

Large Capacity, High Speed Centrifuges

CONTROLTECNICA



2236R

Refrigerated, floor-standing, large capacity, high speed centrifuge

- 22,000 RPM
- 54,111 xg RCF
- ≤ 56dBa
- 7" LCD TOUCH
- 3 DOOR
- 100 PROGRAMS
- IMBALANCE
- 9 ACC 10 DEC
- ROTOR ID
- 20°C
- FAST COOL
- Touch



Rotors Overview

| | | | | | | |
|---|---|---|---|--|---|--|
| <p>GRF-L-m2.0-24</p>  <p>24 x 2.0 ml 22,000/45,616</p> | <p>GRF-L-m2.0-30</p>  <p>30 x 2.0 ml 18,000/34,919</p> | <p>GRF-L-50-6</p>  <p>6 x 50 ml 22,000/54,111</p> | <p>GRF-L-c50-6</p>  <p>6 x 50 ml conical 17,000/31,793</p> | <p>GRF-L-50-8</p>  <p>8 x 50 ml 20,000/46,062</p> | | |
| <p>GRF-L-85-6</p>  <p>6 x 85 ml 20,000/44,496</p> | <p>NEW</p> <p>GRF-L-250-6</p>  <p>6 x (250&15 ml) 12,000/22,442(15 ml : 21,138)</p> | <p>GRF-L-500-6</p>  <p>6 x 500 ml 9,000/14,308</p> | <p>GRF-L-1000-4</p>  <p>4 x 1,000 ml 8,000/12,071</p> | <p>HIT</p> <p>GRF-L-1000-6</p>  <p>6 x 1,000 ml 7,000/10,825</p> | <p>GRS-L-r250-4</p>  <p>GLB-r250-r250 4 x 250 ml 4,000/3,134</p> | <p>GLP-mw-r250</p>  <p>4 x 4 MTPs 4,000/2,737</p> |



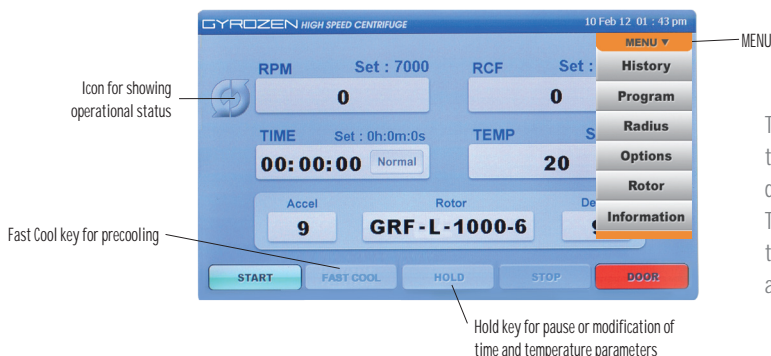
- | Max. 22,000 rpm(54,100 xg) with 6 x 50 ml tubes, 8,000 rpm (12,000 xg) with 4 x 1,000ml tubes
- | Max. capacity of 6x 1,000 ml with fixed angle rotor & 4 x 250 ml (48 x 15 ml) with swing-out rotor
- | 7" LCD touchscreen with intuitive Window based control for easy editing and programming
- | More optimized operation feasible by varied programming capability
- | User ID and protocol management facility with historical tracking
- | Hold or change control of time and temperature whilst running
- | Quiet operation with patented vibration minimizing damper structure
- | Strong, triple laminated ABS/Steel door with auto-lock function
- | Automatic recognition and alarms for imbalance, over-speed, and over-heat
- | High capacity, strong compressor ensures fast cooling of chamber and samples
- | Lowest temperature of -20°C with Fast cool down function to reach 4°C within 5 minutes
- | Time setting to 99 hour 59 min 59 sec or continuous
- | 9 acceleration and 10 deceleration ramps
- | Program memory for up to 100 programs
- | Mounted on lockable and leveling castors
- | A variety of rotors and multi-tube adaptors available

Applications

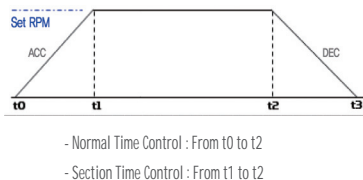
- Ideal for all kinds of basic and analytical experiments from simple precipitation and separation to filtering, concentration, precipitations, density gradient separation, etc.
- Support diverse applications of clinical, industrial, academic, and scientific separation needs

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Advanced Controls of 2236R



The 7" LCD main display screen of the control panel shows both the set parameters and the actual run conditions. The main display screen also includes the buttons to control the operation. To make selection, tap on the desired field with fingertip on the touchscreen, and then a new display screen opens to make additional selections or show further options or information.



Time Counting Methods

With the **Normal** time count method, the time display begins to count the run time when the acceleration begins and stops when the deceleration begins ($t_0 - t_2$). With the **Section** time count method, the time display begins to count the run time once the actual run speed reaches to the set speed value and stops when the deceleration begins ($t_1 - t_2$).



Programming of Combined Protocols

With the **Shift** Programming function, up to ten sets of operating parameters can be linked together in a program memory and operate sequentially as a single run. This function is useful in density gradient centrifugation or complex cell separation.


Technical Specifications

| | | |
|----------------------|-----------------------------------|--------------|
| Max. RPM/RCF (Swing) | 22,000/54,111 xg (4,000/3,134 xg) | |
| Capacity | Fixed angle | 6 x 1,000 mL |
| | Swing out | 4 x 250 mL |
| Temp. Range (°C) | -20~+40 | |
| FAST COOL button | Yes | |
| OS / Control Display | Windows CE / 7" Touch Screen | |
| Time control | Timed < 100 hr or continuous | |
| RPM/RCF conversion | Yes | |
| Noise level (dB) | ≤ 56 | |
| Acc/Dec | 9/10 steps | |

| | |
|---------------------------|---------------------------|
| Program memory | 100 |
| Rotor identification | Automation |
| Imbalance cut off | Yes |
| Safety lid lock | Yes |
| Lid drop protection | Yes |
| Power supply (V/Hz) | 220/50-60 (100V optional) |
| Power requirement (KVA) | 4.0 |
| Dimension (W x D x H, mm) | 824 x 634 x 1,049 |
| Weight without rotor (Kg) | 240 |
| Cat. No. | GZ-2236R |

Fixed Angle Rotor, GRF-L-1000-6


6 x 1,000 mL
 α 25°
 Hole diameter (mm) : 97
 Max height for tube fit (mm) : 175

| | |
|-------------------|---|
| Tube |  |
| Tube capacity(mL) | 1,000 |
| Radius(mm) | 197.6 |
| Max. RPM | 7,000 |
| Max. RCF(g-force) | 10,825 |



Fixed Angle Rotor, GRF-L-1000-4

4 x 1,000 mL
 α 25°
 Hole diameter (mm) : 97
 Max height for tube fit (mm) : 175


| | |
|-------------------|---|
| Tube |  |
| Tube capacity(mL) | 1,000 |
| Radius(mm) | 168.7 |
| Max. RPM | 8,000 |
| Max. RCF(g-force) | 12,071 |



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Fixed Angle Rotor, GRF-L-500-6



6 x 500 mL
 \sphericalangle 25°
 Hole diameter (mm) : 70
 Max height for tube fit (mm) : 170

| | |
|-------------------|---|
| Tube |  |
| Tube capacity(mL) | 500 |
| Radius(mm) | 158 |
| Max. RPM | 9,000 |
| Max. RCF(g-force) | 14,308 |



Fixed Angle Rotor, GRF-L-250-6

6 x (250&15 mL)
 \sphericalangle 25°
 Hole diameter (250/15)(mm) : 62/17
 Max height for tube fit (250/15)(mm) : 134/115

| | | |
|-------------------|---|---|
| Tube |  |  |
| Tube capacity(mL) | 15 | 250 |
| Radius(mm) | 131.3 | 134 |
| Max. RPM | 12,000 | |
| Max. RCF(g-force) | 21,138 | 22,442 |



Fixed Angle Rotor, GRF-L-85-6

6 x 85 mL
 ∠ 25°
 Hole diameter (mm) : 38.3
 Max height for tube fit (mm) : 125
 Supplied with aerosol tight O-ring



| | | | | | | |
|--------------------------|------------|--------|---------------|------------|---------------|--------|
| Tube | | | | | | |
| Tube capacity(mL) | 10 | 15 | 15 mL conical | 50 | 50 mL conical | 85 |
| Adaptor | | | | | | None |
| Cat. No. | GAS-15(85) | | GAS-c15(85) | GAS-50(85) | GAS-c50(85) | - |
| Adaptor bore (Φ x L, mm) | 17 x 94 | | 17 x 100 | 29 x 95 | 29.5 x 98 | - |
| Radius(mm) | 91.5 | 92.5 | 90.5 | 93.5 | 91.5 | 99.5 |
| Max. RPM | 20,000 | | | | | |
| Max. RCF(g-force) | 40,919 | 41,366 | 40,472 | 41,813 | 40,919 | 44,496 |

Fixed Angle Rotor, GRF-L-50-6

6 x 50 mL
 ∠ 30°
 Hole diameter (mm) : 29.5
 Max height for tube fit (mm) : 125
 Supplied with aerosol tight O-ring



Fixed Angle Rotor, GRF-L-50-8

8 x 50 mL
 ∠ 30°
 Hole diameter (mm) : 29.5
 Max height for tube fit (mm) : 120
 Supplied with aerosol tight O-ring



| | | | | |
|--------------------------|-------------------|-------------------|-------------------|-------------------|
| Tube | | | | |
| Tube capacity(mL) | 10 | 15 | 15 mL conical | 50 |
| Adaptor | | | | None |
| Cat. No. | GAS-15(50) | | GAS-c15(50) | - |
| Adaptor bore (Φ x L, mm) | 17 x 94 | | 17 x 105 | - |
| Radius(mm) (6/8) | 89.5/92.5 | 90.5/93.5 | 93/96 | 100/103 |
| Max. RPM (6/8) | 22,000/20,000 | | | |
| Max. RCF(g-force) (6/8) | 50,053/ 41,366 | 50,594/ 41,813 | 51,947/ 42,931 | 54,111/ 46,062 |

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Fixed Angle Rotor, GRF-L-c50-6


6 x 50 mL conical

∠ 25°

Hole diameter (mm) : 29.5

Max height for tube fit (mm) : 125

Supplied with aerosol tight O-ring

| | |
|-------------------|---|
| Tube |  |
| Tube capacity(mL) | 50 mL conical |
| Radius(mm) | 98.4 |
| Max. RPM | 17,000 |
| Max. RCF(g-force) | 31,793 |



Fixed Angle Rotor, GRF-L-m2.0-24

24 x 1.5/2.0 mL

∠ 45°

Hole diameter (mm) : 11.1

Max height for tube fit (mm) : 56

Supplied with aerosol tight O-ring

Fixed Angle Rotor, GRF-L-m2.0-30






30 x 1.5/2.0 mL

∠ 45°

Hole diameter (mm) : 11.1

Max height for tube fit (mm) : 56

Supplied with aerosol tight O-ring

| | | | |
|---------------------------|---|---|---|
| Tube |  |  |  |
| Tube capacity(mL) | 0.2 | 0.5 | 1.5/2.0 |
| Adaptor |  |  | None |
| Cat. No. | GAS-m0.2(2) | GAS-m0.5(2) | - |
| Adaptor bore (Φ x L, mm) | 6.5 x 23 | 8 x 31 | - |
| Radius(mm) (24/30) | 67/79 | 73/86 | 84.3/96.4 |
| Max. RPM (24/30) | 22,000/18,000 | | |
| Max. RCF(g-force) (24/30) | 36,255/28,616 | 39,501/31,152 | 45,616/34,919 |



Swing Rotor, GRS-L-r250-4

4 loadings
 ▷ 90°



| |
|---|
| Rectangular 250 mL Bucket GLB-r250-r250 |
| Bucket bore (wxdxh, mm) : 86 x 70.3 x 102.5 |
| Radius(mm) : 175.2 |
| Max. RPM : 4,000 |
| Max. RCF(g-force) : 3.134 |
| Max height for tube fit(mm) : 125 |

| Tube | | | | | | | | | | |
|----------------------------|----------------|-----------|-----------------|----|-----------------|----------------|-----------------|----------------|-----------|---------------|
| Tube capacity(mL) | 3 | 5 | 10 | 15 | 15 mL conical | 50 | 50 mL conical | 15 | 85 | 250 |
| Tube rack | | | | | | | | | | |
| Cat. No. | GAM-5-12(r250) | | GAM-15-12(r250) | | GAM-c15-9(r250) | GAM-50-4(r250) | GAM-c50-3(r250) | GAM-85-2(r250) | | GAS-250(r250) |
| Rack capacity(ea/4) | 12/48 | | 12/48 | | 9/36 | 4/16 | 3/12 | 2/8 | | 1/4 |
| Hole dimension (Φ x L, mm) | 13.5 x 58 | 13.5 x 80 | 17.5 x 90 | | 17.5 x 90 | 30.2 x 90 | 30.5 x 90 | 17 x 90 | 38.5 x 90 | 62.5 x 87 |



| |
|---|
| Microplate Holder GLP-mw-r250 |
| Holder dimension (wxdxh, mm) : 88 x 128.5 x 80 |
| Radius(mm) : 153 |
| Max. RPM : 4,000 |
| Max. RCF(g-force) : 2.737 |

| Plate | | |
|-----------------------|------|-----|
| Plate capacity(mL) | MTP | DWP |
| Holder capacity(ea/4) | 4/16 | 1/4 |