

OPERATIONS MANUAL

Mini Centrifuge
Model MCF-1350



LMS 株式会社 エル・エム・イス
Laboratory & Medical Supplies



Contents

1. Safety.....	3
2. Introduction.....	7
3. Package Contents.....	7
4. Specifications.....	8
5. Features.....	9
6. Parts of the Mini Centrifuge.....	10
7. Control elements and Function.....	11
8. Installation and Operation.....	13
9. Maintenance.....	15
10. Trouble shooting.....	16
11. Technical data.....	17
12. Warranty statement.....	18

DOMINIQUE DUTSCHER SAS








1. Safety

 Read the manual before using the Mini Centrifuge.









 Warning	Improper handling may cause a serious hazard, resulting in personnel injury or death.
 Caution	Improper handling may cause a serious hazard resulting in personnel injury or damage to equipment or buildings.

 Meanings of symbols.










 Caution / Warning.	 Refrain from doing this.
 Follow all Instructions.	 Do Not Touch.

 Warning	
	Do not use a power source other than which the unit is designed to operate on. Use of an inappropriate power supply may result in damage to the equipment. Adhere to all electrical codes.
	This device must be connected to an earthed power supply.
	Insert the plug securely into a wall socket. Loose connections result in excessive heat generation to the device and may cause arcing to occur at the connection.
	Before operation, ensure that the power cord is fully extended. Keep the cord away from heat sources and do not place any objects on any part of the cord.
	Avoid using multi-point extension power cords.
	Disconnect the power supply plug if the unit is not going to be used for an extended period of time.

 **Installing the device**

 Warning	
	Place the centrifuge on a level, horizontal surface. Ensure that the device sits completely on a worktop.
	Do not install the device where it can get damp or wet.
	Do not use the device in a dusty environment.
	Do not use the device near a heat source or where temperatures are elevated. Do not operate the device when temperatures fall below 4°C and rise above 45°C.
	Do not use this device where there are flammable or corrosive vapors.
	Install the device in a well-ventilated place. Insufficient ventilation may result in breakdown should there be overheating.
	Do not use the device outdoors. Avoid prolonged exposure to direct sunlight.

 **Operating the device**

 Warning	
	Do not operate the device before reading and fully understanding all instructions in this manual.
	Before using the device for the first time, make sure the rotor is securely fastened to the spindle.
	The rotor must be loaded symmetrically. Asymmetrical loading causes excessive vibrations and may result in accidents.
	Close all microcentrifuge tube lids before operation. Open lids can be ripped off during operation and damage the centrifuge.
	When moving the device from a cold to warm location, operate the device for 30 minutes prior to the move to avoid excessive condensation. Alternatively, allow it to warm to room temperature for at least three hours before plugging the socket into a power source.
	Do not attempt to stop the rotor when it is moving. Always operate the device in an upright position, and avoid moving it during operation.
	This device is not designed to be user serviceable. Do not attempt to open or modify the device. Should the device be opened by unauthorized personnel, all warranties are void.
	Should there be any abnormal smell, or noise during operation, switch off the device immediately and contact your dealer for service.

Caution



Do not operate with uneven loads. Uneven loads causes abnormal wear to the bearings and damages the motor.



When the device is used to process biohazards, proper disinfection procedures must be carried out after each use.



Use caps on your microcentrifuge tubes. Tubes without caps will cause samples to leak during operation.



Do not use the device to process samples with flammable contents. This unit is not designed to be explosion-proof.



Do not expose the device to Ultra Violet (UV) light. The lid may craze and crack under such exposure.



After operation, clean the device and unplug the power if it will not be used for extended periods.



Do not operate the device if you wear excessively loose clothing, wrist chains, long necklaces or have uncovered long hair that can get caught in the device.

2. Introduction

Thank you very much for purchasing the HARMONY mini centrifuge.

Your Mini Centrifuge is CE Certified and designed with function, reliability, and safety in mind. For safe operation, please pay attention to the alert symbols throughout the manual.

3. Package Contents

Mini Centrifuge.....	1 unit
Angle rotor for 1.5/2.0ml micro tubes.....	1 ea
Lid for Angle rotor.....	1 ea
Nut for Rotor Fixing.....	1 ea
Power cable.....	1 ea
Operations Manual.....	1 ea

Optional Items

Rotor for 8 x 0.2ml PCR tubes strip.....	
Adapter for 0.5ml Micro tube.....	
Adapter for 0.2ml Micro Tube.....	

4. Specifications

Model No.	MCF-1350
Max. Speed (rpm/g)	13,500/12300
Capacity	1.5/2.0ml x 12 Tubes 0.4/0.5ml x 12 tubes 0.2ml 8 Strip PCR tubes x 4
Max. Temperature in Chamber (after 20 min at max. speed)	35°C (at room temp. 24°C)
Material	Angle Rotor : Anodized Aluminum (Autoclavable)
	Lid for rotor : Stainless Steel (Autoclavable)
	Nut for Rotor : Stainless Steel (Autoclavable)
Timer	1 – 30 min.
Noise Level	Less than 60dB
Acceleration Time	12 sec.
Braking Time	16sec.
Dimension (mm)	208(W)x(245(D)x145(H)
Weight	4.4 Kg
Power	VAC100, 50/60Hz VAC220, 50/60Hz

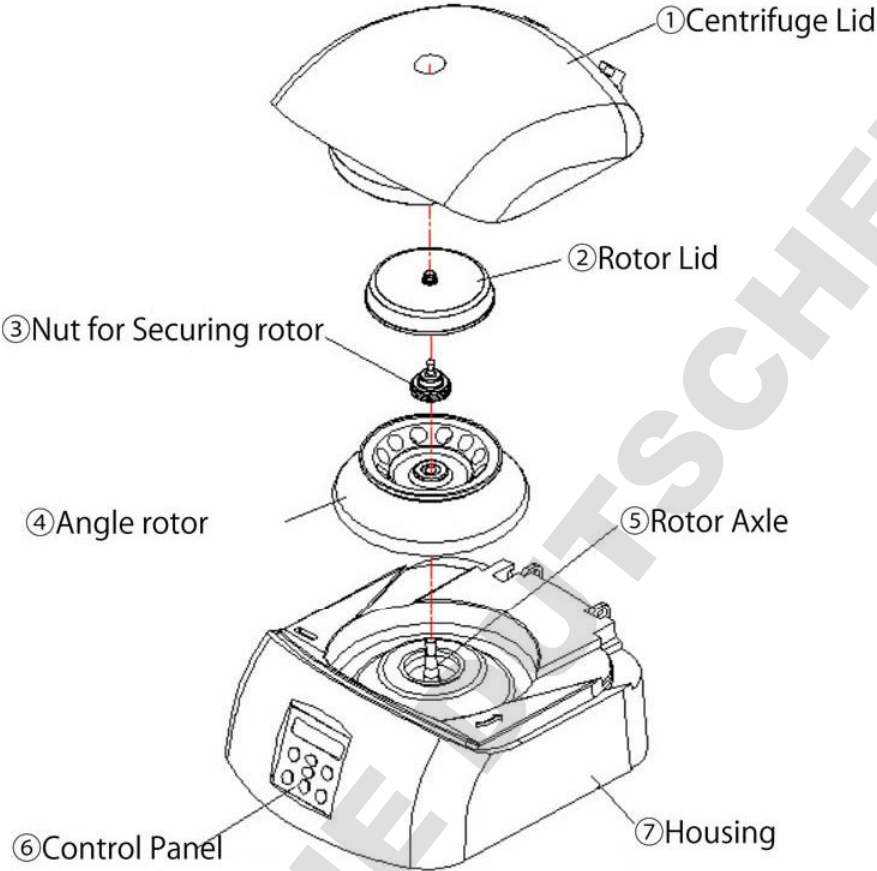
OPTIONAL ACCESSORIES

MCF1350A05	Adapter for 0.5ml Micro tube
MCF1350A02	Adapter for 0.2ml Micro tube
MCF1350STR	Rotor for 8-strip PCR tubes (8 Strip PCR tubes x 4)

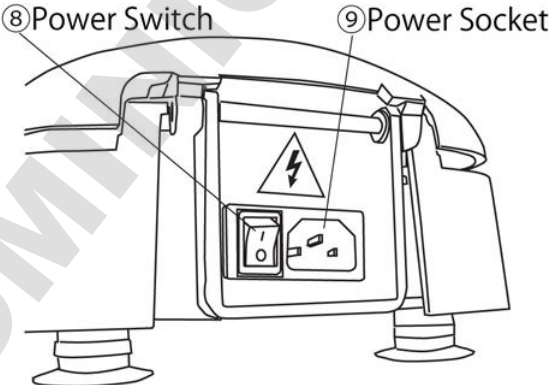
5. Features

- Exceptionally small footprint
- Low noise level (less than 60dB)
- Capacity: 1.5ml/2.0ml x 12 micro tubes
- Acceleration time is less than 12 sec and braking time is less than 16 sec. (at 13,500 rpm)
- Complies to IEC1010-2-020.
- Max. Centrifugal force is 12,300 x g
- Easy to follow digital display
- Separate short-spin button
- Max. temp. in chamber at Max. rpm: 35°C (at room temp. 24°C)
- Automatic lid release
- Maintenance-free drive
- Autoclavable rotor and rotor lid (121°C, 20 min.)
- Timer can be set up to 30 min.
- rpm/rcf setting as required
- Variable accessories: rotor for PCR tubes
 - (0.2ml 8-Strip PCR tubes x 4)
 - Adapter for 0.5 ml and 0.2 ml PCR tubes

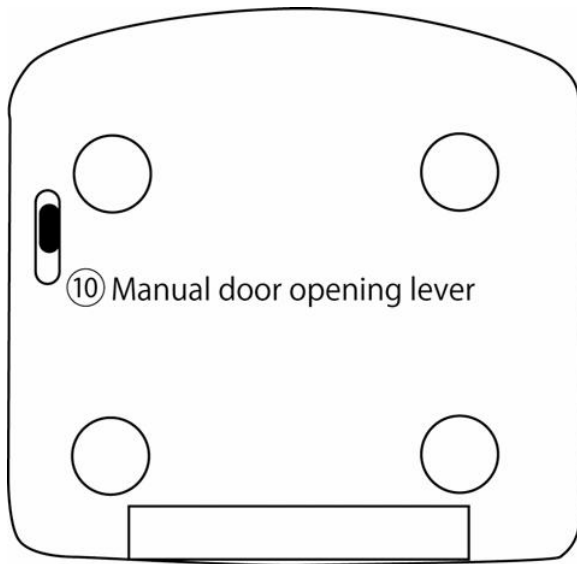
6. Parts of the Mini Centrifuge



(Front View)

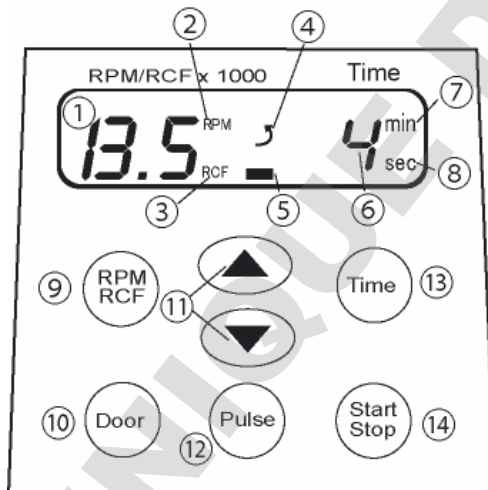


(Rear View)



(Back View)

7. Control elements and Function



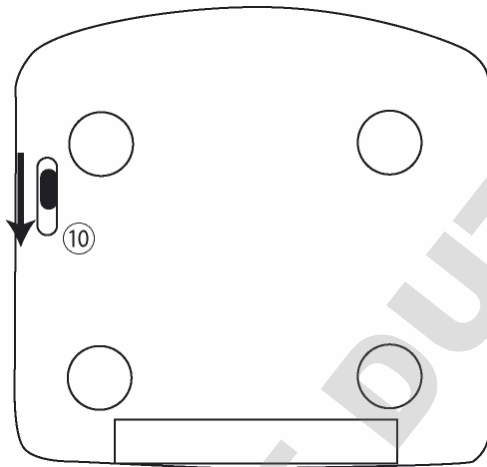
- ① RPM/RCF Display : Displays the settings or speed in RPM or RCF.
※Displayed figure x1000 = Actual rpm or rcf.
- ② RPM Display : It is displayed when you select RPM operation mode.
- ③ RCF Display : It is displayed when you select RCF operation mode.
- ④ Operation Display : It is displayed when the unit is in operation.
- ⑤ Lid Display : Displays an open or closed lid.

- ⑥ Timer Display : Displays the set time or remaining time during operation.
- ⑦ Min Display : Displays when remaining time exceeds 1 minute.
- ⑧ Sec. Display : Displays when the remaining time is less than 1 minute.
- ⑨ RPM/RCF : Toggles the display to show RPM or RCF.
- ⑩ Door : To open the lid

※ Opening the centrifuge in the event of power failure

Please make sure whether the rotor has come to standstill.

Then lift up Mini Centrifuge, insert a pen into the opening in the base and move the lever in the direction of the arrow.



- ⑪ For setting the time and rotation speed
- ⑫ Pulse : For Short-spin
- ⑬ Time : For setting time
- ⑭ Star/Stop : To start and stop

8. Installation and Operation

8-1 Installation

- 1) Install your Mini Centrifuge on a clear, flat and level surface.



CAUTION

Place the centrifuge on a level, horizontal surface. Please make sure that the ventilation slits are not blocked. IEC 1010-2-020 stipulates that 30 cm around the centrifuge should clear of all objects and obstructions.

- 2) Connect the power cord to the main power socket on the rear side of device.
- 3) Switch ON the power switch on the rear. The door is opened automatically and the centrifuge is ready to operate when the display becomes visible.
- 4) Place the rotor onto the rotor axle and tighten using the rotor nut.
- 5) Place tubes symmetrically into the rotor



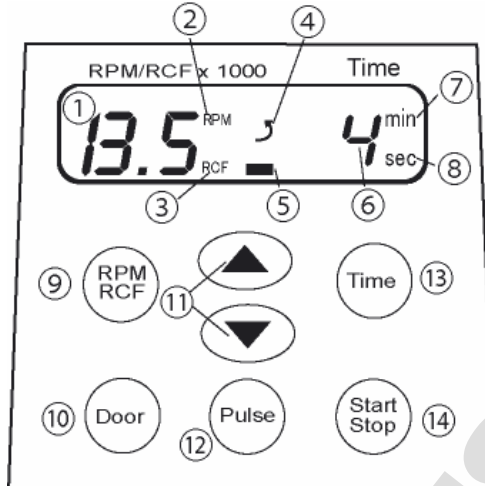
CAUTION

- Unbalanced loading will significantly reduce the life of your centrifuge.
- Load your tubes symmetrically to ensure safe and quiet operation.
- To spin 1 or 5 tubes, load an additional water filled tube in the opposite slot.

- 6) Close the lid for Angle rotor
- 7) Close the centrifuge lid.

8-2 Operation

(1) Setting RPM /RCF



1) Please set the operation mode using the number ⑨ の RPM/RCF button.

The RPM (②) or RCF (③) is displayed when pushed this button.

2) Please set the rpm or rcf using ⑪ button.

※Displayed figure x1000 = Actual rpm or rcf.

(2) Setting Timer

1) Please push the "Time" Button (⑬)

2) Please set the time using the button (▲) and (▼) (⑪).

※The timer can set between 1-30 min.

(3) Please push the Start/Stop button (⑭).

④ (In Operation sign) is displayed when the centrifuge starts.

(4) The unit stops when the button is pushed again during the operation.

※The lid opens with a beep the time is up.

8-3 Short-Spin

- 1) Please set speed using the button ⑨ (RPM/RCF) and ⑩ (▲,▼).
- 2) The unit stops after reaching at preset RPM.

8-4 Opening the centrifuge in the event of power failure



In case of a power failure during operation, the lid cannot be opened. If power is supplied again the alarm will beep and the rotor will stop. The lid cannot be opened until the rotor comes to a complete stop.



Please make sure that the rotor has come to a complete stop. Lift up Mini Centrifuge, insert a pen into the opening in the base and move the lever in the direction of the arrow.



When lifting up the centrifuge, particularly after a device failure, please note that the motor on the underside of the centrifuge can become hot. Please hold the device at the edges only.

9. Maintenance

Cleaning

- The rotor and outside of the centrifuge should be cleaned regularly with a damp cloth.
- Disconnect the centrifuge from the main supply before the cleaning.
- Only neutral agents or a mild liquid soap may be used.
- Do not use chemical cleaning agents or strong solvents.
-

Mechanical or chemical damage

- Do not operate the centrifuge when there is mechanical or chemical damage.
- Change faulty parts immediately.

10. Trouble Shooting

Error	Cause	Solution
No Display	Power cable not connected	Check that the power cable is plugged into both the wall socket and the device.
	Power supply	Check that there is power from the wall socket.
	Power switch	Is the power switch at the ON position?
Lid cannot be opened	Power failure	Emergency lid release
	Rotor is still spinning	Wait for the rotor to come to a complete stop
Excessive Noise or Vibration	Rotor is not loaded symmetrically	Stop the unit and load the tubes symmetrically. Ensure that the tubes on the opposite sides are equally filled.
	Rotor is slanted	Remove the rotor and reinsert straight and firmly downwards.
E1	Failure to reach to 2000 rpm within 2 sec.	Contact service
E2	The door opens during operation	Contact service
E3	Motor Overheat	Contact service
E4	Low Voltage	- Check the mains power - Contact service
E5	High Voltage	- Check the mains power - Contact service
E6	Over Speed	- Stop centrifuge run and power Off and On - Contact service
E7	Control system failure	- Stop centrifuge run and power Off and On - Contact service

11. Technical Report

Power Supply	115 VAC 50-60Hz, 220VAC 50-60Hz (see identification plate on bottom of centrifuge)
Power requirement	75W
Max. Speed	13,500 rpm (Rotor for 1.5/2.0 ml micro tubes)
Max. Centrifugal force	12,300 rcf (Rotor for 1.5/2.0 ml micro tubes)
Ambient temperature	2-35 °C
Max. relative humidity	75%, non condensing moisture
Degree of pollution	N/A
Overvoltage category	N/A
Max. Noise Level	≤ 60dB0
Acc. Time	≤ 12 sec.
Dec. Time	≤ 16 sec.
Dimension	Height: 145 mm
	Depth: 245 mm
	Width: 208 mm
Weight	4.4 kg(without rotor)
Fuse	220VAC 6A

12. Warranty Statement

The warranty for the device is 12 months from the date of purchase. During this period the device will be repaired or exchanged without charge. Warranty is void on devices with damaged manufacturer's number, damaged seal, or damage due to improper use, storage or transport of device or service by unauthorized persons.

CERTIFICATED OF SALE OF EQUIPMENT

Name of company	
Address	
Model Number	
Description	
Serial Number	
Date of Sale	