For safe and correct use, read this manual and the indoor unit installation manual thoroughly before installing the air-conditioner unit.
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1. Safety precautions

- Before installing the unit, make sure you read all the “Safety precautions”.
- Be sure to support to or take consent by the supply authority before connection to the system.

**Warning:**
Describes precautions that must be observed to prevent danger of injury or death to the user.

**Caution:**
Describes precautions that must be observed to prevent damage to the unit.

**Warning:**
- The unit must not be installed by the user. Ask a dealer or an authorized technician to install the unit. If the unit is installed incorrectly, water leakage, electric shock, or fire may result.
- For installation work, follow the instructions in the Installation Manual and use tools and pipe components specifically made for use with R410A refrigerant. The R410A refrigerant in the HFC system is pressurized 1.6 times the pressure of usual refrigerants. If pipe components not designed for R410A refrigerant are used and the unit is not installed correctly, the pipes may burst and cause damage or injuries. In addition, water leakage, electric shock, or fire may result.
- The unit must be installed according to the instructions in order to minimize the risk of damage from earthquakes, typhoons, or strong winds. An incorrectly installed unit will not be properly grounded and electric shock may result.
- The unit must be securely installed on a structure that can sustain its weight. If the unit is mounted on an unstable structure, it may fall down and cause damage or injuries.
- If the air conditioner is installed in a small room, measures must be taken to prevent the refrigerant concentration in the room from exceeding the safety limit in the event of refrigerant leakage. Consult a dealer regarding the appropriate measures to prevent the allowable concentration from being exceeded.
- Should the refrigerant leak and cause the concentration limit to be exceeded, hazards due to lack of oxygen in the room may result.
- Ventilate the room if refrigerant leaks during operation. If refrigerant comes into contact with a flame, poisonous gases will be released.
- All electric work must be performed by a qualified technician according to local regulations and the instructions given in this manual. The units must be powered by dedicated power lines and the correct voltage and circuit breakers must be used. Power lines with insufficient capacity or incorrect electrical work may result in electric shock or fire.
- Use C1210 copper phosphorus, for copper and copper alloy seamless pipes, to connect the refrigerant pipes. If the pipes are not connected correctly, the unit will not be properly grounded and electric shock may result.
- Use only specified cables for wiring. The connections must be made securely and without tension on the terminals. If the cables are connected or installed incorrectly, water leakage, electric shock, or fire may result.
- When installing or moving the air conditioner, use only the specified refrigerant (R410A) to charge the refrigerant lines. Do not mix it with any other refrigerant and do not allow air to remain in the lines. Air enclosed in the lines can cause pressure peaks resulting in a rupture and other hazards.
- Use only accessories authorized by Mitsubishi Electric and ask a dealer or an authorized technician to install them. If accessories are incorrectly installed, water leakage, electric shock, or fire may result.
- The user should never attempt to repair the unit or transfer it to another location. If the unit is installed incorrectly, water leakage, electric shock, or fire may result. If the air conditioner must be repaired or moved, ask a dealer or an authorized technician.
- After installation has been completed, check for refrigerant leaks. If refrigerant leaks into the room and comes into contact with the flame of a heater or portable cooking range, poisonous gases will be released.

1.1. Before installation

**Caution:**
- Do not use the unit in an unusual environment. If the air conditioner is installed in areas exposed to steam, volatile oil (including machine oil), or sulfuric gas, areas exposed to high salt content such as the seaside, or areas where the unit will be covered by snow, the performance can be significantly reduced and the internal parts can be damaged.
- Do not install the unit where combustible gases may leak, be produced, flow, or accumulate. If combustible gas accumulates around the unit, fire or explosion may result.
- The outdoor unit produces condensation during the heating operation. Make sure to provide drainage around the outdoor unit if such condensation is likely to cause damage.

1.2. Before installation (relocation)

**Caution:**
- Be extremely careful when transporting the units. Two or more persons are needed to handle the unit, as it weighs 20 kg or more. Do not grasp the packaging bands. Wear protective gloves to remove the unit from the packaging and to move it, as you can injure your hands on the fins or other parts.
- Be sure to safely dispose of the packaging materials. Packaging materials, such as nails and other metal or wooden parts may cause stabs or other injuries.
- The base and attachments of the outdoor unit must be periodically checked for looseness, cracks or other damage. If such defects are left uncorrected, the unit may fall down and cause damage or injuries.
- Do not clean the air conditioner unit with water. Electric shock may result.
- Tighten all flare nuts to specification using a torque wrench. If tightened too much, the flare nut can break after an extended period and refrigerant can leak out.
1. Safety precautions

1.3. Before electric work

Caution:
- Be sure to install circuit breakers. If not installed, electric shock may result.
- For the power lines, use standard cables of sufficient capacity. Otherwise, a short circuit, overheating, or fire may result.
- When installing the power lines, do not apply tension to the cables. If the connections are loosened, the cables can snap or break and overheating or fire may result.

Caution:
- Use ester oil, ether oil, alkylbenzene oil (small amount) as the refrigeration oil.
- Do not use thin pipes. (Refer to page 5)
- Replace the existing flare nuts and flare the flared sections again.

Do not touch the refrigerant pipes with bare hands during operation. The refrigerant pipes are hot or cold depending on the condition of the flowing refrigerant. If you touch the pipes, burns or frostbite may result.

Caution:
- Be sure to ground the unit. Do not connect the ground wire to gas or water pipes, lighting rods, or telephone grounding lines.
- Use circuit breakers (ground fault interrupter, isolating switch (B fuse), and molded case circuit breaker) with the specified capacity. If the circuit breaker capacity is larger than the specified capacity, breakdown or fire may result.

Caution:
- Do not use thin pipes. (Refer to page 5)
- Note the following if reusing existing pipes that carried R22 refrigerant:
  - Replace the existing flare nuts and flare the flared sections again.
  - Do not use thin pipes. (Refer to page 5)
  - Store the pipes to be used during installation indoors and keep both ends of the pipes sealed until just before brazing. (Leave elbow joints, etc. in their packaging.) If dust, debris, or moisture enters the refrigerant lines, refrigeration oil deterioration may result.
  - Use ester oil, ether oil, alkylbenzene oil (small amount) as the refrigeration oil applied to the flared sections. If mineral oil is mixed in the refrigeration oil, oil deterioration or compressor breakdown may result.
  - Use the transportation handles of the outdoor unit to transport the unit. If the unit is carried from the bottom, hands or fingers may be pinched.

1.4. Before starting the test run

Caution:
- Turn on the main power switch more than 12 hours before starting operation. Starting operation just after turning on the power switch can severely damage the internal parts. Keep the main power switch turned on during the operation season.
- Before starting operation, check that all panels, guards and other protective parts are correctly installed. Rotating, hot, or high voltage parts can cause injuries.
- Do not touch any switch with wet hands. Electric shock may result.
- Do not touch the refrigerant pipes with bare hands during operation. The refrigerant pipes are hot or cold depending on the condition of the flowing refrigerant. If you touch the pipes, burns or frostbite may result.
- After stopping operation, be sure to wait at least five minutes before turning off the main power switch. Otherwise, water leakage or breakdown may result.

2. Installation location

2.1. Refrigerant pipe (Fig. 2-1)

Check that the difference between the heights of the indoor and outdoor units, the length of refrigerant pipe, and the number of bends in the pipe are within the limits shown below.

<table>
<thead>
<tr>
<th>Models</th>
<th>⑦ Pipe length (one way)</th>
<th>⑧ Height difference bends (one way)</th>
<th>⑨ Number of bends (one way)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RP35, 50, 60, 71</td>
<td>Max. 50 m</td>
<td>Max. 30 m</td>
<td>Max. 15</td>
</tr>
<tr>
<td>RP100, 125, 140</td>
<td>Max. 75 m</td>
<td>Max. 30 m</td>
<td>Max. 15</td>
</tr>
</tbody>
</table>

Height difference limitations are binding regardless of which unit, indoor or outdoor, is positioned higher.
- Indoor unit
- Outdoor unit

2.2. Choosing the outdoor unit installation location

- Avoid locations exposed to direct sunlight or other sources of heat.
- Select a location from which noise emitted by the unit will not inconvenience neighbors.
- Select a location permitting easy wiring and pipe access to the power source and indoor unit.
- Avoid locations where combustible gases may leak, be produced, flow, or accumulate.
- Note that water may drain from the unit during operation.
- Select a level location that can bear the weight and vibration of the unit.
- Avoid locations where the unit can be covered by snow. In areas where heavy snowfall is anticipated, special precautions such as raising the installation location or installing a hood on the air intake must be taken to prevent the snow from blocking the air intake or blowing directly against it. This can reduce the airflow and a mal-function may result.
- Avoid locations exposed to oil, steam, or sulfuric gas.
- Use the transportation handles of the outdoor unit to transport the unit. If the unit is carried from the bottom, hands or fingers may be pinched.

2.3. Outline dimensions (Outdoor unit) (Fig. 2-2)

The figure in parenthesis is for RP100-140 models.
2. Installation location

2.4. Ventilation and service space

2.4.1. Windy location installation

When installing the outdoor unit on a rooftop or other location unprotected from the wind, situate the air outlet of the unit so that it is not directly exposed to strong winds. Strong wind entering the air outlet may impede the normal airflow and a malfunction may result.

The following shows three examples of precautions against strong winds.

1. Face the air outlet towards the nearest available wall about 50 cm away from the wall. (Fig. 2-3)
2. Install an optional air guide if the unit is installed in a location where strong winds from a typhoon, etc. may directly enter the air outlet. (Fig. 2-4)
3. Position the unit so that the air outlet blows perpendicularly to the seasonal wind direction, if possible. (Fig. 2-5)

2.4.2. When installing a single outdoor unit (Refer to the last page)

Minimum dimensions are as follows, except for Max., meaning Maximum dimensions, indicated. The figures in parentheses are for RP100-140 models. Refer to the figures for each case.

- Obstacles at rear only (Fig. 2-6)
- Obstacles at rear and above only (Fig. 2-7)
- Obstacles at rear and sides only (Fig. 2-8)
- Obstacles at front only (Fig. 2-9)
- Obstacles at front and rear only (Fig. 2-10)
- Obstacles at rear, sides, and above only (Fig. 2-11)

2.4.3. When installing multiple outdoor units (Refer to the last page)

Leave 350 mm for RP35, 50 and 10 mm for RP60-140 space or more between the units.

3. Installing the outdoor unit

Be sure to install the unit in a sturdy, level surface to prevent rattling noises during operation. (Fig. 3-1)

- M10 (3/8") bolt
- Thickness of concrete 120 mm
- Length of bolt 70 mm
- Weight-bearing capacity 320 kg

- Make sure that the length of the foundation bolt is within 30 mm of the bottom surface of the base.
- Secure the base of the unit firmly with four-M10 foundation bolts in sturdy locations.

Installing the outdoor unit

- Do not block the vent. If the vent is blocked, operation will be hindered and breakdown may result.
- In addition to the unit base, use the installation holes on the back of the unit to attach wires, etc., if necessary to install the unit. Use self-tapping screws (ø5 × 15 mm or more) and install on site.

Warning:

- The unit must be securely installed on a structure that can sustain its weight. If the unit is mounted on an unstable structure, it may fall down and cause damage or injuries.
- The unit must be installed according to the instructions in order to minimize the risk of damage from earthquakes, typhoons, or strong winds. An incorrectly installed unit may fall down and cause damage or injuries.
4. Installing the refrigerant piping

4.1. Precautions for devices that use R410A refrigerant

- Refer to page 3 for precautions not included below on using air conditioners with R410A refrigerant.
- Use ester oil, ether oil, alkylbenzene oil (small amount) as the refrigeration oil applied to the flared sections.
- Use C1220 copper phosphorus, for copper and copper alloy seamless pipes, to connect the refrigerant pipes. Use refrigerant pipes with the thicknesses specified in the table below. Make sure the insides of the pipes are clean and do not contain any harmful contaminants such as sulfuric compounds, oxidants, debris, or dust.

⚠ Warning:
When installing or moving the air conditioner, use only the specified refrigerant (R410A) to charge the refrigerant lines. Do not mix it with any other refrigerant and do not allow air to remain in the lines. Air enclosed in the lines can cause pressure peaks resulting in a rupture and other hazards.

<table>
<thead>
<tr>
<th>Pipe side</th>
<th>Pipe size (mm)</th>
<th>ø6.35</th>
<th>ø9.52</th>
<th>ø12.7</th>
<th>ø15.88</th>
<th>ø19.05</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liquid pipe</td>
<td>ø6.35 thickness 0.8 mm</td>
<td>ø9.52 thickness 0.8 mm</td>
<td>ø12.7 thickness 0.8 mm</td>
<td>ø15.88 thickness 1.0 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gas pipe</td>
<td>ø6.35 thickness 0.8 mm</td>
<td>ø9.52 thickness 1.0 mm</td>
<td>ø12.7 thickness 1.0 mm</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Do not use pipes thinner than those specified above.

4.2. Connecting pipes (Fig. 4-1)

- When commercially available copper pipes are used, wrap liquid and gas pipes with commercially available insulation materials (heat-resistant to 100 °C or more; thickness of 12 mm or more).
- The indoor parts of the drain pipe should be wrapped with polyethylene foam insulation materials (specific gravity of 0.03; thickness of 9 mm or more).
- Apply thin layer of refrigerant oil to pipe and joint seating surface before tightening flare nut.
- Use two wrenches to tighten piping connections.
- Use leak detector or soapy water to check for gas leaks after connections are completed.
- Apply refrigerating machine oil over the entire flare seat surface.
- Use the flare nuts for the following pipe size.

<table>
<thead>
<tr>
<th>Pipe size (mm)</th>
<th>ø6.35</th>
<th>ø9.52</th>
<th>ø12.7</th>
<th>ø15.88</th>
<th>ø19.05</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gas side</td>
<td>ø6.35</td>
<td>ø9.52</td>
<td>ø12.7</td>
<td>ø15.88</td>
<td>ø19.05</td>
</tr>
<tr>
<td>Liquid side</td>
<td>ø6.35</td>
<td>ø9.52</td>
<td>ø12.7</td>
<td>ø15.88</td>
<td>ø19.05</td>
</tr>
</tbody>
</table>

- When bending the pipes, be careful not to break them. Bend radii of 100 mm to 150 mm are sufficient.
- Make sure the pipes do not contact the compressor. Abnormal noise or vibration may result.

1. Pipes must be connected starting from the indoor unit.
2. Flare nuts must be tightened with a torque wrench.
3. Flare the liquid pipes and gas pipes and apply a thin layer of refrigeration oil (Applied on site).
4. When usual pipe sealing is used, refer to Table 1 for flaring of R410A refrigerant pipes.

The size adjustment gauge can be used to confirm A measurements.

4.3. Table 1 (Fig. 4-2)

<table>
<thead>
<tr>
<th>Copper pipe O.D. (mm)</th>
<th>Flare tool for R410A</th>
<th>Clutch type</th>
</tr>
</thead>
<tbody>
<tr>
<td>ø6.35 (1/4&quot;)</td>
<td>ø9.52 (3/8&quot;)</td>
<td>ø12.7 (1/2&quot;)</td>
</tr>
<tr>
<td>ø6.35</td>
<td>0.1 - 1.5</td>
<td>0.1 - 1.5</td>
</tr>
<tr>
<td>ø9.52</td>
<td>0.1 - 1.5</td>
<td>0.1 - 1.5</td>
</tr>
<tr>
<td>ø12.7</td>
<td>0.1 - 1.5</td>
<td>0.1 - 1.5</td>
</tr>
<tr>
<td>ø15.88</td>
<td>0.1 - 1.5</td>
<td>0.1 - 1.5</td>
</tr>
<tr>
<td>ø19.05</td>
<td>0.1 - 1.5</td>
<td>0.1 - 1.5</td>
</tr>
</tbody>
</table>

- Do not use pipes thinner than those specified above.

Fig. 4-1

Table 1 (Fig. 4-2)
4. Installing the refrigerant piping

If the pipe length exceeds 30 m, charge the unit with additional R410A refrigerant.

4.1. Installing the refrigerant piping

- Perform refrigerant piping connections for the indoor/Outdoor unit when the unit is stopped.
- Do not add refrigerant directly to the check valve. Do not add liquid refrigerant directly to the check valve.
- When the unit is operating, add refrigerant to the gas check valve using a safety charger. Do not add liquid refrigerant directly to the check valve.

4.2. Refrigerant piping (Fig. 4-3)

**For RP35, 50**
- Remove the service panel (one screw).

**For RP60-140**
- Remove the service panel (three screws) and the front piping cover (two screws) and rear piping cover (two screws).

4.3. Refrigerant piping (Fig. 4-3)

**For RP35, 50**
- Remove the service panel (one screw).

**For RP60-140**
- Remove the service panel (three screws) and the front piping cover (two screws) and rear piping cover (two screws).

- Do not add pressure to the specified pressure all at once; add pressure little by little.
  - Pressurize to 0.5 MPa (5 kgf/cm²G), wait five minutes, and make sure the pressure does not decrease.
  - Pressurize to 1.5 MPa (15 kgf/cm²G), wait five minutes, and make sure the pressure does not decrease.
  - Pressurize to 4.15 MPa (41.5 kgf/cm²G) and measure the surrounding temperature and refrigerant pressure.

- If the specified pressure holds for about one day and does not decrease, the pipes have passed the test and there are no leaks.
  - Check that the valves are fully open, then return the cap to its original state and make sure the stop valve is completely closed.
  - Use a leak detector or soapy water to check for gas leaks at the pipe connection sections of the outdoor unit.
  - If the vacuum drying is inadequate, air and water vapor remain in the coolant line. This will lead to abnormally high pressure and have a serious effect on operation performance.

4.4. Refrigerant pipe airtight testing method (Fig. 4-4)

(1) Connect the testing tools.
- Make sure the stop valves are closed and do not open them.
- Add pressure to the refrigerant lines through the service port of the liquid stop valve.

(2) Do not add pressure to the specified pressure all at once; add pressure little by little.
- Pressurize to 0.5 MPa (5 kgf/cm²G), wait five minutes, and make sure the pressure does not decrease.
- Pressurize to 1.5 MPa (15 kgf/cm²G), wait five minutes, and make sure the pressure does not decrease.
- Pressurize to 4.15 MPa (41.5 kgf/cm²G) and measure the surrounding temperature and refrigerant pressure.

(3) If the specified pressure holds for about one day and does not decrease, the pipes have passed the test and there are no leaks.
- If the surrounding temperature changes by 1 °C, the pressure will change by about 0.03 MPa (0.3 kgf/cm²G). Make the necessary corrections.

(4) If the pressure decreases in steps (2) or (3), there is a gas leak. Look for the source of the gas leak.

4.5. Stop valve opening method

The stop valve opening method varies according to the outdoor unit model. Use the appropriate method to open the stop valves.

(1) Gas side of RP60-140 (Fig. 4-5)
- Remove the cap, then turn one-quarter rotation counter-clockwise with a flat-bladed screwdriver to complete open.
- Check that the valves are fully open, then return the cap to its original state and tighten it down.

(2) Liquid side of RP60-140 and Gas/Liquid side of RP35, 50 (Fig. 4-6)
- Remove the cap and turn the valve rod counterclockwise as far as it will go with the use of a 4 mm hexagonal wrench. Stop turning when it hits the stopper.

4.6. Addition of refrigerant

- Additional charging is not necessary for this unit if the pipe length does not exceed 30 m.
- If the pipe length exceeds 30 m, charge the unit with additional R410A refrigerant according to the permitted pipe lengths in the chart below.

<table>
<thead>
<tr>
<th>Model</th>
<th>Permitted pipe length</th>
<th>Permitted vertical difference</th>
<th>Additional refrigerant charging amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>RP35, 50</td>
<td>-50 m</td>
<td>2.4 kg</td>
<td>0.4 kg</td>
</tr>
<tr>
<td>RP60, 71</td>
<td>-50 m</td>
<td>1.2 kg</td>
<td>-</td>
</tr>
<tr>
<td>RP100-140</td>
<td>-75 m</td>
<td>1.2 kg</td>
<td>1.8 kg</td>
</tr>
<tr>
<td>RP70</td>
<td>-75 m</td>
<td>1.8 kg</td>
<td>2.4 kg</td>
</tr>
</tbody>
</table>

Be careful when installing multiple units. Connecting to an incorrect indoor unit can lead to abnormally high pressure and have a serious effect on operation performance.
4. Installing the refrigerant piping

4.7. Precautions when reusing existing R22 refrigerant pipes

- Refer to the flowchart below to determine if the existing pipes can be used and if it is necessary to use a filter dryer.
- If the diameter of the existing pipes is different from the specified diameter, refer to technological data materials to confirm if the pipes can be used.
- If the diameter of the existing gas side pipe is bigger than the specified diameter, turn SW8-1 on.

4.8. For twin/triple combination

Refrigerant piping limitation of length, height difference are shown in the figure. (Fig. 4-7)

Fig. 4-7

5. Drainage piping work

Outdoor unit drainage pipe connection
When drain piping is necessary, use the drain socket or the drain pan (option).

<table>
<thead>
<tr>
<th></th>
<th>RP35, 50</th>
<th>RP60-140</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drain socket</td>
<td>PAC-S061DS-E</td>
<td></td>
</tr>
<tr>
<td>Drain pan</td>
<td>PAC-S063DP-E</td>
<td>PAC-S064DP-E</td>
</tr>
</tbody>
</table>
6. Electrical work

6.1. Outdoor unit (Fig. 6-1, Fig. 6-2)

- Remove the service panel.
- Wire the cables referring to the Fig. 6-1 and the Fig. 6-2.
- Wire the cables so that they do not contact the center of the service panel or the gas valve.

6.2. Field electrical wiring

<table>
<thead>
<tr>
<th>Wiring</th>
<th>Power Supply</th>
<th>Outdoor Unit</th>
<th>Indoor Unit</th>
<th>Transformer</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>A-Control</td>
<td>Single Phase</td>
<td>230V</td>
<td>DC 12V</td>
<td>DC 12V</td>
<td>1. Wiring size must comply with the applicable local and national code. 2. Power supply cords and Indoor/Outdoor unit connecting cords shall not be lighter than polyvinylchloride sheathed flexible cord. (Design 245 IEC 57) 3. Install an earth longer than other cables. 4. The list is a part of the remote controller accessory.</td>
</tr>
</tbody>
</table>
7. Test run

7.1. Before test run
- After completing installation and the wiring and piping of the indoor and outdoor units, check for refrigerant leakage, looseness in the power supply or control wiring, wrong polarity, and no disconnection of one phase in the supply.
- Use a 500-volt megohmmeter to check that the resistance between the power supply terminals and ground is at least 1.0MΩ.
- Do not connect this test on the control wiring (low voltage circuit) terminals.

Warning:
Do not use the air conditioner if the insulation resistance is less than 1.0MΩ.

Insulation resistance
After installation or after the power source to the unit has been cut for an extended period, the insulation resistance will drop below 1 MΩ due to refrigerant accumulating in the compressor. This is not a malfunction. Perform the following procedures.
1. Remove the wires from the compressor and measure the insulation resistance of the compressor.
2. If the insulation resistance is below 1 MΩ, the compressor is faulty or the resistance dropped due to accumulation of refrigerant in the compressor.
3. After connecting the wires to the compressor, the compressor will start to warm up after power is supplied. After supplying power for the times indicated below, measure the insulation resistance again.

7.2. Unit replacement operation

- When reusing existing pipes that carried R22 refrigerant, replacement operation must be performed before performing a test run.
- If new pipes are used, these procedures are not necessary.
- If existing pipes that carried R22 refrigerant are used for R35-71 models, these procedures are necessary. (The replacement operation cannot be performed.)

Replacement operation procedures
1. Supply power.
2. Set DIP switch SW8-2 on the control board of the outdoor unit to ON to start replacement operation.
   - The replacement operation is performed using the cooling system. Cool air will flow from the indoor unit during the replacement operation.
   - During the replacement operation, TEST is displayed on the remote controller. LED1 and LED2 on the control board of the outdoor unit flash together.
   - The duration of the replacement operation is determined by the length of the piping. Always perform the replacement operation for longer than the stipulated time.
   - Use one of the following methods to complete the replacement operation. When the replacement operation ends, the unit will automatically stop.

(1) Set SW8-2 from ON to OFF (when ending a replacement operation of less than 2 hours).
- Because the replacement operation restarts each time SW8-2 is set from OFF to ON, always perform the replacement operation for longer than the stipulated time.

Required replacement operation times

<table>
<thead>
<tr>
<th>Pipe Length</th>
<th>Replacement Operation Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to 20 meters</td>
<td>30 minutes or more</td>
</tr>
<tr>
<td>21 to 30 meters</td>
<td>45 minutes or more</td>
</tr>
<tr>
<td>31 to 50 meters</td>
<td>60 minutes or more</td>
</tr>
</tbody>
</table>

(2) Allow the replacement operation to automatically stop after 2 hours (operation stops while SW8-2 is still in the ON position).
- When the replacement operation has ended automatically after 2 hours of operation, there is no need to set SW8-2 from ON to OFF; normal air conditioning operation is possible with SW8-2 set to ON. However, to repeat the replacement operation, SW8-2 must be set to OFF and then to ON.
- If the indoor temperature is less than 15°C, the compressor will operate intermittently but the unit is not faulty.

7.3. Test run

7.3.1. Using SW4 in outdoor unit

- After performing the test run, set SW4-1 to OFF.
- After power is supplied, a small clicking noise may be heard from the inside of the outdoor unit. The electronic expansion valve is opening and closing. The unit is not faulty.

7.3.2. Using remote controller

Refer to the indoor unit installation manual.

8. Initial settings for refrigerant leakage detection function

Remote control button positions

- Press the [TEST] button for more than three seconds to switch to the maintenance mode.
- Display [MAINTENANCE] and select the [GAS LEAK TEST START] (Fig. 8-2).
- The initial learning for the leakage detection is always done once after the new installation or the data reset.

Caution:
Make sure to perform the "7. Test run" and confirm the unit works without any problems, before starting the following settings.

- How to select the "Refrigerant Leakage Detection" mode
  Detection is possible regardless the unit’s operation (ON or OFF).
- Press [TEST] button for more than three seconds to switch to the maintenance mode.

- How to start the initial learning
  Press [CLOCK] button and select the [GAS LEAK TEST START] (Fig. 8-2).

This air conditioner (outdoor unit) can detect refrigerant leakage which may happen during a long period of use. In order to enable the leakage detection, the following settings are required to let the unit memorize the initial conditions (initial learning).

- After power is supplied, a small clicking noise may be heard from the inside of the outdoor unit. The noise is coming from the check valve due to the small difference in pressure in the pipes. The unit is not faulty.
- The test run operation mode cannot be changed by DIP switch SW4-2 during the test run. (To change the test run operation mode during the test run, stop the test run by DIP switch SW4-1.) After changing the test run operation mode, resume the test run by switch SW4-1.)
8. Initial settings for refrigerant leakage detection function

![Diagram of initial settings for refrigerant leakage detection function]

- Press the ( ) button to confirm. (Fig. 8-3)
- How to finish the initial learning
  - Once the unit’s operation is stabilized, the initial learning is completed.
  - Press the ( ) button for more than three seconds to cancel the initial learning.
  - The initial learning can also be cancelled by pressing the ( ) button.

* Refer to the Technical Manual for the refrigerant leakage detection judgment method.

9. Special Functions

9.1. Low noise mode (on-site modification) (Fig. 9-1)

By performing the following modification, operation noise of the outdoor unit can be reduced by about 3-4 dB.

The low noise mode will be activated when a commercially available timer or the contact input of an ON/OFF switch is added to the CNDM connector (option) on the control board of the outdoor unit.

- The ability varies according to the outdoor temperature and conditions, etc.
  - Complete the circuit as shown when using the external input adapter (PAC-SC36NA) (Option)
  - SW1 ON: Low noise mode
  - SW1 OFF: Normal operation

9.2. Demand function (on-site modification) (Fig. 9-2)

By performing the following modification, energy consumption can be reduced to 0-100% of the normal consumption.

The demand function will be activated when a commercially available timer or the contact input of an ON/OFF switch is added to the CNDM connector (option) on the control board of the outdoor unit.

- Complete the circuit as shown when using the external input adapter (PAC-SC36NA) (Option)
- By setting SW7-1 and SW7-2 on the control board of the outdoor unit, the energy consumption (compared to the normal consumption) can be limited as shown below.

<table>
<thead>
<tr>
<th>SW7-1</th>
<th>SW7-2</th>
<th>Energy consumption (SW2 ON)</th>
</tr>
</thead>
<tbody>
<tr>
<td>OFF</td>
<td>OFF</td>
<td>0% (Stop)</td>
</tr>
<tr>
<td>ON</td>
<td>OFF</td>
<td>50%</td>
</tr>
<tr>
<td>OFF</td>
<td>ON</td>
<td>75%</td>
</tr>
</tbody>
</table>

9.3. Refrigerant collecting (pump down)

Perform the following procedures to collect the refrigerant when moving the indoor unit or the outdoor unit.

- When power is supplied, make sure that “CENTRALLY CONTROLLED” is not displayed on the remote controller. If “CENTRALLY CONTROLLED” is displayed, the refrigerant collecting (pump down) cannot be completed normally.
- After the gas stop valve is closed, set the SWP switch on the control board of the outdoor unit to ON. The compressor (outdoor unit) and ventilators (indoor and outdoor units) start operating and refrigerant collecting operation begins. LED1 and LED2 on the control board of the outdoor unit are lit.
- Only set the SWP switch (push-button type) to ON if the unit is stopped. How- ever, even if the unit is stopped and the SWP switch is set to ON less than three minutes after the compressor stops, the refrigerant collecting operation cannot be performed. Wait until compressor has been stopped for three minutes and then set the SWP switch to ON again.

10. System control (Fig. 10-1)

- Set the refrigerant address using the DIP switch of the outdoor unit.
- Wiring from the Remote Control
  - This wire is connected to TB5 (terminal board for remote controller) of the indoor unit (non-polar).
  - When a Different Refrigerant System Grouping is Used
  - Up to 16 refrigerant systems can be controlled as one group using the slim MA remote controller.

Note:
In single refrigerant system (twin/triple), there is no need of wiring ①.

### SW1 Function table

<table>
<thead>
<tr>
<th>Function</th>
<th>Operation according to switch setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>ON</td>
<td>Normal</td>
</tr>
<tr>
<td>OFF</td>
<td>Clear</td>
</tr>
<tr>
<td>1</td>
<td>Complementary de-frosting</td>
</tr>
<tr>
<td>2</td>
<td>Error history clear</td>
</tr>
<tr>
<td>3</td>
<td>Refrigerant system address set-</td>
</tr>
<tr>
<td></td>
<td>ting</td>
</tr>
<tr>
<td></td>
<td>Settings for outdoor unit adresses</td>
</tr>
<tr>
<td></td>
<td>0 to 15</td>
</tr>
</tbody>
</table>
This product is designed and intended for use in the residential, commercial and light-industrial environment.

The product at hand is based on the following EU regulations:

- Low Voltage Directive 73/23/ EEC

Please be sure to put the contact address/telephone number on this manual before handing it to the customer.