

Vysokorychlostní chlazená centrifuga Himac CR22N - Hitachi



Velkokapacitní sálová centrifuga pro rychlé stáčení vzorků o celkovém objemu až 6 litrů – 4 x 1500ml. Centrifuga má intuitivní jednoduché ovládání pomocí dotykového LCD displeje. Displej umožňuje zobrazení všech důležitých parametrů během centrifugace. Centrifuga je vybavena USB portem pro export dat z centrifugace.

Model	CR22N
Maximální rychlost (rpm)	22 000
Maximální RCF (xg)	55 200
Maximální kapacita	1500 ml x 4
Teplotní rozsah	od -20° C do 40 ° C
ACL / DCL Mode	ACL: 9 režimy, DCL: 9 režimy s dobíhající
Program Funkce	30 programů, s funkcí RCF / g • s Funkce
Chladicí systém	Uzavřený (chladiivo: R410A)
Bezpečnostní zařízení	Elektronický zámek krytu, dvojitý alarm překročení rychlosti, detekce nerovnováhy, detekce přehřátí motoru, atd.
Variabilní zpomalení	Ano
Funkce uzamčení uživatelem	Ano
Komunikace dat	USB port
Software Log Management	LAN port: při objednání nebo přidání na místě Volitelně Himac LogManager Ver.4.0 pro Windows® (Network Edition) Podpora GMP / GLP
Ovládací Panel	5,7 palcový barevný dotykový LCD panel
Klávesnice	Pop-up klávesnice a ikony na displeji
Hlučnost (dBA)	64 dBA
Continuous Flow Rotor	Volitelně

Model	CR22N
Rozměr	700 x 760 x 915 mm (výška do komory: 853mm)
Hmotnost (kg)	260
Požadavky na napájení	Jednofázové, AC200 / 208/220/230 / 240V +/- 10%, 50 / 60Hz, 30A

Splnění požadavků:

- Minimální kapacita objemu stáčeného materiálu 6 x 250ml - ANO
- Možnosti stáčení při relativní odstředivé síle minimálně 22 000xg s objemem 6 x 250ml- ANO
- Rozsah regulace teploty min. -15 až +30 °C - ANO

Součástí nabídky je rotor R12A3

- Požadavky na rotor:
- Rotor úhlový na celkový objem 6x250ml)
- Hodnota RCF rotoru 23 800 g
- Centrifugační láhve o objemu 250ml kompatibilní s nabídnutým rotorem, šroubovací součástí dodávky, 6 kusů

Specifications

Model	CR22N (CE Model)	CR22N (Non-CE Model)
Max. Speed	22,000 rpm	
Max. RCF	55,200 xg (R22A4)	
Max. Capacity	1,500ml x 4 bottles (R9A2)	
Speed Control Range	300 ~ 22,000 rpm	
Temperature Control Range	-20 ~ +40 °C	
ACL/DCL Mode	ACL: 9 modes, DCL: 9 modes with coasting	
Program Function	30 programs, with RCF(g) / g x sec function	
Drive Unit	Induction Motor (Inverter)	
Refrigerator	Closed Inverter Rotary (Refrigerant : R410A)	
Safety Functions	Interlock Door, Dual Over Speed Detection Non-contact Imbalance Detection, Abnormal Temp. Detection etc.	
Variable Deceleration Slope	Yes (beside DCL mode, moderate deceleration or free coast is selectable.)	
User Lockout Function	Yes	
Data Communication	USB port (Operating history can be output through USB port.)	
Operating Log Management	LAN : Factory Option PC and optional himac Log Manager Ver.3.1 network edition is required. Supporting GLP/GMP	
Display	High-resolution 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*	EN61010-1, 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, 220, 230, 240V +/-10%, 30A (50/60Hz)	
Part No.	903360C1	903360D1

Note : 1. Please note that LCD panel may contain a few dead or stuck pixels.

2. * LVD : Low Voltage Directive, MD : Machinery Directive

Appearance



Top view



Front view



Side view



Display & Operational Panel
(Enlarged)

CAUTION:
For safe 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 in 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.



Hitachi Koki Co., Ltd. is a certified ISO 14001 Environmental Management System (EHS) and ISO 9001 Quality Management System (QMS) for the manufacture of centrifuges.



Hitachi Koki Co., Ltd. is a certified Bureau Veritas ISO 14001 Environmental Management System (EHS) and ISO 9001 Quality Management System (QMS) for the manufacture of centrifuges.



Hitachi Koki Co., Ltd. is a certified UKAS ISO 14001 Environmental Management System (EHS) and ISO 9001 Quality Management System (QMS) for the manufacture of centrifuges.

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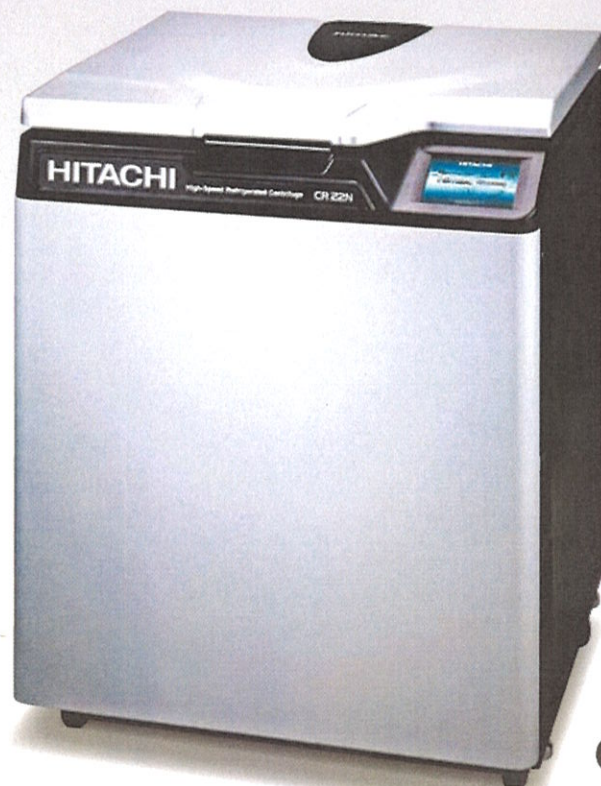
URL : <http://centrifuges.hitachi-koki.com>

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Hitachi Koki
HITACHI



CR22N
High-Speed Refrigerated Centrifuge



himac CR22N

High-Speed Refrigerated Centrifuge



Technologies

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.

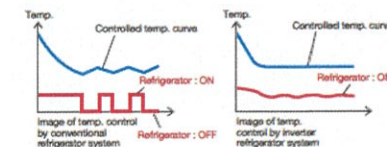


Non-Contact Imbalance Detection System

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.

All Standard Rotors maintained at 4°C

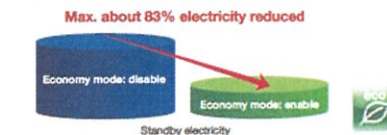
CR22N is the 1st model equips inverter refrigerator system in this class*. The inverter refrigerator system provides you high efficient temperature control of the rotor and less electricity consumption is anticipated. Also the refrigeration capacity was improved, so now all standard rotors can be maintained 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, inverter 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 display is not touched over the set wait time, the system automatically deepens 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.

* as of October 2012
** comparing with standby electricity without Economy mode under in-house conditions

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..

RCF Calculation and Display RCF

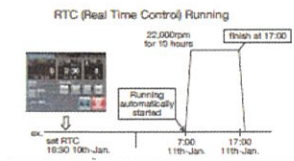
CR22N automatically calculates from rpm value to RCF(xg) value and eliminates many troublesome and time-consuming manual calculations using many parameters, such as speed and R(max.) etc.. You can start operation by entering RCF(xg) value, instead of running speed.

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.

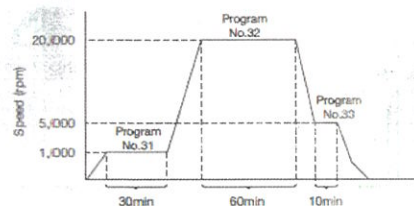
RTC (Real-Time Control) Function

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 PAT.

It 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.

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 register 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

In case the user lockout function is enabled, only registered user can login the system by entering registered 4 digit PIN. It is useful function to control user access based on the groups or laboratories.

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)

Operation Flow Diagram

Color touch-sensitive LCD



Run Screen

Color touch-sensitive LCD enables users to easily operate the system. Menu screen is displayed by just touching the menu tab.



RTC function

You can set a timer to start programmed operation.

Alarm indication

Indicating a cause and corrective action of the alarm by text.



Setting parameters

Pop-up keyboard is displayed by touching the screen.



Menu Screen

Menu icon



Manager (Admin)

Setting administrative parameters



Rotor Catalog

Referring applicable model and spec. of rotors

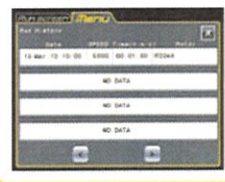


CUSTOM Screen



Run History

Recording previous running parameters automatically and loading it for new run.



Zoom

Zooming speed and time indication on run screen

Stop Signal

5 melodies and an electronic beep are selectable.

Pre-Cool

Keeping rotor chamber Temp. at 15 °C with preventing from icing.

Backlight

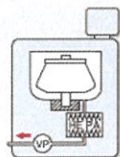
Adjusting brightness of the screen
Setting to deem the backlight

Economy mode (auto standby)

Reducing electricity consumption of the back light, fan, and refrigerator in waiting.

Biosafety Option

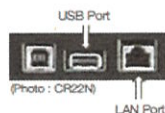
Biosafety is the 1st priority in all laboratories. This is why we design and offer multiple options for biosafety compatibility. Not only biosafety rotors or special-sealed type fixed angle rotor, but also the Micro Filter can be assembled in the CR22N system for enhanced level of biosafety at your option.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

himac LogManager Ver. 3.1 for Windows® (Network Edition)

-Optional log management software

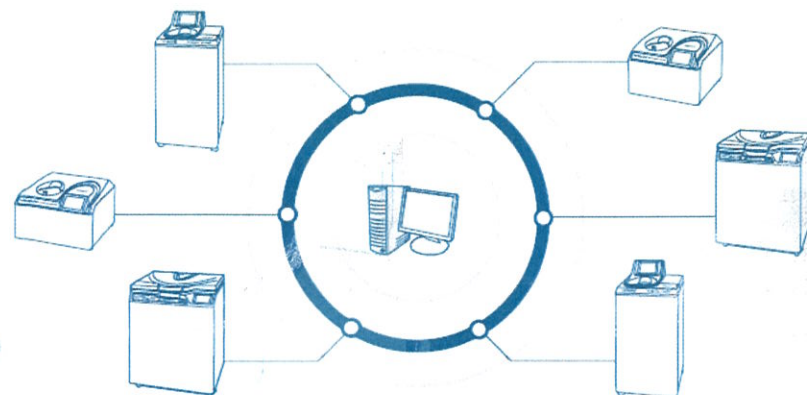
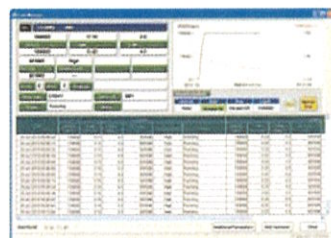
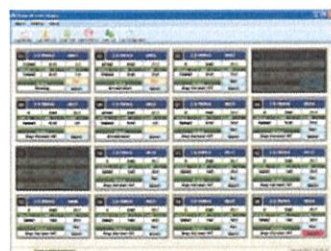
himac LogManager Ver. 3.1 for Windows® (Network Edition) is useful and convenient software to manage real time operating log of himac CP-WX series, CS150NX, CS150FNX, CR22N and CR-Gill series. Maximum 16 units of the abovementioned centrifuges can be registered to the software. As data communication 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® XP, Windows Vista®, Windows® 7

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



Unique 6L Rotor model R9A2 & 1500PP Bottle (WM)



We proudly introduce the newly developed 1500PP Bottle (WM). Hitachi Koki is the 1st manufacturer developed unique 1.5L triangular bottle for high-speed refrigerated centrifuge use. The unique 1.5L triangular bottle has a wide mouth so that it is easy to collect separated sample (pellet) and clean the bottle. We could minimize the size and weight of our new 6L capacity fixed angle rotor with 1.5L triangular bottle. Comparing with R7A fixed angle rotor (1L x 6 bottles) for large-capacity refrigerated centrifuge, R9A2 rotor is lighter than R7A rotor and R9A2 rotor can offer higher g force.

R9A2 : 17.1kg / 15,100 xg (8,500rpm)
R7A : 18.7kg / 11,100 xg (7,000rpm)

R9A2 rotor and 1500PP Bottle (WM) including its cap can be sterilized by autoclave (at 121°C for 20min.)
4sets 1500PP Bottle (WM) including cap, cap support, inner cap and O-ring are supplied as standard accessories with R9A2 rotor.

Configuration of 1500PP Bottle (WM)

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

New Rotors

R21A2



The R21A2 rotor is designed for 30ml x 6 tubes and has 40° tube cavity angle. It is suitable for pelleting. 40SS tube and 40Ti tube (for ultracentrifuge) can be used.

Specification	
Max. Speed	21,000 rpm
Max. RCF	50,000 xg
Nominal Capacity	30ml x 6 bottles
Tube Cavity Angle	40°
K-factor	487
Weight (kg)	5.4
Product No.	90437300

R22A6



The R22A6 rotor is designed for 10ml x 12 tubes and has 45° tube cavity angle. It is suitable for pelleting. 12SS tube and 12 Ti tube (for ultracentrifuge) can be used.

Specification	
Max. Speed	22,000 rpm
Max. RCF	55,100 xg
Nominal Capacity	10ml x 12 bottles
Tube Cavity Angle	45°
K-factor	319
Weight (kg)	4.8
Product No.	90437500

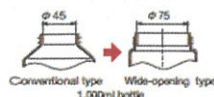
High-capacity Light Weight Rotor

Innovative aluminum alloy made light weight rotor

This series' rotors are half the weight of conventional rotors in the same capacity. They greatly reduce acceleration/deceleration time. They can be rotated at Max. speed with bottles filled with any volume, as long as balanced.

Wide Mouth Bottle

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



R9A2
Net weight: 17.1kg
8,500 rpm / 15,100 xg
1500ml x 4 bottles



R9A
Net weight: 13.7kg
9,000 rpm / 15,300 xg
1000ml x 4 bottles



R10A5
Net weight: 15.5kg
10,000 rpm / 18,900 xg
500ml x 6 bottles



R12A6
Net weight: 14.8kg
12,000 rpm / 22,500 xg
500ml x 4 bottles



R10A3
Net weight: 16.9kg
10,000 rpm / 18,800 xg
500ml x 6 bottles



R13A
Net weight: 11.0kg
13,000 rpm / 26,400 xg
250ml x 6 bottles

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



R18A
18,000 rpm / 42,200 xg
50ml x 8 tubes



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

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

(Part No. S307904A : 300 pcs/set)

Max. RCF : 42,200 xg*

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 R18A fixed angle rotor



Fixed Angle Rotor (Standard model)



R22A4
22,000 rpm / 55,200 xg
1.5/2ml x 30 tubes



R20A2
20,000 rpm / 48,000 xg
50ml x 8 tubes



R14A
14,000 rpm / 30,240 xg
250ml x 4 tubes

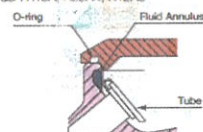


R12A3
12,000 rpm / 23,500 xg
250ml x 6 tubes

Fixed Angle Rotor with Fluid Annulus

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

Model : R13A, R22A4, R12A6



Standard Swinging Bucket Rotors

General-purpose Swinging Bucket Rotor

R4SS



5ml - 10ml x 40 tubes
50ml TC (conical bottom) x 8 tubes
15ml TC (conical bottom) x 24 tubes



4ml/5ml x 8 tubes/bucket
5xBS adaptor
15ml TC x 6 tubes/bucket
15TCxBS adaptor



7ml/10ml x 8 tubes/bucket
10xBS adaptor
50ml TC x 2 tubes/bucket
50TCx2S adaptor



10ml/15ml x 8 tubes/bucket
15xBS adaptor
4 - 10ml x 10 tubes/bucket
10x10SB adaptor

15ml x 10 tubes/bucket
15x10S adaptor

Versatile Swinging Bucket Rotor

R3S



50ml TC (conical bottom) x 28 tubes
15ml TC x 40 tubes



10ml x 24 tubes/bucket
Tube Rack GP
225ml x 1 tube/bucket
175ml x 1 tube/bucket
Tube Rack 61x1



3 - 5ml x 30 tubes/bucket
Tube Rack BL
250ml (Nargent®) x 1 tube/bucket
Tube Rack 62x1



15ml x 18 tubes/bucket
Tube Rack YE
10ml x 18 tubes/bucket
Tube Rack 15.5x18



10ml x 4 tubes/bucket
Tube Rack OR
7ml x 18 tubes/bucket
Tube Rack 13.2x18



15ml TC x 10 tubes/bucket
Tube Rack 17x10



50ml x 7 tubes/bucket
50TTS adaptor



500ml x 1 tube/bucket
500PA tube



96-hole microplate x 1 per bucket
M bucket

High-speed Swinging Bucket Rotor for TC (conical bottom) Tube

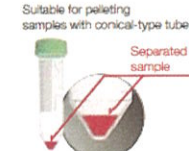
R8S



Max. Speed : 8,000 rpm
Max. RCF : 11,500 xg
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 (optional)
(Part No. S302194A : 4pcs/set)



Suitable for pelleting samples with conical-type tube
Separated sample

*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)

Swinging Bucket Rotor for Micro Plate



R5S4
DWP x 4 pcs
MP x 12 pcs

Balancer



S302959A : Scale Balancer (for 1,000ml bottle)
349981A : 500g Balancer (up to O.D. 73mm)
349981B : 250g Balancer (up to O.D. 38mm)

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 E061010-2-020 Annex AA, using Bacillus subtilis containing $\geq 1 \times 10^6$ 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

Type	Model	Part No.	Maximum speed (rpm)		Maximum RCF (g)	Weight (kg)	For tubes		Standard accessories
			CR22N				Nominal capacity (ml) x number of tubes	Tube dimensions (dia. x mm)	
Fixed angle rotor	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 x 8
	R18A	904359D0	18,000	42,200	8.2		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	32,300	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	30,240	16.8		250 x 4	62 x 124	250PP bottle x4
	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	62 x 124	250PP bottle x6
							11 x 6	16 x 82	16 x 82
	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	-
	R4S5	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	S36821A	3,000	1,870	-		10 x 120	12 x 120	-	
Tube rack GR	S36822A	3,000	1,870	-		7 x 96	13-14 x 120	-	
Tube rack YE	S36823A	3,000	1,870	-		15 x 72	16.5 x 120	-	
Tube rack OR	S36824A	3,000	1,870	-		50 x 16	36.5 x 120	-	
						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	36.5 x 120	-	
						10 x 16	12 x 120	-	
Tube rack 61 x 1	S303580A	3,000	1,800	-		-	Falcon® 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	-	
507TS 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**	
M bucket	S46977A	2,000	700	-		Microplate x 4pcs	W128 x D86 x H10-30	96-hole microplate	
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.
2. Automatic identification type (non) can be used with previously delivered centrifuge (CR-Gil 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 R10C rotors cannot be reproduced.)
4. For information on product compatibility, please contact your nearest Hitachi Koki's representative. For one of these rotors is used in a previously delivered (old type) centrifuge or it is 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 information, a coupon produced by Falcon (part no. 2900) is also required.
6. ** 1,000PPARC bottle (2), the conventional product, cannot be used.
7. 14 item 50ml low standing culture tubes and 50ml V bottom culture tubes can be used.
8. R10C rotor is an exclusive model for CR22N. It cannot be used with our former models, such as CR-Gil, CR-Gil, CR-Gil and CR-F series.
9. When the above rotors are used with our former models, their max. speed may be restricted. For more detailed information, please contact your nearest Hitachi Koki's representative.
10. The rotor warranty period is 7 years.
11. Eppendorf is a registered trademark of Eppendorf AG.
12. Nalgene® is a registered trademark of Nalgene, Nunc International Corporation.

Made-to-Order Rotors

Fixed Angle Rotors

Type	Model	Part No.	Maximum speed (rpm)	Maximum RCF (g)	Weight (kg)	Nominal capacity (ml) x number of tubes	Tube dimensions (dia. x mm)	Standard accessories
Fixed Angle Rotors	R22A2	904375D0	22,000 rpm / 51,200 g	55,100	4.2	10 x 12	16 x 82	10PA bottle (with cap) x 12
	R22A	904363D0	22,000 rpm / 45,170 g	55,200	3.3	2 x 30	11 x 42	-
	R21A	904373D0	21,000 rpm / 43,600 g	50,000	5.4	30 x 6	26 x 97	30PA bottle (with cap) x 6
	R20A	904295D0	20,000 rpm / 33,200 g	48,000	6.8	50 x 8	29 x 103	50PA tube x 8
	R19A	904359D0	18,000 rpm / 40,940 g	42,200	8.2	50 x 8	30 x 115	himac 50TC tube x 300
	R17A	904360D0	17,000 rpm / 27,700 g	32,300	10.5	50 x 10	30 x 115	50 ml culture tube
Swinging Bucket Rotors	R15S3	904365D0	15,000 rpm / 28,700 g	22,500	10.5	50 x 10	30 x 115	50 ml culture tube
	R10S	904345D0	10,000 rpm / 16,470 g	18,800	16.9	500 x 6	73 x 163	500PA bottle x 6
	R7S	904371D0	8,000 rpm / 9,420 g	11,500	7.2	50 x 4	30 x 115	50 ml culture tube
	R6S	904369D0	4,700 rpm / 5,010 g	3,100	5.2	96DW x 4 / 96MP x 12	W128 x D86 x H90	-
	R4S3	904370D0	4,000 rpm / 2,900 g	2,860	4.9	-	-	-
	R3S	904315D0	3,000 rpm / 1,940 g	1,940	6.0	-	-	-

Swinging Bucket Rotors

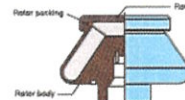
Type	Model	Part No.	Maximum speed (rpm)	Maximum RCF (g)	Weight (kg)	Nominal capacity (ml) x number of tubes	Tube dimensions (dia. x mm)	Standard accessories
Swinging Bucket Rotors	R15S3	904365D0	15,000 rpm / 28,700 g	22,500	10.5	50 x 10	30 x 115	50 ml culture tube
	R10S	904345D0	10,000 rpm / 16,470 g	18,800	16.9	500 x 6	73 x 163	500PA bottle x 6
	R7S	904371D0	8,000 rpm / 9,420 g	11,500	7.2	50 x 4	30 x 115	50 ml culture tube
	R6S	904369D0	4,700 rpm / 5,010 g	3,100	5.2	96DW x 4 / 96MP x 12	W128 x D86 x H90	-
	R4S3	904370D0	4,000 rpm / 2,900 g	2,860	4.9	-	-	-
	R3S	904315D0	3,000 rpm / 1,940 g	1,940	6.0	-	-	-

Special Sealed-type Fixed Angle Rotor

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

Type	Model	Part No.	Maximum speed (rpm)	Maximum RCF (g)	Weight (kg)	Nominal capacity (ml) x number of tubes	Tube dimensions (dia. x mm)	Standard accessories
Special Sealed-type Fixed Angle Rotor	R18AY	904357D0	18,000 rpm / 38,800 g	42,200	8.2	50 x 8	30 x 115	himac 50TC tube x 300
	R12AY	904325D0	12,000 rpm / 22,200 g	23,800	16.0	250 x 6	62 x 124	250PP bottle x 6

Type	Model	Part No.	Maximum speed (rpm)	Maximum RCF (g)	Weight (kg)	Nominal capacity (ml) x number of tubes	Tube dimensions (dia. x mm)	Standard accessories
Special Sealed-type Fixed Angle Rotor	R16AY	904359D0	16,000 rpm / 32,300 g	32,300	10.5	50 x 10	30 x 115	50 ml culture tube
	R8AY	904374D0	8,000 rpm / 12,000 g	11,500	7.2	50 x 4	30 x 115	50 ml culture tube



Horizontal Rotor

Type	Model	Part No.	Maximum speed (rpm)	Maximum RCF (g)	Weight (kg)	Nominal capacity (ml) x number of tubes	Tube dimensions (dia. x mm)	Standard accessories
Horizontal Rotor	R10H	904345D0	10,000 rpm / 13,000 g	18,800	16.9	500 x 6	73 x 163	500PA bottle x 6
	R11D2	904353D0	11,000 rpm / 15,800 g	20,000	17.5	100 x 4	30 x 115	100 ml culture tube

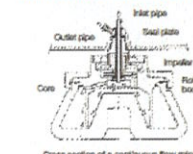
Soil Dehydration Rotor

Type	Model	Part No.	Maximum speed (rpm)	Maximum RCF (g)	Weight (kg)	Nominal capacity (ml) x number of tubes	Tube dimensions (dia. x mm)	Standard accessories
Soil Dehydration Rotor	R10H	904345D0	10,000 rpm / 13,000 g	18,800	16.9	500 x 6	73 x 163	500PA bottle x 6
	R11D2	904353D0	11,000 rpm / 15,800 g	20,000	17.5	100 x 4	30 x 115	100 ml culture tube

Continuous Flow Rotor

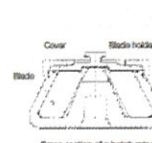
Type	Model	Part No.	Maximum speed (rpm)	Maximum RCF (g)	Weight (kg)	Nominal capacity (ml) x number of tubes	Tube dimensions (dia. x mm)	Standard accessories
Continuous Flow Rotor	R18C	904357D0	18,000 rpm / 34,960 g	42,200	8.2	50 x 8	30 x 115	himac 50TC tube x 300
	R13C	904366D0	13,000 rpm / 21,260 g	26,400	11.0	250 x 4	62 x 124	250PP bottle x 4
	R10C	904345D0	10,000 rpm / 14,590 g	18,800	16.9	500 x 6	73 x 163	500PA bottle x 6

Continuous flow rotors: R18C/R13C/R10C



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.



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.

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

Type	Model	Part No.	Maximum speed (rpm)	Maximum RCF (g)	Weight (kg)	For tubes		Standard accessories
			CR22N			Nominal capacity (ml) number of tubes	Tube dimensions (dia. X mm)	
Fixed angle rotor	R22A	90439900	22,000 (21,000)	45,170 (49,800)	7.0	7 x 18	16 x 80	7PA tube x 18
	R22A2	90435000	22,000	45,200	6.4	50 x 8	29 x 103	50PA tube x 8
	R21A	90437100	21,000 (20,000)	43,660 (58,300)	5.5	11 x 16	16 x 82	11PA tube x 16
	R20A (special diameter)	90430200	20,000 (17,000)	33,300 (57,510)	10.0	18 x 32	16 x 99	18PP tube x 32
	R19A	90435000	19,000 (18,000)	40,940 (40,900)	10.4	80 x 6	39 x 104	80PA bottle x 6
	R17A	90435000	17,000 (18,000)	27,700 (52,600)	11.0	50 x 14	29 x 103	50PA tube x 14
	R14AS	90432700	14,000	23,800	12.9	100 x 10	38 x 104	80PA bottle x 10
	R12A4	90432700	12,000	23,800	7.7	2 x 72	11 x 41	1000PP (specialized product)
	R15S3	90439900	15,000	28,700	5.8	11 x 4	16 x 82	11PA tube x 4
	R10S	90435100	10,000	16,470	6.0	50 x 4	29 x 103	50PA tube x 4
Swinging bucket rotor	R7S	90431300	7,000	9,420	9.0	250 x 4	62 x 124	250PP bottle x 4
	R6S	90434500	4,700	5,010	10.7	Microplate x 2 pcs	W128 x D86 x H10-30	96-hole microplate
	2 x 48 adapter	S406787A	5,700	5,010	-	2 x 96	11 x 41	Microtube
	0.2 x 50MP actuator	S406785A	5,700	5,010	-	46-hole microplate x PG1	-	-
	R18A4	90432800	18,000	38,800	6.9	50 x 8	29 x 103	50PA bottle x 8
Special sealed-type fixed angle rotor	R18A4	90432800	18,000	38,800	6.9	80 x 6	39 x 104	80PA bottle x 6
	R12A4	90435000	12,000	22,200	14.3	250 x 4	62 x 124	250PP bottle x 4
	R8A4	90433100	8,000	12,000	24.1	500 x 6	135 x 163	500PA bottle x 6
Horizontal rotor	R10H	90434800	10,000	13,000	10.6	Microplate x 4 pcs	W128 x D86 x H15-45	96-hole microplate
Soil dehydration rotor	R11D2	90436300	11,000	15,800 (PF2.6-4.2)	12.0	100 x 4	50 x 51	Dehydration tool x 4
Continuous flow rotor	R18C	90137800	18,000	25,800	7.5	1,000 (6,000)	-	-
	R18C	90432000	13,000	21,200	6.2	2,200 (1,600)	-	-
	R13C	90432100	13,000	21,200	11.8	3,200 (2,400)	-	-
	R10C	90432100	10,000	13,000	15.3	3,200 (2,400)	-	-
	R10C	90432100	10,000	13,000	15.3	3,200 (2,400)	-	-