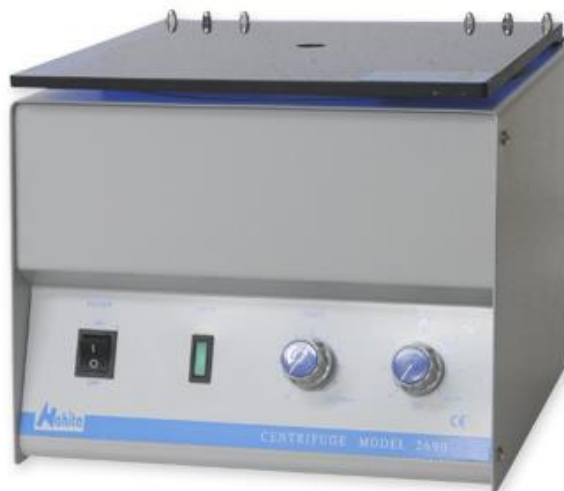


Instruction Manual

Analogical Centrifuges Series 2600

Models 2650, 2690 and 2690/5 (codes GBC001, GBC002 y GBC003, respectively)



Thank you for choosing this equipment. We sincerely wish that you enjoy your analogical Nahita centrifuges. 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 analogical centrifuges Nahita, so it should be available for all the users of this equipment.
- Follow all required **applicable laws about safety and health** (electrical security devices, inflammable, toxic and/or pathological products, etc.).
- You should carefully handle the analogical centrifuges avoiding sudden movements, knocks, free fall of heavy / sharp objects on it. Avoid spilling liquids inside the 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.
- To prevent fire or electric discharges avoid dry or dusty environments. In case it may happen unplug the equipment immediately.
- If you have any doubt about setting up, installation or functioning do not hesitate in contacting your wholesaler. You can also tell us any doubts or suggestions you have by contacting Nahita Technical Assistance Department by email to (asistencia@auxilab.es).
- 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 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.

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1. USES OF THE APPARATUS

Compact centrifuges, they sturdy in design and can be used for a variety of applications. Models with mechanical regulation have head for tubes of different volumes and with system of elastic suspension.

There are some examples of different activities in which this centrifuge is used as a technique of separation:

- a) Separation of serum or plasma.
- b) Cell concentration.
- c) Separation of substances.
- d) Biochemical laboratories.

2. BASIC THEORY

The centrifuge is an apparatus 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 (RCF) 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 RCF is calculated by means of the following formula:

$$RCF = 1,118 * 10^{-5} * r * n^2$$

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

r = twisting radius, horizontal distance in centimetres from rotation axis up to the bottom of the tube (see figure 1).

n = rotation speed expressed in revolutions per minute (rpm).

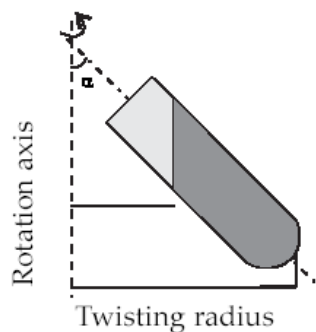
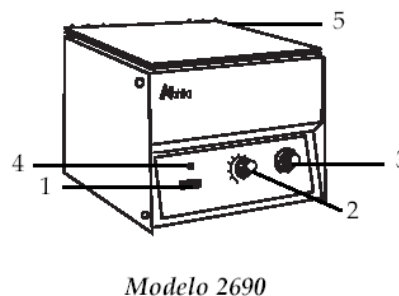
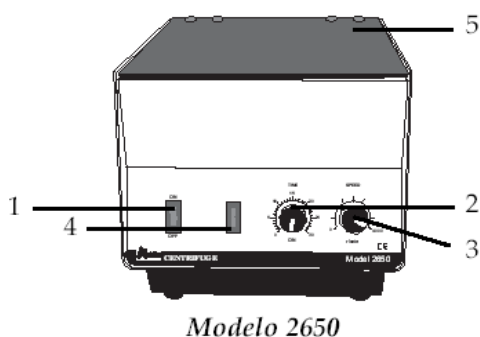


Figure 1

3. DESCRIPTION



1. ON/OFF switch
2. Time selector in model 2650 and speed selector in models 2690-2690/5
3. Speed selector in model 2650 and time selector in models 2690-2690/5
4. ON indicator light
5. Lid

4. TECHNICAL SPECIFICATIONS

Model	2650	2690 - 2690/5
Code	GBC001	GBC002 - GBC003
Control	Analogical	
Rotor	45° inclined	
Max. speed	4000 rpm	5000 rpm
Max. RCF	2147xg	3130xg
Capacity	12x15mL	12x15mL/16x5mL
Timer	0-30 min	
Speed regulation	500 rpm increments	
Motor	Elastic suspension, with brushes	
Power supply	220V-230V 50Hz	

5. INSTALLATION / OPERATION

Preliminary inspection

- Unwrap the centrifuge, take off the involving plastic and take off the poliespan 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 distributor 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
- Schuko standard wire
- Instruction manual

Installation

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

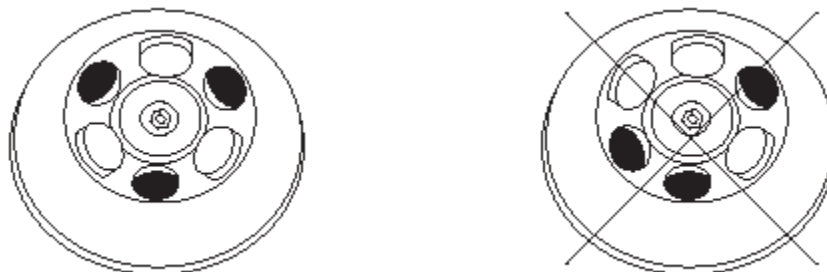
- Please put the analogical centrifuge on top of a horizontal, plane and stable table making a free space at least at 30 cm per side.
- Do not put the centrifuge near any warm supply (burners, blowlamps...), nor expose it directly to the sun, etc.
- Avoid inflammable or toxic substances in the working area.
- The apparatus is supplied with a Schuko standard wire. Please insert the wire that feeds the AC electric current in the power outlet 220V 50Hz $\pm 10\%$ provided with grounding and the other end to the centrifuge connector.

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 electric connection. The voltage should be 220V 50Hz $\pm 10\%$.

Operation

- Place the tubes in the tube holders and close the lid.

IMPORTANT: Make sure that the sample tubes are placed in symmetrical positions and that tubes are of equal weight to avoid serious shaking.



- Turning ON the centrifuge:

Turn on the ON/OFF switch and the light is lit to indicate that the power is connected.

Adjust the working time and speed with the corresponding selectors.

- Functioning:

The centrifuge starts functioning once selected time and adjusted speed. If you want continuous mode turn the timer knob counterclockwise to ON position.

- Stop

Once the time is spent wait until the rotor stops and electromagnetic lock unlocks to open the lid. If you want to interrupt a centrifuge run, turn the timer knob counterclockwise to 0.

Security

- The centrifuge must not be operated by unqualified persons not familiar with the correct use and intended purpose of the machine.
- You should put the apparatus on a horizontal, plane and stable table, having a safety area of at least 30 cm per side.
- Follow all required **applicable laws about safety and health** (electrical security devices, inflammable, toxic and/or pathological products, etc.).
- Don't centrifuge flammable liquids, explosive samples or substances capable of forming explosive mixtures.
- Do not place the analogic centrifuges 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 analogic centrifuges 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 switched off and unplugged from the net** before cleaning, checking components or replacing any piece (e.g. replacement of a fuse).
- Never try to repair the analogic centrifuges 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 equipment (burns, hurts...).

- Made under the European regulations for electrical security, electromagnetic compatibility and security on machines.

6. MAINTENANCE AND CLEANING

To get the best results and a higher duration of this equipment it is essential to follow some recommendations.

- Please follow the processes of use of this manual.
- This manual should be available for all users of the equipment.
- Always use original components and supplies. Other devices can be similar, but they can damage the equipment.
- The analogic centrifuge is supplied with a Schuko standard wire; it should be connected to power outlet provided with grounding and be accessible to be disconnected in case of emergency.
- Never try to repair the analogic centrifuges 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 analogic centrifuges (burns, hurts...) or damages in nearby equipments.
- Use tubes that are resistant to the RCF.
- 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.
- In the event of breakdown please contact your distributor to overhaul through Nahita Technical Assistance Department.

Cleaning

- Never use scourers or substances that can grate for cleaning metallic parts such as stainless steel, aluminium, coatings, etc. as they damage the analogic centrifuges and produce an early ageing of the equipment.
- 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.

ATTENTION!! IF EQUIPMENTS ARE NOT PROPERLY CLEAN AND DISINFECTED THEY WOULD NOT BE ALLOWED TO REPAIR BY OUR TECHNICAL SERVICE.

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 locations.