

Prism™ Microcentrifuge

Instruction Manual

Catalog Numbers:

C2500, C2500-230V



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1.0 Introduction

The Prism™ is a small benchtop centrifuge designed for separation of various research samples. The motor is brushless and requires no routine maintenance. The Prism Microcentrifuge is supplied with a 24 x 1.5/2.0 mL rotor for micro sample tubes. Adapters are available for tubes smaller than 1.5 mL. The Prism reaches speeds of up to 15,000 rpm/21,200 x g.

2.0 Safety Information

Before using the Prism Microcentrifuge 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 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 tighten rotor nut by hand only.
- ▶ 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 counter balanced 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 21,200 x g.
- ▶ Always use a wrench to tighten the 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: 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.
- ▶ The rotor nut was not tightened with a wrench.

3.0 Specifications

Dimensions (W x D x H)	10.25 x 13.8 x 7.48 in. (26 x 35 x 19 cm)
Maximum Speed	15,000 rpm
Maximum RCF	21,200 x g
Maximum Volume	24 x 2.2 mL
Timer	0.5 to 99 minutes or continuous
Admissible Sample Density	1.2 kg/dm ³
Electrical/Fuse Rating	120V, 50-60Hz, 1.9A, 5AT 230V, 50-60Hz, 1.1A, 2.5AT
Operating Conditions	0°C to 40°C / ≤80%RH

4.0 Package Contents

Description	Quantity
Prism™ Microcentrifuge	1 each
Standard angle rotor (Cat. No. 24D-RTR)	1 each
Rotor removal tool	1 each
Instruction manual	1 each
Warranty card	1 each
Power cord	1 each

5.0 Installation

The centrifuge should be installed on a rigid, even surface such as a stable laboratory bench, countertop, 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.

Before operating the centrifuge, check that the power source (electrical outlet on the wall) 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

6.1 Rotors and Accessories

The following accessories are included or available for the Prism™ Microcentrifuge:

Angle rotor for 24 x 1.5 ml tubes (included)

Cat. No.	24D-RTR
Tube Measurement	1.5 mL / 2.0 mL (10 x 40 mm)
Maximum Speed	15,000 rpm
Centrifuging Radius	8.4 cm
Maximum RCF (G-value)	21,200 x g

Rotor Wrench (included)

Cat. No.	AM190
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Rotor Lid (included)

Cat. No.	C2400-RC1
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Rotor Securing Screw (included)

Cat. No.	AR110
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Strip Spin Adapter

Cat. No.	C2400-SS
Tubes Accepted	0.2 mL tubes or 8 x 0.2 mL strips
Maximum Speed	15,000 rpm
Centrifuge Radius Range	4.32 cm to 5.33 cm
RCF (G-value) Range	10,874 x g to 13,405 x g

Adapter for 0.5 mL tubes (pk./6)

Cat. No.	C-1205
Tube Measurement	8 x 30 mm
Maximum Speed	15,000 rpm
Centrifuging Radius	7.53 cm
RCF (G-value)	18,942 x g

Adapter for 0.4 mL tubes (pk./6)

Cat. No.	C-1206
Tube Measurement	6 x 47 mm
Maximum Speed	15,000 rpm
Centrifuging Radius	8.4 cm
RCF (G-value)	21,200 x g

Adapter for 0.2 mL tubes (pk./6)

Cat. No.	C-1222
Tube Measurement	6 x 21 mm
Maximum Speed	15,000 rpm
Centrifuging Radius	7.03 cm
RCF (G-value)	17,684 x g

6.2 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.

6.3 Removing and Installing the Angle Rotor

The Prism™ Microcentrifuge comes complete with a standard 24-place rotor installed. To remove the rotor for cleaning, remove the rotor securing screw from the motor shaft by turning the screw counterclockwise, using the rotor wrench. Lift the rotor directly upward in a straight vertical motion.



Figure 1. Loading the rotor to achieve balance

To replace rotor, first make sure the motor shaft and rotor mounting hole are clean. Place the rotor on the motor shaft. Reinstall the rotor securing screw on the motor shaft by turning it clockwise. Hold the rotor with one hand and **tighten the rotor securing screw, using the rotor wrench.**

6.4 Loading the Rotor

Tubes to be loaded should be filled equally by eye. The difference in the weight between the tubes should not exceed 0.1 gram. Tubes should always be loaded so that there is equal spacing between all tubes. One or two additional loaded tubes may need to be added to achieve this. Refer to Figure 1. to see one typical balancing scheme.

6.5 Overloading Rotors

The maximum load of the rotor and maximum speed has been established by the manufacturer. Do not attempt to exceed these values. The maximum speed of the rotor has been established for liquids having a homogeneous density of 1.2g/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:

$$(n_{\text{red}}) = \sqrt{\frac{1.2}{1.7}} \times 15,000 = 12,602 \text{ rpm}$$

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

7.0 Operation

ATTENTION: 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, accessories, or bowl of the unit.

7.1 Attaching Rotor Lid

After the rotor has been properly secured and loaded, attach the rotor lid to the rotor. Always use the rotor lid for safety and to allow the rotor to reach proper speed. Make sure that the rotor lid snaps securely into place, by pressing down on center catch.

7.2 Closing the Lid

Close the centrifuge lid. The Prism™ Microcentrifuge has a lid lock that activates only when a run is started.

7.3 Lid Release

The lid will remain locked during a centrifuge run. Once the run has been completed and the rotor has come to a stop, a beep will indicate the end of a run, and the lid will unlock automatically.

WARNING: 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.
3. Pull the wire (attached to the plug) to open the lid lock manually.

7.4 Lid Lock

The centrifuge can be started only with the lid securely closed. When a run is started, the lid lock automatically activates. Do not attempt to open the lid during a centrifuge run. At the end of the run, the lid will automatically unlock. Never attempt to override the lid lock mechanism. Doing so is dangerous and could damage the centrifuge.

7.5 Speed Selection



Figure 2. Prism Microcentrifuge control panel layout

The speed (rpm or g-force) can be selected from 500 to 15,000 rpm in 100 rpm increments or from 100 to 21,200 x g with the control knob. The speed is selected by pressing the RPM or RCF button. The speed signal will begin to blink. Then, turn the control knob to increase or decrease the value.

7.6 Selection of Operating Time, Momentary Operation, Start/Stop

Operating time can be selected from 0.5 min to 99 min by pressing the TIME button and adjusting with the control knob. The time can be set in 0.5 minute increments from 0 to 10 minutes and in 1 minute increments from 10 to 99 minutes. After 99 minutes, the display shows "--" which indicates continuous run. In this mode, the centrifuge will run until manually stopped. To start a run, press the control knob. When the preselected time expires, the centrifuge will stop automatically. To stop the centrifuge prior to the expiration of set time, press the control knob. The centrifuge may be operated for a short run by pressing and holding the control knob. The centrifuge will continue to run as long as the control knob is depressed and the time, in seconds will count up on the time display.

8.0 Service and Maintenance

8.1 Centrifuge Service

The brushless motor in the Prism™ Microcentrifuge requires no routine maintenance. Any required service should be performed by authorized, qualified personnel only. Repairs performed by unauthorized personnel may void the warranty.

8.2 Cleaning

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).

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

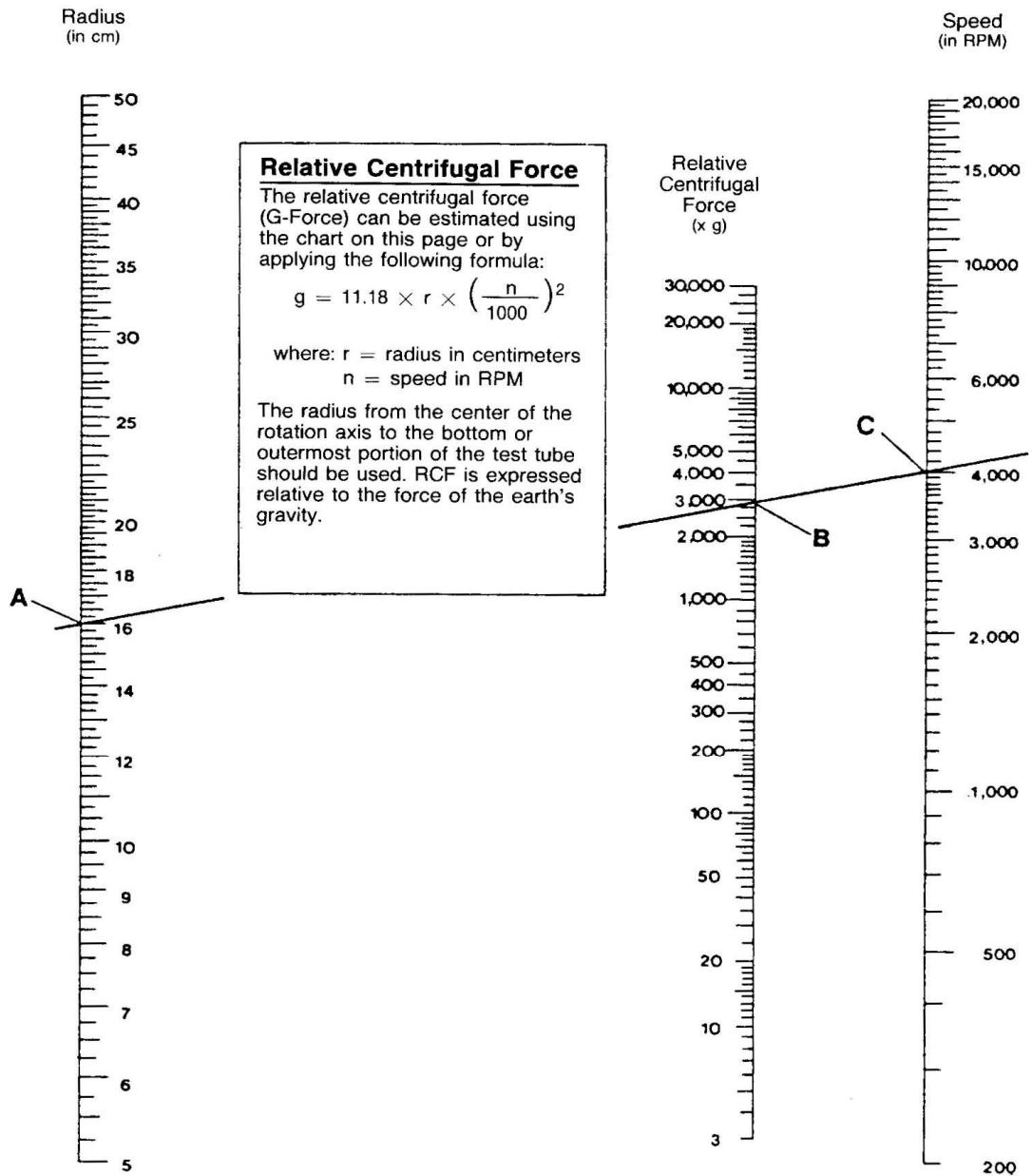
Problem	Possible Cause	Solution
Centrifuge will not start	No power supply	<ul style="list-style-type: none"> ▶ Check that power is being supplied to the outlet ▶ Check that the power cord is plugged into both the wall outlet and the back of the centrifuge ▶ Check that power cord is not damaged
	Blown fuse	Check fuse and replace if necessary
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
bAL: Error Message Indicates imbalance	Tubes not inserted symmetrically in rotor holes	Load tubes symmetrically (see Section 3.4 on Loading the rotor)
	Sample liquid in tubes not balanced	Make sure the same volume of liquid is in each tube
	Defective or improperly adjusted balance sensor	Call service
Lid: (Error message) Lid not closed	Lid not closed completely	Close lid
	Lid lock or sensor defective	Call service
Other Error Messages Er on Display	–	<ul style="list-style-type: none"> ▶ Press time or speed knob to clear error ▶ Call service

Should you have a question about the operation of the Labnet Prism™ Microcentrifuge 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 1.5/2.0 mL rotor is 8.23 cm. The Prism™ Microcentrifuge has an automatic g-force conversion program, so g-values are automatically calculated and can be displayed on the control panel, for this centrifuging radius. If adapters or smaller tubes are used, the centrifuging radius changes as does the g force. The chart on the next page can be used to manually determine g-values for any centrifuging radius.

RELATIVE CENTRIFUGAL FORCE



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, 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.

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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 only. Not intended for use in diagnostic or therapeutic procedures. Corning Life Sciences makes no claims regarding the performance of these products for clinical or diagnostic applications.

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NORTH AMERICA

t 800.492.1110
t 978.442.2200

ASIA/PACIFIC

Australia/New Zealand
t 61 427286832

Chinese Mainland
t 86 21 3338 4338

India

t 91 124 4604000

Japan

t 81 3-3586 1996

Korea

t 82 2-796-9500

Singapore

t 65 6572-9740

Taiwan

t 886 2-2716-0338

EUROPE

HTL.sales@corning.com
HTL.service@corning.com

LATIN AMERICA

grupoLA@corning.com

Brazil

t 55 (11) 3089-7400

Mexico

t (52-81) 8158-8400