TommaTech Triome R290 Heatpump Manual

HP-RST-MF-10-TNK-130LT

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DEAR CUSTOMER;

Thank you for choosing our high-quality device designed with German engineering. For many years of efficient operation please ensure that the device is used in accordance with the instructions written in the User's Manual supplied with it. Take care not to lose the user manual. In this booklet prepared for you; there is very useful information and explanations about the correct and efficient use of the heat pump.

If you notice any irregular operation, consult the user's manual immediately. If you think that the user's manual does not contain explanatory information about the situation, please contact our Authorized Service that installed your device.

Prior to the initial start-up of the heat pump, Commissioning Approval must be obtained from the manufacturer.
Failure to obtain this approval will result in the heat pump being excluded from the warranty.

In accordance with the relevant law, the manufacturer and seller companies undertake to provide the necessary spare parts and service to the device in order for the devices to fulfil their functions within this period.

This device carries the CE marking in accordance with the following directives;

- Low Voltage Directive 2014/35/EU
- Electromagnetic Compatibility Directive 2014/30/EU

Contents

IMPORTANT NOTE:
Thank you very much for purchasing our product. Before using your unit, please read this manual carefully and keep it for future reference.

1. FOREWORD

1.1. Read the Manual Before Operation

WARNING

Prior to the initial start-up of the heat pump, Commissioning Approval must be obtained from the manufacturer.

Failure to obtain this approval will result in the heat pump being excluded from the warranty.

Do not use means other than those recommended by the manufacturer to accelerate the defrosting process or to clean. The device shall be stored in a room with no ignition sources (for example: open flames, gas appliance, or electric heater). Do not pierce or burn.

Be aware that refrigerants may not contain an odour.

Initial safety checks shall include:

1-Capacitors are discharged: this shall be done in a safe manner to avoid the possibility of sparking.

2-No live electrical components and wiring are exposed while filling, emptying or cleaning of the system.

3-There is continuity of earth bonding.

Checks to the area

Prior to beginning work on systems containing flammable refrigerants, safety checks are necessary to ensure that the risk of fire is minimized. For repair to the refrigerating system, the following precautions shall be complied with prior to conducting work on the system.

Work procedure

Work shall be undertaken under a controlled procedure so as to minimize the risk of flammable gas or vapor being present while the work is being performed.

General work area

All maintenance staff and others working in the local area shall be instructed on the nature of the work being carried out. Work in confined spaces shall be avoided.

Checking for the presence of refrigerant

The area shall be checked with an appropriate refrigerant detector prior to and during work, to ensure the technician is aware of potentially flammable atmospheres. Please ensure that the leak detection equipment being used is suitable for use with flammable refrigerants, i.e. non-sparking, adequately sealed, or intrinsically safe.

Presence of a fire extinguisher

If any hot work is to be conducted on the refrigerating equipment or any associated parts, appropriate fire extinguishing equipment shall be available to hand. Have a dry powder or CO2 fire extinguisher adjacent to the working area.

No ignition sources

No person carrying out work in relation to a refrigeration system that involves exposing any pipework that contains or has contained flammable refrigerant shall use any sources of ignition in such a manner that it may lead to the risk of fire or explosion. All possible ignition sources, including cigarette smoking, should be kept sufficiently far away from the site of installation, repairing, removal, and disposal, during which flammable refrigerant can possibly be released to the surrounding space. Prior to work taking place, the area around the equipment is to be surveyed to make sure that there are no flammable hazards or ignition risks. “No Smoking” signs shall be displayed.

Ventilated area

Please ensure that the area is in the open and that it is adequately ventilated before breaking into the system or conducting any hot work. A degree of ventilation shall continue during the period that the work is carried out. The ventilation should safely disperse any released refrigerant and preferably expel it externally into the atmosphere.

Checks to the refrigeration equipment

Where electrical components are being changed, they shall be fit for the purpose and according to the correct specifications. At all times the manufacturer's maintenance and service guidelines shall be followed. If in doubt consult the manufacturer's technical department for assistance.

The following checks shall be applied to installations using flammable refrigerants:

1-The charge size is in accordance with the room size within which the refrigerant containing parts are installed.

2-The ventilation machinery and outlets are operating adequately and are not obstructed.

3-If an indirect refrigerating circuit is being used, the secondary circuit shall be checked for the presence of refrigerant.

4-Marking of the equipment continues to be visible and readable.. Markings and signs that are illegible shall be corrected.

5-Refrigeration pipes or components are installed in a position where they are unlikely to be exposed to any substance which may corrode refrigerant containing components unless the components are constructed of materials that are inherently resistant to being corroded or are suitably protected against being so corroded.

Repairs to sealed components

During repairs on sealed components, all electrical supply shall be disconnected from the equipment being worked upon prior to any removal of sealed covers, etc. If it is necessary to have power supplied to equipment during servicing, then a permanently operating form of leak detection shall be located at the most critical point to warn of a potentially hazardous situation.

Particular attention shall be paid to the following to ensure that by working on electrical components, the casing is not altered in such a way that the level of protection is affected. This shall include damage to cables, excessive number of connections, terminals not made to original specification, damages to seals, incorrect fitting of glands, etc.

1-Ensure that the device is mounted securely.

2-Ensure that seals or sealing materials have not degraded to the point that they no longer serve the purpose of preventing the ingress of flammable gases. Replacement parts shall be in accordance with the manufacturer's specifications.

1.1.1 Repair to intrinsically safe components

Do not connect any permanent inductive or capacitance loads to the circuit without ensuring that the permissible voltage and current values will not be exceed. Intrinsically safe components are the only types that can be worked on while the device is running in the presence of flammable gases.. The test apparatus shall be at the correct rating.

Replace components only with parts specified by the manufacturer. Other parts may result in the ignition of refrigerant from a leak.

NOTE

The use of silicon sealant can inhibit the effectiveness of some types of leak detection equipment.

Intrinsically safe components do not have to be isolated prior to working on them.

Cabling

Check that cabling will not be subject to wear, corrosion, excessive pressure, vibration, sharp edges, or any other adverse environmental effects. The check shall also take into account the effects of aging or continual vibration from sources such as compressors or fans.

Detection of flammable refrigerants

Under no circumstances shall potentially sources of ignition be used in the searching for or detection of refrigerant leaks. A halide torch (or any other detector using a naked flame) shall not be used.

Leak detection methods

The following leak detection methods are deemed acceptable for systems containing flammable refrigerants.

Electronic leak detectors shall be used to detect flammable refrigerants. However, the sensitivity may not be adequate or may need re-calibration. (Detection equipment shall be calibrated in a refrigerant-free area.) Please ensure that the detector is not a potential source of ignition and is suitable for the refrigerant used. Leak detection equipment shall be set at a specific percentage of the LFL for the used the refrigerant and shall be calibrated to the refrigerant employed and the appropriate percentage of gas (25% maximum) .

Leak detection fluids are suitable for use with most refrigerants but the use of detergents containing chlorine shall be avoided as it may react with the refrigerant and corrode the copper pipework.

If a leak is suspected, all naked flames shall be removed/extinguished.

If leakage of refrigerant is found which requires brazing, all refrigerant shall be recovered from the system, or isolated (by means of shut-off valves) in a part of the system remote from the leak. Oxygen free nitrogen (OFN) shall then be purged through the system both before and during the brazing process.

Removal and evacuation

When breaking into the refrigerant circuit to make repairs – or for any other purpose – conventional procedures shall be used. However, it is important that best practice is followed since flammability is a consideration. The following procedure shall be adhered to:

1-Remove refrigerant

2-Clean the circuit with inert gas

3-Evacuate

4-Clean again with inert gas

5-Open the circuit by cutting or brazing

The refrigerant charge shall be recovered into the correct recovery cylinders. The system shall be “flushed” with OFN to render the unit safe. This process may need to be repeated several times. Compressed air or oxygen shall not be used for this task.

Flushing shall be achieved by breaking the vacuum in the system with OFN and continuing to fill until the working pressure is achieved, then venting to the atmosphere, and finally pulling down to a vacuum. This process shall be repeated until no refrigerant is within the system. When the final OFN charge is used, the system shall be vented down to the atmospheric pressure to enable work to take place. This operation is vital if brazing operations on the pipework are to take place.

Please ensure that the outlet for the vacuum pump is not close to any ignition sources and there is ventilation available.

Charging procedures

In addition to conventional charging procedures, the following requirements shall be followed:

1-Ensure that contamination of different refrigerants does not occur when using charging equipment. Hoses or lines shall be as short as possible to minimize the amount of refrigerant contained in them. Cylinders shall be kept upright.

2-Ensure that the refrigeration system is earthed prior to charging the system with refrigerant.

3-Label the system when charging is complete (if not already).

4-Extreme care shall be taken not to overfill the refrigeration system. Prior to recharging the system, it shall be pressure tested with OFN. The system shall be leak tested on completion of charging prior to commissioning. A follow-up leak test shall be carried out prior to leaving the site.

Decommissioning

Before carrying out this procedure, it is essential that the technician is completely familiar with the equipment and all its details. It is recommended good practice that all refrigerants are recovered safely. Prior to the task being carried out, an oil and refrigerant sample shall be taken in case analysis is required prior to re-use of reclaimed refrigerant. It is essential that electrical power is available before the task is commenced.

1-Become familiar with the equipment and its operation.

2-Isolate system electrically.

3-Before attempting the procedure please ensure that:

- Mechanical equipment for handling refrigerant cylinders is available, if required.
- All personal protection equipment is available and being used correctly.
- The recovery process is supervised at all times by a competent person.
- Recovery equipment and cylinders conform to the appropriate standards.

4-Pump down refrigerant system, if possible.

5-If a vacuum is not possible, make a manifold so that refrigerant can be removed from various parts of the system.

6-Make sure that the cylinder is situated on the scales before recovery takes place.

7-Start the recovery machine and operate following the manufacturer's instructions.

8-Do not overfill cylinders. (No more than 80 % volume liquid charge).

9-Do not exceed the maximum working pressure of the cylinder, even temporarily.

10-When the cylinders have been filled correctly and the process completed, make sure that the cylinders and the equipment are removed from the site promptly and all isolation valves on the equipment are closed.

11-Recovered refrigerant shall not be charged into another refrigeration system unless it has been cleaned and checked.

Labeling

Equipment shall be labeled stating that it has been decommissioned and emptied of refrigerant. The label shall be dated and signed. Please ensure that there are labels on the equipment stating that it contains flammable refrigerant.

Recovery

When removing refrigerants from a system, either for servicing or decommissioning, it is recommended good practice that all refrigerants are removed safely. When transferring refrigerant into cylinders, please ensure that only appropriate refrigerant recovery cylinders are used.. Please ensure that the correct number of cylinders for holding the total system charge is available. All cylinders to be used must be designated for the recovered refrigerant and labeled for that refrigerant (i.e. special cylinders for the recovery of refrigerant). All cylinders shall be equipped with a pressure relief valve and associated shut-off valves in good working conditions. Empty recovery cylinders must be evacuated and, if possible, cooled before recovery occurs.

The recovery equipment shall be in good working conditions with a set of instructions concerning the equipment that is at hand and shall be suitable for the recovery of flammable refrigerants.

In addition, a set of calibrated weighing scales shall be available and in good working conditions.

Hoses shall be equipped with leak-free disconnect couplings and in good condition.

Before using the recovery machine, check that it is in satisfactory working conditions, has been properly maintained, and that any associated electrical components are sealed to prevent ignition in the event of a refrigerant release. Consult the manufacturer if in doubt.

The recovered refrigerant shall be returned to the refrigerant supplier in the correct recovery cylinders, and the relevant Waste Transfer Note arranged. Do not mix refrigerants in recovery units and especially not in cylinders.

If compressors or compressor oils are to be removed, please ensure that they have been evacuated to an acceptable level to make certain that flammable refrigerant does not remain within the lubricant. The evacuation process shall be carried out prior to returning the compressor to the suppliers. Only electric heating to the compressor body shall be used to accelerate this process. When oil is drained from a system, it shall be carried out safely.

1.2. The Symbol Description of the Device

The precautions mentioned in this document are divided into the following types. They are very important. Please be sure to follow them carefully.

Explanation of symbols displayed on the indoor unit or outdoor unit

Symbols	Meaning	Description
	WARNING	This symbol shows that this device uses a flammable refrigerant. If the refrigerant is leaked and exposed to an external ignition source, there is a risk of fire.
	WARNING	This symbol shows that this device uses a low burning velocity material. Please keep away from the fire source.
	CAUTION	This symbol shows that the operation manual should be read carefully.
	CAUTION	This symbol shows that service personnel should be handling this equipment with reference to the installation manual only.
	CAUTION	This symbol shows that additional information is available in the operating manual or installation manual.

1.3. Instructions

To keep users under safe working conditions and property safety, please follow the instructions below:

1-Wrong operation may result in injury or damage.
2-Please install the unit in compliance with local laws, regulations, and standards.
3-Confirm power voltage and frequency.
4-The unit is only used with grounding sockets.
5-Independent switch must be offered with the unit.

1.4. Safety Instructions

The following safety factors need to be considered:

1-Please read the following warnings before installation.
2-Be sure to check the details that need attention, including safety factors.
3-After reading the installation instructions, be sure to save them for future reference.

Make sure that the unit is installed

• If the unit is not secured or installed properly, it may cause damage. The minimum support weight required is 21g/mm².
• If the unit was installed in a closed area or with limited space, please doublecheck the size of the room and ventilation to prevent suffocation caused by refrigerant leakage.

1-Use a sitable wire and fasten it to the terminal block to prevent pulling forces on the block or the device.
2-Wrong wiring will cause a fire.
Please connect the power wire accurately according to the wiring diagram in the manual to avoid burning of the unit or fire.
3-Be sure to use the correct material during installation.
Wrong parts or wrong materials may result in fire, electric shock, or unit falling.
4-Install on the ground safely. Please read installation instructions.
Improper installation may result in fire, electric shock, falling of the unit, or water leaking.
5-Use professional tools for electrical works.
If the power supply capacity is insufficient or the circuit is not completed, it may cause
fire or electric shock.
6-The unit must be grounded properly.
If the power supply is not grounded properly, do not connect the unit.
7-The unit should only be removed and repaired by a professional technician.
Improper movement or maintenance of the unit may cause water leakage, electric shock, or fire. Please find a professional technician to do it.
8-Don't unplug or plug power during operation. It may cause fire or electric shock.
9-Don't touch or operate the unit when your hands are wet. It may cause fire or electric shock.
10-Don't place heaters or other electrical devices near power wires. It may cause fire or electric shock.
11-Water must not be poured directly from the unit. Do not let water permeate into the electrical components.

Warning

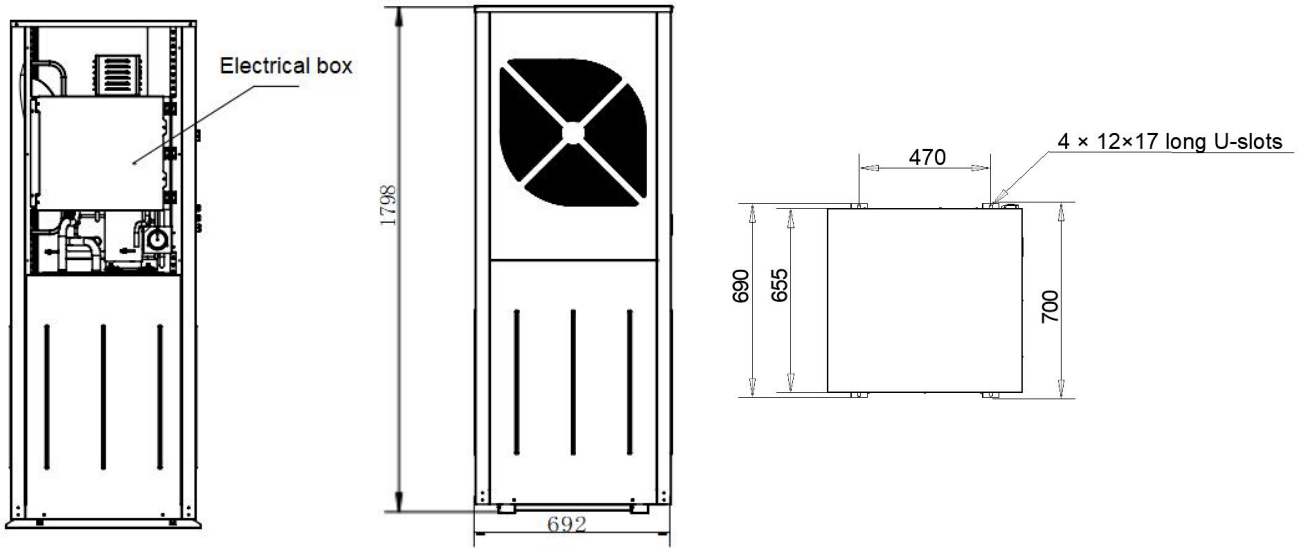
1-Do not install the unit in a location where there may be flammable gas.
2-If there is flammable gas around the unit, it will cause an explosion. Please carry out drainage system and pipeline work according to the
If the drainage system or pipeline is defective, water leakage will occur.
Leaked water should be disposed of immediately to prevent other household products from getting wet and damaged.
3-Do not clean the unit while the power is on. Turn off power before cleaning the unit. If not, it may result in injury from a high-speed fan or electric shock.
4-Stop operating the unit once there is a problem or a fault code.
Please turn off the power and stop running the unit. otherwise, it may cause electric shock or fire.
5-Be careful when the unit is not packed or not installed.
Pay attention to the sharp edges and fins of the heat exchanger.
6-After installation or repair, please confirm refrigerant is not leaking.
If the refrigerant is not enough, the unit will not work properly.
7-The installation of the external unit must be level and firm.
Avoid abnormal vibration or noise.
8-Don't put your fingers into the fan and evaporator.
High-speed running fans will cause serious injury.
9-This device is not designed for people who are physically or mentally weak (including children) and who does not have experience and knowledge of heating and cooling system. The device should only be operated under the direction and supervision of a professional technician who has received training on the use of this unit. Children must use it under the supervision of an adult to ensure that they use the unit safely. If the power wire is damaged, it must be replaced by a professional electrician to avoid danger.

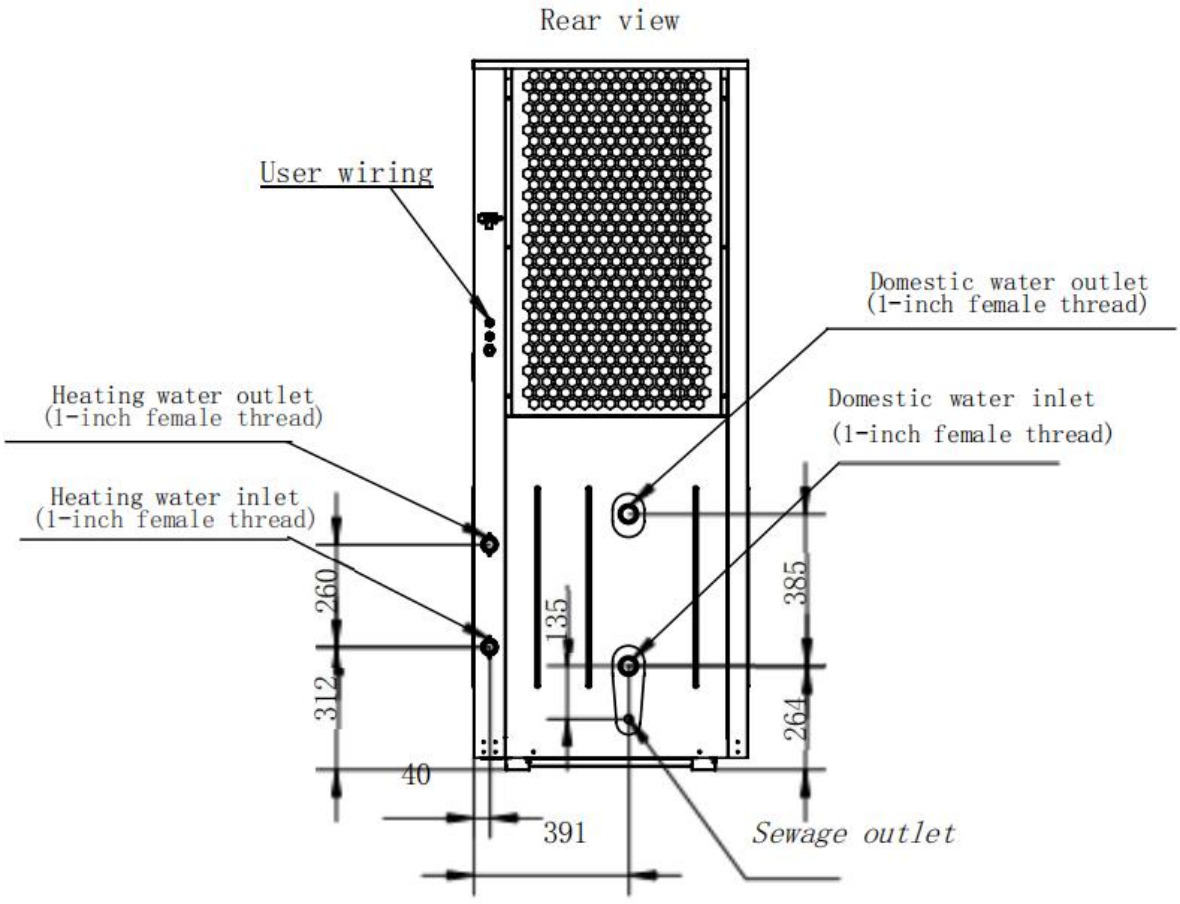
1.5. Accessories

Name		Quantity
Installation & Instruction Manual		1
Operation Manual		1
Wire Controller		1
Rubber Bases		4

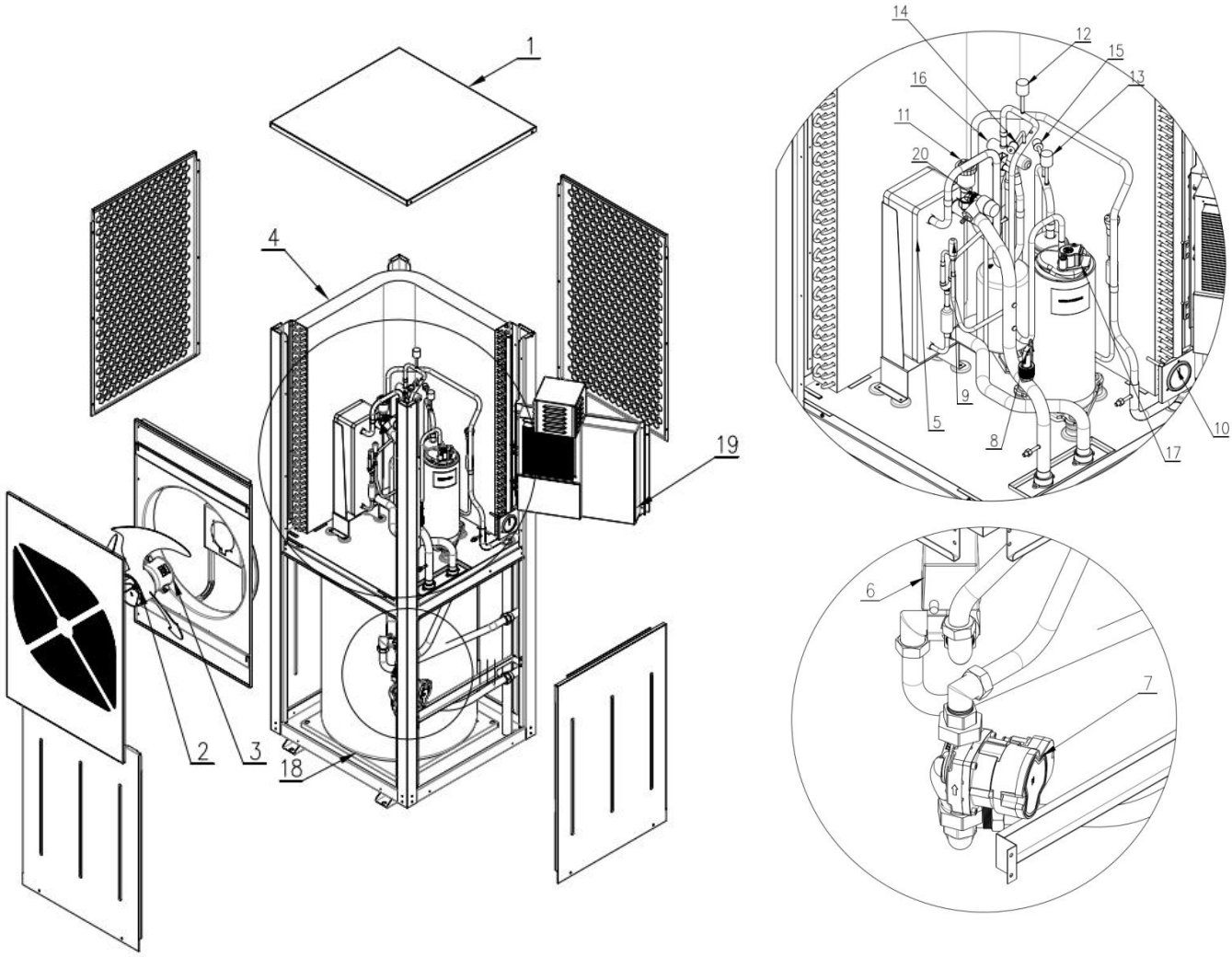
2. OVERVIEW OF THE UNIT

2.1. Dimensions of the Unit





2.2. Main Components of the Unit



No.	Component Name	Quantity
1	Metal Sheet Cover	1
2	Axial Flow Fan Blade	1
3	Motor	1
4	Coil Heat Exchanger	1
5	Plate Heat Exchanger	1
6	Electric 3-Way Valve	1
7	Water Pump	1
8	Water Flow Switch	1
9	Electronic Expansion Valve	1
10	Pressure Gauge	1
11	Automatic Air Release Valve	1
12	High Pressure Sensor	1
13	Low Pressure Sensor	1
14	High Pressure Switch	1
15	Low Pressure Switch	1
16	Four-Way Valve	1
17	Compressor	1
18	Water Tank	1
19	Electric Box	1
20	Pressure Relief Valve	1

2.3. Device Parameters

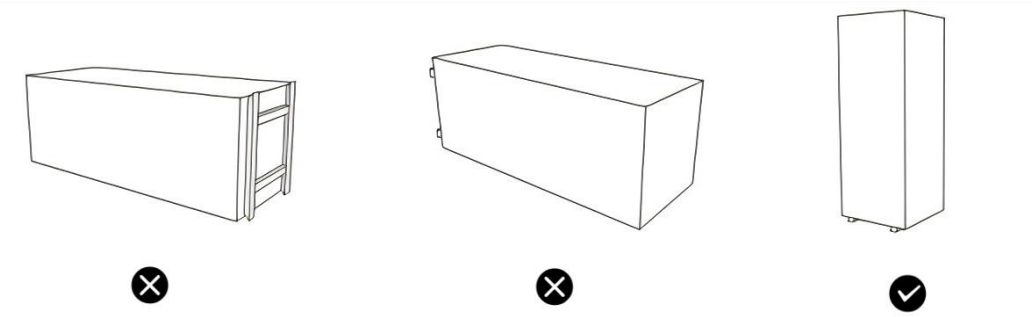
TOMMATECH TRIOME R290 HEAT PUMP	
Technical Specifications	
Brand name	TommaTech GmbH
Series	TRIOME
Model	HP-RST-MF-10-TNK-130LT
Power Supply (V/Ph/Hz)	220-240V ~ 1Ph / 50Hz
Refrigerant Type	R290
(Space Heating) Ambient Temperature: 7/6℃ / Water Temperature (Inlet/Outlet): 30/35	
Max. Heating Capacity（kW）	3.50～10.00
Power Input (kW)	0.67 ~ 2.30
COP	4.35～5.25
(Space Heating) Ambient Temperature: 7/6℃ / Water Temperature (Inlet/Outlet): 47/55	
Max. Heating Capacity (kW)	3.20～9.20
Power Input (kW)	0.91 ~ 3.26
COP	2.82～3.50
(Space Cooling) Ambient Temperature: 35℃ / Water Temperature (Inlet/Outlet):12/7	
Max. Cooling Capacity (kW)	2.50～7.00
Power Input (kW)	0.71 ~ 2.55
EER	2.75～3.52
(Hot Water) Ambient Temperature: 20/15℃ / Water Temperature:15/55℃	
Max. Heating Capacity	4.00～10.00
Power Input (kW)	0.82 ~ 2.38
COP	4.20～4.90
ERP-Level (35°C)	A+++
ERP-Level (55°C)	A++
Air Side Heat Exchanger	Double-layer Finned Tube Heat Exchanger
Max. Power Input (kW)	4.6
Max. Operating Current (A)	20
Circulation Pump	Buit-in Variable frequency pump
Fan Motor Type	Brushless Direct Current Motor
Water Side Heat Exchanger	Plate Heat Exchanger
Water Tank (L)	130
Water Tank Coil (m)	20
Water Pipe Connection	G 1'
Expansion Tank Volume (L)	/
Screen	4-inch color screen
Wi-Fi Function	yes
Nominal Water Flow Rate (m^3/h)	1.72
Water Pressure Drop (kPa)	35
Water Pipe Connection	G 1'
Sound Pressure Level at 1m （dB）	44 ~ 55
Operating Range (°C)	-25 ~ 43
Max. Outlet Water Temperature (°C)	75
Waterproof Class	IPX4
Electric Shock Resistance	I
Net Dimensions (W/D/H) (mm)	691×735×1798
Net Weight (kg)	202

3. INSTALLATION AND CONNECTION

WARNING The heat pump must be installed by a professional team. End-users are not qualified to install it by themselves, otherwise, the heat pump might be damaged and risky for users' safety.
This section is provided for information purposes only and must be checked and adapted if necessary according to the actual installation conditions.

3.1. Transportation

1. When storing or moving the heat pump, the heat pump should be in the upright position.



2. When moving the heat pump, do not lift the water tap since the titanium heat exchanger inside the heat pump will be damaged.

3.2. Installation Instruction

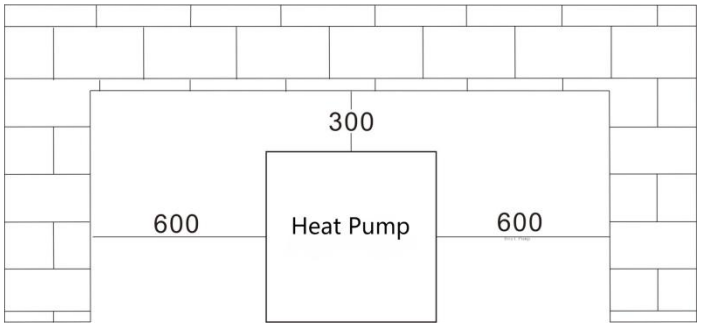
3.2.1. Pre-requirements

Equipment necessary for the installation of your heat pump:
1- Power supply cable suitable for the unit's power requirements.
2- A By-Pass kit and an assembly of PVC tubing suitable for your installation as well as stripper, PVC adhesive, and sandpaper.
3- A set of wall plugs and expansion screws suitable to attach the unit to its support.
4- We recommend that you connect the unit to your installation with flexible PVC pipes in order to reduce the transmission of vibrations.
5- Suitable fastening studs may be used to raise the unit.

3.2.2. Location and Space

Please comply with the following rules concerning the choice of the heat pump location.
1-The unit's future location must be easily accessible for convenient operation and maintenance.
2-It must be installed on the ground, fixed ideally on a level concrete floor. Please ensure that the floor is sufficiently stable and can support the weight of the unit.
3-A water drainage (device) must be available close to the unit in order to protect the area where it is installed.
4-If necessary, the unit may be raised by using suitable mounting pads designed to support its weight.

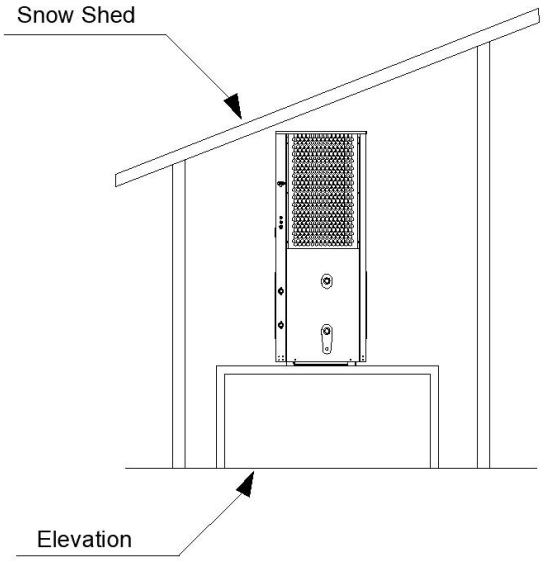
5- Check that the unit is properly ventilated, that the air outlet is not facing the windows of neighbouring buildings and that the exhaust air cannot return. In addition, provide sufficient space around the unit for servicing and maintenance operations.
6-The unit must not be installed in an area exposed to oil, flammable gases, corrosive products, sulphur compounds, or close to high-frequency equipment.
7-To prevent mud splashes, do not install the unit near a road or a track.
8-To avoid causing a nuisance to neighbors, make sure that the heat pump is positioned towards the area that is least sensitive to noise.
9-Keep the unit as much as possible out of the reach of children.
10-Installation space:
The unit shall be installed in a place with air circulation, no heat radiation or other heat sources, and the allowable minimum distance between the unit and the surrounding walls or other shelters is: 600mm. The distance between the air inlet surface and the air inlet surface must be more than 300 mm, the distance between 2 units must be more than 600mm, as shown in the figure below:



Unit: (mm)

In snowy areas, anti-snow facilities shall be installed. In order not to be affected by snow, an elevated platform is adopted, and an anti-snow shed must be installed at the air inlet and air outlet.

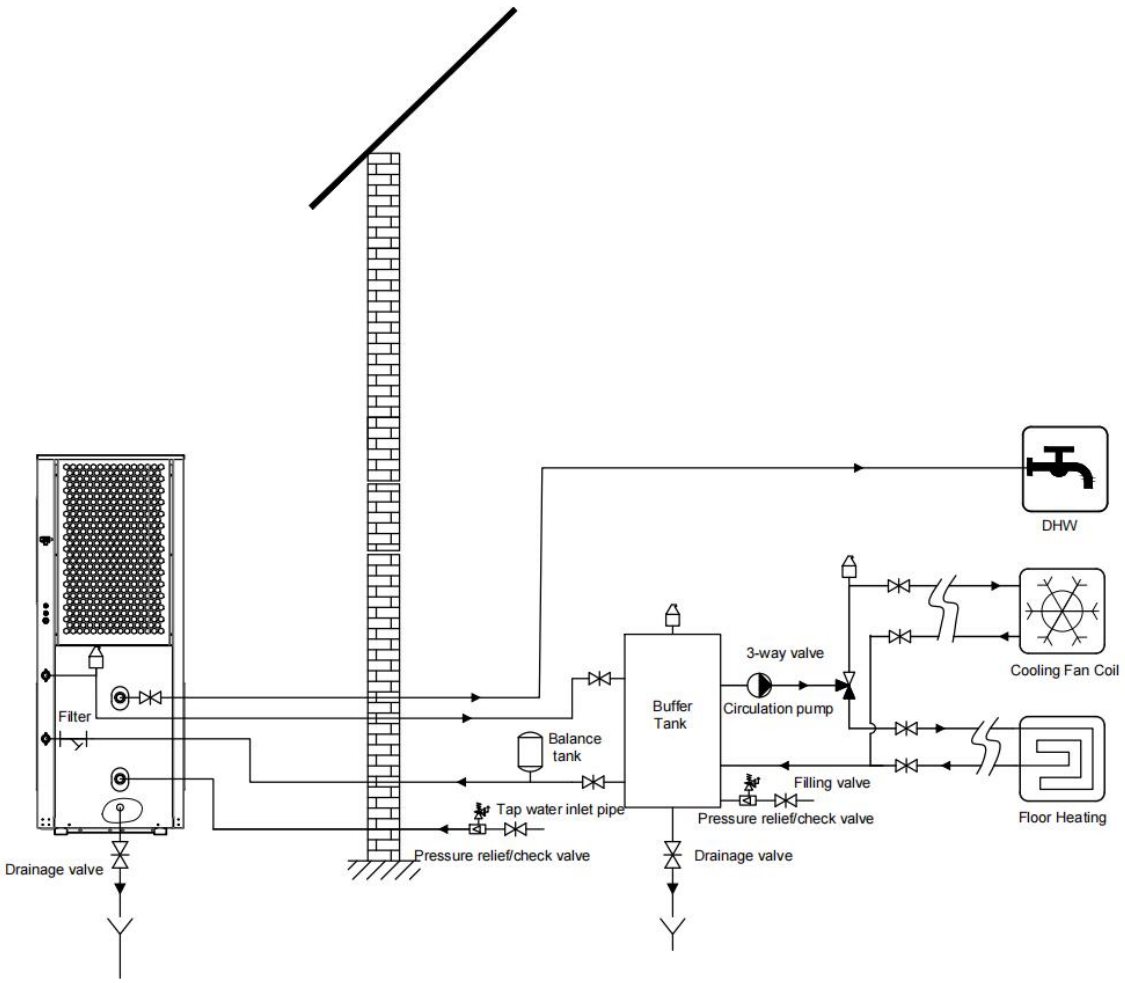
Snow Protection shed Diagram



3.2.3. Installation Layout

Notice:

1-It is recommended to use flexible connections between the unit and the circulation water pipes, which can effectively avoid vibration transmission from the unit to the water pipes.
2-The gate valve must be installed at the inlet/outlet of the unit. When the pressure test is completed after the installation of the end of the water system, the gate valve shall be closed.
3-Open after discharge.
4-A “Y” filter (60 mesh) must be installed at the inlet pipe of the main engine to effectively prevent impurities from damaging the unit.
5-Clean water quality regularly.
6-Installation of the relief valve, bypass valve, and other valve parts must be in the direction of the arrow of the valve body.
7-After installation, water injection is required to detect leakage, confirm no leakage, and clean the filter.
The installation diagram is shown in the following figure:



3.2.4. Electrical Installation

To function safely and maintain the integrity of your electrical system, the unit must be integrated into the existing electricity supply under the following regulations:
1-upstream, the electricity supply must be protected by a 30mA differential switch.
2-The heat pump must be connected to a suitable D-curve circuit breaker in accordance with current standards and regulations in the country where the system is installed.
3-The electricity supply cable must be adapted to match the unit's rated power and the length of wiring required by the installation. The cable must be suitable for outdoor use.
4-For a three-phase system, it is essential to connect the phases in the correct sequence. If the phases are inverted, the heat pump's compressor will not work.
5-In places open to the public, it is mandatory to install an emergency stop button close to the heat pump.

Model	Power Supply Wires		
	Electricity Supply	Cable Diameter	Specification
HP-RST-MF-10-TNK-130LT	230V~/ 50Hz	3G 4mm²	AWG 10

3.2.5. Electrical Connection

•All main and branch lines of the heat pump installation must be connected to their own main or disconnect switches and integrated into the existing electrical system in accordance with the relevant local laws and regulations. Turn off the power before making any connections.

Only copper wire can be used. Never pinch the wires, and make sure they don't touch pipes and sharp edges. Make sure that no external pressure is applied to the terminal connections. All field wiring and components must be installed by a licensed electrician and must comply with relevant local laws and regulations.

•Field wiring must be done in accordance with the wiring diagram supplied with the unit and the instructions given below.

Be sure to use a dedicated outlet from the distribution board. Never use an outlet shared with other devices.

•Be sure to build a foundation. Do not ground the device to a utility pipe, surge protector, or telephone ground. Incomplete grounding may result in electric shock. Be sure to install a ground fault circuit interrupter (30 mA). Failure to do so may result in electric shock.

•Be sure to install the required fuse or circuit breaker.

Precautions for installing wires

•Secure the wires so that they do not come into contact with the pipes (especially the 230 / 400V cables)

•Make sure that no pressure or tension is applied to the terminal connectors.

•When installing a ground fault circuit interrupter, make sure it is compatible with the inverter (anti-high frequency electrical noise) to avoid opening the ground fault circuit interrupter unnecessarily.

NOTE

•This unit is equipped with an inverter. Installing a phase leading capacitor not only reduces the power factor improvement effect, but also may cause abnormal heating of the capacitor due to high frequency waves. Never install a phase lead capacitor as it may cause an accident.

Wiring overview

NOTE

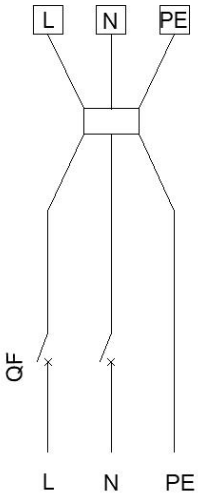
•Please use a suitable power cable. Except the thermistor cable and user interface cable, all other wires are connected to the 230 / 400V busbar.The equipment must be grounded.

•All 230 /400V external loads, whether metallic or non-conductive, must be grounded.

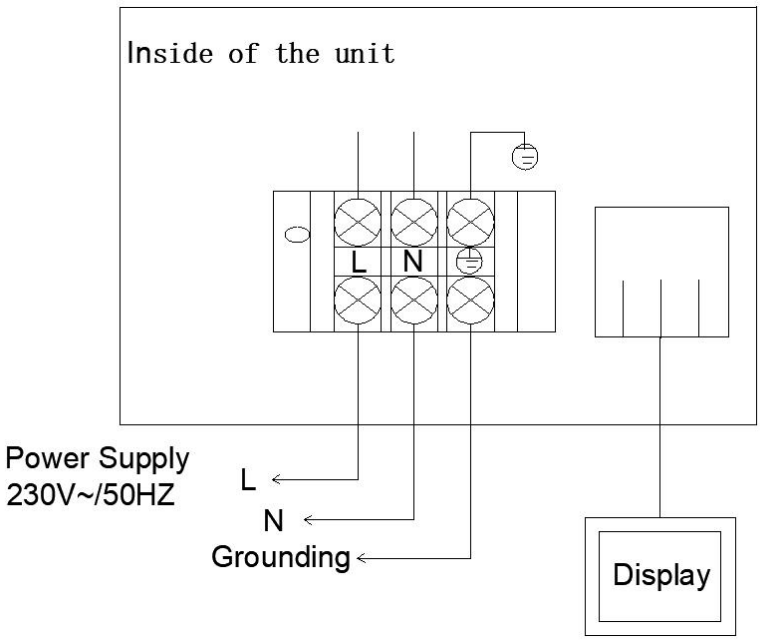
•All external load currents must be less than 0.2A. If a single load current is greater than 0.2A, the load must be controlled through an AC contactor.

- •The "1", "3","5", "6"and "2，4，7" ports provide output signals only.
- •The "8, 9,12" and "10, 11" terminal ports receive input signals.

See the image below for the port location in the device.



1.Customer Installation Wiring Section



Power Supply: 230V~/50Hz

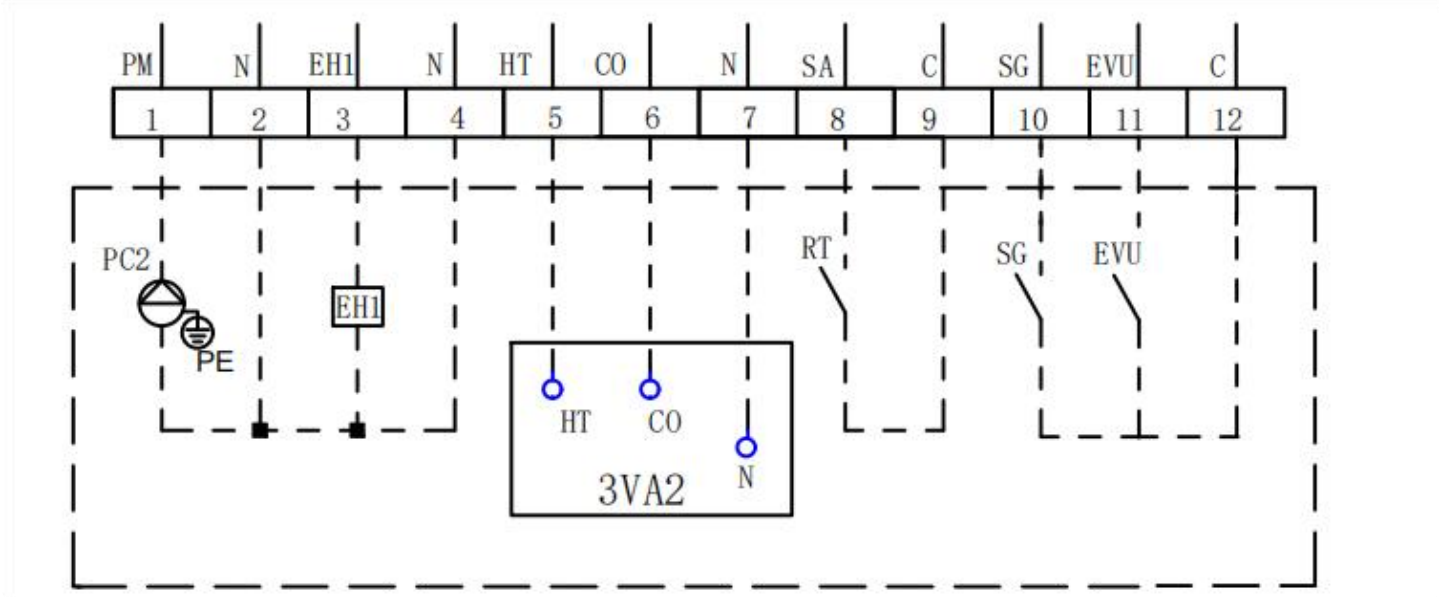
NOTE

•The ground fault circuit breaker must be a 30mA (<0.1 s) high speed type circuit breaker. Please use a cable with the corresponding number of cores and specifications.

•The current rating is based on the allowable maximum operating temperature of the conductor (105°C/70°C) as well as the rated ambient temperature (40°C/25°C), and assumes that the single wire is freely installed in the air. The wire diameter comparison table is outlined below:

The maximum operating current of the unit (A)	Wire cross-sectional area (AWG)	The maximum operating current of the unit (A)	Wire cross-sectional area (AWG)
≤3.0	≥24	≤15	≥14
≤4.6	≥22	≤21	≥12
≤6.5	≥20	≤28	≥10
≤8.5	≥18	≤40	≥8
≤11	≥16	≤55	≥6

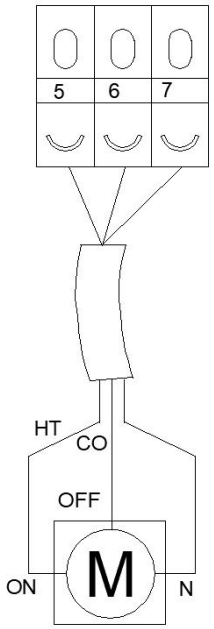
Connection of other components



No.	Meaning	NOTE
1	External circulation water pump	Voltage：230V Maximum Current：0.2A Wire Specifications： 20AWG/0.75mm²
2	Neutral	
3	Electric heating signal for space heating	
4	Neutral	
5	Switch to the heating terminal	
6	Switch to the cooling terminal	
7	Neutral	
8	Link-Age	Passive dry contact signals
9	Link-Age	
10	Smart Grid SG	
11	Smart Grid EVU	
12	COM Terminal	

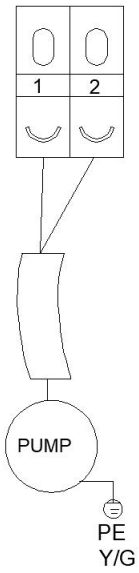
1） Electromagnetic three-way valve wiring

The electromagnetic three-way valve is used to switch the Heating & Cooling water channels of the heat pump. During construction and installation, the control line of the three-way valve needs to be connected to the corresponding point on the terminal block of the unit. If the air conditioner of the unit is heating, the HT wiring point provides 230V voltage output, and the CO point has not output. If the unit is cooling, the CO point provides 230V voltage output, and the HT point has no output. During Installation, it is necessary to confirm each waterway interface of the electromagnetic three-way valve to ensure that the three-way valve is switched to the correct waterway when the unit is running.



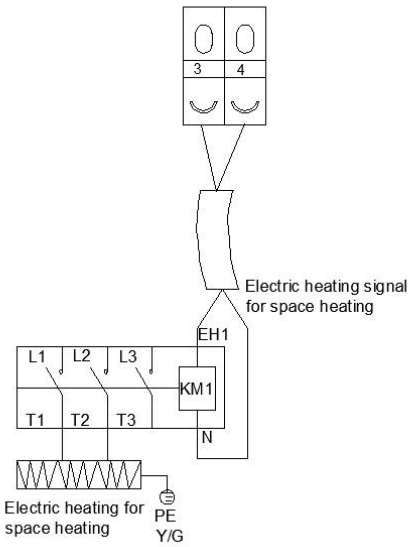
2)For Water Pump

In the secondary system, the pump between the buffer water tank and end-use water points (rooms) is an end-use water pump, which can be directly connected to the terminals.



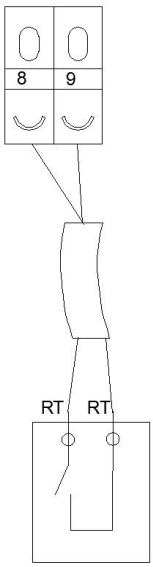
3）Electric heating for space heating

This is the auxiliary electric heating for rooms. Only a 230V signal is provided here, which cannot directly drive the electric heating. A separate control cabinet must be configured.



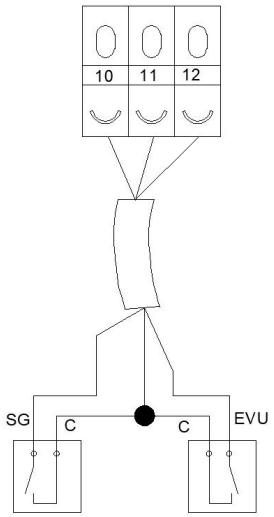
4) Two-way valve interlock

Two-way valve interlock refers to interlocking with external devices, and it is shorted at the factory. When the panel is powered on, the external interlock signal closes to start the the external device and opens to stop it.



5) For Smart Grid

The smart grid wiring is shown in the figure below. SG is the smart grid signal, EVU is the photovoltaic signal.



SG Grid Signal [LDIsg]	EVU Power Supply Signal [LDIevu]	Smart Grid Command	Smart Grid Display	Explanation
√	×	Smart Grid Command 1	Display off-peak electricity icon	When SG is connected and EVU is disconnected, it corresponds to Smart Grid Command 1, and the off-peak electricity icon is displayed. ● At this time, the unit operates normally. When the mode is set to automatic, the unit operates in standard mode.
×	×	Smart Grid Command 2	Display peak electricity icon	When SG is disconnected and EVU is disconnected, it corresponds to Smart Grid Command 2, and the peak electricity icon is displayed. ●In this mode, timed sterilization and water tank electric heating are both inoperative, and operation of the hot water mode is prohibited. If the mode is set to automatic, the unit operates in energy-saving mode.
×	√	Smart Grid Command 3	Display free electricity icon	When SG is disconnected and EVU is connected, it corresponds to Smart Grid Command 3, and the free electricity icon is displayed. ● When the mode is set to automatic, the unit operates in power mode. If the water tank temperature is 2℃ lower than the set temperature for hot water, the water tank electric heating is turned on. If the water tank temperature is 3℃ higher than the set temperature for hot water, the water tank electric heating is turned off.
√	√	Smart Grid Command 4		When SG is connected and EVU is connected, it corresponds to Smart Grid Command 4, and the free electricity icon is displayed. ● The unit is forced to start, and the target temperature for hot water is automatically set to 70℃. When the water tank electric heating is inuse and if the water tank temperature is lower than 69℃, the water tank electric heating is turned on. If the hot water tank temperature is 70℃ or higher, the water tank electric heating is turned off.

3.3. Trial After Installation

Please check all wiring carefully before turning on the heat pump.

3.3.1. Inspection Before Trial Running

Before the trial run, please confirm the below items and cck √ in the corresponding block:;

☐	Correct unit installation
☐	The power supply voltage is the same as unit rated voltage
☐	Correct piping and wiring
☐	The air inlet & outlet port of the unit is unblocked
☐	Drainage and venting are unblocked and no water leaking
☐	The leakage current detector is working
☐	Piping insulation is working
☐	The ground wire is connected correctly

3.3.2. Trial Running

Step 1: The trial run can begin after completing all installation.

Step 2: All wiring and piping should be connected well and carefully checked, then fill the water tank with water before power is switched on.

Step 3: Emptying all air within pipes and water tank, press the “ON/OFF” button on the control panel to run the unit at setting temperature.

Step 4:The following items need to be checked during the trial run:

1-Is the power consumption normal or not?

2-Is each function button on the control panel normal or not?

3-Is the display screen normal or not?

4-Is there any leakage in the heating circulation system?

5-Is the condensate drain normal or not?

6-Are there any abnormal sounds or vibrations during operations?

4. MAINTENANCE AND WINTERIZATION

4.1. Maintenance

Before undertaking maintenance work on the unit, please ensure that you have disconnected the electrical power supply.

Cleaning

a.The heat pump's casing must be cleaned with a damp cloth. The use of detergents or other household products could damage the surface of the casing and affect its properties.

b.The evaporator at the rear of the heat pump must be carefully cleaned with a vacuum cleaner and soft brush attachment.

Annual maintenance

The following operations must be undertaken by a qualified person at least once a year.

a.Carry out safety checks.

b.Check the integrity of the electrical wiring.

c.Check the earthing connections.

d.Monitor the state of the pressure gauge and the satus of refrigerant.

4.2. Winterizing

"CUT OFF" power supply of the heater before cleaning, examination and repairing

When you don't use:

a.Disconnect the power supply to prevent any mechanical damage.

b.Drain water clear of the machine.

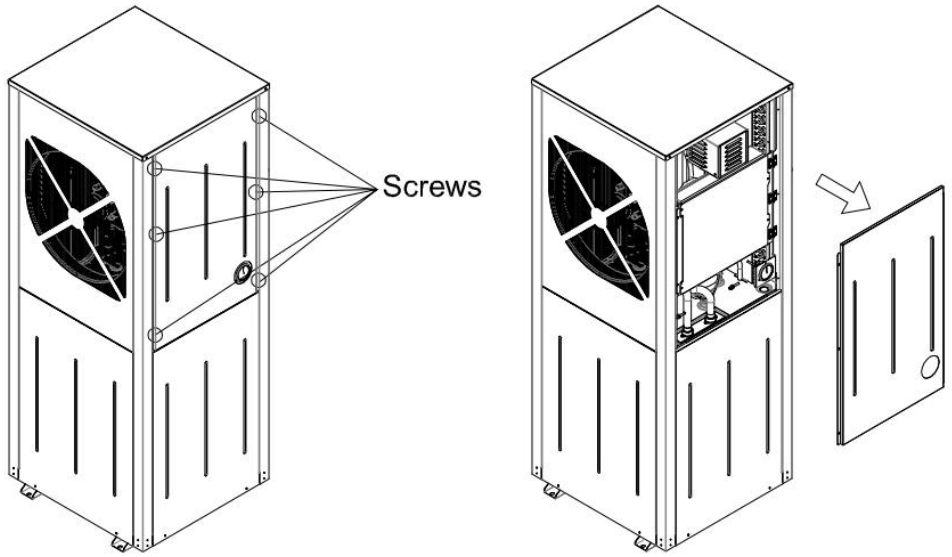
c.Cover the machine body when not in use.

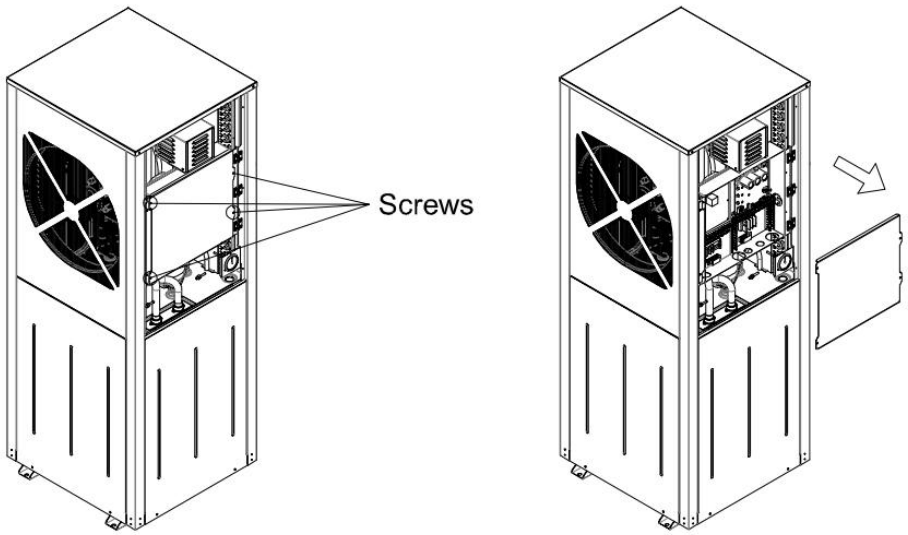
NOTE: Unscrew the water nozzle of the inlet pipe to let the water flow out.

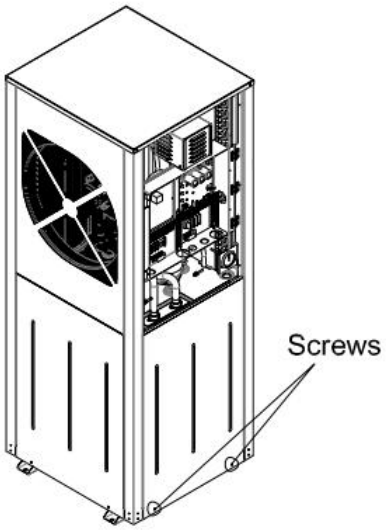
5. DISASSEMBLY PROCEDURES FOR OUTDOOR UNITS

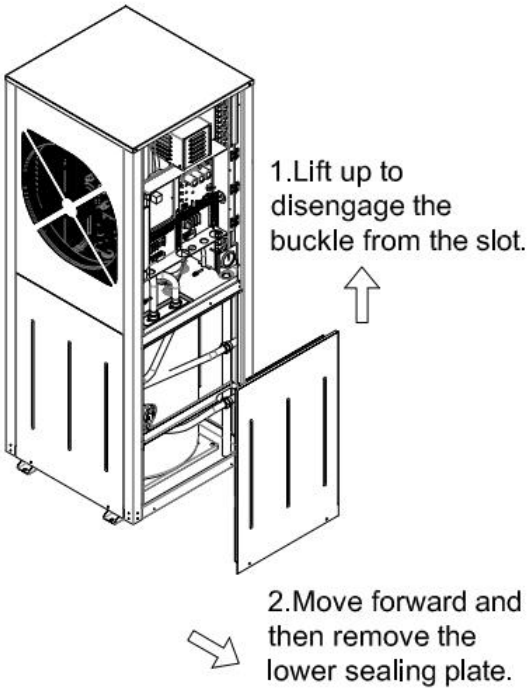
HP-RST-MF-10-TNK-130LT

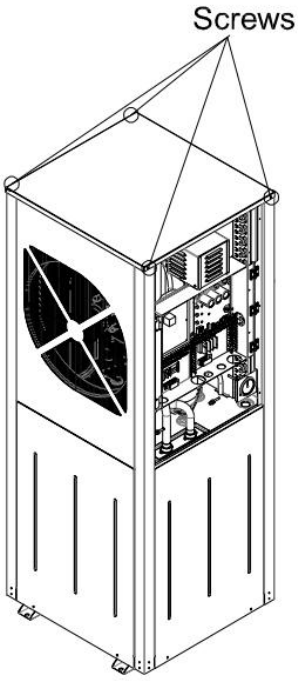
Disassembly Procedure

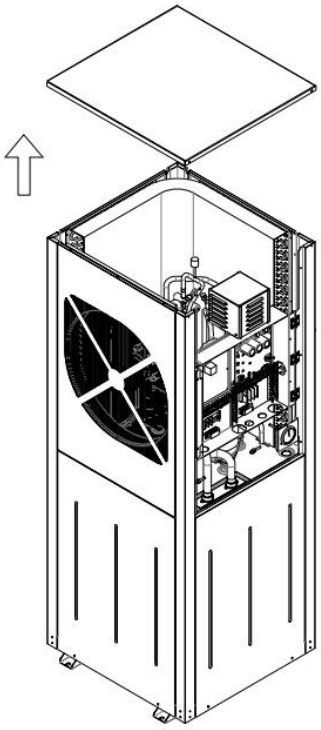


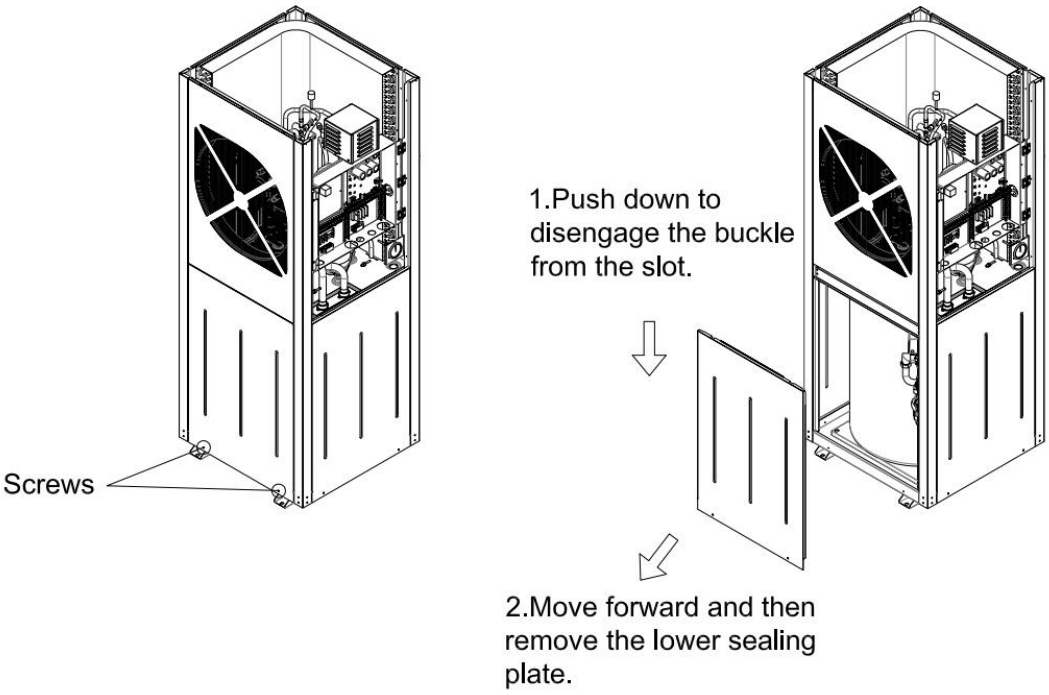


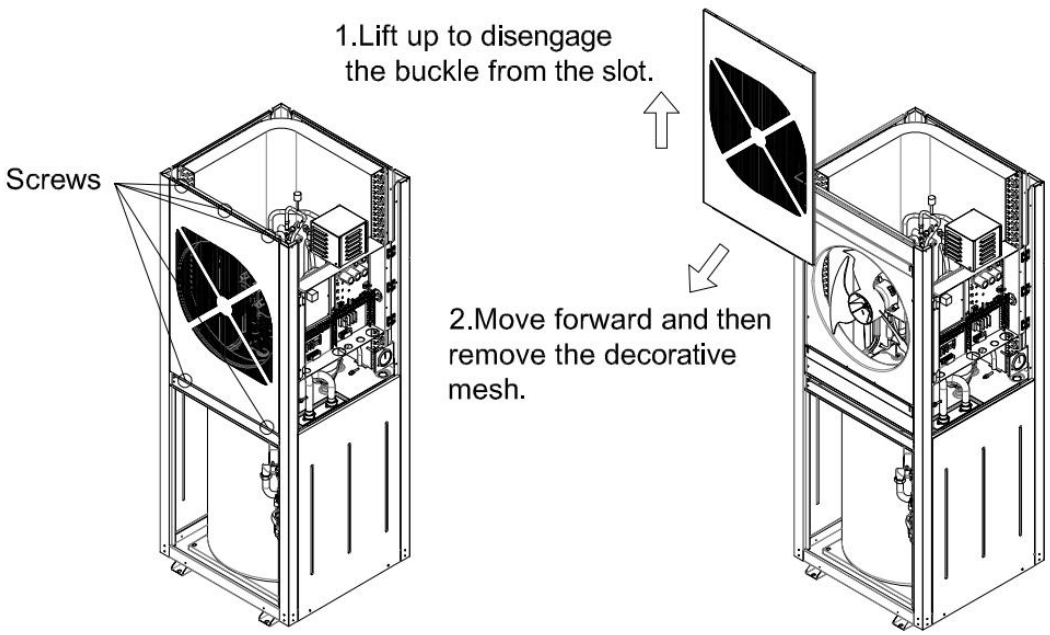

Screws

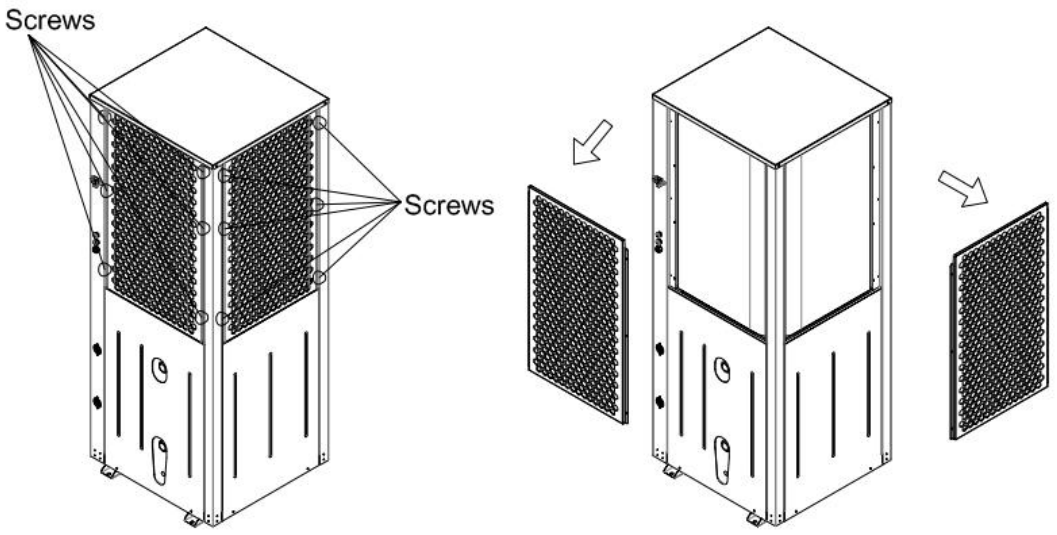

1.Lift up to
disengage the
buckle from the slot.
2.Move forward and
then remove the
lower sealing plate.

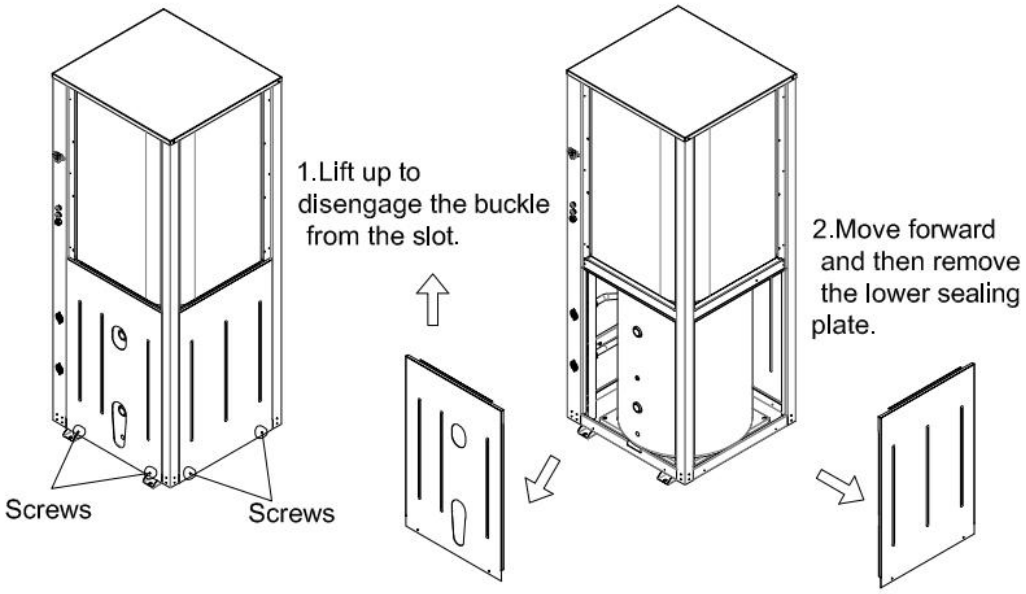

Screws




Screws
1.Push down to disengage the buckle from the slot.
2.Move forward and then remove the lower sealing plate.


1.Lift up to disengage the buckle from the slot.
Screws
2.Move forward and then remove the decorative mesh.


Screws
Screws


1.Lift up to disengage the buckle from the slot.
2.Move forward and then remove the lower sealing plate.
Screws
Screws

TommaTech Triome R290 Heatpump Manual

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