CRC-432X



USER MANUAL

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1. INTRODUCTION

This centrifuge is equipped with a maintenance free drive, a large display & simple interface for efficient operation for daily lab usage. The programmable centrifuge can deliver up to 4500 RPM and can accommodates different types of rotors. It features various programmable mode to save time & add convenience.

2. INTENDED USE

This is a large capacity centrifuge designed to separate, sediment, spin down aqueous solutions & solvent suspensions of differing densities in compatible sample containers.

NOTE: Before using the centrifuge, please read this user manual carefully. This user manual 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. SALIENT FEATURES

Centrifuge has following features:

- Delivers up to 4500 RPM for all compatible rotors
- BLDC maintenance free motor drive
- Imbalance detection safety with auto cutoff feature
- Lid lock safety feature : Lid does not open during operation
- Program mode for customized operation
- Speed setting by RPM/RCF mode
- Countdown timer range from 1 to 99 minutes
- Last run memory feature
- Convenient and easy user interface
- Emergency lid release during power cutoff
- Automatic internal diagnosis & error display

4. STANDARD ACCESSORIES

- Power Cord
- T - Allen key
- Grease Tube
- User manual & Warranty card

5. TECHNICAL SPECIFICATIONS

Motor Type	Brushless DC Motor
Max capacity	400ml (4x100ml)
Speed Setting	Variable 500 - 4500 rpm (Step of 100 rpm)

Speed Accuracy	± 100 rpm
Run Time	1 min to 99 mins & infinite mode
Min. Acceleration Time	30 seconds
Min. Deceleration Time	30 seconds
Noise Level	<65 dB
Ambient Temperature	5 - 40°C
Permissible Relative Humidity	≤80%
Size (L x B x H)	475 x 585 x 325 mm
Weight	23 Kg (without rotor)
Power Supply	230 VAC, 50 Hz
Power Consumption	460 W
Altitude	Use upto an altitude of 2000 m above MSL
Pollution Degree	2
Environment	For indoor use only

6. 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.
- Always use recommended original rotors and spare parts for best result & product safety.
- The rotors must be loaded symmetrically. Each tube should be counter balanced by another tube of same weight.
- Do not use centrifuge or rotor that have not been correctly installed or shows any sign of damage .
- The rotor must always be securely fastened. If the centrifuge makes unusual noise during operation, the rotor fitment needs to be checked. Switch OFF the device immediately by pressing STOP, check fitment & fasten it well.
- Never move the centrifuge during its operation.
- Prior to centrifugation, the tubes should be visually inspected for material damage. Damaged tubes must not be centrifuged. This is because broken tubes can result in sample loss and can create imbalance which can result in
- further damage to the centrifuge and accessories.

- Do not fill tubes while they are in the rotor. Liquids spillage may harm the device. If liquids are spilled on the rotor or rotor chamber, the centrifuge must be cleaned carefully and properly before being used again.
- 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. Also do not place the potential hazardous material within the clearance area/envelope.
- Equipment if used in any manner not specified in this manual or by the manufacturer can result in the lapse of the product warranty.
- Repairs must only be performed by authorized service technician.
- Do not lean on the equipment. It may damage the equipment or even harm the operator.
- In the event of contamination caused by aggressive agents, the rotor must be cleaned immediately using a natural cleaning liquid. 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 mentioned by the manufacturer, contact the manufacturer to ensure that the intended method will not damage the centrifuge.
- For safety we have provided protective earthing with power supply. Make sure power supply is earthened.

7. INSTALLATION

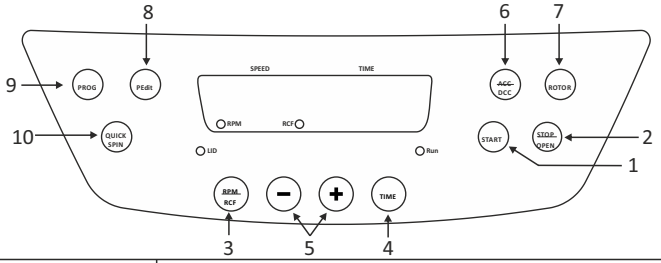
The Laboratory centrifuge is supplied in packaging box. Open the box, remove the packaging and gently place the centrifuge out of the box. Before 1st time usage, open the centrifuge & ensure to remove all packaging from the rotor chamber. Please keep all packaging in safe storage for at least 2 years for warranty purpose.

LOCATION & MOUNTING

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

- Ideal ambient temperature is 25° C ± 5°C, avoid placing the centrifuge in direct sunlight.
- Keep clearance of at least 30 cm from all side for ease of usage.
- Keep away from heat or water to avoid sample temperature issues or centrifuge failures.
- Do not place the centrifuge such that it becomes difficult to operate the device.

8. USER INTERFACE & DISPLAY



Item	Button Name	Function
1	Start	Single press, motor will start as per selected rpm and time if lid closed. Start button works only if lid closed. Motor start or stop, indicates with LED
2	Stop/open	Single press stop/open button, will stop motor as per defined DCC time if motor is running. Second press stop/ open button, will open the lid if motor stopped. Also use as lid open function if centrifuge motor is not running.
3	RPM/RCF	Single press, RPM will be display like 4500 and RPM LED will blink. Long Press, RPM/RCF will toggle display to RPM to RCF. RPM , RCF mode also indicate via LED on panel.
4	Time	Single press, Time will be display like 99.00 Timer can be set from1 to 99 min.
5	Increment / Decrements	Short press of {+}Plus and {-}Minus buttons will increase and decrease speed, time, ACC, DCC values normally. Long press of these keys would change the parameters quicker
6	Acceleration	First Single press, Acceleration will display on time segment like ACC1. We can change acceleration using {+} and {-} buttons. (1 to 9).
	Deceleration	Second Single press, Deceleration will display on time segment like DCC1. We can change Deceleration using {+} and {-} buttons. (1 to 9).
7	Rotor	To select among multiple rotors listed below
8	Pedit	Single press Pedit, SPEED/ TIME/ ACC/ DCC will blink one after one 5 times on respective display and user can change blinking parameters by using {+}Plus and {-}Minus key. In PEdit mode user can also press SPEED/TIME/ACC/ DCC and change its value.

9	**PRG**	Press PRG button to select the program from 1-99. The different parameters can be set in each program for quick selection.
10	**Quick Spin**	Press hold for immediate centrifugation up to last set RPM

9. OPERATING THE CENTRIFUGE

SWITCH ON THE CENTRIFUGE

After connecting the power cord. Switch ON the main power supply & then Switch on the power switch located on the right side of the instrument. Make sure to check the rotor fitment before use. Centrifuge will not operate with open lid.

Note: *Maintain a gap of 3 seconds between switch OFF and switch ON again. DO NOT switch OFF and ON again instantly.*

Speed Setting:

Press RPM/RCF button to set speed from 500 to 4500 RPM. Single press to set speed, long press to toggle mode RPM/RCF. The parameter can be set when the speed screen blinks by using + button for increment & "- "button for decrement. The values will automatically saves after screen stops blinking.

Timer Setting:

Press the timer button to set timer. Time can be set by + for increment & - for decrement. The timer will save automatically once the blinking stops. The timer can be set in minutes only while seconds are for countdown timer for running operation.

Acc/Dcc:

This button will set the parameters of acceleration or deceleration of the rotor ramp. Press acc/dcc button once to set the acceleration from 1-9 by using +/- button for increment/decrement respectively. Similarly press once again the acc/dcc button to set deceleration from 1-9 by using +/- button for increment/decrement respectively. The values of acceleration & deceleration timings are listed below.

-	dcc L	480 Seconds	Acc 5	dcc 5	110 Seconds
-	dcc 0	300 Seconds	Acc 6	dcc 6	90 Seconds
Acc 1	dcc 1	180 Seconds	Acc 7	dcc 7	70 Seconds
Acc 2	dcc 2	170 Seconds	Acc 8	dcc 8	50 Seconds
Acc 3	dcc 3	150 Seconds	Acc 9	dcc 9	30 Seconds
Acc 4	dcc 4	130 Seconds			

PRG:

Press PRG button to select the program from 1-99. The different parameters can be set in each programm for quick selection. To set parameters in each program follow the parameters (Speed, time & Acc/Dcc) as described above. To select from programs press using +/- button for increment or decrement. All the parameters in the program saves automatically once the blinking stops. The saved programs also can be edited by following the instruction of setting Speed, time & Acc/Dcc as described above.

Quick Spin:

Press hold the quick spin button for immediate centrifugation of the samples up to previous run RPM. Releasing the hold will stop of the rotor gradually.

Pedit:

Press PEdit button to enter all the different parameters - Speed, Timer, acceleration & deceleration automatically one after the other. These parameter will be asked by the instrument sequentially to be entered if required to be changed (if not edited the display value will set). These parameters will save automatically.

Rotor:

Press rotor button to select rotors as listed below. The rotor numbers can be changed by using +/- for increment or decrement of the rotor number.

Swing Out Rotors			
Rotor	**Max. Volume**	**Max. RPM**	**Max. RCF**
CR-43-100	4 x 100 ml	4500	3164
CR-43-50-4	4 x 50 ml	4500	3485
CR-43-15	16 x 15 ml	4500	3485
CR-43-06	32 x 6 ml	4500	3164
CR-43-PL	2 x Microplates	4500	2355

Fixed Angle Rotors			
Rotor	**Max. Volume**	**Max. RPM**	**Max. RCF**
CR-43-100F	4 x 100 ml	4500	2599
CR-43-50-4F	4 x 50 ml	4500	2644
CR-43-15F-24	24 x 15 ml (Glass tubes)	4500	2854
CR-43-15F-16	16 x 15 ml	4500	3144

START & STOP

The centrifugation can be started by pressing start button once the desired operation set. The operation can be stopped by pressing stop button once. To open the lid press stop/open key once after the rotor comes to stop.

10. MAINTENANCE AND CLEANING

- The rotor and the outside of the centrifuge should be cleaned regularly with a mild wet (with water) cloth.
- Ensure that while cleaning the unit is not plugging in.
- Wear protective glove & safety glass while operating & cleaning the device.
- The brushless motor in the centrifuge requires no routine maintenance. Any required service should be performed by authorized, qualified personnel only. Repairs performed by unauthorized personnel may void the warranty.
- Always keep the centrifuge housing, rotor chamber and rotor clean. All parts should be wiped down periodically with a soft cloth. For more thorough cleaning, use a neutral cleaning agent and clean with a soft cloth. Exclusive amounts of liquid should be avoided.

Note: *Liquid should not come into contact with the motor.*

- After cleaning, ensure that all parts are dry before re-use.
- Regularly cleaning of the rotor is important.
- If the rotor chamber needs cleaning, clean with cloth or sponge moistened with a neutral detergent solution.
- Do not place the rotor into the cleaning solution.
- If corrosive, toxic or pathogenic bacteria are accidentally spilled in the rotor or rotor chamber the centrifuge must be decontaminated throughly.
- 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.

11. 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 mains cable at both ends.
	Power failure	Check the mains 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	Emergency lid release after rotor stops
Centrifuge shakes during acceleration & exceptional running noise	Rotor not loaded symmetrically.	Load rotor symmetrically & restart operation
	Either a broken tube, damage to the rotor or motor is cause for run noise.	Replace broken tube. For damaged rotor/motor contact service representative.
	Rotor damaged.	Remove & change rotor
Display error	Loose connection of display.	Contact service representative.
Err 1	Latch damaged, Latch jammed	Contact service representative.
Err 52	Motor stuck or incorrect operating voltage	Turn OFF the centrifuge, Check rotor fitment or apply correct 230VAC ± 10VAC operating voltage
Power tripping	Cable not fit properly.	Remove cable and connect properly.
Last run memory not displayed	Turing ON centrifuge immediately after turning it OFF.	Maintain 3 seconds gap Between switch OFF and switching ON again.
System gets hang	Electronics error.	Switch off centrifuge and then switch it ON again. If the error still shows, contact service representative.

IMPORTANT NOTE:

- If system get hangs or gets heated due to over current, switch OFF & switch ON (restart) the centrifuge and check it again.
- Maintain 3 seconds gap between switch OFF and switch ON. Instant ON-OFF can lead to a reset, erasing last run memory.
- If motor gets hot due to which there will be fluctuation in speed value then allow centrifuge to get cool for atleast 30 minutes. Do not do any operation for 30 minutes.

12. WARRANTY STATEMENT

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

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 that there are no other remedies or warranties, expressed or 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 entertained. All items returned for service should be sent postage prepaid in the original packaging or other suitable carton, padded to avoid damage. We will not be responsible for damage incurred by improper packaging.

All items returned for service should be set postage prepaid in the original packaging or other suitable carton, added to avoid damage.

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

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

13. PRODUCT DISPOSAL

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.

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



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