

High-Speed Refrigerated Centrifuges



himac CR-GⅢ SERIES

Hitachi High-speed refrigerated centrifuges

CR22GⅢ/CR21GⅢ

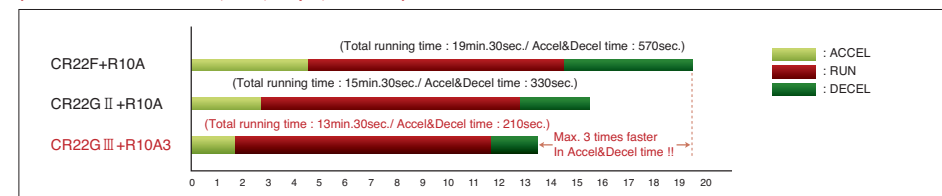
The himac High-Speed Refrigerated Centrifuge established reputations as a standard model in the global market. CR-GⅢ series have taken over its reliability and are featuring various advanced functions with high performance. In addition, CR-GⅢ series have been designed for easy to use and environment-friendly than ever.

Improved Accel/Decel Time — Max. 3 times Faster

himac original technology "PWM motor control"

- PWM (pulse width modulation) motor control has realized substantial reduction in acceleration and deceleration time.
- Acceleration and deceleration time of CR-GⅢ series with large capacity rotor has improved max. 3 times faster than the one of our former models of high-speed refrigerated centrifuge.
- Reducing running time contributes to energy saving and reducing CO₂.

eg) Comparison of Centrifugation (1 cycle)
(conditions : 500mlx6bottles, at 10,000rpm, for 10min.)



Versus our former models / Time may vary depending on running parameters.

Energy Saving

Acceleration and Running at set speed

- Reduced electricity consumption substantially by IGBT inverter

Deceleration

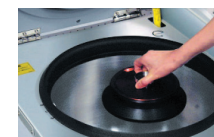
- himac regenerative braking system re-generates max.40% electricity used for acceleration and running.
- It reduces heat radiation into the room and is high efficient for energy saving.

Former models : Kinetic Energy → Heat radiation into the room

New System : Kinetic Energy → Regenerated to electricity and reused

Self-Locking Rotor System

- Hitachi Koki is a pioneer to introduce "Self-Locking Rotor System" in Centrifuges.
- Just placing a rotor onto the drive shaft
- No need to fix the rotor by screw or push the button to lock or unlock the rotor.
- Automatic rotor identification **PAT.**
- Optimized running condition is automatically adjusted. (such as compensating for air friction and implement temperature control)



Specifications

Model	CR22GⅢ	CR21GⅢ
Max. Speed (rpm)	22,000	21,000
Max. RCF (xg)	55,200 (R22A4)	50,300 (R22A4)
Nominal Capacity (ml x pcs)	1,000x4 (R9A)	
Temp. Control Range (°C)	-20 to +40	
Accel/Decel Mode	Accel : 9 modes / Decel : 9 modes, free deceleration	
Drive Unit	Induction Motor (inverter control)	
Refrigerator	1,500W (hermetically sealed type) (Refrigerant : R404A)	
Standard	ICE61010-2-020, EN61326, CE marking qualified*	
Dimension (WxDxHmm)	752x810(w/o rear duct)x1,144(panel opened) (height to table :858)	
Weight (kg)	300	
Power	AC220V, 230V, 240V, Single Phase, 30A 50/60Hz	

* When using following rotors, please place an order of CR-GⅢ series without CE mark.
Continuous flow rotor: R18C/R13C/R10C

Advanced Technologies and Useful Functions

Automatic Rotor Identification (PAT.)

This function automatically adjusts optimized running condition based on the rotor automatically identified by compensating for air friction and implement temperature control etc..



Non-Contact Imbalance Protection (PAT.)

The himac original imbalance sensor continuously measures oscillation over the entire rpm range. The system immediately detects abnormal vibrations and stops rotation.

Actual Run Timer (PAT.)

Conventional run timer starts when the rotor starts acceleration. But himac original Actual Run Timer starts when the set speed is attained. It enables users to control actual run time and obtain higher reproducibility of separation.

Pre-Cooling Chamber (PAT.)

This function maintains temperature inside chamber room at low temperature with preventing from icing, in order to reach target temperature shortly.

Automatic Rotor Cover Detector (PAT.)

It detects rotor cover status by ultrasonic sensor on the door. It prevents from unexpected accident caused by without rotor cover in advance.

RCF Calculation and Display

CR-GIII series eliminate many troublesome and time-consuming manual calculations using many parameters, such as speed and R(max) etc. You can start operation by entering g value, instead of running speed.



Angle Adjustable LCD Panel

CR-GIII series have adapted wide viewing angle LCD panel as display. Angle of the LCD panel can be adjustable at easily viewable position. Large indication of basic information (Speed, Time and Temp.) on the run screen helps to identify running status at a glance. "FINISH" message flashes on LCD panel at the end of operation. This unique feature offers users visual alarm of the end of operation at a glance to keep laboratory room in quiet instead of audible alarm. (Of course, audible alarm of end of the operation is available as standard specification.)

Angle Adjustable LCD Panel

- Wide viewing angle LCD Panel
- Angle of the panel is adjustable at easily viewable position.
- Large indication of basic information (Speed, Time, Temp.) for running status at a glance on the run screen



Initial Screen

"FINISH" message at the end of operation

Various Functions (1)

Run Screen Function

(Basic Information Display) Operating parameters and running conditions (speed, time, temp, rotor etc.) are displayed on the single screen. You can find set parameters and current running conditions at a glance.



Various Functions (2)

Zoom Display Function (PAT.)

Display of running speed and time is enlarged on the screen in order to find the status from a distance. Screen is switched from "Run Screen" to "Zoom Display" automatically at 20 sec. after reaching set speed.



Various Functions (3)

New Rotor Registration (PAT.)

When you purchase newly released rotor, the rotor information can be entered into the system by manual. It eliminates troublesome work, such as replacing ROM etc.



Various Functions (4)

Alarm Information Display

If any alarm is activated during operation, details and counter measurement of the alarm are displayed on the screen. It enables you to recover the unit from the alarm condition shortly.



Various Functions (5)

User Lockout System

Users of the centrifuge are limited by this function. Before usage, user ID and pass word should be registered to the system, then log in the system to start operation. It is useful function to control users based on the groups or laboratories.



Various Functions (6)

Operating Log Management Function

Under "user lockout function" is selected, you can manage and display operating log based on the user. User name, operating date, type of rotor, running speed, running time, temperature and RCF value can be recorded up to 99 cases in total.



Optional Functions

Data Output Port (comply with GLP/GMP)

Operating conditions and histories can be output through RS232C communication port to PC or Printer. (factory option) Exclusive software to manage operating log is also available.

Biosafety Modification

The himac High-Speed Refrigerated centrifuge can be modified for biosafety model as factory option.

Example of Centrifuge with HEPA Filter

In order to make negative pressure inside a chamber room of the centrifuge, air can be exhausted by vacuum pump through HEPA filter from the chamber. (factory option)



New Swinging Bucket Rotor

R8S (PAT. P)

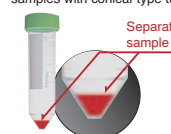


Max. Speed : 8,000 rpm
Max. RCF : 11,500 x g
No wind-sealed shell design offers easy operation to users.
Nominal Capacity : 50ml TC tube (conical-type) x 4 tubes



Bucket sealing cap for biosafety (option)
(Part No. S302194A : 4pcs/set)

Suitable for pelleting samples with conical-type tube



Buckets are autoclavable. (121°C, for 20minutes)
Optional bucket sealing cap is available for your biosafety.
Optional bucket sealing cap is also autoclavable. (121°C, for 20minutes)

High-capacity Light Weight Rotor

R9A



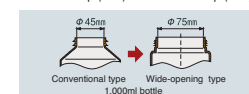
Light Weight : 13.7kg
Autoclavable
1,000ml x 4 bottles

Innovative aluminum alloy made light weight rotor

This series' rotors are half the weight of conventional rotors in the same capacity. Greatly reduce acceleration/deceleration times. Enables to rotating at Max. speed with bottles filled with any volume, as long as balanced.
Nominal Capacity
R13A : 250ml x 6 (10.9kg) (autoclavable)
R12A6 : 500ml x 4 (14.8kg) (autoclavable)
R10A5 : 500ml x 6 (15.5kg)
R9A : 1,000ml x 4 (13.7kg) (autoclavable)

Wide-Opening Type Bottle

Easy to collect separated sample and clean the bottle



Fixed Angle Rotor for 50ml TC (Conical-Bottom) Tube

R18A



18,000rpm
42,200 x g
50ml x 8

R15A



15,000rpm
32,240 x g
15/50ml x 10 each

"himaC 50ml TC tube" applicable to high x g is available!!

(Part No. S30790A : 5pcs x 50 packs/set)



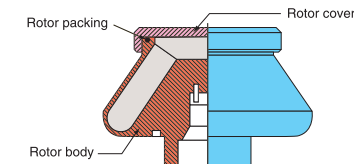
- Max. RCF : 42,200 x g*
- Max. Speed : 18,000 rpm*
- Sterilized by electron beam for immediate use to culture and process fungus.
- Scale indication and writing space are ethanol/methanol proof.

* with R15A fixed angle rotor

Special Sealed-type Fixed Angle Rotor

himaC Special Sealed-type Rotor prevents leakage of sample, by design that rotor body screwed into rotor cover in order to increasing sealing level. It is recommended to use, when you need to separate the sample for high level sealing.

Model : R18AY, R16AY, R12AY, R8AY



Swinging Bucket Rotor

R3S



R5S4



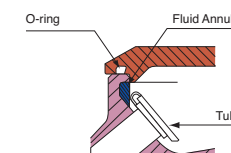
R6S



Fixed Angle Rotor with Fluid Annulus

Even if a sample is overflowed from a tube inside the rotor during centrifugation, overflowed sample is dwelled in the fluid annulus.

Model : R13A, R22A4, R12A6



Fixed angle rotors

R22A4



1.5/2 ml x 30
Max. 55,200 x g
(22,000 rpm)

R21A



11 ml x 16
Max. 43,600 x g
(19,000 rpm)

R20A



16 ml x 32 (16 outside/16 inside)
Max. 33,200 x g (16,000 rpm) : outside
Max. 28,500 x g (16,000 rpm) : inside

R20A2



50 ml x 8
Max. 48,000 x g
(20,000 rpm)

R19A



80 ml x 6
Max. 40,940 x g
(18,000 rpm)

R18A



For culture tubes
50 TC x 8
Max. 42,200 x g (18,000 rpm)
Marketed 50TC tube:
Max. 18,760 x g (12,000 rpm)

R15A



For culture tubes
Outside: 50 TC x 10
Inside: 15 TC x 10
Max. 32,300 x g (15,000 rpm)
Marketed 50TC tube:
Max. 20,670 x g (12,000 rpm)
Marketed 15TC tube:
Max. 17,380 x g (11,000 rpm)

R14A



250 ml x 4 (50TC x 4*)
Max. 30,240 x g (14,000 rpm)
* 50TC tubes:
Max. 18,800 x g (12,000 rpm)

R14A3



80 ml (100 ml*) x 6
Max. 29,100 x g (14,000 rpm)
*Seal tube is usable.

R13A



250 ml x 6
Max. 26,400 x g (13,000 rpm)

R9A



1,000 ml x 4*
Max. 15,300 x g (9,000 rpm)
*Exclusively uses with 1000PP bottle (WM) and 1000PC bottle (WM)

R12A3



250 ml x 6
Max. 23,800 x g
(12,000 rpm)

R12A6



500 ml x 4
Max. 22,500 x g (12,000 rpm)

R10A3



Weight: 16.9 kg
500 ml x 6
Max. 18,800 x g (10,000 rpm)

R10A5



Weight: 15.5 kg
500 ml x 6
*For Nalgene® bottle
Max. 18,900 x g (10,000 rpm)

R22A



7 ml x 18
Max. 45,170 x g (20,000 rpm)

R22A2



50 ml x 6
Max. 51,200 x g (22,000 rpm)

R17A



50 ml x 14
Max. 27,700 x g (14,000 rpm)

R12A4



For microtubes
2 ml x 72 (48 outside/24 inside)
Max. 23,800 x g (12,000 rpm) : outside
Max. 21,400 x g (12,000 rpm) : inside

Auto clamp

The rotor marked with this icon can be sterilized by autoclave at 121 for 20 minutes.

Bio safety

Biosafety of the rotor marked with this icon was verified by in-house test according to the procedure modified IEC61010-2-020 Annex AA, using Bacillus subtilis containing $\geq 1 \times 10^6$ spores/ml.

Swinging bucket rotor

R8S



50TC x S
Max. 11,500 x g
(8,000 rpm)
*Optional bucket sealing cap must be used.

R10S



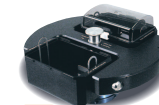
50 ml x 4
Max. 16,470 x g
(10,000 rpm)

R6S



For microplates
Max. 5,010 x g
(5,700 rpm)

R5S4



Bio safety
Max. 3,100 x g
(4,700 rpm)

R4SS



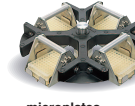
Max. 2,900 x g
(4,000 rpm)

R3S



500 ml x 4

R3S + M/MP bucket



microplates

R15S3



11 ml x 4
Max. 28,700 x g
(15,000 rpm)

R7S



250 ml x 4
Max. 9,420 x g
(7,000 rpm)

Accessories for R3S/R4S



10 x 10 assembly



15 x 8 assembly



50TC x1 assembly



50TC x4 assembly



50TS50 adapter



50ml shield bucket



50T7S adapter



Tube rack 17 x 10 for culture tube 15ml



Tube rack GR



Tube rack YE



Tube rack OR



Tube rack BL



M bucket for microplate



Balancer

Special sealed-type fixed angle rotors

R18AY

50 ml x 8
Max. 38,800 x g
(18,000 rpm)

R16AY

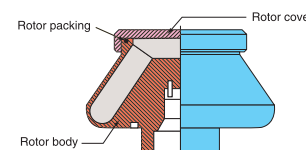
80ml x 6
Max. 32,300 x g
(16,000 rpm)

R12AY

250 ml x 4
Max. 22,200 x g
(12,000 rpm)

R8AY

500ml x 6
Max. 12,000 x g
(8,000 rpm)



Continuous flow rotors

R18C

1,000 ml
Max. 34,960 x g
(18,000 rpm)

R13C

2,200 ml
Max. 21,260 x g
(13,000 rpm)

R10C

3,200 ml
Max. 14,590 x g
(10,000 rpm)



Horizontal rotor

R10H

For microplates
Max. 13,000 x g
(10,000 rpm)



Soil dehydration rotor

R11D2

100 ml x 4
Max. 15,800 x g
(11,000 rpm)



Optional accessories: Rotors

Type	Item Model	Part No.	Maximum speed (rpm)		Maximum RCF (x g)		Weight (kg)	For tubes		Standard accessories
			CR22GIII	CR21GIII	CR22GIII	CR21GIII		Nominal capacity (ml) x number of tubes	Tube dimensions (dia. x mm)	
Fixed angle rotor	R22A4	904363D0	22,000 (17,000)	21,000 (17,000)	55,200 (33,000)	50,300 (33,000)	3.3	1.5/2 x 30	11 x 42	—
	R21A	904301D0	19,000 (18,000)		43,600 (39,120)		8.5	11 x 16	16 x 82	11PA tube x 16
	R20A	904302D0	16,000		33,200		10.0	16 x 32	18 x 99	16PP tube x 40
	R20A2	904295D0	20,000 (18,000)		48,000 (38,900)		6.8	50 x 8	29 x 103	50PA tube x 8
	R19A	904303D0	18,000 (16,000)		40,940 (32,340)		10.4	80 x 6	38 x 104	80PA bottle x 6
	R18A	904359D0	18,000 (16,000)		42,200 (33,500)		8.1	50 x 8	30 x 115	himac 50TC tube x 300
			12,000		18,760			50 x 8	30 x 115	50 ml culture tube
	R15A	904360D0	15,000 (14,000)		32,300 (27,800)		10.5	50 x 10	30 x 115	himac 50TC tube x 300
			12,000		20,670			50 x 10	30 x 115	50 ml culture tube
			11,000		17,380			15 x 10	17 x 120	15 ml culture tube
	R14A	904306D0	14,000 (12,000)		30,240 (22,220)		16.8	250 x 4	62 x 128	250PP bottle x 4
	50TA300 adapter	S408203A	12,000		18,800			50 x 4	30 x 115	50 ml culture tube
	R14A3	904322D0	14,000 (13,000)		29,100 (25,100)		12.9	100 x 10	38 x 104	80PA bottle x 10
	R13A	904366D0	13,000		26,400		10.9	250 x 6 11 x 6	62 x 124 16 x 85	250PP bottle x 6
	R12A3	904325D0	12,000 (11,000)		23,800 (20,000)		16.0	250 x 6	62 x 128	250PP bottle x 6
	R12A6	904357D0	12,000		22,500		14.8	500 x 4	73 x 163	500PA bottle x 4
	R10A3	904345D0	10,000 (9,500)		18,800 (17,000)		16.9	500 x 6	73 x 163	500PA bottle x 6
	R10A5	904365D0	10,000		18,900		15.5	500 x 6	69.5 x 169	500 ml bottle (Nalgene®)
Swinging bucket rotor	R9A	***	9,000		15,300		13.7	1,000 x 4	98 x 168	1000PP bottle (WM) x 4
	R10S	904312D0	10,000		16,470		6.0	50 x 4	29 x 103	50PA tube x 4
	R8S	904371D0	8,000		11,500		7.2	50 x 4	3.0 x 11.5	50 ml culture tube
	R6S	904334D0	5,700		5,010		10.7	Microplate x 2 pcs	W128 x D86 x H10 – 55	96-hole microplate
	2 x 4BS adapter	S408787A	5,700		5,010			2 x 96	11 x 41	Microtube
	0.2 x 96MP adapter	S408786A	5,700		5,010			96-hole microplate for PCR	—	—
	R5S4	904369D0	4,700		3,100		5.2	96DWx4/96MPx12	W128x D86x H90	—
	R4S	904314D0	5,000		4,530					
	10 x 10 ass'y	S304026A	3,600		2,190		4.5	10 x 40	12 x 105	
	15 x 6 ass'y	S304025A	3,600		2,350		4.5	15 x 24	16.5 x 110	
	15 x 8 ass'y	S304024A	3,600		2,350		4.9	15 x 32	16.5 x 110	Round bottom glass tube x 50
	15 x 10 ass'y	S304023A	3,000		1,630		5.3	15 x 40	16.5 x 110	
	50 x 1 ass'y	S304148A	5,000		4,530		4.4	50 x 4	35 x 100	Round bottom glass tube x 10 NBR adapter (w. stand)
								15 x 4	16.5 x 110	
	50 x 2 ass'y	S304147A	3,600		2,350		4.9	50 x 8	35 x 100	Round bottom glass tube x 10 (w. stand)
	50TS50 adapter	S408295A	5,000 (50 x 1 ass'y)		4,360 (50 x 1 ass'y)		4.4	50 x 4	35 x 100	50 ml culture tube
	15TC x 4 ass'y	S305550A	4,600		3,910		4.2	15 x 16	17 x 120	15 ml culture tube
Swinging bucket rotor	50TC x 1 ass'y	S305549A	5,000		4,620		4.2	50 x 4	30 x 115	50 ml culture tube
	50TC x 2 ass'y	S306706A	3,600		2,390			50 x 8	30 x 115	50 ml culture tube
	50TC shield bucket	S409541A	4,000		2,900			50 x 4	30 x 115	50 ml culture tube
	50 ml shield bucket	S403793A	4,000		2,900		4.7	50 x 4	35 x 100	—
	R4SS	904370D0	4,000		2,900		4.9	—	—	—
	15 x 10S adapter	S308546A	4,000		2,860		—	15 x 10	16 x 110	—
	15 x 8S adapter	S307334A	4,000		2,860		—	15 x 8	16 x 100	—
	10 x 10S adapter	S308695A	4,000		2,860		—	10 x 10	15.4 x 100	—
	10x 8S adapter	S307333A	4,000		2,860		—	10 x 8	13.2 x 100	—
	5 x 8S adapter	S307332A	4,000		2,860		—	5 x 8	13.2 x 78	—
	50 x 2S adapter	S308844A	3,600		2,320		—	50 x 2	35 x 100	—
	15TC x 6S adapter	S307335A	4,000		2,900		—	15 x 6	17 x 120	—
	50TC x 2S adapter	S307336A	4,000		2,860		—	50 x 2	30 x 115	—
	R3S	904315D0	3,000		1,940					
	500PA tube	S303830A	3,000		1,940		6.0	500 x 4	98 x 100	
	Tube rack BL	S36821A	3,000		1,870		6.9	10 x 120	12 x 120	
	Tube rack GR	S36822A	3,000		1,870		6.9	7 x 96	13–14 x 120	
	Tube rack YE	S36823A	3,000		1,870		6.9	15 x 72	16.5 x 120	
	Tube rack OR	S36824A	3,000		1,870		6.9	50 x 16	36.5 x 120	
								10 x 16	12 x 120	
	Tube rack BL (B)	S307165A	3,000		1,870		6.9	10 x 120	12 x 120	
	Tube rack GR (B)	S307167A	3,000		1,870		6.9	7 x 96	13–14 x 120	
	Tube rack YE (B)	S307164A	3,000		1,870		6.9	15 x 72	16.5 x 120	
	Tube rack OR (B)	S307166A	3,000		1,870		6.9	50 x 16	36.5 x 120	
								10 x 16	12 x 120	

Note: Refer to Notes for the table on the next page.

Optional accessories: Rotors

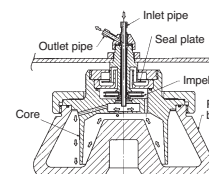
Type	Item Model	Part No.	Maximum speed (rpm)		Maximum RCF (x g)		Weight (kg)	For tubes		Standard accessories
			CR22GIII	CR21GIII	CR22GIII	CR21GIII		Nominal capacity (ml) x number of tubes	Tube dimensions (dia. x mm)	
Swinging bucket rotor	R3S									
	Tube rack 61 x 1	S303580A	3,000		1,870		6.9	225 x 4 175 x 4	Falcon® culture tube **	225/175 ml culture tube
	Tube rack 17 x 10	S304528A	3,000		1,870		6.9	15 x 40	17 x 120	15 ml culture tube
	Tube rack 13.2 x 18	S304666A	3,000		1,870		6.9	7 x 72	φ13 vacuum blood collecting tube	—
	Tube rack 15.5 x 18	S304667A	3,000		1,870		6.9	10 x 72	φ15 vacuum blood collecting tube	—
	50TTS adapter	S305213A	3,000		1,870		6.9	50 x 28	30 x 115	50 ml culture tube
Horizontal rotor	R10H									
	Tube rack 19.2 x 5 (B)	S307253A	3,000		1,830			50 x 20	30 x 115	50 ml culture tube**
	M bucket	S46977A	2,000		770		6.0	Microplate x 4 pcs	W128 x D86 x H10 – 30	96-hole microplate
Continuous rotor	R10C*									
		904348D0	10,000		13,000		5.8	Microplate x 4 pcs	W128 x D86 x H10 – 45	96-hole microplate
			90431900	18,000 (16,000)	34,960 (27,630)		7.5	1,000	—	—
R18C seal unit (E) for CR22GIII/21GIII (Part No. S203036A), 18 batch unit for CR22GIII/21GIII (Part No. 217247A)										

Made-to-order rotor specifications

Type	Item Model	Part No.	Maximum speed (rpm)		Maximum RCF (x g)		Weight (kg)	For tubes		Standard accessories
			CR22GIII	CR21GIII	CR22GIII	CR21GIII		Nominal capacity (ml) x number of tubes	Tube dimensions (dia. x mm)	
Fixed angle rotor	R22A	904299D0	20,000 (19,000)		45,170 (40,760)		7.0	7 x 18	16 x 60	7PA tube x 18
	R22A2	904300D0	22,000 (21,000)	21,000	51,200 (46,600)	46,600	5.4	50 x 6	29 x 103	50PA tube x 6
	R17A	904305D0		14,000		27,700	11.0	50 x 14	29 x 103	50PA tube x 14
	R12A4	904327D0	12,000		23,800		7.7	2 x 72	11 x 41	Eppendorf® tube (marketed product)
Special sealed-type Fixed angle rotor ¹	R18AY	904328D0	18,000		38,800		6.9	50 x 8	29 x 103	50PA bottle x 8
	R16AY	904329D0	16,000		32,300		8.7	80 x 6	38 x 104	80PA bottle x 6
	R12AY	904330D0	12,000		22,200		14.3	250 x 4	62 x 128	250PP bottle x 4
	R8AY	904331D0	8,000		12,000		24.1	500 x 6	73 x 163	500PA bottle x 6
Swinging bucket rotor	R15S3	904339D0	15,000 (14,000)		28,700 (25,000)		5.8	11 x 4	16 x 82	11PA tube x 4
	R7S	904313D0	7,000		9,420		9.0	250 x 4	62 x 128	250PP bottle x 4
	R13C*	90432000	13,000		21,260		9.2	2,200	—	—
Continuous rotor	R10C*									
			10,000		14,590		11.8	3,200	—	—
			10,000		14,590		11.8	3,200	—	—
Soil dehydration rotor	R11D2	904353D0	11,000		15,800 (PF2.6 – 4.2)		12.0	100 x 4	50 x 51	Dehydration tool x 4

- Notes: 1. ■ indicates tubes available on the market. Purchase directly from your local supplier.
2. Values in parentheses in the maximum speed and maximum RCF acceleration columns are those at which the sample temperature can be cooled below 4°C. At the maximum speed, the sample temperature can be cooled below 15°C (when room temperature is 25°C).
3. Automatic identification type rotors can be used with previously delivered centrifuges (CR-GII or earlier series). Depending on the centrifuge unit, however, there may be cases in which a ROM exchange or upgrade (for a nominal fee) is required.
4. It is possible to use rotors you currently own in the CR-GIII series by inputting the rotor data. With regard to any rotor within the warranty period, upgrades to the automatic identification type (for a nominal fee) will be accepted. (R12A2, R15S, R15S2, R6S, R20V, R11D, R18C, R13C and R10C rotors cannot be remodeled.)
5. For information on product compatibility, please contact your nearest Hitachi Koki's representative if one of these rotors is used in a previously delivered (old-type) centrifuge or if a previously delivered (old-type) rotor is used in a new centrifuge.
6. "Collector" units for R18C/R13C/R10C cannot be used on CR22GIII and CR21GIII.
7. **Falcon is a registered trademark of Becton Dickinson and Company. For prevention of deformation, a cushion produced by Falcon (Falcon part No. 2090) is also required.
8. ***1,000 PPPC bottle (2), the conventional product, cannot be used.
9. *This rotor is so designed that samples are less liable to leak out to the exterior than with ordinary rotors. It is suitable for biohazard prevention.
10. The rotor warranty period is 7 years.
11. *Both 50 ml free standing culture tubes and 50 ml V-bottom culture tubes can be used.

Continuous flow rotors: R18C/R13C/R10C

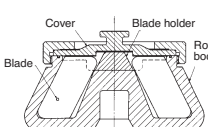


Cross section of a continuous flow rotor

Note: If a continuous flow rotor is used in models compatible with conventional type equipment, please contact your nearest Hitachi Koki's representative.

Continuous flow rotors

The sample is introduced into the rotor through the inlet pipe. The supernatant liquid after separation is taken up by the impeller (like a vane wheel of a centrifugal pump) and discharged from the rotor.



Cross section of a batch rotor

Batch rotors

Batch rotors centrifugally separate samples introduced directly into the rotor. There is no need to establish balance. Four blades protect the sample from disturbance.