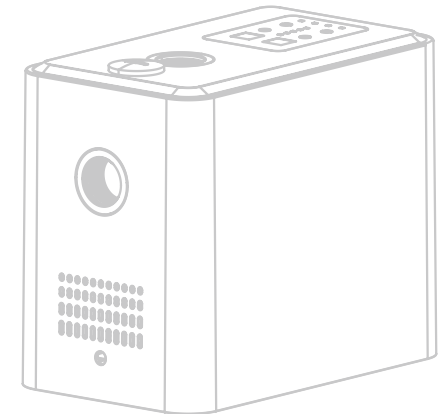




GB **USER'S MANUAL**
INTELLIGENT PERMANENT MAGNET
FREQUENCY CONVERSION BOOSTER PUMP



ISO9001 ISO14001 AUTHENTICATED
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TAIZHOU GRANDFAR INTERNATIONAL TRADING CO.,LTD

Intelligent permanent magnet frequency conversion booster pump



- Before installing and using the product, please read the instructions carefully and keep them in a safe place;
- The electric pump must be reliably grounded before use and should be fitted with an earth leakage protection device;
- It is strictly forbidden to touch the electric pump during operation;
- Strictly prohibit the dry running of the electric pump dewatering;

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Thank you very much for choosing our products, please read the manual in detail before installation and use, and keep it properly.



Warning:

- The electric pump must be reliably grounded before use and should be fitted with an earth leakage protection device;
- It is strictly forbidden to touch the electric pump during operation;
- Strictly prohibit the dry running of the electric pump dewatering.



Prohibited Persons Warning:

It is strictly prohibited for children, incapacitated persons, or persons with restricted capacity to use this product without the supervision of a guardian (e.g., if they have not been taught the safe use of the product and understand the hazards involved).



Pressure warning:

The pipework in which the pump is located must be able to withstand the maximum pump pressure (1.0 MPa).



Change the warning:

The manufacturer is not responsible for any consequences caused by the user's unauthorised changes to the electric pump or by exceeding the conditions of use of the pump that allow the pump to be used.

1. Product overview

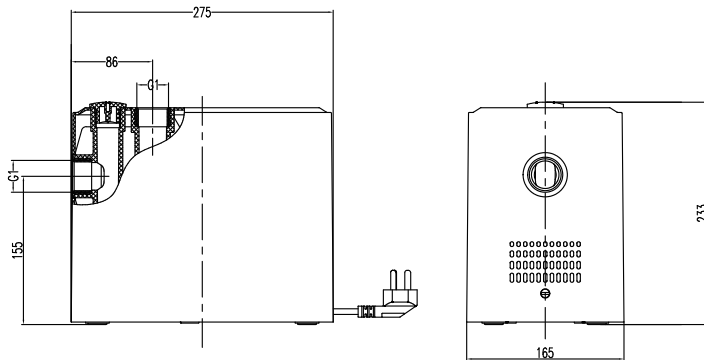
Intelligent permanent magnet frequency conversion booster pump (hereinafter referred to as electric pump), adopts permanent magnet motor, centrifugal impeller and guide vane structure. The electric pump has the features of smooth running, low noise, no leakage, anti-condensation and simple operation.

2. Conditions of use

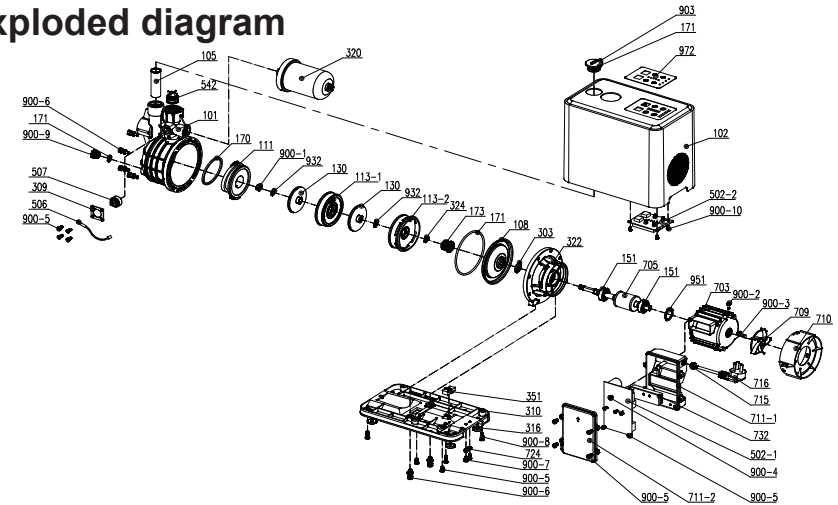
The electric pump shall operate continuously and normally under the following conditions of use:

1. Conveying clear water medium;
2. Ambient temperature 2°C+40°C; medium temperature range 2°C+60°C;
3. The altitude shall not exceed 1000m;
4. The pH value of the medium is between 6.5 and 8.5;
5. The volume ratio of solid impurities in the medium does not exceed 0.01%, and the particle size is not greater than 0.1mm.
6. The voltage is single-phase AC 220V, and the voltage fluctuation range is ±12% of the rated value.

3. Mounting dimensions

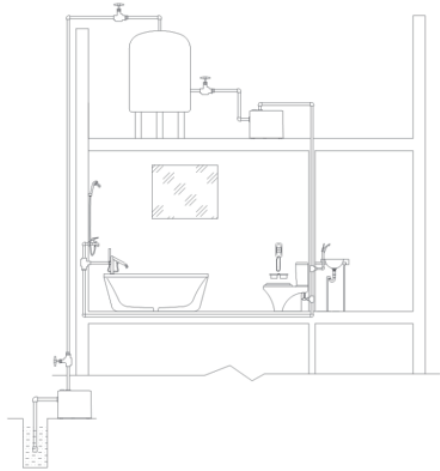


4. Exploded diagram



POS.	COMPONENT	MATERIAL	POS.	COMPONENT	MATERIAL
101	Pump body	PP-GF30%	542	Check valve	
102	Casing	ABS	703	Stator assembly	assembly
105	Filter	304 stainless steel	705	Rotor	
108	Pump cover	304 stainless steel	709	Fan	PP
111	Inlet section	PPO-GF30%	710	Fan cover	PP
113	Pump bowl	PPO+GF30%	711-1	Wiring box holder	PP+GF30%
113-1	Pump bowl assembly	PPO+GF30%	711-2	Terminal box cover	ABS
113-2	Pump bowl	PPO+GF30%	715	Cable sheath	NBR
130	Impeller	PPO+GF30%	716	Plug	
151	Deep groove ball bearings	6201-2RZ	724	Clamping plate	PP
170	Gasket	NBR	732	Heat sink	6063 alloy
171	O ring	NBR	900-1	Hexagon head nuts	304 stainless steel
173	Mechanical seal	108-12	900-2	Phillips pan head screw	Q235
303	Water retaining ring	NBR	900-3	Hexagon head screws	Q235
309	Press plate	304 stainless steel	900-4	Phillips pan head screw with washer	Q235
310	Base plate	ABS	900-5	Phillips pan head tapping screw	201
316	Foot	NBR	900-6	Hexagon socket head cap screw with washer	201
320	Pressure tank	0.5L	900-7	Phillips pan head tapping screw	201
322	Coupling	ADC12	900-8	Phillips pan head tapping screw with washer	201
324	coax	304 stainless steel	900-9	Vent cock	PA6+GF20%
351	Enclosure Pads	NBR	900-10	Phillips pan head tapping screw	Q235
502-1	Drive board	Electronic component	903	Water inlet plug	PA6+GF20%
502-2	Control panel	Electronic component	932	Flat washer	304 stainless steel
506	Temperature sensor	Sensor	951	Wave washer	65Mn
507	Pressure sensor	Sensor	972	Film	

5. Application scenario



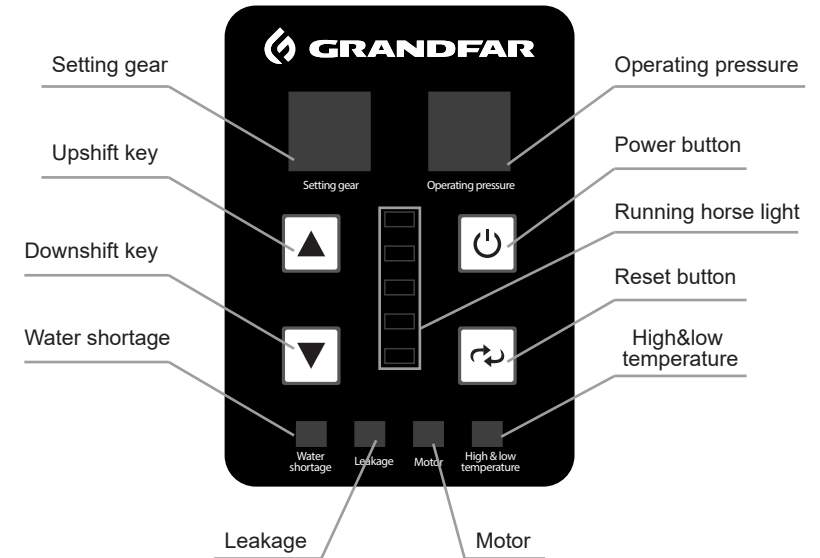
Pumping well water and pressurising downstairs




Tap water pressurisation

6. Instructions for use

6.1 Panel schematic



6.2 Description of key operation

Buttons	Clarification	Note
Power button	<ol style="list-style-type: none"> Short press the 'power button', the pump is switched on, the running light is on; Short press the 'power button' again, the pump standby; Long press the 'power button' for 3 seconds to start skipping the no-load protection directly into the self-priming, slowly increasing speed. 	In the boot state, when the system detects that the tap is open, the pump starts automatically; when the tap is closed, the pump stops automatically.
Reset button	Long press 3 seconds to restore factory settings	
Upshift key '▲'	<ol style="list-style-type: none"> Under the state of switching on, short press to adjust the pump gear; In the off state, long press for 3 seconds. Until the stacking indicator lights up, enter the automatic stacking mode (operating pressure right from the first decimal point). 	 Automatic stacking indication

Buttons	Clarification	Note
Downshift key '▼'	<ol style="list-style-type: none"> Under the boot state, short press to adjust the pump gear. Under power-on state, long press for 3 seconds to enter the parameter menu of the pump, under the parameter menu mode, short press to switch the operating parameters 	<ol style="list-style-type: none"> Motor speed Water pump power Controller temperature Water temperature Input Voltage Software version Restoring the display

6.3 Description of the display area

Display area	Clarification
Setting gear display area	A total of 6 adjustment gears, each gear head difference of 5 metres, the first gear head of 15 metres
Operating pressure display area	Real-time display of electric pump outlet pressure
Running horse light	The electric pump starts to run the lights, the more power, the more lights


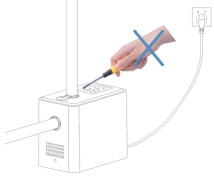
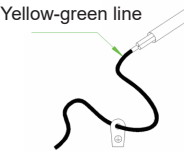
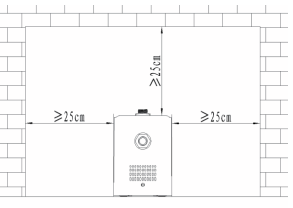
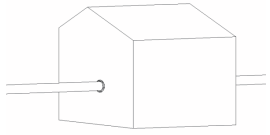
6.4 Fault warning light description

Icon	Reason for alarm	Clarification
	Water shortage	<ol style="list-style-type: none"> The pump will run without load for 10 seconds, and the alarm light will be on. The electric pump runs for 3 minutes, if the water cannot be discharged normally, the alarm light will be on.
	Leakage	If the pipeline leaks, the pump starts and stops repeatedly, and the alarm light comes on.
	Motor	If the motor is blocked, overcurrent, phase loss, high and low voltage, control board temperature is too high and so on, the alarm light is on.
	High&low temperature	<ol style="list-style-type: none"> When the water temperature exceeds 70°, the alarm lamp lights up and the electric pump stops automatically. The water temperature is lower than 4 ° and below, in order to meet the power and automatic mode, the electric pump automatically start, the alarm light flashes

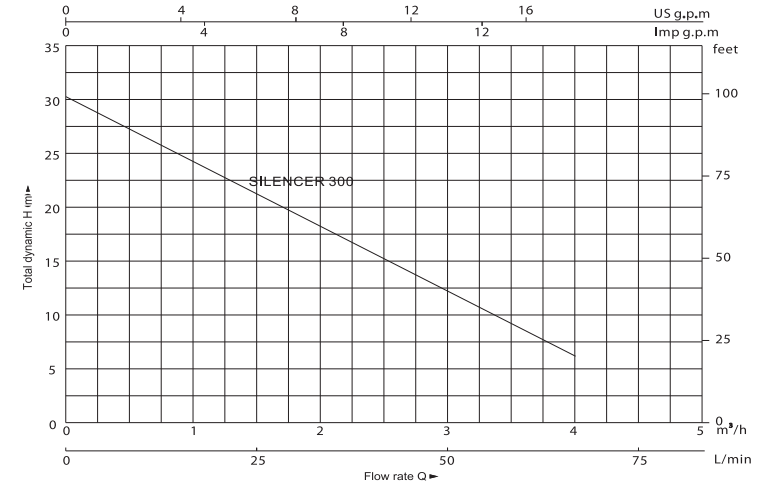
6.5 Protective function

Functionality	Functional description
Blocking protection	A motor blockage occurs, the motor fault alarm light comes on and the electric pump stops. After 3 seconds, it automatically tries to restart, and after 5 attempts, the electric pump stops completely.
Phase failure protection	A phase loss occurs in the motor, the motor fault alarm light comes on and the electric pump stops. After 60 seconds, it automatically tries to restart, and after 5 attempts, the electric pump stops completely.
Overcurrent protection	When the motor is short-circuited and overcurrent, the motor fault alarm light comes on and the electric pump stops. After 60 seconds, it automatically tries to restart, and after 5 attempts, the electric pump stops completely.
No-load protection	When there is no water in the pump chamber, the motor will dry rotate for 10 seconds, the water shortage alarm light will come on and the electric pump will stop.
Water shortage protection	There is water in the pump chamber, but the electric pump runs for 3 minutes and still fails to produce water, the water shortage alarm light comes on and the electric pump stops. The pump will restart after 5 minutes for the first time, after 2 hours for the second to fourth time, and every 6 hours after the fifth time.
Leakage protection	When a leak is detected in the pipeline, it will not affect the normal use of the electric pump, and the pump will start and stop frequently only when the valve is completely closed to alert the user.
Undervoltage protection	When the power supply voltage is lower than 150V, the motor fault alarm lamp lights up and the electric pump stops, and the detection voltage is higher than 170V to restore the
Overpressure protection	When the power supply voltage exceeds 270V, the motor failure alarm light will be on and the electric pump will be shut down, and the detected voltage will be lower than 260V to recover.
High temperature protection	Water temperature over 70 °, high and low temperature alarm light, electric pump automatic shutdown. The water temperature drops 10 degrees automatically recover.
Frost protection	When the water temperature falls below 4°, the high and low temperature alarm lights flash and the electric pump starts automatically to prevent the pump chamber from freezing. After the water temperature up to 7 °, back to standby mode. If it has been rising less than 7 ° pump running 10 minutes downtime detection continue to start, has been repeated until the water temperature to 7 °, downtime detection about 3-5 seconds.

7. Caveat

Graphical Description	Statement of use
	Before using the pump for the first time, you need to open the water injection screw plug, fill the pump cavity with water, drain off the air, install the water injection screw plug in place, and then start the pump. When pumping well water, if you can't pump water for 3 minutes, wait until the pump stops after the water shortage protection, open the water injection screw plug, fill up the pump cavity with water, restart the pump, repeat the operation for 2 to 3 times until the pump produces water normally.
	When the electric pump is working, if you want to adjust the position of the electric pump or have the action of touching the electric pump, you must cut off the power supply first to prevent accidents.
	Electric pumps should be correctly installed leakage protection device, and should be in the pump or cable grounding mark for reliable grounding, connected to the power outlet should also be reliable grounding at the same time
	Install the electric pump in a place where it can be easily serviced and inspected, and keep it dry; when installing the electric pump in a narrow place, the electric pump should be installed as shown in the figure on the left to facilitate heat dissipation.
	It is strictly forbidden to use the electric pump in water. Installed outdoors, a suitable cover is required to prevent sun and rain, as well as frost protection. Installed indoors, it is necessary to set up a drain around the pump to make it form a natural drainage to prevent water leakage leading to damage when using, repairing, or replacing the electric pump.

8. Product performance

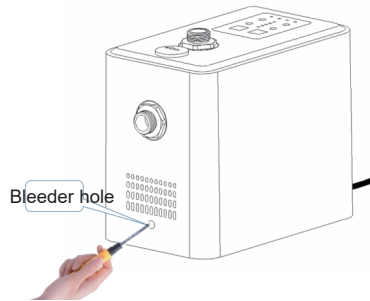


Model	Power	Max.head	Max.flow	Suct.Max.	Size
	kW	m	m ³ /h	m	Inch
SILENCER 300	0.32	30	3.6	3	1"x1"

Model	Q(m ³ /h)	0	0.5	1	1.5	2	2.5	3	3.5	3.8
	Q(L/min)	0	8	17	25	33	42	50	58	63
SILENCER 300	H(m)	30	27.2	24.8	21.8	18.4	15.2	12.1	8.5	6.9

9. Maintenance

1. Regularly check the insulation resistance of the electric pump, after a long period of work its insulation resistance shall not be less than 5MΩ (megohm), otherwise you must seek technical support to meet the requirements before use.
2. If the electric pump is not used for a long time, it should be removed from the pipeline, use a screwdriver to loosen the internal drain screw plug, drain the water inside the pump, wipe the main parts and place them in a dry and ventilated place and keep them in a proper place.



10. Troubleshooting

10.1 Water pump failure

Fault phenomenon	Main reasons	Treatment
The motor does not rotate	<ol style="list-style-type: none"> 1. Poor contact or breakage of the electric pump cable 2. Impeller jammed 3. Stator winding burnt out 	<ol style="list-style-type: none"> 1. Check the terminals or replace the cable with a new one. 2. Correct the jammed parts or remove debris 3. Send the maintenance unit for repair
The motor runs, but no water comes out of the pump	<ol style="list-style-type: none"> 1. Air leakage in the inlet pipe 2. Check valve is not open or clogged 3. Air entering from the seal 4. water pump not filled with water 5. Damaged impeller 	<ol style="list-style-type: none"> 1. Check that inlet pipework, joints, etc. are well sealed 2. Check the flexibility of the check valve and remove the blockage 3. Adjust or replace new seals 4. Re-fill the pump body with water 5. Replace the impeller

Fault phenomenon	Main reasons	Treatment
Lack of traffic	<ol style="list-style-type: none"> 1. The pipeline is too long, the head is too high or the pipeline is bent. 2. Filter or impeller local blockage 3. Impeller serious wear 	<ol style="list-style-type: none"> 1. Shorten the pipeline, according to the use of the range of head use or make the pipeline bending gentle 2. Remove clogging debris 3. Replace the impeller
Intermittent start-up of electric pumps when no water is used	<ol style="list-style-type: none"> 1. Water leakage from outlet pipe and tap 2. Check valve is entangled in foreign objects or check valve failure 3. Insufficient air pressure in the pressure tank or damage failure 	<ol style="list-style-type: none"> 1. Check whether the outlet pipe is leaking and whether the tap is closed tightly. 2. Clean the check valve or replace it with a new one. 3. Increase the air pressure of the air tank moderately with an air pump or replace the pressure tank with a new one.
Vibrating and noisy motor	<ol style="list-style-type: none"> 1. Insufficient water inlet or air leakage at the inlet. 2. The pump is not installed horizontally, or the installation is not flat. 3. Bearing damage. 	<ol style="list-style-type: none"> 1. Increase the diameter of the inlet pipe or replace the inlet pipe with a hard pipe and re-seal the connection. 2. Re-install horizontally and install shock-absorbing pads under the foot. 3. Replace the bearing

10.2 Common Fault Codes and Troubleshooting

Trouble code	Corresponding fault	Fault resolution
E01	Malfunction of communications	Communication between the panel and the motherboard has failed. Check the connection wire between the motherboard and the panel for poor contact.
E02	Blocking (motor fault indicator light on)	Check if the motor is stuck. How to recover after alarm: <ol style="list-style-type: none"> 1. Automatically try to restart after 3 seconds, try 5 times 2. User presses power button to restart to recover
E04	Pressure sensor failure	Check if the pressure sensor is damaged and if the signal wire is connected. How to recover after alarm: <ol style="list-style-type: none"> 1. Clean the interface wiring. 2. Replace the pressure sensor.

Trouble code	Corresponding fault	Fault resolution
E05	lose step	Sudden excessive load shock, mismatch of motor parameters. How to recover after alarm: 1. Automatically try to restart after 3 seconds, try 5 times 2. User presses power button to restart to recover
E06	Phase loss (motor fault indicator light on)	Check whether the motor three-phase is connected and whether the motor is disconnected. How to recover after alarm: 1. Automatically try to restart after 60 seconds, try 5 times 2. User presses power button to restart to recover
E07	Overcurrent (motor fault indicator light on)	Check the motor for a short circuit. Is there water in the motor wiring. How to recover after alarm: 1. Automatically try to restart after 60 seconds, try 5 times 2. User presses power button to restart to recover
E09	Water pump empty (water shortage indicator on)	No water in pump chamber. How to recover after alarm: Add water into the pump, then press the power button to restart to recover.
E10	Water pump out of water (out of water indicator light on)	Pump has water in the pump chamber but no water in the inlet or too little water in the inlet. How to recover after alarm: 1. The current pressure drops more than 3 metres or the current pressure rises more than 3 metres 2. Restart regularly after shutdown 3. Users press the power button to restart recovery
E11 (not shown)	Leakage indication (leakage indicator light on)	A leak in the line is detected and the pump starts and stops frequently. How to recover after alarm: 1. Continued for 10 minutes without pressure drop 2. Continue to run for 180 seconds without stopping 3. Users press the power button to restart the recovery
E12	Drive over-temperature	Controller power module temperature detection is greater than 85°C. How to recover after alarm: 1. Temperature drops below 70° to recover
E13	Drive Temperature Sensor Failure	Loss of signal from the IPM's built-in temperature sensor.

Trouble code	Corresponding fault	Fault resolution
E14	Voltage Low Voltage Protection	Detect voltage below 150V, shutdown protection. How to recover after alarm: 1. Detecting voltage higher than 170V to recover for 3 seconds.
E15	Voltage and high voltage protection	Detect voltage over 275V, shutdown protection. How to recover after alarm: 1. Detecting voltage below 268V to recover for 3 seconds.
E18	High water temperature protection (temperature alarm indicator light on)	Water temperature above 70 degrees shutdown protection. How to recover after alarm: 1. The water temperature drops 10 degrees automatically recover.
E19 (not shown)	Low water temperature protection (flashing temperature alarm indicator)	The water temperature is below 4 degrees and the pump is running at low speed. How to recover after alarm: 1. The water temperature rises 7 degrees to recover. 2. 10 minutes forced recovery.
E20	Temperature sensor failure	Water temperature sensing open or short circuit. How to recover after alarm: 1. Replace or reconnect the water temperature sensor.