

# INSTRUCTION MANUAL



## **LaboGene** **REFRIGERATED** **HIGH SPEED MICROCENTRIFUGE** **ScanSpeed 1730R**



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## Table of contents

<b>1</b>	<b>Precautions .....</b>	<b>4</b>
<b>2</b>	<b>Technical Specifications .....</b>	<b>4</b>
<b>3</b>	<b>Installation .....</b>	<b>5</b>
3.1	Delivery Checklist .....	5
3.2	Unpacking the instrument .....	5
3.3	Installation place .....	5
3.4	Supply the power .....	5
3.5	On/off and the door open .....	5
3.6	Rotor coupling and disassembling .....	6
<b>4</b>	<b>Operation .....</b>	<b>7</b>
4.1	Control Panel .....	7
4.2	Function Description .....	7
4.3	Operation Sequence .....	9
4.4	Miscellaneous Functions .....	9
<b>5</b>	<b>Maintenance .....</b>	<b>10</b>
5.1	Outer part of instrument .....	10
5.2	Inner part of instrument .....	10
5.3	Rotor .....	10
5.4	Moving or shipping of instrument .....	10
<b>6</b>	<b>Trouble Shooting .....</b>	<b>11</b>
<b>7</b>	<b>Declaration of conformity .....</b>	<b>12</b>

## 1 Precautions

- ✓ The instrument must be installed on a flat, stable, horizontal and solid surface.
- ✓ Before operating the instrument, check if the rotor and the rotor lid are securely fastened.
- ✓ Do not move the instrument when it is not completely stopped.
- ✓ Operate with a stable & appropriate power inlet.
- ✓ Do not place dangerous materials within 30cm distance around the instrument.
- ✓ Only use rotors from LaboGene A/S with appropriate tubes for centrifugation.
- ✓ Do not use hazardous, inflammable or radioactive materials as samples.
- ✓ When it is necessary to use toxic or radioactive materials or pathogenic micro-organisms which belong to the Risk Group II of WHO: "Laboratory Bio- safety Manual," follows national regulations.
- ✓ Use the emergency door open function only when the door key on the control panel is not working.
- ✓ The sample must be loaded weight-balanced way not to cause imbalance.
- ✓ The density of sample material must not exceed 1.2g/ml at Max. RPM or RCF.
- ✓ Any improper handling or any usage of un-qualified accessories is not able to be protected.

## 2 Technical Specifications

	1730R with angle rotor	1730R with PCR rotor
Max. RPM	17,000 rpm	15,000 rpm
Max. RCF	27,237 xg	14,187 xg
Max. capacity	1.5mlx30	0.2mlx64
Temp. set range	- 20 ~ 40 °C	
Run time	≤ 99 min 59 sec or continuous	
Noise level	≤ 60 dB	
Acceleration levels	5	
Deceleration levels	5	
Program memory	100	
Imbalance Recognition	Automatic	
Rotor Recognition	Automatic	
Motor	High torque AC induction motor	
Safety	Lid-lock	
Power & Frequency	220V, 50/60Hz	
Dimension (WxDxH) mm	310 x 620 x 265	
Weight	43 Kg (for main body only)	
CE Certification	Yes	

### 3 Installation

\* The 1730R is a rotor auto-recognized model. But the instrument is delivered without rotor, so when you turn on the machine the system tries to recognize a rotor automatically, and 'Error 9' is appeared because of absence of rotor. In this case, open the door manually using the emergency door open function – refer to section 4-4-1 -. Mount the rotor and turn off the machine and turn on again. Then the instrument recognizes rotor properly.

#### 3.1 Delivery Checklist

- 3-1-1. Main body, 1ea
- 3-1-2. Power cable, 1ea
- 3-1-3. Emergency door open tool, 1ea
- 3-1-4. Rotor coupling device (T-tool), 1ea
- 3-1-5. User's manual, 1ea

#### 3.2 Unpacking the instrument

- 3-2-1. Lift the carton upward and remove the safety padding.
- 3-2-2. Lift the instrument on the four sides of the machine with appropriate number of helpers.
- 3-2-3. Place it to the flat space.

#### 3.3 Installation place

- 3-3-1. Install the machine on the solid and flat floor or table. If you place the centrifuge at the slope, the axis of rotation is possibly changed because of the rotor weight.
- 3-3-2. Install the machine about 30cm away from the wall for the efficient air circulation.
- 3-3-3. Install the machine at the place with appropriate temperature and humidity. It also has to be maintained with the proper temperature & humidity.
- 3-3-4. Install the machine at the place without any kinds of corrosive gases.

#### 3.4 Supply the power

- 3-4-1. 1730R model uses 110V or 220V. Check proper voltage of your instrument and connect to adequate power outlet.
- 3-4-2. If the power input is more than +/- 10% of the recommended voltage or fluctuating frequently, it may affect some functions of the instrument. It is advised to use AVR (Automatic Voltage Regulator).
- 3-4-3. If you want to use the instrument at other voltage range, please contact us.

#### 3.5 On/off and the door open

- 3-5-1. Turn on the instrument by pressing a switch on the left side of the machine.
- 3-5-2. Press the 'Door' button to open the door.
- 3-5-3. Remove the protection materials inside the chamber.

### 3.6 Rotor coupling and disassembling

- 3-6-1. Mount the rotor fitting with the motor shaft.
- 3-6-2. Grasp the rotor with one hand, and place rotor coupling device (T-tool) at the central groove of rotor. Rotate the T-tool in the direction of clockwise, until it is tightly assembled.



- 3-6-3. To disassemble the rotor, rotate the T-tool in a counter clockwise direction.
- 3-6-4. To open or close of rotor lid, grasp the rotor with one hand and rotate the rotor lid nut in a counter clockwise direction for open, and clockwise direction for close.



## 4 Operation

### 4.1 Control Panel



- 4-1-1. Display LCD: Shows the data of each setting
- 4-1-2. Up & down arrow: Uses to change the input data
- 4-1-3. Fast Cool: Uses to high-speed refrigeration up to the setting temperature.
- 4-1-4. Pulse: Uses to accelerate to set RPM and decelerate rapidly
- 4-1-5. Door: Uses to open the door
- 4-1-6. RPM/RCF: Uses to switch RPM/RCF
- 4-1-7. TIME: Uses to set test time up to 99 min 59 sec (00: continuous)
- 4-1-8. TEMP: Uses to set test temperature
- 4-1-9. ACC/DEC: Uses to set the acceleration & deceleration level from 1 to 5 steps. '0' step means natural acc/dec, and speed is faster for bigger numbers of steps.
- 4-1-10. PROG: Uses to save a set of setting values or call the saved setting values
- 4-1-11. Start/Stop: Uses to start & stop operation
- 4-1-12. Enter: Uses to complete data setting

\*If you press the arrow button longer than 3 seconds, the numbers change very rapidly and the set-up is achieved faster.

### 4.2 Function Description

#### 4-2-1. RPM

- ✓ Speed display unit : 1 rpm
- ✓ Speed setting unit : 10 rpm
- ✓ Speed accuracy :  $<\pm 2\%$  (at maximum speed)
  - ① Press the 'RPM/RCF' button.
  - ② Press the arrow button to change input value.
  - ③ Press the 'Enter' button to complete the setting. If not pressing the 'Enter' button, the setting values are disappeared but not saved.

#### 4-2-2. RCF (Relative Centrifugal Force)

- ✓ The conversion value from RPM to RCF is calculated automatically (based on the maximum radius and revolution)
  - ① Press the 'RPM/RCF' button twice.
  - ② Press the arrow button to change input value.
  - ③ Press the 'Enter' button to complete the setting.

## 4-2-3. Time

- ✓ Time display: 99 min 59 sec, 2 digit display
- ✓ Time is down-counted after starting centrifugation.
  - ① Press the 'TIME' button. Display shows the default time data and hour data links.
  - ② Press the arrow button to change hour.
  - ③ Press the 'Enter' button to complete setting, the minute data blinks automatically.
  - ④ Press the arrow button to change minute data.
  - ⑤ Press the 'Enter' button to complete setting.

## 4-2-4. Temperature

- ✓ Temp setting unit : 1 °C
- ✓ Temp display unit : 1 °C
- ✓ Temperature can be set from -20°C to 40°C (1°C unit)
  - ① Press the 'TEMP' button. Default temperature data blinks in display.
  - ② Press the arrow button to change temperature data.
  - ③ Press the 'Enter' button to complete setting.

## 4-2-5. Acceleration / Deceleration

- ✓ Use the adjustment function of acceleration & deceleration levels to protect sensitive samples
  - ① Press ACC, then default ACC value blinks.
  - ② Press the arrow button to select your preferred lever from 0 to 5.
  - ③ Press the 'Enter' button to complete the setting.
  - ④ Press DEC, then default DEC value blinks.
  - ⑤ Press the arrow button to select your preferred lever from 0 to 5.
  - ⑥ Press the 'Enter' button to complete the setting.

## 4-2-6. Program saving &amp; recalling

- ✓ Use to save a set of setting values or call the saved setting values [Saving or Editing].
  - ① Press the 'PROG' button longer than 2 seconds for saving your preferred set of the test values.
  - ② Check the message of "PROGRAM SAVE: ##" at the display, and any number of "##" blinks.
  - ③ Press the arrow button and select a number between 01 ~ 99.
  - ④ Press the **'Enter' button to complete the saving or editing.**

## [Recalling]

- ① To retrieve the saved program, just press the 'PROG' **shortly**. Check the message of "PROGRAM CALL: ##" at the display. Choose the number with the arrow button, and then press the 'Enter' button.

## 4-2-7. Pulse

It is for simple and fast spin down. As soon as it reaches to a preset RPM, it is decelerated promptly.



#### 4-2-8. Fast Cool

Press the FAST COOL button, then centrifuge is refrigerated to setting temperature in a short time. The rotor runs with low speed (1,000 rpm) and green light blinks during fast cool. When temperature reached to setting data, operating stops automatically. Be careful to check if the rotor is fastened before using fast cool function. Also it should be checked if the sample is safe at 1,000 rpm.

#### 4-2-9. Door

Press the 'Door' button to open the door. The door is not opened while the instrument is running.

#### 4-2-10. Start / Stop

Pressing the 'Start / Stop' button, the operation is started to run with setting or stopped to run in any case.

### 4.3 Operation Sequence

- 4-3-1. Connect the AC cord to the appropriate voltage.
- 4-3-2. Turn on the power switch located at the left side of the unit.
- 4-3-3. The system recognize a rotor automatically.
- 4-3-4. All of displays are blinking with beeping sound, and the default setting value is displayed.
- 4-3-5. Input the function values as your preferences, or call any preferable program.
- 4-3-6. Press the 'START' button to start the operation.
- 4-3-7. As soon as the set-time is ended, the centrifugation will be stopped according to the set deceleration level. If you want to interrupt before the set-time, press the 'STOP' button.

### 4.4 Miscellaneous Functions

- 4-4-1. In any cases needed emergency open, you can use emergency door open tool as long as the machine is idle. Insert the emergency tool into the emergency door open hole at the left-upside of the unit.
- 4-4-2. Imbalance Alarm: When the rotor is imbalanced and the vibration is severe, the operation is urgently stopped with the error message on the display and the alarming sound.

## **5 Maintenance**

### **5.1 Outer part of instrument**

- 5-1-1. Clean the outside of the machine with a dry soft cloth. If necessary, dip the cloth with neutral detergents and clean contaminated parts. Keep completely dry after cleaning.
- 5-1-2. Do not use any volatile chemicals such as alcohol, benzene, etc.
- 5-1-3. If any rust appears, clean with neutral detergents and dry it.

### **5.2 Inner part of instrument**

- 5-2-1. Keep dry inside the chamber after every use of the machine.
- 5-2-2. Clean the shaft always for avoiding an imbalance during the rotation.
- 5-2-3. If any part is contaminated, clean with neutral detergents.

### **5.3 Rotor**

- 5-3-1. Clean the rotor if any parts are contaminated with samples.
- 5-3-2. Keep dry after usage.

### **5.4 Moving or shipping of instrument**

- 5-4-1. If you need to move or ship the instrument, be cautious to protect the shaft from any physical impact.
- 5-4-2. Remove the rotor and fill inside the chamber with proper materials to keep the shaft on place.
- 5-4-3. It is recommended to move or ship rotors separately if no original safety padding is available.

## 6 Trouble Shooting

Error	Possible Causes	Actions
E 1	Failure to reach to 200RPM within 2 sec.	<ul style="list-style-type: none"> <li>- Check the RPM sensor.</li> <li>- Check the connection of a RPM connector or a wire.*</li> </ul>
E 2	When running, the door is opened.	<ul style="list-style-type: none"> <li>- Check the door latch.</li> <li>- Stop running, power off and on.</li> </ul>
E 3	Over temperature of motor.	<ul style="list-style-type: none"> <li>- Check the motor temperature.</li> </ul>
E 4	Low voltage	<ul style="list-style-type: none"> <li>- Check supply voltage.</li> <li>- Use AVR to provide proper voltage.</li> </ul>
E 5	High voltage	<ul style="list-style-type: none"> <li>- Check supply voltage.</li> <li>- Use AVR to provide proper voltage.</li> </ul>
E 6	Over speed	<ul style="list-style-type: none"> <li>- Stop running, power off and on.</li> <li>- Tuning of the firmware(Download)*</li> </ul>
E 7	Failure of control system	<ul style="list-style-type: none"> <li>- Stop running, power off and on.</li> <li>- Tuning of the firmware(Download)*</li> </ul>
E 8	Imbalance	<ul style="list-style-type: none"> <li>- Check amount of samples.</li> <li>- Check weight-balances of samples.</li> </ul>
E 9	RPM sensor recognition error Fail to auto-recognition of a rotor	<ul style="list-style-type: none"> <li>- Check attached place of RPM sensor.</li> <li>- Check connection of cable for RPM sensor.</li> <li>- Change RPM sensor.</li> <li>- Check the rotor mounting status.</li> </ul>

\* Any wire disconnection or tuning of the instrument must be performed only by a service engineer who is authorized by LaboGene A/S.

## 7 Declaration of conformity



### Declaration of conformity

We declare under our responsibility, that the following product:

**Model:** ScanSpeed 1730R High Speed Refrigerated Micro Centrifuge

to which this declaration relates is in conformity with the following standard(s), directives or other normative document(s):

**In compliance with:**

**EN 61010-1** - Safety requirements for electrical equipment for measurement, control and laboratory use - General requirements

**EN 61010-2-020** - Safety requirements for electrical equipment, control and laboratory use - Particular requirements for laboratory centrifuges

**EN 61000-6-1** - Electromagnetic compatibility - Generic immunity/emission standard

**EN ISO 11201** – Acoustics – Noise emitted by machinery and equipment

**Following the provisions of:**

**2006/42/EC** - Machinery Directive, as amended

**2006/95/EC** - Low Voltage Directive, as amended

**2004/108/EC** - EMC Directive, as amended

**2011/65/EU** - RoHS Directive

**2012/19/EU** - WEEE Directive

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