N/DN/IID Series
(JY92-IIN)

Ultrasonic Homogenizer

Operation Manual

⚠ WARNING: Read carefully and understand all INSTRUCTIONS before operating. Failure to follow the safety rules and other basic safety precautions may result in serious personal injury.

Notice :No liquid no working
Tip don't touch cup edge
One working time not over 20 minutes
Power better set not over 40%

1. Introduction

With the Development of Biological industry, the Ultrasonic Cell Crusher application in experiment has increases demand, such as the sample temperature measurement, control, cryogenic cooling samples and the improvement of intelligent degree of the machine, and so on, have put forward new requirements, in order to further perfect the various properties of such instruments, We based the Newest Foreign technology and existing various types of ultrasonic cell crusher, combined with the software and hardware technology developed in the Microcomputer Control, Frequency Selective, Temperature Measurement, Protection. It has advanced technology, reliable performance, easy to operate, beautiful, display brightness and temperature control precision, etc.

Ultrasonic Homogenizer is a kind of Cavitation in liquid by use of strong ultrasonic instrument, Multi-function multipurpose ultrasonic treatment on material, and can be used in the brokenness of Animal and Plant Tissues, Cells, Bacterium, Bacillus Strains, also can be used to emulsify, separate, disperse, homogenize, distill, wash and accelerate the chemical reaction etc. The instrument are widely used in various fields, such as teaching, scientific research, production of biochemistry, microbiology, medicine chemistry, surface chemistry, physics, zoology, agronomy, physic, pharmacy, etc.

2. Technical Parameters:

Model no	JY92-IIN
Operating frequency:	20-25KHz
Power supply:	220/110V 50Hz/60Hz
Optional Tip (Φ)	Φ6
Accompany (Φ)	Φ2.3,8,10,
Mainframe Weight	N.W: 12 Kg; G.W:14 Kg
Sound Abating Chamber Weight:	N.W: 8 Kg ; G.W: 9 Kg
Host Size:	430*255*300 mm
Sound Abating Chamber Size:	345*340*570 mm
Packing Size:	Host: 490*320*470mm; Sound Abating Chamber: 425*425*600 mm

3. Working Principle

This Machine composes 2 main parts which are ultrasonic generator and ultrasonic transducer. Ultrasonic Generator (power supply) converter 220V, 50Hz(60Hz) single-phase 20-25kHz, about 600V alternating energy, by appropriate impedance and power matching to promote the transducer, longitudinal vibration, vibration wave by Titanium alloy Tip which immersed in sample to produce cavitation effect for all kinds of cells , so as to achieve the purpose of broken cells. The electric principle including the rectifier power supply, switching system, variable frequency system, power amplifier, PLL frequency automatic tracking device, power amplifier, power detector and microcomputer control, etc.

Transducer component is composed of piezoelectric oscillator, the amplitude amplifier. It can mechanical energy cumulative amplitude device. As Fig. 1

4. Operation

(1). Tip and Engineering Settings Interface

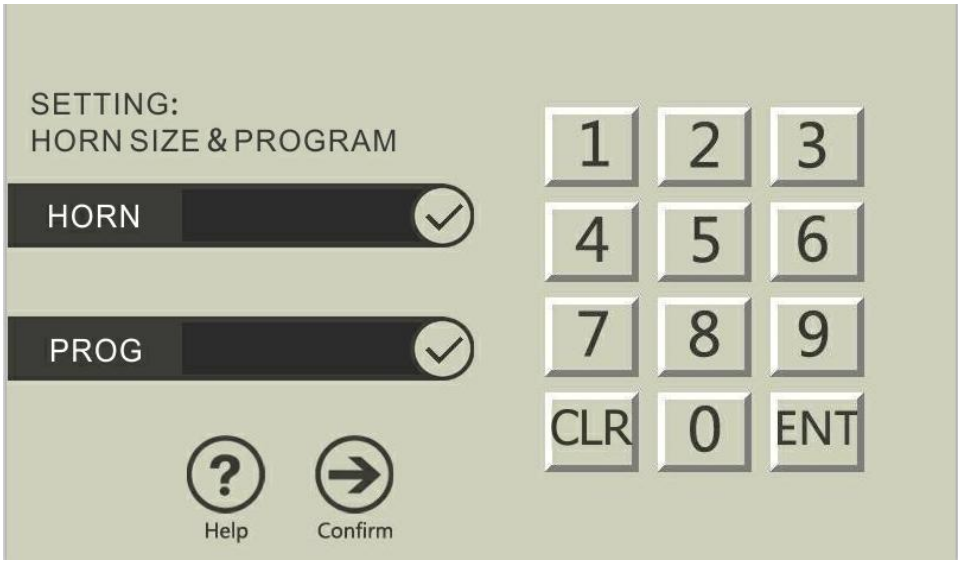


Figure (1) Tip and Engineering Settings Interface

(2). When you click Tip in Figure(1)，The Tip 

display√. And then can click number key to set actually Tip specification which you already installed and adjust Tip by choosing switch on the back of machine, make them the same. and then set Engineering Number, you can click Engineering number interface, the engineering number 

display√. Click different number key to set engineering number, if there is any problem when setting, you can click “help” key to know how to operate, after setting, you need to click “confirming 

” key, and enter standby interface，（as Fig.1）.

REMARK:

1. 

You choose the tips you use.
2. 

it is mean the engineering number that you can save(1-10) group you can save)
3. 

mean delete the data that put in

(4). Standby Interface

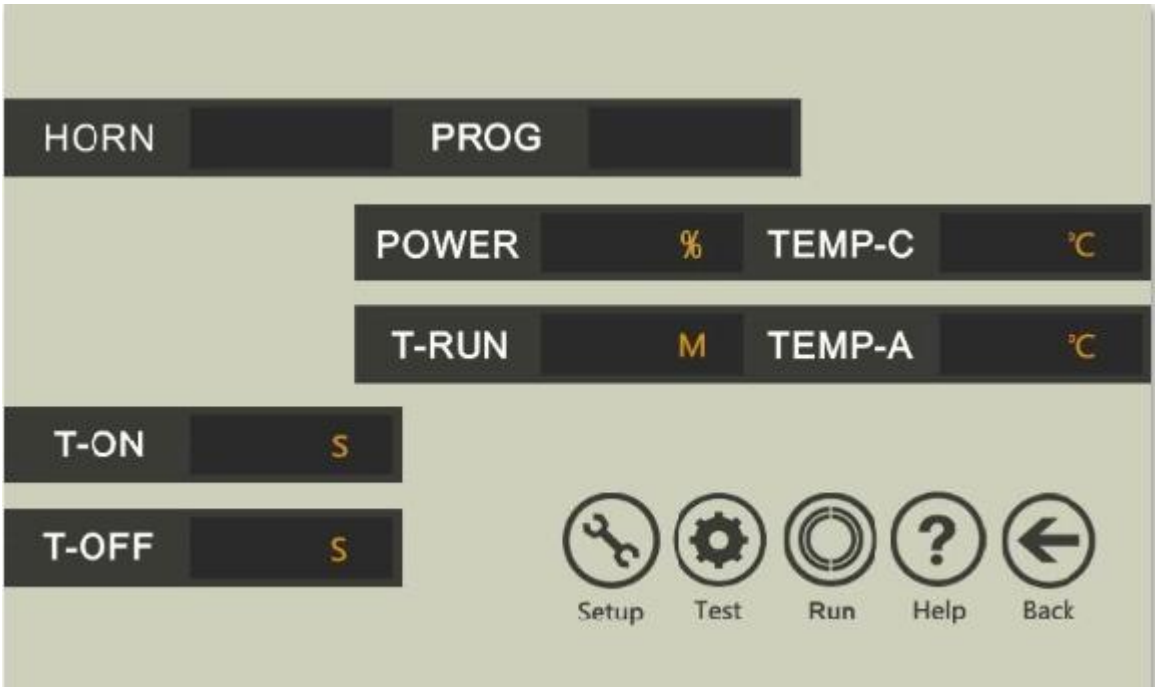


Figure (2) Standby Interface

There are five keys on the Standby Interface.

①：“ 

” key, Enter Parameters Setting Interface

②: “ 

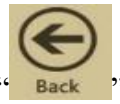
” key： Test whether the machine is good.

③: “ 

” key: Enter working interface

④:“ 

” key: Enter helping interface.

⑤: “ 

” key: Go back to the previous page.

REMARK:

1. POWER: you can setting from 1% to 99%, but we suggest not more than 40%.
2. T-RUN it is the total working time (suggest setting no more 20 minutes)
3. T-ON: it is the ultrasonic time (suggest setting 2.0s)

4. T-OFF: it is the stop working time (suggest setting 2.0s)

5. TEMP-C: it is the sample actual temperature (no need to setting)

6. TEMP-A: It is alarm temperature. When the sample temperature than you setting A-Temp temperature the machine will be alarm.

(5). Parameters Setting Interface

Figure (3) Parameters Setting Interface

On Parameters Setting Interface, click display area and the color display area will be changed. And then can click “number” key on the right of interface to set, after setting, click “ENT” key to confirm data, the color display area will be recovered.

There are four keys on Parameters Setting Interface:

①: Confirm: After confirming data, return standby interface.

②: 

: Enter the help interface.

(6). Working Interface

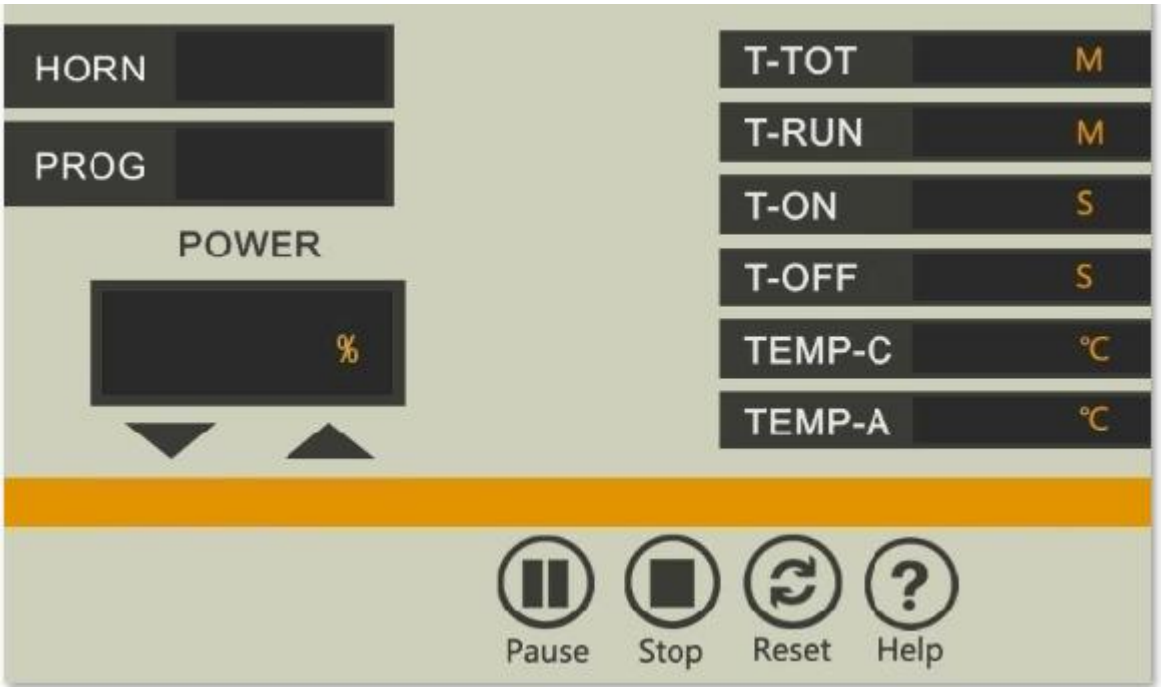


Figure (4) Working Interface

Total 8 keys on Working Interface:

①  and  key: adjust the working power

② 

key: Stop the working.

③ 

key: pause the Ultrasound Function

④ 

key: enter interface of help

⑤ 

reset key: when system is abnormal, click it will reset system

⑥ 

key: when system is overload, click it will reset system

⑦ 

indicator light: means "Over-temperature ".when the temperature is higher than you setting the light will be red color.

⑧ 

indicator light: means" Overload". When the power is too large or the machine have problem this light will be red color.

Remark:

1.Total time: it means the O.A. o-time +U-time on+U-time off. In other words is the total time this machine running (also including the test time). It is no need to setting.
2. O.A. o-time: it is the total working time you need one time (suggest setting no more 30 minutes)
3. U-time on: it is the ultrasonic time (suggest setting 2.0s)
4. U-time off: it is the stop working time (suggest setting 2.0s)
5. Temperature : it is the sample actual temperature
6. P-temp: It is protection temperature that you can setting the temperature you want, when the sample temperature is higher than you setting the "OT" will become red, then you need to let stop the machine working.

5. Notice

(1). Prohibit turn on the machine when the horn did not insert in liquid(no-load), otherwise the energy converter or ultrasonic generator will be damage.

(2). The energy converter must fasten on bracket, prevent it sliding from the upright tube, the end of horn avoid collision to deformation or damage.

(3). For different samples, the optimum work parameter(include sample quantity, time, power etc) need to confirm base on customer explore.(recommondation: working one second, stop one second, sampled one time per five minutes, to explore optimum work parameter). You

need setup the power to small to avoid horn crack due to overload when useφ2、φ3、φ6 horn to work.

(4). The Tip will be not smooth due to corrsion after a period of use, you may make it smooth through grater or other tools. After some times rasion, the horn will be shorter than original and the power maybe smaller or ultrasound was not worked, at the moment,you need adjust the choice switch on back panel of machine to corresponding position till machine is in normal situation. Use above method to extend hours of use of horn, but we advise not to longtime use, and change new horn timely.

(5). When the machine model is 900w and crushing quantity was less of 5ml, should useφ2 or φ3 horn, and the insertion depth should be 1cm under surface of liquid, the distance between end of horn and container bottom will be adjusted according to power level, and not less of 0.5cm.

(6).When there is idle, splash, the power should be adjusted to smaller and time to shorter, for avoid horn to damage(the optimum time should be 0.5 second to 1.0 second)

(7) .This machine does not need to preheat, good ground when in use.

(8).The temperature of liquid will rise quickly due to Cavitation Effect , so that user need to pay more attention to request of temperature of different cells, we advise to adopt short time, many times and cooled by ice-bath.(recommendation:ultrasound time is from 3 second to 5 second, and interval time is less of 3-5 second.)

(9).The machine should be placed in dry, no moisture, no sunlight, no corrosive gas place to work

(10). The choice of holder shape and volume will be correspond to quantity of sample, the practices had proved that long and thin of hold was better than other sharp holder.

(11). The practices had proved that the good result of running was come from short time for many times, work time was from 1 second to 2 second, interval time was 1-2 second, and may use longer interval time to avoid liquid to hot. Furthermore, long time of continuous time may cut down the useful life of machine.

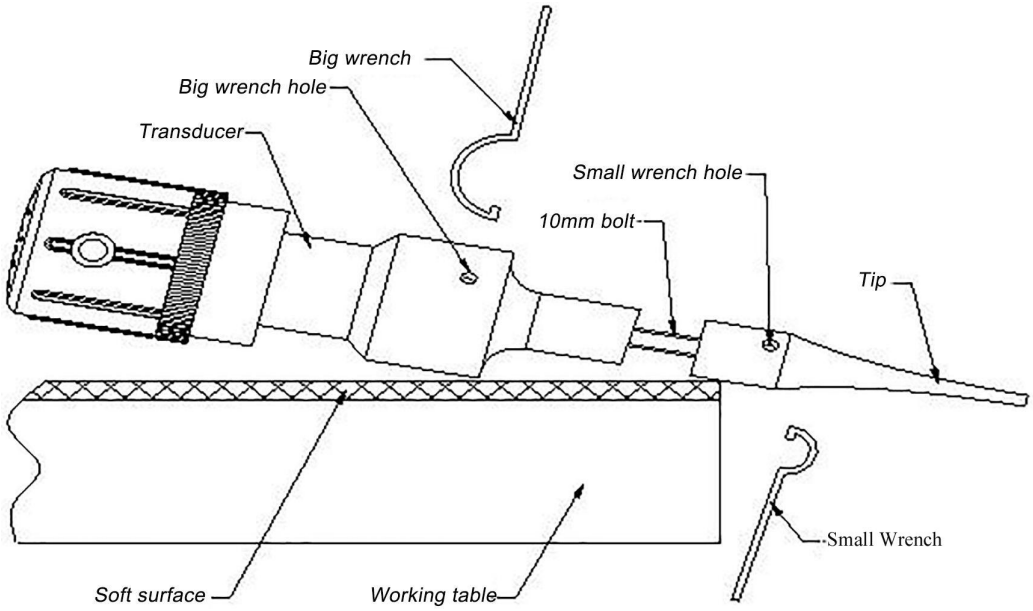
6. Tip Assembling

Put energy converter on soft body, and small wrench into wrench hole in horn, at same

time, big wrench into wrench hole in energy converter, and the two wrenches must keep in left/right horizontal position.

Left hand hold small wrench, right hand hold big wrench, and two hands work to downward together to loose the machine. On contrast, Left hand hold big wrench, right hand hold small wrench, and two hands work to downward together to tighten the machine.

When change horn, M10 bolt is still on horn and screw out to 1/2 position, then change the TIP, must tighten.



Notice :Tip belong to consume parts not in 1 year warranty

7. Packing List

(1) Main Host： 1PC

(2) Transducer： 1PC

(3) Stand Support : 1PC

(4) Cross clamp (in the soundproof chamber)： 1PC

(5) Test tube clamp(in the soundproof chamber)： 1PC

(6) Power Supply:	1line
(7) Special Wrench (for removing the Tip)	1PC
(8) Operation Manual:	1PC