

Labnet Spectrafuge™ 6C

Instruction Manual

Catalog Numbers:

C0060

C0060-230V



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1.0 Introduction

The Spectrafuge™ 6C is a small benchtop centrifuge designed for separation of various research samples and is supplied with a 6 x 15 mL rotor. Adapters are available for tubes smaller than 10 mL. The Spectrafuge 6C reaches speeds of up to 6,500 rpm/4,000 x g.

2.0 Safety Information

Before using the Spectrafuge 6C for the first time, please read this entire manual carefully. If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

2.1 Symbols and Conventions

The following chart is an illustrated glossary of the symbols that may be used in this manual or on the product.



The electrical warning indicates the presence of a potential hazard which could result in electrical shock.



CAUTION This symbol refers you to important operating and maintenance (servicing) instructions within this product Instruction Manual. Failure to heed this information may present a risk of damage or injury to persons or equipment.

2.2 Operation Safety Precautions

- ▶ Never use the centrifuge in any manner not specified in these instructions.
- ▶ Never operate the centrifuge without a rotor properly attached to the shaft.
- ▶ Never fill tubes while they are in the rotor. Liquid spillage may harm unit.
- ▶ Never put hands in the rotor area unless the rotor is completely stopped.
- ▶ Never move the centrifuge while the rotor is spinning.
- ▶ Never use solvents or flammables near this or other electrical equipment.
- ▶ Never centrifuge flammable, explosive or corrosive materials.
- ▶ Never centrifuge hazardous materials outside of a hood or proper containment facility.
- ▶ Always load the rotor symmetrically. Each tube should be counterbalanced by another tube of the same type and weight.
- ▶ Always locate the centrifuge within easy access to an electrical outlet.
- ▶ Always use only centrifuge tubes designed to withstand centrifugal forces of at least 4,000 x g.
- ▶ Always use a wrench to tighten rotor nut.

Do not operate the centrifuge if any of the following conditions exist:

- ▶ The centrifuge has not been installed properly.
- ▶ The centrifuge is partially dismantled.
- ▶ Service has been attempted by unauthorized or unqualified personnel.
- ▶ The rotor has not been installed securely on the motor shaft.
- ▶ Rotors and accessories not belonging to the standard range are being used without permission being obtained from the manufacturer to use such rotors and/or accessories in the centrifuge.
Exception: Centrifuge tubes, normally available in the laboratory.
- ▶ The centrifuge is located in an explosive atmosphere.
- ▶ Materials to be centrifuged are combustible and/or explosive.
- ▶ Materials to be centrifuged are chemically reactive.
- ▶ The rotor load is not properly balanced.

3.0 Specifications

Maximum Speed	6,200 rpm
Maximum RCF	4,000 x g
Maximum Volume	6 x 15 mL
Admiss. Density	1.2 kg/dm ³
Electrical/Fuse Rating	100-240V, 50/60 Hz, 45W, 0.78A
Dimensions (W x D x H)	10.6 x 12.0 x 8.3 in. (26.9 x 30.4 x 21.1 cm)
Temperature Range	5°C to 40°C (up to 80% RH at 31°C, decreasing linearly to 50% RH at 40°C)
Protection Class	IP21

The Labnet Spectrafuge™ 6C is designed to be safe at least when operated under the following conditions:

- ▶ Indoor use only
- ▶ Altitude up to 2,000 meters
- ▶ Pollution degree 2

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. The equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the user manual, may cause harmful interference to radio communications. Operation of equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference.



CAUTION: This equipment is not intended for use in residential environments and may not provide adequate protection to radio reception in such environments.

This ISM device complies with Canadian ICES-001.

Cet appareil ISM est conforme à la norme NMB-001 du Canada.

4.0 Package Contents

- ▶ Labnet Spectrafuge 6C
- ▶ Angle rotor for 6 x 15 mL tubes
- ▶ Rotor wrench, 7/16
- ▶ Power Cord

5.0 Installation

The centrifuge should be installed on a rigid, even surface such as a stable laboratory bench, cabinet, etc. To guarantee sufficient ventilation, ensure that the centrifuge has at least 6 inches (15 cm) of free space on all sides, including the rear.

The centrifuge should not be located in areas subject to excessive heat such as in direct sunlight or near radiators or the exhaust of a compressor, as a buildup of heat may occur within the chamber.

Before operating the centrifuge, check that the power source corresponds to that on the manufacturer's rating label, then connect the power cord to the centrifuge and the power source.

6.0 Installation of Rotors and Rotor Maintenance

The following accessories are available for the Labnet Spectrafuge™ 6C:













Angle rotor for 6 x 15 mL tubes

Cat. No.	TR100-CH
Tube Measurement	<ul style="list-style-type: none"> ▶ 10 mL (16 x 100 mm) ▶ 15 mL (17 x 120 mm)
Maximum Speed	6,200 rpm
Centrifuging Radius	9.3 cm
RCF	4,000 x g

Adapter for 5 mL (12 x 75 mm) and 7 mL (13 x 100 mm) tubes

Cat. No.	C0200-17A
Tube Measurement	<ul style="list-style-type: none"> ▶ 12 x 75 mm ▶ 13 x 100 mm ▶ Common Sarstedt™ style tubes

Tube and tube adapter reference chart:

		Standard Blood Collection Tubes				Sarstedt** Blood Collection Tubes							
Dimensions (mm)	17 x 120	16 x 100	13 x 100	12 x 75	15 x 102	16 x 92	15 x 92	13 x 90	11 x 92	11 x 66	13 x 65	8 x 66	
Capacity*	15 mL	10 mL	7 mL	5 mL	10 mL	9-10 mL	7-8 mL	4.9 mL	4-5 mL	2-3 mL	2-3 mL	1-1.4 mL	
Tube image													
Radius (cm)	9.01	9.31	9.31	8.25	9.31	9.31	9.31	8.25	8.25	8.25	8.25	8.25	
Max. RCF	3,872	4,001	4,001	3,545	4,001	4,001	4,001	3,545	3,545	3,545	3,545	3,545	
Tubes per Rotor	6	6	6	6	6	6	6	6	6	6	6	6	
Adapter (C0200-17A)	–	–	Yes	Yes	–	–	–	Yes	Yes	Yes	Yes	Yes	

*Capacity may vary based on serum volume.

**Sarstedt is registered trademark of Sarstedt Company. The compatibility of these tubes has been independently determined by Corning and there should be no implication of sponsorship or endorsement by Sarstedt Company.

6.1 Rotor Maintenance

The rotor should be cleaned thoroughly after each use. **NOTE:** Thorough cleaning must be performed when spinning samples containing phenol or phenol chloroform. Periodically inspect the rotor for dents, dings, scratches, discoloration and cracks. If any damage to the rotor is found, discontinue use of the rotor immediately and replace.

6.2 Removing and Installing the Angle Rotor

- ▶ Remove the rotor screw from the motor shaft by turning the screw counterclockwise.
- ▶ Lift the rotor upward and remove from the centrifuge. Ensure that the motor shaft adapter remains on the motor shaft (Figure 1).
- ▶ Clean the motor shaft and motor shaft adapter (Figure 1). Place the rotor on the motor shaft (Figure 1) and over the motor shaft adapter (Figures 1 and 2).

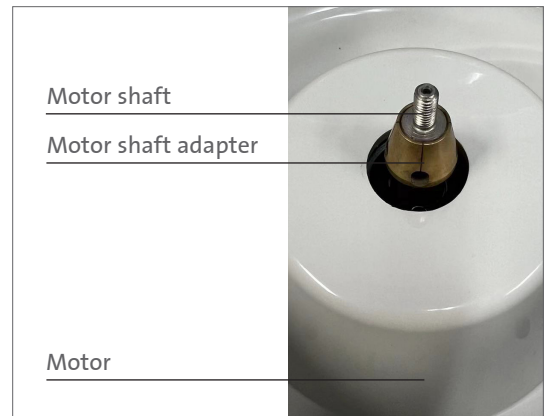


Figure 1. Chamber and motor shaft.



Figure 2. Bottom of angle rotor.

- ▶ When loading the rotor, refer to Figure 3. Loading in the pattern indicated will ensure a balanced load. Tubes to be loaded should be filled equally by eye. The difference in the weight between the tubes should not exceed 2-3 grams. A partially loaded rotor may be centrifuged if the loading scheme for balancing a rotor given in Figure 3 is followed.

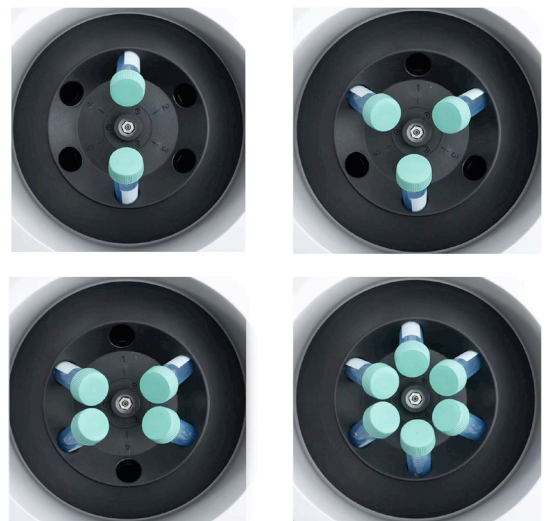


Figure 3. Loading the rotor.

6.3 Overloading the Rotor

The maximum load of the rotor and the maximum speed has been established by the manufacturer. Do not attempt to exceed these values. The maximum speed of the rotor has been measured for liquids having a homogeneous density of 1.2 g/mL or less. In order to centrifuge liquids with a higher density it is necessary to reduce the speed. **NOTE:** Failure to reduce the speed may result in damage to the rotor and centrifuge. The revised maximum speed can be calculated with the following formula:

$$\text{Reduced speed } (n_{\text{red}}) = \sqrt{\frac{1.2}{\text{higher density value}}} \times \text{max speed } (n_{\text{max}})$$

Example:

Where the density of the liquid is 1.7, the new maximum speed would be calculated as follows:

$$(n_{\text{red}}) = \sqrt{\frac{1.2}{1.7}} \times 6,200 = 5,209 \text{ rpm}$$

If in doubt concerning maximum speeds, please contact the manufacturer for assistance.

7.0 Operation



CAUTION: Never attempt to operate the centrifuge with rotors or adapters that show signs of corrosion or mechanical damage. Never centrifuge strongly corrosive materials that may damage the rotors or accessories.

7.1 Closing the Lid

After the rotor has been properly secured and loaded, close the centrifuge lid, making sure that the interlock has been engaged.

7.2 Lid Release

Following a run, the centrifuge display will show flashing “00”. This signals the end of a run, and the lid can now be opened by pressing the lid knob (left).

NOTE: The lid cannot be opened until the display flashes “00” and the rotor has stopped.



CAUTION: Do not attempt to open the lid of any centrifuge until the rotor has come to a complete stop.

In the event of a power failure or malfunction, it may be necessary to open the lid manually.

1. Disconnect the power cord from the wall socket.
2. Remove the plastic plug, located on the left side of the unit, below the quick button.
3. Pull the cord (attached to the plug) to open the lid lock manually.

7.3 Lid Lock

The centrifuge can be started only with the lid securely closed. Do not attempt to open the lid until the end of run signal “00” is displayed.

7.4 Speed Selection

The speed (rpm) can be selected from 300 to 6,200 rpm with the knob (right). The set speed can be viewed at all times on the large LED display (right).

7.5 Selection of Operating Time and Momentary Operation

Time can be selected in half minute intervals from 0.5 to 10 minutes, and in one minute intervals from 11 to 30 minutes. Time can also be set to continuous/hold by turning the timer knob past the thirty minute position. This will display the continuous setting On.

When the preselected time expires, the centrifuge will stop automatically. To stop the centrifuge prior to the expiration of set time, press the Start/Stop knob.

The centrifuge may be operated manually by pressing and holding the Start/Stop knob. The centrifuge will continue to run as long as the knob is depressed.



Figure 4. Spectrafuge 6C control panel layout.

7.6 Starting the Centrifuge

Once the time and speed have been set, the centrifuge can be started by pressing the Start/Stop knob. The centrifuge will then run for the specified amount of time.

8.0 Service and Maintenance

The Labnet Spectrafuge™ 6C requires no routine maintenance other than the occasional routine cleaning. All repairs should be performed by authorized, qualified personnel only. Repairs performed by unauthorized personnel may void the warranty.

8.1 Cleaning the Centrifuge

Always keep the centrifuge housing, rotor chamber, rotor and rotor accessories clean. All parts should be wiped down periodically with a soft cloth. For more thorough cleaning, use a neutral cleaning agent (pH between 6 and 8) applied with a soft cloth.

Excessive amounts of liquid should be avoided. Liquid should not come into contact with the motor. After cleaning, ensure that all parts are dried thoroughly by hand or in a warm air cabinet (maximum temperature 50°C).

8.2 Cleaning the Rotor

The rotor should be cleaned after each use. When spinning samples containing phenol or phenol chloroform, the rotor should be cleaned immediately after use.

Should a spill of infectious materials occur within the rotor or chamber, the unit should be disinfected. This should be performed by qualified personnel with proper protective equipment.

8.3 Replacing Fuses

Check the fuse when it is recommended in the Troubleshooting Guide located in this manual. The fuse holder is located in the power inlet on the rear of the unit. Disconnect the power cord from the power inlet. Open the fuse holder drawer by inserting a small screwdriver under the tab and prying it open. Remove the innermost (operative) fuse from its retaining tabs and replace the fuse if necessary. A spare fuse is located in the outermost chamber of the fuse drawer. Replace only with a fuse of exactly the same value as the original (Fuse type may be found in the Technical data section of this manual).

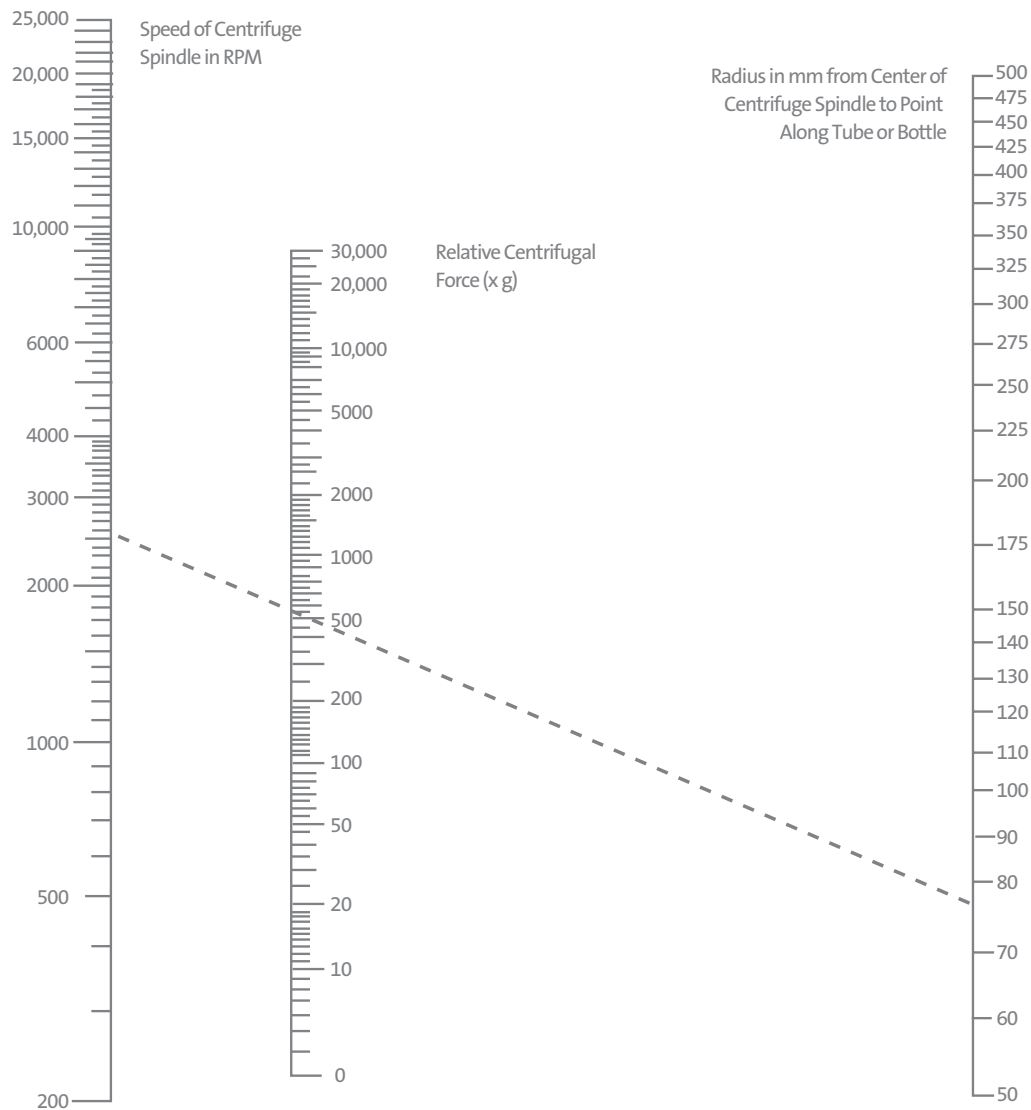
9.0 Troubleshooting Guide

Problem	Possible Cause	Solution
Centrifuge will not start	No power supply	<ul style="list-style-type: none">▶ Check that power is being supplied to the outlet.▶ Check that the power cord is plugged into both the wall outlet and the back of the centrifuge.▶ Check that power cord is not damaged.
	Blown fuse	Check fuse and replace if necessary.
	Defective lid lock	Open manually and have unit serviced.
Lid lock will not release	No power from PC board	Call for service.
	Lid lock is jammed	Call for service.
	Centrifuge is not receiving power	See "Centrifuge will not start".
Centrifuge cannot be started, although power is on	Lid not closed correctly	Close lid correctly.
	No speed or time has been selected	Set speed and/or time.
Centrifuge displays error "03"	Lid opened prior to signal "00"	Close lid and open lid.

Should you have a question about the operation of the Labnet Spectrafuge 6C or if service is required, contact Customer Service. Do not send in a unit for service without first calling to obtain a repair authorization number. Should the unit require return for service, it should be properly packed to avoid damage. Any damage resulting from improper packaging shall be the responsibility of the user.

10.0 Determination of G-values

The centrifuging radius of the 15 mL rotor is 8.5 cm for round bottom tubes and 8.2 cm for conical bottom tubes. See Section 6. for the correct radius when using adapters and smaller tubes. The chart below can be used to determine g-values.



To calculate the RCF value at any point along the tube or bottle, measure the radius (in mm), from the center of the centrifuge spindle to the particular point. Draw a line from the radius value on the right-hand column to the appropriate centrifuge speed on the left-hand column. The RCF value is the point where the line crosses the center column. The nomogram is based on the formula:

$$RCF = (11/17 \times 10^{-7}) RN^2$$

where:

R = Radius in mm from centrifuge spindle to point in tube bottom

N = Speed of spindle in RPM

11.0 Limited Warranty

Corning Incorporated (Corning) warrants that this product will be free from defects in material and workmanship for a period of two (2) years from date of purchase. CORNING DISCLAIMS ALL OTHER WARRANTIES WHETHER EXPRESSED OR IMPLIED, INCLUDING ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE. Corning's sole obligation shall be to repair or replace, at its option, any product or part thereof that proves defective in material or workmanship within the warranty period, provided the purchaser notifies Corning of any such defect. Corning is not liable for any incidental or consequential damages, commercial loss or any other damages from the use of this product.

This warranty is valid only if the product is used for its intended purpose and within the guidelines specified in the supplied 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 motor brushes, fuses, light bulbs, batteries or damage to paint or finish. Claims for transit damage should be filed with the transportation carrier.

In the event this product fails within the specified period of time because of a defect in material or workmanship, contact Corning Customer Service at: USA/Canada 1.800.492.1110, outside the U.S. +1.978.442.2200, visit www.corning.com/lifesciences, or contact your local support office.

Corning's Customer Service team will help arrange local service where available or coordinate a return authorization number and shipping instructions. Products received without proper authorization will be returned. All items returned for service should be sent postage prepaid in the original packaging or other suitable carton, padded to avoid damage. Corning will not be responsible for damage incurred by improper packaging. Corning may elect for onsite service for larger equipment.

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. You may have other rights which vary from state to state.

No individual may accept for, or on behalf of Corning, any other obligation of liability, or extend the period of this warranty.

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

Serial No. _____ Date Purchased _____

Model No. _____ Supplier _____

12.0 Equipment Disposal



According to Directive 2012/19/EU of the European Parliament and of the Council of 4 July 2012 on waste electrical and electronic equipment (WEEE), this product is marked with the crossed-out wheeled bin and must not be disposed of with domestic waste.

Consequently, the buyer shall follow the instructions for reuse and recycling of waste electronic and electrical equipment (WEEE) provided with the products and available at www.corning.com/weee.

To request certificates, please contact us at www.labnetlink.com.

Warranty/Disclaimer: Unless otherwise specified, all products are for research use or general laboratory use only.* Not intended for use in diagnostic or therapeutic procedures. Not for use in humans. These products are not intended to mitigate the presence of microorganisms on surfaces or in the environment, where such organisms can be deleterious to humans or the environment. Corning Life Sciences makes no claims regarding the performance of these products for clinical or diagnostic applications. *For a listing of US medical devices, regulatory classifications or specific information on claims, visit www.corning.com/resources.

Corning's products are not specifically designed and tested for diagnostic testing. Many Corning products, though not specific for diagnostic testing, can be used in the workflow and preparation of the test at the customers discretion. Customers may use these products to support their claims. We cannot make any claims or statements that our products are approved for diagnostic testing either directly or indirectly. The customer is responsible for any testing, validation, and/or regulatory submissions that may be required to support the safety and efficacy of their intended application.

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