

---

## Operating Manual

# Supra R30

Ultra Centrifuge

Date of Purchase	
Serial No.	
Place of purchase	

# hanil

Copyright © 2018 Hanil Scientific Inc. All rights reserved.

### **Contact Us**

If you have any questions, contact Hanil Scientific Inc. or place of purchase.

[techsupport@ihanil.com](mailto:techsupport@ihanil.com)

+82-2-3452-8966

[www.ihanil.com](http://www.ihanil.com)

The specification of the device in this manual is subject to change for improvement.

# CONTENTS

1. General Considerations-----	3
1.1 Safety -3	
1.2 Transport & Storage -4	
1.3 Safety label -4	
1.4 Electric safety information -4	
2. Product description-----	5
2.1 Structure -5	
2.2 Delivery package -5	
2.3 Technical specifications -6	
3. Installation -----	7
3.1 Packing Inspection -7	
3.2 Installation -8	
3.2.1 Selecting the location -8	
3.2.2 Leveling -9	
3.2.3 Power connection -10	
4. Operation -----	11
4.1 Operation panel -11	
4.2 Opening and closing the lid -12	
4.3 Installing or Uninstalling the rotor -12	
4.4 Loading tubes -13	
4.5 Rotor ID identification -14	
4.6 Setting RPM/RCF -15	
4.7 Setting run time -15	
4.8 Setting AT SET SPEED -15	
4.9 Setting Normal mode -16	
4.10 Setting Acceleration/Deceleration rate -16	
4.11 Setting Temperature -17	
4.12 Fast cool -17	
4.13 Start the centrifugation run -17	
4.15 End the centrifugation -18	
4.16 Pulse function -18	
4.17 Saving / Recall a program -18	
5. Maintenance-----	19
5.1 Care instructions -19	
5.2 Cleaning -19	
6. Troubleshooting-----	20
6.1 General errors -20	
6.1 Emergency lid open -21	
6.3 Error Messages -22	
7. Rotor -----	25

# 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 centrifuge should be installed on a flat surface to maintain level.
2. Check the voltage to be used, before connecting the centrifuge 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 centrifuged.
7. The balancing work of samples should done in advance before operation.
8. If the centrifuge is contaminated by toxic or radioactive samples or infectious blood samples, remove contaminants completely and take needful actions such as ventilation or isolation of the 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 centrifuge with rotor and rotor lid firmly tightened.
12. Do not block vents.
13. When serving the centrifuge, 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 centrifuge 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.

# 1. General Considerations

---

## 1.2 Transport & Storage

---



- The device and the accessories may only be stored in dry rooms

-Storage-

Ambient temperature 5°C~35°C

Maximum relative humidity 30%~85%

Air pressure 500~1060hpa



- Only lift and transport the device with sufficient number of helpers.

-Transport-

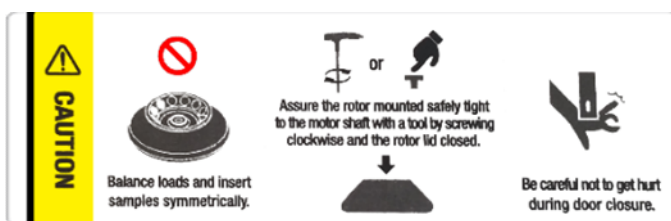
Ambient temperature -10°C~40°C

Maximum relative humidity 10%~90%

Air pressure 500~1060hpa

## 1.3 Safety label attached to a product

---



Insert tube symmetrically.

Firmly tighten the rotor lid.

Watch your fingers when close the lid.



Mark indicating danger and warning.



Mark indicating a place in danger of electric shock.



Mark indicating earth grounding

## 1.4 Electric safety information

---

1. This device should be installed for permanent use.
2. It is recommended that switchgear or circuit breakers and overcurrent protection devices be installed near the equipment.
3. Use a power cord only provided with the equipment.
4. Use sockets with a protective earth conductor and suitable power cord.
5. Do not place anything on the power cable
6. Do not block vents.
7. If you have the following emergencies, shut off the power supply and unplug the power cord from the outlet and contact your place of purchase or Hanil Scientific Inc. Technical Service Team.
  - 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 Display: The display shows time, speed, temperature, Acc/Dec, rotor Id.
- ② Keypad : Time, and speed can be set.
- ③ lid: lid protects the inside of the chamber.
- ④ Power switch : On/off the centrifuge
- ⑤ RPM measuring window: Visual inspection for rotor stop or speed check using a tachometer.

### 2.2 Delivery package

---

- ① Main body
- ② Power Cable
- ③ Operating manual
- ④ Optional items: Rotors

## 2. Product description

---

### 2.3 Technical Specifications

---

Max. RPM	30,000 rpm
Max. RCF	106,657 xg
Max. Capacity	4 x 1,000 mL
ACC/DEC	10/10 steps
Temperature range	-10°C to 40°C
Time control	< 100 hr, continuous
Program memory	100
Noise level	≤ 65 dB
Vacuum system	Yes
Rotor identification	Manual
Dimension (W x D x H, mm)	710 x 1,000 x 1,260
Weight without rotor	450 kg
Power requirement (VA)	4.0 kVA
Power input (V, Hz)	210~240V 60 Hz (110V, 50 Hz optional)
Cat. No.	SU-R30

# 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 packing boxes or back of the manual.



# 3. Installation

---

## 3.2 Installation

---

### 3.2.1 Selecting the location



- Installation must be done by the authorized Hanil Scientific Inc.
- Observe the following instructions for installation.

#### **1. Install the device on a hard and flat floor.**

- The device should be installed on a 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.

#### **2. Adequate ventilation.**

- For air circulation and safety, maintain a 30cm “clearance envelope” around the device while the rotor is spinning.

#### **3. Temperature/Humidity**

- Centrifuge equipped the sensitive electronic software which is fragile with humidity and temperature. Refer to [1.2 Transport & Storage].
- Must avoid a place exposed to direct ray, heater and high humidity.

#### **4. Avoid the corrosive gas**

- Install the device in a place where corrosive gas is not generated.
- Do not place dangerous substances capable of generating flammable or explosive vapors near the device.

# 3. Installation

---

## 3.2 Installation

---

### 3.2.2 Leveling



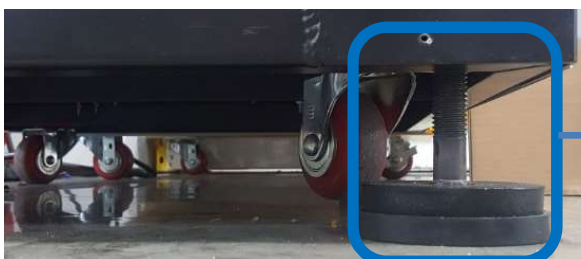
- Imbalance of the device causes vibration, noise and error during operation.

**After locating the device on a flat and hard place, make sure the device is level.**

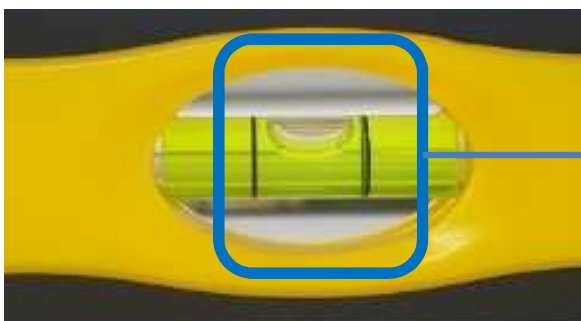
1. Place the leveler on the top of the device.



2. Turn each of the foot levelers which is at the bottom of the device until the device is level.
  - All bubbles must be located in the center of the leveler.



Foot leveler



Bubble located in the center

# 3. Installation

---

## 3.2 Installation

---

### 3.2.3 Power Connection

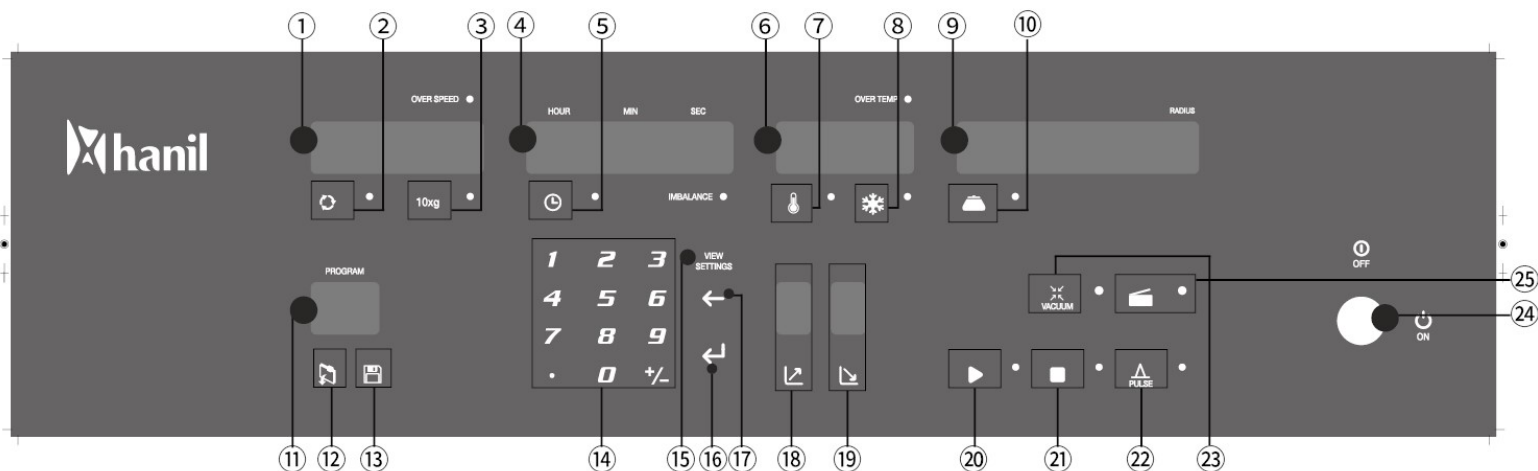


- Connect the device to voltage sources which correspond to the electrical requirements on the label attached to the device.

1. You can choose a embedded socket or a movable socket
2. Switch the centrifuge on using the power switch key on the overlay of the device.

# 4. Operation

## 4.1 Control Panel



Button	Function
①	Speed Display Status of speed
②	RCF Setting RPM
③	RCF Setting RCF
④	Time Display Status of time
⑤	Time Setting run time
⑥	Temp Display Status of temperature
⑦	Temp Setting temperature
⑧	Fast cool Fast cool function
⑨	Rotor Display Status of rotor ID
⑩	Rotor ID Setting rotor ID
⑪	Program Display Showing of program number
⑫	Program Call Calling up a program
⑬	Program Save Saving a program
⑭	Keypad Numeric buttons
⑮	View setting Check the set parameters

Button	Function
⑯	Enter Enter
⑰	Cancel Deleting characters
⑱	Acc Setting acceleration step
⑲	Dec Setting deceleration step
⑳	Start Starting a run
㉒	Stop Stopping a run
㉓	Pulse Pulse run
㉔	Power Key Turning the power on
㉕	Lid LED Status of lid

## 4. Operation

---

### 4.2 Opening and closing the lid

---



- The lid can only be opened if the centrifuge is switched on.
- Do not reach with your fingers between the housing and lid.
- Close the lid completely before operation.

#### •Opening the lid

**MUST open the lid after releasing the vacuum. [Refer to 4.16 Releasing vacuum]**

Push the lid handle up side.

#### •Closing the lid

Pull the lid handle down.

### 4.3 Installing or Uninstalling the rotor

---



- Only use rotors, parts, and accessories provided by Hanil Scientific Inc.
- Do not use scratched or cracked rotor in use.

#### **Loading**

1. Clean the motor shaft and chamber.
2. Load the rotor vertically onto the motor shaft.
3. Place the rotor lid on the rotor body.
4. Turn the rotor lid handle clockwise.
4. Check the rotor to make sure it loaded firmly.

#### **Unloading**

1. Turn the rotor lid handle counterclockwise.

# 4. Operation

---

## 4.4 Loading tubes

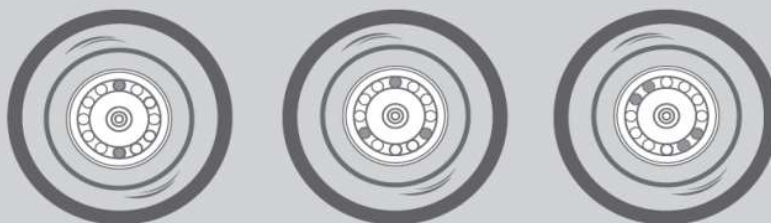
---



- Only use tubes provided or approved by Hanil Scientific Inc.
- Always use the same type of tube.
- Tubes should be loaded symmetrically.
- Do not exceed the maximum rated speed of the tube.
- Same volume of sample should be put on tubes.
- Check symmetric loading by balancing tubes with scales.

1. Check the maximum load for each tube.
2. Put tubes into rotor holes.
3. Tubes located opposite each other must be the same type and contain the same quantity.

Correct arrangement



Wrong arrangement



# 4. Operation

---

## 4.5 Rotor ID identification

---



- Before starting centrifugation, the rotor ID must be recognized.

1. Install the rotor onto the motor shaft.
2. Close the lid.
3. Press the Rotor ID button.
4. Enter the rotor ID number using the numeric keypad.
5. Press the Enter button.




Rotor	Rotor ID
A2.0-36	14
A10-12	2
A15-12	4
A15c-12	8
A50-6	5
A50c-6	6
A50-8	7
A85-6	9
A250-6	10
A500-6	11
A1000-4	12

## 4. Operation

---



### 4.6 Setting RPM/RCF

---

- ① Press the RPM (  ) button or RCF (  ) button.
- ② Press the numeric key to set desired RPM/RCF.
- ③ Press the Enter (  ) button.

### 4.7 Setting run time

---

- ① Press the Time (  ) button.
- ② Press the numeric key to set desired run time.
- ③ Press the Enter (  ) button.

### 4.8 Setting AT SET SPEED mode

---

At Set SPEED mode

: Time display begins to count the run time once the actual run speed reaches to the set speed value and stops when the deceleration begins)

- ▶ Time LED lights up means AT SET SPEED mode is active.
- ▶ When at set speed mode is disabled, press the time button for 3 seconds to activate the mode.



## 4. Operation

---

### 4.9 Setting Normal mode

---



Normal mode

: Time display begins to count the run time when the acceleration begins and stops when the deceleration begins.

- ▶ Flickering TIME led means the Normal mode is active.
- ▶ When Normal is disabled, press the time button for 3 seconds to activate the Normal mode.

### 4.10 Setting Acceleration/Deceleration rate

---

① Press the Accel (  ) key or 'Decel (  )key.

② Press the Numeric keys to set the desired the Acc./Dec. step.



- ▶ ACC/DEC steps : 0~9 steps.
- ▶ The higher the number, the faster the acceleration or deceleration rate.
- ▶ Decel step '0' means natural brake.

## 4. Operation

---

### 4.11 Setting Temperature

---

- ① Press the Temp. (  ) button.
- ② Press the numeric key to set desired temperature.
  - ▶ Temperature range: -10°C ~ 40 °C
- ③ Press the Enter (  ) button.


### 4.12 Fast Cool

---

1. Setting the desired temperature.
2. Press the [Fast cool] button
  - ▶ For fast cooling, the device is refrigerated down to the set temperature in a short time.
  - ▶ If you want to stop Fast cool, press the Stop button.


### 4.13 Start the centrifugation run

---

- ① Check the all parameters are correct and the lid is closed.
- ② Press Start (  ) button.

### 4.14 End the centrifugation

---

- ① Press Stop (  ) key to stop centrifugation.


## 4. Operation

---

### 4.15 Pulse function


---

- After reaching the set rpm, it decelerates and stops.

- ① Set the RPM or RCF.
- ② Press the Pulse (  ) button.

### 4.16 Releasing Vacuum



---

- ① Press Vacuum (  ) button to release the vacuum after centrifugation.
  - ▶ Before pressing the vacuum button, check the rotor is stopped completely.



### 4.17 Saving / Recall a program

---

#### Saving a program

- ① Set the centrifugation time/speed/Accel/Decel/temperature values.
- ② Press Save (  ) button.
  - ▶ You can store 100 programs on the device: 0~99
- ③ Select the desired program slot by pressing the numeric keys and press the Enter (  ) button.

#### Recall a program

- ① Press the Call (  ) button.
- ② Press the desired program slot by pressing the numeric keys
- ③ Press the Enter (  ) button to call up a program.

# 5. Maintenance

---

## 5.1 Care instructions

---

- The following procedures should be performed regularly.
  - ① Regularly inspect the rotor chamber for check the motor shaft is normal.
  - ② Rotate the shaft with your hand to make sure it turns smoothly
  - ③ Use the stopwatch to check that the time setting is correct
  - ④ If you find any damages, do not use the device. Contact Hanil Scientific Inc.

## 5.2 Cleaning

---



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

### • Outside of the device

- ① Clean the outside of device 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 alcohol, benzene, acetone or phenol.
- ③ Use the stopwatch to check that the time setting is correct
- ④ Make sure do not scratch the surface of the device 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, remove it from the chamber with a dry cloth.

### • Rotor

- ① To prevent corrosion, take out the rotor from the rotor chamber after use.
- ② If any sample is spilt inside the rotor, wash and dry the rotor well.

### • Disposal

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

# 6. Troubleshooting

---

## 6.1 General errors

---

Problem	Recommended Action
Power failure	Check the power cord connection. Check the power fuse of the device.
Device cannot be started	Check the lid is closed completely.
Lid cannot be opened	Press the 'Lid open button'.
Lid cannot be closed	Remove the dirt at the lid latch and close the lid. Check the lid latch is not damaged.
Unusual noise and vibration	Check the device whether it is installed on the hard and flat place
	Reload the rotor symmetrically. Reload the tubes symmetrically. Tighten the clamping of the rotor with wrench by turning clockwise

# 6. Troubleshooting

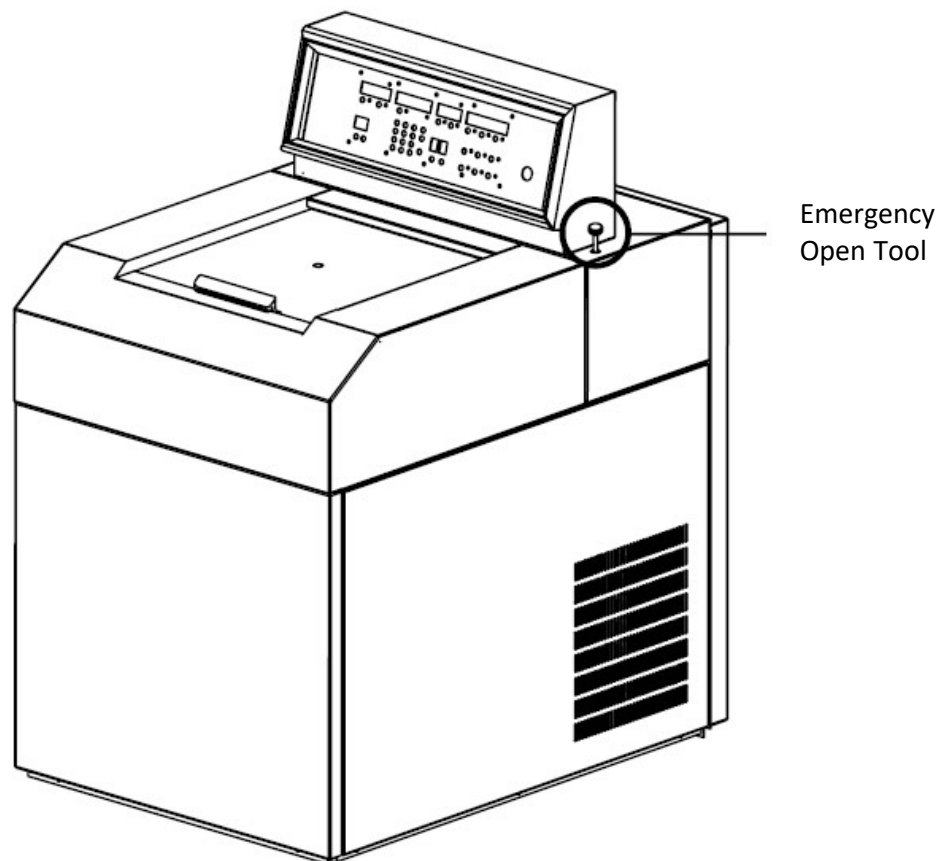
---

## 6.2 Emergency Lid Open

---

If the device lid cannot be opened, you can activate the emergency open manually.

1. Wait for rotor to stop before activating the emergency open.
2. Lift the emergency open tool up and Push the lid handle up side.



# 6. Troubleshooting

---

## 6.2 Error Messages

---

Error Code	Possible causes	Recommended Action
Error 1	Motor active error	<ul style="list-style-type: none"><li>- This error occurs when 100 rpm is not reached within 10 seconds after startup.</li><li>▶ Check the Vacuum led.</li><li>▶ Check the device lid is closed completely.</li><li>▶ Restart the centrifugation.</li></ul>
Error 2	Lid open error	<ul style="list-style-type: none"><li>▶ Check the device lid is closed completely.</li><li>▶ Check the lid led.</li></ul>
Error 3	Motor over heating	<ul style="list-style-type: none"><li>- This error occurs when motor is overheated.</li><li>▶ Shut off the power supply for an hour, and then turn on the power switch for checking the instrument.</li><li>▶ Remove any objects that are near device.</li></ul>
Error 4	Low voltage	<ul style="list-style-type: none"><li>- This error occurs when the power input of power supply (V/Hz) is 10% less than required power.</li><li>▶ Shut off the power supply and then check the voltage of the Power supply (V/Hz).</li><li>▶ Use AVR to provide proper power.</li></ul>
Error 5	High voltage	<ul style="list-style-type: none"><li>- This error occurs when the power input of power supply (V/Hz) is 10% more than required power.</li><li>▶ Shut off the power supply and then check the voltage of the Power supply (V/Hz).</li><li>▶ Use AVR to provide proper power</li></ul>
Error 6	Over speed	<ul style="list-style-type: none"><li>- This error occurs when the device is spun with over speed.</li><li>▶ Emergency stop is activated automatically. So wait for the rotor to stop completely.</li></ul>
Error 7	Firmware program	<ul style="list-style-type: none"><li>- This error occurs when firmware fails.</li><li>▶ Restart the device.</li></ul>
Error 8	Imbalance error	<ul style="list-style-type: none"><li>- Check weight-balances of samples</li><li>▶ Refer to the '4.4 Loading tubes'</li></ul>

# 6. Troubleshooting

---

## 6.2 Error Messages

---

Error Code	Possible causes	Recommended Action
Error 9	Rpm sensing	- This error occurs when RPM sensor or motor fails. ▶ Turn the installed rotor by hand for checking RPM display is working or not.
Error 10	Rotor ID error	- This error occurs when the rotor is uninstalled or rotor recognition is failed. ▶ Check the rotor is installed firmly and touch the Rotor ID button.
Error 11	Chamber temperature	- This error occurs when chamber is not reached to setting temperature within an hour. ▶ Turn off the device and wipe the temperature sensor.
Error 12	Chamber temperature sensor	- This error occurs when there is a faulty in the temperature sensing of chamber. ▶ Turn off the device and wipe the temperature sensor.
Error 15	Motor temperature sensor	- This error occurs when the motor temperature sensor can't recognize. ▶ Turn the power OFF and turn it back ON
Error 17	Communication error	- This error occurs when insecure communication arises among Main-Display-I/O ▶ Turn the power OFF and turn it back ON
Error 36	Save error	- This error occurs when there is no communication with the storage device. ▶ Turn the power OFF and turn it back ON
Error 40	Dip switch error	- This error occurs when the model is selected incorrectly. ▶ Turn the power OFF and turn it back ON
Error 41	Vacuum sensor error	- This error occurs when the vacuum sensor fails to operate correctly. ▶ Turn the power OFF and turn it back ON



# 6. Troubleshooting







































---

## 6.2 Error Messages



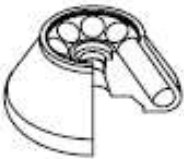

















































---

Error Code	Possible causes	Recommended Action
Error 42	Settable range	- This error occurs when the user enters a value that is greater than the settable range. ▶ Refer to the 2.3 Technical specifications and enter the correct values.
Error 43	Inverter error	- This error occurs when the inverter connection is incorrect. ▶ Turn the power OFF and turn it back ON
Error 44	Restart error	- This error occurs when the start button is pressed while the motor is rotating. ▶ Wait for the rotor to stop completely and press the start button.
Error 45	Time setting error	- This error occurs when run time set to '0' in AT SET SPEED mode. ▶ Set run time again.
Error 46	Vacuum error	- This error occurs when the vacuum valves and pump fail to operate correctly. ▶ Turn the power OFF and turn it back ON



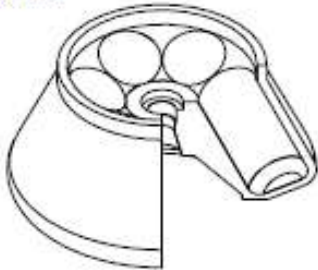

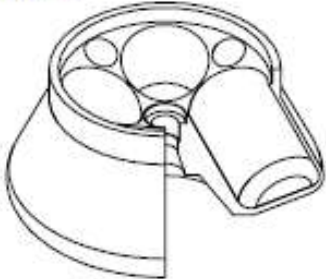

# 7. Rotors

Rotor	Adaptable Centrifuge	Tube Capacity Bottom Type	Required Adaptor	Bore Ø x L (mm) Radius (mm)	Max. RPM (rpm) Max. RCF (xg)
<b>A2.0-36</b>  Type : Fixed Angle Rotor, ∠30° Max. RPM : 20,000 rpm Max. RCF : 51,741 xg Max. Capacity : 36 x 1.5/2.0 mL Dim. ø/H : ø240 x 64 Max. height for tube fit : 49 mm	SU R30	 1.5/2.0 mL	-	11 x 37.5 115.7	20,000 51,741
		 0.5 mL	TR0.5 	8 x 37 111	20,000 49,839
		 0.2 mL	TR0.2 	6 x 21 100	20,000 44,720
	SU R22	 1.5/2.0 mL	-	11 x 37.5 115.7	18,000 41,910
		 0.5 mL	TR0.5 	8 x 37 111	18,000 40,208
		 0.2 mL	TR0.2 	6 x 21 100	18,000 36,223
	SU R17	 1.5/2.0 mL	-	11 x 37.5 115.7	15,000 29,104
		 0.5 mL	TR0.5 	8 x 37 111	15,000 27,922
		 0.2 mL	TR0.2 	6 x 21 100	15,000 25,155
<b>A10-12</b>  Type : Fixed Angle Rotor, ∠36° Max. RPM : 30,000 rpm Max. RCF : 85,828 xg Max. Capacity : 12 x 10 mL Dim. ø/H : ø179.9 x 62 Max. height for tube fit : 65.5 mm	SU R30	 10 mL Round	-	16.3 x 74.5 85.1	30,000 85,828
	SU R22		22,000 46,049		
	SU R17		17,000 27,496		
<b>A15-12</b>  Type : Fixed Angle Rotor, ∠25° Max. RPM : 30,000 rpm Max. RCF : 96,896 xg Max. Capacity : 12 x 15 mL Dim. ø/ H : ø205 x 109 mm Max. height for tube fit : 109.5 mm	SU R30	 15 mL Round	-	19 x 96 96.1	30,000 96,896
	SU R22		22,000 52,001		
	SU R17		17,000 31,050		
<b>A15c-12</b>  Type : Fixed Angle Rotor, ∠36° Max. RPM : 17,000 rpm Max. RCF : 32,116 xg Max. Capacity : 12 x 15 mL conical Dim. ø/H : ø215 x 121 Max. height for tube fit : 124.5 mm	SU R30	 15 mL Conical	-	17 X 115 99.4	17,000 32,116
	SU R22		17,000 32,116		
	SU R17		15,000 25,004		
<b>A50-6</b>  Type : Fixed Angle Rotor, ∠30° Max. RPM : 30,000 rpm Max. RCF : 96,896 xg Max. Capacity : 6 x 50 mL Dim. ø/H : ø200 x 109 mm Max. height for tube fit : 118.7 mm	SU R30	 50 mL Round	-	29 x 100 96.1	30,000 96,896
		 15 mL Round	TR15(50) 	17 x 94 89.9	30,000 90,475
		 15 mL Conical	TR15c(50) 	17 x 105 91	30,000 91,564
	SU R22	 50 mL Round	-	29 x 100 96.1	22,000 52,001
		 15 mL Round	TR15(50) 	17 x 94 89.9	22,000 48,646
		 15 mL Conical	TR15c(50) 	17 x 105 91	22,000 49,241
	SU R17	 50 mL Round	-	29 x 100 96.1	17,000 31,050
		 15 mL Round	TR15(50) 	17 x 94 89.9	17,000 29,047
		 15 mL Conical	TR15c(50) 	17 x 105 91	17,000 29,402

# 7. Rotors

Rotor		Adaptable Centrifuge	Tube Capacity Bottom Type	Required Adaptor	Bore Ø x L (mm) Radius (mm)	Max. RPM (rpm) Max. RCF (xg)	
<b>A50c-6</b> 	Type : Fixed Angle Rotor, ∠23° Max. RPM : 17,000 rpm Max. RCF : 29,402 xg Max. Capacity : 6 x 50 mL conical Dim. ø/H : ø205.7 x 119 mm Max. height for tube fit : 118.1 mm	SU R30	 50 mL Conical	30 x 108.6 91	17,000 29,402	25,000 68,268	
		SU R22			17,000 29,402	25,000 62,189	
		SU R17			15,000 22,891	25,000 62,329	
<b>A50-8</b> 	Type : Fixed Angle Rotor, ∠30° Max. RPM : 30,000 rpm Max. RCF : 99,513 xg Max. Capacity : 8 x 50 mL Dim. ø/H : ø213 x 110.7 mm Max. height for tube fit : 108 mm	SU R30	 50 mL Round  15 mL Round	-	29 x 100 98.9	30,000 99,513	
			 15 mL Conical	TR15(50)		17 x 94 92.8	30,000 93,375
			 15 mL Conical	TR15c(50)		17 x 105 93.9	30,000 94,482
		SU R22	 50 mL Round  15 mL Round	-	29 x 100 98.9	20,000 44,228	
			 15 mL Conical	TR15(50)		17 x 94 92.8	20,000 41,500
			 15 mL Conical	TR15c(50)		17 x 105 93.9	20,000 41,992
		SU R17	 50 mL Round  15 mL Round	-	29 x 100 98.9	15,000 24,878	
			 15 mL Conical	TR15(50)		17 x 94 92.8	15,000 23,344
			 15 mL Conical	TR15c(50)		17 x 105 93.9	15,000 23,621
<b>A85-6</b> 	Type : Fixed Angle Rotor, ∠25° Max. RPM : 25,000 rpm Max. RCF : 68,268 xg Max. Capacity : 6 x 85 mL Dim. ø/H : ø209.1 x 112 mm Max. height for tube fit : 115.4 mm	SU R30	 85 mL Round  50 mL Round	-	38.3 x 95 97.7	25,000 68,268	
			 50 mL Conical	TR50(85)		29 x 95 92.9	25,000 64,912
			 15 mL Round	TR15(85)		17 x 94 89	25,000 62,189
			 15 mL Conical	TR15c(85)		17 x 100 89.2	25,000 62,329
			 15 mL Conical	TR15c(85)		17 x 100 89.2	25,000 62,329
		SU R22	 85 mL Round  50 mL Round	-	38.3 x 95 97.7	20,000 43,891	
			 50 mL Conical	TR50(85)		29 x 95 92.9	20,000 41,545
			 15 mL Round	TR15(85)		17 x 94 89	20,000 39,800
			 15 mL Conical	TR15c(85)		17 x 100 89.2	20,000 39,890
			 15 mL Conical	TR15c(85)		17 x 100 89.2	20,000 39,890
		SU R17	 85 mL Round  50 mL Round	-	38.3 x 95 97.7	15,000 24,576	
			 50 mL Conical	TR50(85)		29 x 95 92.9	15,000 23,389
			 15 mL Round	TR15(85)		17 x 94 89	15,000 22,388
			 15 mL Conical	TR15c(85)		17 x 100 89.2	15,000 22,438
			 15 mL Conical	TR15c(85)		17 x 100 89.2	15,000 22,438

## 7. Rotors

Rotor	Adaptable Centrifuge	Tube Capacity Bottom Type	Bore Ø x L (mm) Radius (mm)	Max. RPM (rpm) Max. RCF (xg)
<b>A250-6</b>  <p>Type : Fixed Angle Rotor, ∠25°            Max. RPM : 14,000 rpm            Max. RCF : 30,305 xg            Max. Capacity : 6 x 250 mL            Dim. ø/H : ø295,6 x 147,8 mm            Max. height for tube fit : 124 mm</p>	SU R30	 250 mL Flat	62 x 103 138.3	10,000 15,462
	SU R22			12,000 22,265
	SU R17			10,000 15,462
	SU R12			12,000 22,265
<b>A500-6</b>  <p>Type : Fixed Angle Rotor, ∠25°            Max. RPM : 10,000 rpm            Max. RCF : 17,743 xg            Max. Capacity : 6 x 500 mL            Dim. ø/H : ø336 x 179 mm            Max. height for tube fit : 147 mm</p>	SU R30	 500 mL Flat	70 x 141 158.7	8,000 11,355
	SU R22			9,000 14,372
	SU R12			10,000 17,743
<b>A1000-4</b>  <p>Type : Fixed Angle Rotor, ∠25°            Max. RPM : 8,000 rpm            Max. RCF : 12,157 xg            Max. Capacity : 4 x 1,000 mL            Dim. ø/H : ø350 x 196 mm            Max. height for tube fit : 152 mm</p>	SU R30	 1,000 mL Flat	98 x 144 169.9	7,000 9,307
	SU R22			
	SU R12			







# hanil

---

Hanil Scientific Inc.

16 Arayukro, Gimpo 10136, Rep. of KOREA

T. +82-2-3452-8965

[techsupport@ihanol.com](mailto:techsupport@ihanol.com)

[www.ihanol.com](http://www.ihanol.com)