Low-Speed Centrifuge

# 416

# User Manual


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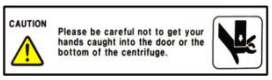
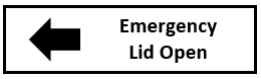
# CONTENTS

# 1. Meanings of Symbols & Safety Precautions

## 1-1. Meanings of Symbols

### 1-1-1. Symbols on the device

| Symbol | Meaning | Symbol | Meaning |
|---|---|---|---|
|  | Attention and warning. |  | Attention and warning for electric shock |
|  | Attention and warning for rotor coupling. |  | Attention and warning for door opening and closing |
|  | Attention and warning for correct way of sample balancing in the rotor. |  | Attention and warning for correct way of buckets position. |
|  | Indicate a hole for manual door opening in case of emergency | | |

### 1-1-2. Symbols in this document

| Symbol | Meaning | Symbol | Meaning |
|---|---|---|---|
|  | This symbol refers to safety relevant warnings and indicates possible dangerous outcomes. | ☞ | Note.<br>This symbol refers to the important reminder. |

**1-2. 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 accessories.

 √ Only use rotors from Gyrozen Co., Ltd. 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-Lock Release 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 Bio-safety Manual,” should follow national regulations.

19. Before the tube is insterted in the rotor, make sure to load the sample in it.
Avoid adding the sample to a tube which is already placed in the rotor

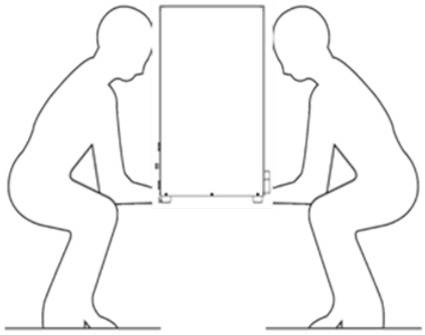
20. When handling a tube containing blood, use gloves to work.

21. This device must be operated by a professional who has received professional education, training and specialized skills for the using procedure.

- ✓ 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-Lock Release 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.

## 1-3 lifting and carrying

When moving the product, two people should grab it from the front and back as shown in Figure



## 1-4 Transport, Storage, Use conditions

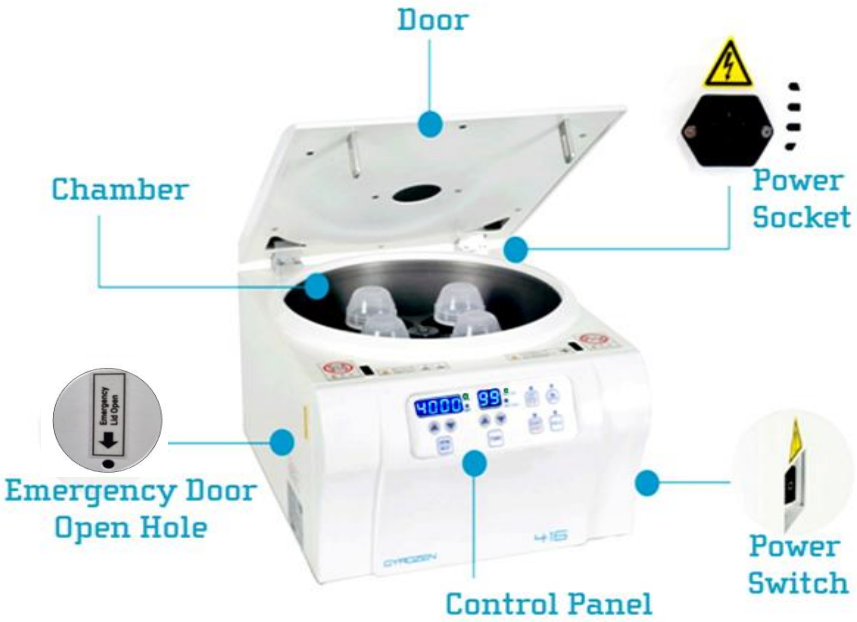
| Use condition | Storage and transport condition |
|---|---|
| - Indoor use<br>- Room Temperature : 5 ~ 40℃<br>- Relative humidity : 30 ~ 85%<br>- Atmospheric pressure : 500 ~ 1060 hPa | - Ambient Temperature : -10 ~ 40℃<br>- Relative humidity : 10 ~ 90%<br>- Atmospheric pressure : 500 ~ 1060 hPa |

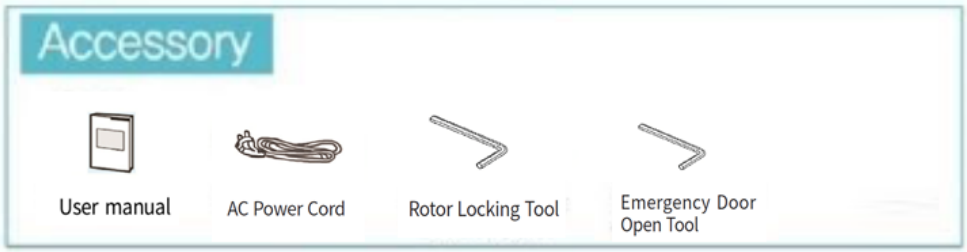
## 2. Product Description & Technical Specifications

### 2-1. Intended Use

The device is used mainly in the laboratory to separte the components through centrifugal force

### 2-2. Product Description




### 2-3. Technical Specifications

| | | |
|---|---|---|
| Max. RPM / RCF | | 4,000 rpm / 2,700 xg |
| Max. capacity | Fixed angle | 16 x 15 ml |
| | Swing-out | 4 x 100 ml |
| Time control | | Timed < 100 min or continuous |
| RPM / RCF conversion | | Yes |
| Noise level (dB) | | ≤ 52 |
| ACC / DEC (sec) | | ≤ 20 / ≤ 25 |
| SOFT START / STOP | | Yes |

| | |
|---|---|
| Program memory | 30 |
| Imbalance cutout | Yes |
| Safety lid lock | Yes |
| Door drop protection | Yes |
| Automatic door release at completion | Yes |
| Power supply (V,Hz) | 220-230V~,50/60Hz (110V optional) |
| Power requirement (VA) | 340 |
| Dimension (W x D x H, mm) | 375 x 480 x 260 |
| Weight without rotor (kg) | 19.5 |
| CE mark | Yes |
| Cat. No. | GZ-0416 |

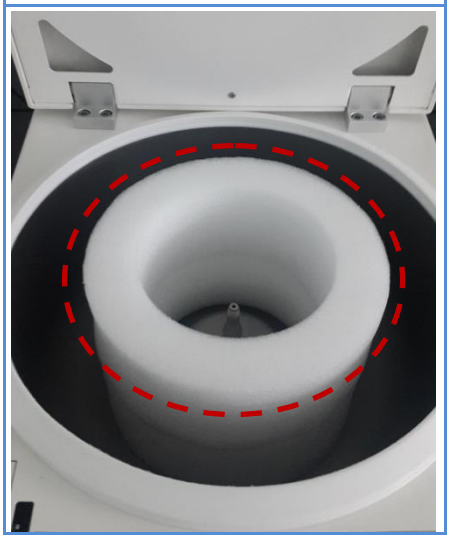
☞ The instrument has the following functions for safety.

1. SOFT spin key for gentle acceleration and deceleration.
2. Automatic detection and alarms for imbalance, excess speed and heating.

## 3. Unpacking

**Motor Protecting Device:** a motor fixing cushion (Polyethylene (PE) foam) is placed in the chamber of 416 centrifuge to prevent possible damages to the imbalance sensor caused by motor shaking during shipping or relocation.

**Motor Fixing Cushion in 416**



☞ The cushion should be removed before the installation of the instrument.

# 4. Installation

## 4-1. Power ON / OFF and Door Release

⚠ When using the product, only use the power cable with the protective ground provided by the manufacturer, the protective ground must be maintained.

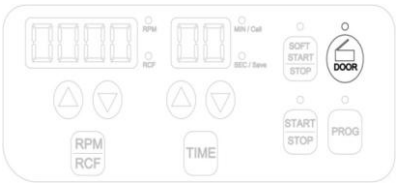
**Action**

### 4-1-1. Power ON / OFF

1. Connect the AC Power cord(Disconnecting Device) to the power socket on the right back of the instrument.
2. Turn on the instrument by pressing the switch on the right side of the instrument.
3. Press the [DOOR] button to open the door.

### 4-1-2. Door Release

1. To open the door, press the [DOOR] button.
   - ➢ The door is automatically opened with end alarm upon completion of the rotation.
   - ➢ Close the door until you hear the door clank.
   - ➢ When the door is opened, the door LED turns on.




☞
- ✓ The door is not opened while the instrument is running.
- ✓ If the door is open, the instrument does not run by pressing the [START] button.
- ✓ Power Failure: If there is any power failure during operation, door is not opened with [DOOR] button. Door can be opened only when the rotation completely stops and the power is on again. If you want to open the door when power is gone off, please refer to '5-7. Emergency Door Release'.

## 4-2. Rotor Coupling and Disassembling

**Action**

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

### 4-2-1. Swing-Out Rotor

1. Mount a compatible rotor into the motor shaft.
2. Grasp the rotor with one hand, and place Rotor Locking Tool at the center hole of the rotor.
   - ➢ To assemble the rotor, rotate the Rotor Locking Tool clockwise until tightly assembled.
   - ➢ To disassemble the rotor, rotate the Rotor Locking Tool counterclockwise.

3. Hang the appropriate buckets into the rotor.
   - ➢ Load an identical bucket at each wing (Do not leave any vacant wing without bucket. All wings should hold identical bucket.).
   - ➢ Remove dirt or dust around hooks of rotor and hanging part of bucket.

4. Spin the rotor manually to check if bucket swinging is sufficiently smooth. If the rotation is resisted, apply the lubricant (grease) to the link area.

### 4-2-1. Fixed Angle Rotor

1. Mount a proper rotor into the motor shaft. Put the Washer (  ) at the center hole of the rotor and assemble it with the Rotor Locking Nut (  ).
   - ➢ To assemble the rotor, rotate the Rotor Locking Nut clockwise until tightly assembled.
   - ➢ To disassemble the rotor, rotate the Rotor Locking Nut counterclockwise.
2. Load the 15-ml sleeves in every hole.

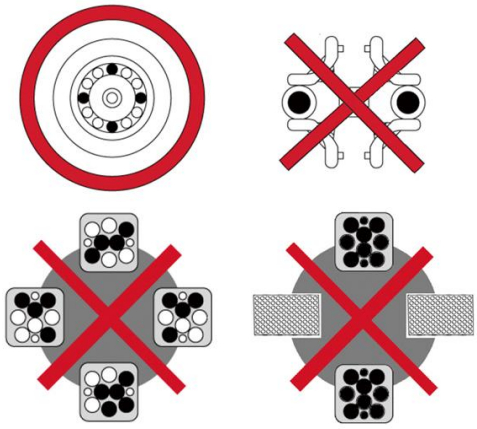
| |
|---|
| ✓ When you couple the rotor at first installation, you turn off the instrument.<br>✓ After coupling the rotor, turn on the instrument. |

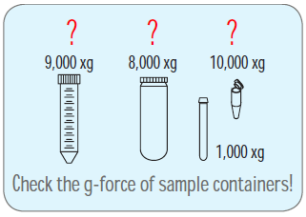
### 4-3. Positioning of Sample Tubes

**Action**

1. Before loading sample tubes, check if there are any water drops or dirt in the rotor hole or tube adaptors.
   - ➢ If you find any, remove it with soft dry cloth.
2. The sample tubes should be loaded symmetrically with the density and the weight considered to avoid imbalance.
   - ➢ Only use appropriate centrifugal tubes and do not exceed the speed beyond the tube's max g-strength.

**Correct Way of Sample Balancing and Tube Usage**



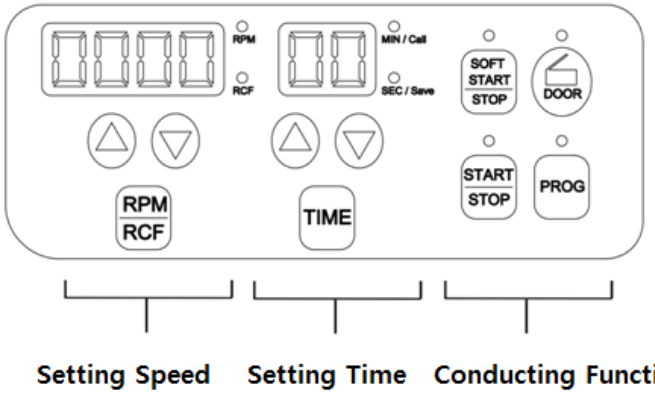



✓ In case the number of samples cannot make balance in weight, please use control tubes. Otherwise, it can cause noise or vibration, which may damage the instrument.

☞ For safety, the 'Imbalance Cutoff' function is turned on, when there is weight imbalance of the loaded tubes (Error 8, Imbalance error). Please refer to 7. Troubleshooting.

# 5. Operation

## 5-1. Key Functions of Control Panel




### Setting Speed

□ RPM / RCF — To set the speed and for automatic conversion between RPM and RCF

### Setting Time

□ TIME — To set time up to 99 min (0:00:00: continuous)

### Setting Functions

□ PROG — To save the set values and recall the saved programs

□ START / STOP — To start or stop operation

□ DOOR — To open the instrument lid

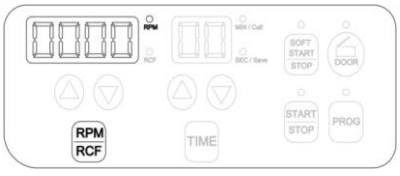
□ SOFT START / STOP — To operate with slower and smoother acceleration / deceleration

## 5-2. Setting the RPM/RCF Value

▶ Maximum RPM / RCF: 4,000 RPM / 2,700 xg

☞ In order to increase or decrease values rapidly, keep either of the [▲▼] buttons pressed over 5 seconds.

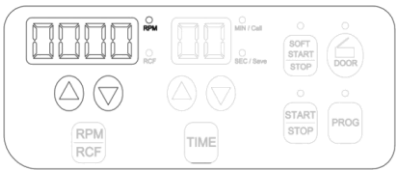
### Action



### 5-2-1. Setting the RPM Value

▶ Speed setting unit: 10 rpm

1. Press a [RPM/RCF] button once.
   - ➢ RPM MODE is on by pressing the [RPM/RCF] button once.
2. Press the [▲▼] buttons to change the set value.
3. Press the [RPM/RCF] button again to set the value.



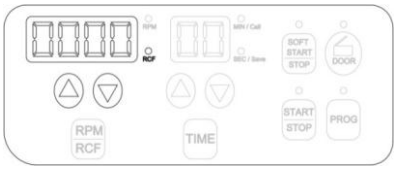
### 5-2-2. Setting the RCF Value

▶ Speed setting unit: 1 xg

Press a [RPM/RCF] button twice.

- ➢ RCF MODE is on by pressing the [RPM/RCF] button twice.

1. Press the [▲▼] buttons to change input value.



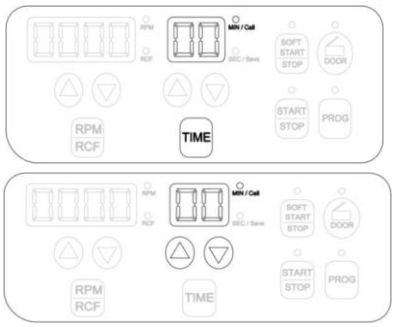
2. Press the [RPM/RCF] button again for saving.

### 5-3. Setting the Time Value

▶ Speed setting unit: 1 min / 1 sec

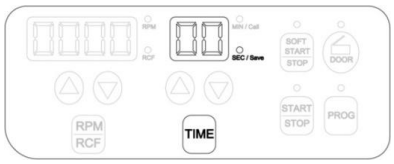
**Action**

#### 5-3-1. Setting the MIN Value




1. Press the [TIME] button once.
   - ➢ The MIN mode is on by pressing the [TIME] button once.
2. Press the [▲▼] buttons to change the set value.
3. Press the [TIME] button again to set the value.

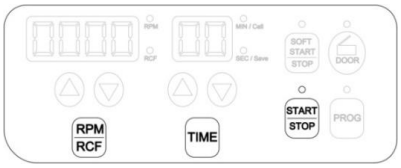
#### 5-3-2. Setting the SEC Value




1. Press the [TIME] button twice.
   - ➢ The SEC mode is on by pressing the [TIME] button twice.
2. Press the [▲▼] buttons to change the set value.
3. Press the [TIME] button again to set the value.

### 5-4. START / STOP

**Action**

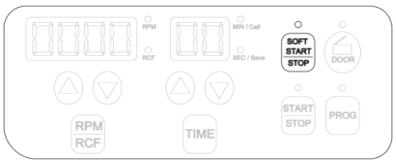



1. After setting the RPM/RCF and the TIME, press [START/STOP] button.
   - ➢ While running, the 'START LED' is turned on.
   - ➢ To stop the operation, press the [START/STOP] button while running.

### 5-5. SOFT START / STOP

The [SOFT START/STOP] button is used for gentle acceleration and deceleration for sensitive samples.

**Action**

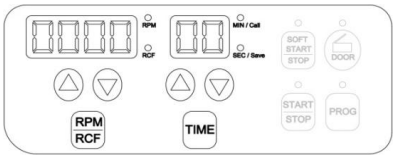



1. After setting TIME and RPM, press the [SOFT START/STOP] button once.
   - ➢ The LED of [SOFT START/STOP] button is on while running.
   - ➢ The door is automatically opened when the operation is completed.
   - ➢ When operating in the [SOFT] mode, the operation cannot be stopped by pressing the [START/STOP] button.

### 5-6. Program Save / Recall

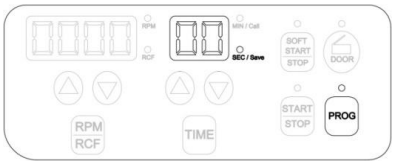
**Action**

#### 5-6-1. Program Save

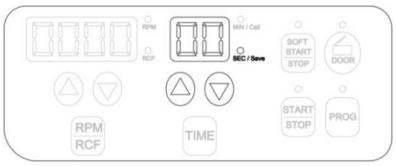



1. Set parameters (Refer to 5-2 ~ 5-3).

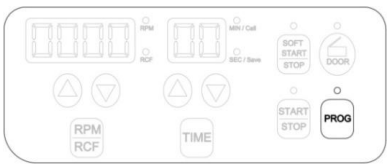
2. Keep the [PROG] button pressed over 3 seconds to save your set values.
   - The LED of [PROG] button and SEC/Save are turned on.




3. Input the program number by using the [▲▼] button.
   - Up to 30 programs can be stored.

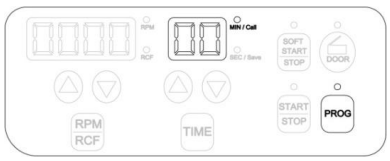



4. Press the [PROG] button again to complete saving.
   - The set value is saved.
   - In case of no input for 5 seconds, you will get out of the Save mode.

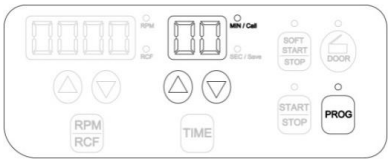



### 5-6-2. Program Recall

1. To recall a saved program, press the [PROG] button shortly.
   - The LED of [PROG] and MIN/Call are turned on.




2. Enter the program number you want to recall by pressing [▲▼] button.




3. Press [PROG] button once again.
   - The set values of the saved program are displayed.
   - In case of no input for 5 seconds, you will get out of the Recall mode.

### 5-7. Emergency Door Release

When the door of the instrument is not opened automatically or by pressing the [DOOR] button due to an accidental power shut-off or any unexpected causes, users can manually open the door by following the instruction.

The door can be unlocked manually with Emergency Door Opening Tool through the emergency opening hole.

1. Find the emergency hole on the left side of the instrument
2. Insert the Emergency Door Opening Tool into the hole and push it until the door is released.

> Manual door release should be attempted only when the rotation completely stops. If not, it could bring about harmful damage to the operators or the samples.
> After opening the door, it is recommended to wait until electricity gets back to normal.

### 5-8. Replacement of Fuse

When you turn on the instrument but it does not power on at all, please check the Power Switch, the connection of the Power Outlet and the Power Socket. If the status keeps going, replace the fuse as the following instruction.

**Action**

1. Remove the AC Power Cord at the back of the instrument and push the Fuse Case by the flat-head screwdriver to take out the Fuse Case.




2. If you find the fuse broken or damaged, replace it by the new spare one stored in the fuse case and check out if the power can be turned on.

## 6. Maintenance

### 6-1. 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 any contaminated area. Keep completely dry after cleaning.
2. Do not use any volatile chemicals such as alcohol, benzene, benzole and thinner, etc.
3. Be careful not to make scratches on the surface of the instrument.

✓ Scratches may cause corrosion on the surface of the instrument.

✓ Any parts with rust should be cleaned with neutral detergents and kept dry.

### 6-2. Chamber

1. Keep dry inside the chamber after every use.
2. If the chamber is contaminated, clean contaminated area with the cloth dipped in neutral detergent.

### 6-3. Shaft

1. Always keep the motor shaft clean to avoid any imbalance problem caused by 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.
3. If the rotor cannot be easily removed from the shaft, do not pull the rotor by force and call a service engineer authorized by GYROZEN Co., Ltd.

### 6-4. Rotor

1. If any parts become contaminated, clean them 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. While the instrument is not used, remove the rotor from the motor shaft and stand it upside down.

### 6-5. 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.

# 7. Troubleshooting

## 7-1. Checklist

| Symptom | Check list |
|---|---|
| Power failure | Make sure the AC Power cord completely connects the instrument to the power outlet. Check the power switch is on (Please refer to 4-1. Power ON / OFF and Door Release). |
| Can't be started | If the door is not closed completely, the instrument does not 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 shortly, open the door with the manual door release tool (Please refer to 5-7. Emergency Door Release). |
| Can't close the door | Remove the dirt at the door latch and keep the door completely closed. If the door is closed by any reasons, please contact GYROZEN service team. |
| Noise and vibration during running | Please check if the table and the instrument keep level. |
| | Please recheck the three coupling status on the following.<br>1. Balanced coupling of the rotor to the motor shaft<br>2. Complete fixing of the rotor by the Rotor Locking Nut<br>3. Fastening of the Rotor Lid and the rotor.<br>(Please refer to 4-2. Rotor Coupling and Disassembling) |
| | Check the balanced positioning of the samples in the rotor (Please refer to 4-3. Positioning of Sample Tubes). |

## 7-2. Error Codes

**Note!**

If any of the following error messages comes up with beeping sound, press 'PROG' button to clear the error status and make the instrument restore its default setting. If the error message does not disappear, check into the current status by referring to the following information.

| Error | Possible Causes | Actions |
|---|---|---|
| Error 1 | RPM | - If the speed does not reach 200 rpm within 2 seconds after motor starts to operate, this message may appear.<br>- Check whether the motor is normally working or not.<br>- If the error message does not disappear, please contact a Service Engineer of your local GYROZEN's partner. |
| Error 2 | Door Open | - If the door opens while spinning or has any trouble in the door sensor, this message may come up.<br>- Remove the dirt at the door latch and close the door completely. Check |

| | | |
|---|---|---|
| | | the door closing status on the display window.<br>- If the error message does not disappear, please contact a Service Engineer of your local GYROZEN's partner. |
| Error 3 | Motor Overheating | - If the motor is overheated, this message may come up.<br>- Keep off the power supply for an hour, and turn on the power to check up the instrument.<br>- If the error message does not disappear, please contact a Service Engineer of your local GYROZEN's partner. |
| Error 4 | Low Voltage | - If the power input (V/Hz) is at least 10% lower than the recommended power, this message may come up.<br>- Turn off the power supply and check the voltage of the Power supply (V/Hz).<br>- Use AVR to provide proper power. |
| Error5 | High Voltage | - If the power input (V/Hz) is at least 10% higher than the recommended, this message may come up.<br>- Turn off the power supply and check the voltage of the Power supply (V/Hz).<br>- Use AVR to provide proper power. |
| Error 6 | Overspeed | - If the instrument spins faster than allowed (1,000 rpm higher than the set speed), it may cause overload to motor capacity or any trouble in the output of motor.<br>- Turn off and on the power supply to check up the instrument.<br>- If the error message does not disappear, please contact a Service Engineer of your local GYROZEN's partner. |
| Error 7 | Software | - If the installed software has any bugs, this message may come up.<br>- Contact a Service Engineer of your local GYROZEN's partner and get the firmware upgrade. Wire disconnection or tuning of the instrument must be performed only by a Service Engineer authorized by GYROZEN Co., Ltd. |
| Error 8 | Imbalance | - Check the balance status of the samples in the rotor (Please refer to 4-3. Positioning of Sample Tubes) and turn off and on the instrument to check the status.<br>- If the error message does not disappear, please contact a Service Engineer of your local GYROZEN's partner. |
| Error 9 | RPM Sensor | - If the rotor recognition fails, this message comes up.<br>- The message will be cleared by coupling an appropriate rotor (Please refer to 4.2 Rotor Coupling and Disassembling.).<br>- Disassemble and couple a compatible rotor and turn off and on the instrument to check out the status.<br>- If the error message does not disappear, please contact a Service Engineer of your local GYROZEN's partner. |

* Any wire disconnection or tuning of the instrument must be performed only by a service engineer who is authorized by GYROZEN Co., Ltd.

## Angle Rotor, GRA-S-50-10

- Capacity : 10 x 50 mL or 50 mL Conical I Max. RPM / RCF : 4,000 / 2,549
- Hole angle rotation : ∠ 45° I Hole dimension (Ø x L, mm) : 32.2 x 13.5
- Supplied with 10 sleeves, No ID ring

**50 mL Sleeve**
**GLB-50s-50A**

Max. RMP / RCF : 4,000 / 2,549
Hole dimension (Ø x L, mm) : 30 x 99
Hole bottom type : Flat bottom with rubber pad
Max. height for tube fit (mm) : 130
Supplied with 3.5 mm thick NBR pad

| Tube |  |  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|---|---|---|
| Tube capacity (mL) | 14 mL | 15 | 15 mL conical | 25 mL conical | 25 mL conical | 30 | 50 mL conical | 50mL conical (Skirt) | 50 |
| Tube Dimension (Φ x L, mm) | 15.7 x 96 | 16 x 120 | 17 x 120 | 28.8 x 83 | 28.8 x 78.5 | 25.7 x 101.4 | 29.5 x 118 | 29.5 x 118 | 29 x 108 |
| Adapter |  |  |  |  |  |  |  | None | None |
| Cat No. | GAS-u14(f50) | GAS-u15(f50) | GAS-u15(f50) | GAS-c25(f50) | GAS-c25(f50) | GAS-30(f50) | GAS-c50(f50) | - | - |
| Adaptor hole dimension (Φ x L,mm) | 17.2 x 75 | 17.2 x 87 | 17.2 x 87 | 27.1 x 14.1 | 27.1 x 14.1 | 26 x 86.5 | 29.5 x 17.5 | - | - |
| Adaptor hole bottom type | Open | Open | Open | Conical | Conical | Round | Conical | - | - |
| Max. radius (mm) | 141.9 | 141.9 | 141.9 | 115 | 115 | 135 | 135.5 | 142.5 | 142.5 |
| Max. RCF (g-force) | 2,538 | 2,538 | 2,538 | 2,057 | 2,057 | 2,415 | 2,424 | 2,549 | 2,549 |

## Fixed Angle Rotor, GRA-S-c50-10

- Capacity : 10 x 50 mL or 50 mL Conical I Max. RPM / RCF : 4,000 / 2,508
- Hole angle rotation : ∠ 45° I Hole dimension (Ø x L, mm) : 32.2 x 13.5
- Supplied with 10 sleeves, No ID ring

**50 mL Sleeve**
**GLB-c50s-50A**

Max. RPM / RCF : 4,000 / 2,508
Hole dimension (Ø x L, mm) : 31 x 99
Hole bottom type : Conical
Max. height for tube fit (mm) : 130

| Tube |  |  |  |  |  |  |
|---|---|---|---|---|---|---|
| Tube capacity (mL) | 15 mL conical | 25 mL conical | 25 mL conical | 30 | 50 | 50 mL conical |
| Tube Dimension (Φ x L, mm) | 17 x 120 | 28.8x83 | 28.8x78.5 | 25.7 x 101.4 | 29 x 108 | 29.5 x 118 |
| Adapter |  |  |  |  |  | None |
| Cat No. | GAS-c15(c50) | GAS-c25(c50) | GAS-c25(c50) | GAS-30(c50) | GAS-50(c50) | - |
| Adaptor hole dimension (Φ x L,mm) | 17 x 105 | 27.1x14.1 | 27.1x14.1 | 26x83.8 | 27.9 x 11 | - |
| Adaptor hole bottom type | Conical | Conical | Conical | Round | Round | - |
| Max. radius (mm) | 139.6 | 115 | 115 | 135.5 | 136.1 | 140 |
| Max. RCF (g-force) | 2,497 | 2,057 | 2,057 | 2,424 | 2,435 | 2,508 |

## Angle Rotor, GRA-S-15-16A

- Capacity : 16 x 15 mL
- Max. RPM / RCF : 4,000 / 2,700
- Hole angle rotation : ∠ 45°
- Hole dimension (Ø x L, mm) : 20.4 x 10.5
- Supplied with 16 sleeves, No ID ring

**15 mL Sleeve**
**GLB-15/10A**

Max. RPM / RCF : 4,000 / 2,700
Hole dimension (Ø x L, mm) : 18 x 87
Hole bottom type : Flat bottom with rubber pad
Max. height for tube fit (mm) : 125 (120 for conical / wider cap)
Supplied with 4.0 mm thick NBR pad

| Tube |  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|---|---|
| Tube capacity (mL) | 2.0 ~ 4 mL VT | 4 ~ 7 mL VT | 5 mL conical | 5 mL conical | 14 mL | 8 ~ 10 mL VT | 15 | 15 mL conical |
| Tube Dimension (Φ x L, mm) | 13 x 75 | 13 x 100 | 16 x 59 | 16 x 67 | 15.7 x 96 | 16 x 100 | 16 x 120 | 17 x 120 |
| Adapter |  |  |  |  |  | None | None | None |
| Cat No. | GAS-3(f15) | GAS-5(f15) | GAS-c5(f15) | GAS-c5(f15) | GAS-14(f15) | - | - | - |
| Adaptor hole dimension (Φ x L,mm) | 13.5 x 61 | 13.5 x 85 | 14 x 20 | 14 x 20 | 16.5 x 7 | - | - | - |
| Adaptor hole bottom type | Round | Open | Conical | Conical | Round | - | - | - |
| Max. radius (mm)* | 134 | 146 | 118.5 | 118.5 | 139.4 | 150.9 | 150.9 | 150.9 |
| Max. RCF (g-force)* | 2,397 | 2,612 | 2,120 | 2,120 | 2,494 | 2,700 | 2,700 | 2,700 |

# Swing Rotor, GRS-S-100-4

- 4 loadings
- Max. RPM : 4,000
- Angle from axis during rotation : ∠ 90°
- Supplied with a lubricant, No ID ring

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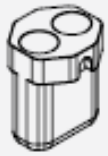
**100 mL Bucket with a Cap**
**GLBB-b100-100**

Max. RPM / RCF : 4,000 / 2,774
Max. Radius (mm) : 155.1
Hole dimension (Ø x L, mm) : 47 x 99
Max. height for tube fit (mm) : 120 (w/ cap) / 130 (w/o cap)
Hole bottom type : Flat
Supplied with a cap and an O-ring, No cap version is available

| Tube |  |  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|---|---|---|
| Tube capacity (mL) | 1.5 ~ 2.0 | 2.0 mL screw cap | 5 mL conical | 5 mL conical | 2.6 ~ 7 | 4 ~ 10 | 15 | 15 mL conical | 15 mL conical |
| Tube Dimension (Φ x L, mm) | 11 x 38 | 10.1x46 | 16 x 59 | 16 x 67 | 13 x 75 | 16 x 100 | 16 x 120 | 17 x 120 | 17 x 120 |
| Adapter |  |  |  |  |  |  |  |  |  |
| Cat. No. | GAM-m2.0 -6(b100) | GAM-m2.0 -6(b100) | GAM-c5-3(b100) | GAM-c5-3(b100) | GAM-7-5(b100) | GAM-10-5(b100) | GAM-15-3(b100) | GAM-15-3(b100) | GAS-c15(b100) |
| Rack capacity (ea / 4) | 6 / 24 | 6 / 24 | 3/12 | 3/12 | 5 / 20 | 5 / 20 | 3 / 12 | 3 / 12 | 1 / 4 |
| Rack hole dimension (Φ x L,mm) | 11 x 39 | 11 x 39 | 17.2 x 52 | 17.2 x 52 | 13.5 x 60 | 16 x 60 | 17.5 x 105 | 17.2 x 106.5 | 17.2 x 106.5 |
| Rack hole bottom type | Round | Round | Conical | Conical | Round | Flat | Flat | Conical | Conical |
| Max. height tube fit (mm) | 115 | 115 | 75 | 75 | 115 | 115 | 120 | 120 | 120 |
| Max. radius (mm)* | 150.1 | 150.1 | 110.1 | 110.1 | 150.1 | 150.1 | 152.1 | 155.1 | 155.1 |
| Max. RCF (g-force)* | 2,685 | 2,685 | 1,969 | 1,969 | 2,685 | 2,685 | 2,721 | 2,774 | 2,774 |

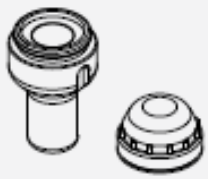
| Tube |  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|---|---|
| Tube capacity (mL) | 25 mL conical | 25 mL conical | 30 | 50 | 50 mL conical | 50 mL conical (Skirted) | 85 | 100 |
| Tube Dimension (Φ x L, mm) | 28.8 x 83 | 28.8 x 78.5 | 25.7 x 101.4 | 29 x 108 | 29.5 x 118 | 29.5 x 118 | 38 x 106 | 44 x 115 |
| Adapter |  |  |  |  |  |  |  |  |
| Cat. No. | GAS-c25(b100) | GAS-c25(b100) | GAS-30(b100) | GAS-50(b100) | GAS-c50(b100) | GAS-sc50(b100) | GAS-85(b100) | GAS-100(b100) |
| Rack capacity (ea / 4) | 1 / 4 | 1 / 4 | 1 / 4 | 1 / 4 | 1 / 4 | 1 / 4 | 1 / 4 | 1 / 4 |
| Rack hole dimension (Φ x L,mm) | 17.2 x 52 | 17.2 x 52 | 26 x 86 | 29.5 x 95.9 | 30 x 100 | 29.8 x 100 | 38.5 x 96.4 | 44.2 x 93 |
| Rack hole bottom type | Conical | Conical | Round | Round | Conical | Flat | Round | Round |
| Max. height tube fit (mm) | 118 | 118 | 118 | 118 | 120 | 120 | 118 | 118 |
| Max. radius (mm)* | 153.5 | 153.5 | 153.5 | 153 | 153 | 153 | 153.5 | 150.1 |
| Max. RCF (g-force)* | 2,746 | 2,746 | 2,746 | 2,737 | 2,737 | 2,737 | 2,746 | 2,685 |



**50 mL Conical Bucket**
**GLB-dc50-100**

Max. RPM / RCF : 4,000 / 2,774
Max. Radius (mm) : 155.1
Hole dimension (Ø x L, mm) : 30 x 89
Max. height for tube fit (mm) : 125
Hole bottom type : Conical

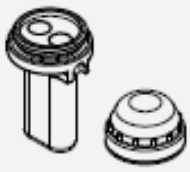
| Tube |  |  |  |  |  |  |
|---|---|---|---|---|---|---|
| Tube capacity (mL) | 15 mL conical | 25 mL conical | 25 mL conical | 30 | 50 | 50 mL conical |
| Tube Dimension (Φ x L, mm) | 17 x 120 | 28.8 x 83 | 28.8 x 78.5 | 25.7 x 101.4 | 29 x 108 | 29.5 x 118 |
| Adapter |  |  |  |  |  | None |
| Cat No. | GAS-c15(50) | GAS-c25(c50) | GAS-c25(c50) | GAS-30(c50) | GAS-50(c50) | - |
| Bucket capacity(ea / 6) | 2 / 8 | 2 / 8 | 2 / 8 | 2 / 8 | 2 / 8 | 2 / 8 |
| Adaptor hole dimension (Φ x L,mm) | 17 x 105 | 27.1 x 14.1 | 27.1 x 14.1 | 26 x 83.8 | 27.9 x 11 | - |
| Adaptor hole bottom type | Conical | Conical | Conical | Round | Round | - |
| Max. radius (mm) | 152.5 | 118.5 | 118.5 | 143.9 | 144.1 | 155.1 |
| Max. RCF (g-force) | 2,728 | 2,120 | 2,120 | 2,574 | 2,578 | 2,774 |



**50 mL Bucket with a Cap**
**GLB-b50-100**

Max. RPM / RCF : 4,000 / 2,700
Max. Radius (mm) : 150.9
Hole dimension (Ø x L, mm) : 30.5 x 97
Max. height for tube fit (mm) : 120 (w/ cap) / 125 (w/o cap)
Hole bottom type : Flat bottom with rubber pad
Supplied with a cap and O-ring. No cap version is available

| Tube |  |  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|---|---|---|
| Tube capacity (mL) | 14 mL | 15 | 15 mL conical | 25 mL conical | 25 mL conical | 30 | 50 mL conical | 50 mL conical (Skirt) | 50 |
| Tube Dimension (Φ x L, mm) | 15.7 x 96 | 16 x 120 | 17 x 120 | 28.8 x 83 | 28.8 x 78.5 | 25.7 x 101.4 | 29.5 x 118 | 29.5 x 118 | 29 x 108 |
| Adapter |  |  |  |  |  |  |  | None | None |
| Cat No. | GAS-u14(f50) | GAS-u15(f50) | GAS-u15(f50) | GAS-c25(f50) | GAS-c25(f50) | GAS-30(f50) | GAS-c50(f50) | - | - |
| Adaptor hole dimension (Φ x L,mm) | 17.2 x 75 | 17.2 x 87 | 17.2 x 87 | 27.1 x 14.1 | 27.1 x 14.1 | 26 x 86.5 | 29.5 x 17.5 | - | - |
| Adaptor hole bottom type | Open | Open | Open | Conical | Conical | Round | Conical | - | - |
| Max. radius (mm) | 150.9 | 150.9 | 150.9 | 117.1 | 117.1 | 142.1 | 142 | 150.9 | 150.9 |
| Max. RCF (g-force) | 2,700 | 2,700 | 2,700 | 2,095 | 2,095 | 2,542 | 2,540 | 2,700 | 2,700 |

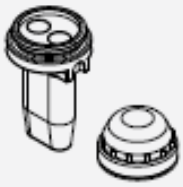


15 mL Dual Round Bucket with a Cap
**GLB-bd15-100**

Max. RPM / RCF : 4,000 / 2,700
Max. Radius (mm) : 150.9
Hole dimension (Ø x L ,mm) : 17 x 87
Max. height for tube fit (mm) : 123 (w/ cap) / 127 (w/o cap)
Hole bottom type : Round
Supplied with a cap and O-ring

| Tube |  |  |  |
|---|---|---|---|
| Tube capacity (mL) | 15 mL glass | 15 mL open top | 15 |
| Tube Dimension (Φ x L,mm) | 16 x 100 | 16 x 114 | 16 x 120 |
| Bucket capacity (ea / 6) | 2 / 8 | 2 / 8 | 2 / 8 |
| Max. height tube fit (mm) | 123 | 123 | 123 |
| Max. radius (mm) | 150.9 | 150.9 | 150.9 |
| Max. RCF (g-force) | 2,700 | 2,700 | 2,700 |

**Bio-Safe** Porton Down Certified



15 mL Dual Conical Bucket with a Cap
**GLBB-bdc15-100**

Max. RPM / RCF : 4,000 / 2,774
Max. Radius (mm) : 155.1
Hole dimension (Ø x L,mm) : 17 x 97.5
Max. height for tube fit (mm) : 120 (w/ cap) / 125 (w/o cap)
Hole bottom type : Conical
Supplied with a cap and O-ring, No cap version is available

| Tube |  |  |  |  |
|---|---|---|---|---|
| Tube capacity (mL) | 5 mL conical | 5 mL conical | 14 mL | 15 mL conical |
| Tube Dimension (Φ x L, mm) | 16 x 59 | 16 x 67 | 15.7 x 96 | 17 x 120 |
| Adapter |  |  |  | None |
| Cat No. | GAS-c5(c15) | GAS-c5(c15) | GAS-14(c15) | - |
| Bucket capacity (ea / 6) | 2 / 8 | 2 / 8 | 2 / 8 | 2 / 8 |
| Adaptor hole dimension (Φ x L,mm) | 14.8 x 20 | 14.8 x 20 | 16 x 7.8 | - |
| Adaptor hole bottom type | Conical | Conical | Round | - |
| Max. radius (mm) | 102 | 102 | 115.1 | 155.1 |
| Max. RCF (g-force) | 1,826 | 1,826 | 2,059 | 2,774 |

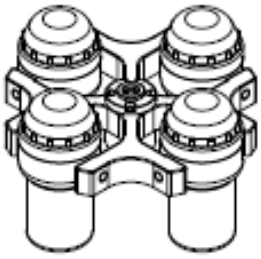
Vacutainer 10 mL Bucket
**GLB-15-8-100**

Max. RPM / RCF : 4,000 / 2,719
Max. Radius (mm) : 152
Hole dimension (Ø x L, mm) : 17 x 86
Hole bottom type : Flat
Max. height for tube fit (mm) : 115
Supplied with 3.0 mm thick NBR rubber pad

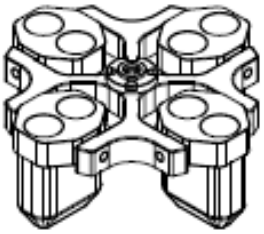
| Tube |  |  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|---|---|---|
| Tube capacity (mL) | 2.0 ~ 4 mL VT | 4 ~ 7 mL VT | 5 mL conical | 5 mL conical | 14 mL | 8 ~ 10 mL VT | 15 mL glass | 15 mL open top | 15 |
| Tube Dimension (Φ x L, mm) | 13 x 75 | 13 x 100 | 16 x 59 | 16 x 67 | 15.7 x 96 | 16 x 100 | 16 x 100 | 16 x 114 | 16 x 120 |
| Adapter |  |  |  |  |  | None | None | None | None |
| Cat No. | GAS-3(f15) | GAS-5(f15) | GAS-c5(f15) | GAS-c5(f15) | GAS-14(f15) | - | - | - | - |
| Bucket capacity (ea / 6) | 8 / 32 | 8 / 32 | 4 / 16 | 4 / 16 | 4 / 16 | 8 / 32 | 8 / 32 | 8 / 32 | 2 / 8 |
| Adaptor hole dimension (Φ x L,mm) | 13.5 x 61 | 13.5 x 85 | 14 x 20 | 14 x 20 | 16.5 x 7 | - | - | - | - |
| Adaptor hole bottom type | Round | Open | Conical | Conical | Round | - | - | - | - |
| Max. height tube fit (mm) | 88 | 115 | 75 | 75 | 103.5 | 115 | 115 | 115 | 125(center) |
| Max. radius (mm)* | 125 | 156.6 | 112 | 112 | 140.5 | 152 | 152 | 152 | 152 |
| Max. RCF (g-force)* | 2,236 | 2,719 | 2,003 | 2,003 | 2,513 | 2,719 | 2,719 | 2,719 | 2,719 |

* Depending on the size of cap, there is a possibility of not fit-in.

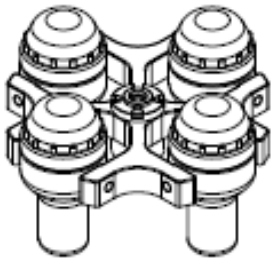
## Adaptable Buckets of Rotor, GRS-S-100-4



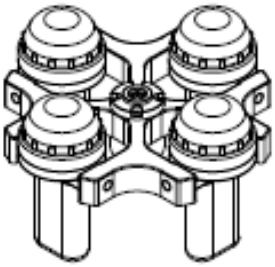
GLBB-b100-100



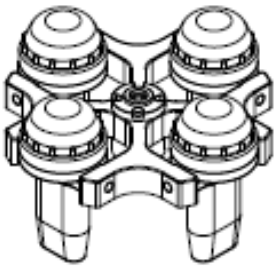
GLB-dc50-100



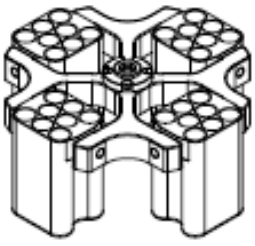
GLB-b50-100



GLB-bd15-100



GLBB-bdc15-100



GLB-15-8-100

# Swing Rotor, GRS-S-50-4

- 4 loadings
- Max. RPM : 4,000
- Angle from axis during rotation: ∠ 90°
- Supplied with a lubricant
- No ID ring

**50 mL Bucket**
**GLB-50-50**

Max. RPM / RCF : 4,000 / 2,700
Max. Radius (mm) : 150.9
Hole dimension (Ø x L, mm) : 30.5 x 91
Max. height for tube fit (mm) : 125
Hole bottom type : Flat
Supplied with 4.0 mm thick NBR pad

| Tube |  |  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|---|---|---|
| Tube capacity (mL) | 14 mL | 15 | 15 mL conical | 25 mL conical | 25 mL conical | 30 | 50 mL conical | 50 mL conical (Skirt) | 50 |
| Tube Dimension (Φ x L, mm) | 15.7 x 96 | 16 x 120 | 17 x 120 | 28.8 x 83 | 28.8 x 78.5 | 25.7 x 101.4 | 29.5 x 118 | 29.5 x 118 | 29 x 108 |
| Adapter |  |  |  |  |  |  |  | None | None |
| Cat No. | GAS-u14(f50) | GAS-u15(f50) | GAS-u15(f50) | GAS-c25(f50) | GAS-c25(f50) | GAS-30(f50) | GAS-c50(f50) | - | - |
| Adaptor hole dimension (Φ x L,mm) | 17.2 x 75 | 17.2 x 87 | 17.2 x 87 | 27.1 x 14.1 | 27.1 x 14.1 | 26 x 86.5 | 29.5 x 17.5 | - | - |
| Adaptor hole bottom type | Open | Open | Open | Conical | Conical | Round | Conical | - | - |
| Max. radius (mm) | 150.9 | 150.9 | 150.9 | 117.1 | 117.1 | 142.1 | 142 | 150.9 | 150.9 |
| Max. RCF (g-force) | 2,700 | 2,700 | 2,700 | 2,095 | 2,095 | 2,542 | 2,540 | 2,700 | 2,700 |

**15 mL Dual Round Bucket**
**GLB-d15-50**

Max. RPM / RCF : 4,000 / 2,700
Max. Radius (mm) : 150.9
Hole dimension (Ø x L,mm) : 17 x 91.5
Max. height for tube fit (mm) : 125
Hole bottom type : Round

| Tube |  |  |  |
|---|---|---|---|
| Tube capacity (mL) | 15 mL glass | 15 mL open top | 15 |
| Tube Dimension (Φ x L,mm) | 16 x 100 | 16 x 114 | 16 x 120 |
| Max. height tube fit (mm) | 125 | 125 | 125 |
| Max. radius (mm) | 150.9 | 150.9 | 150.9 |
| Max. RCF (g-force) | 2,700 | 2,700 | 2,700 |

50 mL Bucket
**GLB-c50-50**

Max. RPM / RCF : 4,000 / 2,700
Max. Radius (mm) : 150.9
Hole dimension (Ø x L,mm) : 29.5 x 91.5
Max. height for tube fit (mm) : 125
Hole bottom type : Conical

| Tube |  |  |  |  |  |  |
|---|---|---|---|---|---|---|
| Tube capacity (mL) | 15 mL conical | 25 mL conical | 25 mL conical | 30 | 50 | 50 mL conical |
| Tube Dimension (Φ x L, mm) | 17 x 120 | 28.8 x 83 | 28.8 x 78.5 | 25.7 x 101.4 | 29 x 108 | 29.5 x 118 |
| Adapter |  |  |  |  |  | None |
| Cat. No. | GAS-c15(c50) | GAS-c25(c50) | GAS-c25(c50) | GAS-30(c50) | GAS-50(c50) | - |
| Rack hole dimension (Φ x L,mm) | 17 x 105 | 27.1 x 14.1 | 27.1 x 14.1 | 26 x 83.8 | 27.9 x 11 | - |
| Rack hole bottom type | Conical | Conical | Conical | Round | Round | - |
| Max. radius (mm) | 150.9 | 119.9 | 119.9 | 145.3 | 145.5 | 150.9 |
| Max. RCF (g-force) | 2,700 | 2,145 | 2,145 | 2,599 | 2,578 | 2,700 |

15 mL Dual Conical Bucket
**GLB-dc15-50**

Max. RPM / RCF : 4,000 / 2,700
Max. Radius (mm) : 150.9
Hole dimension (Ø x L,mm) : 17 x 91.5
Max. height for tube fit (mm) : 120
Hole bottom type : Conical

| Tube |  |  |  |  |
|---|---|---|---|---|
| Tube capacity (mL) | 5 mL conical | 5 mL conical | 14 mL | 15 mL conical |
| Tube Dimension (Φ x L, mm) | 16 x 59 | 16 x 67 | 15.7 x 96 | 17 x 120 |
| Adapter |  |  |  | None |
| Cat No. | GAS-c5(c15) | GAS-c5(c15) | GAS-14(c15) | - |
| Adaptor hole dimension (Φ x L,mm) | 14.8 x 20 | 14.8 x 20 | 16 x 7.8 | - |
| Adaptor hole bottom type | Conical | Conical | Round | - |
| Max. radius (mm) | 98.6 | 98.6 | 131.6 | 150.9 |
| Max. RCF (g-force) | 1,826 | 1,826 | 2,354 | 2,700 |

15 mL Round Bucket
**GLB-15-50**

Max. RPM / RCF : 4,000 / 2,700
Max. Radius (mm) : 150.9
Hole dimension (Ø x L, mm) : 17 x 93
Max. height for tube fit (mm) : 125
Hole bottom type : Round

| Tube |  |  |  |
|---|---|---|---|
| Tube capacity (mL) | 15 mL glass | 15 mL open top | 15 |
| Tube Dimension (Φ x L,mm) | 16 x 100 | 16 x 114 | 16 x 120 |
| Max. height tube fit (mm) | 125 | 125 | 125 |
| Max. radius (mm) | 150.9 | 150.9 | 150.9 |
| Max. RCF (g-force) | 2,700 | 2,700 | 2,700 |

15 mL Conical Bucket
**GLB-c15-50**

Max. RPM / RCF : 4,000 / 2,700
Max. Radius (mm) : 150.9
Hole dimension (Ø x L, mm) : 17 x 92.5
Max. height for tube fit (mm) : 125
Hole bottom type : Conical

| Tube |  |  |  |  |
|---|---|---|---|---|
| Tube capacity (mL) | 5 mL conical | 5 mL conical | 14 mL | 15 mL conical |
| Tube Dimension (Φ x L, mm) | 16 x 59 | 16 x 67 | 15.7 x 96 | 17 x 120 |
| Adapter |  |  |  | None |
| Cat No. | GAS-c5(c15) | GAS-c5(c15) | GAS-14(c15) | - |
| Adaptor hole dimension (Φ x L,mm) | 14.8 x 20 | 14.8 x 20 | 16 x 7.8 | - |
| Adaptor hole bottom type | Conical | Conical | Round | - |
| Max. radius (mm) | 99.8 | 99.8 | 132.8 | 150.9 |
| Max. RCF (g-force) | 1,785 | 1,785 | 2,376 | 2,700 |

# Swing Rotor, GRS-S-15-6

- 6 loadings
- Max. RPM : 4,000
- Angle from axis during rotation: ∠ 90°
- Rotor dimension / weight (Ø x L, mm / g) : 198.2 x 44 / 573
- Supplied with a lubricant, No ID ring

**15 mL Dual Round Bucket**
**GLB-d15-15**

Max. RPM / RCF : 4,000 / 2,737
Max. Radius (mm) : 153
Hole dimension (Ø x L, mm) : 17 x 88
Max. height for tube fit (mm) : 122
Hole bottom type : Flat with rubber pad
Supplied with 3.0 mm thick NBR rubber pad

| Tube |  |  |  |
|---|---|---|---|
| Tube capacity (mL) | 2.0 ~ 4 mL VT | 4 ~ 7 mL VT | 8 ~ 10 mL VT |
| Tube Dimension (Φ x L, mm) | 13 x 75 | 13 x 100 | 16 x 100 |
| Adapter |  |  | None |
| Cat No. | GAS-3(f15) | GAS-5(f15) | - |
| Bucket capacity (ea / 4) | 2 / 12 | 2 / 12 | 2 / 12 |
| Adaptor hole dimension (Φ x L,mm) | 13.5 x 61 | 13.5 x 85 | - |
| Adaptor hole bottom type | Round | Open | - |
| Max. height tube fit (mm) | 95 | 123 | 123 |
| Max. radius (mm) | 126 | 153 | 153 |
| Max. RCF (g-force) | 2,164 | 2,737 | 2,737 |

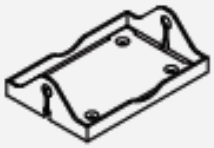
**15 mL Round Bucket**
**GLB-15-15**

Max. RPM / RCF : 4,000 / 2,826
Max. Radius (mm) : 158
Hole dimension (Ø x L, mm) : 17 x 93
Max. height for tube fit (mm) : 125
Hole bottom type : Round

| Tube |  |  |  |
|---|---|---|---|
| Tube capacity (mL) | 15 mL glass | 15 mL open top | 15 |
| Tube Dimension (Φ x L,mm) | 16 x 100 | 16 x 114 | 16 x 120 |
| Max. height tube fit (mm) | 120 | 120 | 120 |
| Max. radius (mm) | 158 | 158 | 158 |
| Max. RCF (g-force) | 2,826 | 2,826 | 2,826 |

## Swing Rotor, GRS-S-mw-2

- 2 loadings
- Max. RPM : 4,000
- Angle from axis during rotation: ∠ 90°
- Supplied with microplate holder, No ID ring



**Microplate Bucket**
**GLP-mw**

Max. RPM / RCF : 4,000 / 2,000
Max. Radius (mm) : 111.8
Hole dimension (w x d, mm) : 86.5 x 128.5
Max. height for tube fit (mm) : 35
Supplied with 3.0 mm thick ABS pad

| Tube |  |
|---|---|
| Tube capacity (mL) | MTP |
| Tube Dimension (Φ x L,mm) | 86 x 128 x15 |
| Bucket capacity (ea / 2) | 2 / 4 |

## 9. CE Declaration of Conformity

GYROZEN® www.gyrozen.com

# DECLARATION OF CONFORMITY

We, GYROZEN Co.,Ltd, hereby declare under our sole responsibility that the product(s) listed below conform to the European Union directives and standards identified in this declaration.

Nous, GYROZEN Co.,Ltd, déclarons sous notre seule responsabilité que le produit (s) indiqués ci-dessous sont conformes aux directives de l'Union européenne et les normes définies dans la présente déclaration.

Nosotros, GYROZEN Co.,Ltd, por la presente declaro bajo nuestra responsabilidad exclusiva que el producto ( es ) en la lista por debajo de ajustarse a las normas y las directivas de la Unión Europea, identificadas en esta declaración.

Wir, GYROZEN Co.,Ltd, hiermit unter eigener Verantwortung, dass das Produkt (s), die unter die Richtlinien der Europäischen Union und Normen, die in dieser Erklärung.

| | |
|---|---|
| **Description of Product** | Centrifuge |
| **Model Name** | 416 |

**Relevant Directives/ Harmonised Standards**

| | | | |
|---|---|---|---|
| **Machinery** | 2006/42/EC | as last amended | EN ISO 12100:2010 |
| **Low Voltage** | 2014/35/EU | as last amended | EN 61010-1:2010+A1:2019<br>EN 61010-2-020:2017 |
| **EMC** | 2014/30/EU | as last amended | EN 61326-1:2013<br>EN 55011:2016<br>EN 61000-3-2:2014<br>EN 61000-3-3:2013 |
| **RoHS** | 2011/65/EU | as last amended | EN IEC 63000:2018 |

**Test Report. Ref.**

ICRT-TR-S190212-0A
ICRT-TR-E190346-0A
RT22R-S0904

**Authorized Representative & Person authorized to compile the technical file**
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May 10, 2022

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