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Benchmate C6VX Centrifuge



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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 brushless DC motor and an imbalance detection safety feature. This centrifuge may be used in a variety of diagnostic procedures and offers compatibility with a variety of tubes towards that end.

2. INTENDED USE

This centrifuge is designed for blood centrifugation & other applications such as those performed by medical practitioners, pathological laboratories, and hospitals.

3. FEATURES

- Maximum volume of 8 x 15 ml
- Imbalance detector with auto-cutoff for safe operation
- Brushless DC motor
- Lid Safety Lock Mechanism - Unit remains locked during operation
- Digital display with speed and time indicators
- Velocity setting from 500-6500 RPM in 100 RPM steps
- One press changeover from RPM to RCF functionality
- Digital Timer
- Reduction Adaptors for smaller tubes
- Emergency lid release usable without power
- Automatic internal diagnosis & error display

NOTE: Before using the instrument, please read this user manual carefully. This user manual is intended to assist with the operation and care of the unit only and not its repair. For repair please contact the supplier.

4. TECHNICAL SPECIFICATION

Autoclavable	8 Tube Rotor
Motor Type	Brushless Motor
Maximum Volume	8 x 15 ml
Speed Setting	500 to 6500 RPM
Maximum RCF	3873 x g
Speed Accuracy	± 100 rpm
Run time	1 min to 30 mins & infinite mode

4. TECHNICAL SPECIFICATION

Acceleration Time	43 ± 2 seconds
Deceleration Time	40 ± 2 seconds
Size (L x W x H)	260 x 244 x 203 mm
Weight	4 Kg (with rotor)
Input Voltage	24 V --- 5A
Power Consumption	120 W

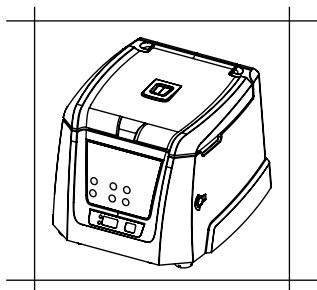
5. STANDARD ACCESSORIES

1. Power Adaptor: 100-230 VAC, 50/60 Hz (Input)
24 V --- 6.25A (Output)
2. 8 - slots rotor (Pre-installed)
3. T-Allen Key
4. Reduction Adaptors (set of 8)
5. Tube Holder & Rubber cap (8 nos.)
6. Product user manual & warranty card

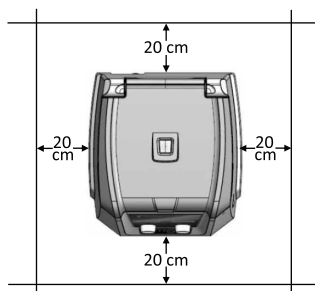
6. INSTALLATION

Gently remove the upper packaging and take out the centrifuge, making sure to hold the centrifuge from the bottom. Before using the centrifuge, ensure that all packaging and accessories are removed from inside of the centrifuge and rotor chamber. The rotor is already installed. Please ensure sure that rotor is firmly installed and tightened. Please keep all the packaging for at least 2 years in case it is needed for warranty purposes.

Please inspect the following diagram to ensure the centrifuge is installed properly:



Must be used on Flat & Non - Slippery Surface

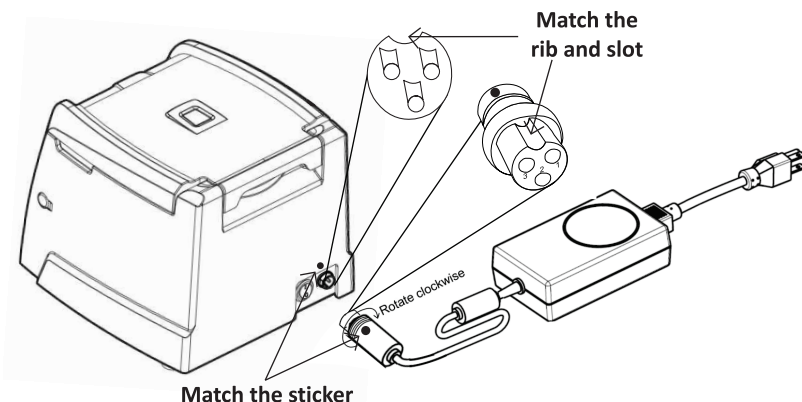


Must have Clearance of 20 cm from all 4 sides

6. INSTALLATION

6.1 CONNECTING THE POWER ADAPTER TO THE CENTRIFUGE

1. Unpack the power adapter cable and find the end labeled with a sticker, matching the image below. This end will be connected to the centrifuge.
2. Make sure the power is set to OFF during this procedure.
3. The sticker on the power adapter should align with the sticker at the top of the power adapter slot on the centrifuge. Once these are aligned, push the power adapter into the centrifuge. Additionally, when aligned, the power adapter slot should align with the rib on the centrifuge (see image below).

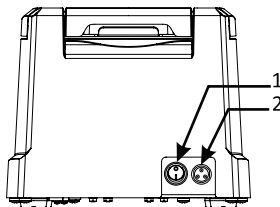


4. If matched correctly the plug, will go in easily without much force (do not try to force the plug in if it is not matched properly). Once the plug is inserted into position, turn the loose upper ring clockwise to tighten & to secure the attachment.

7. STANDARD PARTS LISTING



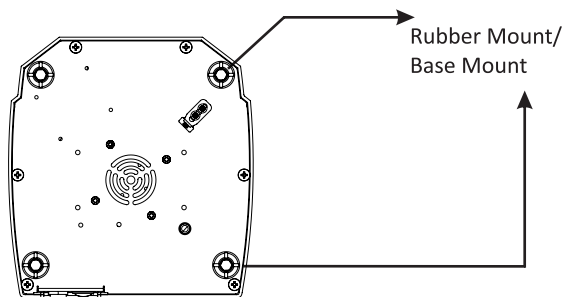
Front View



Rear View

7. STANDARD PARTS LISTING

1. View Window
 2. Groove to open the lid
 3. Operation and setting Buttons
 4. Display
 5. Emergency Lid Release
1. Power Switch
 2. Adaptor Port



Bottom View

8. TUBE HOLDER & ADAPTORS

Tube Holder



Adaptor "RA-1"



Adaptor "RA-2"



Rubber Cap

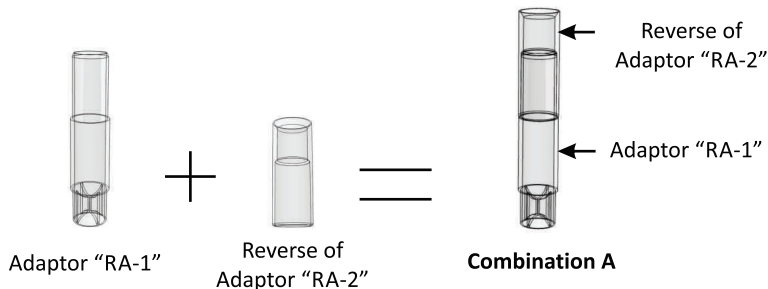


"Tube Holders" should always be used. All of the "Tube Holders" need to be included, regardless of how many tubes are loaded. The above adaptors and rubber caps can be combined to hold different types of tubes. The different combinations are shown below and on the following pages.

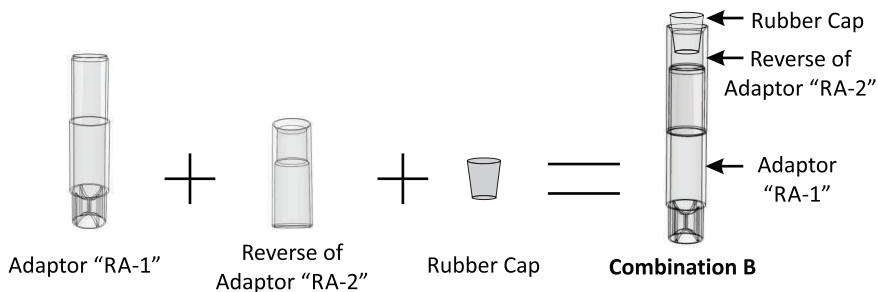
8. TUBE HOLDER & ADAPTORS

NOTE: 1) Maximum RCF value changes for different length of tubes. 2) "Tube Holders" must be included as part of the rotor. Operation without the holders is not recommended. All "Tube Holders" are mandatory to place regardless of how many tubes are being centrifuged.

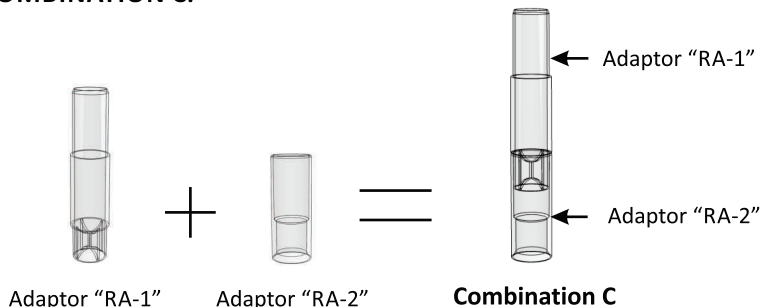
COMBINATION A:



COMBINATION B:



COMBINATION C:



8. TUBE HOLDER & ADAPTORS

ADAPTOR COMBINATION & TUBE SIZES

1) NO ADAPTOR COMBINATION

The maximum diameter and proposed length for such combination are:

Maximum Tube Diameter : 18 mm

Proposed Tube Length : 90 to 120 mm



TUBE HOLDER

2) COMBINATION "A" :

The maximum diameter and proposed length for such combination are:

Maximum Tube diameter : 13 mm

Proposed Tube Length : 75 to 100 mm



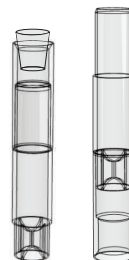
A

3) COMBINATION "B" OR "C" :

The maximum diameter and proposed length for such combination are:

Maximum Tube Diameter : 13 mm

Proposed Tube Length : 55 to 75 mm

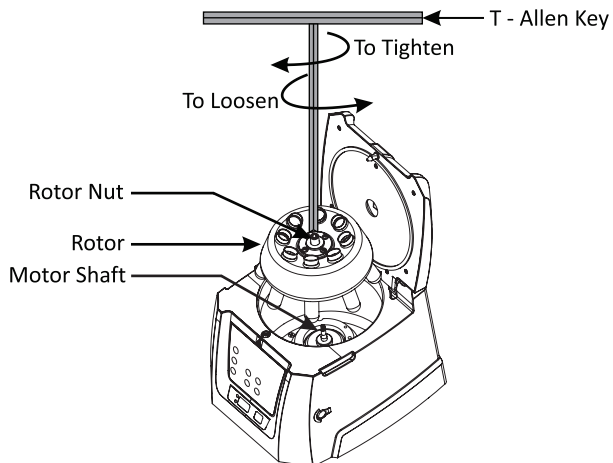


B

C

Check both the criteria (Max. Diameter & Proposed Length) of the blood collection tubes and use the appropriate adaptor-tube holder combination or only tube holder to accommodate the tubes.

9. ROTOR INSTALLATION



9. ROTOR INSTALLATION

The rotor of the centrifuge is pre-installed. In case of any spillage, remove the rotor as shown in the above figure to clean the rotor and its chamber thoroughly.

9.1 REMOVING ROTOR

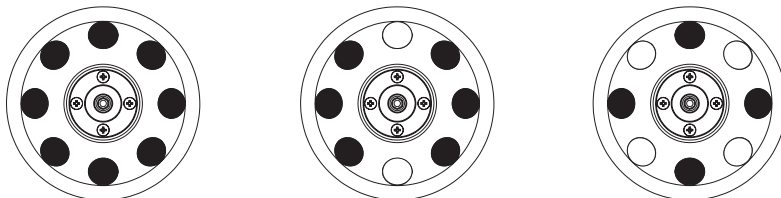
1. To remove rotor, first remove the Tube Holders.
2. Using the T-Allen key, loosen the rotor nut by rotating rotor nut counter clockwise.
3. Once rotor nut is loosened, take the rotor out vertically.

9.2 INSTALLING THE ROTOR

1. Make sure the rotor shaft and the rotor mounting hole are clean. Load the rotor vertically into the motor shaft.
2. Put the T-Allen key in the rotor nut & turn clockwise to tighten the rotor.
3. After properly fastening the rotor, place the Tube Holders into the rotor.

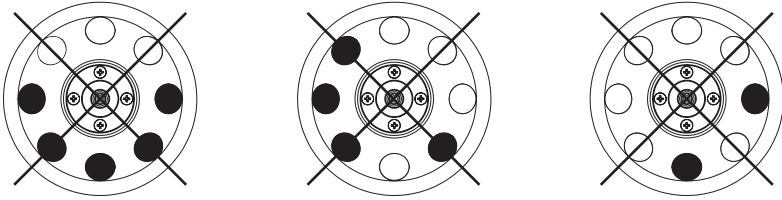
10. BALANCING THE ROTOR

1. Always balance the rotor before centrifugation Symmetrical loading of tubes in the rotor is necessary for proper operation. If not loaded correctly, vibration or imbalance can occur in the rotor, which can cause serious damage to the centrifuge. The following are process of symmetrical loading of centrifuge tubes inside the rotor.



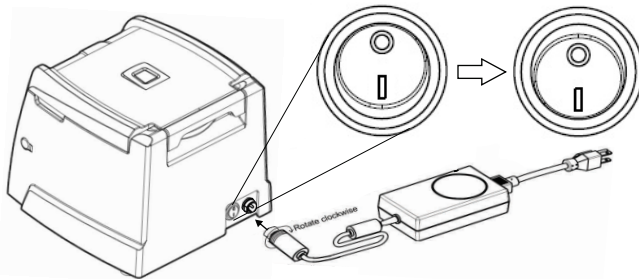
2. The samples in the tubes need to be of equal volume. Tube holders need to be included in all rotor slots in order to achieve a balanced rotor.
3. If the tubes are not loaded symmetrically then the imbalance detector will cut off the centrifuge operation. This will stop the centrifuge and Err 55 will be seen indicating the tubes are not loaded symmetrically. To resume operation, load the tubes symmetrically & restart the centrifuge.
4. Below are examples of incorrectly loaded rotors.

10. BALANCING THE ROTOR

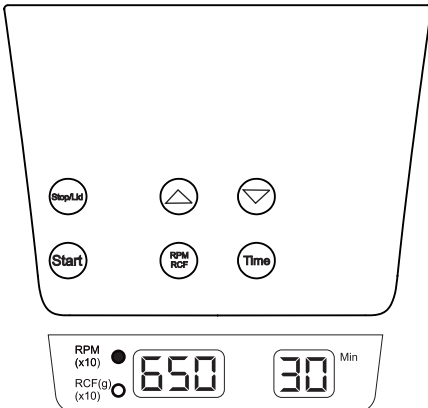


11. OPERATION

After properly installing the centrifuge, switch the power on the rear face of the centrifuge to ON. The lid status will be shown on the display. If the lid is open, the display will show “Lid” and if it is closed, the set RPM will be displayed. Please ensure that the Tube Holders are inside the rotor.



11.1 SETTING THE SPEED AND TIME



1. To set the speed, press the RPM/RCF button first, then with the use of increment & decrement buttons, set the desired speed.
2. The increment or decrement will take place in steps of 10 RPM. The indicator below will show the values.
3. The minimum and maximum speed of the centrifuge is 500 RPM and 6500 RPM respectively. Speed is to be read as 10x the value shown in the indicator.

11. OPERATION

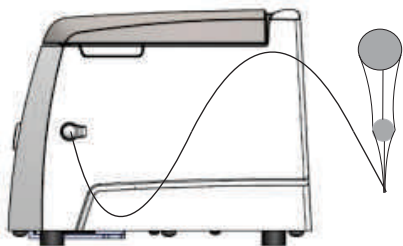
4. The speed can be changed during the centrifuge operation. Once the speed is changed, the centrifuge will start running at the updated speed for the remaining time left on the centrifuge cycle.
5. To set the run time, press the TIME button first, then use the INCREMENT and DECREMENT buttons. The set time will be displayed in the display window at the bottom.
6. The time range in this centrifuge allows user to choose between 1 min & 30 minutes or infinite mode. Infinity mode displays as ∞.
7. The centrifuge uses a count down timer - after each minute of usage, the timer is reduced by 1 minute.

NOTE: Centrifuge will not run with the lid open.

11.2 SWITCHING TO RCF DISPLAY

Press the RPM/RCF to change the mode from RPM to RCF, while in RCF mode the speed value is to be read as value x 10 in the display window. The maximum RCF of the centrifuge is 3684 / 3873 xg. Press the RPM/RCF to see corresponding RCF value.

11.3 OPENING THE CENTRIFUGE LID IN CASE OF POWER FAILURE



In case of a power failure, the centrifuge can be opened to remove the samples inside. First, disconnect the centrifuge from the power. Wait until the rotor completely stops. Once the rotor has stopped, pull out the emergency lid release as shown in

the figure. This will open the centrifuge lid. After the centrifuge lid opens, push the thread back in the hole with your hand and fit the emergency release cap back in the hole.

11.4 STARTING & STOPPING OPERATION

Once all the parameters like Speed & Time are set, press the “Start” button to START operation.

1. Make sure that the lid is closed before starting the centrifuge.
2. The display will keep on blinking until the set parameters are (RPM/RCF & Time) reached.
3. When centrifugation is completed the lid of the centrifuge opens automatically

11. OPERATION

and the timer value will again start blinking.

Press the STOP/LID button any time the centrifuge needs to be stopped.

After every run the lid opens by itself. In any other case, when the lid needs to be opened push the STOP/LID button to open the lid.

11.5 IMBALANCE DETECTION

This centrifuge is equipped with an imbalance detection safety feature. When the rotor is not loaded symmetrically, the imbalance detector gets activated. This will cut off the centrifugation & error “Err55” will be shown on the display. To correct the imbalance, open the centrifuge lid and correct the imbalance using methods described in the balancing the rotor section (page no.8) of this manual. After correctly loading the tubes into the rotor turn off the centrifuge & turn it back on.

12. SAFETY PRECAUTION

1. Never use the centrifuge in any manner not specified in the manual.
2. Never move the centrifuge while it's operating .
3. The rotor must always be securely fastened. If the centrifuge makes an unusual noise during the operation, the rotor fit needs to be checked.
4. The rotor must be loaded symmetrically.
5. Do not use the centrifuge or rotor, if it is not installed correctly or if it is damaged.
6. Do not use the centrifuge or rotor if it shows any sign of external mechanical or electrical damages.
7. The centrifuge must be used only for the specified application. It must not be operated in hazardous or flammable environment and no hazardous or flammable content should be centrifuged.
8. Do not fill tubes while they are in the rotor. Liquid spillage may harm the device.
9. If liquid is spilled on the rotor or rotor chamber, the centrifuge must be cleaned immediately.
10. “Tube Holders” are a part of the Rotor. They must be used in all rotor slots even if no tubes are loaded into them.

13. 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.

13. TROUBLESHOOTING

ERROR	PROBLEM	SOLUTION
No display	No main power connection.	Check power & properly plugin power adaptor at both ends.
	Power failure	Check the main fuse of the lab.
	Improper connection.	Connect adaptor properly.
Err 55	Rotor not loaded symmetrically.	Load the rotor symmetrically & restart the 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 loud running noises while running	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 tube. For damaged rotor/motor contact a service representative.
	Rotor is damaged.	Remove & change rotor
Err 52	Rotor is Stuck	Turn OFF the centrifuge, Check & fit the rotor properly & turn ON the centrifuge

IMPORTANT NOTE:

1. If the centrifuge is working slow or hot due to overdrawn current, restart the centrifuge and check it again.
2. Do not use liquid with density higher than 1.2g/ml for full load operation.

14. 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 :

14. WARRANTY STATEMENT

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 Oxford Lab Products for the product 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 product 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 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.

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

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

For your reference, make a note of serial number, date of purchase and supplier here.

Serial No.:

Purchase Date:

Supplier:

15. PRODUCT DISPOSAL

By observing proper disposal of the equipment, you will help conserve natural and environmental resources along with protecting human health.

This equipment is marked with the crossed out wheeled bin symbol to indicate that this equipment must not be disposed of with unsorted waste.

15. PRODUCT DISPOSAL

User is responsible for correctly disposing of the equipment by handing it over to an authorized facility for separate collection and recycling. Also, it's your responsibility to decontaminate the equipment in case of biological, chemical and/or radiological contamination, so as to protect from health hazards the persons involved in the disposal and recycling of the equipment.

Please contact your local dealer from whom you originally purchased this equipment to get more information about where you can drop off your waste equipment.



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Call us at 800-554-4920 to schedule a product demonstration or to learn about the best consumables for your equipment.

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Thank You for choosing Oxford Lab Products for your research.