Operation Manual

Hematospin II

Clinical Centifuge

Product Model Name :

Date of Purchase :

hanil

Hematospin II
Research Use Only

If you have any questions, contact our Technical Support Center.
+82-2-3452-8966 / techsupport@ihanil.com

www.ihanil.com

The appearance or specifications of the device is subject to partial change for improvement.

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1. General Considerations

1.1 Safety

Follow precautions and all the safety requirements described on this user manual to prevent any damage and failure of device and loss of lives.

1. The device should be installed on flat surface to maintain level.
2. Check the voltage to be used, before connecting the device to the power source.
3. Only use rotors, parts, and accessories provided by Hanil Scientific Inc. Hanil Scientific Inc. is not responsible for damages of the device and accidents caused by using parts and accessories not recommended.
4. Do not exceed the maximum rated speed of the rotor or buckets in use.
5. Make sure to prepare necessary safety measures before using samples that are toxic or radioactive samples or pathogenic or samples or infectious blood.
6. Substances that may generate volatile or explosive vapor can not be deviced.
7. The balancing work of samples should done in advance before operation.
8. To ensure safe use of the device, do not expose the device to strong acids, strong bases, cesium, salt, or alkaline detergents.
8. If the device is contaminated by toxic or radioactive samples or infectious blood samples, remove contaminants completely and take needful actions such as ventilation or isolation of device.
9. Before operation, rotor and chamber should be dry.
10. Do not attempt to slow or stop the spinning rotor by hand.
11. Only device with rotor and rotor door firmly tightened.
12. Do not block vents.
13. When serving the device, be sure to remove contaminants in advance.
14. Please contact the place of purchase or Hanil Scientific Inc. for product repairs.
15. According to IEC61010-2-020 maintain a 30cm "clearance envelope" around the device while the rotor is spinning.
16. Turn the power switch off after using the device.
17. Unplug the power plug before cleaning or left unused for a long period of time.
18. Don't lean against the device

1. General Considerations

1.2 Transport & Storage

⚠️ - The device and the accessories must only be stored in dry rooms.
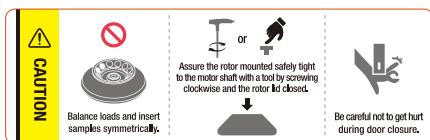- Only lift and transport the device with sufficient number of helpers.

-Storage-

Ambient temperature 5°C~40°C
Maximum relative humidity 30%~85%
Air pressure 500~1060hpa

-Transport-

Ambient temperature -10°C~40°C
Maximum relative humidity 10%~90%
Air pressure 500~1060hpa

1.3 Safety label on the Device

Insert tube symmetrically.
Firmly tighten the rotor lid.
Watch your figers when close the door.

⚠️ Mark indicating danger and warning.

⚡ Mark indicating a place in danger of electric shock.

⏚ Mark indicating earth grounding

1.4 Electric safety

1. It is recommended that switchgear or circuit breakers and overcurrent protection devices be installed near the device.
2. Use a power cord only provided with the device.
3. Use sockets with a protective earth conductor and suitable power cord.
4. Do not use an extension cord.
5. Do not place anything on the powercable.
6. If you have the following emergencies, shut off the power supply and unplug the powercord from outlet and contact your place of purchase.
 - Unusual noises or smell from the equipment.
 - Damage or wear of a power cord.
 - Breakdown of circuit breaker, fuse or safety device.
 - If you spill liquid on the equipment.
 - If the equipment has been damaged.

2. Product Description

2.1 Structure
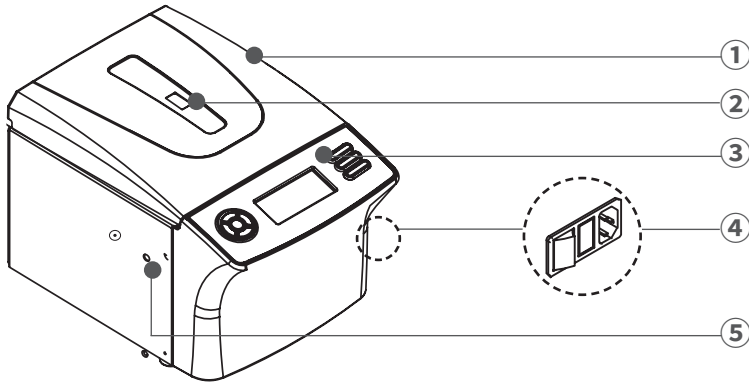
① Door

② RPM measuring window

③ Display & control panel

④ Power switch & soket (Right side of the device)

⑤ Emergency door open hole

2.2 Delivery package

- Hematospin II
- Rotor (A-hemo-24)
- Power cable
- Operating manual

2. Product Description

2.3 Technical Specifications

Max. RPM	12,000 rpm
Max. RCF	15,536 xg
Time	< 100 min, pulse, continuous
Max. Capacity	24 x 0.07 mL capillary
ACC/DEC steps	5/6 steps
Acc. time to max. speed	35 / 59 sec
Dec. time from max. speed	60 / 85 sec
Program memory	10
Noise level	< 60 dB
Imbalance cutoff	Yes
Dimension (W x D x H, mm)	293 x 380 x 242
Weight without rotor	15 kg
Power requirement (VA)	400 VA
Power input (V, Hz)	210~240V, 50/60 Hz (110V optional)
Cat. No.	HE-II

3. Installation

3.1 Packing Inspection

⚠ • Check packing conditions carefully, before unpacking.
• Contact Hanil Scientific Inc. immediately if damages found.
• Check the delivery for completeness.

▶ You can get contact details on the packing box or manual.

3.2 Installation

⚠ **Installation on hard and flat ground.**
• Centrifuge should be installed on hard and flat place.
• If the centrifuge is installed in an inclined place, the shaft may be bent due to the weight of the rotor.

Good ventailation.
• For air circulation and safety, maintain a 30cm"clearance envelope" around the centrifuge while the rotor is spinning.

Constant temperature/humidity
• Centrifuge equipped with the sensitive electronic software which is fragile with humidity and temperature.
• Must avoid direct ray or heater and be put in the ambience of controlled temp.and air.

Avoid the corrosive gas
• Install the centrifuge in a place where corrosive gas is not generated.
• Sulfur dioxide gas and chlorine gas may cause corrosion.

Leveling
• The shaft should be put exactly vertical on the hotizontaliy flat ground by the leveling tool

3. Installation

3.3 Power Connection

⚠️ • Connect the device to voltage sources which correspond to the
electrical requirements on the label attached to the device.
• Use sockets with a protective earth conductor and provided power cord.

1. Connect the power cable to the power socket on the right side of the product
   and plug the cord into the outlet.
2. Switch the centrifuge on using the power switch on the right side of the device.

3.4 Opening/Closing the Door

⚠️ • If the door is not closed, the device does not operate.

Opening the door
1. Press the Door button

Closing the door
1. Put both hands on the lid and close it with light force.

3. Installation

3.5 Installing/Removing the Rotor

⚠ • Only use rotors , parts , and accessories provided by Hanil Science Inc.
• Do not use scatched or cracked rotor in use.

The Rotor is installed onto the motor shaft.
When claning the rotor or device, remove and install it as below.

1. Before installing the rotor remove any foreign object or moisture.

2. Load the rotor vertically onto the motor shaft.

3. Insert the rotor head bolt into the center hole of the rotor and turn it clockwise using a screwdriver.

▶ Installing : Turn the bolt clockwise
▶ Removing : Turn the bolt counterclockwise

4. Place the rotor cover on the rotor.
▶ To remove the rotor cover., press the knob of the rotor cover and lift it up.

4. Operation

4.1 Control Panel

No.	Button	Description
①	Up	Up the values when setting parameters
②	Left	Left button is used to select parameter
③	Right	Right button is used to select parameter
④	Down	Down the values when setting parameters
⑤	Setup/Enter	The Setup/Enter button can be pressed to go into setup mode or complete the setting parameters
⑥	Display	State of RPM/RCF/Program/Time
⑦	Call/Save	Call or save a program
⑧	Door	When door button is pressed, the door opens
⑨	Start/Stop/Short	Start/Stop/Short centrifugation

4. Operation

4.2 Setting RPM/RCF

1. Press the Setup/Enter button.

2. Press the Left or Right button until the RPM/RCF display(rpm) flashes.
   ▶ RPM setting mode : RPM(rpm) display flashes.
   ▶ RCF setting mode : RCF(xg) display flashes.

3. Press Up or Down button until the required RPM/RCF is displayed.

4. Press the Setup/Enter button.

4.3 Setting Run Time

1. Press the Setup/Enter button.

2. Press the Left or Right button until the Time display(0' 00'') flashes.
   ▶ Time can be set for up to 99 minutes 59 seconds.

3. Press Up or Down button until the required run time is displayed.

4. Press the Setup/Enter button.

4. Operation

4.4 Setting Acceleration/Deceleration

1. Press the Setup/Enter button.

2. Press the Left or Right button until the Accel/Decel display(0) flashes.
▶ Accel rate setting mode: Accel display flashes(0).
▶ Decel rate setting mode: Decel display flashes(0).
▶ Accel rate: 5 steps
▶ Decel rate: 6 steps

3. Press the Setup/Enter button.

4.5 Start/Stop a centrifugation

[Start]
1. Check all parameters are correct.

2. Press the Start/Stop/Pulse button.

[Stop]
1. Press the Start/Stop/Pulse button to stop centrifugation.
▶ The centrifugation stops when the set run time has been reached.

4. Operation

4.6 Short Run

The [Short] button is for when press & hold, to accelerate up to maximum speed and

decelerate when the button is not pressed.

 1. Set the desired run speed. [Refer to. 4.2 Setting RPM/RCF]

2. Press the Short button more than 2 sec.
   ▶ While pressing [Short], the equipment will accelerate up to maximum RPM.
   ▶ By stop pressing the [Short], the equipment will decelerate to stop.

4.7 Saving/Calling up a Program

[Saving]
1. Set the RPM(or RCF) / Run time / Accel, Decel rate

2. Press the Left of Right button until Prog display flashes(0).
   ▶ You can save 10(0~9) programs.

3. Press Up or Down button until the required program number is displayed.

4. Press the Enter button.

[Calling up]
1. Press the Setup/Enter button.

2. Press the Left of Right button until Prog display flashes(0).

3. Press Up or Down button until the required program number is displayed.

4. Press the Enter button.

5. Maintenance

5.1 Care Instructions

1. Regularly inspect the rotor chamber for check the motor shaft is normal.

2. Regularly check the rotor and accessories to be sure there is no damage.

3. Rotate the motor shaft with your hand to make sure it turns smoothly.

4. To prevent the rotor from sticking, lubicate the rotor drive hole which contacts motor shaft regularly.

5.2 Cleaning

⚠️ • Before cleaning the centrifuge, be sure to switch off the device and disconnect the power cord.

[Oustside of the device]
1 Clean the outside of deivice with a soft and dry cloth.
   ▶ If the device is contaminated, use a mild cleaning fluid to clean.
2. Do not use aggressive chemicals on the device such as alchol, benzene, acetone or phenol.
3. Make sure do not scratch the surface of deivice when cleaning it.
   ▶ Do not use a metal sponge.
   ▶ If the device is rusted, remove it with a mild detergent and wipe it with a dry cloth.

[Chamber]
1. If the rotor chamber is not dry, wipe moisture from the chamber with a dry cloth.
2. If the rotor chamber is dirty, clean it with a mild fluid to clean.

[Rotor]
1. After centrifugation, remove the rotor from the chamber and keep it upside down.
2. If any sample is spilt inside the rotor, clean it and dry well.

[Disposal]
1. In case of product is to be disposed of, the local wastes laws and regulations are to be observed.

6. Troubleshooting

6.1 Possible Problems

Problems	Recommended Action
Power failure	- Check the power cord connection. - Check the power fuse of the device.
Centrifugation cannot be started	- Check the lid is closed completely.
Lid cannot be opened	- Press the 'Lid open button'. - Check the power connection.
Lid cannot be closed	- Remove the dirt at the door latch and close the lid. - Check the lid latch is not damaged.
Unusual noise and vibration	- Check the device is installed on the hard and flat place
	- Reinstall the rotor symmetrically. - Reinstall the tubes symmetrically. - Tighten the rotor lid firmly by turning the rotor lid handle clockwise.

6. Troubleshooting

6.2 Error Codes

Error	Error Message	Cause	Recommended Action
E1	Imbalance error	• When an imbalance is detected.	• Check the rotor is installed tightly. • Check the proper loading of tubes. • Check the stable ground or worktable.
E2	Over speed	• 10% over the set RPM. • Incorrect tuning of motor and controller.	• Check controller and motor. • Restart the device.
E3	Motor overheat	• Temp. rises inside of motor.	• Check the stator of motor. • Restart the device.
E4	Motor error	• Motor failure	• Restart the device.
E5	Door Open (operating)	• Lid opened during operation	• Contact Hanil Scientific Inc.
E7	System error	• Error in control system	• Restart the device.
E11	Motor tempterature sensor error !	• Motor tempoerature sensor failure	• Contact Hanil Scientific Inc.
E12	High voltage error	• Occurs when the control parts are damaged due to overvoltage or the input power is high.	• Contact Hanil Scientific Inc.
E13	Low voltage error	• Occurs when the control parts are damaged due to overvoltage or the input power is low.	• Contact Hanil Scientific Inc.

6. Troubleshooting

6.2 Error Codes

Error	Error Message	Cause	Recommended Action
E15	RPM Sensing error	• Rpm sensor failure	• Restart the device.
E17	communication error	• Occurs when communication between Main and io board or between display and IO board is broken	• Restart the device.
E20	Lid_1_sensor error	• Lid_1_sensor failure	• Restart the device.
E21	Motor_C_ sensor error	• Motor Close sensor failure	• Restart the device.
E22	Motor-O_ sensor error	• Motor Open sensor failure	• Restart the device.

Please contact us if any other error codes occur or if you are not satisfied with the above method.
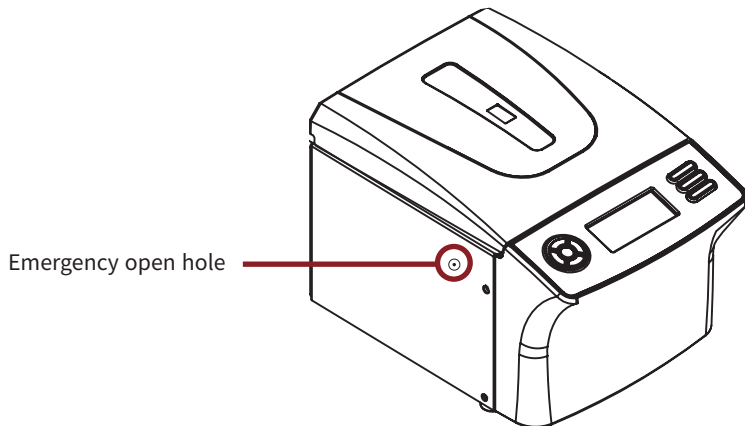
6. Troubleshooting

6.3 Emergency Door Open

If the device door cannot be opened, you can activte the emergency open manually.

1. Wait for rotor to stop before activating the emergency open.

2. Insert a T-wrench into the emergency open hole and turn it clockwise
   until the door is opened.

Emergency open hole

7. Rotor

7.1 Rotor

Rotor		Tube Capacity	Radius (mm)	Max. RPM (rpm) Max. RCF (xg)
A-hemo-24 Consists of lid, scale plate, and tube insert plate A capillary is not included.		24 x 0.07 mL capillary	96.5	12,000 15,536

hanil

16, Arayuk-ro, Gimpo, REP of Korea
+82-2-3452-8966
technicalsupport@ihanil.com
www.ihanil.com