User guide and installation manual

Air Conditioning Multi-Head & Ducted Ultra

ACV200U, ACV200U-1

IMPORTANT NOTICE

Please read this manual before installing the product and retain for future use. Not following the instructions may result in the product not functioning as intended.

Installer information

Installer company:

Contact number:

Installer full name:

Install date:

Contents

Important notice

- Emerald energy pursues a policy of continuing improvement in design and performance of products. The right is therefore reserved to vary specifications without notice.
- Emerald energy cannot anticipate every possible circumstance that might involve a potential hazard.
- This air conditioner is designed for standard air conditioning only. Do not use this air conditioner for other purposes such as drying clothes, refrigerating foods or for any other cooling or heating process.
- The installer and system specialist will ensure safety against leakage in compliance with local regulations or standards.
- No part of this manual may be reproduced without written permission.
- Signal words (DANGER, WARNING and CAUTION) are used to identify levels of hazard seriousness. Definitions for identifying hazard levels are provided below with their respective signal words.

⚠ DANGER

Immediate hazards which WILL result in severe personal injury or death.

⚠ WARNING

Hazards or unsafe practices which COULD result in severe personal injury or death.

⚠ CAUTION

Hazards or unsafe practices which COULD result in minor personal injury or product or property damage.

NOTE

Useful information for operation and/or maintenance.

- It is assumed that this air conditioner will be operated and serviced by English speaking people. If this is not the case, the distributor should add safety, caution and operating signs in the native language.
- If you have any questions, contact your distributor or dealer of Emerald energy.
- This manual gives a common description and information for this air conditioner which you operate as well as for other models.
- Install these air conditioners by local regulations or standards.
- This air conditioner has been for the following temperatures. Operate the heat pump air conditioner within this range.

Temperature			
		Maximum	Minimum
Cooling Operation	Indoor	32DB/23WB	21DB/15WB
	Outdoor	50 DB	10 DB
Heating Operation	Indoor	30 DB	15 DB
	Outdoor	26DB/15.5WB	-20DB/-21WB
DB: Dry Bulb WB: Wet Bulb			

*If it exceeds the operating range, the unit may only operate intermittently or fail to start

- The air conditioning installation, maintenance can only be conducted by qualified professionals.

NOTE:

This air conditioning system has been designed for only cooling or heating operation. Please do not operate cooling and heating at the same time. If operated at the same time, air conditioning system will operate unstably due to the large temperature difference caused by changing the operation mode.

This manual should be considered as a permanent part of the air conditioning equipment and should remain with the air conditioning equipment.

Safety summary

⚠ DANGER

- Use refrigerant R410A in the refrigerant cycle. Do not charge oxygen, acetylene or other flammable and poisonous gases into the refrigerant cycle when performing a leakage test or an air-tightness test. These types of gases are extremely dangerous and can cause an explosion. It is recommended that nitrogen be used for these types of tests.
- Do not pour water into the indoor or outdoor unit. These units contain electrical components, and water can cause a serious electrical shock.
- Do not touch or adjust safety devices inside the indoor or outdoor units. If these devices are touched or readjusted, it may cause a serious accident.
- Do not open the service cover or access panel of the indoor or outdoor units without first turning OFF the main power supply.
- Refrigerant leakage can cause difficulty with breathing. Turn OFF the main switch, extinguish any naked flames and contact your service contractor, if refrigerant leakage occurs.
- The installer and system specialist shall secure safety against refrigerant leakage according to local regulations or standards.
- Use an ELB (Electric Leakage Breaker). Failure to use one in the event of a fault can result in electric shock or fire.
- Do not install the outdoor unit where there is a high level of oil mist, flammable gases, salty air or harmful gases such as sulphur.

⚠ WARNING

- Do not use any sprays such as insecticide, lacquer, hair spray or other flammable gases within approximately one (1) meter from the system.
- If circuit breaker or fuse is frequently activated, stop the system and contact your service contractor.
- Do not perform installation, refrigerant piping, drain piping, or electrical wiring without consulting our installation manual. Failure to follow the instructions may result in water leakage, electric shock, or fire.
- Ensure the ground wire is securely connected. Improper grounding can lead to electric shock. Do not connect the ground wire to gas pipes, water pipes, lightning conductors, or telephone ground wires.
- Connect a fuse of specified capacity.
- Do not put any foreign material on the unit or inside the unit.
- Make sure that the outdoor unit is not covered with snow or ice, before operation.
- Before performing any brazing work, ensure there are no flammable materials nearby. When handling refrigerant, wear leather gloves to prevent cold injuries.
- Protect the wires, electrical parts, and other components from rats or small animals. If left unprotected, these animals may chew on the parts, potentially leading to a fire.
- Fix the cables securely. External forces on the terminals could lead to a fire.
- If the supply cord is damaged, it must be replaced by the manufacturer, a service agent, or similarly qualified personnel to avoid a hazard.
- This appliance should not be used by children or persons with reduced physical, sensory or mental capabilities or lack of experience. Children shall not play with the appliance. Cleaning and user maintenance shall not be made by children.
- The appliances are not intended to be operated by means of an external timer or separate remote-control system.
- Children should be supervised to insure that they do not play with the appliance.
- Keep the appliance and its cord out of reach of children less than 8 years.
- This appliance incorporates an earth connection for functional purposes only.
- The appliance shall be installed in accordance with national wiring regulations.

⚠ CAUTION

- Do not install the indoor unit, outdoor unit, remote control switch and cable within approximately 3 meters from strong electromagnetic wave radiators such as medical equipment.
- Do not step or put any material on the product.
- Provide a strong and correct foundation so that;

a. The outdoor unit is placed on a level surface.

b. There are no abnormal sounds coming from the unit.

c. The outdoor unit is securely anchored to prevent it from falling due to strong winds or earthquakes.

- The models in this manual are partial units that comply with the requirements of this International Standard. They must only be connected to other units that also comply with the corresponding partial unit requirements and use the same refrigerant.

Safety summary

NOTE:

- It is recommended that the room be ventilated every 3 to 4 hours.
- The heating capacity of the VRF unit is decreased according to the low outdoor ambient temperature.
- Operate the air conditioner within this range.

Installation altitude: below 1000m;

Frequency of supply power: within ±1%Hz of rated frequency;

Transport / storage temperature: within -25~55°C;

- The A-weighted emission sound pressure level at workstations, all this level does not exceed 70 dB(A) .

Checking Product received

- Upon receiving this product, inspect it for any shipping damage.
- Check the model number, electrical characteristics (power supply, voltage and frequency) and accessories to determine if they are correct.
- The standard utilisation of the unit shall be explained in these instructions.
- Therefore, the utilisation of the unit other than those indicated in these instructions is not recommended. Please contact your local agent, as the occasion arises.
- Emerald Energy's liability shall not cover defects arising from the alteration performed by a distributor without Emerald Energy’s consent in a written form.

⚠ WARNING

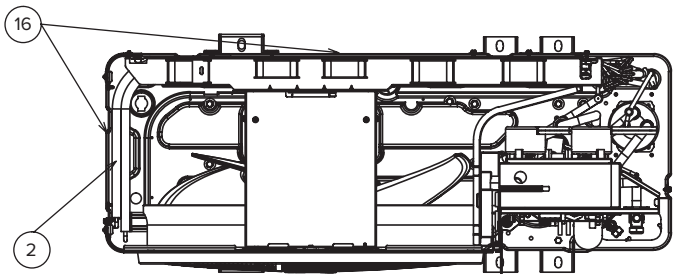
- Do not perform installation work, refrigerant piping work, drain piping and electrical wiring connection without referring to the installation manual.
- Check that the ground wire is securely connected.
- Connected a fuse of specified capacity.

Structure

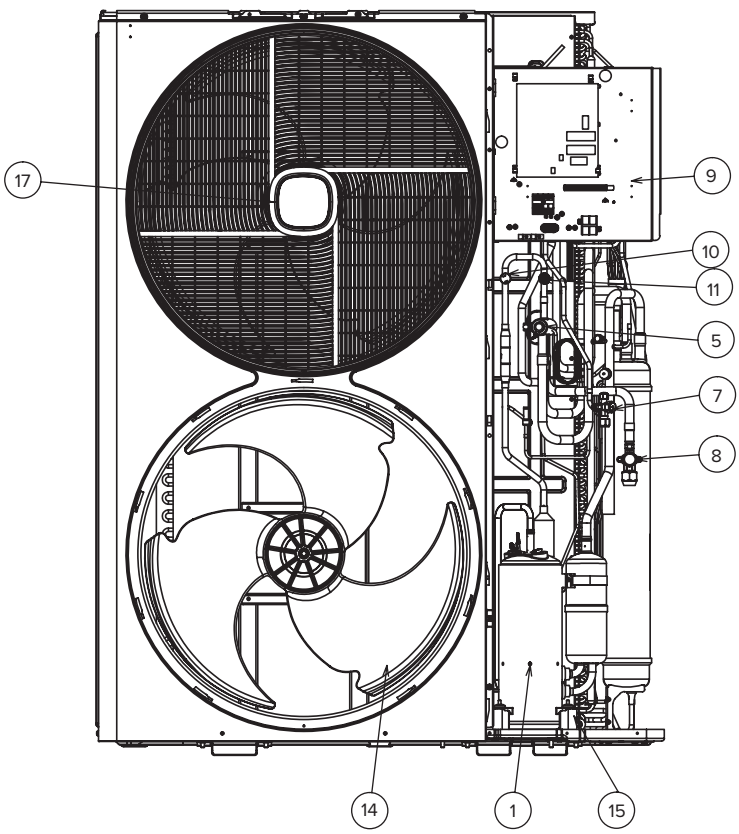
Outdoor unit & refrigerant cycle

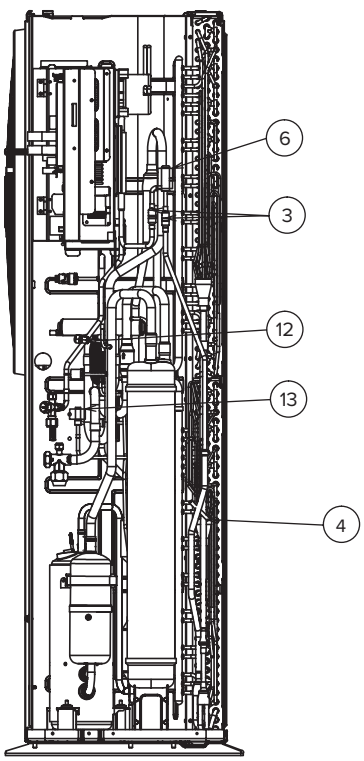
⚠ CAUTION

Do not install the indoor unit, outdoor unit, remote control switch and cable within approximately 3 meters from strong electromagnetic wave radiators such as medical equipment.



OUTDOOR UNIT



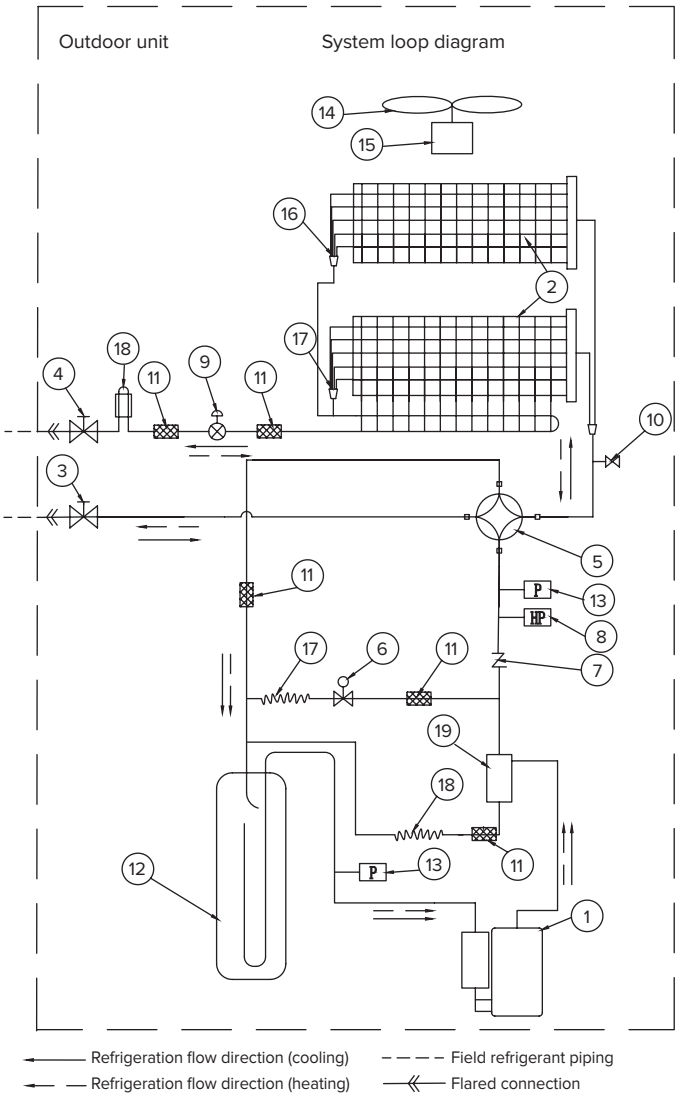


NO.	PART NAME	NO.	PART NAME
1	Compressor	10	Pressure Switch for Controlling
2	Heat Exchanger	11	High Pressure Switch
3	Strainer	12	Check Joint for High/Low Pressure(Cool/Heat)
4	Splitter	13	Solenoid Valve
5	4-Way Reversing Valve	14	Propeller Fan
6	Electrical Expansion Valve	15	Damping Rubber Pad
7	Stop Valve(Liquid)	16	Air Inlet
8	Stop Valve(Gas)	17	Air Outlet
9	Electrical Box		

Structure

Refrigerant cycle

NO.	PART NAME
1	Compressor
2	Heat exchanger
3	Gas side stop valve
4	Liquid side stop valve
5	Four way valve
6	Solenoid valve
7	One-way valve
8	Pressure switch
9	Electronic expansion valve
10	Detecting connectors
11	Filter
12	Gas-liquid separator
13	Pressure sensor
14	Fan
15	Electrical machinery
16	Distributor
17	Capillary
18	Refrigerant cooling components
19	Oil separator



Structure

Necessary tools and instrument list for installation

NO.	TOOL	NO.	TOOL
1	Handsaw	12	Charging cylinder
2	Screwdriver	13	Manifold gauge
3	Vacuum pump	14	Cutter for wires
4	Refrigerant gas hose	15	Gas leak detector
5	Megohmmeter	16	Leveler
6	Copper pipe bender	17	Clamper for solderless terminals
7	Pliers	18	Hoist (for indoor unit)
8	Pipe cutter	19	Ammeter
10	Hexagon wrench	20	Voltage meter
11	Spanner		

NOTE:

- Use tools and measuring instruments exclusively for the refrigerant R410A in case of direct contact with the refrigerant.

⚠ DANGER

The pressure of refrigerant R410A is 1.4 times higher than conventional refrigerants. Impurities such as moisture, oxide film, and grease can easily affect R410A. Ensure that any moisture, dust, different refrigerants, or refrigerant oils are removed from the refrigerant cycle. Using materials other than those specified may lead to explosion, injury, leakage, electric shock, or fire.

Structure

Δ Interchangeability is available with current R22

X Prohibited

● Only for Refrigerant R410A (No Interchangeability with R22)

▲ Only for Refrigerant R407C (No Interchangeability with R22)

Measuring Instrument and Tool		Interchangeability with R22		Reason of Non-Interchangeability and Attention (★ Strictly Required)	Use
		R410A	R407C		
Refrigerant Pipe	Pipe Cutter Chamfering Reamer	Δ	Δ	-	Cutting Pipe Removing Burrs
	Flaring Tool	Δ ●	Δ	* The flaring tools for R407C are applicable to R22. * If using flaring tube make dimensions of tube larger for R410A. * In case of material 1/2H flaring is not available.	Flaring for Tubes
	Extrusion Adjustment Gauge	●	-		Dimensional Control for Extruded Portion of Tube after Flaring
	Pipe Bender	Δ	Δ	* In case of material 1/2H bending is not available use elbow for bend and braze.	Bending
	Expanding Tool	Δ	Δ	* In case of material 1/2H expanding of tube is not available use socket for connecting tube.	Expanding Tubes
	Torque Wrench	●	Δ	* For Φ12.7,Φ15.88, spanner size is up 2mm.	Connection of Flare Nut
		Δ	Δ	* For Φ6.35,Φ9.53,Φ19.05, spanner size is the same.	
	Brazing Tool	Δ	Δ	* Perform correct brazing work.	Brazing for Tubes
	Nitrogen Gas	Δ	Δ	* Strict Control against Contamin (Blow nitrogen during brazing.)	Prevention from Oxidation during Brazing
	Lubrication Oil (for Flare Surface)	●	▲	* Use a synthetic oil which is equivalent to the oil used in the refrigeration cycle. * Synthetic oil absorbs moisture quickly.	Applying Oil to the Flared Surface
Vacuum Drying Refrigerant Charge	Refrigerant Cylinder	●	▲	* Check refrigerant cylinder colour. ★ Liquid refrigeration charging is required regarding zeotropic refrigerant.	Refrigerant Charging
	Vacuum Pump	Δ	Δ	★ The current ones are applicable. However it is required to mount a vacuum pump adapter which can prevent from reverse flow when a vacuum pump stops, resulting in no reverse oil flow.	Vacuum Pumping
	Adapter for Vacuum Pump	✳●	▲		
	Manifold Valve	●	▲	* No interchangeability is available due to higher pressures when compared with R22. ★ Do not use current ones to the different refrigerant. If used, mineral oil will flow into the cycle and cause sludges, resulting in clogging or compressor failure. Connection diameter is different; R410A: UNF1/2, R407C: UNF7/16.	Vacuum Pumping, Vacuum Holding, Refrigerant Charging and Check of Pressures
	Charging Hose	●	▲		
	Charging Cylinder	X	X	* Use the weight scale.	-
	Weight Scale	Δ	Δ	-	Measuring Instrument for Refrigerant Charging
	Refrigerant Gas Leakage Detector	✳●	▲	* The current gas leakage detector (R22) is not applicable due to different detecting method.	Gas Leakage Check

✳ Interchange ability with R407C.

Transportation and handling

Transportation

Transport the product as close to the installation location as possible before unpacking.

⚠ CAUTION

Do not put any material on the product.

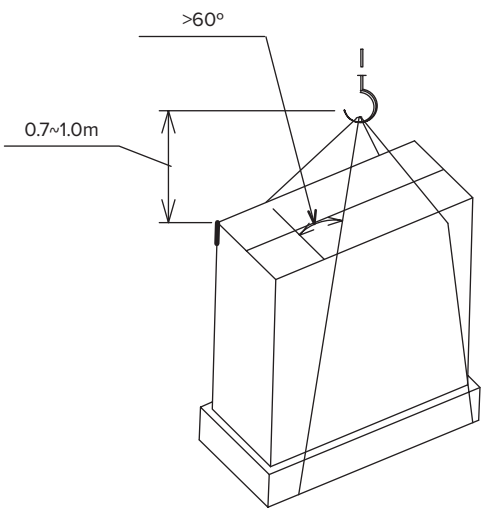
Apply two lifting wires onto the outdoor unit, when lifting it by crane. Useful information for operation and/or maintenance.

Lifting method

When hanging the unit, ensure a balance of the unit, check safety and lift up smoothly.

(1) Do not remove any packing materials.

(2) Hang the unit under packing condition with two ropes, as shown.



Pass the wire ropes through each lifting hole in the wooden base as shown.

⚠ CAUTION

- Lift the outdoor unit in its factory packaging with 2 wire ropes.
- For safety reasons ensure that the outdoor unit is lifted smoothly and does not tilt.
- Do not attach lifting equipment to the plastic band or the corrugated paper frame.
- Ensure the exterior of the unit is adequately protected with cloth or paper.

Handling of outdoor unit

⚠ WARNING

Do not place any foreign materials into the outdoor unit. Before installation and test run, check to ensure that no foreign materials are present in the outdoor unit. Failure to do so may result in fire or equipment failure.

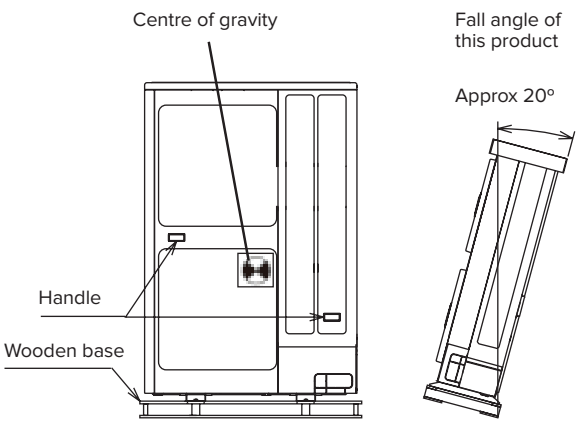
When using handles

When manually lifting the unit using the handles, pay attention to the following points.

(1) Do not remove the wooden base from outdoor unit.

(2) To prevent the unit from overturning, pay attention to the center of gravity as shown in the below figure.

(3) Two or more personnel should be used to move the unit.



Outdoor unit installation

Factory-supplied accessories

Check to ensure that the following accessories are packed with the outdoor unit.

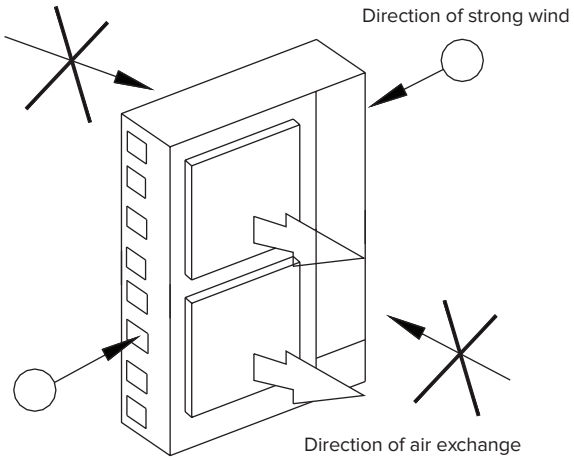
ACCESSORY	ACV200U/ACV200U-1
Installation Manual	1
Electrical Accessory Pouch	1
Accessory Pipe Pouch	-

NOTE:

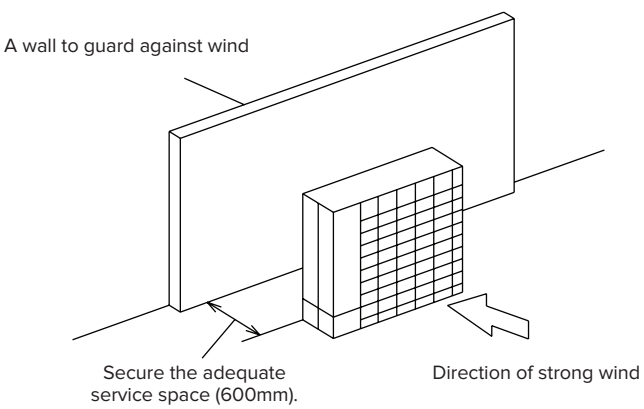
If any of these accessories are not packed with the unit, please contact your contractor.

Initial check

- Install the outdoor unit in a well-ventilated and dry location.
- Install the outdoor unit where the sound or discharge air will not affect neighbors or surrounding vegetation. Be aware that the operating sound at the rear and sides is higher than the value indicated in the catalog for the front side.
- Ensure that the foundation is flat, level, and sufficiently strong.
- Do not install the outdoor unit where there is a high level of oil mist, salty air or harmful gases such as sulphur.
- Do not install the outdoor unit where the electromagnetic wave is directly radiated to the electrical box.
- Install the outdoor unit as far as possible being at least 3 meters from the electromagnetic wave radiator.
- When installing the outdoor unit in snow-covered areas, mount field-supplied hoods at the discharge side of the outdoor unit and the inlet side of the heat exchanger.
- Install the outdoor unit in a shaded area, avoiding direct sunlight or direct exposure to high-temperature heat sources.
- Do not install the outdoor unit in locations where dust or other contaminants could block the outdoor heat exchanger.
- Install the outdoor unit in a location with restricted access to the general public.
- Do not install the outdoor unit in a location where seasonal winds directly blow onto the outdoor heat exchanger or where winds from a building space blow directly onto the outdoor fan.



- If installation in open spaces is unavoidable, place the outdoor unit near a wall to avoid direct exposure to the wind. Ensure that adequate service space is secured.



NOTE:

If extremely strong winds blow directly against the air discharge portion, the fan may rotate in reverse and become damaged.

⚠ CAUTION

Aluminum fins have very sharp edges. Pay attention to the fins to avoid any injury.

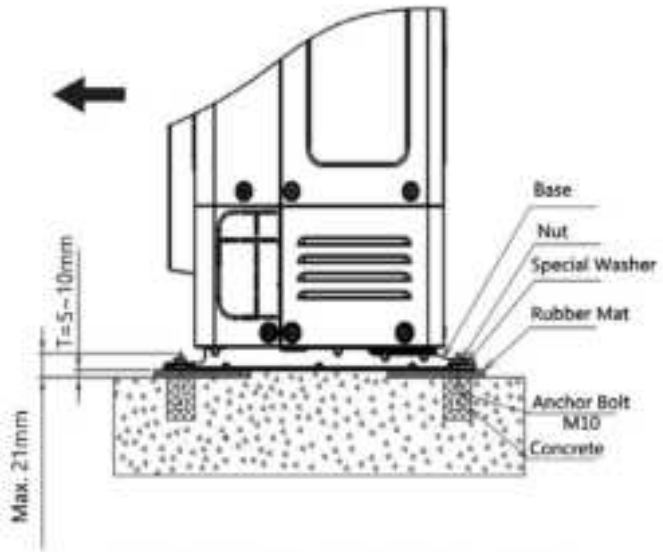
NOTE:

Install the outdoor unit on a roof or in an area where people except service engineers can not touch the outdoor unit.

Outdoor unit installation

Installation work

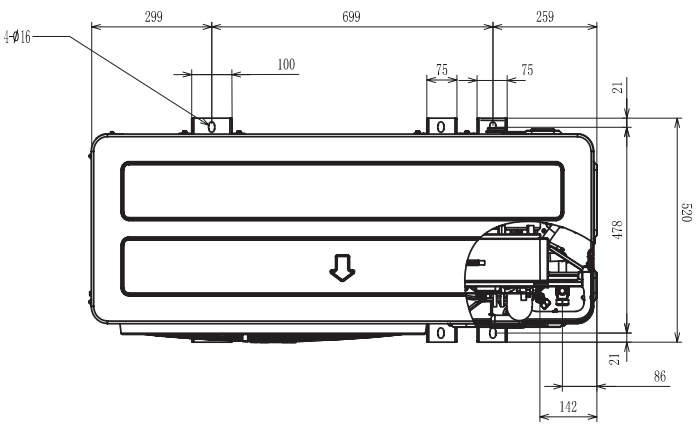
(1) Secure the outdoor unit with the anchor bolts.



Installation of Anchor Bolts

Secure the outdoor unit to the anchor bolts using the special washer provided as a factory-supplied accessory.

2) When installing the outdoor unit, fix the unit by anchor bolts.

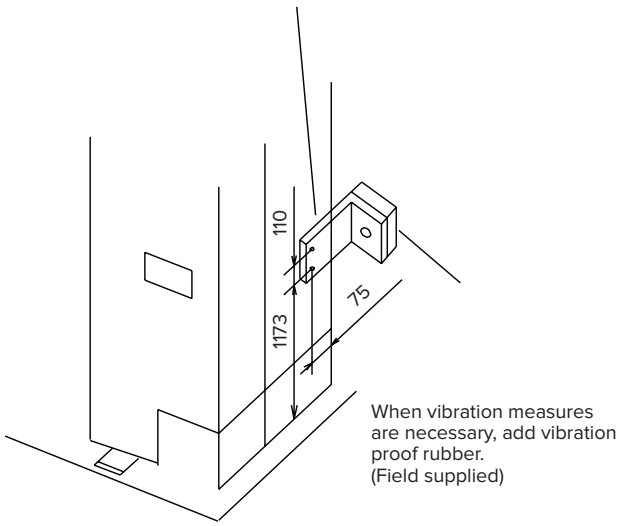


Position of Anchor Bolts

NOTE:

When the mark * dimension is secured, piping work from bottom side is easy without interference of foundation.

(3) Secure the outdoor unit firmly to prevent it from tilting, creating noise, or falling due to strong winds or earthquakes.

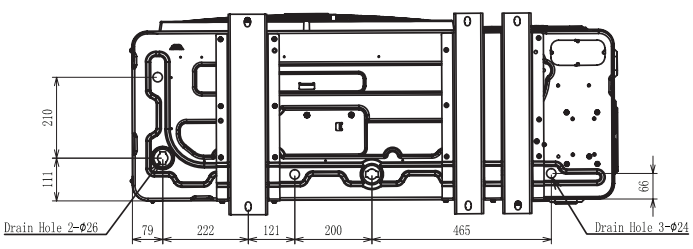


Additional Fixing Arrangement

(4) When installing the unit on a roof or veranda, be aware that drain water may turn to ice on cold mornings. Therefore, avoid draining in areas frequently used by people to prevent slipping hazards.

(5) In case of the drain piping is necessary for the outdoor unit, use the drain-kit (DC-01Q: Optional Parts).

- ACV200U/ACV200U-1



Outdoor unit installation

As shown in the figure below, enough operation and maintenance space should be reserved for the installation of outdoor unit.

(1) The obstacle is on the air inlet side.

(a) Upper opening

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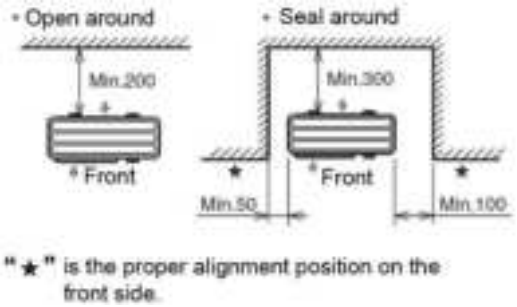
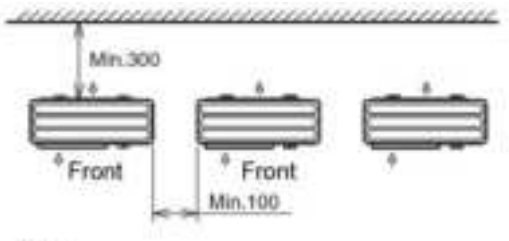
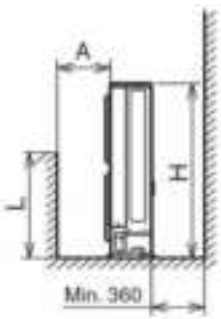
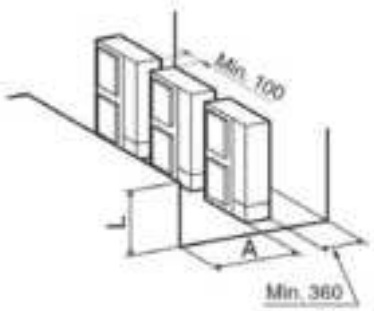
SINGLE INSTALLATION	MULTIPLE INSTALLATIONS
	
	

Installation and maintenance space (Case 1)

(b) The obstacle is on the top

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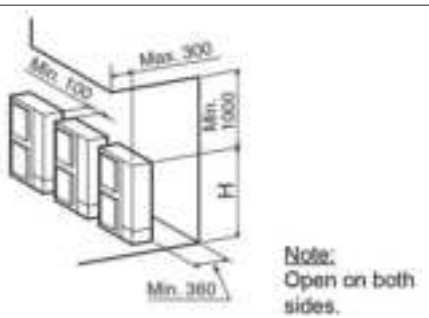
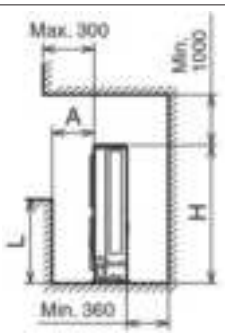
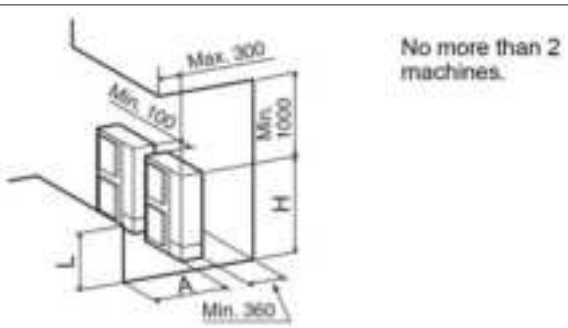
SINGLE INSTALLATION	MULTIPLE INSTALLATIONS
	
	

Installation and maintenance space (Case 2)

Outdoor unit installation

(2) The obstacle is on the air outlet side.

(a) Upper opening

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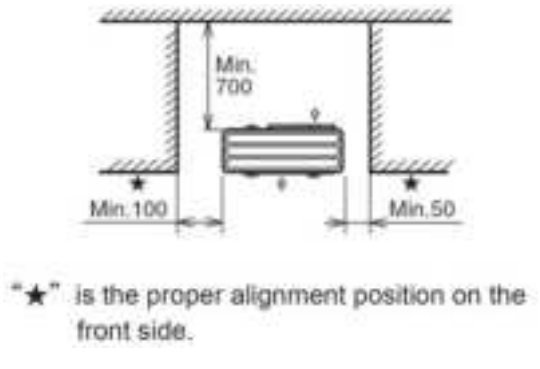
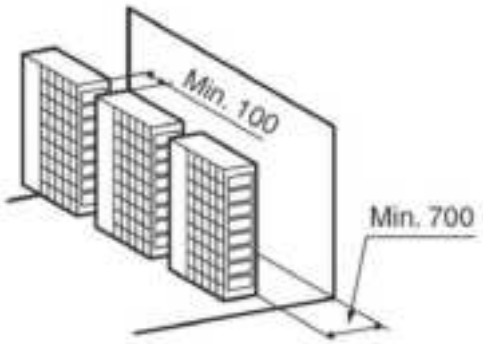
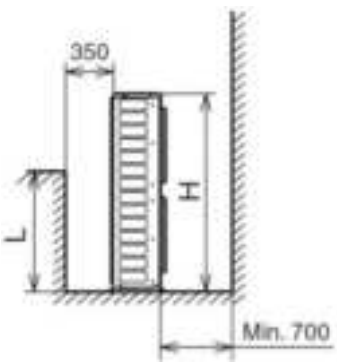
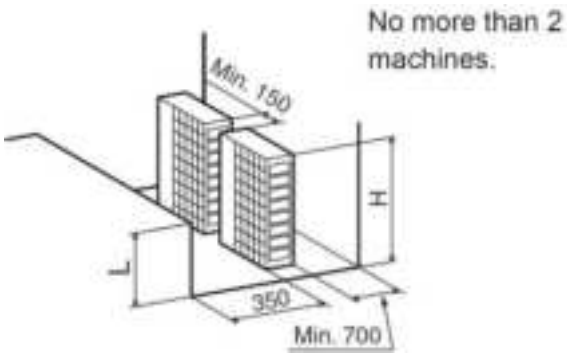
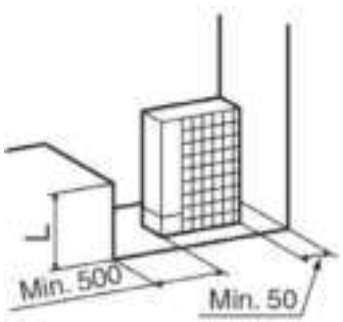
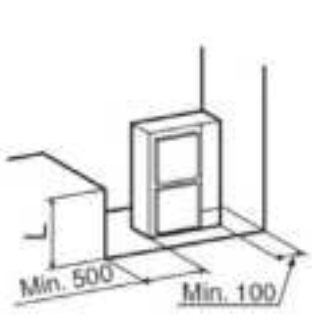
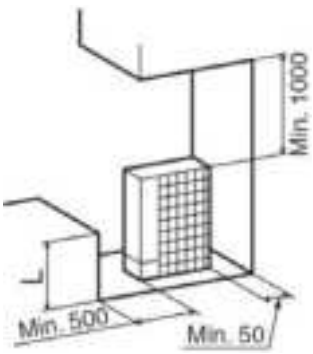
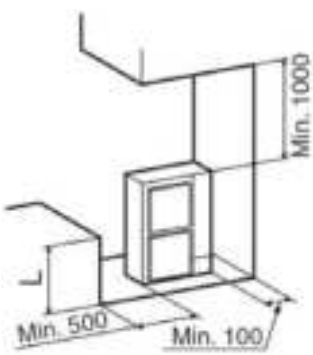
SINGLE INSTALLATION	MULTIPLE INSTALLATIONS
	
	

Installation and maintenance space (Case 3)

(3) The obstacle is on both sides.

(a) Upper opening

mm

SINGLE INSTALLATION		MULTIPLE INSTALLATIONS	
			

Installation and maintenance space (Case 4)

NOTE:

If L is greater than H, install the outdoor unit on the foundation so that H is greater than or equal to L. H: Outdoor unit height + foundation height

L	A
0<L≤1/2H	600 or more
1/2H<L≤H	1400 or more

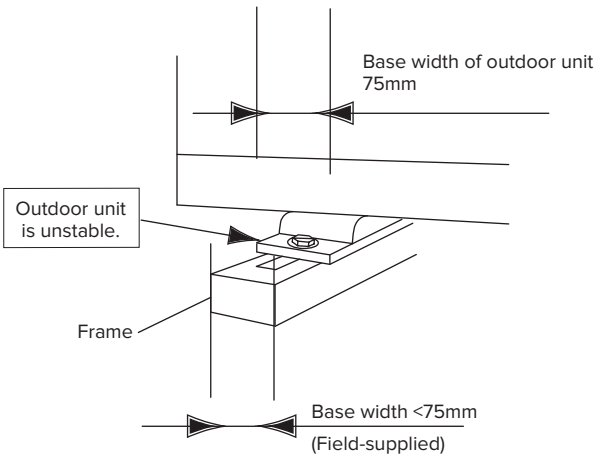
In this case, ensure that the foundation is firm, and do not allow short circuit of air flow. In all cases, short circuit of air flow is not allowed when installing outdoor unit.

Outdoor unit installation

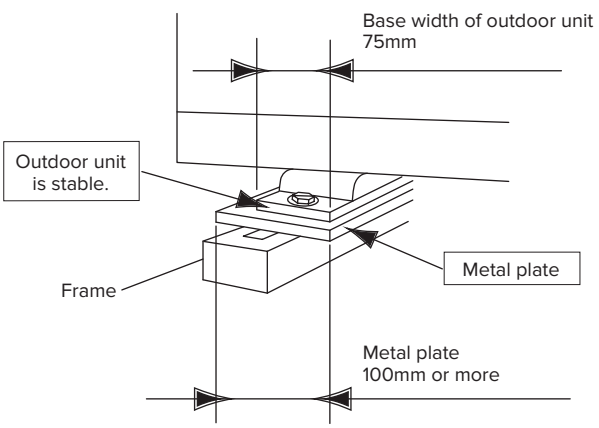
Installation work

The entire base of the outdoor unit should be installed on a foundation. If using a vibration-proof mat, it should also be positioned in the same manner. When installing the outdoor unit on a field-supplied frame, use metal plates to adjust the frame width for a stable installation as shown.

INCORRECT

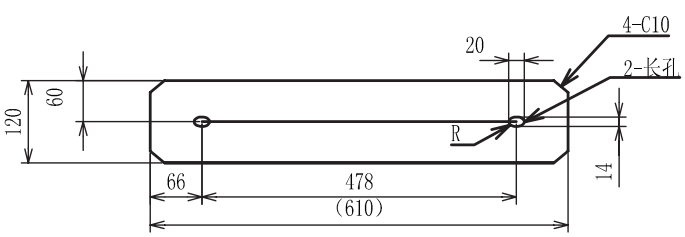


CORRECT



Recommended Metal Plate Size (Field supplied)

Material: Hot-rolled mild steel plate (SPHC)
Plate Thickness: 4.5T



Frame and Base Installation

Refrigerant piping work

⚠ DANGER

Use refrigerant R410A in the refrigerant cycle.

Do not charge oxygen, acetylene, or other flammable and poisonous gases into the refrigerant cycle when performing a leakage test or an air-tightness test, as these gases are extremely dangerous and can cause an explosion. It is recommended to use compressed air, nitrogen, or refrigerant for these tests.

Piping materials

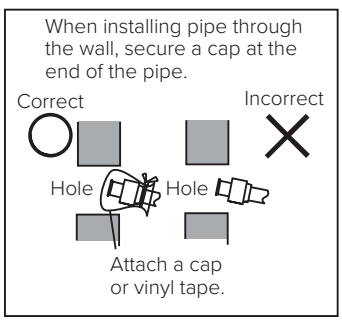
(1) Prepare locally-supplied copper pipes.

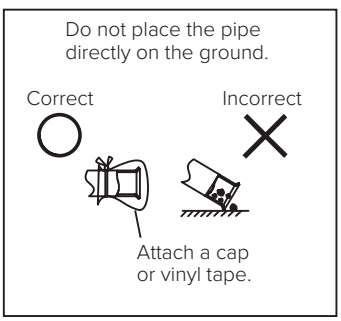
(2) Select the piping size from the table opposite.

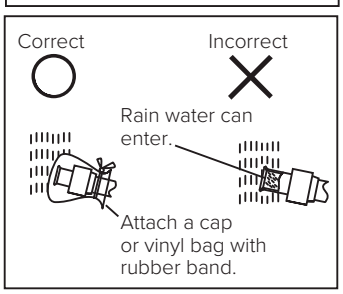
(3) Select clean copper pipes. Make sure there is no dust and moisture inside of the pipes. Purge the pipes with nitrogen or dry air, to remove any dust or foreign materials before connecting pipes.

NOTE:

Cautions for Refrigerant Pipe Ends





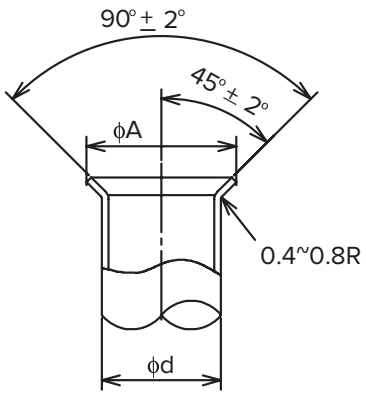


⚠ CAUTION

- Cap the end of the pipe when the pipe is to be inserted through a hole.
- Do not put pipes on the ground directly without a cap or vinyl tape at the end of the pipe.

- Flaring Dimension

Perform the flaring work as shown below.



Diameter (Φd)	A	+ 0
		- 0 .4
	RA10A	
6.35	9.1	
9.53	13.2	
12.7	16.6	
15.88	19.7	
19.05	(*)	

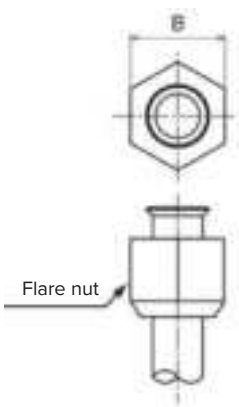
(*) It is impossible to perform the flaring work with 1/2H material. In this case, use an accessory pipe (with a flare).

- Piping thickness and material use the pipe as below

PIPING SIZE		
Diameter	R410A	
	Thickness	Material
Φ6.35	0.8	O material
Φ9.53	0.8	O material
Φ12.7	0.8	O material
Φ15.88	1.0	O material
Φ19.05	1.0	1/2H material
Φ22.2	1.0	1/2H material
Φ25.4	1.0	1/2H material
Φ28.6	1.0	1/2H material

Material is based on a JIS standard (JIS B8607).

- Flare nut dimension use the flare nut as below.



Diameter	RA10A
Φ6.35	17
Φ9.53	22
Φ12.7	26
Φ15.88	29
Φ19.05	36

Dimension is based on a JIS standard (JIS B8607).

Refrigerant piping work

Refrigerant piping work

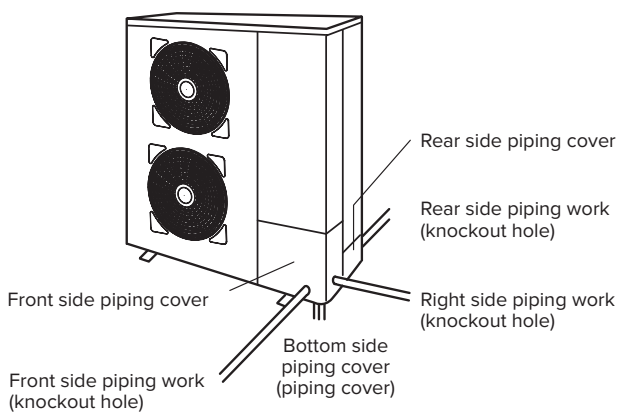
Ensure that the directions for refrigerant piping work according to the table below.

LIMITATION OF OUTDOOR UNIT			
Diameter / Capacity (kw)	Outer Diameter of Pipe		Branch pipe
	Gas	Liquid	
20	Φ 19.05	Φ 9.53	HFQ-102F

SYSTEM COMBINATION				
Outdoor Unit	Indoor Unit	Recommend Combination Quantity	Maximum Combination Quantity	Combination Range
ACV200U/ ACV200U-1	ACV200D	1	1	50%~130%
	ACV032D	9	9	

(*1) The connection ratio should not be bigger than 100% for systems where all indoor units may operate at the same time; otherwise, overload operation may occur in harsh conditions or narrow range.

Piping connection



Piping Direction

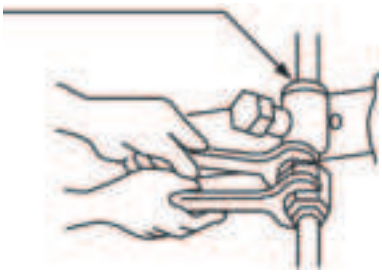
(1) Confirm that the valve is closed.

(2) Prepare field-supplied elbows and pipes according to the operation requirements for connecting by braze and flare nuts.

(3) For the pipe connection at the stop valve, use two spanners to tighten the nut.

Do not apply two spanners work here. Refrigerant leakage shall occur.

Double Spanner Work



Tightening Stop Valve

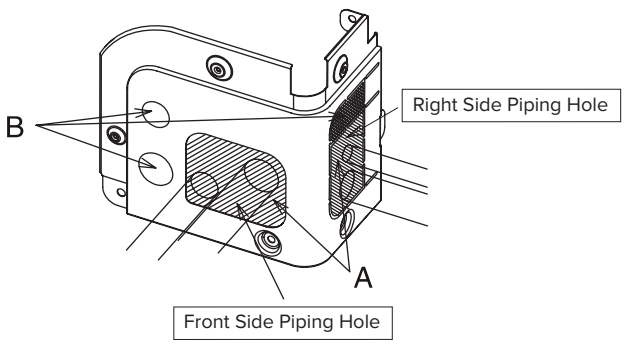
TIGHTENING TORQUE FOR FLARE NUT	
Pipe Size	Torque
Φ 16.35(1/4)	14~18N·m
Φ 9.53(3/8)	34~42N·m
Φ 12.7(1/2)	49~61N·m
Φ 15.88(5/8)	68~82N·m
Φ 19.05(3/4)	100~120N·m

(4) Pipes can be connected from 4 directions as shown in Piping Direction. Make a knock-out hole in the front pipe cover or bottom base to pass through the hole.

After removing the pipe cover from the unit, punch out the holes following the guide line with screwdriver and a hammer.

Then, cut the edge of the holes and attach insulation (field supplied) for cables and pipes protection.

(a) Connect Front and Right Side Pipe Select the correct knock-out size depending on whether it is for power wiring or communication wiring.



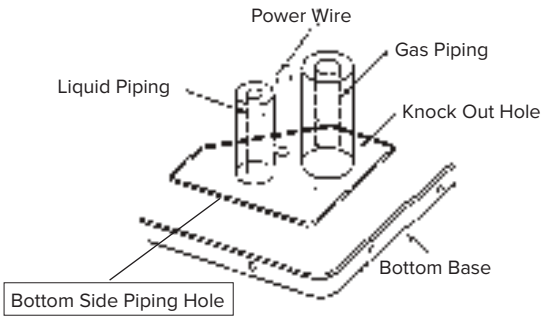
It is available to correct the liquid or gas piping, power wiring less than 14mm^2 and communication wiring from "B" part.

NOTE:

Cautions for Refrigerant Pipe Ends

Refrigerant piping work

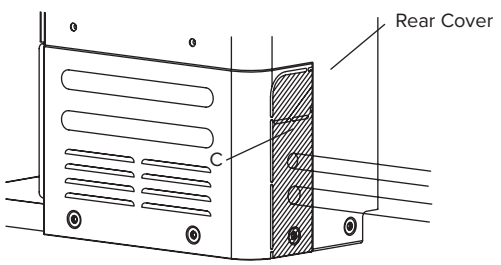
(b) Bottom Side Piping Work
After removing bottom of the piping cover, perform piping and wiring works.



NOTE:

Prevent the cables from coming into direct contact with the piping.

(c) Rear Piping Work
After removing rear piping cover, punch out the "C" holes along the guide line.



NOTE:

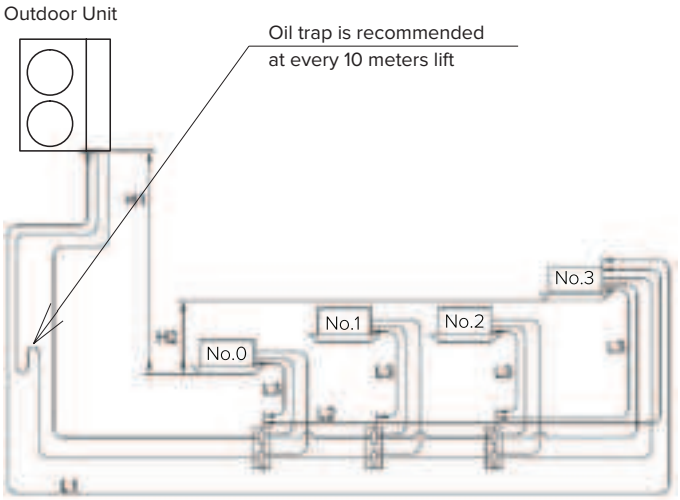
To avoid damage protect cables and pipes with adequate insulation (field supplied).

(5) To protect gaps use a rubber bush and insulation (field supplied) adequately when installing the piping cover. Cut the lower side guide line of the piping cover when attaching work is difficult. If not, it will trap water in the unit and electrical parts will be damaged.

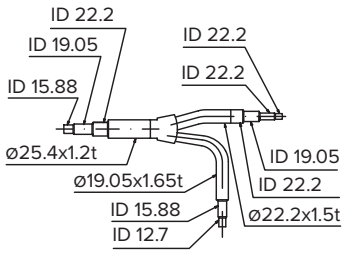
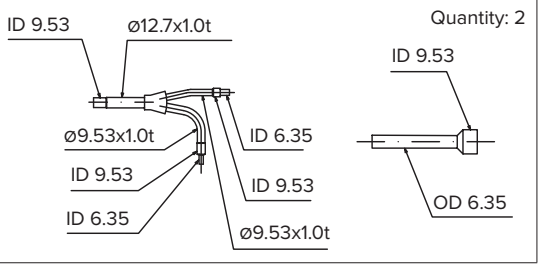
(6) Use a pipe bender or elbow (field supplied) for bending work when connecting pipe.

REFRIGERANT PIPE SYSTEM		
System Item		Branch pipe for Line Branch
Example: One outdoor unit joint four indoor units, pipe materials are acquired from local		See details Fig 1 & 2 below
Max .pipe length		L1≤40m
Total piping length		≤120m
High distance between outdoor and indoor unit	Outdoor is higher than indoor unit	H1≤30m
	Indoor is higher than outdoor unit	H1≤30m
Max. High Distance between Indoor and Indoor or Indoor and Branch Pipe		H2≤10m
Max. Pipe Length between the First Branch Pipe and Indoor Unit		L2≤30m
Pipe length from every branch pipe to indoor unit		L3≤10m

Refrigerant piping work

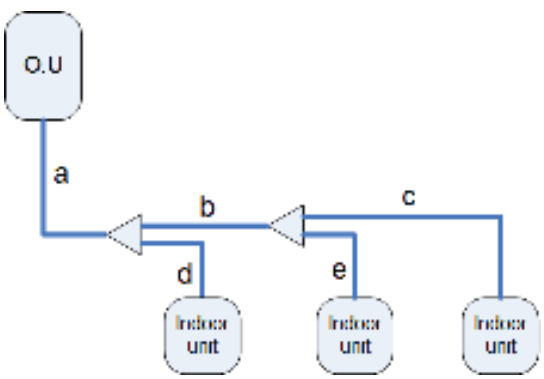


Unit: mm

Branch Pipe	HFQ-102F
Gas Line	
Liquid Line	

ID: Inner Dimensions OD: Outer Diameter

ITEM	MARK	DETAILS
Total Piping Length	a+b+c+d+e	The total amount of all piping actual length.
Maximum Piping Length(L1)	a+b+c	The actual piping length between the stop valve of the outdoor unit and the terminal indoor unit.
L2	b+c	Maximum piping length between branch of 1st branch and each indoor unit.
L3	c; d; e	Maximum piping length between each branch and each indoor unit.



Select the refrigeration pipeline according to the table below

	STOP VALVE SPECIFICATIONS (MM)		BETWEEN THE OUTDOOR UNIT AND THE FIRST BRANCH			BETWEEN BRANCH AND BRANCH		
Model	Gas	Liquid	Gas	Liquid	Mark	Gas	Liquid	Mark
200	Φ19.05	Φ9.53	Φ19.05	Φ9.53	a*	Φ15.88	Φ9.53	b

*If more than 4 indoor units are connected,the gas/liquid pipeline is Φ22.2/12.7

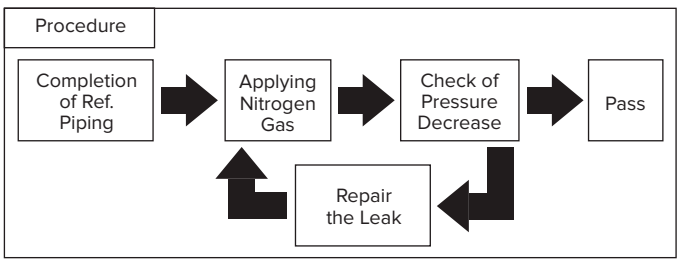
Air-tightness test

(1) The stop valve has been closed before shipment; however, ensure that the stop valves are completely closed.

(2) Connect the indoor unit and the outdoor unit with field-supplied refrigerant piping. Suspend the refrigerant piping at certain points to prevent it from touching weak parts of the building such as walls and ceilings. (If the piping touches these areas, abnormal sounds may occur due to vibration. Pay special attention in cases of short piping lengths.)

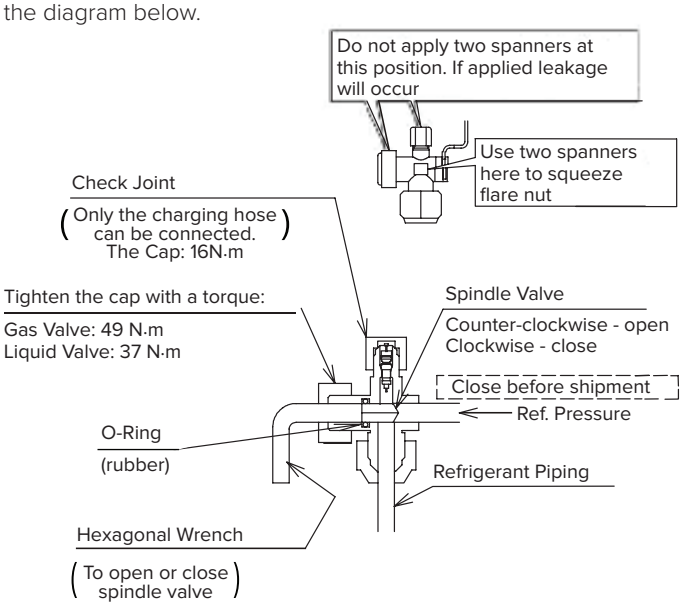
(3) Apply a thin layer of oil to the seat surface of the flare nut and pipe before tightening. When tightening the flare nut, use two spanners.

Refrigerant Oil is field-supply.
Model: α8HES-H (Ether Oil)



(4) Stop Valve

Operation of the stop valve should be performed according to the diagram below.



SPINDLE VALVE TORQUE (N.m)	
Gas	Liquid
10	8
HEXAGONAL WRENCH SIZE (mm)	
Gas	Liquid
8	4

⚠ CAUTION

- Do not apply excessive force to the spindle valve when opening it (5.0 N.m or less). The back seat construction is not provided.
- Do not loosen the stop ring. If the stop ring is loosened, the spindle may pop out, which is dangerous.
- During the test run, fully open the spindle. If not fully opened, the devices may be damaged.

(5) Connect the manifold gauge using charging hoses with a nitrogen cylinder to the check joints of the liquid line and the gas line stop valves.

Perform the air-tightness test. Do not open the stop valves. Apply nitrogen gas pressure of 4.15MPa.

(6) Check for any gas leakage at the flare nut connections, or brazed parts by gas leak detector or foaming agent.

(7) After the air-tightness test, release nitrogen gas.

Vacuum pumping and charge refrigerant

(1) Connect a manifold gauge to the check joints at the both sides. Continue vacuum pumping work until the pressure reaches -0.1MPa or lower for one to two hours.

(2) After vacuum pumping work valve of manifold gauge stop the vacuum pump and leave it for one hour. Check to ensure that the pressure in the manifold gauge does not increase.

(3) Fully open the gas valve and liquid valve.

(4) Add refrigerant according to the piping diameter and piping length in the field connecting.

(5) Check for any gas leakage by gas leak detector or forming agent. Use the foaming agent which does not generate the ammonia (NH3) by chemical reaction.
The recommended foaming agent are as shown below. Do not use general household detergent for checking.

Foaming Agent	Manufacturer
SNOOP	NUPRO (U.S.A.)
Gupoflex	YOKOGAWA & CO., LTD

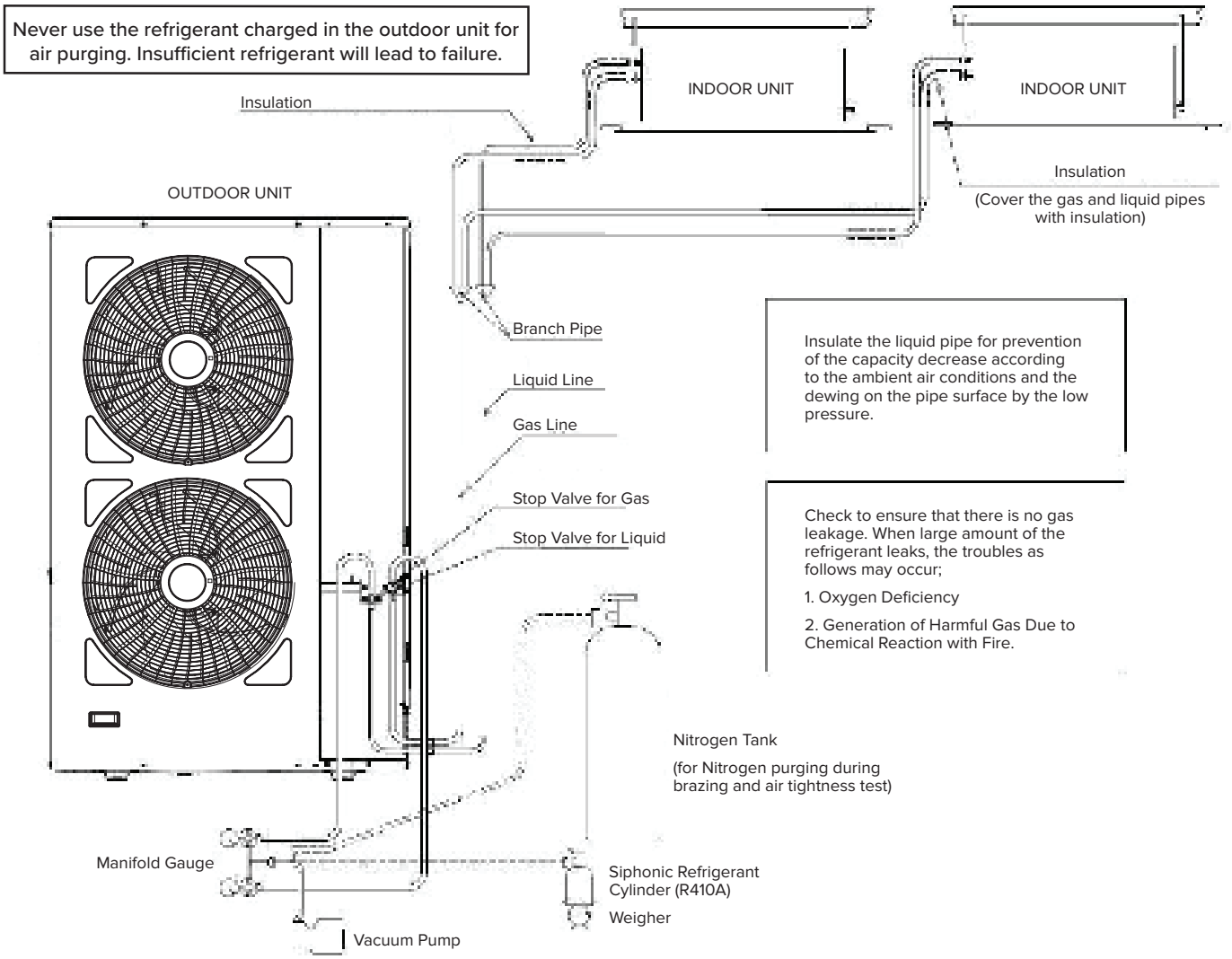
NOTE:

1. When the spindle cap for the stop valve is removed, the gas accumulated at the O-ring or screws may be released, producing a sound. This phenomenon is NOT a gas leak.

2. This unit is only for the refrigerant R410A. The manifold gauge and the charging hose should be exclusive use for R410A.

3. If vacuum degree of -0.1MPa is not available, there may be gas leakage. Check for any gas leakage and fix it and then go back to (2).

Refrigerant piping work



⚠ CAUTION

- During the test run, fully open the spindle. Failure to do so may result in device damage.
- An excess or shortage of refrigerant is the main cause of trouble for the units. Charge the correct refrigerant quantity as specified on the label inside the service cover.
- Carefully check for refrigerant leaks. Severe refrigerant leakage can cause difficulty breathing, and harmful gases may be generated if there is an open fire in the room.

⚠ WARNING

- Only use R410A as refrigerant. Other substances may cause explosions and accidents.
- R410A is fluorinated greenhouse gases. Its global warming potential (GWP) value is 2088. Do NOT vent these gases into the atmosphere.
- Tonnes of CO_2 equivalent of fluorinated greenhouse gases contained is calculated by GWP value of the refrigerant × Total refrigerant charge [in kg] / 1000 in the label.

NOTE:

Fill in the label attached to the unit with the amount of refrigerant charged and Tonnes of CO_2 equivalent of fluorinated greenhouse gases contained on the installation.

NOTE:

- This equipment contains fluorinated greenhouse gases
- Refrigerant: R410A,
global warming potential (GWP) value: 2088
- Weight (kg) of Refrigerant charged before shipment:
Reference to the nameplate [_ _ _] ①kg,
- Weight (kg) of Refrigerant charged additionally on site:
Reference to the manual [_ _ _] ②kg,
- Weight (kg) of Refrigerant charged totally:
③=(①+②), [_ _ _] kg.
- Tonnes of CO_2 equivalent of fluorinated greenhouse gases contained: ③x2088/1000, [_ _ _] tCO_2eq.

H7D09278A

Refrigerant piping work

(6) Additional Refrigerant Charge
ACV200U

It is necessary additional refrigerant charge as follows.

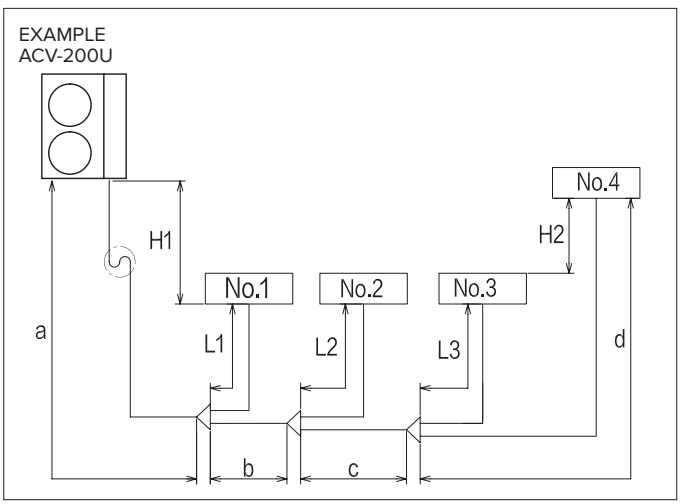
Additional Refrigerant Charge Calculation

Although refrigerant has been charged into this unit, it is required that additional refrigerant be charged according to piping length.

A. Determine an additional refrigerant quantity according to the following procedure, and charge it into the system.

B. Record the additional refrigerant quantity to facilitate service activities thereafter.

1. Calculating Method of Additional Refrigerant Charge (W kg)



See Example for Model ACV-200U, and fill in the following table.

PIPE CHARGE			
Pipe Diameter (mm)	Total Piping Length (mm)		Additional Charge (kg)
W11(Φ6.35)		×0.024	
W12(Φ9.53)		×0.050	
W13(Φ12.7)		×0.11	
W1(=W11+W12+W13)			

* NOTE When combined with ACV200D indoor unit, 15m charge free can be achieved

Additional Charge for Indoor Unit.

INDOOR UNIT CHARGE			
Indoor Unit	Quantity (PC)	Charge (kg/PC)	Additional Charge (kg)
W21(ACV032D)		×(0.755)	
W22(ACV200D)		×(0)	
...	...	...	...
W2(=W21+W22+W23+...)			

2. Charging Work

Charge refrigerant (R410A) into the system as follows:

(1) For charging refrigerant, connect the gauge mani-fold using charging hoses with a refrigerant cylinder to the check joint of the liquid line stop valve.

(2) Fully open the gas line stop valve and slightly open the liquid line stop valve. Charge refrigerant by opening the gauge manifold valve.

(3) Charge the required refrigerant by operating the system in cooling mode. Ensure the correct volume is charged using a weight scale. An excess or shortage of refrigerant is the main cause of trouble for the units. After completing the refrigerant charge, fully open the liquid line stop valve.

2. Record of Additional Charge

Record the refrigerant charging quantity in order to facilitate maintenance and servicing activities.

Total refrigerant charge of this system is calculated in the following formula:

Total Ref. Charge (kg)	=	Wt	=	W0	+	W1	+	W2
W	=		=		+		+	

Total Additional Charge W	kg
Total Ref. Charge of This System	kg
Date of Ref. Charge Work	
Day ____ Month Year	

Refrigerant piping work

Caution of the pressure by check joint

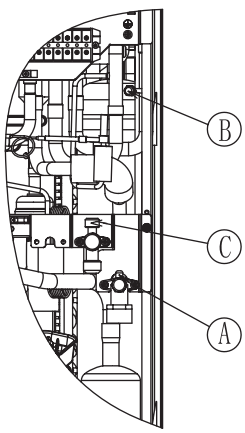
When the pressure is measured, use the check joint of gas stop valve (A in the figure below) and use the check joint of liquid piping (C in the figure below).

At that time, connect the pressure gauge according to the following table because high pressure side and low pressure side change by operation mode.

	Cooling Operation	Heating Operation
Check Joint for Gas Stop Valve "A"	Low Pressure	High Pressure
Check Joint for Piping "B"	High Pressure	Low Pressure
Check Joint for Liquid Stop Valve "C"	Exclusive for Vacuum Pump and Refrigerant Charge	

NOTE:

Be careful to prevent refrigerant and oil from splashing onto the electrical parts when removing the charge hoses.



NOTE:

- Special Attention Regarding Refrigerant Gas Leakage

Pay attention to the critical gas concentration to avoid accidental refrigerant gas leakage before installing air conditioning systems.

$$\frac{\text{R: Total Quantity of Charged Refrigerant (kg)}}{\text{V: Room Volume (m}^3\text{)}} \leq \text{C: Critical Concentration (0.42kg/m3)}$$

* This value should be decided according to the each country's regulation such as ISO5149,EN378 and ASHRAE Standard 15. In the case that the calculated critical concentration is higher than this value, take the following actions:

1) Provide a gas leakage detector and exhaust fan controlled by its gas leakage detector.

2) Provide effective opening in the wall or door for ventilation to next door so that the critical gas concentration can be maintained lower than the above value. (Provide an opening with area greater than 0.15% of the floor surface at the lower part of a door.)

⚠ CAUTION

- Maximum Permissible Concentration of HFC GAS R410A

Refrigerant R410A is an incombustible and non-toxic gas. However, if a leak occurs and the gas fills a room, it may cause suffocation. If a leak occurs, it is essential to take effective actions to reduce the concentration of R410A to below 0.42 kg/m^3.

Calculation of Refrigerant Concentration
(1) Calculate the total quantity of refrigerant R (kg) charged in the system connecting all the indoor units of target rooms.

(2) Calculate the volume of the room installing this unit V (m^3).

(3) Calculate the refrigerant concentration C (kg/m^3) of the room according to the above equation.

Please follow local codes or regulations, if any.

Collecting refrigerant

When the refrigerant needs to be collected into the outdoor unit due to the relocation of the indoor or outdoor unit, follow these steps to collect the refrigerant.

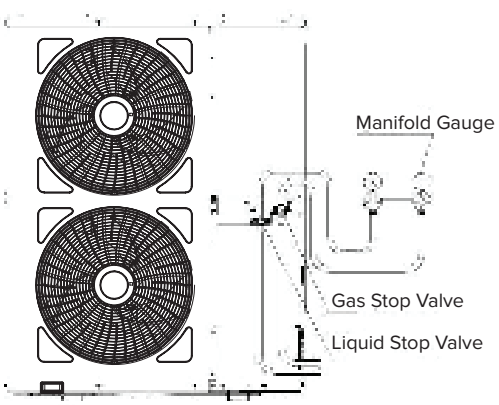
(1) Attach the manifold gauge to the gas stop valve and the liquid stop valve.

(2) Turn ON the power source.

(3) Set the DSW1-1 pin of the outdoor unit PCB at the "ON" side for cooling operation. Close the liquid stop valve and collect the refrigerant.

(4) When the pressure at lower pressure side (gas stop valve) indicates 0.02MPa, perform the following procedures immediately.
* Close the gas stop valve.
* Set the DSW1-1 pin at the "OFF" side.
(To stop the unit operation.)

(5) Turn OFF the power source.



⚠ CAUTION

Measure the low pressure using a pressure gauge and ensure it does not drop below -0.01 MPa. If the pressure falls below -0.01 MPa, the compressor may be faulty.

Electrical wiring

⚠ WARNING

- Turn OFF the main power switch to both the indoor and outdoor units and wait for more than 10 minutes before performing any electrical wiring work or periodical checks.
- Ensure that the indoor and outdoor fan have completely stopped before performing any electrical wiring work or periodical checks.
- Protect the wires, electrical parts, and other components from rats or small animals. If not protected, rats may gnaw on the parts, potentially causing a fire.
- Ensure that the wiring does not touch the refrigerant pipes, plate edges, or electrical parts inside the unit. If the wires come into contact with these components, they may become damaged and could potentially cause a fire.

⚠ CAUTION

- Tightly secure the power source wiring using the cord clamp inside the unit.

General check

(1) Ensure that the field-selected electrical components (main power switches, circuit breakers, wires, conduit connectors and wire terminals) have been properly selected according to the electrical data. Make sure that the components comply with National Electrical Code (NEC).

(2) Ensure that the voltage of power supply is within ±10% of nominal voltage and earth phase is contained in the power supply wires. If not, electrical parts will be damaged.

(3) Ensure that the power supply capacity is sufficient. If it is not, the compressor may fail to operate due to abnormal voltage drops during startup.

(4) Ensure that the earth wire is connected.

(5) Ensure that the electrical resistance is more than 1 megohm, by measuring the resistance between ground and the terminal of the electrical parts. If not, do not operate the system until the electrical leakage is found and repaired.

Electrical wiring connection

(1) Connect the Transmission Wire between the outdoor and indoor units to terminals 1 and 2 on the terminal board (TB2).

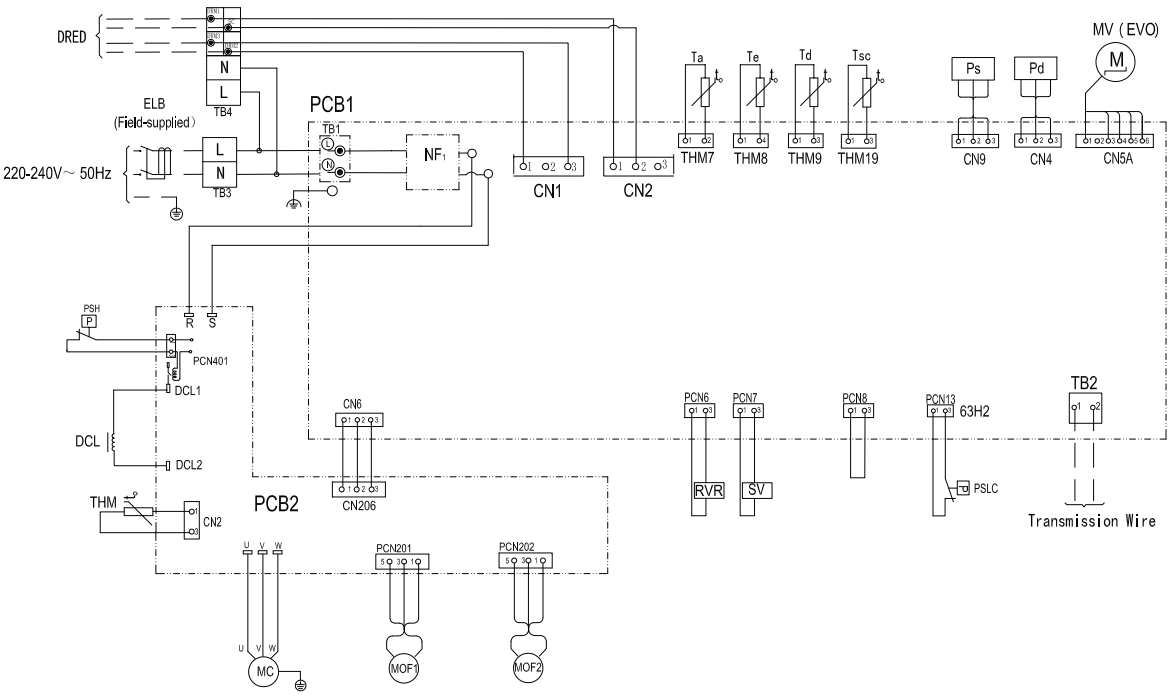
If power supply wiring is connected to 1 and 2 of terminal board (TB2), printed circuit board will be damaged.

(2) Do not wire in front of the fixing screw of the service panel. If do, the screw can not be removed.

Demand Response

This product is Demand Response ready and compliant with DRM1, DRM2 & DRM3. It has the capacity to receive signals from electricity providers with an additional connection. The Demand Response features are future provisions to enable the unit to support grid stability by switching off (DRM1), reducing output to a lower level (DRM2), or operating at a moderate reduced level (DRM3) during periods of high electricity demand.

——— : Factory Wiring
— — — : Field Wiring



Electrical wiring

⚠ WARNING

- Install an ELB (Electric Leakage Breaker) in the power source. Failure to use an ELB can result in electric shock or fire.
- The tightening torque of each screw shall be as follows.

M4: 1.0 to 1.3 N-m

M5: 2.0 to 2.5 N-m

M6: 4.0 to 5.0 N-m

M8: 9.0 to 11.0 N-m

M10: 18.0 to 23.0 N-m

Keep the above tightening torque when wiring work.

NOTE:

1. If the total wiring length between the outdoor unit and indoor unit, and between indoor units, is less than 100 meters, normal wiring (more than 0.75mm^2) can be used, except for shielded twisted pair wiring.

2. Total wiring length for remote control switch can be extended up to 500m. If total wiring length less than 30m, it is possible to use the normal wiring (0.3mm^2) except shielded twist pair.

3. Power Source Wiring
Power source wiring is fundamentally according to this method.

The recommended fuse sizes etc. are shown in the table below.

In the case that a conduit tube for field wiring is not used, fix rubber bushes with adhesive on the panel.

ELECTRICAL DATA AND RECOMMENDED WIRING, BREAKER SIZE / 1 OUTDOOR UNIT							
Model	Power Source	Rated Current (A)	Power Source Cable Size	Trans-mitting Cable Size	ELB		Breaker
			(mm^2)*1	(mm^2)*1	Normal Current (A)	Normal Sensitive Current (mA)	(A)
ACV200U	220--240V 1N~ 50Hz	32	10	0.75	40	30	40
ACV200U-1		32	10	0.75	40	30	40

*1 Refer to the NOTES for selection of the power source cable size.

ELB: Earth Leakage Breaker

NOTE:

(1) Field wiring shall comply with local laws and regulations, and all wiring must be performed by qualified professionals.

(2) Refer to relevant standards for above noted power cord size.

(3) When the power cord is connected through a junction box in series, ensure you determine the total current and select wires based on the table below.

(4) As a minimum, the chosen power cord must comply with the requirements for neoprene sheathed wire #57 as stated in IEC/AS/NZS 60245-1. Additionally, the power cord must be made from copper conductors.

(5) The wiring specifications for the weak-current transmission circuit must meet or exceed those for RVV(S)P shielded wires or equivalent. Additionally, the shielding layer must be grounded.

(6) A switch that guarantees all-pole disconnection must be installed between the power supply and the air conditioning unit. The contact spacing of this switch must be at least 3mm and must meet the requirements of AS/NZS 3000.

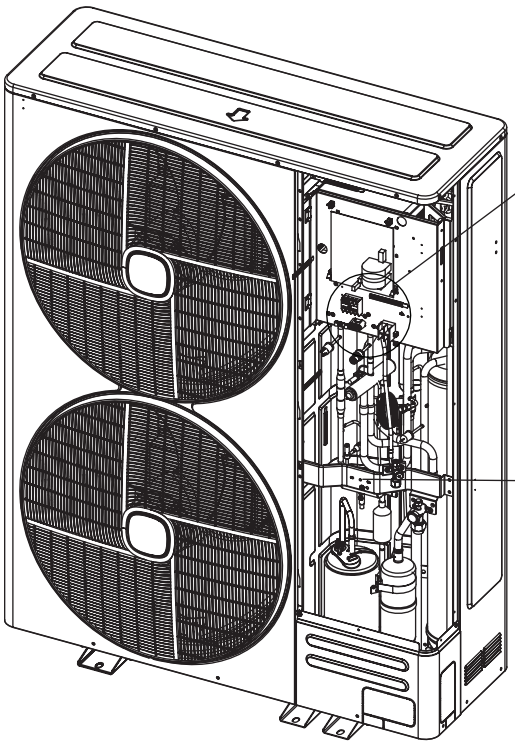
(7) If the power cord is damaged, contact the dealer or professionals from the designated maintenance department promptly for repair and replacement.

(8) When installing the power cord, ensure that the ground wire is longer than the current-carrying conductor.

(9) The wire sizes marked with *1 in the above table are selected at the rated current of the unit according to the European and Australia Standard, EN/AS/NZS 60335-1. Use the wires which are not lighter than the ordinary polypropylene sheathed flexible cord (code designation H05RN-F)

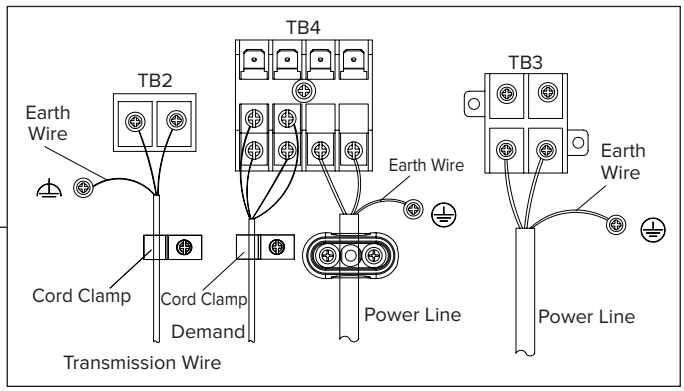
Electrical wiring

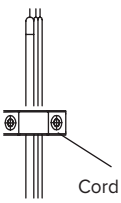
Connection of outdoor unit



Wiring Connection of Outdoor Unit

Terminal block for power source and control circuit

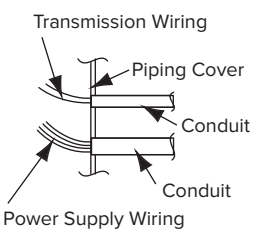




1. Fix the wire as shown in the figure on the left.
2. Tie the wires properly to avoid contact with compressor, refrigerant pipe and rear cover.

CAUTION:

When using conduit, do NOT run it inside the outdoor unit. If the conduit wiring touches the compressor or refrigerant pipe in the outdoor unit, it may cause damage.



⚠ CAUTION

Pay attention to the following when running cables under the unit using conduit.

- Do not run the power supply wiring and transmission wiring through the same conduit tube. Additionally, maintain at least 50mm of separation between the power supply wiring and transmission wiring.
- Cut a cross slit in the rubber bush and securely attach it to the knock-out hole to protect the cable.
- Ensure the wiring does not touch the refrigerant pipes, plate edges, or electrical parts inside the unit.
- Completely seal the end of the conduit tube with sealing materials to prevent rain from entering. Additionally, make a drain hole at the lowest part of the conduit tube.

⚠ CAUTION

Tightly secure the power source wire with a cord clamp inside the unit.

Field Minimum Wire Sizes for Power Source of Indoor Unit

- Connect correct series indoor unit.
- Use an ELB (Electric Leakage Breaker). If not used, it will cause an electric shock or a fire.
- Do not operate the system until all the check points have been cleared.

⚠ CAUTION

Install a multi-pole main switch with a space of 3.0mm or more between each phase.

Test run

⚠ WARNING

- Do not operate the system until all the check points have been cleared.

(A) Check and confirm ref. pipe system and communication wire link to same ref. cycle system.

(B) Check to ensure the electrical resistance is more than 1 megohm, by measuring the resistance between ground and the terminal of the electrical parts. If not, do not operate the system until the electrical leakage is found and repaired.

(C) Check to ensure the stop valves of the outdoor unit are fully opened, and then start the system.

(D) Check to ensure the switch on the main power source has been ON more than 12 hours, to warm the compressor oil by the oil heater.

- Pay attention to the following items while the system is running.

(A) Do not touch any of the parts by hand at the discharge gas side, since the compressor chamber and the pipes at the discharge side are heated higher than 90°C.

(B) DO NOT PUSH THE BUTTON OF THE MAGNETIC SWITCH(ES). It will cause a serious accident.

- Do not touch any electrical components within ten minutes after turning OFF the main switch.

- Operate every indoor unit one by one, check and confirm their ref. cycle and connect wire joint to same ref. cycle system.

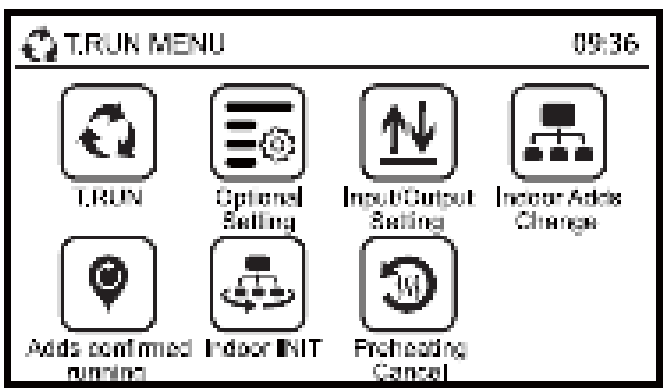
1. Checking the wire connection by test run

(1) Turn ON the power supply for all the indoor units.

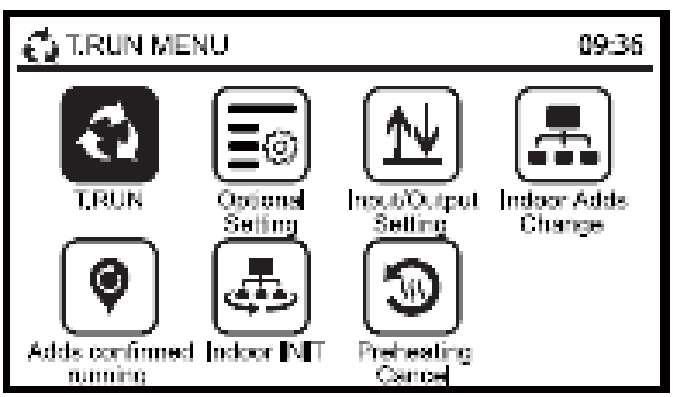
(2) For models with the auto-address function, wait approximately 3 minutes for the addressing to complete automatically. In some cases, it may take up to 5 minutes depending on the settings. After the addressing is complete, select your language from the "Menu." Refer to the operation manual for details.

(3) Press and hold "☐" (menu) and "↩" (return) simultaneously for at least 3 seconds.

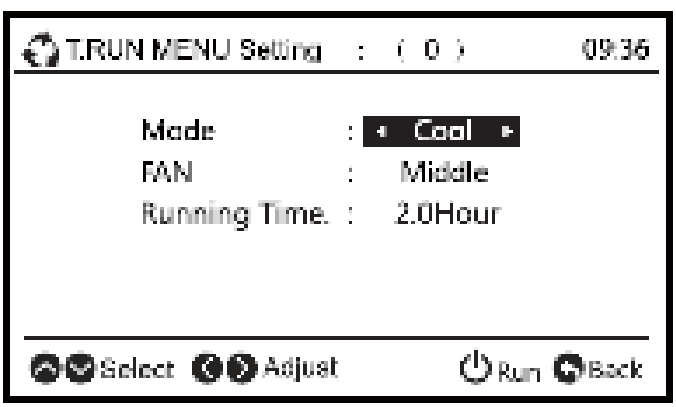
A. The test run menu will be displayed



B. Select ☐ and press ☑. The test run settings will be displayed.

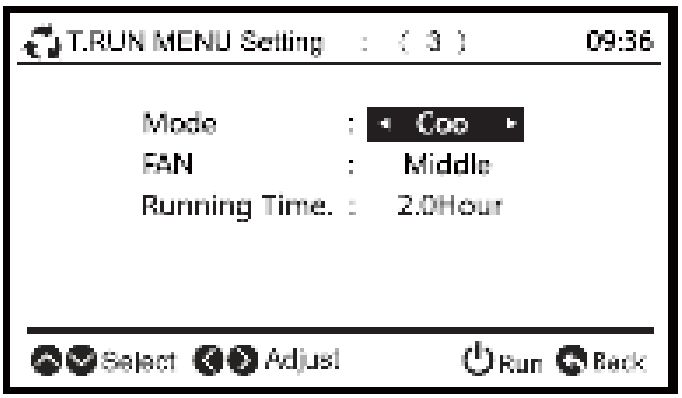


NOTE: When "0" is indicated the auto-address function may be performing. Cancel "Test Run" mode and set it again.



Test run

(4) The total number of indoor units connected is indicated on the LCD (liquid crystal display). The case of the twin combination (one (1) set with two (2) indoor units) is indicated "2", and the triple combination (one (1) set with three (3) indoor units) is indicated "3"

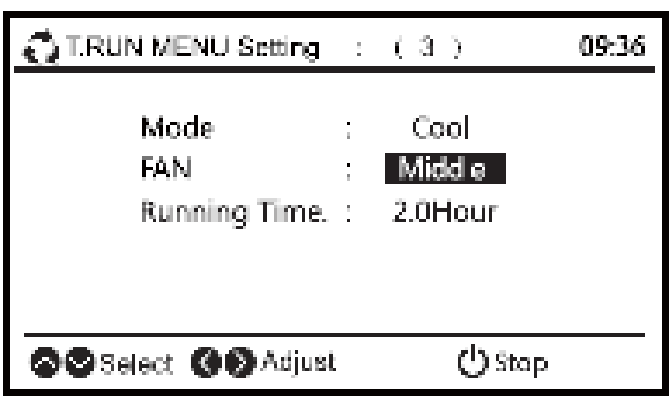


A. If the indicated number is not equal to the actual connected number of indoor unit, the auto-address function is not performed correctly due to incorrect wiring, the electric noise or etc. Turn OFF the power supply and correct the wiring after checking the following points; (Do not repeat turning ON and OFF within 10 seconds.)
- Power supply for indoor unit is not turned ON or incorrect wiring.
- Incorrect connection of connecting cable between indoor units or incorrect connection of controller cable.
- Incorrect setting of rotary switch and dip switch (the setting is overlapped) on the indoor units PCB.

B. Press (run/stop) to start the test run.

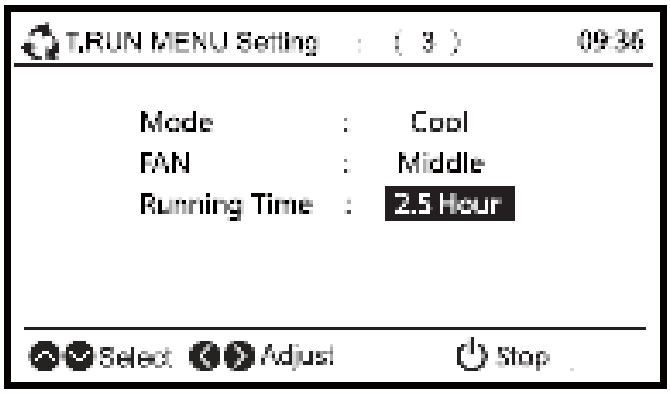
C. Press "< > ^ v" and set each item.

(5) Press (run/stop). At this time, 2-hour OFF timer will be set automatically.

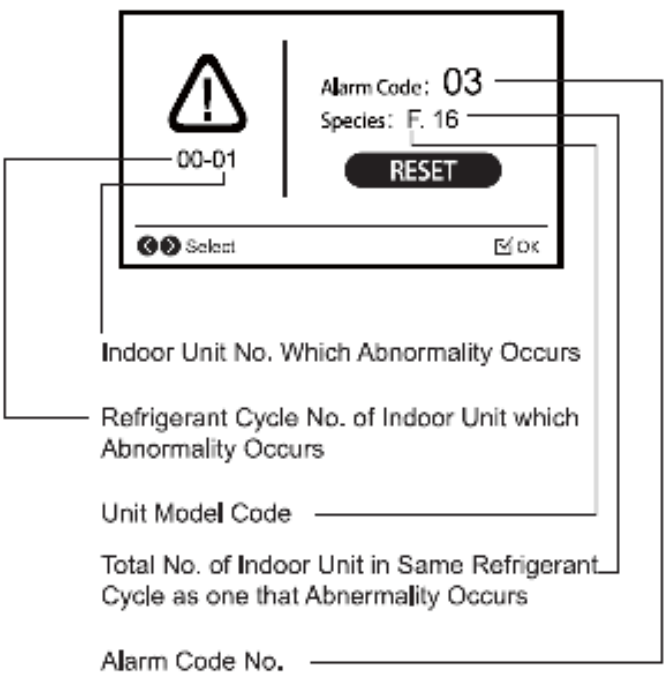


(6) The temperature detections by the thermistor invalid through the protection devices are valid during the test run.

(7) To finish the test run press (run/stop) again or pass over the set test run time. When changing the test run time, press "^" or "v" to select "Running Time". Then, set the test run time (30 to 600 minutes) by pressing "<" or ">".



• The RUN indicator on the remote control switch flashes, indicating abnormalities such as activated protection devices during the test run. Additionally, the RUN indicator (red) on the indoor unit flashes in a pattern of 0.5 seconds ON and 0.5 seconds OFF. The alarm code, unit model code, and the number of connected indoor units will be displayed on the LCD as shown in the figure below. If the RUN indicator on HYXE-JO1H flashes, it may indicate a failure in the transmission between the indoor unit and the remote control switch, such as loosening of connectors, disconnected wiring, or a broken wire. Consult authorised service engineer if the abnormality cannot be resolved.



Test run

2. Test Run and Maintenance Record

MODEL:	SERIAL No.	COMPRESSOR MFG. No.
CUSTOMER'S NAME & ADDRESS		DATE:
1	Is the rotation direction of the indoor coil fan correct?	
2	Is the rotation direction of the outdoor coil fan correct?	
3	Are there any abnormal compressor sounds?	
4	Has the unit been operated at least twenty (20) minutes?	
5	Check room temperature Inlet: No. 1 DB /WB °C No. 2 DB /WB °C No. 3 DB /WB °C No. 4 DB /WB °C Outlet: DB /WB °C DB /WB °C DB /WB °C DB /WB °C	
6	Check outdoor ambient temperature Inlet: DB °C DB °C Outlet: DB °C DB °C	
7	Check refrigerant temperature Liquid temperature: °C Discharge gas temperature: °C	
8	Check pressure Discharge pressure: MPa Suction pressure: MPa	
9	Check voltage Rated voltage: V Operating voltage: V Starting voltage: V	
10	Check compressor input running current Input: kW Running current: A	
11	Is the refrigerant charge adequate?	
12	Do the operation control devices operate correctly?	
13	Do the safety devices operate correctly	
14	Has the unit been checked for refrigerant leakage?	
15	Is the unit clean inside and outside?	
16	Are all cabinet panels fixed?	
17	Are all cabinet panels free from rattles?	
18	Is the filter clean?	
19	Is the heat exchanger clean?	
20	Are the stop valves open?	
21	Does the drain water flow smoothly from the drain pipe?	

3. Alarm Code

CODE	CATEGORY	CONTENT OF ABNORMALITY	LEADING CAUSE
01	Indoor unit	Activation of protection device	Activation of float switch, high level in drain pan
02	Outdoor unit	Activation of protection device	Activation of PSH, pipe clogging, excessive refrigerant, inert gas mixing
03	Transmission	Abnormality between indoor and outdoor (or outdoor and outdoor)	Incorrect wiring, loose terminals, disconnect wire, tripping of fuse
04	Transmission	Abnormality between inverter PCB and outdoor PCB abnormality between fan controller and outdoor PCB	Transmission failure (loose connector)
05	Supply phase	Abnormality power source phases	Incorrect power source, connection to reversed phase, open phase
06	Voltage	Abnormal inverter voltage	Outdoor voltage drop, insufficient power capacity
07	Cycle	Decrease in discharge gas superheat	Excessive refrigerant charge, failure of thermistor, incorrect wiring
08	Cycle	Increase in discharge gas temperature	Insufficient refrigerant charge, pipe clogging, failure of thermistor, incorrect wiring.
11	Sensor on indoor unit	Inlet air thermistor	Incorrect wiring, disconnecting wiring
12		Outlet air thermistor	
13		Freeze protection thermistor	
14		Gas piping thermistor	
19	Fan motor	Activation of protection device for indoor fan	Fan motor overheat, locking
21	Sensor on outdoor unit	High pressure sensor	Incorrect wiring, disconnecting wiring
22		Outdoor air thermistor	
23		Discharge gas thermistor	
24		Evaporating piping thermistor	
29		Low pressure sensor	
31	System	Incorrect capacity of outdoor unit and indoor unit	Incorrect setting of capacity combination
35		Incorrect setting of indoor unit no.	Duplication of indoor unit no.
38		Abnormality of protective circuit in outdoor unit	Failure of protection detecting circuit (failure of protection detecting device, abnormality of outdoor PCB, incorrect wiring of PCB)
43	Protection Device	Activation of low pressure decrease protection device	Defective compression (failure of compressor of inverter, loose power supply connection)
44		Activation of low pressure increase protection device	Overload at cooling, high temp. at heating, locking (loose connector)
45		Activation of high pressure increase protection device	Overload operation (clogging, short-pass), pipe clogging, insufficient refrigerant, inert gas mixing
47		Activation of low pressure decrease protection device (vacuum operation)	Insufficient refrigerant, refrigerant piping clogging, locking (loose connector)
48		Activation of inverter over current protection device	Overload operation, compressor failure
51	Sensor	Abnormal current sensor	Current sensor failure
53	Inverter	Inverter error signal detection	Driver IC error signal detection (Protection for over-current, low voltage, short-circuit)
54		Increase of inverter fin temperature	Abnormal inverter fin thermistor, heat exchanger, clogging, abnormal failure
55		Inverter failure	Inverter PCB failure
57	Outdoor fan motor	Abnormality of fan motor	Disconnecting wiring or incorrect wiring between control PCB (PCB1) and Fan Relay PCB (PCB3, PCB5), failure of fan motor
EE	Compressor	Compressor protection alarm	Failure of compressor
b1	Outdoor unit no. setting	Incorrect outdoor unit no. setting	Over 64 no. is set for address or refrigerant cycle

Safety and control device setting

- Compressor Protection

High Pressure Switch: This switch cuts out the operation of the compressor when the discharge pressure exceed the setting.

- Fan Motor Protection

When the thermistor temperature is reached to the setting, motor output is decreased. The other way, when the temperature becomes lower, limitation is cancelled.

OUTDOOR UNIT MODEL (kw)		ACV200U/ACV200U-1
Pressure switch high pressure		Automatic reset, non-adjustable
Cut-out	MPa	4.15
Cut-in	MPa	3.2
Fuse on main circuit	A	40
CCP Timer set time	min.	3
Control circuit fuse	A	5

After sales service

If your air conditioner can not operate normally, turn off the unit and cut off the power supply at immediately.

Contact your service center or technical department.

emerald.com.au/contact

Emerald Energy Pty Ltd
ABN 86 632 172 368
L2, 12a Rodborough Road Frenchs Forest NSW 2086

The information contained within this brochure is accurate as of the time of publish.

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