CÔNG TY CỔ PHẦN THƯƠNG MẠI QUỐC TẾ MEDITOP
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Haier Biomedical

# Manual of medical centrifuge

Model:
LX-60T500-J


Manufacturer:
Qingdao Haier Biomedical Technology Co.,Ltd.
Address:
No. 280 Fengyuan Road, High-tech Zone, 266111
Qingdao, Shandong, P.R. China
Web:www.haiermedical.com
Revision Date:12/2025
Version:10th,2025
Dedicated code:0270504433
V13026

Haier Biomedical
Makes Life Better

- Please read this manual carefully before use.
- The company reserves the right to interpret this manual.
- Please keep the Manual with invoice properly after reading.
- Product technology or software may subject to upgrade without prior notice.
- The appearance of material object shall prevail.
- This product need to be operated by professionals, and there are risks for home use.

# Contents



# Electromagnetic compatibility requirements

Table 1

| Guidance and manufacturer's declaration - electromagnetic emissions | |
|---|---|
| Emissions test | Compliance |
| RF emissions<br>CISPR 11 | Group 1 |
| RF emissions<br>CISPR 11 | Class A |
| Harmonic emissions<br>IEC 61000-3-2 | Not Applicable |
| Voltage fluctuations/ flicker emissions<br>IEC 61000-3-3 | Not Applicable |

Table 2

| Guidance and manufacturer's declaration - electromagnetic Immunity | | |
|---|---|---|
| Immunity Test | Test level | Compliance level |
| Electrostatic discharge (ESD)<br>IEC 61000-4-2 | ±4 kV contact<br>±8 kV air | ±4 kV contact<br>±8 kV air |
| Electrical fast transient/burst<br>IEC 61000-4-4 | ±1 kV power supply lines<br>±0,5 kV signal input/output<br>5 kHz repetition frequency | ±1 kV power supply lines<br>5 kHz repetition frequency |
| Surge<br>IEC 61000-4-5 | ±0,5 kV differential mode<br>±1 kV common mode | ±0,5 kV differential mode<br>±1 kV common mode |
| Voltage dips, short interruptions and voltage variations on power supply input lines<br>IEC 61000-4-11 | 0 % UT; 0,5 cycle<br>0 % UT; 1 cycle<br>70 % UT ; 25/30 cycles<br>0 % UT; 250/300 cycle | 0 % UT; 0,5 cycle<br>0 % UT; 1 cycle<br>70 % UT; 25/30 cycles<br>0 % UT; 250/300 cycle |
| Conducted RF<br>IEC61000-4-6 | 3 V<br>0,15 MHz – 80 MHz<br>80 % AM at 1 kHz | 3 V<br>0,15 MHz – 80 MHz<br>80 % AM at 1 kHz |
| Radiated RF<br>IEC61000-4-3 | 3 V/m<br>(80 MHz to 1 GHz;<br>1,4 GHz to 6 GHz)<br>80 % AM at 1 kHz | 3 V/m<br>(80 MHz to 1 GHz;<br>1,4 GHz to 6 GHz)<br>80 % AM at 1 kHz |
| NOTE UT is the a.c. mians voltage prior to application of the test level. | | |

# Packing list

## Packing list

| S/N | Category | Name | Quantity | Unit |
|---|---|---|---|---|
| 1 | Body part | Host machine | 1 | Set |
| 2 | Accessories | Power cord | 1 | Pc |
| 3 | | Fuse | 5 | Pc |
| 4 | Tools | T-type wrench | 1 | Pc |
| 5 | Documents | Operation Manual | 1 | Copy |



# Safety Precautions

Dear Haier Customers,
Thank you for choosing Haier desktop low speed normal temperature large capacity centrifuge. For a better understanding of this manual and better use of the product to avoid injuries to personnel and damage to the product, please read the manual carefully and observe the contents marked with the following signs in this manual. For your convenience of reading, the desktop low speed normal temperature large capacity centrifuge is hereinafter referred to as the centrifuge.

## Safety label


Cautions


Grounding


Biological risks

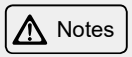
In Vitro diagnostic medical device

| | |
|---|---|
|  The upper and lower limits of temperature shall be indicated adjacent to the upper and lower horizontal lines. |  Symbol for "Manufacture" |
|  Symbol for "Consult instructions for use" |  Symbol for "Date of manufacture" |
| EC REP European Authorized Representative | Shanghai International Holding Corp.GmbH(Europe) Eiffestrasse 80,20537 Hamburg,Germany |

## Safety Precautions


Check this manual in all cases marked with ⚠, so as to learn the nature of potential hazards and any countermeasures that must be taken.

Failure to comply with the items under warning signs may result in serious personal injury or even death.



Failure to comply with the items under precaution signs may result in personal injury or damage to the centrifuge and related property damage.


Behaviors or actions that must be prohibited


Behaviors or actions hat must be followed


It is very important to read this manual when using this machine for the very first time. The protections provided by the device may be damaged if it is not used in accordance with the methods specified in the manual.

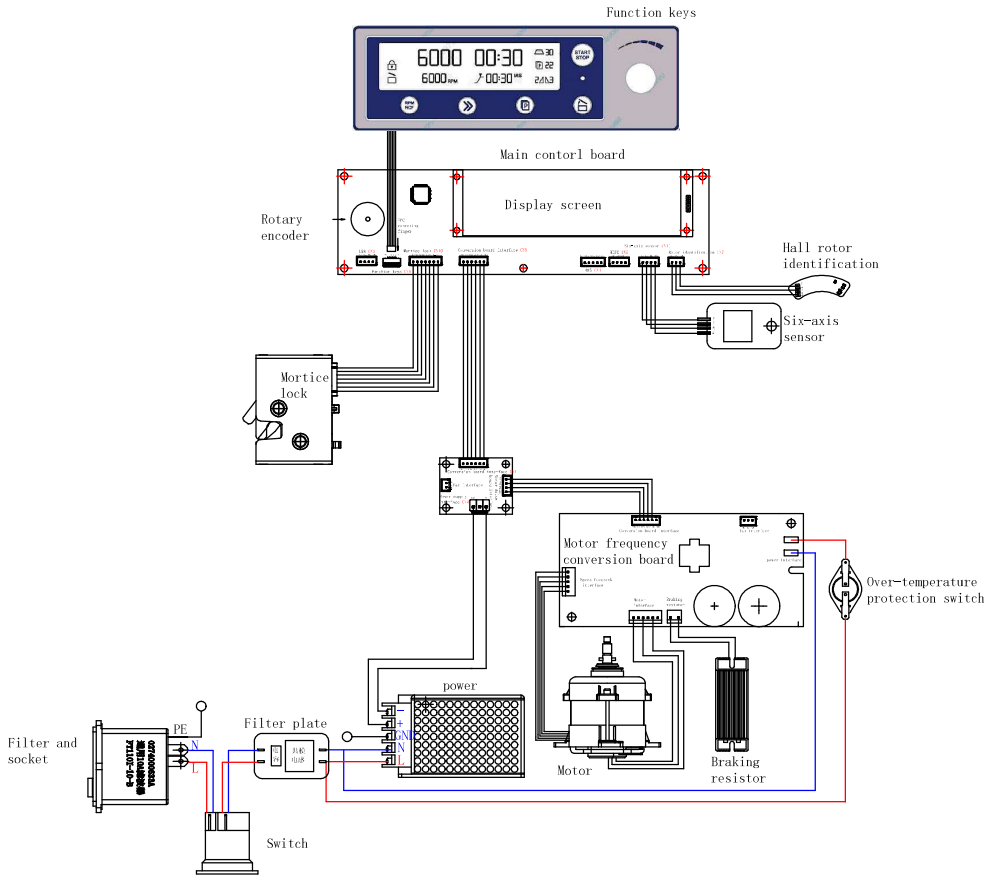

Only professional Haier technicians or after-sales maintenance personnel authorized by Haier can install and maintain the centrifuge, or it may cause electric shock or fire.


Be sure to place the centrifuge firmly on a solid flat surface. If the centrifuge is not firmly fixed or placed in an appropriate place, it will cause the machine to turn over or any personnel to be injured.

- Please use the special power supply indicated on the nameplate of the centrifuge; otherwise, it may cause fire or electric shock.
- If the voltage used is lower than 198V or higher than 264V, it is required to additionally provide an automatic voltage regulator, to ensure that the voltage meets the use requirements.
- If the power line needs to be extended, the section area of the extension line shall not be less than 1mm$^2$ , and its length shall not be longer than 3m; otherwise, fire or electric shock may be caused.
- The power line of the centrifuge is equipped with a three-wire (grounded) plug which matches with the standard three-wire (grounded) socket of 10A. The grounding pin of the power cord can be cut or removed under no circumstances. Be sure that the power plug and socket are tightly and reliably connected; otherwise, a fire may be caused.
- Please use a power socket which has a grounding wire, so as to prevent electric shock. If the power socket is not grounded, be sure to install the grounding wire by a professional technician.
- In case of gas or other flammable gas leakage, the valve with gas leakage shall be closed, and the doors and windows shall be opened for ventilation and exhaust. Do not connect or disconnect the power plug of the centrifuge, or it may cause an explosion and fire.
- When disconnecting the plug of the centrifuge from the power socket, hold the power plug firmly and do not pull the lead of the power plug. Pulling the cord with hands may cause electric shock or fire due to a short circuit.
- If the centrifuge is not operating properly, please disconnect the power plug. Keeping the centrifuge operating in an abnormal state may cause electric shock or fire.
- Before performing any repair or maintenance for the centrifuge, be sure to disconnect the power supply to prevent any electric shock or injury.
- Ensure that no drugs or suspended particles in or around the centrifuge are inhaled during maintenance. Otherwise, it may cause damage to your health.
- If the centrifuge will be left unused for a long period of time, be sure to disconnect its power plug to prevent electric shock, leakage, or fire caused by the aging of the power line.
- Disposal of the centrifuge shall be carried out by the relevant personnel.
- When restarting the centrifuge after any power failure or the power is turned off, it is necessary to check the settings thereof. Change of the settings may lead to changes in the results.
- When handling the centrifuge, be careful not to be trip over by the centrifuge to prevent the machine from being damaged or to prevent any person from being injured.
- There shall be no obstruction around the centrifuge to keep it well-ventilated.
- Do not place the centrifuge in a damp place or a place that is prone to be splashed by water, or it may lead to leakage or electric shock due to reduced insulation.
- Do not pour water directly onto the centrifuge, or it may cause electric shock or short circuit.
- Do not place any container filled with water or heavy object on the centrifuge. If an object falls, it may cause injury, and the water overflowing may reduce insulation and cause leakage or shock.
- Do not touch any electrical parts of the centrifuge, such as the power plug, or any switch with wet hands; otherwise, an electric shock may be caused.
- The user shall not disassemble, repair or modify the centrifuge randomly; otherwise, fire or personal injury may be caused due to improper operation.



# Schematic diagram



# Repair and Maintenance

## Cleaning

Wipe the centrifuge with a neutral solution or warm water. Do not use corrosive cleaners, such as soap, bleach, detergent, etc. If there is any stubborn residue in the centrifugal chamber, remove it with a soft brush; do not use any metal brush, as a metal brush will damage the centrifugal chamber wall. Finally, rinse the centrifuge thoroughly with distilled water and dry it with a soft cloth. Then, place the rotor upside down to dry.

## Disinfection and sterilization

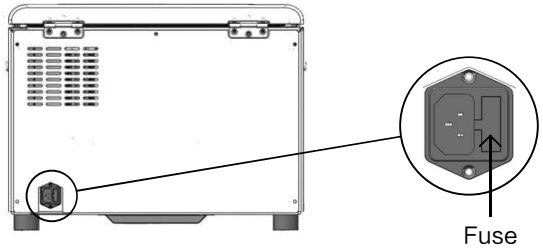
The centrifuge should be sterilized immediately if any infectious materials spill from it during the operation. Clean it by spraying neutral detergents with a sprayer to ensure that all surfaces of the centrifuge chamber and the rotor are sprayed evenly.

The disinfection and sterilization process of the rotor and its accessories:

1. Open the centrifuge lid.
2. Cut off the power supply.
3. Pull out the power plug.
4. Unscrew the lock nuts and remove the rotor from the drive shaft by holding it with both hands.
5. Take the centrifuge tubes and adapter out and disinfect them.
6. Spray detergents on the surface of the rotor with a sprayer or soak it into the detergent.
7. Wipe off the disinfectants and detergents on the rotor.
8. Rinse the rotor and its cover with clean water and then place it upside down to dry.
9. Handle the disinfectant waste in a proper manner.

## Fuse

A fuse is provided inside the power switch of the centrifuge. Its specification is: 10A 250V.






- Do not place inflammable, explosive, dangerous, or volatile articles in the centrifuge, and do not use flammable sprays near the machine; otherwise, it may cause an explosion or fire.
- Do not insert metal objects, such as nails or wires, into any opening or gap on the centrifuge or into any vent for internal air circulation; otherwise, the objects mentioned above may contact moving parts and cause electric shock or injury.

## Disclaimer

In any one of the following circumstances, the resulting property losses or casualties, if any, shall be borne by the user of the device:

- Where the user fails to operate the device according to the operation manual;
- Where the user uses the device for purposes other than the specified ones;
- Where the user uses non-recommended accessories and consumables together with the device;
- Where the user has the device maintained or repaired by personnel not authorized by Haier.
- Where the user modifies the device without authorization.

# Precautions for Use

## Restrictions on use

Danger! Explosion risk

• Do not operate this equipment indoors with explosive hazardous substances.

• Do not use the equipment to centrifuge explosive substances or highly active substances.

• Do not use the equipment to deal with substances that may produce explosive gases.

Warning! Do not use this equipment to separate the following substances

• Do not separate harmful substances.

• Do not separate toxic substances.

• Do not separate infectious liquids and pathogenic bacteria.

CAUTION

• Before using any cleaning or decontamination methods except those

• recommended by the manufacturer, users should check with the manufacturer that the proposed method will not damage the equipment.

• Observe the safety precautions and handling instructions for the cleaning agents used.

WARNING

• UV rays reduce the stability of plastics.

• Do not subject the centrifuge, rotors and plastic accessories to direct sunlight.

## Danger caused by improper operation

Warning! Damage to equipment or power cord can lead to electric shocks

• Make sure the equipment and power cord are not damaged before starting the equipment.

• Only properly installed or maintained equipment can be started.

• Cut off the power supply of the equipment in case of danger. Unplug the power plug from the equipment or power outlet.

Warning! Lethal voltage in the equipment

• Contact with parts with high voltage may result in electric shock.

• Make sure the case is closed and no damage.

• Do not disassemble the case.

• Make sure no liquids enter the equipment.

• The equipment can only be disassembled by an authorized service organization.



# Fault Alarm Processing

Possible faults during operation, as well as the causes and troubleshooting:

| S/N | Fault name | Possible causes | Troubleshooting | Code information | Notes |
|---|---|---|---|---|---|
| 1 | Unbalance protection | The imbalance switch is turned on. | "Immediate shutdown Audible alarm" | E01 | Cancel manually |
| 2 | Door lock failure | After 2 seconds of pressing the open button, the door status is displayed as not open | Immediate shutdown Audible alarm | E02 | Cancel after manually opening the door Repair door locks or gas springs |
| 3 | Forced lid opening during operation | The lid is forcibly opened while the centrifuge is operating at a speed of ＞ 200r/min | Immediate shutdown Audible alarm | E03 | Cancel manually |
| 4 | Rotor identification fault | The identified rotor is not the same as the current rotor number No match or identification | Immediate shutdown Audible alarm | E04 | Check the rotor |
| 5 | Communication failure with the attitude sensor | If communication fails for 30 consecutive seconds, a fault will be reported" | Audible alarm | E07 | Cancel manually or cancel automatically when communication returns to normal |
| 6 | No rotor information | The information of the identifi ed rotor cannot be queried in the rotor library | Audible alarm | E08 | Cancel manually |
| 7 | Overvoltage or undervoltage | The brake resistance is abnormal；The drive plate voltage exceeds 390V or below 150V | Immediate shutdown Audible alarm | E11 | Cancel after power off and restart |
| 8 | Over rated current | The current of the drive board exceeds 5.5A. | Immediate shutdown Audible alarm | E12 | Cancel after power off and restart |
| 9 | No speed of the motor | There is no speed feedback in 10 seconds after the drive board sends the startup instruction | Audible alarm | E13 | Cancel after power off and restart |
| 10 | Overspeed of the | The drive board detects that the actual rotational speed exceeds the set speed by 700r/min | Immediate shutdown Audible alarm | E14 | Cancel after power off and restart |
| 11 | Abnormal UVW output | An error may be reported when the drive board is electrically impacted. | Immediate shutdown Audible alarm | E17 | Cancel after power off and restart |
| 12 | Communication failure with the motor frequency conversion board | If communication fails for 30 consecutive seconds, a fault will be reported | Immediate shutdown Audible alarm | E19 | Cancel automatically when communication returns to normal |
| 13 | Life reminder | When the rotor reaches 90% of its lifespan | A pop-up box shows every day after the machine is energized | E99 | Cancel manually, Replace rotor |

## Operating procedures

(1) Press the power switch.

(2) Press to open the lid, put the rotor onto the main shaft of the motor and then tighten the nuts. Put the well-weighed and well-balanced samples to be centrifuged into the rotor and keep the centrifuge tubes symmetric to the center.

(3) Close the lid and check if it is securely closed.

(4) Press the keys on the screen to set the parameters. After confirming that all parameters are properly set, press the RPM RCF key to run the machine. The running parameters will be displayed on the window.

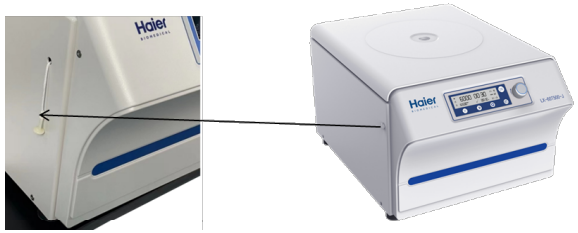
(5) After the centrifuge runs to the set time, it stops timing automatically and starts to speed down. There are two ways of timing: timing from start, namely the timing starts after the start key is clicked; timing from the set speed, namely the timing starts after the machine reaches the set speed.

(6) After the rotor stops, press the key to open the lid and take the centrifuge tubes out.

(7) Turn off the centrifuge switch to cut off the power.

Caution The operator must be on-site during the centrifugal separation.

Caution When the centrifuge is in the power-off state, its lid can be opened manually by pulling the string on the side of the centrifuge once.







Danger: It is forbidden to open the lid manually when the rotor is running.

## After the centrifugal separation

1. Take out the angle rotor after opening the centrifuge lid and wipe off the water inside the centrifuge chamber.
2. Turn off the centrifuge switch to cut off the power.
3. Keep the centrifuge lid open to dry the residual water.



Warning! Chemical or mechanical damage to parts may cause injury

- Avoid mechanical damage to all parts.
- Check whether the parts are damaged before each use. Please replace the accessories in case of damage.
- Do not use accessories that exceed the maximum service life.

Caution! Wrong accessories can lead to safety hazards

- The use of accessories not recommended by Haier may affect the safety, normal function and accuracy of the equipment. Damage caused by improper use of accessories by users is not covered by Haier's warranty.

Caution The spilled liquid may cause damage to the device. In this case:

- Shut down the device in time;
- Cut off the power supply.
- Clean the device and its accessories carefully according to instructions on cleaning and disinfection.

Caution Condensate can cause damage to electrical components

- After the device is transported from a cold environment to a warm one, condensed water may form inside it. Therefore, after placing the device properly, wait at least four hours before connecting it to the power supply.

Caution •Take out the rotor when handling and transporting the centrifuge to avoid damage to the device.

Caution •The device shall be placed in a position that facilitates the disconnection of the power supply.

## Incorrect operation of the centrifuge

Caution
- Impacting or moving the device while it is running can cause damage. If the rotor collides with the walls of the centrifugal chamber, the centrifuge or rotor will be seriously damaged. Therefore, do not move or impact the device while it is running.
- When centrifuge is running, do not stand within 30 cm of the centrifuge to avoid indirect accidents.

## Improper use of the rotor

Improper fixation of the rotor and rotor cover poses a risk of injury

• Centrifugal separation can be carried out only after the rotor is fastened and the rotor cover is properly closed.

• The four hanging cups of the horizontal rotor must be symmetrically placed before the centrifuge starting, Cannot place only one pair of them.

• When selecting the round cup adapter for the horizontal rotor , must attent its placement position, must correctly placing it according to the guide groove before the centrifuge starting.

• Each rotor must use the same hanging cup. If the hanging cup is not installed in the correct position, the rotor or the centrifuge will be damaged, leading to accidents.

• Improper fixation of the rotor and rotor cover may cause abnormal noise inside the centrifuge; in this case, press down the START STOP key to end the centrifugal separation immediately.

Asymmetrical loading of the rotor may pose a risk of injury.

• Load centrifugal tubes of the same specification symmetrically in the rotor.

• Weigh the centrifugal tubes used with an electronic scale and check whether the load is symmetrical.

Rotor overload may pose a risk of injury.

• The density of the reagent to be centrifuged shall not exceed 1.2g/mL at the maximum rotational speed and the maximum capacity or load.

A chemically damaged rotor cover may pose a risk of injury.

• If the rotor cover comes into contact with an organic solvent, clean it immediately.

• Check the rotor cover periodically for damage or crack.

• If the rotor cover cracks or turns milky white, replace it immediately.

Caution

Corrosive chemicals may damage the rotor

• The stability of the rotor may be affected by corrosive chemicals.

• Avoid exposing the rotor to corrosive chemicals, including strong and weak bases, strong acids, solutions containing mercury, copper, and other heavy metal ions, organic halides, concentrated salt solutions, and phenol.

• If the rotor is contaminated with corrosive chemicals, clean it with neutral detergents immediately. Focus on cleaning the rotor groove.

Caution

Improper operations may cause the rotor to fall down

• When removing and placing the rotor, be sure to hold the rotor with both hands to prevent fall-off.

• The service life and usable cycle of the rotor. Using rotors that exceed their lifespan and usable cycle will lead to rotor rupture. Continuing to use rotors that have exceeded their lifespan is very dangerous,will cause unexpected casualties.



# Method of Use and Operations

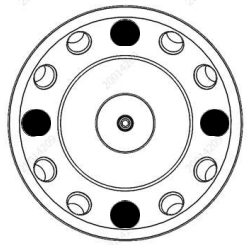
## Loading of the rotor

• Before use

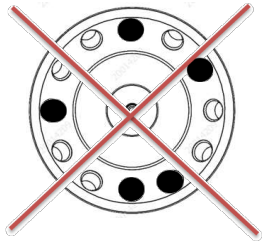
1. Check the rotor for breakage, scratches, and subtle corrosion marks.
2. Check the centrifugal chamber, drive shaft, and lock nut for damage.
3. Turn the rotor by hand carefully to check whether it can rotate freely.
4. After the centrifuge tube is loaded into the sample, It is recommended that the weight difference between two centrifuge tubes placed symmetrically in the rotor is less than 5 grams.

• Correct loading method for samples

Weigh the samples with an electronic scale before loading them into the centrifugal tubes to ensure that the weight difference between two centrifuge tubes placed symmetrically in the rotor is less than 5 grams. Strictly avoid the unbalanced operation of the rotor. Before starting the centrifuge, place the centrifugal tubes (of the same model) into the rotor and keep them symmetric to the center; close the rotor cover after confirming the centrifugal tubes do not exceed the maximum allowable amount of unbalance. It is recommended that the overall imbalance of the rotor after loading is less than 14 grams.



• Incorrect loading method for the samples



## Homepage display: displaying the version number and used life time

When the power is on, the speed display position shows 6000;

The speed setting position shows how long the machine has been used

The time set position shows 3, indicating that the centrifugal tube used is of a 100ml capacity;

The time 01:00 indicates the software version V 1.1.0.




Caution

The number of times the rotor is allowed to be autoclaved.

• When the rotor reaches the allowable number of high-pressure disinfection, the use of the rotor should be stopped immediately.High pressure disinfection can cause structural strength reduce, resulting in deformation or damage.If the rotor is damaged, the main components of the centrifuge may suddenly rotate and have an accident, Cause injury or death.

• When the rotor has corrosion, strength reduction, cracks or deformation, the rotor needs to be replaced in time. Please contact Haier biomedical technicians or Haier biomedical authorized after-sales maintenance personnel to inspection in time to avoid accidents.

## Improper use of centrifugal tubes

Overloading of the centrifugal tubes may pose a risk of injury

• Pay attention not to overload the centrifugal tubes.

• Depending on the required relative centrifugal force, choose appropriate centrifugal tubes according to the manufacturer's instructions.

Damaged centrifugal tubes may pose dangers

• Do not use any damaged centrifugal tube; Otherwise, it may cause damage to the device and accessories and loss of samples. Please visually check all centrifugal tubes for damage before use.

Leaving the centrifugal tube cap open will pose dangers

• The centrifugal caps may get broken if left open during the centrifugal operation, damaging the rotor and centrifuge. Therefore, close the caps of all centrifugal tubes carefully before starting centrifugation.

Caution

Organic solvents can damage the plastic centrifugal tubes

• The use of organic solvents (for example phenol) may reduce the strength of the plastic centrifugal tubes and damage them.

Caution

The test tube muse be the same type

• If use the different test tube will create imbalances, which can lead to rotor, Hanging cup and centrifuge damage.

Caution

The strength of the glass tube varies from factory to factory.

• Please use the glass test tube within the scope guaranteed by the manufacturer (centrifugal force resistance).

• Damage to glass tubes during centrifugation can result in serious accidents, including physical injury.

# Product Introduction

## Product use and scope of application

• Intended Use for laboratory Use Centrifuge

The LX-60T500-J desktop low-speed normal-temperature Centrifuge is a machine that separates the components of a mixture of liquid and solid particles or a mixture of two or more liquids through the use of centrifugal force. It is widely used in fields such as life sciences, biology, medical research, pharmaceuticals, geology, agriculture and forestry, petrochemicals, light industry, and metal particles,for rapid separation and extraction of trace samples.

• Intended Use for IVD Centrifuge

This centrifuge can be used as IVD (In vitro diagnostic) laboratory equipment if used together with IVD tubes and IVD diagnostic analysis systems.The centrifuge separates human blood. Blood is used in numerous diagnostic tests such as hematological screening (e.g. measurement of free hemoglobulin), immunological screening (e.g. measurement of thrombocytes levels), cardio-vascular system assessment (e.g. analysis of potassium level).

## Product features

Direct driven by a brushless DC motor and designed with various rotors, the centrifuge can meet different centrifugal requirements and deliver an operating mode of buttons combined with knobs. The product features are as follows.

With a maximum speed of 6000rpm, a relative centrifugal force of 5353g, and various rotors, the centrifuge can complete centrifugation procedures for most of the commonly used blood cells.

Through the combination of the LCD screen, buttons, and knobs, the centrifuge is more convenient to operate.

Designed with automatic vibration monitoring, imbalance detection during operation, and installation levelness check, the centrifuge can guarantee the security of use.



• Centrifugal force setting: To set the centrifugal force, you should press the RPM RCF key to switch the unit to xg first, press the knob to enter the setting mode, and finally rotate the knob to modify the value. For each position change, the centrifugal force will be increased or decreased by 1. If you press the knob again, the machine will save the parameters and move to the next set position.

• Timing mode setting: If you press the knob, a triangle will flicker, and if you continue to rotate the knob, another triangle will flicker. If you press the knob again, the machine will save the parameters and move to the next set position.

• Time setting: To set the time, you should press the knob to enter the setting mode first. While the first two digits of the time are flickering, you should rotate the knob to change the value and press the knob to save the change. Then, the machine will jump to the last two digits of the time, and you can repeat the above process to set the time. After that, the machine will jump to the time unit, and you can rotate the knob to modify the unit. Then, after you press the knob again, the machine will save the parameters and move to the next set position.

• Speed-up position: To set the speed-up position, you shall press the knob to enter the setting mode first; while the left figure is flickering, rotate the knob to adjust the value; after that, press the knob again, and the machine will save the parameters and move to the next set position.

• Speed-down position: To set the speed-down position, you shall press the knob to enter the setting mode first; while the right-side figure is flickering, rotate the knob to adjust the value; after that, press the knob again, and the machine will save the parameters and move to the next set position.

• Program: is displayed when the program no. 1-99 has saved data; is displayed when the program no. 1-99 has no saved data. The default program number is 00. Any modified program is directly saved in 00 by default.

• Call: Short press the , then the program number flickering,and turn the knob to select the program number to be called, then short press the knob to call the program corresponding to the current number in the program library.

• Save: First set the parameters,then press and hold the , then the program number flickering, and turn the knob to select the program number to be saved, then short press the knob to save the modification to thecorresponding program number in the program library, and then the system automatically returns to the program number before the saving operation.

• Modify: Short press the , the program number flickering ,and turn the knob to select the program to be modified ,then short press the knob to confirm ,and then press the knob to modify parameter, hold press the knob to save ,then hold press the current program flickering ,then short press knob to save current parameter.

• Lid opening state: The machine displays when the lid is opened and displays when the lid is closed, switching between the two automatically depending on the state of the lid lock.

Opening modes: Press and hold the 2 seconds when the lid opened to switch the opening mode to achieve shutdown automatic or manual lid opening. Manual lid opening is allowed in both modes. The manual lid opening is selected by default.

• Timing mode: Press and hold down the and the keys for 2 seconds to switch between the countdown timing and the normal timing mode. In both modes, when the key is pressed, the normal timing mode will be used.

• Rotor No.: Information about the supplied rotors has been preset inside the machine, so after the user places a rotor in, the machine will directly call the corresponding rotor information if it can recognize the rotor successfully. The default rotor is rotor no. 1; if the machine stops after identifying the mismatch, it will automatically switch to the parameters of the current rotor and start again to run normally when the start button is pressed.

Knob: It has 30 positions for each circle of rotation. It allows the machine to enter the adjustment mode when clicked and selects the item to be modified when rotated. When rotated clockwise, it increases the value; otherwise, it decreases the value. If clicked again, it will save the modification and jump to the next area to continue to adjust other parameters. If pressed and held down for 2 seconds or if there is no operation for 10 seconds, it will exit the adjustment mode without saving.

Audible alerts:

1. When the centrifugal operation is completed, the buzzer will beep three times (for about three seconds)

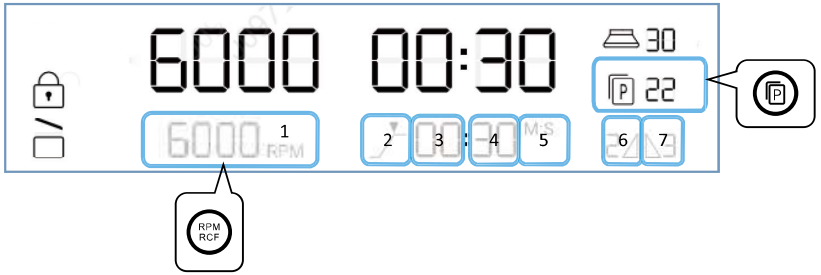
2. In case of an alarm, the buzzer beeps 10 times quickly (for about five seconds).

3. After mode switching, the buzzer beeps once.

Fault display: It is indicated by "E x" in the display frame of the time area, with x representing a number, accompanied by flickering and an alarm sound.

## Parameter setting

If you rotate the knob directly, the window cursor will switch in the following order: 1、2、3、4、5、6、7




• Screen locking: If you press and hold the RPM/RCF key for 2 seconds, the screen will be locked or unlocked. When the screen is locked, no parameter adjustment is allowed, but other normal operations will not be affected.

• Control sequence of the knob:

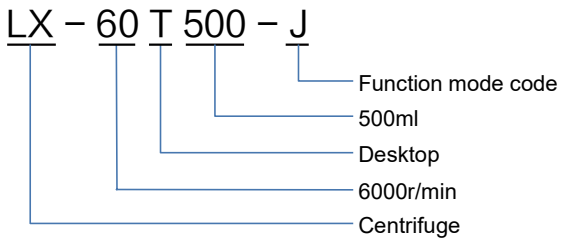
In the unlocked state, if you press the knob, the machine will enter the setting mode, and the “1. Speed setting” flickers. Thereafter, for each press of the knob, the machine switches to the next item, successively “2. Timing mode”, “3. First two digits of the time”, “4. Last two digits of the time”, “5. Time unit”, “6. Speed-up position”, and “7. Speed-down position”, and the corresponding item flickers. After a cycle is ended, the machine will switch to “1. Speed setting” again. If you press and hold the knob for 2 seconds or if there is no operation for 10 seconds, it will save the modification and exit the setting mode automatically.

• Speed setting: After you press the knob, the machine will enter the setting mode, and the speed item will flicker. For each position, the speed will be increased or decreased by 100. If you press the knob again, the machine will save the parameters and move to the next set position.



## Naming and classification

•Naming: Specific naming rules are as follows:




• Classification

A Class I medical device according to the management classes of the Medical Device Classification Directory

a. A Class 1 ordinary device with protective grounding measures if classified by electric shock protection;

b. A desktop centrifuge if classified by structure;

c. A low-speed centrifuge if classified by rotating speed;

d. A normal-temperature centrifuge if classified by temperature.

**Due to product improvements, the Haier desktop low-speed normol-temperature Centrifuge you get may not be completely consistent with the illustration in the manual. We sincerely apologize for this. The contents of this manual are subject to changes without further notice.**

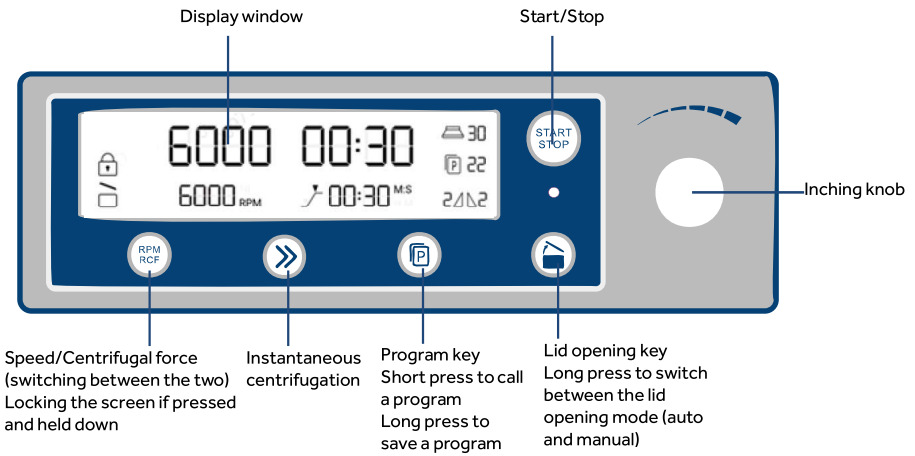
# Main technical parameters

## Machine parameters

| Model | LX-60T500-J |
|---|---|
| Maximum speed (rpm) | 6000 |
| Max. centrifugal force ( ×g ) | 5353 |
| Maximum capacity (ml) | 4 × 500 |
| Speed accuracy(rpm) | ±10 |
| Timer range | 1s-99min59s/1min-99h59min |
| Machine noise (dB(A)) | ≤63 |
| Power supply | AC220V-240V~50/60HZ |
| Machine power (W) | 700 |
| Weight (kg) | 60 |
| Overall dimensions (W*D*H) | 624 × 478 × 365 |
| Date of manufacture/Expected service life | See the bar code on the case body/10 years |

Note: Our company lays emphasis on technological innovation, and the product parameters are subject to changes without prior notice.






Display window definition

• Press and hold down the and the keys for 2 seconds to switch between countdown and normal timing.

## Definition and requirements of the function keys

Functions of the keys:

RPM RCF : It is the conversion key used to switch between xg and RPM, and RMP is displayed by default. Parameter adjustment changes only the value of the number, depending on the current unit.

While in the setting state, if the unit is xg, pressing the key will change the value of the centrifugal force, and if the unit is rpm, pressing the key will change the value of the speed. The key can lock/unlock the screen if pressed and held down for 2 seconds. When the screen is locked, no parameter adjustment is allowed, but other operations are not affected.

: It is the instantaneous centrifugation key. While the lid is closed, if the key is pressed, the machine will operate according to current parameters on the screen and shut down immediately after the key is released.

: It is the program key. It will call the selected program if pressed and released immediately and save the program if pressed and held down for 2 seconds.

: It is the lid opening key. It can be used to open the lid if the machine is not running. If pressed and held down for 2 seconds, it will switch between the lid opening mode (automatic lid opening after shutdown or manual lid opening after shutdown).

START STOP : It is the start/stop key used to start and stop the centrifuge. In case of a fault, this key can be used to lift the alarm.

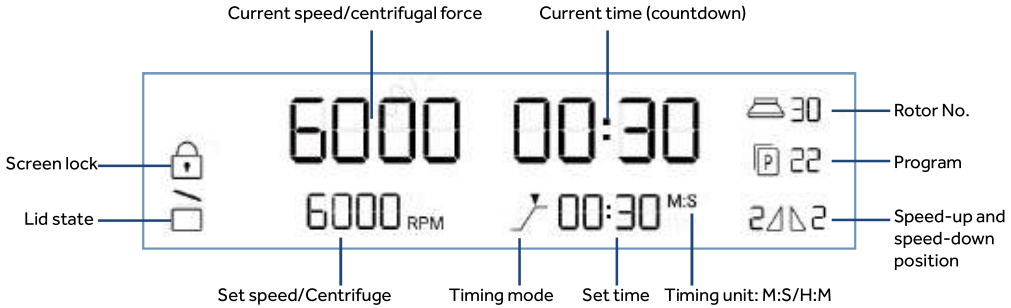
# Description of the Operation Function Interface

## Function interface

The homepage interface of the centrifuge after power-on is shown below:


## Panel display definition

The display panel is an LCD screen, showing the current RPM (can be switched to RCF), set speed, set time, timing mode (timing from start and timing from the set speed), timing unit (can be switched between M: S and H: M), rotor number selection, program number selection, speed-up position, speed-down position, network state, screen locking, lid state, and alarm information (flickering in the time display area).




Display window definition



## Rotor parameters (optional)

| Rotor No. | Order code | Rotor Description | Rotor capacity (ml) | Maximum centrifugal force (xg) | Maximum rotational speed (rpm) | Singe tube capacity | Maximum tube size ( φ×Lmm ) | Centrifugal tube type | Maximum number of uses (times) | Maximum service life |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | BE12DA000 | Angle rotor (tube shield) | 6×50 ( 15 ) ml | 5353 | 6000 | 50/15 ml | 29×118 17×121 | Round /pointed bottom | 50000 | 7 years |
| | BE12C8000 | Angle rotor (tube shield) | 12×15ml | 5353 | 6000 | 15ml | 17×121 | Round /pointed bottom | 50000 | 7 years |
| 2 | BE12D7000 | Angle rotor (tube shield) | 12×50 ( 15 ) ml | 4528 | 5000 | 50/15ml | 29×118 17×121 | Round /pointed bottom | 50000 | 7 years |
| | BE12D8000 | Angle rotor (tube shield) | 42×15ml | 4528 | 5000 | 15ml | 17×121 | Round /pointed bottom | 50000 | 7 years |
| 3 | BE12D9000 | Angle rotor (tube shield) | 10×100ml | 3260 | 4500 | 100ml | 41×120 | Round bottom | 50000 | 7 years |
| 4 | BE12DQ000 | Angle rotor (tube shield) | 60×10ml | 2576 | 4000 | 10ml | 15×106 | Centrifuge tube with cover | 50000 | 7 years |
| 6 | BE12FK001 | Horizontal rotor | 4×500ml | 3220 | 4000 | 500ml | / | Four hanging positions | 25000 | 7 years |
| 6-1 | BE12G0000 | Round hanging cup | 500ml | 4 piece/set | | 500ml | 80×136 | Flat bottom | 25000 | 7 years |
| 6-1-1 | BE12JP001 | Adapter | 250ml | 4 piece/set | | 250ml | 62×123 | Flat bottom | / | / |
| 6-1-2 | BE12FG001 | | 225ml | 4 piece/set | | 225ml | 62×137 | Pointed bottom | / | / |
| 6-1-3 | BE12FF001 | | 100ml | 4 piece/set | | 100ml | 38×120 | Round bottom | / | / |
| 6-1-4 | BE12JS001 | | 4×50ml | 4 piece/set | | 50ml | 29×118 | Pointed bottom | / | / |
| 6-1-5 | BE12JR001 | | 10×15ml | 4 piece/set | | 15ml | 17×121 | Pointed bottom | / | / |
| 6-1-6 | BE12JQ001 | | 14×10ml | 4 piece/set | | 10ml | 16×106 | φ16 Large blood collection tubes | / | / |
| 6-1-7 | BE12JD002 | | 19×7/5ml | 4 piece/set | | 2-7ml | 13×75/106 | Short/Large blood collection tubes | / | / |
| 6-1-8 | BE12JE002 | | 30×1.5ml | 4 piece/set | | 1.5ml | 11×38 | Round /pointed bottom | / | / |
| 6-1-8-1 | BE12J2003 | | 0.2ml | 24piece/set | | 0.2ml | 6.3×23 | Pointed bottom | / | / |
| 6-1-8-2 | BE12JN002 | | 0.5ml | 24piece/set | | 0.5ml | 8×35 | Pointed bottom | / | / |
| 6-2 | BE12G1000 | Pointy bottom hanging cup | 500ml | 4 piece/set | | 500ml | 96×150 | Pointed bottom | 25000 | 7 years |
| 6-2-1 | BE12JB002 | Adapter | 250ml | 4 piece/set | | 250ml | 60×165 | Pointed bottom | / | / |
| 6-3 | BE12HA000 | Rectangular hanging cup | 500ml | 4 piece/set | | 500ml | / | Blood collection tubes | 25000 | 7 years |
| 6-3-1 | BE12JV001 | Unbonnet adapter | 24×7/5ml | 4 piece/set | | 2-7ml | 13×75/106 | Short/Large blood collection tubes | / | / |
| 6-4 | BE12H5000 | ELISA plate hanger | 96×0.2ml | 4 piece/set | | 0.2ml | 86×128 | ELISA plate | 25000 | 7 years |

Note:

1. The service life is calculated from the first time it is put into use;
2. Each rotor acceleration, operation, deceleration of a centrifugal separation process for a cycle;
3. The maximum cumulative number of cycles and the longest service life to prevail.

| Centrifuge Rotor Components | Maximum number of high−pressure sterilization cycles | Service life from first use in years |
|---|---|---|
| Rotor Sealing Ring | 50 times | 3 years |
| Adapter | Cannot be autoclaved | 3 years |
| Rotor Lid (Plastic) | 50 times | 3 years |

Note:

Repeated autoclaving accelerates the aging of rubber seals, which may compromise the airtightness of sealed components. Replace the rubber sealing ring after 50 autoclave cycles to ensure optimal performance.

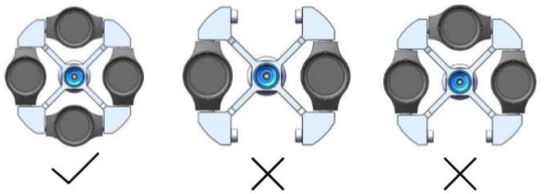


Caution

• When loading and unloading the rotor, be sure to use gentle and smooth force to prevent violent damage to the drive shaft; Make sure remove the rotor from the spindle before moving it to prevent damage.

• In order to ensure centrifugation safety, the horizontal rotor cup or the enzyme plate cup must be fully installed on the rotor, regardless of whether there is a sample centrifuge tube in it.

• The horizontal rotor cup or enzyme plate cup must follow the principle of central symmetry when placing centrifugal samples, otherwise serious imbalance will occur the machine vibrates violently.



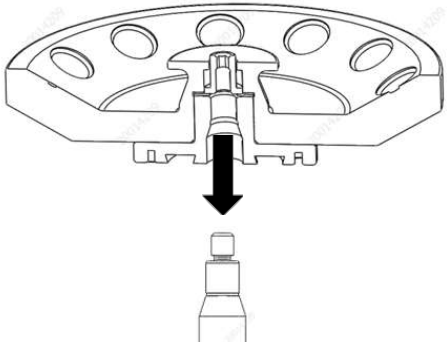
## Commissioning requirements

• Checking: Check the instrument for any damage caused by transportation and check the accessories against the packing list.

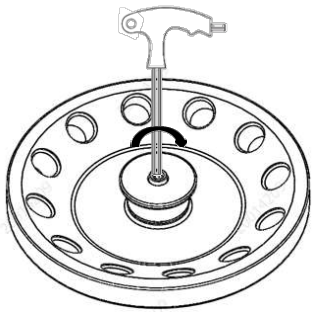
• Opening the lid: After the machine is properly installed, switch on the power supply after confirming all conditions are normal. Then, press the key to open the lid.

• Installing the rotor: Place the rotor onto the motor shaft and align the groove of the rotor with the raised part of the shaft; then, hold the rotor with one hand to keep it from shaking, and turn the center nut clockwise with a special spanner with the other hand until the rotor is completely pressed against the motor shaft.

Step I:



Step II:

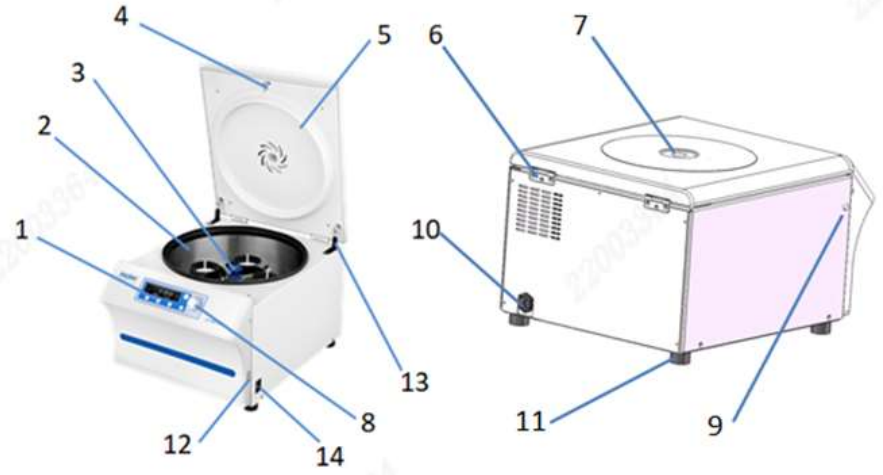


• Disassembling the rotor (upon commissioning of the centrifugal operation), as shown in the figure: Hold the rotor with one hand to keep it from rotating, and turn the center nut counter-clockwise with a special spanner with the other hand until the rotor is detached from the motor shaft. Then, hold the bottom of the rotor with both hands and take out the rotor smoothly from the centrifugal chamber with the rotor perpendicular to the motor shaft.



# Structural Features and Operating Principle

## Overall structure




| | | | |
|---|---|---|---|
| 1.Operation panel | 2. Centrifugal chamber | 3. Rotor | 4. Lid lock |
| 5. Lid | 6.Hinge | 7.Viewing window | 8. Rotary knob |
| 9.Emergency unlocking device | | 10.Filter | 11. Foot |
| 12.USB interface reserved | 13.Gas spring | 14.Power switch | |

## Operating principle

Relying on the powerful centrifugal force generated by the high-speed revolution of the rotor, a centrifuge can accelerate the sedimentation velocity of the particles in the liquid to separate the substances with different sedimentation coefficients and different buoyant densities from the samples and concentrate and purify them.

# Installation and Commissioning

## Preparations for commissioning

• Open the packing case

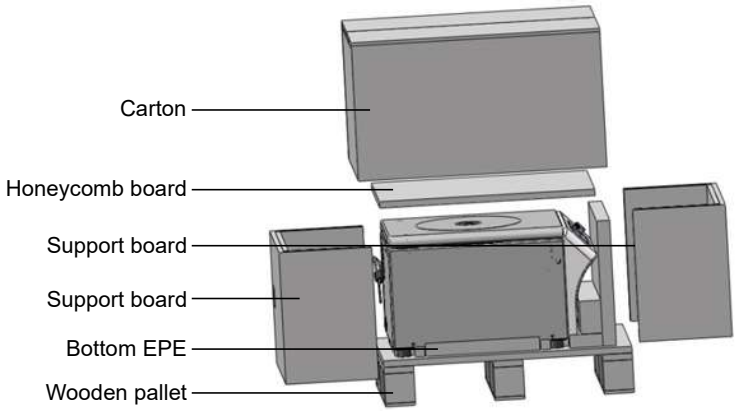
The user shall check the appearance of the packing case after receiving the goods. Violent collision, horizontal placement, or inversion shall be avoided during transportation to ensure that the appearance of the packing case is intact. Please follow these steps to open the packing case:

a. Open the packing case.

b. Take out the centrifuge accessories and tools.

c. Remove the transport protection around the machine.

d. Place the device on an appropriate test bench or table.




Caution

1.You can use a clamping vehicle to carry the centrifuge when it is not unpacked.

2.If use the clamping vehicle ,please clamping the wooden base of the two sides of the centrifuge.

3.After unpacking, the centrifuge should be carried by at least 2 people at the same time, and the tilt Angle of the centrifuge should not be too large.

• Checking the supplied accessories.

Please check the contents of the carton according to the packing list. If there is any discrepancy, please contact the after-sales service in time.



## Installation requirements

• Installation environment

a. Ambient temperature: In order to ensure the best use performance, the ambient temperatu during the operation of the centrifuge shall be within 10°C~35°C. It is safe to use the centrifuge within 2°C~40°C.

b. There shall be no relatively strong vibration source or high pressure around the centrifuge, a direct sunlight shall be avoided.

c. Avoid mechanical shaking or vibration.

d. Input voltage: AC220-240V

e. Ambient humidity: below 80%Rh.

f. The centrifuge shall operate at an altitude lower than 2000m.

g. A safety zone of at least 30 cm must be maintained around the centrifuge.

People and hazardous substances must be kept out of the safety zone while centrifuging.

h. Overvoltage category: The transiment state is category II facility.

i. Pollution Degree:2.

• Installation site

The centrifuge installation site shall meet the following conditions so that the device can operate normally with the best performance:

a. The device shall be installed indoors on a solid level bench.

b. Indoor air shall not contain conductive dust or corrosive gases.

c. After being installed into place, the four rubber feet of the baseboard shall be stressed uniformly.

d. After installation, the machine shall keep a distance of no less than 30cm on the back and the side to ensure the air inlet and exhaust for air cooling.

e. Do not twist or compress the power cord.

f. Check the operating voltage before use. When used in a region with voltage instability, a voltage stabilizer suitable for the motor load shall be provided to maintain the normal input voltage stable at 220V-240V±10%.

g. The power supply must have independent protective earthing which shall not be replaced with a neutral line.

h. If the power socket to be used has protective earthing, check whether it is properly grounded before use.

i. If the socket has no protective earthing, ask a professional engineering and technical personal to install one.

Danger: To prevent electric shock, the protective earthing must be grounded reliably.