

CENTRÍFUGA PARA MICROPLACAS, MODELO P-X MICROPLATE CENTRIFUGE, P-X MODEL CENTRIFUGEUSE POUR MICROPLAQUES, MODÈLE P-X

REF. | CODE | RÉF. GDC011



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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1. SAFETY INSTRUCTIONS

In order to avoid damage to people, the surrounding objects and the environment, please follow all the safety instructions in this User Manual.

In addition, local laws and regulations for the installation of the centrifuge, accident prevention, environmental protection and recognised professional standards for occupational safety and health must be carefully observed.

- Before using this device for the first time, please read this manual carefully.
- Centrifuges can only be operated by trained and authorized personnel.
- Equipment maintenance can only be done by qualified technicians.
- Do not introduce the following materials in the centrifuge:
 - Flammable or explosive substances
 - Aggressive chemicals
 - Toxic or radioactive substances
 - Pathogenic microorganisms
- If the operator encounters a situation not mentioned in this manual, please contact your distributor to request technical assistance.
- Use accessories provided by the manufacturer. If the user uses other accessories, Auxilab S.L. will not be responsible for the adverse consequences.
- This centrifuge must be inspected and maintained at regular intervals.
- Do not plug or unplug the power plug and toggle the power button when the hands are in possession of liquid.
- Do not plug or unplug the power plug when the device is powered.
- It is strictly forbidden to maintain and clean the centrifuge under power-on state.
- It is strictly forbidden to install the device on the work surface with unevenness and vibration.
- When the rotor is not completely stopped, it is strictly forbidden to put the hand or other objects on the rotor, in an attempt to replace the device brake.

2. ENVIRONMENTAL CONDITIONS FOR USE

The following factors may damage the centrifuge; take them into account to assure a safe operation:

- Chemical effects
- Environmental impacts, including natural UV radiation
- Corrosion and wear of safety parts

- Indoor use only
- Altitude: $\leq 2000\text{m}$
- The permissible ambient temperature range is $+5^{\circ}\text{C} \sim +40^{\circ}\text{C}$
- The permissible relative humidity is $\leq 80\%$
- There must be sufficient ventilation in the working room
- There are no vibrations and air flows around the centrifuge
- There is no conductive dust in the surrounding air, explosive gas and corrosive gas

3. PRODUCT DESCRIPTION

Microplate centrifuge adopts the international advanced design concept and manufacturing technology. It comes with aesthetic appearance as well as a compact structure. High versatility, simple operation and with both “smooth start” and “smooth braking” functional characteristics. It is suitable for 96-well or 384-well microplates and also can be used for standard PCR microplates with or without skirt.

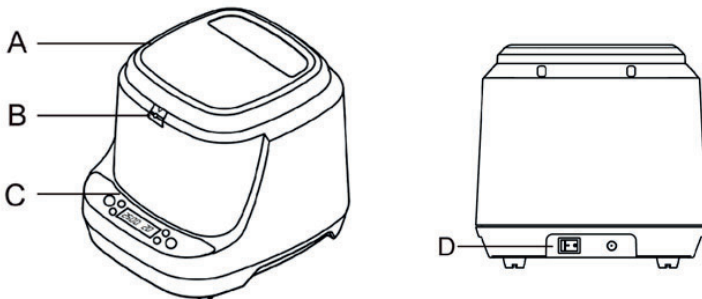
Main advantages

Quick spin centrifugal function which reaches the maximum speed of 3000 rpm within 6 seconds. Droplets adhering to the walls can be quickly centrifuged.

Faster acceleration and deceleration rates to complete experiments in less time.

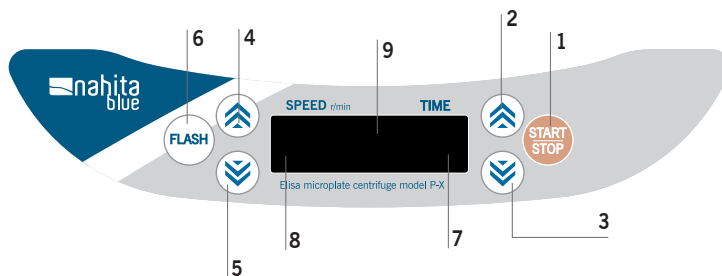
Lid protection; over speed and imbalance detection system that monitors the process of the centrifuge in time to guarantee a safe running. Acoustic signal prompts when operation ends. If errors and imbalances occur, at the same time the centrifuge stops running and an error code is showed at LCD display.

4. APPEARANCE AND FUNCTIONING INTRODUCTION



Equipment

- A. Lid
- B. Lid opening
- C. Operation panel
- D. Power switch



Operation panel - buttons and display

1. Start/Stop button
2. Time adjustment button; increases the value
3. Time adjustment button; decreases the value
4. Speed adjustment button; increases the value
5. Speed adjustment button; decreases the value
6. Quick spin function button
7. Time display area, in min/sec
8. Speed display area, in rpm
9. Lid status display area

5. TECHNICAL PARAMETERS

Input voltage	DC24 V / 2.75 A
Input power	55 W
Motor	Brushless motor
Display	LCD
Timing control	1-99 min / 1-59 sec
Speed range	300~3000 ±15 rpm
Speed increment	10 rpm
Max. capacity	2×96-well microplate
Max. RCF	608×g
Malfunction/failure alarm	Sound signal + Error code display
Sample loading way	Put down vertically
Weight	3.9kg
Noise	60dB (A)
Max. acceleration time	≤6s
Max. deceleration time	≤5s
Dimensions: D×W×H	225mm×255mm×215mm
Allowable ambient temp./relative humidity	+5-40 °C / 80%
Protection class	IP20
Interference suppression standard	EN 61010-1, EN 61010-2-020, EN 61326-1, EN 61010-3-2/A2





6. OPERATING INSTRUCTIONS

Note: Before using the device, please ensure that it was transported without damage.


Check that:

- The transparent cover pulls the cover lever to make it easy to open without any abnormal sound
- The rotor elastic buckle is tightly fitted on the motor spindle
- The edge of the cushion is firmly stuck on the main body casing
- The power switch and power cord are securely attached to the main body casing without looseness
- The equipment can be safely used without any of the above phenomena.
- If there is any of the above, please contact your distributor immediately and do not repair it by yourself.

6.1 Start / Stop the centrifuge

- Before equipment startup, please close the lid; lid status display 
- Set the speed and time required for the centrifugation by adjusting the parameter keys up and down   . The value is automatically confirmed when the parameter flashes three times. Press  button; the device starts to run.

Stop the centrifuge

Press  button directly to end centrifugation. When the rotor stops completely, press the lid opening button to open the transparent upper cover, take out the sample, turn off the power supply (the transparent upper cover can be closed without locking when the centrifuge is no longer used).

6.2 Calculation of centrifugal force

The relative centrifugal force (RCF) is typically thousands of times the Earth's gravity (g), which is a measure of the efficiency of centrifuges to separate or precipitate materials. The centrifugal force is related to the centrifugal speed and the centrifugal radius, and it's calculated according to the following equation:

$$RCF = 1.118 \times (n/1000)^2 \times r$$

r: is the radius of the centrifuge, in cm

n: centrifugal speed, unit rpm (revolutions per minute)

Note: The maximum centrifugal force value is related to the maximum centrifugal radius.

7. MAINTENANCE

- Do not attempt to clean the centrifuge when the power cord is plugged in or the power switch is turned on. If the equipment or accessories are contaminated by pathogenic, toxic or radioactive materials, it is the responsibility of the user to perform proper cleaning/decontamination. The selected cleaning/decontamination method could damage the equipment; consult with your supplier first. If you plan to return equipment or accessories to the Technical Service for repair, you must ensure that the device or accessories are clean and harmless to the human body.
- Do not use organic solvents because it can decompose the grease in the motor bearings; during the cleaning process, liquids, especially organic solvents, cannot be contacted to the motor shaft and the bearings. Do not use sharp objects to collide with the rotor. Prevent bumps during handling and disassembly. Prevent cracks in the rotor during use due to scratches or trauma.
- Regularly check the rotor assembly for corrosion spots, grooves, and small cracks. If any of the above conditions are found, stop using the rotor and contact the Technical Service.
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Note: When disassembling the rotor, grasp the rotor with both hands and lift it up vertically. Do not shake it from side to side.

Normally, the rotor should be cleaned once a week. If it is used for salt solutions or other corrosive samples, please wash it immediately after use. If the sample is found to be spilled on the rotor, it should be immediately drained and partially cleaned.

When cleaning the rotor, clean it with a mild detergent dampened with a sponge or cotton cloth, then wash off the detergent with distilled water. Do not sprinkle or spray the rotor with water as the liquid may be left somewhere and cause corrosion. Allow to invert and dry after washing.

Check the locking of the transparent cover and the main body casing, and whether the cover can be opened and closed smoothly.

Carefully wipe the surface of the device with a soft cloth dampened with a mild detergent, then remove the detergent with a clean, damp cloth.

If there is a major problem with the centrifuge, if the power supply is not working properly, there is a burnt smell inside the machine, the rotor is broken, and the device is shaking sharply during operation, please contact your distributor and request technical assistance.

8. TROUBLESHOOTING

The following table lists the most usual failures, their causes and the solutions. You can follow the prompts to eliminate them. If the user still cannot solve the failure or it's not included in the below list, the user should contact the Technical Service immediately.

Note: If an abnormality occurs, turn off the power, unplug the plug, and then try to identify the failure.

Error	Meaning	Reason	Solution
E2	Speeding	The speed measurement is interfered, or the speed is increased too fast	Check the speed measuring line and reduce the speed
E3	The lid is not closed	Cover not closed	Check that the cover is closed
E7	No speed measurement	No speed measurement signal input	There are many reasons for no speed measurement signal, so it is analyzed separately
E11	Unable to reach the set speed	Insufficient motor power and low external supply voltage	Confirm that the load matches the power of the control system Ensure that the power supply is normal.

9. PACKING LIST

Number	Name	Quantity
1	Centrifuge	1
2	User Manual	1
3	AC/DC power adapter	1
4	PCR adapter	1