

CL SERIES

Laboratory Centrifuges

PRODUCT MANUAL

Models: CL2345 | CL2485

Variable-Speed Benchtop Centrifuges

For Clinical, Diagnostic, and Research Laboratory Applications



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1. Product Overview

This manual covers the CL Series laboratory centrifuges — engineered for routine sample preparation and separation in clinical, diagnostic, research, educational, veterinary, industrial, and general laboratory environments. The series includes variable-speed configurations with fixed-angle or horizontal rotor options, all operated by trained laboratory personnel.

Intended Use

The CL Series centrifuges are intended for general laboratory use only. They are designed for separation of liquid samples using centrifugal force. The centrifuges are not intended for diagnostic, therapeutic, or patient-contact applications unless otherwise specified by local regulatory approval. Users may modify adjustable operating parameters and preset programs within the safety limits of the centrifuge.

Series Overview

Model numbers identify centrifuge configuration and installed features. The first digit after the CL prefix identifies speed configuration (1 = fixed-speed, 2 = variable-speed), the second digit identifies rotor type (3 = fixed angle, 4 = horizontal), the third digit indicates rotor capacity (4 = twenty four-place, 8 = eight-place), and the final digit indicates the display type (5 = segment LCD). Display code 8 is reserved for future touchscreen models.

2. Model Identification

Model numbers identify centrifuge configuration and installed features.

Example: CL2485	Example: CL2345
CL = High-capacity benchtop centrifuges	CL = High-capacity benchtop centrifuges
2 = Variable-speed configuration	2 = Variable-speed configuration
4 = Horizontal rotor	3 = Fixed angle rotor
8 = Eight place rotor capacity	4 = Twenty-Four place rotor capacity
5 = Segment LCD display	5 = Segment LCD display

Display code 8 is reserved for future touchscreen models.

3. Technical Specifications

The following specifications apply to all CL Series centrifuges. All models share the same physical dimensions: 370 x 432 x 290mm.

Model	Rotor	Capacity	Speed (RPM)	RCF (g)	Display	Power	Weight
CS2345	Fixed angle	24 places	500–4000	2710	LCD	100–240V, 120W	7.4 kg
CS2485	Horizontal	8 places	500–4000	2719	LCD	100–240V, 120W	7.4 kg

4. Safety Information

Read all safety instructions before operating any CL Series instrument. Failure to follow these instructions may result in instrument damage, sample contamination, or personal injury.

4.1 General Safety

- Read this manual carefully and completely before operating the centrifuge. This manual is part of the centrifuge and must be stored where it is accessible to the user.
- Operation must be performed only by trained laboratory personnel.
- Use the centrifuge only for its intended laboratory applications.
- Do not modify the centrifuge or safety systems.
- Do not operate the centrifuge if visible damage is present.

4.2 Electrical Safety

WARNING: Risk of electric shock.

- Connect only to a properly grounded power outlet.
- Verify that the power supply matches the product rating label.
- Disconnect power before cleaning, inspection, or maintenance.
- Do not operate the centrifuge with damaged power cords or connectors.
- Prevent liquids from entering the electrical components of the centrifuge.

4.3 Rotor Safety

WARNING: Risk of injury due to rotating components or rotor failure.

- Always balance sample loads symmetrically before operation.
- Inspect rotors, adapters, and mounting hardware before use.
- Never operate the centrifuge with damaged, cracked, or corroded rotors or adapters.
- Maximum rotor speed limits must never be exceeded.
- Use only approved accessories supplied or authorized by MPD Scientific.
- Rotor inspection is recommended every 6 months and after any severe imbalance event or accidental impact.

4.4 Biological and Chemical Safety

WARNING: Potential exposure to hazardous or infectious materials.

- Follow applicable laboratory safety procedures when processing biological or hazardous samples.
- Wear appropriate personal protective equipment (PPE).
- Clean and decontaminate the centrifuge after spills or contamination events.
- Verify chemical compatibility before using aggressive cleaning agents or chemicals.

4.5 Operational Safety

WARNING: Risk of injury due to rotating components.

- Never open the lid while the rotor is in motion.
- Never attempt to bypass the lid interlock system.
- Wait until the rotor has completely stopped before removing samples.
- Do not move or relocate the centrifuge while operating.
- Operate only on a stable, level surface.

NOTICE: Features and available operating modes may vary depending on model configuration.

4.6 Inspection Before Use

Before each use:

- Verify the rotor is properly installed and secured.
- Verify tube adapters are correctly positioned.
- Inspect tubes and adapters for visible damage.
- Confirm the lid closes and locks properly.
- Verify samples are balanced before operation.

Never operate the centrifuge:

- Without a properly installed rotor
- With unbalanced sample loads
- With incompatible or damaged tubes
- With loose adapters
- After severe impact or dropping
- In explosive or flammable atmospheres

NOTICE: Aerosol formation may occur when processing biological samples. Follow appropriate laboratory biosafety procedures.

NOTICE: Internal repairs and electrical servicing must be performed only by qualified service personnel.

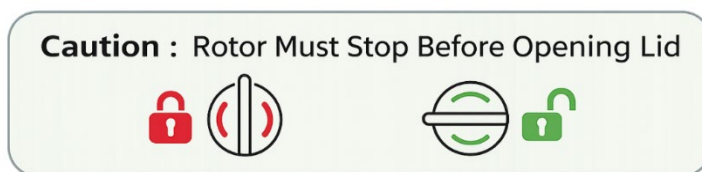
4.7 Symbols and Labels

The following symbols may appear on the centrifuge or within this manual:

- **WARNING** – Indicates potential risk of injury.
- **CAUTION** – Indicates potential equipment or sample damage.
- **NOTICE** – Indicates important operational information.
- **Read Manual** – Refer to the user manual before operation.
- **Protective Earth/Ground** – Indicates protective grounding connection.
- **Electrical Hazard** – Indicates potential electrical risk.

5. Lid Interlock System

The CL Series centrifuges are equipped with an automatic lid interlock system. The lid is secured using a manual locking knob that must be rotated approximately 90 degrees to the locked position before operation.



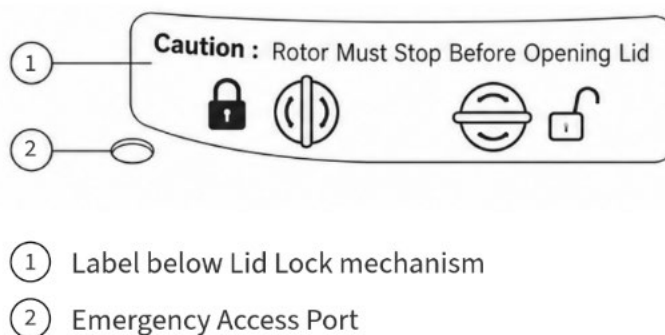
Visual lock status indication is provided at the base of the locking knob:

- **Green indicator** = Lid locked
- **Red indicator** = Lid unlocked

Once the latch is engaged, the lid may be opened by pressing the UNLOCK button after rotor motion has stopped. The centrifuge automatically releases the lid latch at the end of a run after rotor speed reaches 0 rpm and the rotor has come to a complete stop. To protect the locking mechanism, repeated immediate unlock attempts after re-engaging the latch may introduce a short opening delay.

5.1 Emergency Lid Release

In the event of a power failure, samples may be retrieved using the emergency lid release procedure.



The emergency opening port is located beneath the front label, below the lid area. Carefully peel the label from the left side (when facing the centrifuge) to expose the port. Using the small screwdriver supplied with the centrifuge, insert the tip into the left side of the port, apply downward pressure, and rotate counterclockwise. The mechanism will displace to the right, releasing the lid.

WARNING: The emergency lid release must only be used when the rotor has come to a complete stop and power has been disconnected.

6. Installation and Setup

Place the centrifuge on a clean, stable, level surface.

6.1 Environmental Requirements

- Indoor use only
- Ambient temperature: 5°C to 40°C
- Relative humidity: ≤80%, non-condensing
- Pollution Degree 2 / Installation Category II

6.2 Clearance Requirements

Minimum recommended clearance:

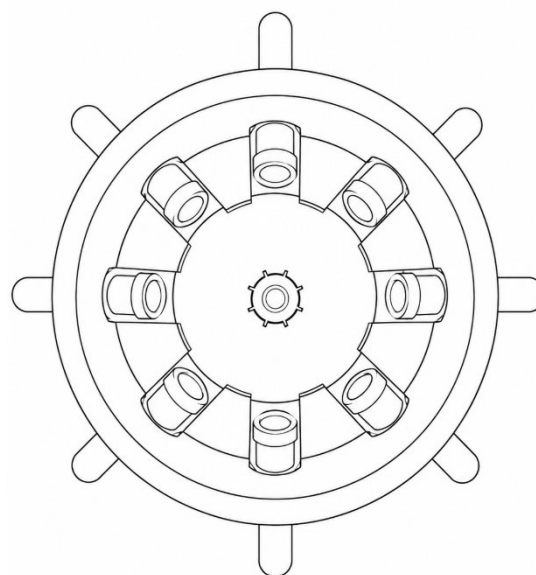
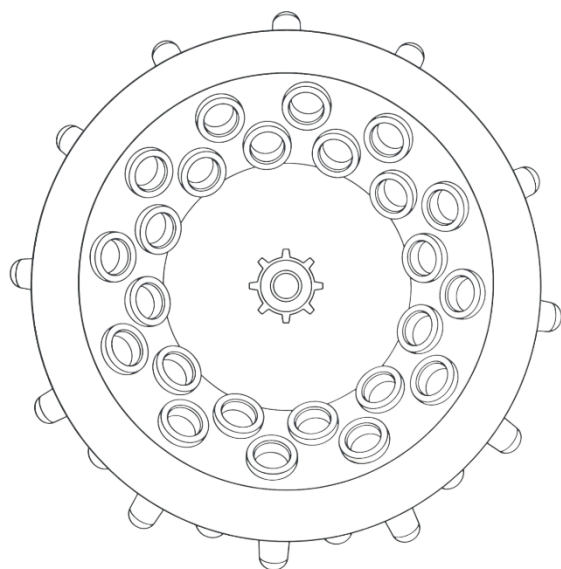
- Rear: 10 cm
- Sides: 10 cm
- Top: 30 cm

6.3 Power Connection

Verify that the power supply matches the rating shown on the product label before connecting power. All CL Series models accept AC 100–240V, 120W. Never operate an instrument on an incompatible power supply.

7. Rotor and Adapter Information

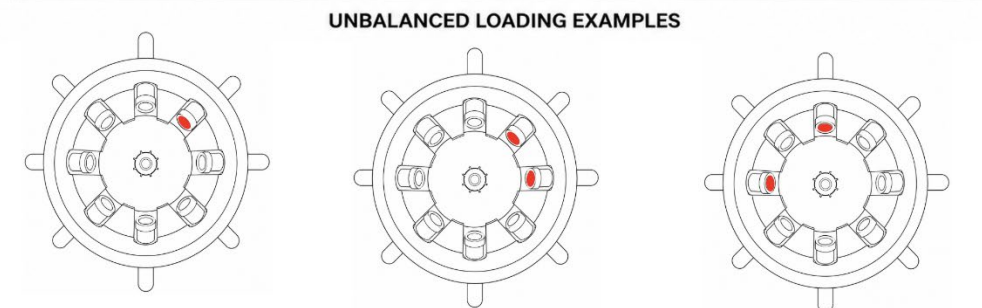
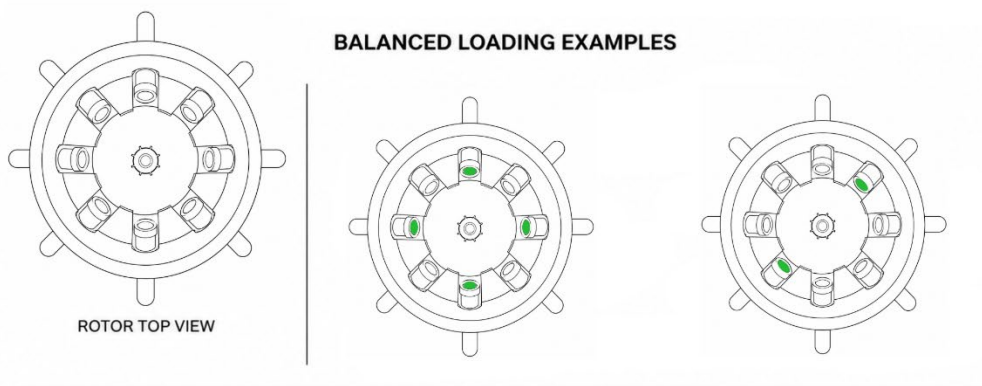
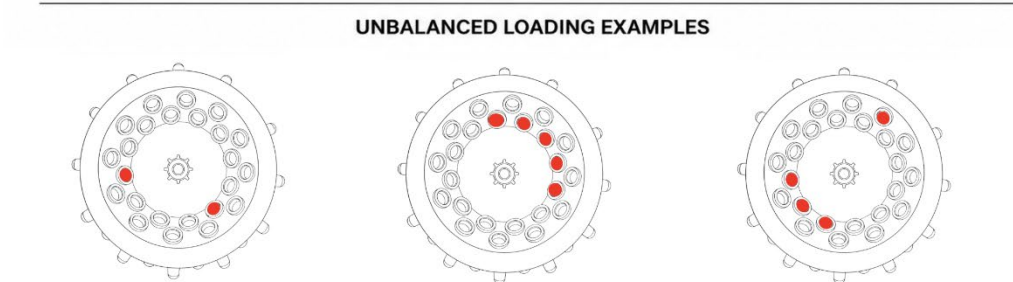
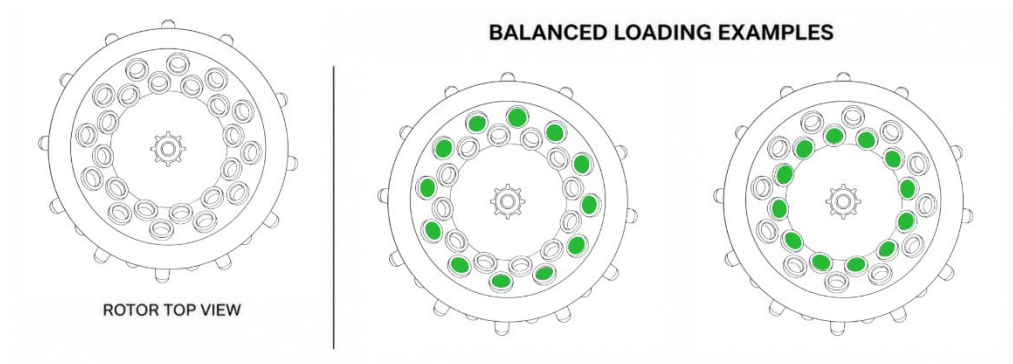
The CL Series is available with either a fixed-angle rotor or a horizontal rotor depending on model configuration. Always inspect rotors and adapters before use. Do not use damaged, corroded, or cracked components. Maximum rotor speed limits must never be exceeded. Always load tubes symmetrically to minimize vibration and imbalance.



Capacity	24 places	8 places
Rotor Type	Fixed Angle	Horizontal
Max Tube Size	16 × 125 mm	16 × 125 mm
Max Speed	4000 RPM	4000 RPM
Compatible	CL2345	CL2485

7.1 Tube Adapters

CSLA1601 (white)	Adapter for 16×100 and 16×125 tubes. Standard with CL Series. Order PN# CLLA1602: pack of 2
CSLA1301 (orange)	Adapter for 13×75 tubes. Standard with CL Series. Order PN# CLLA1302: pack of 2
CSLA1001 (blue)	Adapter for 10×40 tubes. Optional. Order PN# CLLA1002: pack of 2



8. Operation



8.1 Basic Operating Procedure

1. Verify the centrifuge is properly installed.
2. Load balanced sample tubes.
3. Close the lid securely and rotate the locking knob fully to the locked position.
4. Select operating parameters or a preset program.
5. Press START.
6. Wait until the rotor comes to a complete stop.
7. Remove samples after automatic lid release.

Do not attempt to force the lid open during operation or while the rotor is coasting.

8.2 Variable-Speed Models (CS2345, CL2485)

Variable-speed models allow the operating speed to be adjusted between 500 and 4000 RPM (or equivalent RCF).

- Connect to the appropriate power supply and activate the power switch.

- Use the UP/DOWN arrow keys and PROG button to set the desired speed, time, acceleration, and deceleration parameters, or select a factory preset program (P1, P2, P3) or Custom Setting (CS) mode.
- Press START to initiate the run.
- Wait until the rotor comes to a complete stop before removing samples.
- Turn off the power switch and disconnect from the power supply for maintenance or per your institution guidelines.

8.4 Application Guidelines

Centrifugation separates sample components by density using centrifugal force, making it well-suited for the following applications:

- General blood processing and plasma separation
- Urine sample processing
- PRP (platelet-rich plasma) preparation
- Reagent and buffer preparation in clinical and research settings
- General sample separation in research, educational, veterinary, and industrial labs

9. Preset Programs

Variable-speed models (CS2345, CL2485) support programmable operating parameters and three factory preset programs designed for commonly used laboratory applications.

Parameter	P1	P2	P3	CS (Custom)
Application	General Blood Processing	Common Urine Samples	PRP Preparation	Determined by user
Speed (RPM)	3400	2200	1300	Set by user
Time	10 minutes	5 minutes	10 minutes	Set by user
Acceleration	Level 3 (Fast)	Level 2 (Medium)	Level 2 (Medium)	Set by user
Deceleration	Level 2 (Medium)	Level 2 (Medium)	Level 1 (Slow)	Set by user

Users may modify preset parameters as required for their laboratory procedures. Stored programs do not override rotor maximum speed limitations. Users are responsible for validating custom operating parameters for their specific sample types and procedures.

Acceleration and deceleration levels:

- Level 1 = Slow
- Level 2 = Medium
- Level 3 = Fast

9.1 RPM / RCF Selection

Variable-speed CL Series models include a dedicated RPM/RCF selection button that toggles the display between rotational speed (RPM) and relative centrifugal force (RCF, in $\times g$). Many laboratory protocols specify centrifugal force in RCF to provide more consistent conditions across different centrifuge configurations. The selected display mode is shown on the instrument display and remains active while adjusting operating values.

9.2 Custom Setting (CS) Mode

Custom Setting (CS) mode allows the user to create and run temporary operating parameters. When CL mode is selected, the speed indicator flashes to indicate editable parameter entry.

Programming Procedure:

8. Select CL mode.
9. The speed value flashes — use the UP/DOWN arrow keys to adjust speed.
10. Press the PROG button to advance to the time setting; adjust using UP/DOWN keys.
11. Press the PROG button to advance to ACC settings; adjust using UP/DOWN keys.
12. Press the PROG button to advance to DEC settings; adjust using UP/DOWN keys.
13. Press SET to confirm parameters.

Available features and parameter ranges may vary depending on model configuration.

10. Maintenance and Care

10.1 Routine Cleaning

Disconnect the instrument from power before cleaning. Wipe exterior surfaces with a damp cloth moistened with a mild laboratory detergent or 70% isopropanol. Do not allow liquids to enter the motor housing or electrical components.

Recommended cleaning materials:

- Mild laboratory detergent
- 70% isopropyl alcohol
- Soft lint-free cloth

Do not use:

- Abrasive cleaners
- Strong organic solvents
- Bleach solutions unless chemical compatibility is verified

Clean spills immediately. If hazardous materials are used, follow applicable laboratory decontamination procedures.

10.2 Decontamination

For decontamination of the rotor chamber and tube holders following biohazard exposure, apply a suitable disinfectant in accordance with your facility's biosafety protocols. Allow adequate contact time before wiping clean with a damp cloth. Ensure no residue remains on contact surfaces before resuming use.

10.3 Rotor Removal and Inspection

Before Removal:

14. Power off the centrifuge.
15. Disconnect the power cord.
16. Open the lid fully.
17. Remove all sample tubes and tube adapters.

Rotor Removal:

18. Using the supplied rotor tool, loosen and remove the center hex nut.
19. Remove the spring washer and place both components in a secure location.
20. Carefully lift the rotor upward from the motor shaft.
21. Tilt the rotor as required to clear the rotor chamber opening.
22. Avoid striking the rotor against the chamber walls during removal.

Rotor Inspection:

Inspect the rotor, adapters, and mounting hardware for:

- Cracks, corrosion, or deformation
- Excessive wear or chemical damage
- Damaged tube wells or thread damage
- Contamination buildup or loose/damaged adapters

WARNING: Do not operate the centrifuge with damaged rotors, adapters, or mounting hardware. If damage is identified, discontinue use immediately and contact MPD Scientific or authorized service personnel.

Reinstallation:

23. Carefully position the rotor onto the motor shaft.
24. Verify proper seating and alignment.
25. Reinstall the spring washer and center hex nut.
26. Tighten securely using the supplied tool.
27. Reinstall tube adapters before operation.

10.4 Storage

When not in use for extended periods, clean the instrument thoroughly, disconnect from power, and store in a clean, dry environment. Avoid excessive humidity, direct sunlight, and corrosive atmospheres. Use the original packaging or a suitable protective cover to prevent dust accumulation.

11. Troubleshooting

Symptom	Possible Cause	Corrective Action
Excessive vibration during operation	Unbalanced sample load	Rebalance sample tubes symmetrically across the rotor.
Lid does not open after run	Rotor not fully stopped	Wait until rotor reaches 0 rpm. The lid releases automatically.
Unit does not start	Lid not properly closed or locked	Verify the lid is securely closed and the locking knob is rotated to the locked position (green indicator).
Instrument does not start	No power supply / loose connection	Verify power connection and outlet. Check that the power switch is in the ON position.
Speed inconsistency (variable models)	Speed control set incorrectly	Verify speed control setting. If problem persists, contact authorized service.
Unexpected shutdown	Thermal overload protection activated	Power off and allow the instrument to cool for 15 minutes before restarting. Ensure ventilation is not obstructed.
Incorrect sample results	Inappropriate speed, time, ACC/DEC settings	Verify all parameters before operation and consult applicable laboratory protocols.

If the issue cannot be resolved using the guidance above, discontinue use and contact your authorized service representative or distributor. Do not attempt to open the instrument housing or perform internal repairs.

Diagnostic messages and additional error codes may vary depending on model configuration.

12. Transportation and Storage

Always disconnect power and transport the centrifuge in its original packaging.

Storage conditions:

- Dry indoor environment
- Avoid excessive humidity
- Avoid direct sunlight
- Avoid corrosive atmospheres

13. Warranty and Regulatory Information

13.1 Warranty

Warranty terms may vary by region and distributor agreement. Damage caused by improper installation, misuse, unauthorized modification, or operation outside specified limits is not covered under warranty. Contact your authorized distributor for specific warranty terms.

13.2 Disposal

Dispose of the centrifuge in accordance with local regulations governing electrical and laboratory equipment (WEEE). Decontaminate the instrument prior to disposal if hazardous materials were processed. Contact your local authorized dealer or recycling authority for guidance on compliant disposal.

Appendix A – Applicable Tube Sizes

Supported tube configurations:

- $\Phi 16 \times 125$ mm
- $\Phi 16 \times 115$ mm
- $\Phi 16 \times 100$ mm
- $\Phi 13 \times 75$ mm (with adapter CLLA1301)
- $\Phi 10 \times 40$ mm (with adapter CLLA1001)

Appendix B – Future Reserved Features

The following features are under continued development and may vary by model configuration:

- Advanced diagnostic error messages
 - Motor temperature monitoring
 - Touchscreen interface models
 - Additional programmable operating functions
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CS Series Laboratory Centrifuges — Product Manual

All specifications subject to change without notice.