

ELMI

laboratory equipment

Centrifuges-mixers CM-70M-07 CM-70M-09



User's manual



DEAR USER!

Centrifuge-mixer is very handy and reliable device. Observing the main rules of exploitation of the machine you can ensure durable and faultless operation.

General information

The centrifuge-mixer CM-70M-07 or CM-70M-09 is a unique combination of high-speed centrifuge and advanced mixer in one machine. This has become possible after developing a special control system for the high-performance stepper motor.

Centrifuge features

- Digital timer for centrifugation and mixing.
- Possibility of starting the centrifugation by closing the lid.
- Electronic safety rotor blocking system when the lid is opened during the centrifugation.
- Memory on board for saving the last used settings of timer, RPM, mixing and control regime.

Technical specifications

Overall number of tubes in the rotor, pcs	36
Maximal number of test tubes of one type in the rotor, pcs	12
Angle of tubes declination in the rotor, degree	45
Rotor rotation speed, RPM	
CM-70M-07	2000-7000
CM-70M-09	4000-9000
Rotor speed step selection, RPM	1000
Timer settings, min	0,1 -30
Maximal braking time from 9000rpm with full rotor, sec	5
Maximal emergency braking time from 9000rpm with full rotor, sec	0,8
Number of mixing levels	6
Environmental temperature, °C	4-45
Relative air moisture at 20 °C, %	80
Power supply adapter,	
CM-70M-07	24VDC – 1.5A
CM-70M-09	24VDC – 3.75A
Power consumption, W	
CM-70M-07	36
CM-70M-09	90
Size of the device (length x width x height), mm	190x170x120
Weight, kg	2,2

Certificate of approval

Centrifuge-mixer CM-70M_____N_____ has been inspected for the technical conditions and it 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 _____.

Manufacturers' address.

21-136 Aizkraukles Str., Riga LV-1006

Tel: (+371) 6755 8743

Tel: (+371) 6755 1934

E-mail: info@elmi-tech.com

WWW: www.elmi-tech.com

Warranty statements

- Warranty applies to 24-month period from the date of purchasing.
- Malfunctions arisen through the fault of producer in the course of this period, are removed free of charge.
- Guaranty is not valid in the following cases:
 - If the serial number label of the manufacturer is damaged.
 - If damages appear as a result of the incorrect operation, transportation or storage.
- These documents are necessary if applying for warranty repair:
 - User manual with serial number of the machine.
 - Officially signed report, describing the reasons and conditions of equipment malfunction.
- **Warranty repair could be performed only if the equipment is delivered in the original manufacturers packaging or equally safe packaging.** Therefore, please keep the transportation packaging after unpacking the device.
- If the above warranty requirements are disturbed, repair charges are applied to the consumer.
For all further questions concerning exploitation and maintenance please contact manufacturer or product vendor.

Safety features

It is **prohibited** to:

- Plug the machine in to a power outlet with configuration which differs from the power adapters' configuration.
- Plug the power adapter into the outlet if the adapter is damaged.

Transportation and storage

To ensure safety during the transportation, transported equipment should be packed in the original manufacturers' packaging or similar packaging substitute.

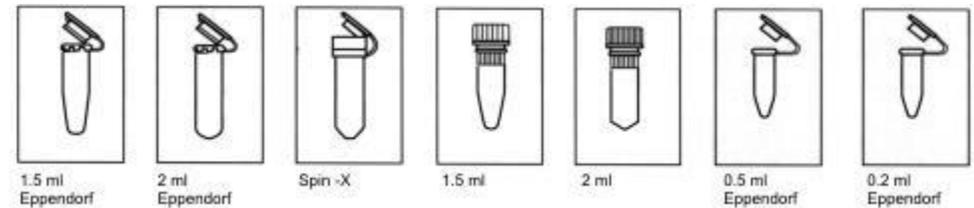
Equipment can be transported by any kind of closed transport so that equipment is tightly fixed, and transportation runs accordingly to regulations applied to this way of transport. Equipment should be stored in original manufacturers packaging in dry room with humidity not more than 80% and temperature range from +10 °C up to +40 °C.

It is not recommended to store the equipment more than 36 month.

Centrifugation specification

RPM	G
2000	260
3000	580
4000	1000
5000	1600
6000	2300
7000	3200
8000	4100
9000	5200

Supported test tube types



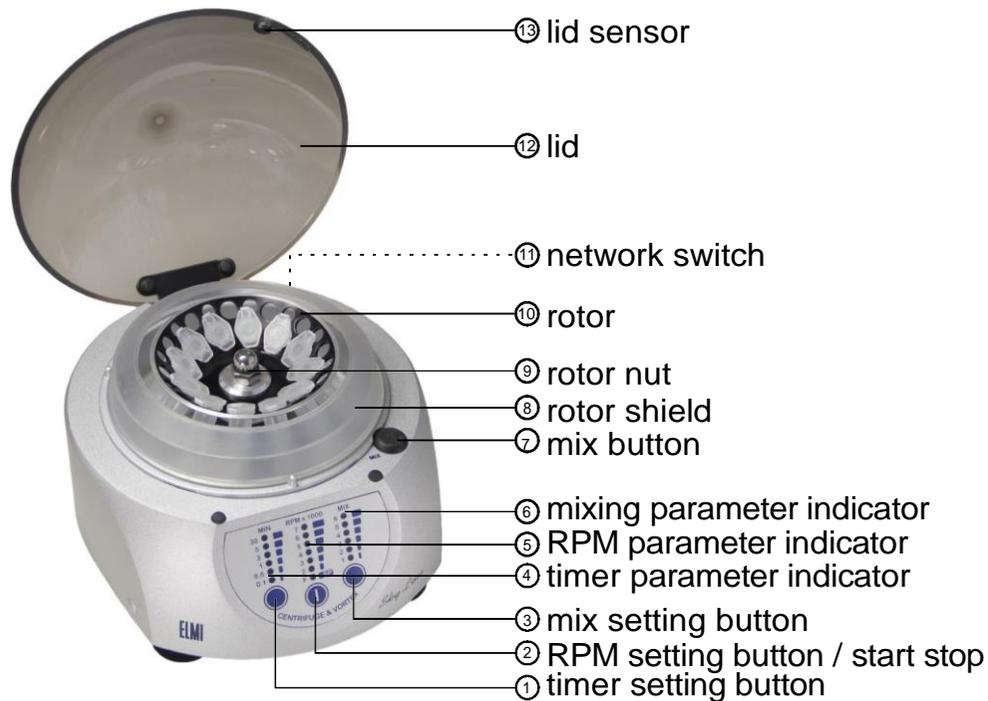
Delivery package

Item	Quantity
Centrifuge mixer	1
Power supply adapter	1
User's manual	1
Packaging	1

Main components

Centrifuge-mixer consists of casing, transparent lid, rotor and rotor safety shield. Control panel on the front and network switch in the back. Under the lid is mixing control button "MIX".

Timer setting button allows to select duration of centrifugation or mixing. When the lid is opened, RPM setting button allows selecting the desired centrifugation speed, when the lid is shut (with indicator glowing) it starts the centrifugation or stops before the set time runs out. Mix setting button allows to select the mixing density. RPM, timer and mixing parameter indicators are indicating selected timer, rpm and mixing regime settings. Rotor is fixed on the motor by a nut and protected by the transparent safety shield. While centrifugation the rotor is covered by the lid. On the lid is a special lid sensor magnet is placed.



Using the centrifuge

! - For setting and modifying the centrifuge parameters the lid should be opened.

1. Setting centrifugation regimes

Centrifugation speed of centrifuge is selected by pressing the ④ button with opened lid.

When the indicator is blinking centrifugation starts automatically after closing the lid.

When the indicator is lighting constantly centrifugation starts by pressing the ④ button.

2. Stopping the centrifugation

Centrifuge starts and stops by pressing the ④ button or automatically if the timer setting is achieved.

! – NOTICE: If the lid of the centrifuge has been opened during the centrifugation the rotor will automatically stop by the electronic lock system within approx. 0.5 sec. This is not recommended for normal use since the braking time is too short and it could be too aggressive for some samples.

Using timer

Setting times should be performed while the rotor is stopped by pressing the timer setting button.

Using vortexing mode

! - Using the vortex regime, the lid of the centrifuge-mixer should be opened.

1. Vortexing begins when the mix button is pressed.
2. Vortex regime density can be changed by pressing the mix setting button.
3. Vortexing stops either when the timer program is over or by pressing “MIX” button again.

! - Notice: It is recommended to use the “MIX” mode for duration not exceeding 5 minutes. Then a 5-minute break is needed to cool down the motor.

Operation tips

! - When the centrifuge is not used it is not needed to unplug the power adapter from the power outlet, except for the case when it is planned not to use the machine for a long period of time.

! - Disbalanced rotor loading, high room temperature or long use of High intensity vortexing may cause the motor overheating. In this case centrifuge-vortex will stop any kind of operation, give an acoustic alarm of 10 short beeps and will automatically switch to cool down regime. All the indicators will start to blink. If during 3 minutes the machine will not cool down to normal temperature it will repeat the acoustic alarm and indicators will continue to blink until the normal temperature regime is regained.

Using programmable sample preparation mode (SP)

SP – Is a special highly effective regime for preparing samples for PCR and other applications and mixing hardly dissolving samples. During this programmable regime samples are being vortexed with variable intensity for 3 seconds and then centrifuged for 7 seconds with optimal 2000 RPM (260 RCF) for washing samples down from the ages of the tube.

Vortexing intensity could be changed either before or while the program is running by pressing mix setting button. The overall duration of the program can be selected by the timer setting button.

! – Notice: Selecting SP regime and changing timer parameters should be performed while the lid is opened.

To start running SP program mode shut the lid and press ④ button or just shut the lid if the SP indicator is blinking.