Hematocrit Centrifuge 12000 rpm



AHN myLab HC-01



Instruction Manual

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1. PRODUCT DESCRIPTION

1.1 INTRODUCTION

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

1.2 INTENDED USE

Hematocrit Centrifuge is used for determination of volume fractions of erythrocytes (Red blood cells) in blood and also for separation of micro blood and solutions.

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 only and not its repair. For repair please contact the supplier.

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

1. PRODUCT DESCRIPTION

1.3 PRODUCT FEATURES

- Brushless DC motor for maintenance free long life
- Precise RPM setting from 500 to 12000 RPM with least count of 100 RPM
- Lid lock safety : Lid releases automatically after run completion
- Timer setting upto 12 minutes
- RPM & RCF toggles alternatively on the display during operation
- Large LCD display for easy setting and reading multiple parameters
- Small footprint saves valuable bench space

1.4 STANDARD ACCESSORIES

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

1. PRODUCT DESCRIPTION

1.5 TECHNICAL SPECIFICATIONS

Motor Type	Brushless DC Motor
Maximum Speed	12000 RPM
Run Time	12 mins
Speed Setting	Variable 500 - 12000 RPM
Speed Accuracy	± 100 RPM
Maximum Volume	24 x 45 / 75 mm (capillary tubes)
Acceleration Time	70 ± 5 seconds
Braking Time	80 ± 5 seconds
Maximum RCF	14119 x g
Ambient Temperature	5 - 40 °C
Permissible Relative Moisture	<80%
Air Pressure	80 to 106 kPa
Size (W x D x H)	365 x 301 x 105 mm
Weight	5 Kg (without rotor)
Input Power	100 - 240 VAC, 50 / 60 Hz, 2.5 A
Output Power	24 VDC, 6 A
Power Consumption	135 W

2. SAFETY PRECAUTIONS

- 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 unusual noise during operation, the fit of the rotor or the fit of the rotor lid needs to be checked. Switch OFF the device immediately by pressing STOP, check rotor fit & fasten it well.
- The rotors must be loaded symmetrically. Each tube should be counter balanced by another tube of the same weight.
- Do not use the centrifuge or rotor that have not been correctly installed or damaged.
- Repairs must only be performed by authorized service technician.
- Using incorrect rotors & wrong spare parts will void the warranty.
- 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 centrifuge explosive or highly reactive substances.



- If liquids are spilled on the rotor or 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. Because broken tubes can create imbalance which can result in further damage to the centrifuge and accessories. And can lead to sample loss.
- The capacity of 24 capillary tubes must not be exceeded as it is the maximum capacity.
- Do not lean on the equipment. It may damage the equipment or the harm the operator.

2. SAFETY PRECAUTIONS

- When moving the centrifuge from a cold room to a normal room, run the centrifuge for 30 minutes beforehand in the cold room to avoid condensation. Alternately, allow it to warm up in the lab for at least 3 hours before use, but do not plug in the centrifuge in order to prevent possible damage by condensation.
- Be sure to close the tubes lid tightly prior to centrifugation. Open tubes lid can be torn off during centrifugation and can damage the rotor lid or centrifuge.
- Rotors and rotor lids are high-graded components which are subject to extreme mechanical strain. Even slight scratches and tears can lead to serious internal material damage. Ensure to check the rotor for any signs of damage before use. Rotor & rotor lid showing visible signs of corrosion or mechanical damage should not be used, contact your local supplier or manufacturer for replacement rotor & parts.
- Do not fill tubes while they are in the rotor. Liquid spillage may harm the device.
- In the event of contamination caused by aggressive agents, the rotor must be cleaned immediately using a natural cleaning liquid (like water). This is particularly important for the bores of the tubes. If any damage is seen, contact the service technician.
- Before using cleaning or decontamination methods, other than those stipulate by the manufacturer, contact the manufacturer to ensure that the intended method will not damage the centrifuge.
- The power adaptor given with centrifuge unit is designed to use for that particular centrifuge. Do not use any other power adaptor, using any other power adaptor may damage the centrifuge and will void the warranty.

3. INSTALLATION

Open the box, then remove the packaging and gently take the centrifuge out of the box. Before using this centrifuge open the centrifuge & remove all packaging from the rotor chamber & ensure rotor is firmly tightened. The user manual and accessories should be kept near the centrifuge. Please keep all packaging in safe storage for at least 2 years for warranty purposes.

3.1 MOUNTING

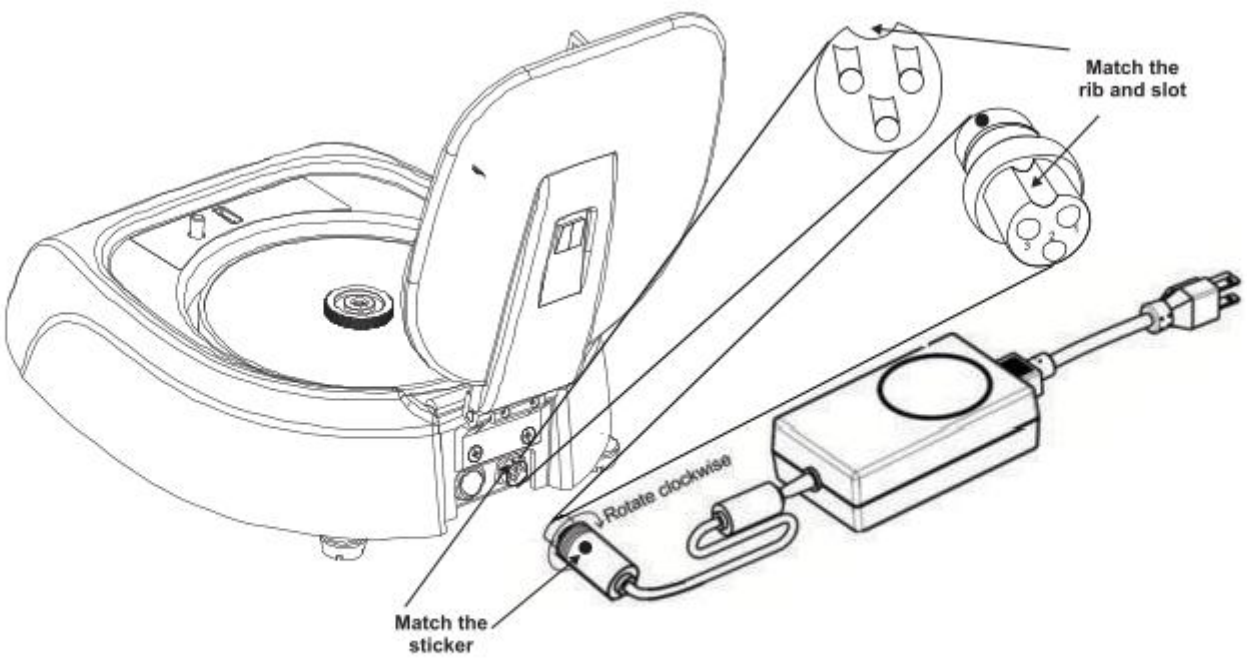
Place the centrifuge on a flat and leveled surface; ensure that the four feet of this centrifuge stand on the surface firmly. Avoid installing on a slippery surface or surface prone to vibration.

1. Ideal ambient temperature is 20°C ± 5°C; avoid placing the centrifuge in direct sunlight.
2. Keep clearance of at least 10 cm on both sides and at least 30 cm behind it 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 may be difficult.

3. INSTALLATION

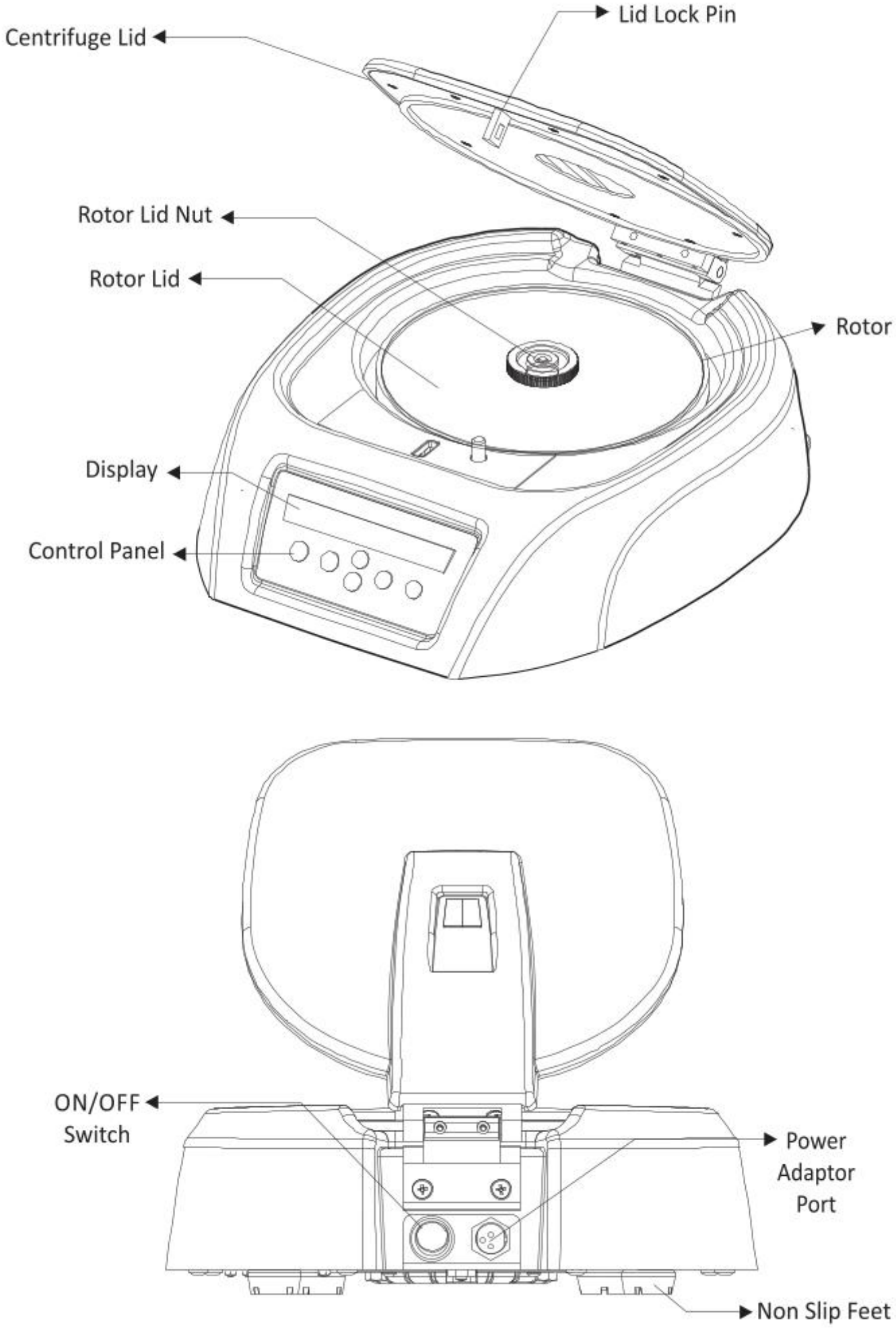
3.2 CONNECTING POWER ADAPTOR

1. Connect one side of the power adaptor to rear the side of centrifuge and to the other side to supply as shown in the figure below.
2. Rotate the adaptor nut clockwise to tighten the adaptor. Ensure the power switch is OFF while connecting the power adaptor.
3. The sticker on the body & jack are indicating the position of the rib on the jack. While fitting the adaptor to the unit please match the sticker position as shown in the figure below & gently push it in.

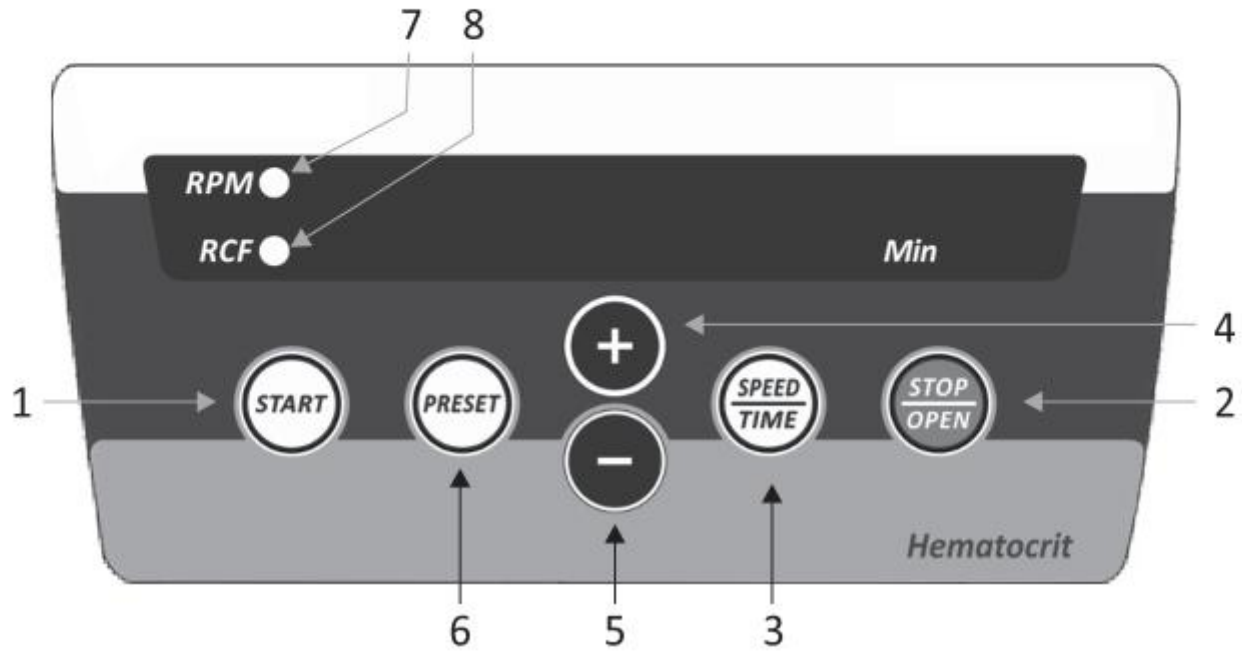


4. If matched correctly the plug will go in easily without much force (do not try to force the plug in if it is not matched properly). Once the plug is inserted, turn the loosened upper ring clockwise until it is tight to secure the fitment.

4. STANDARD PARTS LISTING



5. USER INTERFACE & DISPLAY



Item	Name	Function
1	START BUTTON	Press button to START the centrifugation.
2	STOP/OPEN BUTTON	Press button to STOP the ongoing operation. Lid opens automatically, after rotor comes to a stop.
3	SPEED/TIME BUTTON	Press button to select SPEED mode. Press "+" or "-" to increase or decrease the values
3	SPEED/TIME BUTTON	Long press button to select TIME mode. Press "+" or "-" to increase or decrease the values
4	+	It is used to increase speed and time values
5	-	It is used to decrease speed and time
6	PRESET button	User favorite mode (Refer page no 13)
7	RPM led	Displays the RPM value during the operation
8	RCF	Displays the RCF value during operation

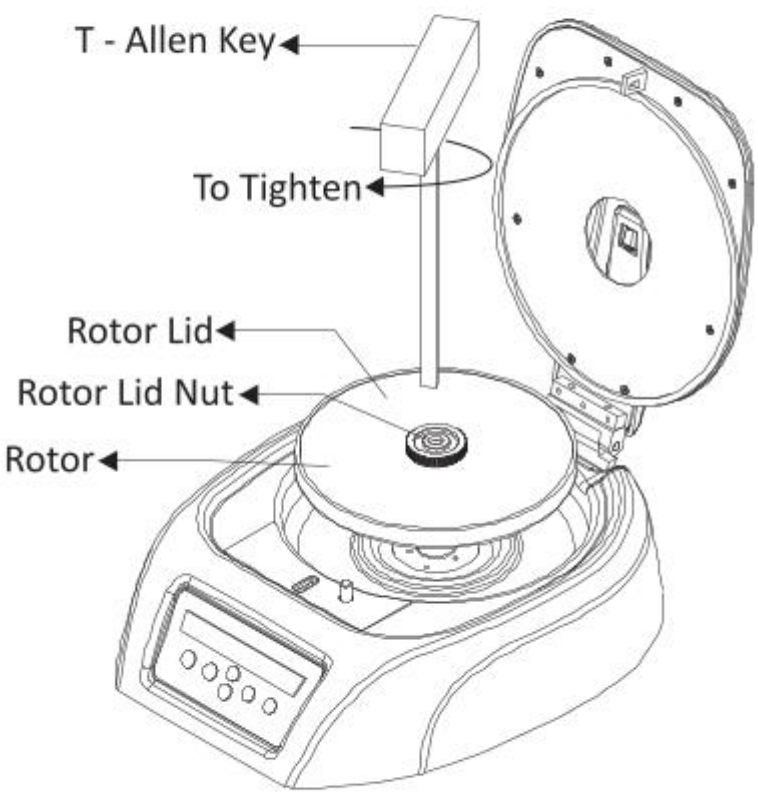
6. ROTOR INSTALLATION

6.1 ROTOR REMOVAL AND REPLACEMENT PROCESS

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

6.1.1 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 loose, pull up the rotor vertically.



6.1.2 REPLACING THE ROTOR

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

6. ROTOR INSTALLATION

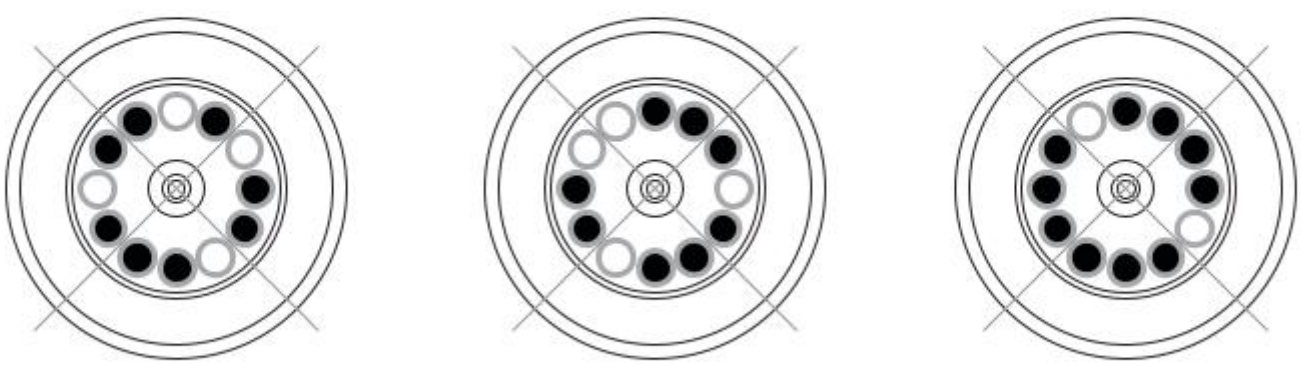
4. After properly fastening the rotor, place the rotor lid on the rotor lid nut by hand and rotate the rotor lid nut clockwise.

Note: *1) Check if the rotor is firmly tightened before running the next program.*
2) Do not remove or loosen the rotor lid before removing the rotor.

6.2 BALANCING THE ROTOR *(Below are the representational images of the rotor)*

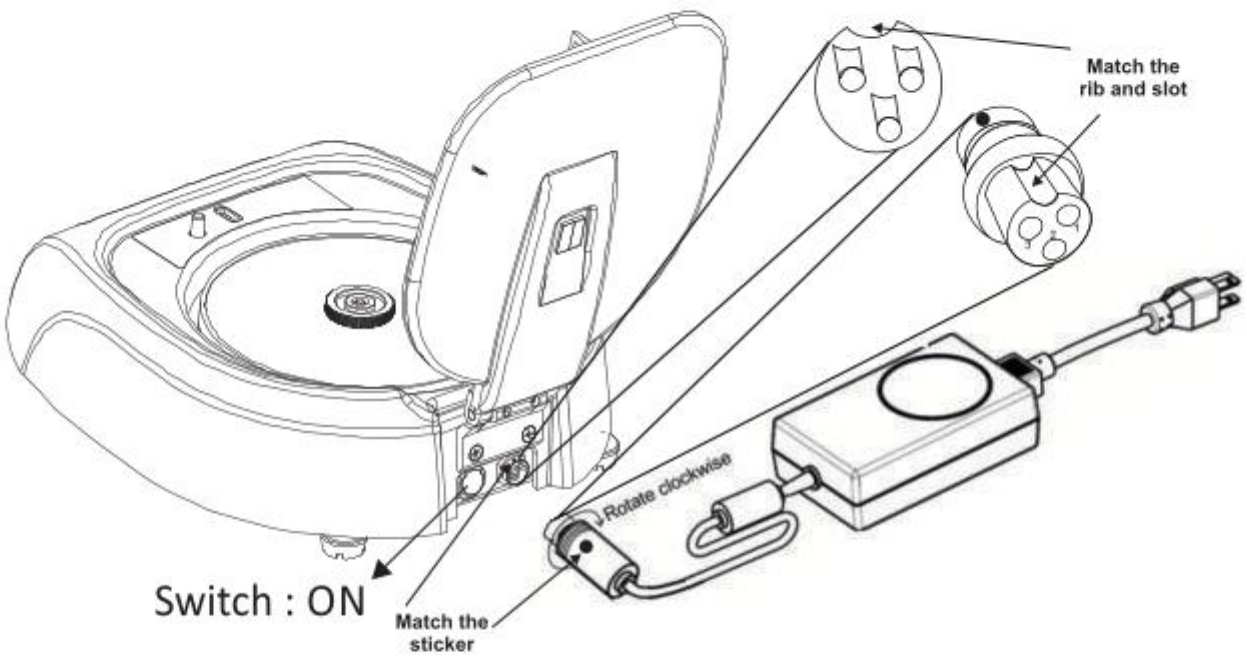


1. Always balance the rotor before centrifugation. Above are examples of properly balanced rotors.
2. The samples in the tubes should be of equal volume.
3. If the tubes are not loaded correctly - vibration or imbalance can occur which can cause serious damage to the centrifuge.
4. If the tubes are not 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 shown indicating tubes are not loaded symmetrically. To resume operation, load tubes symmetrically & restart the centrifuge.
5. Incorrect method of loading tubes in centrifuge rotor :



7. OPERATING THE CENTRIFUGE

7.1 STARTING THE HCT CENTRIFUGE



After connecting the power adaptor, switch ON the power at the rear side of the centrifuge. Make sure to check the rotor fit before use. Centrifuge will not operate with an open lid.

NOTE: *Maintain a gap of 3 seconds between turning off and turning on the centrifuge. DO NOT turn off and turn on the centrifuge instantly.*

7.2 SETTING THE SPEED AND TIME

After closing the centrifuge lid; press the "SPEED BUTTON" to select the speed setting. Press "+" or "-" to increase or decrease values by a interval of ±100 RPM The minimum and maximum speed of the centrifuge is 500 RPM and 12000 RPM respectively.

The input will be accepted if the setting is left idle for 3 seconds. The value will blink multiple times to indicate acceptance.

NOTE*: The speed cannot be changed during the operation. Long Press the "SPEED / TIME BUTTON" to select the time setting press "+" or "-" to increase or decrease values by a interval of ± 1 mins. The centrifuge timer is set to run between 1 mins&12 minutes.*

7. OPERATING THE CENTRIFUGE

The input will be accepted if the setting is left idle for 3 seconds. The value will blink multiple times to indicate acceptance.

7.3 PRESET FEATURE

It's a favorite mode for the user. It allows users to run the system at their required parameters with a single press or define their own PRESET value without setting time and RPM each time.

By pressing the PRESET button and then the START button, the system will run again at last RPM and time combination.

7.4 SWITCHING TO RCF DISPLAY

In this centrifuge, SPEED and RCF would toggle alternatively on the display once the SET speed is attained by the Hematocrit Centrifuge.

7.5 OPENING THE CENTRIFUGE LID IN POWER FAILURE

Disconnect the centrifuge from the power supply. Wait until the rotor has come to a stillstand (this may take time). Once the rotor has stopped, pull down the emergency lid release cap present below the centrifuge. This will open the centrifuge lid.

7. OPERATING THE CENTRIFUGE

7.6 IMBALANCE DETECTION

The centrifuge comes with an imbalance detection safety feature. When the rotor is not loaded symmetrically, the imbalance detector gets activated and stops any centrifugation. Error message "Err 55" will be shown on the display. Correct the imbalance load using the method described in the Balancing the Rotor section (page no. 13) of this manual. After correcting the imbalance, turn off the centrifuge & turn it back on. The values will be the same as set before the imbalance occurred. The imbalance detection feature cannot be deactivated, as it is a factory fitted safety feature.

8. MAINTENANCE AND CLEANING

1. The rotor and the outside of the centrifuge should be cleaned regularly with a moist cloth.
2. Ensure that while cleaning the unit it is not plugged in.
3. Wear protective gloves and safety glasses while operating and cleaning the device.
4. The brushless motor in the centrifuge does not require routine maintenance. Any required service should be performed by authorized, qualified personnel only. Repairs performed by unauthorized personnel may void the warranty.
5. Always keep the centrifuge housing, rotor chamber, rotor and rotor accessories clean. All parts should be wiped down periodically with a soft cloth. For more thorough cleaning, use a neutral cleaning agent (Ph between 6 and 8) applied with a soft cloth. Excessive amounts of liquid should be avoided. The motor should not come into contact with the liquid.
6. After cleaning, ensure that all parts are dried.
7. It is important to regularly clean the rotor.
8. If the rotor chamber needs cleaning, clean it with a cloth or a sponge moistened with a neutral detergent solution (like water).
9. Do not place the rotor into the cleaning solution!
10. If corrosive, toxic or pathogenic bacteria are accidentally spilled in the rotor or rotor chamber, the centrifuge must be decontaminated thoroughly.

Warning! *This product does not contain bio-seals as per IEC/EN/CSA 61010-2-20 and cannot provide any level of containment in case of a spill or release of toxic, radioactive, or pathogenic micro-organisms thus these materials are not recommended to be used in this product.*

9. TROUBLESHOOTING

This centrifuge has a self – diagnostic function. If a problem occurs, an error/warning code will be displayed on the display screen and the operator can determine the malfunction with the warning code below.

ERROR	PROBLEM	SOLUTION
No display	No main power connection.	Power check & proper plug-in of main cable at both ends.
	Power failure	Check the main fuse of the lab.
	Improper connection.	Connect adaptor properly.
	Lid not closed correctly.	Close lid correctly.
	Error with lid closing and opening mechanism.	Contact service.
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 stop.
	Power failure	Press emergency lid release after rotor stops
Centrifuge shakes during acceleration & makes while running noise	Rotor is not loaded symmetrically.	Load rotor symmetrically & restart operation
	Either a broken tube, damage to the rotor or motor is the cause for run noise.	Replace broken tubes. For damaged rotor/motor contact a service representative.
	Rotor is damaged.	Remove & change rotor
Display error	Loose connection of display.	Contact service representative.

9. TROUBLESHOOTING

ERROR	PROBLEM	SOLUTION
Err 2	Lid is not properly latched	Open lid and close it properly.
Err 52	Rotor is stuck	Turn OFF the centrifuge, Check the rotor for propare fit & turn ON centrifuge again.
Power tripping	Cable does not fit properly.	Remove cable and connect properly.
Last run memory not displayed	The centrifuge was turned ON immediately after being turned OFF.	Maintain a 3 second gap Between turning the centrifuge OFF and ON.
System got hung up	Electronic error.	Switch off centrifuge and then switch it ON again. If the error still shows, contact service representative.

IMPORTANT NOTE:

1. *Maintain a 3 second gap between restarting the centrifuge. Instant ON-OFF can lead to a reset, erasing last run memory.*
2. *If the motor gets hot due to which there will be a fluctuation in speed value then allow the centrifuge to cool for atleast 30 minutes. Do not do any operation for 30 minutes*
3. *Do not use liquids with density higher than 1.2g/ml for full load operation.*

10. WARRANTY STATEMENT

This product is warranted to be free from defects in material and workmanship for a period of two (2) years 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 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.

10. WARRANTY STATEMENT

• 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.*

11. 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, 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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