Installation and Operating manual

MW-XMi 252T-335T

Water-source reversible heat pump VRF outdoor unit

Dear Customer,

Congratulations for having chosen this product.

Clivet has been working for years to offer the market systems able to assure maximum and long-lasting wellbeing with high reliability, efficiency, quality and safety.
The company aim is that to offer its customers developed systems that assure the best comfort, reduce energy consumptions and installation and maintenance costs for the entire life-span of the system.

With this manual, we intend giving information useful throughout all phases: from reception, to installation, to use and even disposal, so that such a developed system meets the best installation and use methods.

With kind regards and... good reading!

CLIVET Spa

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Model identification

MW-XMi 252T-335T				
Size	**Reference kW**	**Factory code**	**Power supply**	
252T	25,2	MDVS-252(8)W/DRN1	400V+N	3-phase
280T	28	MDVS-280(10)W/DRN1	400V+N	3-phase
335T	33,5	MDVS-335(12)W/DRN1	400V+N	3-phase

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Installation manual

MD12I-031KW

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1. PRECAUTIONS

Precautions before reading the Installation manual.

- This Installation manual is for the main unit.
- Refer to the indoor unit Installation manual for indoor parts installation.
- Please read the power source unit Installation manual to install the power source unit.
- Please refer to the refrigerant distributor Installation manual to install the refrigerant distributor.

The safety precautions listed here are divided into two categories. In either case, important safety information is listed which must be read carefully.

WARNING

Failure to observe a warning may result in death. The appliance shall be installed in accordance with national wiring regulations.

CAUTION

Failure to observe a caution may result in injury or damage to the equipment.

After completing the installation, make sure that the unit operates properly during the start-up operation. Please instruct the customer on how to operate the unit and keep it tained. Also, inform customers that they should store this Installation manual along with the owner's manual for future reference.

WARNING

- **This air conditioner is a comfortable air conditioner, and it must be installed at indoor, do not place it in the places such as machine room, precise instruments, food, plants, animals or vertu etc.**
- **Be sure only trained and qualified service personnel to install, repair or service the equipment.**
  Improper installation, repair, and maintenance may result in electric shocks, short-circuit, leaks, fire or other damage to the equipment.
- **Install according to this installation instructions strictly.**
  If installation is defective, it will cause water leakage, electrical shock fire.
- **When installing the unit in a small room, take measures against to keep refrigerant concentration from exceeding allowable safety limits in the event of refrigerant leakage.**
  Contact the place of purchase for more information. Excessive refrigerant in a closed ambient can lead to oxygen deficiency.
- **Use the attached accessories parts and specified parts for installation.**
  Otherwise, it will cause the set to fall, water leakage, electrical shock fire.
- **Install at a strong and firm location which** is able to withstand the set's weight.
  If the strength is not enough or installation is not properly done, the set will drop to cause injury.
- **The appliance shall be installed in accordance with national wiring regulations**
- **The appliance shall not be installed in the laundry.**
- **Before obtaining access to terminals, all supply circuits must be disconnected.**
- **The appliance must be positioned so that the plug is accessible.**
- **The enclosure of the appliance shall be marked by word, or by symbols, with the direction of the fluid flow.**
- **For electrical work, follow the local national wiring standard, regulation and this installation instructions. An independent circuit and single outlet must be used.**
  If electrical circuit capacity is not enough or defect in electrical work, it will cause electrical shock fire.
- **Use the specified cable and connect tightly and clamp the cable so that no external force will be acted on the terminal.**
  If connection or fixing is not perfect, it will cause heat-up or fire at the connection.
- **Wiring routing must be properly arranged so that control board cover is fixed properly.**
  If control board cover is not fixed perfectly, it will cause heat-up at connection point of terminal, fire or electrical shock.
- **If the supply cord is damaged, it must be replaced by the manufacture or its service agent or similarly qualified person in order to avoid a hazard.**
- **An all-pole disconnection device which has at least 3mm separation distance in all pole and a residual current device(RCD)with the rating of above 10mA shall be incorporated in the fixed wiring according to the national rule**
- **When carrying out piping connection, take care not to let air substances go into refrigeration cycle.**
  Otherwise, it will cause lower capacity, abnormal high pressure in the refrigeration cycle, explosion and injury.
- **Do not modify the length of the power supply cord or use of extension cord, and do not share the single outlet with other electrical appliances.**
  Otherwise, it will cause fire or electrical shock.

- **Carry out the specified installation work after taking into account strong winds, typhoons or earthquakes.**
  Improper installation work may result in the equipment falling and causing accidents.

- **The temperature of refrigerant circuit will be high, please keep the interconnection cable away from the copper tube.**

- **The power cord type designation is H07RN-F.**
  Equipment complying with IEC 61000-3-12.

- **If the refrigerant leaks during installation, ventilate the area immediately.**
  Toxic gas may be produced if the refrigerant comes into the place contacting with fire.

- **After completing the installation work, check that the refrigerant does not leak.**
  Toxic gas may be produced if the refrigerant leaks into the room and comes into contact with a source of fire, such as a fan heater, stove or cooker.

⚠ CAUTION

- **The cooling&heating indoor unit is applicable for the cooling&heating and the cooling only main unit;the heating capacity of the indoor unit will be effective only when the indoor unit connect to the cooling&heating main unit.**

- **This A/C is a kind of amenity unit. Don't install it at the place where for storing machine, precise instrument, food, plant, animal, artwork or any other special used occasion.**

- **Ground the air conditioner.**
  Do not connect the ground wire to gas or water pipes, lightning rod or a telephone ground wire. Incomplete grounding may result in electric shocks.

- **Be sure to install an earth leakage breaker.**
  Failure to install an earth leakage breaker may result in electric shocks.

- **Connect the main unit wires , then connect the indoor unit wires.**
  You are not allowed to connect the air conditioner with the power source until wiring and piping the air conditioner is done.

- **While following the instructions in this Installation manual, install drain piping in order to ensure proper drainage and insulate piping in order to prevent condensation.**
  Improper drain piping may result in water leakage and property damage.

- **Install the indoor and main units, power supply wiring and connecting wires at least 1 meter away from televisions or radios in order to prevent image interference or noise.**
  Depending on the radio waves, a distance of 1 meter may not be sufficient enough to eliminate the noise.

- **The appliance is not intended for use by young children or infirm persons without supervision.**

- **Young children should be supervised to ensure that they do not play with the appliance**.

- **Young children should be supervised to ensure that they do not play with the appliance**.

- **Don't install the air conditioner in the following locations:**

  - There is petrolatum existing.
  - There is salty air surrounding (near the coast). If this can't be avoided, choose a anticorrosive model.
  - There is caustic gas (the sulfide, for example) existing in the air (near a hot spring).
  - The Volt vibrates violently (in the factories).
  - In buses or cabinets.
  - In kitchen where it is full of oil gas.
  - There is strong electromagnetic wave existing.
  - There are inflammable materials or gas.
  - There is acid or alkaline liquid evaporating.
  - Other special conditions.

- **The insulation of the metal parts of the building and the air conditioner should comply with the regulation of National Electric Standard.**

- **The space is too narrow. Because there isn't enough space for installation and maintenance.**

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2. CONSTRUCTION CHECKPOINTS

- Acceptance and Unpacking

  - After the machine arrives, check whether it is damaged during the shipment. If the surface or inner side of the machine is damaged, submit a written report to the shipping company.
  - Check whether the model, specification and quantity of the equipment conform to the contract.
  - After removing the outer package, please keep the operation instructions well and count the accessories.

- Water pipeline connection

  - The pressure endurance of the water system pipelines are 1.96 MPa.
  - The outer conncecting pipelines of the water system should apply the stainless stell pipes, if not, that may cause corrosion.
  - The cooling water source of the water-ring system should prior to prefer closed cooling tower. The installer and user should make sure the cool and hot water quality which inlet to the water system of the unit (details please refer to Part 4-7).

- Refrigerant pipe

  - Check the model and name to avoid mistaken installation.
  - An additionally purchased refrigerant distributor (manifold adapter and manifold pipe) must be used for installing the refrigerant pipes.

- The refrigerant pipes must have the specified diameter. Nitrogen of a certain pressure must be filled into the refrigerant pipe before welding.
- The refrigerant pipe must undergo heat insulation treatment.
- After the refrigerant pipe is installed completely, the indoor unit cannot be powered on before performing the airtight test and creating a vacuum. The air-side and liquid-side pipes must undergo the airtight test and vacuum extraction.

■ Airtight test
The refrigerant pipe must undergo the airtight test [with 3.9 MPa(40kgf/cm^2) nitrogen].

■ Creating a vacuum
Be sure to use the vacuum pump to create a vacuum of the connective pipe at the air side and liquid side concurrently.

■ Refrigerant replenishment

- According the length&diameter of main&indoor unit (actual), and the refrigerant correction to calculate the refrigerant replenishment quantity. (the specific calculation method refer to the table on the cover of electrical control box)
- Record the refrigerant replenishment quantity, actual length of pipe and the height difference of the indoor & main unit onto the operation confirmation table of the main unit in advance for future reference.

■ Electric wiring

- Select the power supply capacity and wire size according to the design manual. The power cable of the air conditioner is generally thicker than the power cable of the motor.
- In order to prevent misoperation of the air conditioner, do not interleave or entwine the power cable (380-415V 3N~50Hz/ 60Hz) with the connection wires (low-voltage wires) of the indoor/main unit.
- Power on the indoor unit after performing the airtight test and making a vacuum.
- Through the ENC1 switch to set the address of main units . Setting Range : 0~2 . 0 is master unit ,the others are slave unit.
- Setting the quantity of indoor units on the master unit after setting the adress. The quantity of indoor units can be setted from S10 and ENC4 ,setting range :0~63 . 0&1 means one indoor unit .The detail information please refer to wiring nameplate.

■ Trial run

- Perform the trial run only after the main unit has been powered on for over 12 hours.

3. ACCESSORIES

Table.3-1

Name	Qty.	Outline	Function
Main unit installation manual	1		———
Main unit owner's manual	1		Be sure to deliver it to the customer
Indoor unit owner's manual	1		Be sure to deliver it to the customer
User's guideline	1		Be sure to deliver it to the customer
Bolts bag	1	———	Stone for service
Toggling flathead screw	1	———	For toggling of indoor and main units
Water outlet connector	1		For draining the internal condensed water of the unit
Water outlet plug	1		Block a drainage port of the unit chassis which do not need to drainage
Seal ring	2		For avoiding water leakage of the chassis
Seal plug	8	———	For pipe Cleaning
Y-shape water filter	1		Connect to the side of water inlet pipe
Indoor unit branch pipes installation manual	1	———	———
Main unit branch pipes installation manual	1	———	———
Connective pipe accessory	1		Connect to the side of liquid pipe
Air side connective pipe	1 or 2		Connect to the side of air pipe (8/10 HP 1pc, 12HP 2pcs)

4. MAIN UNIT INSTALLATION

4.1 Main unit combination

Table.4-1

HP	Mode	Qty.of indoor unit	HP	Mode	Qty.of indoor unit
8	8HP×1	13	24	12HP×2	39
10	10HP×1	16	26	8HP×2+10HP	43
12	12HP×1	19	28	10HP×2+8HP	46
16	8HP×2	23	30	10HP×3	50
18	10HP+8HP	29	32	10HP×2+12HP	53
20	10HP+10HP	33	34	12HP×2+10HP	56
22	10HP+12HP	36	36	12HP×3	59

4.2 Dimension of main unit

(unit:mm)

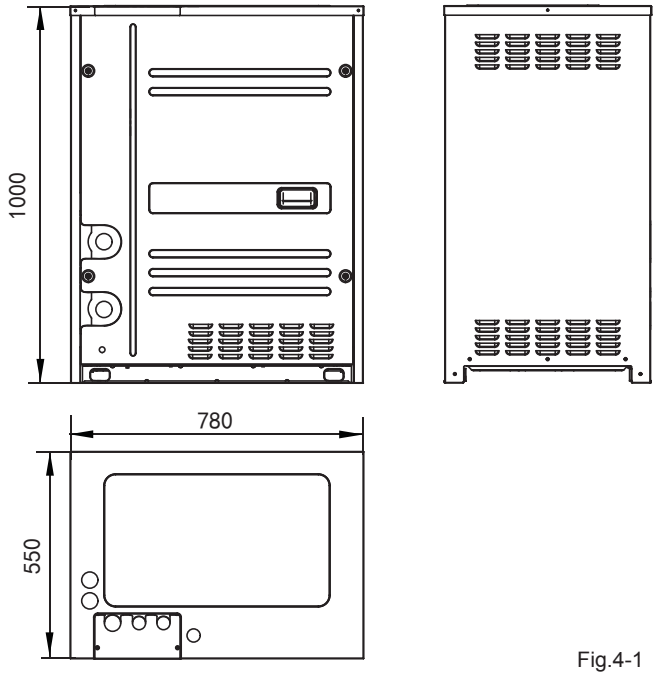


Fig.4-1

4.3 Selecting installation position

- Ensure that the main unit is installed in a place convenient to connect water, refrigerant and electricity.
- Ensure that the noise and exhaust ventilation of the main unit do not affect the neighbors of the property owner or the surrounding ventilation.
- Ensure that the main unit is installed in a well-ventilated place that is possibly closest to the indoor unit.
- Ensure that the main unit is installed in a cool place without direct sunshine exposure or direct radiation of high-temp heat source.
- Do not install the main unit in a dirty or severely polluted place, so as to avoid blockage of the heat exchanger in the main unit.
- Do not install the main unit in a place with oil pollution, salt or high content of harmful gases such as sulfurous gas.

4.4 Hoisting Main Unit

- It is banned to take wooden cork base as the force bearing point of lifting up the unit during hoisting, the correct method is use the braces or lifting ropes which can bear the unit's weight, and go through the lifting holes of the front and back bottom plates in the unit for hoisting.
- It is banned to tear down any packages during hoisting installation; it should use two longer than 4m ropes to lift up the unit with the packages, and keep the unit in balance, lift it up stably. Under transporting the unit with no packages or the package has been damaged, it should use base plate or packaging materials for protection.
- Pay attention to keep the main unit vertical during transportation, hoisting, and make sure the safety during transportation and hoisting.

4.5 Base for main unit

- A solid, correct base can:
  - Avoid the main unit from sinking.
  - Avoid the abnormal noise generated due to base.
- Base types
  - Steel structure base
  - Concrete base (see the figure below for the general making method)

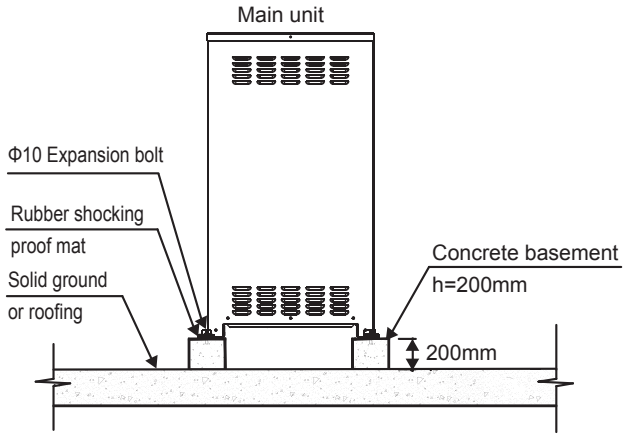


Fig.4-2

CAUTION

- The key points to make basement:
  - The master unit's basement must be made on the solid concrete ground . Refer to the structure diagram to make concrete basement in detail, or make after field measurements.
  - In order to ensure every point can contact equality, the basement should be on completely level.
  - If the basement is placed on the roofing, the detritus layer isn't needed, but the concrete surface must be flat. The standard concrete mixture ratio is cement 1/ sand 2/ carpolite 4, and add Φ10 strenthen reinforcing steel bar, the surface of the cement and sand plasm must be flat, border of the the basement must be chamfer angle.

- Before construct the unit base, please ensure the base is directly supporting the rear and front folding edges of the bottom panel vertically, for the reason of these edges are the actual supported sites to the unit.
- In order to drain off the seeper around the equipment, a discharge ditch must be setup around the basement.
- Please check the affordability of the roofing to ensure the load capacity.

■ Position illustration of screw bolt (Unit: mm)

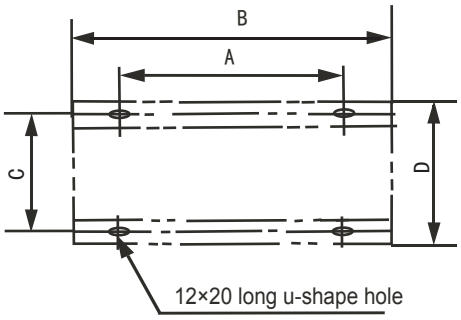


Fig.4-3

Table.4-2 Unit: mm

HP / SIZE	8,10, 12
A	650
B	780
C	518
D	550

Centering position illustration of each connective pipe (Unit: mm)

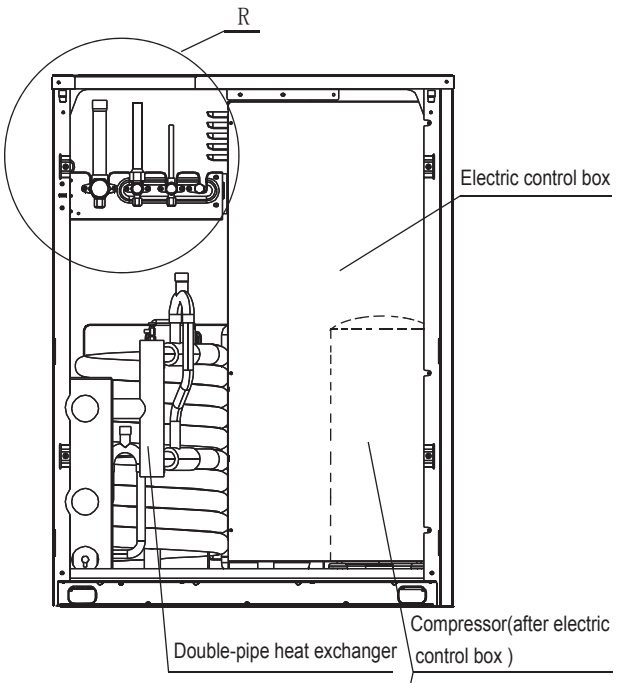


Fig.4-4

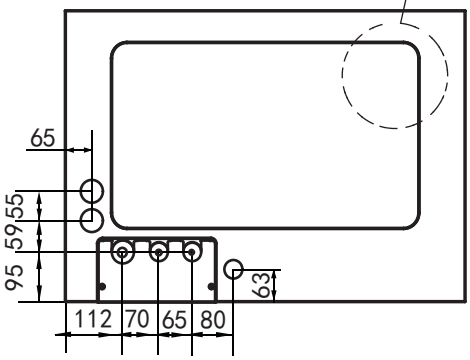


Fig.4-5

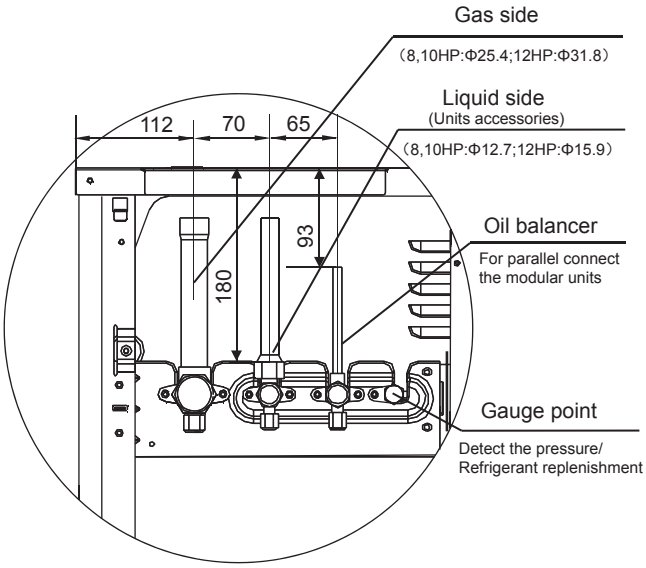


Fig.4-6

4.6 Main units' placement sequence & master and slave units' settings

A system, which provide with more than two main units, will be set as the followings method: The main units in this system should place sequentially from the large to the small capacity; the largest capacity main unit must be mounted at the first branching site; and set the largest capacity main unit address as the master Unit, while the other setting as the Slave Unit. Take 18HP (composed by 10HP, 8HP) as an example:

1) Place the 10HP at a side of the first branching site.
2) Place the unit from the large capacity to the small (See the detail placement illustration).
3) Set 10HP as the master unit, while the 8HP as the aux. unit.

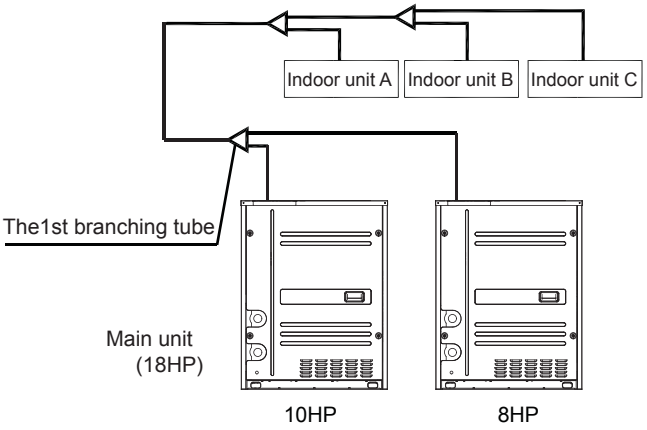


Fig.4-7

4.7 Installation space for main unit

- Ensure enough space for maintenance. The modules in the same system must be on the same height.
- When installing the unit, leave a space for maintenance. Install the power supply at the side of the main unit. For installation procedure, see the power supply device Installation manual.
- **Installation space of single main unit**

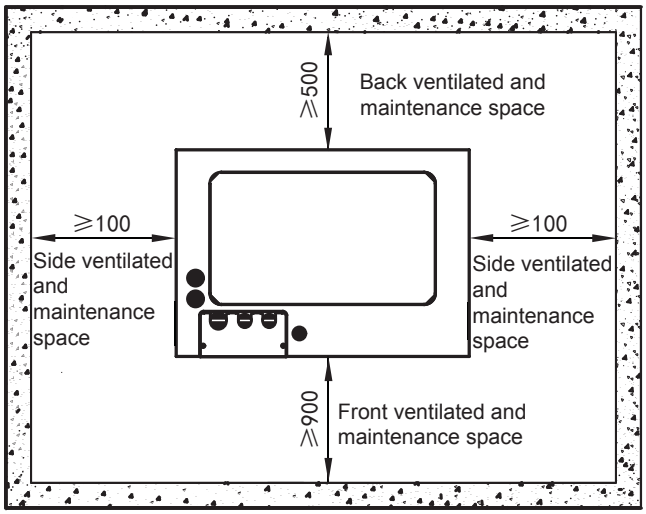


Fig.4-8

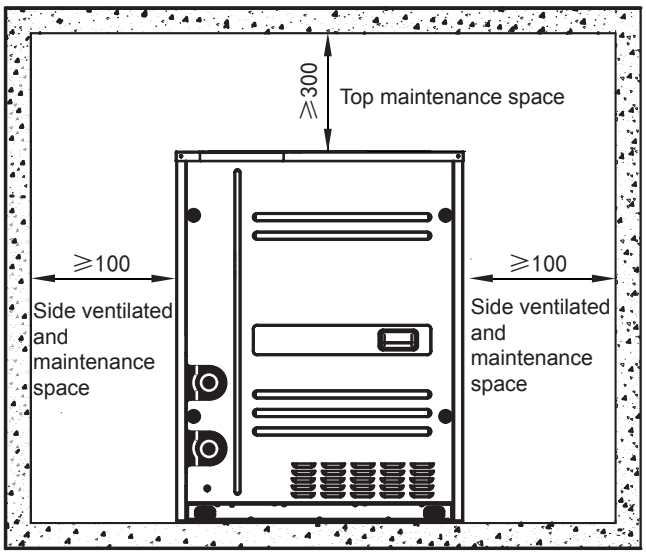


Fig.4-9

- **Installation space of several main units**

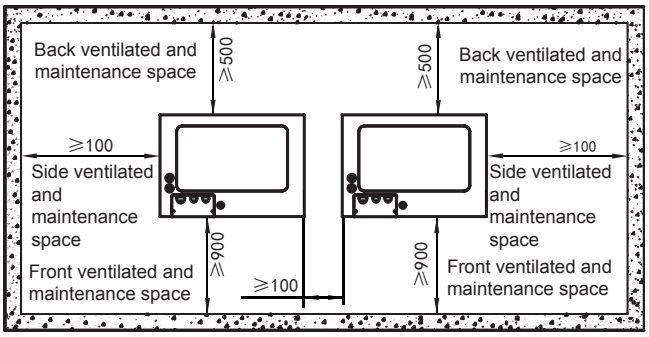


Fig.4-10

CAUTION

When install several main units, please reserve the top maintenance space as the single main unit installation.

5. WATER SYSTEM INSTALLATION

5.1 Basic requirements of connection of chilled water pipes

CAUTION

- After the unit is in place, chilled water pipes can be laid.
- The relevant installation regulations should be abided with when conducting connection of water pipes.
- All water pipes must conform to local rules and regulations of pipeline engineering.
- The size of water pipe should be the same as or larger than the connector size of the unit (DN32).
- The heat exchanger of the unit is double-pipe heat exchanger. There are different operation and maintenance methods between the double-pipe heat exchanger double-pipe heat exchanger and the other heat exchangers.

1) All connected water pipes should be thoroughly flushed, and can not be cleaned after connected to the double-pipe heat exchanger of the unit, for in case any impurity been flushed into the heat exchanger. After connection, all the water pipes should be washed down, and no any impurity left.
2) Water must enter the double-pipe heat exchanger through the inlet; otherwise the performance of the unit will decline.
3) The inlet pipe of each double-pipe heat exchanger in the unit must be provided with a water flow switch, to realize flow-break protection for the unit. Both ends of the water flow switch must be supplied with horizontal straight pipe sections whose diameter is 5 times that of the inlet pipe. The water flow switch must be installed in strict accordance with “Installation & Regulation Guide for Water Flow Switch” (See Section 4-5). The wires of the water flow switch should be led to the electric cabinet through shielded cable (see Electric Wiring section for details). After the pipelines are installed, the water flow switch will be set properly according to the rated water flow of the unit.
4) The pump installed in the water system should be equipped with starter and should be controlled by the unit. The unit only supplies the on, off controlling signal of water pump, and do not supply the power for the water pump.
5) The pipes and their ports must be independently supported but should not be supported on the unit.
6) The pipes and their ports of the double-pipe heat exchanger should be easy to disassemble for operation and cleaning, as well as inspection of port pipes of the evaporator.
7) The inlet of the double-pipe heat exchanger should be provided with a water filter with more than 40 meshes per inch (in the accessories). The filter should be installed near to the inlet port as much as possible, and be under heat preservation. Periodically clean the water filter according to the blocking condition of the filter.
8) The flexible connectors must be mounted between the double-pipe heat exchangers and the on-site pipes, to reduce transfer of vibration to the building.
9) To facilitate maintenance, the inlet and outlet pipes should be provided with thermometer or manometer. The unit is not equipped with pressure and temperature instruments, so they need to be purchased by the user.
10) All low positions of the water system should be provided with drainage valves, to drain water in the heat exchanger of water side and the system completely; and all high positions should be supplied with discharge valves, to facilitate expelling air from the pipeline. The discharge valves and drainage valves should not be under heat preservation, to facilitate maintenance.
11) All possible water pipes in the system to be chilled should be under heat preservation.
12) When the unit will be not used for a long time, water inside the unit should be drained and cut off the power. If the unit is not drained in winter, then the double-pipe heat exchanger and the water pipes system of the unit might be freezing and cracking under low temperature.
13) The rated water flow volume of different models are as follow:

Table.5-1

Model	Rated water flow volume(m^3/h)
8HP	5.4
10HP	6.0
12HP	7.2

WARNING

- The water pipes network including water filters and heat exchangers should be periodically cleaned, otherwise, dreg or dirt may seriously damages the heat exchangers and water pipes.
- The installation persons or the users must ensure the quality of chilled water, and de-icing salt mixtures and air should be excluded from the water system, since they may oxidize and corrode steel parts inside the heat exchanger.

5.2 Positions of water inlet, outlet and drainage port

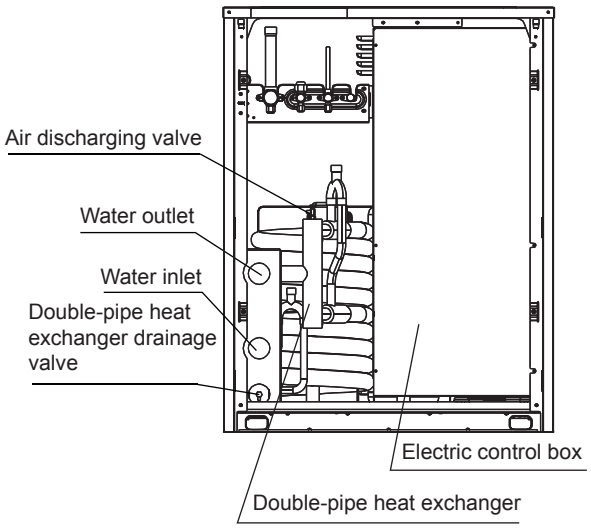


Fig.5-1

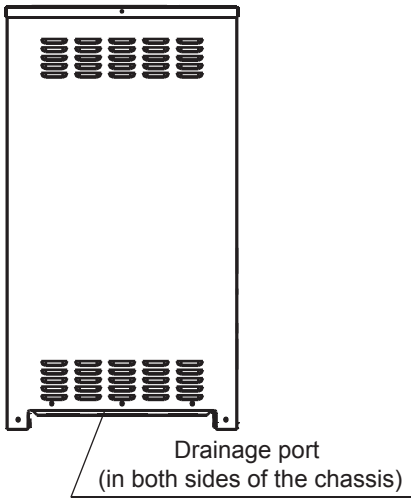
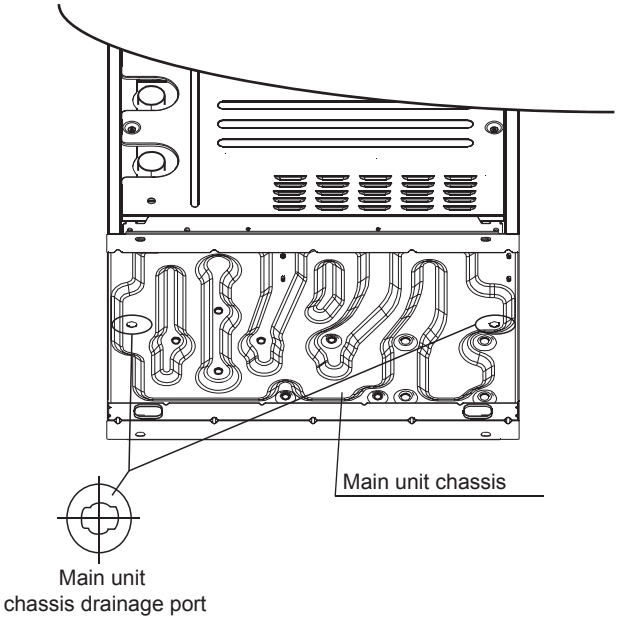


Fig.5-2

5.3 Installation of drainage port connecting pipes

According to the field installation condition, it is selected the side which is draining easily for installing the drainage port connecting pipes. During installation, the seal ring should be put on the water outlet connector, then install into the drainage hole in the chassis from the bottom of the unit, and then rotate 90°, to make it firmly assembled. And connect a drainage pipe (commercially available) with the water outlet connector, for draining the condensed water of the main unit out to the suitable place.



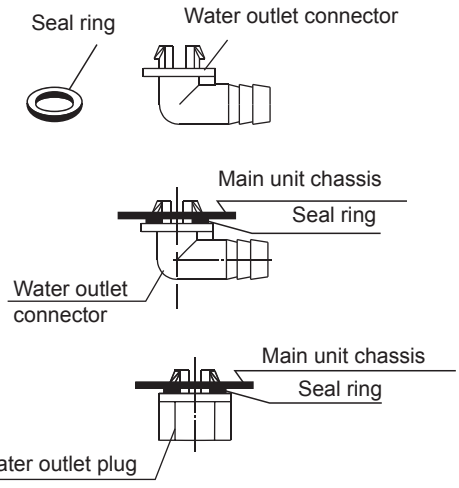
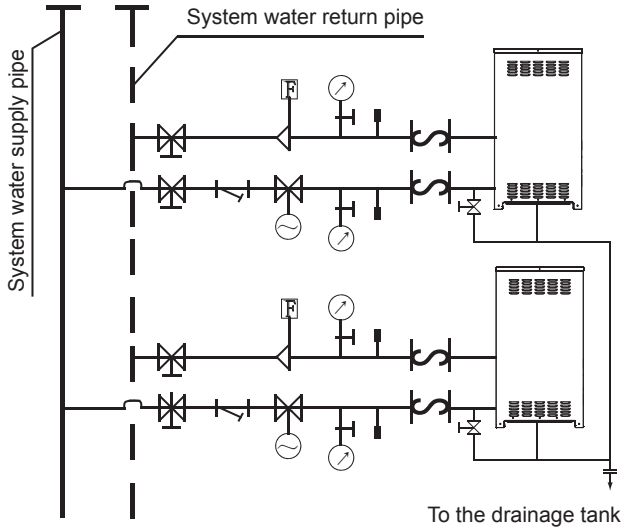


Fig.5-3

WARNING

It is needed to block the water outlet in the side which do not need to be connected with drainage pipes with water outlet plug and seal ring (see Fig. 5-3), otherwise the condensed water produced during the system operation will drain near the installation place, to cause inconvenience.

5.4 Installation of the main unit water pipelines



Symbols description:

	Gate valve		Y-shape filter
	Pressure gauge		Thermometer
	Water flow switch		Motorized valve
	Flexible connection		Drainage valve

Fig. 5-4 Main unit side water pipelines connecting figure (Recommended)

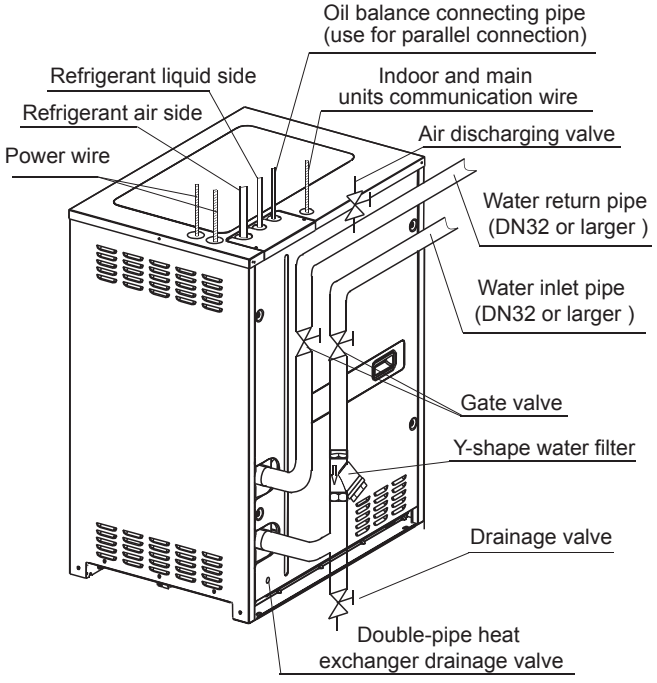
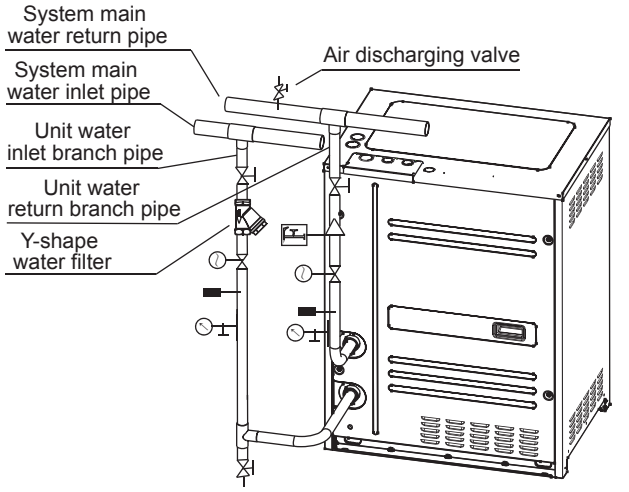


Fig.5-5 Direction schematic diagram of water system pipes



Symbols description:

	Gate valve		Thermometer
	Pressure gauge		Motorized valve
	Water flow switch		Drainage valve

Fig.5-6

As the above figure 5-6, when horizontal installing the water system main water inlet pipe and main water return pipe, the water inlet branch pipe and water return branch pipe which connected with the unit must be separate connected from the vertically lower direction of main water inlet pipe and main water return pipe; if connected from the side direction and the top direction will affect the unit performance.

5.5 Installation & regulation guide for water flow switch

5.5.1 Please carefully check flow switches before conducting installation of the water flow switch. Packing should be in good condition, and the appearance should be free of damage and deformation. If any problem, please contact the manufacturer.

5.5.2 Flow switches can be installed in the horizontal pipeline or the vertical pipeline with upward flowing direction but cannot be mounted in the pipeline with downward flowing direction. The inlet water of gravity should be taken into account when flow switches are installed in the pipeline with upward flowing direction.

5.5.3 Water flow switch must be installed on a section of straight-line pipeline, and its both ends must be supplied with straight-line pipes whose length is at least 5 times diameter of the pipe. In the meanwhile, the fluid flowing direction in the pipeline must be consistent with the direction of arrow on the switch. The connection terminal should be located where wiring connection can be easily done. (Fig.5-7).

5.5.4 Pay attention to the following items when conducting installation and wire connection:

1) Collision of the wrench with the soleplate of the flow switch is prohibited, since such collision may cause deformation and failure of the flow switch.

2) To avoid electric shock and damages to the devices, the power supply should be cut off, when wires are connected or adjustment is done.

3) When wiring connection is conducted, adjustment of other screws except connection terminals of micro switches and ground screws is prohibited. In the meanwhile, over great force should not applied when wires of micro switches are connected, otherwise micro switches may suffer displacement, thus leading to failure of flow switches.

4) Special grounding screws should be used for earth connection. Bolts should not be installed or removed at will; otherwise flow switches may suffer deformation and failure.

5) Flow switches have been set at minimal flow value prior to ex-factory. They should not be adjusted below the ex-factory setting value, or they may suffer failure. After installing flow switches, please press the flow switch lever several times to check them. When the lever is found not to respond with “clatter”, rotate the screw in a clockwise direction, until “clatter” occurs.

6) Be sure to determine the model of target slice according to the rated flow of the unit, the diameter of the outlet pipe and the adjustment range of the target slice of the flow switch. Besides, the target slice should not contact with other restrictors in the pipeline or on the inner wall of the pipeline, or the flow switch cannot be reset normally.

5.5.5 Determine whether the flow switch and the system connected with it are in good operation according to the measured value by flow meter, namely, when the measured value on flow meter is less than 50% of rated water flow of the unit, the water flow controller should be cut off and observed for 3 working periods, and it should be covered with flow switch shell timely.

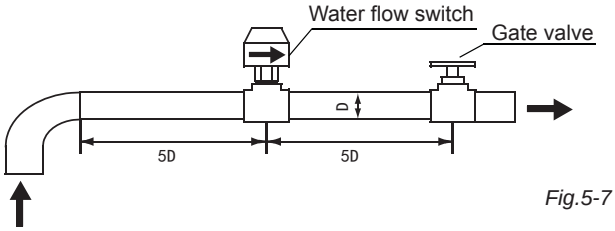


Fig.5-7

5.6 Operations and maintenance of double-pipe heat exchanger

5.6.1 Operations of double-pipe heat exchanger

1) Please note that correctly install the water inlet and outlet pipes. The thread of water inlet and outlet are inner thread G1-1/4.
2) For the double-pipe heat exchanger is internal thread copper pipe, and for avoiding the impurities enter into and affect the performance then cause corrosion of the double-pipe heat exchanger, it must be installed the water filter (accessory) near the water inlet pipes of the unit.
3) Please use water pipes which conform to local rules and regulations of pipeline engineering. The size of water pipe should not smaller than the connector size of the unit (DN32).
4) Periodically clean the water filter according to the water quality situation and the blocking condition of the filter. Otherwise, it might damage the filter screen of the water filter because of the abnormal pressure.
5) When the unit will be not used for a long time in winter, water inside the double-pipe heat exchanger and the water pipes should be drained out in case for being frozen. The water inside the double-pipe heat exchanger can be drained out by its drainage valve, the drainage valve position as Fig.5-1 display. The user can take down the front plate and open the drainage valve for water draining, and also can without taking down the front plate then use a straight screwdriver to go through the small hole in the front plate and open the drainage for water draining, the small hole position as Fig.5-5 display.
6) According to the different water quality the situations of double-pipe heat exchanger and water system pipelines are different. For removing the scale, it is needed to periodically clean the double-pipe heat exchanger and water system pipelines. It is suggested that set isolating valves in the suitable places during water system installation and it is convenient to connect the cleaning system for cleaning.

5.6.2 Double-pipe heat exchanger cleaning

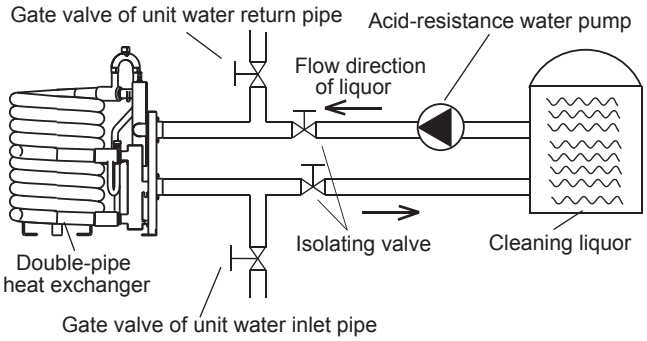


Fig.5-8 Cleaning system schematic diagram of double-pipe heat exchanger

5.6.2.1 Preparation of cleaning liquor

1) The material of water side double-pipe is red copper, and for general corrosion situation it is suggested that use the pickle liquor with 5% oxalic acid, 1.2% buffer and 0.8% surfactant, and the temperature should be controlled in 60°C, that will has prefect cleaning effect.
2) If use hydrochloric acid as the cleaning liquor, for avoiding to the corrosion and shorten the working life of the heat exchanger, it should limit the concentration of the hydrochloric acid to be 3%～5%, and add corrosion inhibitor with 0.2%～0.3% concentration. When it is cleaning, pay attention to the PH value change, when the PH=8, then stop cleaning immediately. Then change to fresh water for cleaning.

5.6.2.2 Cleaning method:

1) Before connecting to the cleaning system, it must stop the unit operation, close the circulating water pump of water system, and close the gate valves in inlet and outlet water return pipes.
2) Correctly connect the cleaning system as the above figure 5-8, make the cleaning liquor counter flush the double-pipe heat exchanger (opposite the general flow direction).
3) Acid cleaning: After make sure it will not leak water, and then open the water pump to make the double-pipe heat exchanger fill with acid liquor, and close the water pump, and then let the double-pipe heat exchanger static state for 2h. And open the water pump continuously dynamic loop for 3～4h. During that every 0.5h, it is done both side alternative cleaning. During the acid cleaning, it should timely do sampling test for acid concentration, if the continuous twice testing concentration difference is lower than 0.2%, which means the acid cleaning finish reaction. Put the waste liquor to the waste liquor tank.
4) Neutralization: After acid cleaning, use NaOH, Na3PO4 and soften liquid mixed accord to some proportion, and use dynamic loop to alkali cleaning for the heat exchanger, in order to alkalis counteract acids. Drain the waste liquor to the waste liquor tank.
5) Water cleaning: After alkali cleaning, use clean soften liquor repeatedly wash the heat exchanger for 0.5h, thoroughly wash the heat exchanger. Then drain the waste liquor to the waste liquor tank.
6) Passivating treatment : Expose the double-pipe heat exchanger in the air for 3～4h, or blow for 2h with high pressure air. Make the pipe surface form a oxidation passivating layer.

7) After cleaning, close the isolating valve, and take down the cleaning system devices and keeping properly for backup.
8) Please contact the waste liquor treating company to treat the collected waste liquor.
9) Connect the unit water system as the state before cleaning, thoroughly check the unit and assist devices whether work normally. Make sure there is no abnormal situation then re-operates the unit.

WARNING

- The cleaning liquor flow direction must be correctly connected.
- Because different water quality and different using situations of the heat exchanger, the cleaning period and method will be big different, the above method is only for reference.
- The double-pipe heat exchanger is internal thread red copper pipe, so that it can not use nitric acid as cleaning agent!
- The cleaning liquor and neutralization will be irritated and corrosive to human eyes and skin, so please do well protection measurements during the cleaning.
- It is strongly suggested that the user calls for professional cleaning company to do component analysis of the water quality and scale, and make a effective cleaning solution and method, then do the cleaning.

5.7 System water quality requirements and management

5.7.1 The unit water system must select the closed cooling tower.

5.7.2 Circulating Chilled Water Processing Design Standard, other index also should meet with the Table.5.2.

5.7.3 It should periodically to detect and handle the chilled water quality in the water system. When handling the water, please make sure with the water dealing person to confirm that use any water scale inhibitor and antiseptic agent etc. will not have corrosion to the stainless steel and copper products.

Table.5-2

ITEMS	CONCENTRATION (mg/L)
Chromaticity	≤15，and can not display other colors
Turbidity NTU	≤1
Smell	None
Visible objects	None
PH Value	7.5～9
Total hardness (Take $CaCO_3$ for calculation)	≤200
Fe	＜0.5
AL	＜0.2
Mn	＜0.1
Cu	＜0.2
Zn	≤0.1
Alkalinity concentration(HCO_3^-)	70～300
Sulfate radical（SO_4^{2-}）	＜70
HCO_3^-/SO_4^{2-}	＞1
Conductivity	10～500 μs/cm(20°C)
NH_3	＜0.1
CL^-	＜100
Chlorine	＜1
H_2S	＜0.05
Free carbon dioxide（CO_2）	＜5
Nitrate radical（NO_3^-）	＜100
Suspended matter	≤20
Soluble solid	500～1000
Oxygen consumption （Take O_2 for calculation）	≤3
Ammonium ion（NH_4^+）	＜1
SiO_2 （Ion state）	＜50

6. REFRIGERANT PIPE

6.1 Length and drop height permitted of the refrigerant piping

Table.6-1

			Permitted value	Piping
Pipe length	Total pipe length (Actual)		300m (Note1)	L1+(L2+L3+L4+L5+L6+L7+L8+L9)×2+a+b+c+d+e+f+g+h+i+j
	Maximum piping (L1)	Actual length	120m	L1+L5+L8+L9+j
		Equivalent length	150m	
	Piping (farthest from the first line pipe branch) equivalent length(L2)		40m(90m,Note2)	L5+L8+L9+j
Drop height	Indoor unit-main unit drop height	Main unit up	H=50m	——
		Main unit down	H=40m	——
	Indoor unit to indoor unit drop height		h=30m	——

Note: 1.Reduced length of the branching tube is the 0.5m of the equivalent length of the pipe.
2. When the conditions following as table. 6-2 are all meeted, the allowable length can extened to 90m.

Table.6-2

No.	Permitted value	Examples	Piping
1	The size of indoor unit main pipe shoud be bigger than the indoor unit aux. pipe. The indoor unit main pipe needn't increase when it is equal to main pipe .	L2~L9 need to increase the pipe diameter .	φ9.52→φ12.7 φ12.7→φ15.9 φ15.9→φ19.1 φ19.1→φ22.2 φ22.2→φ25.4 φ25.4→φ28.6 φ28.6→φ31.8 φ31.8→φ38.1 φ38.1→φ41.3
2	The length of indoor unit aux. pipe is no longer than 40m.	a,b.....j ≤ 40m .	Reference Fig.6-1 .
3	The distance difference between [the main unit to the farthest in-door unit] and [the main unit to the nearest indoor unit] is ≤40m.	If the farest indoor unit is N10, the nearest indoor unit is N1, i.e.(L1+L5+L8+L9+j)-(L1+L2+L3+a) ≤40m.	

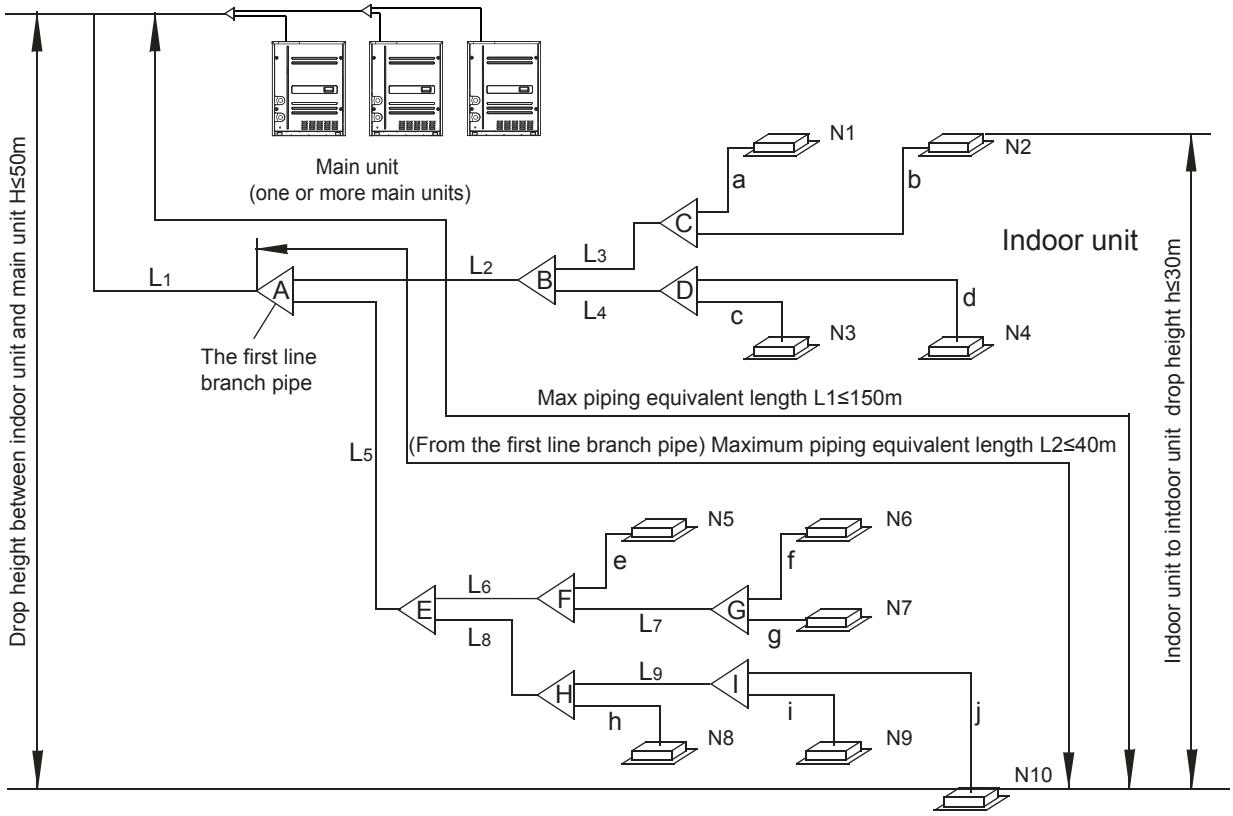


Fig.6-1

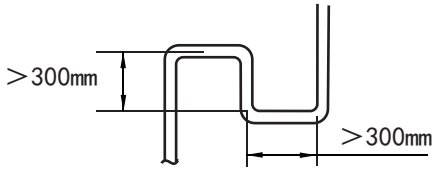


Fig.6-2

CAUTION

1. Indoor units should be placed as equally as possible at the both sides of the U-shape branch pipe.
2. When the main unit is over 20m from the above places, it is recommended to set a return oil bending every 10m of the air pipe in the main pipe, the return oil bending specification is as Fig. 6-2.

6.2 Select the refrigerant piping type

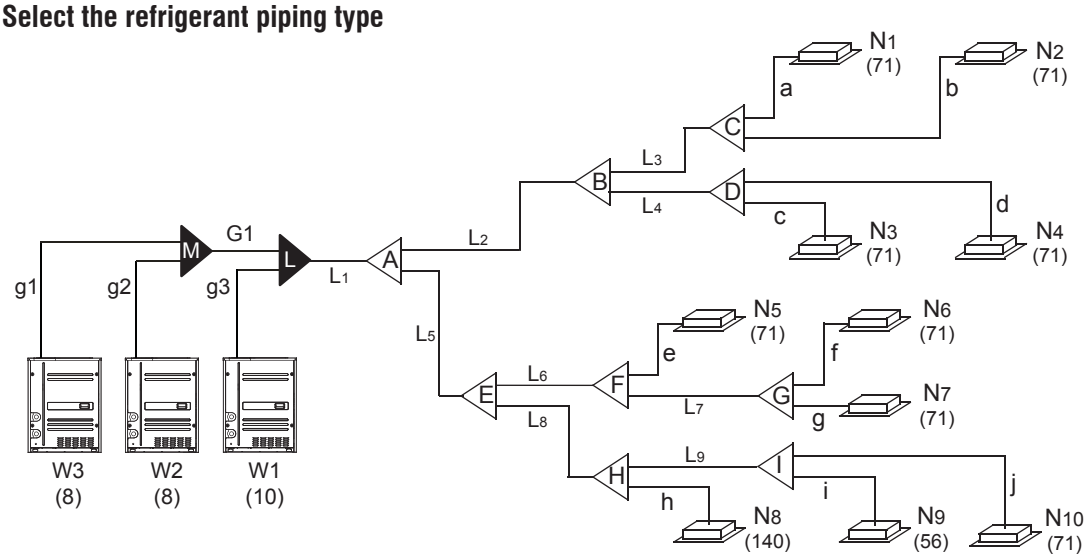


Fig.6-3

Table.6-3

Pipe name	Code (As per the *Fig. 6-2*)
Main pipe	L1
Indoor unit main pipe	L2~L9
Indoor unit aux. pipe	a, b, c, d, e, f, g, h, i, j
Indoor unit branching pipe assembly	A, B, C, D, E, F, G, H, I
Main unit branching pipe assembly	L, M
Main unit connective pipe	g1, g2, g3, G1

6.3 Size of joint pipes for indoor unit

Table.6-4 Size of joint pipes for 410A indoor unit

Capacity of indoor unit (A)	Size of main pipe(mm)		Available branching pipe
	Gas side	Liquid side	
A＜166	Φ15.9	Φ9.5	FQZHN-01D
166≤A＜230	Φ19.1	Φ9.5	FQZHN-01D
230≤A＜330	Φ22.2	Φ9.5	FQZHN-02D
330≤A＜460	Φ28.6	Φ12.7	FQZHN-03D
460≤A＜660	Φ28.6	Φ15.9	FQZHN-03D
660≤A＜920	Φ31.8	Φ19.1	FQZHN-03D
920≤A<1350	Φ38.1	Φ19.1	FQZHN-04D

e.x.1: Refer to *Fig.6-2 ,* the capacity of downstream units to L2 is 71×4=284, i.e. the gas pipe for L2 is Φ22.2, liquid pipe is Φ9.5.

6.4 Size of joint pipes for main unit

Base on the following tables, select the diameters of the main unit connective pipes. In case of the main accessory pipe large than the main pipe, take the large one for the selection.

Example: parallel connect with the three main units 10+10+8 (the total capacity is 28HP), all indoor units total capacity is 812, provided that the equivalent length of all pipes are ≥90m, according to the Table 6-6 the main pipe diameter areΦ31.8/Φ22.2; in according to all indoor unit capacity 1360, we could find out the master unit diameter isΦ31.8/Φ19.1 base on Table 6-3. Take the large one for the selection, we final confirm the main pipe diameter isΦ38.1/Φ22.2.

Table.6-5 Size of joint pipes for 410A main unit

Model	When the equivalent length of all liquid pipes < 90m, the size of main pipe(mm)		
	Gas side	Liquid side	The 1st branching pipe
8HP	Φ22.2	Φ9.5	FQZHN-02D
10HP	Φ22.2	Φ9.5	FQZHN-02D
12HP	Φ25.4	Φ12.7	FQZHN-02D
16HP	Φ28.6	Φ12.7	FQZHN-03D
18~22HP	Φ28.6	Φ15.9	FQZHN-03D
24HP	Φ28.6	Φ15.9	FQZHN-03D
26~32HP	Φ31.8	Φ19.1	FQZHN-03D
34~36HP	Φ38.1	Φ19.1	FQZHN-04D

Table.6-6 Size of joint pipes for 410A main unit

Model	When the equivalent length of all liquid pipes ≥ 90m, the size of main pipe(mm)		
	Gas side	Liquid side	The 1st branching pipe
8HP	Φ22.2	Φ12.7	FQZHN-02D
10HP	Φ25.4	Φ12.7	FQZHN-02D
12HP	Φ28.6	Φ15.9	FQZHN-03D
16HP	Φ31.8	Φ15.9	FQZHN-03D
18~22HP	Φ31.8	Φ19.1	FQZHN-03D
24HP	Φ31.8	Φ19.1	FQZHN-03D
26~32HP	Φ38.1	Φ22.2	FQZHN-04D
34~36HP	Φ38.1	Φ22.2	FQZHN-04D

6.5 Branch pipes for main unit

Table.6-7

Model	Main unit pipe connective opening dimension(mm)	
	Gas side	Liquid side
8HP, 10HP	Φ25.4	Φ12.7
12HP	Φ31.8	Φ15.9

6.6 Branch pipes for indoor unit

Base on Table 6-8 and Table 6-9 select the multi connecting pipes of main unit. Before installation, please read the Main Unit Branching Pipe Installation Manual carefully.

Table.6-8 Main unit multi-connective pipe assembly (Illustration)

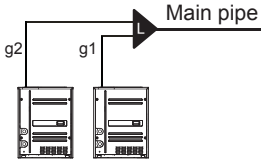
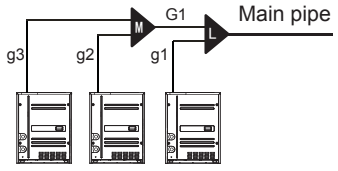
Main unit Qty.	Illustration
2 units	
3 units	

Table.6-9 Main unit multi-connective pipe assembly

Main unit Qty.	Main unit connective pipe diameter	Parallel connect with the branch-ing pipes	Main pipe
2 units	g1, g2: 8, 10HP: Φ25.4/Φ12.7; 12HP: Φ31.8/Φ15.9	L: FQZHW-02N1D	Refer to Table 6-5 for main pipe dimension
3 units	g1, g2, g3: 8, 10HP: Φ25.4/Φ12.7; 12HP: Φ31.8/Φ15.9; G1: Φ38.1/Φ19.1	L+M: FQZHW-03N1D	

Note: The pipe assemblies in above table is special for this model, must be purchased separately.

6.7 Example

1) Take (10+8+8) HP that composed by three modules as an example to clarify the pipe selection.

2) Take Fig.6-4 as an example. Provided that the equivalent length of all pipes in this system is larger than 90m.

Table.6-8 Unit: mm

Indoor unit capacity A(×100W)	When branching pipe's length ≤10m		When branching pipe's length＞10m	
	Gas side	Liquid side	Gas side	Liquid side
A≤45	Φ12.7	Φ6.4	Φ15.9	Φ9.5
A≥56	Φ15.9	Φ9.5	Φ19.1	Φ12.7

A The branching pipe at the inside of the unit.
There are a~j branching pipes at the inside of the unit, the branching pipe diameter should be select as per Table 6-10.

B Main pipe at the inside the unit (Refer to Table 6-4)

1) The main pipe L3 with N1, N2 downstream indoor units that total capacity is 71×2=142, the pipe L3 diameter is Φ15.9/Φ9.5, thus select FQZHN-01D for the branching pipe C.

2) The main pipe L4 with N3, N4 downstream indoor units that total capacity is 71×2=142, the pipe L3 diameter is Φ15.9/Φ9.5, thus select FQZHN-01D for the branching pipe D.

3) The main pipe L2 with N1~N4 downstream indoor units that total capacity is 71×4=284, the pipe L2 diameter is Φ22.2/Φ9.5, thus select FQZHN-02D for the branching pipe B.

4) The main pipe L7 with N6, N7 downstream indoor units that total capacity is 56+71=127, the pipe L7 diameter is Φ15.9/Φ 9.5, thus select FQZHN-01D for the branching pipe G.

5) The main pipe L6 with N5～N7 downstream indoor units that total capacity is 56+71×2=282, the pipe L6 diameter is Φ19.1/Φ 9.5, thus select FQZHN-01D for the branching pipe F.

6) The main pipe L9 with N9, N10 downstream indoor units that total capacity is 56×2=112, the pipe L9 diameter is Φ15.9/Φ9.5, thus select FQZHN-01D for the branching pipe I.

7) The main pipe L8 with N8～N10 downstream indoor units that total capacity is 112+56×2=224 the pipe L8 diameter isΦ19.1/Φ 9.5, thus select FQZHN-01D for the branching pipe H.

8) The main pipe L5 with N5～N10 downstream indoor units that total capacity is 112+56×3+71×2=366, the pipe L5 diameter isΦ 28.6/Φ12.7, thus select FQZHN-03D for the branching pipe E.

9) The main pipe A with N1～N10 downstream indoor units that total capacity is 56×3+71×6+112=706, thus select FQZHN-03D for the branching pipe A.

C Main pipe (Refer to Table 6-4, Table 6-5, Table 6-6):
Main pipe L1 in the Fig.6-2, which upstream main units total capacity is 10+8+8=26HP, base on table 6-5, the gas/liquid pipe diameter areΦ38.1/Φ22.2, total capacity of the downstream indoor unit is 56×3+71×6+112=706, base on table 6-4, the gas/liquid pipe diameter areΦ31.8/Φ19.1, take the large one for your selection, final confirm the main pipe diameter is: gas/liquid pipeΦ38.1/Φ22.2.

D Parallel connect the main units

1) The main unit linked by Pipe g1 is 8HP, parallel connects with main unit. the connective pipe diameter to be selected according to its connector size isΦ25.4/Φ12.7,
The main unit linked by Pipe g2 is 8HP, parallel connects with main unit. the connective pipe diameter to be selected according to its connector size isΦ25.4/Φ12.7,
The main unit linked by Pipe g3 is 10HP, parallel connects with main unit. the connective pipe diameter to be selected according to its connector size isΦ25.4/Φ12.7.

2) The upstream of G1 is the two parallel connected main units, refer to Table 6-9 select the three parallel connected main unit, the pipe diameter isΦ38.1/Φ19.1.

3) Parallel connect the three main units, refer to Table 6-7 should select FQZHW-03N1D for main unit connective pipes (L+M).

6.8 Remove dirt or water in the piping

■ Make sure there is no any dirt or water before connecting the piping to the main units.

■ Wash the piping with high pressure nitrogen, never use refrigerant of the main unit.

6.9 Gas tight test

1) Upon set up the indoor unit pipeline, please connect the Hi-pressure pipe with shut-off valve firstly.

2) Weld the pipe at the low pressure side to the meter connector.

3) Use the vacuum pump discharging air inside the liquid side shut-off valve and meter connecter, until to the -0.1MPa.

4) Close the vacuum pump, charge 3.9MPa nitrogen gas from the piston of shut-off valve and from the meter connector. Pressure inside should be maintained at there no less than 24 hrs.

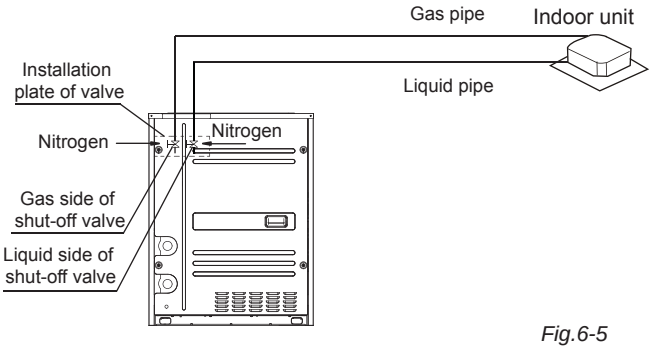


Fig.6-5

CAUTION

- Pressurized nitrogen（3.9MPa）is used for airtightness test.
- It is not allow to use oxygen, combustible gas or toxic gas to conduct the airtightness test.
- When welding, please use wet cloth insulating the low pressure valve for protection.
- For avoid the equipment be damaged, the pressure maintainedtime should not last too long.

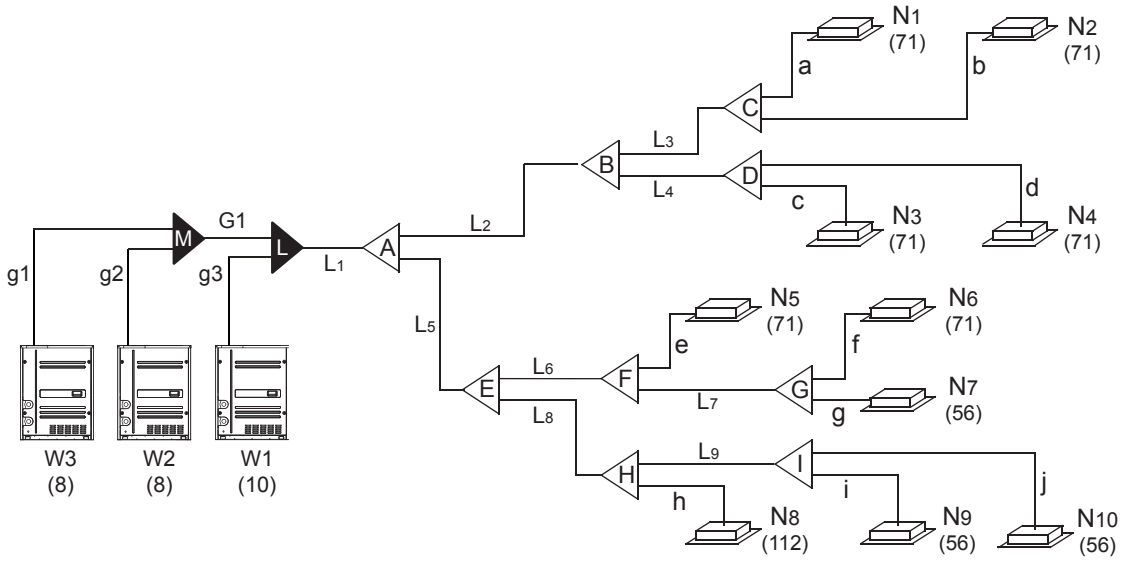


Fig.6-4

6.10 Vacuum with vacuum pump

1) Use the vacuum pump which vacuum level lower than -0.1MPa and the air discharge capacity above 40L/min.

2) The main unit is not necessary to vacuum, don't open the main unit gas and liquid pipe shut-off valves.

3) Make sure the vacuum pump could result as -0.1MPa or below after 2 hrs or above operation. If the pump operated 3 hrs or above could not achieve to -0.1MPa or below, please check whether water mix or gas leak inside of the pipe.

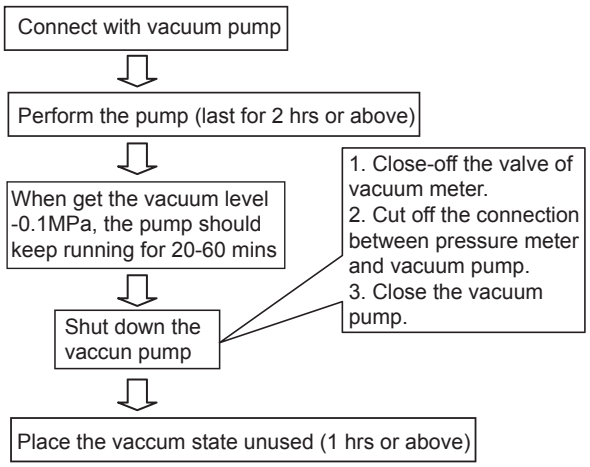


Fig.6-6

CAUTION

- Don't mix up the different refrigerants or abuse the tools and measurements which directly contact with refrigerants.
- Don't adopt refrigerant gas for air vacuuming.
- If vacuum level could not get to -0.1MPa, please check whether resulted by leakage and confirm the leakage site.If no leakage, please operate the vacuum pump again 1 or 2 hrs.

6.11 Refrigerant amount to be added

W = W1 + W2
W = total additional refrigerant amount to be added

W1 = Refrigerant revised amount after unit left the factory

W2 = Refrigerant added amount of connected liquid side pipes

Calculate the added refrigerant W1 according the following table:

Unit capacity (HP)	W1 (KG)
8	2.0
10	2.0
12	2.8

Calculate the added refrigerant according to the diameter and the length of the liquid side pipe of the Main/indoor unit connection. The refrigerant is R410A.

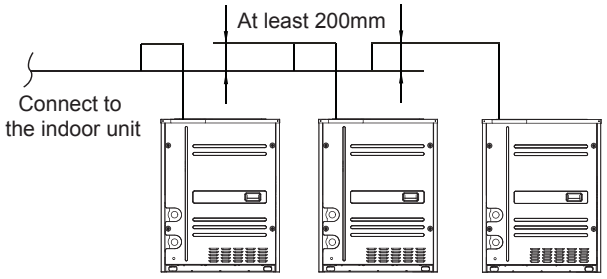
Table.6-11

Pipe size on liquid side	Refrigerant to be Added per meter
Φ6.4	0.022kg
Φ9.5	0.057kg
Φ12.7	0.110kg
Φ15.9	0.170kg
Φ19.1	0.260kg
Φ22.2	0.360kg
Φ25.4	0.520kg
Φ28.6	0.680kg

6.12 The Installation key points of connective pipes between main units

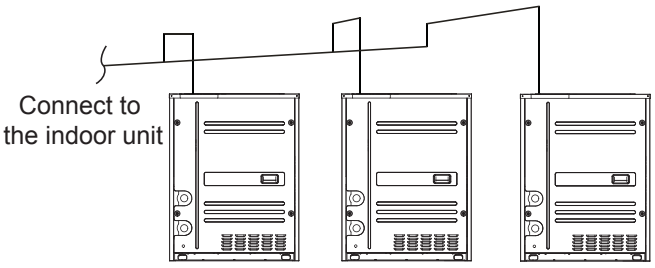
1) Connect the pipes between main units, the pipes should place horizontally (Fig.6-7,Fig.6-8), it is not allow the concave at junction site and set longer than 200mm bending pipes for saving oil.

2) All connective pipes between the main units are not allowed to over than the height of every outlets of the pipes(Refer to Fig.6-9, Fig.6-10).



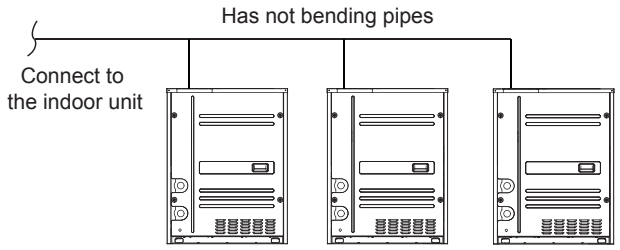
√ Correct way

Fig.6-7



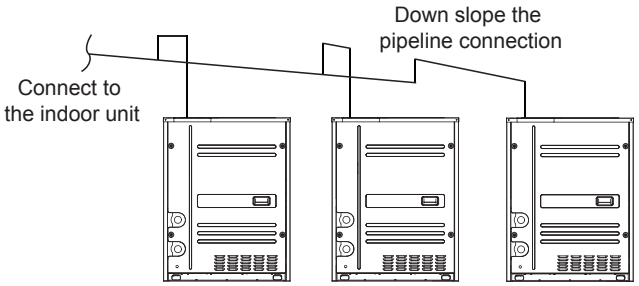
√ Correct way

Fig.6-8



× Wrong way

Fig.6-9



× Wrong way

Fig.6-10

3) The branching pipe must be installed horizontally, error angle of it should not large than 10°. Otherwise, malfunction will be caused.

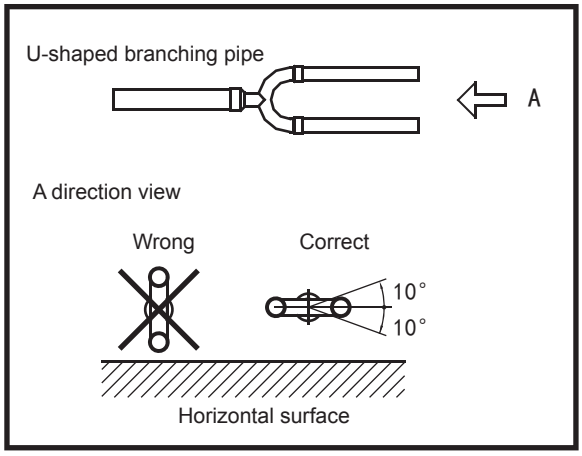


Fig.6-11

! SEE REVIEW AT THE END OF THE DOCUMENT

7. ELECTRIC WIRING

7.1 Sw1 query instructions

Table.7-1

No.	Display content (Normal display)	Note
1	Main unit address	0, 1, 2, 3
2	Main unit capacity	8, 10, 12
3	Modular main unit qty.	Available for main unit
4	Total capacity of main unit	Capacity requirement
5	Total capacity requirement of indoor unit	Available for main unit
6	Total corrected capacity requirement of main unit	Available for main unit
7	Operation mode	0, 2, 3, 4
8	The actual operation capacity of this main unit	Capacity requirement
9	Water flow switch state	0–Open 1–Close
10	T2B/T2 average temp.	Actual value
11	T5 inverter module temp.	Actual value
12	T7 discharge temp. of inverter compressor	Actual value
13	TSJ water inlet temp.	Actual value
14	TSC1 water outlet temp. of upper pipe.	Actual value
15	TSC2 water outlet temp.of lower pipe	Actual value
16	Current 1 of inverter compressor	Actual value
17	Current 2 of inverter compressor	Actual value
18	High pressure	Display value×0. 1MPa
19	Low pressure	Display value×0. 01MPa
20	Opening angle of EXV A	Display value×8
21	Opening angle of EXV B	Display value×8
22	Priority mode	0,1,2,3,4
23	Qty. of communicating Indoor units	Actual value
24	Qty. of installed indoor units	Actual value
25	The last time malfunction or the protective code	Without protection or error display code 00
26	——	Check end

The display contents as followings:

1) Normal display:When in standby, it displays the qty. of indoor units that can communicate with the main unit .When it is operating , it will display the rotation frequency of the compressor.
2) Operation mode: 0—OFF/Fan, 2—Cooling, 3—Heating(Cooling only type without), 4—Constraint cooling.
3) Water flow switch state: 0—Open,1—Close.
4) Priority mode : 0—Heating Priority Mode, 1—Cooling Priority Mode, 2—Priority Mode, 3—Only Respond The Heating Mode, 4—Only Respond The Cooling Mode.
5) EXV opening angle: pulse count=display value×8.
6) ENC1: Main unit address setting switch,
   ENC2: Main unit capacity setting switch,
   ECN3: Network address setting switch,
   S10, ENC4: combination setting the qty. of the installed indoor units.
   SW1:Query button;SW2:Constraint cooling.

NOTE

Setting 0 or 1, all mean install 1 set indoor unit.

7.2 Terminal base function

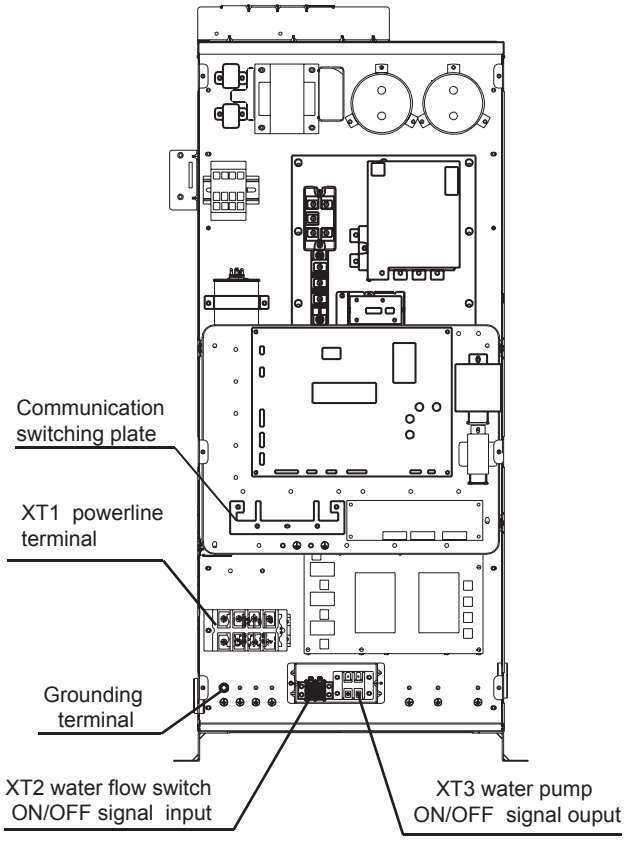
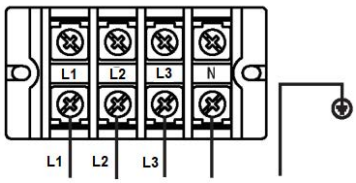


Fig.7-1 Electric control box diagram

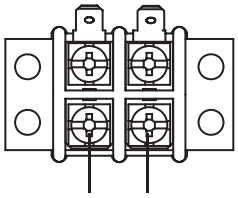
WARNING

Never apply line voltage to communication switching plate and XT2 water flow switch ON/OFF signal input !



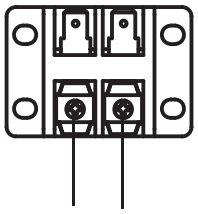
XT1 Powerline terminal
380-415V 3N~ 50Hz/60Hz

Fig.7-2



XT2 water flow switch ON/OFF signal input terminal
(Must be connected to weak current control circuit !)

Fig.7-3



XT3 Water pump ON/OFF signal output terminals
(Dry contact MAX 220 VAC 1A)

Fig.7-4

The same control port at the outlet of the pump can be used to control an auxiliary valve, a flow switch should be installed between the ODU outlet and the valve.

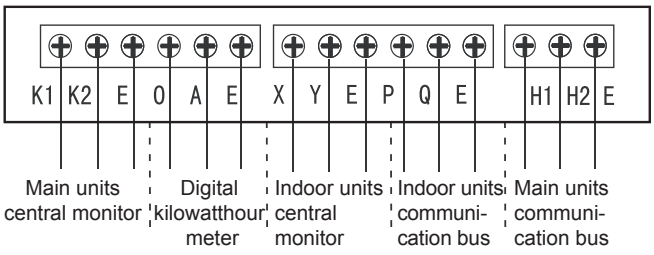


Fig.7-5

7.3 Explanation of main board

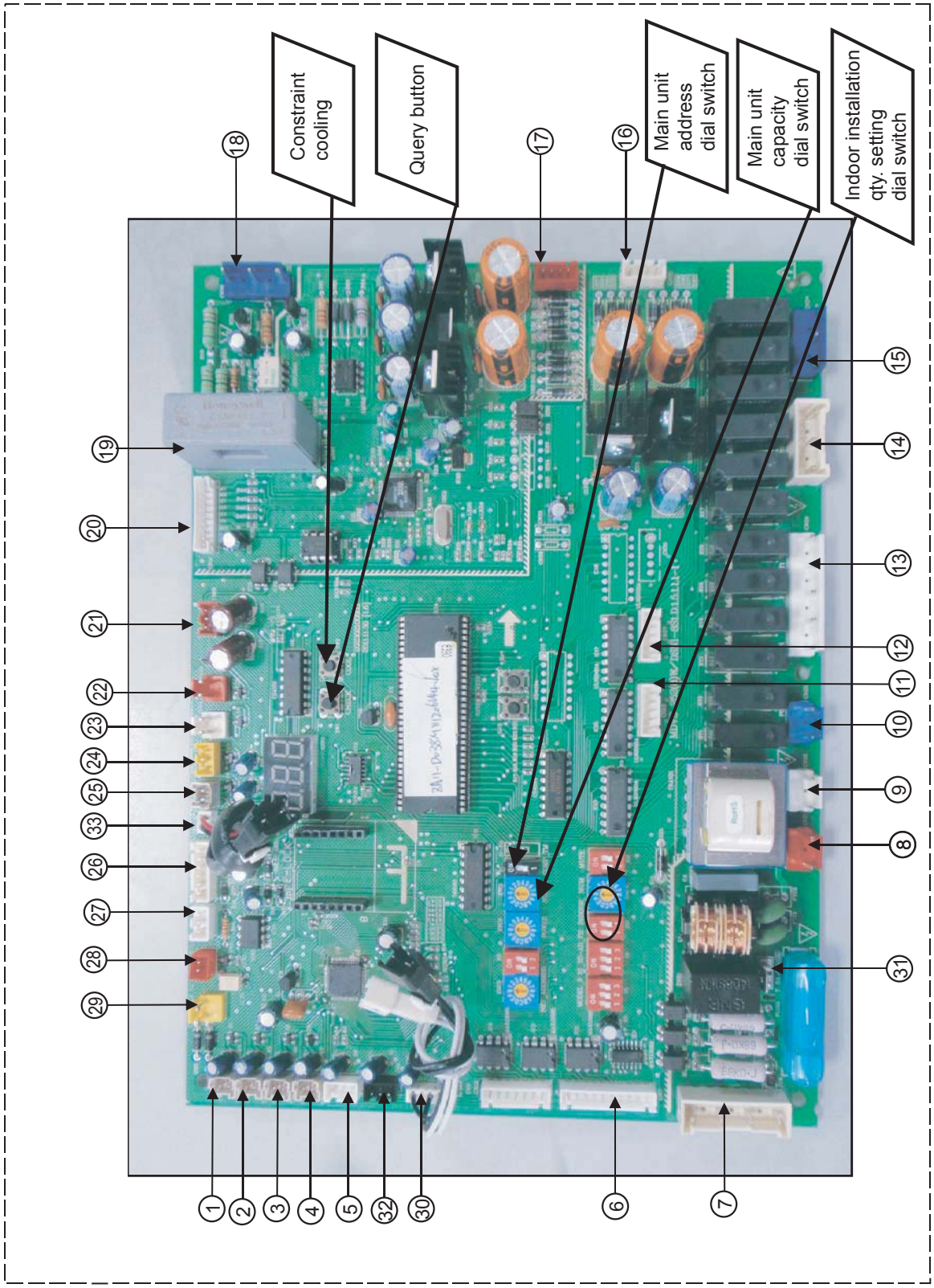


Fig.7-6

■ Explanation of main board

Table.7-2

No.	Content
1	Reserve
2	Reserve
3	Air discharge temp. sensed port 2 of inverter compressor
4	Air discharge temp. sensed port 1 of inverter compressor
5	Power supply connected port of Mid-termial base
6	Wiring port for communication between indoor and main units, indoor unit network,main network and network accounting
7	Phase inspection port
8	Power input of the No.1 transformer
9	Power input of the No.2 transformer
10	Loading output terminal
11	EXV A driving port
12	EXV B driving port
13	Loading output terminal
14	Loading output terminal
15	Loading output terminal
16	Power output of the No.1 transformer
17	Power output of the No.2 transformer
18	Port for inverter module voltage inspection
19	Mutual inductor for DC current inspection
20	Activation port of inverter module
21	Power supply connected port of the main control panel
22	ON/OFF signal input port for system low pressure inspection
23	ON/OFF signal input port for system high pressure inspection
24	Input port for system high pressure inspection
25	Temp. sensed port of the inverter module
26	Current inspection port of phase B and C
27	Communication port among main units
28	Reserve
29	ON/OFF singnal input port for water flow switch
30	Input port of water outlet temp. sensor 1 and sensor 2
31	C phase power supply
32	Input port for system low pressure inspection
33	Water inlet temp. sensed port

7.4 Dial codes definition

S5 S6 S10 ENC4 S11

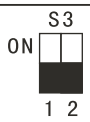
ENC3 S3 ENC2 ENC1 S1

Fig.7-7

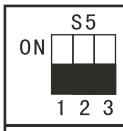
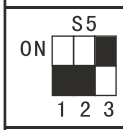
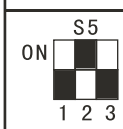
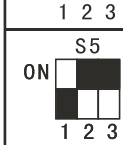
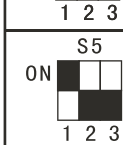
S1 definition

	Starting time is set about 10 minutes
	Starting time is set about 12 minutes (Default the Factory Set)

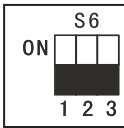
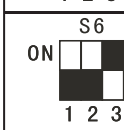
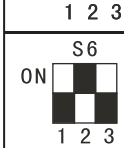
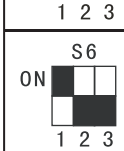
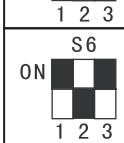
S3 definition

	Reserve

S5 definition(For cooling&heating type)

	Heating priority mode (Default the Factory Set)
	Cooling priority mode
	Open the priority mode first
	Only Respond the heating mode
	Only Respond the cooling mode

S6 definition

	Automatic search address.
	Nonautomatic search address. (The communication way of the original digital indoor unit) (Default the Factory Set)
	Clean the indoor unit addresses
	Reserve
	Reserve

S10 definition

S10 ON 1 2	Combined with ENC4 to set the qty.of the indoor unit to be 1-15
S10 ON 1 2	Combined with ENC4 to set the qty.of the indoor unit to be 16-31
S10 ON 1 2	Combined with ENC4 to set the qty.of the indoor unit to be 32-47
S10 ON 1 2	Combined with ENC4 to set the qty.of the indoor unit to be 48-63

S11 definition

S11 ON 1 2	Reserve

NOTE

Please shut off the power when setting the switch.

CAUTION

- Set refrigerant piping system, signal wires between indoor-indoor unit, and that between main-main unit into one system.
- Power must unified supply to all indoor units in the same system.
- Please do not put the signal wire and power wire in the same wire tube; keep distance between the two tubes. (Current capacity of power supply: less than 10A--300mm, less than 50A--500mm.)
- Make sure to set address of main unit in case of parallel multi-main units.

7.5 Electric wiring system and installation

- Outdoor unit power wiring

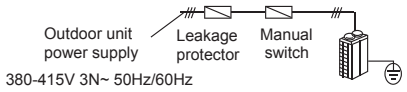


Fig.7-8

- Indoor power supply

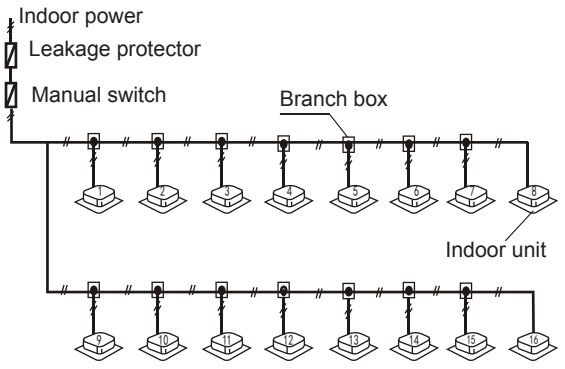


Fig.7-9

7.6 Electric parameter form of outdoor unit

Table.7-3

System	Outdoor Unit				Power Current			Compressor		OFM	
	Voltage	Hz	Min.	Max.	MCA	TOCA	MFA	MSC	RLA	KW	FLA
8HP	380~415	50	342	456	18.6	21	20	-	8.7	-	-
10HP	380~415	50	342	456	18.6	21	20	-	9.3	-	-
12HP	380~415	50	342	456	20.9	21	25	-	12.1	-	-
8HP	380~415	60	342	456	18.6	21	20	-	8.7	-	-
10HP	380~415	60	342	456	18.6	21	20	-	9.3	-	-
12HP	380~415	60	342	456	20.9	21	25	-	11.4	-	-

Notes:

1.The current value of combination unit is the total value of each basic model(refer to Table.7-3)

For example: 34HP=10HP+12HP×2 (50Hz)

Power current: MCA=18.6+20.9×2=60.4
TOCA=21+21×2=63

Compressor: RLA=9.3+12.1×2=33.5

2. RLA is based on the following conditions: indoor temp. 27°C DB/19°C WB, outdoor temp. 35°C DB.

3. TOCA means the total value of each OC set.

4. MSC means the Max. current when the compressor starts.

5. Voltage range units are suitable for use on electrical systems where voltage supplied to unit terminals is not below or above the listed range limits.

6. Maximum allowable voltage variation between phase is 2%.

7. Select the wire size based on the value of MCA.

8. MFA is used to select the circuit breaker and the ground fault circuit interrupter (earth circuit breaker).

Remark:
MCA: Min. Current Amps. (A)
MFA: Max. Fuse Amps. (A)
RLA: Rated Locked Amps. (A)
FLA: Full Load Amps. (A)
TOCA: Total Over-current Amps. (A)
MSC: Max. Starting Amps. (A)
OFM:Outdoor Fan Motor.
KW: Rated Motor Output (KW)

7.7 Control system and Installation

- The control line should be shielded wire. Using other wiring shall create signal interference.
- The shielded nets at the two sides of shielded wires are either grounded to the earth, or connected with each other and jointed to the sheet metal along to the earth.
- Control wire could not be bound together with refrigerant pipeline and power wire. When power wire and control wire is distributed in parallel form, keep gap between them above 300mm so as to preventing signal interference.
- Control wire could not form closed loop.
- Control wire has polarity, so be careful when connecting.

NOTE

The shield net should be grounded at the wiring terminal of main unit. The inlet and outlet wire net of indoor communication wire should be connected directly and could not be grounded, and form open circuit at the shield net of final indoor unit.

7.8 Signal wire of indoor/main units

- Signal wire of indoor/main unit adopts 3-core shielded wire (≥ 0.75mm^2) which has polarity, please connect it correctly.(see Fig.7-14)

7.9 Electric wiring of water pipelines

7-9-1 Water flow switch ON/OFF signal wiring

- Water flow switch should be wired during the installation. Each unit must be configured a water flow switch, and it can not operate without a water flow switch.
- The signal wire should apply 0.75mm^2 shielding wire,and connected to the XT2 terminal in the electric control box (see Fig.7-12).

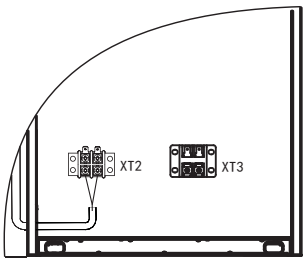


Fig.7-10 Water flow ON/OFF signal input

7-9-2 Water pump ON/OFF signal wiring

- Each unit has configured a dry contact terminal for central control of the water pump (see Fig.7-13),this terminal can not be connected to power terminal of the water pump directly, only should be connected to the control terminal of the water pump stater.
- When the water pump ON/OFF signal wire has been connected to strong current, it shoud be wired the signal wires along with other strong current wires; when it has been connected to week current, it shoud be wired the signal wires along with the week current wires.
- When the water pipeline has a single system, the water pump ON/OFF signal wire should be connected to the XT3 terminals in the main unit electric control box. When the water pipeline has several systems, the water pump ON/OFF signal should be controlled by the main unit centralized controller. The wiring of main unit centralized controller see the Fig.7-15.

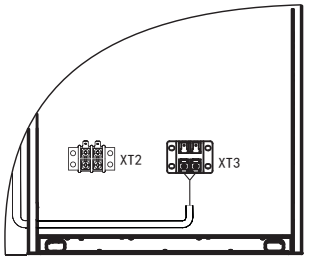
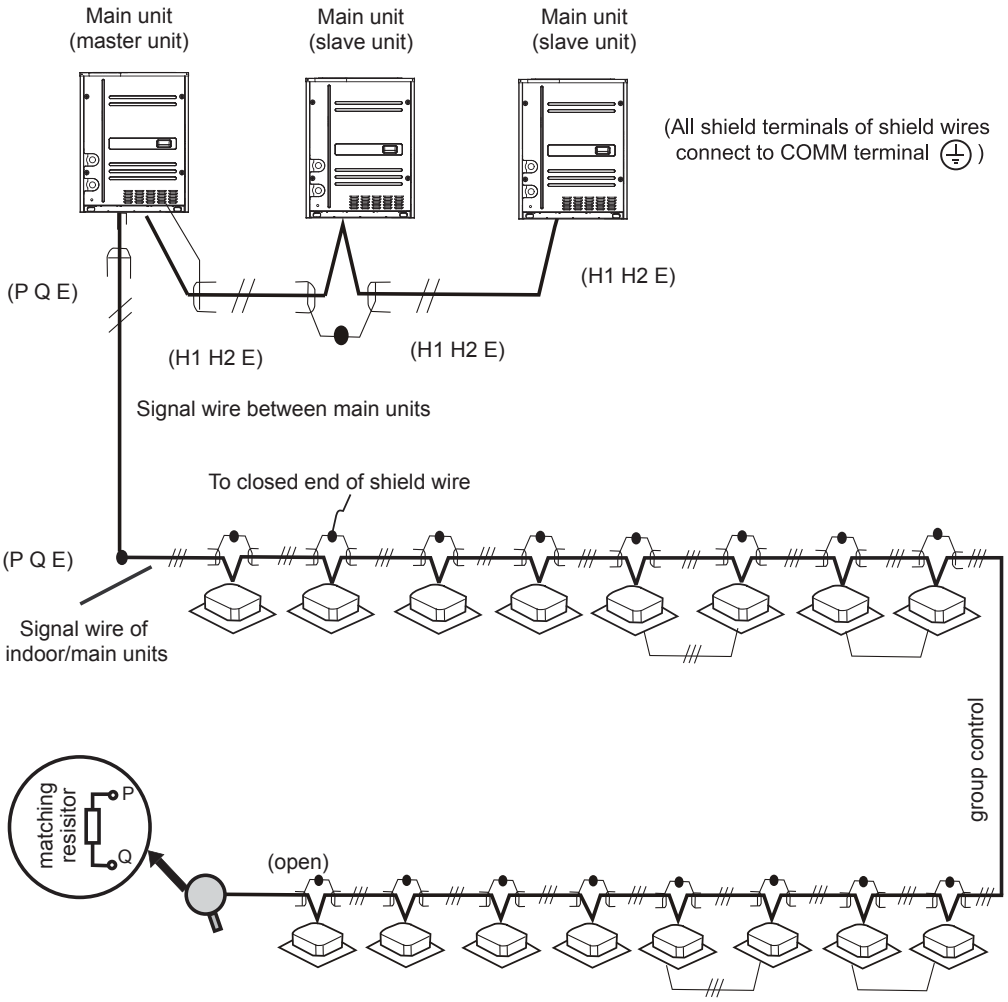


Fig.7-11 Water pump ON/OFF signal output



The indoor unit at the terminal of communication system should paraliel connect a impedance between port P and port Q.

Fig.7-12

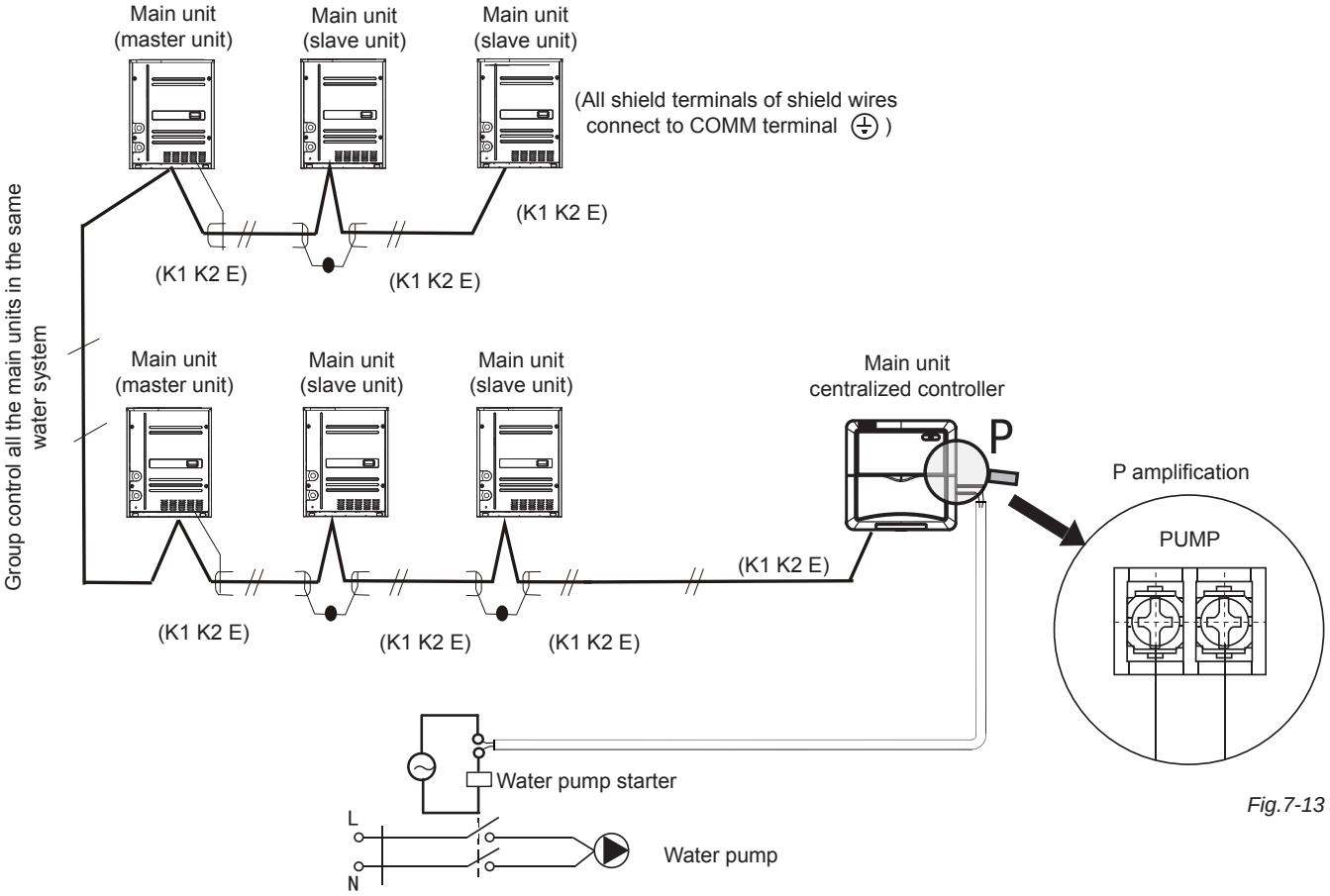


Fig.7-13

CAUTION

The signal wire of the main unit centralized controller should apply three-core shielding wire (larger or equal to 0. 75㎜^{2}), and has polarity. It should be correctly connected.

7.10 Example for power wire connection

7.10.1 A water circuit for single system wiring

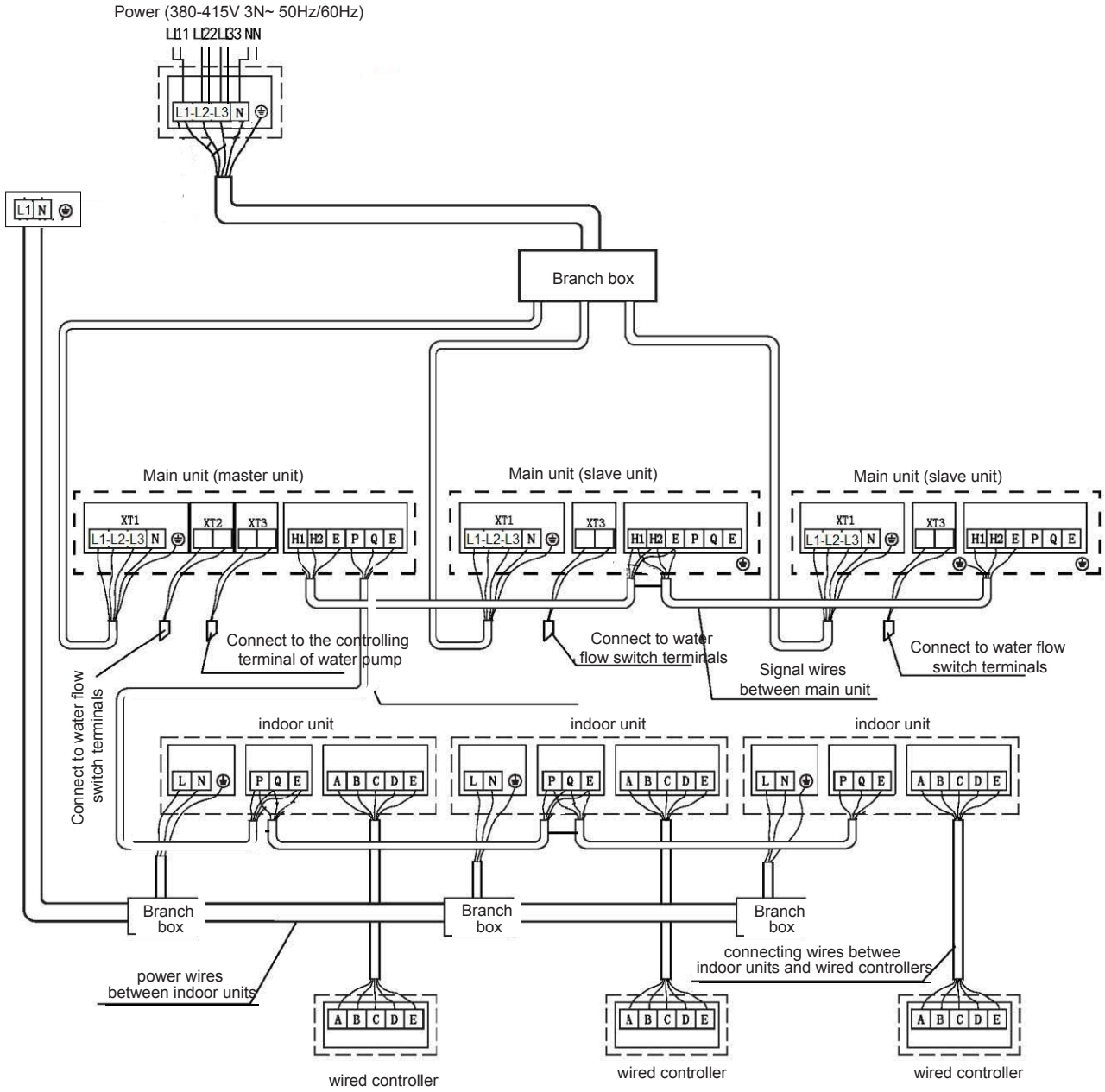


Fig.7-14

7.10.2 A water circuit for several systems wiring

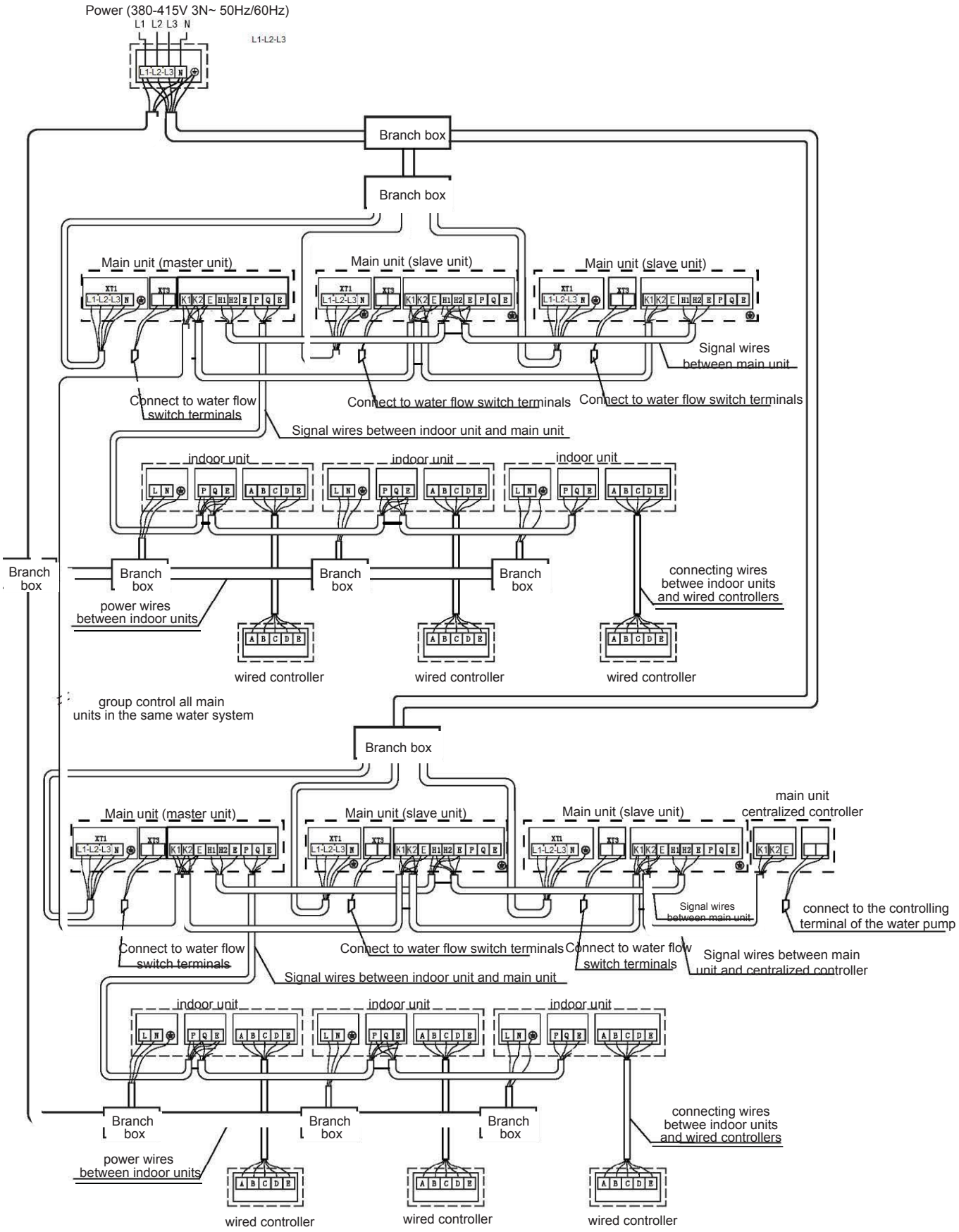


Fig.7-15

8. TRIAL RUN

8.1 Inspection and confirmation before commissioning

1) Check and confirm that refrigeration pipe line and communication wire with indoor and main unit have been connected to the same refrigeration system. Otherwise, operation troubles shall happen.

2) Power voltage is within ±10% of rated voltage.

3) Check and confirm that the power wire and control wire are correctly connected.

4) Before powering on, confirm there is no short circuit to each line.

5) Check whether all units have passed nitrogen pressure-keeping test for 24 hours with R410A: 40kg/cm^2 .

6) Confirm whether the system to debugging has been carried out vacuum drying and packed with refrigeration as required.

7) Make sure all the water pipelines are correct, including the installation directions of water filter and water flow switch.

8) Check whether the water filter has been blocked, and clean the filter screen. If it is seriously blocked, then it should be checked whether the water quality has meet the requirements.

9) Open the gate valve, make sure the double-pipe heat exchanger have been filled with circulating water, and open the water pump and air discharge valve, after make sure the air in the water pipelines and unit has been drain out and then close the air discharge valve.

10) Check whether the pressure meters in the water inlet and water return pips of the unit, thermometer, water flow switch etc. work normally, and make sure the water pipelines system operate normal, and the water flow is suitable.

8.2 Preparation before debugging

1) Calculating the additional refrigerant quantity for each set of unit according to the actual length of liquid pipe.

2) Keep required refrigerant ready.

3) Keep system plan, system piping diagram and control wiring diagram ready.

4) Record the setting address code on the system plan.

5) Turn on power switches main unit in advance, and keep connected for above 12 hours so that heater heating up refrigerant oil in compressor.

6) Turn on air pipe stop valve, liquid pipe stop valve, oil balance valve and air balance valve totally. If the above valves do not be turned on totally, the unit should be damaged.

7) Check whether the power phase sequence of main unit is correct.

8) All dial switch to indoor and main unit have been set according to the Technical Requirement of Product.

8.3 Fill the name of connected system

To clearly identify the connected systems between two or more indoor units and main unit, select names for every system and record them on the nameplate on the main electric control box cover.

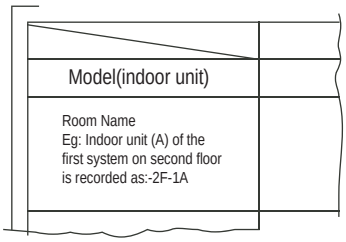


Fig.8-1

8.4 Important information for the used refrigerant

This product has the fluorinated gas, it is forbidden to release to air.
Refrigerant type: R410A,volume of GWP: 2088,
GWP=Global Warming Potential

Table.8-1

Model	Factory charge / kg	tonnes CO_2 equivalent
8,10,12HP	2.00	4.18

Attention:
Frequency of Refrigerant Leak Checks.

1) For equipment that contains fluorinated greenhouse gases in quantities of 5 tonnes of CO_2 equivalent or more,but of less than 50 tonnes of CO_2 equipment,at least every 12 months,or where a leakage detection system is installed, at least every 24 months.

2) For equipment that contains fluorinated greenhouse gases in quantities of 50 tonnes of CO_2 equivalent or more,but of less than 500 tonnes of CO_2 equipment,at least every six months, or where a leakage detection system is installed, at least every 12 months.

3) For equipment that contains fluorinated greenhouse gases in quantities of 500 tonnes of CO_2 equivalent or more,at least every three months ,or where a leakage detection system is installed, at least every six months.

4) Non-hermetically sealed equipment charged with fluorinated greenhouse gases shall only be sold to the end user where evidence is provide that the installation is to be carried out by an undertaking certified person.

5) Only certificated person is allowed to do installation, operation and maintenance.

8.5 Caution on refrigerant leakage

1) This air conditioner adopts R410A as refrigerant, which is safe and noncombustible.

2) The room for air conditioner should be big enough that refrigerant leakage can not reach the critical thickness. Besides this, you can take some action on time.

3) Critical thickness-----the max thickness of Freon without any harm to person. R410A critical thickness:0.3 [kg/m^3]

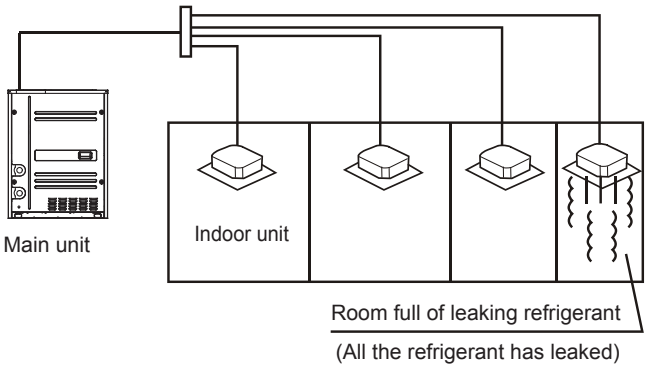


Fig.8-2

4) Calculate the critical thickness through following steps, and take necessary actions.

- Calculate the sum of the charge volume (A[kg]) Total refrigerant volume=refrigerant volume when delivered(nameplate)+superaddition
- Calculate the indoor cubage (B[m^3]) (as the minimum cubage)
- Calculate the refrigerant thickness.

$$\frac{A\ [kg]}{B\ [m^3]} \leq \text{Critical thickness: } 0.3\ [kg/m^3]$$

5) Countermeasure against overhigh thickness

- Install mechanical ventilator to reduce the refrigerant thickness under critical level. (ventilate regularly)
- Install leakage detector alarming device related to mechanical ventilator if you can not regularly ventilate.

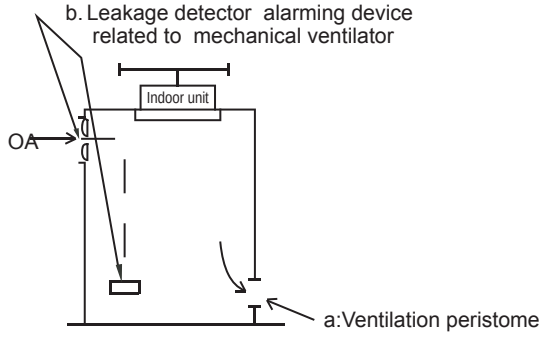


Fig.8-3

8.6 Turn over to customer

Be sure to deliver the Installation Manual of the indoor unit, and the main unit to the user.

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Owner’s manual

MD12U-012DW

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CONTENTS PAGE

1. IMPORTANT SAFETY INFORMATION

To prevent injury to the user or other people and property damage, the following instructions must be followed. Incorrect operation due to ignoring of instructions may cause harm or damage.

The safety precautions listed here are divided into two categories. In either case, important safety information is listed which must be read carefully.

WARNING

Failure to observe a warning may result in death. The appliance shall be installed in accordance with national wiring regulations.

CAUTION

Failure to observe a caution may result in injury or damage to the equipment.

WARNING

- **Ask your dealer for installation of the air conditioner.**
  Incomplete installation performed by yourself may result in a water leakage, electric shock, and fire.
- **Ask your dealer for improvement,repair,and maintenance.**
  Incomplete improvement, repair, and maintenance may result in a water leakage, electric shock, and fire.
- **In order to avoid electric shock, fire or injury, or if you detect any abnormality such as smell of fire, turn off the power supply and call your dealer for instructions.**
- **Never replace a fuse with that of wrong rated current or other wires when a fuse blows out.**
  Use of wire or copper wire may cause the unit to break down or cause a fire.
- **Do not insert fingers, rods or other objects into the air inlet or outlet.**
  When the fan is rotating at high speed, it will cause injury.
- **Never use a flammable spray such as hair spray, lacquers paint near the unit.**
  It may cause a fire.
- **The appliance shall be installed in accordance with national wiring regulations**
- **Never inspect or service the unit by yourself.**
  Ask a qualified service person to perform this work.
- **Do not dispose this product as unsorted municipal waste. Collection of such waste separately for special treatment is necessary.**
- **Do not dispose of electrical appliances as unsorted municipal waste, use separate collection facilities.**
  Contact you local government for information regarding the connection systems available.
- **If electrical appliances are disposed of in landfills or dumps, hazardous substances can leak into the groundeater and get into the food chain, damaging your health and well-being.**
- **Keep far away from high-frequency equipment.**
- **Keep away from the following places:**
  a place where it is full of ail gas; a place where salty air surrounding or near the coast (except for the models with corrosion-resistant function); a place where is caustic gas(the sulfide in hot spring). Location in the following places may cause malfunction or shorten the life span of the machine.
- **In the case of extremely strong wind, please prevent the air from flowing backwards into the Main unit.**
- **In the frequent thunderstruck place, lightningproof actions should be taken.**
- **To prevent refrigerant leak, contact your dealer.**
  When the system is installed and runs in a small room, it is required to keep the concentration of the refrigerant, if by any chance coming out, below the limit. Otherwise, oxygen in the room may be affected, resulting in a serious accident.
- **The refrigerant in the air conditioner is safe and normally does not leak.**
  If the refrigerant leaks in the room, contact with a fire of a burner, a heater or a cooker may result in a harmful gas.
- **Turn off any combustible heating devices, ventilate the room, and contact the dealer where you purchased the unit.**
  Do not use the air conditioner until a service person confirms that the portion where the refrigerant leaks is repaired.

CAUTION

- **The cooling&heating indoor unit is applicable for the cooling&heating and the cooling only Main unit;the heating capacity of the indoor unit will be effective only when the indoor unit connect to the cooling&heating Main unit.**
- **Do not use the air conditioner for other purposes.**
  In order to avoid any quality deterioration, do not use the unit for cooling precision instruments, food, plants, animals or works of art.

- **Before cleaning, be sure to stop the operation, turn the breaker off or pull out the supply cord.**
  Otherwise, an electric shock and injury may result.

- **In order to avoid electric shock or fire, make sure that an earth leak detector is installed.**

- **Be sure the air conditioner is grounded.**
  In order to avoid electric shock, make sure that the unit is grounded and that the earth wire is not connected to gas or water pipe, lightning conductor or telephone earth wire.

- **Do not operate the air conditioner with a wet hand.**
  An electric shock may happen.

- **Do not touch the heat exchanger fins.**
  These fins are sharp and could result in cutting injuries.

- **After a long use, check the unit stand and fitting for damage.**
  If damaged, the unit may fall and result in injury.

- **To avoid oxygen deficiency, ventilate the room sufficiently if equipment with burner is used together with the air conditioner.**

- **Arrange the drain hose to ensure smooth drainage.**
  Incomplete drainage may cause wetting of the building, furniture etc.

- **Never expose little children, plants or animals directly to the air flow.**
  Adverse influence to little children, animals and plants may result.

- **Notice to avoid places where operation noise may easily be spread away or be enhanced.**

- **Noise can be amplified by anything blocking the air outlet of Main unit.**

- **Choose a proper place that the noise and hot or cold wind blown out of the Main unit will not bring inconvenience to your neighbors and not affect the growth or animal or plant.**

- **Do not allow a child to mount on the Main unit or avoid placing any object on it.**
  Falling or tumbling may result in injury.

- **Do not operate the air conditioner when using a room fumigation - type insecticide.**
  Failure to observe could cause the chemicals to become deposited in the unit, which could endanger the health of those who are hypersensitive to chemicals.

- **Do not place appliances which produce open fire in places exposed to the air flow from the unit or under the indoor unit.**
  It may cause incomplete combuston or deformation of the unit due to the heat.

- **Do not install the air conditioner at any place where flammable gas may leak out.**
  If the gas leaks out and stays around the air conditioner, a fire may break out.

- **The appliance is not intended for use by young children or infirm persons withoutsupervision.**

- **Young children should be supervised to ensure that they do not play with the appliance**.

2. PARTS NAMES

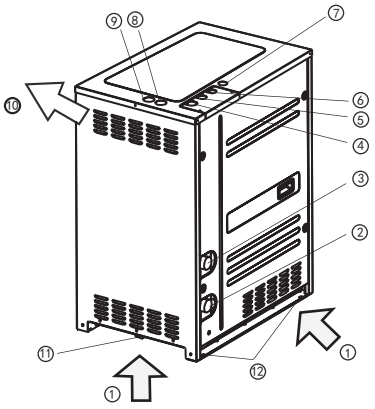

Fig.2-1

①	Air inlet (at the left, right, front and back sides)
②	Connecting port of water inlet pipe
③	Connecting port of water outlet pipe
④	Refrigerant gas pipe outlet
⑤	Refrigerant liquid pipe outlet
⑥	Refrigerant oil balancing pipe outlet (Use for parallel connection)
⑦	Inlet and outlet port of weak current wire
⑧	Inlet and outlet port of powerlines and ground wire
⑨	Inlet and outlet port of strong current wire
⑩	Air outlet (at the left, right, front and back sides)
⑪	Centralized drain port of main unit base (at the left and right sides)
⑫	Fixed foot

Explanations:

1. All the figures are for explanation only, the actual unit shall prevail.
2. The communication wires of indoor, main units and central controller, water flow switch ON/OFF signal wire and water pump controlling wire (if connected to a weak current) should connect to main unit electric control box from the inlet and outlet port of weak current wire; water pump controlling wire (if connected to a strong current) should connect to main unit electric control box from the inlet and outlet port of strong current wire.

NOTE

- All the pictures in this manual are for explanation purpose only, There may be slightly different from the air conditioner you purchased (depend on model). The actual shape shall prevail.

- To avoid danger, never put sticks or other objects into it.

- Please preheat the air conditioner for at least 12 hours before operation. Do not switchoff the power if you need to stop the unit for 24h or shorter time. (This is to heat the crank case heater to avoid the compulsive start of compressor.)

- Make sure the air inlet and outlet are not blocked, or it may degrade the performance of air conditioner or start up protector which will stop the unit from running.

3. OPERATION AND PERFORMANCE

■ **Cooling and heating operation of inverter central A/C**

- The indoor unit of this air conditioner can be controlled solely, and the indoor unit in the same system can not run cooling and heating at the same time.
- When the Cooling and Heating operation confront with each other, please determine the problem according to the settings of main unit Mode dial code S5.

  1. When set as the Heating Priority Mode, the indoor unit on Cooling Mode would stop and there will be Standby or No Priority displayed on the control panel. Those indoor units which are running on Heating Mode will run continuously.

  2. When the Cooling Priority Mode has been set, the indoor unit on Heating Mode would stop and there will be Standby or No Priority displayed on the control panel. Those indoor units which are running on Cooling Mode will run continuously;

  3. When the Priority Mode has been set, the first indoor unit will work in Heating Mode that is Heating Priority, please refer to the ITEM 1 for the control logic. If the first indoor unit is work in Cooling Mode, that is the Cooling Priority Mode, please refer to the ITEM 2 for the control logic;

  4. In terms of the settings only respond the Heating Mode, the indoor unit will run in Heating Mode normally, if unit be run in the Cooling Mode or air Supply Mode, the indoor unit will display Mode Conflicting;

  5. In terms of the settings only respond the Cooling Mode, the indoor unit will run in Cooling Mode or air supply mode normally, if unit be run in the Heating Mode, the indoor unit will display Mode Conflicting.

■ **Features of heating operation**

- Warm air will not be blown out immediately at the beginning of the heating operation, after 3~5minutes (depends on the indoor and outdoor temperature), until the indoor heat exchanger become hot, then blows out warm air.
- During Fan operation, if other indoor Units are running on heating mode, the fan may stop in order to prevent sending heat wind.

■ **Operation conditions**

For good performance, please operate the unit under the conditions as follow.

Table.3-1

Working condition	Cooling	Heating
Main unit ambient temp.	0˚C～40˚C	
Main unit ambient humidity	Below 80%	
Indoor temperature	17˚C～32˚C	15˚C～30˚C
Main unit water inlet temp.	7˚C～45˚C	
Main unit water inlet flow	8HP:2.7～8.1m³/h ; 10HP:3～9m³/h; 12HP:3.6～10.8m³/h	

NOTE

Protective device may start if running the unit outside the above condition, which will prevent the unit from operation.

■ **Protection Device**

■ This protection device will stop the unit automatically in case the air conditioner is on forced running mode. When protection device is activated, running indicator light is lightened and query light flashes.Protection device may start under the following circumstances:

■ cooling operation:

- The air inlet or air outlet of main unit is blocked.
- Strong wind is continuously blowing to the air outlet of the main unit.

■ heating operation:

- Too much dust and rubbish adhere to the dust filter in the indoor unit

■ **Power cut**

- If power is cut during operation, stop all the operation immediately.
- Power on again. The operation indicator on the wire controller flashes.
- Push the ON/OFF button again if you want to restart the unit.

■ **Mishanding in operation**

In case of mishandling caused by lighting or mobile wireless, please switch off the manual power off the manual power. Push ON/OFF again when restarting.

■ **Heating capacity**

- The heating process is :absorb heat from outdoor, while expel heat to indoor by hot pump. Once the outdoor temperature drop down, heating capacity is degraded correspondingly.
- It is command to equip with other warming facility, when outdoor temperature is low.
- It is better to equip with additional purchase indoor auxiliary heating device in paramos area where is in particularly low outdoor temperature.(See Indoor Unit Operation Manual for detail information)

NOTE

Please switch off the power when protection device starts. Do not restart until the problems are solved.

4. TROUBLES AND CAUSES

CAUTION

■ In case the following malfunctions, please switch off the power and contact the local dealer.Incorrect ON/OFF operation

■ Fuse or leakage protector is frequently broken.

■ Foreign matter or water falls in the unit.

Please read the following illustration(before apply for servicing)

Table.4-1

	Troubles	Causes
Not malfunction	**Main unit** • White mist or water • The sound of “hiss”	• FAN function stop automatically to defrost. It is the start and stop sound of the solenoid valve • At the beginning and the end of the running process, sounds like water flow in valve occurs, which will be amplified in 3~15 minutes, this is caused by dehumidifying process of refrigerant current. • Slight hiss is caused by heat exchanger as temperature changes.
	Indoor unit • Bad odor • Operation lamp flashes • No priority of Standby on panel is lightened	• Pieces of the wall, carpet, furniture, cloth, cigarette, cosmetics are adhere to the unit. • Switch on the power after the power cut. • Other equipment preheating process stops cooling operation. • The operator sets an opposite mode against the fixed cooling and heating mode. • FAN mode stops to avoid cold air blown out. • The master unit with slave units for different purposes, when abnormal accident happen,the director will illustrate.
Check it again	• Start or stop operation automatically	• Wrong operation on timer.
	• No operation	• Whether the power is cut. • Whether manual power switch is turned on. • Whether the fuse is melted. • Whether the protection device works. (operation lamp is lightened) • Whether it is the time set.
	• Insufficient cooling • Insufficient heating	• Whether the inlet and outlet of Main unit is blocked. • Whether the door and window are open. • Whether the air filter is blocked by dust. • Whether the air deflector is in the right place • Whether fan speed is slight or whether it is in FAN mode. • Whether the temperature is set properly. • Whether setting COOL and HEAT simultaneously. (Indicator light Standby or No Priority on panel is lightened)

5. MALFUNCTION

Malfunction display of main nuit's DSP1

Table.5-1

No.	Error code	Error or protection type	Note
1	E0	Main unit COMM. error	Only display in slave unit
2	E1	Phase protection	
3	E2	COMM.error with indoor nuit	
4	E8	Main unit address error	
5	E9	Power protection	
6	H0	COMM. error between DSP and main chip	
7	H1	COMM. error between 0537 and main chip	
8	H2	QTY.of main unit decrease	Only display in master unit
9	H3	QTY.of main unit increase	Only display in master unit
10	H4	3 times of P6 protection in 60 minutes	
11	H5	3 times of P2 protection in 60 minutes	
12	H6	3 times of P4 protection in 100 minutes	
13	H7	QTY.of indoor unit decrease or increase	
14	H8	High_pressure sensor error	
15	P0	Inverter compressor top Temp.protection	
16	P1	High pressure protection	
17	P2	Low pressure protection	
18	P3	Compressor current protection	
19	P4	High discharge Temp. Protection	
20	P6	Inverter module protection	
21	L0	DC compressor module error	
22	L1	Low voltage protection of DC bus	
23	L2	High voltage protection of DC bus	
24	L3	Reserve	
25	L4	MCE error / synchronization / closed loop	
26	L5	Zero speed protection	
27	L6	Reserve	
28	L7	Phase error protection	
29	L8	The different value of previous moment minus the subsequent moment >15Hz protection	
30	L9	The setting speed minus the actual speed>15 protection	
31	C0	TSJ (water inlet temp. sensor) error	
32	C1	TSC1 (water outlet temp.sensor 1) error	
33	C2	TSC2 (water outlet temp.sensor 2) error	
34	C3	Low_pressure sensor error	
35	C4	High or low water outlet temp.	
36	C5	High or low water inlet temp.	
37	C6	Low voltage protection	
38	C7	High temp.of inverter module	
39	C8	Water flow switch open fault	
40	F0	3 times of C4 protection in 60 minutes	

If the problem still existing, please contact the sales distributor or the service center, tell us your model No. and the detail of the error.

6. CONSTRAINT COOLING AND QUERY

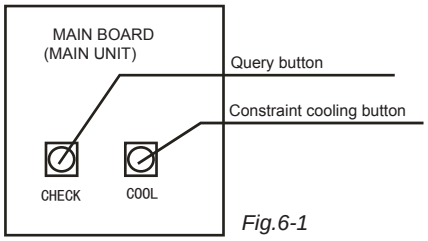

Fig.6-1

■ **Constraint Cooling**

Once pressing the constraint cooling button(see the chart on the right), all the indoor unit will be on forced cooling mode and the wind speed is HIGH.

■ **Query**

Table 6-1

Normal display	Display content	Note
1	Main unit address	0, 1, 2, 3
2	Main unit capacity	8, 10, 12
3	Modular main unit qty.	Available for main unit
4	Total capacity of main unit	Capacity requirement
5	Total capacity requirement of indoor unit	Available for main unit
6	Total corrected capacity requirement of main unit	Available for main unit
7	Operation mode	0, 2, 3, 4
8	The actual operation capacity of this main unit	Capacity requirement
9	Water flow switch state	0-Open,1-Close
10	T2B/T2 average temp.	Actual value
11	T5 inverter module temp.	Actual value
12	T7 discharge temp. of inverter compressor	Actual value
13	TSJ water inlet temp.	Actual value
14	TSC1 water outlet temp. of upper pipe	Actual value
15	TSC2 water outlet temp. of lower pipe	Actual value
16	Current 1 of inverter compressor	Actual value
17	Current 2 of inverter compressor	Actual value
18	High pressure	Display value ×0.1Mpa
19	Low pressure	Display value ×0.01Mpa
20	Opening angle of EXV A	Display value ×8
21	Opening angle of EXV B	Display value ×8
22	Priority mode	0,1,2,3,4
23	Qty. of the communicating indoor units	Actual value
24	Qty.of installed indoor units	Actual value
25	The last time malfunction or the protective code	Without protecion or error display code 00
26	— —	Check end

The display contents as followings:

1) Normal display :When in standby, it displays the qty.of indoor units that can communicate with the main unit . When it is operating, it will display the rotation frequency of the compressor.
2) Operation mode: 0-OFF/FAN , 2-Cooling , 3-Heating , 4-Constraint cooling.
3) Water flow switch state: 0-Open, 1-Close.
4) EXV opening angle: Pulse count=display value×8.
5) Priority mode: 0-heating priority mode, 1-cooling priority mode , 2-open the priority mode first, 3-respond the heating mode only , 4-respond the cooling mode only.
6) ENC1:Main unit address setting switch, ENC2:Main unit capacity setting switch, ENC3:Main unit network address setting switch .S10,ENC4:Combination setting the qty. of installed indoor units.

SW1:Query button ,SW2:constraint cooling

7. AFTERSALE SERVICE

If the air conditioner was operated abnormally, please plug off the power supply firstly, and contact with After-sales Center or Special Distributor. For detail please refer to the attached accessory Consumer Service Instruction.

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