ULTRASONIC GENERATOR

(JYD-700E SERIES)

使用说明书

User Manual

深圳市佳源达科技有限公司

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01. Overview

The newly ultrasonic generator was officially launched to the ultrasonic cleaning industry in 2007. The Company established R&D team in the development center of Hunan University in 2006, invested abundant human resources and materials to make the revolutionary modification to old ultrasonic cleaner and it has successfully developed the latest ultrasonic control technology, which has achieved ideal effects after related tests were conducted in relevant manufacturers with a year of R&D and experiment.

Main features of the generator: it adopts international advanced figure pulse for driving; compared with traditional auto-excitation type control technology, it's advantages like small in size, light in weight, powerful in power, stable and reliable in operation, continuous and adjustable in power and flexible in control have gained approval from many experts. Frequency scanning more ensured the machine can be at its best working state from the beginning to the end, which can express the potential of ultrasonic transducer to its maximum. It has perfect protection function: over-current protection, output short-circuit protection and integrated the functions of digital ampere meter, frequency and PLC remote control.

It integrates the functions of digital ampere meter, frequency, time control, PLC remote control, mode of sweep display etc. Based on traditional ultrasonic generator, functions of frequency locking, current locking, selection of mode of sweep display, 485 communications and so on are added, expanding the scope of cleaning of ultrasonic generator and solving the problems of frequency and current deviation of the generator after running for a while.

02. Main Parameters

Product model	Model JYD-701E	Model JYD-702E
Driving power	600W-1500W	1500W-3000W
Power control	10-100%	10-100%
Working frequency	20KHz-40KHz	20KHz-40KHz
Working voltage	220V±10% 50Hz/60H	220V±10% 50Hz/60H
Maximum output current	**5A**	**8.5A**
Ambient temperature	0-40℃	0-40℃
Net weight of product	6.5KG	6.5KG
External dimensions	340mmx300mmx130mm	340mmx300mmx130mm

03. Specification on Panel Functions and Operation

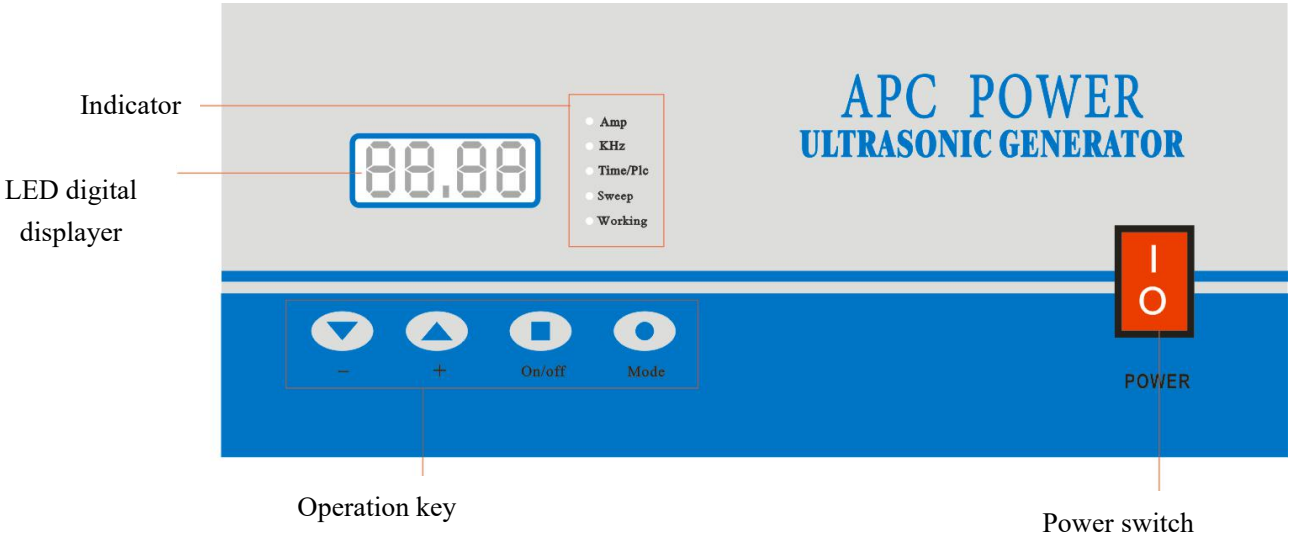


Figure 3.1

Name	Function specifications
Power switch	Power switch is general power switch for the whole machine, which is on and off when it is pushed and pressed respectively.
Indicator	It refers to state indicator for current operation of the generator. There are 5 indicators including current display, frequency display, time/PLC display, display of mode of sweep display and display of working state.
Operation key	The icon of ● is the Mode key for control on LED digital display modes which are able to display overall working current and ultrasonic working frequency respectively, it is for mode of time/PLC or sweep.

After booting, press the Mode key for control on LED digital display modes which are able to display overall working current and ultrasonic working frequency respectively, it is for mode of time/PLC or sweep.

Mode of current display

Figure 3.2

Mode of working frequency display

Figure 3.3

Mode of time/PLC display

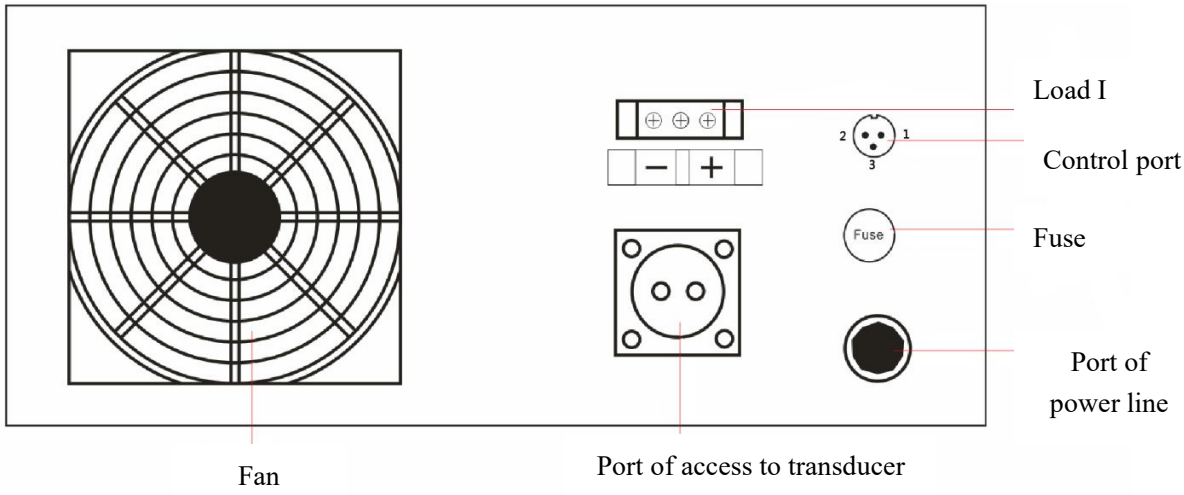
Figure 3.4

Mode of sweep display

Figure 3.5

Lighting position	Display mode on LED digital displayer	Panel function specification
●Amp	Mode of current display	LED digital tube will display working current of the whole machine (unit: Am (Ampere)) as shown in Figure 3.2.
●KHz	Mode of working frequency display	LED digital tube will display working currency of the ultrasonic generator a shown in Figure 3.3.
●Time/PLC	Time/PLC display mode	LED digital tube will display the set time of the ultrasonic generator while Time/PLC indicator will be on as shown in Figure 3.4. In the Time/PLC display mode, keys of ▼, ▲ and ■ will work. In other display modes, the three keys will not work. The maximum time of the timer is 59 minutes 59 seconds. If not intending to set time, it will be advised to set it to be ON. Press the ■ ON/OFF key and it will stop working. Press the ▼ key and the time set will decrease to OFF at minimum. Press it once and it will decrease 1 second. Long press it and the time set will decrease continuously. Press the ▲ key and the time set will increase to ON at maximum (mode of boot and continuous working). Press it once and it will increase 1 second. Long press it and the time set will continuously increase. After setting the time, press the ■ ON/OFF key and the timer will start timing. When it is time set, the machine will turn off the ultrasonic and call in originally set ultrasonic time. After booting, access the Ultrasonic Generator through PLC control. If it is Time/PLC display mode after pressing the Mode key, LED digital tube will display PLC when the timing function will not be effective. Whether the ultrasonic of the whole machine will be fully controlled by PLC. Note: if the timing function is not used, please turn the time display to the state of time display!
●Sweep	Mode of sweep display	There are four modes of sweep display of SP01, SP02, SP03 and SP04 as shown in Figure 3.5. Each mode of sweep display is different in width of sweep display, which is applied to different cleaning objects, making the ultrasonic generator reach the best cleaning effects.
●Working	Working state	It indicates that the generator is in working state.

04. Specification on Connection Port



Note: control port (1：A, 2：B, 3：GND)

Figure 4

05. Debug Methods and Steps

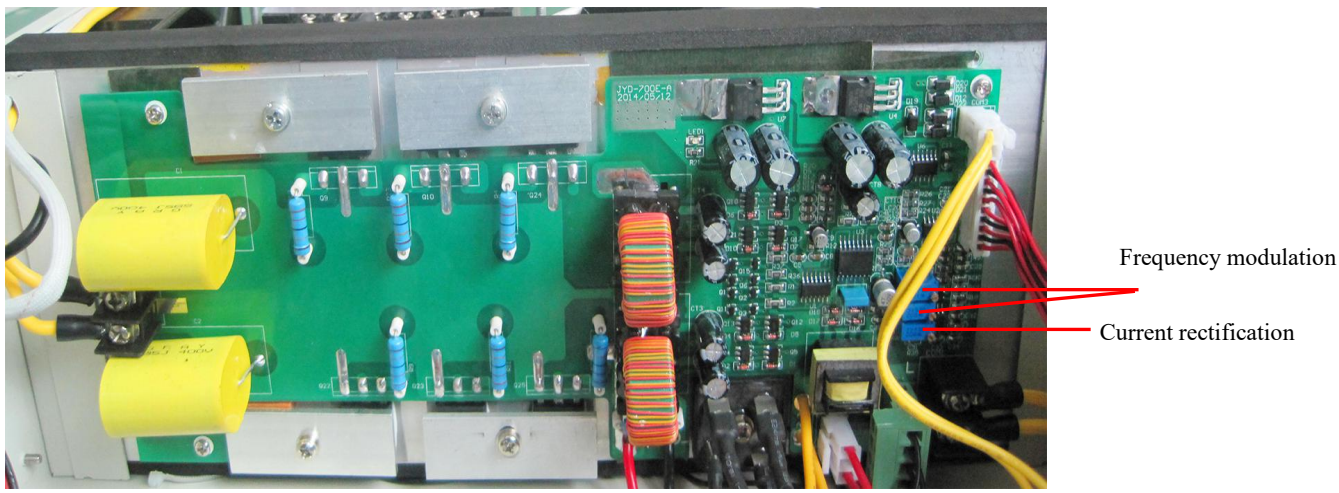


Figure 5.1

1. Connect load (transducer) to output port of the generator (Figure 4). Note: please make correct connection as per ＋and－.

2. Open the machine cover, and modulate the dial-up switch 1 and 2 on the display panel to the unlocking state at the bottom as shown in Figure 5.3

3. Connect it with power line, press the Mode key and modulate the display mode to the mode of frequency display to observe whether working frequencies of the generator are consistent with those of the transducer. In case of inconsistency, please adjust the potentiometer shown in Figure 5.1 and modulate working frequency to be in consistency with that of the transducer.

4. Press the Mode key and modulate display mode to the mode of current display. Press the ON/OFF key and working indicators will be on, indicating that the ultrasonic generator starts working. Press the keys of ▼ and ▲ to modulate current. Press the key ▲ once to increase current and press the key ▼ to decrease 0.1A current. Long press the key ▼ to rapidly decrease current. It is advised not to press the key ▼ to decrease current until waiting for current to be stable (about 3S) after pressing the key ▲.

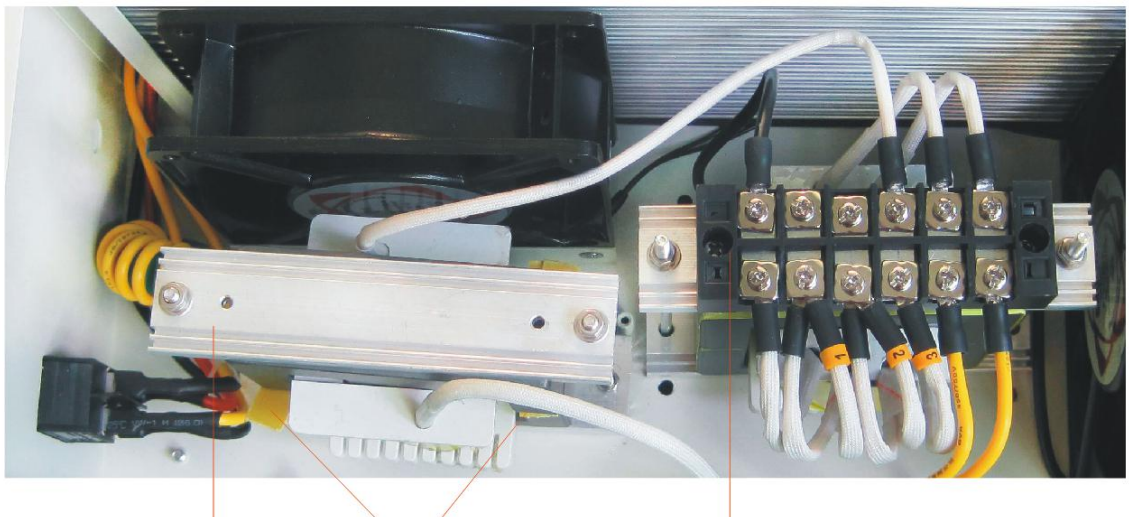
5. Current rectification: when maximum working current displayed on the generator is in inconsistency with actual working current, it will be advised to modulate current rectification potentiometer shown in Figure 5.1.

6. If current fails to reach requirements, turn off the power supply, modulate sensitive quality of matching inductance and open power supply and ON/OFF key to observe the ampere meter and make working current displayed on the ampere meter reach working requirements for the load.

7. In debugging, rated current shall be calculated as per 0.13A for each transducer. Current can be reduced to 0.12A in calculation in a proper way in case of substantial transducers.

8. Mode of sweep display (those who are not debugging personnel are prohibited): SP01 sweep display; SP02 sweep display; SP03 sweep display; SP04 sweep display. Please select appropriate mode of sweep display based on different cleaning objects.

9. After modulation, please turn dial-up switch on the display panel to the locking state on top as shown in the figure. The locked debugging frequency and current will not deviate.



Matching inductance Matching gasket Boosting transformer

Figure 5.2

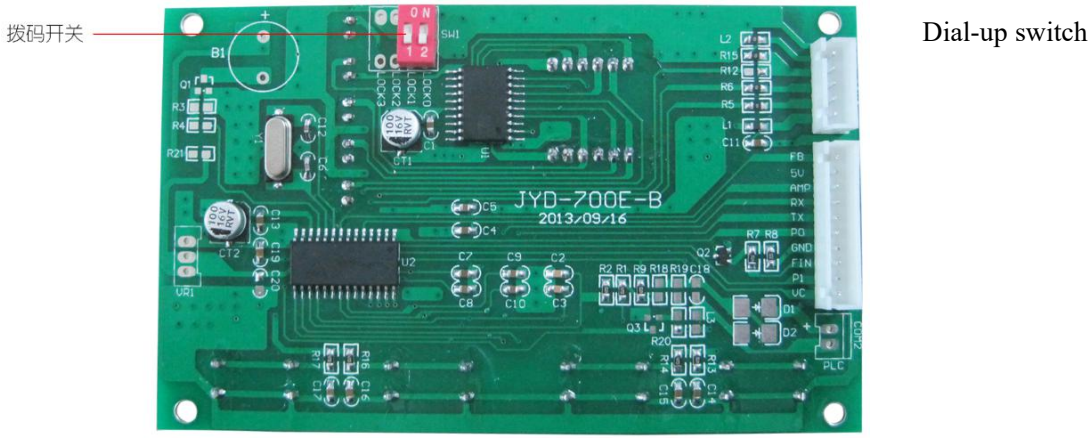


Figure 5.3

06. Common Faults and Maintenance Methods

Fault specification	Maintenance method
There is no ultrasonic and fuse is burnt	Open the machine cover to check whether there is damage on power switch. Check whether there is burning trace on the main board and check whether bridge rectifier, power tube and power resistance are damaged. Replace them if they are damaged.
There is no ultrasonic, fan runs and indicator on driving board is on, and there is frequency display	Check whether each connector on the generator is loosened or disconnected. If yes, weld; if not, return to the manufacturer for repair.
There is no ultrasonic, fan runs and indicator on driving board is off.	Check whether 12V power supply, stabilivolt IC, driving audion and diode are damaged. If yes, please replace them one by one.
There is ultrasonic and there is overcurrent, which is abnormal.	Check whether there are problems in load, if not, please return to the manufacturer for repair.
There is ultrasonic, ultrasonic sound is abnormal and poor in strength.	(1) Check whether output frequency is within working frequency range of transducer by frequency meter (in terms of frequency, 28KHZ transducer and 40KHZ transducer shall be 26KHZ-31KHZ and 36KHZ-41KHZ respectively). In case of too big difference, return to normal working frequency by modulating frequency potentiometer. (2) Observe the current in ampere meter. If current is overly smaller than rated current, first of all, check whether there is damage on ultrasonic transducer, such as transducer shedding, transducer wafer cracking, bonding glue fracture and whether there is short circuit in connection guide wire.

	Generally, if current fall is slight or there is no fall at all, sound is normal while ultrasonic strength declines in a fierce way, it will be likely that transducer bonding glue cracks. Its way of judgment is: observe the glue coating of the joint between transducer and steel plate, which shall be smooth surface in normal situation. In case of tiny crack, it will be likely that glue has cracked and it is necessary to disassemble the transducer to re-bond. If current declines in a fierce way, mainly check whether there is open circuit in guide wire or transducer wafer fracture. (3) Generally working voltage, cleaning object, water temperature and type of cleaning solution etc. will have impact on ultrasonic strength. In fierce stirring in particular, ultrasonic will weaken and it will not return to normal until tens of seconds later. Please pay attention to methods of usage.

07. Precaution

Please place the machine in where it is dry and airy. Distance between the rear of the machine and screen shall be longer than 35mm for convenience in heat dissipation. Please contact maintenance personnel in case of abnormal operation. Please do not uncover arbitrarily so as to prevent injury.