

AKAI

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inverter

Please read the precautions in this manual carefully before using the unit

THIS UNIT USES R32 TYPE REFRIGERANT GAS

THE SAFETY PRECAUTIONS DESCRIBED HERE ARE DIVIDED INTO WARNING AND CAUTION. BOTH PROVIDE IMPORTANT SAFETY INFORMATION. BE SURE TO OBSERVE ALL PRECAUTIONS WITHOUT NEGLIGENCE.

MEANING OF THE WARNINGS AND CAUTIONS

WARNING FAILURE TO OBSERVE THIS CATEGORY OF INSTRUCTIONS MAY RESULT IN PERSONAL INJURY, EVEN SERIOUS INJURY OR DEATH

CAUTION FAILURE TO FOLLOW THIS CATEGORY OF INSTRUCTIONS MAY RESULT IN DAMAGE OR MINOR PERSONAL INJURY

SAFETY PICTOGRAMS IN THIS MANUAL HAVE THE FOLLOWING MEANINGS

 **BE SURE TO FOLLOW THE INSTRUCTIONS.**

 **BE SURE TO ESTABLISH A GROUND CONNECTION.**

 **NEVER ATTEMPT.**

AFTER COMPLETING THE INSTALLATION, PERFORM A TEST RUN TO CHECK FOR FAULTS AND EXPLAIN TO THE END USER HOW TO OPERATE THE AIR CONDITIONER AND TAKE CARE OF ITS MAINTENANCE WITH THE HELP OF THE OPERATION MANUAL

WARNING

- ASK YOUR DEALER OR QUALIFIED PERSONNEL TO PERFORM THE INSTALLATION
- DO NOT ATTEMPT TO INSTALL THE AIR CONDITIONER BY YOURSELF. IMPROPER INSTALLATION MAY RESULT IN WATER LEAKAGE, ELECTRIC SHOCK, OR FIRE
- INSTALL THE AIR CONDITIONER IN ACCORDANCE WITH THE INSTRUCTIONS IN THIS MANUAL
- INCORRECT INSTALLATION MAY CAUSE WATER LEAKAGE, ELECTRIC SHOCK OR FIRE
- BE SURE TO USE ONLY THE ACCESSORIES AND PARTS SPECIFIED FOR THE INSTALLATION WORK
- FAILURE TO USE THE SPECIFIED PARTS COULD CAUSE THE UNIT TO FALL DOWN, WATER LEAKAGE, ELECTRIC SHOCK, OR FIRE
- INSTALL THE UNIT ON A WALL STRONG ENOUGH TO SUPPORT ITS WEIGHT. INSTALLATION ON UNSUITABLE SURFACES MAY CAUSE THE UNIT TO FALL AND CAUSE INJURY.
- ELECTRICAL WORK MUST BE PERFORMED IN ACCORDANCE WITH THE RELEVANT REGULATIONS AND THE INSTRUCTIONS IN THIS INSTALLATION MANUAL. BE SURE TO USE ONLY A DEDICATED POWER SUPPLY CIRCUIT. INSUFFICIENT POWER CIRCUIT OR IMPROPER USE OF THE SAME MAY RESULT IN ELECTRIC SHOCK OR FIRE. USE A CORD OF THE PROPER LENGTH. DO NOT USE EXTENSION CORDS-THEY MAY CAUSE OVERHEATING, ELECTRIC SHOCK, OR FIRE.
- MAKE SURE THAT ALL WIRING USED IS IN ACCORDANCE WITH SPECIFICATIONS AND THAT THERE IS NO VOLTAGE ON TERMINAL CONNECTIONS OR CABLES. IMPROPER CONNECTIONS CAN CAUSE OVERHEATING OR FIRE
- WHEN CONNECTING THE POWER SUPPLY AND WIRING BETWEEN THE INDOOR AND OUTDOOR UNITS, PLACE THE WIRES SO THAT THE INDOOR UNIT COVER CAN BE SECURELY FASTENED. INCORRECT POSITIONING OF THE CONTROL BOX COVER MAY CAUSE ELECTRIC SHOCK, FIRE OR OVERHEATING
- IF REFRIGERANT GAS ESCAPES DURING INSTALLATION, VENTILATE THE AREA IMMEDIATELY.
- INSTALL THE UNIT IN ROOMS FREE FROM HEAT SOURCES.
- IF REFRIGERANT GAS ESCAPES, TOXIC SUBSTANCES MAY BE INHALED IF IT COMES IN CONTACT WITH FLAMES GENERATED BY ELECTRICAL APPLIANCES (E.G., STOVES, STOVES, ETC.).
- WHEN INSTALLING OR RELOCATING THE UNIT, ENSURE THAT THE REFRIGERANT CIRCUIT IS FREE OF AIR. USE ONLY THE SPECIFIED REFRIGERANT (R32). THE PRESENCE OF AIR OR FOREIGN SUBSTANCES IN THE REFRIGERANT CIRCUIT CAUSES AN ABNORMAL INCREASE IN PRESSURE, WHICH MAY RESULT IN EQUIPMENT DAMAGE AND INJURY.
- DURING INSTALLATION, SECURELY CONNECT THE REFRIGERANT PIPES BEFORE TURNING ON THE COMPRESSOR. IF THE REFRIGERANT PIPES ARE NOT CONNECTED AND THE STOP VALVE IS OPEN WHEN THE COMPRESSOR IS RUNNING, AIR WILL BE DRAWN IN, CAUSING ABNORMAL PRESSURE IN THE REFRIGERATION CYCLE, RESULTING IN DAMAGE TO THE EQUIPMENT AND EVEN INJURY
- IF IT IS NECESSARY TO MAKE A SPLIT SYSTEM MOVE, IT IS NECESSARY TO STOP THE COMPRESSOR BEFORE REMOVING THE REFRIGERANT PIPING. IF THE COMPRESSOR IS STILL RUNNING AND THE STOP VALVE IS OPEN, ABNORMAL PRESSURE WILL BE GENERATED IN THE REFRIGERATION CYCLE, RESULTING IN DAMAGE AND INJURY.
- MAKE SURE YOU HAVE A FUNCTIONING GROUNDING SYSTEM.
- IMPROPER GROUNDING CAN CAUSE ELECTRIC SHOCK.
- BE SURE TO INSTALL AN EARTH LEAKAGE BREAKER.
- FAILURE TO INSTALL AN EARTH LEAKAGE BREAKER CAN CAUSE ELECTRIC SHOCK OR FIRE
- DURING TESTING, NEVER PRESSURIZE THE UNITS WITH A PRESSURE HIGHER THAN THE MAXIMUM ALLOWABLE PRESSURE (INDICATED ON THE NAMEPLATE OF THE UNIT).
- IF THE POWER CORD IS DAMAGED, IT SHOULD BE REPLACED BY THE MANUFACTURER OR ITS TECHNICAL SERVICE DEPARTMENT OR OTHERWISE BY A SIMILARLY QUALIFIED PERSON SO AS TO PREVENT ANY RISK. DO NOT PLACE ANYTHING ON THE CORD OR BEND THE CORD
- BE SURE TO DISCHARGE ANY STATIC ELECTRICITY THAT MAY HAVE ACCUMULATED ON THE INSTALLER BEFORE PROCEEDING WITH OPERATIONS

WARNING

Do not install air conditioning in places where there is a danger of flammable gas leakage. In case of gas leakage, gas accumulation near the air conditioner may cause fire

Following the instructions in this installation manual, install exhaust piping to ensure proper drainage

Adequate and thermally insulate piping to prevent condensation. Inadequate drain piping can cause internal water leakage and material damage

Tighten the flared nut to the specified reference torque with a torque wrench.

If the flared nut is overtightened, it may break after prolonged use, causing refrigerant leakage.

Be sure to take all measures to prevent the outdoor unit from being used as a shelter by small animals. Animals, coming into contact with electrical parts, may generate malfunction, smoke or fire. Keep the area around the unit clean. The temperature of the refrigerant circuit reaches high levels, please keep the wire between the units away from copper pipes that are not thermally insulated

SAFETY TIPS

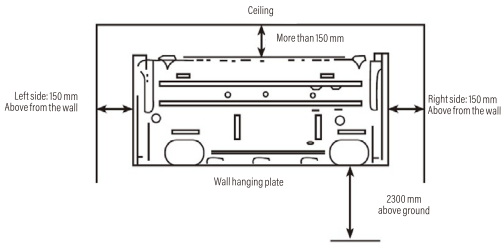
(A) Read the warnings  Read carefully the instruction manual  Instruction manual  Service indicator Read the instruction manual	(B) Fire warning 	(C) warnings on the packing carton  WARNING: HAZARD: READ INSTRUCTION MANUAL PASTED ON THE OUTER UNIT'S PACKING CARDBOARD.
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INSTALLATION INSTRUCTION

Read completely, then follow step by step:

INDOOR UNIT

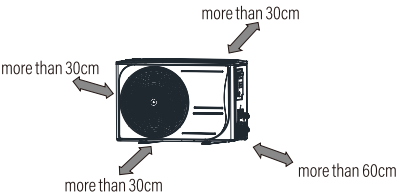
Do not expose the indoor unit to heat or steam.
Select a place where there are no obstacles in front or around the unit.
Make sure that condensation drainage -.- can be conveniently routed away.



Do not install near a doorway.
Ensure that the space on the left and right of the unit is more than 15cm.
Use a stud finder to locate studs to prevent unnecessary damage to the wall.
The indoor unit should be installed on the wall at a height of 2.0 meters or more from the floor.
The indoor unit should be installed allowing a minimum clearance of 15cm from the ceiling.
Any variations in pipe length will/may require adjustment to refrigerant charge.
There should not be any direct sunlight. Otherwise, the sun will fade the plastic cabinet and affect its appearance. If unavoidable, sunlight prevention should be taken into consideration.

OUTDOOR UNIT

If an awning is built over the outdoor unit to prevent direct sunlight or rain exposure, make sure that heat radiation from the condenser is not restricted.
Ensure that the clearance around the back of the unit is more than 30cm and left side is more than 30cm. The front of the unit should have more than 200cm of clearance and the connection side (right side) should have more than 60cm of clearance.
Do not place ani mais and plants in the path of the air i niet or outlet.
Take the air conditioner weight into account and select a place where noise and vibration will not be an issue.
Select a piace so that the warm air and noise from the air conditioner do not disturb neighbors.



ROOFTOP INSTALLATION

If the outdoor unit is installed on a roof structure, be sure to level the unit.

Ensure the roof structure and anchoring method are adequate for the unit location.

Consult local codes regarding rooftop mounting.

If the outdoor unit is installed on roof structures or external walls this may result in excessive noise and vibration, and may also be classed as a non serviceable installation.

TOOLS NEEDED FOR INSTALLATION

Level gauge

Screwdriver

Electric drill, Hole core drill ($< \phi 6.5\text{mm}$)

Flaring tool set

Spanner (hall union)

Hexagonal wrench (4mm)

Specified torque wrenches: 1.8kgf.m, 4.2kgf.m, 5.5kgf.m, 6.6kgf.m (different depending on model No.)

Gas-leak detector

Vacuum pump

Gauge manifold

Users manual

Thermometer

Multimeter

Pipe cutter

Measuring tape

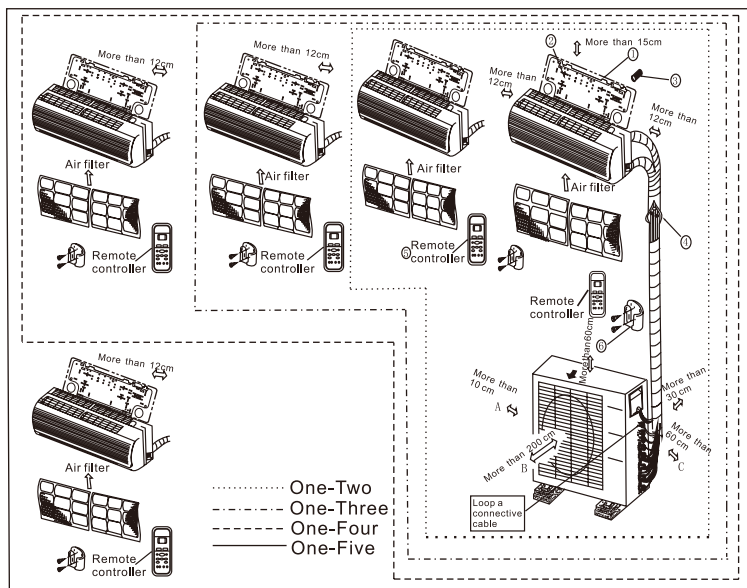


Fig 3

CAUTION

Use a stud finder to locate studs to prevent unnecessary damage to the wall.

A minimum pipe run of 3 meters is required to minimize vibration & excessive noise.

Two of the A, B and C directions should be free from obstructions.

CAUTION

This illustration is for explanation purposes only.

The actual shape of your air conditioner may be slightly different.

Copper lines must be insulated independently

Indoor unit installation(wall-mounted type)

FIT THE INSTALLATION PLATE



Fig 4

Fit the installation plate horizontally on structural parts of the wall with spaces around the installation plate.

If the wall is made of brick, concrete or the like, drill eight (8) 5mm diameter holes in the wall. Insert clip anchor for appropriate mounting screws.

Fit the installation plate on the wall with eight (8) type

Note:

Fit the Installation Plate and drill holes in the wall according to the wall structure and corresponding mounting points on the installation plate. The Installation Plate may be slightly different according to the different models of indoor unit.

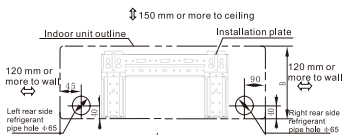


Fig 5

(Dimensions are in mm unless otherwise stated)

Model	A(mm)	B(mm)	Model	A(mm)	B(mm)
7-9K	785	280	12K	855	280
18K	950	315	24K	1055	315

DRILL A HOLE IN THE WALL

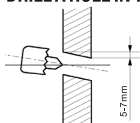


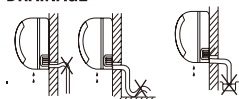
Fig 6

Determine hole positions according to the diagram detailed in Fig.5. Drill one (1) hole ($\phi > 6.5\text{mm}$) slanting slightly to outdoor side.

Always use wall hole conduit when drilling metal grid, metal plate or the like.

CONNECTIVE PIPE AND DRAINAGE INSTALLATION

DRAINAGE



Do not block waterflow by a rise



Do not put the end of
drain hose into water.

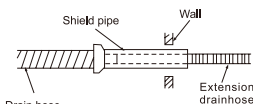


Fig 8

Run the drain hose sloping downward. Do not install the drain hose as illustrated in Fig. 7.

When connecting extension drain hose, insulate the connecting part of extension drain hose with a shield pipe, do not let the drain hose slack.

CONNECTIVE PIPE INSTALLATION

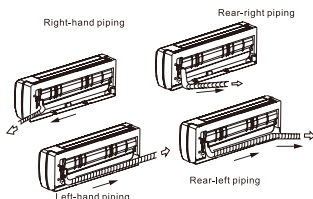


Fig 9

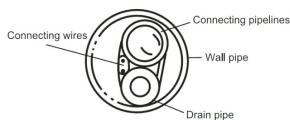
Fig 10

For the left-hand and right-hand piping remove the pipe cover from the side panel.

For the rear-right-hand and rear-left hand piping, install the piping as shown in Fig.10.

Fix the end of the connective pipe (Refer to Tightening Connection in REFRIGERANT PIPING CONNECTION)

PIPING AND WRAPPING



Bundle the tubing, connecting cable, and drain hose with tape securely evenly as shown in Fig.11. Because the condensed water from rear of the indoor unit is gathered in ponding box and is piped out of room. Do not put anything else in the box.

CAUTION

Connect the indoor unit first, then the outdoor unit.

Do not allow the piping to let out from the back of the indoor unit.

Be careful not to let the drain hose slack.

Heat insulated both of the auxiliary piping.

Be sure that the drain hose is located at the lowest side of the bundle. Locating at the upper side can cause drain pan to overflow inside the unit.

Never intercross nor intertwist the power wire with any other wiring.

Run the drain hose sloped downward to drain out the condensed water smoothly.

Reusable mechanical connectors and flared joints are not allowed indoors.

INDOOR UNIT INSTALLATION

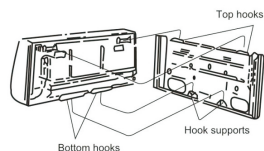


Fig12

- Pass the piping through the hole in the wall.

- Put the upper claw at the back of the indoor unit on the top hook of the installation plate, move the indoor unit from side to side to see that it is securely hooked (see Fig.12 and Fig13).

- Piping can easily be made by lifting the indoor unit with a cushioning material between the indoor unit and the wall. Get it out after finish piping.

- Push the lower part of the indoor unit up on the wall, then move the indoor unit from side to side, up and down to check if it is hooked securely.

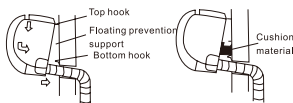


Fig13

Outdoor unit installation

OUTDOOR INSTALLATION PRECAUTION

• Install the outdoor unit on a rigid base to prevent increasing noise level and vibration.

• Determine the air outlet direction where the discharged air is not blocked. In the case that the installation place is exposed to strong wind such as a seaside, make sure the fan operating properly by putting the unit lengthwise along the wall or using a dust or shield plates.

• Specially in windy area, install the unit to prevent the admission of wind. If need suspending installation, the installation bracket should accord with technique requirement in the installation bracket diagram.

The installation wall should be solid brick, concrete or the same intensity construction, or actions to reinforce, damping supporting should be taken. The connection between bracket and wall, bracket and the air conditioner should be firm, stable and reliable.

• Be sure there is no obstacle which block radiating air.

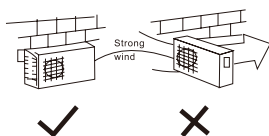
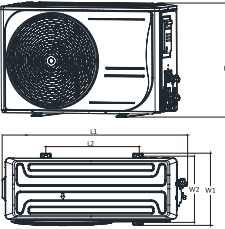


Fig20

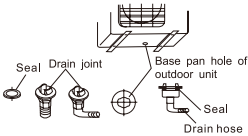
SETTLEMENT OF OUTDOOR UNIT



Anchor the outdoor unit with a bolt and nut $\varnothing 10$ or $\varnothing 8$ tightly and horizontally on a concrete or rigid mount

Outdoor unit dimension mm(L1×H×W1)	Mounting dimensions	
	L2(mm)	P2(mm)
14K~18K 900*545*345	440	315
21K~28K 945*605*390	605	360
21K~42K 1005*810*450	635	405

DRAIN JOINT INSTALLATION



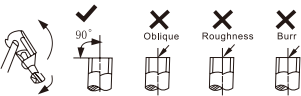
Fit the seal into the drain joint, then insert the drain joint into the base pan hole of out door unit, rotate 90°to securely assemble them. Connecting the drain joint with an extension drain hose (Locally purchased), in case of the water draining off the outdoor unit during the heating mode.

NOTA: The drain joint differ from appliance to appliance.

Fig 22

REFRIGERANT PIPE CONNECTION

REFRIGERANT PIPE CONNECTION
FLARING WORK



Main cause for refrigerant leakage is due to defect in the flaring work.
Carry out correct flaring work using the following procedure::

Fig 23

CUT THE PIPES AND THE CABLE

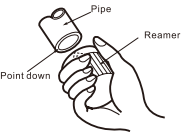


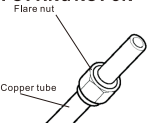
Fig 24

- 1 Use the piping kit accessory or pipes purchased locally.
- 2.Measure the distance between the indoor and the outdoor unit.
- 3.Cut the pipes a little longer than the measured distance.
- 4.Cut the cable 1.5m longer than the pipe length.

BURR REMOVAL

- 1 Completely remove all burrs from the cut cross section of pipe/tube.
- 2.Put the end of the copper tube/pipe in a downward direction as you remove burrs in order to avoid dropping burrs into the tubing.

PUTTING NUT ON



Remove flare nuts attached to indoor and outdoor unit, then put them on pipe/tube having completed burr removal.(not possible to put them on after flaring work)

Fig 25

FLARING WORK

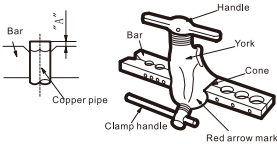
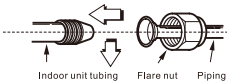


Fig 26

Firmly hold copper pipe in a die in the dimension shown in the table below

Outer diam. (mm)	A(mm)	
	Max.	Min.
φ6.35	1.3	0.7
φ9.52	1.6	1.0
φ12.7	1.8	1.0
φ15.88	2.0	1.2

TIGHTENING CONNECTION



- Align the center of the pipes.
- Sufficiently tighten the flare nut with fingers, and then tighten it with a spanner and torque wrench as shown in Fig.27&28.

Fig 27

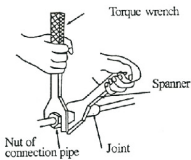


Fig 28

Outer diam (mm)	Tightening torque(N.cm)	Additional tightening torque(N.cm)
φ6.35	1000	1200
φ9.52	1500	1800
φ12.7	2000	2300
φ15.88	2800	3200

CAUTION

Excessive torque can break nut depending on installation conditions.

PIPING LENGTH AND HEIGH DIFFERENCE MAKE SURE OF PI PING LENGTH AND HEIGHT DIFFERENCE ACCORDING WITH FOLLOWING FORM

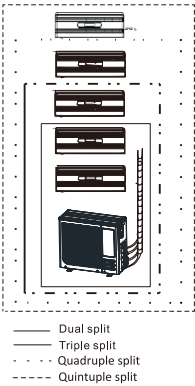


Fig 29

One indoor	Length	MAX15m
Dual split	Total length	MAX.30m
	Difference in height between indoor and outdoor units	MAX.10m
	Difference in height between indoor units	MAX. 5m
Triple split	Total length	MAX. 45m
	Difference in height between indoor and outdoor units	MAX.10m
	Difference in height between indoor units	MAX. 5m
Quadruple split	Total length	MAX. 60m
	Difference in height between indoor and outdoor units	MAX. 10m
	Difference in height between indoor units	MAX. 5m
Quintuple split	Total length	MAX. 75m
	Difference in height between indoor and outdoor units	MAX. 10m
	Total length	MAX. 5m

CONNECTION PIPE DIAMETER:

Indoor unit	Liquid	Gas	Accessories
7K/9K/12K	1/4	3/8	/
18K	1/4	1/2	Adapter
24K	3/8	5/8	Adapter component

THE CAUTION FOR INDOOR UNIT CONNECTION:

FOR 7K/9K/12K UNIT

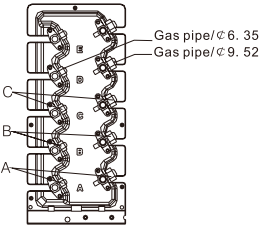


Fig 30

- a. For one 7K/9K/12K indoor unit gas/liquid pipe,it should connect to the same group gas/liquid pipe, eg. Connect to Group A gas/liquid pipe together, as figure shown below.
- b. The Group number of copper pipe, it should be the same as communication wire group number.

FOR 18 UNIT

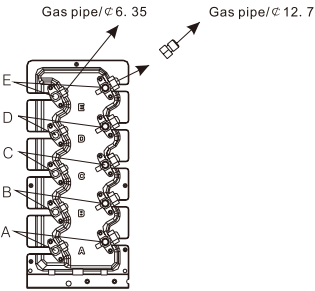


Fig 31

For gas pipe connection, adapter and sealed copper gasket should be used, change the pipe connector diameter of outdoor unit from 9.52mm to 12.7mm, and connector diameter of indoor unit is 12.7mm.

FOR 24K UNIT:

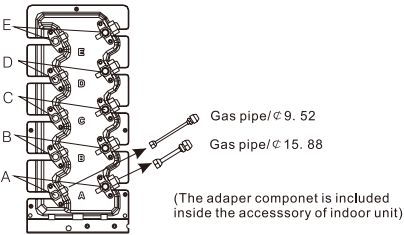


Fig 32

- 1. For gas pipe connection, adapter component should be used, change the pipe connector diameter of outdoor unit from 9.52 mm to 15.8mm, and connector diameter of indoor unit is 15.8 mm;
- 2. For liquid pipe connection, adapter component should be used, change the pipe connector diameter of outdoor unit from 6.35 mm to 9.52 mm, and connector diameter of indoor unit is 9.5 2mm;
- 3. The adapter component is included inside the accessory of indoor unit.

ELECTRICAL SAFETY REGULATIONS FOR THE INITIAL INSTALLATION

1. If there is serious safety problem about the power supply, the technicians should refuse to install the air conditioner and explain to the client until the problem is solved.
2. Power voltage should be in the range of 90%~110% of rated voltage.
3. The creepage protector and main power switch with a 1.5 times capacity of Max.Current of the unit should be installed in power circuit.
4. Ensure the air conditioner is grounded well.
5. According to the attached Electrical Connection Diagram located on the panel of the outdoor unit to connect the wire.
6. All wiring must comply with local and national electrical codes and be installed
7. An individual branch circuit and single receptacle used only for this air conditioner must be available.
8. Electrical work must be done by qualified and skilled electricians.

WIRING CONNECTION

NOTA: Before performing any electrical work, turn off the main power to the system.

Minimum nominal cross-sectional area of conductors:

Main power cable of outdoor unit	Nominal crossectional area	Connecting wire of indoor unit and outdoor unit
5.5kW	2.5mm ² ×3	1mm ² ×4
8.0/10.5/12.5kW	4mm ² ×3	

CAUTION

Do not touch the capacitor even if you have disconnected the power for there is still high voltage power on it, or electric shock hazard may occur. For your safety you should start repairing at least 5 minutes later after the power is disconnected.

The power is supplied from the Outdoor Unit. The Indoor Unit are connected with a signal wires or power cords are connected reliably and correctly, or the air conditioner could not run normally.

CONNECT THE CABLE TO THE OUTDOOR UNIT

1. Remove the electrical control board cover from the outdoor unit as shown in Fig.33.
2. Connect the connective cables to the terminals as identified with their respective matched numbers on the terminal block of indoor and outdoor units.
3. Secure the cable onto the control board with the cord clamp
4. To prevent the ingress of water, from a loop of the connective cable as illustrated in the installation diagram of indoor and outdoor units.
5. Insulate unused cords (conductors) with PVC-tape. Process them so they do not touch any electrical or metal parts.



Fig 33

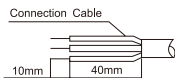
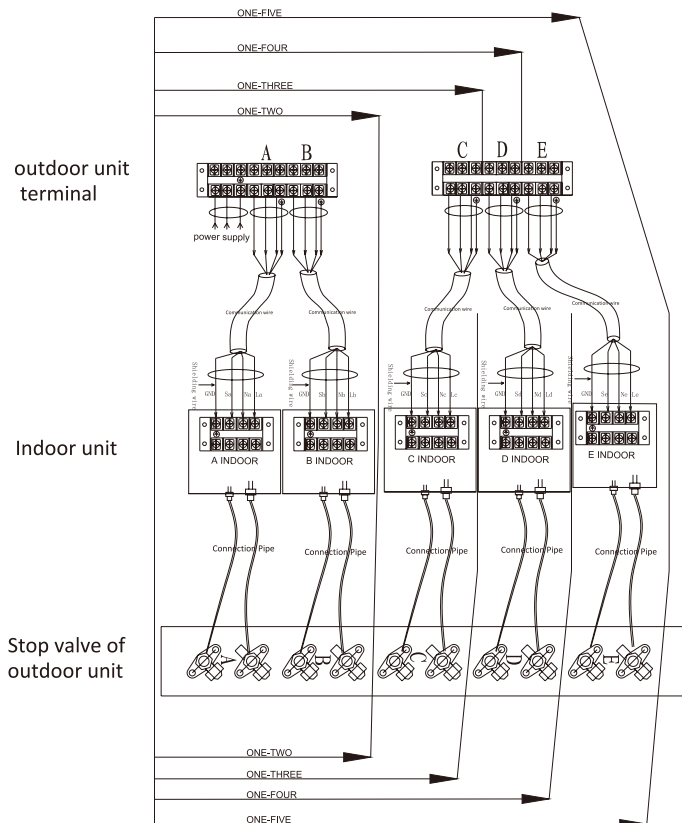


Fig 34

Fig 26



CAUTION

Make sure to connect the indoor unit (A, B, C, D, E) to the Hi and Lo valve and terminals of signal wires (A, B, C, D, E) of outdoor unit as identified with their respective matched connection. Wrong wiring connections may cause some electrical parts to malfunction.

AIR PURGING

CAUTION

After the confirmation of the above conditions, prepare the wiring as follows:

- 1) Never fail to have an individual power circuit specifically for the air conditioner. As for the method of wiring, be guided by the circuit diagram posted on the inside of central cover.
- 2) The screw which fasten the wiring in the casing of electrical fittings are liable to come loose from vibrations to which the unit is subjected during the course of transportation. Check them and make sure that they are all tightly fastened. (If they are loose, it could cause burn-out of the wires.
- 3) Specification of power source.
- 4) Confirm that electrical capacity is sufficient.
- 5) Check that the starting voltage is maintained at more than 90 percent of the rated voltage marked on the name plate.
- 6) Confirm that the cable thickness is as specified in the power source specification.
- 7) Always install an earth leakage circuit breaker in a wet or moist area.
- 8) The following would be caused by voltage drop. Vibration of a magnetic switch, which will damage the contact point, fuse breaking, disturbance of the normal

function of the overload.

9) The means for disconnection from a power supply shall be incorporated in the fixed wiring and have an air gap contact separation of at least 3mm in each active (phase) conductors.

AIR PURGING

Air and moisture in the refrigerant system have undesirable effects as indicated below:

- Pressure in the system rises.
- Operating current rises.
- Cooling or heating efficiency drops.
- Moisture in the refrigerant circuit may freeze and block capillary tubing.
- Water may lead to corrosion of parts in the refrigeration system.

Therefore, the indoor unit and tubing between the indoor and outdoor units must be leak tested and evacuated to remove any non-condensables and moisture from the system.

AIR PURGING WITH VACUUM PUMP

Preparation:

Check that each tube(both liquid and gas side tubes)between the indoor and outdoor units have been properly connected and all wiring for the test run has been completed. Remove the service valve caps from both the gas and the liquid side on the outdoor unit. Note that both the liquid and the gas side service valves on the outdoor unit are kept closed at this stage.

PIPE LENGTH AND REFRIGERANT AMOUNT

Connective pipe length	Air purging method	Additional amount of refrigerant to be charged
Less than 5m	Use vacuum pump.	
More than 5m	Use vacuum pump.	R32: (Pipe length--5m)x15g/m for $\phi 6.35$ R32: (Pipe length--5m)x20g/m for $\phi 9.52$

Note: Piping length means the liquid side of each indoor unit

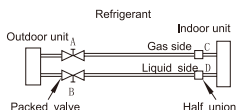


Fig 36

- When relocate the unit to another place, perform evacuation using vacuum pump.

- Make sure the refrigerant added into the air conditioner is liquid form in any case.

(Not applicable to the units adopt Freon R22.)

CAUTION IN HANDLING THE PACKED VALVE

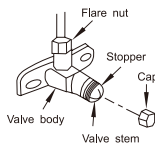


Fig 37

- Open the valve stem until it hits against the stopper. Do not try to open it further.

- Securely tighten the valve stem cap with a spanner or the like.

- Valve stem cap tightening torque(See Tightening torque table in previous page).

WHEN USING THE VACUUM PUMP

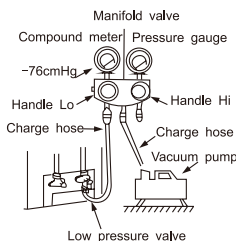


Fig 38

Preparation:

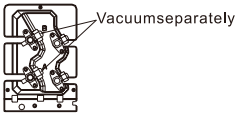
(For method of using a manifold valve, refer to its operation manual.)

1. Completely tighten the flare nuts, A, B, C, D, connect the manifold valve charge hose to a charge port of the low-pressure valve on the gas pipe side.
2. Connect the charge hose connection to the vacuum pump.
3. Fully open the handle Lo of the manifold valve.
4. Operate the vacuum pump to evacuate. After starting evacuation, slightly loose the flare nut of the Lo valve on the gas pipe side and check that the air is entering (Operation noise of the vacuum pump changes and a compound meter indicates 0 instead of minus)
5. After the evacuation is complete, fully close the handle Lo of the manifold valve and stop the operation of the vacuum pump. Make evacuation for 15 minutes or more and check that the compound meter indicates -76cmHg (-1x105Pa).
6. Turn the stem of the packed valve B about 45° counterclockwise for 6~7 seconds after the gas coming out, then tighten the flare nut again. Make sure the pressure display in the pressure indicator is a little higher than the atmosphere pressure.
7. Remove the charge hose from the Low pressure charge hose.

8. Fully open the packed valve stems B and A.
9. Securely tighten the cap of the packed valve.

VACUUM:

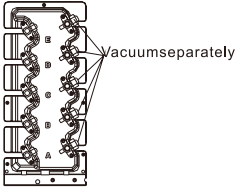
FOR ONE DRIVE TWO UNIT:



Vacuum for two indoor units separately.

Fig 39

FOR ONE DRIVE THREE UNIT:



Vacuum for three indoor units separately.

Fig 40

FOR ONE DRIVE FOUR AND ONE DRIVE FIVE UNIT

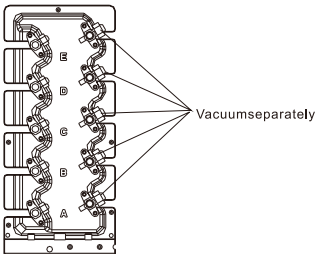
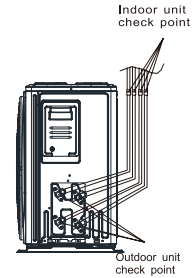


Fig 41

**SAFETY AND LEAKAGE CHECK
ELECTRICAL SAFETY CHECK**



Perform the electric safe check after completing installation:

1. Insulated resistance
The insulated resistance must be more than $2M\Omega$.

2. Grounding work
After finishing grounding work, measure the grounding resistance by visual detection and grounding resistance tester. Make sure the grounding resistance is less than 4Ω .

3. Electrical leakage check (performing during test running)
During test operation after finishing installation, the serviceman can use the electroprobe and multimeter to perform the electrical leakage check. Turn off the unit immediately if leakage happens. Check and find out the solution ways till the unit operate properly.

Fig 42 Dual split type

**GAS LEAK CHECK
SOAP WATER METHOD**

Apply a soap water or a liquid neutral detergent on the indoor unit connection or outdoor unit connections by a soft brush to check for leakage of the connecting points of the piping. If bubble come out, the pipes have leakage.

LEAK DETECTOR

Use the leak detector to check for leakage.

CAUTION: A, B, C, D and E are packed valve of outdoor unit.

NOTE: The illustration is for explanation purpose only. The actual order of A, B, C, D and E on the machine may be slightly different from the unit you purchased. The actual shape shall prevail.

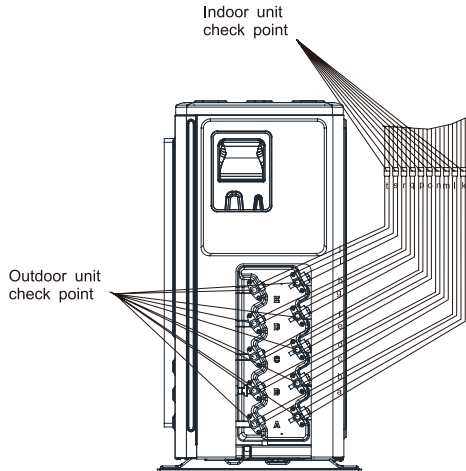


Fig 43

A, b, c, d, e, f, g, h, k, l, m, n, o, p, q and r are points for Quadruple split type.
a, b, c, d, e, f, g, h, i, j, k, l, m, n, o, p, q, r, s and t are points for Quintuple split type.

DIALING SETTING OF MAIN CONTROL BOARD

Table 6-1 Capacity setting

SI Description	
2	Outdoor units type:21 K (62)
3	Outdoor units type:27K (79)
4	Outdoor units type:28K (82)
5	Outdoor units type:36K (105)
6	Outdoor units type:42K (125)

INSPECTION AND CONFIRMATION BEFORE DEBUGGING

- 1 Check and make sure the refrigerating pipeline and communication line connecting with the indoor and outdoor units are connected with the same refrigerating system. Otherwise, some running faults occur.
2. The power supply voltage is within the rated voltage of $\pm 10\%$.
3. Check and make sure the power supply line and the control line are correctly connected.
4. Before power-on, make sure there is no short circuit.
5. Check if all units have passed 24-hour nitrogen pressure-maintaining (40kgf/cm²) test.
6. Make sure the debugged system is fully vacuumized, dried and filled with the refrigerant as specified

PREPARATION BEFORE DEBUGGING

1. Calculate the refilling volume of refrigerant for each set of units according to the length of on-site liquid pipe.
2. Prepare the required refrigerant.
3. Prepare the system plan, system piping diagram and control wiring diagram.
4. Mark the set address codes on the system plan.
5. Turn on the power supply switch of the outdoor unit in advance, and make sure it is power-on for more than 12 hours, so that the heater heats the compressor oil.
6. Fully open air pipe check valve, liquid pipe check valve and oil balance valve of the outdoor unit. If they are fully opened, the machine may be damaged.
7. Check if the power supply phase sequence of the outdoor unit is correct.
8. Check if all dialing switched of the indoor and outdoor units are set according to the technical requirements of the product.

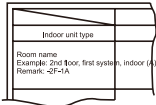


Fig. 44 Filling of Names of Connecting Systems

FILLING OF NAMES OF CONNECTING SYSTEMS

When the multiple indoor units are arranged, in order to distinguish the connecting systems of indoor and outdoor units, all systems shall be named respectively and recorded on the nameplate on the electronic control box cover of the outdoor unit.

PRECAUTIONS AGAINST REFRIGERANT LEAK

1) The refrigerant of the air conditioner is harmless and nonflammable.

2) The room for the air conditioner shall have an appropriate space. In case of refrigerant leak, it cannot go beyond the critical concentration. In addition, necessary measures can be taken.

3) The critical gas concentration harmless to the human body is 0.3 kg/m^3 .

4) Confirm the critical concentration according to the following steps and take corresponding measures.

a) Calculate the filling volume of refrigerant (A[kg])

Volume of refrigerant = filling volume of refrigerant before delivery (see the nameplate) + refilling volume of refrigerant corresponding to the length of pipe

B) Calculate the indoor volume (B [m³]) (by the minimum volume)

c) Calculate the refrigerant concentration

$$\frac{A [\text{kg}]}{B [\text{m}^3]} \leq \text{Critical concentration: } 0.3 [\text{kg/m}^3]$$

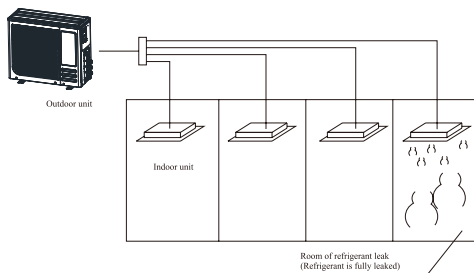
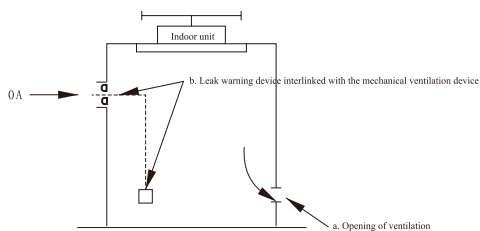


Fig.45 Refrigerant Leak

5) Measures against exceeding the critical concentration

a) To reduce the refrigerant concentration below the critical concentration, install a mechanical ventilation device (for frequent ventilation).

b) If frequent ventilation cannot be performed, please install a leak warning device interlinked with the mechanical ventilation device.



(The leak warning device shall be installed in the gathering place of refrigerant.)

Fig.46 Mechanical Ventilation Device

AKAI

Enjoy Innovation.

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