

CABINET TYPE AIR CONDITIONER

Operation & Installation Manual

UN-GHF36D REDX T3

UN-GHF60D REDX T3

No. 0150573804

- Please read this operation manual before using the air conditioner.
- Please keep this manual carefully and safely.

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Cautions

Disposal of the old air conditioner

Before disposing an old air conditioner that goes out of use, please make sure it's inoperative and safe. Unplug the air conditioner in order to avoid the risk of child entrapment.

It must be noticed that air conditioner system contains refrigerants, which require specialized waste disposal. The valuable materials contained in a air conditioner can be recycled. Contact your local waste disposal center for proper disposal of an old air conditioner and contact your local authority or your dealer if you have any question. Please ensure that the pipework of your air conditioner does not get damaged prior to being picked up by the relevant waste disposal center, and contribute to environmental awareness by insisting on an appropriate, anti-pollution method of disposal.

Disposal of the packaging of your new air conditioner

All the packaging materials employed in the package of your new air conditioner may be disposed without any danger to the environment.

The cardboard box may be broken or cut into smaller pieces and given to a waste paper disposal service. The wrapping bag made of polyethylene and the polyethylene foam pads contain no fluorochloric hydrocarbon.

All these valuable materials may be taken to a waste collecting center and used again after adequate recycling.

Consult your local authorities for the name and address of the waste materials collecting centers and waste paper disposal services nearest to your house.

Safety Instructions and Warnings

Before starting the air conditioner, read the information given in the User's Guide carefully. The User's Guide contains very important observations relating to the assembly, operation and maintenance of the air conditioner.

The manufacturer does not accept responsibility for any damages that may arise due to non-observation of the following instruction.

- Damaged air conditioners are not to be put into operation. In case of doubt, consult your supplier.
- Use of the air conditioner is to be carried out in strict compliance with the relative instructions set forth in the User's Guide.
- Installation shall be done by professional people, don't install unit by yourself.

Cautions

- For the purpose of safety, the air conditioner must be properly grounded in accordance with specifications.
- Always remember to unplug the air conditioner before opening inlet grill. Never unplug your air conditioner by pulling on the power cord. Always grip plug firmly and pull straight out from the outlet.
- All electrical repairs must be carried out by qualified electricians. Inadequate repairs may result in a major source of danger for the user of the air conditioner.
- Do not damage any parts of the air conditioner that carry refrigerant by piercing or perforating the air conditioner's tubes with sharp or pointed items, crushing or twisting any tubes, or scraping the coatings off the surfaces. If the refrigerant spurts out and gets into eyes, it may result in serious eye injuries.
- Do not obstruct or cover the ventilation grille of the air conditioner. Do not put fingers or any other things into the inlet/outlet and swing louver.
- Do not allow children to play with the air conditioner. In no case should children be allowed to sit on the outdoor unit.

Specifications

- The refrigerating circuit is leak-proof.

The machine is adaptive in following situation

Applicable ambient temperature range:

			Rated	Maximum	Minimum
Cooling	Indoor	DB °C	27	32	18
		WB °C	19	23	14
	outdoor	DB °C	35	52	18
		WB °C	24	32	14
Heating	Indoor	DB °C	20	27	15
		WB °C	14.5	--	--
	outdoor	DB °C	7	24	0
		WB °C	6	18	--

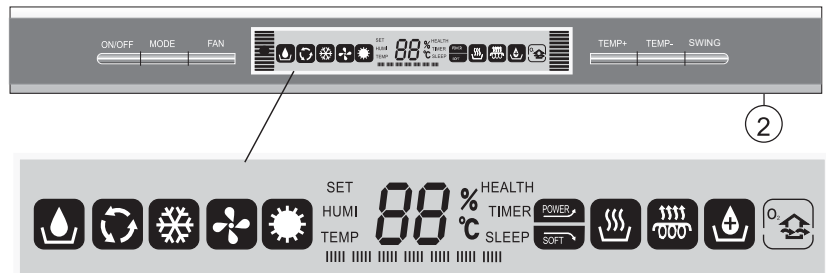
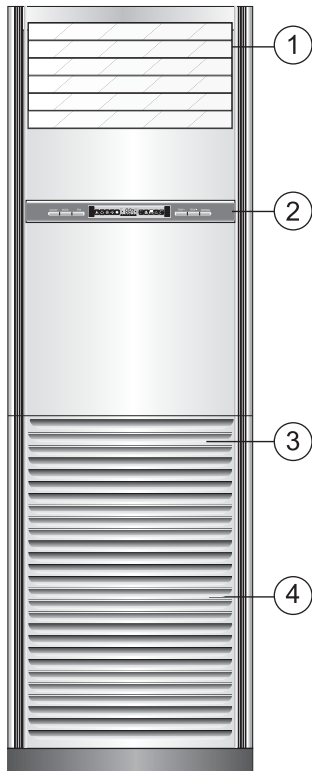
The maximum power input of each model

	Maximum power input(W)	
	UN-GHF36D REDX T3	UN-GHF60D REDX T3
Cooling	4120	5950
Heating	4120	5950

- To be in compliance with EN 61000-3-11, the product shall be connected only to a supply of the system impedance: $Z_{max} < 0.136 \Omega$. Before connecting the product to public power network, Please consult your local power supply authority to ensure the power network meet above requirement.

Parts

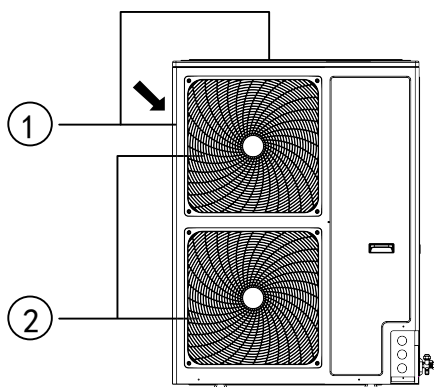
Indoor unit



Indoor unit

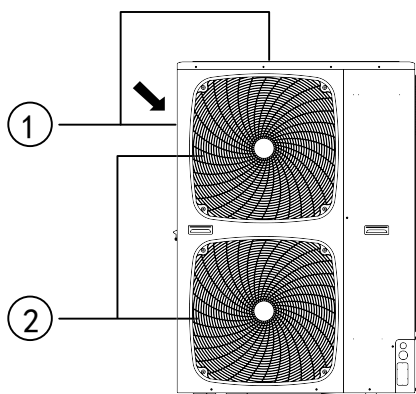
- 1 Outlet grill
- 2 Operation panel
- 3 Inlet grill
- 4 Air filter (inside the unit)

Outdoor unit



- 1 Inlet grill
- 2 Outlet grill

UN-GHF36D REDX T3



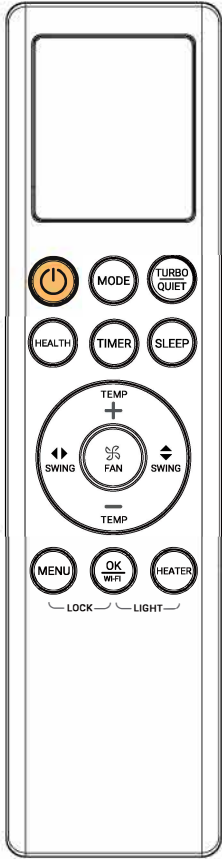
UN-GHF60D REDX T3

Parts

External View of Remote Controller

Remote Controller function description

This remote Controller is a general remote Controller, and some functions are valid according to the adaptable model.



	Used for turning on/off the units
	Used to switch operation modes
	Use to set/cancel TURBO/QUIET functions
	Use to set/cancel HEALTH functions
	Used to set the Timer on/ Timer off function.
	Use to set/cancel SLEEP function
TEMP + / - TEMP	1. Used for setting temperature increase or decrease. 2. Timing adjustment
	Used to set the airflow angle under the up and down swing.
	Used to set the airflow angle under the left and right swing.
	Used to adjust the fan speed.
	Used to set/cancel electrical heater function.
	1. Set/cancel for menu function selection 2. Long press for 3 seconds to enter Wi-Fi mode
	Press "OK/Wi-Fi" and "MENU" to access the lock function, and then press again to cancel the lock function.
	At the same time, press the "OK/Wi-Fi" and "HEATER" keys to enter the lighting function.
	For function selection, see menu function introduction for details.

Functional description

1. ON/OFF Button:

Turning on the units: Press the button to turning on the units.

Note: The initial default operation mode is AUTO and then will display the mode before turning off

Press button again to turn off the unit.

2. MODE

Press the button every time, Function loop will be: → → → → → .

3. TURBO/QUIET

This function is valid under the mode of COOL and HEAT

Along with pressing the button each time, it will display according to the loop of TURBO → QUIET → Cancel → TURBO. Under the function of TURBO / QUIET.

When "SLEEP" is set, the "TURBO" function is disabled and the "QUIET" function is effective.

4. HEALTH

(1) When turning on the units, press button, the remote controller will display "HEALTH", and then press button to cancel.

(2) When turning off the units, press the button to enter FAN mode and display "HEALTH".

5. TIMER

When the unit is in turning on status, users can only set the TIMER OFF, while in off status, users can only set the TIMER ON.

In Off status, press the button to enter the TIMER ON adjustment process.

In On status, Press the button to enter the TIMER OFF adjustment process.

When entering the timing adjustment process, timer ON/OFF icon and clock flash at the same time, the initial default value is: 0:30.


Press the button once to increase or decrease the time for 30 minutes, and pressing and holding the button will speed up the adjustment.


After the time adjustment is completed, press the button again to confirm, the time static display, and start the countdown.

Parts

6. SLEEP


(1) Valid during power on.

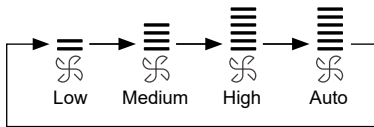
(2) Press the  button, and the remote control will display "Sleep". The SLEEP time is fixed to 8 hours and is not adjustable

Press the  button again, and the sleep function will be cancelled.


(3) It is invalid in FAN mode.

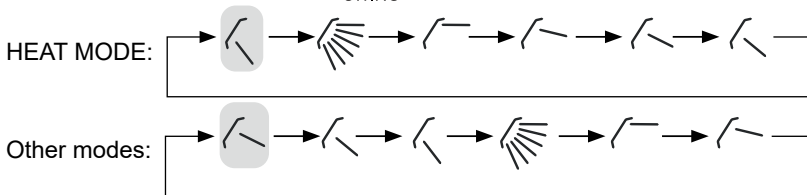
7. FAN SPEED Button

Each time the  button is pressed, the cycle sequence is as follows:




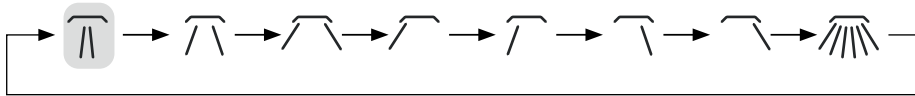
8. Up-and-down SWING Angle Adjustment

Each time you press the button , Remote control display cycle sequence is as follows:




9. Right-and-left SWING Angle

Each time you press the button , the remote control will display the following cycle:




10. +/- Button

(1) This button is invalid in FAN mode;

(2) Press  button, temperature change 0.5°C; pressing and holding the button will change quickly.

11. HEATER






Press the  button, and the remote control will display " HEATER ".


Press  button again, the " HEATER " on the remote control will disappear, and the HEATER function will be turned off.


This function will be effective only in AUTO and HEAT mode.

12.MENU


Functional cycle: SELF-CLEAN→3D AIR (reserved) →FRESH→HEALTH AIRFLOW→IFP→ → →IFP AC OFF→IFP AC ECO→


 → → → → →10°C heating (Only valid in HEAT mode)→°F/°C→SELF-CLEAN

(1) Press  button, the current function to be set flashes;




(2) Press  button again to set/cancel the current setting function in the above sequence. If there is no operation in 5 seconds, it will exit automatically.


Note:

Individual flap control for Round-way cassette: press  button to enter function loop to select the corresponding function icon, then press

the  button to select the airflow angles.

13. LOCK

Press the combination key  and , and the remote control will display "". All buttons on the remote control are invalid.

Press the combination button again to unlock the button and the icon "" will disappear.

14. LIGHT

Press the combined button  and  to turn on the lighting function.

Press the combination key again and the light function turns off.

15. Wi-Fi

Press  button 3s to enter Wi-Fi configuration, remote control display COOL mode, LOW fan speed, 30°C.

Operation hints

Unit operation

- Protection devices inside the unit will activate to stop unit operation, when ambient temp. is extremely low or high.
- When unit is running under high humidity in cooling or dehumidifying mode, condensate might appear at outlet grill.

3-min delay protection

- Unit will not restart until 3 min have elapsed for the protection of the unit.

Fan speed changes

- When Fan speed is set at Auto in cooling mode, it will be automatically reduced as room temp. is approaching temp. setting.
- In dry mode, fan speed will change automatically.

Cold draft prevention

- In heating mode, indoor fan will not run for the first 2-5 min. due to cold draft prevention.

Defrosting

- When frost accumulates on heat exchanger in heating mode, unit will start defrosting automatically.
- During defrosting, both indoor and outdoor fan stop.
- After defrosting, unit resumes running.

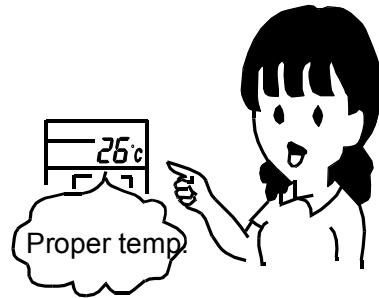
Use objectively

- Heat pump works by means of absorbing outside heat to warm room air, so outdoor temp. degree will affect unit's heating efficiency.

Energy saving

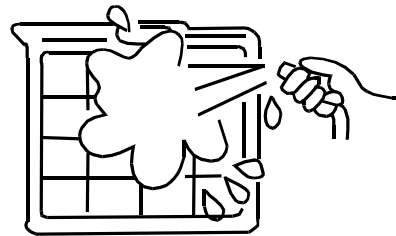
Keep proper room temp.

Too cold or too warm is no good to your health, and power consumption will be increased as well.



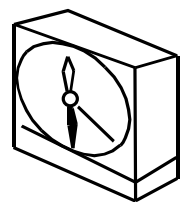
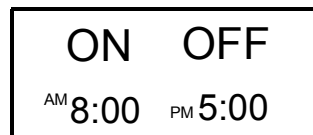
Air filter should be periodically cleaned

If air filter is clogged:
It will cause poor cooling and heating efficiency, higher power consumption and even problem may occur. In cooling operation, water will flow out.

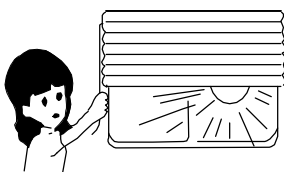


Use Timer effectively

You may use Timer mode to keep a comfortable room temp. when you wake up or come home from outside.



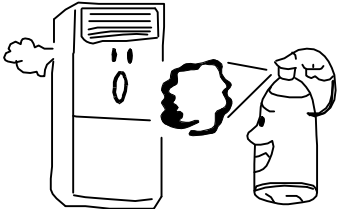
Avoid direct sunlight and air flow



Adjust air flow properly

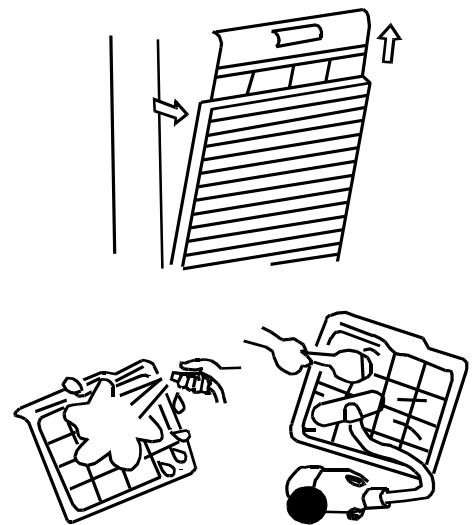


Maintenance

Disconnect power supply	Don't touch it with wet hand	Don't wash with hot water or solvent to clean the unit
		
Don't splash water directly on indoor unit. 	Don't spray any paint or insecticide on the unit.  This will cause damage or even fire accident.	

Air filter cleaning

- Pull it out from top as shown in Fig.
- Use water or vacuum cleaner to clean it. If it is extremely dirty, wash it with neutral detergent or soap water.
- Wash it with clean water and install it after complete dry.



Caution:

- Don't use hot water over 40 °C, as this may cause damage to air filter.
- Wipe air filter carefully.

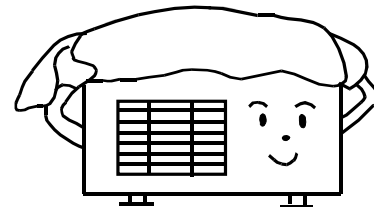
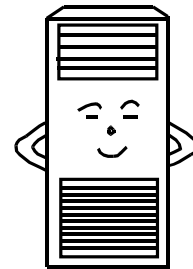
Maintenance

Indoor and outdoor cleaning

- Clean it with warm and wet cloth or with neutral detergent, then wipe it dry with clean and soft cloth.
- If air conditioner is very dirty, clean it with cloth soaked in neutral detergent, then wipe off the detergent with clean water.
- Don't use water higher than 40°C, which will cause discoloring and deformation.
- Don't use insecticide or other chemical detergents.

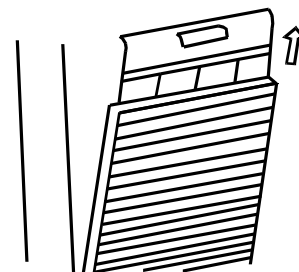
After season maintenance

- Let the unit run in Fan mode for half a day in a fine weather to dry completely the unit inside.
- Turn off the unit and pull out power plug.
- There might be certain power consumption even if unit is stopped.
- Clean air filter and indoor unit, cover outdoor unit after cleaning.


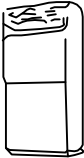




Before season maintenance

- Check if there are obstacles at inlet and outlet of indoor and outdoor unit, which will reduce unit efficiency.
- Don't fail to attach air filter after making sure it is cleaned.
- Dust will enter into unit causing damages or faults if it is running without air filter.
- To protect compressor at start, please connect external power supply to the unit 12 hrs prior to starting. Also please keep the power supply switch ON during the whole season.

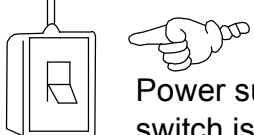
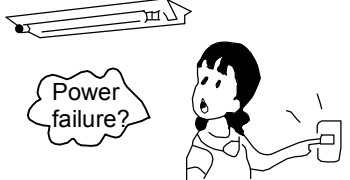
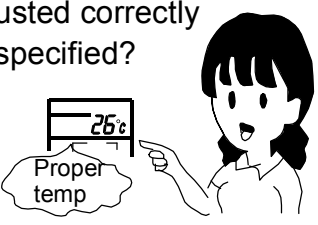
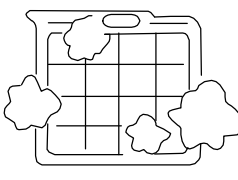


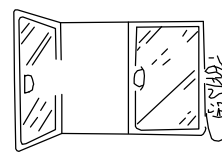
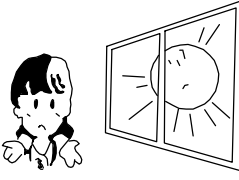
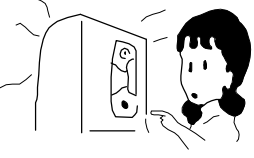
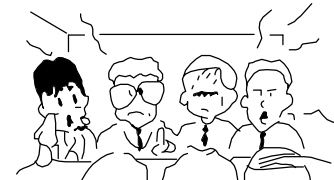


Trouble shooting

Followings are not problems	
<p>Sound of water flowings are not problems.</p> 	<p>During unit start and operation or at stop, a swishing or gurgling noise may be heard. This noise is generated by refrigerant flowing in the system.</p>
<p>Sound of cracking is heard.</p>	<p>During unit operation, a cracking noise may be heard. This noise is generated by the casing expanding or shrinking because of temperature changes.</p>
<p>Smells are generated.</p>	<p>This is because the system circulates smells from the interior air such as the smell of cigarettes or the painting on the unit.</p>
<p>During operation, white fog or steam comes out of indoor unit.</p> 	<p>When unit is running at places like restaurant where dense edible oil fumeis always exist, this will happen.</p>
<p>In cooling operation, unit switches to fan operation.</p>	<p>To prevent frost from accumulating on indoor heat exchanger, unit will switch to fan operation for a while then resume cooling operation.</p>
<p>Unit will not restart after stop. Won't start?</p> 	<p>Though ON/OFF button is set to ON, unit won't resume cooling, dry or heating operation in 3 min after it is stopped, this is because of 3-min-delay protection circuit.</p>  <p style="text-align: right;">Please wait 3 minutes</p>
<p>No outlet air or fan speed can't be changed in dry mode.</p>	<p>Unit will reduce fan speed repeatedly and automatically if room temp. is too low in dry operation.</p>
<p>In heating operation, water or steam are blown out of indoor unit.</p>	<p>This occurs when frost accumulated on the outdoor unit is removed. (during defrosting operation)</p>
<p>In heating operation, indoor fan won't stop even if unit is stopped.</p>	<p>After unit stops, indoor fan will go on running until indoor unit cools down.</p>

When problems occur

Before asking services, please firstly check your unit according to following.

Air conditioner won't start.		
<p>Is power supply switch turned on?</p>  <p>Power supply switch is not set at ON.</p>	<p>Is city power supply normal?</p>  <p>Power failure?</p>	<p>Is leakage current breaker activated?</p> <p>This is very dangerous, please disconnect power supply immediately and contact your dealer.</p>
Poor cooling or heating		
<p>Are operation controls adjusted correctly as specified?</p>  <p>Proper temp</p>	<p>Is air filter too dirty?</p> 	<p>Are there any obstacles at inlet or outlet grill?</p> 
<p>Are horizontal louvers at up position (in heating mode)?</p> 	<p>Any doors or windows left open?</p> 	
Poor cooling		
<p>Is there any direct sunlight in the room?</p> 	<p>If there are unexpected heat sources in the room?</p> 	<p>Too many people in the room?</p> 

If your unit still can't work properly after above mentioned checks, or following problems occur, please stop it immediately and contact your dealer.

- Fuses or circuit breakers often blow out.
- Water comes out in cooling/dry operation.
- Operation is abnormal or sound is heard.

If the fuse on PC board is broken please change it with the type of T3.15A/250VAC.

When problems occur

1. Errors display

WCR	CCR	OBF	Fault content
E0	10	/	Drainage Fault
E1	1	/	Indoor ambient temperature sensor failure
E2	2	/	Indoor pipe temperature sensor failure
E3	3	3	Outdoor ambient temperature sensor failure
E4	4	4	Outdoor pipe temperature sensor failure
E5	5	5	System current exceeds a set value
			Three-phase power phase sequence fault
E6	6	6	Outdoor high pressure exceeds the pressure switch setpoint
F9	16	6	Outdoor low pressure below the pressure switch setpoint
E7	13	/	Over-voltage protection
E8	8	/	Communication failure between the indoor unit and the panel or wired controller
E9	9	9	Indoor and outdoor unit communication failure
FA	11	/	Exhaust sensor failure or the exhaust temperature exceeds the set value of 120 degree celsius.
FB	12	/	Outdoor pipe temperature is too high (cooling)
FC	14	/	Indoor pipe temperature too high (cooling)

2. Power supply

- The parameter of power cord is over 5G 2.5mm².
- The parameter of connect cord is 4G 0.75mm².
For the models with an electric heater the parameter of connect cord is 4G 2.5mm².
- Air conditioner must use an exclusive line (over 30A).
For the models with an electric heater the air conditioner over 40A
- When installation air conditioner in a wet place, try to use a circuit breaker against current leakage.
- For installation in other places, use circuit breaker as far as possible.
- The breaker of the air conditioner should be all-pole switch ; and the distance between its two contacts should be no less than 3 mm.
- Such means for disconnection must be incorporation in the fixed wiring

3. Charge-over switch.

For UN-GHF36D REDX T3, UN-GHF60D REDX T3 the charge-over switch is set:

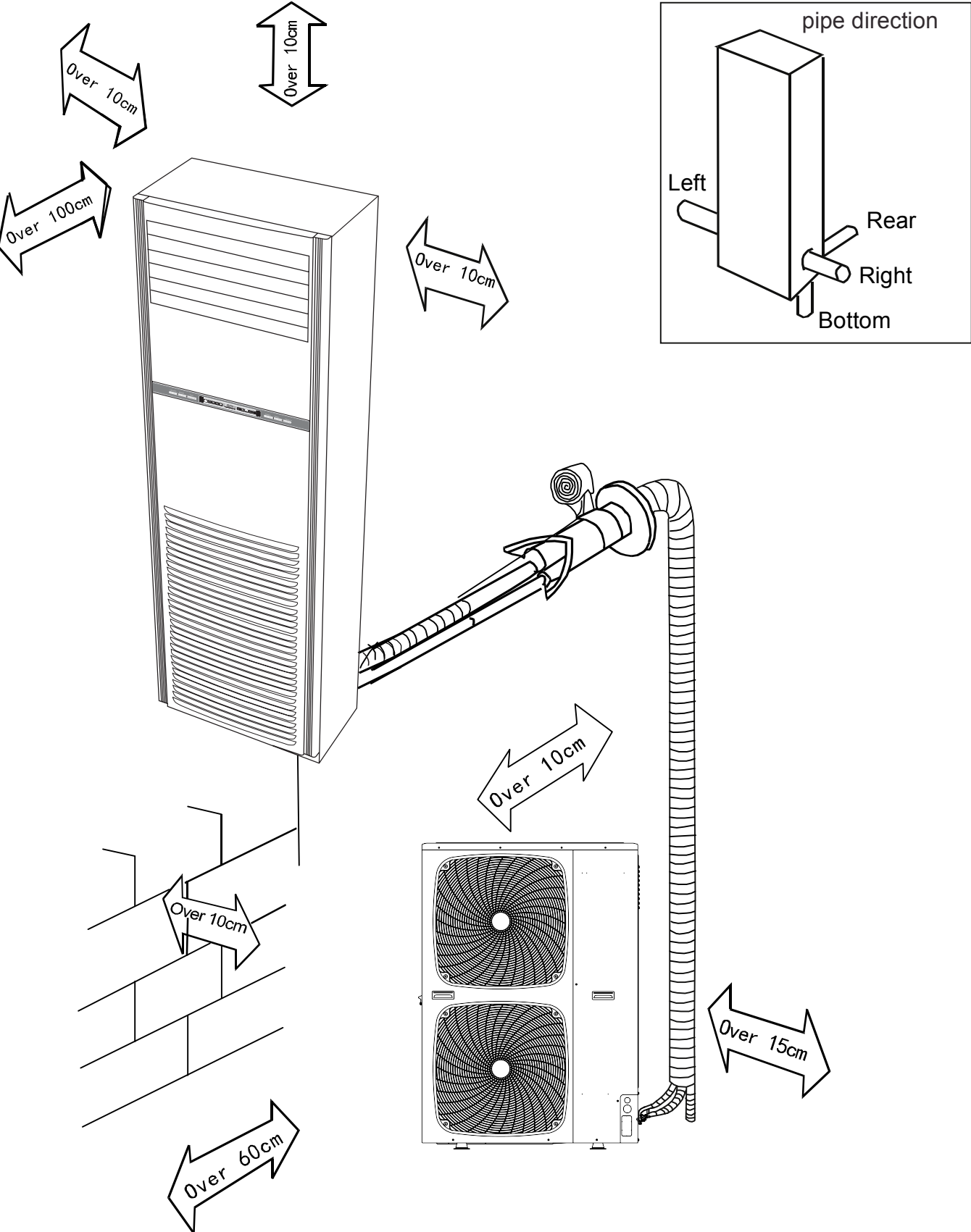
UN-GHF36D REDX T3

BM 1: ON
BM 2: ON
BM 3: ON
BM 4: OFF

UN-GHF60D REDX T3

BM1: OFF
BM2: ON
BM3: ON
BM4: ON

Indoor & outdoor unit connection



Tools necessary

Tools necessary

1. Screw driver
2. Hacksaw
3. 70mm dia. hole core drill
4. Spanner (dia. 17, 27mm)
5. Spanner (14, 17, 27mm)
6. Pipe cutter
7. Flaring tool
8. Knife
9. Nipper
10. Gas leakage detector or soap water
11. Measuring tape
12. Reamer
13. Refrigerant oil

Standard accessories

Following parts shall be field supplied

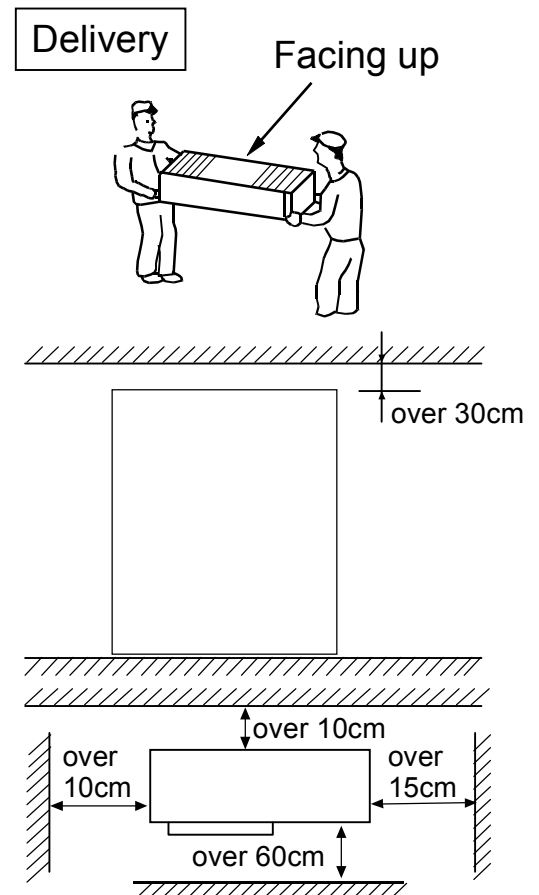
Mark	Parts name
Ⓐ	Adhesive tape
Ⓑ	Pipe clip
Ⓒ	Drain hose

Installation procedures

Display of whole unit

- Try to bring the packed unit to the installation place.
- When it is inevitable to unpack the unit, be careful not to damage the unit. Wrap it with nylon etc.
- After unpacking, be sure to put it with the front side of the unit facing up.

- Note: When delivering, don't hold plastic parts like inlet and outlet grill etc.



Installation of outdoor unit

Selection of installation place

- Place strong enough to support the unit and will not cause vibration and noise.
- Place where discharged wind and noise doesn't cause a nuisance to the neighbors.
- Place where is less affected by rain or direct sunlight and is sufficiently ventilated, or to install a shield.
- Place with enough space for smooth air flow.

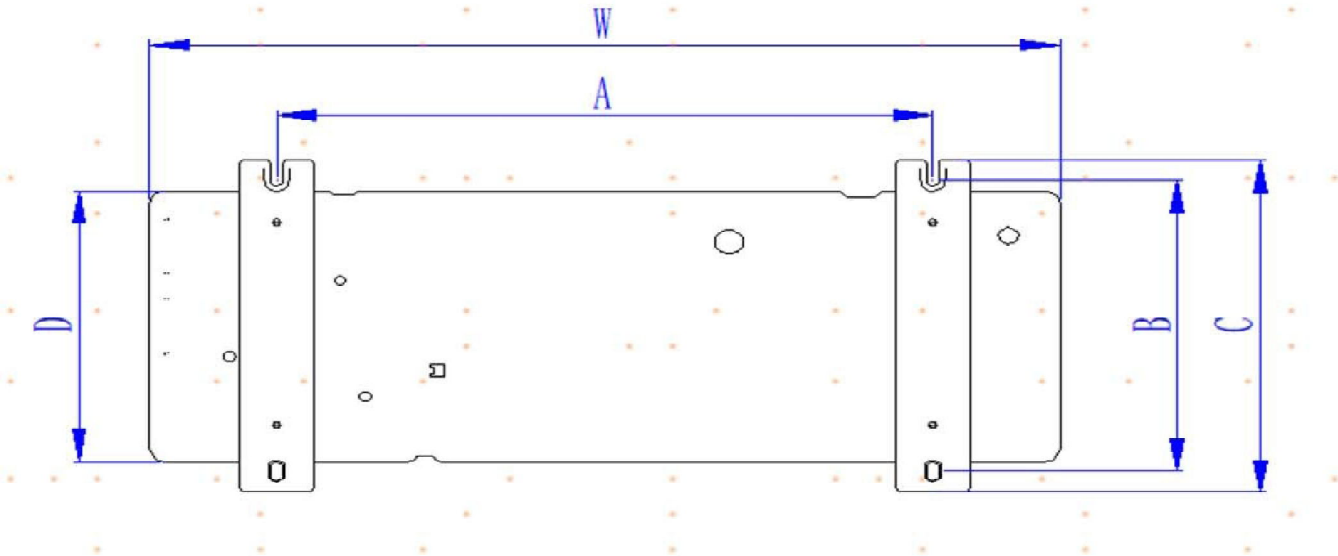
Fixing of the unit

- Fix outdoor unit using M10 bolt to concrete floor horizontally.
- If installed on the wall or on top of a roof, bracket should be fixed securely to resist earthquake or storms.
- Use rubber pad during installation against unit vibration.

Installation procedures

Installation dimension of outdoor unit (mm)

	UN-GHF36D REDX T3	UN-GHF60D REDX T3
A	580	600
B	380	407
C	413	450
D	338	367
W	948	947
H	1250	1350



Installation procedures

Installation of indoor unit

Selection of installation place

Place where it is easy to route drainage pipe and outdoor piping.

Place away from heat source and with less direct sunlight.

Place where cool and warm air could be delivered evenly to every corner of the room.

Place near power supply socket. Leave enough space around the unit (refer to installation drawings).

Fixing of the unit

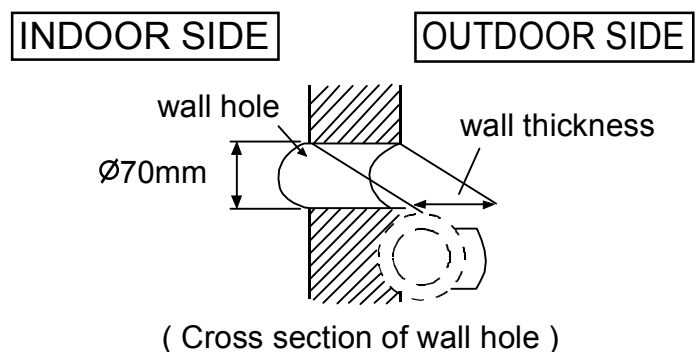
1. Position of the wall hole

Wall hole should be decided according to installation place and piping direction. (refer to installation drawings)

2. Making a wall hole

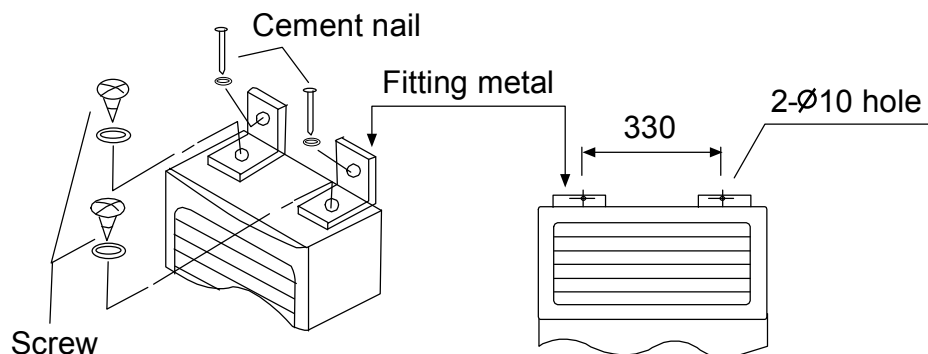
Drill a hole of 70mm dia. with a little slope towards outside.

Install piping hole cover and seal it with putty after installation.

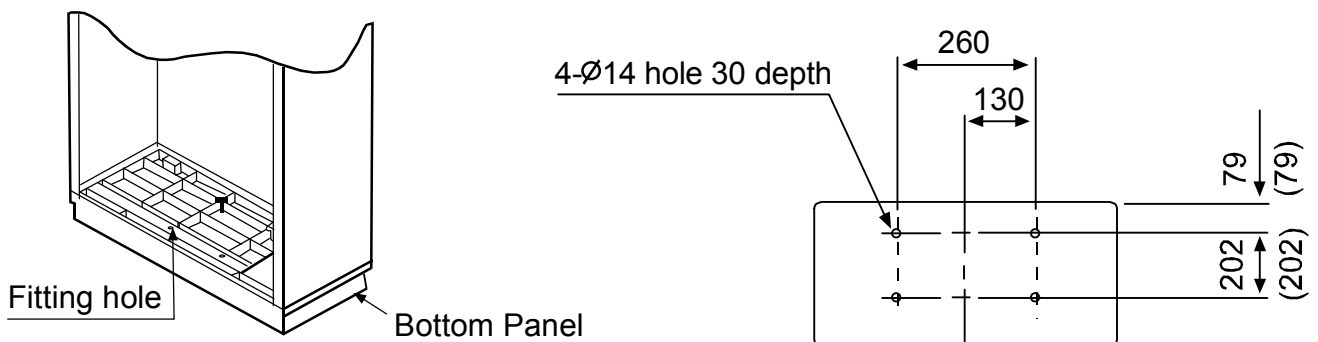


Fixing of indoor unit

With the unit set up vertically, fix the fitting metal to the unit with screws, then fix the fitting metal to the wall with cement nail and washer, as shown below:



Moreover, if want to fix the unit more firmly, you should fix the bottom panel to the ground with concrete bolts, as shown below:



Installation procedures

Piping connection

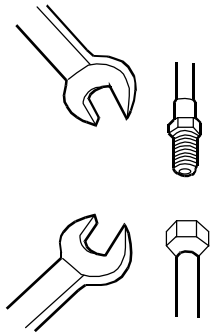
1. Connecting method

Apply refrigerant oil at half union and flare nut.

To bend a pipe, give the roundness as large as possible not to crash the pipe.

When connecting pipe, hold the pipe centre to centre then screw nut on by hand, refer to Fig.

Be careful not to let sundries, such as sands enter the pipe.



Forced fastening without centering may damage the threads and cause a gas leakage.

Pipe dia	Fastening torque
Liquid pipe 9.52mm(3/8")	29.4N·m
Liquid pipe 12.7mm(1/2")	50N·m
Gas pipe 19.05mm(3/4")	117.7N·m

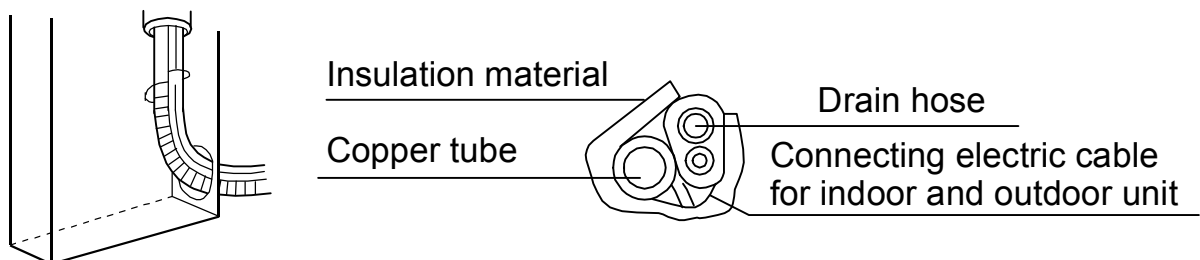
2. Piping connection of indoor unit

Arrangement of piping and drainage pipe



After opening inlet grill, you will see a control box as shown in the Fig. Remove the cover before wiring work.

Cut away, with a hammer or a saw, the lid for piping according to piping direction.



According to the piping method, connect the piping on indoor unit with union of connecting pipe.

Arrange the piping as per the wall hole and bind drain hose connecting electric cable and piping together with polyethylene tape.

Insert the bound piping connecting electric cable and drain hose through wall hole to connect with outdoor unit.

Installation procedures

Necessary Tools and Materials

Prepare the following tools and materials necessary for installing and servicing the unit.

Necessary tools for use with R410A(Adaptability of tools that are for use with R22 and R407C).

1. To be used exclusively with R410A (Not to be used if used with R22 or R407C)

Tools/Materials	Use	Notes
Gauge Manifold	Evacuating,refrigerant charging	5.09MPa on the High-pressure side.
Charging Hose	Evacuating, refrigerant charging	Hose diameter larger than the concentional ones.
Refrigerant Recovery Equipment	Refrigerant recovery	
Refrigerant Cylinder	Refrigerant charging	Write down the refrigerant type. Pink in color at the top of the cylinder.
Refrigerant Cylinder Charging Port	Refrigerant charging	Hose diameter larger than the conventional ones.
Flare Nut	Connecting the unit to piping	Use Type-2 Flare nuts.

2. Tools and materials that may be used with R410 with some restrictions

Tools/Materials	Use	Notes
Gas leak detector	Detection of gas leaks	The ones for HFC type refrigerant may be used.
Vacuum Pump	Vacuum drying	May be used if a reverse flow check adaptor is attached.
Flare Tool	Flare machining of piping	Chages have been made in the flare machining dimension. Refer to the next page.
Refrigerant Recovery Equipment	Recovery of refrigerant	May be used if designed for use with R410A.

3. Tools and materials that are used with R22 or R407C that can also be used with R410A

Tools/Materials	Use	Notes
Vacuum Pump with a Check Valve	Vacuum drying	
Bender	Bending pipes	
Torque Wrench	Tightening flare nuts	Only $\phi 12.70$ (1/2") and $\phi 15.88$ (5/8") have a larger flare machining dimension.
Pipe Cutter	Cutting pipes	
Welder and Nitrogen Cylinder	Welding pipes	
Refrigerant Charging Meter	Refrigerant charging	
Vacuum Gauze	Checking vacuum degree	

4. Tool and materials that must not used with R410A

Tools/Materials	Use	Notes
Charging Cylinder	Refrigerant Charging	Must not be used with R410-type units.

Tools for R410A must be handled with special care, and keep moisture and dust from entering the cycle.

Installation procedures

Piping Materials

Types of Copper Pipes (Reference)

Maximum Operation Pressure	Applicable Refrigerants
4.5MPa	R410A

- Use pipes that meet the local standards.

Piping Materials/Radial Thickness

Use pipes made of phosphorus deoxidized copper.

Since the operation pressure of the units that use R410A is higher than that of the units for use with R22, use pipes with at least the radial thickness specified in the chart below. (Pipes with a radial thickness of 0.7mm or less may not be used.)

Size(mm)	Size(inch)	Radial Thickness(mm)	Type
φ 6.35	1/4"	0.8t	Type-O pipes
φ 9.52	3/8"	0.8t	
φ 12.7	1/2"	0.8t	
φ 15.88	5/8"	1.0t	
φ 19.05	3/4"	1.0t	Type-1/2H or Hpipes

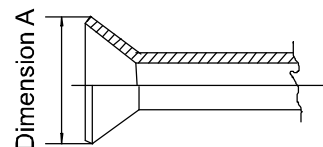
- Although it was possible to use type-O for pipes with a size of up to φ 19.05(3/4") with conventional refrigerants, use type-1/2H pipes for units that use R410A.(Type-O pipes may be used if the pipe size is φ19.05 and the radial thickness is 1.2t.)
- The table shows the standards in Japan. Using this table as a reference, choose pipes that meet the local standards.

Flare Machining (type-O and OL only)

The flare machining dimensions for units that use R410A is larger than those for units that use R22 in order to increase air tightness.

Flare Machining Dimension(mm)

External dimension of pipes	Size	Dimension A	
		R410A	R22
φ6.35	1/4"	9.1	9.0
φ9.52	3/8"	13.2	13.0
φ12.7	1/2"	16.6	16.2
φ15.88	5/8"	19.7	19.4
φ19.05	3/4"	24.0	23.3



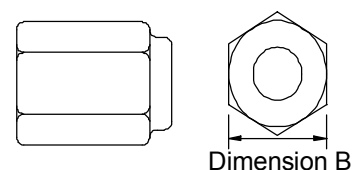
If a clutch type flare tool is used to machine flares on units that use R410A, make the protruding part of the pipe between 1.0 and 1.5mm. Copper pipe gauge for adjusting the length of pipe protrusion is useful.

Flare Nut

Type-2 flare nuts instead of type-1 nuts are used to increase the strength. The size of some of the flare nuts have also been changed.

Flare nut dimension(mm)

External dimension of pipes	Size	Dimension B	
		R410A(Type2)	R22(Type1)
φ6.35	1/4"	17.0	17.0
φ9.52	3/8"	22.0	22.0
φ12.7	1/2"	26.0	24.0
φ15.88	5/8"	29.0	27.0
φ19.05	3/4"	36.0	36.0



- Using this table as a reference, choose pipes that meet the local standards.

Installation procedures

NOTICE

■ For new installations, use the standard pipe sizes.
When using existing pipes, size-up is allowed as mentioned in the table above.
Additional restrictions towards allowable pipe lengths, as mentioned in the table 7.3 on page 11, must be taken into account.
Not using the standard pipe size may result in capacity decrease. The installer must acknowledge this and judge this very carefully in function of the complete installation.

■ Existing or pre-installed piping can be used

1. Piping must comply with the criteria below.

- Piping diameter must comply with the limitations as indicated in paragraph "7.2. Refrigerant pipe size" on page 11.
- Piping length must be within limits of the allowable piping length as in paragraph "7.3. Allowable pipe length and height difference" on page 11.
- Piping must be designed for R410A. See paragraph "6.2. Selection of piping material" on page 10.

2. Piping can be reused without cleaning when:

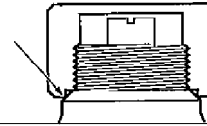
- Total 1-way piping length: < 50m.
- No compressor breakdown has occurred in the history of the unit to be replaced.
- A correct pump down operation can be executed:
 - Operate the unit continuously for 30 minutes in cooling mode.
 - Execute a pump down operation.
 - Remove the air conditioning units to be replaced.
- Check the contamination inside the existing piping.

If you cannot meet all these requirements, the existing pipes must be cleaned or replaced after removing the air conditioning units to be replaced.

3. Prepare the flare connections for higher pressure. See paragraph 6.2

Cautions on handling the stem cap

■ The stem cap is sealed where indicated by the arrow. Take care not to damage it. After handling the stop valve, make sure to tighten the stem cap securely. For the tightening torque, refer to the table below. Check for refrigerant leaks after tightening the stem cap.



Cautions on handling the service port

■ Always use a charge hose equipped with a valve depressor pin, since the service port is a Schrader type valve.

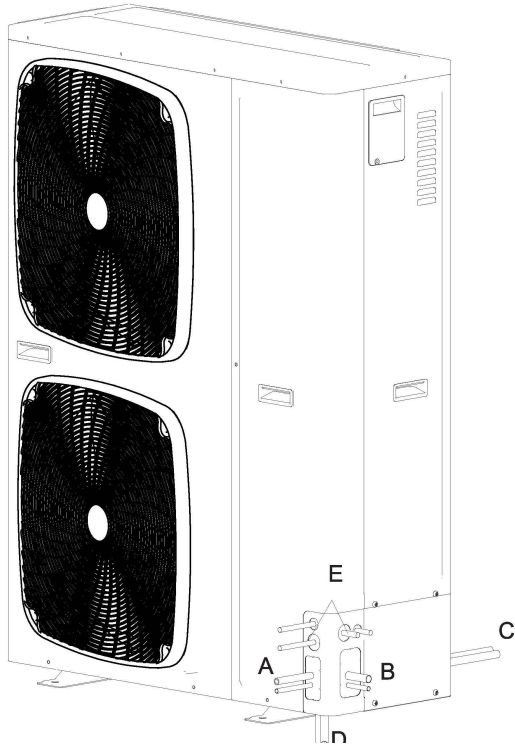
■ After handling the service port, make sure to tighten the service port cap securely. For the tightening torque, refer to the table below.

■ Check for refrigerant leaks after tightening the service port cap.

Refrigerant piping

Installation procedures

- Field pipes can be installed in four directions (A, B, C, D, E).



- A: Forward
- B: Backward
- C: Sideways
- D: Downward
- E: Power supply cable, outdoor and indoor connection cable

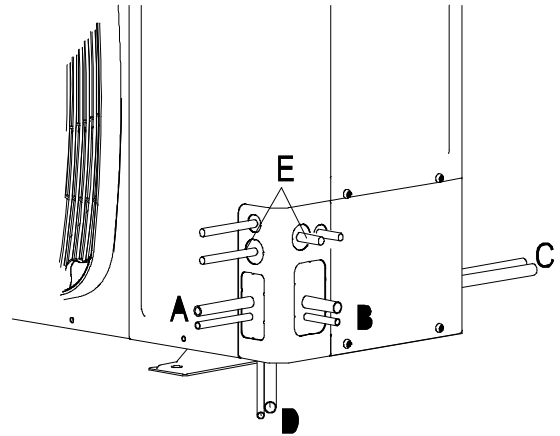
- Cutting out the two slits makes it possible to install as shown in the figure "Field pipes in 4 directions".

(Use a metal saw to cut out the slits.)

- To install the connecting pipe to the unit in a downward direction, make a knock-out hole by penetrating the centre area around the knock-out hole using a $\phi 6\text{mm}$ drill (4x).
- After knocking out the knock-out hole, it is recommended to apply repair paint to the edge and the surrounding end surfaces to prevent rusting.
- When passing electrical wiring through the knock-out holes, remove any burrs from the knock-out holes and wrap the wiring with protective tape to prevent damage.

2. Preventing foreign objects from entering

Plug the pipe through-holes with putty or insulating material (procured locally) to stop up all gaps, as shown in the figure.



1 Putty or insulating material (produced locally)

If there is any possibility that small animals enter the system through the knock-out holes, plug the holes with packing materials (field supplied).

Insects or small animals entering the outdoor unit may cause a short circuit in the electrical box.

Seal knock-out holes to avoid snow and humidity entering.

3. Preventing foreign objects from entering

- Be careful not to let the indoor and outdoor piping come into contact with the compressor terminal cover. If the liquid-side piping insulation might come into contact with it, adjust the height as shown in the figure below. Also, make sure the field piping does not touch the bolts or outer panels of the compressor.
- When the outdoor unit is installed above the indoor unit the following can occur: The condensed water on the stop valve can move to the indoor unit. To avoid this, please cover the stop valve with sealing material.

Installation procedures

Arrangement of drain hose

- Drain hose shall be placed in under place.
- There should be a slope when arrange drain hose. Avoid up and down waves in drain hose.



If humidity is high, drain pipe(especially in room and indoor unit) must be covered with insulation material.

3. Piping connection of outdoor unit.

Connect the connecting pipe and inlet and outlet liquid pipe according to the piping method.

4.Purging method

Discharge the air out of the indoor unit and the refrigerant pipe by vacuumizing

- (1) Fasten all the nuts of the indoor and outdoor pipes to make these parts out of leakage.
- (2) Under the condition of the complete close of the indoor and outdoor valve center (both liquid and gas side),dismount the repair valve cap.Vacuumizing through the charge mouth of the repair valve.
- (3) After vacuumizing fasten the repair valve,and dismount the cap of the big and small stop valve,then loosen the stop valve center completely and fasten the big and small stop valve.

5.Extra charging amount of the refrigerant

When piping is longer than 5 m, charge additional refrigerant specified in this list.

Pipe length	5m	10m	15m	20m	25m	30m
Refrigerant charge (g)	—	375	750	1125	1500	1875

Installation procedures

Electric wiring

Note:

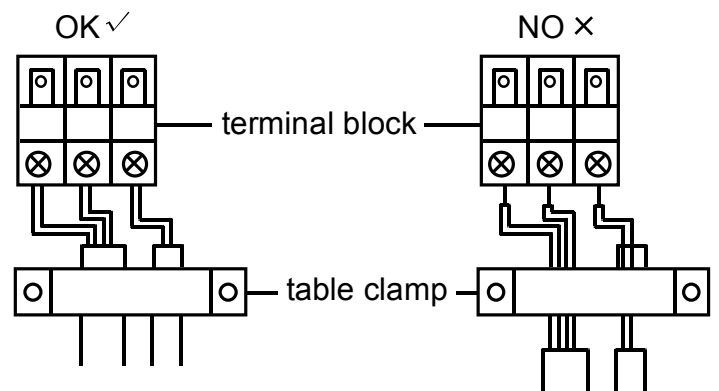
- Electric wiring must be done by qualified person.
- The power supply connects from the outdoor unit.
- The connecting cable and power cable are self-provided.

Wiring of indoor unit

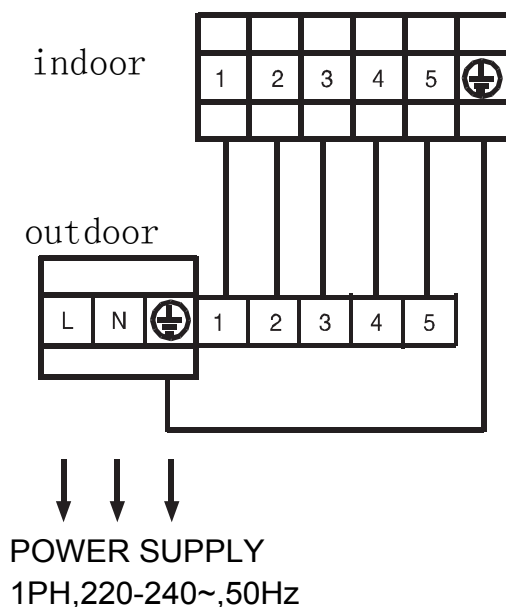
- Insert the cable from outside the wall hole where piping already exist.
- Pull it out from front.
- Loosen terminal screws and insert cable end fully into terminal block, then tighten it.
- Pull the cable gently to make sure it is tight.
- Replace cover after wiring.

Wiring of outdoor unit

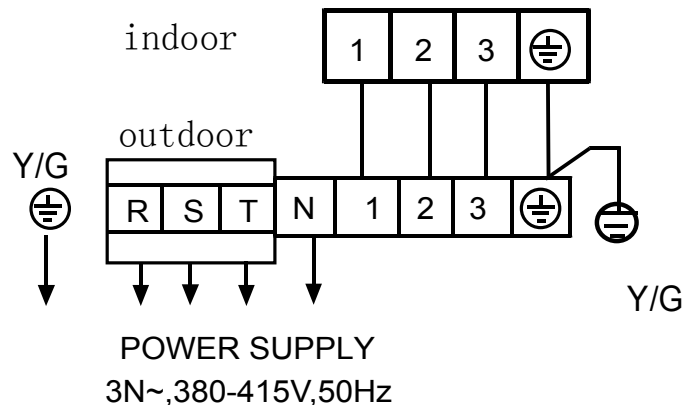
- Insert the cable from inside the wall hole where piping already exists.
- Pull it out from front.
- Loose terminal screw and insert cable end fully into terminal block, then tighten it.
- Pull the cable gently to make sure it is tight.
- Replace cover after wiring.



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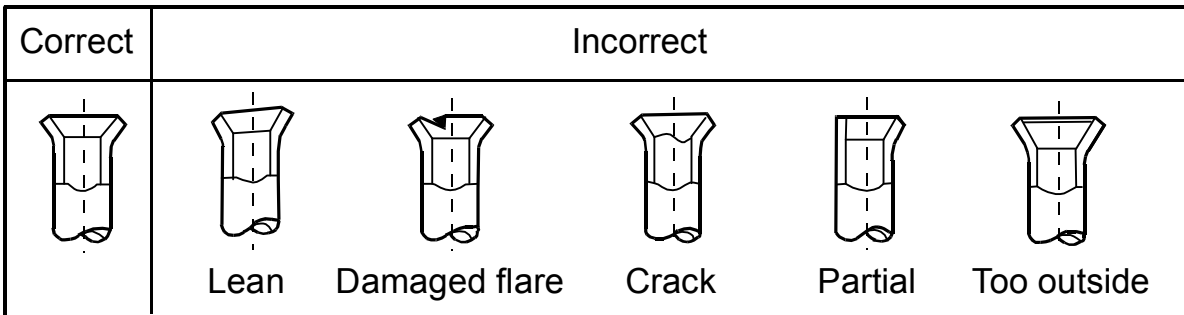
Others

Note:

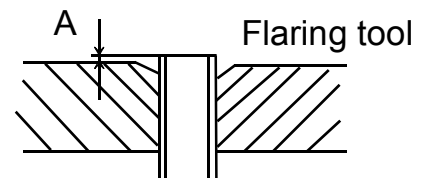
- When connecting indoor and outdoor wire, check the number on indoor and outdoor terminal blocks. Incorrect wiring may damage air conditioner's controller or cause operation failure.

1. Pipe cutting and flaring

- Be sure to carry out deburring after pipe cutting with a pipe cutter.
- Insert flaring tool to make a flare.



	Pipe dia.	Dimension A(mm)
Liquid pipe	Ø9.52mm (3/8")	1.0 ~ 1.8
Liquid pipe	Ø12.7mm (1/2")	1.2 ~ 2.0
Gas pipe	Ø19.05mm (3/4")	1.4 ~ 2.2



2. Installation inspection and test run:

Please operate unit according to this Manual.

Items to be checked during test run. Please made a "✓" in "□"

- Are there any gas leakage?
- How is insulation at piping connection carried out?
- Are electric wires of indoor and outdoor unit firmly inserted into terminal block?
- Is electric wiring of indoor and outdoor securely fixed?
- Is drainage securely carried out?
- Is earth line (grounding) securely connected?
- Is power supply voltage abided by the code?
- Is there any noise?
- Is control display normal?
- Is cooling operation normal?
- Is room temp. regulator normal?

