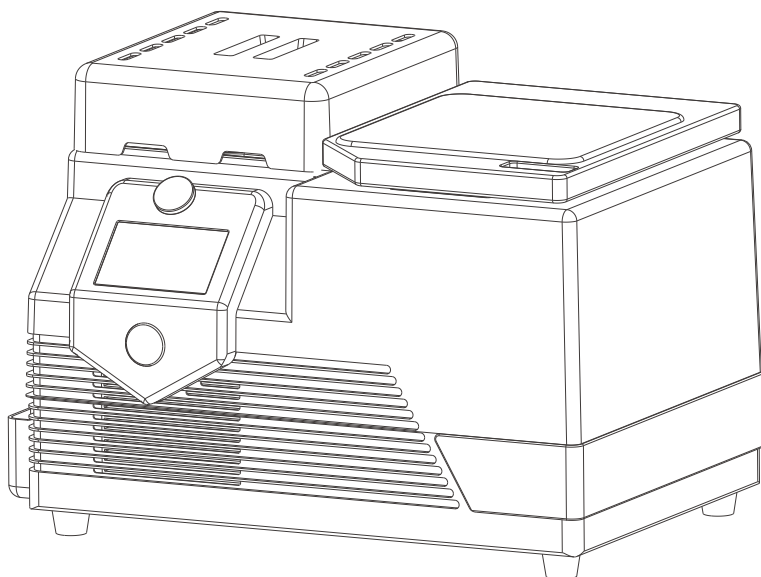




User Manual

High-speed Low-temperature Tissue Homogenizer

SWE-3D

Please read the user manual carefully and keep it properly
before using the product for future reference

Wuhan Servicebio Technology Co., Ltd.

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01 Safety Information

① Notices

- Before using the High-speed Low-temperature Tissue Homogenizer, it is necessary to read the operating manual carefully, follow the instructions and safety information stipulated in user's manual, ensure safe operation of homogenizer, and maintain under safe conditions.
- Press the front red emergency stop button of homogenizer and unplug the power cord from socket incase of emergency.

Please abide by the following suggestions for sake of safety operation:

- The transportation screw needs to be removed.
- The power cord must be connected to socket with grounding protection.
- Adjustment or exchange of inner spare parts of the instrument is prohibited.
- Do not use the instrument if shell or any part is missing.
- If liquid spills into the instrument, turn off the instrument, disconnect power supply and contact technical service of our company.
- If the following situations happened to instrument, there exists safety hazard. The instrument is prohibited to be used and contact technical service of our company immediately.
 - (1) Power cord damage.
 - (2) Instrument stored under unsuitable environment for a long time.
 - (3) Packing damaged after a long distance of transportation.
 - (4) Refrigerant leaking.
- Turn off the power switch if the grinder is not use. Unplug the power cord from the power outlet If not going to be used for a long time.

02 Environmental Requirements

2.1 Working Environment

Power supply	200-240VAC (110V available) ,50-60 Hz,800W; Power supply fluctuation shall not exceed 10% of the rated value
Indoor temperature	5°C-40°C
Relative Humidity	Max.80%
Operating Location	Indoor

2.2 Transportation Conditions

Packing	Use padding materials to package the interior, and make sure the outer box is securely fixed to avoid bumps or collisions during transportation.
Transportation	The instrument should be placed in an upward position during transportation, kept stable, and not be inverted, tilted, or subjected to impacts.

2.3 Technical Parameters

Dimensions	650×420×430 mm
Weight	54 kg
Screen Size	5 Inch
Temperature control accuracy	±1°C
Working time	Run time 0-9999s, pause time 0-999s, and run times 1-99 times

03 Instrument Introduction

The high-speed low-temperature tissue homogenizer adopts a special 3D operation mode, and the sample moves in a "∞" shape in space, making the frozen sample in the grinding tube collide with the grinding beads. The grinding shear force and impact force generated by the collision completely crush the tissue. It is a dedicated equipment for the rapid one-time processing of multiple samples in research institutions, universities, agricultural colleges, biomedical and food testing fields.

The sample treatment efficiency can be sharply improved by using High-speed low-temperature tissue homogenizer:

- 01 Dry grinding, wet grinding and homogenization treatment can be done for samples.
- 02 24 samples can be processed simultaneously to complete sample preparation in a rapid and high-throughput manner. A wide range of samples can be processed, see as follows:
 - a. It is suitable for grinding and crushing all kinds of plant tissues, including roots, stems, leaves, flowers, fruits, seeds and other samples.
 - b. It is suitable for grinding and crushing all kinds of animal tissues, including brain, heart, lung, liver, thymus, kidney, intestine, lymph node, muscle, bone and other samples.
 - c. It is suitable for grinding and crushing of food and drug composition analysis and detection.
- 03 It adopts a unique square grinding chamber design, which can simultaneously process two 96-well plates and improve experimental work efficiency.
- 04 Independent freezer design, with adjustable temperature. It can be used for temporary low-temperature storage of samples waiting to be ground, improving batch grinding efficiency. Equipped with a special freezer cover device, it can be matched with our company electrophoresis series products to cool the electrophoresis transfer membrane process.
- 05 Refrigeration function: -50°C to room temperature; Control accuracy: $\pm 1^{\circ}\text{C}$
- 06 The experiment has strong repeatability. Same grinding effect can be obtained by setting the same grinding frequency and time.
- 07 Adoption of closed disposable centrifugal tubes effectively helps to avoid cross-contamination of samples.

04 Unpacking and Installation

Installation Steps

01.Remove the tissue homogenizer from the packing box, place it on suitable location and confirm all the spare parts are complete.

02.Open the top cover. Pull up the safety lock and rotate it to "ON" to unlock it. Rotate the big knob counterclockwise until you can remove the adapter cover. Take out the adapter and remove the fixed pearl cotton inside the instrument.



Adapter

03.Place instrument on level and horizontal test bench to prevent vibration during working.

04.Connect the power supply that matches the name plate (make sure the instrument has stood for 10h and the coolant is in position), turn on power switch behind the instrument.

05.Turn on refrigeration button of compressor and wait for 10-15 minutes, checking if the grinding room temperature reaches presetting value.

06.If the temperature reaches presetting value, properly install adapter and nut lock, then close top cover and start the instrument.

05 Samples Preparation



Base/Cover

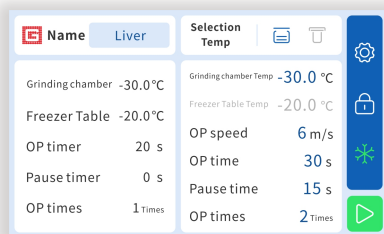
The adapter can grind 24 samples at the same time with standard 2 ml centrifuge tubes. The adapter includes a base that can hold 24 centrifuge tubes, a top cover, and a screw lock.

Take the sample to be grinded and put it into the grinding tube. It is recommended that the amount of sample is not more than 100mg. Add the corresponding extraction solution, and keep the total volume of the sample and the extraction solution within 1/2 of the tube. Then add several grinding beads of appropriate size. To ensure the grinding efficiency and quality, for larger samples, it is recommended to cut them into small pieces with scissors first.

Loosen the adapter cover plate and place the centrifuge tubes (the grinding tubes must be placed symmetrically and balanced). Before starting the grinding, please ensure that the big knob is tightened first, followed by the safety lock.

06 Operation Instructions

6.1 Operation Interface



Instrument Main Interface

01.Insert the power cord of the instrument into a grounded power socket that matches the name plate, and turn on the power switch on the side of the instrument.

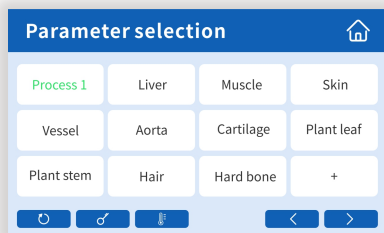
02.After the startup interface appears, wait for approximately 5 seconds to enter the main operating interface.

03.Put the grinding tube into the adapter, tighten the big knob and the safety lock in sequence, and cover the adapter cover.

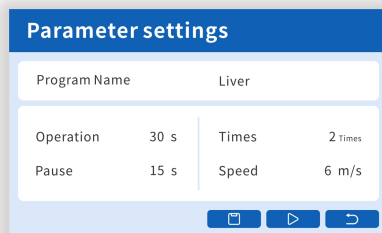
04.Set the operating speed, time, run times, click on temperature selection T to choose the temperature mode, and set the desired temperature for the grinding cabin or freezer.

05.Click  to start the grinding process. The instrument will automatically stop after the running timer resets to zero.

6.2 Parameters Setting



Parameter choose



Parameter setting

The instrument has preset one set of "Program 1" parameters and 10 sets of common tissue grinding parameters, with a total of 24 sets of parameters, each of which can be edited. The parameters for "Program 1" can be edited on the main interface and saved to the back end program.

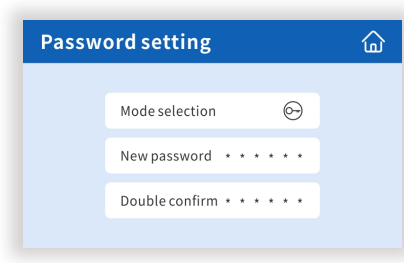
If the sample needs to be ground for a long time, the cycle numbers and pause time can be set:

The single cycle logic is: grinding time +pause time (the number of cycles is set as 1 non-trigger pause time)

The total grinding time is :(single grinding time + pause time)* cycle number

Click the "Grinding ON" button to start the instrument. Touch screen starts countdown in light of the setting time, the grinding work stops automatically at the end of countdown. The adapter cannot be moved out till the grinding completely stopped; repeat the above operation if the grinding is not complete till the grinding requirements are met.

6.3 Password Setting



Password setting

The instrument can set opening password.

When password mode is , need to enter 6 letters password to next step.(The starting password is 123456, and can change the password by yourself.)

07 Maintenance

The following routine maintenance shall be performed after using every day, so as to ensure reliable operation of the homogenizer.

- 01 In order to avoid damaging instrument, the splashed solvent or saline, acidic or alkaline solution on homogenizer shall be cleaned immediately by using a soft cloth with water.
- 02 Autoclaved sterilization on any parts of the homogenizer including adapter is prohibited.
- 03 Soft cloth shall be adopted to wipe the homogenizer after using a suitable detergent.
- 04 Make sure to turn off the power supply and unplug the power cord before cleaning.
- 05 Components of the adapter should be cleaned up after usage. Using a suitable detergent, rinsing with distilled water, and drying with tissue.
- 06 The following sanitizer and detergent are recommended to be used for cleaning homogenizer and adapter.
 - Normal detergent
 - Neutral detergent
 - 70% alcohol

08 Configuration List

Sq.No.	Name	Model/Specification	Qty.	Remarks
1	Tissue homogenizer	SWE-3D	1	
2	Adapter	2mL*24	1	
3	Adapter Cap	2mL*24	1	
4	Grinding Tube	2mL	1	
5	Beads Pen	2mm	2	
6	Power Cord		1	

09

Parameters Setting and Grinding Beads Reference

When extracting proteins, it is recommended to use steel grinding beads; when extracting RNA, it is recommended to use zirconia grinding beads (RNase & DNase Free).

Product Name	Grinding Beads	Grinding Time	Pause Time	Cycle Number	Speed
Plant Leaf	2mm*8	30s	15s	2	6m/s
The heart, liver, spleen, lung, kidney, and brain of rats	2mm*8	30s	10s	1	6m/s
The stomach, intestine, muscle, and fat of rats	2mm*10	30s	15s	2	6m/s
The skin, ears, tail, and blood vessels of rats	2mm*12	45s	20s	3	7m/s
Cartilage, hair and hard bone of rat & mouse	2mm*12	45s	20s	3	7m/s

(These conditions are for reference only, and can be adjusted at any time during the experiment based on the grinding effect.)

For RNA extraction, the grinding time should be appropriately extended compared to protein extraction. Add RNA extraction buffer during grinding. The specific grinding time depends on the amount and type of tissue being ground. Samples that are difficult to grind can be repeatedly ground 2-3 times, and the specific situation can be adjusted appropriately based on the experiment.

Grinding of strong and tough tissues

For samples that are difficult to grind (such as soft bones, hair, etc.), a 2ml grinding tube can be used. The sample should be cut into small pieces of about 1-2mm, and then add an appropriate amount of grinding beads. After tightly closing the grinding tube, put it into liquid nitrogen and freeze for 2-3min. Do not add extraction solution and grind for 60 seconds at a speed of 7m/s. Then add extraction solution to the grinding tube and repeat the grinding process. If the grinding effect is not satisfactory, the sample can be frozen again and the above experimental steps can be repeated.

10 Notes

01. It is recommended to use our company's HT-200-M centrifuge tube, which has thicker walls and higher material strength, suitable for grinding.

02. The tissue size is preferably below 1-3mm, and the weight should be within 100mg.

03. If you want to reuse the grinding beads, it is recommended to soak them in absolute ethanol for 15 minutes before use, then filter out the grinding beads and dry them for future use.

04. To prevent sample degradation while ensuring the grinding effect, the following principles should be followed:

- Minimize the number of grinding beads used
- Minimize the grinding time
- Turn on the compressor 15 minutes prior to the start of grinding to ensure a low temperature environment in the grinding room

05. When using the instrument, ensure that the load on both sides of the adapter is balanced, and do not use it unilaterally.

06. To protect the internal circuitry and mechanics of the instrument, do not rinse it with running water. Use a damp cloth to clean it.

07. If any abnormality occurs during use, immediately disconnect the power and contact a professional for handling.

08. The instrument must be placed on a horizontal and flat laboratory bench to prevent vibration during operation.

09. After ensuring that the adapter and fastening screws are correctly installed, close the top cover and start the instrument.

10. If the safety lock cannot be lifted, you can loosen the big knob left and right first, then normally lift the safety lock, loosen the big knob, and take out the sample.

Warranty Card

Name		Tel	
Model		Serial number	

Maintenance Records

Declared date	Failure and maintenance records	Repair date	Repaired by



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