

**CENTRÍFUGA ANGULAR DIGITAL 12X15 ML,
FUGELAB-GB10**

**DIGITAL ANGLE CENTRIFUGE 12X15 ML,
FUGELAB-GB10**

**CENTRIF. ANGULAIRE DIGITAL 12X15 ML,
FUGELAB-GB10**



Ref. GLC004



Este manual es parte inseparable del aparato por lo que debe estar disponible a todos los usuarios del equipo. Le recomendamos leer atentamente el presente manual y seguir rigurosamente los procedimientos de uso para obtener las máximas prestaciones y una mayor duración del mismo.

This manual should be available for all users of these equipments. To get the best results and a higher duration of this equipment it is advisable to read carefully this manual and follow the processes of use.

Ce manuel est une partie indissociable de l'appareil et doit être mis à la disposition de tous les utilisateurs de l'équipement. Nous vous recommandons de lire attentivement ce manuel et de suivre scrupuleusement les procédures d'utilisation afin d'obtenir des performances maximales et une plus longue durée de vie de l'appareil.

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Thank you for choosing this equipment. We sincerely wish that you enjoy your centrifuge Nahita-Blue Fugelab-GB10. We highly recommend that you look after the equipment according to what is stated in this manual.

Nahita Blue develops its products following the CE guidelines taking into account the ergonomics and safety of the user. The quality of the manufacturing materials and the correct use will allow you to enjoy this equipment for many years.

The misuse of this equipment may cause accidents, electric shocks, shorts, fires, injuries, etc. Check Maintenance to read safety guidelines.

Using Conditions of the Equipment



In order to ensure safety using the machine, the centrifuge may be damaged by the following factors:

- Chemical effects;
- Environmental impacts, including natural UV radiation;
- Corrosion and abrasion and wear of shield and other security components.

- * Indoor use;
- * Altitude: $\leq 2000\text{m}$;
- * Temperature range: $+5^{\circ}\text{C} \sim +40^{\circ}\text{C}$;
- * Relative humidity: $\leq 80\%$;
- * Power supply: AC230V, 50HZ/60HZ (indicated behind machine);
- * There must be adequate ventilation indoor;
- * Vibrations or airflows around may effect the performance of the instrument;
- * There mustn't be conductive, explosive, corrosive dust around;

Safety Tips

- * Please read this manual carefully prior to first-use!
- * The maintenance of the instrument can only be done by Nahita Technical Service;
- * Please, NEVER use the following materials in the centrifuge:
 - Inflammable and explosive materials;
 - Strong chemical agents;
 - Toxic or radioactive substances or pathogenic micro-organisms.
- * If there is any situation not mentioned in this manual, please kindly contact Nahita in order to receive advice on the best way to deal with it.
- * Please, use accessories from Nahita; if you use others, Nahita won't be responsible for any adverse effects caused by them.
- * You must do the inspection and maintenance of the Low-speed table-top centrifuge at the stated intervals.

Security warning signs



Note: Before using this instrument, please read this manual carefully.



Note: High voltage is dangerous!

1. Terms for safe operation

User's better use the device in accordance to the design of it; it may result in equipment damage or personal injury if used incorrectly or inappropriately:

- Not used in accordance with design requirements;
- Operators and maintainers use it without training;
- Users change the contents of the design without authorization;
- Users don't pay attention or understand the safe-using rules.



Each person involved in the use or maintenance of the Low-speed centrifuge should read and understand the operation way and rules of safe-use in this manual.

You must totally enforce the following rules to avoid accidents:

The “Manual” is part of the accessories of the “Low-speed table-top centrifuge”, it must be put together with the machine for the operator to check. The Low-speed centrifuge is designed for clinical medicine, biology, chemistry, genetic engineering, immunology, etc. The density of the separated sample cannot exceed 1.2g/cm^3 under the maximum speed, when the density of the sample exceeds 1.2g/cm^3 , the maximum speed of the rotor must be reduced accordingly.

Please make sure that nobody or any hazardous materials are within a 30cm distance from the centrifuge, and no materials block the vent of the centrifuge when the Low-speed centrifuge is running (separating the sample or the rotor is rotating).

The centrifuge will injure the operator or other staff or damage the centrifuge and the samples inside if the user doesn't follow the following safety measures when operating the Low-speed Table-top centrifuge:

- The centrifuge can't be used in a corrosive environment or if there is possibility of explosion because the design of the centrifuge is neither anti-corrosion, nor is explosion proof;
- Do not use following materials in the centrifuge:
 - Flammable and explosive materials;
 - Strong chemical agents;
 - Toxic or radioactive substances.
- Please take effective sealing measures before the separation of corrosive substances and pathogenic micro-organisms cells, and sterilize in time after separation. For more details, please check “maintenance”.
- The internal part of the centrifuge will be damaged and the mechanical strength of the rotor will be weakened when used to separate corrosive materials. In this case, corrosive materials should be put in the protective container.

1.1. Notes of operation

- Please ensure that the proper rotor is installed and tightened before running the centrifuge (separating the samples)
- Don't open the door manually if the centrifuge is still running (rotor is turning) or the rotor doesn't stop turning.
- The accessories for the Low-speed centrifuge should be provided by Nahita. Some general accessories, such as glass and plastic containers used for separation, should be confirmed to meet the requirement of use under the maximum turning speed and maximum centrifugal force of the corresponding rotor.
- Do not use the centrifuge or separate samples with the door open.
- The replacement of mechanical accessories and electronic components of the centrifuge should be made by a designated person from Nahita.
- Operators shall choose a rotor with an appropriate load and shall not use the rotor overloaded when using the centrifuge;
- Check the rotor regularly. Stop using it once there is obvious corrosion or damage signs on the rotor;
- Please do the maintenance according to the rules of “cleaning and disinfection” after a period of use.

2. Introduction to the Low-speed table-top centrifuge

2.1. Overview

The Low-speed table-top centrifuge can be widely used in the fields of clinical medical, biology, chemistry, genetic engineering, immunology, etc. It is the conventional device for centrifugation and sedimentation in the laboratory.

2.2. Profile of the structure of the device

This equipment consists of a portal system, chamber system, drive system, rotor system, engine bed, power supply system, control systems, display systems and alarm systems.

1. The portal system includes: door cover, door hinge, air spring, door lock, door alarm, rope for emergency locks, etc. The door hinge is behind the rack. The door lock is in front of the rack and you can only start the centrifuge when the door lock is locked tight, otherwise the door alarm system will work (BUZZ Sounds) and the machine won't work.

If you want to open the door cover, just press the "DOOR/STOP" key on the control panel. A gas spring support the door cover when the door cover opens to certain height.

Use the necessary tools to get the cord pry which connects a rope to the lock if the power fails or the "DOOR/STOP" key doesn't work, but the samples should be removed in time. Please, pull it manually so as to open the door cover.



Don't open the door cover manually when the rotor of the device is turning or the power supply is on!

2. The cavity system provides a stable working environment.

3. This equipment uses a DC direct brushless motor which can drive the rotor loaded with samples. The driving system adopts a cone-connection to make a high quality fit between the rotor and the rotor shaft and run smoothly.

4. The rotor system consists of an Angle rotor and centrifuge test-tubes. The role of the rotor is to load the sample and rotate at certain speed to generate a relative centrifugal force field and achieve the separation of the samples. It's important to use the machine in a safe way and do the maintenance carefully as the centrifuge force caused by the high-speed of the rotor is thousands times the Earth's gravitational acceleration.

5. The engine bed consists of a rack, protective steel ring, backplane, fuselage shell, rubber support-legs, etc.

6. The power supply system includes the power outlet and switch, and supplies the power required by the machine.

7. The control system includes the setting buttons of speed, centrifugal force, operation time and lifting speed, the display system, alarm system, etc. Please do not open the front electrical enclosures of the device in order to ensure the normal operation of the machine and the operator's safety.

8. The display system consists of a display panel and PVC keyboard panel (control panel). It's the mean for the human-computer dialogue. It can display the set parameters simultaneously, trace them and display the actual changes in the parameters. In addition, it can show various failures and alarms.

9. The alarm system includes the over speed alarm and the door cover alarm. The system will give an alarm, and, at that time, the red light of the control panel will flash, a buzzer will buzz and the machine won't start (it's not allowed to start) when the machine is over speed or there is a problem opening the door cover. The machine will stop working automatically if it is running and won't restart until troubleshooting.

P.S: Please press the **ENTER** key of the control panel if you want to stop the sound of the buzzer.

2.3. Security structure

- The rack and protective steel ring are made of steel plates. The internal cavity is made of stainless steel. The front frame is made of plastic.
- The structure of the door cover is explosion-proof, and there is a view port in the middle of the top of the door cover and a locking mechanism in its front. You can press the “DOOR/STOP” key of the control panel to open the door cover until the centrifuge is electrified and the rotor stops. You can start the machine only when the door cover of the centrifuge is locked!
- Stop it while speeding.
- The machine will give an alarm when the rotating speed of the rotor is over 250r/min of set speed; the rotor will stop rotating automatically when the rotating speed is 300r/min over the maximum rated speed of the rotor. You can't open the door until the rotor stops totally and restart it until trouble clearing.
- Open the door in case of an emergency
- Please open the door manually (check “troubleshooting” for more details) if there is a sudden power failure, trouble when the rotor is rotating or you can't open the door by pressing keys.

2.4. Placing requirements for the machine

- The device should be placed in a horizontal table-board with sufficient rigidity and it should be far away from any vibration shock device. Keep it away from heat and direct sunshine.
- There should be a space of 10cm to 15cm around the centrifuge for its ventilation.
- Adjust it after installation and make the 4 supporting legs of the bottom of the machine support the machine evenly.
- The equipment supply is AC230V 50HZ/60HZ.



The machine must be totally grounded and the power ground lead should be connected to the ground lead in the electricity grid. Don't cut the electricity when the rotor is running or it will damage the control circuit.

3. Preparation before Using

3.1. Transportation and installation

The low-speed centrifuge is transported in a packing container with buffer protective materials inside. Please remove these buffer materials when you open the package.



The net weight of the machine is 15 kg. Please lift the machine from left and right sides balanced. Please move it vertically and don't swing it.

Please use a special packing chest, fix it firmly and keep it vertically for long-distance transportation. Please handle with care.

3.2. Choose a suitable place

The low-speed centrifuge can only be used indoors and placement conditions are as follow:

- Keep a 30cm safe distance for the centrifuge, and don't put any hazardous substances or let anybody stay within these 30cm around the machine.
- Please fix the bracket of the machine and don't swag. If you are using removable brackets or a trolley, please ensure that there is a locking device to ensure the safe use of the centrifuge.
- If you put the centrifuge against the wall or a corner, please make sure the distance from the wall to the centrifuge posterior is 10cm and from the wall to its left and right sides is 15cm so as to allow air circulation and heat elimination.
- Keep the centrifuge away from the windows to avoid heat and direct sunlight.
- The 4 supporting legs should sustain the centrifuge on the table-board evenly. Adjust the level after placement.
- The environmental temperature should be between 5°C~40°C and relative humidity $\leq 80\%$. Please keep the environment clean.

3.3. Locate the centrifuge at a fixed place

Don't move the centrifuge discretionarily once it is placed. Please re-confirm or re-adjust, make the 4 supporting legs sustain it evenly on the table-board and ensure that the mounting bracket and the table-board are fixed and don't swag if you move the centrifuge.

3.4. Connect the power correctly

Please use a power cord separately for the centrifuge. Make sure that the cord is well grounded and that power cords meet the safety requirements of the country or region. The supply voltage and frequency should meet the requirements of this manual or the specifications on the centrifuge.

Please use the power cord attached with the machine, connect it to the electric outlet correctly and to the fixed main power supply. The power supply switch is "I" when open and "O" when it's switched off.

4. Operating instructions

4.1. Introduction to the control panel and display interface

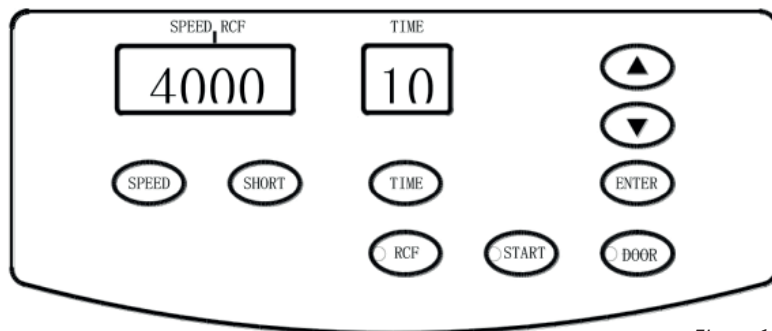


Figure 1

Introduction to Figure 1, function of the control display panel:

▲: Move up button

▼: Move down button

ENTER: Confirm button

DOOR/STOP: Open / stop button

START: Start button

RCF: Relative centrifugal force

TIME: Centrifugation time setting button

SHORT: Centrifugal button moments

SPEED: Speed setting button

SPEED/RCF: Speed / centrifugal force display

TIME: Time display

4.2. Start the machine

Connect one side of the power cord, which is attached, to the power outlet in the posterior of the centrifuge left side, and connect the other side to the main supply, in a separate outlet. Power range of this device is AC230V 50Hz/60Hz. Switch on the button in the left bottom of the right side of the machine after connection. The red light on the control panel will be on after a short buzz of the buzzer. It will display the main interface after self-examination. Then, proceed with next step.

4.3. Open the door

Press the “DOOR/STOP” button of the control panel and the door cover will eject automatically to a certain height. Then, you need to lift the cover to open the door completely. You will see the cavity of the centrifuge. You can remove the rotor and package for the first use of the new machine.

Note: the door cover will spring to certain height automatically while opening, please prevent your head or anything else from the upward side of the door cover to avoid dangers! You can open the door manually in case it goes wrong and the door cover can't open automatically, but you have to remove the materials from the centrifuge. Please check “troubleshooting” for more details.

4.4. Close the door

Press the door cover until the door hook in its upper front hooks the lock dowel and you hear a “click”. The bottom of the door hook will touch the over travel-limit switch and then the door will be locked.



Please press the door cover properly. Don't overexert, or the hook will be damaged.

4.5. Install the rotor

The rotor should be confirmed and designated by Nahita, otherwise it may cause problems. The rotor designated by Nahita for this centrifuge is the Angle rotor 12x15 mL. Users are advised to use the designated rotor in this manual.



Inappropriate types of rotors and centrifuge tubes will lead to a poor effect, or even the damage of the centrifuge.

Steps to install the rotor are the following:

- Switch on and wait until the self-examination finishes.
- Press the “DOOR/STOP” button, open the door cover and make sure the cavity is clean and free of foreign objects.
- Clean the surface of the motor spindle.
- Prepare the rotor, hold it in hand, aim the rotor central bore at the motor spindle, lower it vertically until reaches the bottom of the cone, let your hands go and press the rotor downward.
- Please use a tool to disassembly the rotor; just tighten up the locknut in clockwise direction.

4.6. Calculate rotor load

There is a huge centrifugal force when the Low-speed table-top centrifuge is running at high-speed. The design of each rotor requires that they have sufficient mechanical strength under maximum rated speed, which is the “safety factor”. However, this “safety factor” requires that the load of the rotor doesn't exceed its maximum rated load.

Please put the sample into the container and then place them in the rotor when you are about to separate a sample. You shall reduce the weight of the sample or calculate the allowed-speed of the rotor (NPERM) if the sum of the sample and container exceeds the maximum rated load of the rotor to make sure that the load of the rotor won't exceed its maximum rated load.

The allowed-speed of rotor is calculated as follows:

$$NPERM = N_{max} \times (\text{carga máxima permisible} + \text{carga actual}) \times 0.5$$

Nmax: Máxima velocidad evaluada



Don't use the rotor overloaded, or it will cause an explosion of the rotor and the debris will damage the centrifuge.

4.7. Put the sample in the centrifuge

Please examine carefully whether the centrifuge container in use (centrifuge tubes, etc.) is consistent with its rated maximum allowed acceleration (centrifugal force). Please lower the speed if possible. The separation effect of the centrifuge will be better when running if the sample balance is good due to the lack of vibration interferences. Please try to keep balance when filling the centrifuge with samples, placing test tubes with the same weight, shape and size in symmetric positions. If necessary, use tubes with water to achieve this symmetry balance and prevent vibrations and ensure the best separation performance. Choose proper containers for placing the samples.



Please note the using life of the centrifugal containers. Check whether the centrifugal containers (plastic, glass) are damaged or not when they are under the maximum allowed load and speed. Please replace it in time if there's anything damaged.

4.8. Use the rotor in a safe way

- Fill samples and place the test-tubes exactly and symmetrically before running the rotor.
- Angle rotors shouldn't run in the critical speed area of 800r/min for a long time, otherwise the big vibrations caused by the machine will impact their using life.
- Loose the locknut anti-clockwise with the wrench attached to replace the rotor.



No inicie el equipo antes de que la tuerca esté apretada en el eje.

- Please check whether the rotor locknut is loose or not after several uses if you need to use the centrifuge repeatedly. You must tighten the screw if the locknut is loose and then start the machine.
- The centrifuge tubes can load samples at different times but the loading of samples must be symmetric (the error weight allowed $\leq 1.5g$). Starting the machine with asymmetric loads is not allowed!

4.9. Example of parameter setting

- The procedure is as following: power on > switch on the device and the control panel will light on.
- Setting the following parameters:

Speed r/min	Time: min/sec.
4000	10

- Setting of speed: Press the **SPEED** button > make the number flash on the SPEED > Press the **▲▼** buttons to set the speed at 4000. If you press the RCF button, it will display the relative centrifugal force equivalent to the set speed.
- Time setting: Press the **TIME** button > make the number flash on the TIME > Press **▲▼** buttons to set the time at 10.
- If there is an alarm caused by a machine fault or incorrect parameters setting during the process, press the **ENTER** stop key to cancel the alarm.
- Press the **START** button and the machine will begin to run (if you need stop it halfway, please press the **DOOR/STOP** key), the time display will decrease from set value to zero and the centrifuge will stop working when it reaches zero. At this moment, the speed will decrease from set value to zero. The door cover will open automatically when the speed is zero, and the machine will buzz 5 times. Please press the **ENTER** key to stop the buzz and the centrifugal process will be completed.
- Please press the **SHORT** key for a long time if you need short centrifugal moments. The speed will increase gradually and reach the maximum speed (4000 RPM). It will stop when you release the key.
- The speed / centrifugal force and time parameters can be modified. If you need to set the relative centrifugal force instead of the speed, press the **RCF** and **▲▼** buttons to adjust the value. Press the **ENTER** key to confirm the set parameters.



Note: Install the rotor on the shaft correctly before setting parameters on the control panel. You can reset the parameters if the parameters-setting operation of is wrong.

- About calculating the centrifugal force
The relative centrifugal force (RCF) is usually thousands of times the gravity (g). Its unit measures the efficiency of a variety of separation or precipitation instruments.
The calculation of the centrifugal force depends on the centrifugal speed and centrifugal radius. It's based on the following equation:

$$\text{R.C.F.} = 1.118 \times 10^{-5} \times r \times n^2 (xg)$$

Being 1.118×10^{-5} a constant

r: rotation radius, horizontal distance (cm) from the rotation axe to the bottom of the tube.

n: rotation speed (rpm)

5. Maintenance

5.1. Cleaning and disinfection

- Users have the responsibility to do appropriate cleaning if hazardous materials spill out or into the device.



Users should do the cleaning and disinfection according to this manual to prevent damage to the machine. Using inappropriate cleaning agents or following wrong disinfection procedures may lead to damages to the centrifuge or internal components.

5.1.1. Steps to do cleaning



Please turn off the power switch and unplug the power cord before the cleaning or doing maintenance of the centrifuge.

- Regular (or according to using situation) cleaning and maintenance is for the shell of the centrifuge, cavity, rotor, container used for separation, etc, to prevent contaminants and corrosion caused by used components and environmental pollution.



Don't use organic solvents because they can ruin lubricants in the motor bearing. During cleaning, don't expose the motor bearing and inside ball to liquids, especially organic solvents.

5.1.2. Implementation of steam sterilization

- The sterilization time is related to the components characteristics. If there are obvious signs of corrosion or damage on the rotor or separation container, please stop to use them immediately.

Table 1: Table of sterilization parameters

Accessories	Maximum temperature (°C)	Minimum time (min)	Maximum time (min)	Maximum frequency
Glass tube	134—138	3	5	—
PC tube	115—118	30	40	20
PP tube	115—118	30	40	30
PA tube	115—118	30	40	20

5.1.3. Maintenance

- Don't collide the rotor with sharp objects. Prevent bumping while moving and disassembling. Prevent scratches caused by cracks of the rotor during use.
- Check the rotor components regularly (especially the test-tube bottom). Check whether there are corrosion spots, grooves or small cracks. Please stop to use the rotor and contact Nahita if you find any of the above situations.



Please grasp the rotor and lift it vertically to remove the rotor. Don't swing or shake it.

- Usually, rotor should be cleaned once a week. Please clean immediately after using to separate salts or corrosive samples. If the sample spills out or drip in the rotor, please blot it and do partial cleaning.
- Please wash the rotor with a sponge or cotton bedewed with a neutral detergent, wash off the neutral detergent with distilled water. Don't sprinkle or spray water on the rotor because remaining liquid will cause corrosion. Bottom up drying is allowed after cleaning.
- Remove fragments from centrifugal cavity with rags or tweezers.
- Please paint grease on the spindle motor and connection part between rotor and axle hole.
- Please cut off the power and unplug the power cord connected to the backside of the machine before removing the front shell. Power operation is not allowed. Prevent electric shock to any people or damage to the machine.



Note: This operation can only be done by specially trained staff from Nahita.

- Only accessories provided by Nahita can be used in this machine.
- Please cut off the power when you don't need to use the centrifuge.
- The machine is a precision instrument. Please keep it away from moisture, shock, etc.

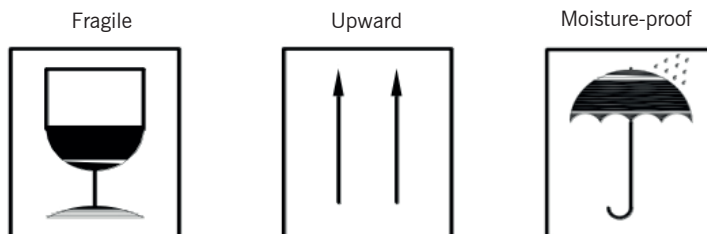


Figura 2

5.2. Warranty

- Regular checks of the equipment are not included in the warranty.
- Any manipulation by non-authorized people will void the warranty.
- Fuses and accessories, including losing them, are excluded from the warranty. Wear of pieces by normal use is also excluded.
- Make sure to keep the purchase invoice in case you need to make any claim or warranty request. Attach the invoice or a copy as a warranty document if you send the equipment to Nahita Technical Service.

6. Troubleshooting

6.1. Open the door cover in case of emergencies

Sometimes, there are accidental power failures or the door can't be opened in the process of normal use, but samples must be removed from the centrifuge. In this case, you can open the door cover manually and remove the samples. **Note:** This way can be only used for emergencies. Don't use it as you like.



The rotor will need a long time to stop completely when there is a power failure because the rotor's function doesn't break when it stops running. Please wait patiently.

Steps to open the door in emergencies:

1. Make sure that the rotor stops completely (You can observe that from the view port on the top of the door cover)
2. Cut off the electricity.
3. There is a plastic plug in the right side close to the foreside plate of the machine; you can pull out the plug with a knife or a screwdriver and there is a rope behind the plastic plug. The door cover can be open once you pull the rope. Then, you can take the centrifugal samples out of the machine.
4. You must put the rope back in the machine and put the plastic plug back to its original position after you open the door cover.

6.2. Fault alarm information

The table shows the alarm information of the centrifuge, the causes as well as the way to solve them; you can rule it out according to the table. Please contact Nahita immediately if you can't solve the problem or the alarm information is not included below.



Please turn off the electricity first when there is any problem and start it after the problem is solved.

Table 2: Trouble alarm information

Symbols	Information of abnormal phenomenon	Troubleshooting
E2	Over speed. It stops working because of detection of rotor over speed	Problem of microcomputer control system, please contact Nahita Technical Service. Problem of speed sensor. Please contact Nahita Technical Service.

E3	Door cover protecting	Re-close the door cover Please contact Nahita Technical Service if the door cover is broken
E5	Parameter setting is wrong	Please re-set according to the content of parameter setting
E7	Fault of driving	Please contact Nahita Technical Service
E8	Parameter setting error	Follow the parameter setting procedure to re-set in part

Table 3: Fault phenomena, causes and troubleshooting

Fault phenomenon	Causes and Troubleshooting
No display	<ol style="list-style-type: none"> 1. Check whether the power outlet and the connection is ok; and if the power supply is on. 2. Whether the switch is ok. 3. If you can't solve it, please contact Nahita Technical Service.
Stop working suddenly	<ol style="list-style-type: none"> 1. The speed extends the maximum rated speed of the rotor. 2. The over speed alarm will work once the speed of the rotor extends 250r/mi the rated speed. Then, you should wait until the machine stops and reset the speed. 3. The speed extends set speed of the rotor. 4. The power supply will be cut inside the machine if the motor is overheating and the machine will stop working. 5. Please check the power supply system of the machine if there isn't any display on the keyboard panel. 6. The voltage may be low; please check whether the voltage of the power supply is ok.
Door can't open	<ol style="list-style-type: none"> 1. The door can't open until the rotor stops turning. 2. Check the assembly of the door lock. 3. Check the electrical wires of the door lock. 4. Open the door manually. 5. Please contact Nahita Technical Service if you can't solve it.
Vibration of machine is a bit heavy	<ol style="list-style-type: none"> 1. The following situation is normal: The speed of rotor is over the critical speed and the machine vibrates. 2. Check whether the rotor is locked tight or not. 3. Check the symmetry of the load in the rotor; check the working situation of the machine. 4. Check whether the rotor is installed correctly. 5. Check the shaft: rotate it by hand and if it can't rotate smoothly, then there may be a problem with the shaft or motor. Please contact Nahita Technical Service if you can't solve it.
Panel LED Indicator light isn't on after switching on.	<ol style="list-style-type: none"> 1. Power supply is not connected, please check the power. 2. The fuse of PCB board and power outlet is broken; please ask professional staff to change the fuse. 3. Please contact Nahita Technical Service if you can't solve it.

Unusual display of operating panel	1. It may be because of the interference of power grid, please shut down and start it after 1 minute, and then the display will be ok.
The motor doesn't work after pressing start key	1. The electric control circuit is broken. Please change the electric control board.
Burnt smell from the machine	1. Cut off the power. 2. Check whether the motor is burnt 3. Check whether the electrical components are burnt 4. Rotate the driving shaft with a hand, if it can't drive smoothly, please contact Nahita Technical Service.
None of the above problems	1. Please contact Nahita Technical Service.

7. Packing List

Packing list of the Low-speed centrifuge

Number	Name	Qty
1	low-speed table-top centrifuge	1set
2	power cord	1pc
3	angle rotor 12x15 mL	1pc
4	service manual (English and Spanish)	1pc



Please check in time if there's anything wrong when you open the package, if so, please kindly contact Nahita in time.

Appendix 1. Technical data

Function/ Parameter	Technical Data
Reference and model	1. Reference GLC004 2. Model Fugelab-GB10
Using environment	3. Indoor use 4. There aren't vibrations or airflows around which may affect the performance of the instrument. There aren't conductive, explosive or corrosive dust around 5. Altitude: $\leq 2000\text{m}$ 6. Relative humidity: $\leq 80\%$
Environmental temperature	+5°C~+40°C
Voltage	AC230V 50HZ/60HZ
Setting time range	0~99min
Maximum RPM	4000 r/min
Maximum relative centrifugal force	2250×g
Noise (maximum speed)	$\leq 65\text{dB(A)}$
Dimensions (machine)	500mm (L)* 400 mm (W)*310 mm (H)
Net weight	18 kg
Dimensions (package)	675 mm (L)* 560 mm (W)* 490 mm (H)
Gross weight	19 kg



Environmental protection instructions

Do not dispose of this equipment with normal household waste at the end of its life cycle; take it to a collection point for the recycling of electrical and electronic equipment.

It does not contain elements that are hazardous or toxic to humans but improper disposal will harm the environment.

The materials are recyclable as indicated by the marking. By recycling materials or other forms of reuse of old equipment, you are making an important contribution to the protection of the environment. Please contact your local authority for advice on the collection points.