



Owner's Manual

Original Instructions

Commercial Air Conditioners

Photovoltaic Multi VRF

Applicable Models:

GMV-Y60WL/A-T(U)

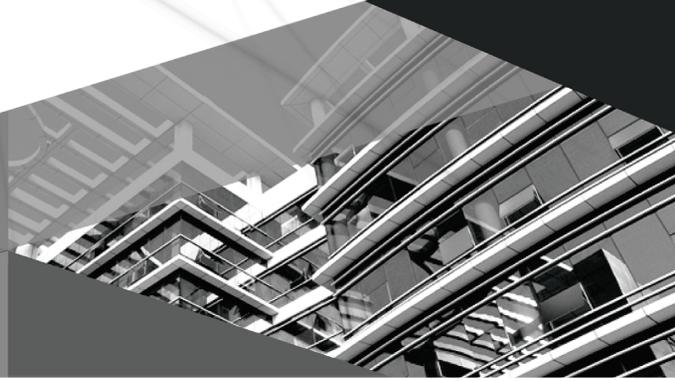
GMV-Y48WL/A-T(U)

GMV-Y36WL/A-T(U)

Thank you for choosing air conditioners. Please read this Owner's Manual carefully before operation and retain it for future reference.

If you have lost the Owner's Manual, please contact the local agent or visit www.gree.com or send an email to global@cn.gree.com for the electronic version.

GREE ELECTRIC APPLIANCES, INC. OF ZHUHAI



Preface

For correct installation and operation, please read all instructions carefully. Before reading the instructions, please be aware of the following items:

⚠ WARNING	
(1)	Instructions for installation and use of this product are provided by the manufacturer.
(2)	Installation must be performed in accordance with the requirements of NEC and CEC by authorized personnel only.
(3)	For the safe operation of this unit, please read and follow the instructions carefully.
(4)	During operation, total capacity of indoor units should not exceed the total capacity of outdoor units. Otherwise, poor effect of cooling or heating may result.
(5)	Direct operators or maintainers should well keep this manual.
(6)	If this unit fails to operate normally, please contact our service center as soon as possible and provide the following information: 1) Content on the name plate (model number, cooling capacity, production code, ex-factory date). 2) Malfunction details (before and after the malfunction occurs).
(7)	Each unit has been strictly tested and proved to be qualified before ex-factory. In order to prevent units from being damaged or operating normally because of improper disassembly, please do not disassemble the unit by yourself. If you need to disassemble and check units, please contact our service center. We will send specialists to guide the disassembly.
(8)	All graphics in this manual is only for your reference. For sales or production reasons, these graphics are subject to change by manufacturer without prior notice.
(9)	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.

User Notice



DISPOSAL: Do not dispose this product as unsorted municipal waste. Collection of such waste separately for special treatment is necessary.

Exception Clauses

Manufacturer will bear no responsibilities when personal injury or property loss is caused by the following reasons:

- (1) Damage the product due to improper use or misuse of the product.
- (2) Alter, change, maintain or use the product with other equipment without abiding by the instruction manual of manufacturer.
- (3) After verification, the defect of product is directly caused by corrosive gas.
- (4) After verification, defects are due to improper operation during transportation of product.
- (5) Operate, repair, maintain the unit without abiding by instruction manual or related regulations.
- (6) After verification, the problem or dispute is caused by the quality specification or performance of parts and components that produced by other manufacturers.
- (7) The damage is caused by natural calamities, bad using environment or force majeure.

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1 Safety Notices (Please be sure to abide them)

⚠ DANGER	If not abide them strictly, it may cause severe damage to the unit or the people.
⚠ WARNING	If not abide them strictly, it may cause slight or medium damage to the unit or the people.
⚠ CAUTION	This sign indicates that the items must be prohibited. Improper operation may cause severe damage or death to people.
NOTICE	This sign indicates that the items must be observed. Improper operation may cause damage to people or property.

⚠ WARNING	
(1)	This product can't be installed at corrosive, inflammable or explosive environment or the place with special requirements, such as kitchen. Otherwise, it will affect the normal operation or shorten the service life of the unit, or even cause fire hazard or serious injury. As for the above special places, please adopt special air conditioner with anti-corrosive or anti-explosion function.
(2)	Follow this manual to complete the installation work. Please read this manual carefully before turning on or repairing the unit
(3)	Diameter of power cord should be large enough. The damaged power cord and connection wire must be replaced with special cables.
(4)	When the power cord is connected, please fix the electric box cover properly to avoid safety accidents.
(5)	Never fail to comply with the nitrogen-charging welding process. Do charge nitrogen when welding the pipes.
(6)	Never short circuit or cancel the pressure switch to prevent unit damage.
(7)	As for the unit controlled by the wired controller, connect the wired controller well firstly and then energize the unit; otherwise, the unit can't operate normally.
(8)	When installation is finished, please check whether the drainage pipes, pipelines and electric wires are connected correctly to avoid water leakage, refrigerant leakage, electric shock or fire, etc.
(9)	Do not insert fingers or objects into air outlet or air return grille.
(10)	Open the door and window frequently to keep good ventilation for avoiding oxygen deficit when gas heater or oil heater is used in the room.
(11)	Never plug in or unplug the power plug directly to turn on or turn off the air conditioner.
(12)	Once the air conditioner is turned on, it can be turned off only after it has operated for 5min at least; otherwise, it will affect the oil return of compressor.
(13)	Do not allow children to operate this air conditioner.
(14)	Do not operate this air conditioner with wet hands.
(15)	The air conditioner can be cleaned only when it has been turned off and the power has been cut off; otherwise, it may cause electric shock or injury.
(16)	Never spray or flush water towards the air conditioner; otherwise, malfunction or electric shock may happen.
(17)	Do not expose the air conditioner to the moist or corrosive environment.
(18)	Under cooling mode, please don't set the room temperature too low; keep the temperature difference between indoor and outdoor within 5°C (41°F).
(19)	Do not repair the unit by yourself. Wrong maintenance may cause electric shock or fire hazard. Please contact Gree appointed service center for help.
(20)	Before installation, please check whether the power supply is complied with that specified on the nameplate and check the safety of the power supply.
(21)	Installation should be conducted by the dealer or qualified personnel. Please do not attempt to install the air conditioner by yourself. Improper installation may lead to water leakage, electric shock or fire hazard, etc.
(22)	Be sure to use special accessories and parts for installation to prevent water leakage, electric shock and fire hazard, etc.
(23)	The air conditioner must be grounded reliably for avoiding electric shock. Please do not connect the earthing wire to gas pipe, water pipe, lightning rod or telephone line.
(24)	Put through the power 8 hours in advance before operation. Do not cut off the power when the air conditioner stops operation for only about one night (protect the compressor).
(25)	If refrigerant leakage happens, please ventilate the room immediately.
(26)	Volatile liquid, such as diluent or gasoline, will damage the appearance of air conditioner. Only soft dry cloth and wet cloth dipped with neutral detergent can be used to clean the outer case of air conditioner.

⚠ WARNING

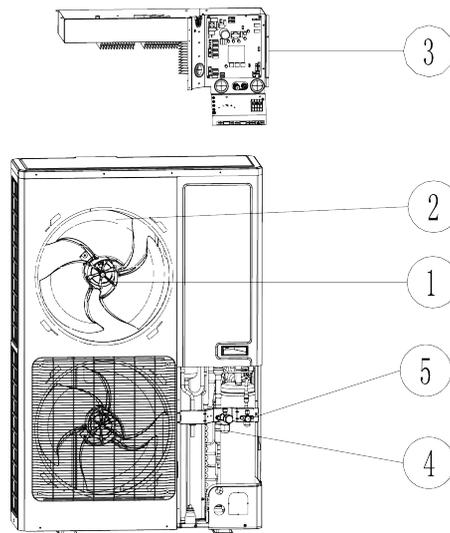
- (27) If there are any abnormal circumstances (such as burning smell, etc.), please turn off the unit and cut off the main power supply immediately, and then contact Gree appointed service center. If those abnormal circumstances still exist, the unit may be damaged and it may lead to electric shock or fire hazard.
- (28) Under the standby status, the air conditioner will consume a little power for ensuring reliability of complete air conditioner, maintaining normal communication and preheating refrigerant. When the unit won't be used for a long time, cut off the power of the complete air conditioner. However, please preheat it when operating the unit next time.

Any personal injury or property loss caused by improper installation, improper debug, and unnecessary repair or not following the instructions of this manual should not be the responsibility of Gree Electric Appliances, Inc. of Zhuhai.

2 Product Introduction

Gree Multi VRF System adopts inverter compressor technology. By changing the displacement of compressor, stepless capacity regulation within range of 10%~100% can be realized. Various product lineups are provided with capacity range from 12.1kW to 20kW, which can be widely used in residential, commercial and working area and especially applicable to places with big load change. Gree residential air conditioner is absolutely your best choice.

2.1 Names of Main Parts



GMV-Y36WL/A-T(U)
GMV-Y48WL/A-T(U)
GMV-Y60WL/A-T(U)

Fig. 2.1.1

No.	①	②	③	④	⑤
Name	Motor	Fan blade	Electric box assembly	Gas pipe valve	Liquid pipe valve

2.2 Combinations of Indoor and Outdoor Units

- (1) See below the number of indoor units that can be connected to the outdoor unit.
- (2) The total capacity of indoor units should be within 50%~135% of that of the outdoor unit.

Model	Max sets of connectable IDUS
GMV-Y36WL/A-T(U)	7
GMV-Y48WL/A-T(U)	8
GMV-Y60WL/A-T(U)	9

(3) Outdoor units of DC Inverter Multi VRF System can be connected to various indoor units. When any one of the indoor units receives operating command, outdoor unit will start operation as per required capacity. When all indoor units stop, outdoor unit will be shut off.

2.3 Operating Range

Cooling	Outdoor temperature: -5°C~48°C(23°F~118°F)
Heating	Outdoor temperature: -20°C~27°C(-4°F~81°F)

3 Preparation before Installation

NOTE! Graphics here are only for reference. Please refer to actual products.

3.1 Standard Parts

Please use the supplied standard parts as required.

Parts for Outdoor Unit				
No.	Name	Appearance	Qty	Remark
1	User Manual		1	—
2	Wiring (match with resistance)		1	Must be connected to the last IDU of communication connection
3	Corrugated pipe		1	—
4	Drainage hole cap		3	—
5	Drainage joint		1	—

3.2 Installation Site

⚠ WARNING	
(1)	The unit must be installed where strong enough to withstand the weight of the unit and fixed securely, otherwise the unit would topple or fall off.
(2)	Do not install where there is a danger of combustible gas leakage.
(3)	Do not install the unit near heat source, steam, or flammable gas.
(4)	Children under 10 years old must be supervised not to operate the unit.
(5)	Select a location which is out of children's reach. Keep the unit away from children.
(6)	Make sure the location has space for heat exchange and maintenance so that unit can operate reliably with good ventilation.
(7)	Make sure the location has space for heat exchange and maintenance so that unit can operate reliably with good ventilation.
(8)	Install the unit where it will not be tilted by more than 5°.
(9)	During installation, if the outdoor unit has to be exposed to strong wind, it must be fixed securely.

NOTICE	
(1)	If possible, do not install the unit where it will be exposed to direct sunlight. (If necessary, install a blind that does not interfere with the air flow.)
(2)	Install ODU in a place where it will be free from getting dirty or getting wet by rain as much as possible.
(3)	Install ODU where it is convenient to connect IDU.
(4)	ODU and IDU should stay as close as possible to shorten the length of refrigerant pipe and reduce bend angles.
(5)	Install ODU where the condensate water can be drained out freely during heating operation. Do not place animals and plants in the path of the warm air.
(6)	Take the air conditioner weight into account and select a place where noise and vibration are small

If the ODU is totally surrounded by walls, please refer to the following figures for space dimension:

Unit:mm(inch)

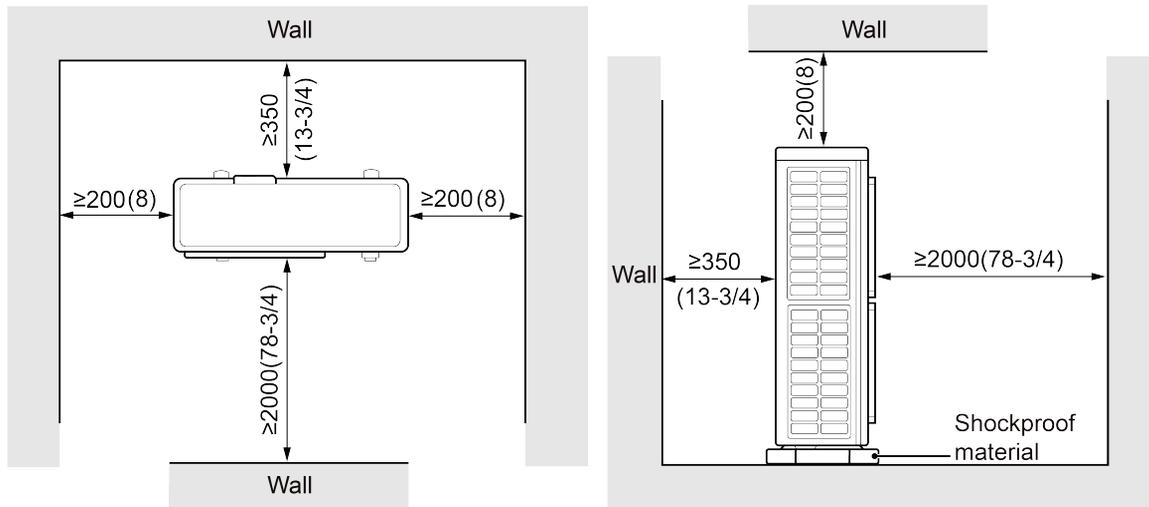


Fig. 3.2.1

3.3 Piping Work Requirements

Refer to the table below for piping work requirements:

R410A Refrigerant System	
Outer diameter (mm/inch)	Wall thickness(mm/ inch)
Φ6.35(Φ1/4)	≥0.8(1/32)
Φ9.52(Φ3/8)	≥0.8(1/32)
Φ12.7(Φ1/2)	≥0.8(1/32)
Φ15.9(Φ5/8)	≥1.0(1/25)
Φ19.05(Φ3/4)	≥1.0(1/25)

4 Installation Instruction

NOTE! Graphics here are only for reference. Please refer to actual products.

4.1 Dimension of Outdoor Unit and Mounting Hole

Unit Outline and Installation Dimension:

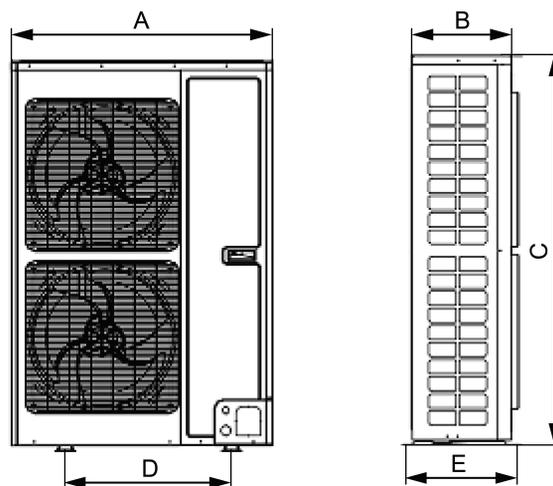


Fig. 4.1.1

Unit:mm(inch)

Model	A	B	C	D	E
GMV-Y36WL/A-T(U)	900	340	1345	572	378
GMV-Y48WL/A-T(U)	(35-3/8)	(13-3/8)	(53)	(22-1/2)	(15)
GMV-Y60WL/A-T(U)					

4.2 Connection Pipe

4.2.1 Schematic Diagram of Piping Connection

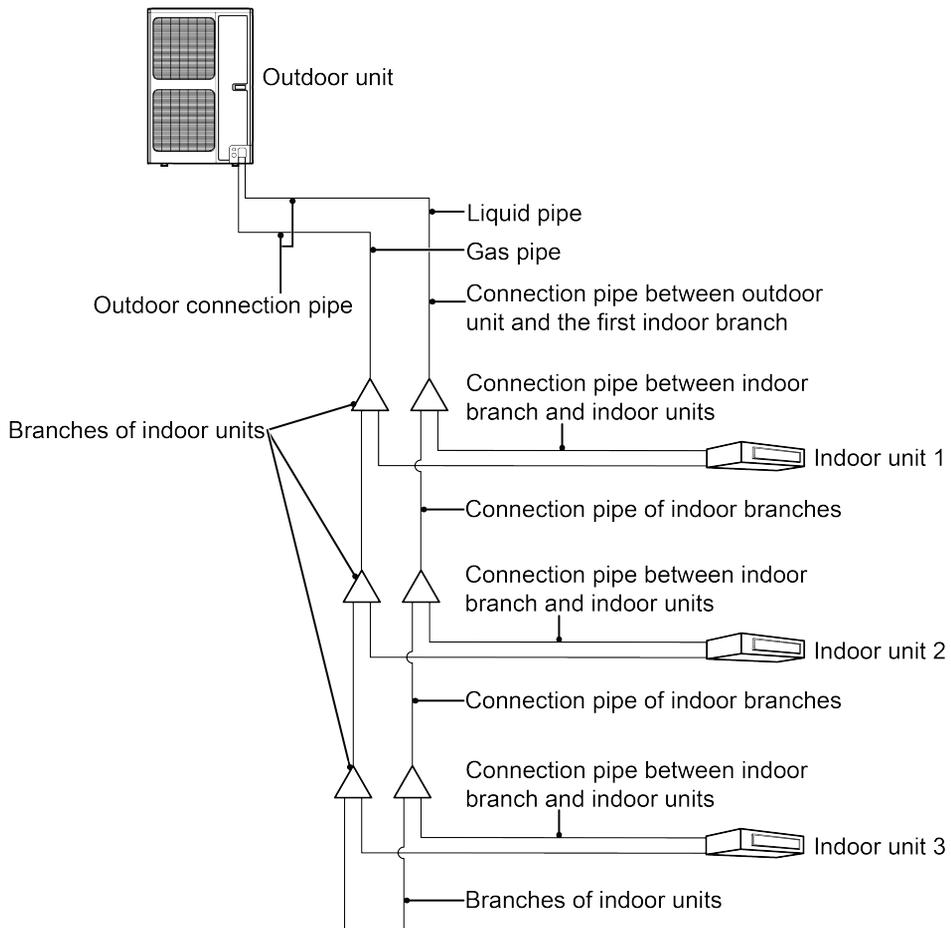
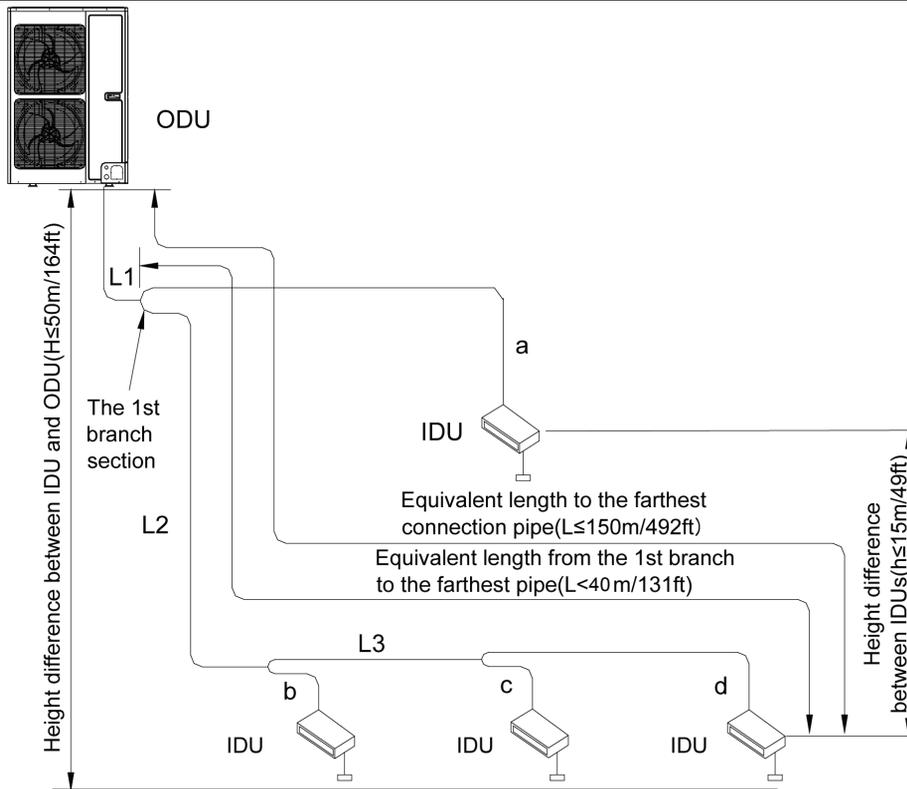


Fig. 4.2.1

4.2.2 Allowable Length and Height Difference of Connection Pipe

Y type branch joint is adopted to connect indoor and outdoor units. Connecting method is shown in the figure below.

NOTE! Equivalent length of one Y-type branch is 0.5m(1-5/8feet).



Each Y-type branch equals to 0.5m(1-5/8ft) and each branch header equals to 1.0m(3-1/4ft).

Fig. 4.2.2 Allowable Length and Height Difference of Connection Pipe

Piping parameters of GMV-Y36WL/A-T(U), GMV-Y48WL/A-T(U), GMV-Y60WL/A-T(U)

—		Allowable value		Fitting pipe
		m	feet	
Total length (actual length) of fitting pipe		300	984	L1+L2+L3+a+b+c+d
Length of farthest fitting pipe	Actual length	120	394	L1+L2+L3+d
	Equivalent length	150	492	
From the 1st branch to the farthest indoor pipe		40	131	L2+L3+d
Height difference between ODU and IDU	ODU at upper side	50	164	—
	ODU at lower side	40	131	—
Height difference between IDUs		15	49	—

4.2.3 Dimension of Pipe (Main Pipe) from ODU to the 1st Indoor Branch

Dimension of pipe from ODU to the 1st indoor branch will be determined by the dimension of outdoor connection pipe.

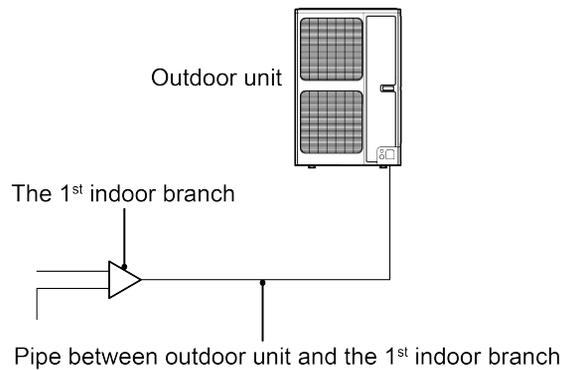


Fig. 4.2.3

Dimension of outdoor connection pipe:

Basic module	Pipe dimension	
	Gas pipe (mm/inch)	Liquid pipe (mm/inch)
GMV-Y36WL/A-T(U)	Φ15.9 (Φ5/8)	Φ9.52 (Φ3/8)
GMV-Y48WL/A-T(U)	Φ15.9 (Φ5/8)	Φ9.52 (Φ3/8)
GMV-Y60WL/A-T(U)	Φ19.05 (Φ3/4)	Φ9.52 (Φ3/8)

4.2.4 Selection of Indoor Branches

Select indoor branches according to the total capacity of downstream indoor units.

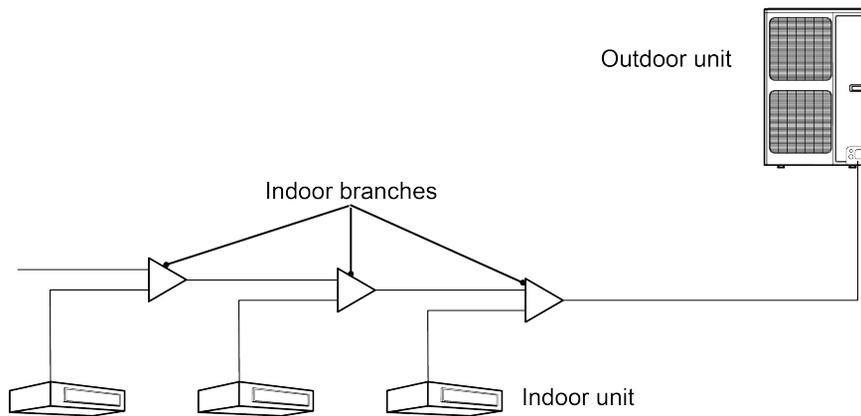


Fig. 4.2.4

Refrigerant system	Total capacity of downstream indoor units C (Btu/h)	Model
Y type branch	$C < 68200$	FQ01A/A
	$68200 \leq C \leq 102400$	FQ01B/A
	$102400 < C \leq 238800$	FQ02/A
	$238800 < C \leq 460600$	FQ03/A
	$460600 < C$	FQ04/A

4.2.5 Dimension of Pipe between Indoor Branches

Select pipe between indoor branches according to the capacity of downstream indoor units; if the capacity exceeds that of the outdoor unit, capacity of outdoor unit prevails.

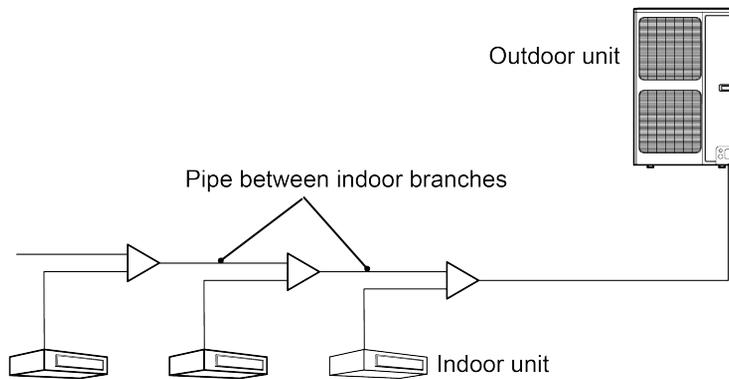


Fig. 4.2.5

Total capacity of downstream indoor units C (Btu/h)	Pipe (mm/inch)	Liquid pipe (mm/inch)
$C \leq 19000$	$\Phi 12.7$ ($\Phi 1/2$)	$\Phi 6.35$ ($\Phi 1/4$)
$19000 < C \leq 48500$	$\Phi 15.9$ ($5/8$)	$\Phi 9.52$ ($3/8$)
$48500 < C \leq 76400$	$\Phi 19.05$ ($\Phi 3/4$)	$\Phi 9.52$ ($\Phi 3/8$)

4.2.6 Dimension of Pipe between Indoor Branch and IDU

Dimension of pipe between indoor branch and IDU should be consistent with the dimension of indoor pipe.

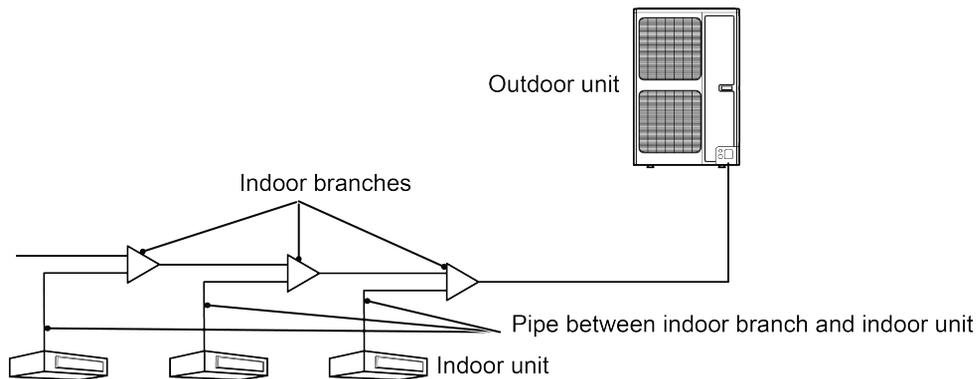


Fig. 4.2.6

Rated capacity of IDU C(Btu/h)	Gas pipe (mm/inch)	Liquid pipe (mm/inch)
$C \leq 9600$	$\Phi 9.52$ ($\Phi 3/8$)	$\Phi 6.35$ ($\Phi 1/4$)
$9600 < C \leq 17000$	$\Phi 12.7$ ($\Phi 1/2$)	$\Phi 6.35$ ($\Phi 1/4$)
$17000 < C \leq 48000$	$\Phi 15.9$ ($\Phi 5/8$)	$\Phi 9.52$ ($\Phi 3/8$)
$48000 < C \leq 55000$	$\Phi 19.05$ ($\Phi 3/4$)	$\Phi 9.52$ ($\Phi 3/8$)
$55000 < C \leq 96000$	$\Phi 22.2$ ($\Phi 7/8$)	$\Phi 9.52$ ($\Phi 3/8$)

NOTE! If the distance between IDU and its nearest branch is over 10m(33feet), then the liquid pipe of IDU (rated capacity ≤ 17000 Btu/h) shall be enlarged.

4.3 Installation of Connection Pipe

⚠ CAUTION

- (1) Conform to the following principles during pipe connection: Connection pipe should be as short as possible, so is the height difference between indoor and outdoor units. Keep the number of bends as little as possible. Radius of curvature should be as large as possible.
- (2) Weld the connection pipe between indoor and outdoor units. Please strictly follow the requirements for welding process. Rosin joint or pin hole is not allowed.
- (3) When laying the pipe, be careful not to distort it. Radius of bending parts should be over 200mm(8inch). Note that pipes cannot be repeatedly bent or stretched; otherwise the material will get harder. Do not bend or stretch the pipe for more than 3 times at the same position.

4.3.1 Flaring Process

- (1) Use pipe cutter to cut the connection pipe in case it is unshaped.
- (2) Keep the pipe downward in case cutting scraps get into the pipe. Clear away the burrs after cutting.
- (3) Remove the flared nut connecting indoor connection pipe and outdoor unit. Then use flaring tool to fix the flared nut into the pipe (as shown in Fig. 4.3.1).
- (4) Check if the flared part is flaring evenly and if there is any crack.

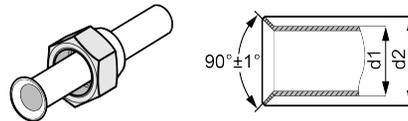


Fig. 4.3.1

4.3.2 Pipe Bending

- (1) Reshape the pipe by hand. Be careful not to damage the pipe.
- (2) Do not bend the pipe over 90°.
- (3) If pipe is repeatedly bent or stretched, it will get hard and difficult to bend and stretch again. Therefore, do not bend or stretch the bend for over 3 times.
- (4) In case that direct bending will open cracks to the pipe, first use sharp cutter to cut the insulating layer, as shown in Fig. 4.3.2.2. Do not bend the pipe until it is exposed. When bending is done, wrap the pipe with insulating layer and then secure it with adhesive tape.

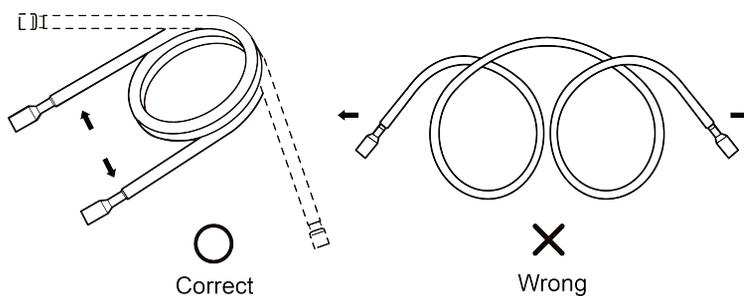


Fig. 4.3.2.1

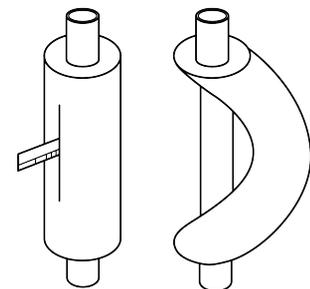


Fig. 4.3.2.2

4.3.3 Indoor Pipe Connection

- (1) Remove pipe cover and pipe plug.
- (2) Direct the flared part of copper pipe to the center of screwed joint. Twist on the flared nut tightly by hand, as in Fig.4.3.3.1. (Make sure indoor pipe is correctly connected. Improper location of the center will prevent flared nut from being securely twisted. Thread of nut will get damaged if the flared nut is twisted forcibly.)
- (3) Use torque wrench to twist on the flared nut tightly until the wrench gives out a click sound. (Hold the handle of wrench and make it at right angle to the pipe. as in Fig. 4.3.3.2)

⚠ CAUTION

- (1) Use sponge to wrap the un-insulated connection pipe and joint. Then tie the sponge tightly with plastic tape.
- (2) Connection pipe should be supported by a bearer rather than the unit.
- (3) The bending angle of piping should not be too small; otherwise the piping might have cracks. Please use a pipe bender to bend the pipe.

⚠ CAUTION

(4) When connecting IDU with connection pipe, do not pull the big and small joints of IDU with force in case the capillary tube or other tubes have cracks and cause leakage.

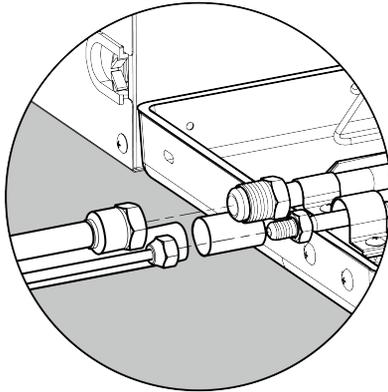


Fig. 4.3.3.1

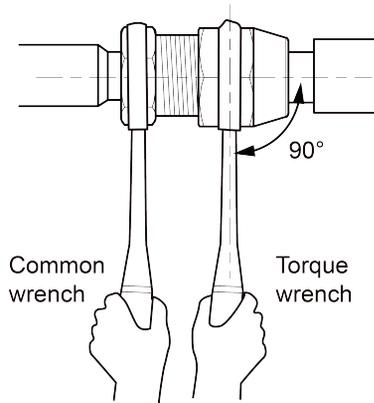


Fig. 4.3.3.2

Pipe Diameter	Tightening Torque
6.35mm(1/4 inch)	15-30N·m(11-22ft.-1b.)
9.52mm(3/8 inch)	35-40N·m(26-29ft.-1b.)
12.7mm(1/2 inch)	45-50N·m(33-37ft.-1b.)
15.9mm(5/8 inch)	60-65N·m(44-48ft.-1b.)

4.3.4 Outdoor Pipe Connection

Twist the flared nut on the connection pipe of outdoor valves. Twisting method is the same as for indoor pipe connection.

Below is the piping diagram of GMV-Y36WL/A-T(U), GMV-Y48WL/A-T(U), GMV-Y60WL/A-T(U), According to customer requirement or space limit, outlet pipe can be installed from the front, right or rear side.

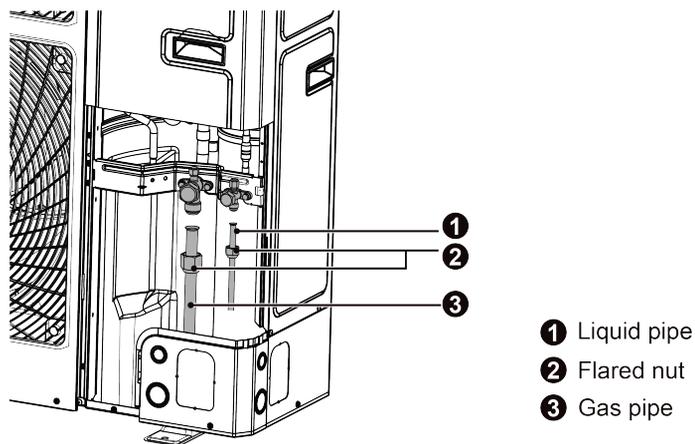


Fig. 4.3.4

4.3.5 Installation of Y-type Branch

(1) Y-type Branch

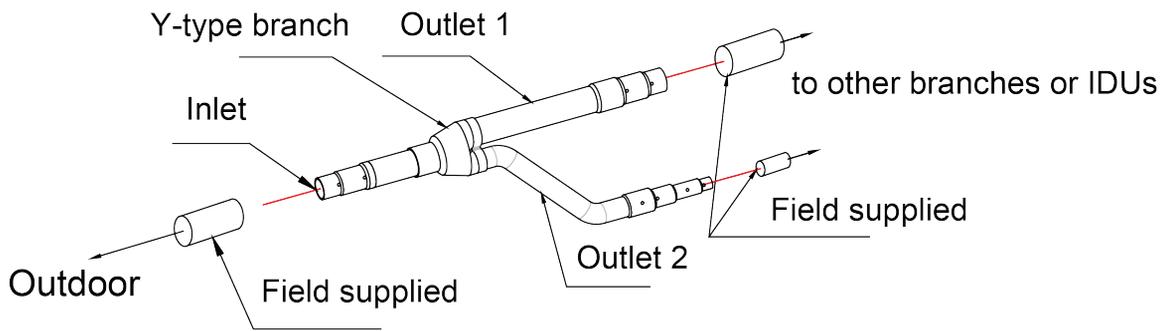


Fig. 4.3.5.1

(2) Y-type branch has several pipe sections with different dimension, which facilitates to match with various copper pipes. Use pipe cutter to cut in the middle of the pipe section that is of proper dimension and remove burrs as well. See Fig. 4.3.5.2.

(3) Y-type branch must be installed vertically or horizontally.

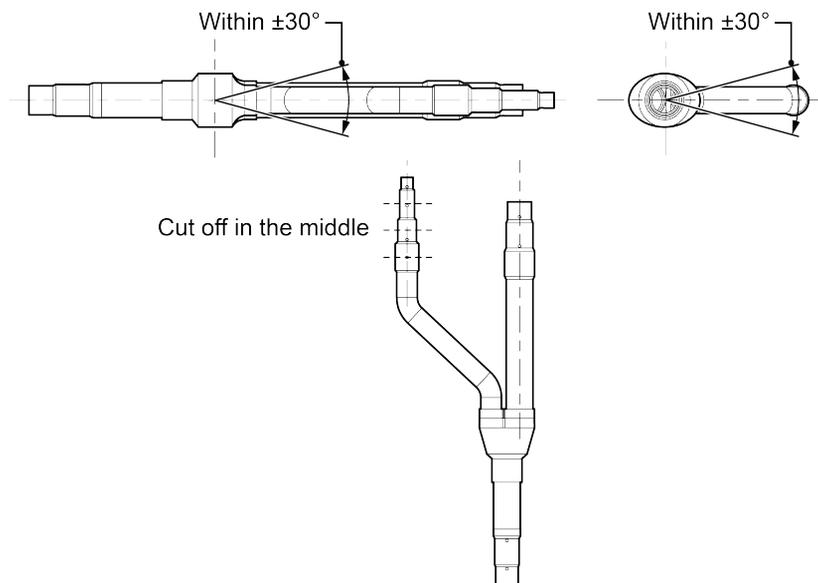


Fig. 4.3.5.2

NOTICE

Branch shall be isolated by insulating material that can bear 120°C(248°F) or even higher temperature. The attached foam of branch cannot be taken as insulating material.

4.3.6 Thermal Insulation for Pipeline

(1) For multi VRF system, every copper pipe should be labeled so as to avoid misconnection.

(2) At the branch inlet, leave at least 500mm(19-3/4inch) straight pipe section.

(3) Thermal insulation for pipeline

1) To avoid condensate or water leakage on the connection pipe, the gas pipe and liquid pipe must be wrapped with thermal insulating material and adhesive tape for insulation from the air.

2) Joints of indoor and outdoor unit should be wrapped with insulating material and leave no gap between pipe and wall. See Fig. 4.3.6.

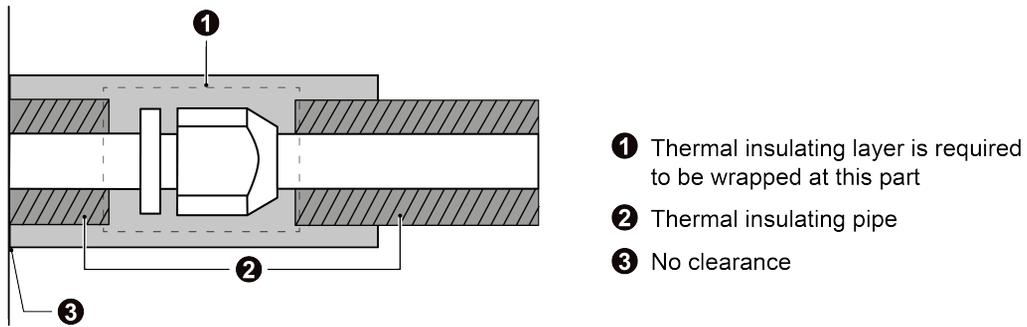


Fig. 4.3.6

- 3) When wrapping the tape, the later circle should cover half of the former one. Don't wrap the tape too tight, otherwise the insulation effect will be weakened.
- 4) After wrapping the pipe, apply sealing material to completely seal the hole on the wall.

NOTICE

- (1) Thermal insulating material shall be able to bear the pipe temperature. For heat pump unit, liquid pipe should bear 70°C(158°F) or above and gas pipe should bear 120°C(248°F) or above. For cooling only unit, both liquid pipe and gas pipe should bear 70°C(158°F) or above.
- (2) Thermal insulating material of branches should be the same as that of the pipeline. The attached foam of branches cannot be taken as insulating material.

4.3.7 Support and Protection of Pipeline

CAUTION

- (1) Support should be made for hanging connection pipe. Distance between each support cannot be over 1m(3-1/4feet).
- (2) Protection against accidental damage should be made for outdoor pipeline. When pipeline exceeds 1m(3-1/4feet), a pinch board should be added for protection.

4.4 Disassembly of Compressor Feet

In order to prevent unit from damage during transportation, 2 metal pieces are fitted to outdoor unit's compressor feet before unit leaves factory. See Fig. 4.4.

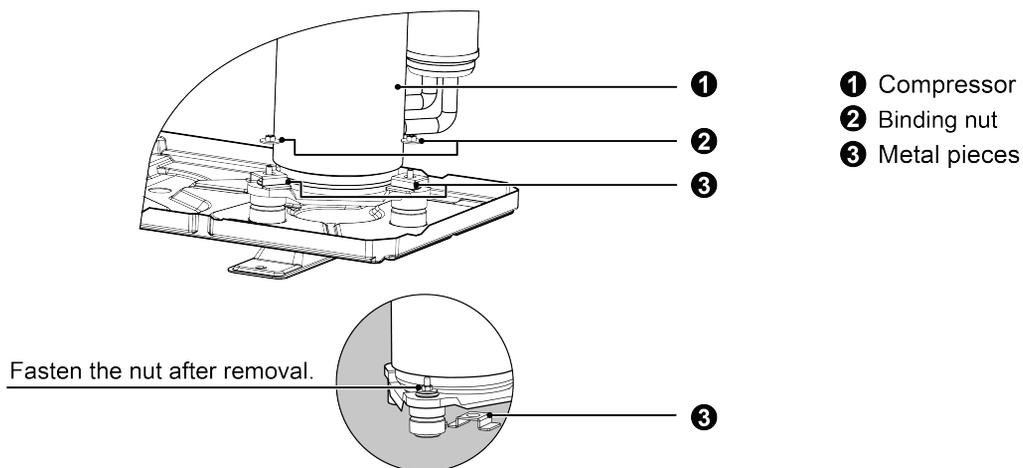


Fig. 4.4

When installing the unit, metal pieces for transportation must be removed. Then fasten the binding nuts again and wrap back soundproofing cotton. If unit runs with metal pieces fitting on, compressor will shake abnormally and unit's operating life will be shortened.

4.5 Vacuum Pumping, Refrigerant Adding

⚠ CAUTION

Do not purge the air with refrigerants but use a vacuum pump to vacuum the installation! There is no extra refrigerant in the outdoor unit for air purging!

4.5.1 Vacuum Pumping

- (1) Outdoor unit has been charged with refrigerant before delivery. Field-installed connection pipe needs to be charged with additional refrigerant.
- (2) Confirm whether outdoor liquid and gas valves are closed.
- (3) Use vacuum pump to withdraw the air inside indoor unit and connection pipe from the outdoor valve, as shown below.

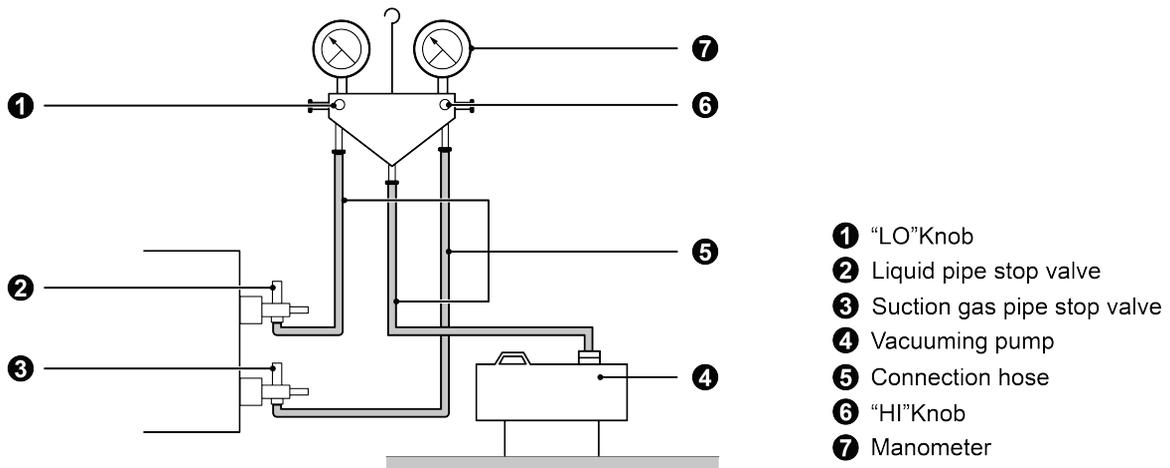


Fig. 4.5.1

4.5.2 Refrigerant Adding

- (1) Refrigerant quantity of outdoor unit before delivery:

Model	GMV-Y36WL/A-T(U)	GMV-Y48WL/A-T(U)	GMV-Y60WL/A-T(U)
Refrigerant Qty (kg/oz)	3.3 (116)	3.3 (116)	3.3 (116)

NOTICE

- (1) The refrigerant amount charged before delivery doesn't include the amount that needs to be added to indoor units and the connection pipeline.
- (2) Length of connection pipe is decided on site. Therefore the amount of additional refrigerant shall be decided on site according to the dimension and length of field-installed liquid pipe.
- (3) Record the amount of additional refrigerant for convenience of after-sales service.

- (2) Calculation of the amount of additional refrigerant

When the ODU is GMV-Y***WL/A-T(U), adding refrigerant method includes 3 steps as follow:

- 1) Amount of additional refrigerant depending on the pipe size(X)
- 2) Amount of additional refrigerant depending on Quantity of IDU(Y)
- 3) Amount of additional refrigerant depending on certain model of IDU(Z)

Total charging amount =X+Y+Z

Detail calculation is as follow:

- 1) $X = \sum(\text{Liquid pipe length} \times \text{amount of additional refrigerant of each 1m})$

Diameter of liquid pipe (mm/inch)	Φ19.05 (Φ3/4)	Φ15.9 (Φ5/8)	Φ12.7 (Φ1/2)	Φ9.52 (Φ3/8)	Φ6.35 (Φ1/4)
kg/m	0.25	0.17	0.11	0.054	0.022
oz/inch	0.224	0.152	0.099	0.048	0.02

2) $Y = (\text{Quantity of IDU} - 2) \times 0.3 \text{ kg} (10.58 \text{ oz})$

3) List of certain model of IDU require amount of additional refrigerant Z is as follow

(Unit: kg/oz)

Capacity (K)	09	12	15
Model			
Big Duct Type GMV-ND**PHS/B-T(U)	0.2 (7.05)	0.3 (10.58)	0.3 (10.58)
Big Cassette Type GMV-ND**T/A-T(U)	0.3 (10.58)	0.3 (10.58)	0.3 (10.58)

Example:

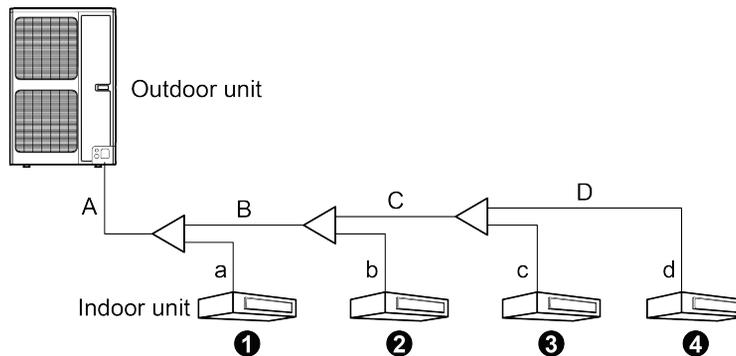


Fig. 4.5.2

No.	IDU ①	IDU ②	IDU ③	IDU ④
Model	Duct type GMV-N18G/A3A-D(U)	Duct type GMV-N12G/A3A-D(U)	Duct type GMV-ND15PH/B-T(U)	Duct type GMV-ND15T/A-T(U)

Liquid pipe

No.	A	B	C	D
Pipe size	Φ9.52mm (Φ3/8inch)	Φ9.52mm (Φ3/8inch)	Φ9.52mm (Φ3/8inch)	Φ6.35mm (Φ1/4inch)
Length	10m (32-3/4feet)	5m (16-3/8feet)	4m (13-1/8feet)	5m (16-3/8feet)
No.	a	b	c	d
Pipe size	Φ9.52mm (Φ3/8inch)	Φ6.35mm (Φ1/4inch)	Φ6.35mm (Φ1/4inch)	Φ6.35mm (Φ1/4inch)
Length	3m (9-3/4feet)	3m (9-3/4feet)	2m (6-5/8feet)	1m (3-1/4feet)

1) Amount of additional refrigerant depending on the pipe size(X)

Total length of each liquid pipe:

Φ9.52: $A+B+C+a=10+5+4+3=22\text{m} (72-3/16 \text{ feet})$

Φ6.35: $D+b+c+d=5+3+3+2+1=11\text{m} (36-1/16 \text{ feet})$

2) Amount of additional refrigerant depending on Quantity of IDU(Y)

Quantity of indoor unit: 4 sets

3) Amount of additional refrigerant depending on certain model of IDU(Z)

IDU includes GMV-ND15PH/B-T(U)、GMV-ND15T/A-T(U)

Therefore, the total charging amount = $(22 \times 0.054) + (11 \times 0.022) + (4-2) \times 0.3 + 0.3 + 0.3 = 2.63\text{kg} (79-13/16 \text{ oz})$

4.6 Electric Wiring

⚠ WARNING	
(1)	All electrical installation must be performed by qualified technicians in accordance with local laws, regulations and this user manual.
(2)	Use air conditioner specialized power supply and make sure that it is consistent with system's rated voltage.
(3)	Do not pull the power cord with force.
(4)	Caliber of the power cord must be large enough. A damaged power cord or connection wire must be replaced by specialized electrical cords.
(5)	Connect the unit to specialized grounding device and make sure it is securely grounded. It's a must to install air switch and current circuit breaker that can cut off the power of the entire system. The air switch should include magnetic trip function and thermal trip function so that system can be protected from short circuit and overload.
(6)	Air conditioner belongs to class I electrical appliance, so it must be securely grounded.
(7)	The yellow-green wire inside the unit is a ground wire. Do not cut it off or secure it with tapping screws, otherwise it will lead to electric shock.
(8)	Power supply must include secure grounding terminal. Do not connect the ground wire to the following: ①Water pipe; ②Gas pipe; ③Drain pipe; ④Other places that are deemed as not secure by professional technicians.

4.6.1 Electrical Wiring

(1) For solid core wiring (Fig. 4.6.1.1)

- 1) Cut the wire end with a wire cutter or wire-cutting pliers, then strip the insulation about 25mm (15/16inch).
- 2) Using a screwdriver, remove the terminal screw(s) on the terminal board.
- 3) Using pliers, bend the solid wire to form a loop suitable for the terminal screw.
- 4) Shape the loop wire properly, place it on the terminal board and tighten securely with the terminal screw using a screwdriver.

(2) For strand wiring (Fig. 4.6.1.2)

- 1) Cut the wire end with a wire cutter or wire-cutting pliers, then strip the insulation about 10mm (3/8inch).
- 2) Using a screwdriver, remove the terminal screw (s) on the terminal board.
- 3) Using a round terminal fastener or pliers, securely clamp a round terminal to each stripped wire end.
- 4) Position the round terminal wire, and replace and tighten the terminal screw with a screwdriver.(Fig. 4.6.1.2)

Unit:mm(inch)

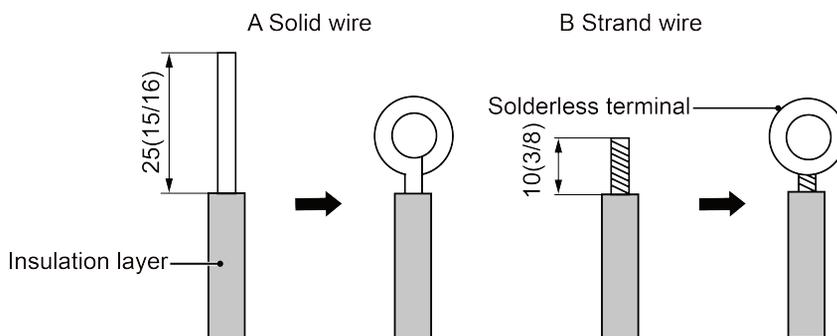


Fig. 4.6.1.1

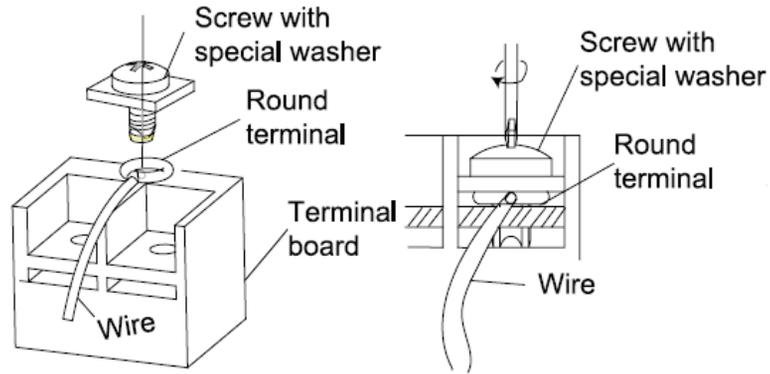


Fig. 4.6.1.2

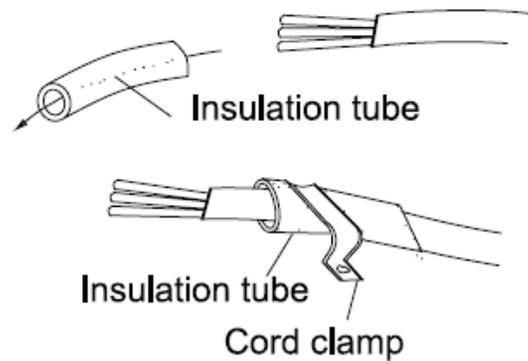


Fig. 4.6.1.3

(3) How to fix connection cord and power cord by cord clamp

After passing the connection cord and power cord through the insulation tube, fasten it with the cord clamp. (Fig. 4.6.1.3)

⚠ WARNING

- (1) Before starting work, check that power is not being supplied to the indoor unit and outdoor unit.
- (2) Match the terminal block numbers and connection cord colors with those of the indoor unit side. Erroneous wiring may cause burning of the electric parts.
- (3) Connect the connection cords firmly to the terminal block. Imperfect installation may cause a fire.
- (4) Always fasten the outside covering of the connection cord with cord clamps. (If the insulator is not clamped, electric leakage may occur.)
- (5) Always connect the ground wire.

4.6.2 Wiring Diagram

Connection of power cord and communication wire

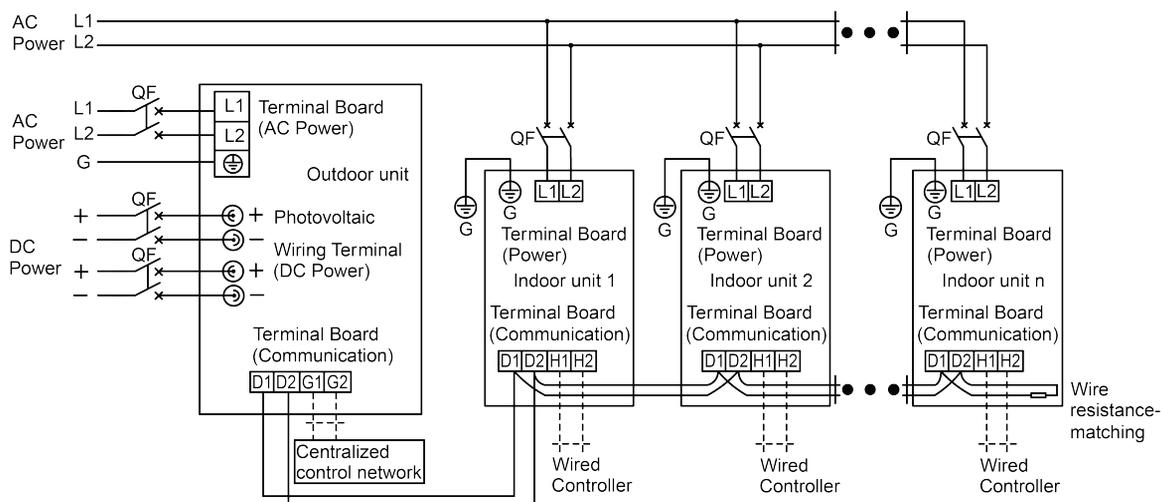


Fig. 4.6.2

4.6.3 Selection of air switch and power cord:

Each unit should be equipped with circuit breaker for protection of short circuit and overloading. Moreover, the IDU and ODU should be installed with master circuit breaker for connecting or cutting off general power supply of IDU and ODU.

For AC public power grid, selection of power cord diameter and air switch are as below:

Model	Power supply	Max Fuse Size/Fusible Max. (A)	Max Ckt, Bkr Size/Disjoncteur Max. (A)	Min. Circuit Ampacity (A)
GMV-Y36WL/A-T(U)	208/240V~ 60Hz	35	35	32
GMV-Y48WL/A-T(U)	208/240V~ 60Hz	45	45	35
GMV-Y60WL/A-T(U)	208/240V~ 60Hz	50	50	38

For photovoltaic DC power supply, selection of power cord diameter and air switch are as below:

Model	Power Supply	Capacity of Circuit Breaker (A)	QTY of Power Cord*minimum Sectional Area (mm ²)
GMV-Y36WL/A-T(U)	120-440Vdc	20A	4*2.5
GMV-Y48WL/A-T(U)	120-440Vdc	20A	4*2.5
GMV-Y60WL/A-T(U)	120-440Vdc	20A	4*2.5

NOTICE

- (1) Selection of circuit breaker and power cord in the above table is based upon unit's maximum power (maximum current).
- (2) Specification of power cord is based on the working condition where ambient temperature is 40°C(104°F) and multi-core copper cable (working temperature is 90°C(194°F), e.g. power cable with YJV cross-linked copper, insulated PE and PVC sheath) is lying on the surface of slot. If working condition changes, please adjust the specification according to national standard.
- (3) Specification of circuit breaker is based on the working condition where ambient temperature of circuit breaker is 40°C(104°F). If working condition changes, please adjust the specification according to national standard.
- (4) The capacity of circuit breaker shall be according to the connection way of GREE Monocrystalline 285Wp PV module installed in the project. In this part, String 1 contains PV string with 10 components, which can be connected to PV1 or PV2 freely; while PV string 2 can be connected to PV1 and PV2 respectively, the quantity of components in PV string 2 can be inconsistent, voltage range for open circuit in each component shall be 120~440Vdc.

NOTICE

- | | |
|-----|--|
| (5) | Circuit breaker and specification of power cord is selected according to maximum power (maximum current) of unit. You are advised to select a 20A 500VDC circuit breaker which is exclusive for direct current (complying with UL standard requirements) as an external protector. |
| (6) | It is compulsory to use copper core cable. |
| (7) | The sectional area of cable is applicable to the maximum distance of 15 meters; if it is over 15 meters, the sectional area of cable should be accordingly increase for prevention of overcurrent that causes burnout or fire. |
| (8) | The circuit breaker should possess magnetic tripping and thermal overload tripping functions to protect the unit under short-circuit or overloading status. |

4.6.4 Engineering wiring of power supply and communication cable

- (1) Please refer Fig. 4.6.4 for engineering wiring. If there is the hole for cable tie in wiring route, please fix the wire with cable tie. Connect the power cord and communication cable to the corresponding terminal board and grounding screw according to the wiring diagram.
- (2) Please be noted that engineering wiring cannot touch the pipe and appliance.
- (3) This figure is only applicable for engineering wiring reference of power supply and communication cable. If there are differences between the figure structure and actual unit, please refer to the actual unit.
- (4) For engineering wiring, please refer to the wiring diagram provided with the unit.

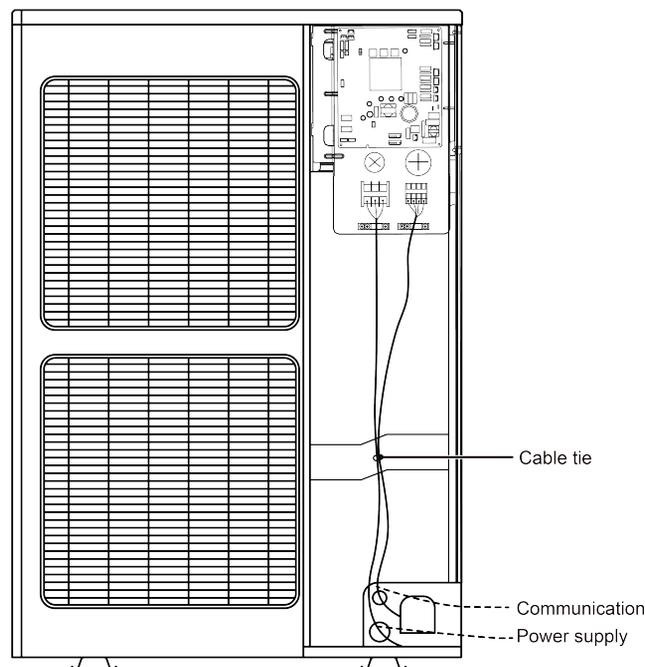


Fig. 4.6.4 Engineering Wiring View

4.7 Installation project of photovoltaic system

The system construction is as below. The installation of photovoltaic system mainly includes the installation of photovoltaic support and photovoltaic battery sub-assy, the lay-out of cable and power device.

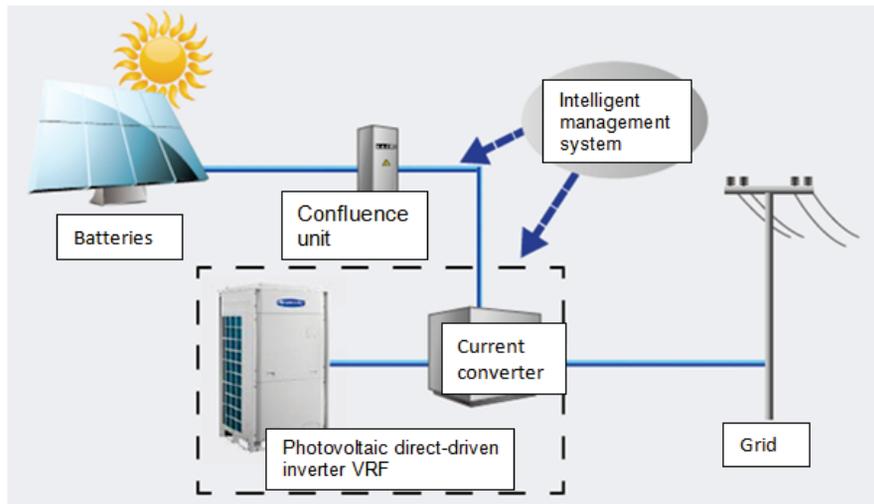


Fig. 4.7

4.7.1 Installation of photovoltaic sub-assy support

The support of photovoltaic sub-assy shall be inspected by Party A and professional supervision unit before installation. The material of support shall be aluminium alloy or hot galvanizing steel. During installation, please avoid scratching to the aluminium alloy surface or galvanizing layer.

During installation, please place the transition unit (connected with house panel), main keel, subaltern keel (if needed) and other parts separately, and then hang them uniformly. Calculate the correct quantity of each row according to the quantity of photovoltaic sub-assy of each row, including the quantity of bolt and other accessories. Firstly, fix the transition unit in the house panel. Secondly, fix the corresponding main keel and subaltern keel (if needed) on it. Then connect each part together with bolt. Tighten the bolt by hand and then tighten it by manual spanner or electric spanner. Meanwhile, check and adjust the straight degree with nylon wire.

After finishing installation, clear the installation site.

4.7.2 Installation of photovoltaic battery sub-assy

The photovoltaic battery sub-assy shall be checked by related department of Party A before using. Common photovoltaic battery sub-assy is shown as below.



Monocrystalline silicon sub-assy



Polycrystalline silicon sub-assy



Thin film sub-assy

Fig. 4.7.2

Place it carefully during transportation to avoid collision among photovoltaic sub-accessories and among photovoltaic sub-accessories and supports. The photovoltaic sub-accessories shall be placed on the keel and fixed by pressing. Press them properly in order to avoid strong wind and earthquake. Meanwhile, avoid damage to the glass due to pressing. Place the photovoltaic sub-accessories orderly and the wiring box shall be placed on the upper end.

4.7.3 Lay-out of cables

The cables shall be laid orderly. Roll the cable shaft for short distance transportation. The cable educing end shall be at the top of shaft. Reduce attrition with the floor during traction. Install corresponding cable bridge support. Each wire must be straight and cannot be curved.

The cable shall be reserved with sufficient wiring length at the two ends in junction case and DC power cabinet, and stuck with label at the end. The cable shall be protected by steel pipe when crossing the road. The pipe port shall be deburring to avoid cutting the cable during pulling.

During laying wire, make sure the wire size according to the diagram. Before laying, check if the insulation resistance is in normative range with megameter.

The cable shall be protected by HDPE plastic pipe when passing through the photovoltaic sub-assy and junction case. The cable shall be protected by steel pipe when crossing the road. The pipe port shall be deburring to avoid cutting the cable. The bridge support in vertical installation shall be firm with straight line deviation within 0.5cm and cannot damage the inner wall structure.

4.7.4 Installation and wiring of power devices

Check the power devices according to devices list, engineering diagram and technical document before installation, in order to check if the devices, their accessories, certificate of qualification, technical document and instruction manual are completed. Please tighten the screw used in installation and check the installation strength.

Installation of junction case: it shall be installed near the sub-assy in order to reduce cable length and wire loss. The position at which the cable getting into the junction case shall be protected in order to avoid scratching the cable. After finishing wiring of junction case, please check the strength of wire and sealing of case. After checking, close the case cover and lock it with key.

Installation of: Install it according to the engineering diagram. The cabinet shall be grounded and each cabinet shall be connected with the base separately. Check if all electronic components in the cabinet are in accordance with the principle diagram. Check if the rated voltage and control and operation power voltage are in accordance with the related requirement. Finally, adjust the overcurrent circuit breaker of cabinet, relays and mechanical linkage.

5 Check Items after Installation and Test Operation

5.1 Check Items after Installation

Check items	Possible conditions due to improper installation	Check
Each part of the unit is installed securely?	Unit may drop, shake or emit noise.	
Gas leakage test is taken or not?	Insufficient cooling (heating) capacity	
Unit gets proper thermal insulation or not?	There may be condensation and dripping.	
Drainage is smooth or not?	There may be condensation and dripping.	
Is the voltage in accordance with the rated voltage specified on the nameplate?	Unit may have malfunction or components may get damaged.	
Is the electric wiring and pipe connection installed correctly?	Unit may have malfunction or components may get damaged.	
Unit is securely grounded or not?	Electrical leakage	
Power cord meets the required specification?	Unit may have malfunction or components may get damaged.	
Is the air inlet/outlet blocked?	Insufficient cooling (heating) capacity	
Length of refrigerant pipe and the charging amount of refrigerant are recorded or not?	The refrigerant charging amount is not accurate.	
Binding pieces on compressor feet are removed or not?	Compressor may get damaged.	

5.2 Test operation and debugging

NOTICE	
(1)	After finishing the first installation or replacing the main board of outdoor unit, it is necessary to perform test operation and debugging. Otherwise, unit won't be able to work.
(2)	Test operation and debugging must be performed by professional technicians or under the guidance of professional technicians.

5.2.1 Prepare the test operation and debugging

- (1) Do not connect power until all installation work is finished.
- (2) All control circuits and wires are correctly and securely connected.
- (3) Check whether the fixing loops for compressor feet are removed.
- (4) All small pieces, especially metal chips, thread ends and forceps holder, must be removed from the unit.
- (5) Check whether unit's appearance and pipeline system has been damaged during transportation.
- (6) Calculate the quantity of refrigerant that needs to be added according to the pipe length. Pre-charge the refrigerant. In case that the required charging quantity is not reached while refrigerant can't be added, record the quantity of refrigerant that still needs to add and complement the quantity during test operation. For details of adding refrigerant during test operation, see below.
- (7) After refrigerant is added, make sure valves of outdoor unit are completely open.
- (8) For the convenience of troubleshooting during debugging, unit shall be connected to a PC with applicable debugging software. Make sure unit's real-time data can be checked through this computer. The installation and connection of debugging software can be found in the Service Manual.
- (9) Before test operation, make sure unit is power on and compressor has been preheated for more than 8 hours. Touch the unit to check whether it's normally preheated. If yes, start test operation. Otherwise, compressor might be damaged.

5.2.2 Test Operation and Debugging

Description of test operation procedures and main board display of ODU

Description of each stage of debugging progress			
Progress	Debugging code		Code meaning and operation method
	LED		
	Code	Display status	
01_ Set master unit	A0	ON	System is not debugged, hold main board's SW3 button for 5s to start debugging.
	01	ON	2s later, next step starts.
02_ Allocate addresses	02/Ad	Display circularly	System is allocating addresses. 10s later, display as below:
	02/L7	Display circularly	No master indoor unit. Display will be on for 1min, during which master IDU can be set manually. If not, system will set the unit with minimum IP address as the master IDU.
	02/oC	Display circularly	Allocation is finished. 2s later, next step starts.
03_ Confirm the quantity of ODU	03/01	Display circularly	System is confirming. 1s later, next step starts.
04_ Confirm the quantity of IDU	04/00~16	Display circularly	"00~16" displays the quantity of indoor unit. Confirm the number manually. If the number is not consistent with the display one, cut off power of IDU and ODU and check whether communication wire of IDU is correctly connected. After the check, connect power and start debugging from progress 01. If the number is then correct, press main board's SW3 button to confirm. Then the display is as below:
	04/oC	Display circularly	System has confirmed the quantity. 2s later, next step starts.
05_ Detect ODU's internal communication and capacity ratio	05/C2	Display circularly	Communication between master ODU and driver has error. Check the communication connection of ODU's main board and drive board. When the error is eliminated, start next step. If power is off during troubleshooting, then restart debugging from progress 01 after power is on.
	05/oC	Display circularly	Communication of master ODU and driver is normal. Unit will display as in the left for 2s and detect the capacity ratio of IDU and ODU. If the ratio is within range, then next step will start 2s later. If the ratio is out of range, unit will display as below:
	05/CH	Display circularly	Rated capacity ratio of IDU is too high. Change the combination way of IDU and ODU to make the ratio within range. And restart debugging from progress 01.
	05/CL	Display circularly	Rated capacity ratio of IDU is too low. Change the combination way of IDU and ODU to make the ratio within range. And restart debugging from progress 01.
06_ Detect outdoor components	06/error code	Display circularly	Outdoor component's error. Besides "06", the other blinking will display the related error code. After errors are eliminated, system will start next step automatically. If power is off during troubleshooting, then restart debugging from progress 01 after power is on.
	06/oC	Display circularly	System detects no error on outdoor component. 10s later, next step starts.

Photovoltaic Multi VRF

Description of each stage of debugging progress			
Progress	Debugging code		Code meaning and operation method
	LED		
	Code	Display status	
07_ Detect indoor components	07/XX/error code	Display circularly	System detects error on indoor components. XX means the project code of IDU with error, e.g. no.1 IDU has d5 and d6 errors, meanwhile no.3 IDU displays error d6 and d7, then the nixie tube will display “07”, “01”, “d5”, “d6”and “03” circularly. After errors are eliminated, system will start next step automatically. If power is off during troubleshooting, then restart debugging from progress 01 after power is on.
	07/XXXX/error code	Display circularly	If errors occur in IDU which the project code is ≥3-digit number, then it will display the 2 big digits of project code first, then the 2 small digits, finally the error code, e.g: L1 error occurs in no.101 IDU, then the nixie tube will display “01”,“01” and “L1” circularly. Display method is the same for several IDUs with multiple errors.
	07/oC	Display circularly	No error on components of IDU. 5s later, next step starts.
08_ Confirm preheated compressor	08/U0	Display circularly	Preheat time for compressor is less than 8 hours. Display will be as in the left until the preheat time reaches 8 hours. Press main board’s SW3 button to confirm manually that the preheat time has reached 8 hours. Then start next step. (Note: Compressor may get damaged if it is started without 8 hours of preheat time)
	08/oC	Display circularly	Compressor has been preheated for 8 hours. 2s later, next step starts.
09_ Refrigerant judgments before startup	09/U4	Display circularly	System is lack of refrigerant and display will be as in the left. Please cut off power of IDU and ODU and check if there is leakage on pipeline. Solve the leakage problem and complement refrigerant into the unit. Then connect power and restart debugging from progress 01. (Note: Before re-charging refrigerant, unit must be power off in case system starts progress 10 automatically.)
	09/oC	Display circularly	Refrigerant is normal and unit will display as in the left for 2s.Then next step starts.
10_ Status judgments of outdoor valves before startup	10/on	Display circularly	Valves of ODU are being inspected. Compressor will start operation for 2min or so and then stop. The opening and closing status of outdoor valves are as below:
	10/U6	Display circularly	Outdoor valves are not fully turned on. Press main board’s SW4 button and display shows “09/OC”. Then check if the gas and liquid valves of ODU are completely open. After confirmation, press the SW4 button again. Then compressor will start running for about 2min to inspect the status of valves.
	10/oC	Display circularly	Valves status is normal. Unit will display as in the left for 2s and then start next step.
12_ Confirm debugging startup	12/AP	Display circularly	Ready for units to start debugging. Press main board’s SW3 button to confirm startup of debugging. 2s later, main board will display as below:
	12/AE	Display circularly	Startup is confirmed. After displaying for 2s, system will choose “15_Cooling debugging” or “16_Heating debugging” according to ambient temperature. If the project requests to add refrigerant but it is not complemented before debugging, then refrigerant can be added in this process through the L-VALVE.

Description of each stage of debugging progress			
—	Debugging code		Code meaning and operation method
Progress	LED		
	Code	Display status	
15_ Cooling debugging	15/AC	Display circularly	Debugging for cooling mode. If no malfunction occurs for 50min when compressor is running, then the system is certified as normal. After shutting down the unit for 5s, the system will enter normal standby status.
	15/error code	Display circularly	Malfunction occurs when debugging for cooling mode.
16_ Heating debugging(For heat pump units only)	16/AH	Display circularly	Debugging for heating mode. If no malfunction occurs for 50min when compressor is running, then the system is certified as normal. After shutting down the unit for 5s, the system will enter normal standby status.
	16/error code	Display circularly	Malfunction occurs when debugging for heating mode.
17_ Debugging finished	oF	ON	The entire unit has finished debugging and under standby-by condition.

5.2.3 Appendix: Reference of normal operation parameters

No.	Debug item		Parameter name	Unit	Reference
1	System parameters	ODU parameters	Outdoor temperature	°C(°F)	—
2			Compressor discharge temp	°C(°F)	<ul style="list-style-type: none"> When compressor starts, discharge temp in cooling mode is within 70~105°C(158~221°F) and at least 10°C(50°F) higher than the high pressure saturation temp; As for temp in heating mode, it is within 65~90°C(149~194°F) and at least 10°C(50°F) higher than the high pressure saturation temp.
3			Defrosting temp	°C(°F)	<ul style="list-style-type: none"> In cooling mode, defrosting temp is 4~10°C(39~50°F) lower than system's high pressure value; In heating mode, defrosting temp is about 2°C(36°F) different from system's low pressure value.
4			System high pressure	°C(°F)	<ul style="list-style-type: none"> In cooling mode, the normal high pressure value is within 20°C~55°C(68~131°F). According to the change of ambient temp and system's operating capacity, the high pressure value will be 10°C~30°C(50~86°F) higher than ambient temp. The higher ambient temp is, the smaller temp difference is. If ambient temp is 25~35°C(77~95°F) in cooling mode, system's high pressure value will be within 44~53°C(111~127°F). In heating mode, if ambient temp is above -5°C(23°F), system's high pressure value is within 40~52°C(104~126°F). If ambient temp is low and many IDUs are turned on, the high pressure will be lower.
5			System low pressure	°C(°F)	<ul style="list-style-type: none"> When ambient temp in cooling mode is 25~35°C(77~95°F), the low pressure value is 0~8°C(32~46°F). When ambient temp in heating mode is above -5°C(23°F), the low pressure value is -15~8°C(5~46°F).

No.	Debug item	Parameter name	Unit	Reference				
6	System parameters	ODU parameters	Opening degree of thermal EXV	PLS	<ul style="list-style-type: none"> ●In cooling mode, the thermal electronic expansion valve remains 480PLS. ●In heating mode, the adjustable Opening degree of EXV is 60~480PLS. 			
7			Compressor's operating freq	Hz	Changes in 10Hz~80Hz.			
8			Compressor's operating current	A	When compressor works normally, the current is no more than 18.4A.			
9			Compressor's IPM temp	°C(°F)	When ambient temp is below 35°C(95°F), IPM temp is lower than 80°C(176°F) and the highest temp won't be above 95°C(203°F).			
10			Fan motor's operating freq	Hz	Changes in 0~49Hz according to system's pressure.			
11		IDU parameters	IDU ambient temp	°C(°F)	—			
12			Indoor heat exchanger's inlet temp	°C(°F)	<ul style="list-style-type: none"> ●According to ambient temp, for a same IDU in cooling mode, the inlet temp will be 1°C~7°C(34~45°F) lower than the outlet temp, and 4~9°C(39~48°F) higher than the low pressure value. ●For a same IDU in heating mode, the inlet temp will be 10°C~20°C(50~68°F) lower than the outlet temp. 			
13						Opening degree of indoor EXV	PLS	<ul style="list-style-type: none"> ●In cooling mode, the Opening degree of indoor EXV varies within 70~480PLS. ●In heating mode, the Opening degree of indoor EXV varies within 70~480PLS.
14								
15		Communication parameters	Communication data	—	Number of IDUs detected by software is the same with the actual number. No communication error.			
16	Drainage system	—	—	Indoor unit can drain water out completely and smoothly. Condensate pipe has no backward slope of water; Water of outdoor unit can be drained completely through drainage pipe. No water drop from unit base.				
17	Others	—	—	Compressor and indoor/outdoor fan motor do not have strange noise. Unit can operate normally.				

6 Common Malfunction and Troubleshooting

WARNING

- (1) If an abnormal situation (such as peculiar smell) occurs, please stop the operation immediately and turn off the main power supply, and then contact Gree authorized maintenance center. If the unit continues to operate under abnormal situation, the air conditioner will be damaged and an electric shock or fire accident may result.
- (2) Do not maintain the air conditioner by yourself, misoperation may cause electric shock or fire hazard. Please contact professional personnel of Gree authorized maintenance center to maintain.

●Before asking for maintenance, please check the following issues first.

Phenomenon	Causes	Troubleshooting
Air conditioner can't operate	Fuse is broken or circuit breaker is open	Replace fuse or close the circuit breaker
	Power failure	Restart up the unit and then the unit will operate
	Power supply is not connected	Connect the power supply
	The power for batteries of remote controller is insufficient	Replace the batteries
	Remote controller is not within the remote control range	Remote control range is within 8m

Phenomenon	Causes	Troubleshooting
Air conditioner operates, while it stops operation immediately	Air inlet or air outlet of indoor unit/outdoor unit is blocked	Eliminate the obstacles
Cooling or heating is abnormal	Air inlet or air outlet of indoor unit/outdoor unit is blocked	Eliminate the obstacles
	Temperature setting is improper	Adjust temperature setting by remote controller or wired controller
	Fan speed is set too low	Adjust fan speed setting by remote controller or wired controller
	Fan direction is not correct	Adjust fan direction setting by remote controller or wired controller
	Door or window is open	Close door and window
	Direct sunshine	Hang curtains or window shade at the window
	Too many persons in the room	—
	Too many thermal source in the room	Reduce the thermal source
The filter is dirty and blocked	Clean the filter	

- Instruction

NOTICE! If problem cannot be solved after checking above items, please contact Gree service center and indicate phenomena and models.

- Following circumstances are not malfunctions.

Phenomenon		Causes
Unit doesn't run	When unit is started immediately after it is just turned off	Overload protection switch makes it run after 3 minutes delay
	When power is turned on	Standby operating for about 1 minute
Mist comes from the unit	Under cooling	Indoor high humidity air is cooled rapidly
Noise is emitted	When the power supply is connected, there is small "dada" sound.	It is the sound of startup action of electronic expansion valve.
	When the system is conducting cooling or defrosting, there is continuous "sa——" sound.	This is the sound of refrigerant flowing inside the unit.
	When the system is switching cooling and heating modes; during heating operation, the unit enters or quits defrosting operation or oil return operation, there is "chi——" sound.	This is the sound for direction reversal of 4-way valve.
	When the system is started or stopped for a short time, you can hear the sound of "sa——"; you can also hear this sound for a short time after the start or stop of the defrosting operation.	This is the sound produced when the refrigerant stops or changes the flow.

Phenomenon		Causes
Noise is emitted	When the system is in cooling operation or after it stops running, a continuous "sa ——" sound can be heard	This is the operation sound of drain system.
	When the system is running or after it stops running, a "creaking" sound can be heard.	This is the sound produced when plastic parts such as panel expansion and contraction due to temperature changes.
	When the system is in heating operation, after the indoor unit stops running, the sound like running water can be heard.	The unit is melting the frost on the outdoor unit, please wait about 10 minutes (due to different unit models, the waiting time will vary).
	When the indoor unit stops running, a faint "sa——" sound or "gurgling" sound can be heard.	This sound can be heard when other indoor units are running. This is to prevent oil and refrigerant from staying in the indoor unit, and to keep a small amount of refrigerant flowing.
	When the unit is running, the operating sound of the compressor changes.	This is caused by changes in compressor operating frequency.
	During the operation of the unit or after the operation is started or stopped, a continuous "sa ——" sound can be heard.	This is the sound produced when the refrigerant bypass valve operates.
	When the operating mode of the unit changes, the indoor unit and outdoor unit will produce " sa ——" and "gurgling" sounds.	This is the sound produced when the refrigerant stops or changes flow.
	The sound from the outdoor unit can be heard indoors	This is because the outdoor unit is installed close to the window or wall, and the sound insulation is poor, and the external noise is transmitted in.
There is dust blowing out from the unit	Start operation after it is not used for a long time	Dust in indoor unit is blew out
The unit emits odor	Operating	The odor of the air conditioner is sucked into the room and then blown out

Phenomenon		Causes
The indoor unit is still running after shutting down	The indoor unit is still running after shutting down	The fan of indoor unit will continue to work for 20 to 70 seconds to fully use the residual cooling or heat of the heat exchanger, and to prepare for the next use.
Mode conflict	Cooling or heating mode cannot start up	When the selected operation mode of the indoor unit conflicts with the operation mode of the outdoor unit, after five seconds, the indoor unit error indicator flashes or the remote controller displays the operation conflict, and the indoor unit shuts down. At this time, the indoor unit can be converted to run with the outdoor unit. The mode can be restored to normal without conflict. The cooling mode and dry mode do not conflict, and the air supply does not conflict with any mode.

7 Error Indication

Inquiry method of error indication: combine division symbol and content symbol to check the corresponding error.

Indoor:

Error Code	Content	Error Code	Content
L0	Malfunction of IDU (uniform)	d1	Indoor PCB is poor
L1	Protection of indoor fan	d2	Malfunction of lower water temperature sensor of water tank
L2	Auxiliary heating protection	d3	Malfunction of ambient temperature sensor
L3	Water-full protection	d4	Malfunction of entry-tube temperature sensor
L4	Abnormal power supply for wired controller	d5	Malfunction of middle temperature sensor
L5	Freeze prevention protection	d6	Malfunction of exit-tube temperature sensor
L6	Mode shock	d7	Malfunction of humidity sensor
L7	No main IDU	d8	Malfunction of water temperature sensor
L8	Power supply is insufficient	d9	Malfunction of jumper cap
L9	For single control over multiple units, number of IDU is inconsistent	dA	Web address of IDU is abnormal
LA	For single control over multiple units, IDU series is inconsistent	dH	PCB of wired controller is abnormal
LH	Alarm due to bad air quality	dC	Abnormal setting for capacity button
LC	IDU is not matching with outdoor unit	dL	Malfunction of air outlet temperature sensor
LL	Malfunction of water flow switch	dE	Malfunction of indoor CO ₂ sensor
LE	Rotation speed of EC DC water pump is abnormal	dF	Malfunction of upper water temperature sensor of water tank
LF	Malfunction of shunt valve setting	dJ	Malfunction of backwater temperature sensor
LJ	Setting of functional DIP switch code is wrong	dP	Malfunction of inlet tube temperature sensor of generator
LP	Zero-crossing malfunction of PG	dU	Malfunction of drainage pipe

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Error Code	Content	Error Code	Content
	motor		temperature sensor of generator
LU	Indoor unit's branch is not inconsistent for one-to-more unit of heat recovery system	db	Debugging status
Lb	Inconsistent IDU of group-controlled reheat and dehumidification system	dd	Malfunction of solar power temperature sensor
y1	Malfunction of inlet tube temperature sensor 2	dn	Malfunction of swing parts
y2	Malfunction of outlet tube temperature sensor 2	dy	Malfunction of water temperature sensor
y7	Malfunction of fresh air intake temperature sensor	y8	Main error of indoor air box sensor
yA	IFD malfunction	—	—

Outdoor:

Error Code	Content	Error Code	Content
F0	Main board of ODU is poor	E0	Malfunction of ODU (uniform)
F1	Malfunction of high-pressure sensor	E1	High-pressure protection
F3	Malfunction of low-pressure sensor	E2	Discharge low-temperature protection
F5	Malfunction of discharge temperature sensor of compressor 1	E3	Low-pressure protection
F6	Malfunction of exit-tube temperature sensor	E4	High discharge temperature protection of compressor
F7	Malfunction of humidity sensor	Ed	Drive module low temperature protection
F8	Malfunction of water temperature sensor	J0	Protection for other modules
F9	Malfunction of jumper cap	J1	Over-current protection of compressor 1
FA	Web address of IDU is abnormal	J2	Over-current protection of compressor 2
FC	Current sensor of compressor 2 is abnormal	J3	Over-current protection of compressor 3
FL	Current sensor of compressor 3 is abnormal	J4	Over-current protection of compressor 4
FE	Current sensor of compressor 4 is abnormal	J5	Over-current protection of compressor 5
FF	Current sensor of compressor 5 is abnormal	J6	Over-current protection for compressor 6
FJ	Current sensor of compressor 6 is abnormal	J7	Gas-mixing protection of 4-way valve
FP	Malfunction of DC motor	J8	High pressure ratio protection of system
FU	Malfunction of casing top temperature sensor of compressor 1	J9	Low pressure ratio protection of system
Fb	Malfunction of casing top temperature sensor of compressor 2	JA	Protection because of abnormal pressure
Fd	Malfunction of exit tube temperature sensor of mode exchanger	JC	Water flow switch protection
Fn	Malfunction of inlet tube temperature sensor of mode exchanger	JL	Protection because high pressure is too low
b1	Malfunction of outdoor ambient temperature sensor	JE	Oil-return pipe is blocked
b2	Malfunction of defrosting temperature sensor 1	JF	Oil-return pipe is leaking
b3	Malfunction of defrosting temperature sensor 2	P0	Malfunction of driving board of compressor (uniform)
b4	Malfunction of liquid temperature	P1	Driving board of compressor operates

Error Code	Content	Error Code	Content
	sensor of sub-cooler		abnormally (uniform)
b5	Malfunction of gas temperature sensor of sub-cooler	P2	Voltage protection of driving board power of compressor (uniform)
b6	Malfunction of inlet temp sensor of gas-liquid separator	P3	Reset protection of driving module of compressor
b7	Malfunction of outlet temp sensor of gas-liquid separator	P4	Drive PFC protection of compressor
b8	Malfunction of outdoor humidity sensor	P5	Over-current protection of inverter compressor
b9	Malfunction of gas temperature sensor of heat exchanger	P6	Drive IPM module protection of compressor
bA	Malfunction of oil-return temperature sensor 1	P7	Malfunction of drive temperature sensor of compressor
bH	Clock of system is abnormal	P8	Drive IPM high temperature protection of compressor
bE	Malfunction of inlet tube temperature sensor of condenser	P9	Desynchronizing protection of inverter compressor
bF	Malfunction of outlet tube temperature sensor of condenser	PA	Malfunction of drive storage chip of compressor
bJ	High-pressure sensor and low-pressure sensor are connected reversely	PH	High-voltage protection of compressor's drive DC bus bar
bP	Malfunction of temperature sensor of oil-return 2	PC	Drive current detection circuit malfunction of compressor
bU	Malfunction of temperature sensor of oil return 3	PL	Low-voltage protection of compressor's drive DC bus bar
bb	Malfunction of temperature sensor of oil return 4	PE	Phase-lacking of inverter compressor
bd	Malfunction of air inlet temperature sensor of subcooler	PF	Drive charging circuit malfunction of compressor
bn	Malfunction of liquid inlet temperature sensor of subcooler	PJ	Failure startup of inverter compressor
H0	Malfunction of driving board of fan (uniform)	PP	AC current protection of inverter compressor
H1	Driving board of fan operates abnormally (uniform)	PU	AC input voltage of drive of inverter compressor
H2	Voltage protection of driving board power of fan (uniform)	G0	PV reversed connection protection
H3	Reset protection of driving module of fan	G1	PV Anti-islanding protection
H4	Drive PFC protection of fan	G2	PV DC overcurrent protection
H5	Over-current protection of inverter fan	G3	PV power generation overload
H6	Drive IPM module protection of fan	G4	PV leakage current protection
H7	Malfunction of drive temperature sensor of fan	G5	Phase-lacking protection at power grid side
H8	Drive IPM high temperature protection of fan	G6	Phase-lacking protection at power grid side
H9	Desynchronizing protection of inverter fan	G7	PV LVRT
HA	Malfunction of drive storage chip of inverter outdoor fan	G8	Overcurrent protection at power grid side
HH	High-voltage protection of fan's drive DC bus bar	G9	Drive IPM module protection at power grid side
HC	Drive current detection circuit malfunction of fan	GA	Low/high input voltage protection at power grid side
HL	Low-voltage protection of fan's drive DC bus bar	GH	Photovoltaic DC\DC protection
HE	Phase-lacking of inverter fan	GC	Photovoltaic DC hardware overcurrent

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Error Code	Content	Error Code	Content
			protection
HF	Drive charging circuit malfunction of fan	GL	Grid side hardware overcurrent protection
HJ	Failure startup of inverter fan	GE	High or low photovoltaic voltage protection
HP	AC current protection of inverter fan	GF	DC bus neutral-point potential unbalance protection
HU	AC input voltage of drive of inverter fan	GJ	Grid side module high-temperature protection
Gd	Grid side current sensor protection	GP	Grid side temperature sensor protection
Gn	Insulation resistance protection	GU	Charging circuit protection
Gy	Unrecoverable error of grid drive (photovoltaic)	Gb	Grid side relay protection

Debugging:

Error Code	Content	Error Code	Content
U0	Preheat time of compressor is insufficient	Cn	Malfunction of network for IDU and ODU of mode exchanger
U2	Wrong setting of ODU's capacity code/jumper cap	Cy	Communication malfunction of mode exchanger
U3	Power supply phase sequence protection	C0	Communication malfunction between IDU, ODU and IDU's wired controller
U4	Refrigerant-lacking protection	C1	Communication malfunction between main control and DC-DC controller
U5	Wrong address for driving board of compressor	C2	Communication malfunction between main control and inverter compressor driver
U6	Alarm because valve is abnormal	C3	Communication malfunction between main control and inverter fan driver
U8	Short-circuit malfunction of IDU	C4	Malfunction of lack of IDU
U9	Malfunction of pipe-line for ODU	C5	Alarm because project code of IDU is inconsistent
UA	DC bus overvoltage protection at power grid side	C6	Alarm because ODU quantity is inconsistent
UH	DC bus undervoltage protection at power grid side	C7	Abnormal communication of converter
UC	Setting of main IDU is successful	C8	Emergency status of compressor
UL	Emergency operation DIP switch code of compressor is wrong	C9	Emergency status of fan
UE	Charging of refrigerant is invalid	CA	Emergency status of module
UF	Identification malfunction of IDU of mode exchanger	CH	Rated capacity is too high
UJ	FO protection for PV module	CC	Malfunction of lack of main control unit
Ud	Grid-connected driver board error	CL	Rated capacity is too low
Un	Communication malfunction between main control and inverter	CE	Communication malfunction between mode exchanger and IDU
Uy	Over-temperature protection for PV module	CF	Malfunction of multiple main control units
CU	Communication malfunction between IDU and the receiving lamp plate	CJ	Address DIP switch code of system is shocking
Cb	Overflow distribution of IP address	CP	Malfunction of multiple main wired controllers
Cd	Communication malfunction between mode exchanger and ODU	—	—

Status:

Error Code	Content	Error Code	Content
A0	Unit waiting for debugging	n0	SE operation setting of system
A2	Refrigerant recovery operation of after-sales	n3	Compulsory defrosting
A3	Defrosting	n4	Limit setting for max. capacity/output capacity
A4	Oil-return	n5	Compulsory excursion of engineering code of IDU
A6	Heat pump function setting	n6	Inquiry of malfunction
A7	Quiet mode setting	n7	Inquiry of parameters
A8	Vacuum pump mode	n8	Inquiry of project code of IDU
AH	Heating	n9	Check quantity of IDU on line
AC	Cooling	nA	Heat pump unit
AL	Charging refrigerant automatically	nH	Heating only unit
AE	Charging refrigerant manually	nC	Cooling only unit
AF	Fan	nE	Negative sign code
AJ	Alarm for cleaning filter	nF	Fan model
AP	Debugging confirmation for startup of unit	nJ	High temperature prevention when heating
AU	Long-distance emergency stop	nU	Eliminate the long-distance shielding command of IDU
Ab	Emergency stop of operation	nb	Bar code inquiry
Ad	Limit operation	nn	Length modification of connection pipe of ODU
An	Child lock status	Ay	Shielding status

8 Maintenance and Care

Regular check, maintenance and care can extend unit's service life. Please have specialized person in charge of the management of air conditioners.

8.1 Outdoor Heat Exchanger

Outdoor heat exchanger shall be cleaned regularly, which is at least once every two months. You can use a dust catcher with nylon brush to clean away the dust on the heat exchanger. If compressed air source is available, it also can be used to clean the heat exchanger. Do not clean it with water.

8.2 Drain Pipe

Please check regularly whether drain pipe is blocked or not. Make sure condensate can be drained out smoothly.

8.3 Notices before Seasonal Use

- (1) Check whether air inlets and air outlets of indoor and outdoor units are blocked;
- (2) Check whether ground connection is reliable or not;
- (3) Check whether batteries in the remote controller are replaced or not;
- (4) Check whether air filter is properly installed;
- (5) If unit starts up after not operating for a long time, it should be power on 8 hours before operation starts so as to preheat the outdoor compressor;
- (6) Check whether outdoor unit is securely installed. If there is any problem, please contact Gree authorized service center.

8.4 Maintenance after Seasonal Use

- (1) Disconnect power of the entire system;
- (2) Clean the air filter and outer case of indoor and outdoor units;
- (3) Clean away the dust and obstacles on indoor and outdoor units;
- (4) If outdoor unit has rust, please apply some paint to it so as to prevent the rust from growing.

8.5 Parts Replacement

Parts and components can be obtained from nearby Gree office or Gree distributor.

WARNING

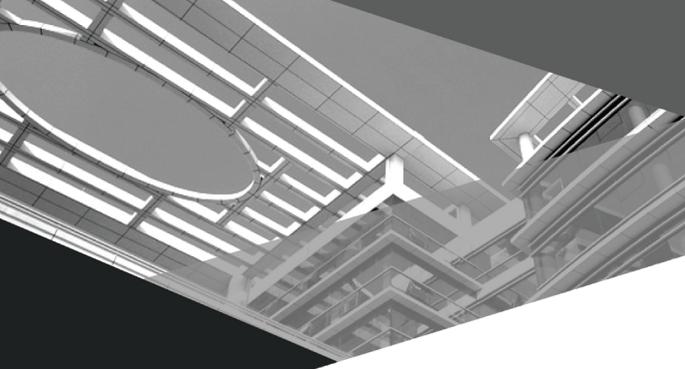
When you are conducting air tightness test and leakage test, do not mix oxygen, C₂H₂ or other dangerous gas into the refrigerant circuit. Otherwise, it may lead to danger. Use nitrogen or refrigerant to conduct the tests.

9 After-sales Service

If there's quality defect or other problems in the product, please contact Gree local after-sales service department for help.

Warranty must be based on the following conditions:

- (1) Product's initial startup must be performed by professional technicians from Gree service center or persons assigned by Gree.
- (2) Only Gree spare parts are used.
- (3) All instructions of unit operation and maintenance in this manual must be strictly followed according to set period and set frequency.
- (4) Any breach of the above conditions will disable the warranty.



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