



Installation, Operation, and Maintenance

DC Inverter Multi VRF System

Model Number:

TRN-24WLA1

TRN-28WLA1

⚠ SAFETY WARNING

Only qualified personnel should install and service the equipment. The installation, starting up, and servicing of heating, ventilating, and air-conditioning equipment can be hazardous and requires specific knowledge and training. Improperly installed, adjusted or altered equipment by an unqualified person could result in death or serious injury. When working on the equipment, observe all precautions in the literature and on the tags, stickers, and labels that are attached to the equipment.

⚠ AVERTISSEMENT DE SÉCURITÉ

Seul le personnel qualifié doit installer et procéder à l'entretien des équipements. L'installation, le démarrage et la réparation des équipements de chauffage, de ventilation et de climatisation peuvent être dangereux et nécessitent une formation et des connaissances spécifiques. Un équipement mal installé, réglé ou modifié par un individu non qualifié peut entraîner des blessures graves, voire mortelles. Lors de toute intervention sur l'équipement, respectez toutes les précautions figurant dans la documentation et sur les étiquettes et autocollants fixés à l'équipement.

Preface

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

⚠ DANGER	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)	The design standard of multi VRF system conforms to related standard of sales countries.
(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)	If the product needs to be installed, moved or maintained, please contact our designated dealer or local service center for professional support. Users should not disassemble or maintain the unit by themselves, otherwise it may cause relative damage, and our company will bear no responsibilities.
(6)	All the illustrations and information in the instruction manual are only for reference. In order to make the product better, we will continuously conduct improvement and innovation. If there is adjustment in the product, please subject to actual product.
(7)	Under the standby status, the unit will consume a little power for ensuring reliability of the complete unit, maintaining normal communication and preheating refrigerant. When the unit won't be used for a long time, please cut off the power of the complete unit. However, please preheat it when operating the unit next time.

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 Precautions

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 above special places, please adopt special air conditioner with anti-corrosive or anti-explosion function.
- (2) Follow this instruction to complete the installation work. Please carefully read this manual before unit startup and service.
- (3) Wire size of power cord should be large enough. The damaged power cord and connection wire should be replaced by exclusive cable.
- (4) After connecting the power cord, please fix the electric box cover properly in order to avoid accident.
- (5) Never fail to comply with the nitrogen charge requirements. Charge nitrogen when welding pipes.
- (6) Never short-circuit or cancel the pressure switch to prevent unit damage.
- (7) Please firstly connect the wired controller before energization, otherwise wired controller can not be used.
- (8) Before using the unit, please check if the piping and wiring are correct to avoid water leakage, refrigerant leakage, electric shock, or fire etc.
- (9) Do not insert fingers or objects into air outlet/inlet grille.
- (10) Open the door and window and keep good ventilation in the room to avoid oxygen deficit when the gas/oil supplied heating equipment is used.
- (11) Never start up or shut off the air conditioner by means of directly plug or unplug the power cord.
- (12) Turn off the unit after it runs at least five minutes; otherwise it will influence oil return of the compressor.
- (13) Do not allow children operate this unit.
- (14) Do not operate this unit with wet hands.
- (15) Turn off the unit or cut off the power supply before cleaning the unit, otherwise electric shock or injury may happen.
- (16) Never spray or flush water towards unit, otherwise malfunction or electric shock may happen.
- (17) Do not expose the unit to the moist or corrosive circumstances.
- (18) Under cooling mode, please don't set the room temperature too low and keep the temperature difference between indoor and outdoor unit within 5°C (41°F).
- (19) User is not allowed to repair the unit. Fault service may cause electric shock or fire accidents. Please contact our designated dealer or local service center for help.
- (20) Before installation, please check if the power supply is in accordance with the requirements specified on the nameplate. And also take care of the power safety.
- (21) Installation should be conducted by dealer or qualified personnel. Please do not attempt to install the unit by yourself. Improper handling may result in water leakage, electric shock or fire disaster etc.
- (22) Be sure to use the exclusive accessory and part to prevent the water leakage, electric shock and fire accidents.
- (23) Make sure the unit can be earthed properly and soundly after plugging into the socket so as to avoid electric shock. Please do not connect the ground wire to gas pipe, water pipe, lightning rod or telephone line.
- (24) Electrify the unit 8 hours before operation. Please switch on for 8 hours before operation. Do not cut off the power when 24 hours short-time halting (to protect the compressor).
- (25) If refrigerant leakage happens during installation, please ventilate immediately. Poisonous gas will emerge if the refrigerant gas meets fire.
- (26) Volatile liquid, such as diluent or gas will damage the unit appearance. Only use soft cloth with a little neutral detergent to clean the outer casing of unit.
- (27) If anything abnormal happens (such as burning smell), please power off the unit and cut off the main power supply, and then immediately contact our designated dealer or local service center. If abnormality keeps going, the unit might be damaged and lead to electric shock or fire.
- (28) Refrigerant gas is heavier than air and replaces oxygen. A massive leak can lead to oxygen depletion, especially in basements, and an asphyxiation hazard could occur leading to serious injury or death.
- (29) When installing the unit in a small room, take measures to keep the refrigerant concentration from exceeding allowable safety limits. Excessive refrigerant leaks, in the event of an accident in a closed ambient space, can lead to oxygen deficiency.

⚠ WARNING

- (30) When installing or relocating the system, keep the refrigerant circuit free from substances other than the specified refrigerant (R-410A) such as air. Any presence of air or other foreign substance in the refrigerant circuit can cause an abnormal pressure rise or rupture, resulting in injury.
- (31) Do not allow children to play on or around the unit to prevent injury.
- (32) Do not touch the refrigerant pipes during and immediately after operation as the refrigerant pipes may be hot or cold, depending on the condition of the refrigerant flowing through the refrigerant piping, compressor, and other refrigerant cycle parts. Your hands may suffer burns or frostbite if you touch the refrigerant pipes. To avoid injury, give the pipes time to return to normal temperature or, if you must touch them, be sure to wear proper gloves.
- (33) Heat exchanger fins are sharp enough to cut. To avoid injury wear glove or cover the fins when working around them.
- (34) Be careful when transporting the product.
- (35) Refrigerant R-410A in the system must be kept clean, dry, and tight. (a) Clean and Dry — Foreign materials (including mineral oils such as SUNISO oil or moisture) should be prevented from getting into the system.
- (36) Tight — R-410A does not contain any chlorine, does not destroy the ozone layer, and does not reduce the earth's protection against harmful ultraviolet radiation. R-410A can contribute to the greenhouse effect if it is released. Therefore take proper measures to check for the tightness of the refrigerant piping installation.
- (37) Since R-410A is a blend, the required additional refrigerant must be charged in its liquid state. If the refrigerant is charged in a state of gas, its composition can change and the system will not work properly.
- (38) Near machinery emitting electromagnetic waves. Electromagnetic waves may disturb the operation of the control system and cause the unit to malfunction.
- (39) Where flammable gas may leak, where there is carbon fiber, or ignitable dust suspension in the air, or where volatile flammables such as thinner or gasoline are handled. Operating the unit in such conditions can cause a fire.
- (40) Take adequate measures to prevent the outside unit from being used as a shelter by small animals. Small animals making contact with electrical parts can cause malfunctions, smoke, or fire. Instruct the customer to keep the area around the unit clean.
- (41) Dismantling the unit, treatment of the refrigerant, oil and additional parts must be done in accordance with the relevant local, state, and national regulations.
- (42) This air conditioner is an appliance that should not be accessible to the general public.
- (43) For installation work, follow the instructions in the Installation Manual and use tools and pipe components specifically made for use with R410A refrigerant. The R410A refrigerant in the HFC system is pressurized 1.6 times the pressure of usual refrigerants. If pipe components not designed for R410A refrigerant are used and the unit is not installed correctly, the pipes may burst and cause damage or injuries. In addition, water leakage, electric shock, or fire may result.
- (44) The unit must be installed according to the instructions in order to minimize the risk of damage from earthquakes, typhoons, or strong winds. An incorrectly installed unit may fall down and cause damage or injuries.
- (45) When installing or relocating, or servicing the outdoor unit, use only the specified refrigerant (R410A) to charge the refrigerant lines. Do not mix it with any other refrigerant and do not allow air to remain in the lines. If air is mixed with the refrigerant, then it can be the cause of abnormal high pressure in the refrigerant line, and may result in an explosion and other hazards. The use of any refrigerant other than that specified for the system will cause mechanical failure or system malfunction or unit breakdown. In the worst case, this could lead to a serious impediment to securing product safety.
- (46) When opening or closing the valve below freezing temperatures, refrigerant may spurt out from the gap between the valve stem and the valve body, resulting in injuries.
- (47) When installing the unit, securely connect the refrigerant pipes before starting the compressor.
- (48) When installing the unit, use appropriate protective equipment and tools for safety. Failure to do so could cause injuries.
- (49) Be extremely careful when transporting the units. 2 or more persons are needed to handle the unit, as it weighs 20 kg, 44 lbs or more. Do not grasp the packaging bands. Wear protective gloves to remove the unit from the packaging and to move it, as you can injure your hands on the fins or the edge of other parts.
- (50) Be sure to safely dispose of the packaging materials. Packaging materials, such as nails and other metal or wooden parts may cause stabs or other injuries.
- (51) The base and attachments of the outdoor unit must be periodically checked for looseness, cracks or other damage. If such defects are left uncorrected, the unit may fall down and cause damage or injuries.
- (52) Before starting operation, check that all panels, guards and other protective parts are correctly installed. Rotating, hot, or high voltage parts can cause injuries.
- (53) Do not touch any switch with wet hands. Electric shock may result.
- (54) After stopping operation, be sure to wait at least 5 minutes before turning off the main power switch. Otherwise, water leakage or breakdown may result.

⚠ WARNING

- (55) Installation of the electric heater must strictly adhere to the manufacturer's instructions. Unauthorized modification of the electric heating circuit is strictly prohibited, as it may cause fire hazards.
- (56) HVAC systems may experience operational disruptions due to electromagnetic interference (EMI), potentially affecting medical devices and broadcast signal transmissions. Conversely, variable-frequency drives (VFDs), dedicated generators, high-frequency medical devices, and radio communication equipment may also interfere with HVAC system operation.
- (57) Improper installation, adjustment, alteration, service, maintenance, abolish, or use can cause explosion, fire, electrical shock, or other conditions which may cause death, personal injury, or property damage. Consult a qualified installer, service agency, or your distributor or branch for information or assistance.

If the product needs to be installed, moved or maintained, please contact our designated dealer or local service center for professional support, otherwise our company would bear no legal reliability for the related damages arising therefrom.

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 7kW to 8kW, 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

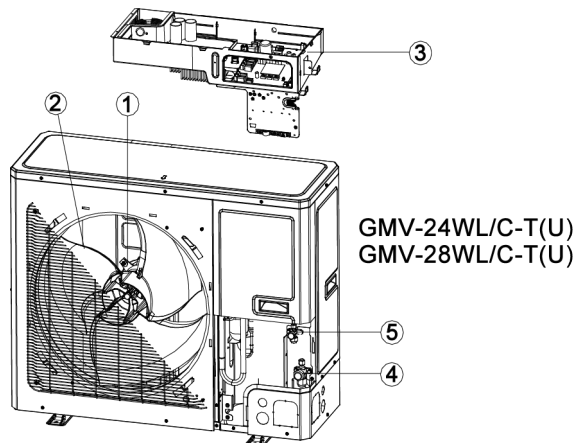


Fig.1

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%~135% of that of the outdoor unit.

Model	Max sets of connectable IDUS
GMV-24WL/C-T(U)	4
GMV-28WL/C-T(U)	4

- (3) 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)

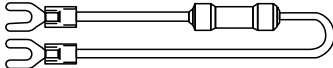
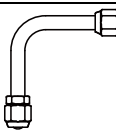
3 Preparation before Installation

NOTICE

Graphics here are only for reference. Please refer to actual products. Unspecified dimensions are all in mm/inch.

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	Chassis gluey plug		3	—
5	Drainage joint		1	—
6	Tube Connector Sub-assy		1	GMV-24WL/C-T(U) GMV-28WL/C-T(U)

NOTICE

Some accessories are not available for some models. Please refer to the present product for details.

3.2 Installation Site

⚠ WARNING	
(1)	The unit must be installed where strong there is a danger 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)	Install the unit where it will not be tilted by more than 5°.
(8)	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)

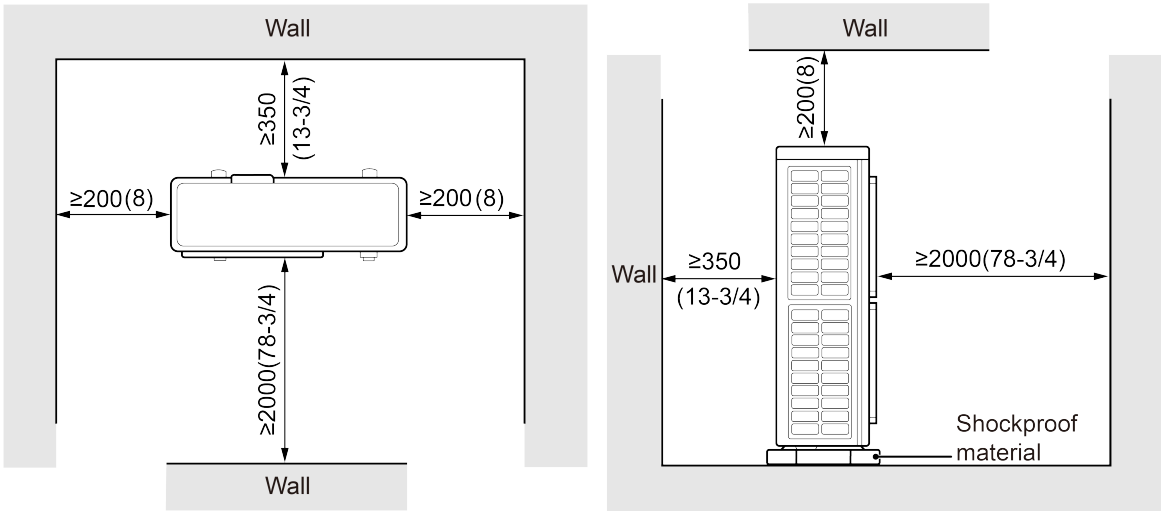


Fig. 2

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 (1/4)	≥0.8(1/32)
Φ9.52 (3/8)	≥0.8(1/32)
Φ12.70 (1/2)	≥0.8(1/32)
Φ15.9(5/8)	≥1.0(1/25)
Φ19.05 (3/4)	≥1.0(1/25)

4 Installation Instruction

NOTICE

Graphics here are only for reference. Please refer to actual products. Unspecified dimensions are all in mm/inch.

4.1 Dimension of Outdoor Unit and Mounting Hole

Unit Outline and Installation Dimension (mm/inch).

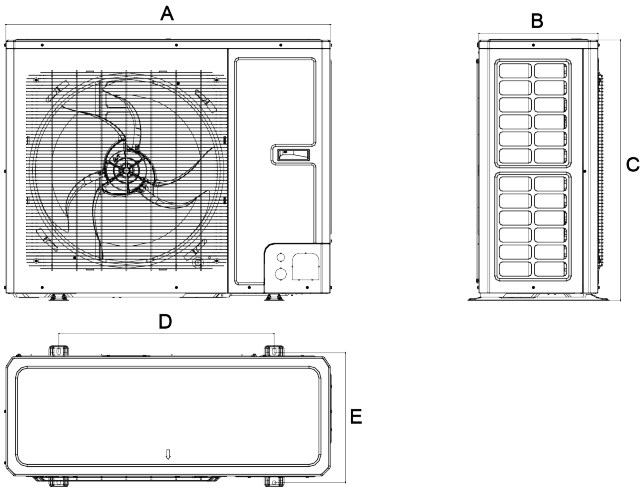


Fig.3

Unit: mm/inch

Model	A	B	C	D	E
GMV-24WL/C-T(U)	980	360	790	650	395
GMV-28WL/C-T(U)	(38-6/19)	(14-3/16)	(31-2/16)	(25-3/5)	(15-5/9)

4.2 Connection Pipe

4.2.1 Schematic Diagram of Piping Connection

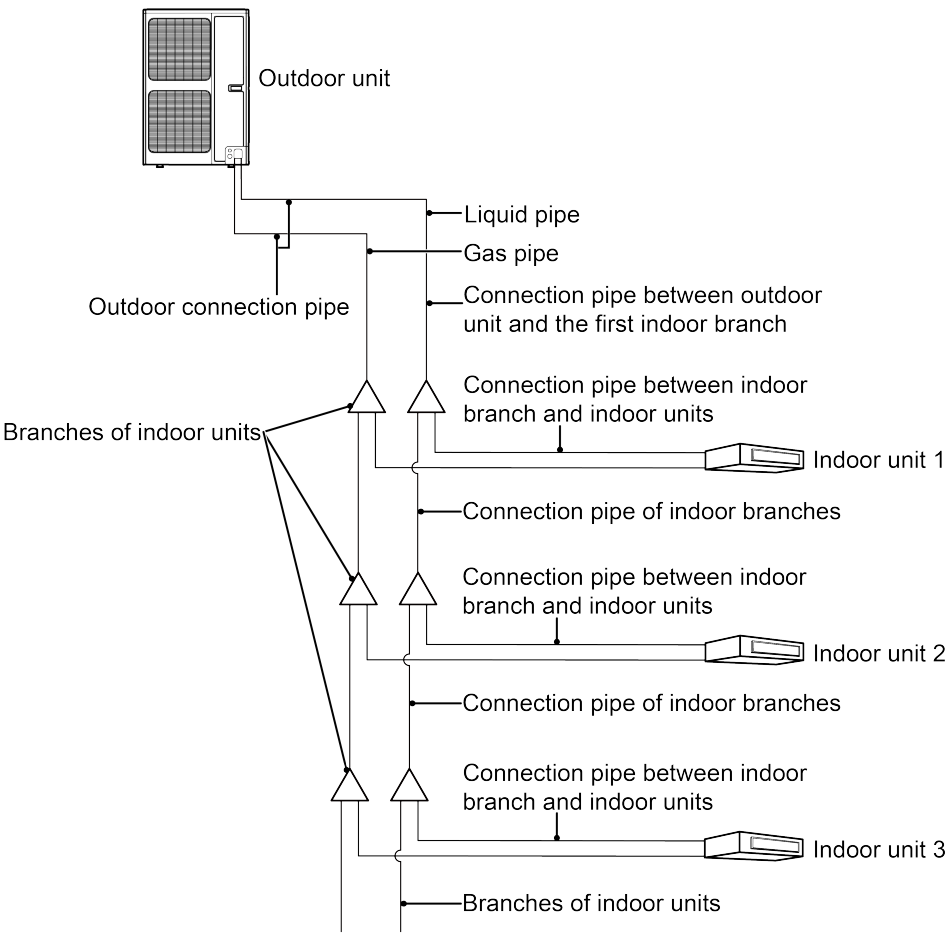


Fig.4

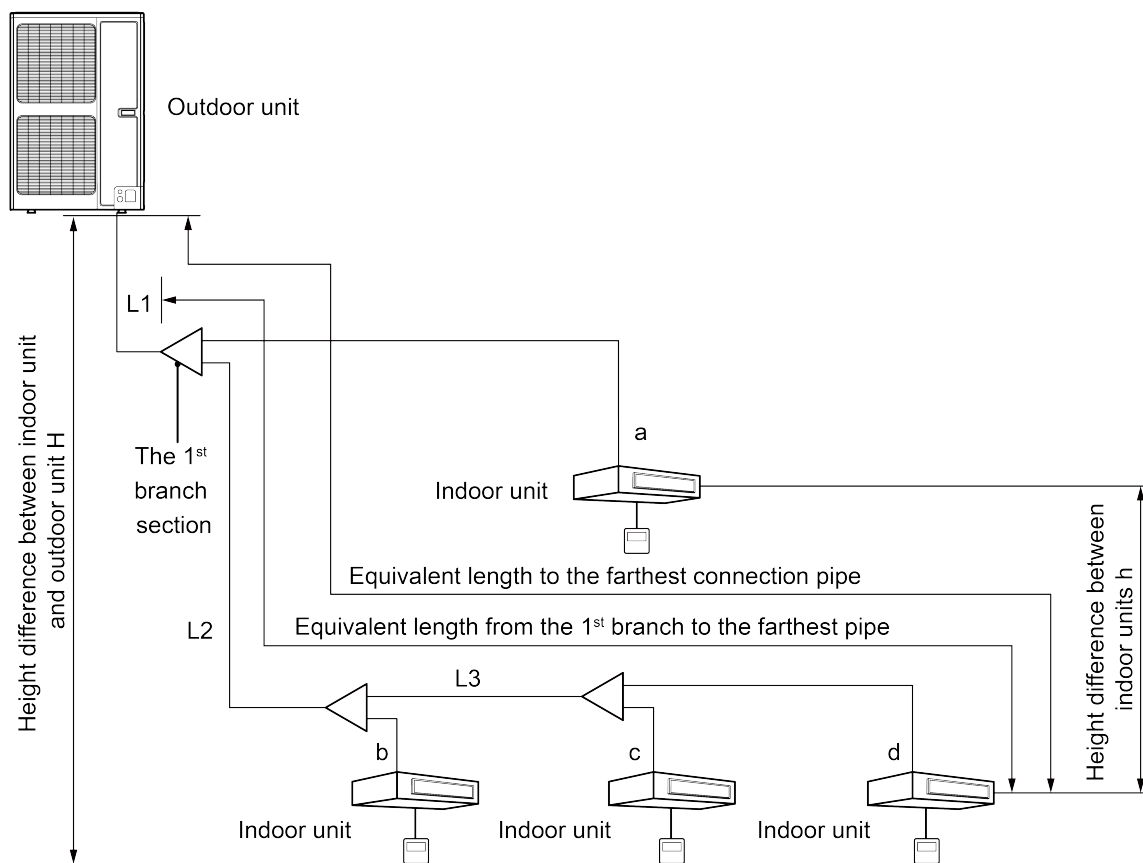
4.2.2 Allowable Length and Height Difference of Connection Pipe

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).

Unit: m(feet)



Each Y-type branch equals to 0.5m and each branch header equals to 1.0m.

Fig.5 Allowable Length and Height Difference of Connection Pipe

Piping parameters of GMV-24WL/C-T(U), GMV-28WL/C-T(U).

—		Allowable value		Fitting pipe
		m	feet	
Total length (actual length) of fitting pipe		250	820	$L1+L2+L3+a+b+c+d$
Length of farthest fitting pipe (m)	Actual length	100	328	$L1+L2+L3+d$
	Equivalent length	120	394	
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	30	98	—
	ODU at lower side	30	98	—
Height difference between IDUs		10	33	—

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.

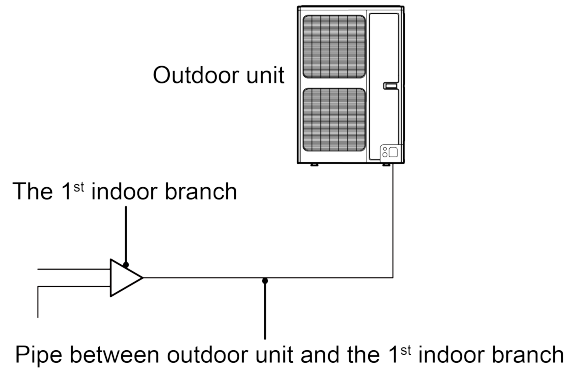


Fig.6

Dimension of outdoor connection pipe.

Basic module	Pipe dimension	
	Gas pipe (mm/inch)	Liquid pipe (mm/inch)
GMV-24WL/C-T(U)	Φ15.9(5/8)	Φ9.52(3/8)
GMV-28WL/C-T(U)	Φ15.9(5/8)	Φ9.52(3/8)

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.

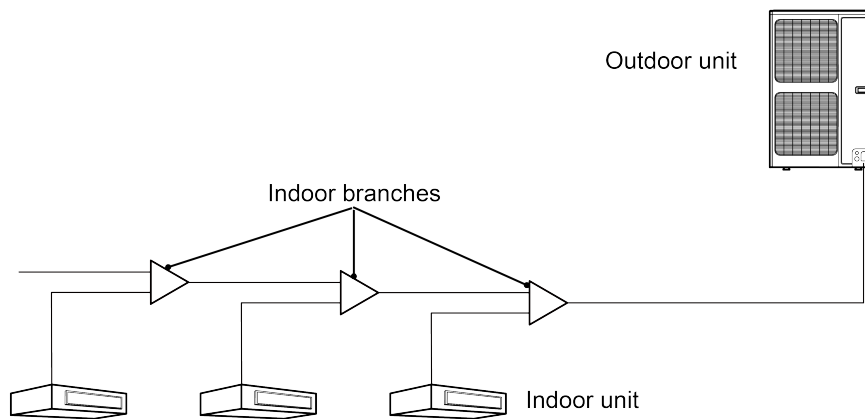


Fig.7

R410A Refrigerant system	Total capacity of downstream indoor units X (kW)	Model
Y type branch	$X < 20$	FQ01A
	$20 \leq X \leq 30$	FQ01B
	$30 < X \leq 70$	FQ02
	$70 < X \leq 135$	FQ03
	$135 < X$	FQ04

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.

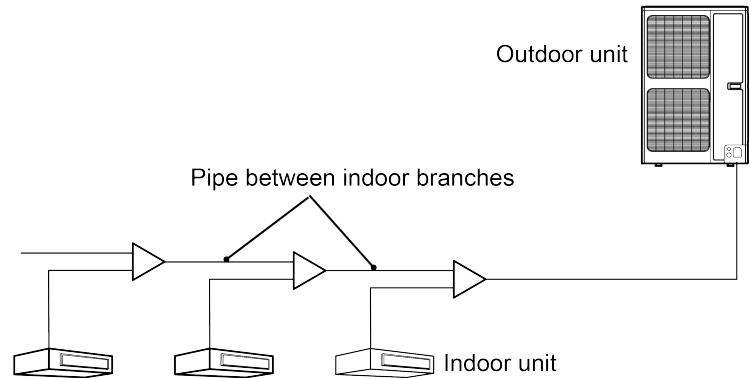


Fig. 8

Total capacity of downstream indoor units C (kW)	Gas pipe (mm/inch)	Liquid pipe (mm/inch)
$C \leq 5.6$	$\Phi 12.7(1/2)$	$\Phi 6.35(1/4)$
$5.6 < C \leq 14.2$	$\Phi 15.9(5/8)$	$\Phi 9.52(3/8)$
$14.2 < C \leq 22.4$	$\Phi 19.05(1/4)$	$\Phi 9.52(3/8)$

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.

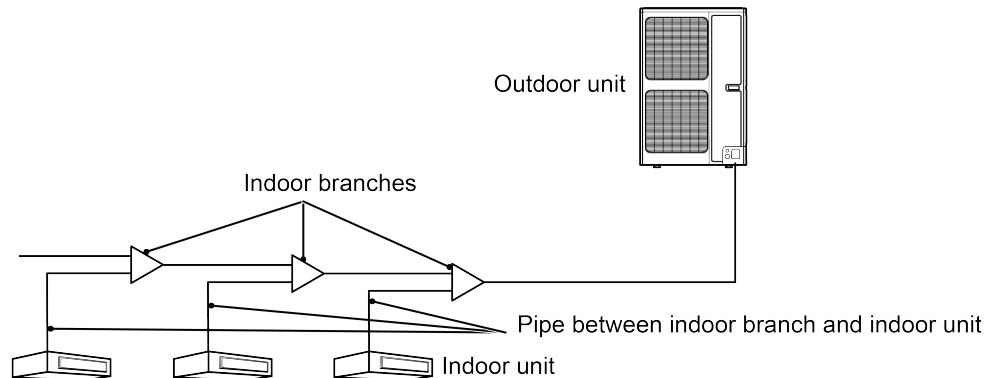


Fig. 9

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

NOTICE

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

4.3 Installation of Connection Pipe

4.3.1 Precautions for the Installation of Connection Pipe

- (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) 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) The wall thickness of field-installed pipes should be selected in accordance with the relevant local, state, and national regulations.
- (5) Store the pipes to be used during installation indoors and keep both ends of the pipes sealed until just before brazing. (Leave elbow joints, etc. in their packaging.) If dust, debris, or moisture enters the refrigerant lines, oil deterioration or compressor breakdown may result.
- (6) When cutting or deburring pipes, do not allow cutting chips or other foreign matters to enter the pipes. If cutting chips or other foreign matters enter pipes, wipe them off the inside of the pipes.
- (7) Use leak detector or soapy water to check for gas leaks after connections are completed.

4.3.2 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.

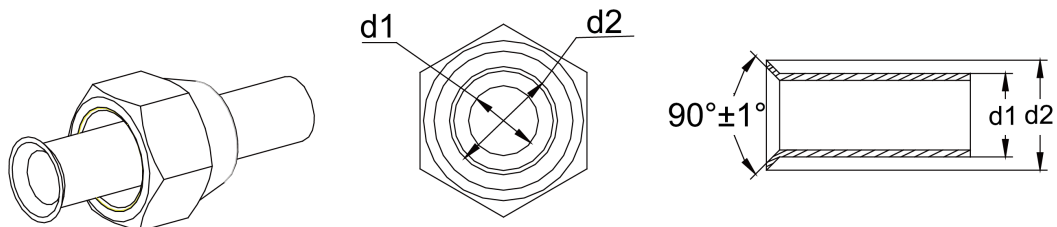


Fig. 10

4.3.3 Pipe Bending

- (1) Reshape the pipe by hand. Be careful not to damage the pipe.

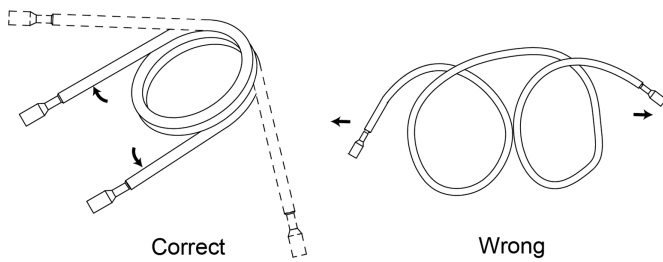


Fig. 11

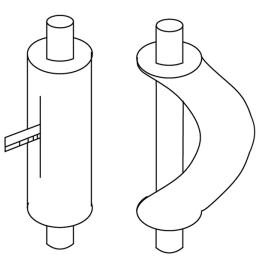


Fig. 12

- (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.

4.3.4 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).
- (4) Use sponge to wrap the un-insulated connection pipe and joint. Then tie the sponge tightly with plastic tape.
- (5) Connection pipe should be supported by a bearer rather than the unit.
- (6) 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.
- (7) 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.

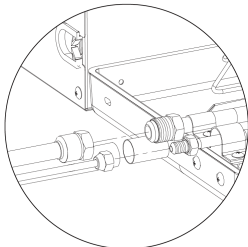


Fig. 13

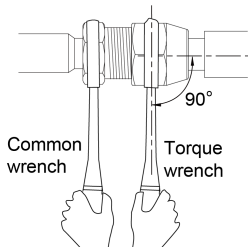


Fig. 14

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

4.3.5 Outdoor Pipe Connection

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

During engineering installation, the connection pipe inside the unit must be wrapped by insulation sleeve.

Below is the piping diagram of GMV-24WL/C-T(U), GMV-28WL/C-T(U). According to customer requirement or space limit, outlet pipe can be installed from the front, right or rear side.

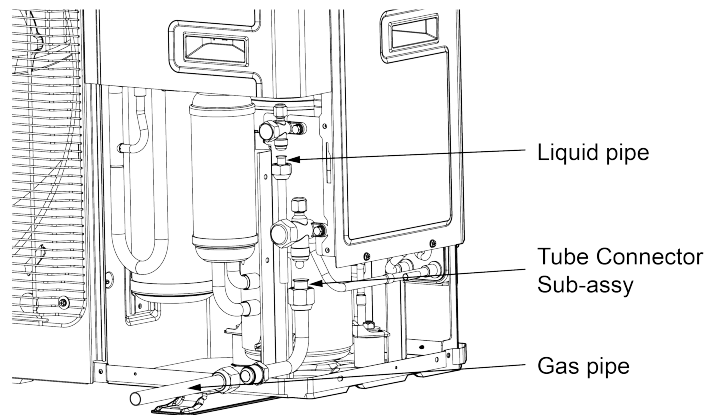


Fig.15

4.3.6 Installation of Y-type Branch

(1) Y-type Branch.

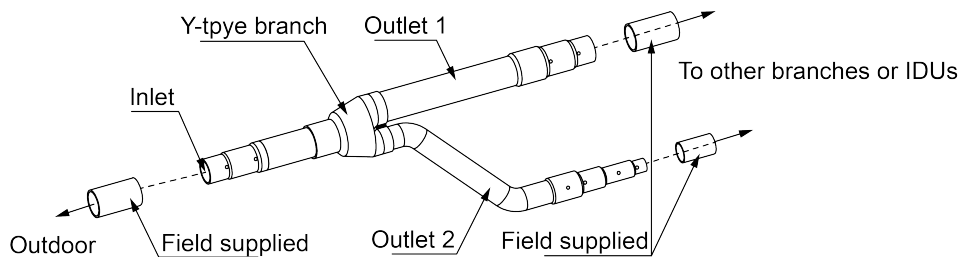


Fig. 16

- (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.

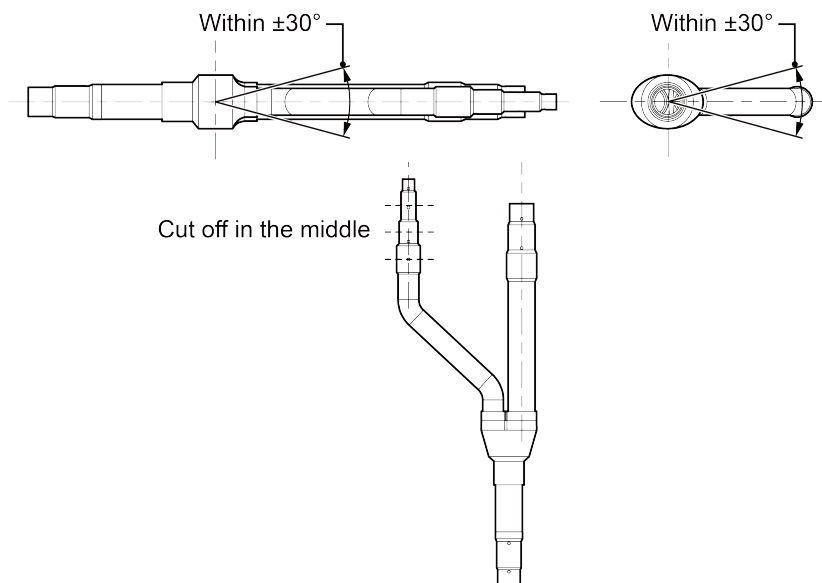


Fig. 17

- (4) 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.

4.3.7 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) 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.
 - 3) Example: Polyethylene foam (bear 120°C(248°F) or above); foaming polyethylene (bear 100°C(212°F) or above).
 - 4) Joints of indoor and outdoor unit should be wrapped with insulating material and leave no gap between pipe and wall. See Fig.18.

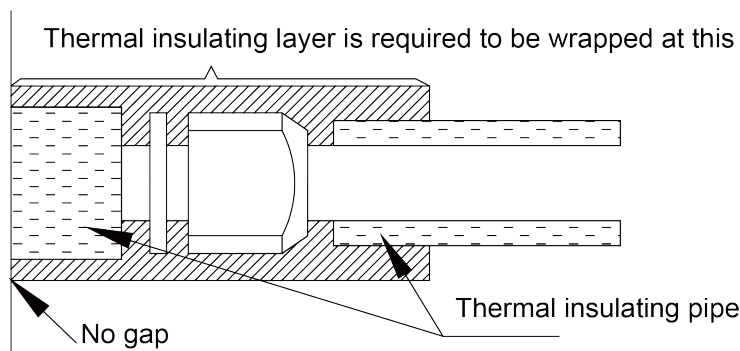


Fig. 18

- 5) 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.
- 6) 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.
- 7) After wrapping the pipe, apply sealing material to completely seal the hole on the wall.
- 8) Insulate piping to prevent condensation.
- 9) Be sure to use the insulation of specified thickness. Excessive thickness may cause incorrect installation of the indoor unit and lack of thickness may cause dew drippage.
- 10) Ensure that the 2 refrigerant pipes are insulated to prevent condensation.
- 11) Increase insulation depending on the environment where the refrigerant piping is installed, or condensation may occur on the surface of the insulation material.

4.3.8 Support and Protection of Pipeline

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

4.4 Vacuum Pumping, Refrigerant Adding

4.4.1 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.
- (4) Do not perform pump down work when there is a gas leak. The intake of air or other gases causes abnormally high pressure in the refrigeration cycle, which may cause explosion or injury.
- (5) When pumping down the refrigerant, stop the compressor before disconnecting the refrigerant pipes. The compressor may burst and cause injury if any foreign substance, such as air, enters the system.

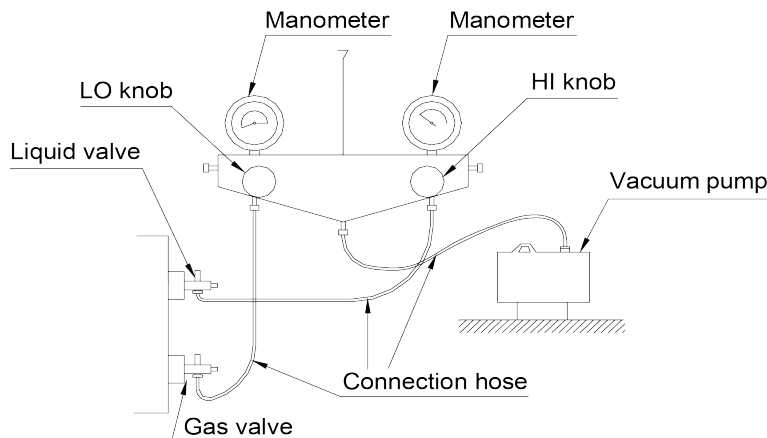


Fig. 19

4.4.2 Refrigerant Adding

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

Model	GMV-24WL/C-T(U), GMV-28WL/C-T(U)
Refrigerant Qty (kg)	2.4

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.

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

Quantity of additional refrigerant = $\sum \text{length of liquid pipe} \times \text{quantity of additional refrigerant per meter} (39\text{-}3/8\text{inch}) + (\text{quantity of indoor unit} - 2) \times 0.3$

Quantity of additional refrigerant per meter for liquid pipe (kg/m)/(oz/inch)					
$\Phi 22.2(\Phi 7/8)$	$\Phi 19.05(\Phi 3/4)$	$\Phi 15.9(\Phi 5/8)$	$\Phi 12.7(\Phi 1/2)$	$\Phi 9.52(\Phi 3/8)$	$\Phi 6.35(\Phi 1/4)$
0.35	0.25	0.17	0.11	0.054	0.022
0.314	0.224	0.152	0.099	0.048	0.020

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.

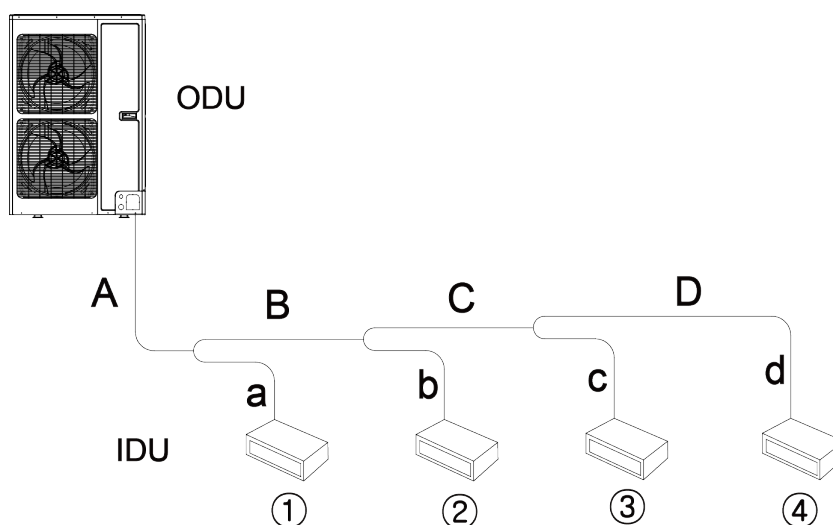


Fig. 20

IDU:

No.	IDU ①	IDU ②	IDU ③	IDU ④
Model	Duct type GMV-ND72PL/B-T	Duct type GMV-ND50PL/B-T	Duct type GMV-ND36PL/B-T	Duct type GMV-ND25PL/B-T

Liquid pipe:

No.	A	B	C	D
Pipe size	$\Phi 9.52(\Phi 3/8)$	$\Phi 9.52(\Phi 3/8)$	$\Phi 9.52(\Phi 3/8)$	$\Phi 6.35(\Phi 1/4)$
Length	10m(32-3/4feet)	5m(16-3/8feet)	5m(16-3/8feet)	5m(16-3/8feet)
No.	a	b	c	d
Pipe size	$\Phi 9.52(\Phi 3/8)$	$\Phi 6.35(\Phi 1/4)$	$\Phi 6.35(\Phi 1/4)$	$\Phi 6.35(\Phi 1/4)$
Length	3m(9-3/4feet)	3m(9-3/4feet)	2m(6-5/8feet)	1m(3-1/4feet)

Total length of each liquid pipe

$\Phi 9.52$: $A+B+C+a=10+5+5+3=23\text{m}$ (75-1/2 feet)

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

Quantity of indoor unit: 4 sets

Therefore, the minimum quantity of additional refrigerant = $(23 \times 0.054 + 11 \times 0.022) + (4 - 2) \times 0.3 = 2.084\text{kg}$

4.5 Electric Wiring

4.5.1 Notices for Wiring

- (1) Install units according to national wiring codes.
- (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) All electrical installation must be performed by qualified technicians in accordance with local laws, regulations and this user manual.
- (5) Caliber of the power cord must be large enough. A damaged power cord or connection wire must be replaced by specialized electrical cords.
- (6) If the supply cord is damaged, it must be replaced by the manufacturer or its service agent or a similarly qualified person in order to avoid a hazard.
- (7) An all-pole disconnection device which has at least 3mm (3/25 inch) clearances in all poles, and disconnection must be incorporated in the fixed wiring in accordance with the wiring rules.
- (8) Details of type and rating for fuse:
- (9) Make sure that a separate power supply circuit is provided for this unit and that all electrical work is carried out by qualified personnel according to local, state, and national regulations.
- (10) Make sure that all wiring is secured, that specified wires are used, and that no external forces act on the terminal connections or wires.
- (11) When wiring, position the wires so that the electrical components box lid can be securely fastened.
- (12) Improper positioning of the electrical components box lid may result in electric shocks, fire, or the terminals overheating.
- (13) Before touching electrical parts, turn off the unit.
- (14) Be sure to install a ground fault circuit interrupter if one is not already available. This helps prevent electrical shocks or fire.
- (15) Be sure to connect the power supply cords and the connecting wires for the indoor units, outdoor units, and branch boxes directly to the units (no intermediate connections). Intermediate connections can lead to communication errors if water enters the cords or wires and causes insufficient insulation to ground or a poor electrical contact at the intermediate connection point.
- (16) For the power lines, use standard cables of sufficient capacity. Otherwise, a short circuit, overheating, or fire may result.
- (17) When installing the power lines, do not apply tension to the cables. If the connections are loosened, the cables can snap or break and overheating or fire may result.
- (18) Be careful not to make mis-wiring. Firmly tighten the terminal screws to prevent them from loosening. After tightening, pull the wires lightly to confirm that they not move.
- (19) If the connecting wire is incorrectly connected to the terminal block, the unit does not operate normally.

(20) Properly route wiring so as not to contact the sheet metal edge or a screw tip.

(21) Never splice the power cable or the indoor-outdoor-branch box connection cable, otherwise it may result in a smoke, a fire or communication failure.

Model: GMV-24WL/C-T(U), GMV-28WL/C-T(U).

Ceramic 250V5A (front main board), ceramic 250V30A (front main board).

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 circuit breaker should include magnetic trip function and thermal trip function so that system can be protected from short circuit and overload.

(22) Grounding Requirements.

- 1) Air conditioner belongs to class I electrical appliance, so it must be securely grounded.
- 2) 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.
- 3) 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.

4.5.2 Wiring Diagram

(1) Connection of power cord and communication wire Separate power supply for IDU and ODU Single-phase power supply unit.

GMV-24WL/C-T(U), GMV-28WL/C-T(U):

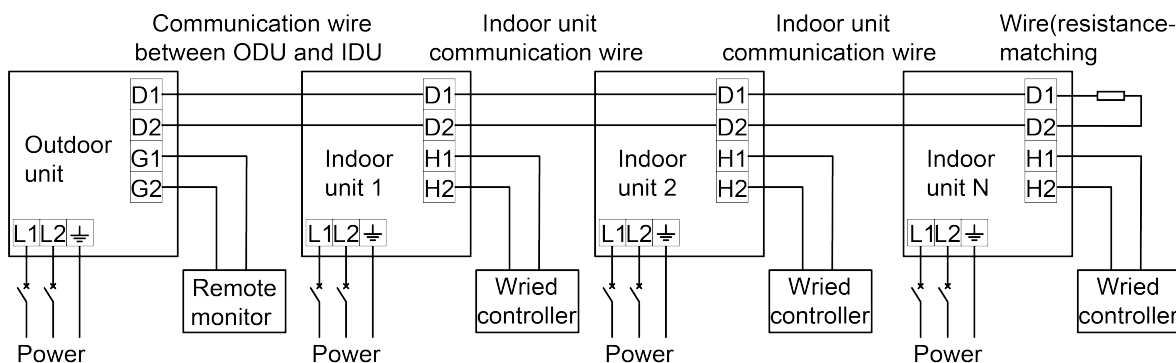


Fig.21 Connection of power cord and communication wire for IDU and ODU

(2) Selection of circuit breaker and power cord.

Model	Power supply	Max Fuse Size/Fusible Max. (A)	Max Ckt, Bkr Size/Disjoncteur Max. (A)	Min. Circuit Ampacity (A)
GMV-24WL/C-T(U)	208/230V~ 60Hz	25	25	21
GMV-28WL/C-T(U)	208/230V~ 60Hz	30	30	21

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.

NOTICE

(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)	Securely fasten the outside unit terminal cover (panel). If the terminal cover/panel is not installed properly, dust or water may enter the outside unit causing fire or electric shock.
(5)	Do not use anything other than breaker and fuse with correct capacity. Using fuse and wire or copper wire with too large capacity may cause a malfunction of unit or fire.
(6)	After using the isolator, be sure to turn off and on the main power supply to reset the system. Otherwise, the outdoor unit may not be able to detect the branch box(es) or indoor units.
(7)	Always use a current leakage breaker that is compatible with higher harmonics as this unit is equipped with an inverter. The use of an inadequate breaker can cause the incorrect operation of inverter.
(8)	Make sure that the current leakage breaker is one compatible with higher harmonics.
(9)	Be sure to attach the terminal block covers/panel of the outdoor unit securely. If it is not attached correctly, it could result in a fire or an electric shock due to dust, water, etc.

4.5.3 Engineering Wiring of Power Supply and Communication Cable

- (1) Please refer Fig. 22 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.

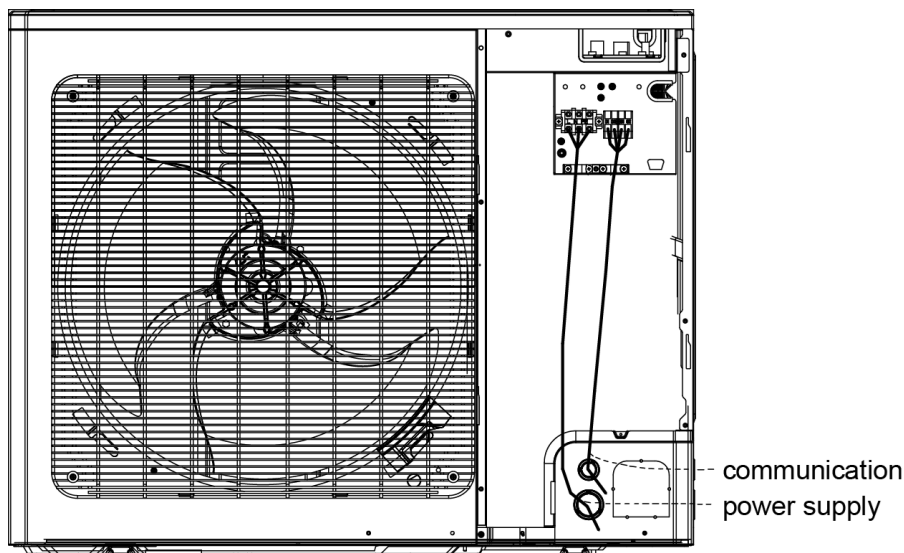


Fig. 22 Engineering Wiring View of GMV-24WL/C-T(U), GMV-28WL/C-T(U)

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 foots 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			
—	Debugging code		Code meaning and operation method
Progress	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 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.

Description of each stage of debugging progress			
—	Debugging code		Code meaning and operation method
Progress	LED		
	Code	Display status	
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.
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, and 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.

Description of each stage of debugging progress			
—	Debugging code		Code meaning and operation method
Progress	LED		
	Code	Display status	
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.
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	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)	- When compressor starts, discharge temp in cool 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 heat 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)	- In cool mode, defrosting temp is 4~10°C(39~50°F) lower than system's high pressure value. - In heat mode, defrosting temp is about 2°C(36°F) different from system's low pressure value.
4			System high pressure	°C(°F)	- In cool 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 cool mode, system's high pressure value will be within 44~53°C(111~127°F). - In heat 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)	- When ambient temp in cool mode is 25~35°C(77~95°F), the low pressure value is 0~8°C(32~46°F). - When ambient temp in heat mode is above -5°C(23°F), the low pressure value is -15~8°C(5~46°F).
6			Opening angle of thermal EXV	PLS	- In cool mode, the thermal electronic expansion valve remains 480PLS. - In heat mode, the adjustable opening angle of EXV is 40~480PLS.
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	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 parameters	IDU ambient temp	°C(°F)	—
12			Indoor heat exchanger's inlet temp	°C(°F)	- According to ambient temp, for a same IDU in cool 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 heat mode, the inlet temp will be 10°C~20°C(50~68°F) lower than the outlet temp.
13			Indoor heat exchanger's inlet temp	°C(°F)	
14			Opening angle of indoor EXV	PLS	- In cool mode, the opening angle of indoor EXV varies within 70~480PLS. - In heat mode, the opening angle of indoor EXV varies within 70~480PLS.
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 Malfunctions 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.

(1) Please check the items below before calling for maintenance.

Problems	Causes	What to do
Unit doesn't work.	Fuse or circuit breaker is cut off.	Replace fuse or reset the circuit breaker.
	Power failure.	Restart unit when power is restored.
	Power supply is not connected	Connect the power.
	Remote controller's power is not enough.	Replace new battery.
	Remote controller is out of the control range.	Control range is within 8m.
Unit runs but stops immediately.	Air inlet or air outlet of indoor and outdoor units is blocked.	Clear obstructions.
Abnormal cooling or heating.	Air inlet or air outlet of indoor and outdoor units is blocked.	Clear obstructions.
	Improper temp setting.	Adjust setting at remote controller or wired controller.
	Fan speed is set too low.	Adjust setting at remote controller or wired controller.
	Wind direction is not correct.	Adjust setting at remote controller or wired controller.
	Door or window is open.	Close the door or window.
	Direct sunshine.	Draw curtain or louver.
	Too many people in the room.	—
	Too many heat resources in the room.	Reduce heat resources.
	Filter is blocked and dirty.	Clean the filter.

NOTICE

If problem cannot be solved after checking the above items, please contact Gree service center and describe the cases and models.

(2) Following circumstances are not malfunctions.

Malfunction		Reason
Unit doesn't operate	Unit doesn't starts up after it is just being 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.

Malfunction		Reason
Noise is emitted	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.
	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 panels 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.
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	d3	Malfunction of ambient temperature sensor
L2	Auxiliary heating protection	d4	Malfunction of entry-tube temperature sensor
L3	Water-full protection	d5	Malfunction of middle temperature sensor
L4	Abnormal power supply for wired controller	d6	Malfunction of exit-tube temperature sensor
L5	Freeze prevention protection	d7	Malfunction of humidity sensor
L6	Mode shock	d9	Malfunction of jumper cap
L7	No main IDU	dA	Web address of IDU is abnormal
L8	Power supply is insufficient	dH	PCB of wired controller is abnormal
L9	1-to-more: number of IDU is inconsistent	dC	Setting capacity of DIP switch code is abnormal
LA	t1-to-more: IDU series is inconsistent	dL	Malfunction of air outlet temperature sensor
LH	Alarm due to bad air quality (Fresh air unit)	dE	Malfunction of indoor CO ₂ sensor
LC	IDU is not matching with outdoor unit	db	Debugging status

Outdoor:

Error Code	Content	Error Code	Content
E0	Malfunction of ODU (uniform)	F0	Main board of ODU is poor
E1	High-pressure protection	F1	Malfunction of high-pressure sensor
E2	Discharge low-temperature protection	F3	Malfunction of low-pressure sensor
E3	Low-pressure protection	F5	Malfunction of discharge temperature sensor of compressor 1
E4	High discharge temperature protection of compressor	FP	Malfunction of DC motor
E5	High discharge temperature protection of compressor 1	b1	Malfunction of outdoor ambient temperature sensor
EC	Drop protection of discharge temperature sensor of compressor 1	b2	Malfunction of defrosting temperature sensor 1
J1	Over-current protection of compressor 1	b4	Malfunction of liquid temperature sensor of sub-cooler
J7	Gas-mixing protection of 4-way valve	b5	Malfunction of gas temperature sensor of sub-cooler
J8	High pressure ratio protection of system	b6	Malfunction of inlet tube temperature sensor of vapor liquid separator
J9	Low pressure ratio protection of system	b7	Malfunction of exit tube temperature sensor of vapor liquid separator
JA	Protection because of abnormal pressure	b9	Malfunction of gas temperature sensor of heat exchanger
JL	Protection because high pressure is too low	bH	Clock of system is abnormal
P0	malfunction of driving board of compressor (uniform)	H0	Malfunction of driving board of fan (uniform)
P1	Driving board of compressor operates abnormally (uniform)	H1	Driving board of fan operates abnormally (uniform)
P2	Voltage protection of driving board power of compressor (uniform)	H2	Voltage protection of driving board power of fan (uniform)
P3	Reset protection of driving module of compressor	H3	Reset protection of driving module of fan
P4	Drive PFC protection of compressor	H4	Drive PFC protection of fan

Error Code	Content	Error Code	Content
P5	Over-current protection of inverter compressor	H5	Over-current protection of inverter fan
P6	Drive IPM module protection of compressor	H6	Drive IPM module protection of fan
P7	Malfunction of drive temperature sensor of compressor	H7	Malfunction of drive temperature sensor of fan
P8	Drive IPM high temperature protection of compressor	H8	Drive IPM high temperature protection of fan
P9	Desynchronizing protection of inverter compressor	H9	Desynchronizing protection of inverter fan
PH	High-voltage protection of compressor's drive DC bus bar	HH	High-voltage protection of fan's drive DC bus bar
PC	Malfunction of current detection circuit drive of compressor	HC	Malfunction of current detection circuit of fan drive
PL	Low voltage protection for DC bus bar of drive of compressor	HL	Low voltage protection of bus bar of fan drive
PE	Phase-lacking of inverter compressor	HE	Phase-lacking of inverter fan
PF	Malfunction of charging loop of driven of compressor	HF	Malfunction of charging loop of fan drive
PJ	Failure startup of inverter compressor	HJ	Failure startup of inverter fan
PP	AC current protection of inverter compressor	HP	AC current protection of inverter fan
Ed	Low temperature protection for drive module	—	—

Debugging:

Error Code	Content	Error Code	Content
U0	Preheat time of compressor is insufficient	C4	Malfunction of lack of IDU
U2	Wrong setting of ODU's capacity code/jumper cap	C5	Alarm because project code of IDU is inconsistent
U4	Refrigerant-lacking protection	C8	Emergency status of compressor
U5	Wrong address for driving board of compressor	C9	Emergency status of fan
U6	Alarm because valve is abnormal	CH	Rated capacity is too high
U8	Malfunction of pipeline for IDU	CC	Malfunction of lack of main control unit
U9	Malfunction of pipeline for ODU	CL	Rated capacity is too low
UC	Setting of main IDU is successful	CF	Malfunction of multiple main control units
UL	Wrong button-dial	CJ	Address DIP switch code of system is shocking
UE	Charging of refrigerant is invalid	CP	Malfunction of multiple wired controller
C0	Communication malfunction between IDU, ODU and IDU's wired controller	CU	Communication malfunction between IDU and the receiving lamp plate
C2	Communication malfunction between main control and inverter compressor driver	Cb	Overflow distribution of IP address
C3	Communication malfunction between main control and inverter fan driver	—	—

Status:

Error Code	Content	Error Code	Content
A0	Unit waiting for debugging	AP	Debugging confirmation when starting up the unit
A1	Inquiry of compressor operation parameters	AU	Long-distance emergency stop
A2	Refrigerant recovery operation of after-sales	Ab	Emergency stop of operation
A3	Defrosting	Ad	Limit operation
A4	Oil-return	n0	SE operation setting of system
A6	Heat pump function setting	n1	Setting of defrosting cycle K1
A7	Quiet mode setting	n2	Setting of upper limit of IDU/ODU capacity distribution ratio

Error Code	Content	Error Code	Content
A8	Vacuum pump mode	n4	Limit setting for max. capacity/output capacity
A9	IPLV test	n6	Inquiry of malfunction
AA	EU AA level EER test mode	n7	Inquiry of parameters
AH	Heating	n8	Inquiry of project code of IDU
AC	Cooling	nA	Heat pump unit
AL	Charge refrigerant automatically	nH	Heating only unit
AE	Charge refrigerant manually	nC	Cooling only unit
AF	Fan	nE	Negative code
AJ	Cleaning reminding of filter	nF	Fan model
q1	Anti-ice temperature setting under low temperature condition	qA	Heat recover status
q2	Shield setting for compressor frequency	qH	main body conducts heating
q3	Upper limit of correction value for target low pressure is Z0	qC	The main body conducts cooling
q4	Upper limit of correction value for target low pressure is Z2	qL	Static pressure setting
q5	Setting for general unit and high sensible heat unit (0 represents general, 1 represents high sensible heat)	qE	EVI operation status setting
q6	Setting for engineering ability correction factor θ	qF	Compulsory cooling mode
q7	Select Centigrade or Fahrenheit	qJ	Dual heat source water emptying
q8	Low temperature protection correction value for discharge	qy	Working mode of compressor heating zone
q9	Defrost mode setting	—	—

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 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.

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.

NOTICE

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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