

Benchtop Centrifuge Operation Manual

Version 1.0



Foreword

Thank you for purchasing our product: the LC-6S/LC-8S/LC-12S Centrifuge. This user manual outlines the function and operation of the centrifuge. In order to ensure the safety of users and use the instrument properly, please read this manual carefully before placing the centrifuge into operation. If you have any questions that are not addressed in this manual, please contact the manufacturer or dealer for additional details. For quick reference, please keep the user manual with the centrifuge.

Opening Check

Compare the contents to the packing list when you first open the instrument packing case. Check the contents for damage. If you find there is damage or missing items, contact the vendor or the manufacturer immediately.

Safety Tips



Before using the centrifuge, please read this instruction manual carefully. Incorrect or inappropriate use may result in equipment damage or personal injury!

- The centrifuge should only be operated by trained or authorized persons.
- When the centrifuge is operating, i.e., the rotor is spinning, please keep an area of approximately twelve (12) inches around the centrifuge clear and ensure the vents are not blocked.
- NEVER use the following materials in the centrifuge:
 - Flammable or explosive materials
 - Concentrated chemicals
 - Toxic or radioactive substances or pathogenic micro-organisms, etc.
- Only qualified technicians may perform maintenance on the centrifuge.
- If situations arise that are not covered in this manual, please consult the manufacturer or authorized dealer for additional information.
- The centrifuge must be inspected and maintained according to the schedule in this manual.



Note: The speed and pressure generated by the centrifuge can be dangerous!

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1. Introduction

1.1 Overview

This centrifuge is suitable for 15ml centrifuge tubes, blood collection tubes, and glass sample tubes. Before using the centrifuge for the first time, please read this operation manual. This manual describes the components, functions, and use of this product with 6-8 15ml tubes and 12 tubes of 10ml or 5ml. Observe the warnings and notices in this manual.

1.2. Centrifuge Features

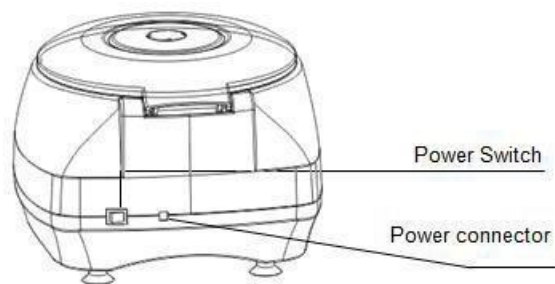
The benchtop centrifuge is a medium-sized utility device and is easy to handle. It is widely used in clinical medicine, analytical laboratories, biology, genetic engineering, immunology, etc. The density of the separated sample cannot exceed 1.2g/cm^3 at maximum speed. When the density of the sample exceeds 1.2g/cm^3 , the maximum speed of the rotor must be reduced accordingly.

The benchtop centrifuge has the following features:

- Fixed-angle rotor
- Microprocessor control system
- LCD display
- Audible warning when the rotation is complete
- Lid lock of centrifuge opens automatically at the end of the run

1.3 Structure Description





1.4 Installing the Device

1.4.1 The centrifuge should be installed in a clean, stable location. Place the centrifuge on a level, horizontal surface. Solvents and flammable materials should not be placed in the vicinity of the centrifuge. Ensure that the ventilation openings are not blocked.

1.4.2 Insert the power connections appropriately. The centrifuge can operate with 110V or 220V power supplies.



110V OR 220V




2. Technical Parameters

Model	LC-6S/LC-8S/LC-12S	
Voltage Supply	AC 110v-60Hz or 230v-50/60Hz	
Power	40W	
Max. Speed (RPM)	500-5000rpm (100 RPM increments)	
Relative Centrifugal Force (RCF)	3074 x g	
Capacity	LC-6S	Angle rotor 6 tubes × 15ml
	LC-8S	Angle rotor 8 tubes × 15ml
	LC-12S	Angle rotor 12 tubes × 10ml/5ml
Time Range	0 --99 min 59 seconds	
Lid Open Auto Stop	Yes	
Ambient Temperature	5 °C ~ 35°C	
Dimension (mm) (W ×D ×H)	340x400x270	
Weight (kg)	5	

3. Safety Precautions



The rotor and the rotor lid must always be securely fastened. If the centrifuge makes unusual noises when started, the rotor or rotor lid is not fastened correctly. Switch the device off immediately by pressing the 

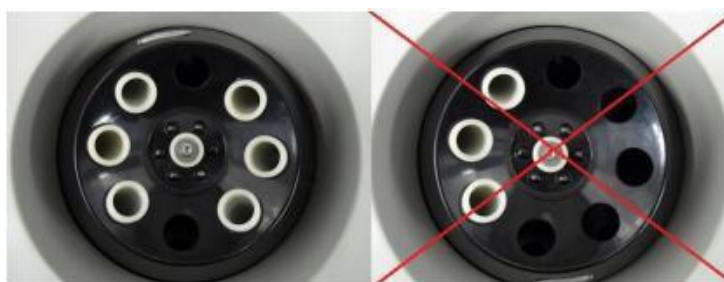


Do not use damaged rotors! (scratched, corroded, or cracked)



Do not move the centrifuge while it is operating.

- 3.1** When centrifuging a sample that is dangerous to the human body, wear masks, eye protection, and protective clothing.
- 3.2** Corrosive, explosive, and flammable liquids should never be used in the centrifuge.
- 3.3** Start the centrifuge only after confirming the safety of the surrounding area.
- 3.4** Never allow non-trained personnel to operate the centrifuge.
- 3.5** Place the tubes correctly into the centrifuge.
 - 3.5.1** A liquid density of 1.2g/ml must not be exceeded at the maximum speed. Do not overfill the tube to avoid liquid overflow.
 - 3.5.2** Damaged tubes cannot be centrifuged. This can cause sample loss and result in damage to the centrifuge.
 - 3.5.3** Close the test tube lids securely before centrifuging. Unsecured lids can be dislodged during centrifuging and damage the centrifuge.
 - 3.5.4** Tubes must be loaded symmetrically. See below illustration. Opposing tubes must have the same weight. If necessary, use a water-filled tube to balance the weights.



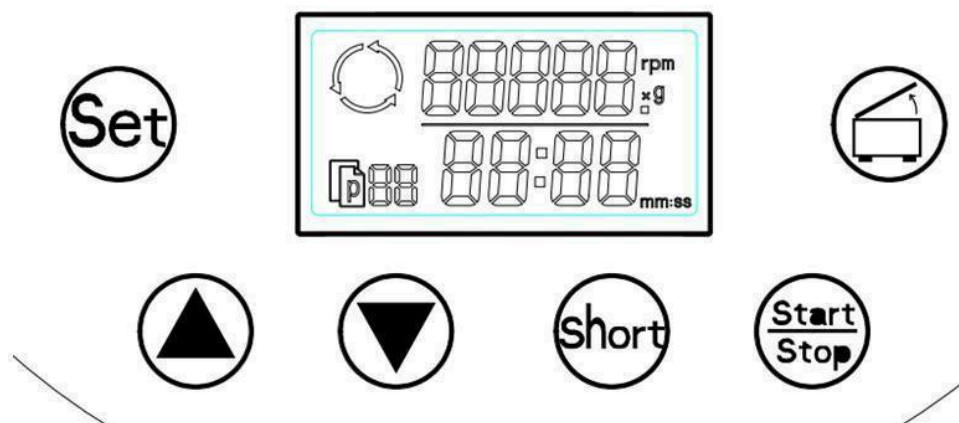
3.6 Maintenance of the Rotor

- 3.6.1** Even slight damage to the rotor can lead to serious damage to the device.
- 3.6.2** Avoid damage by not centrifuging chemicals such as alkalis and acids.

3.6.3 In the event of contamination caused by chemicals, the rotor must be cleaned immediately using a neutral cleaning liquid.

4. Operation Guide

4.1 Introduction of Control Panel and Display Interface



	RRM Display, or RCF display Time Display
	Set button to select adjustment parameters
	Increases rotation speed or RCF or Time
	Decreases rotation speed or RCF or Time
	<i>Short-Spin</i> (for reduced-time centrifugation)
	<i>Start</i> or <i>Stop</i> centrifugation
	To open the lid

4.2 Rotor Insertion and Removal


Fit the rotor onto the motor shaft, followed by the rotor nut. Tighten the rotor nut by turning it clockwise. To release the rotor, turn the rotor nut counterclockwise. Before each start, check that the rotor nut is firmly tightened!

4.3 Loading the Rotor



The rotor must always be loaded symmetrically. Minimize differences in weight between the filled sample tubes. Weighing with a scale is recommended. This

reduces wear on the drive mechanism and reduces noise.



4.4 Centrifugation with a Pre-Set Time

4.4.1 Turn on the main switch pressing  to open the lid. Then load the rotor symmetrically. Fasten the rotor lid and close the centrifuge lid completely.

4.4.2 Setting run speed: Press  → The number flashes the speed.



Press  or  to increase or decrease speed. It will be confirmed automatically after flashing 3 times. The maximum centrifuge speed is 5000 RPM.

4.4.3 Setting run time: Press  → until the number flashes the desired time.

Press  or  to increase or decrease the run time → It will be confirmed automatically after flashing 3 times. The time can be pre-selected between 001 seconds up to 99 minutes and 59 seconds.




If you need to set run time parameters continuously, after finishing one parameter setting, press the *Set* button to set the next parameter, until finished with all parameter settings. It will flash 7 times automatically. This indicates all parameters have been set. There is no need to do this manually.


4.4.5 Press  to start the run. Pressing  again ends the run. The remaining run time appears in the display. The time setting will reduce from the set value to zero. When it displays zero, the centrifuge will stop. The door cover will open automatically, and the centrifuge will buzz 4 times. The time setting and the rotational speed may be changed during the run. The remaining run time appears in the display.







At the end of the run, the lid lock of the centrifuge opens automatically.

4.5 Short-Spin Centrifugation

4.5.1 Turn on the main switch, press  to open the lid. Load the rotor symmetrically. Fasten the rotor lid and close the centrifuge lid completely.

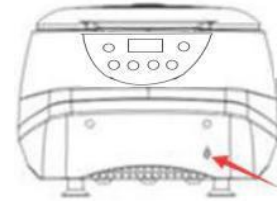
4.5.2 Press . Short-spin centrifugation is possible for as long as this key is held down.

4.6 Switching to the RCF Display

Pressing  and  simultaneously changes the display from RPM to RCF. Also pressing  and  simultaneously again, changes the display from RCF to RPM.

4.7 Open the Centrifuge in the Event of a Power Failure

Make sure that the rotor stops completely. Disconnect the centrifuge from the main supply. Locate the plastic plug under the bottom plate of the front side of the machine. Remove it. There is a rope behind the plastic plug. Upon pulling the rope, the door cover can be opened, and samples removed.



Emergency door handle

5. Maintenance and Cleaning



The rotor and the outside of the centrifuge should be cleaned regularly with a damp cloth. Disconnect the centrifuge from the main power supply, remove the rotor, and clean it separately. Only neutral agents may be used for cleaning.



Please check the rotor and especially the rotor bores regularly for deposits or damage. Reinsert the rotor and tighten the rotor nut.

5.1 External Equipment

- Clean the outside of the machine with a damp cloth. Neutral cleaning solutions may be used in case of persistent stains. Allow the centrifuge to completely dry before using.
- Do not use volatile chemicals such as alcohol or benzene for cleaning.

5.2 Internal Equipment

- Keep in a dry indoor location.
- Clean used parts with a mild detergent.

5.3 Recommended Cleaning Methods

Clean weekly, using neutral detergents and a clean, soft cloth. Avoid using strong chemicals, organic solutions and/or abrasive cloths. Before cleaning the device, ensure the power is disconnected.

6. Troubleshooting

Table 1:

Error	Cause	Solution
No display	Power failure, no main power connection	Check the main fuse; plug in main cable
Lid does not open	Power failure Rotor is spinning Lid lock failure	Emergency lid release (see 4.7) Stop centrifuge run Contact manufacturer or dealer for service
Centrifuge vibrates during acceleration	Rotor not loaded symmetrically.	Stop centrifuge run and load centrifuge symmetrically

Table 2: Trouble Alarm Codes

Symbols	Indication	Troubleshooting
E1	Unbalance protection	Check samples in tube or contact manufacturer or dealer for service
E2	Over speed. Rotation stops because of over speed of the rotor	Problem with microcomputer control system or speed sensor; contact manufacturer or dealer
E3	Door cover protection	Re-close the door cover; contact manufacturer or dealer if the door cover is broken
E6	Voltage supply is too high	Contact manufacturer or dealer if the control board is damaged
E7	Drive fault	Contact manufacturer or dealer
E11	Failure to reach speed	Voltage supply is too low; change the power supply or contact manufacturer or dealer.

7. Packing List

No.	Item	Type	QTY
1	Low-speed Benchtop Centrifuge	LC-6S/LC-8S/LC-12S	1 unit
2	Rotor		1 unit
3	Operations Manual		1 unit