Hot water converter of GMV5 Home Installation and Operation Manual

Owner's Manual

Models:

NRQD16G/A-S

- Thank you for choosing Air Conditioners, please read this owner's manual carefully before operation and retain it for future reference.If you have lost the Owner's Manual, please contact the local agent or visit www.gree.com or send email to global@gree.com.cn for electronic version.
- GREE reserves the right to interpret this manual which will be subject to any change due to product improvement without further notice.
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Preface

Thank you for choosing Gree products.

This is GMV5 HOME unit, which includes outdoor unit, hot water converter, water tank, multi VRF indoor unit and its related fittings. This unit possesses the following functions: cooling, heating, water heating, water heating under cooling mode, water heating under heating mode.

This system has acquired the inventive patents of several countries.

In order for better and safely use this product, please read this instruction manual carefully before installation and using. Pay attention to the notices for using and maintenance, and keep this manual well for further reference.

GMV5 HOME is a kind of professional home appliance; incorrect installation may cause damage or danger. Therefore, corresponding installation and maintenance should be done by professional personnel. Please contact with the local installation and maintenance station of our company when installing the unit, and conduct installation according to instruction. Right of interpretation of this instruction manual belongs to Gree Electric Appliances, Inc. of Zhuhai, there will be no further notices for any modifications.

If the product is not used in winter for a short period, please make sure that the unit is energized for 24 hours a day. If it is not used for long in winter, please drain the water inside the unit, the water tank and pipeline to prevent the system from being frozen; after draining the water, cut off the power of hot water converter. If it is not convenient for you to drain the water, please directly contact with our local dealers or service station, we will send professional personnel to provide checkup, drainage, debugging and maintenance services for value.

Contents

1 Introduction to Users

（1）Before conducting any maintenance and repair for the converter, please cut off the power first; the converter is not allowed to be adjusted or maintained by nonprofessional personnel.

（2）Please make sure that the power socket is in conformity with the national standard and be reliably grounded. It is not allowed to use the converter without reliable grounding.

（3）Make sure that the water tank has been filled with water before energizing the unit, otherwise the unit may be damaged.

（4）Hot water of over 50℃may cause scald, please make sure that the hot water is mixed with cold water before using the water. When the ambient temperature is below 0℃, and no people in the room for long, and the converter is de-energized, please drain the water tank.

（5）After draining the water inside the water tank, please cut off the power of hot water converter.

（6）Hot water inside the water tank cannot be drunk. Because long-term using of water tank may generate water scale, and water quality is bad. So please use clean water to wash the food again after using the water inside the water tank to wash the food.

（7）The default setting water temperature of converter is 50℃. If water temperature is too high, the COP of unit will decrease accordingly.

（8）The most energy-saving mode is water heating under cooling mode; the unit will automatically estimate to exert the heat recovery effect to the most.

（9）This unit has fast water heating function.

2 Safety Notices

Please read this manual carefully before using the unit, and operate according to the instructions.

Please especially pay attention to the meanings of the following signs:

 Warning: it means improper operation may cause death or severe damage to people.

 Caution: it means improper operation may cause injury to people or damage to property.

 Warning!

①Please do not place gasoline or related inflammables near the converter, otherwise it may cause fire or accident.

②The water temperature value displayed in the display screen of wired controller for water tank is the water temperature near the detecting probe, generally water outlet temperature of water tank is higher than the displayed temperature in the display screen. Please add and mix with cold water before using the water, and then adjust the needed water temperature to avoid scald.

③Power switch of converter should be installed in dry place; do not operate the power switch with wet hands, otherwise it may cause electric shock or damage.

 Caution!

①If the converter is faulted, it should be repaired only by professional aftersales personnel; not professional person should not remove or maintain the converter.

②When a child taking shower, an adult must instruct aside; do not allow a child to operate the converter.

3 Product Features

（1） Energy-saving and Eco-friendly

Heat the water with waste heat from the operation of air conditioner and affluent heat source in the air, the COP can be up to 7.0. In water heating under cooling mode, the heat recovery can be optimized and controlled, which is equal to heating the water for free.

（2）Safe and Reliable

This series of unit adopts hot water converter, so that the heat can be transferred from outdoor unit to the water tank with internal coil; the inner pot and outer pot of water tank with internal coil are thermal insulating design for safe operation. Moreover, the unit adopts waterway-free design for better frost resistance, less loss in hot water pipeline, and lower energy consumption. In this way can avoid hidden danger and ensure safety of users.

（3）Convenient to use

Water heating temperature can be set within 35℃～55℃. The hot water can be supplied to washroom, kitchen, and other places at the same time.

（4）Convenient to operate

User can select standard water heating mode, nighttime operating mode, or advanced preset mode to set the water temperature at will, and turn on or turn off the unit according to water temperature and water using situations, so as to ensure instant heating and instant use of hot water in 24 hours. Furthermore, user can set to operate the unit by avoiding the peak time for electricity using, so as to reduce electricity charge and tripping operation phenomenon.

（5）Convenient to install

The unit adopts water tank with external coil, the hot water is supplied by the water pressure via tap water network. There is no need to add water pump or related fittings, therefore installation procedures are simplified.

4 Structure and Performance Parameter of Unit

4.1 Internal Structure of Hot Water Converter

Hot water converter mainly consists of electric box sub-assy, magnet valve sub-assy, electric expansion valve sub-assy, electric controller, etc., and the internal structure is shown as below.

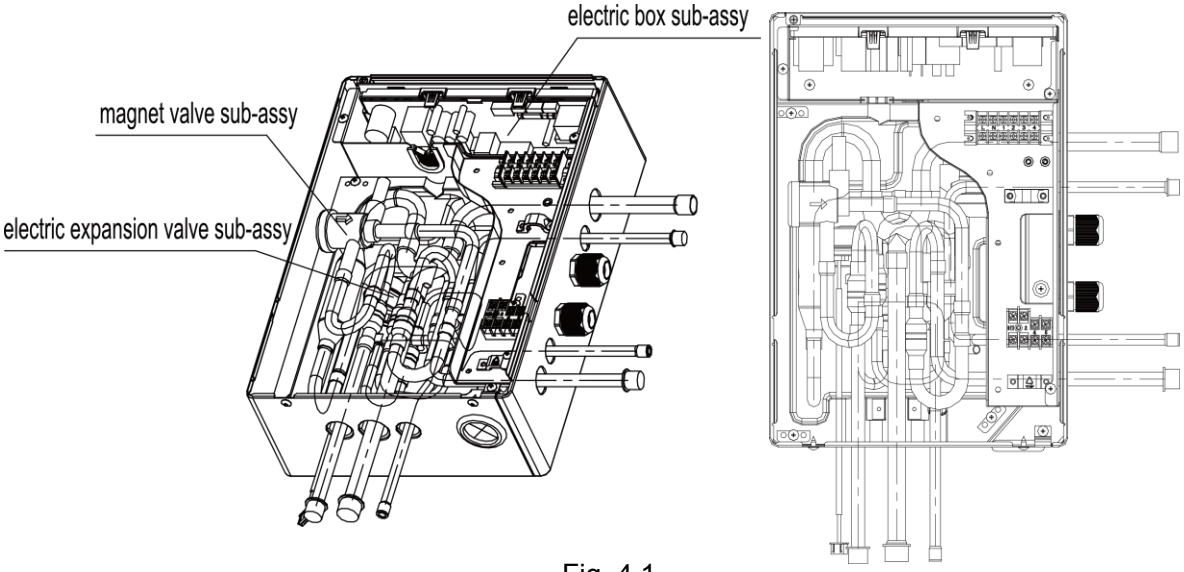


Fig. 4.1

4.2 Introduction to Outline Dimension and Appearance of Hot Water Converter

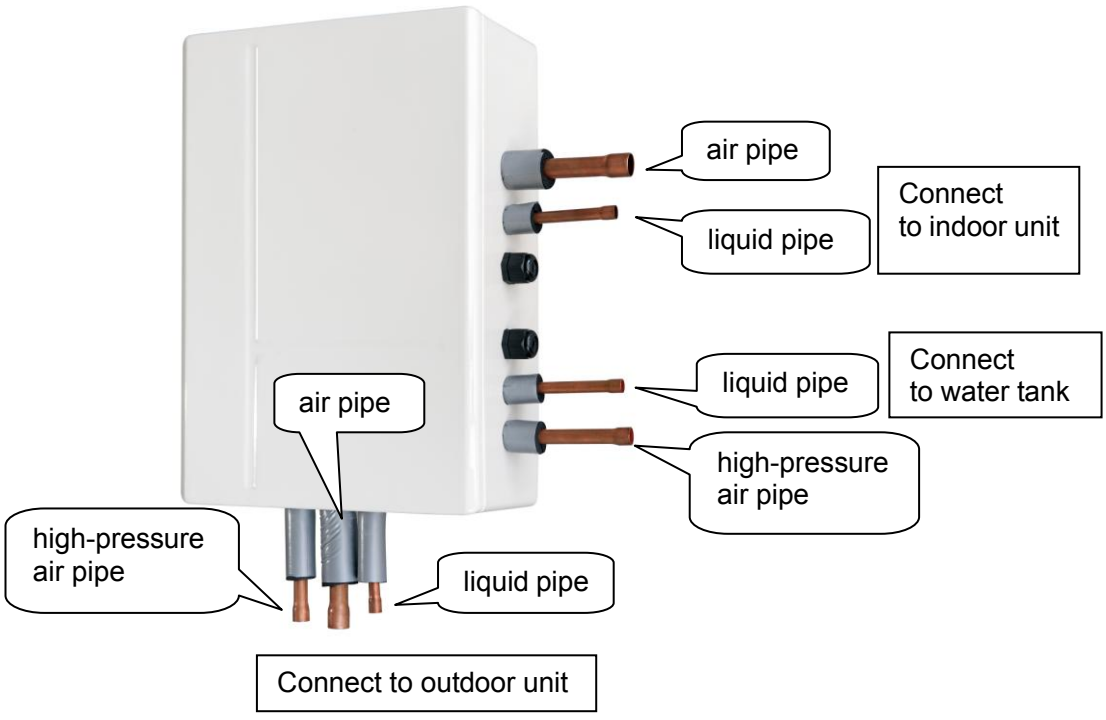


Fig. 4.2

4.3 Model Selection for ODU, Hot Water Converter, Water Tank

Type of ODU	ODU Model	Hot Water Converter	Water Tank Model	Remarks
Side discharge ODU	GMV-S120W/A-S GMV-S140W/A-S GMV-S160W/A-S	NRZ16G/A-S	SXD200LCJW/C1-K	Air conditioner + hot water

4.4 Model and Specification of Pressure Bearing Water Tank

Water Tank Model	Volume	Dimension (external diameter×height)	Power of auxiliary heating	Cooling water inlet tube	Hot water outlet tube
	L	mm	W	mm	mm
SXD200LCJW/C1-K	200	Φ462×1919	1500	G1/2	G1/2

5 Installation of Unit

5.1 Installation of Product

5.1.1 Pipeline Connection for Hot Water System

Preparation of pipeline: cooling water inlet tube and hot water outlet tube for water tank must adopt hot water tube. It is recommended to use the PPR tube with nominal external diameter of G1/2, and should adopt S2.5 (3.4mm wall thickness) series.

Installation for inlet and outlet tube of water tank: inlet water tube must be installed with check valve (note the installing direction of check valve, the "→" arrow directs to the heat insulating water tank), filter, cut-off valve, and the installing order must be the same as the installing sketch map of unit. At least one check valve should be installed in the water outlet tube.

Installation for blow-off pipe in bottom of water tank: lead the drain outlet with PPR tube to the floor drain, one check valve must be installed in the blow-off pipe and it should be installed in the position that is convenience for operation.

After all the pipelines are well connected, conduct leak detection first (for specific leak detection operation, please refer to debugging part of the unit). After confirming there is no leakage, conduct thermal insulation for all the water pipeline system, especially for the joints such as valves and pipe joints. It is recommended to use the thermal insulating cotton with thickness not less than 15mm. After covering the cotton, use the tieline to truss the water pipe, water temperature sensor, and electric wire.

5.1.2 Pipeline Connection for Refrigerant System

The pipeline for hot water converter to connect to indoor unit has been sealed by welding before leaving the factory. The copper tube for refrigerant of indoor unit is led out from hot water converter; the sealed tube of indoor unit should be unsoldered. Sketch map for installation is as below. Conduct thermal insulation for the refrigerant copper tube, and thickness of thermal insulating material should not be less than 8mm. Make sure that the refrigerant copper tube is firmly sealed and connected without leakage.

Size of the air pipe and liquid pipe for hot water converter used for connecting to water tank isφ12.7/φ9.5; size of the air pipe and liquid pipe for water tank isφ9.5/φ6.4. When hot water converter connects to water tank, it requires connecting tube with size ofφ9.5 toφ12.7, andφ6.4 toφ9.5 (hot water converter has been equipped with connecting tube, the connecting tube should be installed in water tank side).

Sketch map for installation of connection of side discharge outdoor unit, hot water converter and water tank:

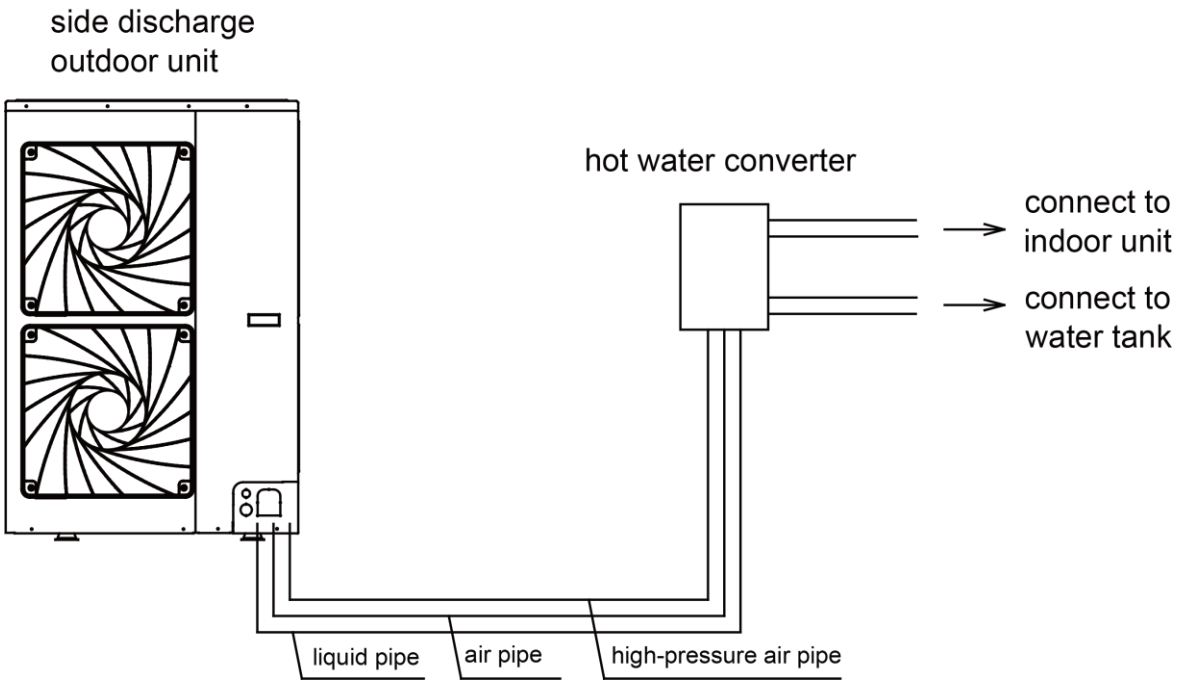


Fig.5.1

Notes:

① The hot water converter is equipped with upper and lower temperature sensor; they are connected in the air, the upper temperature sensor corresponds to red terminal, the lower temperature sensor corresponds to white terminal.

② Lead the upper water temperature sensor from water tank sensor outlet 1 to the upper water temperature sensor terminal for hot water converter.

③ Lead the lower water temperature sensor from water tank sensor outlet 2 to the lower water temperature sensor terminal for hot water converter.

④ Distance between hot water converter and water tank should not be over 10 meters.

Notes:

Horizontal distance between hot water converter and thermal insulating water tank should not be over 10 meters, and vertical fall should not be over 3 meters. It is recommended to install the thermal insulating water tank in lower position, and hot water converter in the upper position, or install them in the same level.

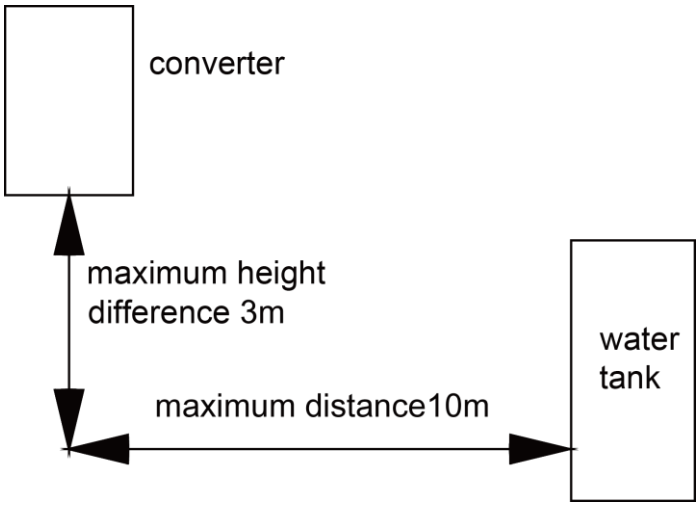


Fig. 5.2

Notes:

① Prepare materials according to the above dimension and specification of terminals. If the cut off valve is installed outdoors, it is recommended to use PPR pipe to avoid freezing.

② Install the water pipelines only after well fixing the hot water converter. During connecting the pips, prevent dust or other sundries from entering into the pipeline system.

③ Hot water is supplied by thermal insulating pressure bearing water tank through the pressure of tap water, thus hot water can be acquired only there is tap water.

④ Keep the cut-off valve in cooling water inlet of water tank open when using the unit.

⑤ When user won't use the unit for a long time, the unit should be de-energized and the water inside water tank should be drained to avoid freeze of unit in cold weather.

5.1.3 Requirements for Refrigerant Connecting Pipe between ODU and Hot Water Converter

Outdoor unit and hot water converter are connected via refrigerant pipe

Refrigerant pipe	Diameter (mm)	Length≤d(m)	Connecting method
Air pipe	15.9	10	Horn mouth
Liquid pipe	9.5	10	Horn mouth
High-pressure air pipe	12.7	10	Horn mouth

5.1.4 Specification for Interface of Water Tank

Hot water converter and water tank are connected via copper tube.

Specification of Interface			
Model	Name	Thread of Interface	Remarks
Hot water converter	High pressure air pipe	12.7mm	Connected via copper tube with different diameters
	Liquid pipe	9.5mm	
Water tank	High pressure air pipe	9.5mm	
	Liquid pipe	6.4mm	
	Cooling water inlet of water tank	G1/2	
	Hot water inlet of water tank	G1/2	
	Drain outlet of water tank	G1/2	

Notes:

①Conduct thermal insulation for refrigerant copper tube; in order to ensure the using effect, thickness of thermal insulating material should not be less than 8mm.

②Make sure that the refrigerant copper tube is sealed up without leakage.

5.1.5 Installation Requirements for Water System

（1）Connect cooling water inlet of pressure bearing water tank to tap water pipe, connect hot water outlet to terminal water using outlet.

（2）Tap water inlet should connect to one-way valve and filter.

（3）For easy maintenance, water inlet and water outlet should be installed with manual cut-off valve.

（4）Install air release valve in the highest point of water pipe.

5.1.6 Installation Method of Hot Water Converter

Wall-mounted installation:

（1） Install wall-mounted board

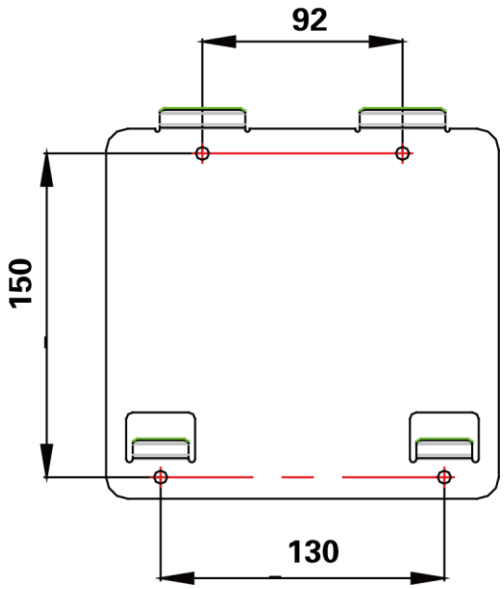


Fig. 5.3

Notes:

①Use line aligning method or leveling instrument to find the level position;

②Use screws to fix the wall-mounted board on the wall after being processed (such as be embedded with plastic particles);

③After installing the board, check if it is firmly installed.

（2）Hang the hot water converter on the wall-mounted board

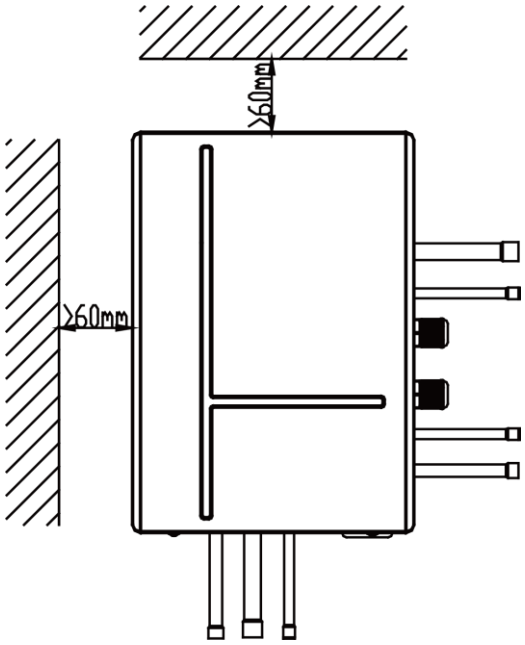


Fig.5.4

Notes: After installation, distance from upper side of hot water converter to the ceiling or related obstacles should be over 60mm, and distance from left side of hot water converter to the left wall or related obstacles should be over 60mm.

5.1.7 Install Protection for Hot Water Converter

Installing pipeline welding protection for hot water converter is to use magnet to fix the baffle on the hot water converter to separate the welding pipe and the wall, so as to avoid burning hot water converter and the wall. Baffle and magnet belongs to fitting materials of hot water converter. Pipeline welding protection is as below:

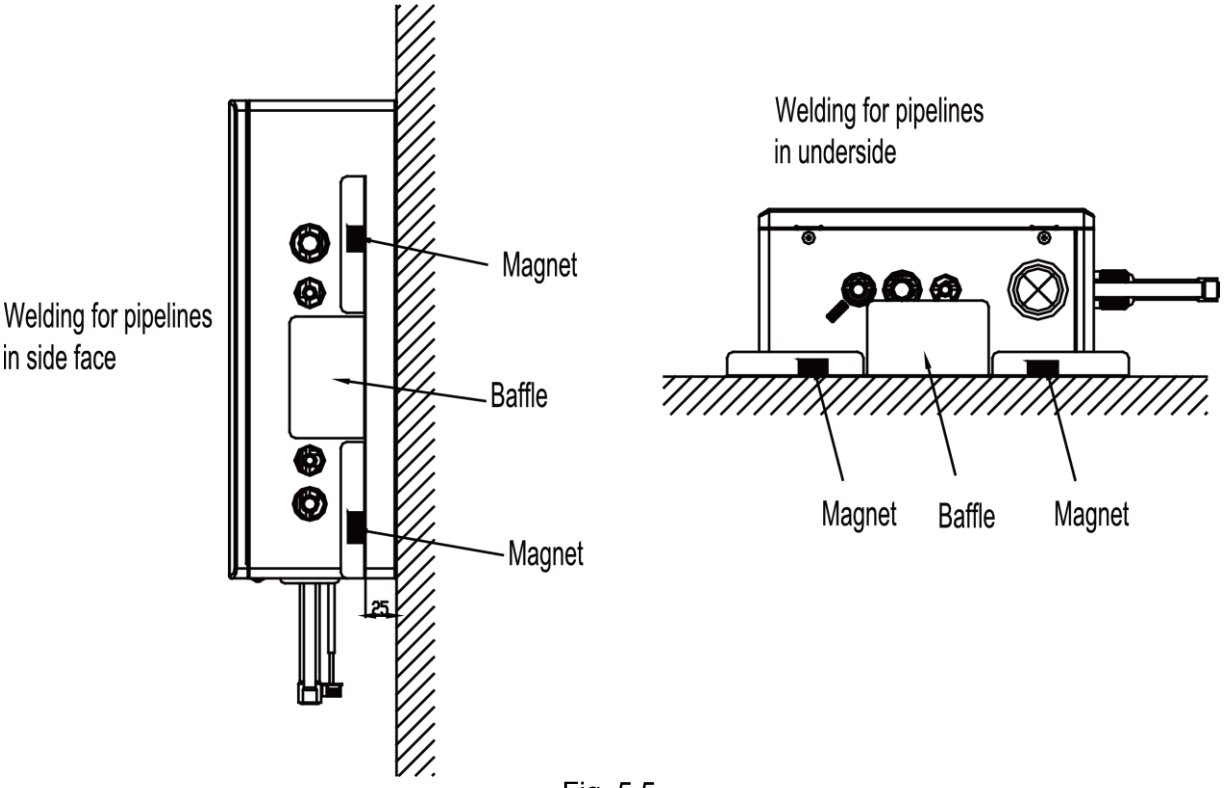


Fig. 5.5

Notes:

①Before the welding, use wet cloth to wrap the thermal insulating bushing;

②Put the baffle between the pipeline and the wall, use two magnets to fix on the case. When welding pipelines in the side face, the baffle should ward off the cable cross loop to prevent the fire from burning the wall and the cable cross loop during welding.

5.1.8 Install Water Storage Tank

（1）Thermal insulating water tank should be installed within the range of 10 meters horizontal distance and 3 meters vertical fall to the hot water converter. The water tank can be installed outdoors with the converter, such as balcony, roof, ground, or indoors.

（2）Vertical thermal insulating water tank must be placed vertically with the feet grounded; it is not allowed to hang in the air. The place for installation must be firm enough, and use screw and bolt to fix the tank on the wall, for details please see below. Take the bearing capacity of installing position into consideration when installing the water tank.

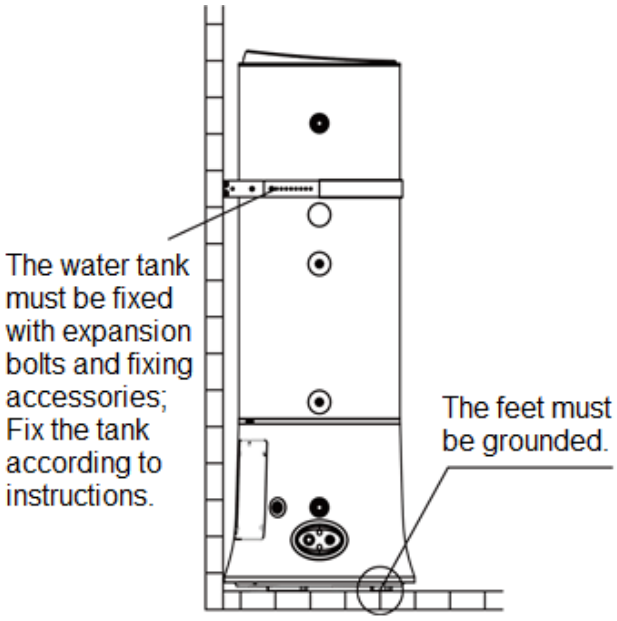


Fig. 5.6

（3）There should be tap water pipe, hot water interface and floor drain around the thermal insulating water tank for easily adding water, supplying water and draining water.

（4）Connection of inlet and outlet water pipelines: connect the safety check valve (note that the arrow “→” points at the thermal insulating water tank) to water inlet of water tank with PPR pipe, and seal with raw material belt; connect another end of safety check valve to water adding end of tap water. Connect the hot water pipe to water outlet of thermal insulating water tank with PPR pipe.

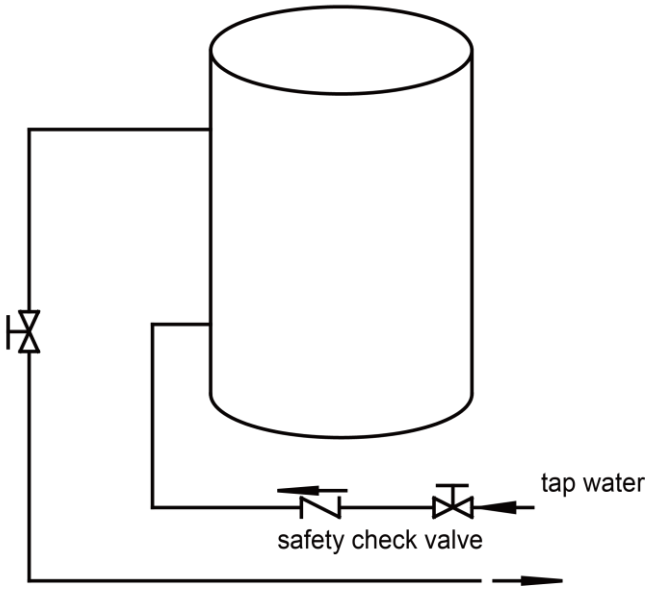


Fig. 5.7

Notes: In order to ensure water using safety, water inlet and outlet of thermal insulating water tank must adopt insulating pipeline (such as PPR plastic pipe); make sure that each section of pipe should not be less than the following length: L≥70×R2, L is the pipe length (Unit: cm), R is inside radius of pipe (Unit: cm). Conduct thermal insulating measures; it is not allowed to use metal pipe. In the first time using, make sure that the thermal insulating water tank has been filled with water before energizing the unit; the thermal insulating water tank should not be operated without water.

5.1.9 Electric Wire Connection Requirement

（1）Layout of Electric Wire

1) The GMV5 Home belongs to I class home appliance, please take reliable grounded measures. Grounded measure must be connected to special grounded device, and should be operated by professional personnel.
2) Creepage protection switch and air switch with enough capacity must be installed in the circuit.
3) The power source must meet the specified specification of power source or special circuit for air conditioner.
4) Wire diameter of power cord must be large enough; please refer to the specification in the following chart.
5) Install according to national layout rules.
6) Please do not forcibly draw the power cord.

Model	Type of Power Source	Minimum Sectional Area of Power Cord (mm^2)			
		Live Wire	Zero Line	Ground Wire	Capacity of Air Switch (A)
NRZ16G/A-S	220V~50Hz	1	1	1	10

Notes:

①Power cord of unit must be copper core cable, and working temperature should not be over its specified value.

②If the length of power cord is over 15 meters, please increase the sectional area of power cord accordingly to avoid overload.

③Specification of power cord means the specification selected when BV single core wire (2~4 pieces) penetrating plastic tube under the ambient temperature of 40℃. Operate the air switch when ambient temperature is 40℃ and the air switch is type “D”.

④If the actual installation condition is changed, please consider to reduce the capacity of power cord and switch provided by the manufacturer.

（2）Electric Wiring and Connection

1) Twist off the screw on the wiring box cover of the hot water converter, and then open the wiring box cover.
2) Connect one end of auxiliary electric heating power cord equipped on the water tank to wiring board 1, connect black end to 1, blue end to 2 and yellow-green end to the ground. The control output terminals of back water pump are terminal 3 and terminal 4 of power wiring board. Connect the coil of control contactor of water pump to this position.
3) Smear some heat-conducting silica gel on the water temperature sensor led out from the hot water converter. Insert the upper water temperature sensor into the upper temperature-sensing outlet 1 of water tank; insert the lower water temperature sensor into the upper temperature-sensing outlet 2 of water tank.
4) Fix the heavy-current wire with wire-fixing clamp and then reinstall the wiring box cover.
5) Install and fix the wired controller, and then connect the wired controller with the communication wire led from the hot water converter.
6) Please note that the heavy current and weak current should be separated.

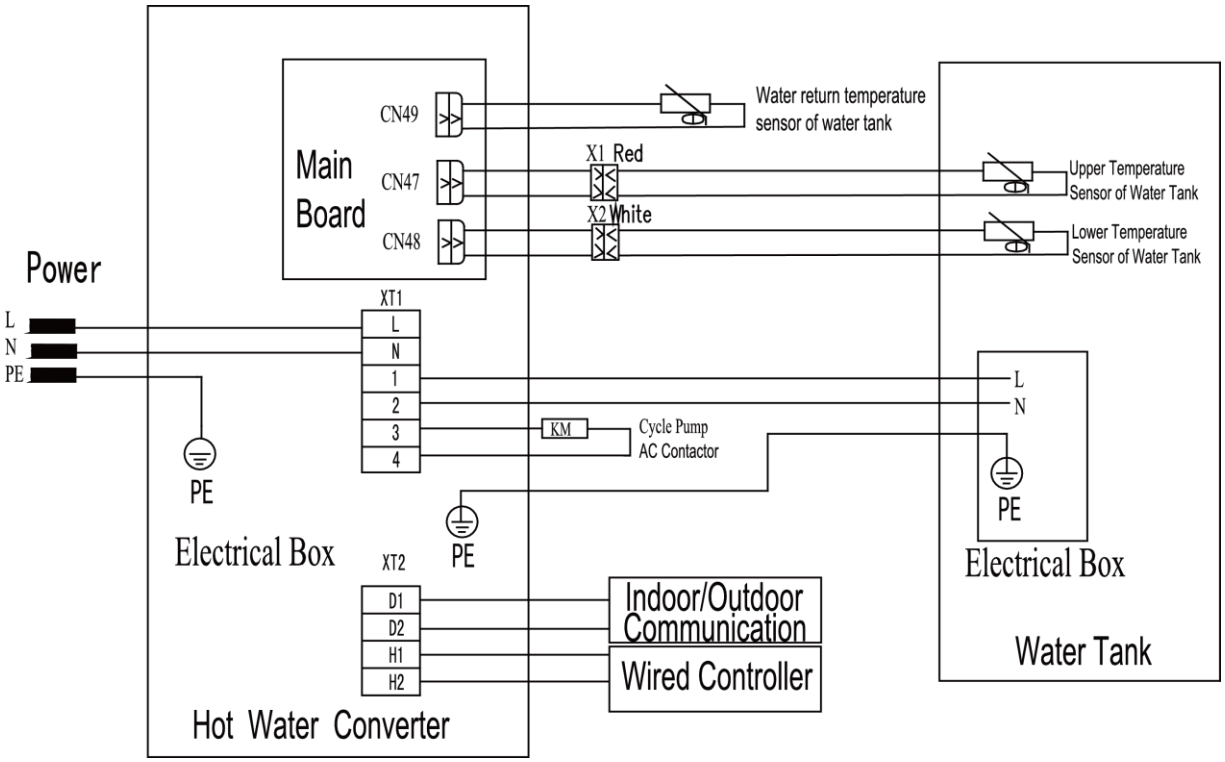


Fig. 5.8 External wiring diagram between hot water converter and outdoor unit & water tank

Note: Above wiring diagram is only for reference. Please refer to the circuit diagram in the electric box of unit for details.

5.2 Debugging

Notices for debugging

（1）Check whether the unit is installed correctly.

（2）Check whether the piping for water system and wiring for electricity system is reasonable.

（3）Check whether the heat preservation for the refrigerant copper pipe is good.

（4）Check whether it connected the earthing wire.

（5）Check whether the voltage is the rated voltage of the unit.

（6）Check whether the check valve and the safety valve at the water inlet are installed correctly.

（7）The water inlet pressure should be no less than 0.15MPa.

5.3 Notices

（1）Do not put the unit at the place where will be frozen easily. Otherwise, container and water pipe will broke and it will cause scalding and water leaking.

（2）Do not operate the unit at the place where the water can’t be drained out. The blow-off pipe should be connected to the sewer.

（3）The water tank should be installed at the place where is convenient for operation and maintenance. Moreover, there should be flow drain at the installation place for the water tank.

（4）The installation position for the water tank should be beyond the children.

（5）The installation position of the water tank should be close to the water-getting point as much as possible to prevent heat loss.

（6）The installation position for the water tank should be close to the outdoor unit as much as possible.

（7）The power switch of water heater should be installed at the dry place to avoid normal operation (you’d better install a water-proof box).

（8）When the temperature is too low in winter or the unit hasn’t been used for a long time, supply power for the unit at least for 8 hours before turning on the unit.

（9）When the outdoor temperature is too low in winter, do not cut off the power after stop operation. Otherwise, the freeze prevention protection will be invalid.

（10）When the unit hasn’t been used for a long time, please drain out the water inside the unit, the water tank and the pipeline through draw off valve after cutting off the power.

（11）Water compensation operation and water drainage operation may be difference for different models. Please refer to the related installation manual.

（12）Before the water tank is filled up with water, please cut off the power to prevent malfunction.

（13）Before using water, please adjust the water to the proper temperature to prevent scalding.

（14）When there’s enough water for use, please try to decrease the set temperature to reduce heat loss. Meanwhile, it can also reduce corrosion and scale to prolong the service life of converter and water tank.

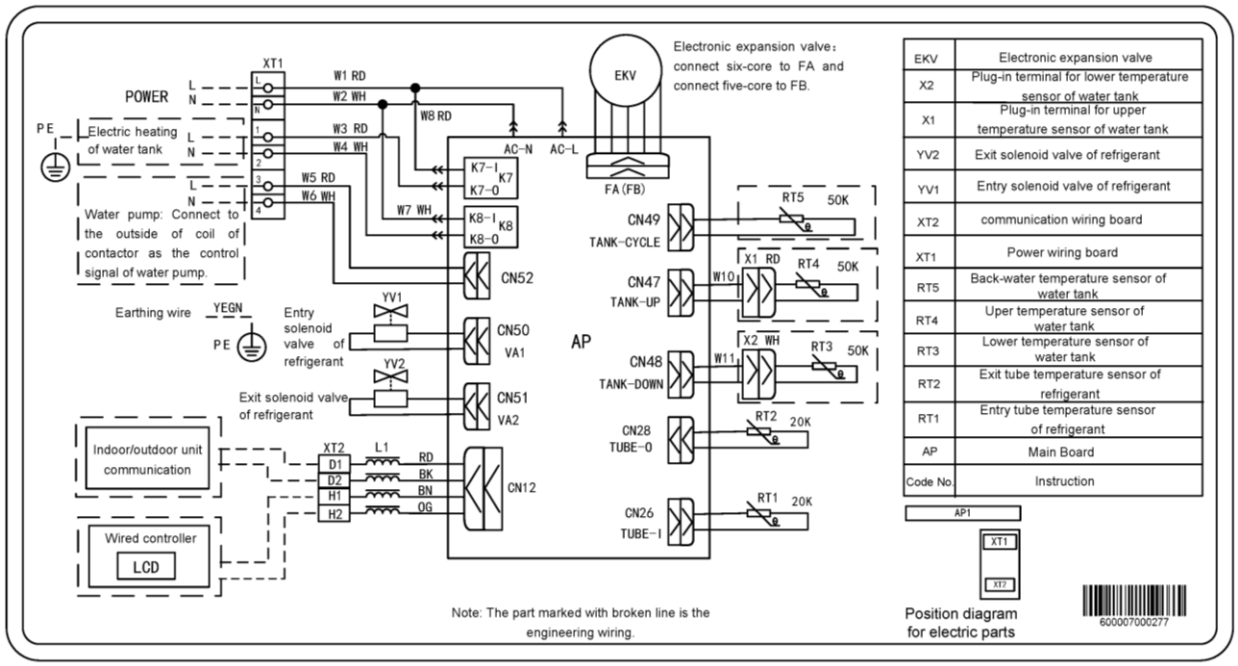
6 ERROR DISPLAY

When error occurs during system operation, the temperature display zone of the wired controller will show the error code, and show the error codes in cycle when there are several errors.

Note: when error occurs, please power off and ask professionals for maintenance.

7 Electric control instruction

Electric principle diagram for NRZ16G/A-S



EKV	Electronic expansion valve
X2	Plug-in terminal for lower temperature sensor of water tank
X1	Plug-in terminal for upper temperature sensor of water tank
YV2	Exit solenoid valve of refrigerant
YV1	Entry solenoid valve of refrigerant
XT2	communication wiring board
XT1	Power wiring board
RT5	Back-water temperature sensor of water tank
RT4	Uper temperature sensor of water tank
RT3	Lower temperature sensor of water tank
RT2	Exit tube temperature sensor of refrigerant
RT1	Entry tube temperature sensor of refrigerant
AP	Main Board
Code No.	Instruction

Note: The above circuit diagram is only for reference. Please refer to the wiring circuit inside the electric box for the detailed content.

8 Troubleshooting

8.1 Error code for hot water converter

Display code	Content	Display code	Content
L4	Wired controller power supply error	d4	Malfunction of entry temperature sensor
L5	Freeze prevention protection	d6	Malfunction of exit temperature sensor
L6	Mode shock	dC	Setting of capacity DIP switch is abnormal
L8	Insufficient power supply	dH	Circuit board of wired controller is abnormal
dF	Malfunction of upper water temperature sensor	d2	Malfunction of lower water temperature sensor

Note:

when there's malfunction for the outdoor unit, the unit can generate hot water (start up the hot water generation function when there's water inside the water tank).

8.2 Common malfunctions

Malfunction phenomenon	Causes	Troubleshooting
No water	Water is stopped or water pressure is too low	Check it.
	Water pipe is blocked	
	Valve of water inlet pipe is not open	
No hot water or the water temperature is not high	Water temperature is set too low	Set it again
	Wired controller is invalid	Contact with local maintenance center
	Heating time is too short	Heat it successively
Hot water volume is not stable	Tap water pressure is not stable	check it
Freeze prevention	Water temperature is too low	Energize the unit or keep the heating status for 30min above

8.3 After-sales service

The guarantee period for the complete unit is 21 months (started from the purchased date on the invoice). The unit can be repaired freely within the guarantee period. User can take the guarantee and invoice to the appointed maintenance center. When the unit has been used for three years, please contact local maintenance center for door-to-door service (maintenance should be charged).

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