



SmartGen
ideas for power

HT310/HT322
ENGINE WATER HEATER
USER MANUAL



SMARTGEN (ZHENGZHOU) TECHNOLOGY CO., LTD.



Chinese trademark

SmartGen English trademark

SmartGen – make your generator *smart*

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Table 1 - Software Version

Date	Version	Note
2021-02-28	1.0	Original release.
2021-05-31	1.1	Remove nuts, screws, flat gasket, spring washer and change hose clamps number from 4 to 2 in packing list.



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1 OVERVIEW

HT310/HT322 Engine Water Heater is applied to various engine coolant preheating for its fine cast aluminum enclosure, flame-retardant engineering plastics end closure and multiple installation methods, which is easy and convenient to use.

If the outside temperature is lower than 4°C, the engine coolant and lubricant may condense into solid state, losing their lubrication and cooling properties during cranking, which will damage the engine. Thereby, engine heater should be installed to ensure normal starting and running of the engine when the outside temperature is lower than 4°C.

This product is suitable for various engine with (0~13)L displacement.

Please login in and visit our company's official website (www.smartgen.com.cn) to select heaters.

2 PERFORMANCE AND CHARACTERISTICS

- Fine cast aluminum enclosure and special surface treatment with high corrosion resistance and high/low temperature capability;
- Stainless steel inner heating pipes with high corrosion resistance;
- Coolant temperature is controlled by thermostat which is installed within the heater. It has simple connections and high reliability;
- There is a water drain valve with seal ring on the bottom of the heater so as to be used when needed;
- Auger-type heating pipe design, larger surface area and longer service life;
- This product can work normally at -40°C temperature.

3 TECHNICAL PARAMETERS

Table 2 – Technical Parameters

Model	HT310	HT322
Rated Power	1190W(220V 1000W)	2200W(220V 1850W)
Rated Voltage	240V	
Rated Current	5A	9.2A
Engine Displacement (L)	(0~7)L	(7~13)L
Thermostat Set Point	(40±3)°C	
Thermostat Range	Off: (40±3)°C Reset: (25±6)°C	
Insulating Resistance	≥50MΩ	
Electrical Strength	AC 1.5kV 1min	
Inlet/Outlet Size	3/4"(φ19mm)	
Max. Water Pressure	0.5MPa	
Protection Level	IP67	
Vibration Resistance	(5~8)Hz Amplitude±7.5mm (8~500)Hz a=2g	Triaxial Triaxial
Shock Resistance	Half-sine Wave; a _{peak} =50g;	Triaxial
Working Conditions	-40°C~+70°C	
Storage Conditions	-40°C~+80°C	
Case Dimensions	238mm×135mm×133mm	
Weight (include accessories)	0.95kg	

4 SCHEMATIC DIAGRAM

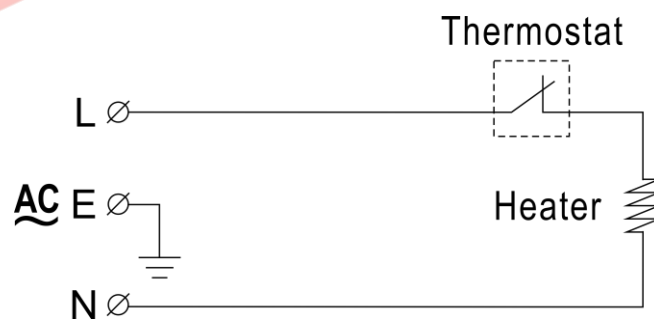


Fig.1 – Schematic Diagram



5 WIRE CONNECTION

This product does not provide power line, please refer to the wiring diagram in figure 2 and connect L, N, E (ground wire), the ground wire must be well grounded.

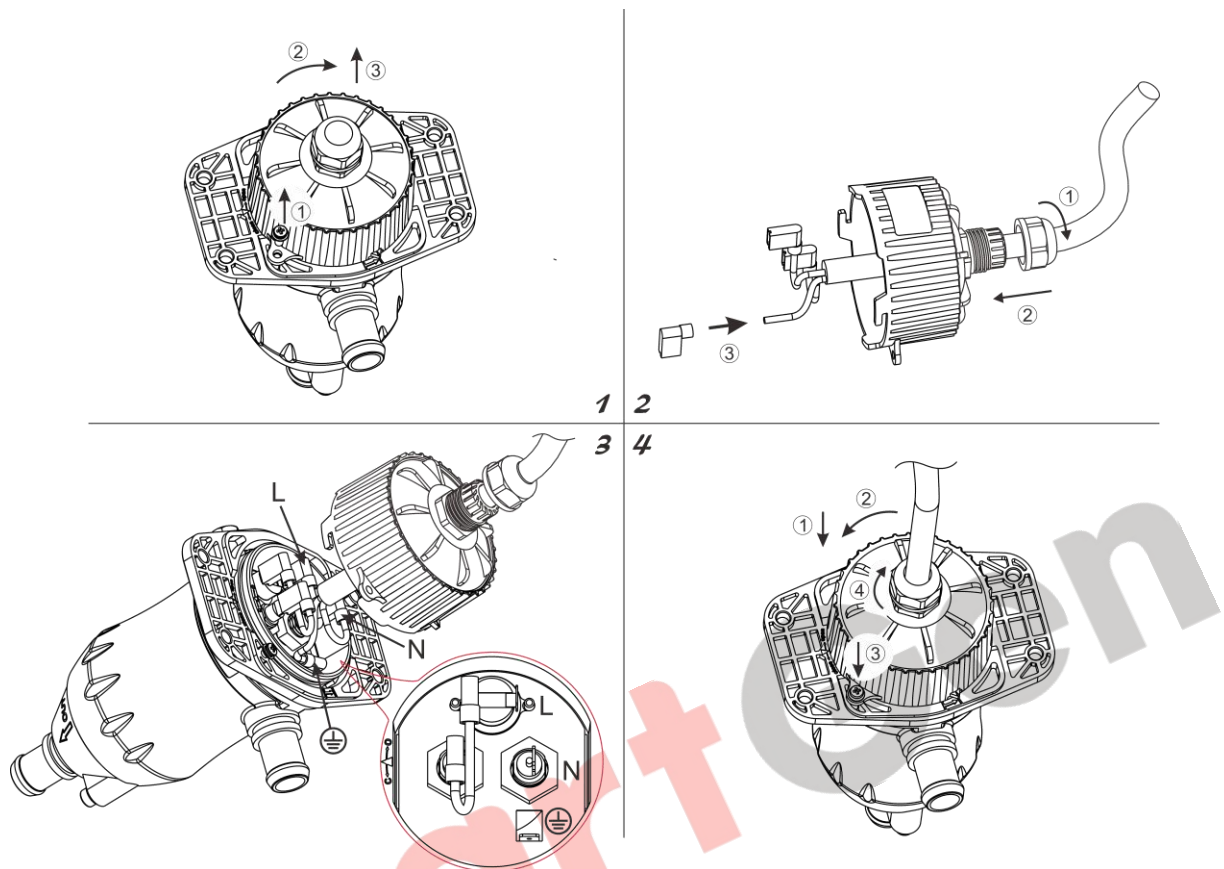


Fig.2 – Wiring Diagram

The wiring steps:

1. Twist off the screw ①, turn the back shell ② clockwise, and then pull up the back shell ③;
2. Unscrew the back cap of waterproof wiring head ①, make the power line (cable outer diameter $\phi 6\text{mm} \sim \phi 11\text{mm}$, $3 \times 2.5\text{mm}^2$ copper cable is recommended) go through the back cover ②, respectively pressed on the flag terminal ③;
3. The flag terminals on the power line are connected to the L, N and E of the heater respectively;
4. Press down the back shell ①, turn counterclockwise to the place ②, lock the screw ③, and tighten the water proof connector ④.

6 HEATER CONNECTION

Please install the heater vertically as shown in the diagram before use. Pay attention to the direction of heater inlet and outlet, and ensure that the heater position is below the lowest water level of the engine and that all the air is exhausted out of the heater and it is topped off with water. The connection between the heater and engine is shown in the following figures:

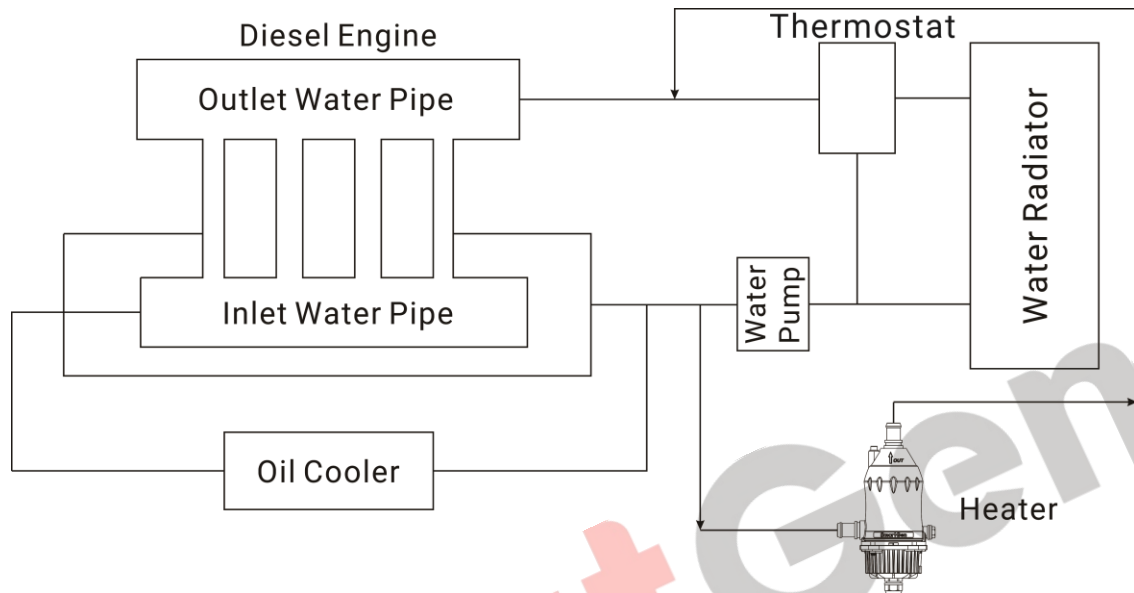


Fig.3 – Heater Operating Schematic Diagram

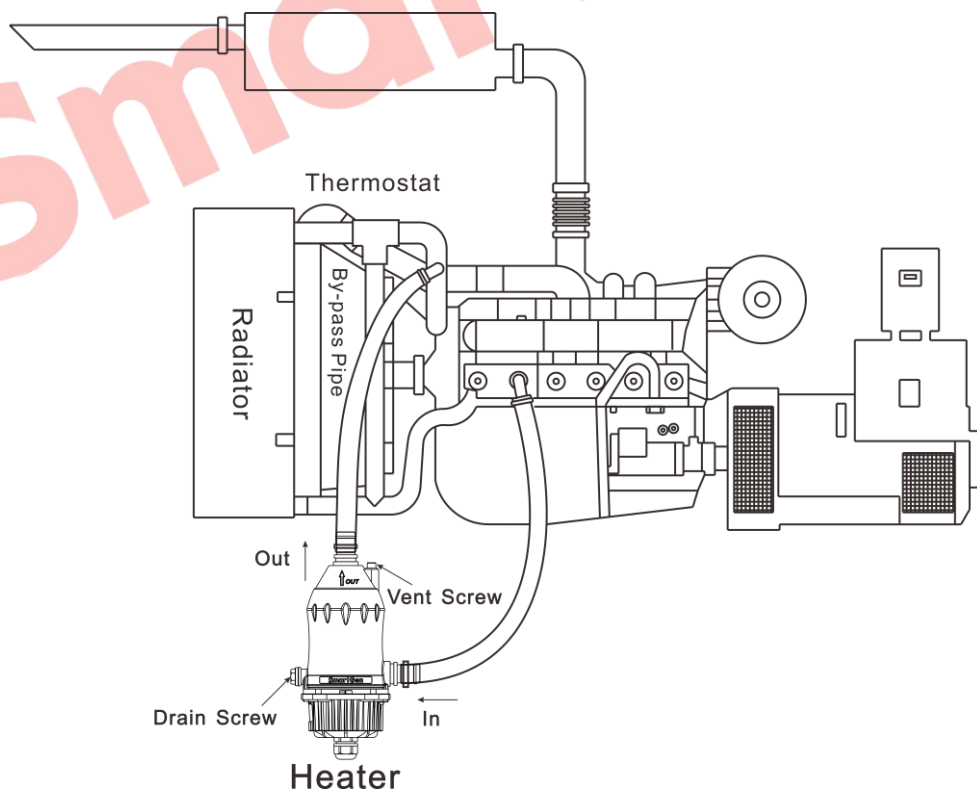


Fig.4 – Installation Position Diagram

7 INSTALLATION AND OVERALL DIMENSIONS

The heater is designed for screw mounting, please fasten it with two M6X25mm screws during installation.

(Unit: mm)

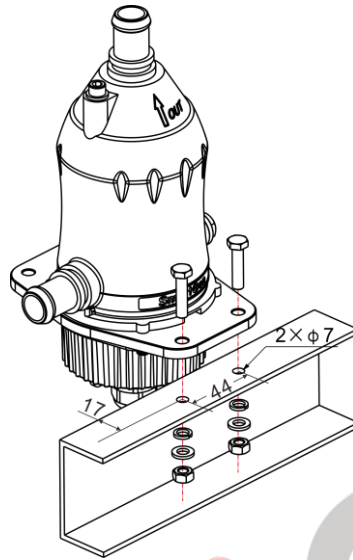


Fig.5 - Installation Diagram

(Unit: mm)

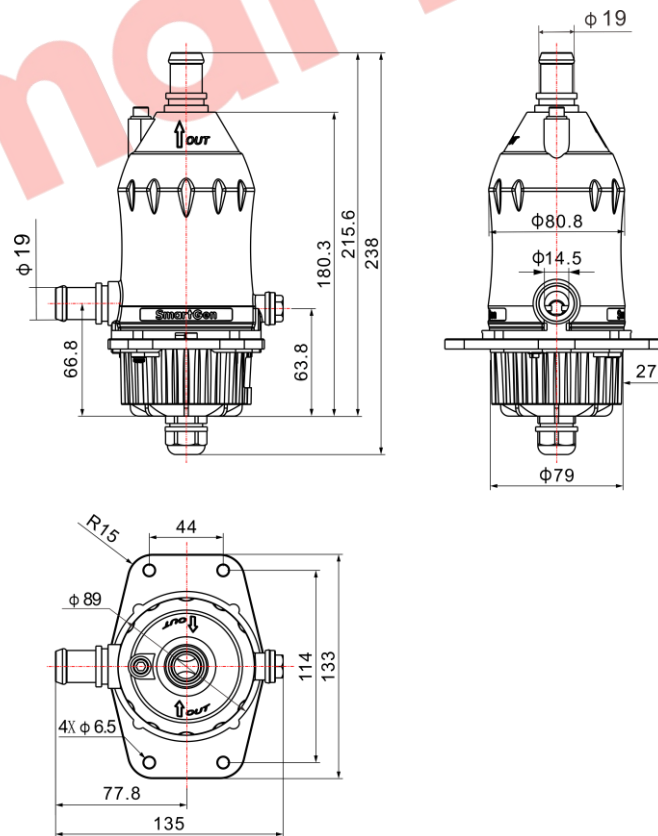


Fig.6 - Overall Dimensions

8 CAUTION

Please ensure that all the air is exhausted out of the heater and it is topped off with coolant before starting the machine. If water is used, please drain it off to avoid the heater rupture due to the remaining water freezes when the outside temperature is below 0°C.

It is strongly recommended to use the corresponding label of antifreeze.

The earth wire must be grounded.

Drainage valve: using hexagonal wrench, adjustable wrench or cross screwdriver to open or close.

(Unit: mm)

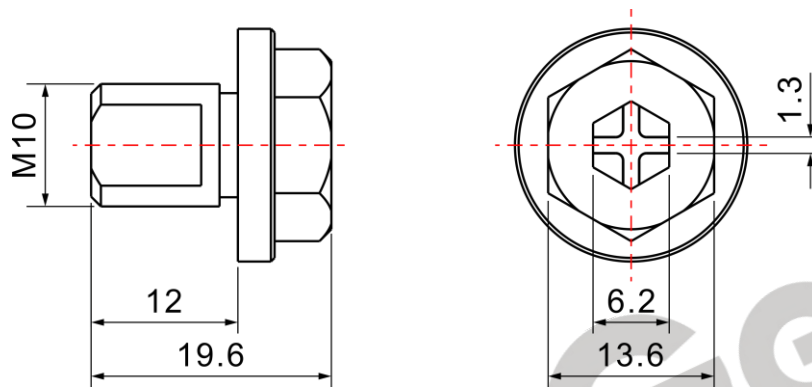


Fig.7 – Water Drain Valve

9 HEATER PACKING LIST

Table 3 – Packing List

No.	Name	Number	Remarks
1	Heater	1	
2	Flag terminal	4	XB-2.5FLDNY2-250
3	Hose clamps	2	Φ18~Φ32
4	Certificate	1	
5	User Manual	1	