NEUATION iFuge UC02R Universal Centrifuge Device User Manual

Contents

NEUATION

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INTRODUCTION

This universal 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 15000 RPM and can accommodate different types of rotors. It features various programmable modes to save time & add convenience.

INTENDED USE

This is a refrigerated benchtop 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.

SALIENT FEATURES

The centrifuge has the following features:

- Delivers up to 15000 RPM for all compatible rotors
- BLOC maintenance-free motor drive
- Imbalance detection safety with auto cutoff feature
- Lid lock safety feature: The lid does not open during operation
- Program mode for customized operation
- Speed setting by RPM/RCF mode
- Countdown timer range from 30 sec to 999 mins 59 second & infinite mode
- Last run memory feature
- Convenient and easy user interface
- Emergency lid release during power cutoff
- Automatic internal diagnosis & error display
- Auto rotor detection feature

STANDARD ACCESSORIES

- power cord
- T-Allen key
- User manual
- Warranty ca rd

TECHNICAL SPECIFICATIONS

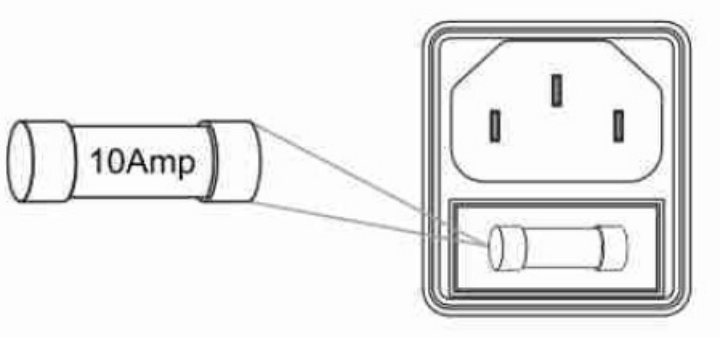
- Motor Type
  - Brushless DC Motor
- Max capacity
  - 400 ml (4x 100 ml)

Speed Setting	Variable 500 – 15000 rpm (Step of 100 rpm)
Speed Accuracy	± 100 rpm
Run Time	30 sec to 999 mins 59 second & infinite mode
Min. Acceleration Time	60 seconds
Min. Deceleration Time	60 seconds
Noise Level	<65 dB
Ambient Temperature	5 – 40°c
Permissible Relative Moisture	<80%
Size (L X BX H)	705 X 585 X 330 mm
Weight	< 57 kgs without rotor
Input Power	230 VAC ± 10 VAC, 50Hz
Power Consumption	710W
Safety Fuse	l0Amp

SAFETY PRECAUTIONS

- Never use the centrifuge in any manner not specified in this manual.
- Always use recommended original rotors and spare parts for the best result & product safety.
- The rotors must be loaded symmetrically. Each tube should be counterbalanced by another tube of the same weight.
- Do not use a centrifuge or rotor that has not been correctly installed or shows any sign of damage.
- The rotor must always be securely fastened. If the centrifuge makes an 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 an imbalance which can result in further damage to the centrifuge and accessories.
- Do not fill tubes while they are in the rotor. Liquid 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.
- Do not use liquid with a density higher than 2.0 gm/ml during full load product operation.
- The 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 potentially 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 an 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 70% IPA. 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 a power supply. Make sure the power supply is earthed.
- Safety Fuse is provided for lamp configuration which can be replaced by the operator. The same will protect the machine circuit during an l l electrical fault or overload.

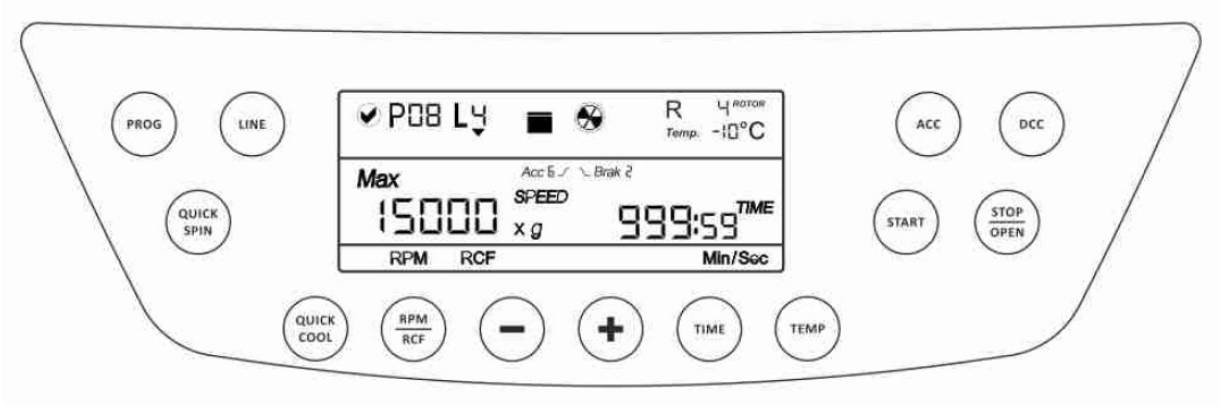


INSTALLATION

The Laboratory centrifuge is supplied in the 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 purposes.
Location & Mounting
Place the centrifuge on a flat, solid, and leveled surface and ensure that all the six feet of this centrifuge stand on the surface firmly. Avoid installing on slippery or surfaces prone to vibration.

- The ideal ambient temperature is 25 C ± s•c, avoid placing the centrifuge in direct sunlight.
- Keep a clearance of at least 30 cm from all sides 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.

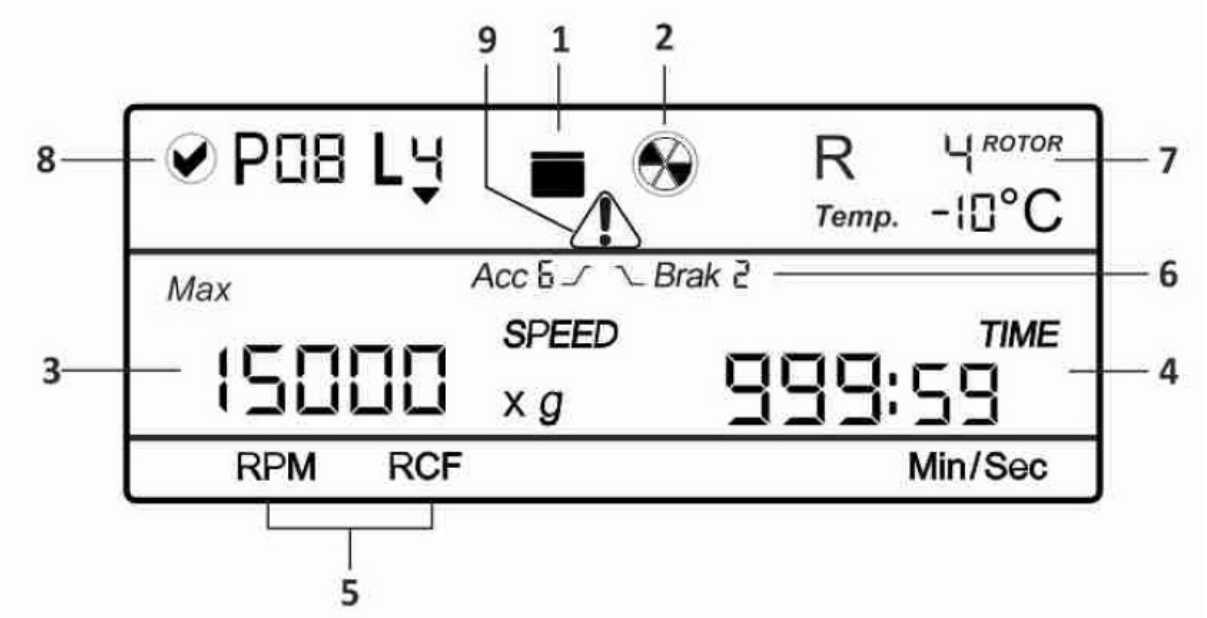
USER INTERFACE & DISPLAY



Item	Button Name	Function
1	**Start**	Single press, motor will start as per selected RPM, Time & Temp if lid closed. Start button works only if lid closed. Motor start or stop, indicates with rotation symbol in LCD.
2	**Stop/open**	Single press stop/open button, will stop motor as per set DCC rate if motor is running. Second press stop/ open button, will open th e lid once the motor stops. Also used for lid open if centrifuge motor is not running.
3	**RPM/RCF**	Single press, Speed display will be blink to set. Long press, RPM/RCF will to ggle between RPM to RCF. RPM, RCF mode is also indicated on LCD display.
4	**Time**	Sin gle press, Minute can be set, another single press then second can be se t. Timer can be set from O min 30 sec to 999 min 59 sec and Infinite Mode.
5	+ / – **Button**	Use to set parameter (speed, time, temp, ace, brak, program, line) values. Pr essing"+" button to increase and Pressing"-" button to decrease values.

6	**Acceleration**	Sing le press, Acceleration will display as ACCl. ACC can be set between 1 to 9 using the {+} and {-} button. The timers for Ac cl-Acc9 is mentioned (page no. 7).
	Deceleration	Single press, Deceleration will on displayed as BRAKl. This can be set between 1 to 9 by using{+) and{-} buttons. The timers for BR AKl- BRAK9 is mentioned (page no. 7).
7	**Prog**	Long Press: to toggle between Normal mode and Program mode . Short press: to select the Program number. it can be accessed only in program mode.
8	**Line**	Press line button to select line of any specific program out of 4 available lines in each program. it can be accessed on ly in program mode.

9	**Temp.**	Press button to set the temperature from -10°C to 40°C.
10	**Quick cool**	Press for setting the centrifuge on quick/pre cool.
11	**Quick spin**	To set short spin on a set speed. Press short spin cont inues press for short s pin operation.



Item	Symbol	Description
1		Indicates lid Status. Left image = lid close & Right image = lid open.
2		Indicates centrifuge status. When centrifuge is running the symbol rotates and when centrifuge is not running the symbol is stable.
3		RPM indicates the speed value at which centrifuge is running. x g indicates the value in RCF mode.
4		The timer is a countdown timer. Indicates the time for which the centrifuge will run. Indicates the time in Min/Sec mode.
5	RPM/RCF	Indicate RPM or RCF mode and shows corresponding values.
6	Acc 8 Brak 8	Indicates selection of Acceleration and deceleration rate.
7	R008 ROTOR	Indicates selected rotor.
8	P05 L4	Indicates selected program number and the line number specific to that program.
9		Warning Symbol! It appear when some error occur.
10	-10°C	Chamber temperature indication.

ROTOR INSTALLATION

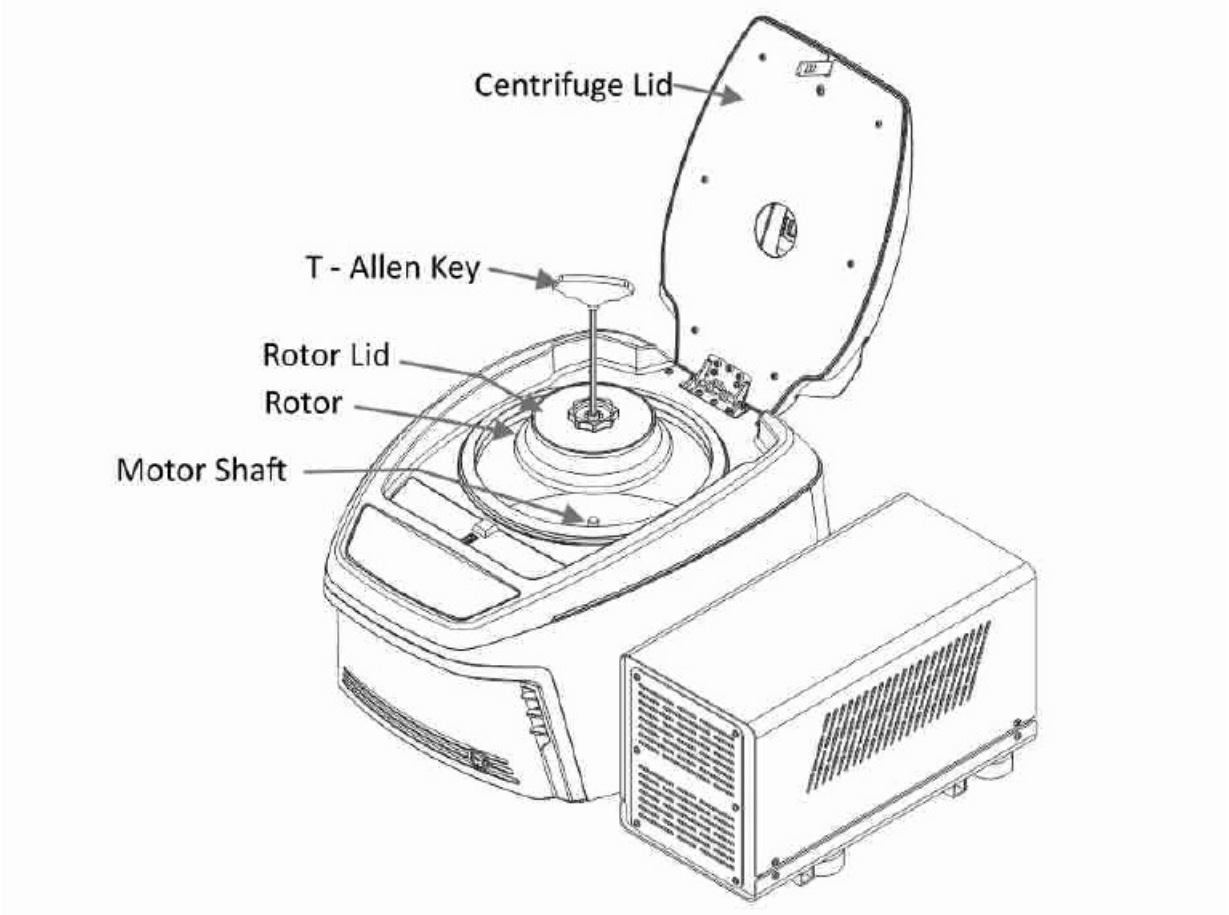
ROTOR REMOVAL AND REPLACEMENT PROCESS

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 loosen completely, pull up the rotor vertically.

REPLACING THE ROTOR



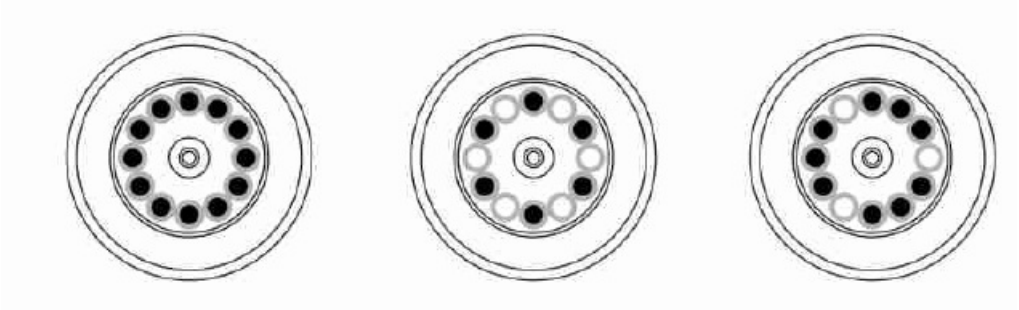
1. To replace or install the rotor, take the rotor and load vertically onto the motor shaft.
2. Place the rotor nut in the center hole of the rotor onto the motor shaft.
3. Put T -Allen Key into the rotor nut and turn clockwise to tighten and counter clockwise to loosen the rotor.
4. After properly fastening the rotor, place the rotor lid on the rotor lid nut by hand and rotate the rotor lid nut clockwise.

NOTE:

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

ROTOR INSTALLATION

BALANCING THE ROTOR (Below are the representational images of 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 55will be seen indicatingtubes are not loaded sy mm Petri ca 11 y. To resume operation, load tubes symmetrically & restart the centrifuge.
5. Incorrect method of loading tubes in centrifuge rotor:

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 front side of the instrument. Make sure to check the rotor fitment before use. The centrifuge will not operate with an 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 the “RPM/RCF” button to set the speed from 500 to 15000 RPM. Single press to set speed, long press to toggle mode RPM/RCF. The parameter can be set when the speed

OPERATING THE CENTRIFUGE

the screen blinks by using the “+” button for increment & “- “button for decrement. The values will automatically save after the screen stops blinking.

The speed can also be changed while the centrifuge is under operation. Press the “RPM / RCF” button & use the”+/-” button to change speed. Changing the speed between the ongoing centrifugation will run the centrifuge at an updated speed for the rest of time as indicated by the timer.

TIMER SETTING

Press the “Timer” button to set a 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 & seconds.

TEMPERATURE SETTING

Press the “Temperature” button for setting the temperature from -10°C to 40 •c. The parameters can be set when the Temperature value blinks by pressing”+” button (for increasing the temperature) & “-” button (to reduce the temperature). The values will automatically save after the screen stops blinking. For quick cool, press the temp.

key longer. Indication by this (cubic rotation) symbol.

QUICK COOL SETTING

Press the “Quick Cool” Key, indicated by  (cubic rotation) on top right (Indication will be in dotted notation in place of rotor digit indication). During quick cool operation RPM:- FIX 2000 & TEMP:- Onset value. Press the “START” button for the centrifuge to start at FIX RPM & set TEMP. After reaching set TEMP, the motor stops thus RPM becomes zero but the compressor continues to keep the chamber temperature at the set value. The quick cool works for 1 hour only. (for indication of refrigeration running process, TEMP display will blink) IF time overs and TEMP does not reach to set value, TIME will switch over from the beginning.
NOTE: *Quick cool will not run If the centrifuge is running. *Quick cool will not work in Programmable mode.

SHORT SPIN OPERATION
Short Spin Centrifugation is the feature for short/pulse run. It will run as long as the button is pressed. Set rotational speed prior to short spin as required. During short spin the timer will be in incremental mode. After releasing the short spin button the time in the display will show the duration of the short spin.

SETTING ACCELERATION/ DECELERATION RATE
This button will set the parameters of acceleration or deceleration of the rotor ramp. Press the “ACC/DCC” button once to set the acceleration from 1-9 by using “+/-” button

R’–”-‘-”	BRRl’l i	180 Seconds
RC[2	BRRl’l 2	165 Seconds
RCC3	BRRl’l 3	150 Seconds
R[[Y	BRRl’l Y	135 Seconds
RCCS	BRRl’l 5	120 Seconds

RCC6	BRRl’l 6	105 Seconds
R’–”-‘-7’	BRRl’l 7	90 Seconds
RCCB	BRRl’l 8	75 Seconds
RCC9	BRRl’l 9	60 Seconds

ROTOR SELECTION
This centrifuge is equipped with auto selection rotor technology. Fix the rotor on the shaft & follow the operation guideline.

Swing Out Rotors				
Rotor	**Rotor No.**	**Max. Volume**	**Max. RPM**	**Max. RCF**
UC-139	24	lSxlSml	4500	3305
UC-141	23	4 x 50 ml	4500	3305
UC-142	22	4 x 100 ml	4500	3305
UC-1 24	26	2 Micro plates	4500	2377
UC-140	25	32 x 6 ml	4500	3164
UC-156	21	4 x 100 ml (with lid)	4500	3164

Fixed Angle Rotors				
Rotor	**Rotor No.**	**M ax. Volume**	**Max. RPM**	**Max. RCF**
UC-150	34	16 x 15 ml	6000	4910
UC-148	33	6 X SO ml	6000	4910
UC-147	32	4x 50 ml	6000	4750

Fixed Angle Rotors				
Rotor	**Rotor No.**	**M ax. Volume**	**Max. RPM**	**Max. RCF**
UC-14 9	35	24x 15 ml	6000	5070
UC-146	31	4 x 100 ml	6000	4628
UC-600	1	24 x 2 ml	15000	21420
UC-700	4	44x 2 ml	15000	22388

OPERATING THE CENTRIFUGE

UC-800	2	4 x 8 ml PCR	15000	15397
UC-900	3	8×5 ml	15000	18461

START AND STOP OPERATION

Press “START BUTTON” to start the operation and press “STOP/OPEN BUTTON” to stop the ongoing operation.

When the centrifuge is running the symbol  will rotate. Pressing the “STOP/OPEN BUTTON” will stop the operation. Once the operation is stopped, press the Button again to open the centrifuge lid. If the time gets over, the centrifuge

will stop automatically. When the centrifuge is not running the symbol “  ” will be idle. To open the lid in the non-operating stage, press the “STOP/OPEN BUTTON”.

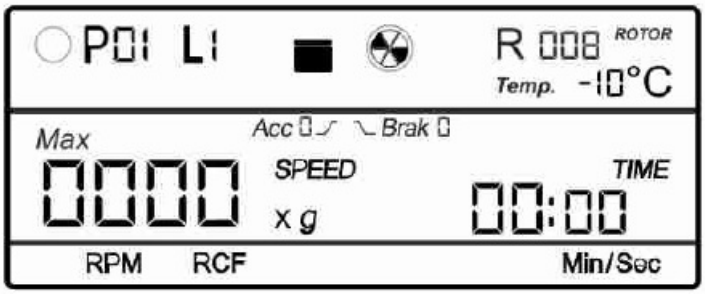
After completing the run, before any other operation, it is mandatory to open the lid once before starting a new operation. The centrifuge will not do 2nd operation if lid is not opened and closed for at least one time after completion of its operation.

NOTE: It is mandatory ta open the lid once after completion of operation far ind operation. The centrifuge will not start if lid is not opened and closed after completion of an operation.

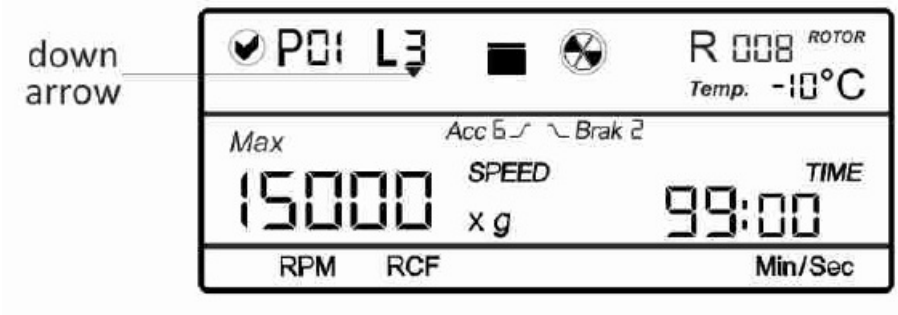
PROGRAM MODE

Long press the “PROG” button to enter into program mode. Short press select program and press the”+/-” button

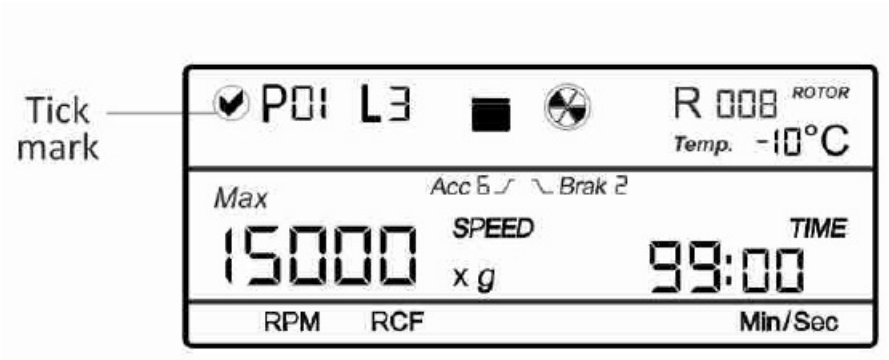
for increment & decrement to select the desired program out of 99 available programs. Users can select any program from 1 to 99 programs and can have user-specific setting parameters for all programs. Each program has 4 lines indicated by Ll, L2, L3, and L4. Press the “LINE” button to enter inline selection mode and press the “+/-” button to select a line out of 4 lines.
Every line of the program can have different values for all set parameters. Users can set and save different speeds, different times, different temperaturess, and different Acceleration and Deceleration rate for any line of the program. Only Rotor will not remain save for any program. Rotor selection is not Program specific. Rotor selection is universal and it should be set before setting any other parameters.
On first-time usage, all programs will have zero (O) values and once the “PROG” button is pressed below the display will appear indicating the selection of program mode.



As per the above image, the circle O left of “P0l Ll” is blank indicating no values in any line of the specific program. Once any line of Program in filled or set, the below the change of display will appear.



The circle @ left to “P0l L3” will have a tick mark indicating that any one line of the specific program is filled. If any line leading to selected line is set, then the arrow below the line number will appear.



If no leading line is filled or last line L4 is selected then the arrow below the Line will not appear. It indicates there is no further operation left as the leading lines of the specific program are empty.
Once a particular line of the program is selected set the parameters like speed time, temperature, and acc/brak parameters as in a normal case. It is recommended to select the rotor before selecting a program or even before setting any other parameters in program mode. Rotor selection is not program-specific. The rotor number is not saved for any program and the selected rotor remains active for all programs until a new rotor number is not selected. Select the rotor, Press the “PROG” button to enter in Program mode, select a specific program using the “+/-” button, Press the “LINE” button to select a specific line and set different parameters for that particular line of the program. Values for any parameter get saved after 5 blinks. Once the Program is set, press the “START” button to start the program.
After completion of any operation, it is mandatory to open the lid at least once for another operation. Open the lid, close it again and press START for another operation.
NOTE:

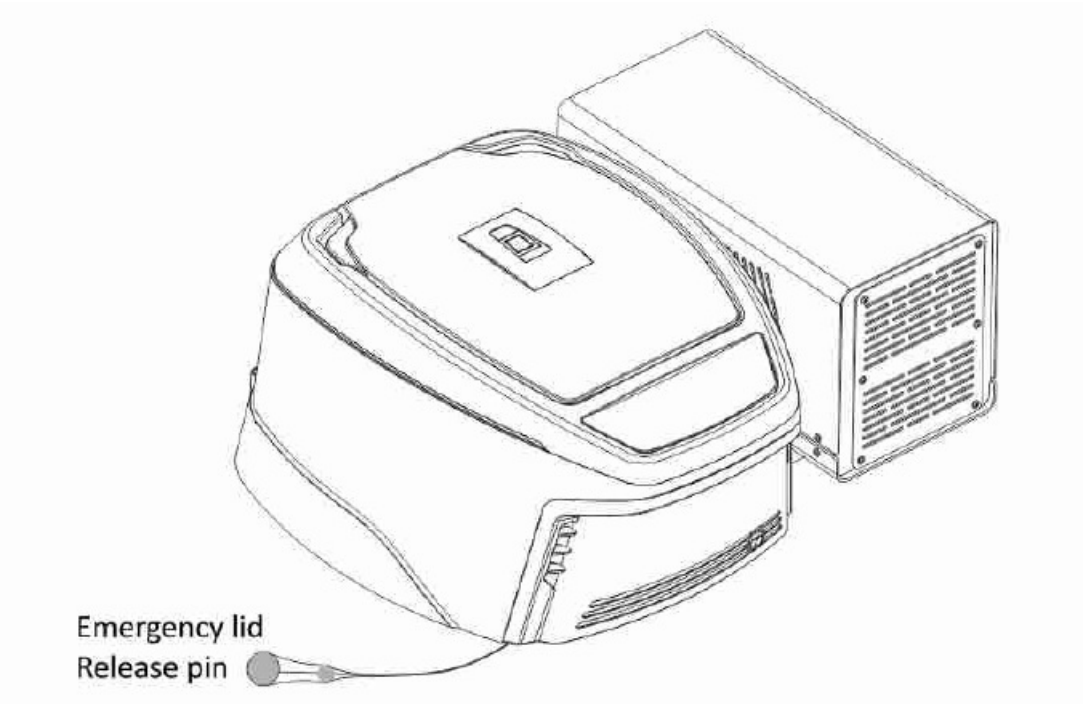
1. The rotor is not program-specific. The selected rotor will be active for any new operation.
2. It is mandatory to open the lid once after completion of the operation for 2nd operation. The centrifuge will not start if lid is not opened and closed after completion of an ongoing operation.

IMBALANCE DETECTION

The centrifuge is equipped with an imbalance detection safety feature. When the rotor is not loaded symmetrically, the imbalance detector gets activated and will cut off the centrifugation. The error “Error 55” will be shown on the display. First, correct the imbalance load then switch OFF & switch it ON again. The values will be the same as set before the imbalance. The imbalance detection feature cannot be deactivated, as it is factory fitted.

OPENING CENTRIFUGE LID IN POWER FAILURE

Disconnect the centrifuge from the main power supply. Wait until the rotor has come to a standstill (this may take longer time). Once the rotor has stopped, then pull the lid release thread located at the bottom left (to your right) of the machine This will open the centrifuge lid.



NOTE: This method of opening the lid should be used only in case of Emergency or power failure.

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 (Ph between 6 and 8) 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 thoroughly.

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 rot or
Display error	Loose connection of display	Contact service representative
Err 1	Latch motor damaged, Latch ja mmed or any Limit switch of latc h got damaged	Contact servicerepresentative
Err 52	Motor Stuck or incorrect operati ng voltage	Turn OFF the centrifuge, Check rotor fitment or apply correct 230VAC ± lOVAC operating voltage
Power tripping	Cable not fit properly	Remove cable and connect properly
Last run memory not displayed	Turing ON centrifuge immediat e ly after turning it OFF	Maintain 3 seconds gap Between switch OF F and switching ON again

System gets hang	Electronics error	Switch off centri fuge and then swit ch it **ON** again If the error still shows, contact service repres entative
Error 41	Selected Temp value not rechable for selected set speed	Set temperat ure value will be taken automatically that it can be archived after 1 h our, Error indication will be displayed every 1 5 second
Error 42	Temperature is out of control	Erro r indication will be displayed every 15 second If it persist in every operation consistently, co ntact service representative

Error 43	Over Temperature inside chamb er	Turn off the centrifuge and wait until tempera ture goes down
Error 44	Temperature sensor failure	contact service representative

IMPORTANT NOTE:

- If the system gets 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 at least 30 minutes. Do not do any operation for 30 minutes.

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 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 limitations 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.

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

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.

TRANSPORTATION & STORAGE

This devices is heavy & weighs approximately 57kgs. Care must be taken while lifting up. Always take few people help to lift this instrument. The refrigerated centrifuge must be kept always in upright position while storing/transporting from place to place.

- Use only original packaging during transportation
- For longer distance take transportation aid like hard trucks
- Avoid knocking, harsh shaking or jolting the device
- Always retain the packaging material & transportation protections for longer storage or transportation
- The transportation conditions for the instrument is -25 •c to 60°C with a Relative Humidity up to 80% & max pressure of 106kPa for both general & air transportation
- For storage the instrument is recommended to be stored in original package. the instrument is -s•c to 45°C with a Relative Humidity up to 70% & max pressure of 106kPa

Neuation Technologies Pvt. Ltd.
Plot No. 15, GIDC Electronic Park SEZ Kolavada Road, Gandhinagar – 382026, Gujarat, India

Website: **www.neuation.com**

Documents / Resources

	**NEUATION iFuge UC02R Universal Centrifuge Device** [pdf] User Manual iFuge UC02R, Universal Centrifuge Device, iFuge UC02R Universal Centrifuge Device