LabRobot

Dilushaker III *digital*

User guide



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Index

KEY FEATURES 3
INSTRUCTIONS FOR USE 4
HOW TO CHANGE THE ROTATION SPEED? 4
HOW TO ADJUST THE NUMBER OF DILUTION STEPS? 5
HOW TO CHANGE THE SHAKING TIME? 5
HOW TO CHANGE THE WORKFLOW DIRECTION? 6
HOW TO TURN ON/OFF THE LED LIGHTS? 6
HOW TO REVERT THE LED LIGHTS TO THE START POSITION? 6
HOW TO STEP BACK ONE DILUTION STEP? 6
MAINTENANCE AND CLEANING 6
CONTACT INFORMATION 7
DECLARATION OF CONFORMITY 8

Welcome to the user manual for the Dilushaker III *digital*, the most compact shaker designed for use with Dilucup® Elegance. Together, they enable easy and ergonomic serial dilutions, replacing both traditional dilution tubes and the vortex mixer.

The three LEDs located on the rear ramp of the tray assist the operator during dilutions, indicating which column contains the Dilucup® being processed.

This manual will provide you with detailed instructions on how to maximize the potential of your Dilushaker III, ensuring that your serial dilutions are both effective and efficient.

KEY FEATURES

- Number of dilution steps per sample: 1 – 12
- Rotation speed: 400, 500 or 600 rpm
- Shaking time: 1 - 30 s per dilution
- Removable tray for easy cleaning
- Ramp with 3 LED lights to guide the user
- Adjustable direction of the ramp to suit both right- and left-handed users
- Possible steering by footswitch
- One optical sensor located on the front
- For blisters of 7x3 Dilucups

Designed and manufactured by **LabRobot Products AB** in **Sweden**.

You can download the latest version of this manual on the website:
www.labrobot.com/dilushaker-iii/



INSTRUCTIONS FOR USE

1. Press the ON/OFF switch located on the back of the Dilushaker to turn it on.
2. Adjust the shaking speed, the number of dilutions and the shaking time.
3. Place the Dilucup® Elegance blister pack on the tray.
4. Add 1 mL of the initial sample to be diluted (from a vial or stomacher bag) into the first flashing Dilucup®. *"0" is shown on the display.*
5. Wave your hand over the sensor or press the foot switch to activate the shaking. *The display will show "1".*
6. Transfer 1 mL from the first Dilucup® to the next and continue diluting until you achieve the desired dilution.

The progression of the LEDs is controlled by the optical sensor or an optional foot switch. Each time the sensor is activated, the Dilushaker registers that one dilution step has been completed. The number shown on the display corresponds to the total number of dilution steps performed.

When the serial dilution is completed, the number of LEDs corresponding to the number of performed steps lights for 2 seconds to inform you that you have finalized your series *(not valid when only one dilution step is programmed).* The first cup/row immediately located after the last one you have used, starts then to flash showing that this cup/row is waiting for the next sample.



HOW TO CHANGE THE ROTATION SPEED?

When you press the SPEED button briefly (less than 1 second), the display shows the currently programmed rotation speed. To change the rotation speed:

1. Press and hold the SPEED button for more than 3 seconds to enter speed adjustment mode.
2. Once in adjustment mode, press the SPEED button briefly to cycle through the available speeds (1, 2 and 3). The selected speed is shown on the display during adjustment.

The actual rotation speeds corresponding to settings 1, 2 and 3 (approx. 400 rpm, 500 rpm and 600 rpm) are measured during quality control and are listed on the QC certificate supplied with the device.

Note: We recommend using a standard rotation speed of 2 for routine work.

How to adjust the number of dilution steps?

Press and hold the DILUTIONS button for more than 3 seconds to enter adjustment mode. Then briefly press the button as many times as needed to select the desired number of dilution steps.

The number of dilution steps can be set from 1 to 12.

The number of LEDs that corresponds to the selected number of dilution steps will illuminate for 2 seconds before the first LED starts flashing.

If the selected number of dilution steps is greater than the number of LEDs on the ramp, all LEDs will first illuminate for 2 seconds. Then, the number of LEDs required to complete the selected number of dilution steps will illuminate for an additional 2 seconds, before the first LED starts flashing. For example, if eight dilution steps are programmed, the visible sequence will be:

- 3 LEDs on for 2 seconds
- 3 LEDs on for 2 seconds
- 2 LEDs on for 2 seconds

You may change the number of dilution steps between samples (and even within the same sample) without affecting the position of the flashing LED on the ramp. To do this, press and hold the DILUTIONS button 3 seconds to enter adjustment mode.

If you quickly press the DILUTIONS button once, the display shows the number of programmed dilutions and the LED lights reset to the start position.

How to change the shaking time?

Press the TIME button for less than 1 second to display the currently programmed shaking time (in seconds).

To change the shaking time:

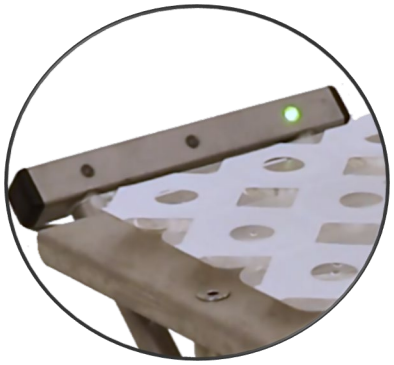
1. Press and hold the TIME button for more than 3 seconds to enter adjustment mode.
2. Briefly press the TIME button as many times as needed to reach the desired value.

During adjustment, the selected time (in seconds) is shown on the display. The shaking time can be set from 1 to 15 seconds, plus an additional 30-second option:

- Each press increases the time by 1 second up to 15 seconds.
- After 15 seconds, the next press selects 30 seconds.
- After 30 seconds, the next press selects “-” which means permanent shaking. In this mode, shaking is continuous and the LED ramp cannot be used.
- After “-”, the next press returns to 1 second.

Note: A standard shaking time of 3 to 7 seconds is recommended.

How to change the workflow direction?



The software used in the Dilushaker allows the device to be used by left-handed and right-handed persons without any need for compromise.

- To perform dilutions from left to right: press the SPEED button while turning on the device.
- To perform dilutions from right to left: press the TIME button while turning on the device.

How to turn on/off the LED lights?

Dilushaker can be used with or without the ramp of LEDs. To switch on/off the ramp, press quickly and simultaneously the DILUTIONS and TIME buttons.

Note: The status of the ramp (on or off) is memorized every time you turn off the Dilushaker by using the ON/OFF switch.

How to revert the LED lights to the start position?

To revert the lights to the start position (first cup/row on the left or the right) briefly press the DILUTIONS button.

How to step back one dilution step?

If you accidentally activate the sensor before performing a dilution, you can correct this by quickly pressing the SPEED and TIME buttons at the same time. The LEDs will move one step backward on the ramp.

Note: This function is not available once you have reached the final dilution step of the series.

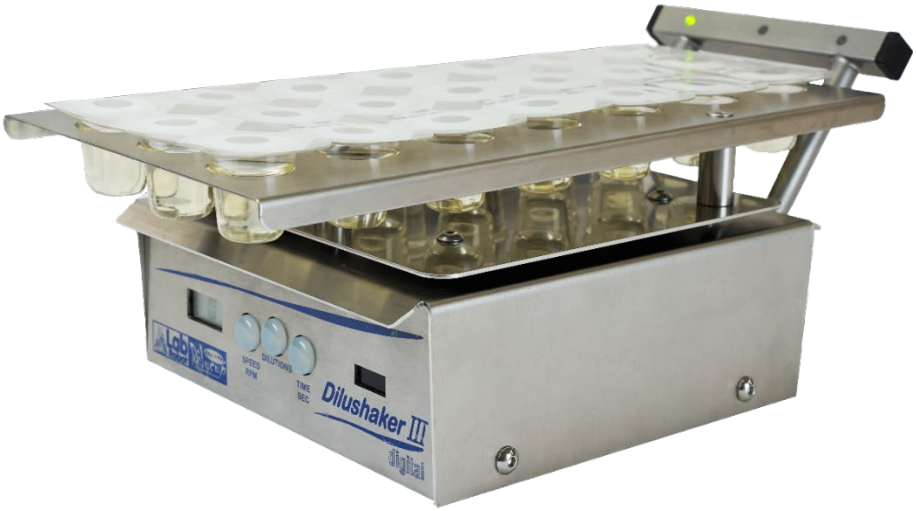
Maintenance and cleaning

- Dilushaker III *digital* can remain in a laminar flow cabinet (with the power off) even when the ultraviolet light is turned on.
- The metal tray can be removed by pressing and rotating at the same time.
- You may disinfect moderately with a paper towel dipped in an alcoholic solution.

SERVICE INTERVAL AND WARRANTY

Dilushaker III *digital* has a 2-year warranty from the purchase date.

LabRobot recommends that it is serviced every 2 years to ensure trouble-free use of the instrument.



CONTACT INFORMATION

Contact us if you have any further questions. We will be happy to answer.

Visit our website for updated information.

LabRobot Products AB
Munkerödsvägen 4
444 32 Stenungsund
Sweden

+46 303 846 73
kontakt@labrobot.com
www.labrobot.com/

Follow us on LinkedIn and learn more about the Dilucup® System!

DECLARATION OF CONFORMITY

LabRobot Products AB

EC/EEA DECLARATION OF CONFORMITY

We: **LabRobot Products AB**
Munkerödsvägen 4
SE 444 32 Stenungsund
SWEDEN

Declare that the product:

Dilushaker III Digital
Shaker for microbiology samples
Produced in Sweden

Is in conformity with below mentioned standards and other normative documents:

EMC: **Emission: SS-EN 61000-6-3:2007**
Immunity: SS-EN 61000-6-1:2007

Following the provisions of:

EMC Directive (89/336/EEC + 92/31/EEC)

LabRobot Products AB



Hervé Laisis, CEO

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