



FastGene[®] High Speed Mini Centrifuge

Cat.No.: NG003



CONTENTS		Page
1.1	General Information	2
1.2	First QC Check	2
2.1	Packaging Content	2
3.1	Meanings of Symbols	3
3.2	Safety Precautions	3
4	Product Description & Technical Specifications	5
5	Installation	6
6	Operation	8
7	Maintenance	11
8	Transportation	11
9	Trouble Shooting	12
9.1	Error Codes	13
10	Rotor and Accessories	14
11	Ordering Information	14
12	Contact Information	15

1.1 GENERAL INFORMATION

Thank you for purchasing FastGene® High Speed Mini Centrifuge. This Manual includes the operation procedure. In order to use the instrument properly, please read this manual carefully before using the instrument.

This centrifuge is designed for workstations in research laboratories in the fields of bioscience, medicine and chemistry. Twelve 1.5 ml or 2.0 ml micro test tubes can be centrifuged simultaneously in a 45° fixed-angle rotor.

1.2 FIRST QC CHECK

Please check the instrument and the packing list when you open the package. If you find there is something wrong with the instrument or the packaging content, please contact Nippon Genetics Europe or your distributor in your country.

2.1 PACKAGING CONTENT

FastGene® High Speed Mini Centrifuge	NG003
12 x 1.5/2.0 ml tube rotor	1
Rotor nut	1
Rotor lid	1
Adaptors for 0.5 ml tubes	12
Adaptors for 0.2 ml tubes	12
Operation Manual	1
Power Cord	1

3.1. MEANINGS OF SYMBOLS & SAFETY PRECAUTIONS

Symbols on the device

Symbol	Meaning	Symbol	Meaning
	Indicate a hole for manual door opening in case of emergency		Attention and warning for electric shock
	Attention and warning for rotor coupling		

Symbols in this document

Symbol	Meaning	Symbol	Meaning
	This symbol refers to safety relevant warnings and indicates possible dangerous outcomes		Note. This symbol refers to the important reminder

3.2. SAFETY PRECAUTIONS

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 associated accessories. Only use rotors from NIPPON GENETICS EUROPE 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 door 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 bio hazardous 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 Bio- safety Manual," should follow national regulations.



- ✓ Do not place dangerous materials within 30 cm distance around the instrument, and that is also recommended by IEC 61010-2-020.
- ✓ Use the emergency door open function only when the [Door] 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.

4. PRODUCT DESCRIPTION & TECHNICAL SPECIFICATIONS



Max. RPM/RCF (Rotor)	13,500 rpm/ 12,300 xg (Fixed Angle)	6,000 rpm/ 1,850 xg (PCR Strip Rotor) (optional accessory)
Max. capacity	12 x 2.0 ml or 1.5 ml Tubes	4 x 8-well PCR Strips
Time control	Pulse or timed ≤ 30 min	
RPM/RCF conversion	Yes	
Noise level (dB)	≤ 56	
Acc/Dec (sec)	≤ 12 / < 16	
Display	Blue LCD	
Automatic door release at completion	Yes	
Power supply (V/Hz)	220/50~60 (110V optional)	
Power requirement(VA)	110	
Dimension (W x D x H, mm)	208 x 245 x 145	
Weight without rotor (kg)	4.4	
CE mark	Yes	
Cat. No.	NG003	

5. INSTALLATION

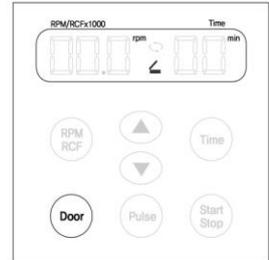
Power On/Off

1. Connect the AC Power cord at the power socket on the back of the instrument.
2. Turn on the instrument by pressing the switch on the back of the instrument.



Door Release

1. For opening the door, press the [DOOR] button.
 - The door is automatically opened after completion of spinning operation with beeping sound.
 - When you close the door, close it until hearing clank shut.



- ✓ The door is not opened while the instrument is running.
- ✓ If the door is opened, the instrument could not be operated even with pressing the [Start] button.
- ✓ Power Failure: If there is any power failure during the operation, door is not opened with [Door] button. Door can be opened only when the operation is completely stopped and the power is on again. If you want to open the door at the power failure, please refer to 6. Emergency Door Open (page 10).

Rotor Coupling and Disassembling

Before coupling a rotor, clean the motor shaft and chamber with soft dry towel.



Fixed Angle Rotor

1. Mount a proper rotor into the motor shaft.
2. Place the Rotor Locking Nut at the center hole of the rotor.
 - To assemble the rotor: Rotate the Rotor Locking Nut clockwise until tightly assembled.
 - To disassemble the rotor: Rotate the Rotor Locking Nut counterclockwise.



3. After loading sample tubes, close the rotor lid until hearing clank shut.
 - To open the lid, lift the nut.



8-well strip Rotor

1. Mount a proper rotor into the motor shaft.
2. Place the Rotor Locking Nut at the center hole of the rotor.
 - To assemble the rotor: Rotate the Rotor Locking Nut clockwise until tightly assembled.
 - To disassemble the rotor: Rotate the Rotor Locking Nut counterclockwise.



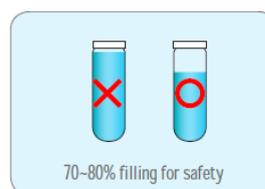
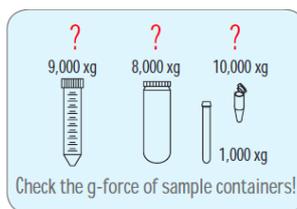
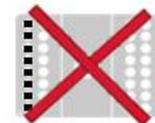
When the PCR rotor is coupled, please do not speed over 6,000 rpm / 2,400 rcf, as mentioned on the rotor.

Positioning of Sample Tubes

1. Before loading sample tubes, check the water drop or dirt in the rotor hole or inner adaptor.
2. If there is a water drop or dirt in the rotor hole or inner adaptor, remove it with soft dry cloth.
3. Tubes should be placed in the rotor with same amount of samples at symmetrical positions.
4. Only use appropriate centrifugal tubes and do not exceed the speed beyond the tube's max g-force.
5. For safety, fill the sample for 70~80% in the tubes.

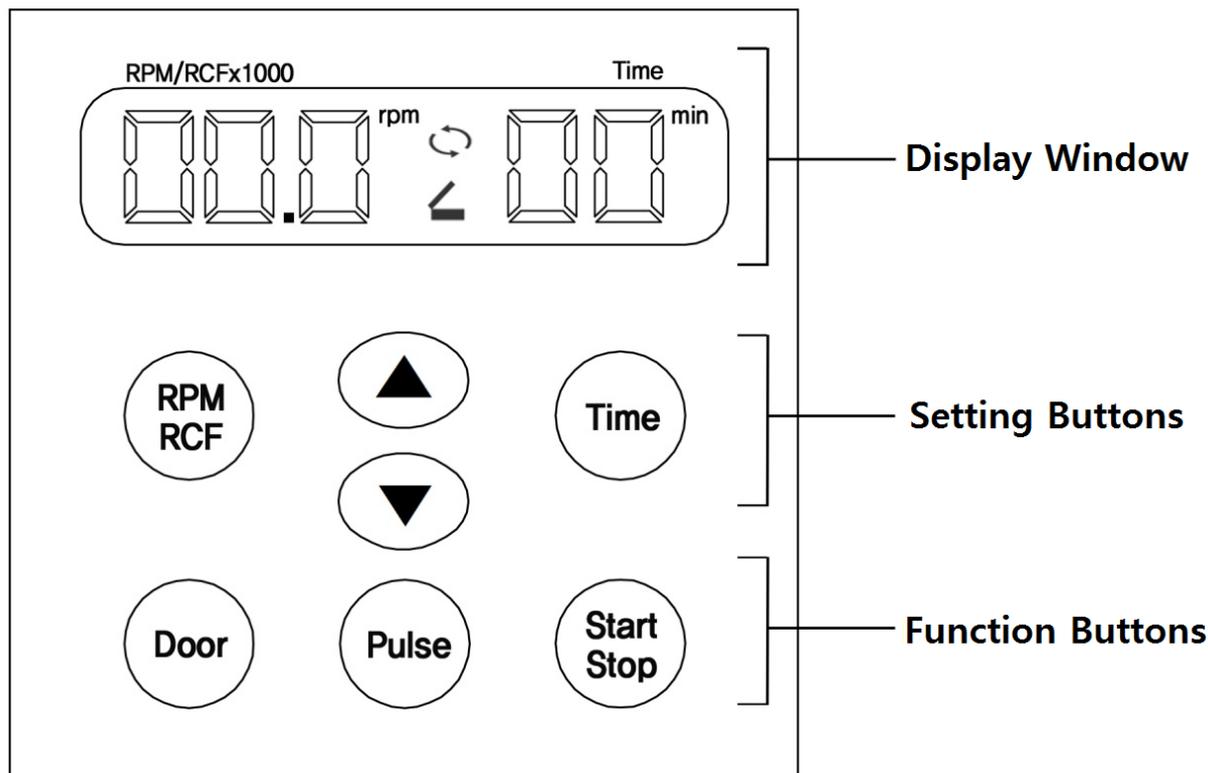


Correct Ways of Sample Balancing & Tube Usage



☞ If the number of samples is not in pair, please load the control tubes at each symmetrical position. Otherwise, it results noise and vibration, which eventually damage the instrument.

6. OPERATION



Display Window

Shows speed, time, status of running and the status of door opening or closing.

- RPM/RCF Modes are displayed as rpm and rcf.
- While running,  is flickering.
-  appears when the Door is opened and  appears when the Door is closed.
- Time is displayed as 'min'.

Setting Buttons

When setting up the RPM/RCF and Time, you can put the set value with up (▲) and down (▼) button.

Function Buttons

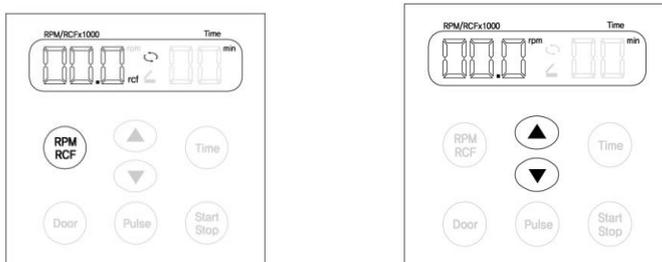
- [Door] For opening instrument door
- [Pulse] For quick spin down
- [Start/Stop] Command start and stop operation

Setting the RPM/RCF Value

- Maximum RPM/RCF: 13,500 RPM/ 12,300 x g
- Display value: multiply 1,000 to check real value. (Example: RPM Display value 13.5 indicates RPM 13,500)

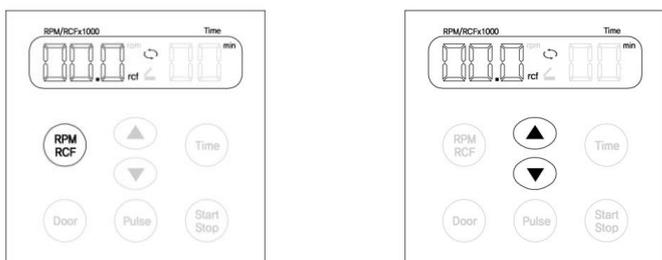
Setting the RPM Value

1. Press the [RPM/RCF] button once to adjust RPM.
 - RPM LED is flickering on the display window, indicating that the instrument is in the RPM Mode.
2. Press the [▲▼] buttons to change input value.
 - RPM setting unit: 0.1 unit (0.1=100rpm)
 - After 5 seconds from pressing the input value, the setting value is saved.
 - If you want to check the input value, press [RPM/RCF] button.
 - If you do not press the [▲▼] button for 5 seconds, the setting mode is cleared.



Setting the RCF Value

1. Press the [RPM/RCF] button twice to adjust RCF.
 - RCF LED is flickering on the display window, indicating that the instrument is in the RCF Mode.
2. Press the [▲▼] buttons to change input value.
 - RCF setting unit: 0.1 unit (0.1=100 rcf)
 - After 5 seconds from pressing the input value, the setting value is saved.
 - If you want to check the input value, press [RPM/RCF] button.
 - If you do not press the [▲▼] button for 5 seconds, the setting mode is cleared.

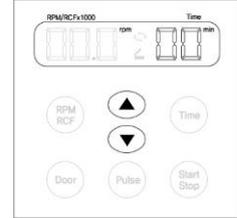
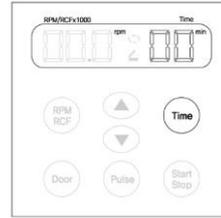


When the PCR rotor is coupled, please keep in mind that do not over speed at the max. 6,000 rpm/2,400 rcf, as mentioned on the rotor.

Setting the Time Value

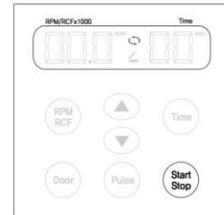
Time control: 1 min. ~30 min ; Time setting unit: 1min

1. Press the [TIME] button once.
 - 'min' on LED is flickering.
2. Press the [▲▼] buttons to change input value.
 - After 5 seconds from pressing the input value, the setting value is saved.
 - If you do not press the [▲▼] button for 5 seconds, the setting mode is cleared.



Start/Stop

1. After setting RPM/RCF and Time, press [Start/Stop] button.
 - The running starts only when the door is closed.
 - In case of pressing the [Start/Stop] button while running, the running is stopped.



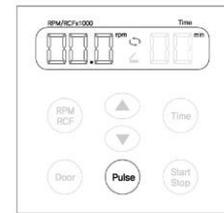
Pulse

Button for quick spin down

1. If you press [Pulse] button once, the centrifuge will spin until it reaches the set RPM value. Afterwards, it will stop.

If you press [Pulse] button continuously, the centrifuge will speed up until it reaches the set RPM value. The centrifuge will stop when you release the [Pulse] button.

- When the running is stopped, the door is opened automatically with beeping sound.



Emergency Door Open

The door can be unlocked manually with Emergency Door Open Function.

1. After pulling the instrument forward about 10 cm, find the "Emergency Door Open Hole" at the bottom of the instrument
2. Insert spikes (a car key, scissors, etc.) 2~3 cm into the "Emergency Door Open Hole" and pull the spikes at the opposite direction of the arrow.



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 door manually, it is recommended to wait until normal electricity comes back.

7. MAINTENANCE

Outer part of Instrument

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.

Chamber

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.

Shaft

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.

Rotor

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.

8. TRANSPORTATION OF THE INSTRUMENT

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.

9. TROUBLE SHOOTING

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 5. Power On/Off).
Can't be started	If the door is not closed completely, the instrument can't run. Check the Door LED on the display window and close the door completely.
Can't open the door	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 door with spikes for safety of sample. (Please refer to 6. Emergency Door Open).
Can't close the door	Remove the dirt at the door latch and then close the door completely again. If the door 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.
	Check balances of samples in the rotor. (Please refer to 5. Positioning of Sample Tubes) and load the same weight of samples symmetrically.

9.1 ERROR CODES

If the instrument shows the error code with beeping sound, press [Stop] button to stop the beeping sound.

Error	Possible Causes	Actions
Error 1 or Error 9	RPM Sensor	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 call NIPPON GENETICS EUROPE or your local distributor.
Error 2	Door	If the door is not closed completely, this message is appeared. Remove the dirt at the door latch and then close the door completely again. Check the Door LED on the display window. If it is not solved in shortly, open the door with emergency door tool manually for safety of sample. (Please refer to 6. Emergency Door Open.)
Error 3	Motor Overheating	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 call NIPPON GENETICS EUROPE or your local distributor.
Error 4	Low Voltage	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 (Automatic Voltage Regulation) to provide proper power.
Error 5	High Voltage	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 (Automatic Voltage Regulation) to provide proper power.
Error 6	Over Speed	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	If the installed software has bugs, this message is appeared. Tuning the firmware (Download)*

* Any wire disconnection or tuning of the instrument must be performed only by a service engineer who is authorized by NIPPON GENETICS Europe GmbH

10. ROTORS AND ACCESSORIES

Fixed Angle Rotor

12 x 1.5/2.0 ml

45°

Hole diameter (mm) : 11.1

Max. height for tube fit (mm) : 56

Tube			
Tube capacity(ml)	0.2	0.5	1.5/2.0
Adaptor			None
Adaptor bore (Φ x L, mm)	6.5 x 23	8 x 31	-
Radius(mm)	43.5	50.5	60.4
Max. RPM	13,500		
Max. RCF(g-force)	8,863	10,250	12,300



PCR Rotor

4 x 8-tube PCR strips, 32 x 0.2 ml

45°

Hole diameter (mm) : 6.5

Tube		
Tube capacity(ml)	0.2	8-tube PCR strip
Radius(mm)	1st : 38.6 / 2nd : 45	
Max. RPM	6,000	
Max. RCF(g-force)	1st : 1,554 / 2nd : 1,850	



11. ORDERING INFORMATION

Product

FastGene® HighSpeed Mini Centrifuge
 PCR Rotor for FastGene® HighSpeed Mini Centrifuge
 FastGene® 1.5 ml Tubes (500)
 FastGene® PCR Tubes 0.2 ml with domed caps (1000)
 FastGene® PCR Tubes 0.2 ml with flat caps (1000)
 8well PCR TubeStrips 0.2ml+single domed caps (120)
 8well PCR TubeStrips 0.2ml+single flat caps (120))
 8well PCR TubeStrips 0.2ml+Domed CapStrips (120)
 8well PCR TubeStrips 0.2ml+Flat CapStrips (120)

Cat.No.

NG003
 NG004
 FG-015
 FG-021D
 FG-021F
 FG-088WD
 FG-088WF
 FG-016DC
 FG-016FC

12. CONTACT INFORMATION

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For more detailed product information, contact details, questions, or trouble shooting please visit our English website www.nippongenetics.eu or our German website www.nippongenetics.de.

FastGene® is a registered trademark of Nippon Genetics Europe GmbH

RELATED PRODUCTS

FastGene® Mini Centrifuge in different colours



