

CENTRÍFUGA DIGITAL
DIGITAL CENTRIFUGE
CENTRIFUGEUSE DIGITALE



Modelo / Model / Modèle 2615/1



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 Digital centrifuge 2615/1. We highly recommend looking after this equipment according to what is stated in this manual. Nahita develops its products according to the CE marking regulations as well as emphasizing the ergonomics and security for its user.

The correct using of the equipment and its good quality will permit you to enjoy this equipment for years.

The improper use of the equipment can cause accidents and electric discharges, circuit breakers, fires, damages, etc. Please read the point of Maintenance, where we expose the security notes.



TO GET THE BEST RESULTS AND A HIGHER DURATION OF THE EQUIPMENT IT IS ADVISABLE TO READ THOROUGHLY THIS MANUAL BEFORE OPERATING WITH THE EQUIPMENT.

Please bear in mind the following:

- This manual is inseparable from the Digital centrifuge 2615/1, so it should be available for all the users of this equipment.
- Never dismantle the different pieces of the analogical centrifuges to repair it yourself, since it could produce a defective use of the whole equipment and a loss of the product warranty, as well as injuries on people that handle the analogical centrifuges.
- If you have any doubt about setting up, installation or functioning do not hesitate in contacting your wholesaler.
- This equipment is protected under the Warranties and consumer goods regulation (10/2003).
- Overhaul is not covered by the analogical centrifuges warranty.
- Operations made by non-qualified staff will automatically produce a loss of the analogical centrifuges warranty.
- Neither fuses (1A) nor accessories (including their loss), are covered by the product's warranty. The warranty neither covers piece's deterioration due to the course of time.
- Please make sure you keep the invoice, either for having the right to claim or asking for warranty coverage. In case you have to send the equipment to Nahita Technical Assistance Department you should enclose the original invoice or a copy as guarantee.
- Manufacturer reserves the right to modify or improve the manual or equipment.

1. APPLICATIONS

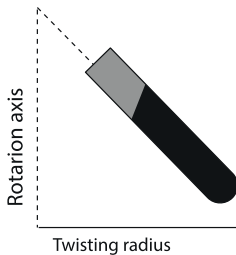
Compact centrifuge with a sturdy design that can be used for a variety of applications in the laboratory. With angle rotor for 15 mL tubes and motor with elastic suspension that assures a smooth operation.

2. BASIC THEORY

The centrifuge is an instrument that provides a technique of separation that is based on the movement of the particles. In this way the particles are moved towards the end of the rotating axis depending on their different masses and shapes.

The Relative Centrifuge Force (R.C.F.) is the required force so that the separation can be carried out. The units of this force are expressed in number of times higher than the gravity (g).

The R.C.F. is calculated by means of the following formula:



$$F.C.R. = 1,118 * 10^{-5} * r * n^2$$

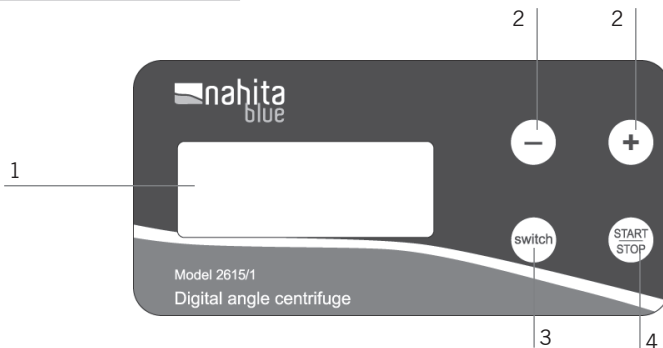
Being $1,118 * 10^{-5}$ a constant.

r = horizontal distance of the radius (in centimetres) from the centre of rotation up to the bottom of the tube.

n = speed of rotation expressed in revolutions per minutes (r.p.m.).

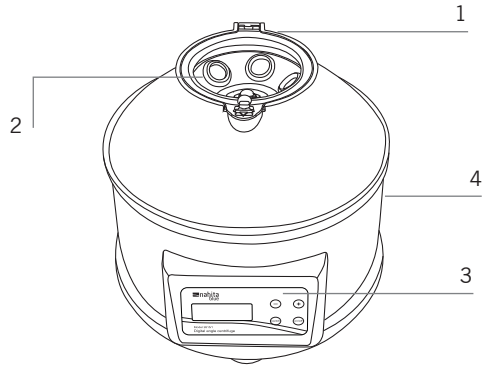
3. DESCRIPTION

1. LED display.
2. Increase/Decrease of value of rpm and time.
3. Switch: Selection of speed (rpm)/time.
4. On/Off: Start/Stop.



3. DESCRIPTION

1. Lid
2. Rotor
3. Front panel
4. Connection wire (back side)



TECHNICAL SPECIFICATIONS

Code	GBF001
Model	2615/1
Control	Digital
Rotor	Fixed-angle
Speed	1000-4000 rpm (steps of 500 rpm)
Time	1-60 min (steps of 1 min)
Capacity	6x15 mL
Max. FCR	1790 g
Consumption	80 W
Voltage	220 V – 50 Hz

5. INSTALLATION - SETTING UP

Preliminary inspection

- Unwrap the centrifuge, take off the involving plastic and take off the polyspan protection in which it comes fitted.
- Please make sure that it does not present any damage because of the shipment. If it does please communicate to your transport agent or dealer immediately, so that they can make the claims in the correct time limit.



WE WILL ONLY ACCEPT ANY EQUIPMENT RETURN WITHIN 15 DAYS AFTER DELIVERY AND PROVIDED IT COMES IN ITS ORIGINAL PACKAGE AND WITH ALL ACCESSORIES AND DOCUMENTS SUPPLIED

- Please check that all the accessories are enclosed with the equipment:
 - Tube holders (6 pcs)
 - Rubber cushions (6 pcs)
 - Instruction manual

Installation

Before using this instrument, it is convenient for you to familiarize with its components and basic essentials.



PLEASE READ THOROUGHLY THE INSTRUCTIONS BEFORE CONNECTING AND OPERATING WITH THIS EQUIPMENT

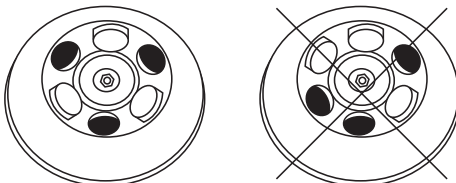
- Put the centrifuge on top of a horizontal, plane and stable table making a free space at least at 30 cm per side.
- Follow all required applicable laws about safety and health (electrical security devices, inflammable, toxic and/or pathological products, etc.).
- Do not put the centrifuge near any warm supply (burners, blowlamps...), nor expose it directly to the sun, etc.
- Avoid inflammable or toxic substances in the working area.
- Insert the wire that feeds the AC electric current in the base of current 220V 50Hz $\pm 10\%$ provided with earth.

Neither the manufacturer nor the distributor will assume any responsibility for the damages produced to the equipment during its installation or damages to persons suffered by the improper use of the electrical connection. The tension should be 220V 50Hz $\pm 10\%$.

- If you are not using the centrifuge for a long period of time please make sure it is disconnected from the net and protected from dust (this way you will avoid accidents and will extend its working-life).

Operation mode

- Connect the cable to the power supply.
- Press the ON/OFF button on the side of the centrifuge to general switch-on or switch-off.
- Open the lid and put the supplied tube holders in the holes of the centrifuge rotor.
- Place the tube with the samples in the tube holders symmetrically and with weights perfectly balanced.



- Close the lid firmly. As long as the lid is not closed, the centrifuge will not start up
- For programming the centrifuge, proceed as follows:
 - Press “switch” button to enter time setting mode.
 - Press “+” or “-“ button to select the value of operation time (from 1 to 60 min).
 - Press “switch” button to enter speed setting mode (rpm).
 - Press “+” or “-“ button to select the value of operation speed (from 1000 to 4000 rpm, in steps of 500 rpm).
- Press “On/Off” button to start operation. Time will start counting once rotor reaches the selected speed.
- Once operation time is finished, rotor will stop. If you need to stop centrifugation before time is finished, then press On/Off button.
- In the same working session, the centrifuge will save the last program run; once the centrifuge is disconnected from the net, then time and speed should be set again.

Safety

- The centrifuge must be always operated by qualified staff that knows the equipment and its operation mode through the instruction manual.
- The centrifuge has been designed for an indoor use in the laboratory on a plane and flat surface, so it should be placed on a horizontal plane stable table, having a safety area of at least 30 cm per side.
 - Make sure the centrifuge is connected to a power source with the proper voltage.
 - Make sure samples are placed in the rotor symmetrically and well balanced. Otherwise, the centrifuge will suffer vibrations that can produce an improper operation and damages in the instrument.
 - Make sure the sample containing tubes are perfectly closed before centrifugation.
 - Let the centrifuge completely stop before taking out the tubes with samples from the rotor.
 - Never move the centrifuge during operation.
 - Follow all required applicable laws about safety and health (electrical security devices, inflammable, toxic and/or pathological products, etc.).
 - The centrifuge is not suitable for treatment of flammable liquids, explosive samples or samples capable of making explosive mixtures.
 - Do not place the centrifuge near any warm supply (burners, blowlamps, etc), nor expose it directly to the sun. Avoid vibrations, dust and dry environments.
 - When you are not using the centrifuge for a long period of time please make sure it is unplugged in order to avoid possible accidents.
 - It is essential to have the equipment unplugged from the net before cleaning, checking components or replacing any piece (e.g. replacement of a fuse).
 - Made under the European regulations for electrical safety and electromagnetic compatibility.

6. MAINTENANCE AND CLEANING

TO GET THE BEST RESULTS AND A HIGHER DURATION OF THIS EQUIPMENT IT IS ESSENTIAL TO FOLLOW THE PROCESSES OF USE.

- Please follow the processes of use of this manual.
- This manual should be available for all users of this equipment.
- Always use original components and supplies. Other devices can be similar but they can damage the equipment.

- The centrifuge is supplied with a Schuko standard wire and it should be connected to a power source provided with earth; the wire should be on hand to be disconnected in case of emergency.
- Never try to repair the centrifuge by yourself, since you will lose the warranty and may provoke damages to the general operating system or the electrical installation, as well as injuries to the people that usually handle the centrifuge (burns, hurts...) or damages in nearby equipments.
- Use tubes that are resistant to the R.C.F.
- Balance the centrifuge placing tubes that are equal in weight, shape and size in symmetrical positions. If it is necessary use tubes filled with water when one of the holes is empty. In a centrifuge it is very important the concept of weight, then it is advisable to have a balance to adjust the weights of the different tubes.
- This is absolutely necessary since if the rotor is not well balanced it can produce shakings, if these shakings are small, it is difficult to notice them, then little by little the centrifuge wears away and then the breaking of the tube holders increases and it produces a worse sedimentation. It is advisable to change all the tube holders at the same time.
- Do not stop the centrifuge by the application of any external force, in this way you will avoid the possible mixture of the separate parts as well as the risk of accident and wear.
- In the event of breakdown please contact your distributor to overhaul through Nahita Technical Service Department.

Cleaning

- Use a fluff-free cloth dampened with soaped water that does not contain abrasives.
- With high g-values, there is a possibility that tube breakage will occur. Should this happen, the centrifuge rotor, adapters and the rotor chamber must be thoroughly cleaned and all broken particles removed immediately.



Instructions on environment protection

At the end of its life cycle, please do not dispose of this equipment by throwing it in the usual garbage; hand it over a collection point for the recycling of electrical and electronic appliances. It does not contain dangerous or toxic products for humans, but a non adequate disposal would damage the environment. The materials are recyclable as mentioned in its marking. By recycling material or by other forms of re-utilization of old appliances, you are making an important contribution to protect our environment. Please inquire at the community administration for the authorized disposal location.