

LABQUEST

CCH12000VT0

BY **BOROSIL**[®]



PRODUCT USER MANUAL

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1. INTRODUCTION

This manual provides important safety information for this centrifuge. It should be kept near the centrifuge for quick and easy reference. The hematocrit centrifuge is equipped with a maintenance free drive, a large display and a simple interface for silent & efficient operation in the lab. This centrifuge comes with a host of safety features including imbalance detection.

2. INTENDED USE

This is a bench top centrifuge is designed to hold 40 / 75mm length capillaries with 1mm diameter in its 24 position; aiding separation / sedimentation of aqueous solutions & solvent suspensions of differing densities.

NOTE: Before using the centrifuge, please read this user manual carefully. This usermanual is intended to assist with the operation and care of the unit & is not a document which aids in repair. For repair please contact the supplier.

3. SYMBOL

 Warning	 Waste electrical
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4. PRODUCT FEATURES

- Brushless DC Motor – Low maintenance and long lasting
- Precise RPM Control from 500 to 12000 RPM with increments of 100 RPM
- Lid Lock Safety : Lid releases automatically after run completion
- Run Timer with upto 12 minutes of run time
- Display toggle to alternate between RPM and RCF
- Large LCD Display for easy setting control and parameter display
- Small physical footprint saves valuable bench space


5. STANDARD ACCESSORIES

- Power Adaptor
- 24 slot Capillary Tube Rotor (Pre-installed)
- Blood reader
- T - Allen wrench
- Product user manual and warranty card
- Grease Tube

6. TECHNICAL SPECIFICATIONS

Motor Type	Brushless DC Motor
Maximum Volume	24 x 45 / 75 mm (capillary tubes)

6. TECHNICAL SPECIFICATIONS

Speed Setting	12000 RPM
	14118 x g (Max RCF)
Speed Accuracy	± 100 RPM
Speed Steps	± 100 RPM
Noise Level	<67 dB (A)
Run Time	1 to 12 mins
Acceleration Time	60 ± 5 seconds
Braking Time	70 ± 5 seconds
Ambient Temperature	5 - 40 °C
Permissible Relative Moisture	≤80%
Weight	4.3 kg Approx (with rotor)
Size (W x D x H)	330 X 265 X 161 mm
Altitude	Use upto an altitude of 2000 m above MSL
Pollution Degree	2
Environment	For indoor use only
Power Adapter Details	Input: 100-240 VAC, 50/60 Hz, Output: 24 V  6 A
Power Consumption	132 W

7. SAFETY PRECAUTIONS



Read all safety & usage information provided in this manual carefully before using the device.

- Never use the centrifuge in any manner not specified in this manual.
- Using equipment in any manner not specified in this manual or by the manufacturer, will void the warranty.
- Never move the centrifuge while the rotor is spinning.
- The rotor and the rotor lid must always be securely fastened. If the centrifuge makes any unusual noise during operation, the rotor or rotor lid fit needs to be checked. Turn the device off immediately by pressing STOP and then, check the rotor fit to ensure it is securely fastened.
- The rotors must be loaded symmetrically. Each tube should be counter balanced by another tube of the same weight.
- Do not use a centrifuge or rotor that has not been correctly installed or that has been damaged.
- Any repairs must be performed by an authorized service technician.
- Using incorrect rotors and/or incorrect spare parts will void the warranty.
- This centrifuge may be used for the specified applications only. It must not be operated in a hazardous or flammable environment and must not be used to

7. SAFETY PRECAUTIONS

centrifuge explosive or highly reactive substances.

- If liquids are spilled on the rotor or in the rotor chamber, the centrifuge must be cleaned carefully and properly before being used again.
- Prior to centrifugation, the tubes should be visually inspected for material damage. Damaged tubes may not be centrifuged. Broken or damaged tubes can lead to sample loss, and can also create imbalance which may result in further damage to the centrifuge and accessories.
- The max capacity of the rotor is 24 capillary tubes. Do not exceed this capacity.
- Do not lean on centrifuge. It may damage the equipment or harm the operator.
- When moving the centrifuge from a cold room to a normal room, run the centrifuge for 30 minutes in the cold room beforehand, to avoid condensation. Alternatively, allow the centrifuge to warm up in the normal room for at least 3 hours before use, but do not plug in the centrifuge, to prevent possible damage due to condensation.
- Close all tube lids securely prior to centrifugation. Open/loose tube lids can be torn off during centrifugation and may damage the rotor lid or centrifuge.
- Rotors and rotor lids are high-grade components subject to extreme mechanical strain. Even slight scratches or tears may lead to serious internal damage. Check the rotor and rotor lid for any signs of damage before use. Rotors and rotor lids showing any signs of corrosion or mechanical damage should not be used. Contact your supplier for replacement rotor or parts.
- Do not fill tubes while they are in the rotor. Liquid spillage may harm the device.
- In the event of contamination, the rotor must be cleaned immediately using a natural cleaning liquid (like water). This is particularly important for the tube slots. If any damage is seen, contact the service technician.
- Contact manufacturer or supplier before using cleaning or decontamination methods not recommended in this manual. Alternative cleaning methods may damage the centrifuge.
- Do not use any other power adaptor with this centrifuge. The power adaptor supplied with the centrifuge is specifically designed for this centrifuge. A different power adaptor may damage the centrifuge.

8. INSTALLATION

Open the box, then remove the packaging. Gently take the centrifuge out of the box. Before using this centrifuge open the centrifuge & remove all packaging from the rotor chamber. Next ensure the rotor is firmly secured. The user manual and accessories should be kept near the centrifuge. Please keep all packaging safely stored for at least 1 year for warranty purposes.

MOUNTING

Place the centrifuge on a flat and leveled surface; ensure that the four feet of this

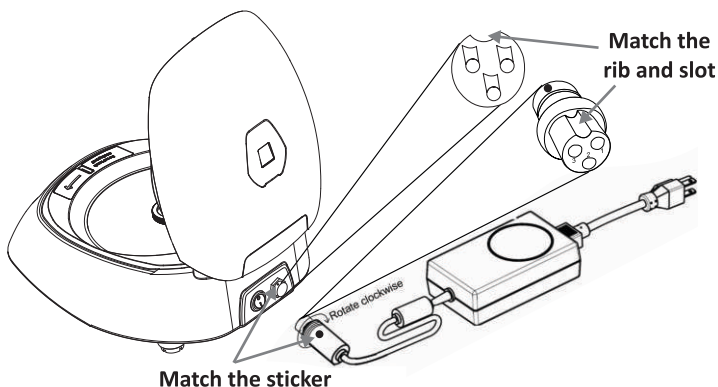
8. INSTALLATION

centrifuge stand on the surface firmly. Avoid installing on a slippery surface or surface prone to vibration

1. Ideal ambient temperature is $20^{\circ}\text{C} \pm 5^{\circ}\text{C}$; do not place the centrifuge in direct sunlight.
2. Keep clearance of at least 10 cm on both sides and at least 30 cm behind the centrifuge to guarantee cooling efficiency.
3. Keep away from heat or water to avoid sample temperature issues or centrifuge failures.
4. Do not place the centrifuge in any area where operating the unit maybe difficult.

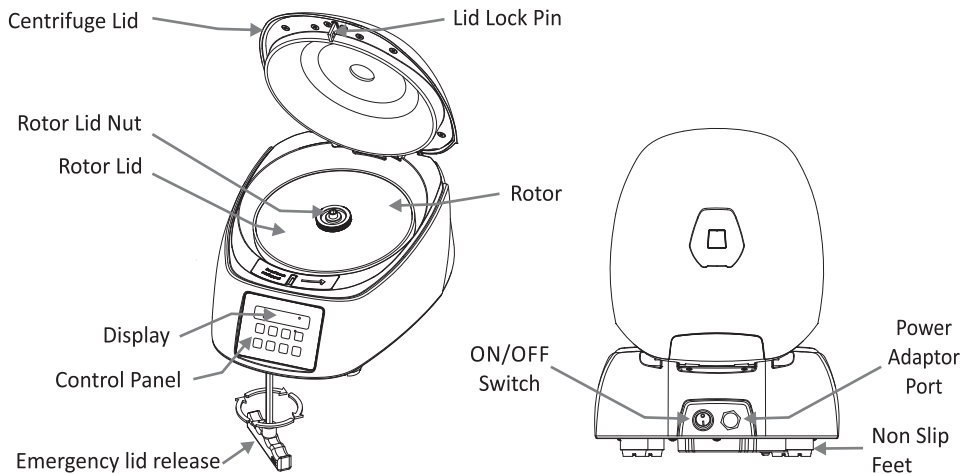
CONNECTING POWER ADAPTOR

1. Ensure the power is switched to OFF while connecting the power adaptor.
2. The sticker on the centrifuge and on the power adaptor indicate the position of the slot and corresponding rib, respectively. Align these and gently push the power adaptor end into the centrifuge
3. If matched correctly, the plug should enter easily, without much force needed. Do not try to force the plug in. Once the plug is inserted into the centrifuge fully, turn the loose ring clockwise to secure the fit onto the centrifuge.

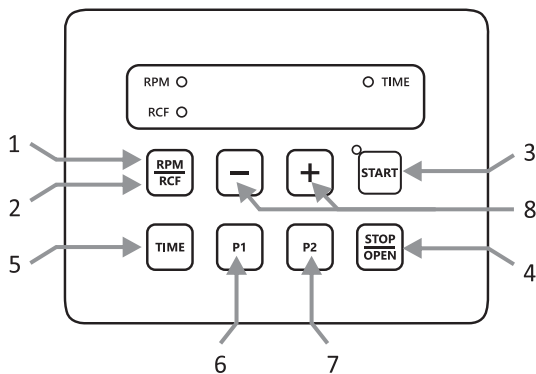


4. Plug other end of power adaptor into electrical socket of power supply.

9. STANDARD PARTS LISTING



10. USER INTERFACE & DISPLAY



Item	Name	Function
1	RPM	Displays the RPM value during operation

10. USER INTERFACE & DISPLAY

2	RCF	Displays the RCF value during operation
3	START BUTTON	Press button to START the centrifugation
4	STOP/OPEN BUTTON	Press button to STOP the ongoing operation. Lid opens automatically, after rotor comes to a stop
5	TIME BUTTON	Press button to select TIME. Press “+” or “-” to increase or decrease the values
6	P1	Preset Mode 1 button. Press button to enter Preset Mode 1. Hold button to exit mode.
7	P2	Preset Mode 2 button. Press button to enter Preset Mode 2. Hold button to exit mode
8	+/-	Press button to increase or decrease toggled value. This button is used with the time and speed controls

11. ROTOR INSTALLATION

ROTOR REMOVAL AND REPLACEMENT PROCESS

The rotor comes pre-installed on the centrifuge. If you want to remove or replace the rotor, follow the instructions below.

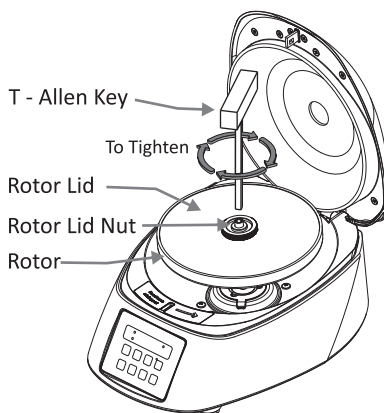
REMOVING THE ROTOR

1. Do not remove or loosen the rotor lid before attempting to remove the rotor.
2. Using the T - Allen Key, loosen the rotor nut by turning it counter clockwise. Do not try to pull the rotor, the rotor will come up automatically.
3. Once the rotor nut is completely loosened, pull the rotor up, vertically.

REPLACING THE ROTOR

1. To replace or install the rotor, take the replacement rotor attached with lid and load it vertically onto the empty motor shaft.
2. Place the rotor nut in the center hole of the rotor onto the motor shaft.
3. Put the T -Allen Key into the rotor nut and turn clockwise to tighten the rotor nut.

- NOTE:** 1) Ensure that the rotor is firmly secured before using the next centrifugation.
2) Loosen the rotor lid before removing before placing and removal of capillaries.



11. ROTOR INSTALLATION

BALANCING THE ROTOR



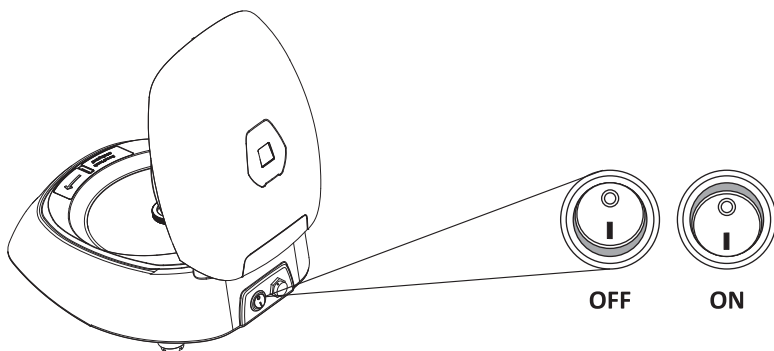
1. Always balance the rotor before centrifugation runs. Above are examples of properly balanced rotors.
2. The samples in the tubes should be of equal volume.
3. If the tubes are not loaded correctly - vibration or imbalance can occur which can cause serious damage to the centrifuge.
4. If the tubes are not loaded symmetrically then the imbalance detector will cut off the running centrifuge for device & user safety. This will stop the centrifuge and "Err 55" will be seen indicating tubes are not loaded symmetrically. To resume operation, load tubes symmetrically & restart the centrifuge.
5. Incorrect examples of tube loading tubes in centrifuge rotor :



12. OPERATING THE CENTRIFUGE

After properly installing the centrifuge, turn the centrifuge on by toggling the power switch, on the rear panel, to ON. The lid status will be shown on the display. If the lid is open, the display will show "Lid" and if it is closed, the set RPM will be displayed. Please ensure that the tube holders are inside the rotor.

12. OPERATING THE CENTRIFUGE



12.1 SPEED SETTING

After closing the centrifuge lid, press the “RPM/RCF” button to toggle the speed control. The speed display will blink for 5 seconds. Now, press the (+) button to increase the speed value and/or press the (-) button to decrease the speed value. The RPM value will stop blinking and the value will be stored automatically if no buttons are pressed for about 1 second after the adjustment.

The speed can also be changed while the centrifuge is running. To do so, press the “RPM/RCF” button and use the (+) and (-) buttons to change the speed. Changing the speed during centrifugation will run the centrifuge at the updated speed for the remaining time as indicated by the timer.

The speed can be displayed in RCF value, as well. Hold the “RPM/RCF” button to switch to RCF. Press the (+) and (-) buttons to increase or decrease the value. The RCF value will stop blinking and will be stored if no buttons are pressed for ~1 second after the adjustment. The value will blink 5 times to indicate acceptance.

12.2 TIME SETTING

Operating time can be set from 1 minute upto 12 minutes. Press the “TIME” button to toggle the time setting. The value will blink 5 times and can then be changed. Use the (+) and (-) buttons to increase and/or decrease the time setting. Once the time is correct, do not change it for ~1 second and then the entered value would be set. This is confirmed by blink of 5 times. The time will be displayed as minutes and seconds.

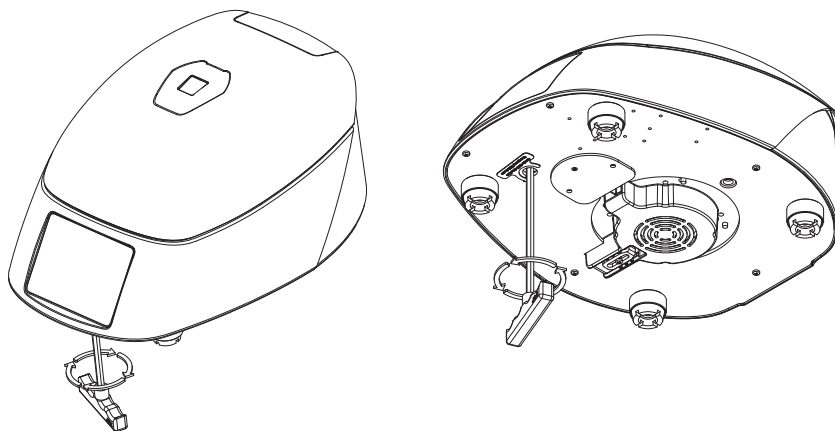
12.3 START & STOP OPERATION

Press the “START” button to start a centrifugation run and press the “STOP” button to

12. OPERATING THE CENTRIFUGE

stop the an ongoing run. While the centrifuge is running, the LED light is on. Pressing the “STOP/OPEN” button will stop the ongoing run. Once the run is fully stopped, the centrifuge lid will open automatically. If the lid is not open, press the “STOP/OPEN” button to open the centrifuge lid.

12.4 OPENING THE CENTRIFUGE LID IN CASE OF POWER FAILURE



Disconnect the centrifuge from the main supply. Wait until the rotor comes to a standstill (this may take some time). Once the rotor has stopped, use the T-allen key from bottom side of the unit, rotate the T-allen key in counterclockwise direction as indicated in above figure this will open the centrifuge lid in case of emergency lid opening.

12.5 PROGRAM MODE

Press the “P1 or P2” buttons to enter either into program mode.

On first time usage, the program will have “0” for all values. Once program mode is entered, the display will indicate “P1” or “P2”. Press the “RPM/RCF” button to toggle speed control, and use the (+) or (-) buttons to increase or decrease the speed. Similarly, you may press the “TIME” button to access and change the time setting. Values for either parameter are saved after the value is not changed for a long enough time. The value will blink 5 times to indicate it has been set. You may press the “START” button to start the indicated program.

To exit program mode, hold either the “P1” or “P2” button.

13. MAINTENANCE & CLEANING

Before cleaning the centrifuge, turn it off device and disconnect the power cord.

OUTSIDE OF THE DEVICE

1. Clean the outside of the centrifuge with a soft and dry cloth.
2. Do not use aggressive chemicals such as alcohol, benzene, acetone or phenol.
3. If the device is contaminated, use a 70% IPA solution to decontaminate it.
4. Be careful to not scratch the surface of equipment when cleaning it.
5. Do not use a metal sponge.

INTERIOR OF THE DEVICE (CHAMBER)

1. If the chamber is not dry, wipe away any moisture from the chamber with a dry cloth.
2. Clean the chamber and motor shaft at least once a week with a mild cleaning fluid.

ROTOR

1. To prevent corrosion, take the rotor out of the chamber.
2. If any sample is spilled inside the rotor, wash and dry the rotor well.
3. The standard rotor is metal and is fully autoclavable (121 °C for 15 min).
4. You can sterilise the T-Allen Key by wiping it with 70% IPA (isopropyl alcohol).
5. Grease tube has been provided as part of standard accessory. Minor Grease has to be applied on the Motor shaft (Threaded Parts, Grooves) at every 2 weeks interval to prevent rotor & shaft jam. This also would ease installation process in case of regular rotor change.

14. TROUBLESHOOTING

This centrifuge can self-diagnose. If a problem occurs, an error/warning code will be displayed and the code can be matched with the below list.

Display	PROBLEM	SOLUTION
No display	No main power connection	Check the power connection and ensure the power adaptor is properly connected
	Power failure	Check that the power is being supplied to the outlet
Lid Open	Lid not closed correctly	Close lid correctly
	Error with lid closing and opening mechanism	Contact supplier or manufacturer

14. TROUBLESHOOTING

Err 55	Rotor not loaded symmetrically	Load rotor symmetrically & restart centrifuge
Centrifuge lid cannot be opened	Rotor is still spinning	Wait for the rotor to come to a full stop
	Power failure	Pull emergency lid release after rotor is fully stopped
Centrifuge shakes during acceleration or makes noise during run	Rotor is not loaded symmetrically	Load rotor symmetrically & restart operation
	Broken Tube(s)	Carefully open rotor, then remove and replace any broken tubes. Clean rotor if needed.
	Damaged motor	Contact supplier or manufacturer
	Damaged Rotor	Remove & change rotor
Err 1	Latch motor is damaged, latch is jammed, or latch components are damaged	Contact supplier or manufacturer
Err 52	Rotor is stuck	Turn centrifuge OFF, Check the rotor for fit and restart the centrifuge

IMPORTANT NOTE:

1. Leave a 3-second gap between turning the centrifuge off and turning it back on. The gap is essential to storing last run parameters, otherwise these may be lost.
2. If the motor heats up leading to a fluctuation in centrifugation speed, allow the centrifuge to cool down before further usage. Let the device cool for at least 30 minutes.
3. Do not use liquids with a density higher than 1.2g/mL if running the centrifuge at full capacity.

15. WARRANTY STATEMENT

This product is warranted to be free from defects in material and workmanship for a period of one (1) year from date of purchase. Your product will be duly repaired upon prompt notification in compliance with the following conditions :

This warranty is valid only if the product is used for its intended purpose and within the guidelines specified in this instruction manual. This warranty does not cover damage caused by accident, neglect, misuse, improper service, natural forces or

15. WARRANTY STATEMENT

other causes not arising from defects in original material or workmanship. This warranty does not cover any incidental or consequential damages, commercial loss or any other damages from the use of this product.

The warranty is invalidated by any non-factory modification, which will immediately terminate all liabilities on us for the products or damages caused by its use. The customer shall be responsible for the product or use of products as well as any supervision required for safety. If requested the products must be returned to the distributor in well packed and insured manner and all shipping charges must be paid.

NOTE: *Some states do not allow limitation on the length of implied warranties or the exclusion or limitation of incidental or consequential damages. This warranty gives you specific legal rights. This warranty is given expressly in lieu of all other warranties, expressed or implied.*

The purchaser agrees that there is no warranty of merchantability or of fitness for any intended purpose and there are no other remedies or warranties, implied, which extend beyond the description on the face of the agreement. This warranty is only applicable to the original purchaser.

Products received without proper authorization will not be processed for warranty or service. All items returned for service should be sent with postage prepaid in the original packaging or other suitable packaging, padded to avoid damage. We will not be responsible for damage incurred by improper packaging.

NOTE: *This warranty is valid only if the warranty is registered with the supplier within 30 days from the date of purchase.*

For you reference, make a note of serial number, date of purchase and supplier here.
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Serial No.:	Purchase Date:
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Supplier:

16. PRODUCT DISPOSAL

In case the product is to be disposed of, the relevant legal regulations are to be observed.

Information on the disposal of electrical and electronic devices in the European Community

The disposal of electrical devices is regulated within the European Community by national regulations based on EU Directive 2012/19/EU on waste electrical and electronic equipment (WEEE). According to these regulations, any devices supplied after 13.06.05 in the business to business sphere, to which this product is assigned,

16. PRODUCT DISPOSAL

may no longer be disposed off in municipal or domestic waste. They are marked with the following symbol to indicate this.

As disposal regulations within the EU may vary from country to country, please contact your supplier if necessary.



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