





Low Speed Centrifuge

LX120LSC

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1. Safety Measures

Symbol	Meanings
~	Alternating current
ON	Power on (general supply)
OFF	Power off (general supply)
	Protective earthing (ground)
	Warning (see attachment paper)

Carefully read the manual before the installation or operating the instrument.

- 1) Before repairing, ensure the electricity is disconnected. Exercise caution if repairing requires electricity. Always cut off the electricity and wait 4 minutes before opening any cover.
- 2) Place the centrifuge on a steady floor or table and adjust the level for normal operation.
- 3) As safety measures, the centrifuge is equipped with a single-phase three-wire cable, and the longer cable connects with the casing as the protection grounding.
- 4) If your socket doesn't have protection grounding, contact your electrician to replace the original socket without invalidating the security role of single-phase with a three-wire power cable.
- 5) When replacing parts, the technician must use parts from the manufacturer that serve the same function as the original. Using unrecognized alternative parts may lead to fire, electric shock, or other hazards.
- 6) The room should install an air conditioner to provide a good refrigerating effect when the temperature reaches more than 35°C.
- 7) To reduce the risk of electric shock, the centrifuge adopts the plug with three points which should connect with the socket with ground lead.
- 8) Make sure the wall socket is connected to the ground wire. The voltage of the power supply must be the voltage of the centrifuge.
- 9) Do not use the three-hole to two-hole power adapter, the two-line expanding socket, or the all-purpose power adapter without a ground wire.

2. Introduction

Low Speed Centrifuge LX120LSC is a table top centrifuge with a speed range of 6000 rpm. Integrated digital display to set and track the speed, time, RCF and other parameters required in the operations .It features an electric lid lock system, which provides protection against high speed and imbalance.

3. Features

- Speed - 6000 rpm
- Memory storage upto 10 programs
- Can set 10 different speeds
- Micro computer controlled system with digital display to set RCF, speed and time
- Electric lid lock system for safety

4. Specifications

Model	LX120LSC
Maximum speed	6000 rpm
Maximum RCF	5120 × g
Maximum capacity	16 x 15 ml
Timer range	1 ~ 99 min
Speed accuracy	± 30 rpm
Noise	≤ 65 dBA
Power	250 W
Power supply	AC 220 V ± 22 V, 50 - 60 Hz, 5A
Dimensions (H x W x D)	380 x 500 x 300 mm
Net weight	19 kg
Packing dimensions (H x W x D)	660 x 470 x 350 mm
Gross weight	23 kg

5. Applications

Used for qualitative analysis in hospitals, blood banks, research institutes

6. Instrument Introduction

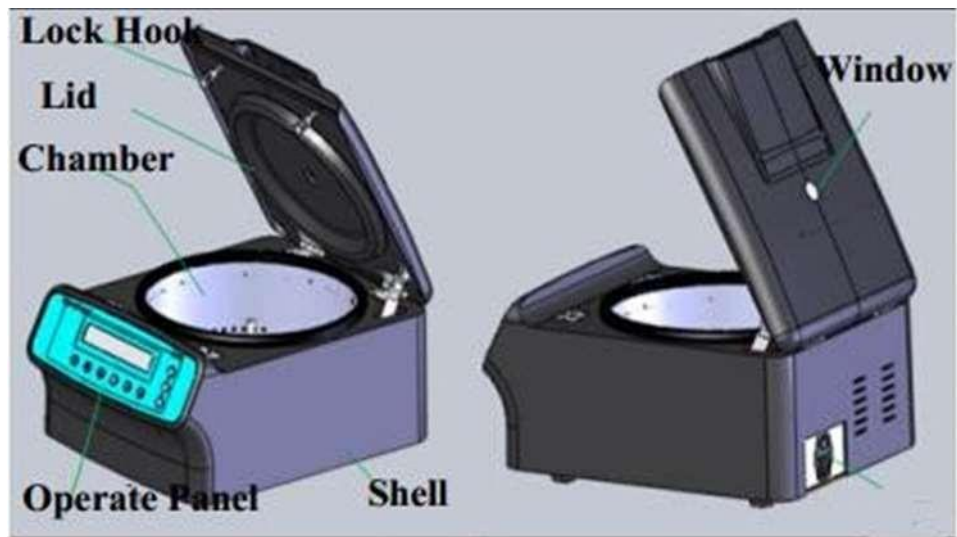


Figure-1

1. Shell
2. Centrifugal chamber
3. Drive system
4. Control system
5. Window

7. Installation

7.1 Installation environment

- 1) The working environment temperature is 10°C to 35°C, and the relative humidity is no more than $\leq 85\%$.
- 2) It is prohibited to put lab equipment with large heating production and strong vibration around the centrifuge.
- 3) Avoid direct sunlight and damp places.
- 4) Avoid Install in the place of corrosion, flammable, and explosive gases in the air.
- 5) Avoid installing in oil, dust, and metal dust places.

7.2 Installation place

- 1) The centrifuge should be installed on a flat and solid platform.
- 2) The distance between the centrifuge and the wall should be kept at 30cm at least for air circulation.

7.3 Installation steps

- 1) Open the outer package, carefully take out the centrifuge with the foam package, then put it on the even platform and take off the foam package. The four rubber feet of the centrifuge should touch the platform evenly.
- 2) **Open the Lid:** Poke into the Emergency lock hole by using the inner hexagon spanner which along with the centrifuge Tools, aims at the Inner six-angle Lock hole of the centrifuge, and open the lid in a clockwise direction. Then check the chamber of the centrifuge, take all the things from the chamber, and clean the Chamber.
- 3) **Rotor install:** Take the Rotor out of the package, and check whether the Rotor is ok and without any damage or deformation during the transport. Hold the Rotor by hand; put the Rotor on the Rotor shaft vertically and stably. Then one hand holds the Rotor Yoke, other hand screws the Rotor tightly by the spanner. You must make sure the Rotor is installed tightly before use.
- 4) The user must confirm the voltage of the power supply and the voltage of the centrifuge required are the same. Connect the power cord to the electric outlet on the centrifuge back first, and then put the plug on the other end into the external electric supply socket. Press one side marked “-” on the switch to power **ON**.

7.4 Adjust Centrifuge

Check whether the rotor is loose, the centrifuge is on the plat without any shack. If all is OK, then close the Lid and start the centrifuge directly (do not use the sample in the rotor). The max speed setting is 1000r/min when run to 1000r/min then stops and set to 2000r/min stops then set to 3000r/min, 4000r/min, and 5000r/min until the max speed of the instrument is achieved if there is no abnormal phenomenon then the user can use it.

8. Operations

8.1 Control panel



Figure-2

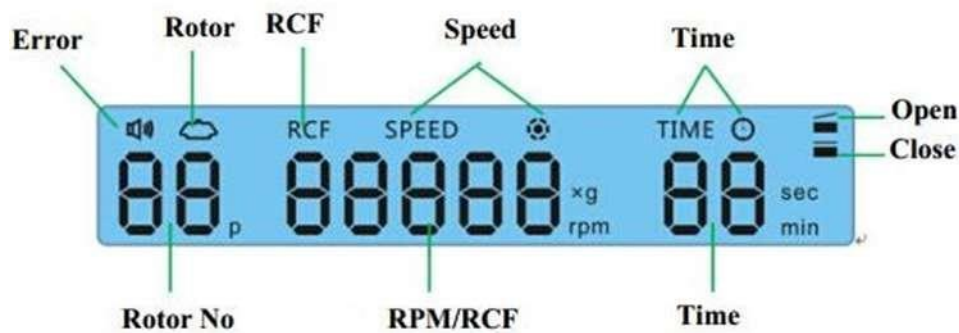












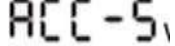
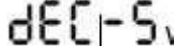





Figure-3




Indicator light status and meaning

- Light **OFF**
- Light **ON** means choosing the program or displaying the process that will run, for example: If the Indicator Light becomes green flash, then it means that the centrifuge starts, and is in the state of speed. The light keeps green all the time means the centrifuge is running at the set speed. If the indicator light becomes a red flash, then it means that the centrifuge is stopped, and is in the state of speeding down. If the light keeps red all the time, then it means the centrifuge is stopped.














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“Set” Key	
	<p>Press the key, then the number of the Rotor No. Will flash, then it enters the rotor No. Setting mode, press the  or  key to choose the Rotor No. you use.</p> <p>Attention: When the centrifuge is running, do not try to set this.</p> <p>Press the  Key, then the number of speed area will flash, and then it enters the speed setting mode, press  or  to set the speed you want.</p> <p>Press the Key, then the number of time area will flash, then it enters the time setting mode, press  or  to set the time you need.</p> <p>Press the Key, then the number of display area of will flash, it can set the Acc gear you need, press or key to set the gear you need, from 1 to 9 gears, if the number is larger, then Acc time will be less, at normal, it set to 5.</p> <p>Press  Key, then the number of display area of   will flash, it can set the Acc gear you need, press  or key to set the gear you need, from 0 to 9 gears, If the number is larger, then Dec time will be less, at normal, it set to 5.</p> <div style="text-align: right; margin-top: 10px;">    </div>











“Start” Key	
	<ul style="list-style-type: none"> ◆ Press  the Key, and the Indicator Light will become green flash, start the centrifuge, it will run to the parameter you set, and then the Light will keep green.

“Stop” Key	
	<ul style="list-style-type: none"> ◆ When the centrifuge is under running, then Key, then the indicator light will become red flash, and it will reduce from the max speed to “0”, when the Light keeps red, then the centrifuge stops. ◆ The centrifuge connects the power, but in the not work mode (the rotor is not running), the press  Key, the Lid will be open. ◆ When the display Board displays the Error code, press the  Key, Clear error code.

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	“RCF” Key
	<ul style="list-style-type: none"> ◆ Press  key, and it will display the RCF of the Rotor you use and the speed you set, RCF displays on the speed display area, and to distinguish, the decimal point will show.
	“Prog” Key
	<ul style="list-style-type: none"> ◆ These keys used together can realize the program's choices and their amends.
	“Add/Reduce” Key
	<ul style="list-style-type: none"> ◆ Press the  key, it can add the value of the setting parameter. ◆ Press  Key, it can add the value of the setting parameter.
	“Enter” Key
	<ul style="list-style-type: none"> ◆ Press  the key to confirm the parameter you set. Normally, press the  key to set the Rotor No, speed, time, and Acc/Dec you need, then press key , it will store all kinds of parameters you have set. ◆ If you set the parameter, not press  to confirm exceed 5 seconds, then it will be invalid and back.
	“Pulse” Key
	<ul style="list-style-type: none"> ◆ Press the  Key, the centrifuge will run, not press, then the centrifuge will stop automatically, it is for short-time centrifugation.


8.2 Operation program

Operation instruction of the program		
Condition	Display	Function Description
Select		<ul style="list-style-type: none"> ◆ Select program: when the centrifuge is powered on but not work, press the , then “01_p” number will flash, then press  or to  select the program No.you need (there is 25 preset programs, from 1 to 25, together 25 programs), then press the  key to confirm your selection. ◆ Not press  to confirm exceed 5 seconds, then it will be invalid and back.
Amend		<ul style="list-style-type: none"> ◆ Amend program: amend the program parameter, Press the  key, please refer to the operation instruction of the centrifuge program set, set the Rotor No, speed, time, temp, Acc gear, and Dec gear, then press the  to confirm your set, then the program will be saved automatically. ◆ Not press  to confirm exceed 5 seconds, then it will be invalid and back.



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1) Selection of centrifugal mode

Operation of Centrifuge Mode		
Item	Condition and Display	Function Description
1.	<p>Timed centrifugal mode</p> 	<p>Press  key, set  the time to any number users need from 01 to 99 (Timed centrifugal mode), and then press the  key to start the centrifuge, the indicator Light will become green. After the speed up to the max speed you set, the time will start to countdown (99 to 00), the time unit is a minute. When the time counts down from the time you set it to "0", the centrifuge will stop automatically, and the Indicator Light will become red. When the speed reduces to 0 r/min, then the centrifuge will have a Buzzer sound for times.</p>
2.	<p>Short-time centrifugal mode</p> 	<p>Press the  Key, the centrifuge will run, not press, then the centrifuge will stop automatically, it is for short-time centrifugation. </p>
3.	<p>Continue centrifugal mode</p> 	<p>Press  key, set the  to the max number "99" (Continue centrifugal mode). Press  key to start the centrifuge. The time display area will display to "Hd", the run time will be from 00 to 99, the Cycle time count.</p>

Operation of Centrifuge Mode		
Item	Condition and Display	Function Description
		<p>The time unit is minute. Until you press  the key, the centrifuge will stop.</p>

2) Operation steps

- Check the rotors and tubes carefully if cracked change them or it will damage the instrument.
- **Install rotor:** Take the Rotor out of the package, and check whether the Rotor is ok and without any damage or deformation during the transport. Hold the Rotor by hand; put the Rotor on the Rotor shaft vertically and stably. Then one hand holds the Rotor Yoke, other hand screws the Rotor tightly by the spanner. You must make sure the Rotor is installed tightly before use.
- **Add Liquid in the tube and put the tube:** When adding the sample in the centrifuge tube, it should use the balance to measure the same weight, then put into the tube symmetrically, in the rotor the weight of the symmetrical tube should be the same. The centrifugal tube should be put symmetrically, otherwise, there will be vibration, and noise because of the imbalance.
- **Lid close:** Put the Lid down, when the Lock hook touches the inductive switch, the Lid will automatically lock. When the display board displays the Lid in the close mode, and then it means that the centrifuge is closed.
- Set the parameter of the Rotor No, speed, time, Acc, Dec, and so on. Start and stop the centrifuge.
 - **Start:** Press the  key to start the centrifuge, and then the Start Indicator Light will be light.
 - **Automatically stop:** When the time countdown to “0”, the centrifuge will slow down and stop automatically. When the speed is 0 r/min, you can open the Lid Lock.
 - **Manually stop:** In the running status (the working time isn't counted down to “0”), press the  key, and the centrifuge will start to stop when the speed slows down to 0 r/min, you can open the lid
- **Uninstall the rotor:** When replacing the rotor, you should uninstall the used rotor, unscrewing the bolt with a screwdriver, and taking out the rotor after removing the spacer
- **Shut off the Power:** When the work is finished, then shut off the power and pull off the plug.

9. Maintenance

- 1) Wipe up the rotor with a neutral cleaning mixture after taking it out to avoid corrosion and then stock it in a dry and ventilated place.
- 2) The central hole in the rotor should be smeared with some lubricating oil for protection.
- 3) All action on the rotor should be soft, and the rotor should be taken out vertically to protect the shaft.
- 4) If the centrifugal chamber is unused, wipe it with water and some lubricating grease should be smeared on the drive shaft for protection.
- 5) Plug off the main power when the instrument has not been used for a long time.

10. Troubleshooting

During operation, maybe there are following failures, refer to the following methods for easy troubleshooting.

1) Power ON but no display

- Check whether the input power is by centrifuge-rated voltage by a multimeter. If it is a power problem, check and troubleshoot.
- Check whether the power cord is connected to the main jack. If it is loosened and not connected properly, check and troubleshoot

2) Loud noise or abnormal vibration

- Check whether symmetrically placed tubes are with same weight. If the weight does not meet the tolerance requirement, balance the weight gain and make sure symmetrically placed tubes with the same weight.
- Check whether the tube is broken or not. If it is, clear the rotor and place it with the same weight tube.
- Check whether the tubes are symmetrically placed in the rotor. If not, place them symmetrically.
- Check whether the centrifuge is placed on a steady platform at the level and whether the stress on four feet is even or not.
- Whether the rotor is bent or not. Whether the ground is stable and the strong shock around.
- Check whether damping absorber parts are damaged or not. If it is, replace them.

3) Centrifuge not working

- Check whether connecting terminals relate to the circuit board properly and whether the connection is loose or not. If it is fastened the connection wires properly
- Check whether the input/output voltage is correct with the multimeter. If the power supply transformer is broken, replace it with the same model and specification transformer
- Check whether the motor is energized with a multimeter. If the motor is energized but not rotated, it means the motor is damaged, and replace it.
- If the motor can rotate but the rotor does not spin, check whether the rotor is installed correctly. If no abnormalities on the rotor.

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Common Error Code

Error code	Reasons	Solution
E5	The door lid isn't closed, or the door opened abnormally during the run.	Check and close the door lid
E6	Overspeed, rotor number setting wrong, or power control board cannot be controlled.	Check and replace
	The motor was damaged.	Replace
E7	The motor runs without speed, the power control board cannot be controlled, or no rated power is supplied.	Check and replace
	The speed-detecting signal wire was loosened.	Check and replace
E9	Communication failure, the connecting wire between the display board and the power control board was loosened or damaged.	Check and replace

11. Replacement

Replace fuse

- 1) Cut off the power and unplug the power cord plug connected to the external electric supply socket, then draw another end of the power cord connected to the centrifuge.
- 2) There is a fuse case equipped under the electric outlet on the instrument's back.
- 3) There is a marking for the fuse symbol and find the V-shape slot on the fuse case.
- 4) Pull out the fuse case with a slotted point screwdriver into the V-shape slot.
- 5) Take out the damaged fuse and replace it
- 6) Put the fuse case into an electric outlet.

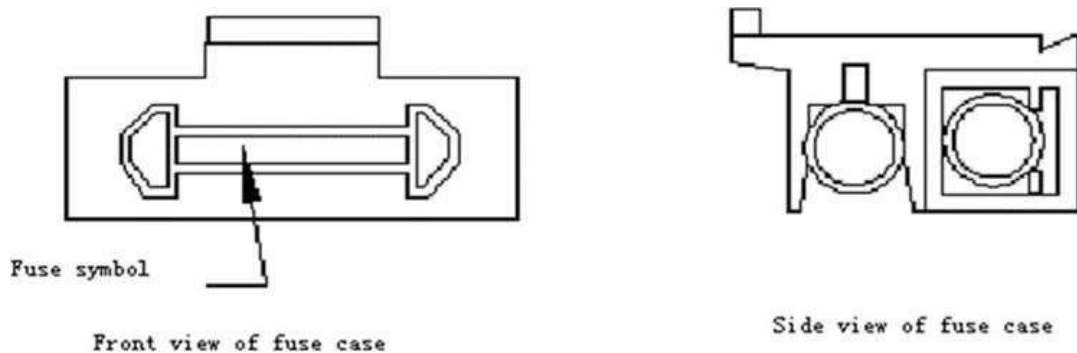


Figure-4

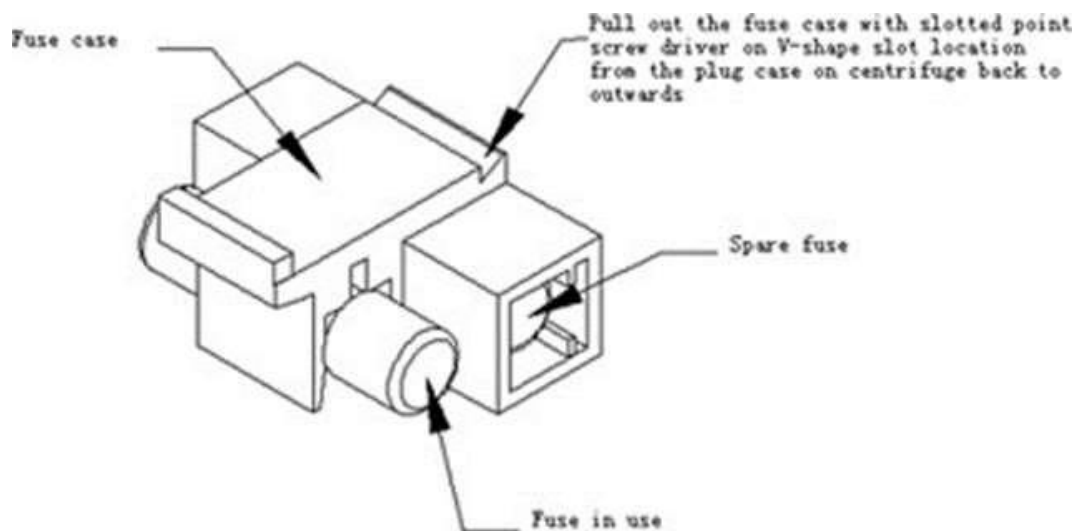


Figure-5

12. Rotor selection

Rotor name	Maximum speed (rpm)	Maximum capacity (ml)	Maximum RCF (×g)
Angel rotor R1	5000	12 x 15	5120
Swing yoke rotor R2	4200	4 x 50	2760

13. Adapter selection

Name of Adapter	Maximum capacity (ml)
A1 for rotor R2	15 ml falcon
	1.5 ml
	5 ml
	7 ml
	1.5 ml
	0.5 ml



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