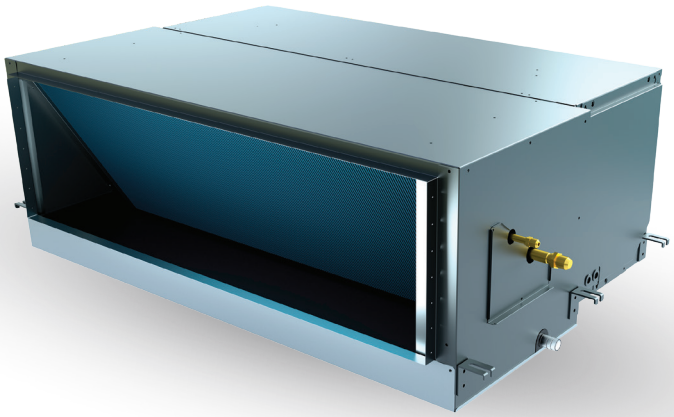
emerald

USER MANUAL

MODEL NUMBER:
ACV200D



Thank you for choosing Emerald Energy.

This leaflet contains important information on the correct installation and operation of your Emerald Air Conditioning Ducted System Indoor Unit.

Read these instructions carefully before installation. Keep this manual in a handy for future reference.

IMPORTANT NOTICE

Please read this manual carefully before you attempt to install this product. Failure to do so may result in the product not working according to its design.

CONTENTS

SAFETY SUMMARY	**5**
STRUCTURE	**7**
Name of parts	7
Necessary tools and instrument list for installation	8
TRANSPORTATION AND HANDLING	**9**
Transportation	9
Handling of indoor unit	9
INDOOR UNIT INSTALLATION	**11**
Factory-supplied accessories	10
Initial check	10
Installation	11
REFRIGERANT PIPING WORK	**15**
Piping materials	15
Piping connection	15
DRAIN PIPING	**17**
ELECTRICAL WIRING	**18**
General check	18
Electrical wiring connection	18
TEST RUN	**20**
SAFETY AND CONTROL DEVICE SETTING	**21**
Field minimum wire sizes for power source	21
Dip switch setting	22

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 foresee every possible circumstance that might involve a potential hazard.
- This indoor air conditioning unit is designed for human comfort. Do not use this air conditioner for other purposes such as drying clothes, refrigerating foods or for any other cooling or heating process.
- No part of this manual may be reproduced without written permission.
- Signal words (DANGER, WARNING, CAUTION, NOTICE and NOTE) are used to identify levels of hazard seriousness. Definitions for identifying hazard levels are provided below with their respective signal words.

⚠ DANGER

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

⚠ WARNING

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

⚠ CAUTION

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

NOTICE

Address practices not related to physical injury.

NOTE

Useful information for operation and/or maintenance.

- Do not install the unit in the place where silicon gas drifts. If the silicon gas attaches to the surface of heat exchanger, the fin surface repels water. As a result, drain water splashes outside of the drain pan and splashed water runs inside of electrical box. In the end, water leakage or electrical devices failure may occur.
- Pay attention to the following points when the unit is installed in a hospital or other facilities where an electromagnetic wave generates from a medical equipment.
  - Do not install the unit in the place where an electromagnetic wave is directly radiated to the electrical box, remote control cable or remote control switch.
  - Install the unit at least 3 meters away from an electromagnetic wave such as a radio.
- This unit shall be installed in accordance with local codes and regulations.
- The installer and system specialist shall ensure safety against the refrigerant leakage according to local regulations or standards.
- No part of this manual may be reproduced without written permission.
- It is assumed that this heat pump air conditioner will be operated and serviced by persons conversant in English. 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 system has been designed and tested to operate within the indoor temperature limits as stated below. The manufacturer cannot guarantee satisfactory performance if the unit is operated for prolonged periods outside of these limits.

Temperature Range	Maximum	Minimum
Cooling Operation	32 DB/23 WB	21 DB/15 WB
Heating Operation	30 DB	15DB

DB: Dry Bulb , WB: Wet Bulb

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

⚠ DANGER

- Do not install pipework with diameters that are not specified for the model.
- Do not ground units to water pipes, gas pipes, telephone wires, or lightning rods as incomplete grounding can cause a severe shock hazard resulting in severe injury or death. Additionally, grounding to gas pipes could cause a gas leak and potential explosion causing severe injury or death.
- Do not install unit in an area where flammable materials are present due to risk of explosions that can cause serious injury or death.
- Safely dispose all packing and transportation materials in accordance with federal/state/local laws or ordinances. Packing materials such as nails and other metal or wood parts, including plastic packing materials used for transportation may cause injuries or death by suffocation.
- Refrigerant gas is heavier than air and replaces oxygen. A massive leak can lead to oxygen depletion, especially in basements, and an asphyxiation hazard could occur leading to serious injury or death.
- If refrigerant gas leaks during installation, ventilate the area immediately. Refrigerant gas may produce toxic gas if it comes into contact with fire. Exposure to this gas could cause severe injury or death.

IMPORTANT NOTICE

⚠ WARNING

- Assure that the maximum operating pressure is checked when connecting to Outdoor UNIT.
- This unit is a PARTIAL UNIT AIR CONDITIONER, shall only be connected to an appliance suitable for the same refrigerant.
- This unit is a PARTIAL UNIT AIR CONDITIONER, complying with PARTIAL UNIT requirements of AS/NZS 60335-1 and AS/NZS 60335-2-40, and must only be connected to other units that have been confirmed as complying to corresponding PARTIAL UNIT requirements of AS/NZS 60335-1 and AS/NZS 60335-2-40.
- Only qualified personnel licensed or certified in their jurisdiction must carry out the installation work. Installation must be done in accordance with this installation manual. Improper installation may result in water leakage, electric shock, or fire.
- Pipe work and installation shall be also in compliance with national codes.
- Use only specified accessories and parts for installation work. Failure to use specified parts may result in water leakage, electric shock, fire, or the unit falling.
- Install the air conditioner or heat pump on a foundation strong enough that it can withstand the weight of the unit. A foundation of insufficient strength may result in the unit falling and causing injuries.
- Take into account strong winds, typhoons, or earthquakes when installing. Improper installation may result in the unit falling and causing accidents.
- Make sure that a separate power supply circuit is provided for this unit and that all electrical work is carried out by qualified personnel licensed or certified in their jurisdiction according to local, state, and national regulations. An insufficient power supply capacity or improper electrical construction may lead to electric shock or fire.
- Make sure that all wiring is secured, that specified wires are used, and that no external forces act on the terminal connections or wires. Improper connections or installation may result in fire.
- When wiring, position the wires so that the electrical wiring box cover can be securely fastened. Improper positioning of the electrical wiring box cover may result in electric shock, fire, or the terminals overheating.
- Before touching electrical parts, turn off the unit.
- The circuit must be protected with safety devices in accordance with local and national codes, i.e. a circuit breaker.
- Securely fasten the outdoor unit terminal cover (panel). If the terminal cover/panel is not installed properly, dust or water may enter the outdoor unit causing fire or electric shock.
- When a fire occurs, cut off the power supply immediately.

⚠ CAUTION

- Do not touch the switch with wet fingers. Touching a switch with wet fingers can cause electric shock.
- This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety. Children should be supervised to ensure that they do not play with the appliance.
- Wear adequate personal protective equipment (protective gloves, safety glasses etc.) when installing, maintaining or servicing the system.
- The heat exchanger fins are sharp enough to cut. To avoid injury, wear gloves or cover the fins while working around them.
- Do not touch the refrigerant pipes during and immediately after operation as the refrigerant pipes may be hot or cold, depending on the condition of the refrigerant flowing through the refrigerant piping, compressor, and other refrigerant cycle parts. Your hands may suffer burns or frostbite if you touch the refrigerant pipes. To avoid injury, give the pipes time to return to normal temperature or, if you must touch them, be sure to wear proper gloves.
- Install drain piping to ensure proper drainage. Improper drain piping may result in water leakage and property damage.
- Insulate piping to prevent condensation.
- Be careful when transporting the product.
- Do not install the air conditioner or heat pump in the following locations:

- Where a mineral oil mist or oil spray or vapor is produced, for example, in a kitchen. Plastic parts may deteriorate and fall off or result in water leakage.

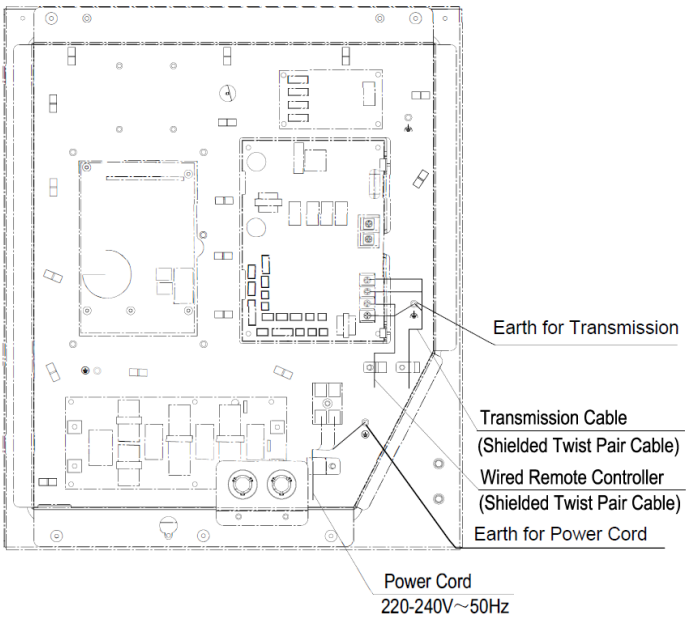
- Where corrosive gas, such as sulfurous acid gas, is produced. Corroding copper pipes or soldered parts may result in refrigerant leakage.

- Near machinery emitting electromagnetic waves. Electromagnetic waves may disturb the operation of the control system and cause the unit to malfunction.

- Where flammable gas may leak, where there is carbon fiber, or ignitable dust suspension in the air, or where volatile flammables such as thinner or gasoline are handled. Operating the unit in such conditions can cause a fire.

- Take adequate measures to prevent the outdoor unit from being used as a shelter by small animals. Small animals making contact with electrical parts can cause malfunctions, smoke, or fire. Instruct the user to keep the area around the unit clean.
- This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved. Cleaning and user maintenance shall not be made by children without supervision.

• Use shielded wires of operation line between the indoor and the outdoor unit. And connect the shielded part to the earth screw in the electrical box of the indoor unit as shown in the diagram below.



Earth Wiring

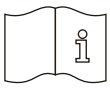
NOTES:

• The indoor unit should be positioned where the unit and inner unit wires (outdoor to indoor) are at least 1m away from any televisions or radios. (The unit may cause interference with the picture or sound.) Depending on the radio waves, a distance of 1m may not be sufficient to eliminate the noise.

• Dismantling the unit, treatment of the refrigerant, oil and additional parts must be done in accordance with the relevant local, state, and national regulations.

• As maximum allowable pressure is 4.15MPa, minimum allowable pressure is 2.21MPa, the wall thickness of field-installed pipes should be selected in accordance with the relevant local, state, and national regulations.

Explanation of symbols may displayed on the indoor unit

	CAUTION	Indicates the operation manual should be read carefully.
	CAUTION	Indicates service personnel should be handling this equipment with reference to the installation manual
	CAUTION	Indicates information is available such as the operating manual or installation manual.

SAFETY SUMMARY

⚠ DANGER

- Do not perform the installation work, refrigerant piping work, drain pump, drain piping and electrical wiring connection without referring to our installation manual. If the instructions are not followed, it may result in a water leakage, electric shock or a fire.
- Do not pour water into the indoor unit or outdoor unit. This product contains electrical components and if wet, can cause serious electrical shock.
- Do not open the service cover or access panel for the indoor or outdoor unit without turning OFF the main power supply.
- Do not touch or adjust safety devices inside the indoor unit or outdoor unit. If these devices are touched or re-adjusted, it may cause a serious accident.
- Refrigerant leakage can cause difficulty with breathing due to insufficient air. Turn OFF the main switch, extinguish any naked flames and contact your service contractor, if refrigerant leakage occurs.
- The installer and system specialist shall ensure safety against refrigerant leakage according to local regulations or standards.
- Use the ELB which is above medium reaction speed (residual-current circuit breaker, action time of 0.1s or less). Otherwise, it may lead to electric shock or fire.
- For installation, firmly connect the refrigerant pipe before the compressor starts operating. For maintenance, relocation and disposal, remove the refrigerant pipe after the compressor stops.
- Do not perform a short-circuit of the protection device such as the pressure switch when operating. It may cause a fire and explosion.

⚠ WARNING

- Do not use any sprays such as an insecticide, lacquer, hair spray or other flammable gases within approximately 1 meter from the system.
- If the circuit breaker or fuse frequently activates, stop using the system immediately and contact your service contractor.
- Check that the ground wire is securely connected. If the unit is not correctly grounded, it leads electric shock. Do not connect the ground wiring to a gas piping, water piping, lighting conductor or ground wiring for telephone.
- Connect a fuse with specified capacity.
- Before performing any brazing work, check to ensure that there is no flammable material around. When using the refrigerant be sure to wear leather gloves to prevent cold injuries.
- Fix the cables securely. External forces on the terminals could lead to a fire.
- Ensure that the wiring terminals are tightened securely with the specified torques. If not, generating fire or an electric shock at the terminal connection part may occur.

⚠ CAUTION

- Do not step or put any material on the product.
- Do not put any foreign material on the unit or inside the unit.
- Ensure a solid and level foundation to achieve the following:
  (a) The unit is not on an incline.
  (b) No abnormal sounds occur.
  (c) The unit remains secure during strong earthquakes.

NOTICE

- In certain situations, the packaged air conditioner may not operate normally due to the following conditions:

The electrical power for the packaged air conditioner is supplied from the same power transformer as other high-power devices.

The power source wires for the high-power devices and the packaged air conditioner are located close to each other.

High-power devices include, but are not limited to, lifts, container cranes, rectifiers for electric railways, inverter power devices, arc furnaces, electric furnaces, large induction motors, and large switches. These devices consume a significant amount of electrical power.

In these cases, a surge voltage may be induced in the power supply wiring for the packaged air conditioner due to rapid changes in power consumption or the activation of switches in these devices.

To mitigate this risk, check the relevant field regulations and standards before performing electrical work to protect the power supply for the packaged air conditioner.

- If the supply cord is damaged, it must be replaced by our service agent to prevent any hazards.
- The means for disconnection from the supply mains, which have contact separation in all poles to ensure complete disconnection under over voltage category III conditions, must be integrated into the fixed wiring as per AS/NZS 3000 regulations.
- The appliance should be installed in compliance with applicable local and national wiring regulations.

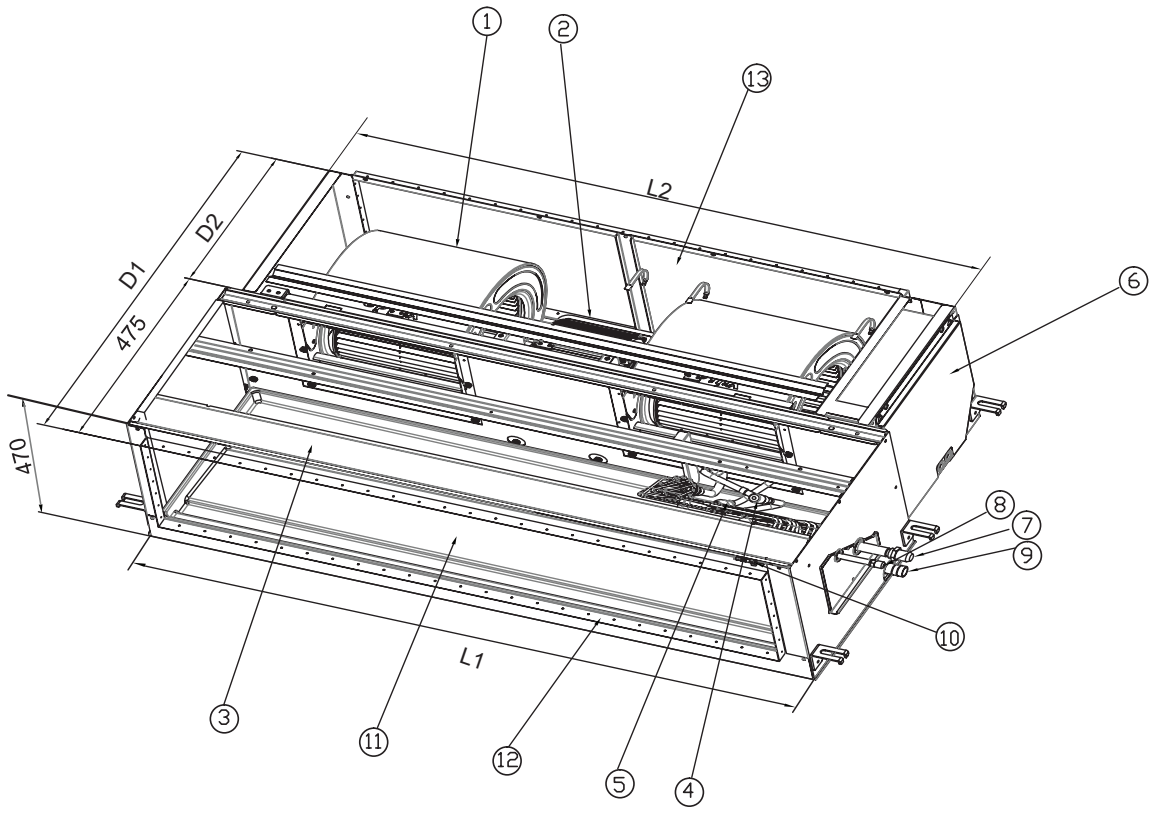
NOTE:

- It is recommended to ventilate the room every 3 to 4 hours.

STRUCTURE

NAME OF PARTS

ACV200D



No.	Part Name
1	Fan
2	Fan Motor
3	Heat Exchanger
4	Distributor
5	Strainer
6	Electrical Control Box
7	Refrigerant Gas Pipe Connection
8	Refrigerant Liquid Pipe Connection
9	Drain Pipe Connection
10	Float Switch
11	Drain Pan
12	Air-discharge Outlet
13	Air-return Inlet

Model	L1	L2	D1	D2
ACV200D	1300	1230	890	415

Flange Dimension (H X W, mm)		
Model	Air-return Inlet	Air-discharge Outlet
ACV200D	420x 1081	339 x 1215

NECESSARY TOOLS AND INSTRUMENT LIST FOR INSTALLATION

No.	Tool	No.	Tool	No.	Tool
1	Handsaw	8	Plier	16	Cutter for Wires
2	Phillips Screwdriver	9	Pipe Cutter	17	Gas Leak Detector
3	Vacuum Pump	10	Brazing Kit	18	Leveler
4	Refrigerant Gas Hose	11	Hexagon Wrench	19	Clamper for Solderless Terminals
5	Megohmmeter	12	Spanner	20	Hoist (for Indoor Unit)
6	Copper Pipe Bender	13	Weigher	21	Ammeter
7	Manual Water Pump (for Indoor Unit)	14	Charging Cylinder	22	Voltage Meter
		15	Manifold Gauge		

NOTE:

• About vacuum pump, gas hose, charging cylinder, manifold gauge, please use suitable equipments for R410A respectively. Do not mix other refrigerant.

TRANSPORTATION AND HANDLING

TRANSPORTATION

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

⚠ WARNING

- Check your local transport regulations for the maximum number of pieces of equipment or the permitted configuration for transportation.

⚠ CAUTION

- Do not place any objects on the product.

HANDLING OF INDOOR UNIT

⚠ WARNING

- Before installation and testing, ensure no foreign materials are present inside the indoor unit, as their presence could lead to fire or operational failures.

⚠ CAUTION

- Be careful to avoid damaging the insulation materials on the unit's surface when lifting.

INDOOR UNIT INSTALLATION

⚠ DANGER

- Do not install the indoor unit in a flammable environment to avoid fire or an explosion.
- Do not install the indoor unit in the laundry.
- The indoor unit should be positioned in a place where:
  (1) both the air inlet and air outlet are unobstructed,
  (2) the unit is not exposed to direct sunlight,
  (3) drainage occurs easily,
  (4) the unit is away from sources of heat or steam,
  (5) there is no source of machine oil vapor (this may shorten the indoor unit service life),
  (6) cool/warm air is circulated throughout the room,
  (7) the unit is away from electronic ignition type fluorescent lamps (inverter or rapid start type) as they may affect the remote controller range,

⚠ WARNING

- Check to ensure that the ceiling slab is strong enough. If not strong enough, the indoor unit may fall.
- Do not install the indoor unit outdoors. If installed outdoors, an electric hazard or electric leakage will occur.
- Indoor units should be installed higher than 2.5 meters from the floor level.

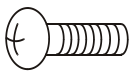
FACTORY-SUPPLIED ACCESSORIES

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

NOTE:

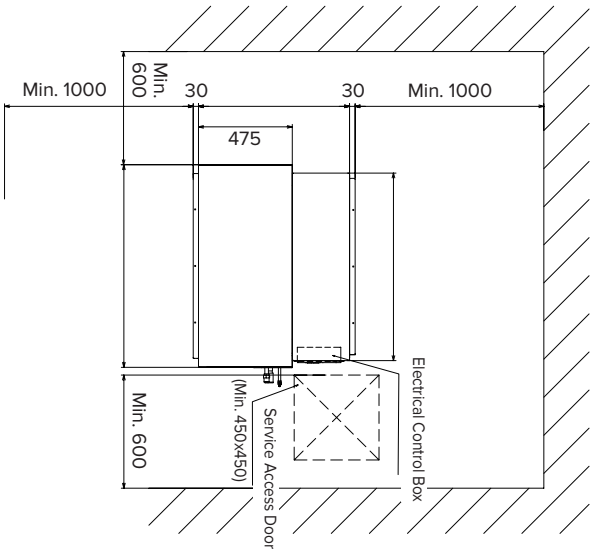
- If any of these accessories are not packed with the unit, please contact your contractor.

Factory-Supplied Accessories

Accessory	Qty	Purpose
Washer 	8	For unit suspension
Screw 	16	For fixing flanges
Hose Clamp 	1	For drain hose connection

INITIAL CHECK

- Install the indoor unit with a proper clearance around it for operation and maintenance working space, as shown below.



*In case that the ceiling board can not be detected for servicing, prepare a service access door below the indoor unit for removing the unit.

- Consider the air distribution from the indoor unit to the room space and select a suitable location to ensure uniform room temperature.
- Do not install flammable parts in the service space of the indoor unit.
- Avoid obstacles which may hamper the air intake or the air discharge flow.
- Do not install the indoor unit in a machine shop or kitchen where vapor from oil or its mist flows to the indoor unit. The oil will deposit on the heat exchanger, thereby reducing the indoor unit performance, and may deform and in the worst case, break the plastic parts of the indoor unit.
- Pay attention to the following points when the indoor unit is installed in a hospital or other facilities where there are electronic waves from medical equipment.

(a) Do not install the indoor unit where the electromagnetic wave is directly radiated to the electrical box, remote control cable or remote control switch.

(b) Install the indoor unit and components as far as practical or at least 3 meters from the electromagnetic wave radiator.

(c) Prepare a steel box and install the remote control switch in it. Prepare a steel conduit tube and wire the remote control cable in it. Then, connect the ground wire with the box and the tube.

(d) Install a noise filter when the power supply emits harmful noises.

- To avoid any corrosive action to the heat exchangers, do not install the indoor unit in an acid or alkaline environment.

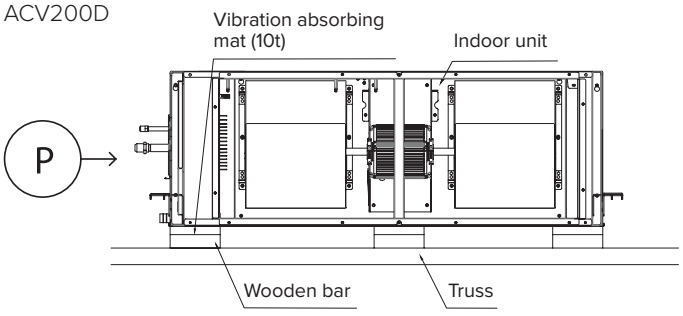
INSTALLATION

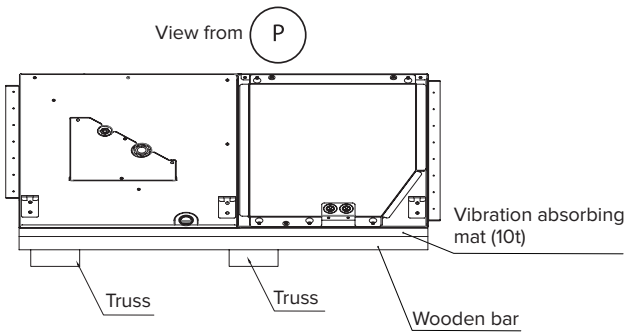
1. Mounting on truss

If the indoor unit is installed in the false ceiling space without hanging, pay attention to the following items:

(1) Apply vibration absorbing mats (10t) under the indoor unit.

ACV200D





Place the three wooden bars on the truss as shown in the figure.

Note that the middle wooden bar should be placed in the center position of the unit.

(2) Apply an auxiliary drain under the indoor unit if the ambient humidity is higher than 75% (RH).

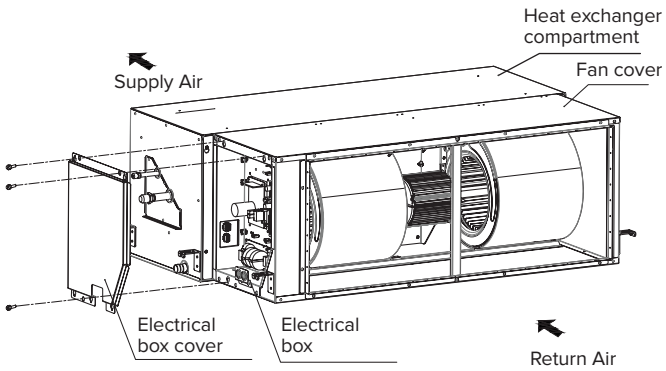
2. Separating Indoor Unit (If required)

NOTE:

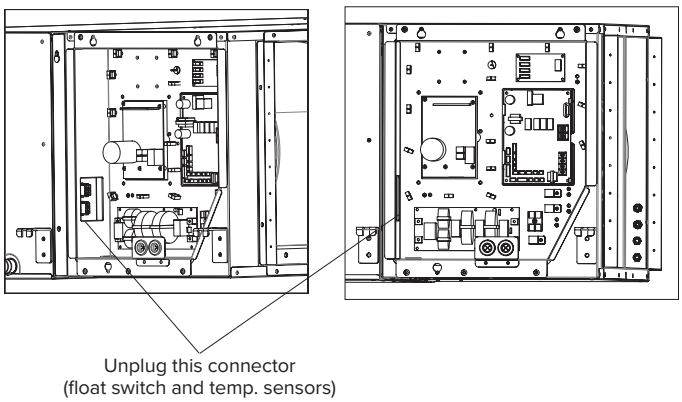
- Separate the indoor unit only when necessary. Disassemble and reassemble it on a flat surface.

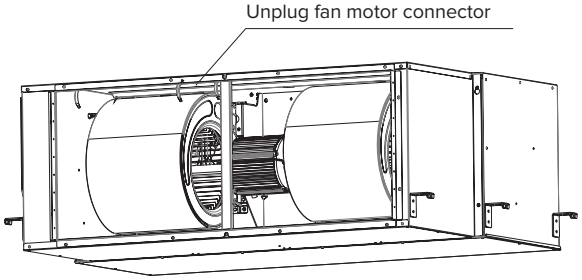
Follow the steps below to separate the indoor unit:

(1) Remove the Electrical box cover (2 screws) as shown below.

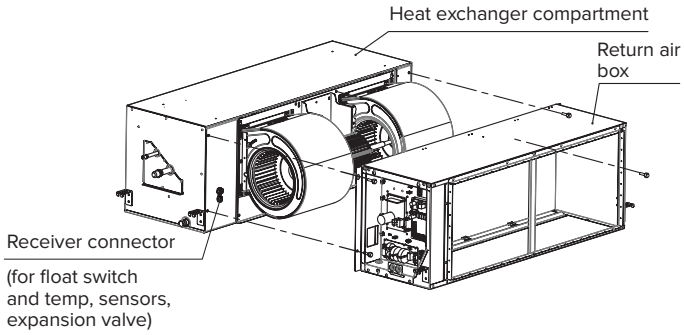


(2) Unplug the float switch and temperature sensor.
After removing the insulation tape(store for reuse), unplug the fan motor connectors as shown below and unfasten the fan motor wiring as shown below.

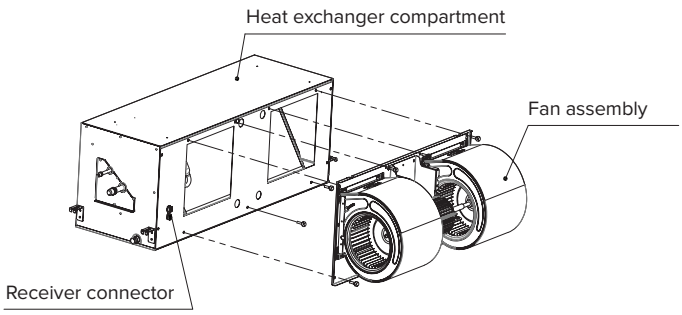




(3) Remove the 4 bolts (M6) on the back of the supply air box, and carefully pull the Return Air Box away, ensuring not to damage the fan motor wiring as shown below.



(4) Remove the 7 bolts (M6) securing the fan assembly to the heat exchanger compartment. Once the bolts are removed, lift off the fan assembly as shown below.



Rejoin the return air and supply air compartments in the following order:

(1) Carefully place the fan assembly back into the original position.

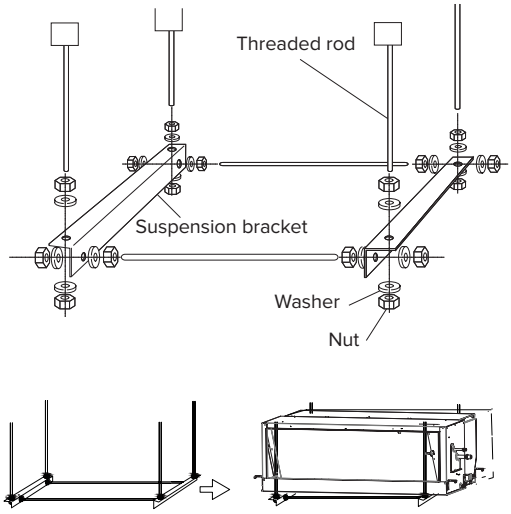
(2) Fix the fan assembly onto the heat exchanger compartment with 7 bolts (M6).

(3) Carefully replace the Return Air Box, ensuring not to damage the fan motor wiring, and secure the Return Air Box with the 4 bolts (M6).

(4) Reconnect the float switch and temperature sensor. Reconnect the fan motor plugs, wrap and tighten them with insulation tape, and tie the fan motor wiring.

3. Mounting on suspension brackets (Field-Supplied)

Mount the suspension brackets to the suspension bolts and secure them with nuts as shown. Use (field-supplied) angle and threaded rods, (M10 or greater) to brace the unit mounting. Ensure compliance with local and national building codes, and consult a structural engineer if necessary, for the proper fixing of the unit or building support structure.



4. Suspension Bolts

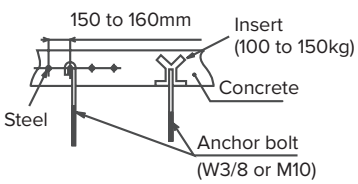
Step1

Select the final location and installation direction of the indoor unit, paying careful attention to the space required for piping, wiring and maintenance.

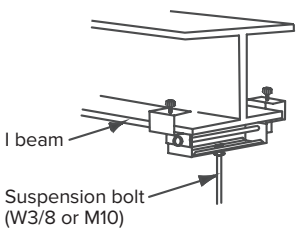
Step2

Mount suspension bolts, as shown below.

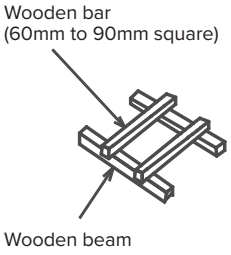
For concrete slab

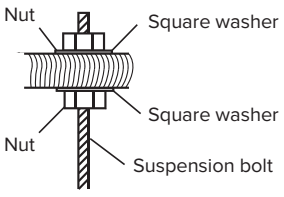


For steel beam



For wooden beam suspension





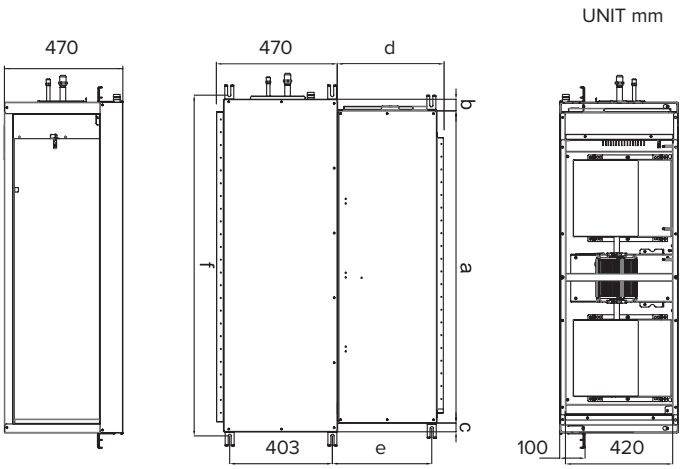
Mounting of Suspension Bolts

INDOOR UNIT INSTALLATION

5. Marking of the positions of the sling bolts and piping connections

(1) Mark the positions of the sling bolts, refrigerant piping connections and drain connection.

(2) Installation dimensions are shown below.

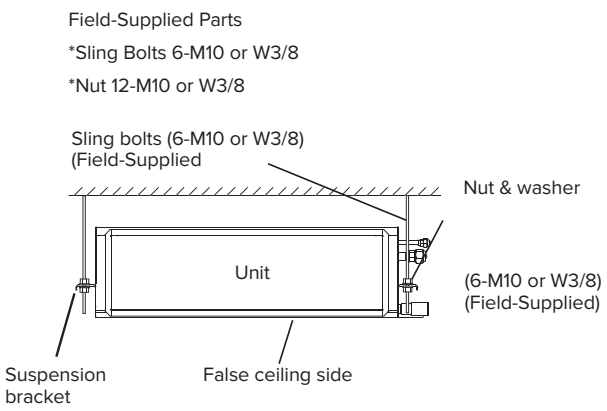


Suspension bolts

Model	a	b	c	d	e	f
ACV200D	1230	44	35	415	390	1336

6. Mounting of the indoor unit

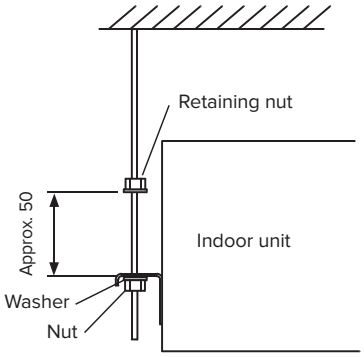
Hang the indoor unit as shown below.



Hanging indoor unit

(1) Nuts or Sling Bolts installation

Put nuts on each of the four hanging bolts, as shown below.

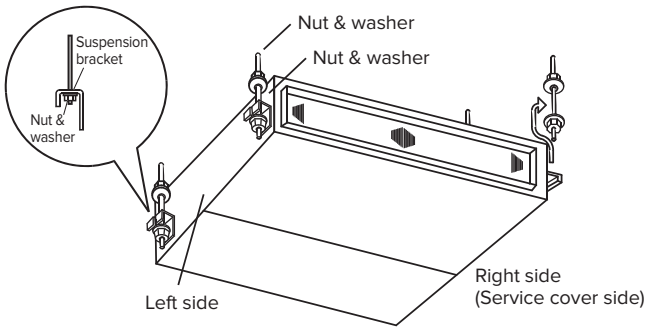


Sling bolts and nut

(1) Hanging the indoor unit

* Hook the suspension bracket to the nut and washer of each hanging bolt, as shown, starting at the opposite side to service cover side.

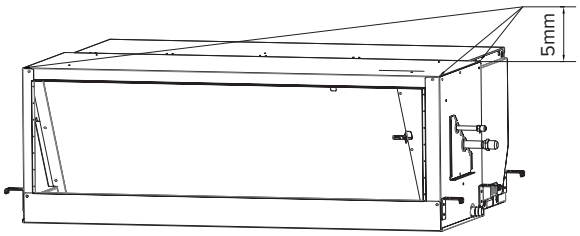
* After ensuring that the nut and washer are correctly fixed by the retainers of the suspension bracket on the service cover side, secure the nut and washer. Keep the sling bolts away from the unit when hooking.



Hanging indoor unit

7. Adjusting the unit level

(1) Check to ensure that the foundation is flat, considering the maximum allowable foundation gradient.



Foundation gradient

(2) The unit should be installed with the rear side slightly (0mm to 5mm) lower than the front side to ensure correct drainage discharge.

NOTE:

- Keep the unit as well as relevant equipment covered with the vinyl cover during installation work.

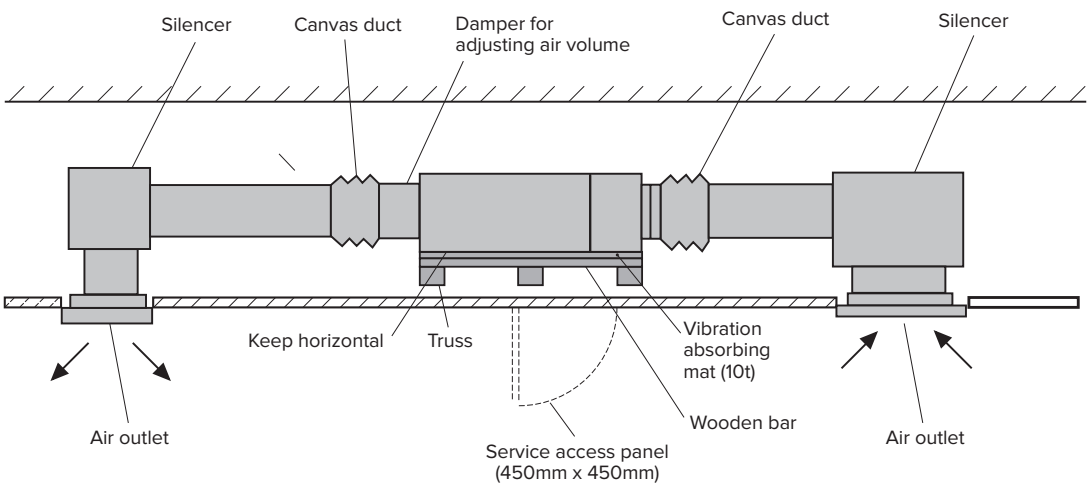
8. Connecting supply duct

(1) The supply duct should be connected with the indoor unit through canvas ducts, in order to avoid abnormal sound vibration (Refer below). The unit is equipped with a pre-drilled duct flange for the supply duct connection.

(2) Attach the vibration proof rubber to Sling Bolt in order to avoid abnormal sound vibration.

(3) Duct material should be non-flammable material.

(4) Perform the heat insulation work over the duct for dew protection.



Duct connection

⚠ CAUTION

- The outdoor return air duct must be connected at least 1 meter in the field.
- Ducted indoor unit machines must be connected to return air ducts; direct inhalation of high-temperature attic air is prohibited.
- For further reduction of sound levels, install a silencer (supplied in the field).
- Design the duct arrangement according to "Unit External Static Pressure = Pressure Drop of Duct + Pressure Drop of Air Outlet and Air Inlet". Improper duct design can cause excessive noise and airflow disruption.
- Before starting the unit, use the wired remote controller to operate the auto ESP function or ensure that the set ESP is nearly the same as the field duct pressure. Improper settings can lead to excessive noise and airflow issues.

9. Setting of external static pressure

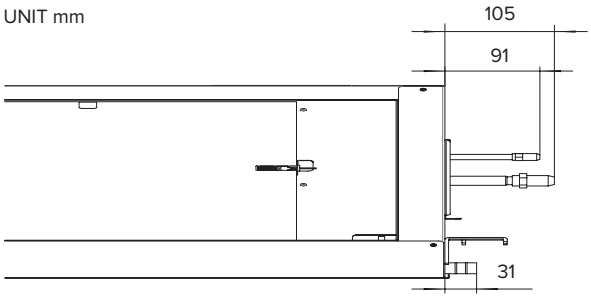
Refer to the ACAV-C wall mounted controller user manual.

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.

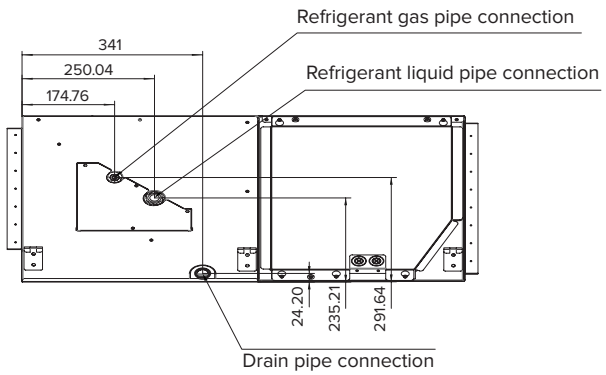
These types of gases are extremely dangerous and cause an explosion. It is recommended that dry nitrogen be used for these types of tests.



PIPING MATERIALS

(1) Prepare locally-supplied copper pipes.

(2) Select clean copper pipes ensuring there is no dust and moisture inside the pipes. Before connecting pipes, blow the inside of the pipes with nitrogen or dry air, to remove any dust or foreign materials.



Position of piping connection

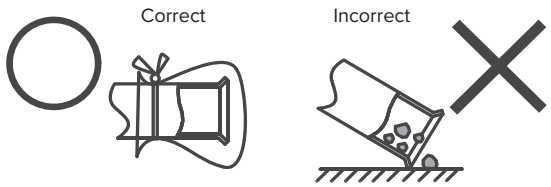
Model	Gas Piping	Liquid Piping
ACV200D	Φ19.05(3/4)	Φ9.53(3/8)

PIPING CONNECTION

⚠ CAUTION

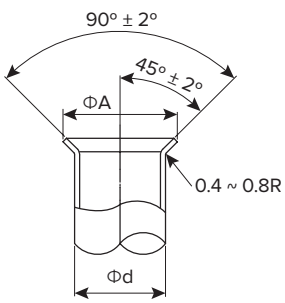
• Cap the end of the pipe when the pipe is to be inserted through a hole.

• Do not put pipes on the ground directly without a cap or vinyl tape at the end of the pipe.



• An excess or a shortage of refrigerant is the main cause of trouble to the units. Charge the correct refrigerant quantity.

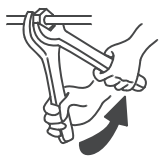
(1) Perform the flaring work



UNIT mm

Diameter Ød	$A^{+0}_{-0.4}$
	R410A
Ø9.53(3/8)	13.2
Ø19.05(3/4)	23.3

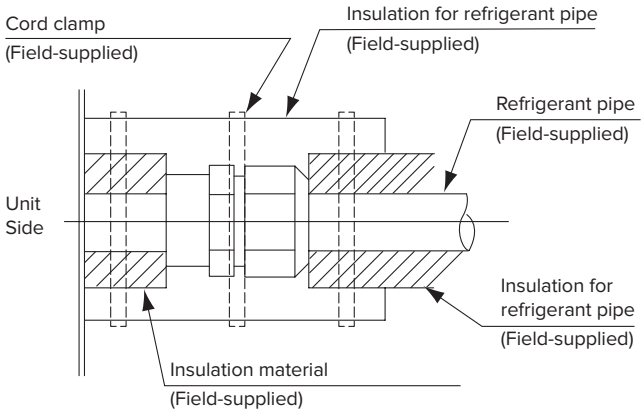
(2) Use two spanners to tighten the flare nut:



Pipe Size (mm (in.))	Tightening Torque (N·m)
Φ9.53mm(3/8)	34~42
Φ19.05mm(3/4)	100~120

Tightening work of flare nut

(3) After connecting the refrigerant piping, seal the refrigerant pipes by using the field-supplied insulation material as shown below.



Insulation on Pipes

(4) Perform evacuation and refrigerant charging procedures as outlined in the Outdoor Unit manual.

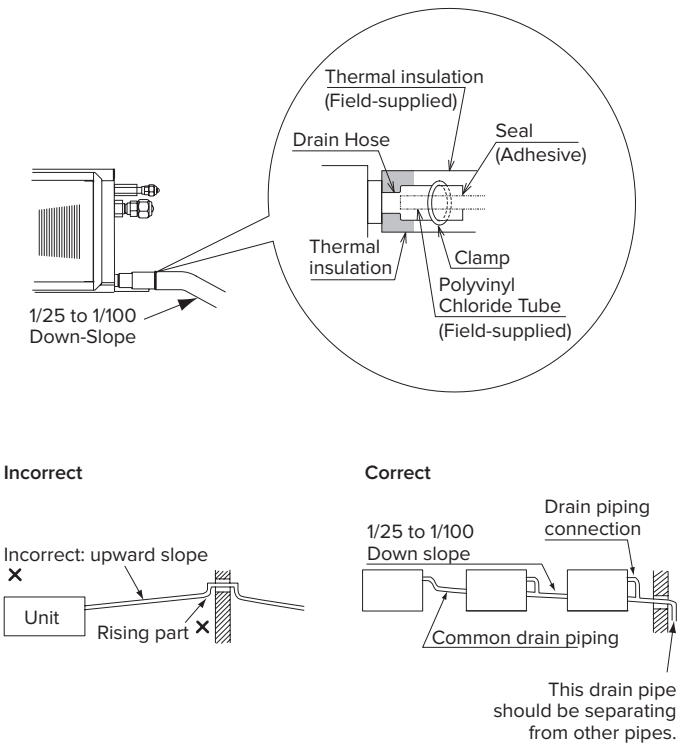
DRAIN PIPING

(1) The position of the drain piping connection is shown below.

(2) Prepare polyvinyl chloride pipe with a 32mm outer diameter.

(3) Securely fasten the tube to the drain hose using the adhesive agent and the clamp. Ensure that the drain piping maintains a downward slope pitch of 1/25 to 1/100.

(4) Insulate the drain pipe after connecting the drain hose.



Drain Piping

(1) Do not create an upper-slope or rise for the drain piping, since drain water can flow back to the unit and leakage to the room will occur when the unit operation is stopped.

(2) Do not connect the drain pipe with sanitary or sewage piping or any other drainage piping.

(3) When the common drain piping is connected with other indoor units, the connected position of each indoor unit must be higher than the common piping. The pipe size of the common drain pipe must be large enough according to the unit size and number of units.

(4) After performing drain piping work and electrical wiring, check to ensure that water flows smoothly as in the following procedure.

(5) Checking with the Float Switch.

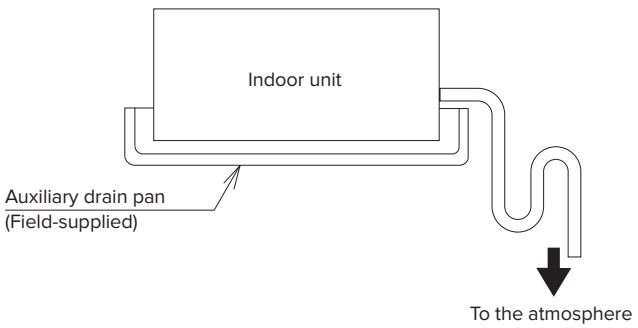
(a) Switch ON the power supply.

(b) Pour 2 or 2.5 liters of water into the drain pan.

(c) Check to ensure that the water flows smoothly or whether water leakage occurs. When water cannot be found at the end of the drain piping, pour another 2 liters of water into the drain.

NOTE:

• When the relative humidity of inlet or ambient air exceeds 80%, apply an (field-supplied) auxiliary drain pan beneath the indoor unit as shown below.



Auxiliary Drain Pan

ELECTRICAL WIRING

⚠ WARNING

- Turn OFF the main power switch of the indoor unit and the outdoor unit and wait for more than 10 minutes before electrical wiring work or a periodical check is performed.
- Check to ensure that the indoor fan and the outdoor fan have stopped before electrical wiring work or a periodical check is performed.
- Protect the wires, drain pipe, electrical parts, etc. from rats or other small animals. Otherwise, rats may gnaw at unprotected parts and at the worst, a fire will occur.
- Tighten screws according to the following torque.

M4 : 1.0 to 1.3 N·m

M5 : 2.0 to 2.4 N·m

M6 : 4.0 to 5.0 N.m

- The ground wire must be longer than the current-carrying conductor when installing the power cord.
- Using the air conditioner power terminal to transfer the power cord is strictly prohibited. A power distribution box can be used to expand the power distribution on the indoor unit.

⚠ CAUTION

- Wrap the accessory packing around the wires, and plug the wiring connection hole with the seal material to protect the product from any condensate water or insects.
- Tightly secure the wires with the cord clamp inside the indoor unit.
- Secure the cable of the remote control switch using the cord clamp inside the electrical box.

GENERAL CHECK

(1) Make sure 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 given in “Technical Catalog”. Make sure that the components comply with National Electrical Code (NEC).

(2) Check to ensure that the power supply voltage is within ±10% of the rated voltage.

(3) Check the capacity of the electrical wires. If the power source capacity is too low, the system cannot be started due to the voltage drop.

(4) Check to ensure that the ground wire is connected.

(5) Power Source Main Switch
Install a multi-pole main switch with a space of 3.5mm or more between each phase.

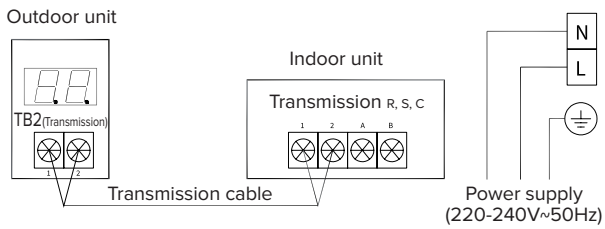
ELECTRICAL WIRING CONNECTION

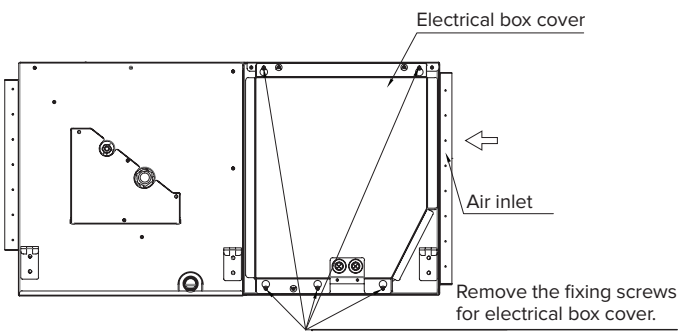
(1) Connect the cable of an optional remote control switch or an optional extension cable to the connectors on the printed circuit board inside the electrical box through the connecting hole in the cabinet.

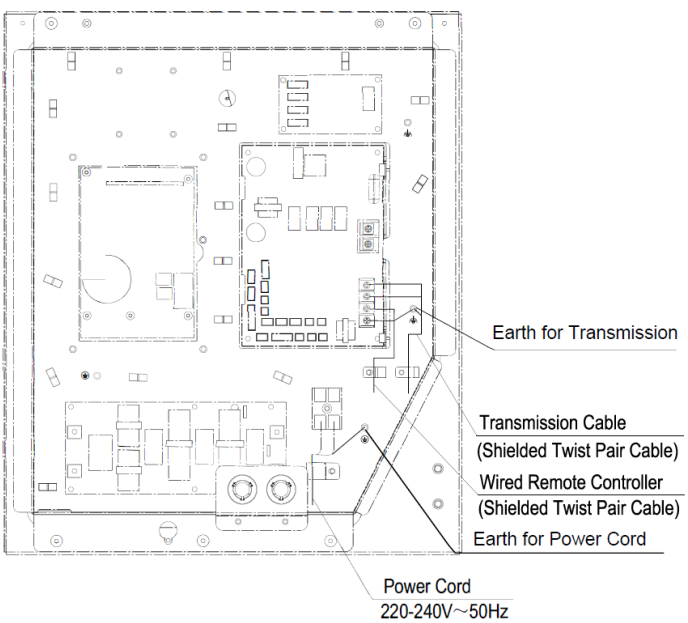
(2) Connect the power supply and earth wires to the terminals in the electrical box.

(3) Connect the wires between the indoor unit and the outdoor unit to the terminals in the electrical box.

(4) Tightly clamp the wires using the cord clamp inside the electrical box.





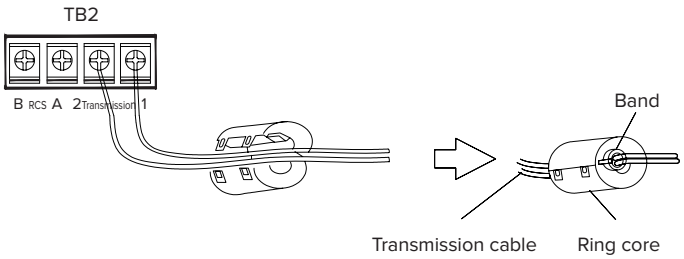


NOTE:

• The ring core needs to be installed on the transmission cable between the fixed wire clamp and TB2, where additional insulation rubber is peeled off.

[Procedure]

Insert the transmission cable into the ring core as shown in the right figure before connecting to the terminal board. Fix the cable and the ring core by using the band (accessory) in the electrical box.



TEST RUN

Test run should be performed according to User Manual of the outdoor unit or wired remote controller.

⚠ WARNING

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

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

  (a) Check to 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.

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

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

SAFETY AND CONTROL DEVICE SETTING

Indoor unit:

Model			ACV200D
For Control Circuit Fuse Capacity		A	20
Freeze Protection Thermostat	Cut-out	°C	0
	Cut-out	°C	14
Thermostat differential		°C	±1

FIELD MINIMUM WIRE SIZES FOR POWER SOURCE

(1) Use an ELB (Electric Leakage Breaker). If not used, it will cause an electric shock or a fire.

(2) Do not operate the system until all the check points have been cleared.

(a) Check to 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.

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

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

Model	Power Source	Maximum Current (A)	Power Source Cable Size		Transmitting Cable Size	
			IEC 60335-1 *1	MLFC *2	IEC 60335-1 *1	MLFC *2
ACV200D	220-240V~50Hz	6.26	2.5mm²	2.5mm²	0.75mm²	0.75mm²

NOTES:

- Follow local codes and regulations when selecting field wires.

• The wire sizes marked with *1 in the table are selected at the maximum current of the unit according to the European Standard, AS/NZS 60335-1. Use the wires which are not lighter than the ordinary tough rubber sheathed flexible cord (code designation H05RR-F) or ordinary polychloroprene sheathed flexible cord (code designation H05RN-F) when get power from outside.

• The wire sizes marked with *2 in the table are selected at the maximum current of the unit according to the wire, MLFC (Flame Retardant Polyflex Wire) manufactured by Emerald energy .

• Use a shielded cable for the transmitting circuit and connect it to ground.

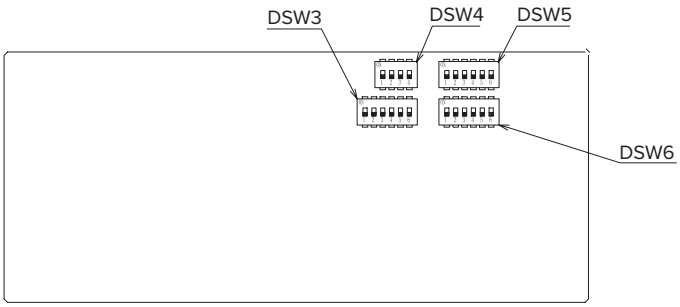
• In the case that power cables are connected in series, add each unit maximum current and select wires below.

Selection According to IEC 60335-1		Selection According to MLFC (at Cable Temperature of 60°C)	
Current i (A)	Wire Size (mm²)	Current i (A)	Wire Size (mm²)
i ≤ 6	2.5	2.5 < i ≤ 6	2.5
6 < i ≤10	2.5	6 < i ≤ 10	2.5
10 < i ≤16	2.5	10 < i ≤ 16	2.5
16 < i≤ 25	4	16 < i ≤ 25	4
25 < i ≤ 32	6	25 < i ≤ 32	6
32 < i ≤ 40	10	32 < i ≤ 40	10
40 < i ≤ 63	16	40 < i ≤ 63	16
63 < i	*3		

*3: In the case that current exceeds 63A, do not connect cables in series.

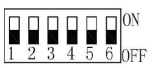
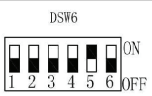
DIP SWITCH SETTING

(1) Set the DIP switch with the power sources of the indoor and outdoor units in the OFF state. Otherwise, the settings will be invalid.



(2) The PCB of the indoor unit is equipped with 4 DIP switches that must be set according to the following requirements before conducting a test run.

(a) Unit number Setting (DSW6):
All indoor units should be numbered according to DSW6 as shown in the figure below.
The numbering of outdoor units must start with "0".

	DSW6 (Setting 0~63)	Ex.) Set system No. 16
Setting Method 1		 No. 5 is ON

(b) Capacity Code Setting (DSW3):
No setup is required as the code is pre-set before delivery.
This switch is used to configure the capacity of the indoor unit.

(c) Model Code Setting (DSW4)
No setup is required as the code is pre-set before delivery.

(d) Refrigerant System Code No. Setting (DSW5)
Setup is required. All switches are set to OFF before delivery.

Refrigerant System Setting

	DSW5 (Setting 0~63)	Ex.) Set system No. 5
Setting Method 1		

DSW5 is set to "0" before delivery; up to 64 indoor units can be connected with.

NOTE:

Symbol "■" indicates the location of DIP switch.

The position indicated in the diagram is in the factory-set state.

NOTES

AFTER SALES SERVICE

WARRANTY INFORMATION

Emerald Energy Pty Ltd warrants this heat pump to the original purchaser.

Emerald Energy Pty Ltd warrants each new air conditioning system is free from defects in material and workmanship under normal use and service from the date of purchase. 5 years parts, 2 years labour warranty . *Subject to terms and conditions.

This warranty does not cover damage resulting from accident, misuse or abuse or lack of reasonable care of the product.

In no case shall Emerald Energy Pty Ltd be liable for any incidental or consequential damages for breach of this or any other warranty express or implied whatsoever.

For full warranty details visit our website emeraldenergy.com.au

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