GMV5 Compact Series

R410A Systems－Outdoor Unit

Owner's Manual

Air Conditioners

GMV-224WL/A-X

GMV-250WL/A-X

GMV-280WL/A-X

Thank you for choosing Gree air conditioners, please read this owner's manual carefully before operation and keep it for future reference.

Preface

Gree GMV5 Compact Series 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) For safety operation, please strictly follow the instructions in this manual.

(2) During operation, the gross rated capacity of working IDU should be within the gross rated capacity of ODU. Otherwise, IDU's cooling / heating performance will be reduced.

(3) This manual must be in the hands of direct operators or maintenance men.

(4) In case of malfunction and operation failure, please examine the following items and contact our appointed 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)

(5) All units have been strictly tested and proved to be qualified before ex-factory. To avoid unit damage or even operation failure which may be caused by improper disassembly, please do not disassemble units by yourself. If disassembly is needed, please contact our appointed serve centers for help.

(6) 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.

The appliance shall not be installed in the laundry. This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety. Children should be supervised to ensure that they do not play with the appliance.

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

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1 Safety Instruction

refers to things that are not allowed. Incorrect operation may cause personal injury or death.

refers to things that must be allowed. Incorrect operation may cause personal injury or death.

Follow this instruction to complete the installation work. Please carefully read this manual before unit startup and service.

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.

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 safely.

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.

Be sure to use the exclusive accessory and part to prevent the water leakage, electric shock and fire accidents.

If refrigerant leakage happens during installation, please immediately ventilate. Poisonous gas will emerge if the refrigerant gas meets fire.

Wire size of power cord should be large enough. The damaged power cord and connection wire should be replaced by exclusive cable.

After connecting the power cord, please fix the electric box cover properly in order to avoid accident.

Never fail to comply with the nitrogen charge requirements. Charge nitrogen when welding pipes.

Never short-circuit or cancel the pressure switch to prevent unit damage.

Please firstly connect the wired controller before energization, otherwise wired controller can not be used.

Before using the unit, please check if the piping and wiring are correct to avoid water leakage, refrigerant leakage, electric shock, or fire etc.

Do not insert fingers or objects into air outlet/inlet grille.

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.

Never start up or shut off the air condition by means of directly plug or unplug the power cord.

Turn off the unit after it runs at least five minutes; otherwise it will influence oil return of the compressor.

Do not allow children operate this unit.

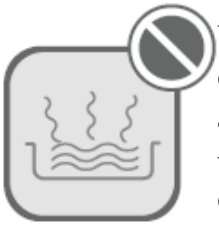
Do not operate this unit with wet hands.

Turn off the unit or cut off the power supply before cleaning the unit, otherwise electric shock or injury may happen.

Never spray or flush water towards unit, otherwise malfunction or electric shock may happen.

Do not expose the unit to the moist or corrosive circumstances.

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).



Volatile liquid, such as diluents or gas will damage the unit appearance. Only use soft cloth with a little neutral detergent to clean the outer casing of unit.

Under cooling mode, please don't set the room temperature too low and keep the temperature difference between indoor and outdoor unit within 5℃.

If anything abnormal happens (such as burning smell), please power off the unit and cut off the main power supply, and then contact Gree appointed service center. If abnormality keeps going, the unit might be damaged and lead to electric shock or fire.

User is not allowed to repair the unit. Fault service may cause electric shock or fire accidents. Please contact Gree appointed service center for help.

GREE will not assume responsibility of personal injury or equipment damage caused by improper installation and commission, unnecessary service and incapable of following the rules and instructions listed in this manual.

2 General Introduction

GREE GMV5 Compact series All DC Inverter VRF outdoor units are based on GREE DC Inverter compressor technology and special designed for the residential apartments, commercial offices and super markets. And the capacity range of GMV5 Compact series outdoor units is 22.4 kW, 25 kW, and 28 kW.

2.1 Outdoor Unit and Indoor Unit Combination

（1）One outdoor unit can be connected to the maximum 16 indoor units.

（2）The total capacity of indoor units should be in the range of 50%~135% of the capacity of outdoor unit.

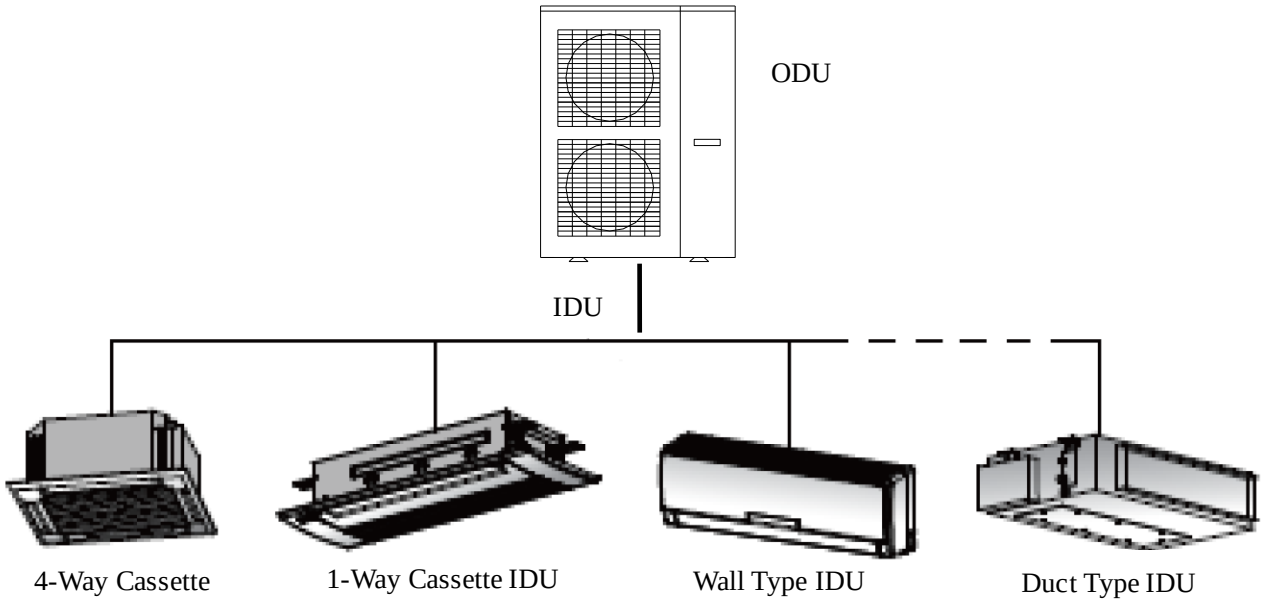


Fig.1 Outdoor unit and indoor unit combination

（3）As shown in Fig.1, the outdoor unit can be connected to different type of indoor units including 4-way Cassette IDU, 1-Way Cassette IDU, Wall Type IDU and Duct Type IDU. If one indoor unit is turned on, the outdoor unit will start and deliver the required cooling capacity to the indoor unit. If all the indoor units are turned off, the outdoor unit will be stopped.

2.2 Operating Range

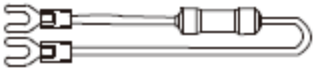
Cooling operation	Ambient temperature:10℃~52℃
Heating operation	Ambient temperature:-20℃~27℃

3 Before Installation

Remarks: the pictures are for reference only, and the all the unit is in “mm”.

3.1 Standard Accessories

Please use the below standard accessories as per the instruction

Accessories for outdoor unit				
S/N	Name	Appearance	Qty	Remarks
1	User Manual		1	
2	Flexible Pipe		1	
3	Resistance		1	This resistance should be connected to the last indoor unit

3.2 Installation Location

The installation should follow the local safety regulation.
Please contact with our local agent or dealers to install the unit.
Don’t turn on the power until finishing the installation.

3.2.1 Choose the Location for Installation of Indoor Unit

（1） Keep the indoor unit away from sunshine.

（2） The ceiling and suspender should be strong enough to support the indoor unit.

（3） Please choose the location.

（4） Please keep the air outlet and air inlet away from the barriers.

（5） The location for installation should be easy for piping.

（6） Please keep the indoor units away from incendive materials and explosive materials.

（7） Please keep the indoor units away from the location with high humidity and high corrosive

3.2.2 Choose the Location for Installation of Outdoor Unit

（1） The outdoor units should be installed on the solidity foundation

（2） The outdoor units should be installed near to indoor units as much as possible and the length of piping

should be less as much as possible to ensure the performance.

（3） Don’t install the outdoor units under the window or between buildings to avoid the noise problem.

（4） Please keep the outdoor units from the direct sunshine and drench

（5） Please keep the air outlet and air inlet away from the barriers.

（6） Please install the outdoor units in the location which has good ventilation.

（7） Please keep the indoor units away from the location with high humidity and high corrosive

Don’t install duct on the ventilation fan of the outdoor.

The waterproof cover should not affect the ventilation of the outdoor unit fan.

Caution!

If the unit was installed on the following improper sites leading to malfunction, please contact Gree appointed service center for help.

①the place full of oil; ②Salina; ③the place including of H_2S;

④the place with high frequency device (such as wireless device, electric welding device, iatric device);

⑤special places.

4 Installation Instruction

Note: The picture is only used for reference and the actual product prevails. Unit: mm.

Please observe the following installation principle to insure the operating unit is perfect:

☆ A much space should be enough to make sure the inlet and outlet air from outdoor unit will not regurgitate and maintain outdoor unit;

☆ Good ventilation is needed for outdoor unit;

☆ Install the unit at a place where is adequate to withstand the weight of the unit and is insulated against all noise, which makes sure the noise doesn't disturb the neighbors;

☆ Only use the appointed suspender orifice to suspend outdoor unit. Please protect the unit when suspending it, and forbid destroying sheet metal in case of rustiness;

☆ Never expose the unit under direct sunshine;

☆ Rain water and thaw water should be discharged in time;

☆ The place must insure outdoor unit will not be under the influence of snow, rubbish, oil smear;

☆ Rubber or spring absorber should be installed on the outdoor unit to meet the standard of noise and vibration;

☆ Installation dimension should observe the installation instruction, and outdoor unit must be fixed on the installing place;

☆ Please call Gree appointed professional people to install units.

4.1 Physical Dimension of the Outdoor Unit and Mounting Hole

1) Outdoor unit physical dimension

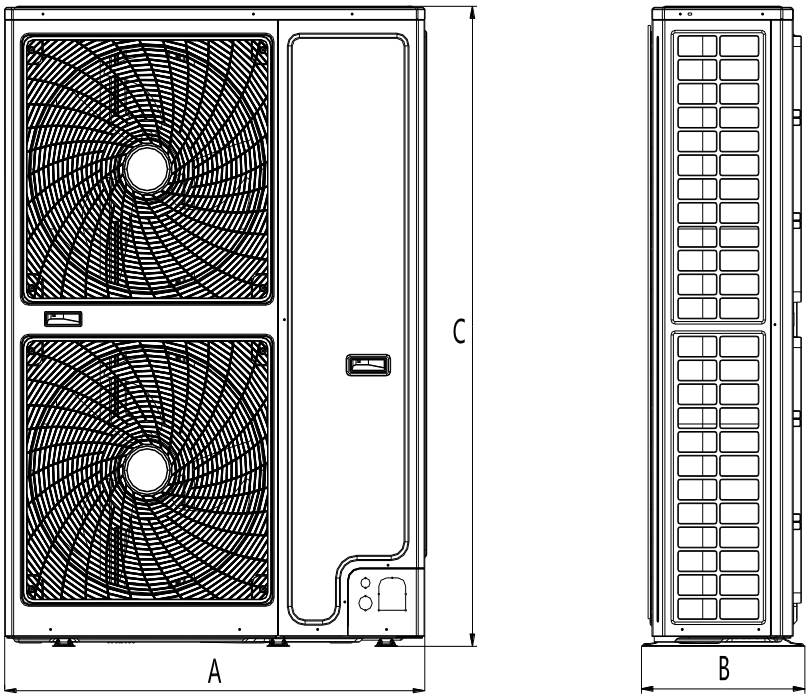


Fig.2 Outdoor unit physical dimension

Model	A	B	C
GMV-224WL/A-X	1098	427	1584
GMV-250WL/A-X	1098	427	1584
GMV-280WL/A-X	1098	427	1584

2) Mounting hole physical dimension

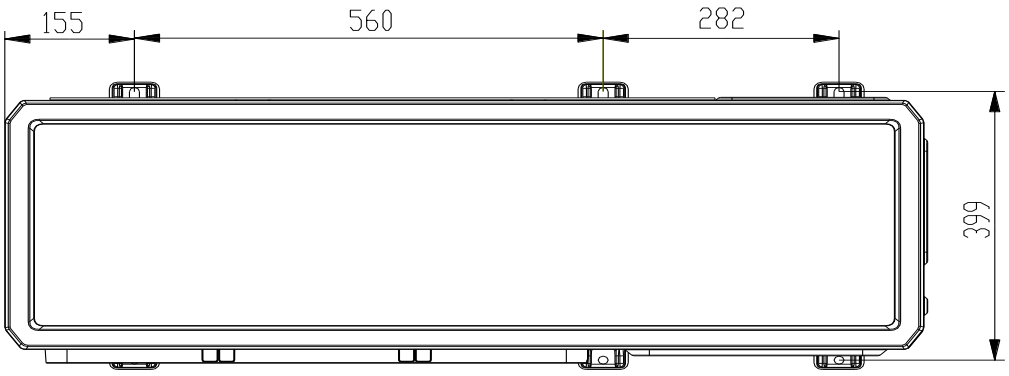
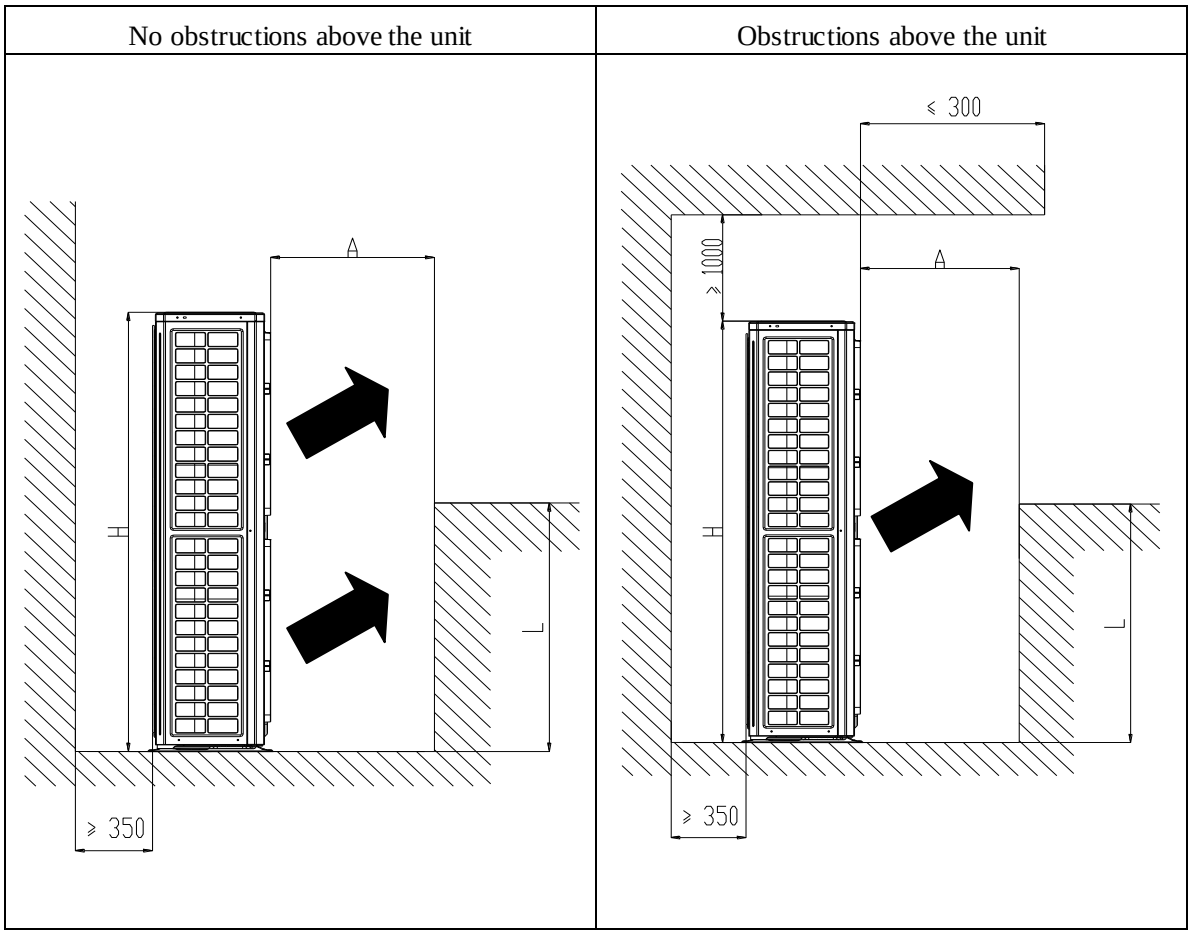


Fig.3 Mounting hole physical dimension

3）Use M12 bolt to fix up the chassis of the units when installing units.

4）A space is needed to install outdoor unit to insure unit operate normally.

ⅰ Obstructions in the air inlet



ii Obstructions in the air outlet

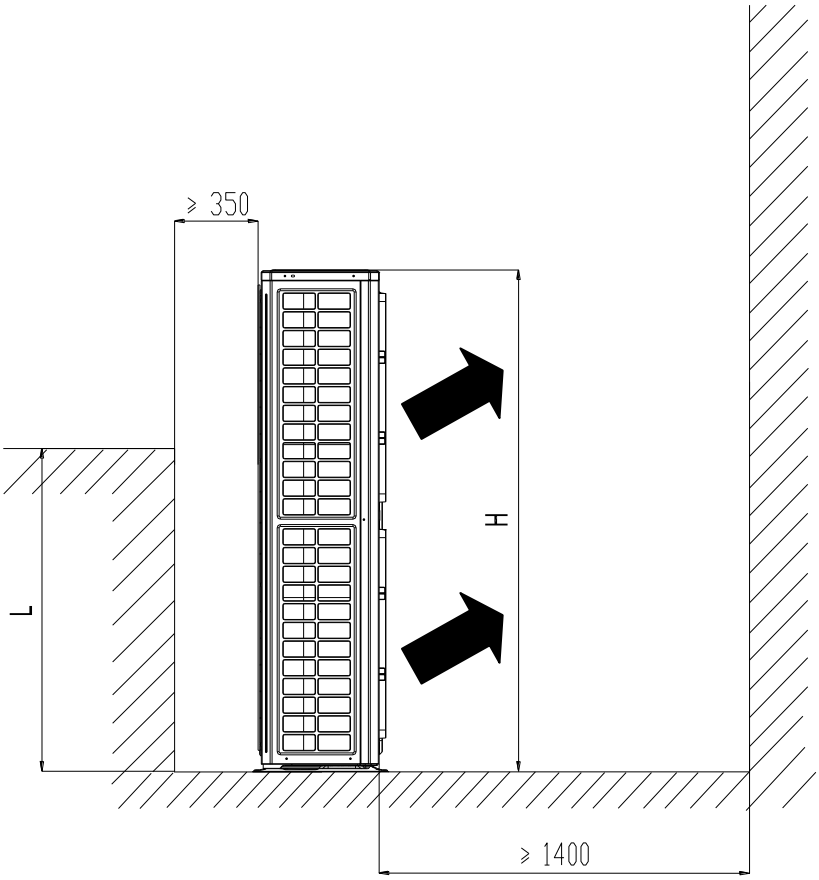


Fig.4 Installation space for outdoor unit

Note：

(1) Be sure that L is less than H, and H is the height of the unit and its chassis;

(2) The value of A must meet the following standard:

L	A
0 < L < 1/2H	≥600
1/2H < L < H	≥1400

5）Outdoor unit should be installed on the beton chassis of 10cm thickness.

4.2 Piping Design

4.2.1 The Branch of the Connection Pipe

The connection pipe between indoor unit and outdoor unit uses "Y" type branch, as shown in Fig.5.

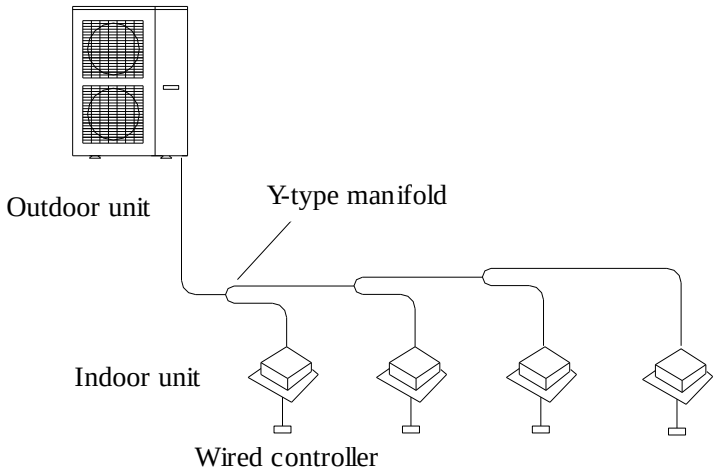


Fig.5 Schematic diagram of piping connection

4.2.2 Allowable Pipe Length and Drop Height among Indoor and Outdoor Units

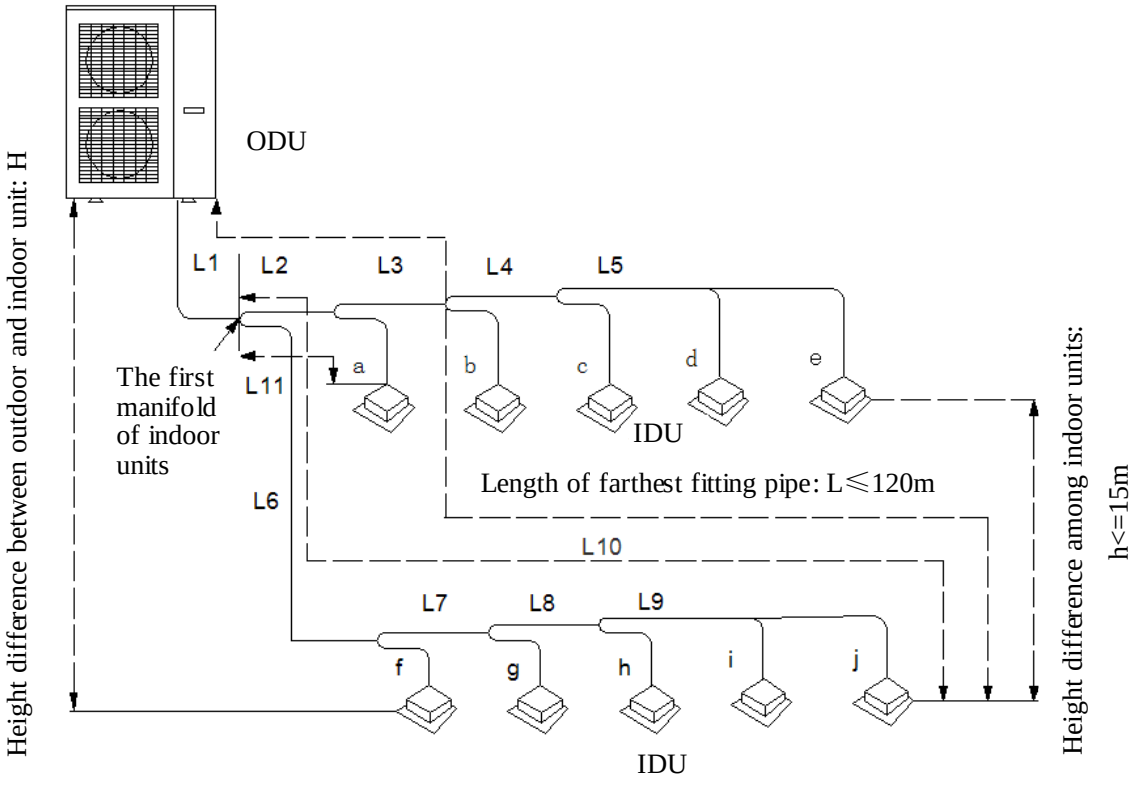


Fig.6 Allowable pipe length and drop height among indoor and outdoor units

The equivalent distance of indoor units manifold is 0.5m.

GMV-224WL/A-X、GMV-250WL/A-X、GMV-280WL/A-X		Allowable Value	Fitting Pipe
Total length (actual length) of fitting pipe		250m	L1+L2+L3+…+L9+a+b+…j
Length of farthest fitting pipe (m)	Actual length	100m	L1+L6+L7+L8+L9+j
	Equivalent length	120m	
Equivalent length from the first manifold to the furthest pipe		40m	L6+L7+L7+L8+L9+i
Height difference between outdoor unit and indoor unit	Outdoor unit at upper	50m	——
	Outdoor unit at lower	40m	——
Height difference between indoor units		15m	——
Maximum length of main pipe (1)		90m	L1

4.2.3 Indoor Unit Capacity Code

	Energy rank	capacity code	Energy rank	Capacity code	Energy rank	Capacity code
Indoor unit	22 model	22	25 model	25	28 model	28
	32 model	32	36 model	36	40 model	40
	45 model	45	50 model	50	56 model	56
	63 model	63	71 model	71		
Outdoor unit	224 model	224	250 model	250	280 model	280

☆ The maximum number of indoor units is 16 with one outdoor unit;

☆ The total capacity code of indoor unit is in the range of 50% t~ 135% of that of outdoor unit.

4.2.4 Connection Pipe Size

（1） Pipe size between outdoor unit and the first manifold is determined by that of outdoor unit.

Pipe size between outdoor unit and the first manifold:

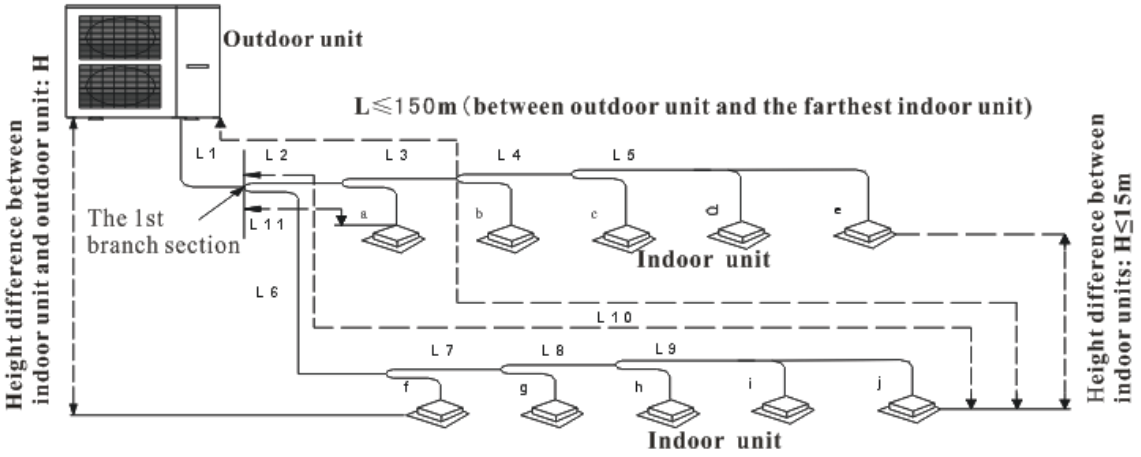
Outdoor unit model	Fitting pipe between outdoor unit and the first manifold	
	Gas pipe (mm)	Liquid pipe(mm)
GMV-224WL/A-X	Φ22.2	Φ9.52
GMV-250WL/A-X	Φ22.2	Φ9.52
GMV-280WL/A-X	Φ22.2	Φ9.52

Note:

① When the maximum length between outdoor unit and the first manifold exceeds or equals to 90m , the sizes of gas pipe and liquid pipe of the main pipe are changed according to the following table.

If L≥90m and H≥15m, then :

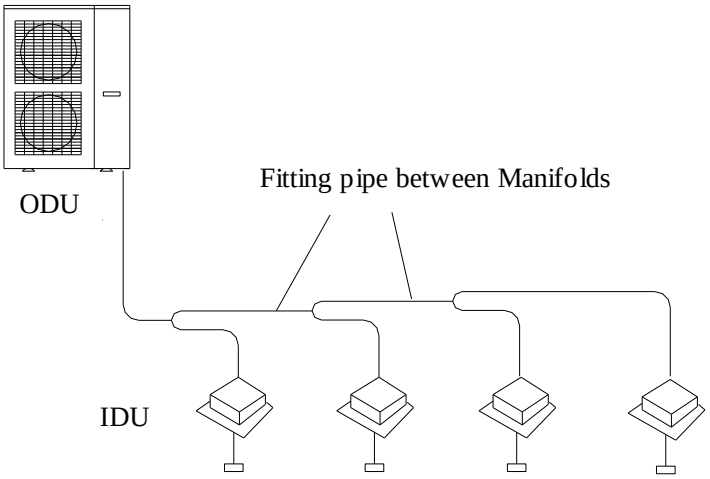
		Equivalent length: L, The maximum height difference between IDU and ODU: H			
		L<90m and H<15	L<90m and H≥15	L≥90m and H<15	L≥90m and H≥15
28kw	L1 gas pipe	φ22.2	φ22.2	φ22.2	φ28.6
	L1 liquid pipe	φ9.52	φ9.52	φ9.52	φ12.7
25kw	L1 gas pipe	φ22.2	φ22.2	φ22.2	φ28.6
	L1 liquid pipe	φ9.52	φ9.52	φ9.52	φ12.7
22.4kw	L1 gas pipe	φ22.2	φ22.2	φ22.2	φ22.2
	L1 liquid pipe	φ9.52	φ9.52	φ9.52	φ12.7



Notice：Equivalent length = Length of farthest fitting pipe + Equivalent length of branch (0.5m)

② When the distance between indoor unit and its nearest manifold exceeds 10m, the liquid pipe size of the indoor unit whose rated capacity is less than or equal to 5.0KW should be 2 times bigger than before.

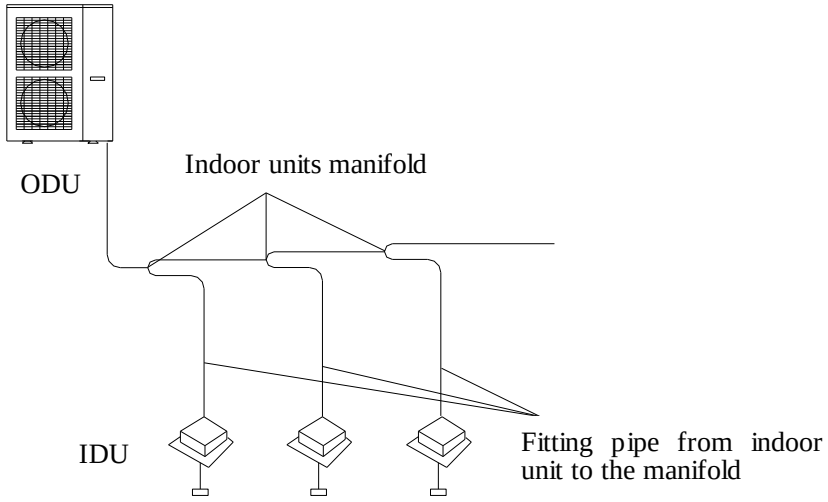
（2）Fitting pipe size between Manifolds at indoor unit side is determined by the total capacity of downstream indoor unit(s).



Total capacity of downstream indoor unit(s)	Fitting pipe size between Manifolds at indoor unit side	
X（kW）	Gas pipe（mm）	Liquid pipe（mm）

X≤5.6	Φ12.7	Φ6.35
5.6＜X≤14.2	Φ15.9	Φ9.52
14.2＜X≤22.0	Φ19.05	Φ9.52
22.0＜X≤30.0	Φ22.2	Φ9.52

（3）Manifold should be matched with the fitting pipe of indoor units.（If the distance from the first manifold to a indoor unit exceeds 30m, then double the gas pipe size between them）



Indoor unit energy rank	Gas pipe	Liquid pipe
22、25、28 model	Φ9.52	Φ6.35
32、36、40、45、50 model	Φ12.7	Φ6.35
56、63、71、80、90、100、112、125、140 model	Φ15.9	Φ9.52

4.3 Oil Return Trap Installation

4.3.1 Objective of Setting Oil Loop

When large drop height exists in the system, oil loop is required to be set on the vertical pipeline so as to guarantee effective oil return to compressor.

4.3.2 Principle of Setting Oil Loop

When large drop height exists between indoor and outdoor units, oil loop is required to be set on the vertical pipeline for every X m from the top down.

Oil loop can be made by two U-type bends or one return-type bend. Pipe height is 3-5 times of pipe sizes. (Note: X is determined by the location of indoor and outdoor units, if outdoor unit is upper, then X is 6m, otherwise X is 10m.)

4.3.3 Precautions for Oil Loop Installation

(1) Oil loop can be set as U-type or O-type;

(2) When the outdoor unit is at lower position, oil loop is required to be set on the vertical pipeline for every 10m

from the down top. And also set oil loop at the lowest and highest position;

(3) When the outdoor unit is at higher position, oil loop is required to be set on the vertical pipeline for every 10m from the down top. And also set oil loop and one-way trap at the lowest and highest position.

4.3.4 Oil Loop and One-way Trap

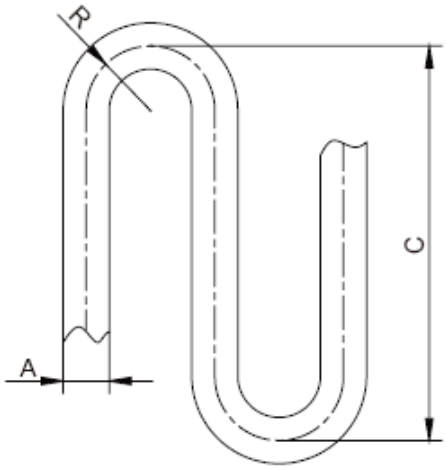


Fig.7 Oil loop

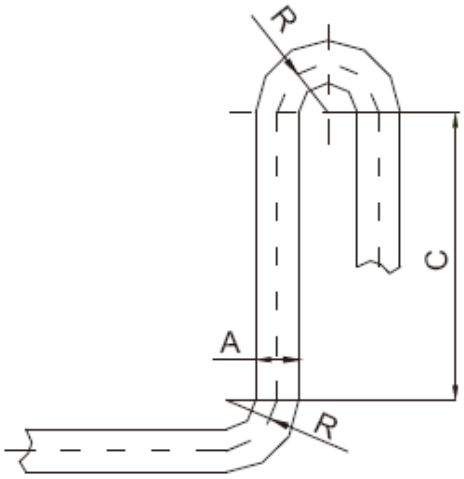


Fig.8 One-way trap

In case of not damaging the pipe, please check the following table for size of oil loop and one-way trap.

A		R	C
mm	inch	mm	mm
Φ19.05	3/4	≥34	≤105
Φ22.2	7/8	≥31	≤150
Φ25.4	1/1	≥45	≤150
Φ28.6	9/8	≥45	≤150
Φ34.9	11/8	≥60	≤250
Φ38.1	12/8	≥60	≤350
Φ41.3	13/8	≥80	≤450
Φ44.45	7/4	≥80	≤500
Φ54.1	17/8	≥90	≤500

4.4 Installation of the Connection Pipe

4.4.1 Precautions When Installing the Connection Pipe

(1) Conform to the following principles during piping connection: Connection pipeline should be as short as possible. The height difference between indoor and outdoor units should be as short as possible. Keep number of bends as little as possible. The radius of curvature should be as large as possible.

(2) Weld the connection pipes between indoor and outdoor units. Please strictly conform to the requirements for welding process. Rosin joints and pin holes are not allowable.

(3) When laying the pipes, be careful not to deform them. The radius of bending parts should be more than

200mm. the pipes cannot be repeatedly bent or stretched; otherwise the material will get harden. Do not bend or stretch the pipe over three times at the same position.

(4) Please use a torque wrench to connect union nut on the indoor unit. See Fig.9.

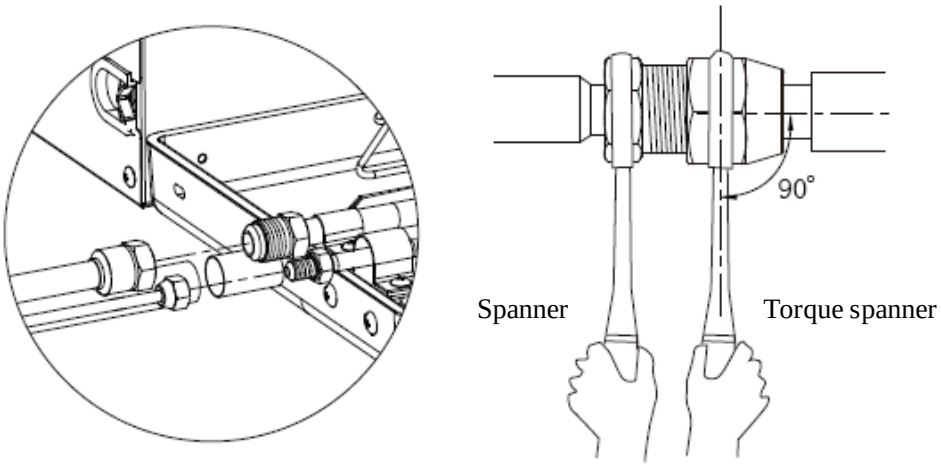


Fig.9 Installation of fitting pipe

1) Align the expansion end of copper pipe with the center of threaded joint. Tighten the flare nuts with your hands;
2) Tighten the flare nuts with torque wrench until you hear "click" sound;
3) Use sponge to wrap the connecting pipe and joints without thermal insulation and tie it up with plastic tape;
4) A mounting support for the connection pipe is required;
5) The curvature degree of connection pipe should not be small, otherwise the pipe might crack. Installation personnel should use tube bender when bending the pipe;
6) Don't forcibly stretch the pipe joint, otherwise indoor capillary or other pipes might be damaged and lead to refrigerant leakage.

4.4.2 Y-type Manifold

（1） Y-type manifold

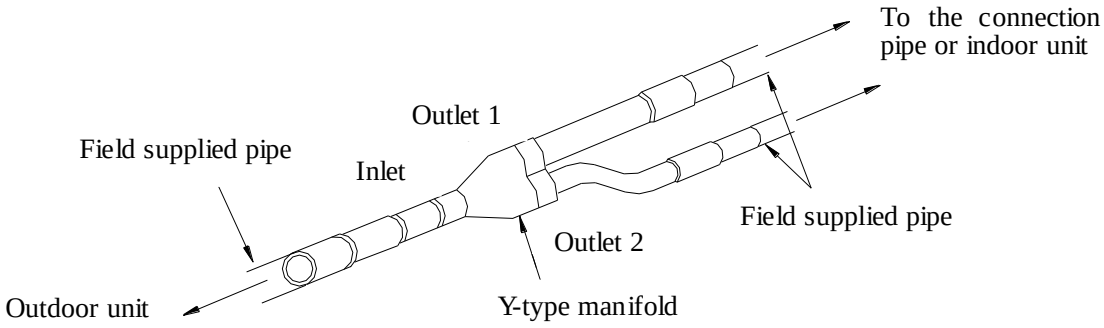
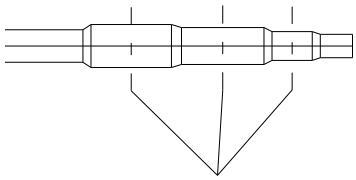


Fig.10 Y-type manifold

(2) Y-type manifold has several pipe sections with different pipe size, which facilitates to match with various copper pipes. Use pipe cutter to cut in the middle of the pipe section with different pipe size and deburr as well. See Fig.11.



Cut in the middle

Fig.11 Cut manifold

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

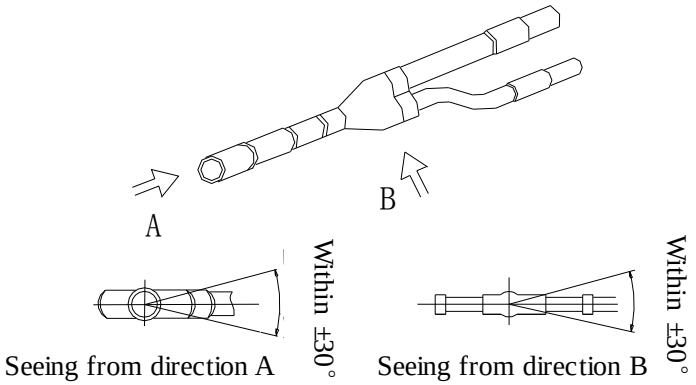


Fig.12 Installation of manifold

Select Y-type manifold:

R410A	Total capacity of downstream indoor units X（KW）	Model
Y-type manifold（2 branches）	X≤20	FQ01A
	20<X≤30	FQ01B
	30<X≤70	FQ02
	70<X≤135	FQ03
	135<X	FQ04

(4) Thermal insulation for manifold

For gas pipe side manifold is isolated by insulating material that can bear 120℃ or higher temperature, and the foam attached on the manifold cannot be taken as insulating material. For liquid pipe side the foam attached on the manifold and the field insulating material should be in touch in case of dropping dew.

4.4.3 Thermal Insulation for Pipeline

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

(2) At the manifold inlet, at least leave 500mm straight pipe section, and for FQ04 manifold, keep it at least 800mm;

(3) Every 6m drop height between indoor and outdoor units, one oil loop should be set on gas pipe so as to keep normal oil return;

(4) Thermal insulation for pipeline.

1) To avoid condensate or water leakage on connecting pipe, gas pipe and liquid pipe must be wrapped with

thermal insulating material and adhesive pipe for insulation from the air;

2) For heat pump unit, liquid pipe should bear 70℃ or above, and gas pipe should bear 120℃ or above. For cooling only unit, both liquid pipe and gas pipe should bear 70℃ or above.
   Example: Polyethylene foam can bear 120℃ or above, and foaming polyethylene foam can bear 1200℃ or above.
3) Joints at indoor and outdoor units should be wrapped with insulating material and leave no clearance between pipe and wall. See Fig.13.

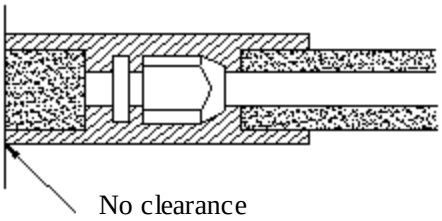


Fig.13

4) The foam attached on the manifold cannot be taken as insulating material.
5) When wrapping the tape, the later circle should cover half of the former one. Don't wrap the tape so tightly, otherwise the insulation effect will be weakened;
6) After wrapping the pipe, adopt sealing material to completely fill the hole so as to prevent wind and rain from entering the room.

4.4.4 Support and Protection for Pipeline

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

4.4.5 Connecting Outdoor Unit Pipe

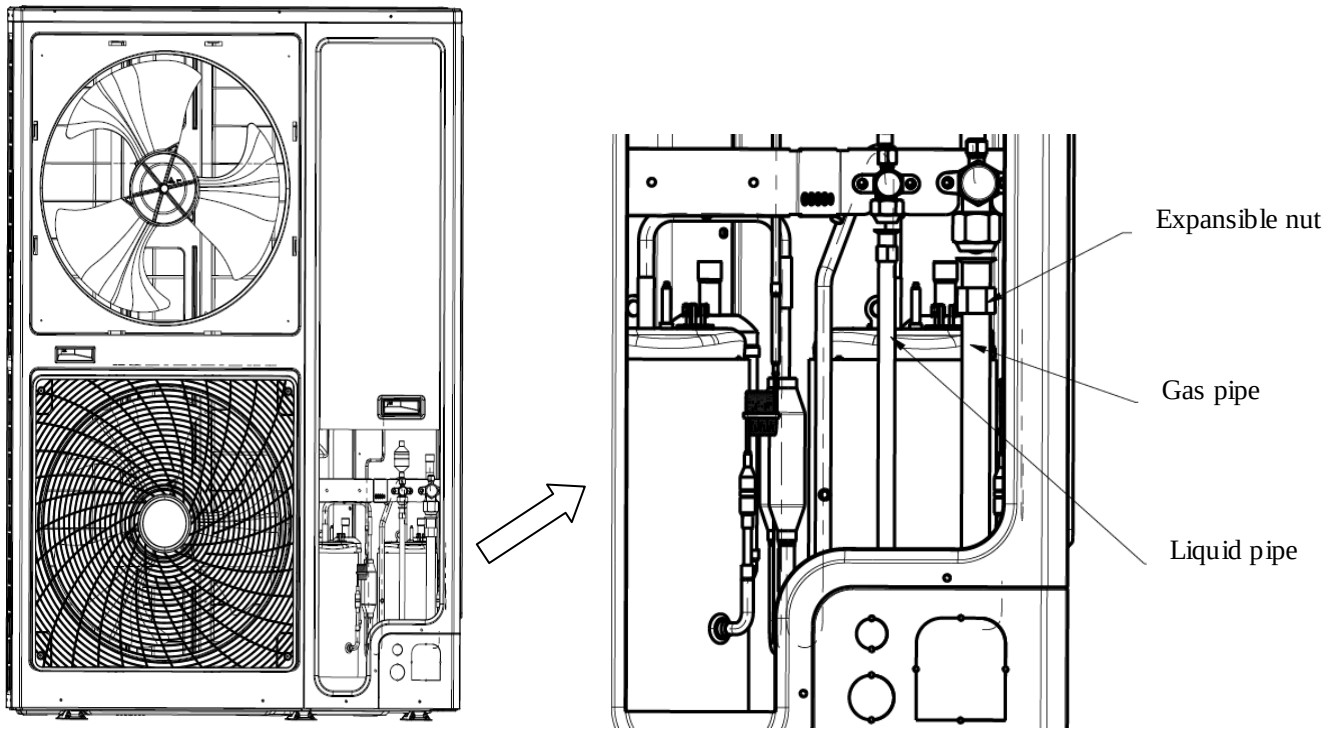


Fig.14 The way of outdoor unit connecting pipe

(1) Turn off bolts, board above unit, board on the front of unit, and the right board.

(2) According to the installation location, the right location of connecting pipes can be one of the four directions.

(3) Then remove the cut-and-dried orifice with electric drill and hammer.

(4) Corrugated pipe and liquid pipe are connected with valves of outdoor unit respectively.

(5) Adjust the bend angle of connecting pipes to let the connecting pipes out easily, and weld corrugated pipe and liquid pipe.

(6) Seal up the remaining space of the cut-and-dried orifice except connecting pipes with sealant or putty. And do not leave any space. If not, maybe water, dust, small animals come in unit and lead to malfunction.

4.5 Pressure Check, Vacuum and Additional Refrigerant Charge

4.5.1 Pressure Check

(1) Valves of outdoor unit on the side of gas pipe and liquid pipe are off during pressure check.

(2) Only use nitrogen to check the units.

(3) Turn on booster valve till manometer shows 1.0MPa（10bar), then keep it for 10min to make sure pressure is not changed.

(4) Turn on booster valve till manometer shows 4.0MPa（40bar), then keep it for 24 hours to make sure pressure is not changed.

(5) If pressure is not changed, the unit is not leaking. If not, please check the units seriously and find leaks.

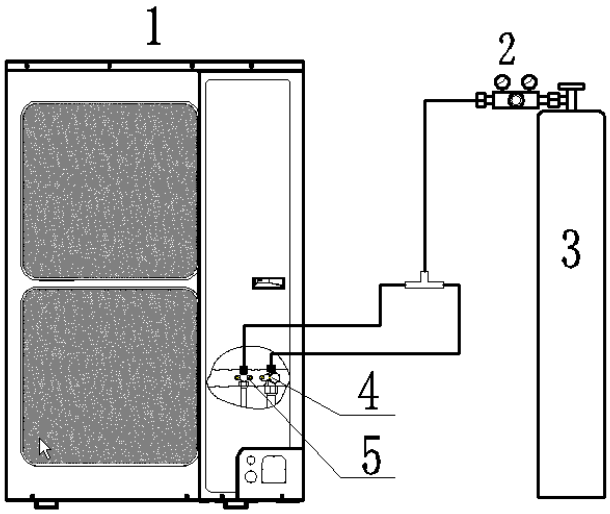


Fig.15 The way of connecting pipe

Number	1	2	3	4	5
Name	Outdoor unit	Booster valve	Nitrogen	Gas valve	Liquid valve

4.5.2 Vacuum

(1) Conform outdoor unit liquid valve and gas valve are closed when deflating air.

(2) Follow the instruction to deflate air of unit with vacuum pump.

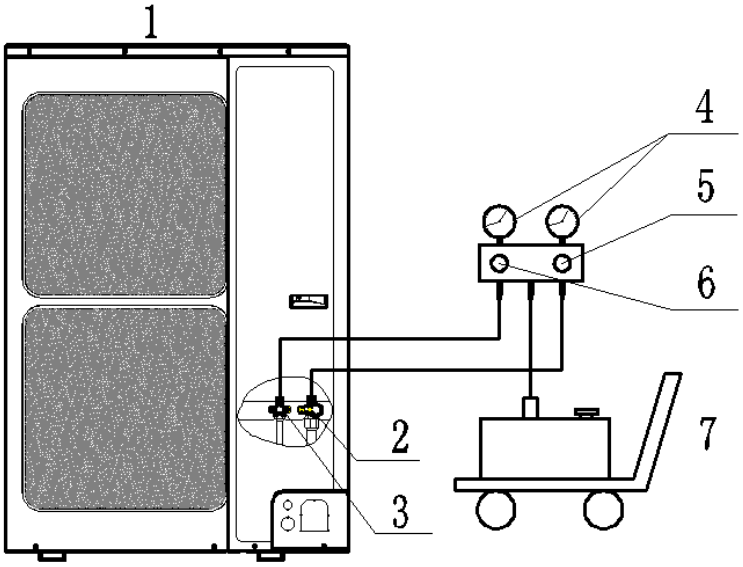


Fig.16 Vacuum

Number	1	2	3	4	5	6	7
Name	ODU	Gas valve	Liquid valve	Manometer	“LO” Knob	“HI” Knob	Vacuum pump

(3) Turn on vacuum pump, “LO” knob and “HI” knob to vacuum the air of both gas pipe and liquid pipe. If only one pipe is deflated, the units exist air leading to a little vacuum degree.

(4) When manometers show -0.1MPa(-1bar), vacuum pump still works for 1hour or more to make sure that indoor unit and connecting pipes don’t exist air.

(5) Turn off vacuum pump, "LO" knob and "HI" knob, and observe the manometers value. If the pressure value doesn't increase in 2 hours, the units don't exist any leaks and air. If not, please check the units seriously and find leaks.

4.5.3 Additional Refrigerant Charge

1）The refrigerant mass of outdoor unit before installation

Model / Item	GMV-224WL/A-X	GMV-250WL/A-X	GMV-280WL/A-X
The refrigerant mass (kg)	7.2	7.6	7.6

Note:

☆The refrigerant mass of outdoor unit before installation doesn't include of the refrigerant mass of connection pipe.

☆The refrigerant mass of connection pipe is determined by the actual connection pipe length.

2）The method of computing the refrigerant mass of connection pipe based on liquid pipe

If the length of connection pipe is more than 50m, then the refrigerant mass should be charged for every excess meter.

The refrigerant mass of connection pipe =∑the length of liquid pipe × Refrigerant mass for every excess meter

Diameter of liquid pipe	Φ28.6	Φ25.4	Φ22.2	Φ19.05	Φ15.9	Φ12.7	Φ9.52	Φ6.35
Refrigerant mass for every excess meter（kg/m）	0.680	0.520	0.350	0.250	0.170	0.110	0.054	0.022

After confirming that there is no leakage from the system and compressor is not at operation, charge additional R410A with specified amount to the unit through the filling opening of the liquid pipe valve of outdoor unit. If required additional refrigerant cannot be quickly filled because of increase of pipe pressure, then turn on the units at cooling mode and charge refrigerant from outdoor unit gas valve.

4.6 Electric Wiring

4.6.1 Wiring Precautions

- ◆ Wiring should conform to national rules. All the parts, materials, electric work should be in accordance with local codes.
- ◆ Power supplies of indoor unit and outdoor unit can be uniform or separate, but power supplies of indoor units must be uniform.
- ◆ Rated voltage and exclusive power supply should be used.
- ◆ Power cord should be fixed soundly and reliable. Never forcibly pull the power cord.
- ◆ Wire size of power cord should be large enough. The damaged power cord and connecting wire should be replaced by exclusive cable.
- ◆ All the electrical work should be performed by professional personnel as per local law, regulation and this manual.

◆ Connect the unit to the special earthing device and make sure the unit is earthed soundly. Please call professional personnel to install.

◆ Air switch and circuit breaker is required to be set. Air switch should have both magnetic trip and thermal trip functions so as to protect the unit when short-circuit and overload happens. D-type breaker is advised to be used.

◆ Wiring diagram attached on the unit is prevailed.

4.6.2 Wiring of Power Cord

(1) Unit wiring diagram

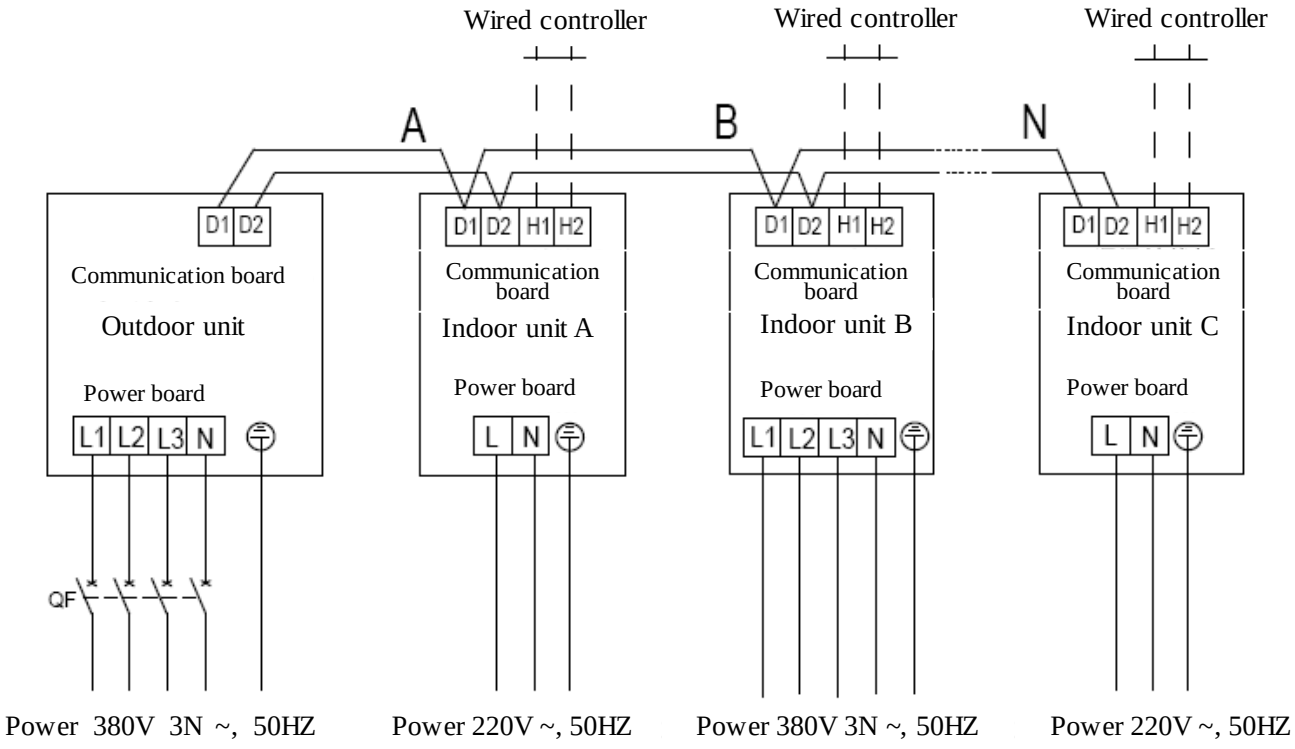


Fig.17 Outdoor unit wiring diagram

Indoor unit wiring diagram is in the indoor unit user manual.

(2) Air switch and power supply

Model	Power supply	Air switch capacity (A)	Min. sectional area of grounding wire (mm^2)	recommendable wire (sectional area mm^2 × number)
GMV-224WL/A-X	380V 3N~50Hz	20	4.0	4.0×5
GMV-250WL/A-X	380V 3N~50Hz	25	4.0	4.0×5
GMV-280WL/A-X	380V 3N~50Hz	25	4.0	4.0×5

(3) Please refer to the following table for circuit breaker and air switch for indoor units. Breaker listed in the table represents total capacity of breaker in one system.

Total capacity of indoor units	Capacity of circuit breaker（A）	Min. sectional area of power cord（mm^2）	Min. sectional area of grounding wire（mm^2）
Below 10A	10	1.5	1.5
16～10A	16	1.5	1.5
20～16A	20	2.5	2.5
32～20A	32	4.0	4.0

(6) Breaker capacity and power cord specification for every indoor unit.

Indoor unit	Capacity of circuit breaker（A）	Min. sectional area of grounding wire（mm^2）	Min. sectional area of power cord （mm^2）
Wall-mounted type	6	1.0	1.0
Duct type unit (heat pump)	6	1.0	1.0
Cassette type unit (heat pump)	6	1.0	1.0
One-way cassette type unit	6	1.0	1.0

If indoor unit is equipped with auxiliary electric heater, select capacity of circuit breaker as per auxiliary electric heater, which requires special setting.

Indoor unit models (with auxiliary electric heater)	Capacity of circuit breaker（A）	Min. sectional area of grounding wire（mm^2）	Min. sectional area of power cord（mm^2）
22、25、28、32、36 duct type unit	6	1.0	1.0
40、45、50 duct type unit	10	1.0	1.0
56、63、71、80 duct type unit	16	1.5	1.5
90、100、112、125、140 duct type unit	10	1.0	1.0
28、36、45、50 cassette type unit	6	1.0	1.0
56、63、71 cassette type unit	10	1.0	1.0
80、90、112、125、140 cassette type unit	10	1.0	1.0

Caution!

① Unit power cord must use copper cable whose actual temperature can't exceed its rated value.

② If the length of power cord exceeds 15m, please enlarge its sectional area in case of causing accident from overload.

③ Power cord and air switch are conjoint with the units and their models are determined by the units. Other accessories specifications are determined by actual fact.

④ Condition: models of power cord and circuit breaker are based on the most power (the most current); power cord model is based on the condition that environment temperature is 40℃ and its working temperature is 90℃, and the working temperature is gained from the condition that copper-other cable (such as YJV) is laid on the seam barely, if the actual condition doesn't agree with above condition,

please adjust power cord model according to the nation standard (GB/T 16895.15-2002); circuit breaker model is based on the condition that environment temperature is 40℃, if the actual condition doesn't agree with above condition, please adjust circuit breaker model according to the circuit breaker specification.

⑤ The rated current value of air switch should be more than the maximum current value of unit but less than next wire load.

⑥ If air switch was installed at a changing temperature place, such as coordinate installation, poor radiator, and higher environment temperature, air switch should be considered falling capacity.

⑦ The load of electrical wire has a relation with its installing way, environment temperature, material of electrical wire, and fire-resistant grade. If all the above conditions changed, the diameter of electrical wire should be chosen again.

4.6.3 Connection of Power Cord

(1) Power cord cross through rubber ring, and is connected to the positions on wiring board that are marked with "L1, L2, L3, N" and the ground screw nearby.

(2) Use cable ties to tie the cable securely.

(3) If units are type Ⅰ electrical appliances, they must be reliably grounded.

(4) The green-yellow wire within units is ground wire. Do not use it for other purposes. Nor should it be cut off or secured by tapping screws. Otherwise, it may cause electric shock.

(5) Ground resistance must be in accord with requirements of local standard.

(6) Power supply at user side must have reliable ground terminal. Do not connect ground wire to the following places:

1) water pipe; 2) gas pipe; 3) drainage pipe; 4) other places that are considered by professionals as unreliable.

4.7 Communication Wiring

4.7.1 The Way of Communication Wiring

(1) Open the wiring lid of indoor and outdoor units respectively. The communication wires come through the appointed orifice to the wiring box. Please contact indoor unit with outdoor unit according to the units circuit diagrams. And the power cord model is determined by the capacity of power supply and the place for installing the units.

(2) Connect the communication wires according to Fig.18.

(3) When installing the units, please divide communication wires from power cord and make sure the least distance between communication wires and power cord should be more than 20cm, otherwise the units communication cannot work normally.

(4) Connection between indoor unit and outdoor unit board: electric wires come through rubber loop, and communication wires are connected on the port signed with "D1，D2". Communication wiring among indoor units uses tandem way, and two sides of communication wire should be around with magnetic loop.

(5) After making sure communication wiring is right, please press all the electric wires with line pressing card

respectively, and install the wiring lid.

Note:

1、Communication wire of the last indoor unit is assorted wire (resistance suited);

2、When indoor unit is Wall Type IDU, both input and output communication wires are offered by the Wall Type IDU.

3、If the units were placed at a place with stronger electromagnetism, the communication wire between indoor unit and wire controller should use screen wire for shielding the electromagnetism, and the communication wire between indoor unit and outdoor (or indoor) unit should use STP for shielding the electromagnetism.

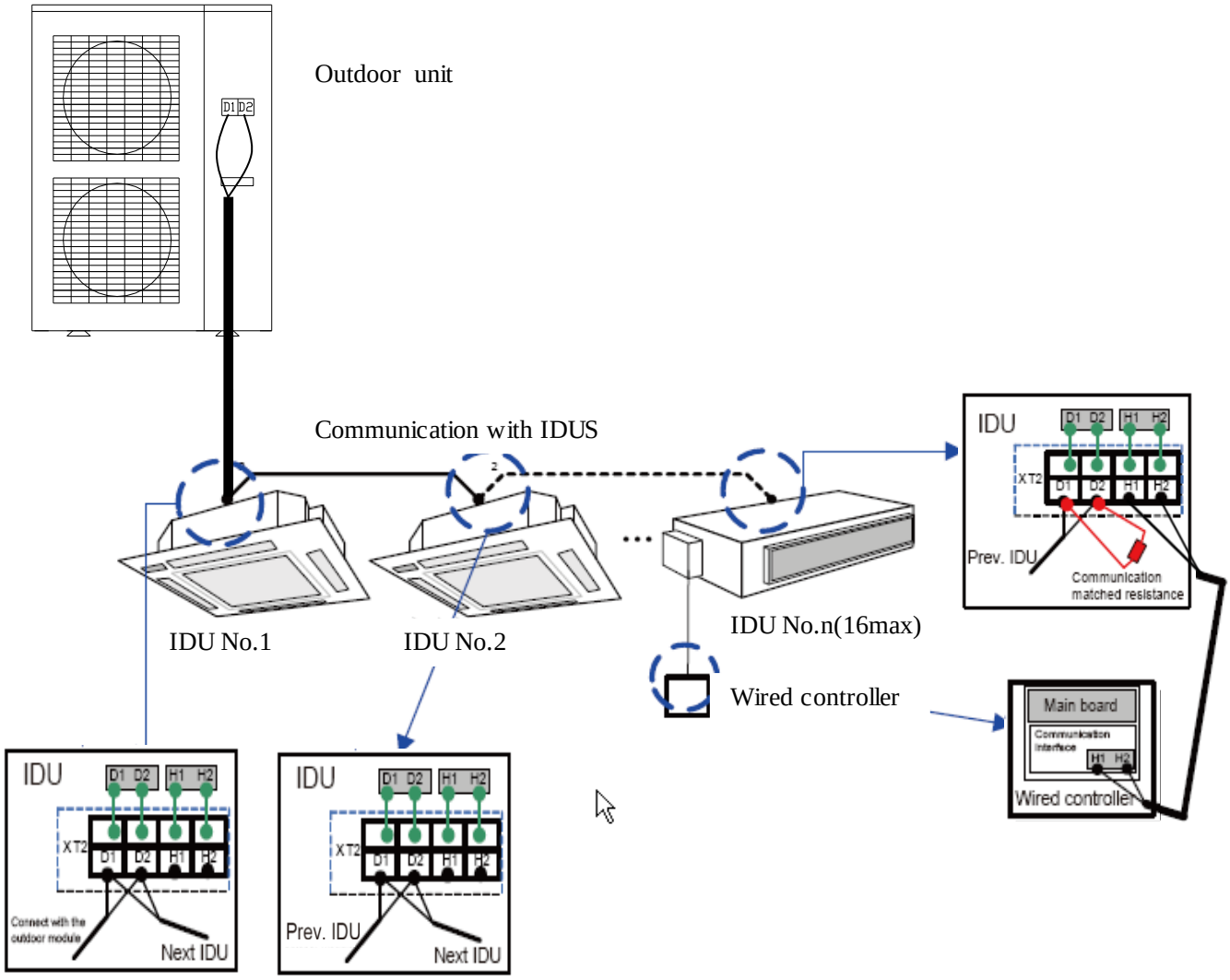


Fig.18 Communication wiring

4.7.2 Choice of the Material of Communication Wire

Note: If the units were placed at a place with stronger electromagnetism, the communication wire between indoor unit and wire controller should use screen wire for shielding the electromagnetism, and the communication wire between indoor unit and outdoor (or indoor) unit should use STP for shielding the electromagnetism.

(1) The communication wire between indoor unit and wire controller

The following table shows the material of communication wire, the length (L) of the communication wire between indoor unit and wire controller, the sectional area of communication wire.

Material	Length L(m)	sectional area (mm^2)	Standard	Remarks
RVV	L≤250	≥2×0.75	GB/T 5023.3-2008	L≤250m

Fig.19 shows the communication wiring between indoor unit and wire controller.

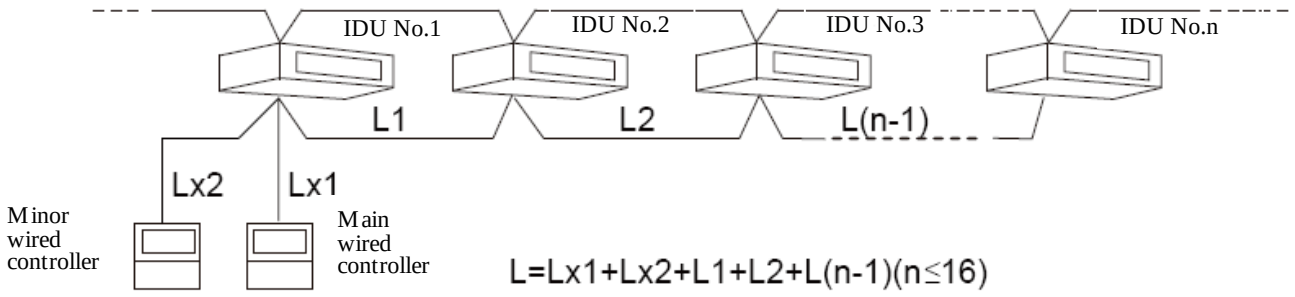


Fig.19 The communication wiring between indoor unit and wire controller

(2) The communication wire between indoor unit and outdoor (or indoor) unit

The following table shows the material of communication wire, the length (L) of the communication wire between indoor unit and outdoor (or indoor) unit, the sectional area of communication wire.

Material	Length L(m)	Sectional area (mm^2)	Standard	Remarks
RVV	L≤1000	≥2×0.75	GB/T 5023.3-2008	If the diameter increases to 2×1mm^2, the length (L) should enlarge. But the length (L) should be less than 1500m.

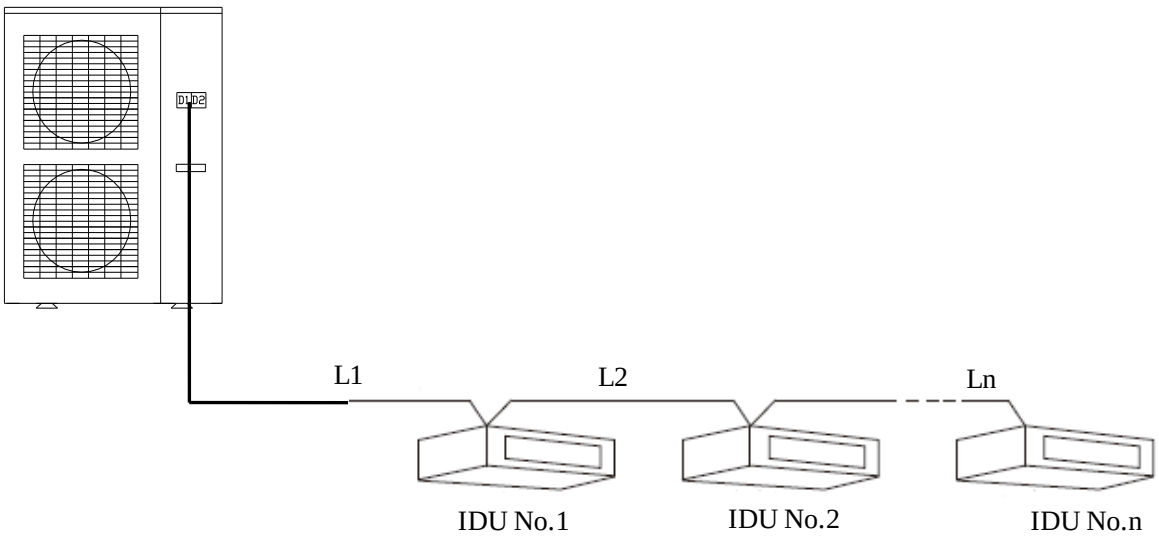


Fig.20 The communication wiring between indoor unit and outdoor unit

5 Check Items after Installation and Trial Run

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.	

5.2 Trial Run

5.2.1 Check before Trial Run

(1) Check if the unit appearance and piping system are damaged due to transportation.

(2) Check if the wiring terminals of the electronic component are loose and the phase sequence is correct.

(3) Check if the rotation direction of the fan motor is correct.

(4) Check if all valves in the system are fully opened.

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 N (see Table 5.2) hours. Touch the unit to check whether it's normally preheated. Start test operation after unit is normally preheated, otherwise compressor might be damaged.

Table 5.2

Outdoor Temperature/℃	N
T>10	N≥1
0<T<10	N≥2
-10<T<0	N≥4
T<-10	N≥8

(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℃, debugging shall be in cooling mode.

2) When outdoor temperature is below 20℃, 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.

Caution!

Before restarting the unit, make sure the compressor has been preheated for more than N (see Table 5.2) hours.

6 Common Malfunction 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 after it starts	Clogged air intake/outlet of indoor/outdoor unit.	Clear the obstacle.
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 frication 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	L6
Malfunction of indoor ambient temperature sensor	d3	d3	d3
Malfunction of indoor coil inlet temperature sensor	d4	d4	d4
Malfunction of indoor mid-coil temperature sensor	d5	d5	d5
Malfunction of indoor coil outlet temperature sensor	d6	d6	d6
Malfunction of indoor humidity sensor	d7	d7	d7
Malfunction of jumper	d9	d9	d9
Malfunction of outdoor ambient temperature sensor	b1	b1	b1
Malfunction of defrosting temperature sensor	b3	b3	b3
Malfunction of outdoor condenser temperature sensor	b5	b5	b5
Malfunction of suction temperature sensor	b6	b6	b6
No master IDU	L7	L7	
High pressure protection	E1	E1	E1
Low pressure protection	E3	E3	E3
Discharge protection	E4	E4	E4
Refrigerant-lacking protection	Ed	E0	Ed
Power protection of compressor	EN	E0	EN
Malfunction of EEPROM chip	F0	F0	F0
Malfunction of high pressure sensor	F1	F1	F1
Malfunction of low pressure sensor	F3	F3	F3
Malfunction of discharge temperature sensor of compressor 1	F5	F5	F5
Malfunction of discharge temperature sensor of compressor 2	F6	F6	F6
Malfunction of high-pressure switch	Fd	E0	Fd
AC current protection	P5	P0	P5
IPM protection	P6	P0	P6
Drive IPM module protection of compressor	P7	P0	P7
Drive IPM module overheating protection of compressor	P8	P0	P8
Desynchronizing protection of inverter compressor	P9	P0	P9
High-voltage protection of compress's drive DC busbar	PH	P0	PH
Drive current detection circuit malfunction of compressor	PC	P0	PC
Low-voltage protection of compressor's drive DC bus bar	PL	P0	PL

Phase-lacking of inverter compressor	PE	P0	PE
Drive charging circuit malfunction of compressor	PF	P0	PF
Demagnetization protection	PU	P0	PU
Communication malfunction between indoor unit and outdoor unit, indoor unit's wires controller	C0	C0	C0
Communication malfunction between main control and inverter compressor driver	C2	C2	C2
Phase-lacking protection of power	U3	E0	U3
Malfunction of fan	H0	H0	H0

6.3.2 Error Code of Limited Frequency Reduction for 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	

6.3.3 Operation Code

Operation	Code	Display
Trail run	A0	Both units display the code
Fluorine recycle	A2	
Defrosting	A3	
Oil return	A4	
Testing online	A5	
Vacuumization	A8	
Test module	SS	Only the outdoor unit displays the code

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

7 Maintenance

WARNING!

1. The unit can only be cleaned after the unit is turned off and the main power is cut off; otherwise it would cause an electric shock hazard.
2. Do not dampen the unit, as it would cause an electric shock hazard and never rinse the unit with water in any case.

CAUTION!

1. Volatile liquid, like thinner, gasoline etc would damage the appearance of the air conditioning unit. (Only use the soft dry cloth or the wet cloth with neutral detergent clean the outer shell of the air conditioning unit)
2. Do not clean the outer shell of the air conditioning unit with hot water above 45℃ to prevent discoloration or deformation.
3. Do not dry the air filter screen of the indoor unit on the fire to prevent combustion or deformation.

7.1 Outdoor Heat Exchanger

The outdoor heat exchanger should be cleaned for one time every two months. Use vacuum cleaner with nylon brush to clean up dust and sundries on the surface of heat exchanger. Blow away dust by compressed air if it is available. Never wash the heat exchanger with water.

7.2 Drain Pipe

Regularly check if the drain pipe is clogged in order to drain condensate smoothly.

7.3 Check before the Seasonal Use

(1) Check if the inlet/outlet of the indoor/outdoor unit is clogged.

(2) Check if the earth wire is earthed reliably.

(3) Check if batteries of the wireless remote controller are replaced.

(4) Check if the air filter screen is installed properly.

(5) When restarting the unit which is not used for a long time, switch on the main power supply eight hours ahead so as to preheat the compressor crankcase.

(6) Check whether the outdoor unit is installed firmly. If there is something abnormal, please contact the GREE appointed service center.

7.4 Maintenance after the Seasonal Use

(1) Cut off the main power supply of the air conditioning system.

(2) Clean the filter screen and body of the indoor and outdoor units.

(3) Remove the dust and the foreign matters of the indoor and outdoor units.

(4) In the event of rusting, use the anti-rust paint to stop spreading of rust.

7.5 Parts Replacement

Purchase parts from Gree appointed service center or dealer if necessary.

CAUTION!

When doing airtightness and leakage test, do not mix oxygen, acetylene and other dangerous gases into the refrigerant circuit. The best way is to use nitrogen or refrigerant to do such test or it will be dangerous.

8 After-sales Service

If the air conditioning unit you bought has any quality or other issue, please contact the local after-sales service agency designated by Gree.

Warranty should meet the following requirements:

(1) First run of the unit should be operated by professional personnel from Gree appointed service center.

(2) Only accessories manufactured by Gree can be used on the machine.

(3) All the instructions listed in this manual should be followed.

(4) Warranty will be automatically invalid if fails to obey any item mentioned above

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