### **Specifications**

Model	CR22N (CE Model)	CR22N (Non-CE Model)					
Max. Speed	22,000 rpm						
Max. RCF	55,200 xg (R22A4)						
Max. Capacity	1,500ml >	1,500ml x 4 bottles (R9A2)					
Speed Control Range	300 -	~ 22,000 rpm					
Temperature Control Range	-20	0 ~+40 °C					
ACL/DCL Mode	ACL: 9 modes, D	CL: 9 modes with coasting					
Program Function	30 programs, wit	th RCF(g) / g x sec function					
Drive Unit	Induction	n Motor (Inverter)					
Refrigerator	Closed Inverter Ro	otary (Refrigerant : R410A)					
5	Interlock Door, D	Jual Over Speed Detection					
Safety Functions	Non-contact Imbalance Dete	ection, Abnormal Temp. Detection etc.					
Variable Deceleration Slope		Yes					
Variable Deceleration Slope	(beside DCL mode, moderate	deceleration or free coast is selectable.)					
User Lockout Function		Yes					
Data Communication	USB port						
Data Communication	(Operating history can be output through USB port.)						
	LAN :Factory Option						
Operating Log Management	PC and optional himac Log Manager Ver.3.1 network edition is required.						
	Supporting GLP/GMP						
Display	Ű	on 5.7 inch color LCD					
Keypad	Touch-sensitive LCD panel						
	(with GUI icons)						
Noise	64 dBA) at 1m front						
	(at 22,000rpm)						
Economy Mode		Yes					
Standard	CE marking	N/A					
(1) EMC Directive	EN61326-1						
(2) LVD and MD*		-1, EN61010-2-020					
Dimensions (W x D x H : mm)	700 x 810 x 915						
	(height to chamber : 853)						
Weight	290 kg						
Power Requirements	Single Phase, AC 200, 208, 2	220, 230, 240V+/-10%, 30A (50/60Hz)					
Part No.	903350C1	903350C1 90335001					

Note : 1. Please note that LCD panel may contain a few dead or stuck pixels. 2. \* LVD : Low Voltage Directive, MD : Machinery Directive

#### **Appearance**







# Front view

Slide view

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itachi Koki Co.,Ltd, is certificated i



Display & Operational Panel (Enlarged)

#### CAUTION: For sale and proper use of your machine, carefully read and follow the instructions in the instruction manual.

· All specifications are subject to change without advanced notice.

Actual color may vary from the color of the photos on this catalogue, due to printing conditions.
 Due to safety reasons, installation environments, operating environments and conditions may be restricted.
 Unless specially mentioned, products and/or operation panel of the photos are standard specification.
 For further information, please contact your nearest Hitachi Koki's representative.

#### Manufacturer :

#### Hitachi Koki Co., Ltd. Life-Science Instruments Division

1-8-12 Shiba-Kouen, Minato Tokyo 105-0011 JAPAN TEL:+81-3-5733-0206 FAX:+81-3-5733-0207

URL : http://centrifuges.hitachi-koki.com







Scientific Instruments Di Quality Management and International Organization ni Koki Co.,Ltd. is c

**BUREAU VERITAS** Certificatio









# himac CR22N

**High-Speed Refrigerated Centrifuge** 

1



#### **Compact body, Larger Capacity**

6L rotor was available only for large-capacity refrigerated centrifuge or high-end model of the high-speed refrigerated centrifuges in the past. With newly developed drive unit and 1.5L bottle, now you can use 6L rotor (1.5L x 4 bottles) with a new standard model of the high-speed refrigerated centrifuge model CR22N. In addition, the CR22N has a more compact body than the one of our former model CR-GIII series.

#### Easy Operation with Color Touch-Sensitive LCD

High resolution color touch-sensitive LCD and GUI (graphic user interface) with high contrast against back screen in black color enable users to easily operate the system or select various menus and function by touching the icon on the display. Of course, operation status is identified at a glance by intelligible screen design.



#### Self-Locking Rotor System

himac original "self-locking rotor system" is the most simple system to place the rotor onto the drive shaft. You just simply place the rotor on the drive shaft and that's all. The rotor is locked by centrifugal force automatically. You do not need to fix the rotor by screw or push the button to lock or unlock the rotor like other models available in the markets.



#### **Non-Contact Imbalance Detection System**

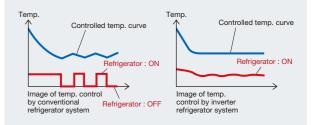
The himac original imbalance sensor continuously measures oscillation over the entire rpm range. The system immediately detects abnormal vibrations caused by the imbalance of the rotor and stops the rotation of the rotor automatically.

\* as of October 2012

comparing with standby electricity without Economy mode under in-house conditions

#### All Standard Rotors maintained at 4°C

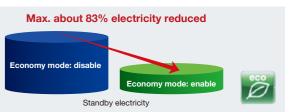
CR22N is the 1st model equips inverter refrigerator system in this class\*. The inverter refrigerator system provides you high efficient temperature control of the rotor and less electricity consumption is anticipated. Also the refrigeration capacity was improved, so now all standard rotors can be maintained at 4°C at their maximum speed without vacuum system. (under room temperature at 25°C) (There are some exceptions about made-to-order rotors.) In addition, invertor refrigerator system has reduced operating sound, because there is no start-up sound of conventional refrigerator system.



### **Energy Saving and Environment Friendly Design**

#### Economy mode (automatic standby function)

CR22N has Economy mode (automatic standby function) in it. If the distplay is not touched over the set wait time, the system automatically deeps backlight of the LCD and stop refrigerator (except at running) so that system reduces maximum 83% of standby electricity\*\*. Just press a button, so you can contribute to the energy saving.



#### **Re-generating Brake System**

The drive unit has a re-generating brake system. It changes the kinetic energy, which was exhausted into the room as a heat in deceleration, to electricity. So it can reduce the temperature increment and return maximum 40% electricity, which is used in whole operation, to power source.

#### **Environment Friendly Design**

CR22N is designed according to Hitachi Group's "Design for Environment Assessment System" standard. Over 80% materials of the product are reusable or recyclable. It has reduced use of harmful substance in materials and components. Also, the refrigerant used in CR22N has ODP (ozone depletion potential) equals to 0.



RCF

Θ

#### Automatic Rotor Identification

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

#### **RCF Calculation and Display**

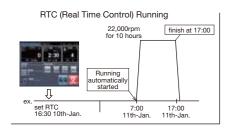
CR22N automatically calculates from rpm value to RCF(xg) value and eliminates many troublesome and time-consuming manual calculations using many parameters, such as speed and R(max.) etc.. You can start operation by entering RCF(xg) value, instead of running speed.

#### Actual Run Timer

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 net run time and obtain higher reproducibility of the separation.

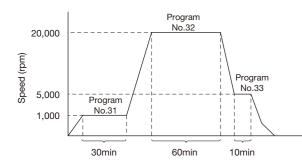
#### **RTC (Real-Time Control) Function**

himac original RTC function makes timer setting easier than conventional delay time setting. You can simply set date and time when you want to start or finish the centrifugation, as calendar and clock are equipped with the system.



#### Programmed Operation

You can program 30 operations into the memory. You can set another three programs with three-step-mode operation. (total 33 programs)



#### Automatic Rotor Cover Detector

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

Pre-Cool Function PAT.



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This function maintains temperature inside rotor chamber at 15°C with preventing from icing, in order to reach target temperature shortly, when the rotor is not set on the drive shaft. When the rotor is set on the drive shaft, refrigerator control the temperature inside the rotor chamber at the set temperature.

#### Zoom Function **PAT**

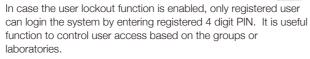
Display of running speed and time is enlarged on the screen in order to find the operating status from a distance. Screen is switch from "Run Screen" to "Zoom Display" automatically at 20 sec. after reaching the set speed.

#### **User Administration**

You can resister up to 40 users into the memory. You can set access level and PIN of each user. There are two access level, "Administrator" or "User". "Administrator" can access all function, but "User" cannot access administrator function when the user lockout function is on.

#### User Lockout Function



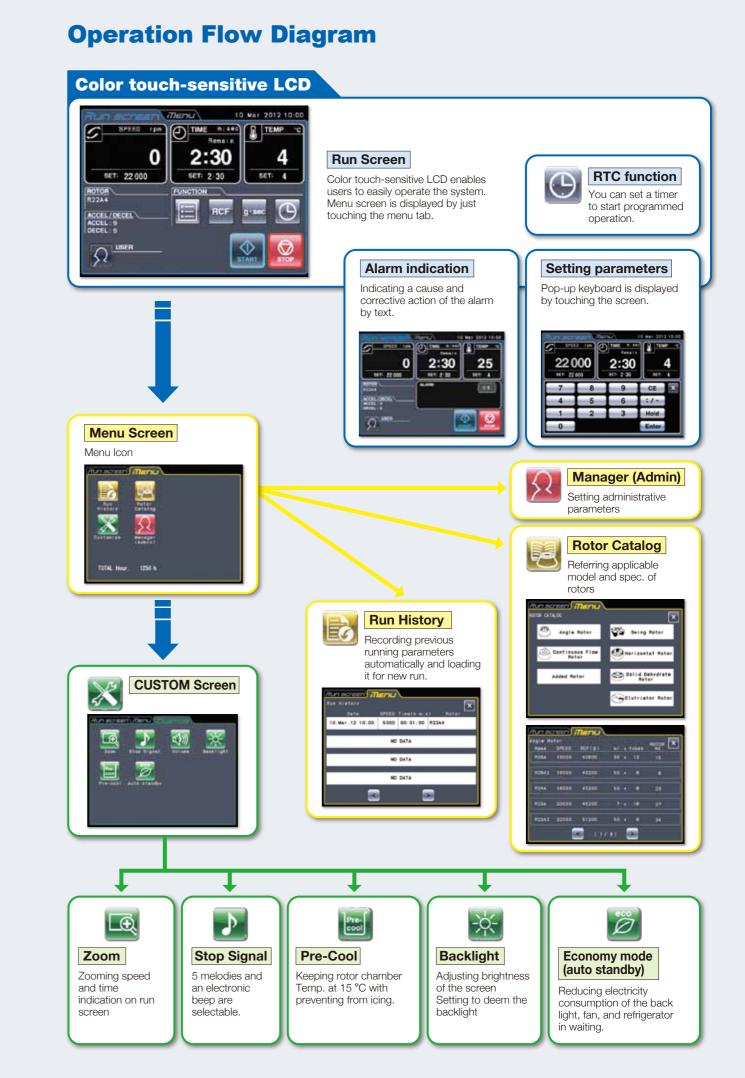


Rotor Management

Your rotors can be registered to the system in order to manage followings;

\* Serial number of each rotor

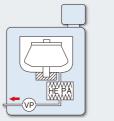
- \* Total accumulated operating time (hours)
- \* Total number of operation (runs)



3

# **Biosafety Option**

Biosafety is the 1st priority in all laboratories. This is why we design and offer multiple options for biosafety compatibility. Not only biosafety rotors or special-sealed type fixed angle rotor, but also the Micro Filter can be assembled in the CR22N system for enhanced level of biosafety at your option. This Micro Filter modification of the CR22N system is our factory option.





# **Data Communication and Operating Log Management**

#### USB

USB port is equipped as standard specification. The system records up to 100 operating histories in its memory. Operating data can be output in CSV format through the USB port.



LAN

Optional LAN board is also available. You can link CR22N to your PC through ethernet or internet. Optional software "himac LogManager Ver. 3.1 (network edition)" can be installed in your PC and operating history and data of CR22N can be easily managed by your PC.

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#### himac LogManager Ver. 3.1 for Windows® (Network Edition) -Optional log management software

himac LogManager Ver. 3.1 for Windows® (Network Edition) is useful and convenient software to manage real time operating log of himac CP-WX series, CS150NX, CS150FNX, CR22N and CR-GIII series. Maximum 16 units of the abovementioned centrifuges can be registered to the software. As data communication between the centrifuge and PC is done via LAN or Ethernet, so there is no distance limitation to establish a network. You can easily establish the network configuration and relocation with commercially available LAN devices. (Optional LAN board is required for the centrifuges.) It means you can manage the operating log at the different location from the installation site of the centrifuges.

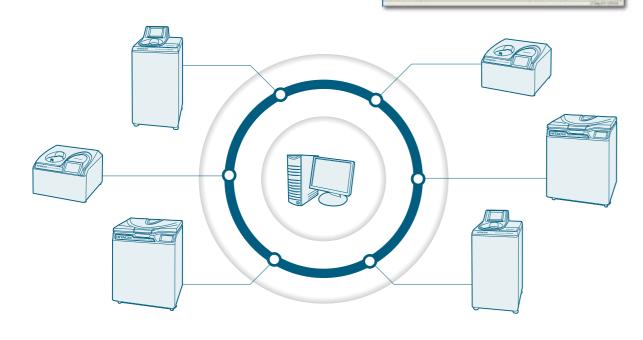
The software is real-time log management software; recording period is selectable from 10 seconds to 5 minutes interval. Of course, the software supports U.S. FDA 21 CFR Part 11, following functions are available;

- Digital Signature
- Audit Trail
- Encrypted Data Files etc.

Compatible OS;

Windows<sup>®</sup> XP, Windows Vista<sup>®</sup>, Windows<sup>®</sup> 7

Windows®, Windows® XP, Windows Vista® and Windows® 7 are registered trademark of Microsoft Corporation in the United States and other countries.





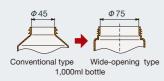
	Part No.	Description					
	S310087A	1500PP Bottle (WM) (4pcs/set : bottle only)					
	S310071B	1500AL Cap (2pcs/set : cap only)					
	S412932A	Cap Support (4pcs/set : cap support only)					
	S412933A	1000 Inner Cap (WM) 2 (4pcs/set : inner cap only					
	S412935A	O-ring (10pcs/set : O-ring only)					
	Specification						
	Max. Speed	8,500 rpm					
Max. RCF		15,100 xg					
	Nominal Capacity	1,500ml x 4 bottles					
	Tube Cavity Angle	22°					
	K-factor	4,313					
	Weight (kg)	17.1					
	Product No.	904374D0					

# **Standard Fixed Angle Rotor**



#### Wide Mouth Bottle

It is easy to collect separated sample and clean the bottle.







R10A5

Net weight: 15.5kg

500ml x 6 bottle

10,000 rpm / 18,900 xg

500ml x 6 bottles

"himac 50TC tube" applicable to high xg is available!



Net weight: 11.0kg 13,000 rpm / 26,400 xg 250ml x 6 bottles

R12A6

Net weight: 14.8kg

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



**R18A** 

50ml x 8 tubes

18,000 rpm / 42,200 xg

**R15A** 15,000 rpm / 32,240 xg 15/50ml x 10 tubes each



#### Fixed Angle Rotor (Standard model)



R22A4

22,000 rpm / 55,200 xg

1.5/2ml x 30 tubes



20,000 rpm / 48,000 xg

R20A2

50ml x 8 tubes



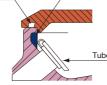
**R14A** 

250ml x 4 tubes

R12A3 14,000 rpm / 30,240 xg 12,000 rpm / 23,800 xg 250ml x 6 tubes

Fixed Angle Rotor with Fluid Annul

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 O-ring Fluid Annulus



# **Standard Swinging Bucket Rotors**



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

Swinging Bucket Rotor for Micro Plate



**R5S4** DWP x 4 pcs MP x 12 pcs

S302859A : Scale Balancer (for 1,000ml bottle) 349981A : 500g Balancer (up to O.D. 73mm) 349981B : 250g Balancer (up to O.D. 38mm)

7





10ml/15ml x 8 tubes/bucket 15x8S adaptor



4 ~10ml x 10 tubes/bucket 10x10SB adaptor



15ml x 10 tubes/bucket 15x10S adaptor



15ml x 18 tubes/bucket Tube Rack YE



10ml x 18 tubes/bucket Tube Rack 15.5x18



500ml x 1 tube/bucket 500PA tube



10ml x 4 tubes/bucket 50ml x 4 tubes/bucket Tube Rack OR



7ml x 18 tubes/bucket Tube Rack 13.2x18



96-hole microplate x 1 pc/bucket M bucket

(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)





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

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 x 10^6 spores/ml. \* Sample may be leaked from the rotor if o-ring is deteriorated or operation is not appropriate.

## **Standard Rotor : Rotors and Accessories List**

			Maximum speed (rpm) RCF (xg) CR22N		Weight (kg)	For t	ubes	Standard accessories	
Туре	Model	Part No.				Nominal capacity (ml)x number of tubes	Tube dimensions (dia. x mm)	Tube/bottle	
Fixed angle	R22A6	904375D0	22,000	55,100	4.2	10 x 12	16 x 82	10PA bottle (with cap) x 12	
	R22A4	904363D0	22,000	55,200	3.3	2 x 30	11 x 42	-	
	R21A2	904373D0	21,000	50,000	5.4	30 x 6	26 x 97	30PA bottle (with cap) x 6	
	R20A2	904295D0	20,000	48,000	6.8	50 x 8	29 x 103	50PA tube x8	
		904359D0	18,000	42,200		50 x 8	30 x 115	himac 50TC tube x 300	
	R18A		12,000	18,760	8.2	50 x 8	30 x 115	50 ml culture tube	
	R15A	904360D0	15,000	32,300		50 x 10	30 x 115	himac 50TC tube x 300	
			12,000	20,670	10.5	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	30,240	16.8	250 x 4	62 x 124	250PP bottle x4	
rotor	50TA300 adapter	S408203A	12,000	18,800		50 x 4	30 x 115	50 ml culture tube	
	R13A	904366D0	13,000	26,400	11.0	250 x 4 11 x 6	62 x 124 16 x 82	250PP bottle x6	
	R12A6	904357D0	12,000	22,500	14.8	500 x 4	73 x 163	500PA bottle x4	
	R12A3	904325D0	12,000	23,800	16.0	250 x 6	62 x 124	250PP bottle x6	
	R10A5	904365D0	10,000	18,900	15.5	500 x 6	69.5 x 169	500 ml bottle (Nalgene®)	
	R10A3	904345D0	10,000	18,800	16.9	500 x 6	73 x 163	500PA bottle x 6	
	R9A2	904374D0	8,500	15,100	17.1	1,500 x 4	126 x H175	1500PP bottle(WM) x 4	
	R9A***	904364D0	9,000	15,300	13.7	1,000 x 4	98 x 168	1000PP bottle(WM) x 4	
	R8S	904371D0	8,000	11,500	7.2	50 x 4	30 x 115	50 ml culture tube	
	R5S4	904369D0	4,700	3,100	5.2	96DWx4/96MPx12	W128xD86xH90	-	
	R4SS	904370D0	4,000	2,900	4.9	-	-		
	15 x 10S adapter	S308546A	4,000	2,860	-	15 x 40	16.5 x 110		
	15 x 8S adapter	S307334A	4,000	2,860		15 x 32	16.5 x 110		
	10 x 10SB adapter	S308695A	4,000	2,800		10 x 40	15.4 x 100		
	10 x 8S adapter	S307333A	4,000	2,860		10 x 32	13.2 x 100		
	5 x 8S adapter	S307332A	4,000	2,380	-	5 x 32	13.2 x 78		
	50 x 2S adapter	S308844A	3,500	2,120			35 x 100		
	15TC x 6S adapter	S307335A	4,000	2,900	-	15 x 24	17 x 120		
	50TC x 2S adapter	S307336A	4,000	2,860			30 x 115		
	R3S	904315D0	3,000	1,940	6.0	-	-		
	500PA tube	S303830A	3,000	1,940	-		98 x 100		
	Tube rack BL	336821A	3,000	1,870	-	10 x 120	12 x 120		
	Tube rack GR	336822A	3,000	1,870	-	7 x 96	13-14 x 120		
Swinging	Tube rack YE	336823A	3,000	1,870		15 x 72	16.5 x 120		
bucket rotor						50 x 16	36.5 x 120	_	
	Tube rack OR	336824A	3,000	1,870	-	10 x 16	12 x 120		
	Tube rack BL (B)	S307165A	3,000	1,870	-	10 x 120	12 x 120		
	Tube rack GR (B)	S307167A	3,000	1,870	-	7 x 96	13-14 x 120		
	Tube rack YE (B)	S307164A	3,000	1,870	-	15 x 72	16.5 x 120		
	Tube rack OR (B)	S307166A	3,000	1,870	-	50 x 16 10 x 16	36.5 x 120 12 x 120		
	Tube rack 61 x1	S303580A	3,000	1,800	-		Falcon <sup>®</sup> culture tube**	225/175 ml culture tube	
	Tube rack 17 x 10	S304528A	3,000	1,940	-	15 x 40	17 x 120	15 ml culture tube	
	Tube rack 13.2 x 18	S304666A	3,000	1,800	-	7 x 72	φ 13 vacuum blood collecting tube	_	
	Tube rack 15.5 x18	S304667A	3,000	1,800	-	10 x 72	φ 15 vacuum blood collecting tube		
	50T7S adapter	S305213A	3,000	1,870	-	50 x 28	30 x 115	50 ml culture tube	
	Tube rack 29.5 x 5 (B)	S307253A	3,000	1,830	-	50 x 20	30 x 115	50 ml culture tube <sup>††</sup>	
	M bucket	346977A	2,000	700	-	Microplate x 4pcs	W128 x D86 x H10-30		
	MP bucket	S305521A	3,000	1,650	-	Microplate x 4pcs	W128 x D86 x H10-55	96-hole microplate	

# Notes:1. Indicates tubes available on the market. Purchase directly from your local supplier. 5:1. Indicates trubes available on the market. Furchase directly from your local supplier. 2. Automatic identification type rotors can be used with previously delivered centrifuges (CR-GIII 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. 3. It is possible to use rotors you currently own in CR22N 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 D10C enter on the served deal).

R10C rotors cannot be remodeled.) 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. 5. \*\* Falcon is a registered trademark of Becton Dickinson and Company. For prevention of

\*\* nacon is a registered trademark or becton Lloxinson and Company. For prevention of deformation, a cushion produced by Falcon (Falcon part No. 2009) is also required.
 \*\*\* 1,000PP/PC bottle (2), the conventional product, cannot be used.
 \*\*\* TBoth 50ml free standing culture tubes and 50ml V-bottom culture tubes can be used.
 R9A2 rotor is an exclusive model for CR22N. It cannot be used with our former models, such as CR-Cill, CR-Cill, CR-G and CR-F series.
 When the above rotors are used with our former model, their max, speed may be restricted. For more directed bismership allocation and the used with our former model. Their provided bismership and bismerships.

more detailed information, please contact your nearest Hitachi Koki' s representative.

The rotor warranty period is 7 years.
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## **Made-to-Order Rotors**

<b>Fixed Angle Rotors</b>						
ه ه						
<b>R22A2</b> 22,000 rpm / 51,200 rg 50ml x 6 tubes <b>R22A</b> 22,000 rpm 7ml x 18 tu	<b>R21A</b> 1,45,170 xg bes 11ml x 16 tul					
Swinging Bucket R	otors					
R15S3 15,000 rpm / 11ml x 4 tube		R10S 10,000 rpm / 16,470 xg 50ml x 4 tubes				
Special Sealed-type	e Fixed Angle Ro	otor				
himac Special Sealed-type Rotor sample, by design that rotor body rotor cover in order to increasing s recommended to use, when you r sample for high level sealing.	screwed into the ealing level. It is	<b>R18AY</b> 18,000 rpm / 38,800 xg 50ml x 8 tubes <b>R12AY</b> 12,000 rpm / 22,200 xg 250ml x 4 tubes				
Horizontal Rotor		Soil Dehydration F				
	00 rpm / 13,000 xg ole microplate x 4pcs					
	Ors: R186/R136/	KIUC				
Outlet pipe	The sample is int heller body The inlet pipe. Th separation is take vane wheel of a discharged from	<b>Continuous flow rotors</b> 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.				

	Model	Part No.	Maximum speed (rpm) Maximum RCF (xg)		Weight	For tubes		Standard accessories
Туре			CR2	22N	(kg)	Nominal capacity(ml) xnumber of tubes	Tube dimensions (dia. X mm)	Tube/bottle
	R22A	904299D0	22,000 (21,000)	45,170 (49,800)	7.0	7 x 18	16 x 60	7PA tube x 18
	R22A2	904300D0	22,000	51,200	5.4	50 x 6	29 x 103	50PA tube x6
	R21A	904301D0	21,000 (20,000)	43,600 (48,300)	8.5	11 x 16	16 x 82	11PA tube x 16
Fixed	R20A(sales discontinued)	904302D0	18,000 (17,000)	33,200 (37,510)	10.0	16 x 32	18 x 99	16PP tube x 40
angle rotor	R19A	904303D0	19,000 (18,000)	40,940 (40,900)	10.4	80 x 6	38 x 104	80PA bottle x6
10101	R17A Non-CE	904305D0	17,000 (16,000)	27,700 (32,600)	11.0	50 x 14	29 x 103	50PA tube x 14
	R14A3	904322D0	14,000	29,100	12.9	100 x 10	38 x 104	80PA bottle x 10
	R12A4	904327D0	12,000	23,800	7.7	2 x 72	11 x 41	Eppendorf®tube(marketed product)
	R15S3	904339D0	15,000	28,700	5.8	11 x 4	16 x 82	11PA tube x4
Outin sin a	R10S	904312D0	10,000	16,470	6.0	50 x 4	29 x 103	50PA tube x4
Swinging bucket	R7S	904313D0	7,000	9,420	9.0	250 x 4	62 x 124	250PP bottle x4
rotor	R6S	904334D0	5,700	5,010	10.7	Microplate x 2 pcs	W128 x D86 x H10-55	96-hole microplate
10101	2 x 48S 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	-	-
Special	R18AY	904328D0	18,000	38,800	6.9	50 x 8	29 x 103	50PA bottle x 8
sealed-type	R16AY	904329D0	16,000	32,300	8.7	80 x 6	38 x 104	80PA bottle x6
fixed angle	R12AY	904330D0	12,000	22,200	14.3	250 x 4	62 x 124	250PP bottle x4
rotor*	R8AY	904331D0	8,000	12,000	24.1	500 x 6	73 x 163	500PA bottle x 6
Horizontal rotor	R10H	904348D0	10,000	13,000	10.6	Microplate x 4 pcs	W128 x D86 x H15-45	96-hole microplate
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
	R18C* Non-CE	90131900	18,000	34,960	7.5	1,000 (500*1)	-	-
Continuous		R18C	seal unit (E) for CR22	2N (Part No. S203036/	A), 18 batc	h unit for CR22N (Par	No. 217247A)	-
flow	R13C* Non-CE							
rotor		R13C	seal unit (E) for CR22	2N (Part No. S203037)	A), 13 batc	h unit for CR22N (Par	No. 217248A)	
	R10C* Non-CE	90432100	10,000	14,590	11.8	3,200 (2,300* 1)	-	-
		R10C	seal unit (E) for CR22	2N (Part No. S203038/	A), 10 batc	h unit for CR22N (Part	Na 217250A)	-

Notes:1. Indicates tubes available on the market. Purchase directly from your local supplier.

es:1. Indicates tubes available on the market. Purchase directly from your local supplier.
2. Values in parentheses in the maximum speed and maximum RSC columns are those at which the rotor temperature can be cooled at 4°C. At the maximum speed , the rotor 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-GIII 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 CR22N 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. (R1242, R15S, R15S2, R8S, R20V, R11D, R18C, R13C and R10C rotors cannot be remodeled.)





**R19A** 19,000 rpm / 40,940 xg 17,000 rpm / 27,700 xg 14,000 rpm / 29,100 xg 12,000 rpm / 23,800 xg 80ml x 6 tubes



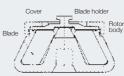




R14A3 100ml x 10 tubes

**R12A4** 2ml x 72 tubes





Cross section of a batch rotor

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

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

5. For information on product compatibility, please contact your nearest Hitachi Koki's

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.
 \* Collector units for R18C/R13C/R10C cannot be used on CR22N and CR-GIII series.
 \* 1: Maximum pellet capacity (m).
 When the above rotors are used with our former model, their max. speed may be restricted. For more detailed information, please contact your nearest Hitachi Koki's representative.
 Non-CE rotors cannot be used with CR22N (CE model), due to higher kinetic energy and rotor ID identification. Therefore Non-CE rotors are not sold in EU countries.

10. The rotor warranty period is 7 years.