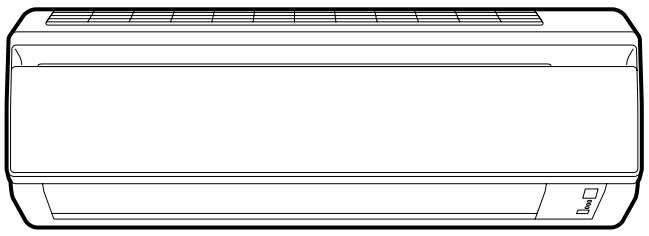
DAIKIN

INSTALLATION MANUAL

R22 Split Series



Installation manual
R22 Split series

English

Руководство по монтажу
Серия R22 с раздельной установкой

Русский

Models
FTY25GXV1
FTY35GXV1

Safety Precautions

- Read these Safety Precautions carefully to ensure correct installation.
- This manual classifies the precautions into WARNING and CAUTION.
  Be sure to follow all the precautions below: they are all important for ensuring safety.

⚠ **WARNING.....Failure to follow any of WARNING is likely to result in such grave consequences as death or serious injury.**

⚠ **CAUTION ..... Failure to follow any of CAUTION may in some cases result in grave consequences.**

- The following safety symbols are used throughout this manual:

Be sure to observe this instruction.	Be sure to establish an earth connection.	Never attempt.

- After completing installation, test the unit to check for installation errors. Give the user adequate instructions concerning the use and cleaning of the unit according to the Operation Manual.

⚠ WARNING
• Installation should be left to the dealer or another professional. Improper installation may cause water leakage, electrical shock, or fire.
• Install the air conditioner according to the instructions given in this manual. Incomplete installation may cause water leakage, electrical shock, or fire.
• Be sure to use the supplied or specified installation parts. Use of other parts may cause the unit to come to lose, water leakage, electrical shock, or fire.
• Install the air conditioner on a solid base that can support the unit's weight. An inadequate base or incomplete installation may cause injury in the event the unit falls off the base.
• Electrical work should be carried out in accordance with the installation manual and the national electrical wiring rules or code of practice. Insufficient capacity or incomplete electrical work may cause electrical shock or fire.
• Be sure to use a dedicated power circuit. Never use a power supply shared by another appliance.
• For wiring, use a cable long enough to cover the entire distance with no connection. Do not use an extension cord. Do not put other loads on the power supply, use a dedicated power circuit. (Failure to do so may cause abnormal heat, electric shock or fire.)
• Use the specified types of wires for electrical connections between the indoor and outdoor units. Firmly clamp the interconnecting wires so their terminals receive no external stresses. Incomplete connections or clamping may cause terminal overheating or fire.
• After connecting interconnecting and supply wiring be sure to shape the cables so that they do not put undue force on the electrical covers or panels. Install covers over the wires. Incomplete cover installation may cause terminal overheating, electrical shock, or fire.
• If any refrigerant has leaked out during the installation work, ventilate the room. (The refrigerant produces a toxic gas if exposed to flames.)
• After all installation is complete, check to make sure that no refrigerant is leaking out. (The refrigerant produces a toxic gas if exposed to flames.)
• When installing or relocating the system, be sure to keep the refrigerant circuit free from substances other than the specified refrigerant (R22), such as air. (Any presence of air or other foreign substance in the refrigerant circuit causes an abnormal pressure rise or rupture, resulting in injury.)
• During pump-down, stop the compressor before removing the refrigerant piping. If the compressor is still running and the stop valve is open during pump-down, air will be sucked in when the refrigerant piping is removed, causing abnormal pressure in the freezer cycle which will lead to breakage and even injury.
• During installation, attach the refrigerant piping securely before running the compressor. If the compressor is not attached and the stop valve is open during pump-down, air will be sucked in when the compressor is run, causing abnormal pressure in the freezer cycle which will lead to breakage and even injury.
• Be sure to establish an earth. Do not earth the unit to a utility pipe, arrester, or telephone earth. Incomplete earth may cause electrical shock, or fire. A high surge current from lightning or other sources may cause damage to the air conditioner.
• Be sure to install an earth leakage breaker. Failure to install an earth leakage breaker may result in electric shocks, or fire.

⚠ CAUTION
• Do not install the air conditioner in a place where there is danger of exposure to inflammable gas leakage. If the gas leaks and builds up around the unit, it may catch fire.
• Establish drain piping according to the instructions of this manual. Inadequate piping may cause flooding.
• Tighten the flare nut according to the specified method such as with a torque wrench. If the flare nut is tightened too hard, the flare nut may crack after a long time and cause refrigerant leakage.
• Make sure to provide for adequate measures in order to prevent that the outdoor unit be used as a shelter by small animals. Small animals making contact with electrical parts can cause malfunctions, smoke or fire. Please instruct the customer to keep the area around the unit clean.

Accessories

Indoor unit Ⓐ – Ⓙ , **Outdoor unit** Ⓚ

Ⓐ Mounting plate	1	Ⓓ Remote controller holder	1	Ⓖ Thermistor cable (8m)*1	1
Ⓑ Air-Purifying Filter with bacteriostatic, virustatic function	2	Ⓔ AAA dry-cell batteries	2	Ⓗ Operation manual	1
		Ⓕ Indoor unit fixing screw M4 × 12L	2	Ⓙ Installation manual	1
Ⓒ Wireless remote controller	1			Ⓚ Drain plug	1

*1 The thermistor cable is attached to the indoor unit.

Choosing a Site

• Before choosing the installation site, obtain user approval.

Indoor unit

The indoor unit should be sited in a place where:
- the restrictions on installation specified in the indoor unit installation drawings are met,
- both air intake and exhaust have clear paths met,
- the unit is not in the path of direct sunlight,
- the unit is away from the source of heat or steam,
- there is no source of machine oil vapour (this may shorten indoor unit life),
- cool (heat) air is circulated throughout the room,
- the unit is away from electronic ignition type fluorescent lamps (inverter or rapid start type) as they may shorten the remote control range,
- the unit is at least 1 metre away from any television or radio set (unit may cause interference with the picture or sound).

Outdoor unit

The outdoor unit should be sited in a place where:
- the restrictions on installation specified in the outdoor unit installation diagram are met,
- drain water causes no trouble or problem in particular,
- both air intake and exhaust have clear paths of air (they should be free of snow in snowy districts),
- the unit is in a clear path of air but not directly exposed to rain, strong winds, or direct sunlight,
- there is no fear of inflammable gas leakage,
- the unit is no directly exposed to salt, sulfidized gases, or machine oil vapour (they may shorten outdoor unit life),
- operation noise or hot air flow does not cause trouble to neighbours,
- the unit is at least 3 metres away from any television or radio antenna.

Wireless remote controller

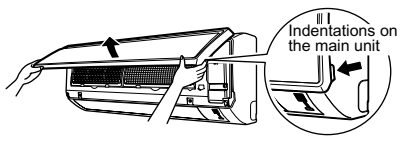
- Turn on all the fluorescent lamps in the room, if any, and find the site where remote controller signals are properly received by the indoor unit (within 7 metres).

Installation Tips

1. Removing and installing front panel.

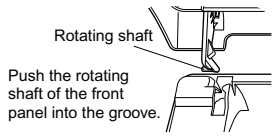
• Removal method

1) Place your fingers in the indentations on the main unit (one each on the left and right sides), and open the panel until it stops.
2) Continue to open the front panel further while sliding the panel to the right and pulling it toward you in order to disengage the rotating shaft on the left side. To disengage the rotating shaft on the right side, slide the panel to the left while pulling it toward you.



• Installation method

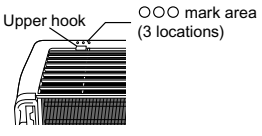
Align the tabs of the front panel with the grooves, and push all the way in. Then close slowly. Push the center of the lower surface of the panel firmly to engage the tabs.

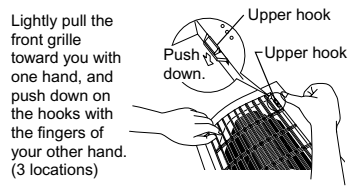


2. Removing and installing front grille.

• Removal method

1) Remove front panel to remove the air filter.
2) Remove the screws (2) from the front grille.
3) In front of the ○○○ mark of the front grille, there are 3 upper hooks. Lightly pull the front grille toward you with one hand, and push down on the hooks with the fingers of your other hand.



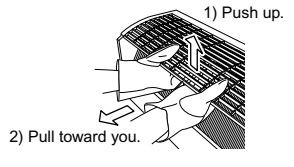


When there is no work space because the unit is close to ceiling

⚠ CAUTION

Be sure to wear protection gloves.

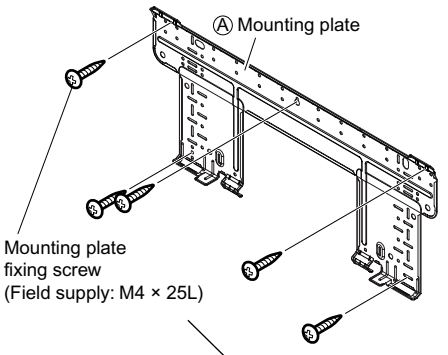
Place both hands under the center of the front grille, and while pushing up, pull it toward you.



• Installation method

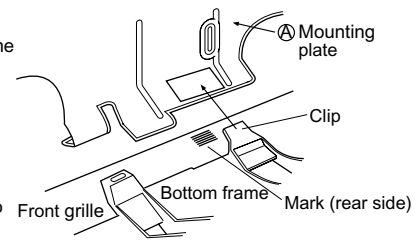
1) Install the front grille and firmly engage the upper hooks (3 locations).
2) Install 2screws of the front grille.
3) Install the air filter and then mount the front panel.

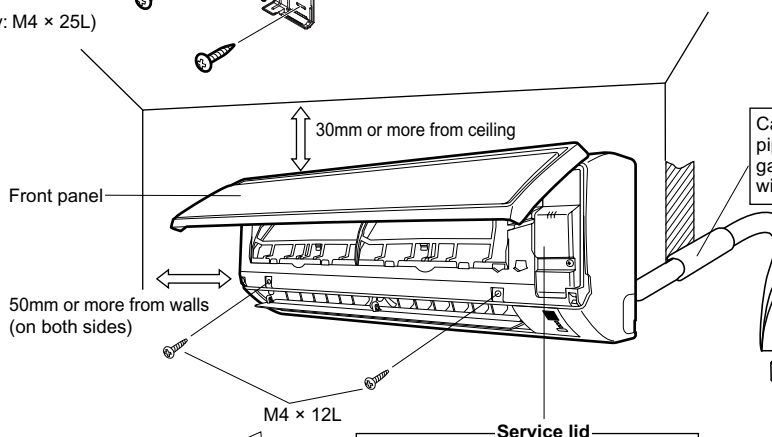
Indoor/Outdoor Unit Installation Drawings



■ **How to attach the indoor unit.**
Hook the claws of the bottom frame to the mounting plate.
If the claws are difficult to hook, remove the front grille.

■ **How to remove the indoor unit.**
Push up the marked area (at the lower part of the front grille) to release the claws. If it is difficult to release, remove the front grille.

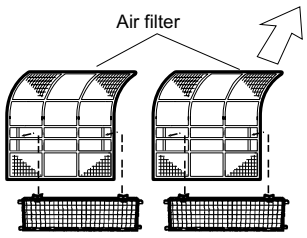




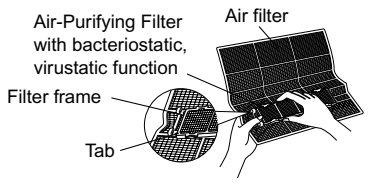
Caulk pipe hole gap with putty.

Cut thermal insulation pipe to an appropriate length and wrap it with tape, making sure that no gap is left in the insulation pipe's cut line.

Wrap the insulation pipe with the finishing tape from bottom to top.



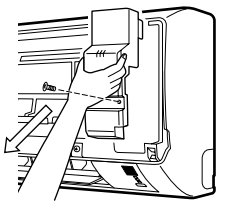
Ⓑ Air-Purifying Filter with bacteriostatic, virustatic function (2)



Service lid

■ **Opening service lid**
Service lid is opening/closing type.

■ **Opening method**
1) Remove the service lid screws.
2) Pull out the service lid diagonally down in the direction of the arrow.
3) Pull down.



Model	25	35
Min. allowable length	3m	
Max. allowable length	15m	
Additional charge of refrigerant	20g/m	
Max. allowable length without additional charge	10m	
Max. allowable height	10m	
Gas pipe	O.D. 9.5mm	O.D. 12.7mm
Liquid pipe	O.D. 6.4mm	

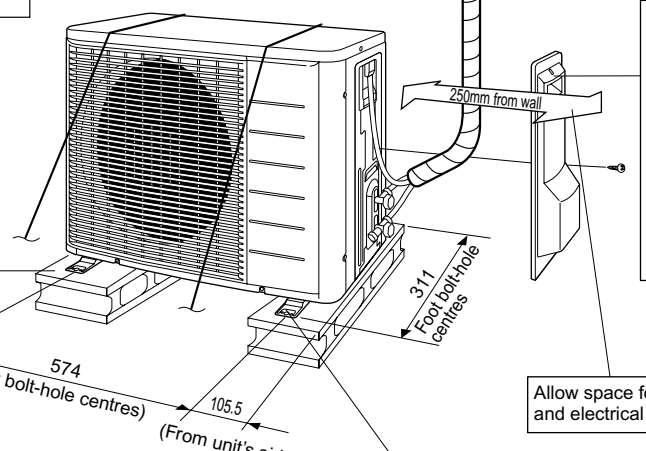
* Be sure to add the proper amount of additional refrigerant. Failure to do so may result in reduced perfomance.

Ⓒ Wireless remote controller

Ⓓ Remote controller holder

Before screwing the remote controller holder to the wall, make sure that control signals are properly received by indoor unit.

Screws (Field supply: M3 × 20L)



Stop valve cover

■ **How to remove the stop valve cover.**
- Remove the screw on the stop valve cover.
- Slide the lid downward to remove it.

■ **How to attach the stop valve cover.**
- Insert the upper part of the stop valve cover into the outdoor unit to install.
- Tighten the screws.

Allow space for piping and electrical servicing.

In sites with poor drainage, use block bases for outdoor unit. Adjust foot height until the unit is leveled. Otherwise, water leakage or pooling of water may occur.

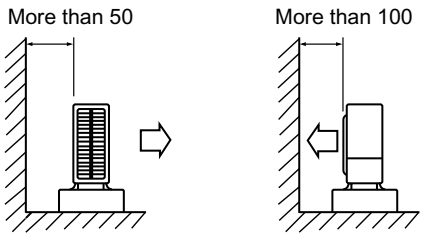
Where there is a danger of the unit falling, use foot bolts, or wires.

unit: mm

Outdoor Unit Installation Guidelines

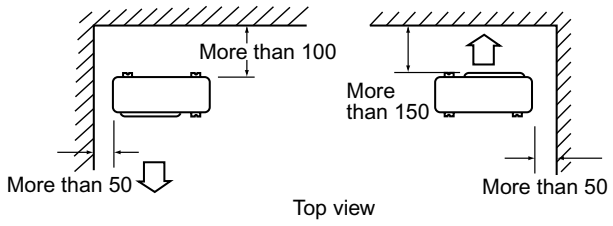
• Where a wall or other obstacle is in the path of outdoor unit's intake or exhaust airflow, follow the installation guidelines below.

Wall facing one side



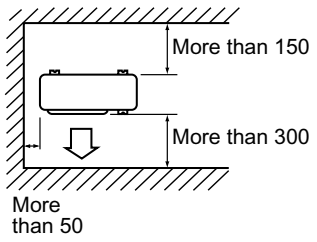
Side view

Walls facing two sides



Top view

Walls facing three sides



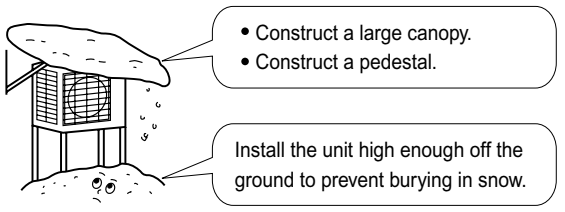
Top view

Unit: mm

⚠ CAUTION

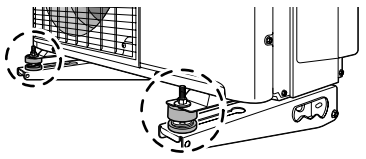
When operating the air conditioner in a low outdoor ambient temperature, be sure to follow the instructions described below.

1) To prevent exposure to wind, install the outdoor unit with its suction side facing the wall.
2) Never install the outdoor unit at a site where the suction side may be exposed directly to wind.
3) To prevent exposure to wind, it is recommended to install a baffle plate on the air discharge side of the outdoor unit.
4) In heavy snowfall areas, select an installation site where the snow will not affect the unit.



⚠ CAUTION

In the case of using a mount and installing the outdoor unit on the wall or roof, attach vibration absorbers (e.g., vibration isolation rubbers and springs) between the legs of the outdoor unit and the mount (4 portions).

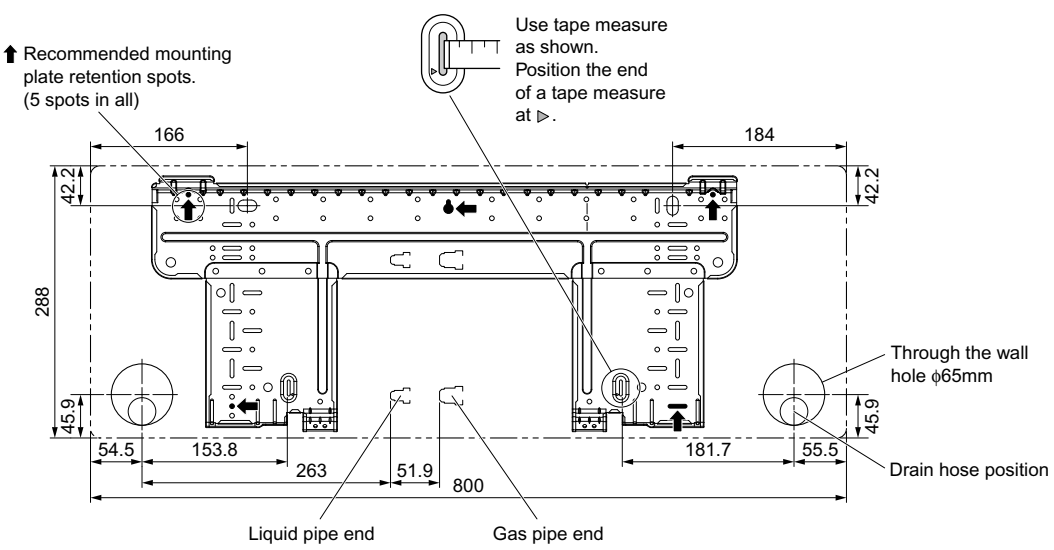


Indoor Unit

1. Installing the mounting plate.

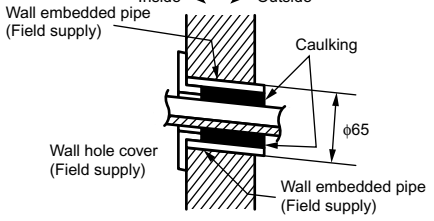
- The mounting plate should be installed on a wall which can support the weight of the indoor unit.
  1) Temporarily secure the mounting plate to the wall, make sure that the panel is completely level, and mark the boring points on the wall.
  2) Secure the mounting plate to the wall with screws.

Recommended mounting plate retention spots and Dimensions



2. Boring a wall hole and installing wall embedded pipe.

- For walls containing metal frame or metal board, be sure to use a wall embedded pipe and wall cover in the feed-through hole to prevent possible heat, electrical shock, or fire.
- Be sure to caulk the gaps around the pipes with caulking material to prevent water leakage.
  1) Bore a feed-through hole of 65mm in the wall so it has a down slope toward the outside.
  2) Insert a wall pipe into the hole.
  3) Insert a wall cover into wall pipe.
  4) After completing refrigerant piping, wiring, and drain piping, caulk pipe hole gap with putty.

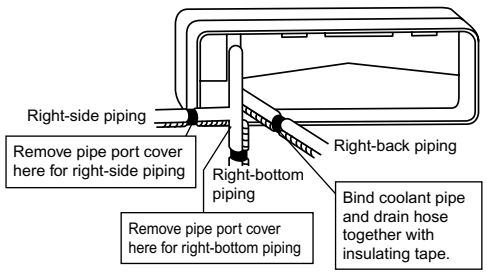


Indoor Unit

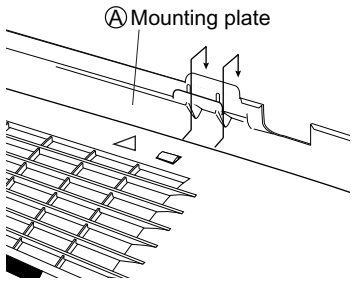
3. Installing indoor unit.

3-1. Right-side, right-back, or right-bottom piping.

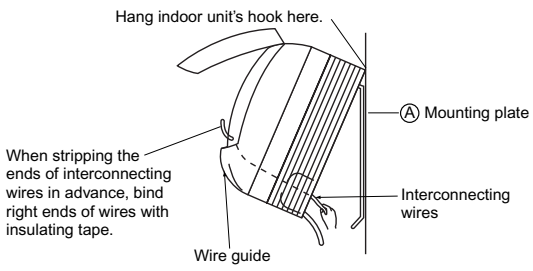
1) Attach the drain hose to the underside of the refrigerant pipes with adhesive vinyl tape.
2) Wrap the refrigerant pipes and drain hose together with insulation tape.



3) Pass the drain hose and refrigerant pipes through the wall hole, then set the indoor unit on the mounting plate hooks by using the △ markings at the top of the indoor unit as a guide.

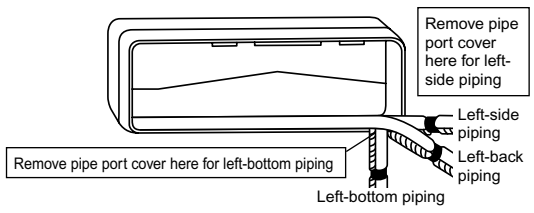


4) Open the front panel, then open the service lid.
(Refer to Installation Tips)
5) Pass the interconnecting wires from the outdoor unit through the feed-through wall hole and then through the back of the indoor unit. Pull them through the front side. Bend the ends of tie wires upward in advance for easier work. (If the interconnecting wire ends are to be stripped first, bundle wire ends with adhesive tape.)
6) Press the indoor unit's bottom panel with both hands to set it on the mounting plate hooks. Make sure the wires do not catch on the edge of the indoor unit.

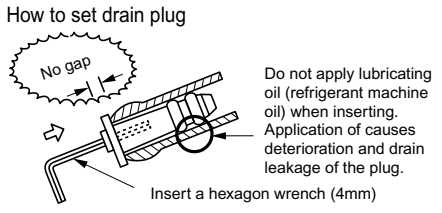


3-2. Left-side, left-back, or left-bottom piping.

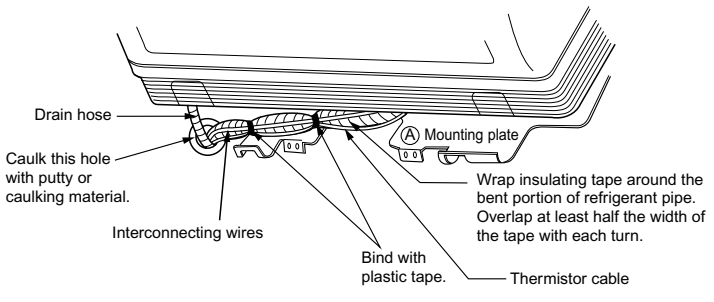
1) Attach the drain hose to the underside of the refrigerant pipes with adhesive vinyl tape.



2) Be sure to connect the drain hose to the drain port in place of a drain plug.

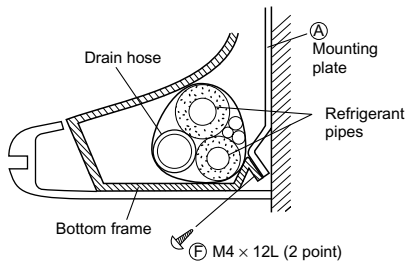


3) Shape the refrigerant pipe along the pipe path marking on the mounting plate.
4) Pass drain hose and refrigerant pipes through the wall hole, then set the indoor unit on mounting plate hooks, using the △ markings at the top of indoor unit as a guide.
5) Pull in the interconnecting wires.
6) Connect the inter-unit piping.



Note:

1) Wrap the refrigerant pipes and drain hose together with insulation tape as right figure, in case of setting the drain hose through the back of the indoor unit.
2) If it difficult to fix the claws of the bottom frame on the catches of the mounting plate.
   Secure indoor unit to the mounting plate with screws (M4 × 12L).

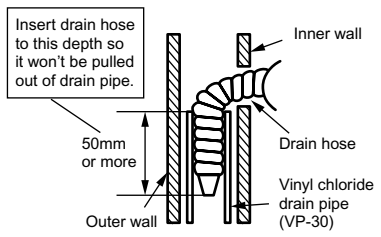


3-3. Wall embedded piping.

Follow the instructions given under

Left-side, left-back, or left-bottom piping .

1) Insert the drain hose to this depth so it wont be pulled out of the drain pipe.

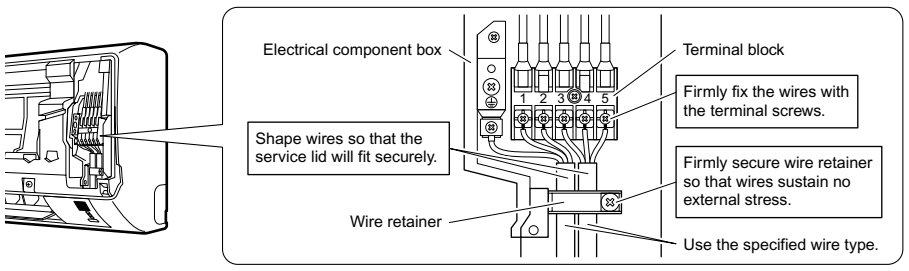


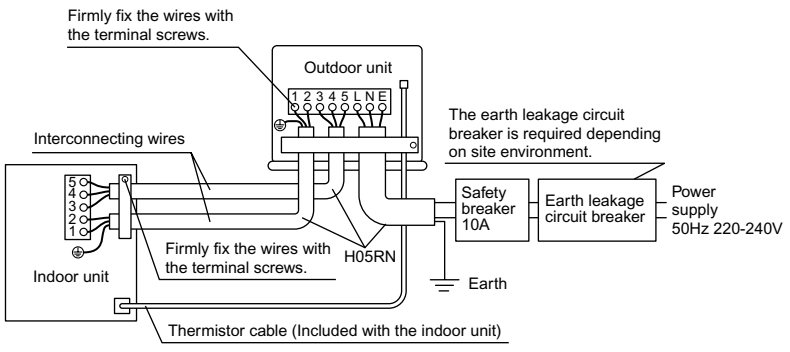
4. Wiring.

⚠ WARNING

1) Do not use tapped wires, stand wires, extensioncords, or starbust connections, as they may cause overheating, electrical shock,or fire.
2) Do not use locally purchased electrical parts inside the product. (Do not branch the power for the drain pump, etc., from the terminal block.) Doing so may cause electric shock or fire.
3) Be sure to install an earth leak detector. (Failure to install an earth leakage breaker may result in electric shocks.)
4) When wiring indoor and outdoor units, always connect terminals together having the same numbers.
   Should any terminal be connected to another terminal that has a different number, the air conditioner may stop running, or the fuse on the indoor or outdoor unit may blow out.
   (See the electric wiring diagram included with the product for details on the fuse specifications.)

- Do not turn ON the safety breaker until all work is completed.
  1) Strip wire ends (15mm).
  2) Match wire colours with terminal numbers on indoor and outdoor units' terminal blocks and firmly screw wires to the corresponding terminals.
  3) Connect the earth wires to the corresponding terminals.
  4) Pull wires to make sure that they are securely latched up, then retain wires with wire retainer.
  5) Shape the wires so that the service lid fits securely, then close service lid.





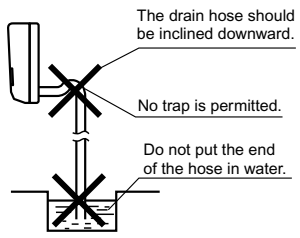
Specification for field wire

	Wire	Size (mm²)	Number of core
Interconnecting wires	H05RN	1.0	4
Power supply wire		1.5	3

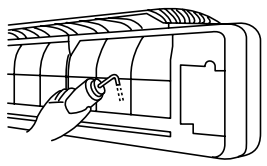
Indoor Unit

5. Drain piping.

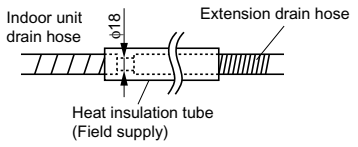
1) Connect the drain hose, as described right.



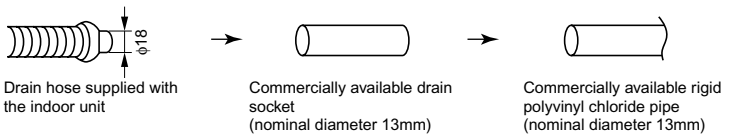
2) Remove the air filters and pour some water into the drain pan to check the water flows smoothly.



3) When drain hose requires extension, obtain an extension hose commercially available. Be sure to thermally insulate the indoor section of the extension hose.



4) When connecting a rigid polyvinyl chloride pipe (nominal diameter 13mm) directly to the drain hose attached to the indoor unit as with embedded piping work, use any commercially available drain socket (nominal diameter 13mm) as a joint.



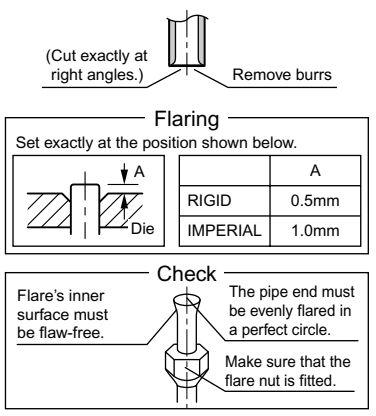
Outdoor Unit

1. Installing outdoor unit.

- For outdoor unit installation, see **Choosing a Site** **Outdoor unit** and **Indoor/Outdoor Unit Installation Drawings**.

2. Flaring the pipe end.

1) Cut the pipe end with a pipe cutter.
2) Remove burrs with the cut surface facing downward so that the chips do not enter the pipe.
3) Put the flare nut on the pipe.
4) Flare the pipe.
5) Check that the flaring is properly made.



⚠ WARNING

1) Incomplete flaring may cause refrigerant gas leakage.

3. Refrigerant piping.

1) Align the centres of both flares and tighten the flare nuts 3 or 4 turns by hand. Then tighten them fully with the torque wrenches.
   - Use torque wrenches when tightening the flare nuts to prevent damage to the flare nuts and escaping gas.
2) To prevent gas leakage, apply refrigeration machine oil on both inner and outer surfaces of the flare. (Use refrigeration oil for R22)

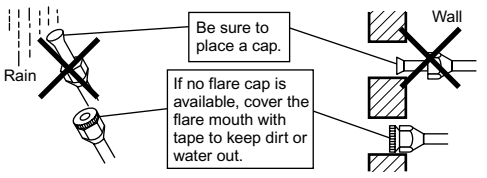
Flare nut tightening torque		
Gas side		Liquid side
25 class	35 class	
3/8 inch	1/2 inch	1/4 inch
32.7-39.9N • m (330-407kgf • cm)	49.5-60.3N • m (505-615kgf • cm)	14.2-17.2N • m (144-175kgf • cm)

Valve cap tightening torque		
Gas side		Liquid side
25 class	35 class	
3/8 inch	1/2 inch	1/4 inch
21.6-27.4N • m (220-280kgf • cm)	48.1-59.7N • m (490-610kgf • cm)	21.6-27.4N • m (220-280kgf • cm)

Service port cap tightening torque	10.8-14.7N • m (110-150kgf • cm)

3-1. Caution on piping handling.

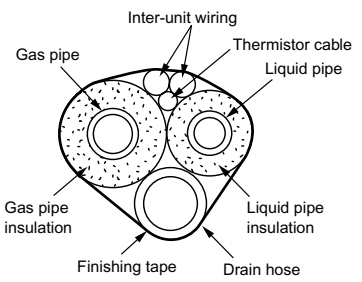
1) Protect the open end of the pipe against dust and moisture.
2) All pipe bends should be as gentle as possible. Use a pipe bender for bending.
   (Bending radius should be 30 to 40mm or larger.)



3-2. Selection of copper and heat insulation materials.

- When using commercial copper pipes and fittings, observe the following:

1) Insulation material: Polyethylene foam
   Heat transfer rate: 0.041 to 0.052W/mK (0.035 to 0.045kcal/mh°C)
   Refrigerant gas pipe's surface temperature reaches 110°C max.
   Choose heat insulation materials that will withstand this temperature.
2) Be sure to insulate both the gas and liquid piping and to provide insulation dimensions as below.



Gas side		Liquid side	Gas pipe thermal insulation		Liquid pipe thermal insulation
25 class	35 class		25 class	35 class	
O.D. 9.5mm	O.D. 12.7mm	O.D. 6.4mm	I.D. 12-15mm	I.D. 14-16mm	I.D. 8-10mm
Thickness 0.8mm			Thickness 10mm Min.		

3) Use separate thermal insulation pipes for gas and liquid refrigerant pipes.

Outdoor Unit

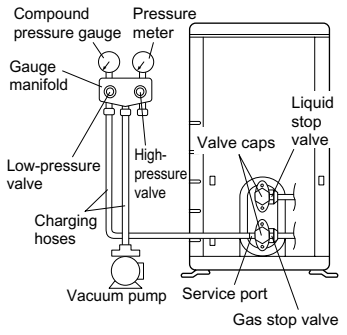
4. Purging air and checking gas leakage.

- When piping work is completed, it is necessary to purge the air and check for gas leakage.

⚠ WARNING

1) Do not mix any substance other than the specified refrigerant (R22) into the refrigeration cycle.
2) When refrigerant gas leaks occur, ventilate the room as soon and as much as possible.
3) R22, as well as other refrigerants, should always be recovered and never be released directly into the environment.
4) Use a vacuum pump for R22 exclusively. Using the same vacuum pump for different refrigerants may damage the vacuum pump or the unit.

- If using additional refrigerant, perform air purging from the refrigerant pipes and indoor unit using a vacuum pump, then charge additional refrigerant.
- Use a hexagonal wrench (4mm) to operate the stop valve rod.
- All refrigerant pipe joints should be tightened with a torque wrench at the specified tightening torque.



1) Connect projection side of charging hose (which comes from gauge manifold) to gas stop valve's service port.

↓

2) Fully open gauge manifold's low-pressure valve (Lo) and completely close its high-pressure valve (Hi).
(High-pressure valve subsequently requires no operation.)

↓

3) Do vacuum pumping and make sure that the compound pressure gauge reads –0.1MPa (–76cmHg)*1.

↓

4) Close gauge manifold's low-pressure valve (Lo) and stop vacuum pump.
(Keep this state for a few minutes to make sure that the compound pressure gauge pointer does not swing back.)*2.

↓

5) Remove covers from liquid stop valve and gas stop valve.

↓

6) Turn the liquid stop valve's rod 90 degrees counterclockwise with a hexagonal wrench to open valve.
Close it after 5 seconds, and check for gas leakage.
Using soapy water, check for gas leakage from indoor unit's flare and outdoor unit's flare and valve rods.
After the check is complete, wipe all soapy water off.

↓

7) Disconnect charging hose from gas stop valve's service port, then fully open liquid and gas stop valves.
(Do not attempt to turn valve rod beyond its stop.)

↓

8) Tighten valve caps and service port caps for the liquid and gas stop valves with a torque wrench at the specified torques.

*1. Pipe length vs. vacuum pump run time

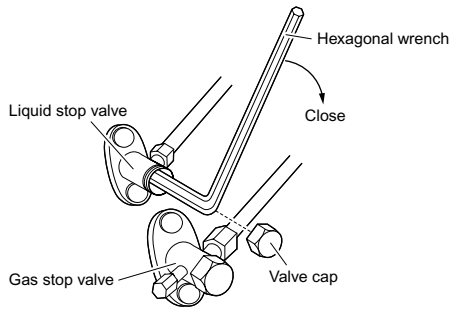
Pipe length	Up to 15 metres	More than 15 metres
Run time	Not less than 10 min.	Not less than 15 min.

*2. If the compound pressure gauge pointer swings back, refrigerant may have water content or a loose pipe joint may exists.
Check all pipe joints and retighten nuts as needed, then repeat steps 2) through 4).

5. Pump down operation.

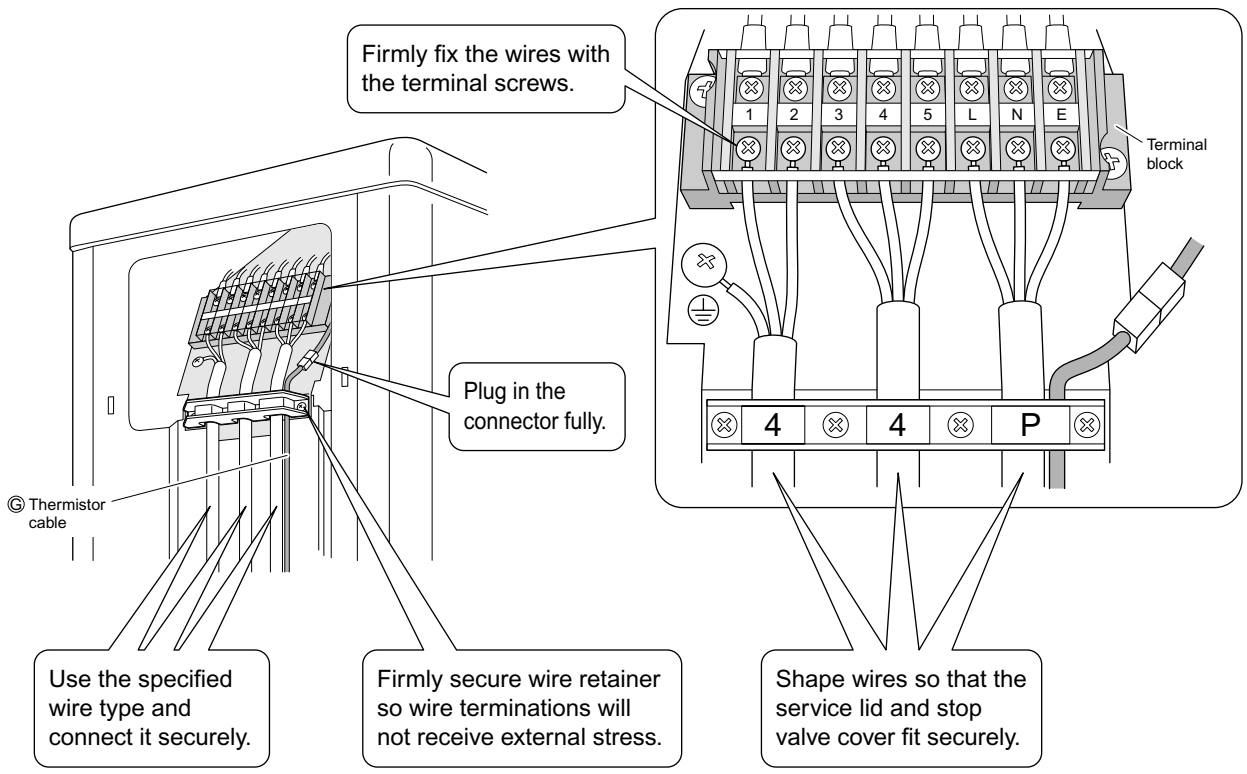
In order to protect the environment, be sure to pump down when relocating or disposing of the unit.

1) Remove the valve cap from liquid stop valve and gas stop valve.
2) Carry out forced cooling operation.
3) After five to ten minutes, close the liquid stop valve with a hexagonal wrench.
4) After two to three minutes, close the gas stop valve and stop forced cooling operation.



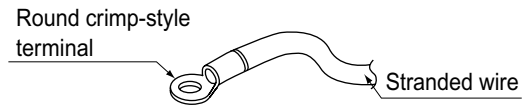
6. Wiring.

- For interconnecting wire connections, see **Indoor Unit**, **4 Wiring**.



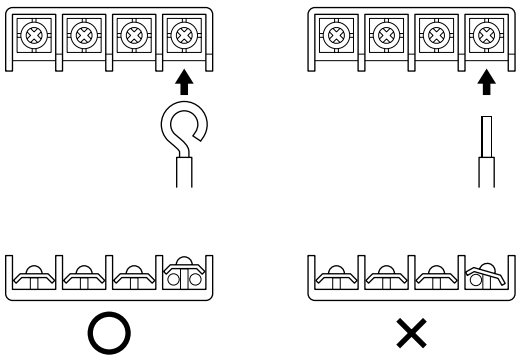
Outdoor Unit

Observe the notes mentioned below when wiring to the terminal block.
Precautions to be taken for power supply wiring.
(Use a round crimp-style terminal for connection to the terminal block.
In case it cannot be used due to unavoidable reasons, be sure to observe the following instruction.)

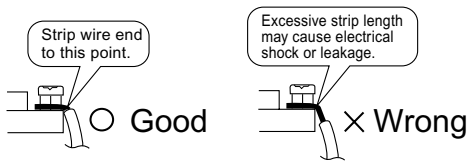


⚠ CAUTION

When connecting the connection wires to the terminal block using a single core wire, be sure to perform curling.
Problems with the work may cause heat and fires.



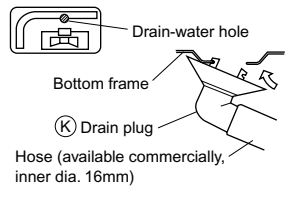
Stripping wire at terminal block



- Pull the wire and make sure that it does not disconnect. Then fix the wire in place with a wire stop.

7. Drain work.

1) Use drain plug (K) for drainage.
2) If the drain port is covered by a mounting base or floor surface, place additional foot bases of at least 30mm in height under the outdoor unit's feet.
3) In cold areas, do not use a drain hose with the outdoor unit.
(Otherwise, drain water may freeze, impairing heating performance.)



Trial Operation and Testing

1. Trial operation and testing.

1-1 Measure the supply voltage and make sure that it falls in the specified range.

1-2 Trial operation should be carried out in either cooling or heating mode.

- In cooling mode, select the lowest programmable temperature; in heating mode, select the highest programmable temperature.
  1) Trial operation may be disabled in either mode depending on the room temperature.
  2) After trial operation is complete, set the temperature to a normal level (26°C to 28°C in cooling mode, 20°C to 24°C in heating mode).
  3) For protection, the system disables restart operation for 3 minutes after it is turned off.

1-3 Carry out the test operation in accordance with the Operation Manual to ensure that all functions and parts, such as louver movement, are working properly.
  * The air conditioner requires a small amount of power in its standby mode. If the system is not to be used for some time after installation, shut off the circuit breaker to eliminate unnecessary power consumption.
  * If the circuit breaker trips to shut off the power to the air conditioner, the system will restore the original operation mode when the circuit breaker is opened again.

2. Test items.

Test Items	Symptom (diagnostic display on RC)	Check
Indoor and outdoor units are installed properly on solid bases.	Fall, vibration, noise	
No refrigerant gas leaks.	Incomplete cooling/heating function	
Refrigerant gas and liquid pipes and indoor drain hose extension are thermally insulated.	Water leakage	
Draining line is properly installed.	Water leakage	
System is properly earthed.	Electrical leakage	
The specified wires are used for interconnecting wire connections.	Inoperative or burn damage	
Indoor or outdoor unit's air intake or exhaust has clear path of air. Stop valves are opened.	Incomplete cooling/heating function	
Indoor unit properly receives remote control commands.	Inoperative	
Thermistor cable is plugged in the connector fully.	Inoperative	