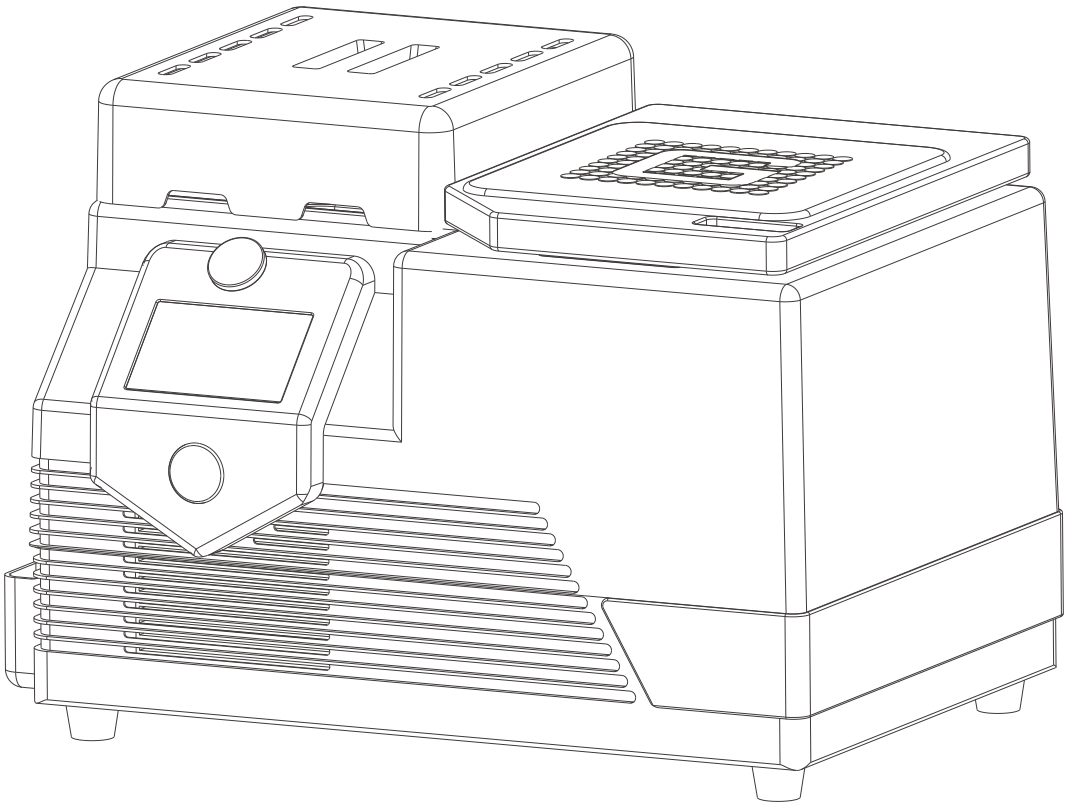
Servicebio®



User Manual

High-speed Low-temperature Tissue Homogenizer

SWE-FP

Read the operational manual carefully prior to usage,
Or operate theinstrument correctly after professional operation training.

Wuhan Servicebio Technology Co.,Ltd.

Continuous working | Low-temperature refrigeration | Freezer pre-cooling

Large sample volume | No cross-contamination | Easy operation | Greater safety

Strong reproducibility | Convenience

High-speed Low-temperature Tissue Homogenizer

Used for homogenizing biological tissues; Homogenate can be used for following WB, PCR and biochemical experiment

CONTENTS

01 Safety Information

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 Servicebio.

·If the following situations happened to instrument, there exists safety hazard. The instrument is prohibited to be used and contact technical service of Servicebio immediately.

(1) Power cord damage.

(2) Instrument stored under unsuitable environment fora 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,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%
Operation location	Indoor
Altitude	Max.2000m

2.2 Transportation Conditions

Packaging	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 lnch
Temperature control accuracy	±1°C
Working time	Run time 0-9999s, pause time 0-999s, and run times 1-99 times

03 Instrument Introduction

High speed low temperature tissue homogenizer series adopt vertical vibration system high-speed reciprocating motion or special three-dimensional integrated operation mode, so that the sample in the grinding tube and the grinding bead collide with each other, the grinding shear force and impact force produced can make the tissue completely broken. Servicebio tissue homogenizers are special equipments for rapid one-time processing of multiple samples in research institutes, universities, agricultural institutes, biomedicine, food testing and other fields.

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

01 Dry grinding, wet grinding and homogenization treatment can be done for samples.

02 Maximum 192 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 Servicebio electrophoresis series products to cool the electrophoresis transfer membrane process.

05 Refrigeration function: -50℃ to room temperature; Control accuracy: ±1℃

06 The experiment has strong repeatability. Same grinding effect can be obtained by setting the same grinding frequency and time.

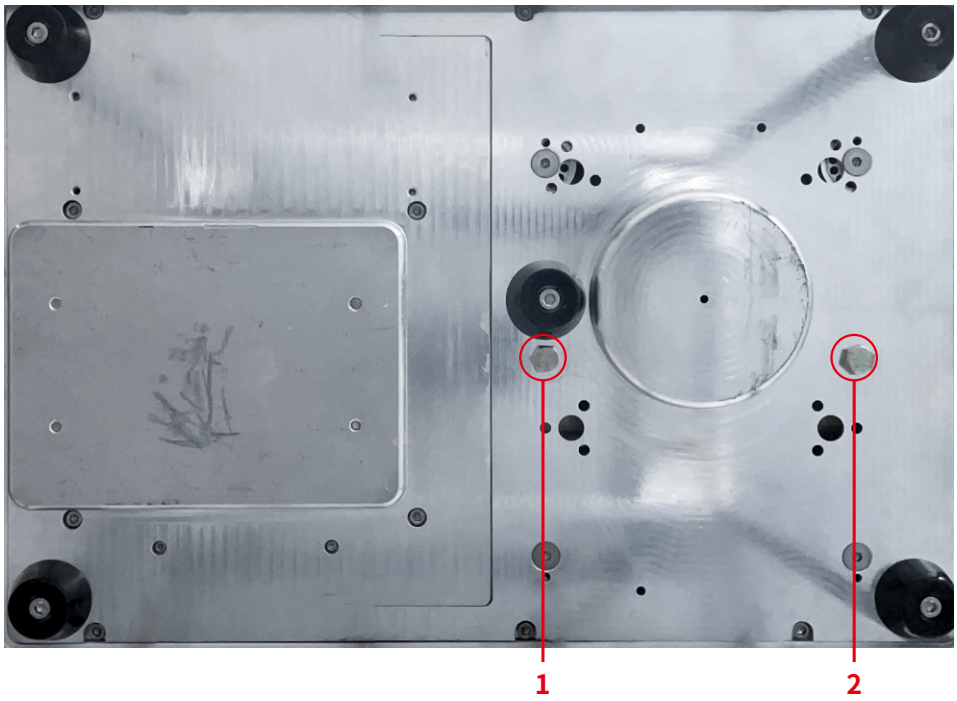
07 Adoption of closed disposable centrifugal tubes effectively helps to avoid cross-contamination of samples.

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.Dismantle two fastening screws under the instrument by using hex wrench.(Please make sure the fastening screws have been dismantled when the first time to use it)



Remove screws 1 and 2 shown

Wrench

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

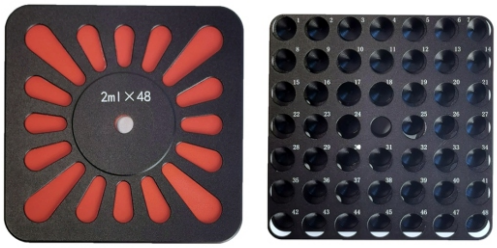
04.Connect to 220-220V power source (make sure the instrument has stood for 10h and the coolant is in position), turn on power switch behind the instrument.

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

2ml*24 adapter



2ml*48 adapter

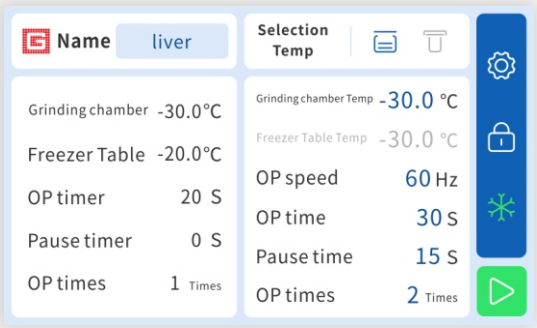
The standard adapter consists of a base for 24 centrifuge tubes and a base for 48 centrifuge tubes, a top cover, and a nut latch.

Take the sample to be ground and put it in to the grinding tube. It is suggested that the sample should not be more than 100mg, add corresponding extracting solution, control the sample and extracting solution within 1/2 of the total volume, and add a few suitable size grinding beads. In order to ensure grinding efficiency and quality, it is recommended to cut larger samples into small pieces with scissors.

Screw out the nut lock, take out the cover plate, put the grinding tube into the adapter, fasten the cover plate nut lock, and tighten the fixing nut lock clockwise (the placement of the test tube shall follow the principle of symmetry and balance)

06 Operating Instructions

6.1 Operating Steps



Instrument Main Interface

01.Connect the homogenizer' s power cord to 220V socket with grounding protection and turn on the power switch behind the instrument.

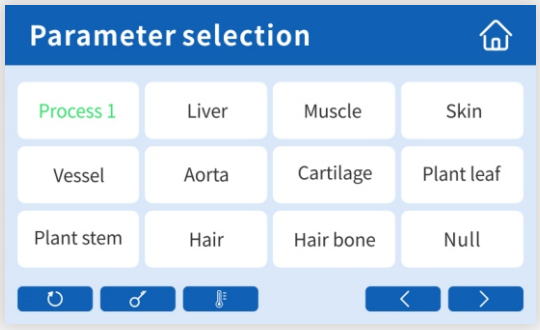
02.After the startup interface is displayed, wait for 5 seconds and enter the main operation interface.

03.Automatic refrigeration after startup. Wait the actual temperature of the system reaches the preset value and becomes stable (about 10min) and put the grinding tube contained sample into it, then tighten the adapter, and cover the top of the homogenizer.

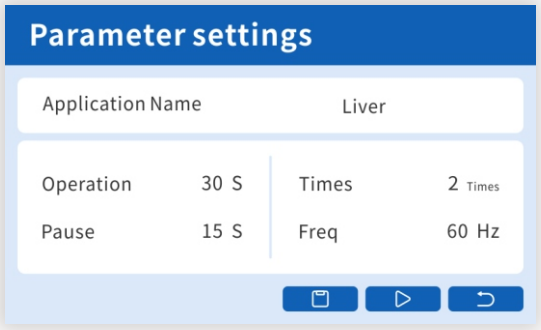
04.Set the operating frequency, time, run times, click on temperature selection T to choose the temperature mode, and set the desired temperature for the grinding cabin or freezer.

05.Click the "Grinding ON" button to start the grinding work, and the instrument will stop automatically after the running time is reset 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.

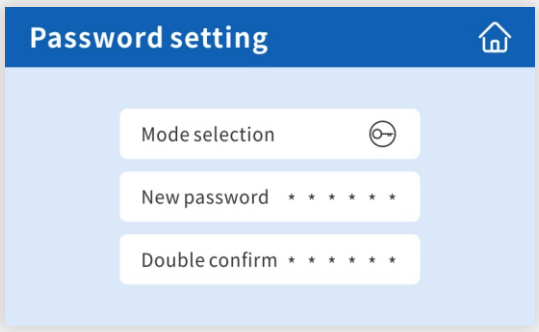
If the sample needs to be ground for a long time, the cycle numbers and pause time can be set:

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-FP	1	
2	Homogenizer adaptor 2ml*24	SWE-FP-0224	1	24 samples can be ground at one time
3	Homogenizer adaptor 2ml*48	SWE-FP-0248	1	48 samples can be ground at one time
4	Beads pen	SYM-04Z	1	for 2 mL grinding tube, zirconia 4 mm
5	Beads pen	SYM-04B	1	for 2 mL grinding tube, steel 4 mm
6	Beads pen	SYM-03B	1	for 2 mL grinding tube, steel 3 mm
7	2mL grinding tube	HT-200-M	1	Thickened tube wall and the material has higher strength, no RNA enzyme.

09 Adapter Options List

Sq.No.	Name	Model	Applicable models	Cat. No.
1	Homogenizer adapters	0.5ml*24	KZ-III.KZ-III-FP/F.SWE-FP	SWE-FP-D524
2	Homogenizer adapters	2ml*24	KZ-III.KZ-III-FP/F.SWE-FP	SWE-FP-0224
3	Homogenizer adapters	2ml*32	KZ-III.KZ-III-FP/F.SWE-FP	SWE-FP-0232
4	Homogenizer adapters	2ml*48	KZ-III.KZ-III-FP/F.SWE-FP	SWE-FP-0248
5	Homogenizer adapters	2ml*60	KZ-III.KZ-III-FP/F.SWE-FP	SWE-FP-0260
6	Homogenizer adapters	2ml*96	SWE-FP	SWE-FP-0296
7	Homogenizer adapters	5ml*12	KZ-III.KZ-III-FP/F.SWE-FP	SWE-FP-0512
8	Homogenizer adapters	10ml*10	KZ-III.KZ-III-FP/F.SWE-FP	SWE-FP-1010
9	Homogenizer adapters	Steel tank 5ml*6	KZ-III.KZ-III-FP/F.SWE-FP	SWE-FP-0506B
10	Homogenizer adapters	Steel tank 15ml*8	KZ-III.KZ-III-FP/F.SWE-FP	SWE-FP-1508B
11	Homogenizer adapters	Steel tank 30ml*4	KZ-III.KZ-III-FP/F.SWE-FP	SWE-FP-3004B
12	Homogenizer adapters	Steel tank 50ml*2	KZ-III.KZ-III-FP/F.SWE-FP	SWE-FP-5002B
13	Homogenizer adapters	96-well Plate*2	SWE-FP	SWE-FP-9602
14	Homogenizer adapters	PTFE 30ML*4	KZ-III.KZ-III-FP/F.SWE-FP	SWE-FP-3004Z
15	Homogenizer adapters	PTFE 50ML*2	KZ-III.KZ-III-FP/F.SWE-FP	SWE-FP-5002Z

10 Parameters Setting and Grinding Beads Reference

10.1 Protein Extraction

Tissue	Beads	Frequency	Grinding time	Pause time	Cycle times	Suggested extracting solution
Plant leave and stem	Steel grinding beads 3mm*3, 4mm*1	60Hz	60s	15s	3	Protein extracting solution
Heart, liver, spleen, lung, kidney and brain of rat & mouse	Steel grinding beads 3mm*2, 4mm*1	60Hz	30s	15s	2	Protein extracting solution
Stomach, colon, muscle, fat of rat & mouse	Steel grinding beads 3mm*2, 4mm*1	60Hz	45s	15s	2	Protein extracting solution
Skin, ear, tail, vessel of rat & mouse	Steel grinding beads 3mm*3, 4mm*2	70Hz	60s	20s	3	Protein extracting solution
Cartilage, hair and hard bone of rat & mouse	Steel grinding beads 3mm*4, 4mm*2	70Hz	90s	20s	3	Protein extracting solution

(The above mentioned condition information is only for reference and can be adjusted at any time according to grinding effect during experiment)

10.2 RNA Extraction

Tissue	Beads	Frequency	Grinding time	Pause time	Cycle times	Suggested extracting solution
Plant leave and stem	Zirconia grinding beads 3mm*3, 4mm*1	60Hz	60s	15s	3	RNA extracting solution
Heart, liver, spleen, lung, kidney and brain of rat & mouse	Zirconia grinding beads 3mm*2, 4mm*1	60Hz	30s	15s	2	RNA extracting solution
Stomach, colon, muscle, fat of rat & mouse	Zirconia grinding beads 3mm*3, 4mm*2	60Hz	45s	15s	2	RNA extracting solution
Skin, ear, tail, vessel of rat & mouse	Zirconia grinding beads 3mm*4, 4mm*2	70Hz	60s	20s	3	RNA extracting solution
Cartilage, hair and hard bone of rat & mouse	Zirconia grinding beads 3mm*3, 4mm*4	70Hz	90s	20s	3	RNA extracting solution

(The above mentioned condition information is only for reference and can be adjusted at any time according to grinding effect during experiment)

Compared to protein extraction, the grinding time for RNA extraction is relatively longer; adding RNA extracting solution during grinding, the specific grinding time is determined according to quantity and type of tissue. For samples which are difficult to crush, it can be repeatedly ground for 2-3 times. The specific situation is adjustable in light of experiment.

10.3 Toughness Tissue Grinding

For more difficult grinding samples (such as cartilage, hair, etc.), grinding tube of 2ml can be used. Cut samples into small pieces of 1-2mm, add 3 grinding beads of 4mm, cover grinding tube well, put it into liquid nitrogen and freeze for 2-3min without adding extract; Dry grinding at a frequency of 70Hz for 60 seconds, then add extract to the grinding tube and repeat grinding again. If the grinding effect is not ideal, freeze it again and repeat the above procedure.

10.4 Bone Tissue Grinding

Special steel grinding tanks and adapters are used for bone tissue. Freeze bone tissue in liquid nitrogen for 5-10 minutes, then put it into a grinding tank, add steel beads, and grind it for 180 seconds under frequency of 70Hz (setting cycle grinding). After grinding, take out the finished tissue and add it into a 2mL grinding tube, add extraction solution and 2pcs grinding beads of 3mm for 60 seconds.

11 Notes

01.2mL U bottom tube is required to be used when adopting 4mm grinding beads or larger beads; while 1.5mL sharp bottom tube will get stuck, and affecting the grinding effect.(It is recommended to use 2ml centrifuge tube provided by our company, which has a higher material strength, and suitable for grinding)

02.The size of tissue block should be below 1-3mm and the weight should be less than 100mg.

03.If the grinding beads need to be reused, it is recommended to soak them in anhydrous ethanol for 15 minutes, filter them out and dry them for later use.

04.On the premise of ensuring grinding effect, the following principles should be followed to prevent sample degradation:

· Use as few grinding beads as possible.

· Shorten grinding time as much as possible.

· Turn on the compressor 15 minutes prior to the start of grinding to ensure a low temperature environment in the grinding room.

05.Balanced load at both sides of adapter shall be ensured during instrument operation; Do not use one side only.

06. In order to protect inner circuit and machinery of the instrument, cleaning by running water is prohibited, only wiping with wet cloth is acceptable.

07. there is any abnormality during using, disconnecting power immediately and contacting professional to deal with it.

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

09.After confirming that the adapter and fastening screw are properly installed, cover the top and start the machine.

Warranty Card

Name		Tel	
Model		Serial number	

Maintenance Records

Declared date	Failure and maintenance records	Repair date	Repaired by

Servicebio®

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