

# Clinispin® CT30 Centrifuge

## User Manual





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## 1. Introduction



The Clinispin CT30 is a microprocessor controlled, next generation digital clinical centrifuge. This centrifuge is designed for the separation and preparation of samples in various applications. This product is equipped with a maintenance free Brushless DC Motor drive and an imbalance detection feature. It comes with three different types of rotors (horizontal swing out and fixed), making it compatible with different types of standard sample collection tubes.

## 2. Intended Use

The Clinispin CT30 benchtop centrifuge is designed to separate, sediment, spin down aqueous solutions and 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, but is not a document which aids in repair. If repairs are needed, please contact Woodley Equipment Company.


## 3. Symbols

 Warning	 Waste electrical
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## 4. Features

- Brushless DC motor for maintenance free long life
- Microprocessor Controlled – Enables digital variable speed and time setting with last run memory function
- Single instrument for different work protocols with appropriate choice of rotors
- Precise RPM setting from 500 – 4000 RPM with least count of 10 RPM
- Automatic imbalance detection for safe operation
- Lid Lock Safety – Lid releases automatically after run completion
- Compact design with low loading height for ease of operation
- Programming Feature – User can save and run up to 99 defined programs (protocols)
- One touch, short spin operation and change over from RPM to RCF

## 5. Technical Specifications

<b>Motor Type</b>	Brushless DC Motor
<b>Speed Setting</b>	500 – 4000 RPM
<b>Speed Accuracy</b>	±10 RPM
<b>Speed Steps</b>	±10 RPM
<b>Run Time &amp; Modes</b>	1 – 999 minutes and infinite mode
<b>Dimensions (W x D x H)</b>	381 x 480 x 185 mm
<b>Weight</b>	8.2kg (without rotor)
<b>Permissible Temperature</b>	5 – 40°C
<b>Permissible Relative Humidity</b>	≤80%
<b>Altitude</b>	Use up to an altitude of 2000m above MSL
<b>Pollution Degree</b>	2
<b>Environment</b>	For indoor use only
<b>Noise Level</b>	≤65 dB (A)
<b>Power Adaptor Details</b>	Input: 100 – 240VAC, 50/60 Hz Output: 24V  5A
<b>Power Consumption</b>	90W

<b>Rotor Specifications</b>	<b>6 Tubes Rotor</b>		<b>8 Tubes Rotor</b>	<b>16 Tubes Rotor</b>
Rotor	6 x 10ml Horizontal Swing Out Rotor		8 x 15ml Fixed Angle Rotor	16 x 10ml Fixed Angle Rotor
Maximum Capacity	6 x 2ml 6 x 3ml 6 x 4ml	6 x 10ml 6 x 9ml 6 x 6ml	8 x 15ml Conical Tube	16 x 10ml Gel Tube
Nominal RCF	1840g	2270g	1950g	2180g
Acceleration Time	45 seconds		45 seconds	45 seconds
Deceleration Time	40 seconds		70 seconds	70 seconds
Power	90W		24W	35W
Current	3.7A		1.01A	1.45A

## 6. Standard Accessories

- Power Adaptor
- T-Allen Key
- Reduction Adaptors
- Tube Holder
- User Manual

## 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.
- Equipment used in any manner not specified in this manual or by the manufacturer can result in the lapse of warranty.
- Never move the centrifuge whilst in operation.
- The rotor must always be fitted securely. If the centrifuge makes unusual noises during operation, the rotor or the rotor lid fitment needs to be checked. Switch the device OFF immediately by pressing 'STOP'. Check the rotor or rotor lid and fasten it if required.
- 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 which hasn't been correctly installed or shows any sign of damage.
- Repairs must only be performed by authorised Woodley Equipment Company personnel.
- Only use rotors and spare parts supplied by Woodley Equipment Company for best results and safety.
- The centrifuge must be used for the specified application only. It must not be operated in a hazardous or flammable environment, and must not be used to centrifuge explosive or highly reactive material. Also, do not place any potentially hazardous material within the clearance area.
- 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 any damage. Damaged tubes must not be used. This is because broken tubes can result in sample loss and create imbalance in the centrifuge which can result in further damage to the centrifuge and its accessories.
- The centrifuge's capacity must not be exceeded.
- Do not lean on the equipment as it may damage the equipment or harm the user.
- When moving the centrifuge from a cold room to normal room temperature, run the centrifuge for 30 minutes beforehand in the cold room to avoid condensation. Alternatively, allow it to warm up in a lab for at least three hours but do not plug in the centrifuge in order to prevent possible damage by condensation.
- Be sure to close the tube lids tightly prior to centrifugation. Open tube lids can be torn off during centrifugation and can damage the rotor lid or centrifuge.
- Rotors and adaptors are high-grade components which are subject to extreme mechanical strain. Even slight scratches and tears can lead to serious internal

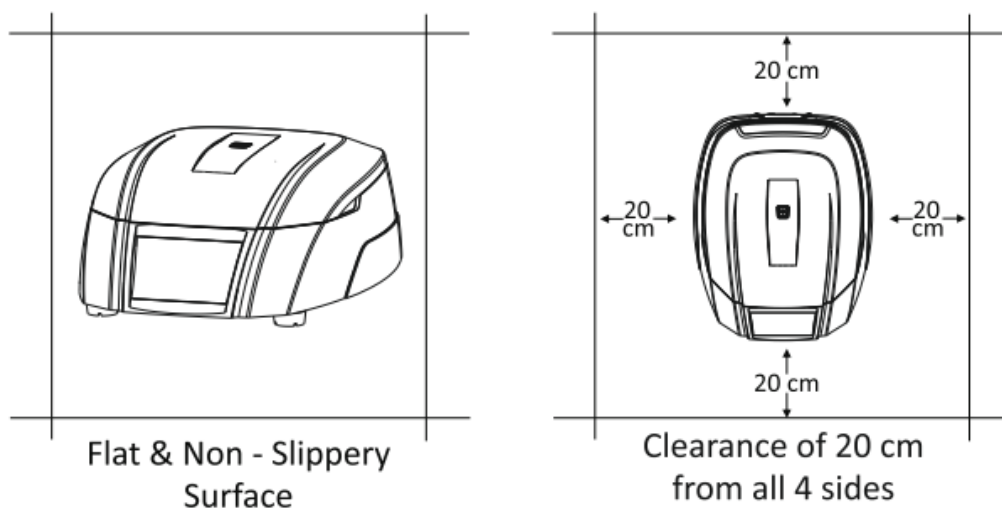
material damage. Ensure to check the rotor for any signs of damage before use. Rotors and rotor lids showing visible signs of corrosion or mechanical damage should not be used.

- Do not fill tubes while they are in the rotor. Liquid spillage may damage the centrifuge.
- For safety, Woodley Equipment Company have provided protective earthing with the power supply. Please ensure the power supply is earthed.
- In the event of contamination caused by aggressive agents, the rotor must be cleaned immediately using a natural cleaning liquid. If there are any signs of damage, contact Woodley Equipment Company.
- Before using cleaning or decontamination methods other than those stated in this manual, please contact Woodley Equipment Company to ensure that the intended method will not damage the centrifuge.
- The power adaptor supplied with the centrifuge is designed to be used for this specific centrifuge only. Do not use any other power adaptor.

## 8. Installation

The Clinispin CT30 is supplied in a packaging box. Upon receiving the centrifuge, gently remove the upper packaging and take out the centrifuge by holding it from the bottom. Ensure that all the packaging accessories are removed from the rotor chamber. The rotor is pre-installed, make sure it is firmly tightened. Accessories and the user manual are kept inside the box with the centrifuge. Please keep all the packaging stored safely for at least two years for warranty purposes.

The following points are necessary to properly install the centrifuge:



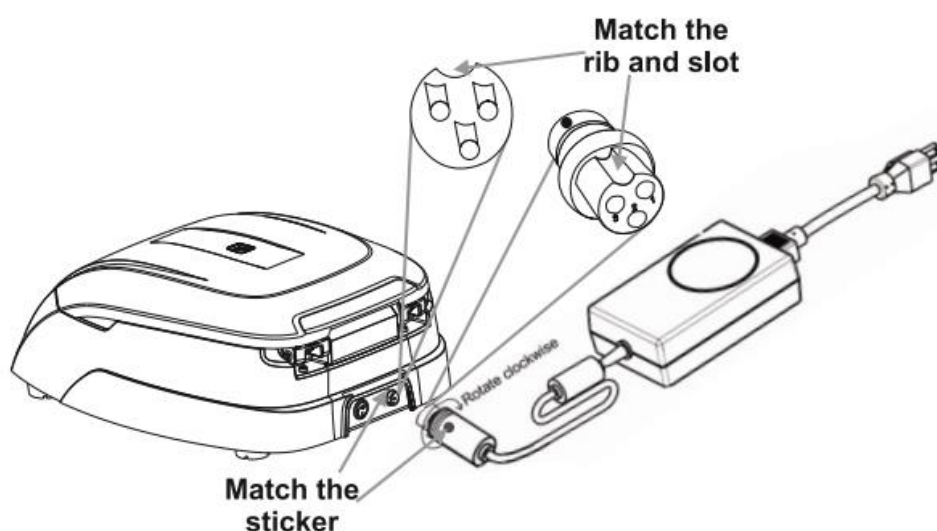
## 8.1 Location and Mounting

Place the centrifuge on a flat and level surface. Ensure that all four feet of the centrifuge stand on the surface firmly. Avoid installing on a slippery surface or surface prone to vibration.

- Ideal ambient temperature is  $20^{\circ}\text{C} \pm 5^{\circ}\text{C}$ . Avoid placing the centrifuge in direct sunlight.
- Ensure clearance of at least 20cm on both sides and at least 20cm behind the centrifuge to guarantee cooling efficiency.
- Keep away from heat and water to avoid sample temperature issues or centrifuge failure.
- Do not place the centrifuge anywhere that makes it difficult to operate.

## 8.2 Connecting Power Adaptor

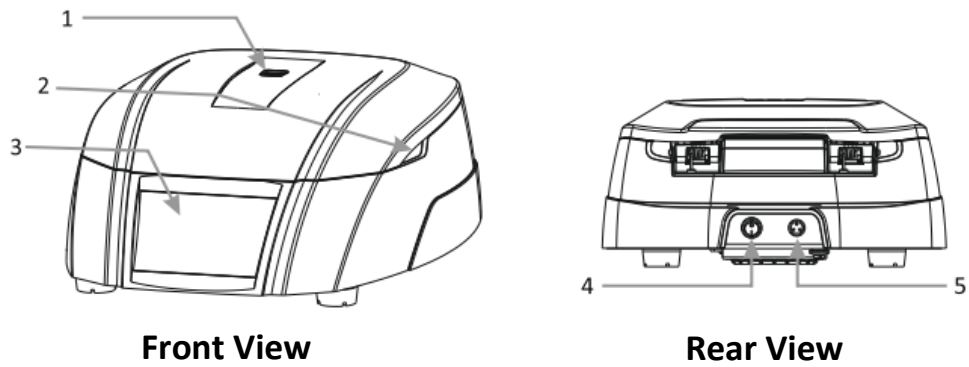
1. Connect one side of the power adaptor to the rear side of the centrifuge and the other side to the power supply as shown in the figure below.
2. Rotate the adaptor nut clockwise to secure the adaptor to the centrifuge. Ensure the power switch is off while connecting the power adaptor.
3. The sticker on the body and jack indicate 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 and 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 into position, turn the loose upper ring clockwise to tighten and to secure the fitment.

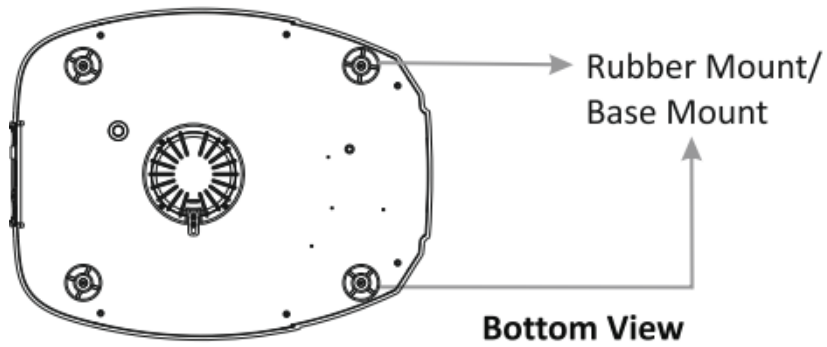


## 9. Standard Parts Listing

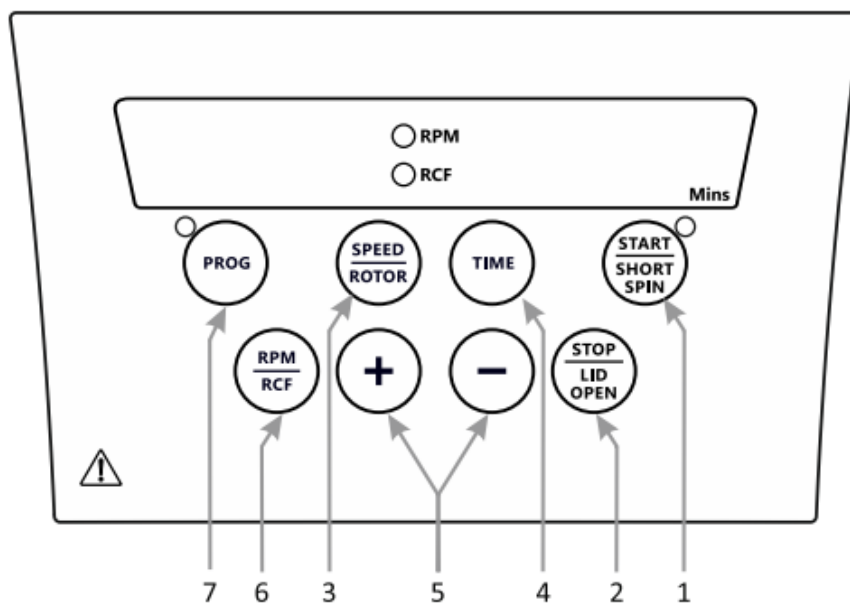


1. View window
2. Groove to open the lid
3. Operation and setting buttons

4. Power switch
5. Adaptor port



## 10. User Interface and Display



Item	Name	Function
1a	START/SHORT SPIN	Press 'START' to start the operation of the centrifuge.
1b	START/SHORT SPIN	Long press and hold the 'START/SHORT SPIN' button after setting the required speed to run the centrifuge for a short time.
2a	STOP/LID OPEN	Press this button to stop the ongoing operation. Lid opens automatically after the rotor comes to a stop.
2b	STOP/LID OPEN	Press this button to open the lid of the centrifuge.
3a	SPEED/ROTOR	Press this button to select the speed value. Then, press '+/-' to set the speed value in RPM.
3b	SPEED/ROTOR	Long press and hold this button to select the rotor.
4	TIME	Press 'Time' to select the time value. Then, press '+/-' to set the Time value in minutes.
5	+/-	'+' is used to increase and '-' is used to decrease values.
6	RPM/RCF	Used to toggle display between RPM and RCF.
7	PROGRAM MODE	Long press and hold the 'PROG' button to enter the Program Mode and select/set any program from the 99 available.

## 11. Rotor Installation

### 11.1 Rotor Removal and Replacement

Upon receiving the centrifuge, its rotor comes pre-installed. If the rotor needs to be removed or replaced, follow the procedure below.

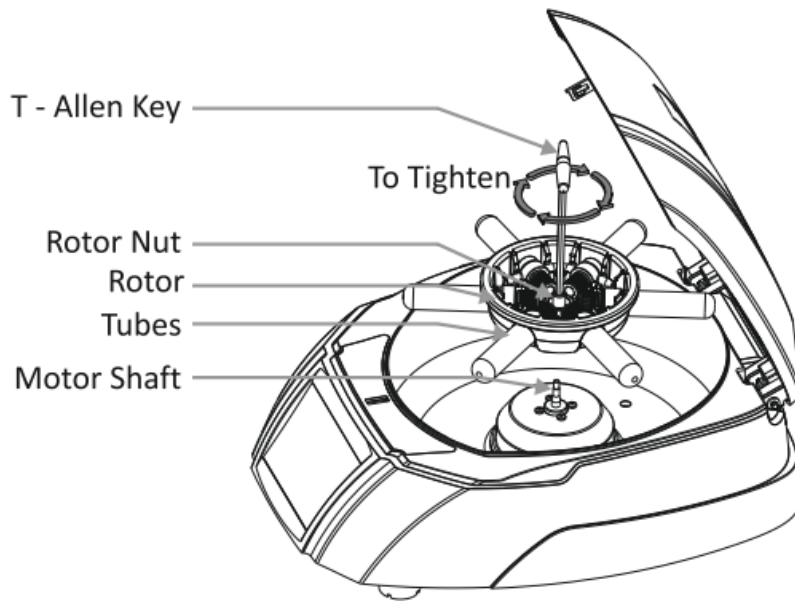
#### 11.1.1 Removing Rotor

1. Do not try to remove or loosen the rotor with bare hands
2. Using a T-Allen Key, loosen the rotor nut by turning it anti-clockwise

#### 11.1.2 Replacing Rotor

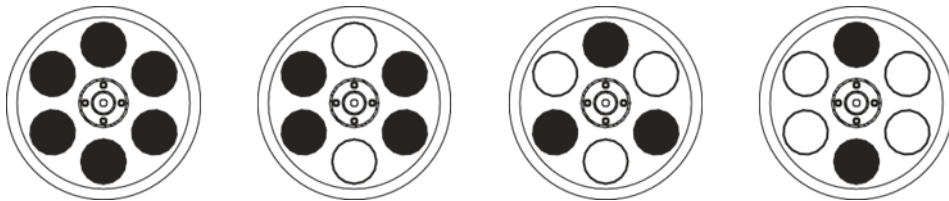
1. To replace or install the rotor, take the rotor and load it vertically on the motor shaft
2. Place the rotor nut in the centre hole of the rotor onto the motor shaft
3. Put a T-Allen Key in the rotor nut and turn clockwise to tighten and anti-clockwise to loosen the rotor

**NOTE:** Check the rotor is firmly tightened before running.

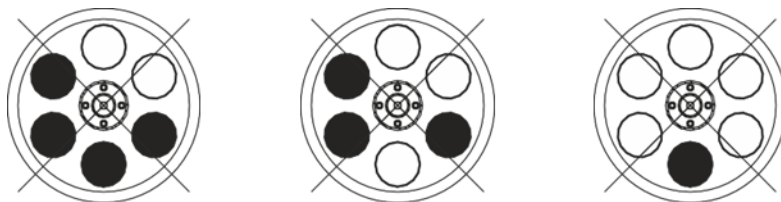


## 12. Balancing the Rotor

1. Always balance the rotor before beginning operation. Below is the process for symmetrical loading of tubes in the rotor.



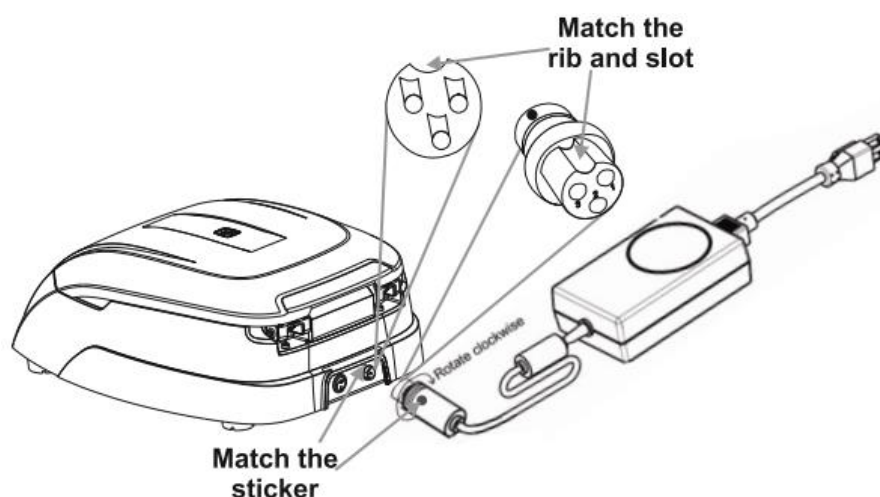
2. The above illustration is the method to load the tubes symmetrically in the rotor. The samples in the tubes should be of equal volume.
3. Symmetrical loading of tubes in the rotor is necessary. Otherwise, vibration or imbalance can occur which can cause serious damage to the centrifuge.
4. If the tubes aren't loaded symmetrically, the imbalance detector will stop the centrifuge for device and 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 and restart the centrifuge.
5. This same process is to be followed when using an 8 tube rotor or 16 tube rotor.
6. Below is the incorrect method of loading tubes in the centrifuge rotor.



**NOTE:** Incorrect loading of tubes can cause damage. The tube holder is part of the rotor. All the 6 tube holders are mandatory to place whether 2, 3, 4 or 6 tubes are used in balanced condition.

## 13. Operating the Centrifuge

### 13.1 Switch on the Centrifuge



After connecting the power adaptor, switch the centrifuge on at the main power supply and the switch at the rear side of the centrifuge. Make sure to check the rotor fitment before use. The centrifuge will not operate with the lid open.

**NOTE:** Maintain a gap of three seconds between switching the centrifuge OFF and ON again. DO NOT switch OFF and ON again instantly.

### 13.2 Setting Speed and Time

After closing the centrifuge lid, follow the procedure below to set the parameters.

#### 13.2.1 Setting Time

The time on the display will show in minutes. The timer set for operation is between 1-999 minutes and infinite. Infinite time is seen as ']['. To set the time, press the 'TIME' button and then set the value by pressing the '+/-' button. When the 'TIME' button is pressed, the 'Mins' display will flash indicating the time value is selected. Once the time value is selected, single pressing '+/-' will increase or decrease the time by 1 minute. Long pressing and holding the button will quickly increase or decrease the time. The time value will be saved after it has flashed five times.

### 13.2.2 Setting Speed

Speed is displayed as RPM. The minimum and maximum speed of the centrifuge is 500 RPM and 4000 RPM, respectively. When the centrifuge is used for the first time, the speed will be set to 500 RPM and shown as '500'. Once the speed value is selected, single pressing '+/-' will increase or decrease the speed by 10 RPM. Long press and hold '+/-' to quickly increase or decrease the speed value. The speed value will be saved after it has flashed five times.

### 13.3 Selecting the Rotor

Long press and hold the 'SPEED/ROTOR' button to select the rotor number as per the capacity mentioned in the table below.

3 Rotor Options			
Rotor No.	Rotor Type	Capacity	Max RPM/RCF (xg)
1	Horizontal Swing Out	6 x 10ml	2270
2	Fixed Angle	8 x 15ml	1950
3	Fixed Angle	16 x 10ml	2180

### 13.4 Switching to RCF Display

Press the 'RPM/RCF' button to change the mode from RPM to RCF (Relative Centrifugal Force). After pressing the button, the display will show the speed in RCF. Maximum RCF speed of the centrifuge is 2270 xg. The system will automatically convert the values from RPM to RCF and vice versa.

### 13.5 Short Spin Centrifugation

Short spin centrifugation is the feature for short run. It will run as long as the button is pressed. Set the rotational speed prior to short spin as required. During short spin, the timer will be in incremental mode.

**This feature can be activated by long pressing and holding the 'START/SHORT SPIN' button. After releasing the short spin button, the time on the display will show the duration of the short spin.**

### 13.6 Program Mode

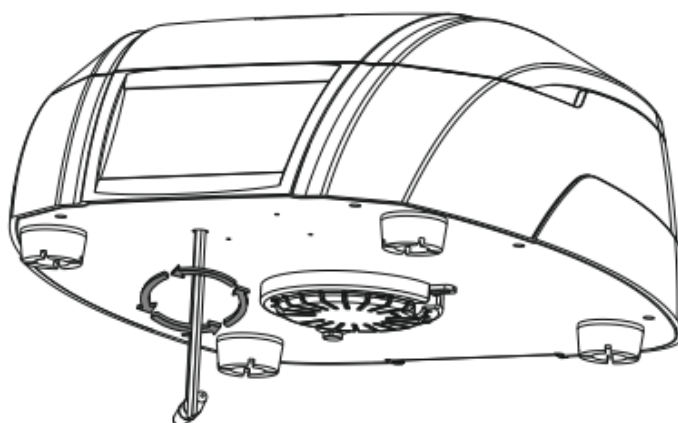
Program mode operation is the feature which allows users to save 99 programs which can have different speed and time parameters. The user can use any of these programs simply by turning ON the program mode. To turn ON the program mode, long press and hold the 'PROG' button, the display will flash and show 'P01' indicating program mode is activated. The user can select any program from 'P01 – P99' by pressing '+/-' when the program display is flashing. Once the required program is selected, press 'Speed' to select and set speed value, press 'Time' to select and set the time value.

Once all values are set, the display will flash five times and after that all the selected values of different parameters will be saved in the respective program. If the user wants to set another program while the display is flashing, press '+/-' to move onto the next program and set the values. If the user wants to modify a previously saved program, press the 'PROG' button and select the program you want to modify by using '+/-'.

The selected program will show the previously saved values. The user can change the values of the parameters as required. Once all parameters are changed, the program will be saved automatically with new values after the display showing the select program flashes five times.

### **13.7 Emergency Stop/Lid Release**

If the lid will not open, disconnect the centrifuge from the mains supply. Wait until the rotor comes to a standstill (this may take some time). Once the rotor has stopped, rotate the allen key anti-clockwise underneath the centrifuge as shown in the figure below. This will open the centrifuge lid.



### **13.8 Imbalance Detection**

The centrifuge is equipped with an imbalance detection safety feature. When the rotor is not loaded symmetrically, the imbalance detector is activated and will stop the centrifugation. 'Err 55' will be shown on the display. First, correct the imbalance load using the method described in Section 12 of this manual. After correcting the imbalance, switch the centrifuge off and on. The values will be the same as set before imbalance. The imbalance detection feature cannot be deactivated as it is factory fitted.

## 14. Rotor Compatibility

The Clinispin CT30 is compatible with three rotors that the user can choose from. Each rotor has a different radius and so the corresponding RCF will also be different. When the user operates a particular rotor, the user has to select the rotor number for that particular RCF. Rotor selection is covered in Section 13.3 of this manual with technical specifications detailed in Section 5.

## 15. Maintenance and Cleaning

- The rotor and the outside of the centrifuge should be cleaned regularly with a damp (with water) cloth.
- Ensure that the centrifuge is not plugged in while cleaning.
- Wear protective clothing and safety glasses while operating and cleaning the centrifuge.
- The brushless motor in the centrifuge requires no routine maintenance. Any required service should be performed by Woodley Equipment Company authorised personnel only. Repairs performed by unauthorised 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 a clean, soft cloth. Excessive amounts of liquid should be avoided.

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

- After cleaning, ensure all parts are dry before using.
- Regular cleaning of the rotor is important.
- If the rotor chamber needs cleaning, use a cloth or sponge dampened 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.

## 16.Troubleshooting

The Clinispin CT30 has a self-diagnostic function. If a problem occurs, an error code will be displayed on the screen and the operator can determine the malfunction with the error codes below.

<b>Error</b>	<b>Problem</b>	<b>Solution</b>
No display	No mains power connection	Check power and properly plug in the power adaptor at both ends.
	Power failure	Check the main fuse in the lab.
	Improper connection	Connect the adaptor properly.
Err 1	Lid doesn't close properly	After 'Err 1' is displayed, turn the centrifuge off and then turn it on. Then, use the emergency lid through the allen key on clockwise rotation.
Lid Open	If the lid is closed and the display shows 'lid open', the rotor will not operate	Turn the centrifuge off and then turn it on. Press the 'LID OPEN' button 2-3 times.
Err 55	Rotor not loaded symmetrically	Load the rotor symmetrically and restart the centrifuge.
Centrifuge lid cannot be opened	Rotor is still spinning	Wait for the rotor to come to a stop.
	Power failure	Rotate allen key underneath the centrifuge for lid release after rotor stops.
Centrifuge shakes during acceleration and makes loud noises while running	Rotor is not loaded symmetrically	Load rotor symmetrically and restart operation.
	Either a broken tube, damage to the rotor or motor is the cause for the noise	Clean centrifuge. For a damaged rotor/motor, contact Woodley Equipment Company.
	Rotor is damaged	Remove and change the rotor.
Err 52	Rotor is stuck	Turn the centrifuge off. Check and fit the rotor properly and turn the centrifuge on.



**NOTE:** *If the centrifuge is working slowly or is hot due to overdraw current, allow to cool. Restart the centrifuge and check it again. Do not use liquid with density higher than 1.2g/ml for full load operation.*

## 17. Warranty

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 manual. This warranty does not cover damage caused by accidents, 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 Woodley Equipment Company Ltd 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 well packed 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 authorisation will not be entertained. All items returned for service should be returned in the original packaging or suitable carton, padded to avoid damage. Woodley Equipment Company is not responsible for any damage incurred by improper packaging.

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

## 18. 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 and the UK:

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) and in the UK by UK SI 2013 No. 3113 – Waste Electrical and Electronic Equipment Regulations 2013. According to these regulations, any devices supplied after 13.08.05 in the business-to-business sphere, to which this product is assigned, may no longer be disposed of in municipal or domestic waste. They are marked with the symbol below 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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