

Operations Manual

ORBi-SHAKER™ CO² **All Environment Shaker**



Benchmark 

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I. General Information

NOTE : Before operating the Orbi-Shaker CO2 please take a few minutes to familiarize yourself with the contents of this manual.

Thank you for purchasing the Orbi-Shaker CO2. This operations manual contains instructions for the care of this Instrument. In order to use the instrument properly, please read this manual carefully before operation. Please keep it available for future use.

**Prior to the initial operation:
Please check the Instrument and the accessories against the packing list when you first open the shipping carton. If you find there is damage, a discrepancy, or missing items, please contact your supplier immediately.**

II-1. Introduction

The Orbi-Shaker CO₂ is designed for use in extreme environments, including CO₂ incubators. The product is ideal for many applications used in general research laboratories, including cell culture, bacteria suspension, etc.

The Microprocessor's constant monitoring system ensures accurate shaking speed. The beltless drive system minimizes noise and vibration while increasing the life span of the unit. Optional accessories are available for compatibility with a wide variety of laboratory vessels, including flasks, tubes, dishes and trays.

II-2. Installation

- Choose a location for the shaking mechanism.
- To assure proper ventilation, allow a minimum of 2 inches (5 Cm) of the clearance between the rear and side of the unit and the adjacent wall.
- Always ensure that the machine is installed on a level surface.
- Once the machine is placed in the desired location, attach the flat cable to the remote controller.
- Place the remote controller in the desired location. (Ensure that the remote controller is located in a dry area.

- Before plugging the remote controller into the outlet, ensure that the electrical specifications (listed on the serial number label on the rear side of the controller) matches the electrical specifications of your outlet.
- **ALWAYS: Connect the flat cable from the remote controller to the shaking mechanism before connecting the controller to the electrical outlet.**

When installing the instrument inside of an incubator, typically, the flat cable can exit the incubator through a cable port (usually located on the back of the incubator). If your incubator does not include a port, the flat cable is designed so that it can also exit between the front of the door and the chamber without preventing sealing.

II-3. Specification

1) Dimension (Exterior) : 30 (W) X 34 (D) X 9 (H) cm / 11.8 (W) x 13.5 (D) x 3.5 (H) in.

(Platform): 30 (W) x 33 (D) cm / 12(W) x 13(D) in.

2) Speed range : 30 - 300 RPM

3) Shaking Orbit: 19mm (3/4")

4) Timer : Digital - 1 min. to 47hr 59min. (1 min. increments)

Or continuous

5) Motor : Brushless DC - Beltless

6) Weight: Shaker: 25 lbs / 11.5 kg

Controller: 5 lbs / 2.3 kg

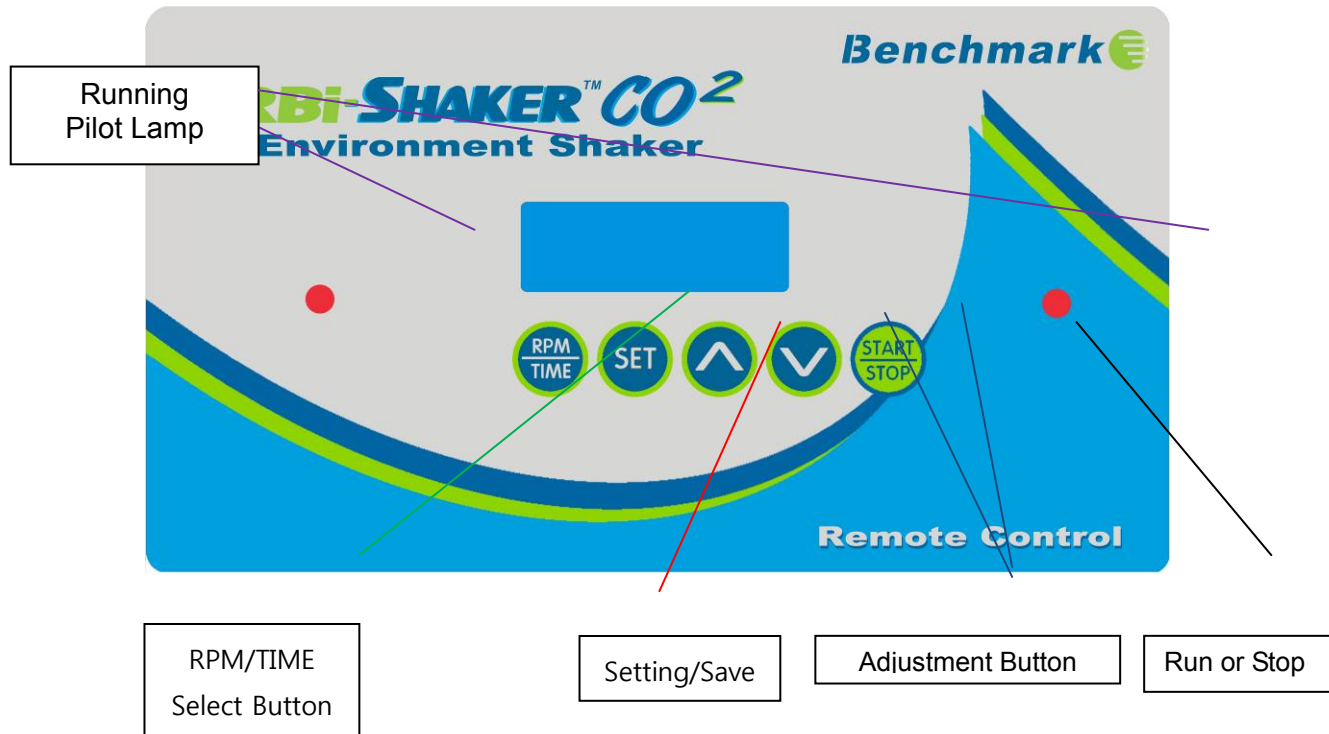
7) Electrical: 120V or 230V, 50-60Hz / 200W

8) Operating Environment: 0 to 60°C

II-4. Features

- 1) Constant Monitoring System (CMS) ensures precise control over speed
- 2) Sealed shaking mechanism for use in extreme environments (humidity up to 100%)
- 3) Controller allows for speed/time adjustment without opening door
- 4) MAGic Clamp platform available as optional accessory.
- 5) Brushless DC motor and beltless drive system minimizes noise and vibration.
- 6) Digital controller displays speed and time .
- 7) Wide variety of optional accessories available for most common laboratory vessels

III-1. Operation



- 1) Install the Shaker on a level surface. (If installing in an incubator, it is recommended to start on the lowest available section of the incubator.)
- 2) Place the power switch (located on the rear of the controller) in the "**ON**" position (the display will illuminate).

3) To set the desired time, Press and hold the "**RPM/TIME**" key for approximately 1 second until **LED** displays "**t**" followed by the current set time. Press the "**SET**" key located underneath the time/speed display. The set time is displayed and will blink continuously. It can be adjusted by using the UP (▲) and DOWN (▼) keys. Once the desired time is displayed, press the "SET" key to confirm. To set the time to continuous, select "00:00" on the timer.

* If you do not press the "SET" key to store the desired time the new time will not be saved and the set time will return to the prior setting.

4) To set the desired mixing speed, Press and hold the "**RPM/TIME**" key for approximately 1 second until **LED** displays "**r**" followed by the current set mixing speed. Press the "**SET**" key located underneath the time/speed display. The set speed is displayed and will blink continuously. It can be adjusted by using the UP (▲) and DOWN (▼) keys. Once the desired speed is displayed, press the "SET" key to confirm.

* If you do not press the "SET" key to store the desired speed the new speed will not be saved and the set speed will return to the prior setting.

III-2. Platform Installation

The Orbi-Shaker includes a flat non-slip platform for low speed operation with many common vessels, including trays and dishes. For installation of the optional MAGic Clamp platform, please follow the instructions below:

- 1.) Unscrew the four metal thumb screws from the corners of the internal platform and remove the green rubber mat.
- 2.) Unscrew the four center screws and two additional screws (using a Phillips screw driver.
- 3.) Remove the included platform and apply the MAGic Clamp platform.
- 4.) Screw in the six screws that were previously removed from the included platform.

When installing the microplate platform (H1000-P-MP) or universal spring platform (H1000-P-SP), please follow the simple instructions below:

- 1.) Unscrew the four metal thumb screws from the corners of the included platform.
- 2.) Apply the desired platform lining up the four corner holes and screw in the 4 thumb screws.

III-3. Error Messages



1) This message “rErrL” represents a **low** speed speed error

- Check the platform to ensure that nothing is obstructing it's movement
- Check the set speed to make sure that it is within the acceptable range (30 to 300rpm)

Solution : Use your hand to physically move platform. While the platform is still moving press and hold the "STOP" and "SET" keys simultaneously for two seconds. The speed display will blink and can now be adjusted to a higher speed.



2) This message “rErrH” represents a high speed error.

- Removal of load or partial load.

Solution : If a vessel has been removed, replace the vessel or restart the machine.



3) This message, “Error” represents an electrical error.

- Machine has lost power during the run.

Solution : Check that the power cord is properly installed and restart or check that the circuit has not been interrupted and restart.

4.) Display will not illuminate

(1) Electrical connection - Please disconnect main power cord and connect again.

(2) Voltage supply - Please check to voltage.

(3) Check the fuse

(4) Verify voltage on the serial number label of the machine

(5) Defective power switch (check voltage at switch)

III-4. Maintenance:

The platform of the Orbi-Shaker CO2 should be cleaned regularly with a soft cloth dampened with water or alcohol. (Always ensure that the machine has been powered down prior to cleaning.

In the event of a spillage: Power down the unit, remove the platform and dry the internal chamber with a soft cloth. DO NOT attempt to operate the unit until the spillage had been properly dried.

IV-4. Service and Contact

Service on the Orbi-Shaker CO2 should only be performed by qualified service personnel. To request service or technical support, please contact Benchmark Scientific or your local Benchmark Scientific representative.



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