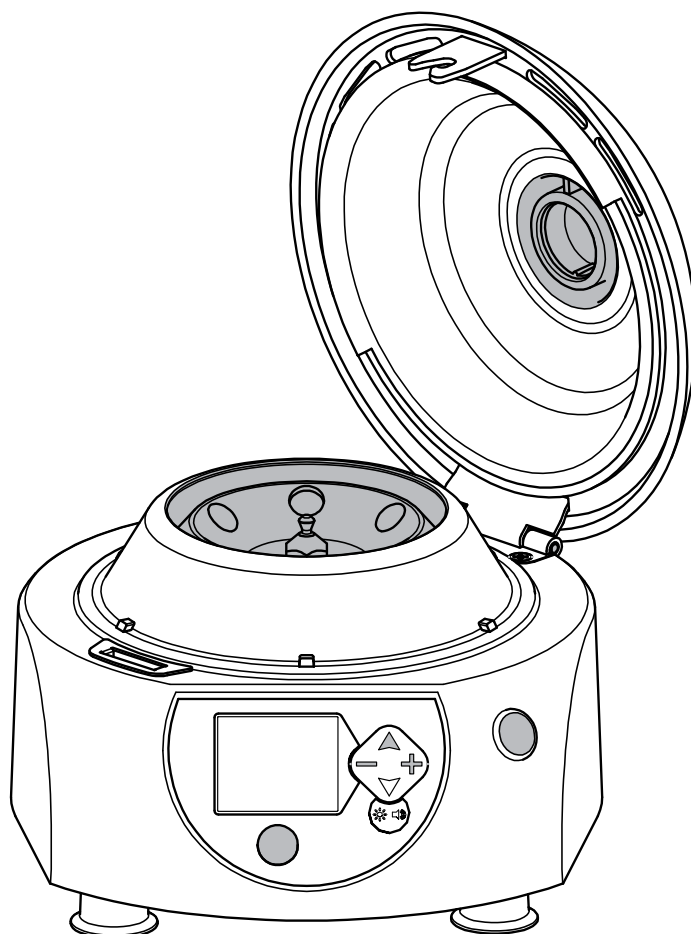


ELMI



Manufactured by **ELMI** for **Cleveland Diagnostics Inc**

User manual Mixer-Centrifuge **REF 1011**



Cleveland**Dx**

	Page
Contents	1
Introduction	2
Technical specifications.....	2
Delivery package	2
Getting started.....	3
Rotor	4
Rotor assembly and usage.....	4
Control buttons	5
Operation.....	7
Troubleshooting: error codes	14
Safety precautions	16
Disinfection and cleaning.....	16
Transportation and storage	16
Warranty statements	16
Certificate of approval	17
Certificate of sale	17
Calibration certificate	18

Dear users!

Centrifuge-mixer Cleveland DX is designed for ease of use and reliable operation. We strongly recommend that you carefully read this user manual and follow all instructions to ensure proper use and maintenance. Doing so will guarantee excellent results and long-lasting performance.

General information

The Cleveland DX centrifuge-mixer comes equipped with a special 6-position rotor designed for 1.5/2 ml test tubes. A preset program consisting of two operational phases is built into the device. The microprocessor-controlled system ensures precise and stable performance. The bright, colorful display provides instant readout of all key parameters. For safety, the device lid locks during operation and automatically unlocks at the end of each run. An adjustable sound alarm and customizable screen brightness make the device user-friendly. Integrated imbalance and temperature sensors protect the unit from hazardous imbalance and overheating.

Technical specifications

Rotor rotation speed, RPM	10000
Centrifugal force, RCF	6797
Cycle length Min	5
Total possible imbalance of test tubes: g	1
Environmental temperature, °C	10-40
Relative air moisture at 20°C, %	80
Power supply adapter,	24V-5A
Power consumption, W	not more than 120
Size of the device (length x width x height), mm	200x180x145
Weight, kg	3.1

Delivery package

Item	Quantity
Centrifuge.....	1
Rotor nut.....	1
Rotor key	1
Power supply adapter 24V- 5A 120W.....	1
Power cord	1
User manual.....	1
Packaging material.....	1

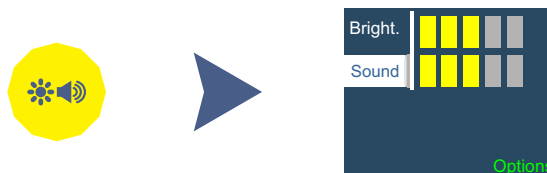
Preparation to work

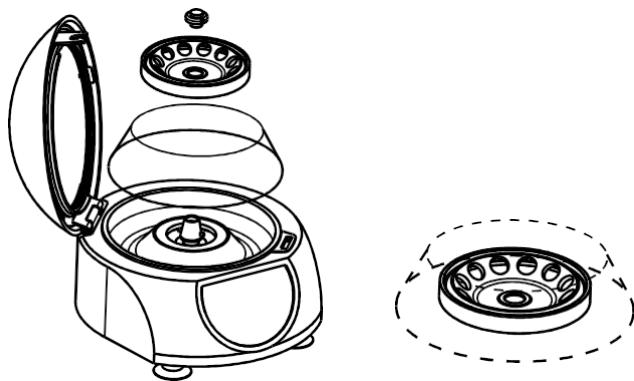
- Unpack the device.
- Carefully inspect the device, the adapter, and the power cord for any signs of damage.
- Use the emergency lid opening lever to open the lid and remove all packaging material (see “Emergency Opening of the Centrifuge Lid,” p.8).
- If the centrifuge has been transported or stored in cold conditions, allow it to stand at room temperature for at least 2 hours before use.
- Assemble the rotor. Ensure it rotates freely without resistance or jamming.
- Connect the centrifuge to the adapter, then plug the adapter into the power socket.
- The light indicators will turn on.
- If no faults or damage are detected, the centrifuge is ready for operation.
- If faults or damage are found, do not use the centrifuge—contact a qualified specialist.

ATTENTION! The network socket must match the adapter plug.

Failure to comply with this requirement violates electrical safety standards.

Adjust screen brightness and signal tone by pressing this button.





Rotor 50.05

Rotor 50.05 for 6 test tubes with aerodynamic housing.
Maximal rotation speed 10 000 RPM.
Maximal centrifugation force 6797 RCF.

Assembly: Place the rotor onto the shaft and secure it by tightening the nut with the supplied hand-driven key.

Usage: Always load the rotor symmetrically. Minimizing the weight difference between filled test tubes reduces wear on the mechanical parts of the centrifuge. If the total imbalance of the test tubes exceeds 1 gram, the centrifuge will automatically stop and the display will show the DISBALANCE error code.

Rotor 50.05 must always be used with the aerodynamic housing, which reduces noise levels and prevents excessive heating of the tubes.

Control buttons

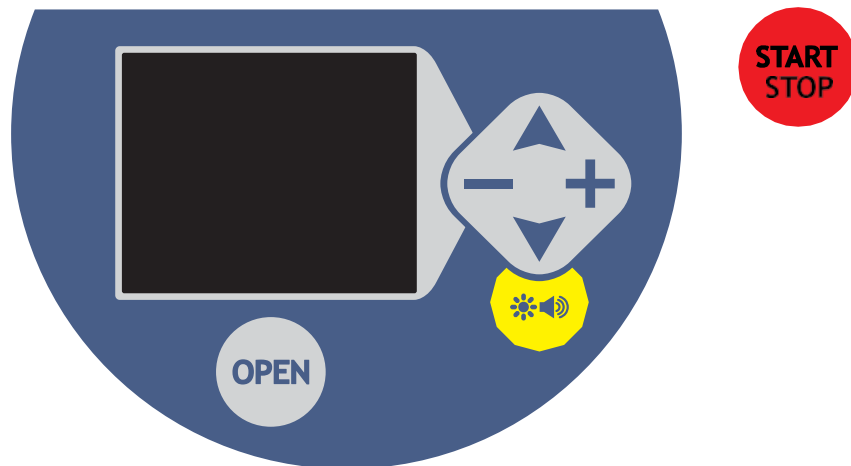


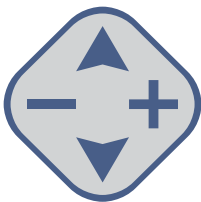
Fig. 1 Control panel.



Lid opening button.



Settings menu button.



Up and Down menu scroll
and parameter change buttons.

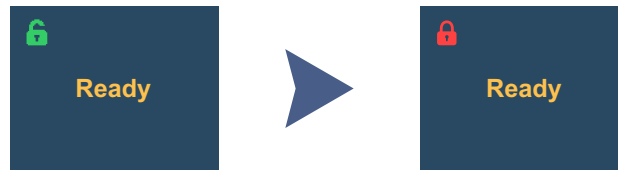


Start/stop button to begin the working cycle
or to stop the cycle before estimated time.

Operation

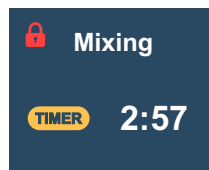
Load the rotor symmetrically to minimize weight difference between test tubes.

Once the rotor is loaded, close the lid of the device so that the lock indicator on the display turns red from green.

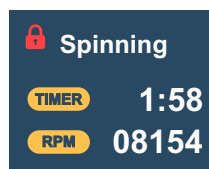


Press start stop button and the device will start the two phase program.

1st phase of the program is mixing at 22,17 Hz frequency for 3 minutes.



2nd phase (starts automatically) is centrifugation for 2 minutes at 10000rpm.



In working mode the display shows count down timer for current phase and current rotor rpm in 2nd phase of the program.

At the end of the 5 minute program sound alarm will sound, lid will unlock swiching indicator from red to green.

Attention! If the lid of the device is not shut, when pressing start button the display will show error message that the lid is not shut, close the lid till you hear a click at press start button again.

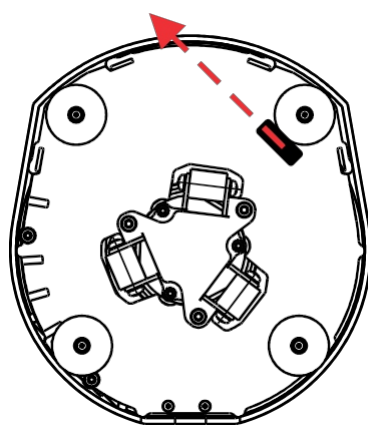


Error codes and solutions

Error code	Cause	Solution
"BLACK SCREEN"	No main power connection. Power failure	Check connection of the power cable. Check if the power supply adapter is functioning.
THE LID IS NOT SHUT	Centrifuge lid is left open.	Close and press on the lid till you hear a click.
DISBALANCE	Total imbalance of test tubes is more than 1 gram.	Load rotor symmetrically.
PCB OVERHEAT	Processor Control Board is overheated.	Give a little time and centrifuge will cool down automatically.
MOTOR OVERHEAT	Motor is overheated.	Give a little time and centrifuge will cool down automatically.
⚠ POWER PROBLEM	Bad connection of power supply to device / to power socket. Power supply failure.	Turn on and off the device with mains switch, check the power supply connections from device up to the socket. Check the condition of power supply, if necessary replace the unit.
Rotor detection fails. Centrifuge does not start. Power supply cuts off. Disbalance detection failure.	Controller factory settings mismatch.	<div>⚠ For service specialists only!</div> Go to "TO" special menu.

Emergency Opening of Centrifuge Lid

To open the centrifuge lid in the event of a power failure or lid lock malfunction, lift the centrifuge and move the lever located on the bottom of the unit, beneath the control panel, to the side as shown in the figure.



Safety Features

Service personnel are prohibited from:

- Connecting the device to a power outlet that does not match the adapter configuration.
- Operating the device with a damaged adapter, power cord, rotor aerodynamic lid, or housing.
- Moving the device during centrifugation.
- Running the device without the rotor aerodynamic lid or housing installed.
- Loading the rotor asymmetrically. • Using damaged tubes.

ATTENTION! Processed samples may contain pathogenic material, including agents of serious diseases.

Disinfection and Cleaning

Before disinfection or cleaning, ensure that the power adapter is unplugged.

It is recommended to clean the device with water and universal cleaning solutions.

After cleaning, the unit should be thoroughly dried. Prevent water from entering the centrifuge-mixer.

Transportation and Storage

For safe transportation, the equipment must be packed in the original manufacturer's packaging or in equivalent protective packaging. The device may be transported by any type of closed vehicle, provided it is securely fixed and transported in accordance with applicable regulations.

Store the equipment in the original packaging in a dry room with relative humidity not exceeding 80% and a temperature range of +10 °C to +40 °C. Storage beyond 36 months is not recommended.

Warranty Statements

- The warranty is valid for 24 months from the date of purchase.
- Malfunctions caused by manufacturer's fault during the warranty period will be repaired free of charge.
- The warranty is void in the following cases: • If the manufacturer's serial number label is damaged. • If damage occurs as a result of improper operation, transportation, or storage.
- The following documents are required for warranty repair: • User manual with the serial number of the device.
- Officially signed report describing the reasons and circumstances of the malfunction.
- Warranty repair can only be carried out if the equipment is delivered in the original manufacturer's packaging or equally secure packaging. Please retain the packaging after unpacking the device.
- If the above warranty requirements are not met, repair costs will be charged to the consumer.
- For all further questions regarding operation and maintenance, please contact the manufacturer or product vendor.

Certificate of approval

Centrifuge-mixer Cleveland DX No _____ has been inspected for the technical conditions and meets all regulations necessary for such class of device.

Quality control person _____
(name) (signature)

Date of manufacture _____

Place for stamp

Certificate of sale

Organization _____

Address _____

Phone _____

Vendor _____
(name) (signature)

Date of sale _____

Manufacturer: ELMI SIA
7b Bukultu street, Riga LV-1005, Latvia
Tel: (+371) 6755 8743
Tel: (+371) 6755 1934
E-mail: info@elmi-tech.com
WWW: www.elmi-tech.com

Calibration Certificate

Issued by ELMI SIA Calibration Laboratory

Device	Cleveland DX Mixer-Centrifuge
Model	REF-1011 with Rotor 50.05 (6 × 1.5/2 ml)
Serial No.	
Certificate No.	
Date	

Protocol Applied

Phase 1: Mixing — 3 minutes at 22.17 Hz

Phase 2: Centrifugation — 2 minutes at 10,000 RPM (6,797 × g RCF)

Brake setting: 1

Rotor: 50.05 with aerodynamic housing

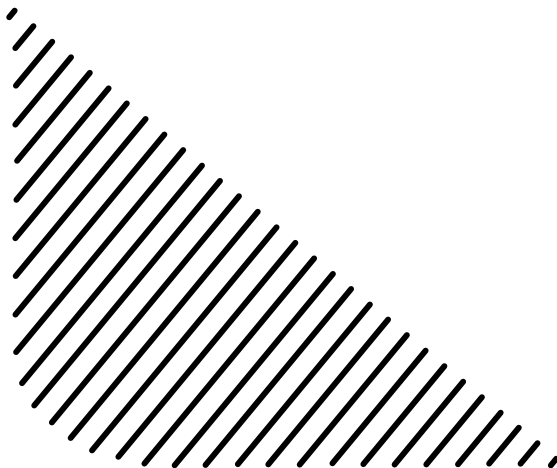
Calibration Results

Parameter	Target	Measured	Acceptance
Mixing Frequency	22.17 Hz	_____	±5%
Spin Speed	10,000 RPM	_____	±1%
RCF	6,797 × g	_____	±2%
Imbalance Detection	>1 g	PASS / FAIL	Alarm must trigger
Brake Operation	Setting 1	PASS / FAIL	Engages as set

Authorized Signatures

_____ Technician	_____ Director
_____ Date: _____	_____ Date: _____

ELMI



Manufactured by **ELMI** for **Cleveland Diagnostics Inc**

Contact us

Cleveland Diagnostics, Inc.
T: 216-432-2700
E: info@elminorthamerica.com
W: www.clevelanddx.com

