

STALWART

SMC-24 High-speed centrifuge



Operations Manual

PREFACE

Thanks for choosing our high speed centrifuge. This operation manual describes function and operation of the instrument. In order to use the instrument properly, please read this manual carefully before operating the Instrument.

Opening Check

Please check the instrument and appendix with the packing list when you first open the packing case. If anything does not match with the packing list, please contact with the vendor or the producer.

Safety Warnings and Guidelines

1 Important operation information of the security

Users should have an entire conception of how to use the instrument properly before operating it. Please read this operation manual carefully before using the instrument.



It is forbidden operating before read the operation manual. If you do not follow the instructions in the manual, the instrument may cause accidental injury during operation, and electric shock may occur. Read the guidelines and directions below and carry out the countermeasure according to them.

2 Security

The operation, maintenance and repair of the Instrument should comply with the basic guidelines and the remarked warning below. Otherwise, it will affect the scheduled using life of the Instrument and the protection provided.



This product is a normal and an indoor Instrument which conforms to Standard B style- I type- GB9706.1. This instrument is for indoor use.



Before operation, read the manual carefully. These units are designed for using in the laboratory environments by who're knowledgeable in safe laboratory practices.



The operator should not open or repair the instrument by himself. Otherwise, the instrument will lose the qualification of repair guarantee or cause accidents. The company will repair the instrument based on warranty description.



Before connecting the power supply, make sure that the voltage of the power supply is the same as that required by the instrument. And ensure that the rated load of the power socket is not less than the requirements of the instrument. If the power cord is damaged, it must be replaced. The replacement must be replaced by a power cord of the same type and size. Do not put anything on the power cord when the instrument is in use. Do not place the power cord where people move. Be sure to hold the plug when plugging and unplugging the power cord. Make sure that the plug is fully inserted into the socket when plugging in, and do not pull the power cord hard when unplugging.



The instrument should be put in the place where of low temperature, little dust, no water, no sunshine or hard light, and of good aeration, no corrosively gas or strong disturbing magnetic field, and far away from central heating, camp stove and other hot resource. Do not put the instrument in wet and dusty place.



Power off when operation finished. If do not use the instrument for a long period, pull off the connector plug, cover a piece of cloth on the instrument to prevent from dust.



Pull the connector plug from the jack at once in the following case, and contact the vendor.

- There is some liquid flowing into the instrument;
- Drenched or fire burned;
- Abnormal operation: such as abnormal sound or smell;
- Instrument dropping or outer shell damaged;
- The function has obviously changed.

3 Instruments Maintenance

The instrument and the accessories should be cleaned by cloth drenched with alcohol.

If there is any stain on the surface of the instrument, it can be cleaned with a soft cloth dipped in cleaning paste.

4 After Service

1) Warranty Description

Within one month of delivery, the company is responsible of exchange for breakdown caused by material or manufacture.

Within 12 months of delivery, the company is responsible of free repair for breakdown caused by material or manufacture. Proven with defect under warranty, the company will exchange the instrument or free repair it alternatively.

Instrument under warranty period should be delivered to the appointed maintenance department by user. Freight from user to maintenance department will be borne by user. Freight for instrument resent to user will be borne by the company.

Repair out of warranty will be charged reasonable cost.

2) Warranty Coverage

Breakdown due to improper use, operation in inappropriate conditions, maintain or refitting without authorization are not in warranty coverage.

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Chapter 1 Introduction

SMC-24 high-speed centrifuge is widely used in life science, biology, molecular biology, physical and chemical analysis and other fields for the separation of cells, proteins, virus samples, etc. The maximum speed can reach 15000rpm.

Feature

1. High-speed and stable operation, the rotor and the motor shaft are matched with high-precision cones, high concentricity, and low operating noise.
2. Both the upper cover and the lower shell adopt high-strength metal protective rings, which have high structural safety and ensure the safe operation of the rotor at high speed.
3. The invention patent of the upper cover safety lock ensures the safety during operation. It automatically pops up after the operation is completed, and has one-key open cover function.
4. Adopting the three-dimensional air inlet circulation cooling method, the cooling effect is good, and the temperature rise of the rotor is low.
5. Powerful DC brushless motor, maintenance-free, fast drive, ultra-quiet operation, low noise level.
6. After the centrifugation is finished, the sound prompts and the cover will automatically opened, which is convenient for the sample to cool down; the brake is soft to protect the special sensitive samples.
7. It adopts 4.3-inch color LCD screen, which can display the speed, centrifugal force and time at the same time.
8. The buzzer prompts after the operation is completed, with the function of displaying the running status and prompting the error code.
9. With PROG key, you can call the built-in 10 groups of programs with one key, which is convenient and quick to use.
10. Equipped with a momentary centrifugal button, which can be centrifuged quickly to meet more experimental needs.
11. High-strength aluminum alloy rotor has no service life limit and can be sterilized by high temperature and high pressure.
12. multi-purpose use, suitable for 0.2, 0.5, 1.5, 2.0, 5.0ml centrifuge tubes and PCR centrifuge tubes, and four types of rotors are available.

Chapter 2 Specifications

1. The Normal Operation Condition

Ambient Temperature: 4℃ □ 40℃
 Relative Humidity: ≤70%
 Power: AC 220V 50Hz

2. The Basic Parameters and Specifications

Model	SMC-24
Speed Range	500~15000rpm(increment: 100rpm)
Max. RCF	20867×g
Rotor Capacity	0.2ml/0.5ml/1.5ml/2mlx24; 0.5mlx36; 5ml×18; PCR strips ×4
Timing Range	0 ~99min59s
Speed up / down time range	25 ~ 45s(Programmable)
Noise (dB)	≤62dB
Safety performance	High-strength metal protective ring, safety door lock, over temperature status diagnosis
Other functions	Speed, instantaneous centrifugal function, running progress display, voice prompt function
Power Supply	AC220V 50Hz
Maximum power	500W
Fuse	250V ,5A, φ 5×20
Dimension	W.238x D.335 x H.208mm
Net weight (including rotor)	13kg

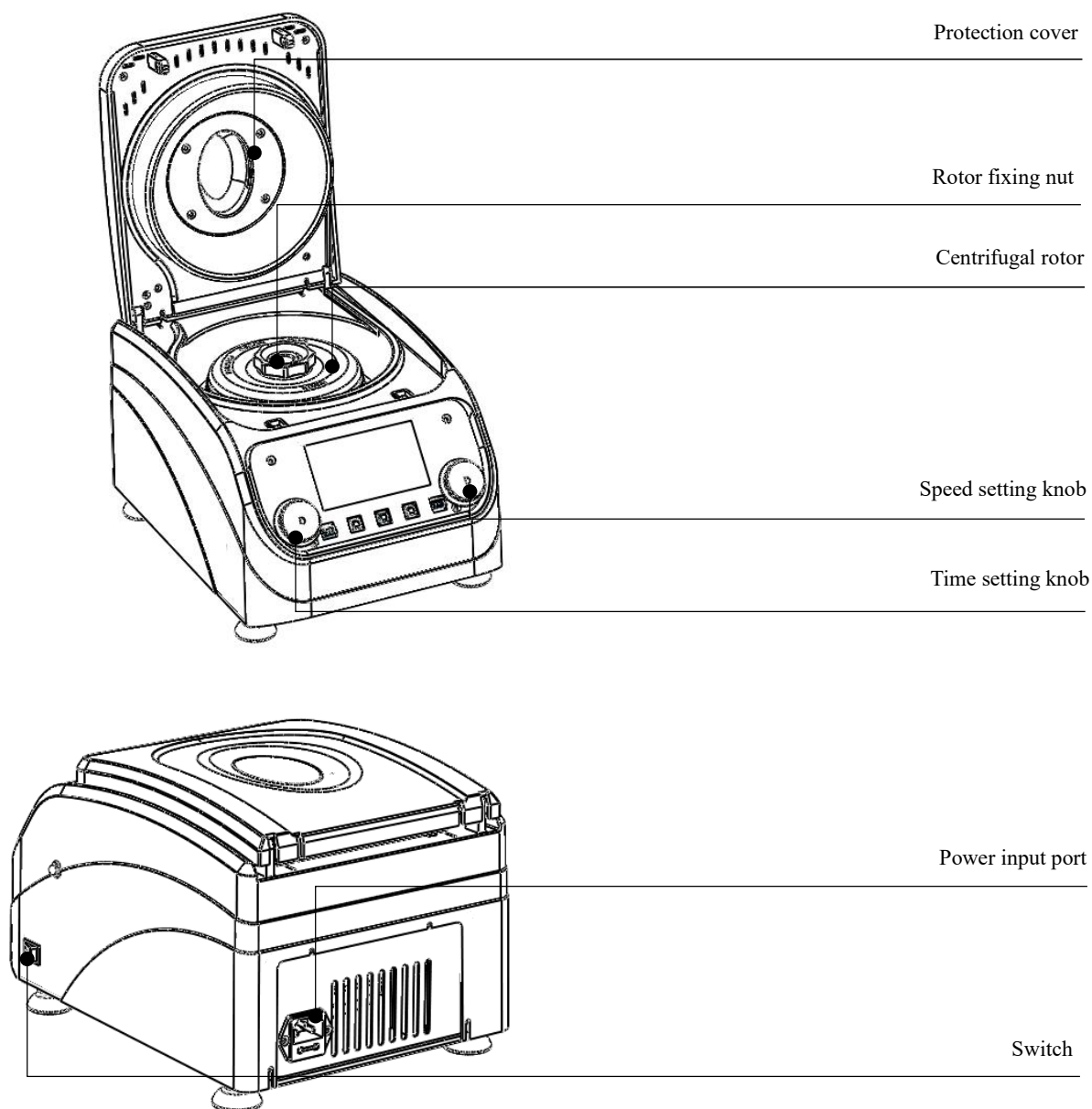
3. Optional rotor

Model	Description	Maximum speed (r/min)	Max RCF(xg)
MC-A	5ml x 18	15000	20867
MC-B	PCR strips×4	15000	17624
MC-C	0.5ml x 36	15000	20846
MC-D	2ml x 24	15000	20519
MC-1	2ml to 0.2ml tube adapter		
MC-2	2ml to 0.5ml tube adapter		

Chapter 3 Preparation

This chapter mainly describes the instrument's mechanical structure, the keyboard and functions of each key, as well as preparations before power on. Please learn this chapter well before the orbital shaker is to be operated at the first time.

1. Structure Description




2. Schematic diagram of operation panel and display screen



1. Display Description

- ① PROG: Display 10 preset programs, PROG.01~10.
- ② Speed: Display the speed, and display the yellow font when the parameter is adjusted.
- ③ Rcf. : Display the relative centrifugal force, and display the yellow font when the parameter is adjusted
- ④ Time: Display the time, and display the yellow font when the parameter is adjusted.

- ⑤  Display rotor model, A~D.

- ⑥  Display lid switch status.

Chapter 4 Operation Guide

1. Knob description

Left knob:



Rotate clockwise, the set time increases, and rotate counterclockwise, the set time decreases; Long press the knob to enter the lift rate adjustment function. At this time, rotate clockwise, the set acceleration rate increases, and rotate counterclockwise, the set acceleration rate decreases.

Right knob:



Rotate clockwise, the set speed increases, and rotate counterclockwise, the set speed decreases;

Press the knob to start running, press it again to stop running; if it enters the lift rate adjustment function, rotate clockwise at this time, the set deceleration rate increases, Rotate counterclockwise to decrease the set deceleration rate.

2. Press key Description



Select program number



In jog mode, press to run, release to stop.



Open the top cover

Chapter 5 Failure Analysis and Trouble Shooting

Failure Analysis and Processing Procedures

No.	Phenomenon	Possible Causes	Processing Procedure
1	No signal display when power on.	Replace the display	Contact with the seller
2	The button is invalid	hardware malfunction	Contact with the seller
3	Motor blocked, overspeed, loud noise	Hardware failure, motor failure	Contact with the seller
4	Power switch does not work	Damaged power switch	Contact with the seller
5	show error code	communication error	Contact with the seller

Appendix A: Wiring Diagram

(Below diagram is just for reference. It is subject to change without prior notice.)

