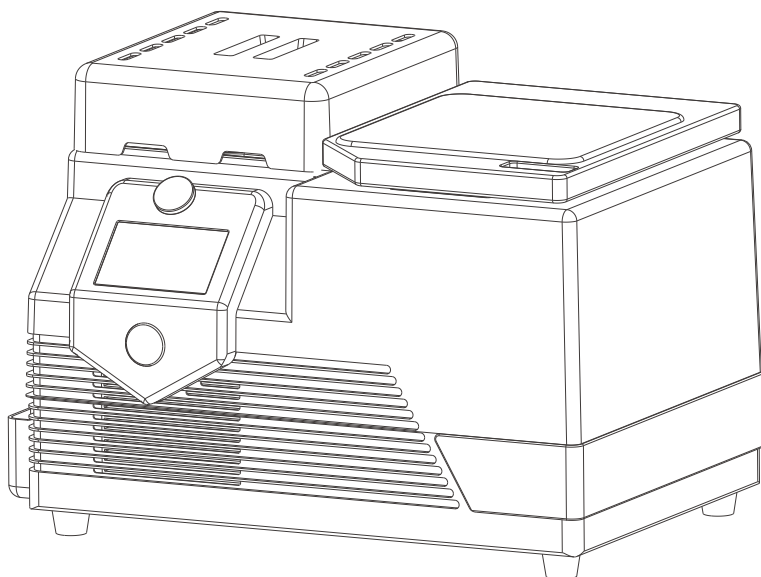




User Manual

High-speed Low-temperature Tissue Homogenizer

SWE-FP PLUS

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



Note

- Before using the tissue homogenizer, it is necessary to carefully read the operation manual, and follow the instructions and safety information in the user manual to ensure the safe operation of the homogenizer and maintain it under secure conditions
- If an emergency occurs, please press the red emergency stop button on the front of the instrument and cut off the power supply

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	650×420×430mm
Weight	54Kg
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

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. Our company 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-temperature tissue 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°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

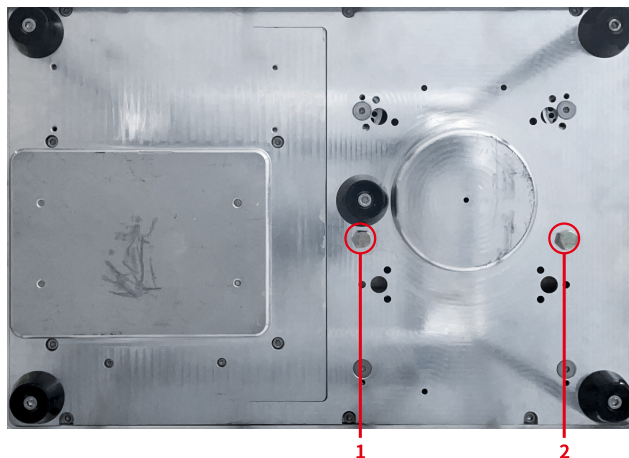
Adoption of closed disposable centrifugal tubes effectively helps to avoid cross-contamination of samples

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.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

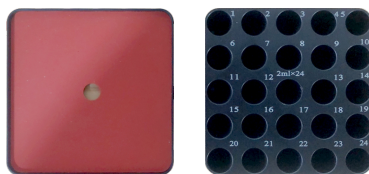
03.Place instrument on level and horizontal test bench to prevent vibration during working;

04.Connect 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



2mL×24 Adapter

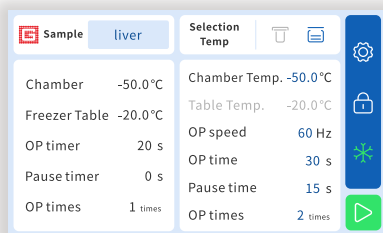
The standard adapter includes a base that holds 24 centrifuge tubes, a top cover plate, and a nut lock.

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.Insert the power cord of the instrument into a grounded power socket that matches the name plate 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 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 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.

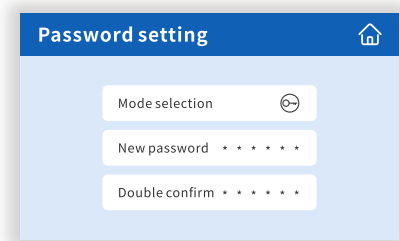
If the sample needs to be ground for a long time, the cycle numbers and pause time can be set:

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 PLUS	1	
2	2mL×24 Hard Tissue Adapter	SWE-FP-0224F	1	24 samples can be ground at one time
3	Grinding Beads (Zirconia)	G0206-150G	1	6mm
4	Beads pen	SYM-03Z	1	for 2 mL grinding tube, zirconia 3 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	Grinding Tubes (Screw Cap)	HT-200V-REM	1	Thickened tube wall and the material has higher strength, no RNA enzyme
8	Torx Nut	SWR-YSY-WG-18	2	M8
9	Shipping Bolt Removal Wrench	WLYBS16	1	Size 16
10	Power Cord	SDY-DX-GB-01	1	

09 Adapter Options List

Sq.No.	Name	Model	Applicable models	Cat. No.
1	Homogenizer adapters	0.5mL×24	SWE-C6/SWE-FP/SWE-FP PLUS	SWE-FP-D524
2	Homogenizer adapters	2mL×24	SWE-C6/SWE-FP/SWE-FP PLUS	SWE-FP-0224
3	Homogenizer adapters	2mL×24	SWE-C6/SWE-FP/SWE-FP PLUS	SWE-FP-0224F
4	Homogenizer adapters	2mL×32	SWE-C6/SWE-FP/SWE-FP PLUS	SWE-FP-0232
5	Homogenizer adapters	2mL×48	SWE-C6/SWE-FP/SWE-FP PLUS	SWE-FP-0248
6	Homogenizer adapters	2mL×60	SWE-C6/SWE-FP/SWE-FP PLUS	SWE-FP-0260
7	Homogenizer adapters	2mL×96	SWE-C6/SWE-FP/SWE-FP PLUS	SWE-FP-0296
8	Homogenizer adapters	5mL×12	SWE-C6/SWE-FP/SWE-FP PLUS	SWE-FP-0512
9	Homogenizer adapters	5mL×12	SWE-C6/SWE-FP/SWE-FP PLUS	SWE-FP-0512F
10	Homogenizer adapters	10mL×10	SWE-C6/SWE-FP/SWE-FP PLUS	SWE-FP-1010
11	Homogenizer adapters	Steel tank 5mL×6	SWE-C6/SWE-FP/SWE-FP PLUS	SWE-FP-0506B
12	Homogenizer adapters	Steel tank 15mL×8	SWE-C6/SWE-FP/SWE-FP PLUS	SWE-FP-1508B
13	Homogenizer adapters	Steel tank 30mL×4	SWE-C6/SWE-FP/SWE-FP PLUS	SWE-FP-3004B
14	Homogenizer adapters	Steel tank 50mL×2	SWE-C6/SWE-FP/SWE-FP PLUS	SWE-FP-5002B
15	Homogenizer adapters	96-well Plate×2	SWE-C6/SWE-FP/SWE-FP PLUS	SWE-FP-9602
16	Homogenizer adapters	PTFE 30mL×4	SWE-C6/SWE-FP/SWE-FP PLUS	SWE-FP-3004Z
17	Homogenizer adapters	PTFE 50mL×2	SWE-C6/SWE-FP/SWE-FP PLUS	SWE-FP-5002Z

10 Parameters Setting and Grinding Beads Reference

10.1 Protein Extraction

Tissue	Grinding Tubes	Beads	Frequency	Grinding Time	Pause Time	Cycle Times	Suggested Extracting Solution
Plant leave and stem	2mL	Steel grinding beads 3mm×3/4mm×1	60Hz	60s	15s	3	Protein extracting solution
Heart, liver, spleen, lung, kidney and brain of rat & mouse	2mL	Steel grinding beads 3mm×2/4mm×1	60Hz	30s	15s	2	Protein extracting solution
Stomach, colon, muscle, fat of rat & mouse	2mL	Steel grinding beads 3mm×2/4mm×1	60Hz	45s	15s	2	Protein extracting solution
Skin, ear, tail, vessel of rat & mouse	2mL	Steel grinding beads 3mm×3/4mm×2	70Hz	60s	20s	3	Protein extracting solution
Cartilage and bone tissues of mice, rats, and rabbits	2mL	Steel grinding beads 6mm×2	70Hz	60s	30s	5	Protein extracting solution
Cartilage and bone tissues of mice, rats, and rabbits	5mL	Steel grinding beads 8mm×1/10mm×1	70Hz	60s	30s	5	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	Grinding Tubes	Beads	Frequency	Grinding Time	Pause Time	Cycle Times	Suggested Extracting Solution
Plant leave and stem	2mL	Zirconia grinding beads 3mm×3/4mm×1	60Hz	60s	15s	3	RNA extracting solution
Heart, liver, spleen, lung, kidney and brain of rat & mouse	2mL	Zirconia grinding beads 3mm×2/4mm×1	60Hz	30s	15s	2	RNA extracting solution
Stomach, colon, muscle, fat of rat & mouse	2mL	Zirconia grinding beads 3mm×3/4mm×2	60Hz	45s	15s	2	RNA extracting solution
Skin, ear, tail, vessel of rat & mouse	2mL	Zirconia grinding beads 3mm×4/4mm×2	70Hz	60s	20s	3	RNA extracting solution
Cartilage and bone tissues of mice, rats, and rabbits	2mL	Zirconia grinding beads 6mm×2	70Hz	60s	30s	5	RNA extracting solution
Cartilage and bone tissues of mice, rats, and rabbits	5mL	Zirconia grinding beads 8mm×1/10mm×1	70Hz	60s	30s	5	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 Grinding of cartilage and bone tissues

For bone tissues and difficult-to-grind samples (such as cartilage, hair, etc.), it is recommended to use a specialized hard tissue adapter. Place one 6mm grinding bead at the bottom of a 2mL grinding tube, then cut the sample into small pieces of approximately 1~2mm and place them into the 2mL grinding tube. Add another 6mm grinding bead into the tube, and inject an extraction buffer into the 2mL grinding tube. Grind at a frequency of 70Hz for 60 seconds, pause for 30 seconds, and repeat this cycle 5 times. If the grinding result is unsatisfactory, the above experimental steps can be repeated.

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

User Name		Contact Number	
Device Model		Factory Number	

Maintenance Record

Date of Repair Request	Faults and Maintenance Status	Date of Repair	Maintenance Technician



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