

Multi-Purpose, High Speed Centrifuge

User' s Manual



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Let Professionals Serve Professionals!

GENESPEED®



**THE BEST
FUNCTIONAL QUALITY**

- ☑ Manufactured and tested to IEC standards, within +/-2% variation
- ☑ Steady and soft deceleration with dynamic brake technology
- ☑ Unique internal air flow design preventing from sample heating
- ☑ High-capacity, strong compressor ensures fast cooling of chamber and samples
- ☑ Fast cooling function to 4°C in 5 minutes for fast start up of cooled samples
- ☑ Automatic rotor identification
- ☑ Automatic RPM/RCF conversion



**SAFETY and
ROBUSTNESS**

- ☑ Safety lid lock scheme for safe and reliable work environment
- ☑ Lid-drop protection protecting the operator and samples
- ☑ Automatic detection and warning for imbalance, excess speed and over-heating
- ☑ Emergency lid-lock release for power blackout or sudden stoppage
- ☑ The eco-friendly compressor-off function on when lid is open
- ☑ The aerosol tight buckets and rotors to prevent contamination
- ☑ Autoclavable and corrosion-free rotors

Wide range of modern centrifuges for a wide variety of laboratory applications



CONVENIENCE IN OPERATION

- ✓ Soft touch button/screen with intuitive controls
- ✓ Highly legible blue and white LCD display
- ✓ Time control functions of pulse, timed and continuous
- ✓ Automatic RPM/RCF conversion
- ✓ Easy to check actual rotation through the viewing port in the lid
- ✓ Program memory up to 100 (or 10) programs
- ✓ Automatic rotor identification
- ✓ Automatic lid release at the completion of spinning
- ✓ A large assortment of rotors, buckets and adaptors for diverse applications



EASY CUSTOMIZATION

- ✓ Any rotors, sample containers and adaptors can be customized upon specified requirement
- ✓ High flexibility of structural & functional modifications



CERTIFICATES AND REGISTRATIONS

- ✓ Accredited with ISO 9001, ISO 13485, and KGMP
- ✓ Comply with CE conformity



1. Meanings of Symbols & Safety Precautions 5

2. Product Description & Technical Specifications 7

..... 7

3. Unpacking

4. Installation 9

..... 10

..... 11

5. Operation 11

..... 12

..... 12

..... 14

..... 14

..... 15

..... 15

..... 16

..... 16

6. Maintenance 17

..... 17

..... 17

..... 17




..... 17



7. Trouble Shooting 18

..... 18

..... 18



	Attention and warning.		Attention and warning for electric shock
		<p>Attention and warning for correct way of sample balancing in the rotor.</p> <p>Attention and warning for rotor coupling.</p> <p>Attention and warning for lid opening and closing</p>	

	This symbol refers to safety relevant warnings & indicates possible dangerous Outcomes.		Note. This symbol refers to the important reminder.
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Before using the instrument, please read this operation manual to ensure correct usage. Incorrect handling of the instrument could possibly result in personal injury or physical damage on the instrument or its accessories.

1. ALWAYS locate the instrument on a flat, rigid and stable table capable of withstanding the weight of the instrument and its spinning operation.
2. ALWAYS make a safety zone of 30 cm around the centrifuge to indicate that neither hazardous materials nor persons should be permitted within the area during operation.
 - ✓ ALWAYS position the instrument with enough space on each side of instrument to ensure proper air circulation.
3. ALWAYS install the instrument within a temperature and humidity controlled environment. (Permissible ambient temperature: +5 ° C ~ +35 ° C, Relative humidity: 85%)
4. Before connecting the power, check the rated voltage.
5. Should not use unapproved rotors and accessories.
 - ✓ Only use rotors from Baygene Company Limited with appropriate centrifugal tubes and suitable adaptors to embrace sample containers tightly enough inside rotors.
6. Before operating the instrument, check if the rotor and the rotor lid are securely fastened.

- ✓ Should operate the instrument with a rotor properly installed and secured to the motor shaft.
- 7. Mount the rotor on the motor shaft properly, check it with spinning manually.
- 8. Do not stop the rotor by touching with hand during the instrument is running.
- 9. Emergency lid open should be performed only when spinning is completely stopped.
- 10. Should not exceed the rated speed or specific gravity. Samples whose density is greater than 1.2g/ml must have reduced maximum rotational speed to avoid rotor failure.
- 11. The sample content should not exceed 80% of total capacity of a tube. Otherwise, it would cause spillage of sample fluid and even the tube breakage.
- 12. ALWAYS load the tubes symmetrically with evenly weighted samples to avoid rotor imbalance. If necessary, use the water blank to counterbalance the unpaired sample.
- 13. The operation speed should not exceed the highest value of the individual guaranteed g-forces of each centrifuge, rotor, bucket or adaptors and sample container, especially the guaranteed g-force of sample container should not be neglected.
- 14. The rotors should be cleaned and kept dry after every use for longer life and safety.
- 15. ALWAYS disconnect the power supply prior to maintenance care and service to avoid electrical shock.
- 16. ALWAYS use proven disinfection procedures after centrifuging biohazardous materials.
- 17. Should not centrifuge flammable, toxic, radioactive, explosive, or corrosive materials.
- 18. When it is necessary to use toxic or radioactive materials or pathogenic micro-organisms which belong to the Risk Group II of WHO: "Laboratory Biosafety Manual," should follow national regulations.




- ✓ Do not place dangerous materials within 30cm distance around the instrument, and that is also recommended by IEC 61010-2-020.
- ✓ Use the emergency lid open function only when the lid button on the control panel is dumb under the condition of complete stop of rotor running.
- ✓ Never try to open or move the instrument if it is not completely stopped.
- ✓ If the power input is more than +/- 10% of the recommended voltage or fluctuates frequently, it may cause malfunction of the instrument and often result serious damage.
- ✓ Install the instrument at the place without any kinds of corrosive gases.



- 1 Lid
- 2 Power Socket
- 3 Display & Control Panel
- 4 Power Switch
- 5 Manual Lid Opening Hole

Accessory


 User manual


 AC Power Cord


 Rotor Locking Tool
 (Emergency Door Open Tool)


 Lubricant (grease)


 6mm Wrench

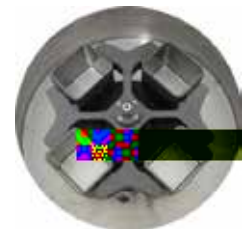
Max. RPM/RCF	Fixed angle	12,000 rpm / 15,520 xg	15,000 rpm / 21,206 xg
	Swing out	5,000 rpm / 5,394 xg	
Max. capacity	Fixed angle	6 x 85 ml	
	Swing out	4 x 250 ml/250 ml conical	4 x 750 ml
Time control		Pulse, timed <100 min or continuous	
Time counting modes		Selectable, at set speed or from starting	
RPM/RCF conversion		Yes	
Noise level (dB)		60	
ACC/DEC		9/10 steps	
Program memory		100	
Parameters on display window		RPM (RCF), Oper Status	

1. After connecting the AC Power cord at the power socket on the right back of the instrument, put the plug into the outlet.
Check the proper power.
2. Turn on a power switch on the right side of the instrument.
With beeping sound, right before setting value is displayed.
The default values are Max. rpm, 10 min, ACC 7, DEC 7.

1. For opening the lid, touch the [LID] button.
Should touch the [LID] button when the lid is closed (Lid LED shows off).
Close the lid until hearing clank shut.
When the lid is opened, the lid LED turns on.



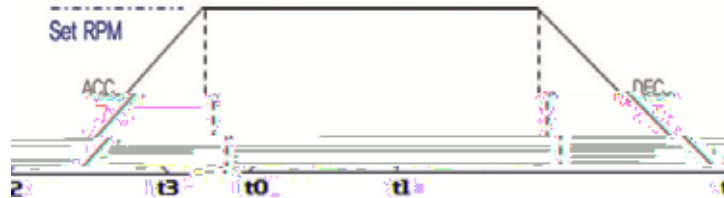
The lid is not opened while the instrument is running.
If the lid is opened, the instrument could not be operated even with pressing th



1. Before loading sample tube



For exact time control, this instrument can be set with AT SET SPEED mode which counts supports the run time once the actual run speed reaches to the set speed value and stops when the deceleration begins.



*[AT SET SPEED] lamp turns on: From t1 to t2
 *[AT SET SPEED] lamp turns off: From t0 to t2

. Setting the

Speed setting unit: 1min. / 1 sec.

Time is down-counted after starting centrifugation.

1. Touch the [TIME] button once.
 SEC value on LED is flickering.
2. Touch the number buttons to change the second value.
 If you do not touch the number button for 15 seconds, the setting mode is cleared.
 If wrong number is entered, touch [X] button and change the value again.
3. Touch the [ENTER] button to pass the MIN ' value
4. setting.
5. Touch the number buttons to change the minute
6. value.
 If you do not touch the number button for 15 seconds, the setting mode is cleared.
 If wrong number is entered, touch [X] button and change the value again.
7. Touch the [ENTER] button to complete the setting.



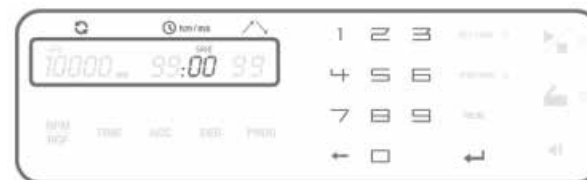
Use the adjustment function of acceleration (level: 1~9)& deceleration levels (level: 0~9) to protect sensitive samples.

1. Touch [ACC/DEC] button.
2. Touch the number buttons to change input ACC value.
 - Input the desired level of ACC from 1 to 9. (Level 9: The fastest acceleration)
 - If you do not touch the number button for 15 seconds, the setting mode is cleared.
 - If wrong number is entered, touch [X] button and change the value again.
3. Fix the ACC level by touching [ENTER] button.



4. Touch the number buttons to change input DEC value.
 - Input the desired level of DEC from 0 to 9. (Level 0: Natural deceleration / Level 9: The fastest deceleration)
 - If you do not touch the number button for 15 seconds, the setting mode is cleared.
 - If wrong number is entered, touch [X] button and change the value again.
5. Fix the DEC level by touching [ENTER] button.

1. Set parameters. (Refer to 5-2 ~ 5-4)
2. Touch the [PROG] button twice.
 - 'SAVE' is turned on the display window.
3. Touch the number buttons to change input Program number.
 - If you do not touch the number button for 15 seconds, the setting mode is cleared.
 - Save up to 100 programs. (Program numbers from 00 to 99).
 - If wrong number is entered, touch [X] button and change the value again.
4. Touch the [ENTER] button to complete the saving.



1. To recall the saved program, touch the [PROG] button once.

- CALL is turned on the display window.



3. Touch the number buttons to select program number you want to recall and then touch the [ENTER] button.

- If you do not touch the number button for 15 seconds, the setting mode is cleared.
- If wrong number is entered, touch [X] button and change the value again.



1. After setting RPM/RCF and Time, touch [START/S TOP] button.

- During running, a Start LED ' is turned on.
- The instrument is running only when the lid is closed.
- When you touch the [ENTER] button during operation, display window shows the saved setting parameters



1. In case of touching the [START/STOP] button, the operation is stopped.

- When you touch the [START/STOP] button twice, the operation is stopped with DEC 9.

Repeat account and sound pitch of the end alarm can be selected.



1. Touch [SOUND] button.

- Sound LEVEL_03 ' appears on the display window

2. Touch the number buttons to change the value for
3. the pitch of sound.
4. Fix the value by touching [ENTER] button.
 - Sound LEVEL: 0~10 (0: silent)



1. Touch [AT SET SPEED] button for more than 2
2. seconds.
 - Sound rPt 'appears on the display window.



3. Touch the number buttons to change the value for
4. the repeat count.
5. Fix the value by touching [ENTER] button.
 - Repeat counts of end alarm: 0~99 (0: silent, 99: 99 times)



It is for quick and short spin down.

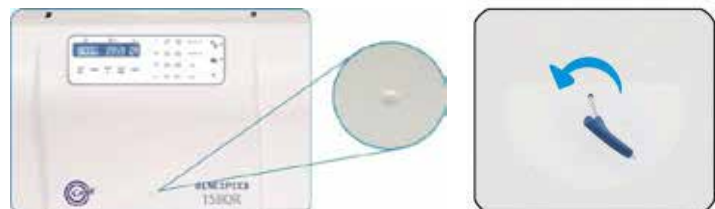
1. If you touch [PULSE] button and release at the point
2. you want to stop, the centrifuge decelerates
3. immediately.
 - When the operation is completely stopped, lid
 - is automatically opened.



For emergency lid opening, you can use the Emergency Lid Open Tool when the instrument is completely stopped.

The lid can be unlocked manually with the Emergency Lid Open Tool through the emergency lid opening hole.

1. Find the emergency lid open hole in the
2. front body of the instrument and take
3. out the white rubber closure.
4. Insert the Emergency Lid Open Tool into the hole and revolve it counter clockwise until the lid is released.





Manual opening should be performed only when spinning is completely stopped. Otherwise, harmful damage will be accompanied to not only operators but samples. After opening the lid manually, it is recommended to wait until normal electricity comes back.

1. Clean the outside of the instrument with dry soft cloth. If necessary, dip the cloth in neutral detergent and clean contaminated area. Keep completely dry after cleaning.
 2. Do not use any volatile chemicals such as alcohol and benzene, etc.
 3. Be careful not to make scratches on the surface of the instrument. The scratches can cause corrosion on the surface of the instrument.
- ✓ If any rust appears, clean it with neutral detergents and keep dry.
1. Keep dry inside the chamber after every use.
 2. If the chamber is contaminated, dip the cloth in neutral detergent and clean contaminated area.
1. Always make special attention to clean the motor shaft to avoid any imbalance problem due to the contaminants.
 2. After using the instrument, take out the rotor from the shaft, and clean the shaft with dry soft cloth to keep dry.
1. If any parts are contaminated with samples, clean the rotor with soft wet cloth and keep the rotor dry.
 2. Be careful not to make scratches inside or on the surface of rotors. Any small scratches can cause corrosion of the rotor and big damage to the instrument.
 3. If you do not use the instrument, keep the rotor separately from the motor shaft and stand it upside down.
1. If you need to move or ship the instrument, be cautious to protect the motor shaft from any physical impact or turbulence.
 2. Do not mount a rotor in any cases of movement. Fill inside the chamber with proper materials to keep the motor shaft on place and not to be influenced by physical pressure.

Symptom	Check List
Power failure	Connect the AC Power cord and make sure that the line is completely connected between the instrument and power outlet. Check the power switch is turned on. (Please refer to 4-1. Power On/Off and Lid Release)
Can ' t be started	If the lid is not closed completely, the instrument can ' t run. Check the Lid LED on the display window and close the lid completely.
Can ' t open the lid	If the power is out, check the main fuse for the laboratory to supply the power. If it is not solved in shortly, open the lid with emergency lid open tool manually for safety of sample. (Please refer to 5-9. Emergency Lid Open)
Can ' t close the lid	Remove the dirt at the lid latch and then close the lid completely again. If the lid seems not being closed by mechanical reason, please contact our service team.
Noise and vibration during running	Please check the balanced status of both the table and the instrument.
	Please re-check the coupling status of the following three matches to minimize the noise <ol style="list-style-type: none"> 1. the balanced way of coupling of the rotor into the motor shaft 2. the completeness of fixing of the Rotor Locking Nut on the rotor 3. the matching status of Rotor Lid with the rotor (Please refer to 4-2. Rotor Coupling and Disassembling)
	Check balances of samples in the rotor. (Please refer to 4-3. Positioning of Sample Tubes) and load the same weight of samples symmetrically.

If the instrument shows the error code with beeping sound, press [START/STOP] button to stop the beeping sound and press [ENTER] button to release of the error status and make the instrument go to the default setting again.

Error 1	RPM Sensor	<ul style="list-style-type: none"> - Shut off the power supply, and then, turn on the power switch again to check the instrument. - If the error code shows continuously although you try to operate again, please contact us.
Error 2	Lid	<ul style="list-style-type: none"> - If the lid opens during the instrument running or is troubled in lid sensor, this message is appeared. -Remove the dirt at the lid latch and then close the lid completely again. Check the Lid LED on the display window. If the error code shows continuously, please call GENESPEED® Field Service Engineer.
Error 3	Motor Overheating	<ul style="list-style-type: none"> - If the motor is overheated, this message is appeared. -Shut off the power supply for an hour, and then turn on the power switch for checking the instrument. - If the error code shows continuously, please contact us.

Error 4	Low Voltage	<ul style="list-style-type: none"> - If the power input of Power supply (V/Hz) is 10% less than required power, this message is appeared. - Shut off the power supply and then check the voltage of the Power supply (V/Hz). - Use AVR to provide proper power.
Error 5	High Voltage	<ul style="list-style-type: none"> - If the power input of Power supply (V/Hz) is 10% more than required power, this message is appeared. - Shut off the power supply and then check the voltage of the Power supply (V/Hz). - Use AVR to provide proper power.
Error 6	Over Speed	<ul style="list-style-type: none"> - If the instrument is spun with over speed, there will be some problems in the overload of motor and the output of motor. - Shut off the power supply, and then, turn on the power switch again to check the instrument.
Error 7	Software	<ul style="list-style-type: none"> - If the installed software has bugs, this message is appeared. - Tuning the firmware (Download)*
Error 8	Imbalance	<ul style="list-style-type: none"> - Check weight-balances of samples (Please refer to 4-3. Positioning of Sample Tubes) and then turn off and on the instrument for checking.
Error 9	Rotor ID or RPM Sensor	<ul style="list-style-type: none"> - If the function of rotor recognition is failed, this message is appeared. - This message will be cleared by coupling an appropriate rotor (Please refer to 4-2. Rotor Coupling and Disassembling.) - If the error code shows continuously, please call GENESPEED® Field Service Engineer.
Error 11	Chamber Temp. Error	<ul style="list-style-type: none"> - If the instrument is not reached to setting temperature within an hour, this message is appeared. - No user action. Please call GENESPEED® Field Service Engineer.
Error 12	Temp. Sensor Error	<ul style="list-style-type: none"> - If there is a faulty in the temperature sensing of chamber or over heated, this message is appeared. - No user action. Please call GENESPEED® Field Service Engineer.
Error 15	Motor Temp. Sensor	<ul style="list-style-type: none"> - If the motor temperature sensor can ' t recognize, this message is appeared. - No user action. Please call GENESPEED® Field Service Engineer.
Error 16	Comp. Temp. Sensor	<ul style="list-style-type: none"> - If the temperature of compressor is over heated up, this message is appeared. - No user action. Please call GENESPEED® Field Service Engineer.
Error 17	Communications Error	<ul style="list-style-type: none"> - If insecure communication arises among Main-Display-I/O, this message is appeared. - No user action. Please call GENESPEED® Field Service Engineer.
Error 20-27	Lid Lock	<ul style="list-style-type: none"> - If the sensors or cables of the lid lock system do not normally work, this message is appeared. - Please 權

