

MANTA CALEFACTORA CON AGITACIÓN, 20 L HEATING MANTLE WITH STIRRING, 20 L MANTEAU CHAUFFANT AVEC AGITATION, 20 L

REF. | CODE | RÉF. JGB009 - JGB010



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

- Connect the device to a grounded power source to ensure the safety of the equipment and the experiment and connect the power supply as required by the device.
- This equipment is prohibited for use in flammable and explosive, toxic and highly corrosive experiments.
- Ensure that the installation is horizontal.
- Non-professionals must not disassemble or repair this machine.
- Pay attention to the set temperature when handling flammable materials.
- Ensure that the resin container is dry, as accidentally setting the temperature too high could cause the container to dissolve and fall onto the heater, resulting in a fire.
- Excess samples will cause the workroom to overheat under the parts, dissolving the flammable material and causing a fire.
- While the equipment is in operation, do not touch the top or exhaust port of the device to avoid burns from high temperatures.
- Read the instruction manual before operating the device.
- During work, personal protective equipment must be used to avoid the risk of:
 - Splashes and evaporation of liquids.
 - Release of toxic or flammable gases.
- Install the equipment in a spacious area on a stable, clean, dry, non-flammable surface with no sharp edges. Do not use the equipment in explosive atmospheres, with hazardous substances or underwater.
- The temperature must always be set at least 25°C below the ignition point of the medium used.
- Be aware of hazards due to:
 - Flammable materials or media with a low boiling point
 - Excessive filling of the medium
 - Unsafe container

- Process pathogenic materials only in closed containers.
- Check the equipment and accessories before each use for possible damage. Do not use damaged components.

Safe operation is only guaranteed with the accessories described in the “Parts list” chapter. Accessories must be securely attached to the device and must not come loose on their own. Always disconnect the plug before attaching accessories.

- Ensure that the external temperature sensor is inserted into the medium to a minimum depth of 20 mm. When using metal containers, do not place the temperature sensors at the bottom of the container. Placing the sensors at the bottom of the container can cause excessively high temperatures to be measured, especially in media with poor conductivity. The tip of the measuring sensor must be at least 5 mm from the bottom of the container; 10 mm is ideal.
- The device can only be disconnected from the mains power supply by pulling out the mains plug or connector.
- The voltage indicated on the label must correspond to that of the mains supply.
- Ensure that the power cord does not touch the surface of the heating base. Do not cover the equipment.
- Keep it away from strong magnetic fields.

Unpack the equipment carefully and check that it has not been damaged during transport. If so, contact the supplier for technical assistance.

2. FUNCTION TEST

- Ensure that the operating voltage and the power supply voltage match.
- Ensure that the power outlet is properly grounded.
- Ensure that the power is turned off.
- Plug in the power cord, make sure the power is turned on, and start initialisation.
- Add the medium to the container with a stir bar if your equipment has a magnetic stirrer function.
- Place the container on the work plate.
- Adjust the stirring speed and start stirring if your device has a magnetic stirrer function.
- Observe the stirring bar and digital display if your equipment has a digital function.
- Set the temperature and start heating.
- Observe the actual temperature on the digital display with the digital function.
- Adjust the heating and stirring functions.

Observe the actual temperature on the digital display if your equipment has a digital function. Stop the heating and stirring functions.

If the above operations are normal, the device is ready to operate. If these operations are not normal, the device may have been damaged during transport. If so, contact the supplier for technical assistance.

3. OPERATING MODES

3.1 Heating mantle with stirring JGB009:

- Place the equipment on a level work surface, insert the container with the liquid into the heating blanket.
- Turn on the power according to the instructions, turn the temperature knob clockwise, the indicator light will turn on and gradually increase in intensity, and the temperature will also increase. Turn the knob counterclockwise to lower the temperature.
- Turn the shake button clockwise, the indicator light will turn on and gradually increase in intensity, and the speed will also increase. Turn the button counterclockwise to reduce the speed.



Notes:

- The power must be suitable for the equipment.
- Adjust the volume slowly; if the volume is too high, the shaker will stop.
- Ensure that the power cord is at a safe distance from the heating blanket.
- If the machine malfunctions, disconnect the power supply first.

3.2 Digital heating mantle with stirring JGB010:

- Place the equipment on a level worktable and insert the container with the liquid into the heating blanket.
- Install the sensor holder with stainless steel rods on the rear support of the heating blanket.
- Insert the temperature sensor into the liquid.
- Press the button to adjust the temperature using the up and down keys.
- Turn the knob clockwise and counterclockwise to adjust the power of the magnetic stirrer.



Notes:

- The power must be appropriate for the machine.
- Adjust the volume slowly; if the volume is too high, the agitator will stop.
- Ensure that the power cord is at a safe distance from the heating blanket.
- If the machine malfunctions, switch off the power first.

3.3 Temperature controller instructions for JGB010

3.3.1. Turn on the power, the top line indicates “Inp-LLL” and the bottom-line shows “Pt”.

3.3.2. Press the “SET” key to access the first menu, “ $\underline{50}$ ” (Operating temperature) is the set temperature. Press “SET” again, the top row shows “ $\underline{1}$ ” (Operating time), which is the time to be set, and press the “SET” key again to save the set value.

3.3.3. Press the “SET” button for 5 seconds to access the second menu (see Table 1), then press the “SET” button for 5 seconds to save the set value.

3.3.4. Auto-adjust function

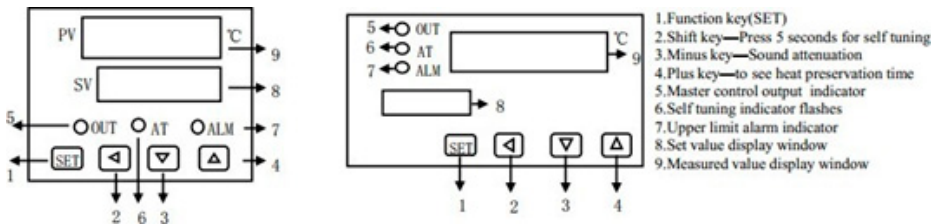
Enter the setting value, press the “ \blacktriangleleft ” button for 5 seconds and auto-adjustment will start while the “AT” light flashes. When auto-adjustment is complete, the “AT” light will turn off. Press the “ \blacktriangleleft ” button for 5 seconds to interrupt the auto-adjustment process.

3.3.5. Timing function

Press “ \blacktriangle ” and the display will show the total operating time since power-up.

3.3.6. Timer function

According to Table 1, when the upper line shows “ $\underline{1}$ ”, the lower line shows the set time in minutes; when the set time has elapsed, the lower display turns off. If users do not need the timer, set the time to 0.



1 st menu	Symbol	Name	Range set	Description	Factory data
SET	SO			Master control	Random
2 nd menu	Press "SET" for 5 seconds to access, then after setting, press "SET" for 5 seconds to save				
1	T	Timer	0 1 2	There is no timer function Start the timer when the power is turned on Start timing when the temperature reaches the set value	0
2	SHF	Limiter alarm	100	The value that measures the temperature above the set temperature	10
3	P	Proportional band	0-999	Heating speed	500
4	I	Integration	0-999	Integration time	150
5	d	Derivative	0-999	Derivative time	250
6	t	Cycle	0-120	Cycle	20
7	Sc1	Sensor correction		Sensor correction	0
8	Sc2	Slope correction		$Sc2 = \frac{\text{grado de correccion} \times \text{max rango}}{\text{valor de ajuste}} = \text{valor revisado}$	0
9	HY	Return difference	1-20		1
10	AE	Auto adjustment	0-1-2	Position control - PID operation - Self-tuning operation	1
11	LOCK	Electrical lock	0-1-2	No lock - First menu lock - First menu and second menu locked	0

When the timer ends, press the decrease button to start again.

The top row displays LLLL, which means that the sensor is disconnected or that the temperature is below the minimum measured value; the top row displays HHHH, which means that the sensor is disconnected or that the temperature is above the maximum measured value;

4. MAIN TECHNICAL PARAMETERS

Code	JGB009	JGB010
Capacity	20 L	
Heating mode	Surface heat-conduction	
Maximum temperature	380°C	
Speed range	0-1600 rpm	
Heating power	2,5 kW	
Operating mode	Continuous	Continuous/Timed
Permissible ambient temperature	5-40°C	
Permissible ambient humidity	≤90%	
Power supply	200-240 V, 50/60 Hz	
Dimensions	Ø470x340 mm	600x457x360 mm
Approx. net weight	16 kg	

5. STORAGE AND TRANSPORT

- Keep the equipment in a dry, clean place with good ventilation and away from corrosive gases.
- Avoid getting wet in the rain and avoid violent shocks during transport.

6. FAULTS

When working with the equipment, always use personal protective equipment to avoid risks.

Possible faults and checks:

- The instrument does not turn on:
 - Check that the power cable is properly connected.
 - Check that the fuse is not damaged or loose.
- The temperature does not reach the set value or stirring does not start when adjusting the control knob:
 - Check whether the heating cable may have been damaged during transport.
 - Check if the controller has been damaged during transport.

If the problems persist, contact the supplier.

7. MAINTENANCE AND CLEANING

- Proper maintenance can keep the equipment in good condition and extend its service life.
- Be careful not to spray the cleaner inside the instrument during cleaning.
- Unplug the power cord before cleaning.
- Use only the cleaning products recommended below:

Dyes		Isopropyl alcohol
Building materials		Water with surfactants
Cosmetics	Isotopic alcohol	Water with surfactants
Food products		Water containing surfactants
Fuels		Water containing surfactants

- Wear suitable protective gloves when cleaning the equipment.
- Before using any other cleaning or decontamination method, the user should contact the supplier to ensure that the method will not damage the instrument.
- The equipment must be cleaned and stored in its original packaging before sending it to the technical service for repair, avoiding contamination by hazardous substances.
- Use the equipment in a clean, dry room in a stable temperature environment.