

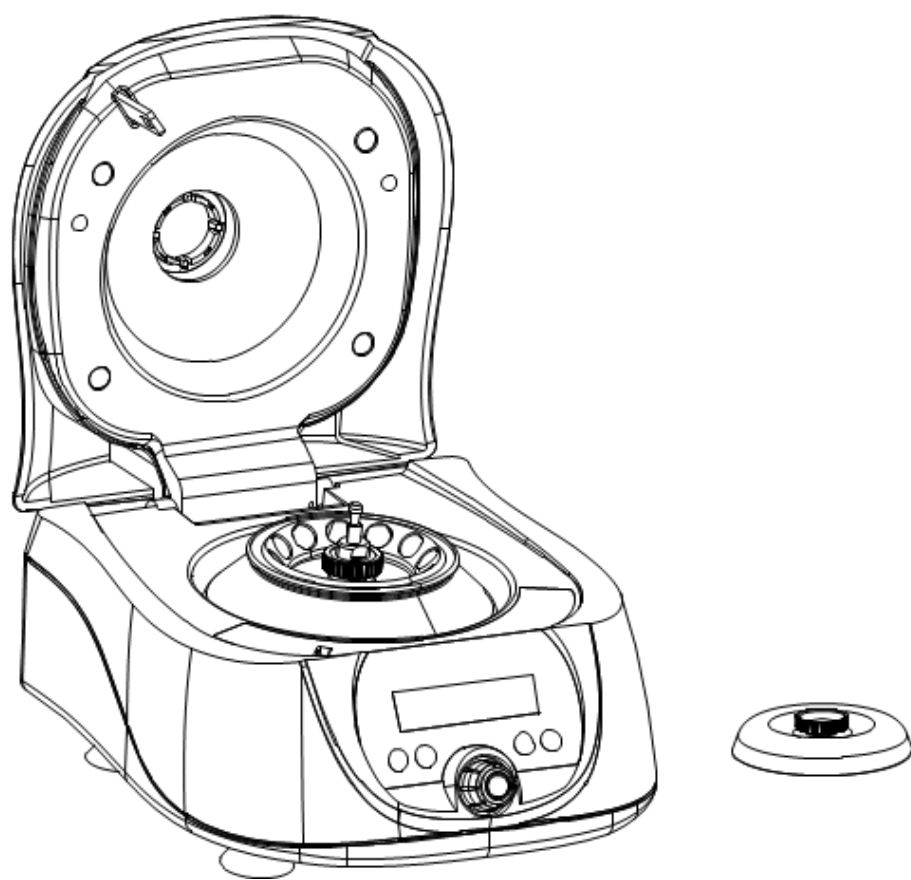


MC-12

High Speed Micro Centrifuge

Operations Manual

Version 2.0



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1 Introduction

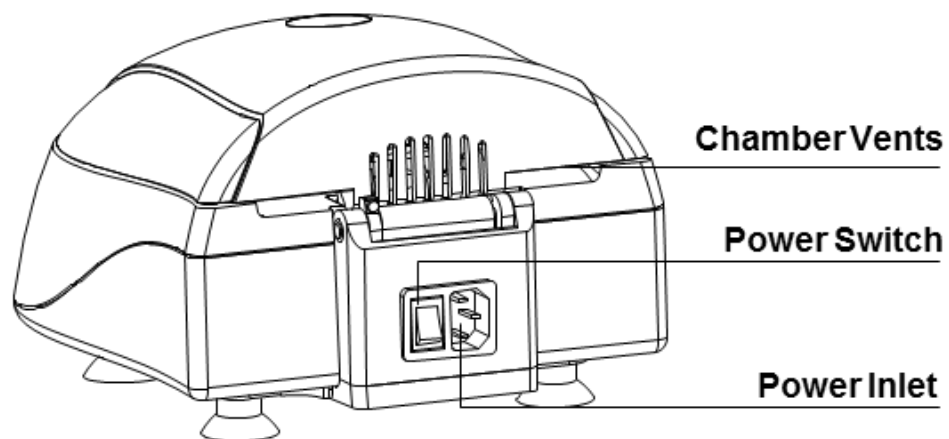
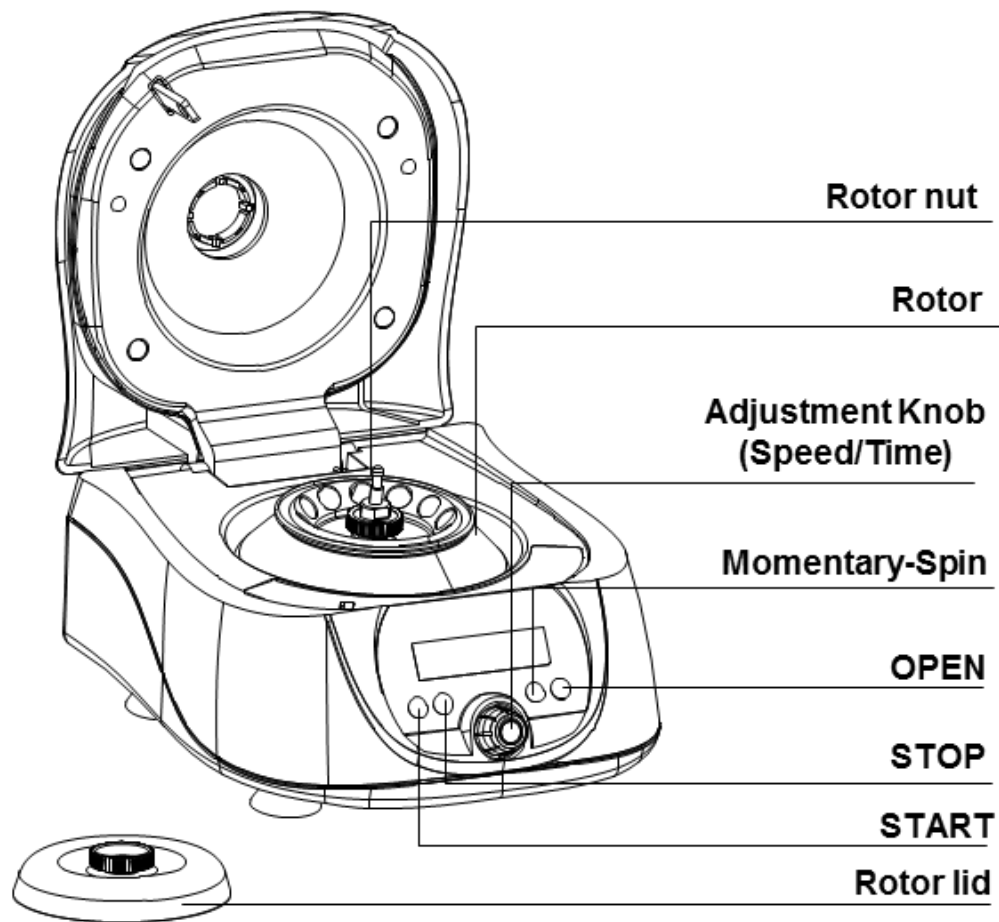
This high speed centrifuge is designed for the centrifugation of microcentrifuge tubes (1.5 to 2.0ml). It comes equipped with a 12 position rotor holding the tubes at a 45° angle.

Please read this manual carefully before operating the centrifuge for the first time.

1.1 Included Components

NO.	Item	QTY
1	MC-12 Centrifuge	1
2	Rotor (Installed)	1
3	Rotor nut (Installed)	1
4	Rotor lid (Installed)	1
5	Power cord	1
6	Operations manual	1

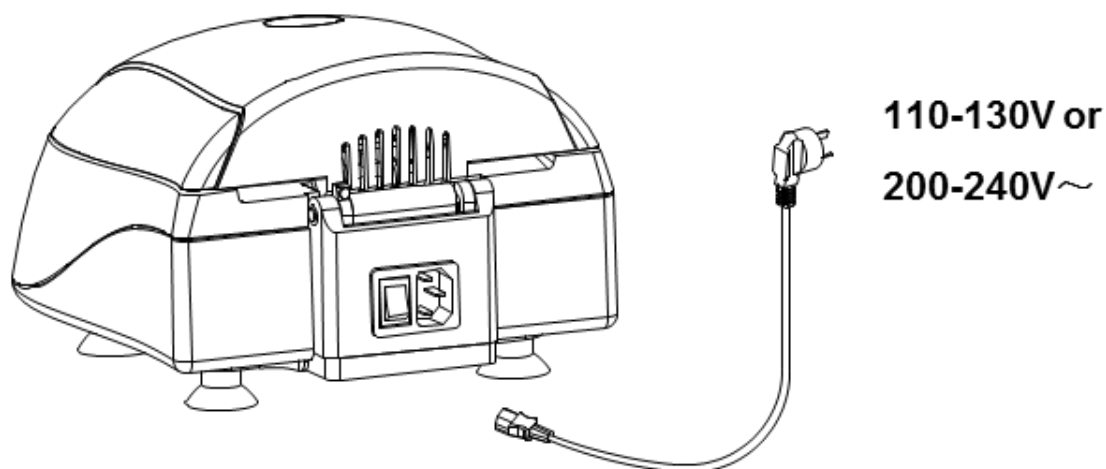
1.2 Structure Description



1.3 Installing the device

1.3.1 Place the centrifuge onto a level , horizontal surface. Make sure that the chamber vents clear from any obstructions.

1.3.2 Insert the power cord into the device ,and plug into a wall outlet of the proper voltage.



1.3.3 Always install the centrifuge with 20cm of air space on all sides.

1.3.4 Power on the centrifuge. The display will illuminate and the device is ready for use. Ensure that the rotor is placed onto motor shaft and tighten the rotor nut.

Before starting up the centrifuge for the first time, ALWAYS ensure that the rotor nut is securely fastened and that rotor lid is properly secured.

2 Technical data

Model	MC-12
Power supply	110~130 V/ 200~240V 50/60Hz
Power	100W
Max. speed	15,500 rpm
Max. centrifugal force	16,100g
rpm/rcf	yes
Time	20sec ~ 99min / continuous or momentary
Max. load	12×1.5/2.0ml tubes
Max. permitted density	1.2g/ml
Acceleration time to max. speed	12 seconds
Braking time from max. speed	10 seconds
Ambient temperature	2°C ~ 35°C
Dimensions (W×D×H)	270mm×220mm×150mm 10.6 x 8.7 x 5.9 in.
Weight (with rotor)	4.8kg / 10.5 lbs

3 Safety precautions



ALWAYS ensure that the rotor and the rotor lid are securely fastened and that the rotor nut has been fully tightened. If an abnormal sound exits during acceleration, **STOP** the device immediately and reattach the rotor and rotor lid.



Do not use a rotor with any signs of damage or ware.



Do not move or pick up the centrifuge during centrifugation.

3.1 Insertion of sample tubes

3.1.1 Don not exceed a liquid density of 1.2g/ml when running at the maximum speed.

3.1.2 NEVER run the centrifuge with cracked or damaged sample tubes.

3.1.3 ALWAYS fully close the test tube lids/caps before centrifugation.

3.1.4 ALWAYS load the test tubes symmetrically and balanced.

3.2 Maintain of rotor

3.2.1 NEVER operate the centrifuge with a damaged rotor. Even slight scratches and tears of the rotor can lead to internal material damage.

3.2.2 Avoid use with aggressive chemicals, including among others: strong and weak alkali, strong acids. In the event of a spillage, clean the centrifuge and rotor immediately.

4. Operation

4.1 Control Panel

Start	To begin centrifugation
Stop	To end centrifugation
Quick	For momentary or pulse operation
Open	To open the centrifuge lid
Knob	To adjust the time and rpm values. (Press the knob to toggle between speed and time)

4.2 Rotor insertion and removal

Place the rotor onto the motor shaft. When properly attached, the motor shaft should stick out approximately 0.8mm above the rotor. Tighten the rotor nut by turning clockwise. To release the rotor, turn the rotor nut counterclockwise.

Prior to every start, ensure that the rotor nut is firmly tightened!

4.3 Loading the rotor

Rotor must always be loaded symmetrically. ALWAYS minimize any differences in weight/volume between the sample tubes.

4.4 Centrifugation with a preset time

4.4.1 Turn on the mains switch, pressing “Open” to open the lid, load the rotor symmetrically. Attach the rotor lid and close the centrifuge lid.



4.4.2 Press the control knob and rotate it to select the desired run time, the time can be pre-selected between 20 seconds and 99 minutes. (The time can also be set to continuous by selecting 0 sec.) Press knob again and rotate it to select the desired run speed, the max. speed is 15500 rpm.

4.4.3 Press “Start” to begin the cycle . Press “Stop” to end the run prematurely. (The remaining run time appears in the display.)

After the cycle, the lid lock of centrifuge opens automatically.

NOTE: Both the time setting and the rotational speed may be changed during the run.

4.5 Quick-Spin Setting

4.5.1 Turn on the mains switch, pressing “Open” to open the lid, load the rotor symmetrically. Fasten the rotor lid and close the centrifuge lid.

4.5.2 Press and hold “Quick”. The centrifuge will run for as long as this key is held down.

4.6 Disabling the End of Run Alarm: To disable the “beep”, please press and hold the “Stop” key for 5 seconds (display reads “Off”). Use the adjustment knob to toggle between on and off (Wait 3 seconds for the setting to store.)

4.7 Toggling between the rpm and g force (rcf) speed settings

Press and hold the adjustment knob for 3s to switch “rpm” to “g”, press and hold the knob for 3s again to switch “g” to “rpm” on the screen.

You can calculate with the following formula :

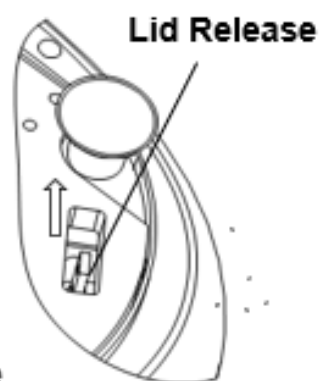
$$\text{g force (rcf)} = 11.18 \times n^2 \times \text{r}_{\text{max}}$$

n: rotational speed in 1/min

r_{max} = 6 cm, max. centrifuging radius in cm

4.8 Emergency Lid Release

Unplug the power cord. Wait until the rotor has come to a complete stop, Then lift up the device and place on its side. Locate the emergency release and press to open the lid.



5 Maintenance and cleaning



The rotor and the outside of centrifuge should be cleaned regularly with a moist cloth. Disconnect the centrifuge from the power inlet, remove the rotor and clean it separately. Only neutral agents (such as 70% isopropyl alcohol) may be used for cleaning.



Please check the rotor and especially the rotor bores regularly for deposits or damage, then reinsert the rotor and tighten the rotor nut.

6 Troubleshooting

Error	Cause	Solution
No display	No power connection. Power failure.	Plug in power cable on both ends. Check the fuse
Lid won't open	Power failure. Rotor is still spinning. Lid lock failure.	Emergency lid release(see sec.4.7). Stop centrifuge run. Contact service.
Centrifuge shakes during acceleration	Rotor not loaded symmetrically.	Stop centrifuge run and load centrifuge symmetrically.
Display E104	lock failure	Contact service.
Display E501	Speed instability	Contact service.
Display E503	Motor failure	Contact service.
Display E101	Speed instability	Contact service.
Display E201	Over Vibration	Balance load

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