

AGITADOR OSCILANTE PARA MICROPLACAS
MICROPOROUS PLATE OSCILLATION MIXER
MÉLANGEUR OSCILLANT À PLAQUES MICROPOREUSES

REF. - CODE - RÉF. LGD003
MODELO - MODEL - MODÈLE 730



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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SAFETY STANDARDS



- For safety reasons, please read the operating instructions carefully before use.
- Equipment exposed to heat, humidity and biological changes leads to degradation of performance and even loss of safety, which can lead to accidents.

ENVIRONMENT OF USE OF THE INSTRUMENTS



To ensure safety in the continued use of the equipment, it is important to consider that the following factors may affect or damage the instrument:

- Chemical effects;
- Environmental impacts, including natural ultraviolet radiation; Corrosion and wear of protective cover components and other safety components.
- Indoor use:
- Altitude: $\leq 2000\text{m}$.
- The suitable temperature range for the operation of the instrument is $+5 \sim +40 \text{ }^\circ\text{C}$.
- The applicable relative humidity range for operation of the instrument is $\leq 80\%$.
- Application range of the instrument's working power supply

Security advice:

- Adequate ventilation system must be installed indoors
- The environment must be free of vibrations and draughts that could affect performance.
- The surrounding air must be free of conductive dust, explosive gases and corrosive gases.
- Please read this manual carefully when using this machine for the first time.
- This equipment may only be operated by trained and authorised personnel.
- Maintenance of the equipment may only be carried out by our company or authorised personnel.
- The use of the following materials on the instrument is strictly prohibited:
 - Flammable and explosive materials.
 - Materials with strong chemical action.
 - Toxic or radioactive substances, or pathogenic micro-organisms, etc.

■ It is recommended to use, as far as possible, the accessories provided by our company. If users wish to use other accessories, our company is not responsible for any possible adverse consequences. However, users may request a verification from our company to confirm whether the accessories meet our requirements.

SAFETY PRECAUTIONS



- It is strictly forbidden to plug or unplug the power plug and operate the power button when holding the liquid with both hands!
- It is strictly forbidden to plug or unplug the power plug when the instrument is live!
It is strictly forbidden to handle or clean the instruments while they are switched on!
- It is strictly forbidden to perform oscillation operations when the sample capacity exceeds 70% of the test tube capacity! To avoid overflows, the sample must be placed in a suitable container.
- The product packaging must be properly sealed.
- It is strictly forbidden to install the instrument on uneven, unstable or vibrating workbenches!
- Make sure that the container is correctly installed in place to prevent it from flying off during operation!

EQUIPMENT FEATURES

The Nahita-Blue LGD003 Microplate Oscillating Shaker is based on advanced design concepts and state-of-the-art manufacturing techniques, this device is primarily designed for mixing and oscillating solutions in enzyme-labelled plates (96-well plates/384-well plates), cell culture plates (24-well plates, 48-well plates, 96-well plates, etc.), and can be used in experiments such as immunoassays and staining. It is suitable for use in low ambient temperature environments or incubators. The product features a compact design, is easy to operate and offers a safe, stable and quiet experience.

It has the following advantages:

- Large 1.3-inch LCD display, real-time display of operating status and system parameters.
- The microprocessor controls the speed and timing, with precise oscillation speed, small fluctuations, safety, stability and no noise.
- Four standard enzyme plates or microplates can be set up for efficient mixing of trace samples.
- It has a recovery function in case of power failure, and after recovery, the instrument can automatically resume operation according to the original set programme.
- Convenient fixing method with soft adhesive for quick and easy installation of microporous plates.
- Brushless DC motor drive, long service life, can provide smooth or strong oscillation.

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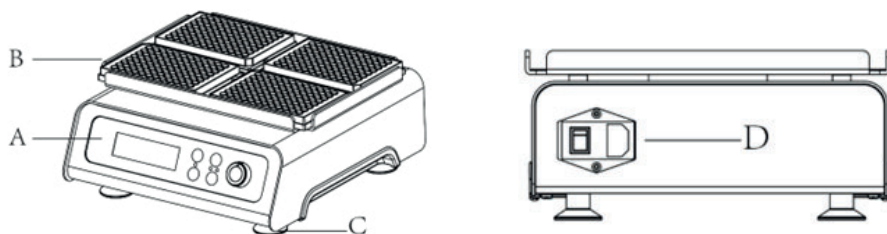
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1. TECHNICAL PARAMETERS

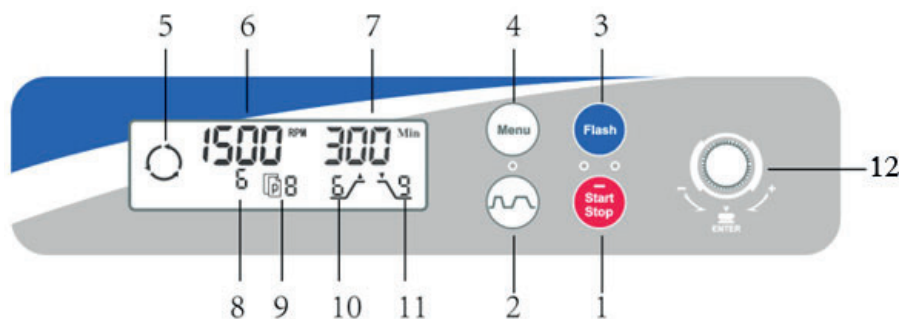
Product model	730
Reference	LGD003
Input power	AC100~250V/50/60Hz
power output	25W
Speed	200~1500r/min
Speed accuracy	±10 rpm
Control mode	Stepless speed control
Mode of operation	Continuous/Pulse/Jog
Storage of programmable parameters	10 Integrated stored procedure
Oscillation mode	circumference
Circumferential diameter	3 mm
Time function/display	Digital timing 1s-999min; Continuous: count-down; Jog: positive timing; Pulse: flashing time/light LCD
Speed control function/display	10 rpm step-by-step adjustment/full range
Maximum load	4 standard microporous plates/culture plates/deep-well plates
Faster linear acceleration	≈10s
Faster linear deceleration	≈5s
Security protection operation	Recovery function in case of power failure
Dimensions	L282mm× W277mm× H128mm
Weight	8,6Kg
Permissible ambient humidity/relative humidity	+5-40 /80% °C
Level of protection	IP20

At 23°C ambient temperature

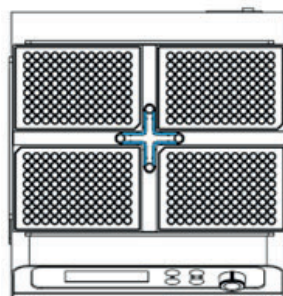
2. INTRODUCTION TO APPEARANCE AND FUNCTIONING



- A. Control panel
- B. Container tray
- C. Rubber feet
- D. Power switch



1. Stop/Start key.
2. Key for pulse mode, set for intermittent operation.
3. Flash key, for instantaneous oscillation
4. MENU key, used to select speed, time, programme storage and pulse operating parameters.
5. Dynamic operating symbol.
6. Speed display area, unit r/min.
7. Time display area, in minutes per second.
8. In the pulse mode, set the display area for the number of operating segments.
9. Stored procedure number display area 0~9.
10. In pulse mode, runtime block
11. In pulse mode, stop time block
12. Parameter increase/decrease adjustment button.



3. INSTRUCTIONS FOR USE

Caution: Before using the instrument, check that it has not been damaged during transport.

- Before receiving the instrument, inspect it for scratches, loose screws or other transport damage!
- It is strictly forbidden to install the instrument on uneven, unstable or vibrating workbenches!
- Stirring operations are strictly prohibited when the sample capacity exceeds 70% of the capacity of the test tube! To avoid overflows, the sample container must be hermetically sealed!
- The plate containers must be securely fastened to prevent them from flying off during swinging!
- Check that the machine foot pad is correctly installed!
- Is the adjustment knob fixed vertically on the control panel and in the correct position?

Operation

- The power switch is activated by turning the knob to the “ON” position. When it is turned to the “OFF” position, the power is switched off.
- The maximum speed limit of the instrument is 1500 rpm, and the adjustment is gradual in increments of 10 rpm.
- In continuous mode (when the “pulse” indicator light is not lit), press the MENU key repeatedly to select the parameters to be set. The speed, time (in minutes or seconds) and stored procedure number can be modified.
- Turn the adjustment knob to increase or decrease the parameters until the desired value is reached. Then press the knob downwards; the value will flash three times to confirm that the parameters have been saved and exit the setting mode.
- In pulse mode (when the pulse indicator light is yellow and the programme memory function is deactivated), the speed, the number of operating segments, the operating time and the waiting time before stop can be set. After turning the knob to set the parameters, press the knob downwards; the value will flash three times to confirm that the parameters have been saved and exit the setting mode. When the cycle is completed in pulse mode, “End” will be displayed on the time bar.
- The running and stopping times in pulse mode are as follows (in seconds):

Runtime block	Stop time block
1st gear=5 seconds	1st gear=10 seconds
2nd gear=10 seconds	2nd gear=15 seconds
3rd gear = 15 seconds	3rd gear=20 seconds
4th gear=20 seconds	4th gear = 25 seconds
5th gear=25 seconds	5th gear = 30 seconds
6th gear=40 seconds	6th gear=40 seconds
7th gear=60 seconds	7th gear=60 seconds
8th gear = 90 seconds	8th gear = 70 seconds
9th gear = 120 seconds	9th gear = 90 seconds

4. MAINTENANCE

Do not attempt to clean the appliance when the power cord is plugged in, or the power switch is in the “ON” position. If the equipment or accessories are contaminated with pathogenic, toxic or radioactive substances, it is the responsibility of the user to carry out appropriate decontamination. In this case, a “Laboratory Biosafety Manual” should be drawn up, covering the relevant procedures.

If other cleaning and decontamination procedures are required and are mentioned in this chapter, contact our company to confirm whether they can affect the equipment. If you plan to return the equipment or accessories to our company or request a repair, make sure that they are completely clean and do not pose a risk to human health.

During the cleaning process, liquids, especially organic solvents, must not meet the motor spindle and bearing balls.

Avoid the use of sharp objects that may collide with the fixture. During transportation and disassembly, it is crucial to avoid impacts that may cause cracks in the fixture or damage to the equipment due to scratches or external shocks.

Periodically inspect the tray components for signs of corrosion, scoring or small cracks. If any of these conditions are observed, discontinue use and contact the manufacturer.

When cleaning the tray, use a neutral detergent to dampen a sponge or cotton cloth, then rinse with distilled water to remove the detergent. Avoid splashing or spraying water on the rotor, as this may cause corrosion by drawing liquids into the rotor.

Carefully wipe the surface of the instrument with a soft cloth dampened in neutral detergent, then remove any detergent residue with a clean, damp cloth.

If serious problems occur with the instrument, such as inability to operate with a proper power supply, a burning smell inside, broken accessories, or severe shaking during operation, contact the manufacturer or authorised distributor immediately. Repairs are prohibited without the guidance of professional service personnel.

5. FAULT INFORMATION

The following table presents the alarms, the possible causes of failure and the solution provided by the machine. You can follow the instructions to solve the problem. If, after trying, the user cannot solve the problem or if the alarm message does not appear in this list, you should immediately contact our company's maintenance staff.



When a fault occurs, the power must first be switched off and then switched on again after the fault has been resolved.

Table 1: Fault alarm information

Error codes	Meaning	Reason	Resolution
E2	Overspeed	Interference in speed measurement or too fast acceleration	Check the speed measuring line and downshift the acceleration gear.
E7	No speed measurement	No speed measurement signal input	There are many reasons why no speed measurement signal is generated, and a separate analysis is necessary.
E11	Set speed cannot be reached	Insufficient engine power External supply voltage too low	Confirm that the load matches the power of the control system. Ensure that the power supply is normal