

FOR SERVICE PERSONNEL ONLY

HITACHI
Inspire the Next

SPLIT UNIT AIR CONDITIONER INSTALLATION MANUAL

Outdoor Unit



RAC-25N5
RAC-35N5
RAC-50N5

- Carefully read through the procedures of proper installation before starting installation work.
- The sales agent should inform customers regarding the correct operation of installation.

Tools Needed For Installation Work

- \oplus \ominus Screwdriver • Measuring Tape • Knife
- Saw • \varnothing 65mm Power Drill • Hexagonal Wrench Key (\square 4mm) • Wrench (14, 17, 22, 26, 27mm)
- Gas Leakage Detector • Pipe Cutter • Putty
- Vinyl Tape • Pliers • Flare Tool

SAFETY PRECAUTION

- Read the safety precautions carefully before operating the unit.
- The contents of this section are vital to ensure safety. Please pay special attention to the following sign.

⚠ WARNING Incorrect methods of installation may cause death or serious injury.

⚠ CAUTION Improper installation may result in serious consequence.

Be sure that the unit operates in proper condition after installation. Explain to customer the proper way of operating the unit as described in the user's guide.

⚠ WARNING

- Please request your sales agent or qualified technician to install your unit. Water leakage, short circuit or fire may occur if you do the installation work yourself.
- Please observe the instructions stated in the installation manual during the process of installation. Improper installation may cause water leakage, electric shock and fire.
- Make sure that the units are mounted at locations which are able to provide full support to the weight of the units. If not, the units may collapse and impose danger.
- Observe the rules and regulations of the electrical installation and the methods described in the installation manual when dealing with the electrical work. Use power cables approved by the authorities of your country.
- Be sure to use the specified wire for connecting the indoor and outdoor units. Please ensure that the connections are tight after the conductors of the wire are inserted into the terminals. Improper insertion and loose contact may cause over-heating and fire.
- Please use the specified components for installation work. Otherwise, the units may collapse or water leakage, electric shock and fire may occur.
- Be sure to use the specified piping set for R-410A. Otherwise, this may result in broken copper pipes or faults.
- When installing or removing an air conditioner, only specified refrigerant (R410A) shall be allowed, do not allow air or moisture to remain in the refrigeration cycle. Otherwise, pressure in the refrigeration cycle may become abnormally high so that a rupture may be caused.
- Be sure to ventilate fully if a refrigerant gas leak while at work. If the refrigerant gas comes into contact with fire, a poisonous gas may occur.
- After completion of installation work, check to make sure that there is no refrigeration gas leakage. If the refrigerant gas leaks into the room, coming into contact with fire in the fan-driven heater, space heater, etc., a poisonous gas may occur.
- Unauthorized modifications to the air conditioner may be dangerous. If a breakdown occurs please call a qualified air conditioner technician or electrician. Improper repairs may result in water leakage, electric shock and fire, etc.

⚠ CAUTION

- A circuit breaker or fuse (16A time delay) must be installed. Without a circuit breaker or fuse the danger of electric shock exists. A main switch with a contact gap of more than 3mm has to be installed in the power supply line to the outdoor unit.
- Do not install the unit near a location where there is flammable gas. The outdoor unit may catch fire if flammable gas leaks around it.
- Please ensure smooth flow of water when installing the drain hose.
- Piping shall be suitable supported with a maximum spacing of 1m between the supports.



THE CHOICE OF MOUNTING SITE (Please note the following matters and obtain permission from customer before installation).

⚠ WARNING

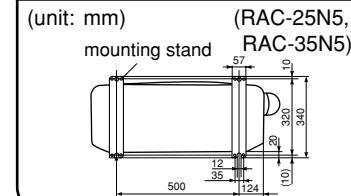
- The Outdoor unit must be mounted at a location which can support heavy weight. Otherwise, noise and vibration will increase.

⚠ CAUTION

- Do not expose the unit under direct sunshine or rain. Besides, ventilation must be good and clear of obstruction.
- The air blown out of the unit should not point directly to animals or plants.
- The clearances of the unit from top, left, right and front are specified in figure below. At least 3 of the above sides must be open air.
- Be sure that the hot air blown out of the unit and noise do not disturb the neighbourhood.
- Do not install at a location where there is flammable gas, steam, oil and smoke.
- The location must be convenient for water drainage.
- Place the Outdoor unit and its connecting cord at least 1m away from the antenna or signal line of television, radio or telephone. This is to avoid noise interference.

OUTDOOR UNIT

Dimension of Mounting Stand of the Outdoor unit



Dimension of Mounting Stand of the Outdoor unit

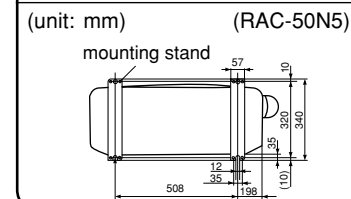
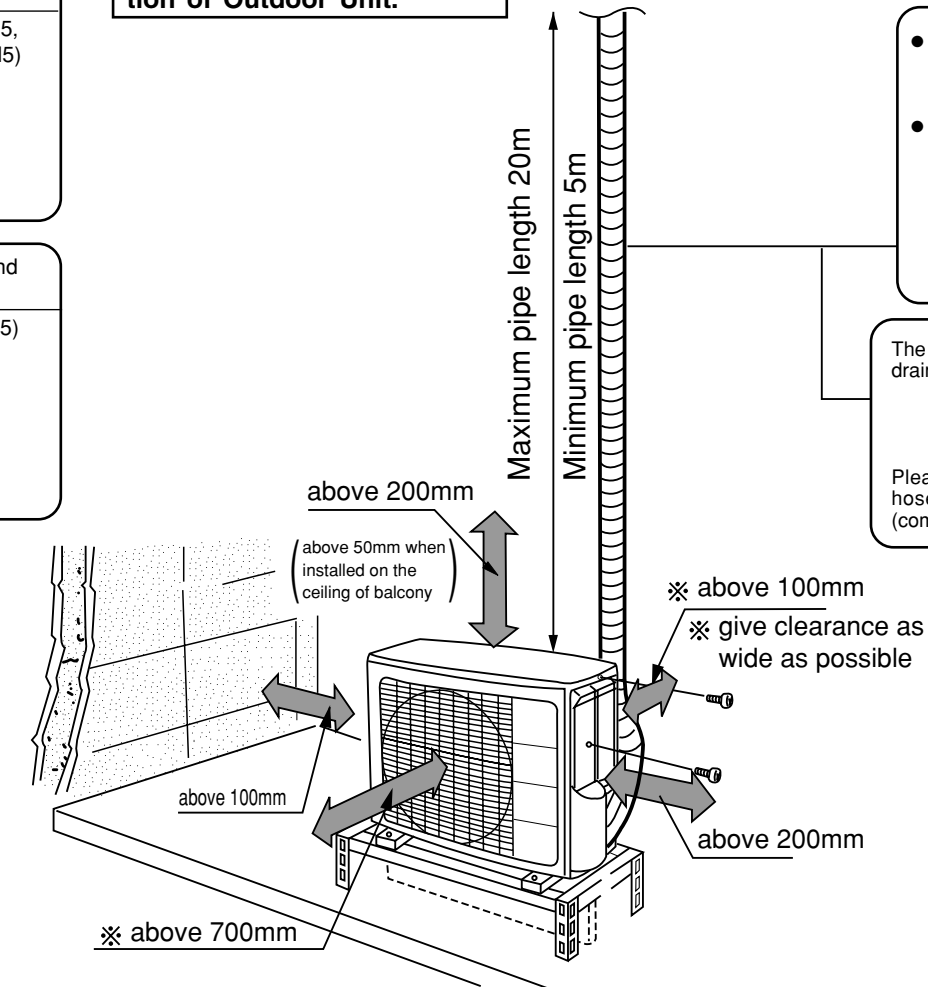


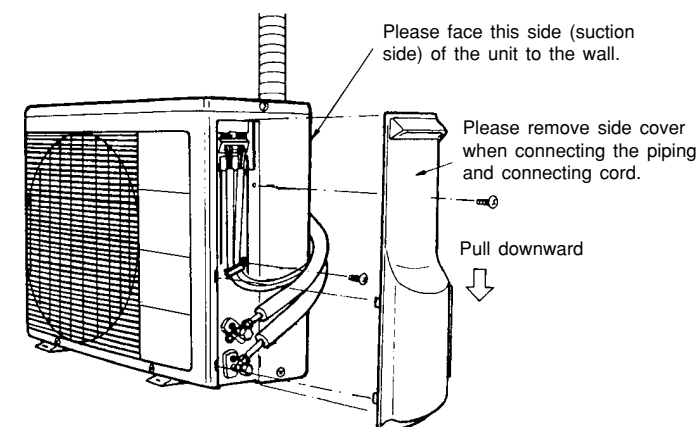
Figure showing the installation of Outdoor Unit.



• The difference in height between the indoor and outdoor unit should be kept max 10m.
• The connecting pipe, no matter big or small, should all be insulated with insulation pipe and then wrapped with vinyl tape. (The insulator will deteriorate if it is not wrapped with tape).

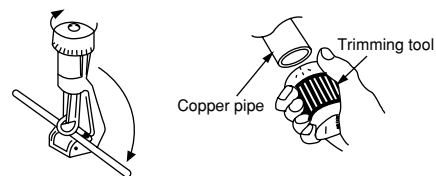
The connection of insulated drain hose.
inner diameter \varnothing 16mm
Please use insulated drain hose for the indoor piping (commercial product).

- Please mount the Outdoor unit on stable ground to prevent vibration and increase of noise level.
- Decide the location for piping after sorting out the different types of pipe available.
- When removing side cover, please pull the handle after undoing the hook by pulling it downward.



1 Preparation of Pipe

- Use a pipe cutter to cut the copper pipe.



CAUTION

- Jagged edge will cause leakage.
- Point the side to be trimmed downwards during trimming to prevent copper chips from entering the pipe.

- Before flaring, please put on the flare nut.



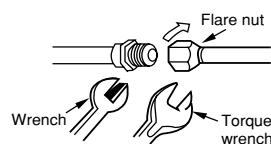
- Recommend to use R410A flaring tool.

Outer Diameter (mm)	A (mm)	
	For R410A tool	For R22 tool
6.35	0.0 ~ 0.5mm	1.0mm
9.52	0.0 ~ 0.5mm	1.0mm
12.7	0.0 ~ 0.5mm	1.0mm

2 Pipe Connection

CAUTION

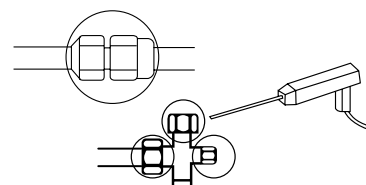
In case of removing flare nut of an Indoor unit, first remove a nut of small diameter side, or a seal cap of big diameter side will fly out. Prevent water from entering into the piping when working.



	Outer dia. of pipe	Torque N·m (kgf · cm)
Small dia. side	6.35 (1/4")	13.7 - 18.6 (140 - 190)
Large dia. side	9.52 (3/8")	34.3 - 44.1 (350 - 450)
	12.7 (1/2")	44.1 - 53.9 (450 - 550)
Valve head cap	Small dia. side	6.35 (1/4")
	Large dia. side	9.52 (3/8")
Valve core cap	Small dia. side	19.6 - 24.5 (200 ~ 250)
	Large dia. side	19.6 - 24.5 (200 ~ 250)
	12.7 (1/2")	29.4 - 34.3 (300 - 350)
		12.3 - 15.7 (125 ~ 160)

Gas Leakage Inspection

Please use gas leakage detector to check if leakage occurs at the connection of Flare nut as shown on the right.



If gas leakage occurs, further tighten the connection to stop leakage. (Use the detector provided for R410A)

3 Removal Of Air From The Pipe And Gas Leakage Inspection

Procedures of using Vacuum Pump for Air Removal

As shown in right figure, remove the cap of valve core. Then, connect the charge hose. Remove the cap of valve head. Connect the vacuum pump adapter to the vacuum pump and connect the charge hose to the adapter.

1

Fully tighten the "Hi" shuttle of the manifold valve and completely unscrew the "Lo" shuttle. Run the vacuum pump for about 10-15 minutes, then completely tighten the "Lo" shuttle and switch off the vacuum pump.

2

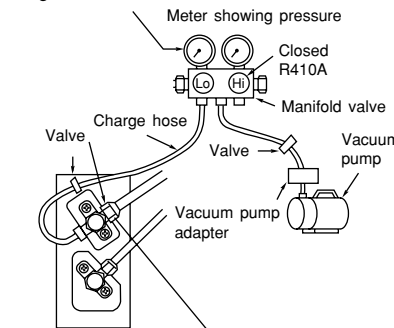
Completely unscrew the spindle of the service valve (at 2 places) in anti-clockwise direction to allow the flow of coolant (using Hexagonal Wrench key).

3

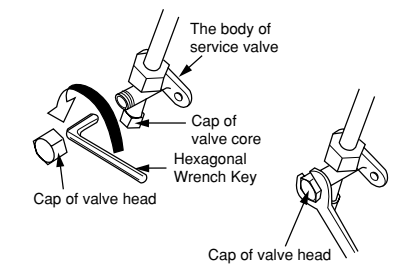
Remove the charge hose and tighten the cap of valve head. Check the cap's periphery if there is any gas leakage. The task is then completed.

4

When the meter reaches - 101KPa (-76cmHg) during pumping, fully tighten the shuttle.



When pumping starts, slightly loosen the flare nut to check of air sucked in. Then tighten the flare nut.

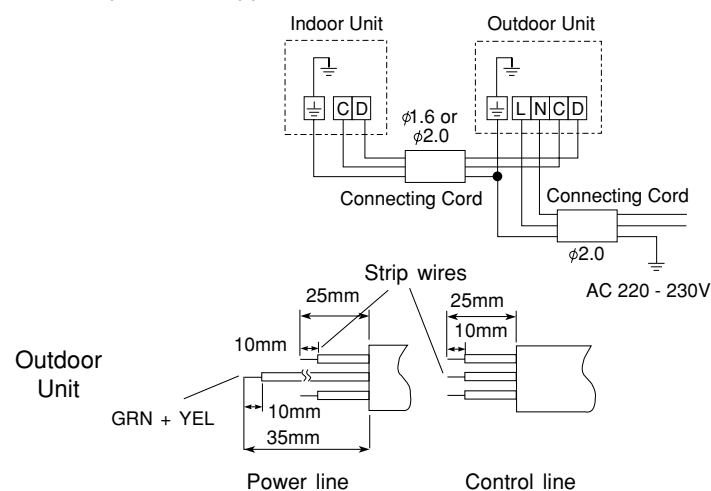


WARNING THIS APPLIANCE MUST BE EARTHED.

Power supply shall be connected at the rated voltage, otherwise the unit will be broken or could not reach the specified capacity.

Procedures of Wiring

In case that power is supplied from Outdoor Unit



WARNING

- The naked part of the wire core should be 10 mm and fix it to the terminal tightly. Then try to pull the individual wire to check if the contact is tight. Improper insertion may burn the terminal.
- Be sure to use only power cables approved from the authorities in your country. For example in Germany: Cable type: NYM 3x1.5mm².
- Please refer to the installation manual for wire connection to the terminals of the units. The cabling must meet the standards of electrical installation.
- There is a AC voltage of 230V between the L and N terminals. Therefore, before servicing, be sure to remove the plug from the AC outlet or switch off the main switch.
- Do not make any connection in the middle of the connecting cable. It may cause the wire over heated, emit smoke and fire.

Wiring of The Outdoor Unit

- Please remove the side cover for wire connection.

WARNING

- If you cannot attach the side cover due to the connecting cord, press the connecting cord in direction to the front panel to fix it.
- Be sure that the hooks of the side cover is fixed in certainly. Otherwise water leakage may occur and this causes short circuit or faults.
- The connecting cord should not touch to service valve and pipes. (It becomes high temperature in heating operation.)

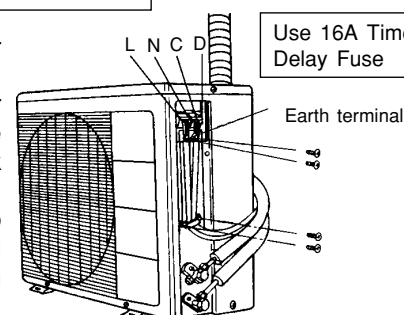
Checking for the electric source and the voltage range

- Before installation, the power source must be checked and necessary wiring work must be completed. To make the wiring capacity proper, use the wire gauges list below for the lead-in from a pole transformer and for the wiring from a switch board of fuse box to the main switch and outdoor unit in consideration of the locked rotor current.

IMPORTANT

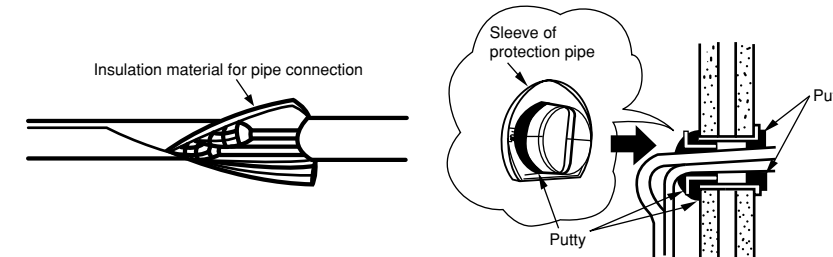
Cable length	Wire cross-section
up to 6m	1.5mm ²
up to 15m	2.5mm ²
up to 25m	4.0mm ²

- Investigate the power supply capacity and other electrical conditions at the installation location. Depending on the model of room air conditioner to be installed, request the customer to make arrangements for the necessary electrical work etc. The electrical work includes the wiring work up the outdoor. In localities where electrical conditions are poor, use of a voltage regulation is recommended.



1 Insulation And Maintenance Of Pipe Connection

- The connected terminals should be completely sealed with heat insulator and then tied up with rubber strap.
- Please tie the pipe and power line together with vinyl tape as shown in the figure showing the installation of Indoor and Outdoor units. Then fix their position with holders.
- To enhance the heat insulation and to prevent water condensation, please cover the outdoor part of the drain hose and pipe with insulation pipe.
- Completely seal any gap with putty.



2 Power Source And Operation Test

Power Source

CAUTION

- Please use a new socket. Accident may occur due to the use of old socket because of poor contact.
- Please plug in and then remove the plug for 2 - 3 times. This is to ensure that the plug is completely plugged into the socket.
- Keep additional length for the power cord and do not render the plug under external force as this may cause poor contact.
- Do not fix the power cord with U-shape nail.

Operation Test

- Please ensure that the air conditioner is in normal operating condition during the operation test.
- Explain to your customer the proper operation procedures as described in the user's manual.