

# Labnet Spectrafuge™ 16M Microcentrifuge

Instruction Manual

**Catalog Numbers:**

C0160

C0160-230V



**Table of Contents**

- 1.0 Introduction .....1
- 2.0 Symbols and Conventions.....1
- 3.0 Safety Information .....1
- 4.0 Specifications .....2
- 5.0 Packaging.....2
- 6.0 Installation.....2
  - 6.1 Unpacking the centrifuge .....2
  - 6.2 Required space .....2
  - 6.3 Installation.....2
- 7.0 Rotors and Rotor Maintenance .....2
  - 7.1 Rotors and accessories .....2
  - 7.2 Rotor maintenance .....3
  - 7.3 Mounting and securing the angle rotor .....3
  - 7.4 Removing the rotor .....3
  - 7.5 Overloading rotors .....3
- 8.0 Operation .....4
  - 8.1 Closing the lid .....4
  - 8.2 Lid release.....4
  - 8.3 Lid lock.....4
  - 8.4 Speed selection .....4
  - 8.5 Selection of operating time and momentary operation .....4
- 9.0 Service and Maintenance .....5
  - 9.1 Centrifuge service .....5
  - 9.2 Cleaning the rotor .....5
  - 9.3 Disinfection .....5
  - 9.4 Replacing fuses .....5
- 10.0 Troubleshooting.....5
  - 10.1 Determination of g-values .....6
- 11.0 Limited Warranty.....7
- 12.0 Equipment Disposal .....7

## 1.0 Introduction

The Labnet Spectrafuge™ 16M Microcentrifuge is a small benchtop centrifuge designed for separation of various research samples. The motor is brushless and requires no routine maintenance. The Spectrafuge 16M is supplied with an 18 x 1.5 mL rotor for micro-samples. Adapters are available for tubes smaller than 1.5 mL. The Spectrafuge 16M reaches speeds of up to 14,000 rpm/16,000 x g.

## 2.0 Symbols and Conventions



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 Instruction Manual. Failure to heed this information may present a risk of damage or injury to persons or equipment.



This symbol identifies a Protective Earth (PE) terminal, which is provided for connection of the supply system's protective earth (green or green/yellow) conductor.

## 3.0 Safety Information

**NOTE:** All users of the centrifuge must read the Safety Information section of this manual before attempting to operate the unit.



If this equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

- ▶ 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 microcentrifuge tubes made from plastic and designed to withstand centrifugal forces of at least 16,000 x g.

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 an 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: Microcentrifuge tubes made of plastic, 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.

## 4.0 Specifications

Dimensions (W × D × H)	8.25 x 8.9 x 7.6 in. (21 × 22.6 × 19.3 cm)
Maximum speed	14,000 rpm
Maximum RCF	16,000 x g
Maximum volume	18 x 1.5/2.0 mL
Admiss. density	1.2 kg/dm <sup>3</sup>
Electrical/fuse rating	
C0160	120V ± 10%, 50/60 Hz, 1.3A/2.5AT
C0160-230V	230V ± 10%, 50/60 Hz, 0.7A/1.25AT
Operation conditions	5°C to 40°C, up to 80% RH, non-condensing

The Labnet Spectrafuge 16M Microcentrifuge 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

## 5.0 Packaging

Description	Qty
Labnet Spectrafuge™ 16M microcentrifuge	1
Instruction manual	1
Power cord	
C0160 (NA plug)	1
C0160-230V (EU and UK plugs)	1
Rotor screw wrench and screw	1

## 6.0 Installation

### 6.1 Unpacking the centrifuge

Before unpacking the centrifuge, inspect the outside of the carton for any shipping damage. The centrifuge is delivered in a carton with protective cushions. Remove the centrifuge from the carton. Retain the carton and cushions until it has been established that the centrifuge is working properly. Inspect the centrifuge for any visible signs of shipping damage. Shipping damage is the responsibility of the transportation carrier. Any claims for damage must be filed within 48 hours. The accessories supplied with the centrifuge should be kept with the instruction manual near the centrifuge's place of installation.

### 6.2 Required space

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 15 cm (6 inches) 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.

### 6.3 Installation

Make certain that the timer is set to the OFF position. 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.



**NOTE:** The timer must be in the OFF position before connecting the power cord. Failing to place the timer in the OFF position may result in damage to the centrifuge and injury to personnel.

## 7.0 Rotors and Rotor Maintenance

### 7.1 Rotors and accessories

The following accessories are available for the Spectrafuge 16M Microcentrifuge.

	Cat. No.	Tube Measurement (mm)	Max. Speed (rpm)	Centrifuging Radius (cm)	RCF (g-Value) (x g)
Angle rotor for 18 x 1.5 mL tubes	Included with unit	10 x 40	14,000	7.3	16,000
Adapter for 0.5 mL tubes	C1205	8 x 30	14,000	6.6	14,462
Adapter for 0.4 mL tubes	C1206	6 x 47	14,000	7.3	16,000
Adapter for 0.2 mL tubes	C1222	6 x 21	14,000	6.1	13,366

### 7.2 Rotor maintenance

The rotor should be cleaned thoroughly after each use. 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.

### 7.3 Mounting and securing the angle rotor

Remove the rotor screw from the motor shaft by turning the screw counterclockwise. Clean the motor shaft and the rotor mounting hole (see Figures 1 and 2). Place the rotor on the motor shaft ensuring that the cross-pin (Figure 1) aligns correctly with the rotor slot (Figure 2).

**NOTE:** Reinstall the rotor screw on the motor shaft by turning it clockwise. Hold the rotor with one hand and hand-tighten the rotor screw. Use an adjustable or 1/4 inch wrench to tighten the screw. 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 and the difference in the weight between the tubes should not exceed 0.1 gram. The difference in the weight between the tubes should not exceed 0.1 gram. A partially loaded rotor may be centrifuged if the loading scheme for balancing a rotor given in Figure 3 is followed.



Figure 1. Chamber and motor shaft.



Figure 2. Bottom of angle rotor.

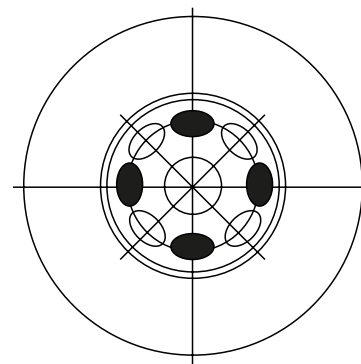


Figure 3. Loading the rotor.

### 7.4 Removing the rotor

Using an adjustable or 1/4 inch wrench to loosen the screw, and remove the rotor retaining the screw/washer assembly by turning it counterclockwise. Lift the rotor directly upward in a straight vertical motion.

**CAUTION:** Be sure to secure the rotor screw and tighten with a wrench before further operation.

## 7.5 Overloading rotors

The maximum load of the rotor and the maximum speed have 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. 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:

$$n_{\text{red}} = \sqrt{\frac{1.2}{1.7}} \times 14,000 = 9,882 \text{ rpm}$$

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

## 8.0 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.

### 8.1 Closing the lid

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

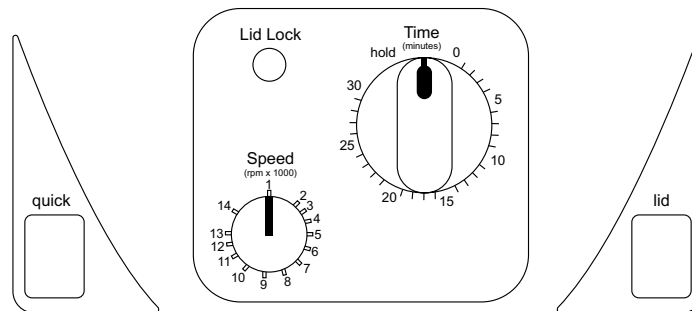


Figure 4. Spectrafuge™ 16M control panel layout.

### 8.2 Lid release

Once the run has been completed and the rotor come to a stop, the lid will open automatically. If the lid does not open automatically, press the lid button. **NOTE:** The Lid button will not operate while the rotor is spinning.

**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.

### 8.3 Lid lock

The centrifuge can be started only with the lid securely closed. When the rotor begins to accelerate, the lid lock indicator light turns on and the lid button becomes inoperable. Do not attempt to open the lid until the lid lock indicator turns off. At the end of the run, the lid will automatically open.

### 8.4 Speed selection

The speed (rpm) can be selected to 14,000 rpm using the Speed knob. The scale is directly proportional to the speed – a setting of 9 corresponds to 9,000 rpm, a setting of 13 corresponds to a speed of 13,000 rpm, etc.

## 8.5 Selection of operating time and momentary operation

Operation of the centrifuge begins when the Time knob is turned clockwise to set a run time. For run times less than 5 minutes, turn the knob clockwise past the halfway point and then counterclockwise to the desired time. For run times longer than 5 minutes, turn the knob clockwise to the desired time.

When the preselected time expires, the centrifuge will stop automatically. To stop the centrifuge prior to the expiration of set time, turn the Time knob to the zero position.

The centrifuge may be operated manually by pressing and holding the Quick button. The centrifuge will continue to run as long as the button is depressed.

Some models are equipped with a timer that includes a Hold position. Continuous operation of these models may be achieved by turning the Time knob firmly to the left. The centrifuge will continue to operate until the knob is turned to the zero position.

**NOTE:** The Time knob may be turned in either direction during operation of the centrifuge without damage to the timer mechanism.

## 9.0 Service and Maintenance

### 9.1 Centrifuge service

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).

### 9.2 Cleaning the rotor

The rotor should be cleaned after each use. When spinning 8 samples containing phenol or phenol chloroform, the rotor should be cleaned immediately after use.

### 9.3 Disinfection

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.

### 9.4 Replacing fuses

Check the fuse when it is recommended in Section 10 (Troubleshooting). 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 Section 4 (Specifications).

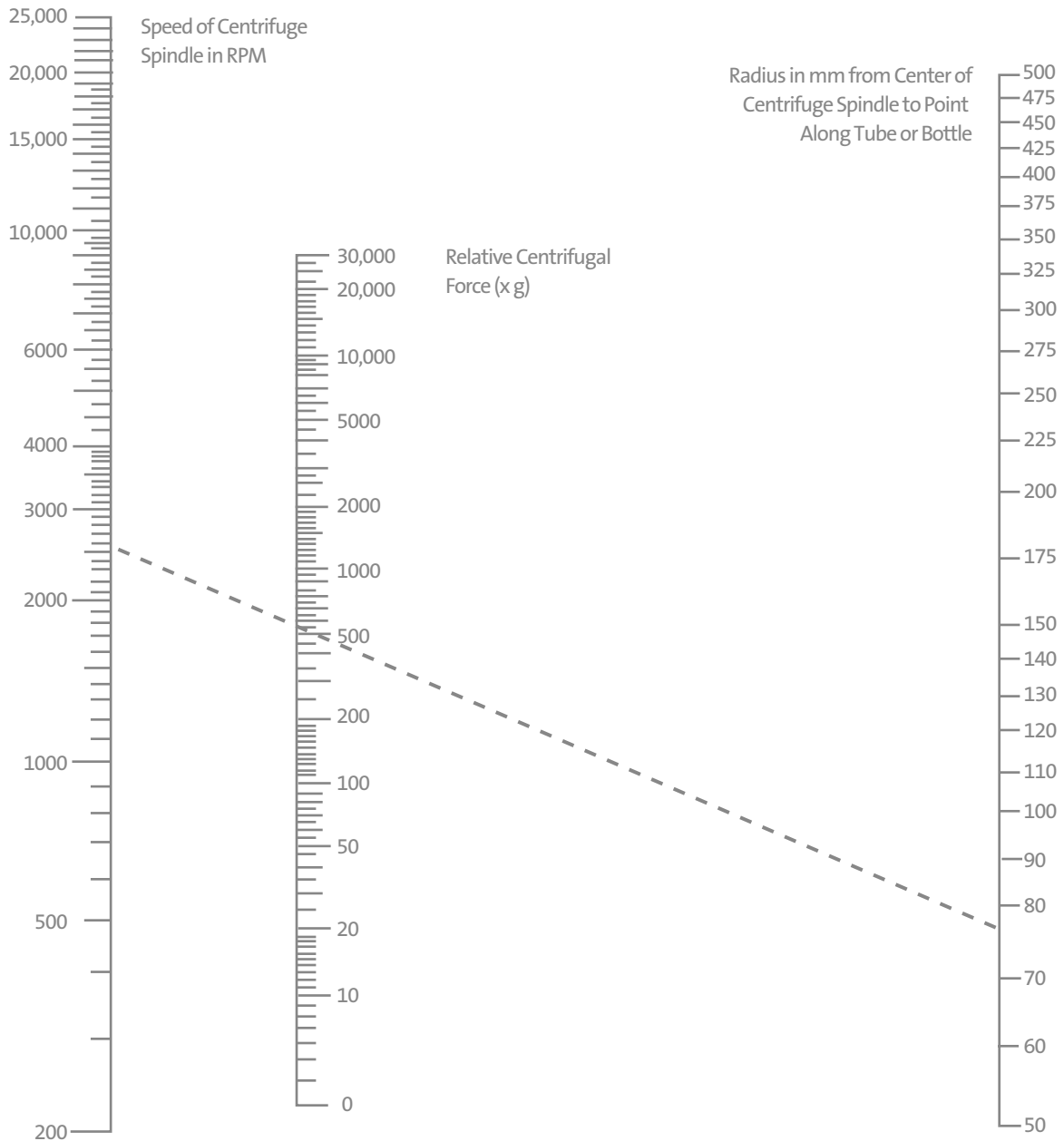
## 10.0 Troubleshooting

Please refer to this guide before calling for service.

Problem	Cause	Solution
Centrifuge will not start	No power supply	<ul style="list-style-type: none"><li>▶ Check that power is being supplied to the outlet.</li><li>▶ Check that the power cord is plugged into both the wall outlet and the back of the centrifuge.</li><li>▶ Check that the power cord is not damaged.</li></ul>
	Blown fuse	Check fuse and replace if necessary.
Lid lock will not release	Defective lid lock	Open manually and have unit serviced.
	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.

## 10.1 Determination of g-values

The centrifuging radius of the 1.5 mL rotor is 7.3 cm. See Section 7.1 (Rotor and Accessories) for the correct radius when using adapters and smaller tubes. The Relative Centrifugal Force chart 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:

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

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 one (1) year 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](http://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](http://www.corning.com/weee).

To request certificates, please contact us at [www.labnetlink.com](http://www.labnetlink.com).

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