

Sapphire Series Centrifuge SC-7500



User Manual



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Introduction

Sapphire Series Centrifuge

The Sapphire Series Centrifuge SC-7500 is easy to use and reliable in operation. We ask you to carefully read the user manual and follow the instructions for proper operation and maintenance. This will ensure excellent results and enduring performance.

Technical Specifications

Rotor rotation speed	100 to 4500 RPM
Maximal relative centrifugal force	3735 RCF (G)
Accuracy of rotation speed maintenance	±2%
Timer range	1-720 min
Braking levels	6
Step-type behavior of setting:	
rotor rotation speed	10 RPM
centrifugal force	1 RCF (G)
time	1 min
Noise	61 db(A)
Temperature range	4-40°C
Relative air moisture	80 %
Allowed imbalance of concentrating devices	1 gram
Allowed deviations of voltage	100-240V
Allowed deviations of frequency	50-60Hz
Maximal consumable power	330 W
Dimensions (length x width x height)	430 x 415 x 220mm
Weight	14.1kg

Delivery Package

Item	Quantity
Centrifuge	1
Power cord	1
Rotor	1
Rotor key	1
Power nut	1
QR Code for user manual	1
Bucket pack	1
Counterbalance pack	1
Counterbalance scale	1

General Safety

1. Use only as specified in the operating instructions provided.
2. The unit should not be used if it has encountered a physical shock or has been dropped.
3. The unit must be stored and transported in a horizontal position (see package label).
4. After transport or storage allow the unit to dry out (2-3 hrs) before connecting to the power outlet.
5. It is necessary to observe the safety area of 300 mm around the centrifuge in accordance with EN-61010-2-20. Persons and hazardous materials must not be located in the safety area while the centrifuge is in operation.
6. Use only original accessories (rotors, adaptors, etc.) provided by the manufacturer and ordered specifically for this model.

Electrical Safety

1. Connect only to the power outlet mains with a voltage corresponding to that on the serial number label.
2. Ensure that the switch and plug are easily accessible during use.
3. Do not plug the unit into the main outlet without grounding, and do not use extension lead without grounding.
4. Before moving the unit, disconnect it from the power outlet mains. To turn off the unit, disconnect the power plug from the mains outlet.
5. It is the user's responsibility to carry out appropriate decontamination if hazardous material is spilt on or inside the equipment. If liquid is split inside the unit, disconnect it from the power outlet mains and have it checked by an electrician or qualified person.

During operation

1. Do not centrifuge flammable or chemically vigorously reactive materials. If such liquids are spilled in the rotor or rotor chamber the centrifuge must be cleaned with a moist with mild soap solution.
2. Do not use rotors with visible signs of corrosion, wear or mechanical damage.
3. Do not fill in the containers after they are inserted in the rotor.
4. Do not leave the operating unit unattended.
5. Do not operate the unit in environments with aggressive or explosive chemical mixtures.
6. Do not operate the unit if it is faulty or been incorrectly installed.
7. For indoor use only.
8. Clean the unit before each use. Clean with mild decontaminate solution.
9. Do not make modifications to the unit.

Biological Safety

1. Without bioseal the centrifuge is not a biosafety system in accordance to EN61010-2-20 and cannot be used for centrifuging hazardous materials contaminated with toxic, radioactive or pathogenic microorganisms.
2. It is the user's responsibility to carry out appropriate decontamination if hazardous material is spilled on or inside the equipment.

Machine Preparation

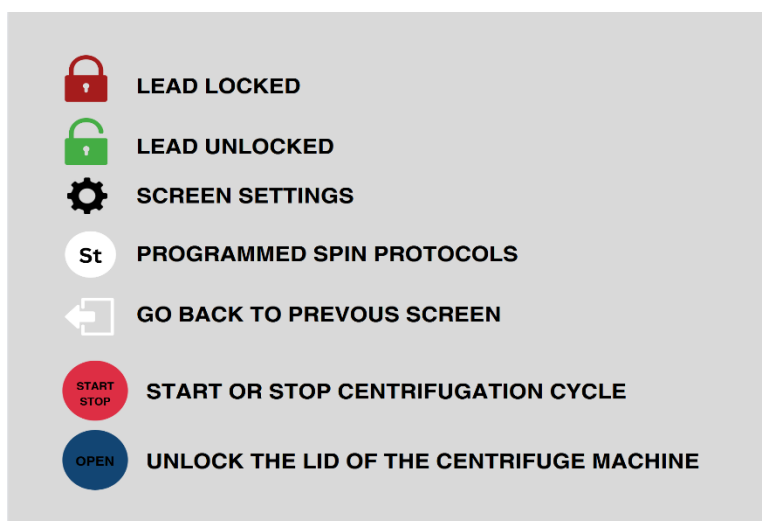
1. Unpack the centrifuge. Please keep the packaging material for transportation or storing.
2. In case the machine has been brought from below zero temperature make sure it stays at room temperature for at least two hours before turning on.
3. Place the centrifuge onto a level, horizontal surface.
4. Examine the power plug, power cord and appearance of centrifuge for damage.
5. Connect the power cord to the centrifuge, insert the plug in to the socket and press the ON switch at (I) symbol. The indicators will light up on the control panel.
6. Open the lid by pressing the OPEN button.
7. Check the rotor, make sure rotor Power Nut is securely fastened. Try rotating it by hand. There should be no noise or obstacles for smooth run.
8. Check the adapters. All the adapters must be equally positioned inside the brackets.
9. Check the surrounding of device. Safety distance of 30cm should be observed around the centrifuge during operation.
10. If no other damage or malfunction were determined, the centrifuge is ready to run.

ATTENTION! If there is damage or malfunction DO NOT TURN ON the centrifuge without consulting a specialist.

ATTENTION! To finish the unpacking of centrifuge it is necessary to pull the emergency opening lever to the side as it is shown on the figure on page 7 and remove all packaging materials from the rotor bucket.

Control Description

The centrifuge consists of a stainless-steel casing, rotor mounted in it, electric motor and control system. Rotor is covered with self-locking transparent lid. In the back of the casing the power switch is mounted. On the front of the casing a control panel is placed with displays, indicators and buttons having the followings functions:



Operation

Place the concentrating devices in the rotor buckets. Always load the rotor symmetrically by minimizing weight difference between the filled devices, this will reduce the wear on the mechanical parts of centrifuge. The total imbalance of the concentrating devices should not exceed 1 gram. After closing centrifuge lid, it automatically locks and unlocks at the end of the centrifugation cycle or by pressing "OPEN" button before the start of centrifugation. Settings and adjustments of the parameters of centrifuge are made before the start of centrifugation cycle with opened or closed lid. During the centrifugation cycle only, the RPM's (RCF) parameter can be adjusted.

1. Setting rotor rotation speed / G force parameter:
Set the desired parameter value by pressing "UP/DOWN" buttons under the "X1000" display.
2. Setting time parameter:
Set the desired parameter value by pressing "UP/DOWN" under the "MIN" display.
3. Opening centrifuge lid:
Open centrifuge lid by pressing the "OPEN" button. During centrifugation, the button does not work.
4. Starting the centrifuge:
Close the centrifuge lid and start the centrifugation cycle by pressing the "START/STOP" button.
5. Stopping centrifuge before estimated time runs out:
To stop the centrifuge before the end of centrifugation cycle press the "START/STOP" button.

ATTENTION! The operation must be stopped immediately if there are any unusual noises or vibrations.

ATTENTION! Check the rotor, rubber seal and buckets for wear each time before starting the centrifuge.

Operation

During centrifugation MIN display shows the remaining time of given cycle in minutes, last minute of cycle is counted in seconds. If the centrifuge does not start, you hear a beep and the displays show **ErOP**, it means that the lid is not closed properly. Press on the lid and start the centrifuge. If the centrifuge does not start, you hear a beep and the displays show **Erbd**, it means that there is a mechanical obstruction of the rotor, or malfunction in the engine. If the overall imbalance of concentrating devices in the rotor exceeds 3 grams, centrifuge when reaching 1000 rpm will start

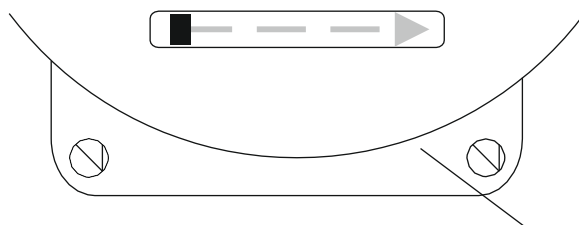
emergency braking and the displays will show **Erdb** - error code for imbalance. Other possible errors are listed in the table of error codes.

At the end of the centrifugation cycle, after full stop of the rotor the device will beep and lid will be unlocked. The set parameters will be saved in memory of device after disconnecting mains plug from socket or switching the mains switch.

Emergency Opening of Centrifuge Lid

To open the lid of centrifuge in case of power brake down or lid lock damage it is necessary to disconnect the device from mains supply, wait until the rotor comes to a complete stop then lift the centrifuge and move the lever to the side as it is shown on the figure. The lever is located on the bottom of centrifuge near the control panel.

Emergency lid opening lever



Control panel (view from bottom)

Rotor assembly and usage

Assembly: Put the rotor on the axis, on top of the rotor place the Power Washer spacer, note that the pin of the spacer must get in to the groove of the axis. Put the Power Nut on the axis and tighten it with a special rotor key. Before each start check that the rotor is firmly tightened. Disassembly is made in reverse sequence.

Usage: Always load the rotor symmetrically. By maintaining equal weight of the concentrating devices. This will reduce the wear of mechanical parts of the centrifuge. If the overall imbalance of the concentrating devices in the rotor exceeds 1 gram, the centrifuge, when reaching 1000 rpm will start emergency braking and the displays will show Erdb - error code for imbalance. Do not use damaged rotors!

ATTENTION! Always check concentrating devices for damage before centrifugation, to prevent centrifuge contamination

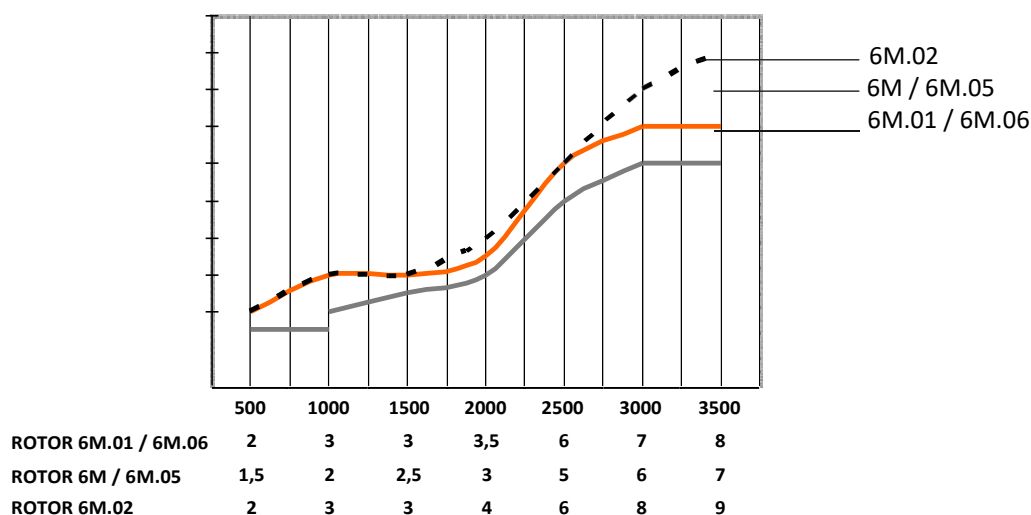
Programmed Spin Protocols

1. PurePRP® 30 SPIN 1
2. PurePRP® 30 SPIN 2
3. PurePRP® 60 SPIN 1
4. PurePRP® 60 SPIN 2
5. PureBMC® 30 SPIN 1
6. PureBMC® 30 SPIN 2
7. PureBMC® 60 SPIN 1
8. PureBMC® 60 SPIN 2
9. Progenikine®
10. AbsolutePRP™ Gold
11. AbsolutePRP/BMC™

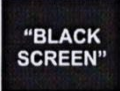




Mandatory Counterbalancing Protocol

Concentrating devices has an allowed imbalance weight of 1 gram. Prior to centrifugation, using the gram scale provided with the centrifuge machine, weight each concentrating device, making sure that the weight is no more than 1 gram apart. Place concentrating devices directly opposite each other in the centrifuge rotor. These steps are mandatory to ensure successful centrifugation and to prevent resonance that may be damaging to the machine.

Heating Chart (after 30 minutes of continuous centrifugal time)



Error code table

Error code	Cause	Solution
	No main power connection. Power failure	Check connection of the power cable.
	Centrifuge lid is left open.	Close and press on the lid till you hear a click.
	Total imbalance of test tubes is more than 7 gram.	Load rotor symmetrically.
	Processor Control Board is overheated.	Give a little time and centrifuge will cool down automatically.
	Residual rotation of the rotor.	Wait until the rotor is moveless.

Microprocessor control system self-tests and reports detected faults and errors to the user.

Disinfection and cleaning

To avoid corrosion and changes to material, the rotor and accessories must be cleaned once a week. Disconnect the centrifuge from power outlet mains supply, remove rotor and clean it separately. The rotor, rotor chamber and the outside of the centrifuge should be cleaned with a moist cloth. Only neutral agents may be used for cleaning purposes. For disinfection purposes use an alcohol-based disinfectant (70% isopropanol/water mixture). If corrosive, toxic or radioactive liquids or pathogenic bacteria are accidentally spilled in the rotor or its chamber, the centrifuge must be decontaminated thoroughly.

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 make sure 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.

Warranty Statements

1. Product is warrantied for 12 months after the date of purchase.
2. Warranty is not valid in the following cases:
 - a. If the serial number label of the manufacturer is damaged.
 - b. If damages appear as a result of the incorrect operation, user transportation or storage.
3. These documents are necessary if applying for warranty repair:
 - a. User manual with serial number of the machine.
 - b. Officially signed report, describing the reasons and conditions of equipment malfunctions.
4. Warranty repair could be performed only if the equipment is delivered in the original manufacturers packaging or equally safe packaging.
5. Before returning to warranty repair ensure that the device is fully cleaned and decontaminated and do not present a health risk to our staff.
6. If the above warranty requirements are disturbed, repair charges are applied to the consumer.
7. For all further questions concerning exploitation and maintenance please contact manufacturer or product vendor.

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CE CONFORMITY DECLARATION

The undersigned ELMI SIA company declares, that the following instrument(s) conforms the bellow mentioned directives and standards:

Manufacturer:	ELMI SIA Aizkraukles str. 21-136, Riga LV-1006, Latvia Phone: (+371) 67558 743 Fax: (+371) 67551 934
Equipment name:	CM-50, CM-50M, CM-50MP, CM-6M, CM-6MT, CM-7, CM-7S, CM-70, CM70M.07, CM70M.09
Equipment type:	Laboratory centrifuge
Directives:	EMC Directive 2014/30/EC Low Voltage Directive 2014/35/EC RoHS 2011/65/EC WEEE 2002/96/EC & 2012/19/EU Medical devices directive 93/42/EEC In vitro diagnostic medical devices directive 98/79/EC
Applied standards:	<u>EN 61326-1: 2013</u> Electrical equipment for measurement, control and laboratory use EMC requirements. General requirements. <u>EN 61010-1: 2010</u> Safety requirements for electrical equipment for measurement, control and laboratory use. General requirements <u>EN 61010-2-020: 2006</u> Particular requirements for laboratory centrifuges.



Aleksandrs Sorokins
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Riga 2014



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