EES
ENERGY EFFICIENT SOLUTIONS
> the heat pump specialists

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HydroHero

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> the heat pump specialists

INVERTER

Blue Fin Condenser

HydroHero
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Aqua-Man Outdoor Range

Specifications	Aqua-Man 190L	Aqua-Man 260L
Capacity (L)	190L	260L
Rated input / output HP (kW)	0.88kW / 2.8kW	0.88kW / 3.6kW
Rated input / output electric (kW)	2kW / 2kW	2kW / 2kW
Max current (amps)	15 amps	15 amps
Max input power (kW)	3.6kW	3.6kW
Rated output water temp (°)	55° - 70°	55° - 70°
Power supply (V)	220V	220V
COP at 20° (EN255-3)	4.52	4.52
COP at 15° (EN255-3)	3.88	3.88
COP at 7° (EN255-3)	2.82	2.82
Refrigerant	R417a	R417a
Noise level dB(A)	48 dB(A)	48 dB(A)
Air flow (m3/h)	900 m3/h	900 m3/h
Tank construction	Stainless Steel	Stainless Steel
Dimensions (mm)	Ø650mm x 1485mm	Ø650mm x 1760mm
Pressure rated / max (MPa)	2.8MPa / 3.6MPa	2.8MPa / 3.6MPa
Gross weight (KG)	83KG	98KG
Compressor specification	Panasonic 2P17S225ANQ	Panasonic 2P17S225ANQ
Warranty heat pump / Cylinder	6 Years / 10 Years	6 Years / 10 Years

*Mean temperature in Auckland 2013 15.9°

Heating Possible -15°C INVERTER Blue Fin Condenser

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Dark-Knight Indoor Range

Specifications	Dark-Knight 190L	Dark-Knight 260L
Capacity (L)	190L	260L
Rated input / output HP (kW)	0.7kW / 2.8kW	0.7kW / 2.8kW
Rated input / output electric (kW)	2kW / 2kW	2kW / 2kW
Max current (amps)	15 amps	15 amps
Max input power (kW)	3.3kW	3.3kW
Rated output water temp (°)	55° - 70°	55° - 70°
Power supply (V)	220V	220V
COP at 20° (EN255-3)	4.21	4.21
COP at 15° (EN255-3)	3.88	3.88
COP at 7° (EN255-3)	2.95	2.95
Refrigerant	R134a	R134a
Noise level dB(A)	48 dB(A)	48 dB(A)
Air flow (m3/h)	450 m3/h	450 m3/h
Tank construction	Stainless Steel	Stainless Steel
Dimensions (mm)	Ø650mm x 1485mm	Ø650mm x 1760mm
Pressure rated / max (MPa)	2.4MPa / 3.0MPa	2.4MPa / 3.0MPa
Gross weight (KG)	83KG	98KG
Compressor specification	Panasonic 6PS174EAA21	Panasonic 6PS174EAA21
Warranty heat pump / Cylinder	6 Years / 10 Years	6 Years / 10 Years

*Mean temperature in Auckland 2013 15.9°

Heating Possible -15°C INVERTER Blue Fin Condenser

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Heat Pump Water Heater

INSTRUCTIONS

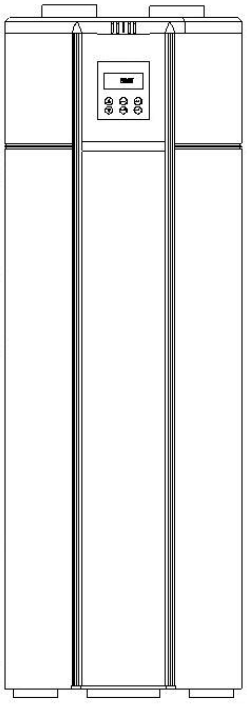
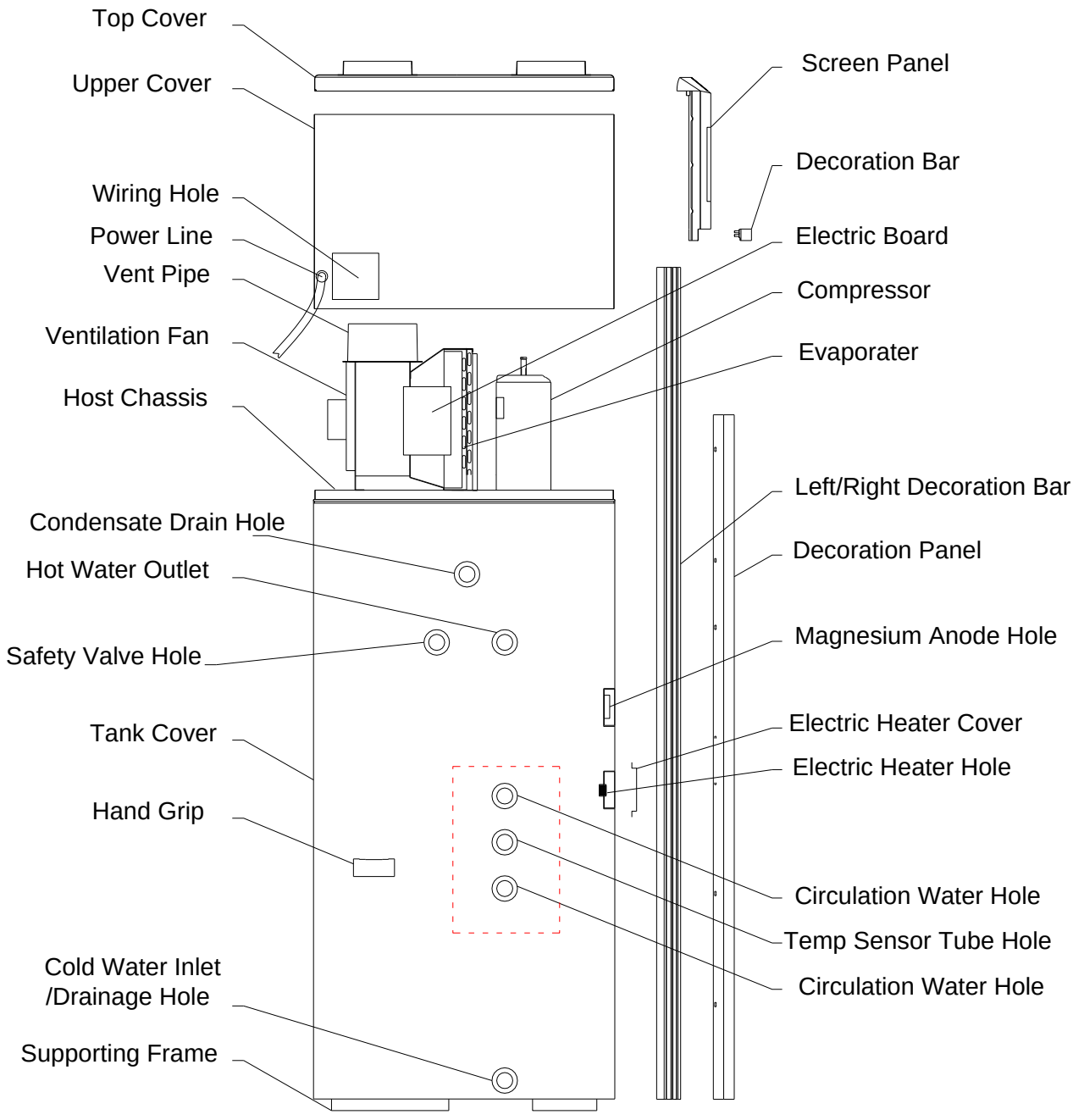
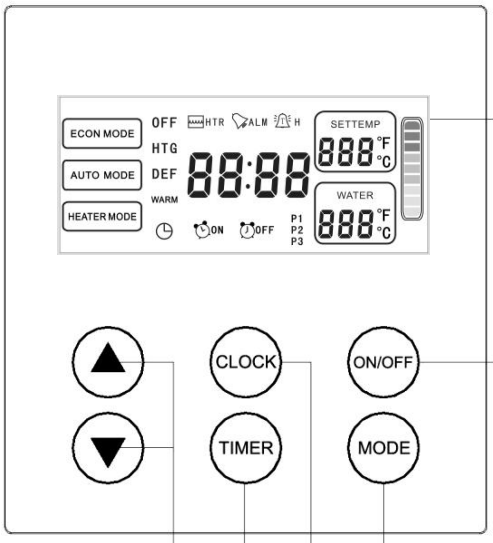


Diagram of tank & heat pump



Operation of controll panel



DISPLAY SCREEN

Display the working mode, status, water temperature, time etc.

ON/OFF BUTTON

Turn ON or OFF the unit by this button.

When the unit is turn ON, display screen shows "HTG" (heating), "DEF" (defrost) or "Warm" (keep warm).

When the unit is turn OFF, display screen shows " OFF ".

MODE BUTTON

Press this button can be switched to ECON MODE (Economic mode), AUTO MODE (Automatic mode) or HEATER MODE.
ECON MODE can only be set during selected the timer period to control the unit working, other times will not control the unit.
AUTO MODE is according to the setting water temperature to control the unit working.
HEATER MODE is according to the setting water temperature (with auxiliary heater function) to control the unit working.
* HEATER MODE can be selected and displayed only for the unit with Auxiliary heater models.

CLOCK BUTTON

Press this button can adjust the clock, use ▲▼ button to adjust;
when the corresponding time Hour or Minute flashing, use ▲▼ button to adjust.

TIMER BUTTON

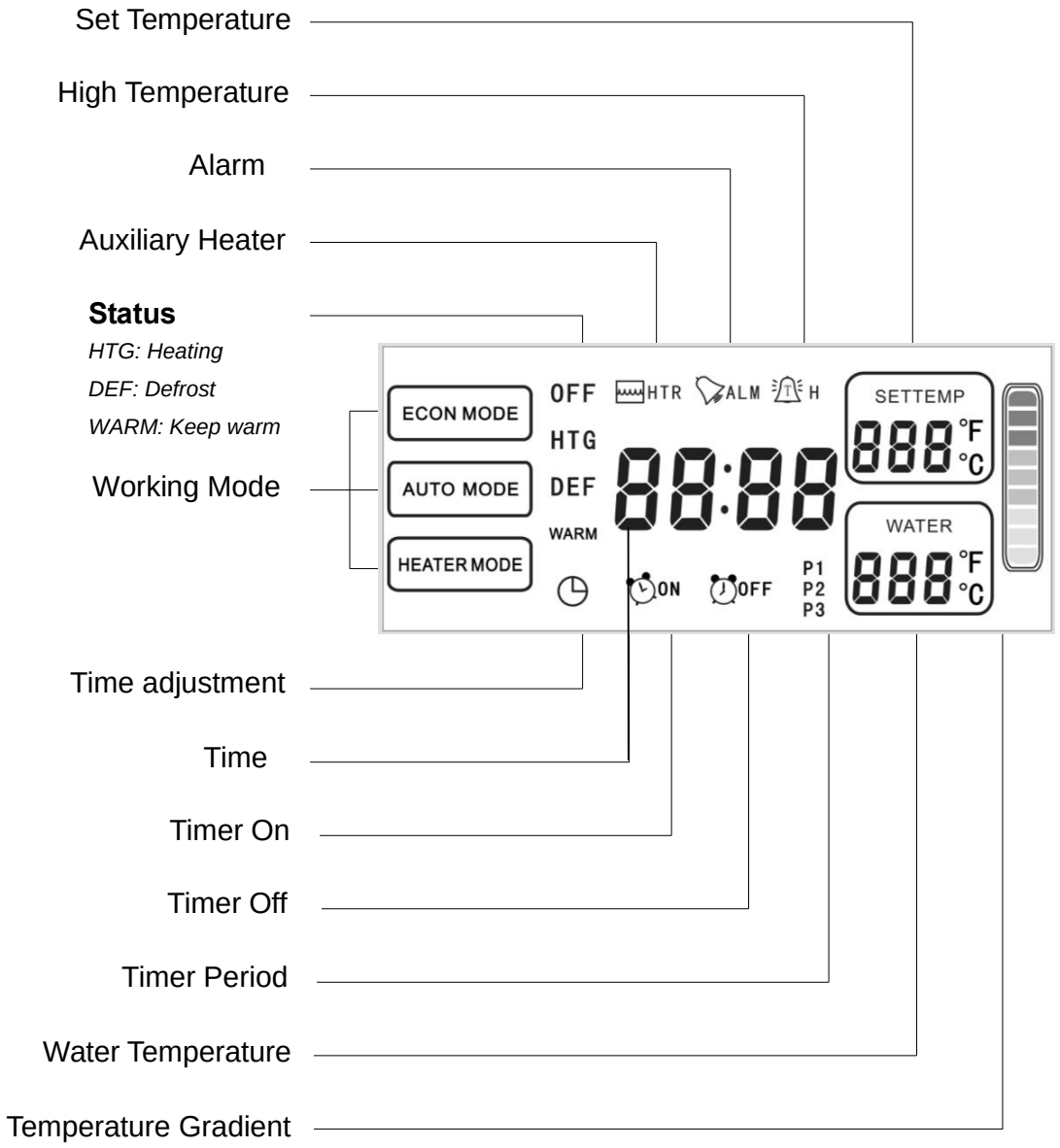
Press this button for 2 seconds, enter temperature setting, when temp. value flashing, use ▲▼ button to adjust setting temperature.
Press this button, enter "ECON MODE" timer period for time setting status, There have 3 timer periods beginning and ending for setting, when the time hour or minute value flashing, use ▲▼ button to adjust corresponding time.
NOTE: Timer period setting only available under "ECON MODE".

UP /DOWN BUTTON

In peacetime, press ▲ (up) can check the ambient temperature of the unit;
press ▼ (down) to check the condenser coil temperature.
Under the corresponding operation, use ▲▼ to adjust the water temperature, clock, timer or parameter data etc..

REMARK:

1. *Set water temperature*
   Press "TIMER" for over 2 seconds, enter water temp. setting status, when the setting temp. value flashing, use ▲▼ button to set water temp.
2. *ECON MODE (Timer heating)*
   There are 3 timer periods (P1, P2, P3) available for setting, they can only be set under "ECON MODE".
3. *AUTO MODE*
   According to the setting water temperature value to control the unit ON/OFF. Timer period setting is invalid under this mode.
4. *HEATER MODE*
   According to the setting water temperature value to control the unit ON/OFF (Auxiliary heater forced to operation). Timer period setting is invalid under this mode.
5. *Delay protection*
   When the machine restart power on, there have 3 minutes time delay protection, it's 3 minutes interval between the unit start and stop. At this time, on the screen it will display " HTG " and flashing until the unit starts operation.



Note: When the water temperature exceeds 55℃, the indicator light H on display.

Press “MODE” button for 5 seconds; enter the Parameter setting status, the main parameter code as below sheet:

Type	Code	Parameter Name	Setting Range	Factory Setting	Unit	Remark
Temperature Control	F11	Setting temperature	5-70	55	°C	
	F12	Difference in Temp.	1 - 30	5	°C	
	F13	Determine Heat pump stop ambient temp.	-10 – 5	-7	°C	
	F14	Highest temp. for heat pump	40 – 60	55	°C	
	F15	Turn on or off electric heater mode	0 - 1	1	-	
	F16	Ambient temp. for start electric heating	-10 - 20	0	°C	
	F17	Turn on or off electric heater for sterilization function	0-1	1		
	F18	Sterilization cycle	1-990	336	hour	
	F19	Water thermal sensor temp. amendment	-5 – 5	0	°C	
Compressor	F21	Compressor start delay	0 – 10	3	minute	
	F28	Econ mode turn on or off electric heater	0 - 1	1		
	F29	Heat pumps working or not in heater mode	0 - 1	1		
Defrost	F31	Defrost start temp.	-20 – 20	-2	°C	
	F32	Defrost finish temp.	0 – 50	25	°C	
	F33	Defrost start time	1 – 999	30	minute	
	F34	Max. defrost time	Off, 1 – 99	5	minute	
Alarm	F50	Low pressure alarm mode	0 - 2	2	-	
	F51	Auto resume times of low pressure alarm	0 – 10	3	time	
	F52	Reset time of external alarm auto resume times	0 – 999	60	minute	
	F54	Electric heater overheat protection	0 - 2	2	-	
	F55	Overheat resume time	0-10	3	-	
	F56	Alarm resume time	0-999	60	°C	
	F57	Exhaust temp. protection mode	0 – 2	1	-	
	F58	Exhaust protect temp.	50 – 125	110	°C	
	F59	Exhaust temp. protection Return difference	1 – 30	10	°C	
Function Setting	F61	Memory status when power off	Yes/No	Yes	-	
	F69	Communication baud	24/48	24	-	

Electronic expansion valve(EEV)	F70	EEV opening query	0–480	--		
	F71	EEV control mode	0–2	0		
	F72	Manually set EEV opening	100–480	350		
	F73	Set EEV superheat degree	-15–15	5		
	F74	Set EEV discharge temp	85–110	92		
	F79	Return gas temp.		--		
System Setting	F80	Password	OFF 0001 -- 9999	4321	-	"OFF" means no password. Set "0000" to clear password.
	F85	Display sterilization total time	-	-	hour	
Testing	F98	Force defrosting (refrigeration)	Control panel display "AdF"		Start compressor, 4-way valve and fan motor. Press any key to exit or 20 minutes it will exit automatic.	

Remarks:

When enter Parameter setting status, press "up" or "down" to choose parameter code; after choose one, press "Timer" button to show this code's setting value, and press "up" or "down" can set the value; After finish setting, press "Timer" button to confirm and return to Parameter code status.

Error Handling:

ERROR CODE	ERROR STATUS	REASONS	ERROR HANDLING
A1	Thermal sensor alarm	Water temp. sensor open circuit or short circuit.	1. Check the water temp. sensor connection. 2. Change the water temp. sensor.
A2	Condenser coil sensor alarm	Condenser coil temp.sensor open circuit or short circuit.	1. Check the condenser coil temp. sensor connection. 2. Change the coil sensor.
A3	Exhaust sensor alarm	Exhaust temp. sensor open circuit or short circuit.	1. Check the exhaust temp. sensor connection. 2. Change the exhaust temp. sensor.
A4	Ambient temp. sensor alarm	Ambient temp. sensor open circuit or short circuit.	1. Check the Ambient temp. sensor connection. 2. Change the ambient temp. sensor.
A5	Low /High pressure alarm	1.1. High pressure protection switch off. 1.2. Ambient temp. too high or water heat exchanger dirty block. 2.1. Low pressure protection switch off. 2.2. Leakage of refrigerant.	1.1Check or change the high pressure protector. 1.2. Check if the surround temp. is too high, or clean the heat exchanger of water tank. 2.1. Check or change the low pressure protector. 2.2. Supply refrigerant and check if there is any leakage.
A6	(Auxiliary) electric heater protection overheat alarm	1. Electric heater protection switch off. 2. Tank water temp. too high.	1. Check if the water temp. is as LCD display, or if water temp. is too high. 2. Change the Electric heater.
A7	Exhaust temperature too high	1. Lack of refrigerant. 2. Mix with air in system. 3. Lack of lubricating oil.	1. Supply refrigerant. 2. Re-vacuumizing, and fill in refrigerant. 3. Change the lubricating oil of compressor.
A8	Condensate drain hole blocked	1.condensate pipe blocked； 2.Machine drain hole blocked；	1.Check condensate pipe is blocked or not. 2.Check machine drain hole is blocked or not.
A9	Return gas temp. sensor alarm	Return gas temp. sensor open circuit or short circuit.	1.Check the Return gas temp. sensor connection. 2. Change the ambient temp. sensor.
- -	Screen no display or display insufficiency	1. No plug in power. 2. Mainboard and operation panel communication break off.	1. Check the power line and voltage. 2. Reconnect the line of mainboard and operation panel. 3. Change the mainboard or operation panel.

NOTE:

1. When the unit has error, the buzzer of the operation panel will make an alarm sound, and there will show “Alarm” on the screen panel.
2. “ERROR CODE” will show on temperature display location by alternately.
3. Part of the error alarm can be automatically restored (resumed). That is the appeared alarm can be eliminated by electronically controlled self-test.
4. Some of the error alarm is caused by large fluctuation of the external power, by this, just power off and restart the unit to clear the error.
5. When the machine has error alarm and restart still can not eliminated error, please contact the after service as soon as possible for solution.

Maintenance and service

Examination before trial run

1. Check the water tank is filled with water, and open the water outlet tap till water flow out.
2. Check the water pressure is normal (0.15Mpa~0.7Mpa).
3. Check the air inlet or outlet is well connected; and the air outlet pipe heat insulation is completed.
4. Check the power supply voltage is normal, whether according with the nameplate requirement. (Range ± 10%).
5. Check whether the equipped parts are screwed /locked well.
6. Check whether the wirings are according with the Circuit diagram, and the earth-wire is connected.
7. Check whether the wind inlet and outlet has been cleaned up and no obstacle.
8. Check whether the condensate drain pipe is connected well and no blockage.
9. After power-ON, check the control panel display is normal.

Trial running

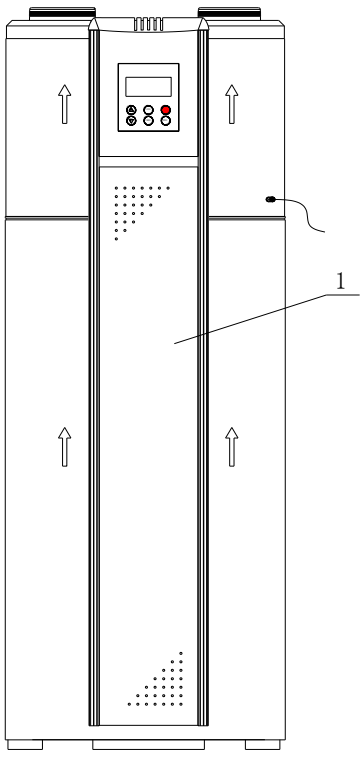
1. After the machine starts, to hear and determine whether there is abnormal sound or collision during operation, if there is abnormal sound, stop the unit immediately and check for it until there is no abnormal sound to continue operation.
2. For the first time power on, the compressor will have 3 minutes delay protection function.
3. Observe whether the drainage of condensate water is smooth, prevent the chassis stagnant or spill water.
4. For the first time discharge hot water or start the units after a long time closure, the water tap of outlet pipe may flow muddy water, this is a normal phenomenon, and continue to drain for a period of time can be cleared.
5. After stop operation for a long time, there may have condensation water hereabout the air outlet or pipe (especial in humidity weather), this is a normal phenomenon, use a dry washcloth to clean it or by air dry.
6. The advance setting parameters of the operation panel has been set at the factory, users no need to reset it, the maintenance person should be carefully set if needed.

Maintenance and service

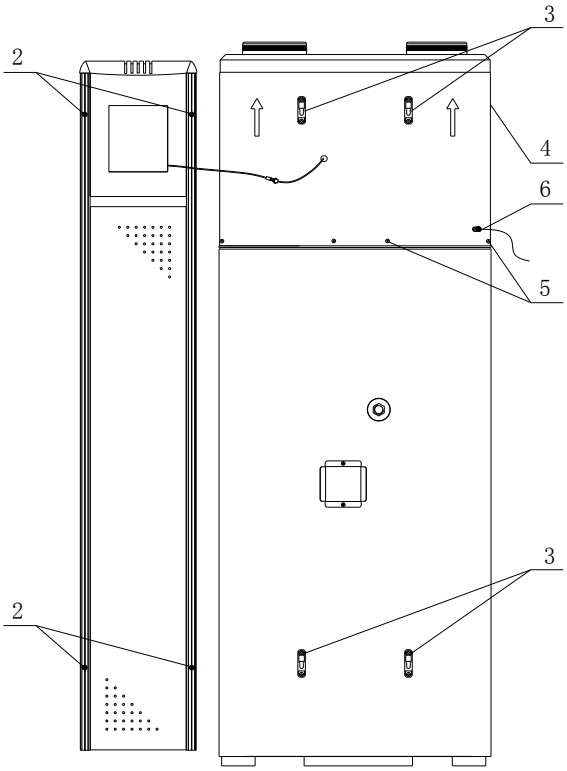
1. After carry and move the unit by the first time installation, and connects the water pipes and filled the tank with water. The machine should be rest for 1-2 hours before start trial running.
2. The water heater inlet filter needs to be cleaned once per 3 months. At the same time, per half year we suggest draining all the storage water and repeatedly wash for 2-3 times to remove the dirt and sediment.
3. To keep the unit in good heating performance, suggest cleaning the Air inlet /outlet filter net per month, or using high pressure air tube to clean the Heat exchanger. Be careful not to damage the copper tube.
4. Clean the Electric Heater per 6 months. (When clean the Electric Heater or Heat Exchanger must cut off power supply.)
5. Change the Anode (Magnesium rod) per 6 months for better anticorrosion and antiscale.
   According to different water quality, change the Anode rod when it's expended.
6. When clean the Tank, Electric Heater, Heat Exchanger or Anode rod must cut off power supply.
7. If the supply cord is damaged, it must be replaced by the manufacturer or its service agent or a similarly qualified person.
8. Special statement: for what does not in accordance with the requirements of above maintenance and service work lead to the failure problem, does not apply to our warranty scope.

Heat Pump main unit disassembly

If want to check and maintain the top main parts of the unit, should disassembly the cover of the unit, follow the below steps (Fig.5, 6) to process.



(Fig.5)



(Fig.6)

1. Move up the control panel and its components-1(including control panel、decorative panel, decorative aluminum profile、decorative strip) vertically 15-20mm, then pull it out horizontally to separate hook A-2 from hook A-3 until exposed butt splice connector;
2. Disconnect control panel with butt splice connector；
3. Remove all screws-5 from the bottom of the top cover.
4. Release the power line from the top cover of fixed terminal, to prevent the power line stuck when move up the top cover.
5. Finally, remove the block objects (e.g. air ducts etc.) from the air inlet /outlet, holding both sides of the top covers and move it up.

Circuit diagram

Heat pump WITH auxiliary electric heater: