

# Operation Manual



**BCBH-302**

## Benchtop High Speed Centrifuge

Thank you for Choosing Biolab products. Please read the "Operating Instructions" and "Warranty" before operating this unit to assure proper operation.

Thanks for purchasing our BCBH-302 Table top High-speed centrifuge! Before using this centrifuge, carefully read through this instruction manual to ensure fast, efficient and safe operation. Keep this instruction manual handy.

### Safety Notices

Dear Customer,

To prevent any potential accident, please carefully read and fully understand the following safety instruction before you operate centrifuges. If neglected, personal injury and /or instrument damage can be caused.

The safety reminders are indicated as shown below. The signal words " DANGER", "WARNING" AND " CAUTION " are indicated together with the hazard alert symbols in this manual.

**DANGER:** This note indicates an imminently hazardous situation, which if not strictly Observed, could result in personal severe injury.

**WARNING:** This note indicates a potentially hazardous situation, which if not strictly observed, could result in personal severe injury or pollution of the environment.

1. For operator safety, maintain a 30-cm "clearance envelope "around the instrument while the rotor is spinning.
2. Do not store dangerous substances capable of developing flammable or explosive vapors in the clearance envelope.
3. Do not attempt to unlock the door forcefully while the rotor is spinning.
4. Do not attempt to slow or stop the spinning rotor by hand.
5. Do not use any sample inapplicable to the rotor (including buckets), like corrode chemical material.
6. Do not incline or move the instrument while the rotor is spinning. Do not lean on the instrument.
7. Do not exceed the maximum rated speed of the rotor or buckets in use.
8. Do not use corroded, scratched or cracked rotor, buckets and assemblies. Check that the rotor, buckets and assemblies are free of such abnormalities before operation.

If abnormal sound or vibration occurs, stop the operation immediately and contact machine supplier.

### CAUTION :

This note indicates a potentially hazardous situation, which if not strictly observed, could result in personal injury or severe damage to the instrument.

1. Do not use any sample inapplicable to the tubes, the bottles, the tube racks, the micro-plates or tube/bottle caps, etc. Using such a sample could deteriorate them.

Maximum rotor speed depends on the buckets, assemblies, tubes or adapters to be used.

2. Do not exceed the allowable imbalance.
3. Use the rotor tubes and bottles within their actual capacities.
4. Mount the rotor onto the drive shaft gently and properly. Do not drop the rotor or apply excessive force to the drive shaft to avoid damage to the drive shaft. Please see the picture and video!
5. Clean the inside of the drive hole (crown hole ) of the rotor and surface of the drive shaft (crown) of the centrifuge once a month.
6. If dew drops are in the rotor chamber, drain the chamber through the drain hose to prevent the sample to get mixed up with them or prevent them from leaking into the drive unit. Be sure to recap the drain hose after drainage.
7. Do not pour any solution such as water, detergent and disinfectant directly into the rotor chamber. Otherwise, the bearings of the drive unit may be corroded or deteriorated.
8. Before relocating the centrifuge, remove the rotor from the rotor chamber to avoid damaging to the drive shaft.
9. The volume of centrifugal sample is not beyond the 75% of tube volume.

**“NOTE”** indicates a note which has no direct bearing on personal safety

## Safety During Installation and/or Maintenance

**WARNING:** 1. Level the centrifuge by using the four level adjusters and secure them completely. Improper securing can cause significant movement of the centrifuge in the event of rotor disengagement.

2. When servicing the centrifuge, be sure to turn off the POWER switch, turn off the distribution board of your centrifuge room, and then wait for at least three minutes before removing covers or tables from the centrifuge to avoid electrical shock hazards.

**CAUTION:** Avoid a place exposed to ultraviolet rays for operation or storage of the centrifuge. Otherwise, the covers can be discolored and the coating can be peeled off easily. If installation in such place is unavoidable, cover the centrifuge with a cloth after operation to protect from ultraviolet rays.

### 1-1 Rotor Chamber

**CAUTION:** Do not pour any solution such as water, detergent and disinfectant directly into the rotor chamber. Otherwise, the bearings of the drive unit may be corroded or deteriorated.

(1) If the rotor chamber is found not dry, wipe moisture from the chamber with a cloth or sponge to cool the rotor efficiently. Drain condensed water from the chamber by using the drain hose.

(2) If the rotor chamber is found dirty, wipe the chamber with a cloth or sponge dampened with a diluted solution of neutral detergent.

(3) Turn off the centrifuge power and keep the door opened to dry the chamber after

operation.

### **1-2 Drive Shaft (Crown)**

**CAUTION:** Clean the inside of the drive hole ( crown hole ) of the rotor and the surface of the drive shaft ( crown ) of the centrifuge once a month. If the drive hole or the drive shaft is stained or any foreign matter is adhered, the rotor may be improperly installed and come off during operation.

This part is very important because the rotor is mounted on it and the crown transmits driving force to the rotor. Before mounting a rotor, wipe the outer surface of the crown with a soft cloth dampened with water sufficiently.

### **1-3 Cabinet**

Always keep the table and the cabinet of the centrifuge clean, to prevent dust and other materials from falling into the rotor chamber. Wipe the table and the cabinet with a cloth or sponge dampened with a diluted solution of neutral detergent. If any solution that is toxic, radioactive, or pathogenic is spilt inside or outside the centrifuge, take necessary action according to your proper laboratory procedures and methods.

### **1-4 Rotor**

- (1) To prevent corrosion, take out the rotor from the rotor chamber after operation and remove the rotor cover to dry the tube holes.
- (2) If any sample spilted inside the rotor, wash and dry the rotor well, then apply silicone grease lightly to the rotor.
- (3) Regularly apply lubricant grease to the thread portion of the rotor

### **Electrical Safety**

**WARNING:** Your centrifuge must be grounded properly to avoid electrical shock hazards. And this BCBH-302 centrifuge is 220/110Voltage.

**CAUTION:** Do not place containers holding liquid in the rotor chamber or on or near the instrument. If they spill, liquid may get into the instrument and damage electrical components.

## **Safety against Risk of Fire**

**WARNING:** This instrument is not designed for use with materials capable of developing flammable or explosive vapors. Do not centrifuge such materials in this instrument nor handle or store them near the instrument.

## **Chemical and Biological Safety**

**WARNING:** 1. Make sure to prepare necessary safety measures before using

samples that are toxic or radioactive samples or pathogenic or infectious blood samples at your own responsibility.

2. If the centrifuge, rotor or the accessory is contaminated by toxic or radioactive samples or pathogenic or infectious blood samples, be sure to decontaminate it according to good laboratory procedures and methods.

3. If there is a fear that the centrifuge, rotor or the accessory is contaminated by toxic or radioactive samples or pathogenic or infectious blood samples that impair human health, it is your responsibility to sterilize or decontaminate the centrifuge, rotor or the accessory properly.

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# 01 Summary of BCBH-302 Centrifuge

BCBH-302 centrifuge is table top high speed apparatus , it is high performance, low noise and less vibration equipment. The maximum speed is 21000r/min, the maximum RCF is 30910×g, and the maximum volume is 6×100ml.

# 02 Features of BCBH-302

- It uses brush-less frequency motor drive which in great torque.
- Microprocessor control system & soft touch control panel.
- Digital display which indicates run parameters.
- Auto-electric lid interlock with alarm.
- There are 10 kinds of acceleration and deceleration for your choice.

## 03 Main specification and technical parameters

### Form 1

The Max.speed	21000 r/min
The Max.volume	6×100 ml
The Max.RCF	30910×g
Timer	0~99min
Speed Accuracy	±20 r/min
Noise	≤55dB (A)
Power supply	110V/220V 50/60Hz 10A
Product dimension	513mm×370 mm×320mm

## 04 Rotor Parameters

### Rotor Parameters

#### Form 2

Rotor Name	Rotor Number	Capacity (tubes x ml)	Maximum speed (rpm)	Maximum RCF (x g)
Fixed angle	30801	12 x 1.5/2.0	21,000	30910
Fixed angle	30802	40 x 0.5	15,000	22920
Fixed angle	30803	24*1.5	17,000	26460
Fixed angle	30804	30 x 1.5/2.0	13,500	19,340
Fixed angle	30805	16x 5	16,000	22020
Fixed angle	30806	12 x 7	16,000	21380
Fixed angle	30807	12 x 15	10,000	11,840
Fixed angle	30808	12 x 10	15,000	22680
Fixed angle	30809	8 x 20	15,000	22680
Fixed angle	30810	6 x 30	14,000	19060
Fixed angle	30811	6 x 50	13,000	18840



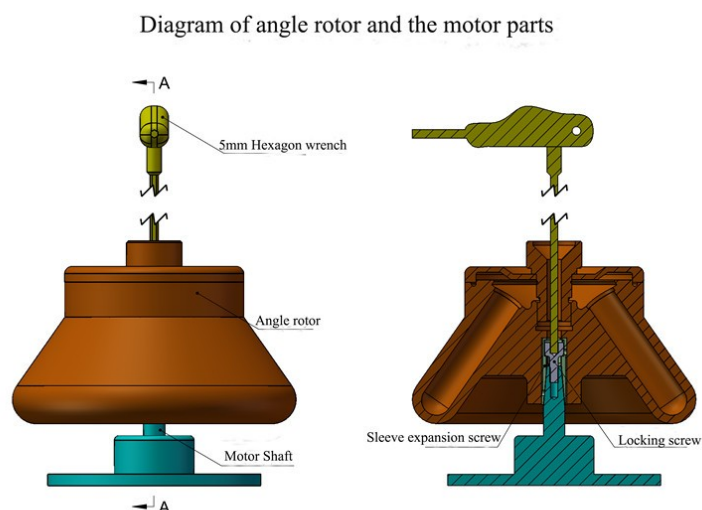
Fixed angle	30812	6 x 70	12,000	15570
Fixed angle	30813	4 x 100	12,000	14850
Fixed angle	30814	6 x 100	12000	16390

## 05 Unpacking

Please check whether there are serious damages on the package as soon as you received the centrifuge. If so, please take its photo and contact us directly. If not, please unpacking the package take out the instruction manual, checking the components and accessories according the packing list in the instruction manual. If you found something missing, please tell us.

## 06 Installation

The centrifuge should be installed in a stable working table, let its four rubber feet touch the even surface of the table. And then insert one head of the power plug into the socket which mounted on the rear of the centrifuge. Insert another head of the plug into the power supply socket. ( attention: the power supply socket must be connected with the earth in case of electric shocks)



Do remember, we can tighten the rotor only after the rotor is installed fully down to the shaft.

Put the rotor through the sleeve expansion screw. Check the sleeve expansion screw to make sure it is very loose before putting through rotor. That is because only when the sleeve expansion screw is very loose, the rotor can be fully installed down to the shaft which is correctly installed. If the rotor is installed fully: move the rotor up and down from the shaft, you could hear "bang bang..." sound. If you find the sleeve expansion screw is tight and the rotor can not be installed down fully, rotating with the wrench from anticlockwise 3-4 circles to loose the screw and move the rotor up and down to check, if you can hear "bang bang", it is correct, if not, continue to loose the screw till the rotor can be fully installed down to the shaft. Only after the rotor is fully installed down to the shaft, then you can tighten the rotor.

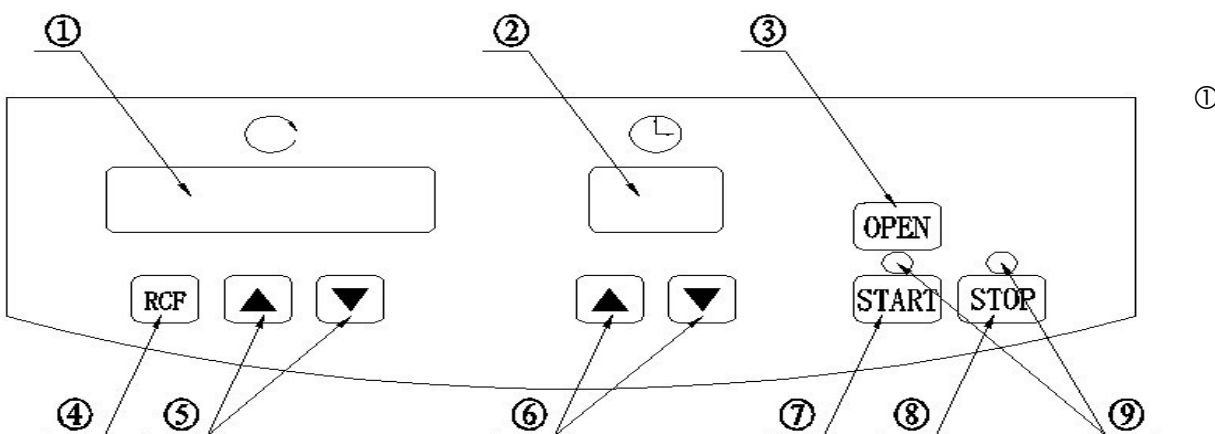
## 07 Operation

### Power on

Power switch is located on the right bottom corner of control panel. Turn it to "I" position, the centrifuge is power on (while it turns to "O" position, the centrifuge is power off).

1. Checking whether the round nut in the rotor is loose or not, if so, fasten them.
2. Prepare the tubes; put the test liquids into the tubes, checking whether they are in the same level with your eyes.
3. Load the tubes on the tube rack symmetrically; otherwise it will be resulted in severe vibration in the process of centrifugal or cause accident.
4. Close the lid, make sure it is locked.
5. Set parameters

### Display panel: Chart1



Speed/RCF/Rotor No. screen      ② Timer screen      ③ open the lid      ④ RCF      ⑤ +/- key for speed      ⑥ +/- key for run time      ⑦ Start the centrifuge      ⑧ Stop the centrifuge      ⑨ start light and stop light

In "①" Rotor No./Speed/RCF conversion window

You can circularly press the button RCF . It will respectively display rotor no., speed and centrifugal force (RCF).

Note: it will originally display "speed".

#### (1) Set the speed

As shown in Chart 1, press speed button ⑤ ▲ , speed selection range from 0rpm to maximum rpm, press speed button ⑤ ▼ , speed will be down in the "Speed window", set the speed you prefer, after the digital tube flashes twice, then the setting speed will storage automatically.

#### (2) Set RCF

As shown in Chart 1, Pressing ④ "RCF" button in the display window ①, it will show the RCF, press button ⑤ ▲, the RCF selection range from 0 to maximum RCF. Press button ⑤ ▼, the RCF will be down. Set the RCF you prefer, after the digital tube flashes twice, then the setting RCF will storage automatically.

#### (3) Select Rotor NO.

It shows the parameters of rotors. It will display the last 2digits of the rotor no.

For example: 6×50ml angle rotor no.30811, it was set no. 11. So if you need use this rotor, please select no.11

#### (4) Set the time

As shown in Chart 1, Press time button ⑥ ▲ , the time selection range from 0 minute to 99

minutes, then press time button Ⓢ ▼ . The time will be down under the " time window ", set the speed and time you prefer, after the digital tube flashes twice, then the setting speed will storage automatically.

(5) Set deceleration and acceleration.

It will be done as b4 or b5 default in factory. Different solution test has different requirement for the deceleration and acceleration rate, so we can set the corresponding deceleration and acceleration. When in power off, long time pressing Stop key, instrument has a sound with "di", time screen display , press ▲、▼ under time screen to select suitable deceleration and acceleration rate. After setting the parameter, no need to press any key, parameters can be stored automatically. 5mins later, change to time display automatically. There are 10 grades can be chosen (0-9), the larger of the No, the quicker of the deceleration and acceleration rate.

### **Start the centrifuge**

Press the "start" button, the green light of the "start" button will be brighten, the instrument start to run, the speed window display speed; 1-2 minutes later, the speed will rising to the setting speed. When the time counts down to zero, the centrifugal is over. And the red light will be brighten. When the speed counts down to zero, and the rotor is stopping running, the lid can be open.

### **Stop the centrifuge**

It will cut off the electricity automatically in the process of operation when the centrifugal time is 0, the red light will on , it will decelerating according the parameters you set, when you hear the buzz sound, the rotors will stop, the instrument also will stop running.

### **Open the lid**

Now it is automatic to open the lid after spinning to 0rpm. If you forgot to take the sample out after you finished the spinning and not close the lid well to wrongly press the button " StartⓈ"to run the centrifuge, which can't be allowed and the centrifuge will show "E1", because the lid is open situation in your first spinning, at this time, you need use your hand to lift the lid up, then lightly press the lid down little again, then the lid will be automatically close well , finally you press the button " Start Ⓢ"to normally operate the centrifuge.

All kinds of break down shows in table below:

E1	E2	E3	E5	E6	E7	E8
Cover unclosed	Break down	Parameters setting error	Sending error	Receiving error	ECC Error	Over speed

## 08 Trouble-shooting service

Trouble	Cause	Removal
The display window is not working when power is connected	No 110V/220V power supply	Check the power supply
	Fuse is broken	Check and replace fuse
The rotor doesn't run when Start key is pressed	The connector to circuit board is not properly connected.	connect it properly
	The power transformer is broken.	Replace the transformer
	The motor is powered on, but it doesn't work. The motor is damaged.	Replace the motor
Abnormal vibration of the centrifuge	The tube in the rotor is not arranged symmetrically.	Check and rearrange Properly.

	The test tube is broken.	Check and replace the broken tube
	The rotor is not turned tightly.	Check
	The shock absorber is damaged	Replace the damaged shocking absorber

## 09 Warranty Policy

1. We have one –year warranty on our all products
2. After the machine fixed, our professional technician will file it and keep track of the usage of the machine.
3. We will pay attention to the feedback of the customers within 24 hours.
4. We won't charge customers any money for repairing the machine in one-year warranty time.
5. We only charge for the accessories on repairing the machine beyond the one-year warranty time.



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