



Ultra Heat GMV5 User Manual

Owner's Manual Air Conditioners

Applicable Models:

GMV-48WL/B-T(U)

GMV-36WL/B-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 sent email to global@gree.com.cn or electronic version.
- GREE reserves the right to interpret this manual which will be subject to any change due to product improvement without further notice.
- GREE Electric Appliances, Inc. of Zhuhai reserves the final right to interpret this manual.

Preface

Gree DC Inverter Multi VRF System, with the most advanced technologies in the world, uses eco-friendly refrigerant R410A as its cooling medium. For correct installation and operation, please read this manual carefully. Before reading the manual, please note that:

- (1) Multi VRF system conforms to design standard: ARI 210240-2008
- (2) To ensure safety when operating this system, please strictly follow the instructions in this manual.
- (3) The total capacity of running indoor units must not exceed that of the outdoor units. Otherwise, the cooling (heating) effect of each IDU would be poor.
- (4) Make sure that this manual is kept by direct operators and maintainers.
- (5) In case of malfunction, please examine the following items and contact our authorized service centers as soon as possible.
 - 1) Nameplate (model, cooling capacity, product code, ex-factory date)
 - 2) Malfunction status (detail description of conditions before and after malfunction occurs)
- (6) All units have been strictly tested and proved to be qualified before ex-factory. To avoid damage or operation failure which may be caused by improper disassembly, please do not disassemble units by yourself. If disassembly is needed, please contact our authorized service centers.
- (7) All graphics and information in this manual are only for reference. Manufacturer reserves the right for changes in terms of sales or production at any time and without prior notice.
- (8) Under the standby status, the unit will consume a little power for ensuring reliability of complete unit, maintaining normal communication and preheating refrigerant. When the unit won't be used for a long time, cut off the power of the complete unit. However, please preheat it when operating the unit next time.

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1 Safety Precautions

	This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.
▲WARNING	This mark indicates procedures which, if improperly performed, might lead to the death or serious injury of the user.
▲CAUTION	This mark indicates procedures which, if improperly performed, might possibly result in personal harm to the user, or damage to property.
NOTICE	NOTICE is used to address practices not related to personal injury.

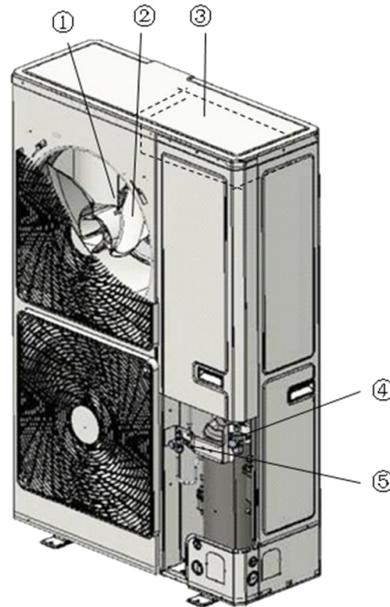
▲WARNING	
(1)	Instructions for installation and use of this product are provided by the manufacturer.
(2)	Installation must be performed in accordance with the requirements of NEC and CEC by authorized personnel only.
(3)	For operating the air conditioner pleasantly, install it as outlined in this installation manual.
(4)	Connect the indoor unit and outdoor unit with the room air conditioner piping and cord available from our standard parts. This installation manual describes the correct connections using the installation set available from our standard parts.
(5)	Before installation, check the power cord if it complies with the power supply requirement on the nameplate. Make sure the power supply is safe.
(6)	This air conditioner must be properly grounded through the receptacle to avoid electric shock. The ground wire shouldn't be connected with gas pipe, water pipe, lightning arrester or telephone line.
(7)	If refrigerant leaks while work is being carried out, ventilate the area. If the refrigerant comes in contact with a flame, it produces toxic gas.
(8)	Do not power on until all installation work is complete.
(9)	During installation, make sure that the refrigerant pipe is attached firmly before you run the compressor. Do not operate the compressor under the condition of refrigerant piping not attached properly with gas pipe and liquid pipe valve open. This may cause abnormal pressure in the refrigeration cycle that leads to breakage and even injury.
(10)	During the pump-down operation, make sure that the compressor is turned off before you remove the refrigerant piping. This may cause abnormal pressure in the refrigerant cycle that leads to breakage and even injury.
(11)	When installing and relocating the air conditioner, do not mix gases other than the specified refrigerant (R410A) to enter the refrigerant cycle.
(12)	If air or other gas enters the refrigerant cycle, the pressure inside the cycle will rise to an abnormally high value and cause breakage, injury, etc.
(13)	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.
(14)	Children should be supervised to ensure that they do not play with the appliance.
(15)	If the supply cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard.
(16)	When installing, specialized parts and accessories must be used. Otherwise, it may result in water leakage, electric shock or fire hazard.
(17)	Diameter of power cord must be large enough. Damaged power cord or connecting wire must be replaced by specialized electric cable.
(18)	After the power cord is connected, please install the cover of electric box to avoid danger
(19)	Nitrogen must be charged according to technical requirements.
(20)	For units with wired controllers, do not connect power supply until the wired controller is well installed. Otherwise, the wired controller cannot be used.

(21) When installation is finished, please check and make sure the drain pipe, pipeline and electric wire are all well connected so as to avoid water leakage, refrigerant leakage, electric shock and fire hazard.
(22) Do not extend fingers or objects into air outlet or return air grille.
(23) If you use gas heater or petroleum heater in the same room, please open the door or window to maintain good air circulation, otherwise the room may be lack of oxygen.
(24) Never start or stop the air conditioner by inserting or removing the power cord.
(25) Do not turn off the air conditioner until it runs for at least 5 minutes. Otherwise, oil return of the compressor will be affected.
(26) Children are not allowed to operate the air conditioner.
(27) Do not operate the air conditioner with wet hands.
(28) Please turn off and unplug your air conditioner before cleaning. Otherwise, it may cause electric shock or personal injury.
(29) Do not spray water on the air conditioner or it will cause malfunction or electric shock.
(30) Do not expose the air conditioner directly under damp or corrosive surroundings.
(31) Connect power 8 hours before operation. Do not disconnect power when you want to stop the unit in a short period of time, e.g. in one night. (This is for protecting the compressor.)
(32) Volatile liquid like thinner or gasoline will damage the appearance of air conditioner. (Please use soft dry cloth and wet cloth with mild detergent to clean unit's outer case.)
(33) Under cool mode, do not set the indoor temperature too low. Keep the difference between indoor temp and outdoor temp within 5°C(41°F).
(34) If abnormal condition occurs (e.g. unpleasant smell), please turn off the unit at once and disconnect power supply. Then contact Gree authorized service center. If the air conditioner continues to operate despite of abnormal condition, it may be damaged and cause electric shock or fire hazard.)
(35) Do not repair the air conditioner by yourself. Improper repair will cause electric shock or fire hazard. Please contact Gree authorized service center and ask professional technicians to repair it.
(36) Gree Electric Appliances, Inc. of Zhuhai will not assume responsibility for any personal injury or property loss caused by improper installation, improper debugging, unnecessary repair or not following the instructions of this manual.

2 Product Introduction

Gree Multi VRF System adopts inverter compressor technology. By changing the displacement of compressor, stepless capacity regulation within range of 15%~100% can be realized. Various product lineups are provided with capacity range from 36000Btu/h to 48000Btu/h, 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-36WL/B-T(U)

GMV-48WL/B-T(U)

Fig.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%~100% of the outdoor unit.

Model	Min sets of connectable IDUs	Max sets of connectable IDUs
GMV-36WL/B-T(U)	2	5
GMV-48WL/B-T(U)	2	6

- (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

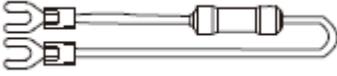
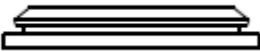
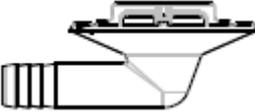
Cooling	Outdoor temperature: 10°C~54°C(50°F~129°F)
Heating	Outdoor temperature: -35°C~27°C(-31°F~81°F)

3 Preparation before Installation

NOTICE! 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:

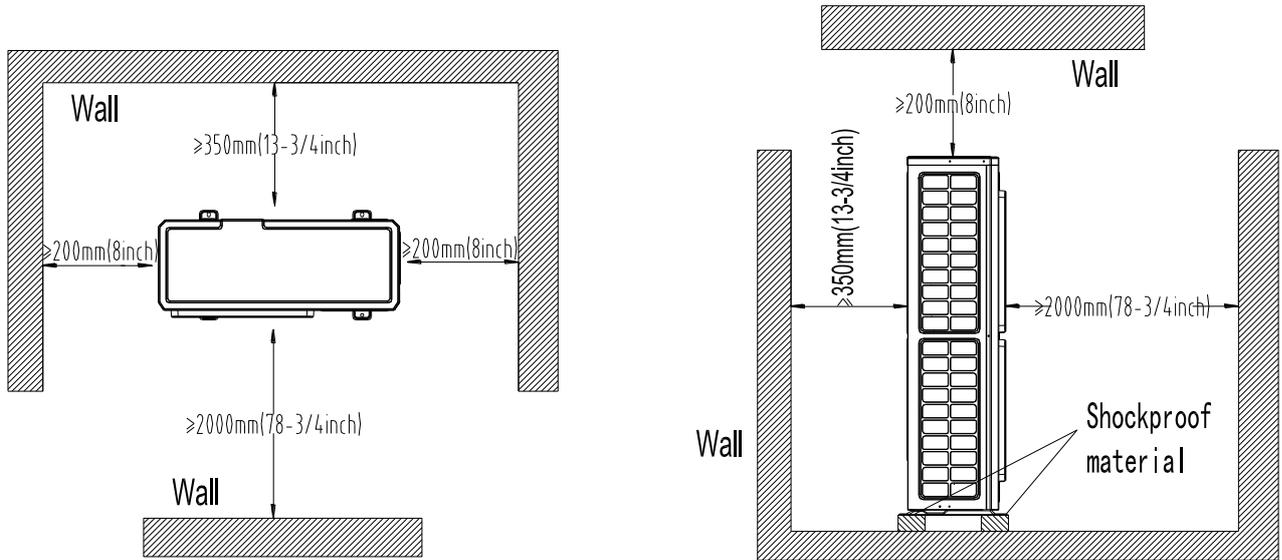


Fig.2

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

NOTICE! 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:

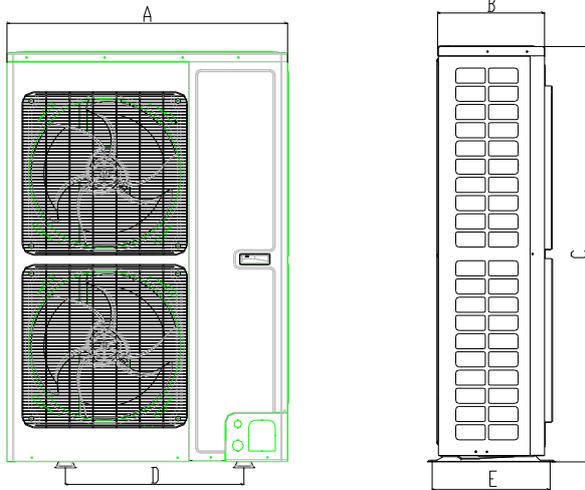


Fig.3

Unit:mm(inch)

Model	A	B	C	D	E
GMV-36WL/B-T(U)	900	340	1345	572	378
GMV-48WL/B-T(U)	(35-3/8)	(13-3/8)	(53)	(22-1/2)	(15)

4.2 Connection Pipe

4.2.1 Schematic Diagram of Piping Connection

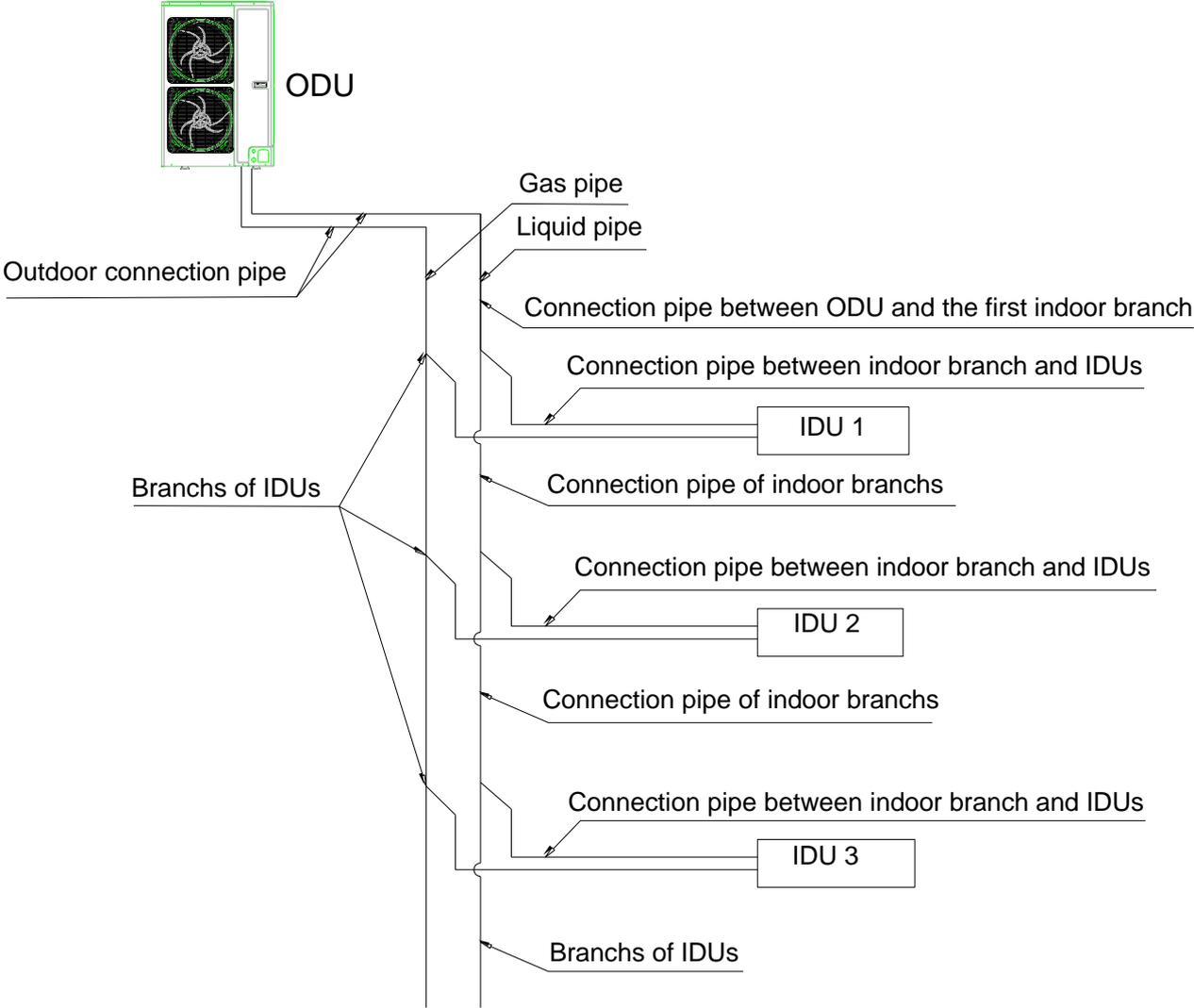
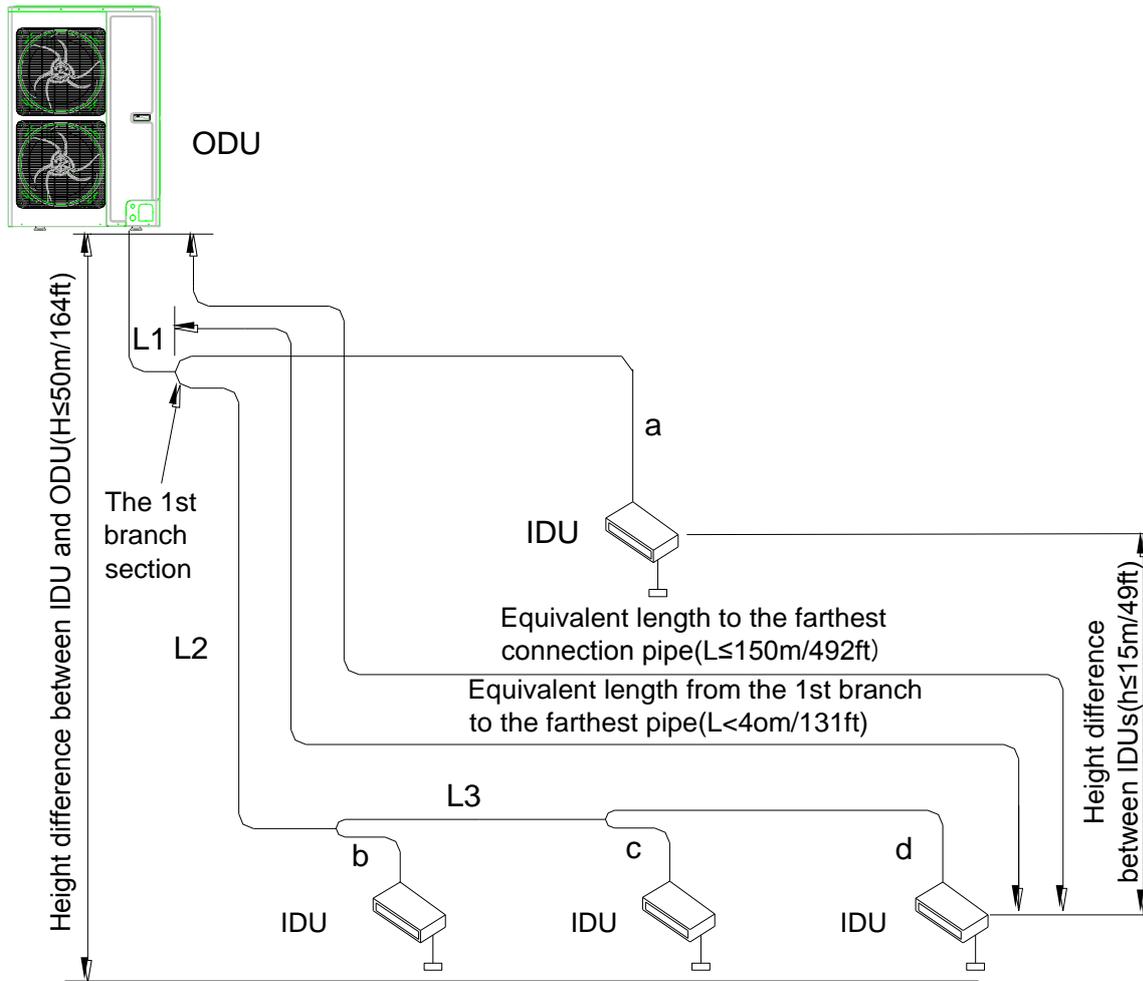


Fig.4

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:

NOTICE! 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.5 Allowable Length and Height Difference of Connection Pipe

Piping parameters of GMV-36WL/B-T(U) 、 GMV-48WL/B-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 1 st 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.

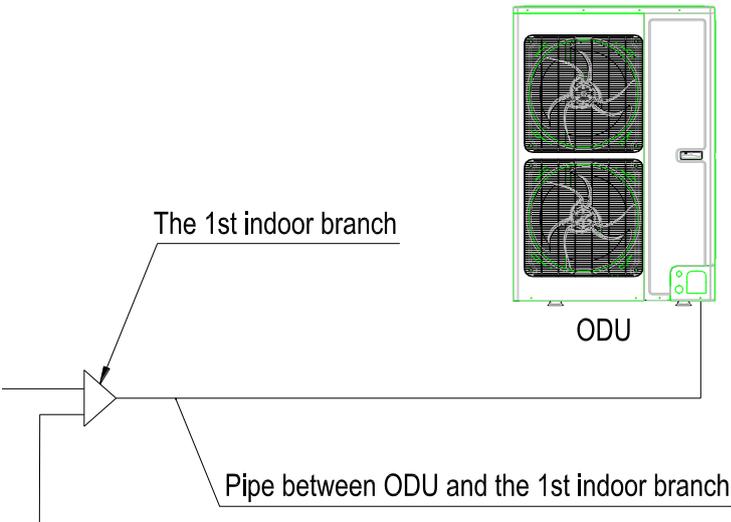


Fig. 6

Dimension of outdoor connection pipe:

Basic module	Pipe dimension	
	Gas pipe (mm/inch)	Liquid pipe (mm/inch)
GMV-36WL/B-T(U)	φ15.9 (φ5/8)	φ9.52 (φ3/8)
GMV-48WL/B-T(U)	φ15.9 (φ5/8)	φ9.52 (φ3/8)

4.2.4 Selection of Indoor Branches

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

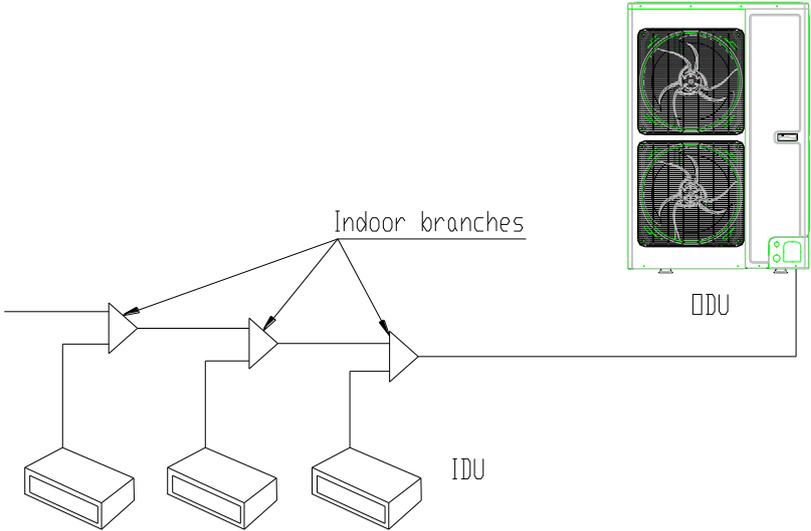


Fig.7

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

	460600 < C	FQ04
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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.

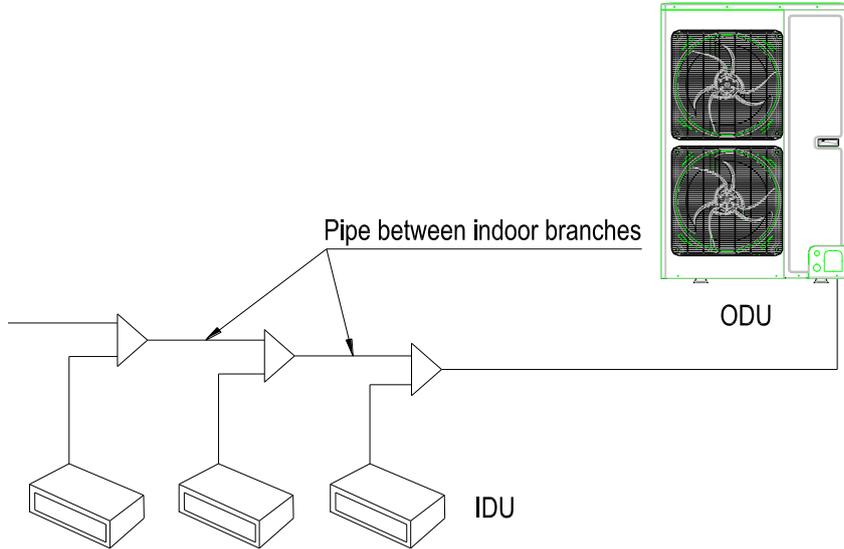


Fig.8

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

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.

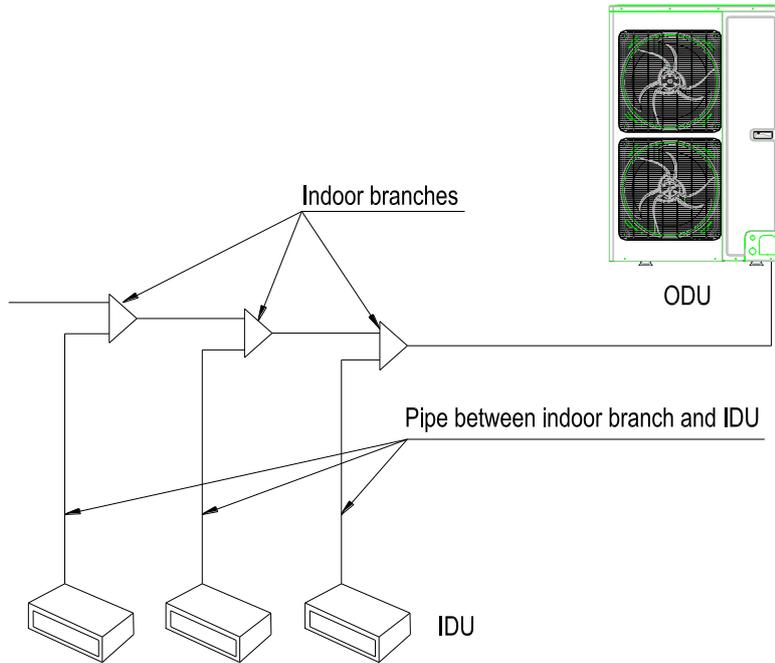


Fig. 9

Rated capacity of IDU C(Btu/h)	Gas pipe (mm/inch)	Liquid pipe (mm/inch)
C≤9600	Φ9.52 (Φ3/8)	Φ6.35 (Φ1/4)
9600<C≤17000	Φ12.7 (Φ1/2)	Φ6.35 (Φ1/4)
17000<C≤48000	Φ15.9 (Φ5/8)	Φ9.52 (Φ3/8)
48000<C≤55000	Φ19.05 (Φ3/4)	Φ9.52 (Φ3/8)
55000<C≤96000	Φ22.2 (Φ7/8)	Φ9.52 (Φ3/8)

NOTICE! If the distance between IDU and its nearest branch is over 10m(33feet), then the liquid pipe of IDU (rated capacity ≤17000Btu/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.10).
- (4) Check if the flared part is flaring evenly and if there is any crack.

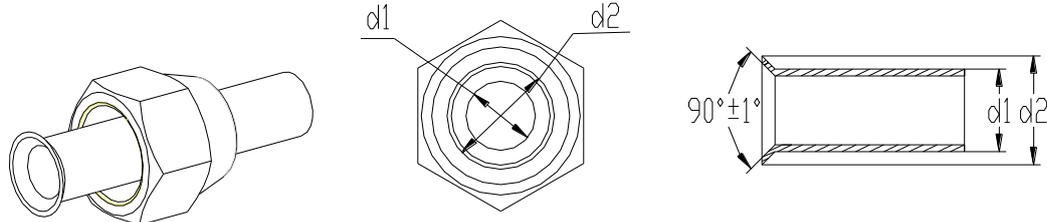


Fig. 10

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. 12. 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.

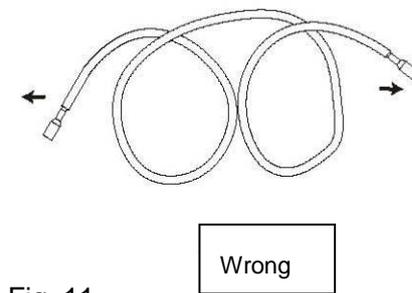
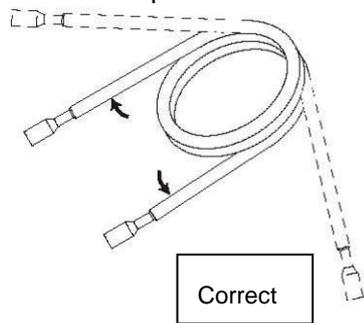


Fig. 11

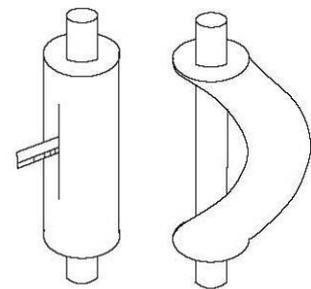


Fig. 12

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. 13. (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. 14)

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. |
| (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. |

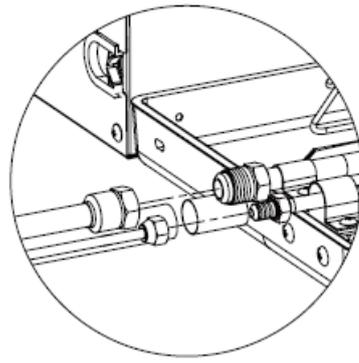


Fig. 13

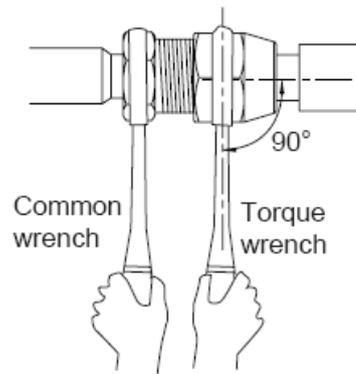


Fig. 14

Pipe Diameter	Tightening Torque
6mm(1/4inch)	15-30N·m(11-22ft.-1b.)
9.5mm(3/8 inch)	35-40N·m(26-29ft.-1b.)
12.7mm(1/2 inch)	45-50N·m(33-37ft.-1b.)
16mm(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.

According to customer requirement or space limit, outlet pipe can be installed from the front, right or rear side.

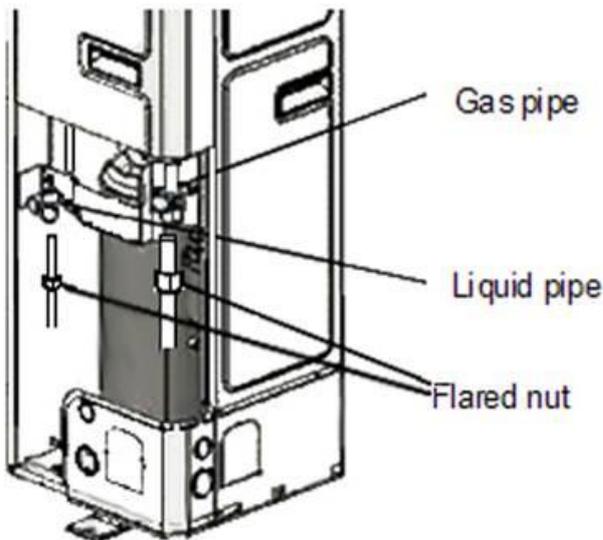


Fig. 15

4.3.5 Installation of Y-type Branch

- (1) Y-type Branch

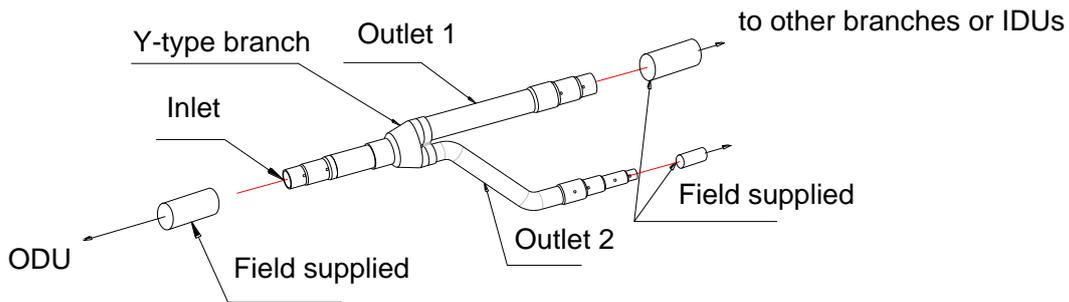


Fig. 16

(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. 17.

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

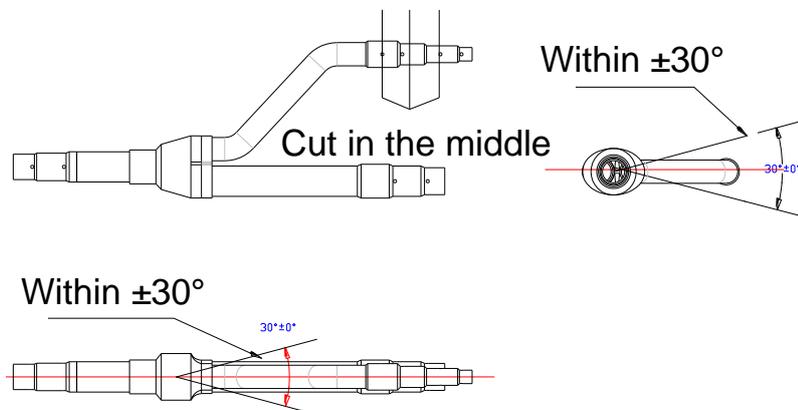


Fig. 17

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.
 - 3) Joints of indoor and outdoor unit should be wrapped with insulating material and leave no gap between pipe and wall. See Fig. 18.

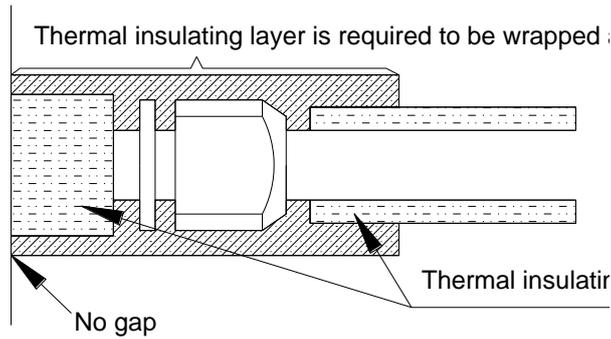


Fig. 18

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

NOTICE

- (1) Thermal insulating material shall be able 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. 19.

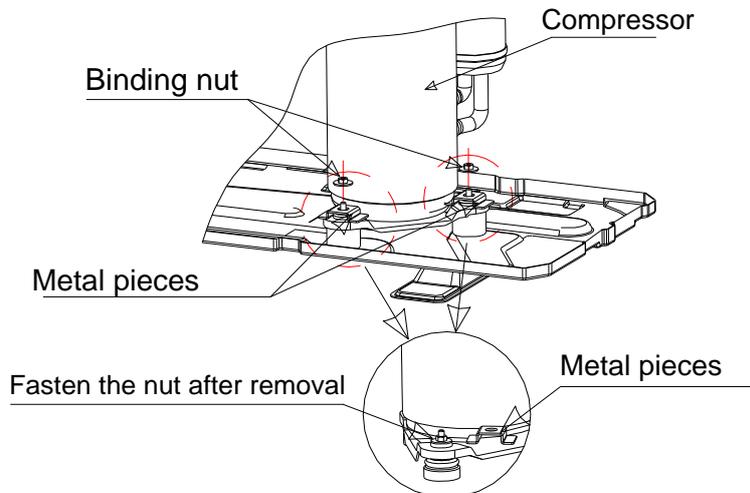


Fig. 19

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 Leak Test, Vacuum Pumping, Refrigerant Adding

4.5.1 Leak Test

- (1) Please make sure that the stop valves of the outdoor unit are closed during the operation.
- (2) The leak test should be made by pressurizing nitrogen gas.
- (3) Turn on the Hi-knob and Lo-knob. The leak test should be done simultaneously at both the gas and liquid stop valves.
- (4) Open the pressure reducing valve, pressurize the connection pipes to 1.0 MPa (10 bar) slowly, wait fifteen minutes, and make sure that the pressure will not drop.
- (5) Rise the pressure to 4.0 MPa (40 bar) slowly, wait 24 hours, and make sure the pressure will not drop.
- (6) If the pressure does not decrease, the pipes have passed the test. Otherwise, look for where the gas leaks from.

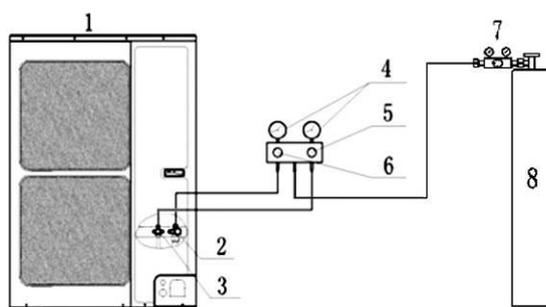


Fig.20

NO.	1	2	3	4
Name	Outdoor unit	Gas side stop valve	Liquid side stop valve	Pressure-vacuum gauge
NO.	5	6	7	8
Name	Hi-knob	Lo-knob	Pressure reducing valve	Nitrogen

⚠ 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!

4.5.2 Vacuum Pumping

- (1) Make sure that the stop valves of the outdoor unit are closed fully during the operation.
- (2) As shown in the following figure Fig.21, expel the gas from the refrigerant pipes by the vacuum pump.
- (3) Open the pump and turn on the knobs to evacuate the gas in the liquid and gas pipes.
The vacuuming should be done simultaneously at both the gas and liquid stop valves.

- (4) When the pressure of the system is less than -0.1Mpa (-1bar), keep the system for more than one hour under the condition.

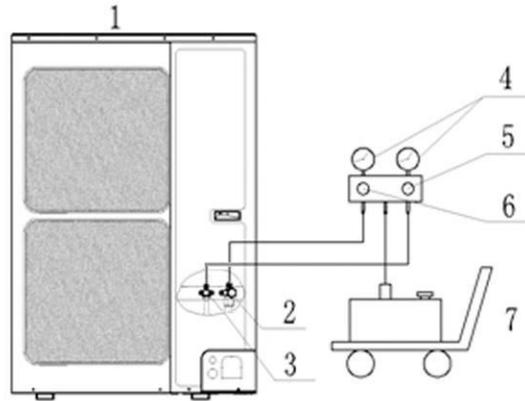


Fig. 21

NO.	1	2	3	4
Name	Outdoor unit	Gas side stop valve	Liquid side stop valve	Pressure-vacuum gauge
NO.	5	6	7	
Name	Hi-knob	Lo-knob	Vacuum pump	

- (5) Turn off the knobs firstly and then the pump. If the pressure of the pressure-vacuum gauge does not rise within 2 hours, the system is under a vacuum. Otherwise, the system has leaked, please look for where the gas leaks in.

4.5.3 Refrigerant Adding

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

Model	GMV-36WL/B-T(U)	GMV-48WL/B-T(U)
Refrigerant Qty (kg/oz)	6.5 (229)	6.5 (229)

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. |

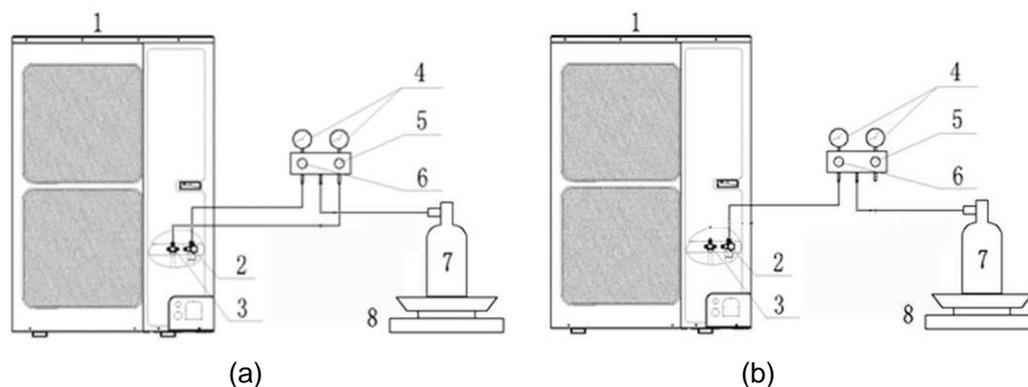


Fig. 22

NO.	1	2	3	4
Name	Outdoor unit	Gas side stop valve	Liquid side stop valve	Pressure-vacuum gauge
NO.	5	6	7	8
Name	Hi-knob	Lo-knob	R410A tank	Scale

Procedures for adding refrigerant

- 1) When the liquid and gas stop valves have not been opened, the system is under the vacuum:
 - ① Refer to Fig. 22 (a); connect the R410A tank to the system.
 - ② Turn on the R410A tank and the Hi-knob; charge the R410A refrigerant into the unit from the liquid side stop valve. The Lo-knob should be closed completely.
 - ③ Turn off the R410A tank and the Hi-knob immediately, when the adding refrigerant is enough.
 - ④ Turn on the liquid and gas side stop valves in an anticlockwise direction slowly and completely.
- 2) If the pressure of the system is too high to charge refrigerant, you can do as follow after the trial run.
 - ① Turn off all indoor units, then turn off power after the compressor and fans stop;
 - ② After turn off power 5 min, refer to the right of the Fig. 22 (b) connect the R410A tank to the system, keep the R410A tank and the Lo-knob closing;
 - ③ Turn on the power of the air conditioner, and set cooling mode, running more than 20min;
 - ④ Turn on the R410A tank and the Lo-knob; charge the R410A refrigerant into the unit from the gas side stop valve.
 - ⑤ Turn off the R410A tank and the Lo-knob immediately when adding refrigerant is enough.



Caution!

- ◆ Make sure the liquid and gas side stop valves are opened completely after the installation.
- ◆ Make sure the length of liquid pipe is exactly.
- ◆ Additional refrigerant charge must be measured exactly.
- ◆ Make sure that the refrigerant which charge into the unit is in liquid state.
- ◆ Please prevent the refrigerant leakage from your body when remove the charging hose.
- ◆ Please heat the refrigerant tank with hot water or hot air when the outside temperature is too low. However, it must be forbidden to heat with fire directly, otherwise it may lead to explosion.

(2) Calculation of the amount of additional refrigerant

Calculation method of the quantity of additional refrigerant (based on liquid pipe)

Quantity of additional refrigerant = \sum length of liquid pipe X quantity of additional refrigerant per meter(39-3/8inch)

Diameter of liquid pipe (mm/inch)	Φ22.2 (Φ7/8)	Φ19.05 (Φ3/4)	Φ15.9 (Φ5/8)	Φ12.7 (Φ1/2)	Φ9.52 (Φ3/8)	Φ6.35 (Φ1/4)
kg/m	0.35	0.25	0.17	0.11	0.054	0.022
oz/inch	0.314	0.224	0.152	0.099	0.048	0.020

NOTICE! Liquid pipe that is within 20m(65-5/8feet) doesn't need to be added with refrigerant.

First confirm that there is no leakage from the system. When compressor is not working, charge additional R410a with specific amount to the unit through the filling opening of the liquid pipe valve of the outdoor unit. If required amount cannot be quickly filled due to pressure increase of the pipe, then set the unit in cooling startup and fill refrigerant from the low pressure check valve of the outdoor unit.

(3) Calculation example

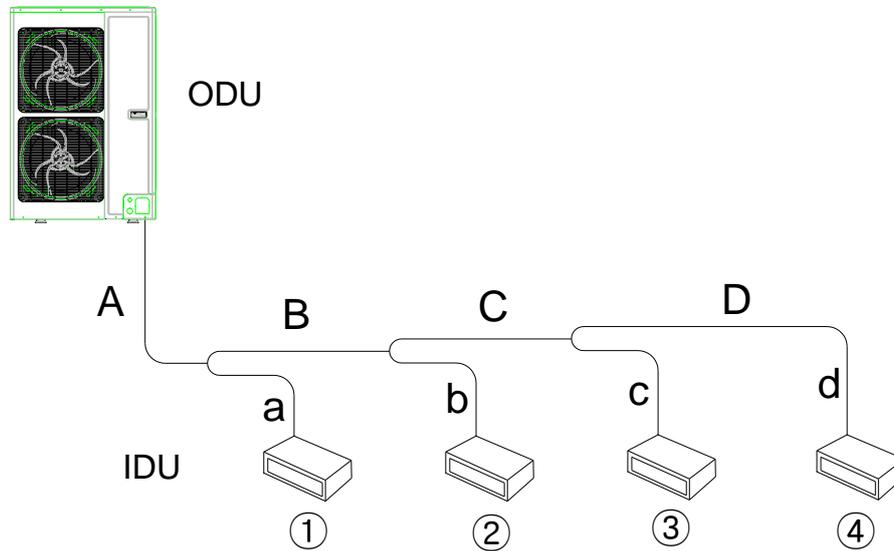


Fig. 23

IDU

No.	IDU ①	IDU ②	IDU ③	IDU ④
Model	Duct type GMV-ND18PLS/A-T(U)	Duct type GMV-ND12PLS/A-T(U)	Duct type GMV-ND09PLS/A-T(U)	Duct type GMV-ND09PLS/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)	5m (16-3/8feet)	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)

Total length of each liquid pipe

φ9.52: $A+B+C+a=10+5+5+3=23m(75-1/2 \text{ feet})$

$$\phi 6.35: D+b+c+d=5+3+2+1=11m(36\text{feet})$$

NOTICE! Liquid pipe that is within 20m(65-5/8 feet) doesn't need to be added with refrigerant.

Therefore, the minimum quantity of additional refrigerant = $(23-20) \times 0.054 + 11 \times 0.022 = 0.404\text{kg}(14\text{oz})$

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.24)

- 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. 24)

- 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. 25)

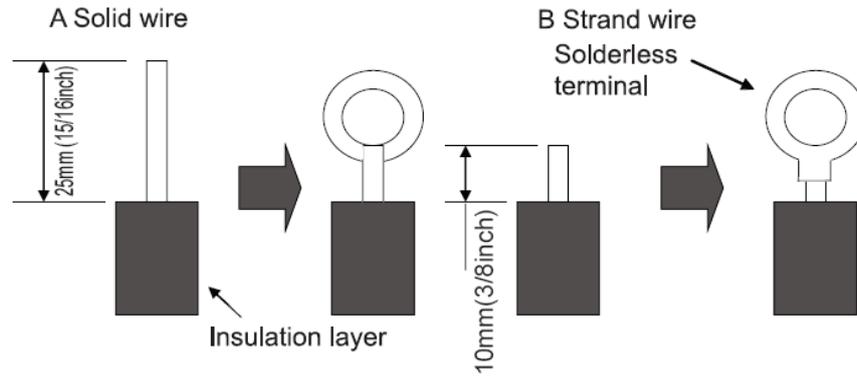


Fig. 24

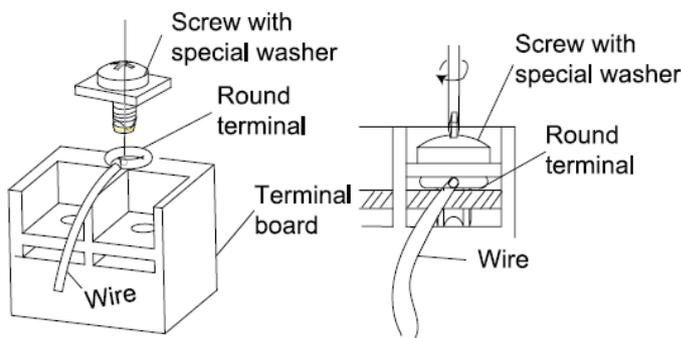


Fig. 25

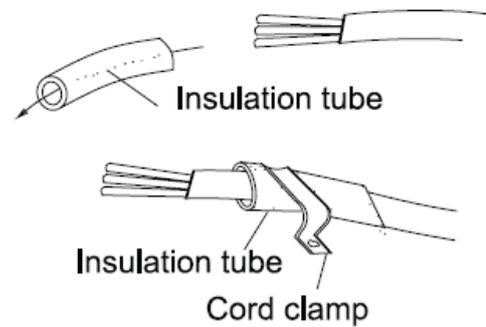


Fig. 26

(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. 26)

⚠ 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

(1) Connection of power cord and communication wire

Separate power supply for IDU and ODU

NOTICE! The remote monitor can be installed when it is necessary. The wire (match with resistance) must be connected with ODU (see Fig. 27a and b) only the remote monitor is installed.

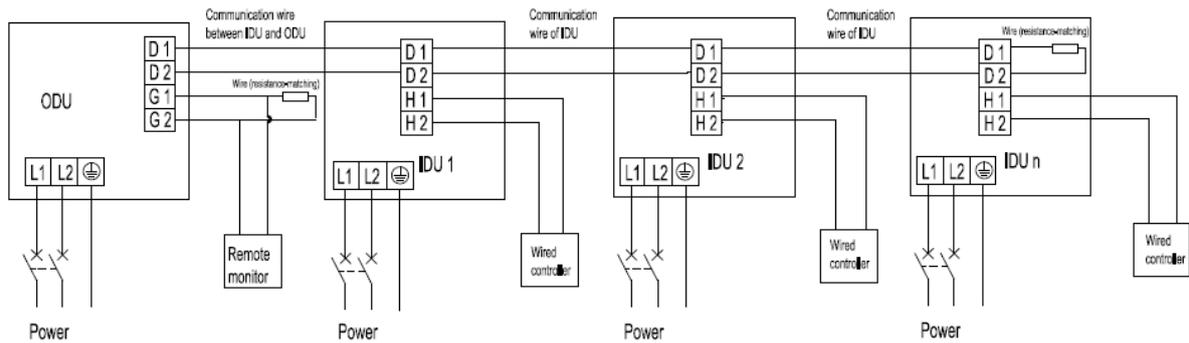


Fig.27 a Connection of power cord and communication wire for IDU and one ODU

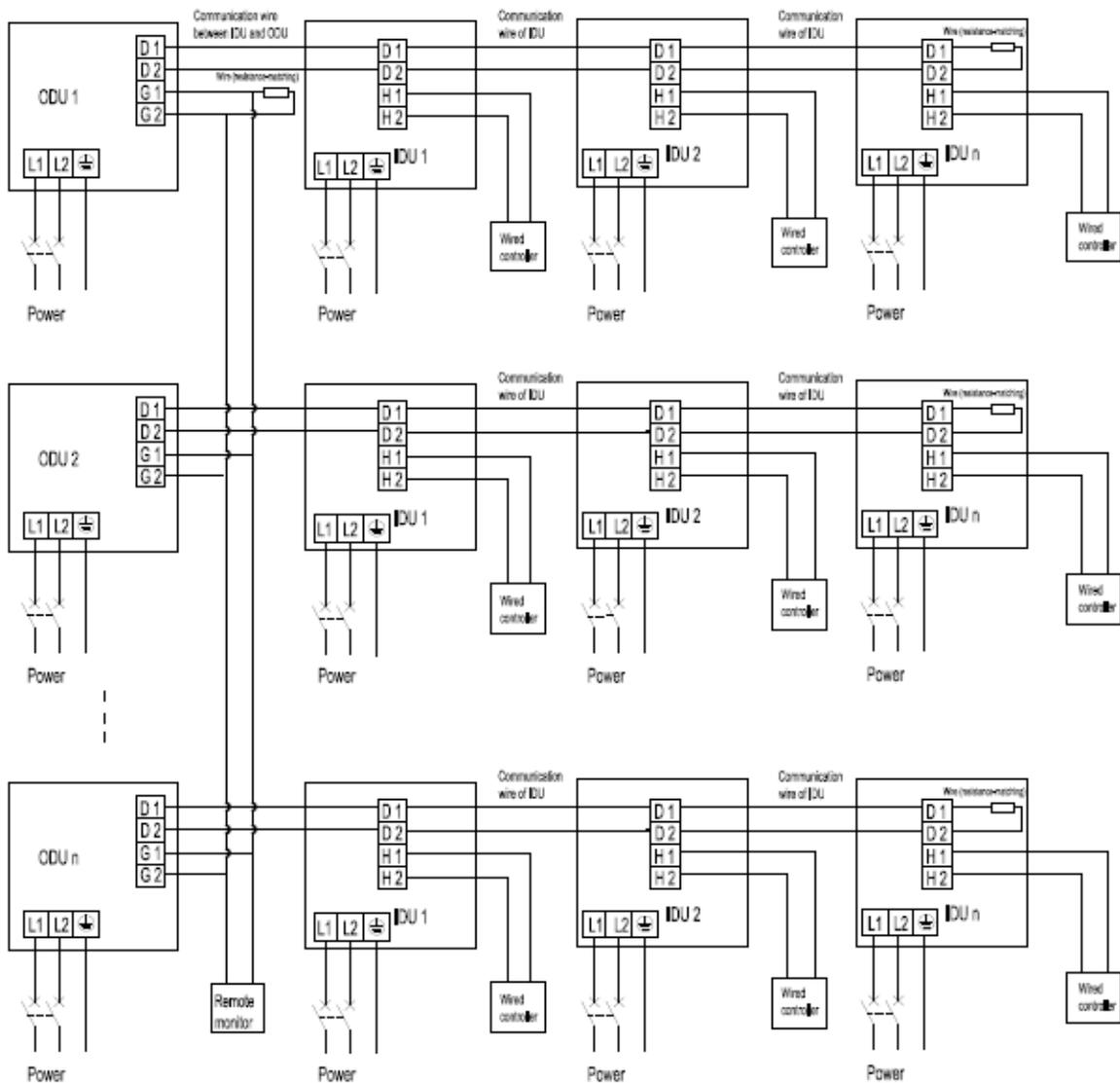


Fig. 27 b Connection of power cord and communication wire for IDU and multi ODUs
NOTICE! : ODU n(Max)=16.The wire (match with resistance) must be connected with the last ODU.

(2) The wiring diagram for power cord of outdoor unit and communication wire.

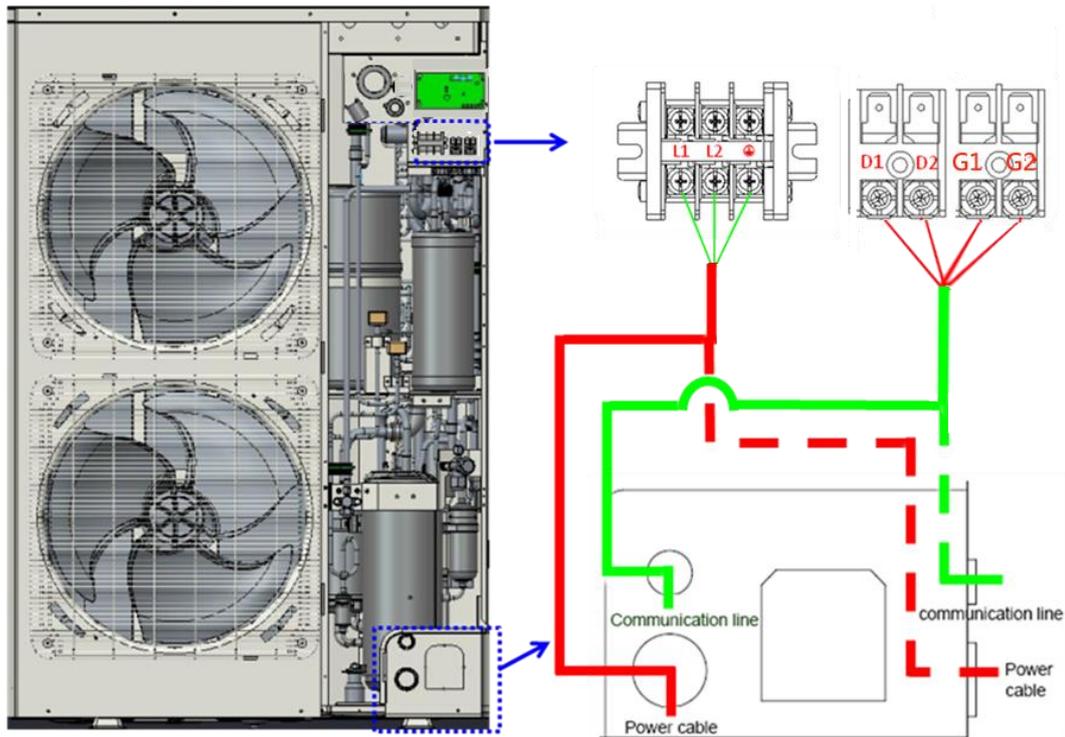


Fig.28

Wiring of the Power Cord

- (1) Open the side plate.
 - (2) Connect the power cord to the terminals “L1”, “L2” and also the earthing screw, and then connect the communication line “D1,D2” of the indoor unit to those of the outdoor unit correspondingly. The communication line “G1, G2” could be used to connect the remote monitor. Please use the bonding screw to connect the earthing cord. The location is showing in the Fig.28.
 - (3) Fix the power cord and communication line with wire clips.
 - (4) Let the power cord and communication line go through the rubber ring.
- (3) Selection of air switch and power cord:

Model	Power supply	Max Fuse Size/Fusible Max. (A)	Max Ckt, Bkr Size/Disjoncteur Max. (A)	Min. Circuit Ampacity (A)
GMV-36WL/B-T(U)	208/230V~ 60Hz	50	50	45
GMV-48WL/B- T(U)	208/230V~ 60Hz	50	50	45

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.

5 Check Items after Installation and Test Operation

5.1 Check Items after Installation

Check Items	Conditions Might Happen	Check
Has the unit been fixed firmly?	The unit may drop, shake or emit noise.	
Has the gas leakage be checked?	It may cause insufficient cooling/heating capacity.	
Does the unit get proper thermal insulation?	It may cause condensation and dripping.	
Does the unit drain well?	It may cause condensation and dripping.	
Is the voltage in accordance with the related voltage specified on the nameplate?	It may cause malfunction or damage the part.	
Is the electric wiring and piping connection installed correctly and securely?	It may cause malfunction or damage the part.	
Has the unit been earthed securely?	It may cause electrical leakage.	
Is the power cord specified?	It may cause malfunction or damage the part.	
Has the inlet and outlet been clogged?	It may cause insufficient cooling/heating capacity.	
Has the pipe length and refrigerant charging amount been recorded?	The refrigerant charging amount is not accurate.	
Is the communication line connection installed correctly?	It causes communication malfunction the part.	
Is the piping connection and valves states installed correctly?	It may cause malfunction or damage the part.	

5.2 Trial Run

5.2.1 Check before Trial Running, Must Preheat Compressor

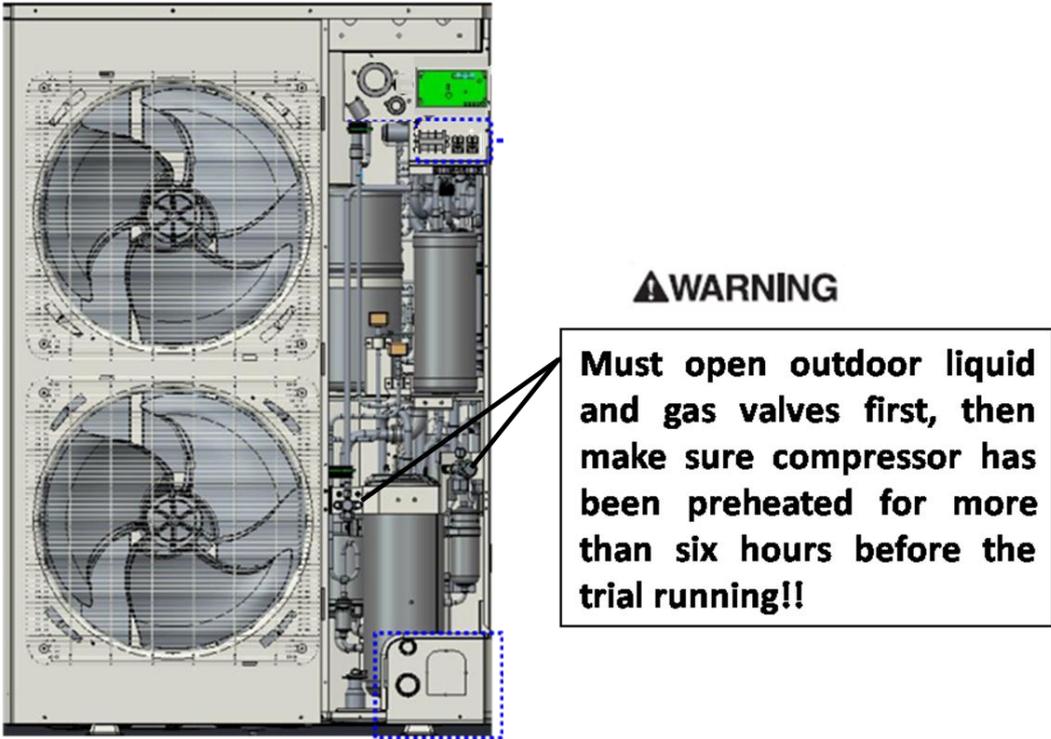
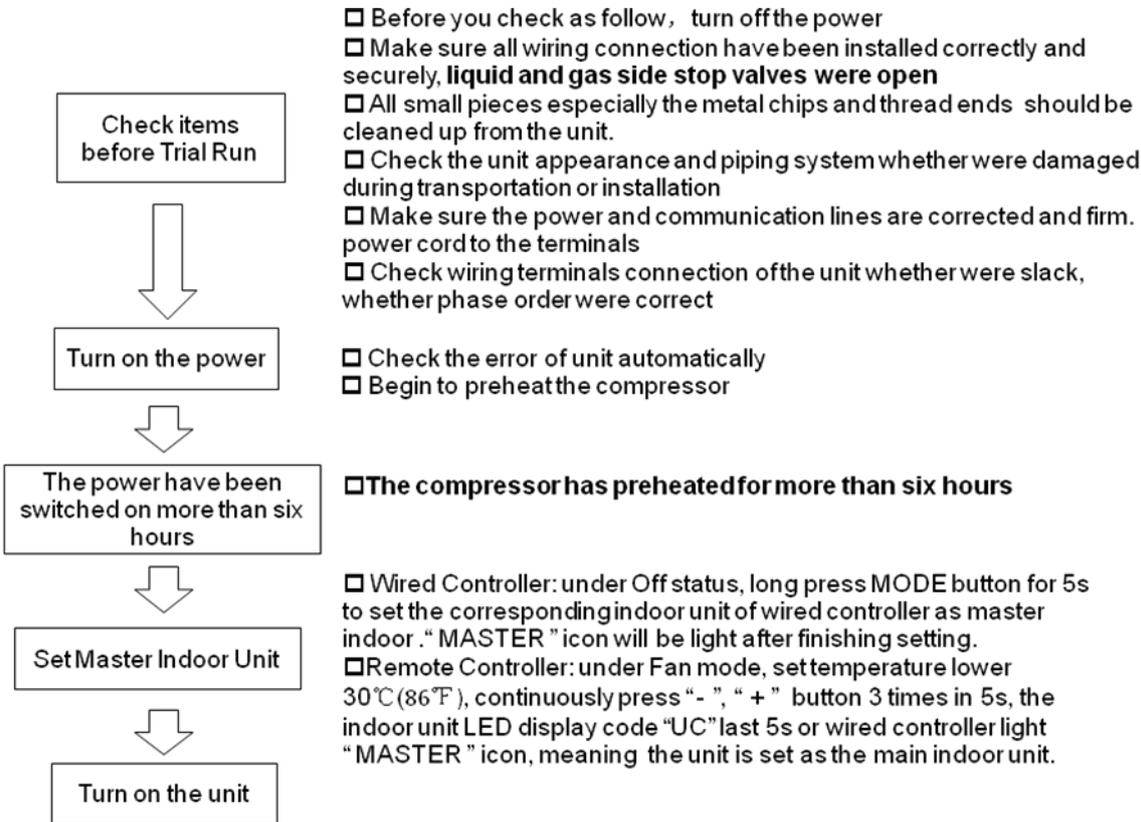


Fig.29

5.2.2 Trial Run



5.2.2.1 Notices

(1) Before the trial running, make sure the unit is power on and compressor has been preheated

for more than six hours. Touch the unit to check whether it's normally preheated. Start test operation after unit is normally preheated, otherwise compressor might be damaged.

- (2) Before the trial running, make sure the needed amount of refrigerant has been added to the pipe or at least 70% of the needed refrigerant has been added.
- (3) During the trial running, system will operate according to the ambient temperature.
 - 1) When outdoor temperature is above 20°C (68°F), debugging shall be in cooling mode.
 - 2) When outdoor temperature is below 20°C (68°F), debugging shall be in heating mode.

5.2.2.2 Trial Run

- (1) The trial run should be carried out by the professionally skilled personnel on the premise that all items listed above are in normal conditions.
- (2) Let the unit energized and switch the wired controller or the remoter controller to "ON".
- (3) The fan motor and compressor of the outdoor unit will run automatically in three minutes.
- (4) If there is some unusual so started, turn off the unit for an immediate check.

▲WARNING
Before restarting the unit, make sure the compressor has been preheated for more than 6 hours.

6 Common Malfunctions and Troubleshooting

▲WARNING
(1) In the event of abnormal conditions (like, stinky smell), please shut off the main power supply immediately and then contact the GREE appointed service center; otherwise the continuous abnormal running would damage the air conditioning unit and also would cause electric shock or fire hazard etc.
(2) Do not repair the air conditioning personally but instead contact the professionally skilled personnel at the Gree appointed service center, as the incorrect repair would cause electric shock or fire hazard etc.

6.1 Check before Contacting Service Center

Conditions	Causes	Corrective Actions
The unit does not run	Broken fuse or opened breaker.	Change the fuse or close the breaker.
	Power off.	Restart the unit when power on.
	Power supply plug is loose.	Plug the power supply properly.
	Insufficient energy of remote controller.	Change new battery.
	Remote controller out of the control scope.	Keep the control distance within 8 meters
The unit stops soon	Clogged air intake/outlet of	Clear the obstacle.

after it starts	indoor/outdoor unit.	
Abnormal cooling or heating	Clogged air intake/outlet of indoor/outdoor unit.	Clear the obstacle.
	Improper temperature setting.	Adjust the setting of wireless remote controller or wired controller.
	Too low set of fan speed.	Adjust the setting of wireless remote controller or wired controller.
	Incorrect airflow direction	Adjust setting at wireless remote controller or wired controller
	Opened door or window.	Close the door or window.
	Direct sunlight.	Hang a curtain or blinds over the window.
	Too much people in the room.	
	Too much heat sources in the room.	Reduce heat sources.
	Dirty filter screen.	Clean the filter screen.

Note:

If problem cannot be solved after the above check, please contact Gree appointed service center and also give a description of the error occurred as well as the model of the unit.

6.2 Normal Phenomenon

Conditions		Causes
The unit does not run	When restarting the unit soon after it is stopped.	The overload protection switch makes the startup delay for 2 minutes.
	As soon as press the "Temperature Set" button.	
	The moment the unit is powered on.	The unit will stand by for approximate one minute.
The unit blows out mist	When the cooling operation starts.	The hi-humidity air indoor is cooled quickly.
The unit generates noise	The unit "buzzes" as soon as it starts running.	It is the sound generated during the initialization of the electronic expansion valve.
	The unit "swishes" during the cooling operation.	It is the sound when the refrigerant gas runs inside the unit.

	The unit “swishes” when it is started or stopped.	It is the sound when the refrigerant gas stops running.
	The unit “swishes” when it is in and after the running.	It is the sound when the draining system is operating.
	The unit “squeaks” when it is in and after the running.	It is the sound of friction generated by the skin plate etc which swells due to the temperature change.
The unit blows out dust.	When the unit restarts after it is not used for a long time.	The dust inside the unit is blown out again
The unit emits odors.	When the unit is running.	The odors absorbed in are blown out again.

6.3 Error Display

6.3.1 Error Code of Protection

Error Item	Code	Indoor Unit Display	Outdoor Unit Display
Indoor fan protection	L1	L1	L1
Water overflow protection	L3	L3	L3
Anti-freeze protection	L5	L5	L5
Mode conflict	L6	-	L6
Indoor ambient temperature sensor error	d3	d3	d3
Indoor coil inlet temperature sensor error	d4	d4	d4
Indoor mid-coil temperature sensor error	d5	d5	d5
Indoor coil outlet temperature sensor error	d6	d6	d6
Indoor humidity sensor error	d7	d7	d7
Jumper error	d9	d9	d9
Outdoor ambient temperature sensor error	b1	b1	b1
Outdoor heat-exchanger coil outlet temperature sensor error	b3	b3	b3
Vapor-liquid separator inlet temperature sensor error	b6	b6	b6
High pressure protection	E1	E1	E1
Low pressure protection	E3	E3	E3
Discharge protection	E4	E4	E4
Refrigerant-lacking protection	Ed	E0	Ed
Compressor power protection	EN	E0	EN
Intermediate vapor injection temperature sensor error	Fb	E0	Fb

EEPROM read-write error	F0	F0	F0
High pressure sensor error	F1	F1	F1
Middle pressure sensor error	F2	E0	F2
Low pressure sensor error	F3	F3	F3
Discharge temperature sensor error	F6	F6	F6
High pressure switch	Fd	E0	Fd
AC over current	P5	P0	P5
IPM over current protection	P6	E0	P6
IPM module overheat	P8	P0	P8
Desynchronizing protection	P9	P0	P9
Busbar over voltage protection	PH	P0	PH
Phase current detection fault	PC	P0	PC
Busbar under voltage protection	PL	P0	PL
Capacitor charge error	PF	P0	PF
Demagnetization protection	PU	P0	PU
Communication error between indoor and outdoor units, indoor unit's wired controller	C0	C0	C0
485 communication error between main controller and drive controller	C2	C2	C2
Fan motor error	H0	H0	H0
PFC over current protection	P4	E0	P4
PFC module overheat	Pn	P0	Pn
Phase loss protection of compressor	PE	P0	PE
Malfunction of lack of IDU	C4	C4	C4
485 communication error between main controller and debugging controller	C1	-	C1

6.3.2 Error Code of Limiting Frequency Reduction Protection

Error Item	Code	Display
Limited frequency reduction for high pressure protection	FA	Only the outdoor unit displays the code
Limited frequency reduction for low pressure protection	FH	
Limited frequency reduction for discharge temperature protection	F9	
Limited frequency reduction for AC current protection	F8	
Limited frequency reduction for power protection	FC	
Limited frequency reduction for IPM temperature protection	FL	
Limited frequency reduction for PFC temperature protection	FE	

6.3.3 Operation Code

Operation	Code	Indoor Unit Display	Outdoor Unit Display
Trail run	A0	A0	A0
Fluorine recycle	A2	A2	A2
Defrosting	A3	A3	A3
Oil return	A4	-	A4
Testing online	A5	A3	A4
Vacuumization	A8	A8	-
Test module	SS	-	SS

Note: Last ten records of protection shutdown or limited frequency reduction for protection can be searched through the debugging controller.

7 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.

7.1 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.

7.2 Drain Pipe

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

7.3 Notice 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.

7.4 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.

7.5 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.

8 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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