AGITADORES MAGNÉTICOS
MAGNETIC STIRRERS
AGITATEURS MAGNÉTIQUES

Ref. | Code | Réf. LBB006, LBD009, LBG002

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. DESCRIPTION

Magnetic stirrers are essential laboratory equipment for mixing and stirring liquids; they also support the work of analytical instruments. They are used, for example, in laboratories for environmental monitoring, sanitary, biotechnological, petrochemical industry, etc.
The stirrers are equipped with a 12VDC brushless DC motor, which allows for noise and vibration-free operation, high torque, and effective stirring.

2. TECHNICAL DATA

Code	Model	Power supply VAC / Hz	Speed rpm	Capacity mL	Power W	Temp. ºC	Plate mm
LBG002	682	220/50	100 - 1500	5000	10	-	180 x 180
LBB006	693	220/50	100 - 1500	20000	600	RT+5-400	180 x 180
LBD009	693/1	220/50	100 - 1500	20000	600	RT+5-400	180 x 180

3. BEFORE USE

Check that all accessories are included with the shaker. List of accessories included:

- 1 power cable.
- 1 user manual.
- 1 magnet (30x8mm).
- 1 PT100 temperature probe (only for digital model 693/1 Ref.LBD009).
- 1 kit for thermometer support (consisting of a double nut, a clamp for thermometer and support rod for mounting).

4. MODE OF OPERATION FOR ANALOGUE STIRRERS WITH AND WITHOUT HEATING (MODELS 693 AND 682)

Attach the rod, the nut, and the clamp. Place the container containing the liquid on the dish, insert the stirring magnet and place an external thermometer to measure the temperature of the solution. Connect the equipment to the power supply and operate the switch on the left-hand side to switch it on.

The speed should be adjusted gradually from low to high to prevent the magnet from jumping using the right-hand knob on the stirrer. On the 693 model, the left-hand knob is used to regulate the temperature.

At the end of use, be sure to place the control at the beginning of its travel and check that the switch integrated in the control has been activated, thus turning off the function of each control.

Model 682

Model 693

5. OPERATING MODE DIGITAL STIRRER WITH HEATING (MODEL 693/1)

Place the rod, the nut, and the clamp. Place the container containing the liquid on the plate and insert the stirring magnet. If required, connect the external PT100 probe to the connector located on the back of the plate. The agitator has two temperature probes, one located on the plate (type K probe) to work with the temperature of the plate and the external probe (type PT100) to measure the temperature in solution. Connect the equipment to the power supply.

NOTE: To switch between the internal or external probe modes it is recommended to do it with the equipment switched off; when switching on the equipment with the external temperature probe, the sensor will be automatically detected, and the temperature will be displayed with decimal. In case of using the internal probe of the coil, the temperature will be displayed without decimal.

Activate the ON/OFF switch on the left side of the unit. When activated, both displays turn on, showing the word 'OFF' on the heating display and a moving line in one direction on the stirring display (the direction of rotation can be changed clockwise and counterclockwise with the stirring knob).

5.1 Operation of the agitation mode:

- Press the right knob once to start the agitation (STIR LED will be on). Start stirring at the last set speed.
- To modify a new speed, press the right button again, the 'Stir' indicator flashes, turn the button to set the setpoint speed, to select the setpoint value in RPM you will have to select each digit individually (thousands, hundreds, tens, and units) pressing the right knob to go from value to value until the end save and exit.
- Once the use is finished, press, and hold the right button to stop stirring, the 'Stir' indicator will turn off.

5.2 Heating mode operation:

- Press and hold the left button to activate the heating mode, each time the heating element is in operation the 'Heat' indicator will light up.
- The set point temperature will be the same as the last use.
- To select a new set point temperature, press the left button; the 'Set' indicator light will remain on, turn the left button to adjust the set point temperature; press the left button to select until the desired temperature is confirmed and press the left button again to confirm and exit.
- After use, press and hold the left knob to turn off the heating mode, until 'OFF' is displayed.

SAFETY

- When the temperature measured by the internal sensor exceeds 350ºC, heating stops.

5.3 Access to internal parameters:

When the heating mode is on, enter the SET temperature mode by pressing the left button (SET LED will light up), then press and hold the knob until you enter the parameter list. To exit the parameter table, simply press and hold the knob again to change the parameter with each press and turn the knob to change its value if necessary or required.

Nº	Symbol	Description	Note
1		Sensor correction	(Pt 100)
2		Power 15%	(Below 50)
3		Power 100%	(Above 50)
4		350 ºC alarm value	(K type)
5		0 ºC correction	(K type)
6		Slope correction $\frac{\text{Residual*1000}}{\text{Set value}}$ = Modification value	(K type)
7		465	(Pt 100=P)
8		327	(Pt 100=I)
9		272	(Pt 100=d)
10		21	(Pt 100= Cycle T)
11		465	(K type =P)
12		327	(K type=I)
13		272	(K type=d)
14		21	(K type = Cycle T)
15		0= Positional control, 1= PID control, 2= Self-tuning	 = AT =1
16		400	 = SOH range

Note:
To self-tune the agitator, first adjust the temperature set point to the desired value and then adjust parameter 'U' to value 2. Once the self-tuning process has been completed, the agitator automatically returns the value of parameter 'U' to 1 (PID control), this process can take from 1h to 2h.

Attention
- If the equipment does not stir, check if the set speed is too low. If the magnet jumps, check if the bottom of the container is smooth.
- The electrical supply line must provide the agitator with effective grounding.
- If the agitator does not switch on, check the state of the fuse at the rear.
- If the agitator does not turn on, check that the power switch is turned on.

If you think you have any incidence that needs to be checked by the technical staff, contact your distributor.