

# Micro Centrifuge



## Introduction

The CopyRight of this manual owned by company, no person shall re-printed or distributed any of the contents of the manual, including pictures, and audio and video products related.

The equipment operator can copy some sections of the Operation Instruction, but only for internal use. For example, the contents that guide the user how to deal with sudden incidents. In the Operation Instruction of the Table of Contents has been very clearly marked where these sections are.

For any damages that caused by the users who don't follow the Instruction of "Using Environment", has no obligation and responsibility for this.

have the right to modify on the contents of the Operation Instruction at any time without proper notice.

### Using Environment



In order to ensure the safety of the using of the machine, the following factors may damage the centrifuge:

Chemical effect;

Environmental impact, including natural ultraviolet radiation;

The wear out and corrosion of the parts of the protective cover and other security components.

The machine must be used:

Indoors only;

\* altitude: less than 2000m;

\* Working environmental temperature range: from +5 to +40°C;

\* Relative Humidity range: ≤80%;

power supply scope: Please refer to the product model and its main technical parameters;

interior must be fitted with adequate ventilation;

\* No vibration and air flow that may influence performance of the machine.

\* no conductive dust, explosive gas and corrosive gases in the ambient air;

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## **Safety**

The first use of this machine, please read this manual carefully!

\* Micro Centrifuge This Micro Centrifuge can only be operated by trained and authorized personnel;

Equipment maintenance can only be conducted by or the authorized dealers;

the use of the following materials in a centrifuge is Prohibited

- flammable and explosive materials;
- Strong chemical material;
- toxic or radioactive substances, or pathogenic microorganisms

Only the certified personnel using appropriate tools can repair the Micro Centrifuge.

If the situation encountered not mentioned in this Operation instruction, please contact or the authorized dealer for the correct way to deal with.

Try to use accessories from , if the user wants to use accessories from other suppliers, will not be responsible for adverse consequences. But users can ask for advice about the accessories.

Must be inspected and maintained in the specified interval of time

### **Safety warning signs Instruction**



**Note: before using the instrument, please read the manual carefully!**



**Note: Danger! High Voltage! The risk of electric shock!**



The meaning of the safety instructions

In order to avoid the damage to the surrounding people or bring destruction to the surrounding objects and environments, please comply with all safety instructions in this user manual.

Except for the accident prevention, environmental protection and the accepted rules in occupation and security, including the laws and regulations of the country and the locality of the installation, must be carefully observed.

The consequences of ignoring the rules for safe operation

Any behavior of neglect of safety operation procedures, laws and regulations and various rules will cause harm to personnel, the object and the environment.



Safety precautions

It is strictly prohibited to plug in or out of the power plug and switch on or off the power key when hands with liquid!

It is strictly prohibited to plug in or out of the power plug with the instrument power switch on.

It is strictly prohibited to scrub the instrument and maintain the machine with the power on.

It is strictly prohibited to the centrifugal operation with sample more than 70% capacity of the test tube

It is strictly prohibited to put the instrument on the rugged, unstable working table

If the motor is not completely stop, it is strictly prohibited to put hand or something else on the motor to stop the turning.

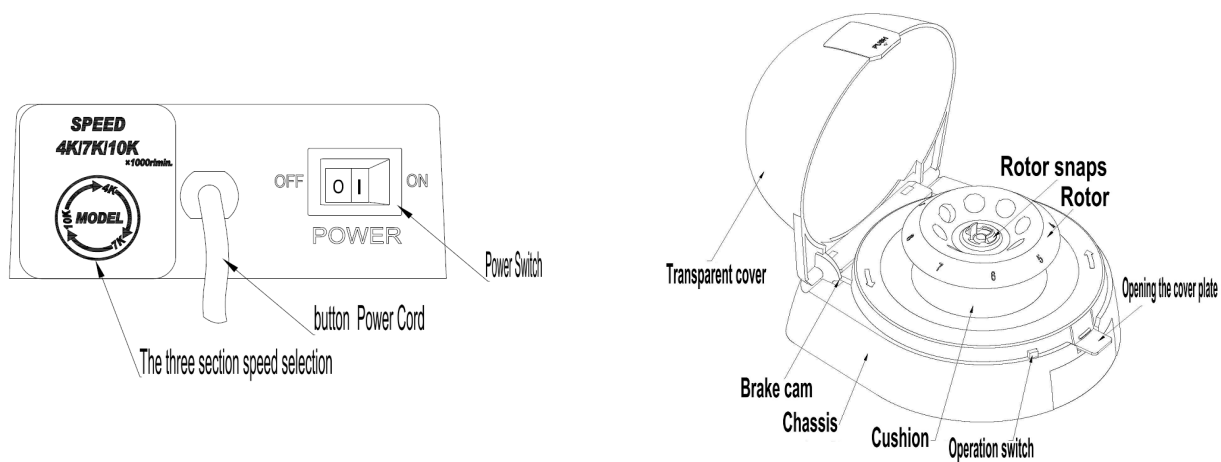
## Product Introduction

This Centrifuge Adopts international advanced design and manufacturing technology, with features of smooth and beautiful appearance, compact structure, strong versatility, easy operation, it's really a good instrument for scientific experiments. The handheld centrifuge is very suitable for microtubule filtration and fast centrifugation, the micro blood cell separation, microbial sample processing, experimental partition centrifugal of PCR, and preventing the phenomenon of liquid on the centrifugal tube wall.

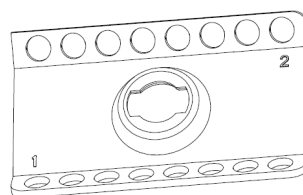
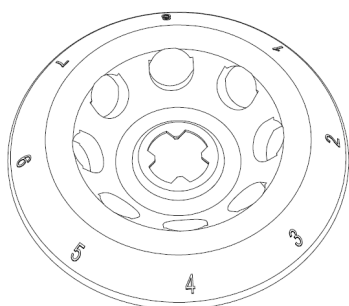
## Product Models and Main Technical Parameters

Models	4K	7K	10K	12K
ElectricSource Input	AC100-220V/50/60Hz			
Rate of Work Input	12W	18W	25W	30W
Motor	DC24V			
Control	PI/Power direct drive			
Fuse	PPTC/self recovery fuse/No replacement needed			
Rotor Capacity	2/1.5/0.5/0.2ml×8 0.2ml×8×2 (PCR)			
maximum speed[r / min.]	4,000r/min. ±3%	7,000r/min. ±3%	10,000r/min. ±3%	12,000r/min. ±5%
The maximum relative centrifugal force[×g]	990×g	2,910×g	5610×g	8550×g
Size[mm]: LengthXWidthXHeight	158×172×123mm			
The noise at highest speed	≤43dB (A)	≤45dB (A)		
The fastest cceleration time	≤3s	≤3s	≤3s	≤8s
The fastest eceleration time	≤3s	≤3s	≤3s	≤10s

**at23°C ambient temperature Micro centrifuge: introduction of appearance and function**



**Pictures Above**



**Angle rotor: 2.2/1.5ml×8**

**PCR Rotor**

**Standard Adapter: 0.5/0.2ml**

**Universal Rotor for Micro Mini Centrifuge(Appearance 3)**

**Operation Introduction**



Note: before using the instrument, please ensure instrument has no damage in the transportation!

Whether the appearance of the instrument is no damag

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Press the opening plate on the transparent upper cover to open the cover, check whether the opening easily and no abnormal sound.

Check the rotor elastic buckle whether vertical and tight fit on the main shaft of the motor  
Check if cushion edge is firmly stuck in the housing of the body

Check if the power switch and a power wires is firmly fixed on the main housing without loosening

*If no one of the above mentioned items, then this instrument can be used safely.*



If any of the above circumstances, please contact the manufacturer or the authorized dealers, please do not repair it without the guiding of professional repair engineer.

#### **4.1 【Opening/Closing】**

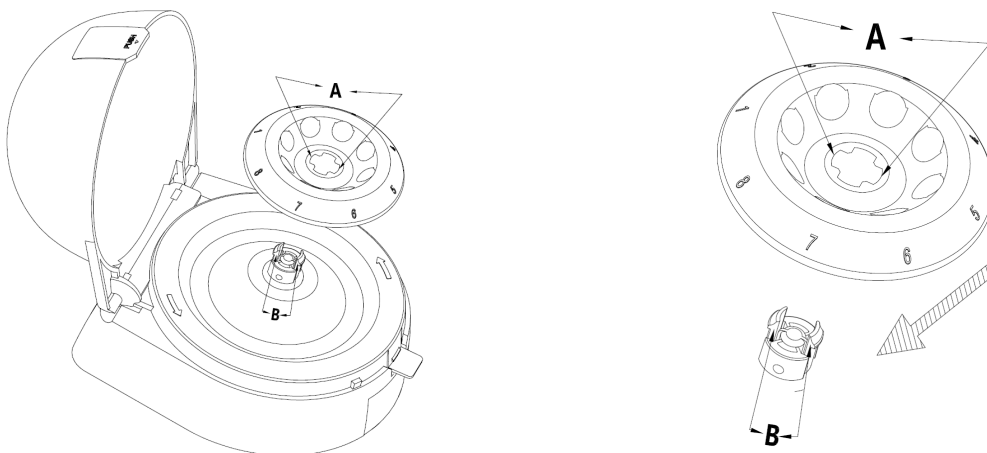
**【Opening】** See the appearance diagram 1 or 2, press the Key of Opening Plate, then you can open the cover;

**【Closing】** See the appearance diagram 1 or 2, close the cover, when you hear "click" sound, it means the cover is locked with the housing;

#### **4.2 【Power On/Off】**

See the appearance diagram 1 or 2, Power Switch, 1 move to "ON" position means power on, and if "0" to "OFF" position, means power off.

#### **4.3 【Install / Remove the Rotor】**

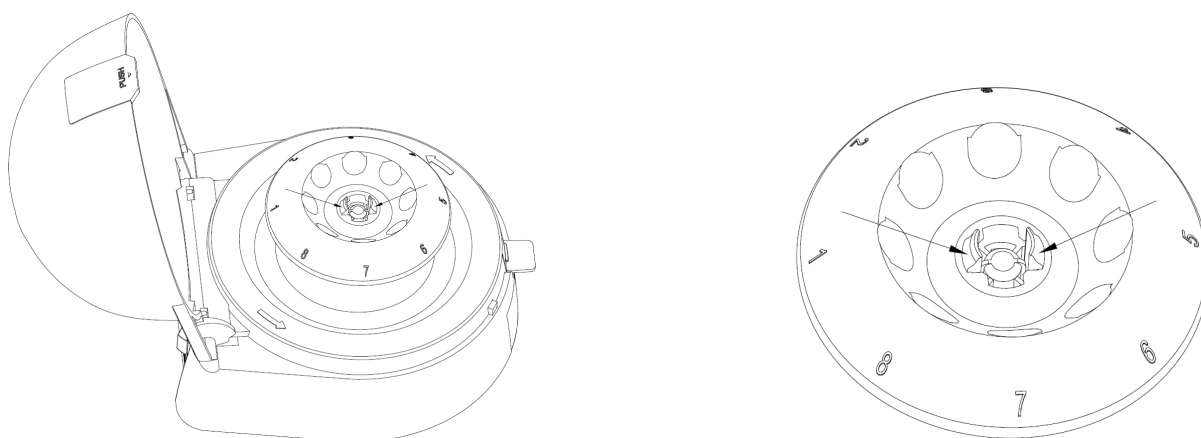


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**Picture above is Universal Rotor of the Micro Centrifuge (installation diagram 3)**

**[Install Rotor]** (installation diagram 3) notice the marked "A" "B", they should be at the same direction, then press the rotor down when you hear a "click" sound, that means the rotor is locked to "B", to further verify the installation in place, you can grasp the head of the rotor and lift it upward slowly. If the rotor firmly locked with shaft, it means the installation is ok. (Note: the installation of PCR Rotor is the same!)

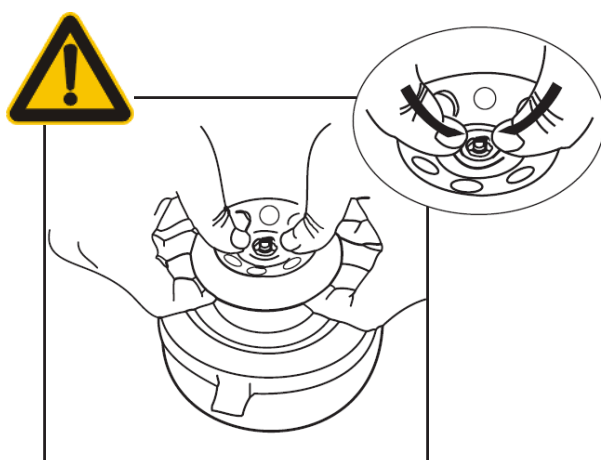
**[remove the Rotor]**



**Picture above is Universal Rotor of the Micro Centrifuge (removing diagram 4)**

**Do not use strong force try to pull out rotor!**

**This will lead to deformation of the Rotor or damage of the motor!**



the surface with Arabia digital of the Rotor faces upward , or may damage the machine.

**Picture above is Universal Rotor of the Micro Centrifuge (removing diagram 5)**

According to the direction of the arrow(See Removing Schematic 4), hands raise the rotor with two thumbs

press inward, slowly raise up, then you can remove the rotor. (See Removing Schematic 5)  
 (Note: PCR head with angle rotor method of removing the same!)

#### 4.4 【The correct position of test tube】



diagram 6

**For angle rotor, symmetrical balanced placement with 8 tubes, 6 tubes, 4 tubes, 2 tubes**

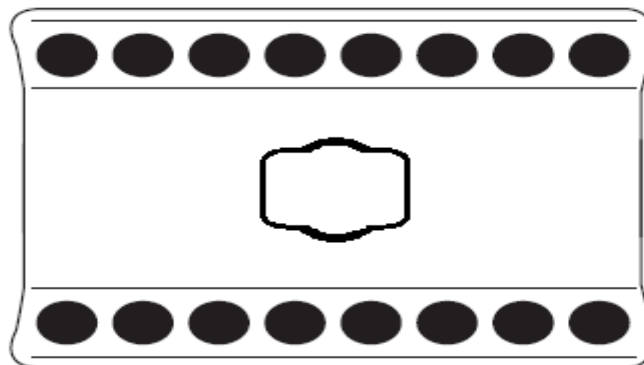


diagram 7

**For PCR Rotor, placement of 0.2ml tube, be sure to follow the diagonal symmetry placed.**

#### 4.5 【Start and Stop】

##### 4.5.1 Mini-4G/Mini-7G/Mini-10G How to use...

##### 【Start】



Open the cover-> Install the Rotor-> Place samples Symmetrically->Switch On->Close the cover->the machine will run(can reach more than 95% of the rated speed in 3 seconds)

**Enabling instrument for the first time, as the vibration produced during transport, carbon brush longer resting can lead to the carbon brushes have a larger friction noise , 2-3 minutes idling run, will get as normal, without worrying about the quality of the instrument!**

### **【Stop】**

Open transparent top cover (here press the opening plate and about 15 seconds it will stop. If you just press the button on the top cover, (see Diagram 1 or 2). There is no brake. If you open the top cover fully, the machine will stop in 3 seconds with the brake works. )  
→ removed samples → switch off (no longer using the instrument, please close the transparent top cover closed without lock it).

### **4.5.3** How to calculate the centrifugal force

Relative centrifugal force is the force of gravity (g) thousands of times, it is used for measuring the efficiency of various instruments of separation or . Calculation of the centrifugal force associated with rotational speed and centrifugal radius, calculated according to the following equation:

$$\mathbf{RCF=11.18 \times (n/1000)^2 \times r}$$

**r: centrifugal radius, unit:**

**n: Centrifugal speed, RPM (revolutions per minute)**

**Note: "max centrifugal force is associated with the maximum centrifugal radius"**

## **Maintenance**



Do not try to plug in the power cord or the power switch is turned on when cleaning the centrifuge. If the equipment or accessories is polluted by pathogenic, toxic or radioactive substances, proper cleaning is the responsibility of the user, this should be explained when developing the "Laboratory Biosafety Manual". When cleaning and decontamination mentioned in this chapter have other requirements, please contact our Office to check if they may damage the device. If you plan to return equipment or accessories to us or when maintenance is required, must ensure that the cleaning to the equipment or accessories has no harm to the human body!



Do not use organic solvents, because it can break down the motor bearing

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lubrication oil; in the process of cleaning, please do not let liquid, especially organic solvents, touch the motor spindle and inner bearing ball!

**5.1** Do not use sharp goods impact on the rotor, when handling and disassembly, please prevent knocking, Please prevent scratches or injuries which may cause cracks of Rotor when use it.

**5.2** Check the rotor Assembly on a regular basis (especially the bottom of the tube hole), are there corrosion pits, grooves, small cracks, if there is any one of the above issues, please discontinue the use of the rotor, and contact the Manufacturer.



**When removing the rotor and grip the rotors, vertical lift, not from side to side**

**5.3** Typically, rotor cleaning once a week, if using for separation or other corrosive salt solution sample, please clean immediately after use. If found that the sample spill, dip, drop on the rotor during use, , should be drained immediately and cleaned locally.

**5.4** When cleaning the rotor, please clean with moistened sponge or cotton cloth of neutral detergent, then wash with distilled water cleaners. Please do not sprinkle or spray the rotor with water because liquid may remain somewhere and cause corrosion. After cleaning allow upside down to dry.

**5.5** Check the locking of the transparent top cover and housing if it can open and close the top cover smoothly.

**5.6** carefully wipe the surface of the instrument, , using soft cloth with neutral detergent. then remove detergent with a clean damp cloth.

**5.7** If major problems happens, such as it can't operate properly with the power properly, there is a burnt smell from the inside of the machine, rotor ruptures, shake violently while equipment is running, please promptly contact manufacturer or authorized dealer. Please not try to repair without the guidance of professional maintenance staff.

### **Fault handling**

The table below lists the phenomena of the faults with related reason and handling method, you can follow the prompts to solve it; if the user tried but cannot solve the failure or symptoms is not within the following table of contents, the user should contact service people of the Manufacturer immediately.



**Once faults occur, you should turn off the power supply, pull the plug out, when troubleshooting ok and then you can start again.**

### Symptoms, causes and solutions

<b>The Symptoms</b>	<b>Causes and Solutions</b>
Does not rotate	1, check the power outlet and wires if good, power from the outlet has power. 2, a bad power switch contacts. 3, if it cannot be solved, please contact the manufacturer
Sudden stop during running	1 power supply connection is good. 2, determine the time limits , carbon brush within life (brush life is approximately 1100 hours). 3 motor from overheating or overload, power off waited 10-20 minutes to restart. 4, check if there is a burning smell, if yes immediately unplug the power supply, contact the manufacturer's service personnel. 5, voltage range might be excessive, check that the supply voltage is in accordance with provisions of AC85-264V.
The top cover can't be opened or closed	1, can't open, check if there is any foreign objects under the cover plate 2, can't close, ,check the triangle-shaped buttons on the top of the cover plate is worn out
Too much noise	1, the rotor critical speed, the machine vibration is normal. 2, check whether the rotor is locked firmly. 3, check the symmetry balancing of the rotor, check the leveling of the machine 4, check the rotor is assembled properly. 5, check the drive shaft, turn by hand if not rotate smoothly, may be the drive shaft or motor problems, If it cannot be solved, contact the manufacturer's maintenance personnel.
When switch on, the LED indicator not light	1, not connected to the power supply, check all electrical power. 2. Switch to all the rest of the lights and check if light correctly. If not please contact the manufacturer. 3, if it cannot be solved, please contact the manufacturer
Switching speed buttons not responds	<p style="text-align: center;">please contact the manufacturer</p>
Not listed here	<p style="text-align: center;">please contact the manufacturer</p>

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## **Warranty**

The warranty period from the beginning of the user receives the product, in the warranty period, if the product failure, manufacturer or the authorized dealer will come to your site with free, if the parts replaced is caused due to the quality of its own, rather than human caused by improper use, can be free, otherwise must pay. Housing does not belong to the scope of warranty!

## **Warranty Scope**

User operate according to the requirements of the manual;

- installation, adjustment, move the location, adding accessories, maintenance work is conducted by the authorized dealer or the manufacturer.

- the usual maintenance is performed according to this instruction manual.

If not meet the above requirements, user damage caused by misuse, Manufacturer and the authorized dealer is responsible for the repair, but not for free.

Gives warranty of the machine within 18 months after the sales, so any quality problem of the machine (except the damage due to improper use of the user), we will be responsible for the warranty. Beyond the warranty period, we will make the maintenance charges.

## Packing List

### Micro mini centrifuge

Item	Description	Quantity	Note
1	Centrifuge	1	
2	Angle Rotor 2.2/1.5ml×8 PCR Rotor 0.2ml×8×4 Angle Rotor 2.2/1.5ml×6+0.5×6	1	Each 1 piece
3	0.5ml,0.2ml Adapter		Each 8 pieces
4	Certificate	1	
5	Warranty	1	
6	User's Manual	1	



**When open the box, please check timely, if not consistent with what you order, please contact with the Manufacturer or the authorized Dealer.**

**Repair and maintenance record**

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