

Centrifuges
GENERAL
CATALOG
2009-2010

Hitachi Koki
HITACHI

Hitachi



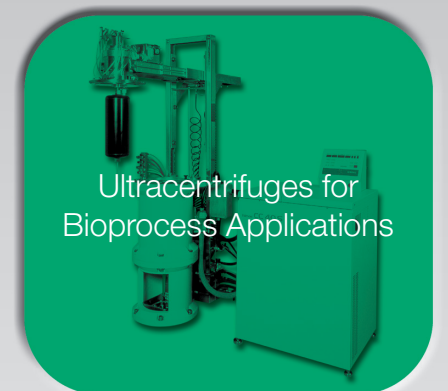
Ultracentrifuge



Refrigerated Centrifuges



Compact Centrifuges



Ultracentrifuges for
Bioprocess Applications



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Scientific Instruments Division of Hitachi Koki Co., Ltd. is certified Quality Management and Quality Assurances Standard (ISO 9001) by International Organization for Standard



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 advance notice.
For further information, please contact your nearest Hitachi Koki representative.

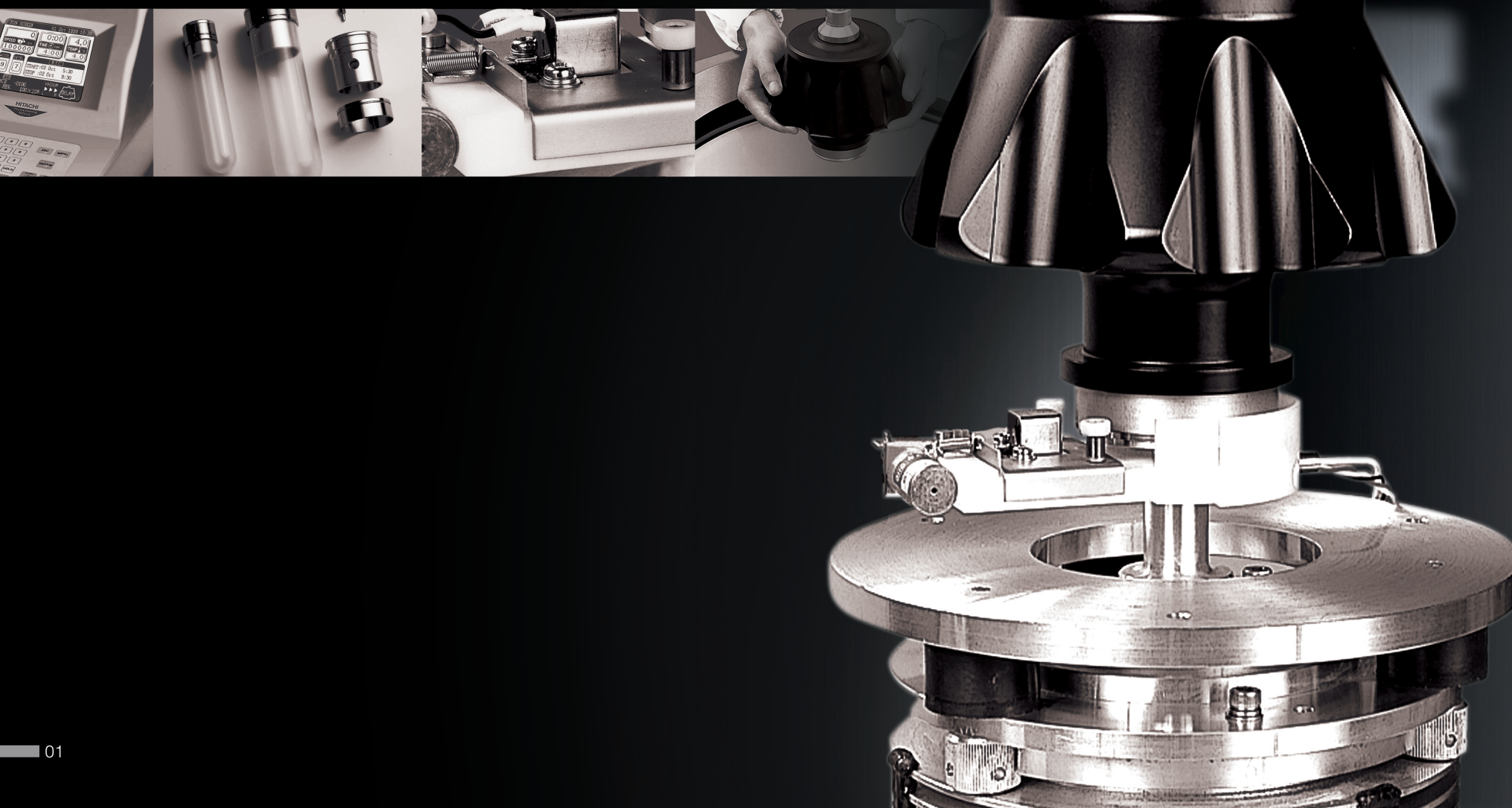
Manufacturer :
Hitachi Koki Co., Ltd.
Life-Science Instruments Division

Shinagawa Intercity Tower A
2-15-1 Konan, Minato-ku
Tokyo 108-6020 JAPAN
TEL : +81-3-5783-0665
FAX : +81-3-5783-0771

www.hitachi-koki.com/himac

Ultracentrifuges P03-P14
Refrigerated Centrifuges P15-P24
Compact Centrifuges P25-P44
Ultracentrifuges for Bioprocess Applications P45-P50

Where New Technologies are Born



Ultracentrifuges



These general-purpose ultracentrifuges have the highest performance in their class* — 100,000 rpm (CP100WX) — making them ideal for the wide range of separation tasks used in cell biology, biochemistry and nano-material fields. For reliability and efficiency to match their speed and quiet operation, they incorporate automatic rotor-life management (RLM), a large color LCD display and positive-feedback (click-type) touch pad entry. Other standard features include RCF (x g) computation and display functions and real-time control (RTC) for direct entry of start/stop times and other parameters. A log options list permits connection with a PC (for simulations and logging of rotor and centrifuge operation histories), printer connection, user security functions and more.

*As of May 2009

Easy operation

Microcomputer control functions

The liquid crystal screen simultaneously displays set values and the actual operating conditions.

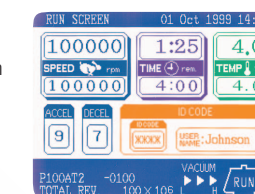
Color liquid crystal display and touch-sensitive panel

Keypad input is enhanced by gentle "click" feedback to confirm correct entry. Operation errors or faults are immediately indicated by means of an alarm display.



User name is shown on screen, linked to user ID code

The user name can be shown through ID code input. This function allows interactive verification of users.



Powerful customization functions

These functions can be selected through the interactive screen display.

- Setting of date
- Setting of time
- Identification number of the centrifuge unit
- Print-out function (optional)
- User time reservations
- User registration
- Screen contrast adjustment
- Setting of the zonal rotation speed (2,000 – 3,000 rpm)

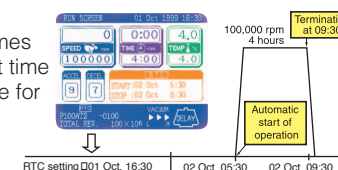
Low table height easier rotor handling

The operating height of the work top was lowered to 85 cm, making the large-sized rotors easier to load and unload.



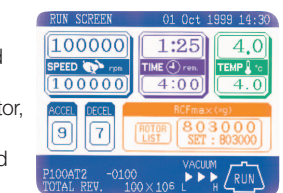
Real-time control (RTC) simplifies timer settings

Operators input desired start times directly and can input both start time and operating profile in advance for unattended operation.



Operating parameters are automatically computed and displayed, based on selected RCF

RCF max. and RCF avg. at the selected rotational speed are automatically calculated and displayed for a given rotor, reducing bothersome calculations. The rpm and operating profile are calculated simply by setting the desired RCF.



Specifications

Model	CP100WX	CP90WX	CP80WX
Max. speed (rpm)	100,000	90,000	80,000
Max.RCF(xg)	803,000 (P100AT2 rotor)	700,000 (P90AT rotor)	615,000 (P80AT rotor)
Speed control accuracy (rpm)	±10 (1,000 to maximum speed)		
Set speed (rpm)	1,000 to maximum speed in increments of 100		
Displaying and setting RCF	Applicable (RCF max. or RCF average)		
ω-T run	Applicable		
Drive unit warranty	10 years		
Rotor temperature control accuracy (°C)	±0.5 (set temperature is from 0 to +40)		
Cooling method	Thermo-module cooling (CFC/HCFC/HFC-free)		
Operation panel	· Color liquid crystal display (256 color) and keyboard · Touch-sensitive panel (run screen only)		
Rotor life management	RLM rotor: automatic management, Rotor with optical adaptor: management by registration system		
Operation results management system / calculation & simulation system	Optional software (CD-ROM, OS: Windows® XP Professional / 2000 Professional) This option requires a PC and RS232C cross cable on the market.		
Vacuum system	Oil-rotary vacuum pump with moisture removal function and oil diffusion pump.		
HEPA filter	Option		
Operational noise (dB(A))	53		
Heat radiation into the room	1 kW or less		
Dimensions (mm)	790 (W) x 690 (D) x 1,000 (H), depth with safety cover: 890, height to the table: 850		
Floor area (m ²)	0.81 (900 x 900 mm)		
Weight (kg)	400		
Power requirements	Single phase, 50/60 Hz, AC 200/208/220 V ±10%, 20 A max. (normally 8 A) AC 230/240 V ±10%, 16 A max. (normally 7A)		
Conformity to EMC* standards	The CP-WX series ultracentrifuges conform to the following EMC standards: EN61326, EN61000-3-2, and EN61000-3-3		

Note: *Electro-Magnetic compatibility

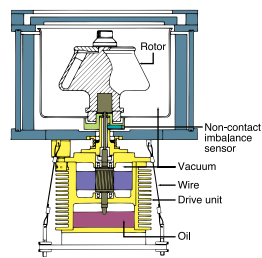
himac CP-WX SERIES Hitachi Ultracentrifuge

CP100WX/CP90WX/CP80WX

Advanced technology

The highest acceleration and RCF for its class 100,000 rpm, and RCF for 803,000 x g

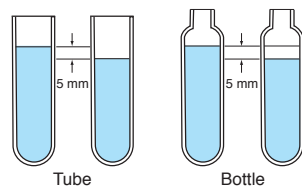
The highly efficient and compact drive unit can reach maximum acceleration of 100,000 rpm in 5 minutes. The motor spins in a vacuum, with a unique wire-suspension design (PAT.).



Drive unit warranted for 10 years

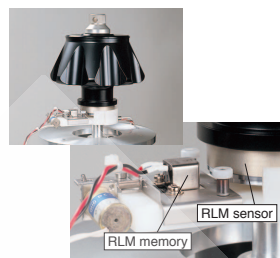
Powerful imbalance protection

Automatic balance compensation requires only that samples are visually balanced to within 5 mm. If faulty bucket installation or excessive rotor imbalance occurs, a fast-acting imbalance detector shuts down the centrifuge.



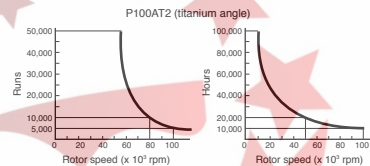
Rotor life is automatically managed (PAT.)

Operation records of each rotor are stored in the RLM (Rotor Life Management) memory and the RLM element embedded in the rotor, eliminating need for manual rotor logbook entries. (Naturally, non-RLM rotors still require manual logging.)



Rotor life is automatically extended (PAT.)

Automatic rotor life management system records rotor type, serial number, total number of runs and accumulated run time of the rotor. By precise automatic tracking of the rpm profile and operation time to the nearest 0.1 hours and 0.1 times means, the rotor life is extended as much as 10 times longer than as conventional calculation.



Safety and environmental impact reduction

0°C is maintained by electronic cooling

An electronic cooling system, based on a thermo-module maintains samples at 0°C, even at maximum acceleration (ambient temperatures to 30°C).

Energy savings

Power consumption is reduced by 10% (in-house comparison) through the use of an IGBT inverter.

Exceptionally low noise -- 53 dB or less

Based on EU requirements for mechanical and electrical safety and electromagnetic compatibility

Brake control system for reverting motor electric power to the power source side

Heating during deceleration is thus curbed.

Environment friendly product

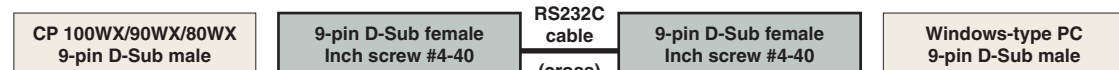
About 80% of the centrifuge proper is composed of recyclable materials.

Options

Option	Option	Part No.
Option 1	himac Log manager and himac ASSIST Windows® XP Professional/2000 Professional**, NT CD-ROM for PC-based logging and management of operating parameters, separation simulations, rotor data	S203638A
Option 2	Printer Kit* for printout of centrifuge operation parameters	S204364B
Option 3	User lockout Adds security functions to restrict use to authorized users	96002996

- *Contains thermal printer (with AC adapter and paper roll included), printer cable, printer battery, base and operation manual.
- **Operation under Windows® XP Home Edition/2000 Home Edition has not yet been confirmed. Operation is not possible under Windows® 95/98/Me.
- Option 1 requires a PC and RS232C cross cable. Options 1 and 2 cannot be used simultaneously.

Specifications of RS232C cable for option 1 (This cable is available on the market.)



- Notes:
- The above cable is applicable to most Windows-type PCs. Mac OS is not supported.
 - Recommended cable: RS232C cable
 - 9-pin D-Sub (DB-9) female serial (RS232C) cross cable with the correct connector for the computer (usually 9-pin D-Sub (DB-9) female or 25-pin D-Sub (DB-25) female).
 - Be sure to use the cross (reverse) type RS232C cable. Note that a straight type cable cannot establish a communication between the centrifuge and the PC.
 - Note that some notebook PCs have no serial port.

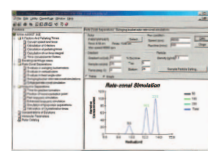
Option 1: himac Log manager and himac ASSIST

– himac Log manager

With this software and a PC (Windows® XP Professional/2000 Professional) connected to the centrifuge, it is possible to maintain records of centrifuge and rotor usage online. This simplifies management with multiple users by maintaining records of centrifuge use, use history by individuals, rotor use, and detailed rotor life.

• Rate zonal simulation

Example: rRNA separation based on the P40ST swing rotor; 40,000 rpm, 4 C, 5 to 20% sucrose density gradient, 500 min.

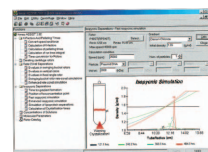


– himac ASSIST

- Calculations of K factor and pelleting time
- Calculation of the allowable rpm with high-density liquids
- Rate zonal simulation
- Isopycnic simulation
- Solvent concentration conversion
- Mutual conversion of molecular parameters
- Rotor database

• Isopycnic simulation

Example: Plasmid DNA separation with P40ST swing rotor; CsCl $\rho = 1.55$ g/ml, 35,000 rpm (Note: crystallization warning mark [s] showing that parameters are unsuitable.)

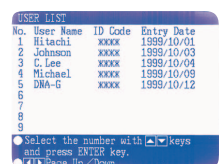


Option 2: Printer

After the run, connect this printer to capture a permanent record of operating parameters and rotor life. You can use this option without a connected PC for post-operation data control.

Option 3: User lockout

When sharing a centrifuge under joint utilization or in RI facilities, the optional lockout system limits utilization to registered personnel only.



Optional accessories: Rotors

Type	Model	Part No. (automatic)	Max. speed (rpm)	Max. RCF (x g)	Nominal capacity (ml) x number of samples	K-factor
Fixed angle	P100AT2*	9023112M	100,000	803,000	6.5 x 8	18
	P90AT*	9023052M	90,000	700,000	12 x 8	25
	P80AT*	9023092M	80,000	615,000	12 x 8	27
	P70AT*	9022622M	70,000	505,000	40 x 8	44
	P70AT2*	9022752M	70,000	452,000	12 x 12	36
	P65A*	9022312M	65,000	370,000	12 x 10	48
	P50AT2*	9022632M	50,000	303,000	40 x 12	70
	P50A3	9023140M	50,000	252,000	1.5 x 24	33
	P50AT4*	9024110M	50,000	316,000	6.5 x 44	32
	P45AT*	9022642M	45,000	235,000	94 x 6	130
	P42AT	9022650M	42,000	223,000	0.23 x 72	12
	P32AT	9023150M	32,000	111,000	12 x 32	186
	P27A	9023120M	27,000	106,000	160 x 6	352
	P19A	9022220M	19,000	55,100	230 x 6	754
Neo angle	P90NT*	9023072M	90,000	646,000	5 x 8	10
	P65NT*	9024152M	65,000	402,000	12 x 10	23
Vertical	P65NT2*	9023102M	65,000	431,000	5 x 18	15
	P100VT*	9023062M	100,000	700,000	5 x 8	6
Swinging bucket	P65VT2*	9023022M	65,000	416,000	5 x 16	10
	P65VT3*	9023032M	65,000	402,000	12 x 10	13
	P50VT2*	9023082M	50,000	243,000	40 x 8	36
	P65ST	9022390M	65,000	419,000	5 x 3	48
Zonal	P56ST	9022550M	56,000	409,000	4 x 6	54
	P55ST2	9022770M	55,000	366,000	5 x 6	50
	P40ST	9022370M	40,000	284,000	13 x 6	139
Continuous flow	P28S	9022880M	28,000	141,000	40 x 6	252
	P35ZT	9022520M	35,000	122,000	1,690 ml	303
P32CT	P32CT	9022660M	32,000	102,000	430 ml	42

- Notes:
- Automatic life management rotors, CP- α , CP-MX and CP-WX series-compatible only (automatic RLM system).
 - * These rotors do not include any tubes or caps as a standard accessories. They can be purchased from the list of "Rotors and tubes catalog" (Part No. 999511). Also please refer to website (<http://www.hitachi-koki.com/himac/>).
 - All the rotors above are also compatible with the CP- α , CP-MX and CP-WX, series.
 - Rotors with model names that include the letter T are made of titanium alloy.
 - When model names do not include the letter T, rotors are made of aluminum alloy.
 - Buckets for swinging bucket rotors are made of titanium alloy.
 - When using the zonal rotor P35ZT, the RPZ-S zonal rotor seal attachment ass'y., Part No. 90130600, is required (order separately). Please refer to p. 7.
 - When using a seal tube, please place a separate order for STF2 tube sealer and tube rack (refer to p. 8).
 - indicates a made-to-order rotor.
 - Capacity in the above table shows nominal capacity of tubes. Actual capacity in actual use may be smaller than the nominal capacity depending on rotor structure, tube shape, etc.
 - As for P32CT, refer to p. 8.
 - The P28S rotor can also be used for 16 ml x 6 pcs., with optional 16 Ti bucket ass'y. (Part No. 347607A, order separately).

New Rotors



The P50A3 fixed angle rotor can separate samples contained in twenty-four 1.5ml microtubes at a time. It is suitable for speedy pelleting of minimal volume samples in nano-order. Fluid annulus prevents the sample leakage even if the sample overflows from a tube in the rotor during the rotor is spinning. Applicable microtube is "himac 1.5ml microtube" (S308892A, 300pcs/box) only.



The P32AT fixed angle rotor can separate samples contained in thirty-two 12ml tubes at the same RCF at a time. It is suitable for separation of many samples in nano-order at 100,000 x g or higher RCF. Fluid annulus prevents the sample leakage even if the sample overflows from a tube in the rotor during the rotor is spinning. Tube cavity angle 35° in two layers provide the same RCF to all tubes (32 tubes) for efficient pelleting.

Applications

● **Rotor: P90NT (neo angle rotor)**
● **Tube: 5PA seal tube**
● **Mode: Normal mode**

After centrifugation:
Linear DNA
Plasmid DNA
RNA

● **Rotor: P100AT2 (fixed angle rotor)**
● **Tube: 4.7PC thick-walled tube**
● **Mode: Normal mode**

Step 1 Separation of VLDL
Layer 1 ml of 1.006M NaCl
Serum 2 ml
Centrifugation: 100,000 rpm, 2 hours, 16°C, Acc.: 5, Dec.: 7
VLDL
LDL, HDL, Albumin, etc.

Step 2 Separation of LDL
Add 1 ml of 1.063M NaCl to 2 ml of the lower layer solution of Step 1
Centrifugation: 100,000 rpm, 3 hours, 16°C, Acc.: 9, Dec.: 7
LDL
HDL, Albumin, etc.

● **Rotor: P90NT (neo angle rotor)**
● **Tube: 5PA seal tube**
● **Mode: Normal mode**

85,000 rpm 3 hours
Acceleration: 9
Deceleration: 7
20°C

CsCl: $\rho=1.57\text{g/cm}^3$ (49.3% (W/W))
Ethidium bromide (10 mg/ml): 100 μl
10% sodium N-lauroyl sarcosinate: 50 μl
Crude sample of plasmid DNA in TE buffer (pH8.0)
Total: about 5 ml

Also see our homepage (<http://www.hitachi-koki.com/himac/>).

Accessories

- Tubes** Materials: PA—Polyallomer, PC—Polycarbonate, PE—Polyethylene, PET—Polyethylene-terephthalate, SS—Stainless steel
In an angle rotor, tubes must be used with caps (order separately). In a swing rotor, caps are unnecessary. Tubes should be filled to full capacity during operation, except in the case of stainless steel tubes, for which volume is arbitrary.
Thick wall tube: Wall thickness of 1 mm or more. It can be used in a capless state in both angle and swing rotors.
For swing rotor use, the liquid volume should be full.
- Bottles** Materials: PA—Polyallomer, PC—Polycarbonate
Screw cap types are called bottles. Bottles with plugs and caps are high-speed bottles, while bottles with plastic caps are classified as B-type bottles, and those with metal caps, C-type bottles. If centrifugal acceleration above 100,000 x g is required, the liquid volume must be up to the shoulder, but at 100,000 x g or less, liquid volume is arbitrary.
- Seal tubes** Material: PA—Polyallomer
These are widely used in secondary biological applications (for containment purposes). They are disposable tubes which are used after their tops are sealed with the dedicated STF2 tube sealer (option).
- Cleaning kit** (Centrigent, cleaning brush x 3: Part No. S305166A) (Centrigent: Part No. S408349A)
This kit consists of a cleaning liquid for dedicated use with centrifugal rotors and tubes, as well as a cleaning brush. The cleaning liquid is a genuine product suitable for polycarbonate tubes and aluminum alloy rotors, which are sensitive to chemicals.
- S-cap series**
Improves reliability and operability of caps for open top tubes and allows 12 and 40 ml open top tubes to be driven at higher revolutions.
- There are only three parts and three steps to assembling the whole unit.
- It contains no consumable parts, such as O rings, and, aside from occasional cleaning, requires no maintenance.
- It is also designed for use with highly chemically resistant PE tubes.

P35ZT: Zonal centrifugation system

P35ZT
Zonal rotor
Part No. 9022520M

In zonal centrifugation, a density gradient is developed within the zonal rotor running at low speed. Next, the samples to be separated are loaded through the center of the zonal rotor and are separated at a preset high speed. After separation, the gradient is unloaded and collected through the center by injecting high-density fluid from the outside wall of the zonal rotor while the rotor is running. The desired fractions are moved into the fraction collector via a spectrophotometer using a flow cell which monitors and records the optical density of the fractions.

System flow diagram

* RPZ-S: Seal attachment ass'y., Part No. 90130600

Separation procedure

By arranging for low-speed revolution of a rotor in the air, density gradient is produced within a rotor by a density gradient preparation unit.

The sample is injected during rotor revolution.

Rotor revolution is accelerated to the specified number of revolutions, and desired centrifugation is implemented.

The sample is taken out, and liquid characterized by higher density is injected.

Under the state in which the rotor is revolved at a low speed in the air, liquid characterized by higher density is injected from the exterior of the rotor, and the separated sample is taken out of the central portion of the rotor.

P32CT: Continuous flow centrifugation system

P32CT
Continuous flow rotor
Part No. 9022660M

The Model P32CT Continuous Flow Rotor, designed for use with Hitachi preparative ultracentrifuges, enables you to perform highly efficient continuous flow separation and purification of large volumes under high centrifugal force.

Product made to special specification

940 ML core ass'y.
Part No. 348333A

For separating samples containing much sediment or performing separation after increasing the density gradient, the 940 ML core ass'y. increases the rotor capacity to 940 ml. The flow volume performance is about 35% less than that of standard cores.

Configuration of P32CT

System flow diagram

*Necessary for the use of P32CT. Please make this pump and bath ready before installing a P32CT. Regarding its specifications, please consult us.
**Necessary in the case of density gradient centrifugation.

STF2*: Tube sealer

STF2*
Tube sealer
Part No. 90132400

Simple to use, this welding sealer employs a heating element to seal tubes quickly and effectively. An indicator lamp turns off once sealing is complete. (Tube rack is an optional item)

Tube rack (option)

Item	Part No.	Tube to be used
Tube rack (G2)	S201778G	1.5PA seal tube
Tube rack (G)	S201778F	2PA seal tube
Tube rack (B2)	S201778E	3.5PA seal tube
Tube rack (B3)	S201778H	4PA seal tube
Tube rack (B)	S201778A	5PA seal tube
Tube rack (B4)	S201778J	6.5PA seal tube
Tube rack (C2)	S201778L	8PA seal tube
Tube rack (C)	S201778B	12PA seal tube
Tube rack (E)	S201778C	40PA seal tube
Tube rack (F2)	S201778M	94PA seal tube
Multi rack	S201778K	2, 4, 6.5, 12, 40PA seal tubes

DGP-2*: Density gradient preparation unit

DGP-2*
Density gradient preparation unit
Part No. 90131100

This instrument can be used for preparing gradients for zonal centrifugation and unloading the gradients after fractionation. It also permits cooling the density gradient solution with ice.

Special accessory
When absorbance is measured and recorded using a spectrophotometer equipped with flow cell after zonal rotor centrifugation, accurate data cannot be obtained if there is pulsating flow. In such a case, please order a buffer tank assembly, which is a special accessory.

Item	Buffer tank ass'y.
Part No.	103592A

DGF-U*: Density gradient fractionator

DGF-U*
Density gradient fractionator
Part No. 90130701

This instrument can be used for preparing gradients and unloading them after separation. Pouring and unloading can be performed from the liquid surface. The flow rate is selectable from 0 to 5 ml/min. Density gradient solutions can be prepared simultaneously in six tubes (also, in one or three tubes).

TSU2*: Tube slicer

TSU2*
Tube slicer
Part No. 90130800

This instrument slices sample tubes and collects lipoprotein which floats on the surface after centrifugation. Motorized rotation slicing greatly simplifies operation.

Note: *As the accessories marked with an asterisk require a 100-volt power source, a step-down transformer, Part No. 337501, is required in areas where the mains voltage is not 100 V.

Tabletop Micro Ultracentrifuge



himac CS150NX

The Greatest Performance and the quietest operating sound in the most compact body

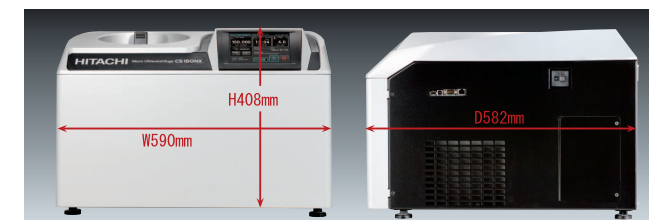
himac State-of-the-Art Technology for Easy Operation

The world's fastest speed : 150,000rpm / The world's greatest RCF : 1,050,000xg *

himac centrifuge technologies have realized the above greatest performance and the quietest operating sound "45dBA" in its the most compact body*. CS150NX takes only 90 seconds to reach the world's fastest speed 150,000rpm by himac original vacuumed drive unit. Now you can separate and purify protein, lipoprotein, cell organella, DNA and RNA, also carbon nano tubes, more efficiently than ever.

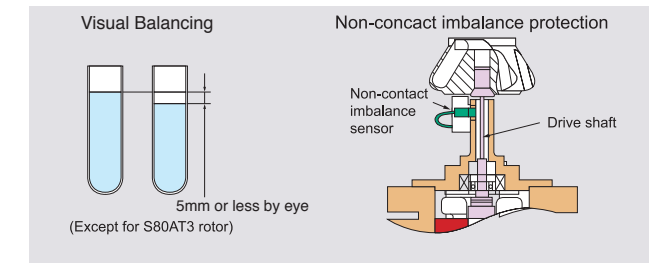
The Most Compact Body

The most compact body* (590(W) x 582(D) x 408(H) mm) does not occupy a laboratory table. CS150NX carries the world's greatest performance and many attractive and useful functions in its the most compact body*. Rotor chamber is allocated in a front part of the body with smooth sliding door, so that it is easy for operators to place a rotor. Touch-sensitive LCD panel with wide view angle is placed at a position and an angle for easy operation.



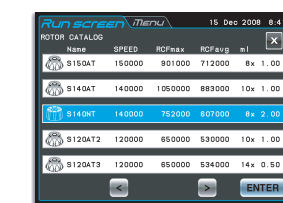
Powerful Imbalance Protection

Samples need to be balanced within 5mm by visual check only. Non-contact imbalance sensor always monitors vibration of the rotor and drive shaft. In case of abnormal vibration, the sensor activates and stops operation immediately.



Easy Operation with Touch-Sensitive LCD

Colour 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 functions by touching the icon on the display. Of course, operation status is identified at a glance by intelligible screen design.



Quick Start-Up

It takes just 8 seconds (minimum) to be ready for operation since power switch is turned on. Initial screen is displayed on the LCD panel during booting up the system.



USB Interface (compatible to GLP/GMP)

USB port is equipped as standard specification. Operating data can be output in CSV format. LAN port is also selectable. (option)

Specifications

Model	CS150NX
Maximum speed (rpm)	150,000
Maximum RCF (x g)	1,050,000 (S140AT rotor)
Speed control accuracy (rpm)	+/-50 (5,000 - 150,000)
Nominal capacity	30ml x 6 tubes (S50A rotor)
Nominal capacity (Swinging bucket rotor)	7ml x 4 tubes (S50ST rotor)
Timer	1 min. to 99 hrs. and 59 min. with HOLD function, with RTC function
Rotor temp. control range (°C)	0 to +40 (1 degree increments)
Rotor cooling method	Thermo-module cooling system (HFC free)
Rotor setting method	Self locking system
Screen display	Colour LCD (touch-sensitive)
Operational noise (dB(A))	45 (1m front)
Heat radiation rate (kw)	0.7
Drive unit warranty	5 years
Dimensions (mm)	590 (W) x 582 (D) x 408 (H)
Footprint (m ²)	0.50 (850 x 590)
Weight (kg)	97
Power requirements	AC220V, 230V, 240V +/-10% (50/60Hz) Single phase, 8A (Maximum)
Standard accessories	Tool box and tool set, Instruction manual
Standard	IEC61010-2-020, EN61326
	CE Marking qualified



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

* Versus other similar ultracentrifuge in this class, as of Oct. 2008.

Micro Ultracentrifuges



himac CS-GXII Hitachi Micro Ultracentrifuge SERIES
CS 150GXII / CS 120GXII

World's highest speed & greatest RCF
Unusually compact and quiet model

Even-quieter operation

- Very-low noise design realizes dramatically quieter operation Operation noise is 46dB(model: CS120GXII),47dB(CS150GXII)
- Disturbing rotor and fan noise is significantly reduced.

State-of-the-Art Technology

The world's greatest RCF: 1,050,000 x g

With the high-efficiency vacuum driving unit, acceleration to the maximum rotation speed of 150,000 rpm can be attained in about 100 seconds.

- No air friction loss operated in a vacuum
- Separation time improved 30% over previous models
- Drive unit warranted for 5 years

Non-contact imbalance protection

- Samples need only be balanced to within 5 mm by eye.
- When an abnormality occurs in the rotor due to substantial imbalance, rotation is stopped automatically using an advanced non-contact imbalance sensor.

Safer, self-locking rotor

- Simply put the rotor on its spindle and it is locked automatically with centrifugal force.
- Dual CPU over-speed prevention mechanism

VIEW



Specifications

Model	CS 150GXII	CS 120GXII
Maximum speed (rpm)	150,000	120,000
Maximum RCF(X g)	1,050,000 (S140AT rotor)	771,000 (S140AT rotor)
Speed control capacity (rpm)	+/- 50 (5,000 to max. speed)	
Nominal capacity (ml x tube)	30 x 6 (S50AT rotor)	
Swing rotor nominal capacity (ml x tube)	7 x 4 (S50ST rotor)	
Timer	1 min. to 99 hrs. and 59 min with HOLD and RTC function (real-time control)	
Vacuum system	Oil rotary vacuum pump and oil diffusion pump	
Rotor temp. control range (°C)	0 to +40	
Rotor cooling method	Thermo-module cooling system (HFC free)	
Screen display	Adjustable LCD display	
Rotor setting method	Quick setting (no special tools required)	
Operational noise (dB(A)*)	47	46
Heat dissipation into room (kW)	0.6	
Drive unit warranty	5 years	
Dimensions (mm)	440 (W) x 490 (D)x 850 (H/panel closed) / 1,000 (H/panel open), height to table 780	
Floor area (m ²)	0.53 (750x700)	
Weight (kg)	110	
Power requirements	AC220, 230, 240V+/-10%, 6A (50/60Hz) single phase	
Standard	IEC61010-2-020, EN61326	

*Measured 1 meter from front

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.



New Rotors

NEW S110AT



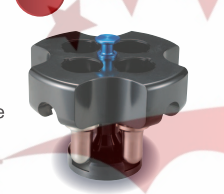
Comparing with S100AT6, Max. RCF is improved, in spite of the same nominal capacity. Separation time is reduced 17% over S100AT6 under the same condition. Screw cap type microtube can be centrifuged at 581,000xg with adaptor (option).

NEW S50A



Maximum nominal capacity is 30ml x 6 tubes, it is one of the largest capacity rotor for micro ultracentrifuge. Also it is easy to open and close the cover by T-shape handle. Newly introduced 30ml tubes series and himac original S-cap can be used for S50A.

NEW S50ST



Top Loading System

Top loading of swing bucket prevents from wrong setting the bucket. Maximum nominal capacity is 7ml x 4 tubes, it is one of the largest capacity rotor for micro ultracentrifuge. New 7ml tubes series are also introduced.

Applicable to : CS-NX / GXII / GXL / GX series

Max. speed (rpm)	110,000
Max. RCF	691,000
K-factor	15
Standard tube capacity (ml x tubes) ¹⁾	4.0 x 8
Max. tube capacity (ml x tubes)	5.0 x 8
Part No.	9024411K

Applicable to : CS-NX / GXII / GXL / GX series

Max. speed (rpm)	50,000
Max. RCF	210,000
K-factor	61
Standard tube capacity (ml x tubes) ¹⁾	25.0 x 6
Max. tube capacity (ml x tubes)	30.0 x 6
Part No.	9024391K

Applicable to : CS-NX / GXII / GXL series

Max. speed (rpm)	50,000
Max. RCF	253,000
K-factor	77
Standard tube capacity (ml x tubes) ¹⁾	7.0 x 4
Max. tube capacity (ml x tubes)	7.0 x 4
Part No.	9024401K

Exclusive 1.5 ml microtube (conical bottom) x 12pcs. 201,000 x g has been realized!



S55A2

Protein and nucleic acid etc. are quickly separated and the pretreatment of proteomic analysis is accelerated.

1.5 ml microtube (applicable to high x g)



You can use this exclusive microtube up to 201,000 x g without any adaptor in S55A2 rotor. (P/N S308420B) (300pcs/box)

For further detail, please refer to himac application No.127 available on our web site. (<http://www.hitachi-koki.com/himac>)



Type	Model	Part No.	Max. speed (rpm)	Max. RCF (xg)	K-factor	Standard tube capacity (ml x tubes) ¹⁾	Max. tube capacity (ml x tubes)
Fixed angle	S150AT	9024211K	150,000	901,000	6	1.0 x 8	*2 2.0 x 8
	S140AT	9024351K	140,000	1,050,000	5	1.0 x 10	*2 2.0 x 10
	S120AT2	9024181K	120,000	650,000	8	1.0 x 10	*2 2.0 x 10
	NEW S110AT	9024411K	110,000	691,000	15	4.0 x 8	*2 5.0 x 8
	S100AT3	9024231K	100,000	436,000	7	0.23 x 20	0.23 x 20
	S100AT4	9024241K	100,000	541,000	16	3.0 x 6	*2 4.0 x 6
	S80AT3	9024331K	80,000	415,000	23	6.0 x 8	*2 8.0 x 8
	S58A	9024381K	58,000	289,000	50	10.0 x 8	*2 13.5 x 8
	NEW S55A2	9024371K	55,000	201,000	40	1.5 x 12	*4 1.5 x 12
	NEW S50A	9024391K	50,000	210,000	61	25.0 x 6	*1 30.0 x 6
Neo angle	S140NT	9024223K	140,000	752,000	6	2.0 x 8	*3 2.0 x 8
	S55S	9024281K	55,000	259,000	44	2.2 x 4	2.2 x 4
Swinging bucket	S52ST	9024341K	52,000	276,000	79	5.0 x 4	5.0 x 4
	NEW S50ST	9024401K	50,000	253,000	77	7.0 x 4	*1 7.0 x 4

NEW New adapter for 1.5ml microtube with screw cap applicable to high x g

1.5ml microtube with screw cap + Adapter

* Exclusively for S110AT fixed angle rotor
 * Max. RCF : 581,000 x g
 * Applicable 1.5ml microtube with screw cap (Corning : #430909, Simport T334-5, T334-5S)
 * This adapter can be used with former models, S100AT6 and S100AT5. (Part No. #5412067)

MADE TO ORDER ROTORS

Type	Model	Part No.	Max. speed (rpm)	Max. RCF (xg)	K-factor	Standard tube capacity (ml x tubes) ¹⁾	Max. tube capacity (ml x tubes)
Fixed angle	S120AT3	9024191K	120,000	650,000	8	0.5 x 14	0.5 x 14
	S80AT2	9024251K	80,000	358,000	14	0.5 x 20	0.5 x 30
				304,000	17	0.5 x 10	
Neo angle	S70AT	9024261K	70,000	307,000	31	0.5 x 20	0.5 x 20
	S120NT	9024303K	120,000	586,000	9	2.0 x 8	*3 2.0 x 8
Vertical	S100NT	9024313K	100,000	479,000	12	4.0 x 8	*3 4.0 x 8
	S120VT	9024291K	120,000	501,000	8	2.0 x 8	*3 2.0 x 8

Notes
 1 Nominal capacity of standard tube supplied with the rotor
 2 Capacity indicated is when using a seal tube.
 Please place a separate order for STF-2 tube sealer, tube rack and space cap.
 3 Space cap is standard accessory.
 4 Third-party 1.5 ml microtubes cannot be used.

Rotor	Tube		Nominal volume (ml)	Tube specifications			Supply unit (pcs/box)	Special accessories needed when using these tubes (order separately)			
	Part No.	Name		Size (mm)	Material	Max. speed (rpm)		STF2 Tube rack	Adapter	Cap	
S150AT	S300535A	1PC tube	1.0	φ 11 x 34	PC	150,000	100				
	S300539A	1.5PA seal tube*	1.5	φ 11 x 25	PA	150,000	50	Tube rack (G2) x 1		Space cap (A4) x 8	
	S300540A	2PA seal tube*	2.0	φ 11 x 32	PA	150,000	50	Tube rack (G) x 1		Space cap (A4) x 8	
S140AT	S300535A	1PC tube □□	1.0	φ 11 x 34	PC	140,000	100				
	S300539A	1.5PA seal tube*	1.5	φ 11 x 25	PA	140,000	50	Tube rack (G2) x 1		Space cap (A4) x 10	
	S300540A	2PA seal tube*	2.0	φ 11 x 32	PA	140,000	50	Tube rack (G) x 1		Space cap (A4) x 10	
S120AT2	S300535A	1PC tube	1.0	φ 11 x 34	PC	120,000	100				
	S300539A	1.5PA seal tube*	1.5	φ 11 x 25	PA	120,000	50	Tube rack (G2) x 1		Space cap (A4) x 10	
	S300540A	2PA seal tube*	2.0	φ 11 x 32	PA	120,000	50	Tube rack (G) x 1		Space cap (A4) x 10	
S120AT3	S300533A	0.5 PC tube	0.5	φ 8 x 34	PC	120,000	100				
	S300534A	0.5 PA tube	0.5	φ 8 x 34	PA	80,000	100				
	S404332A	4PC tube	4.0	φ 1.3 x 6.0	PC	110,000	50				
S110AT	S303351A	4PA thick-walled tube			PA	80,000	50				
	S45319A	5PA seal tube	5.0	φ 1.3 x 5.3	PA	110,000	50	Tube rack (B) x 1		B4 space cap x 8	
	S308892A	1.5ml micro tube**	1.5	φ 1.09 x 4.0	PP	48,000	300		1.5A5 adapter x 4		
	S308892A	1.5 micro tube**	1.5	φ 1.1 x 4.2	PP	50,000	300		1.5A3 adapter x 6		
S100AT3	339133A	0.23 PC tube	0.23	φ 7 x 21	PC	100,000	100				
	339675A	0.23 PA tube	0.23	φ 7 x 21	PA	80,000	100				
	S308892A	1.5 micro tube**	1.5	φ 1.1 x 4.2	PP	50,000	300		1.5A3 adapter x 6		
S100AT4	S301599A	3PC tube	3.0	φ 13 x 51	PC	100,000	50				
	S303694A	4PA seal tube*	4.0	φ 13 x 38	PA	100,000	50	Tube rack (B3) x 1		B4 space cap x 6	
	S303350A	3PA thick-walled tube	3.0	φ 13 x 51	PA	85,000	50				
	S308892A	1.5 micro tube**	1.5	φ 1.1 x 4.2	PP	47,000	300		1.5A5 adapter x 4		
S100AT6 (Sales discontinued)	S404332A	4PC tube	4.0	φ 13 x 60	PC	100,000	50				
	S45319A	5PA seal tube*	5.0	φ 13 x 53	PA	100,000	50	Tube rack (B) x 1		B4 space cap x 8	
S80AT2	S303351A	4PA thick-walled tube	4.0	φ 13 x 60	PA	80,000	50				
	S300533A	0.5 PC tube	0.5	φ 8 x 34	PC	80,000	100				
	S300534A	0.5 PA tube	0.5	φ 8 x 34	PA	80,000	100				
S80AT3	S308892A	1.5 micro tube**	1.5	φ 11 x 42	PP	45,000	300		1.5A8 adapter x 8		
	S408829A	6PC thick-walled tube	6.0	φ 16 x 59	PC	80,000	50				
	S408833A	6PA thick-walled tube	6.0	φ 16 x 59	PA	60,000	50				
S70AT	S408831A	8PA seal tube*	8.0	φ 16 x 53	PA	80,000	50	Tube rack (C2) x 1		Space cap (C5) x 8	
	S302371A	0.5 PC tube (B)	0.5	φ 7 x 56	PC	70,000	100				
	S58A	S345320A	12PA seal tube*		φ 16 x 78	PA		50	Multi rack x 1		C2 space cap x 8 C-TI cap ass'y x 8
		S29606A	12PA tube		φ 16 x 76	PA		50			
S58A	S325470A	12PE tube		φ 16 x 76	PE		50			C-TI cap ass'y x 8	
	S325751A	12PC tube		φ 16 x 76	PC		50			C-TI cap ass'y x 8	
	S326010A	12SS tube		φ 16 x 76	SS		2			C-TI cap ass'y x 8	
	S338455A	10PC thick-walled tube		φ 16 x 76	PC	58,000	10				
	S338456A	10PA thick-walled tube		φ 16 x 76	PA	50,000	10				
	S303922A	10PC bottle (B) ass'y.		φ 16 x 82	PC	58,000	6				
S58A	S325952A	10PC bottle ass'y.		φ 16 x 82	PC	55,000	10				
	S334105A	10PA bottle ass'y.		φ 16 x 82	PA	50,000	10				
	S329445A	6.5PA tube		φ 13 x 64	PA	38,000	50		6.5A12 adapter	B-AL cap ass'y x 8	
S58A	S326415A	6.5PC tube		φ 13 x 64	PC	38,000	50		6.5A12 adapter	B-AL cap ass'y x 8	
	S332245A	5PA tube	5.0	φ 13 x 52	PA	38,000	50		5A12 adapter	B-AL cap ass'y x 8	
	S303141A	4.7PC thick-walled tube	4.7	φ 13 x 64	PC	38,000	50		6.5A12 adapter		
S58A	S329561A	4PA tube	4.0	φ 11 x 60	PA	38,000	50		4A12 adapter	A3-AL cap ass'y	
	S336708A	3PA tube		φ 11 x 47	PA	38,000	50		3A12 adapter	A3-AL cap ass'y	
	S303271A	3PET tube		φ 11 x 47	PET	38,000	50		3A12 adapter	A3-AL cap ass'y	
	S301599A	3PC tube		φ 13 x 51	PC	38,000	50		5A12 adapter		
	S304296A	0.9PC thick-walled tube	0.9	φ 8 x 50	PC	42,000	50		2A12 adapter		
	S308892A	1.5 micro tube	1.5	φ 11 x 42	PP	55,000	300				
S50A	S309154A	30PA tube ass'y	30.0	φ 2.6 x 7.2	PA	50,000	50			E3-AL cap ass'y x 6 S-40AL cap ass'y x 6	
	S309140A	25PC tick-walled tube ass'y	25.0	φ 2.6 x 9.6	PC	50,000	10				
	S309155A	25PA tick-walled tube ass'y			PA	30,000	10				
	S309156A	20PC bottle(C) ass'y	20.0	φ 2.6 x 8.0	PC	50,000	6				
S140NT	S300540A	2PA seal tube*	2.0	φ 11 x 32	PA	140,000	50	Tube rack (G) x 1		Comes with rotor	
	S120NT	S300540A	2PA seal tube*	2.0	φ 11 x 32	PA	120,000	50	Tube rack (G) x 1		Comes with rotor
	S100NT	S303694A	4PA seal tube*	4.0	φ 13 x 38	PA	100,000	50	Tube rack (B3) x 1		Comes with rotor
S120VT	S300540A	2PA seal tube*	2.0	φ 11 x 32	PA	120,000	50	Tube rack (G) x 1		Comes with rotor	
	S55S	S300535A	1PC tube	1.0	φ 11 x 34	PC	55,000	100			
S55S	S300536A	2.2PA tube	2.2	φ 11 x 34	PA	55,000	50				
	S300538A	2.2PET tube	2.2	φ 11 x 34	PET	55,000	50				
	S52ST	S332245A	5PA tube	4.9	φ 13 x 52	PA	52,000	50			
S52ST	S303273A	5PET tube	5.3	φ 13 x 52	PET	52,000	50				
	S301599A	3PC tube	3.4	φ 13 x 51	PC	52,000	50				
	S304296A	0.9PC thick-walled tube	0.9	φ 8 x 50	PC	43,000	50		2S5 adapter x 4		
	S50ST	S309146A	7PA tube(B)	7.0	φ 1.6 x 5.2	PA	50,000	50			
S309167A		7PC tube(B)			PC	50,000	50				
S309168A		7PET tube			PET	50,000	50				

Notes: 1. When using tubes marked with *, additional accessories are required (STF2 tube sealer, tube rack and space cap).
 2. Tubes marked with ** are commercially available too. When using these items, 1.5A3, 1.5A5 or 1.5A8 adapters are necessary; therefore, please order separately.
 3. Caps marked with*** are standard accessory.

himac CS SERIES Refrigerated Centrifuges Compact Centrifuges Ultra Centrifuges

himac CS SERIES Refrigerated Centrifuges Compact Centrifuges Ultra Centrifuges

High-Speed Refrigerated Centrifuges



himac CR-GIII SERIES

Hitachi High-speed refrigerated centrifuges

CR22GIII / CR21GIII

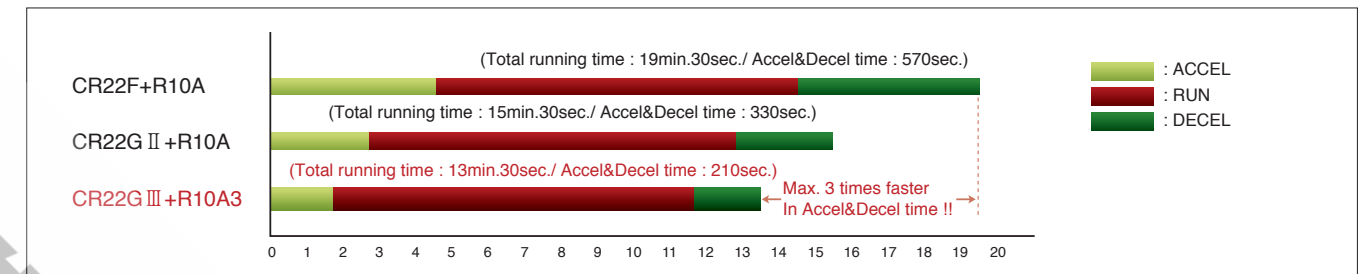
The himac High-Speed Refrigerated Centrifuge established reputations as a standard model in the global market. CR-G III series have taken over its reliability and are featuring various advanced functions with high performance. In addition, CR-G III series have been designed for easy to use and environment-friendly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

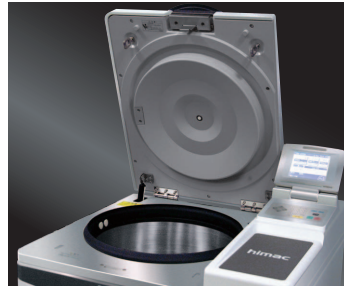
Model	CR22G III	CR21G III
Max. Speed (rpm)	22,000	21,000
Max. RCF (xg)	55,200 (R22A4)	50,300 (R22A4)
Nominal Capacity (ml x pcs)	1,000x4 (R9A)	
Temp. Control Range (°C)	-20 to +40	
Accel/Decel Mode	Accel : 9 modes / Decel : 9 modes, free deceleration	
Drive Unit	Induction Motor (inverter control)	
Refrigerator	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-G III 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 net 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.**

In 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.**

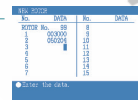
Display of running speed and time is enlarged on the screen in order to find the status from a distance. Screen is switched from "Run Screen" to "Zoom Display" automatically at 20 sec. after reaching set speed.



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

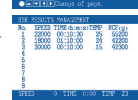
Users of the centrifuge are limited by this function. Before usage, user ID and pass word should be registered to the system, then log in the system to start operation. It is useful function to control users based on the groups or laboratories.



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)

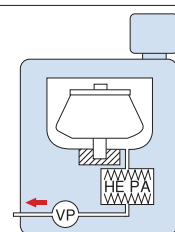
Operating conditions and histories can be output through RS232C communication port to PC or Printer. (factory option)
Exclusive software to manage operating log is also available.

Biosafety Modification

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

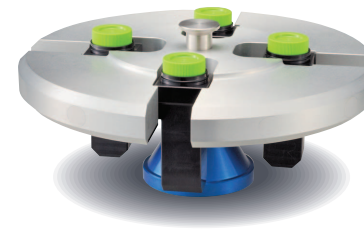
Example of Centrifuge with HEPA Filter

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**

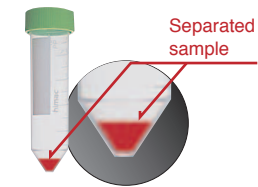


Max. Speed : 8,000 rpm
Max. RCF : 11,500 x g
No wind-sealed shell design offers easy operation to users.
Nominal Capacity :50ml TC tube (conical-type) x 4 tubes



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

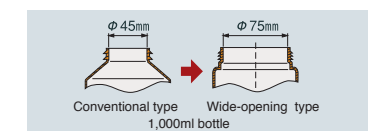
Innovative aluminum alloy made light weight rotor

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)



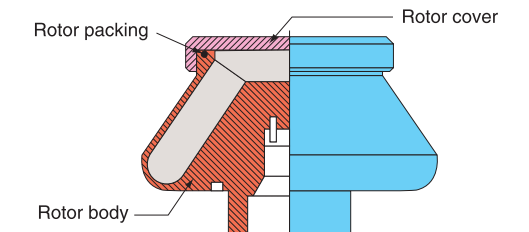
- Max. RCF : 42,200 x g*
- Max. Speed : 18,000 rpm*
- Sterilized by electron beam for immediate use to culture and process fungus.
- Scale indication and writing space are ethanol/methanol proof.

* 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

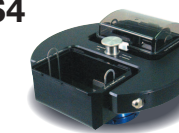


Swinging Bucket Rotor

R3S



R5S4



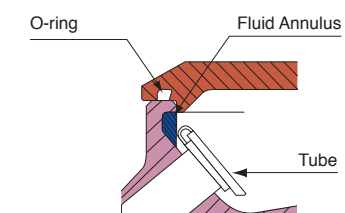
R6S



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



Auto
clave
Bio
safety

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



Auto
clave

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



Auto
clave

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



Auto
clave

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

R9A



Auto
clave

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



Auto
clave

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
clave

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



Auto
clave
Bio
safety

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 x 4 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

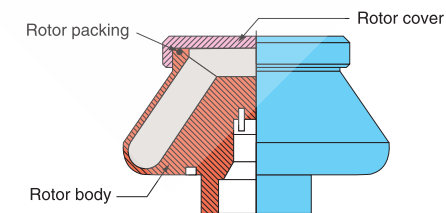
80ml x 6
Max. 32,300 x g
(16,000 rpm)

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

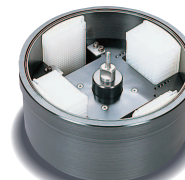
3,200 ml
Max. 14,590 x g
(10,000 rpm)



Horizontal rotor

R10H

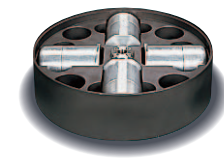
For microplates
Max. 13,000 xg
(10,000 rpm)



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 Tube/bottle
			CR22G III	CR21G III	CR22G III	CR21G III		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®)
	R9A	*** 904364D0	9,000		15,300		13.7	1,000 x 4	98 x 168	1000PP bottle (WM) x 4
	Swinging bucket rotor	R10S	904312D0	10,000		16,470		6.0	50 x 4	29 x 103
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 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	—	—	
R5S4		904369D0	4,700		3,100		5.2	96DWx4/96MPx12	W128xD86xH90	—
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	Round bottom glass tube x 50
		15 x 8 ass'y S304024A	3,600		2,350		4.9	15 x 32	16.5 x 110	
		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)
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	
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 10SB 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 336821A	3,000		1,870		6.9	10 x 120	12 x 120	—
Tube rack GR 336822A		3,000		1,870		6.9	7 x 96	13-14 x 120	—	
Tube rack YE 336823A		3,000		1,870		6.9	15 x 72	16.5 x 120	—	
Tube rack OR 336824A		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	—		

Optional accessories: Rotors

Type	Item Model	Part No.	Maximum speed (rpm)		Maximum RCF (x g)		Weight (kg)	For tubes		Standard accessories Tube/bottle
			CR22G III	CR21G III	CR22G III	CR21G III		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	—
	R10H	Tube rack 15.5 x 18 S304667A	3,000		1,870		6.9	10 x 72	φ15 vacuum blood collecting tube	—
		50T7S adapter S305213A	3,000		1,870		6.9	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 346977A	2,000		770		6.0	Microplate x 4 pcs	W128 x D86 x H10 - 30	96-hole microplate
MP bucket S305521A	3,000		1,650				W128 x D86 x H10 - 55	96-hole microplate		
Horizontal rotor	R10H	904348D0	10,000		13,000		5.8	Microplate x 4 pcs	W128 x D86 x H15 - 45	96-hole microplate
Continuous rotor	R18C*	90431900	18,000 (16,000)		34,960 (27,630)		7.5	1,000	—	—

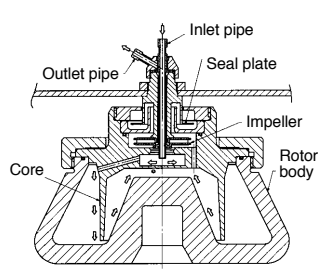
R18C seal unit (E) for CR22G III/21G III (Part No. S203036A), 18 batch unit for CR22G III/21G III (Part No. 217247A)

Made-to-order rotor specifications

Type	Item Model	Part No.	Maximum speed (rpm)		Maximum RCF (x g)		Weight (kg)	For tubes		Standard accessories Tube/bottle
			CR22G III	CR21G III	CR22G III	CR21G III		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†	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
Continuous rotor	R13C*	90432000	13,000		21,260		9.2	2,200	—	—
	R10C*	90432100	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-G III 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-G III 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 CR22G III and CR21G III.
 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 PP/PC 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

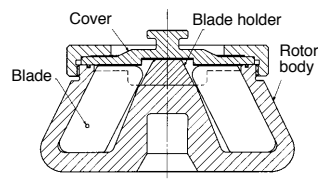


Cross section of a continuous flow rotor

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.

Large-Capacity Refrigerated Centrifuge

The brushless motor emits no dust, making this unit ideal for use in clean hospital environments and for blood component separation in blood centers. Powerful refrigeration and fine control maintain constant sample temperatures.

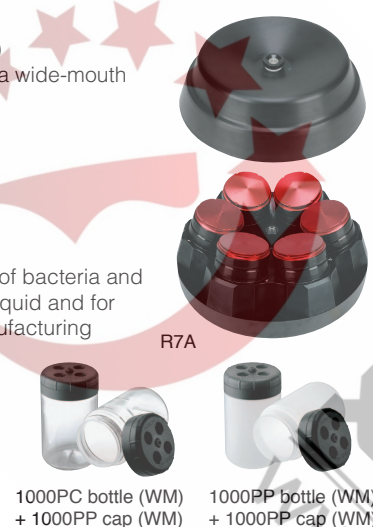


CR7

The photo shows a CR7 with log data printer (option) connected.

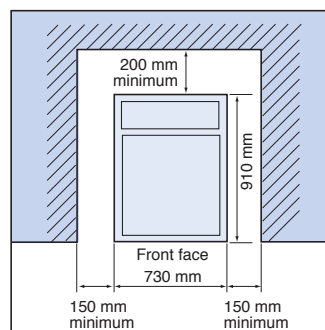
High-capacity lightweight rotor model R7A

- 1,000 ml x 6 bottles
- Max. 7,000 rpm (11,100 x g)
- To be used exclusively with a wide-mouth 1-liter bottle
 - 1000PP bottle (WM) (P/N: S307700A, 6 pcs/box)
 - 1000PC bottle (WM) (P/N: S308357A, 6 pcs/box)
 - 1000PP cap (WM) (P/N: S410870A, 2 pcs/box)
- For high-volume separation of bacteria and organelle from their culture liquid and for rough separation in the manufacturing process of vaccines



High-capacity swinging bucket rotor model R5S3

- 400 ml MAP bag x 12 units can be processed at a time.
- Max. 4,200 rpm (5,030 x g)
- For blood component separation use at blood centers, etc.



Cautions during installation

1. To optimize the heat exchange efficiency of the refrigerator unit, install in a space according to the specifications.
2. Install on a stable floor.
3. Avoid installation near equipment that could be a heat source, or in direct sunlight.
4. An extension cord should not be used.
5. The heat radiation rate of the centrifuge is about 2,300 kcal/h.
6. As a safety precaution, ground the equipment properly according to applicable electrical codes.

Specifications		
Model	CR7	
Maximum speed (rpm)	7,000	
Maximum RCF (x g)	11,100 (R7A rotor)	
Maximum capacity (tubes x ml)	1,000 x 6 (R7A rotor or R5S2 rotor)	
Drive motor	High-torque brushless high-frequency motor	
Speed control range (rpm)	300 to 7,000	
Temperature range adjustment (°C)	-20 to +40	
Timer	One second to 99 minutes and 59 seconds, with a HOLD function (one minute to 99 hours and 59 minutes optional)	
Refrigerator capacity/refrigerant	1.5 kW/R404a	
Function	Memory-based programmed operation	30 programmed operations possible
	Acceleration/deceleration time variable RCF calculation	Nine-stage variable acceleration, nine-stage braked deceleration, plus free deceleration
	RCF integrator	√
	RTC (real-time control) *	N/A
	Rotor stoppage buzzer	√
	Imbalance detection device	√
	Automatic rotor temperature compensation	√
	Self-diagnosis	√
Automatic rotor identification	N/A	
Continuous flow rotor	N/A	
Power requirements	Single phase, AC 220/230/240 V-10%, 30A, 50/60Hz	
Dimensions (mm)	730 (W) x 910 (D) x 1,150 (H)	
Height to the table (mm)	870	
Standard accessories	Instruction manual, silicone grease	
Weight (kg)	300	

Advanced technology

Memory operation

Stores 30 sets of operating parameters.

Actual run timer **PAT.**

Because the timer starts simultaneously with attainment of the selected speed, net operation time can be realized.

Convenient functions are standard features

- RCF calculation
- Memory lock function
- g•sec. calculation
- Step operation input

Numerous safety devices and self-diagnosis functions are standard

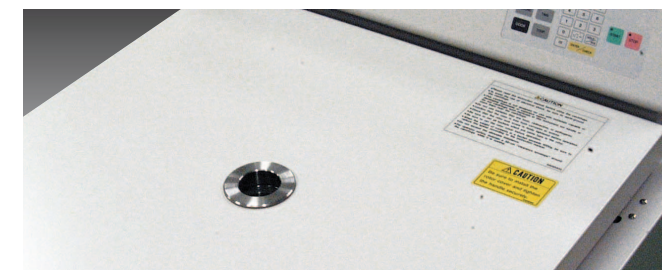
- Door opening/closing detection
- Imbalance detection
- Overspeed detection
- Rotor setting abnormality detection
- Temperature control abnormality detection
- Power source abnormality detection
- Motor rotation abnormality detection

GLP/GMP-compatible operation record control

In order to manage operating log, optional printer or RS232C communication port for data transfer to PC are selectable. (Factory option) Exclusive software to manage operating log on your PC is also available.

Rotor view port

The CR7 with rotor view port model is also available. (Factory option)



Optional accessories: Rotors

Description	Bucket	Max. speed (rpm)	Max. RCF (x g)	Permissible imbalance (g x pcs)	Tube nominal capacity (ml)	Number of tubes (pcs)	Tube dimensions dia. x L (mm)	Rotor angle (degree)	Rotor weight (kg)	Remarks	
Swinging bucket rotor											
R7S (904313D0)	Standard bucket (included)	7,000	9,420	2 x 2	250	4	62 x 128	—	9.0	250PP bottles (4 pcs) as standard accessories. Order adapters separately.	
R5S2 (90431610)	1000AL bucket (B) (sold separately)	4,200	5,150	50 x 3	1,000	6	Bucket size 99 x 150	—	28	Inner cup (L) for blood bag (6 pcs: standard accessories)	
	MAP bucket (sold separately)	3,800	4,210	50 x 3	—	6	—	—	28	Inner cup for MAP bag (6 pcs: standard accessories)	
1000AL Bucket (B)	R5S3** (904358D0)	4,200	5,030	50 x 3	—	6	—	—	32	Oval inner cup (400) for 400ml MAP bag (6 pcs: standard accessories)	
	R3S (904315D0)	3,000	1,870	6 x 2	500	4	98 x 100	—	6.9	Order tube racks (BL, OR, GR or YE) and 500PA tubes for 500 ml separately.	
MAP bucket	MP bucket (sold separately)	3,000	1,650	6 x 2	—	—	96-hole microplate x 4 pcs 128 x 86 x 55 (H)	—	6.2	R3S rotors can be used for microplates. Place orders for MP bucket or M bucket separately.	
	M bucket (sold separately)	2,000	770	6 x 2	—	—	120-hole/96-hole common use microplate x 4 pcs 130 x 88 x 14 (H)	—	6.2		
Fixed angle rotor	R14A (904306D0)	—	7,000	7,560	4 x 2	250	4	62 x 128	35	17	250PP bottle (4 pcs): standard accessories
	R12A3 (904325D0)	—	7,000	8,110	4 x 3	250	6	62 x 128	30	16	250PP bottle (6 pcs): standard accessories
	R10A3 (904345D0)	—	7,000	9,200	6 x 3	500	6	73 x 163	26	14.5	500PA bottle (6 pcs): standard accessories
	R10A5 (904365D0)	—	7,000	9,200	6 x 3	500	6	69 x 169	26	15.5	—
R10A3	R7A*** (904367D0)	—	7,000 (6,500)	11,100 (9,600)	6 x 3	1,000	6	98 x 168	17	18.6	1000PP bottle (WM) x (6 pcs): standard accessories

Notes: 1. For information on product compatibility, please contact your nearest Hitachi representative, if one of these rotors is to be used in a previously delivered (old-type) centrifuge or if a previously delivered (old-type) rotor is to be used in a new centrifuge.
 2. Generally, sample temperatures at the highest rpm can be cooled to 4°C.
 For R7A, figures in parentheses represent the highest rpm and centrifugal acceleration under which the temperature can be lowered to 4°C.
 At the rotor's maximum rpm, cooling to below 15°C is possible (room temperature: 25°C).

3. **400 ml MAP bag x 12 pieces (2 pcs/bucket) can be processed at a time.
 4. ***A 1,000PP/PC bottle (2), a conventional product, cannot be used.
 5. The warranty period for rotors is 7 years.

Tabletop High-Speed Micro Centrifuges



CT15RE



CT15E



himac CT SERIES

Hitachi Tabletop Centrifuge

CT15RE/CT15E

Comfortable safety and compact design. Quiet and biosafety operation.

Exceptionally low noise

himac CT15E tabletop centrifuge has lower noise level in its class(50 dB or less). The operating noise is suppressed and the sample temperature rise is prevented effectively as a result of the CAE analyses including the latest fluid analysis.

Safe and compact

himac CT15E and CT15RE tabletop centrifuges comply with the CE marking requirements to ensure safety even if a trouble occurs during operation. They are highly safe and compact thanks to the elaborate manufacturing without making compromises.

Environmental-friendly design

More recyclable, energy and resource saving than conventional models in the market. himac CT15E and CT15RE comply with Hitachi's environmental standards and are environment-friendly products.

Easy to use

The operation panel is easy to use. Up to three sets of operating parameters can be stored. In addition, the door is equipped with the automatic door closure system.

Autoclavable rotors

Three types of autoclavable rotors are available. These rotors are suitable for biosafety applications.

Specifications

Model	CT15E	CT15RE
Maximum speed (rpm)	15,000	
Maximum RCF (X g)	21,500	
Maximum capacity	2 ml x 24 or 0.5 ml x 24 (When using the T15A62 angle rotor)	
Speed control range (rpm)	300 to 15,000 (in increments of 100)	
Temperature range adjustment (°C)	Not settable (air-cooling)	-20 (displayed "Lo") to +40
Timer	1 to 99 minutes. (in increments of 1 minute.) with a HOLD function (continuous operation)	
Acceleration/deceleration time variable	2-stage variable acceleration, 2-stage braked deceleration plus coasting deceleration	
Drive motor	Brushless DC motor (inverter control)	
Memory-based programmed operation	SPEED/RCF, TIME, TEMP (CT15RE only), ACCEL, DECEL and stop melody	
Rotor stop signal	Selectable from 5 types of stop melodies, beep and mute	
Safety devices	Door interlock, dual overspeed detector, imbalance detector, abnormal motor temperature detector, etc.	
Compliance with standards	CE marking (EN61326, 61010-1, 61010-2-020)	
Heat radiation	300W	500 W
Power requirements	AC120V ±10%, 60Hz 15A	
	AC220-240V ±10% 50/60Hz 10A	AC220/230V ±10% 50Hz 10A AC220V ±10%, 60Hz10A
Dimensions	240 (W) x 320 (D) x 250 (H)	290 (W) x 520 (D) x 300 (H)
Weight	17	40

Rotors

T15A61 (PAT.)
(plastic cover attached)



Max. speed (rpm)	15,000
Max. RCF	21,500 x g
Tube capacity (ml x tubes)	1.5 ml/2 ml x 24

T15A62 (PAT.)
(shield cover attached)



Max. speed (rpm)	15,000
Max. RCF	21,500 x g
Tube capacity (ml x tubes)	1.5 ml/2 ml x 24 0.5 ml x 24

T15A63 (PAT.)
(shield cover attached)



Max. speed (rpm)	15,000
Max. RCF	21,500 x g
Tube capacity (ml x tubes)	0.2 ml x 32 (For PCR tube)

*1. Standard plastic cover of T15A61 is not autoclavable.

*2. The plastic cover is a standard accessory. The shield cover ass'y (optional accessory, S308839B) is required when using these rotors for biosafety applications.

CF-RXII Series High-Speed Compact Centrifuges

CR-RXII series offers wide range of fixed angle rotors in order to process from micro tubes to TC tubes with a single unit of centrifuge under high-speed and controlled temperature. Especially CR16RXII enables you to use both fixed angle rotor and swinging bucket rotor with its compact body. Of course, easy operation, harmonizing global standard and environment-friendly design are in mind.

High-Speed
Micro
Centrifuges

Versatile
High-Speed Compact
Centrifuge



CF15RXII



CF16RXII



Various functions with easy operation

- Large LED display and ergonomic design of control panel
- Easy setting of parameters by Jog Dial
- RCF calculation and setting
- Faster acceleration and deceleration than ever
- himac original "Self-Locking Rotor System" for easy exchange of rotors
- Automatic rotor identification
- Visual balancing of the samples accepted
- All rotors maintained at 4°C at their max. speed.
- 5 memorable program, 5 selectable sound for end of running, 4 acceleration modes, 5 deceleration modes



CF16RXII features "Two in One"!!

This unique model enables you to use both fixed angle rotors with micro tubes and swinging bucket rotors with test tubes and tissue culture tubes in a single compact body. In other words, CR16RXII is a high-speed micro centrifuge as well as a versatile centrifuge. This model is very suitable for laboratories that need to centrifuge various types of samples with single unit. Of course, CF16RXII has taken over various functions with easy operation of CF15RXII so that CF16RXII offers optimum performance of centrifuge at every aspect in this class.

Global standard

Safer compact centrifuges! Compliance with CE marking requirements

- **Mechanical safety (Compliance with IEC 61010-2-020 requirements)**
 - CF15RXII /CF16RXII centrifuges have passed the MCA (maximum credible accident) test. This test confirms that no fragments are expelled from the centrifuge in the event of an accident.
- **Electrical safety (Compliance with IEC 61010-2-020 requirements)**
 - Operator safety is ensured even under a single fault condition.
 - Double electric insulation construction for prevention of electric shock and all units have passed a general inspection under high-voltage conditions.
- **Electromagnetic compatibility (EMC Directive: Compliance with EN61326 and other requirements)**
 - Strong immunity to erroneous operation or other malfunction from external electromagnetic emissions. (Protection from nearby lightning strikes and static electricity in dry winter air.)
 - Negligible electromagnetic emissions that would make peripheral equipment operate erroneously.

Environment-friendly design

Meeting Hitachi's environmental standards!

- **Hitachi himac CF15RXII/CF16RXII High-Speed Micro centrifuges are environment-friendly products.**
 - More recyclable, energy-saving and resource-saving than the conventional models in the market.
 - Reduced the use of hazardous substances

CF-RX series specifications

Model	CF15RXII	CF16RXII
Type of centrifuge	High-speed micro	Versatile compact
Maximum speed (rpm)	15,000	16,000
Maximum RCF (x g)	22,200 (T15A41/T15A42 rotor)	22,200 (T15A41/T15A42 rotor)
Drive motor*	Inverter motor (brushless)	
Rotation control range (rpm)	300 to 15,000	300 to 16,000
Timer	5 sec. to 55 sec. (in 5 sec. increments) or 1 min. to 99 min. (in 1 min. increments), with HOLD function	
Temperature setting range (°C)	-9 to + 40	
Dimensions (mm)	370 (W) x 517 (D) x 834 (H)	490 (W) x 580 (D) x 852 (H)
Power requirements	AC115V±10%, 15A, 60Hz	
	AC200/208V±10%, 8A, 50/60Hz	
	AC220/230/240±10%, 8A, 50Hz	
Weight	AC115V spec.	86
	AC200-240V	92
		110
		115

Notes: 1. CF15RXII is centrifuges designed exclusively for automatic identification rotors (ID rotors **PAT.**). It cannot use conventional-type (non-automatic identification) rotors.
2. CF16RXII is compatible with both automatic identification rotors (ID rotors **PAT.**) and non-automatic identification rotors. Non-automatic identification rotors, however, cannot be identified its model automatically.
3. CF-RXII series high-speed compact centrifuges comply with the CE marking.

himac **CF-RXII** SERIES Hitachi Compact Centrifuges

CF15RXII/CF16RXII

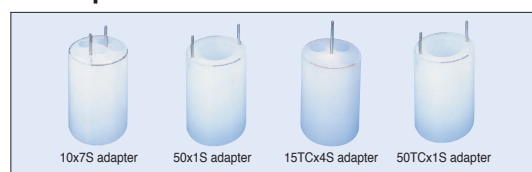
CF15RXII/CF16RXII-compatible rotors



CF16RXII-compatible rotors



Adapters for T5SS31



Adapters for T4SS31



CF-RXII series rotor list

Type	Model	Part No. (ID rotor)	Max. nominal tube capacity (ml x number of tubes **)	ID No.	Max. speed (rpm) (max. RCF (x g))		
					CF15RXII	CF16RXII	
High-capacity horizontal	T6AP31	90590700	50TC x 8	25	x	6,000 (4,770)	
	T8H31	90588500	MP (0.2 x 98) x 4	23	x	8,000 (7,100)	
	T9A31	90587400	50TC x 8	24	x	9,000 (10,600)	
	T11A33	90588700	50 x 8	28	x	11,000 (14,500)	
	T11A34	90588800	80 x 6 (50TC x 6)	29	x	11,000 (14,800)	
	T15A41	90591300	50TCx4 or 15TCx4	42	15,000 (22,200)	15,000 (22,200)	
	T15A42	90591400	50TCx4 or 15TCx4	42	15,000 (22,200)	15,000 (22,200)	
	T11A32	90588300	2 x 48	32	11,000 (12,000/11,200)	11,000 (12,000/11,200)	
	T12A31	90590100	PCR tube 0.2 x 48	33	12,000 (14,100)	12,000 (14,100)	
	T15S31 *	90588200	2 x 16	34	15,000 (19,500)	15,000 (19,500)	
High-speed micro	T15H31 *	90590000	2 x 48	35	15,000 (18,600)	15,000 (18,600)	
	T16A31	90587500	2 x 18	36	15,000 (18,800)	16,000 (21,400)	
	T14A31	90588600	2 x 30	37	14,000 (21,900)	14,000 (21,900)	
	T15AP31	90589300	2 x 18	41	15,000 (18,800)	15,000 (18,800)	
	T15A34	90589500	10 x 8	44	15,000 (18,600)	15,000 (18,600)	
	T15A35	90589600	30 x 6	45	15,000 (21,100)	15,000 (21,100)	
	T15A36	90589700	50 x 4 (15TC x 4)	46	15,000 (21,800)	15,000 (21,800)	
	T15A37	90589800	80 x 4	47	15,000 (20,900)	15,000 (20,900)	
	T15A38	90590800	2 x 36	48	15,000 (21,600/18,300)	15,000 (21,600/18,300)	
	T15A39	90589900	2 x 24	49	15,000 (21,500)	15,000 (21,500)	
	T15A43	90591500	2/1.5 x 36 0.2 x 18	43	15,000 (21,600/18,300)	15,000 (21,600/18,300)	
	T15A44	90591600	2/1.5 x 18 0.5 x 18 0.2 x 18	43	15,000 (21,600/18,300)	15,000 (21,600/18,300)	
	Multi-place swing	T5SS31	90587700	250 x 4 (15TC x 16)	50	x	4,800 (4,170)
		T5S32	90587600	96DW/96MP x 2	55	x	4,800 (3,120)
		T5S33	90591700	96DWx4 or 96MPx12	56	x	4,700 (3,100)
		T4SS31	90588100	50TC x 8	60	x	4,000 (2,900)
		T3S51 *	90590400	500 x 4	65	x	x
T3S52 *		90590500	500 x 4	66	x	x	

Notes: 1. * Buckets are optional items.
 2. ** MP: microplate; TC: culture tube; 96DW: 96-hole deep well plate; 96MP: 96-hole microplate.
 Regarding rotors that can revolve culture tubes, the maximum nominal capacity is shown in { }.
 3. For specifications of tubes, bottles and adapters, see p. 30.

Optional accessories: Rotors for CF16RXII

Model (Part No.)	Max. speed (rpm)	Max. RCF (x g)	Nominal capacity (ml x number of samples)	Bucket (box)		Tube adapter		Tube/bottle					
				Part No.	Name	Part No.	Name	Part No.	Name	Tube size (φ x L) mm	Selling unit		
T6AP31 (90590700)	6,000	4,770	50 (TC) x 8	—	—	S409424A	15TA50T adapter (B) (2 pcs/box)	—	50ml culture tube 15ml culture tube	30 x 115 17 x 120	— —		
T9A31 (90587400)	9,000	10,600	50 (TC) x 8	—	—	S409424A S408945A	15TA50T adapter (B) (2 pcs/box) 13A50T adapter (B) (2 pcs/box)	—	50ml culture tube 15ml culture tube 13ml round bottom culture tube	30 x 115 17 x 120 17 x 101	— — —		
T11A33 (90588700)	11,000	14,500	50 x 8	—	—	—	—	S306352A 328352A S302921A	50PP bottle ass'y 50PC bottle ass'y 50PP bottle (B) ass'y	29 x 106 29 x 106 29 x 108	10 pcs/box 10 pcs/box 10 pcs/box		
T11A34 (90588800)	11,000	14,600	80 x 6 80 x 6 50 (TC) x 6	—	—	—	—	S308433A 332094A	70PC bottle (B) ass'y 80PA bottle ass'y	38 x 106 38 x 108	6 pcs/box 10 pcs/box		
T5SS31 (90587700)	4,800	4,170	5 x 28	Incl.	—	S409812A	5 x 7S adapter (4 pcs/box)	—	4 - 5ml blood collection tube	12 - 13 x 75 - 78	—		
	4,800	4,170	7 x 28	—	—	S409811A	10 x 7S adapter (4 pcs/box)	—	7ml blood collection tube	12 - 13 x 100	—		
	3,000	1,630	10 x 28	—	—	—	—	464977A	10 glass tube ass'y	12.0 x 105	50 pcs/box		
	4,800	4,170	10 x 28	—	—	S409810A	15 x 7S adapter (4 pcs/box)	—	10ml blood collection tube	16.0 x 100	—		
	3,000	1,630	15 x 28	—	—	—	—	464976A	15 glass tube ass'y	16.5 x 115	50 pcs/box		
	4,800	3,990	50 x 4	—	—	S409813A	50 x 1S adapter (4 pcs/box)	473866A	50 glass tube ass'y	35.0 x 100	10 pcs/box		
	4,800	4,170	15 (TC) x 12	—	—	S409976A	15TC x 3S adapter (4 pcs/box)	—	15ml culture tube	17 x 120	—		
	4,800	4,170	15 (TC) x 16	—	—	S409814A	15TC x 4S adapter (4 pcs/box)	—	15ml culture tube	17 x 120	—		
	4,800	4,170	50 (TC) x 4	—	—	S409815A	50TC x 1S adapter (4 pcs/box)	—	50ml culture tube	30 x 115	—		
	4,800	4,170	160 x 4	—	—	S410251A	160 x 1S adapter (4 pcs/box)	S306847A	160PP bottle ***	52.0 x 120	10 pcs/box		
	4,800	4,170	160 x 4	—	—	—	—	S306848A	160PC bottle ***	52.0 x 120	10 pcs/box		
	4,800	4,170	160 x 4	—	—	—	—	S410008A	160 cap	—	2 pcs/box		
	4,800	4,170	250 x 4	—	—	—	—	—	** 250PPCO flat-bottom bottle	61.6 x 135	(Nalgene)		
	4,800	4,170	250 x 4	—	—	—	—	—	** 250PC flat-bottom bottle	61.6 x 135	(Nalgene)		
Shield cap	—	—	—	—	—	S410252A	Shield cap (4 pcs/box), but not used with 15TC x 4S adapter and 250 bottle.	—	—	—	—		
T5S32 (90587600)	4,800	3,120	96DW x 2 96MP x 2 0.2 x 192	Incl.	—	—	—	—	96-hole Deep Wellplate 96-hole microplate	128 x 86 x 55 (H) 128 x 86 x 14 (H)	— —		
	—	—	2/1.5 x 48	—	—	S408786A	0.2 x 96MP adapter (2 pcs/box)	—	0.2ml tube for PCR	—	—		
	—	—	—	—	—	S408787A	2 x 48S adapter (4 pcs/box)	—	2.0/1.5PP tube	10.8 x 40.5	—		
	T5S33 (90591700)	4,700	3,100	96DW x 4 96MP x 12	—	—	—	—	—	96-hole Deep Wellplate 96-hole microplate	128x86x55(H) 128x86x14(H)	— —	
		T4SS31 (90588100)	4,000	2,380	5 x 32	Incl.	—	S307332A	5 x 8S adapter (4 pcs/box)	—	4 - 5ml blood collection tube	12-13 x 75 - 78	—
			4,000	2,860	7 x 32	—	—	S307333A	10 x 8S adapter (4 pcs/box)	—	7ml blood collection tube	12 - 13 x 100	—
Round bucket	3,600	2,320	10 x 32	—	—	—	—	464977A	10 glass tube ass'y	12.0 x 105	50 pcs/box		
	4,000	2,860	10 x 32	—	—	S307334A	15 x 8S adapter (4 pcs/box)	—	10ml blood collection tube	16.0 x 100	—		
	3,600	2,320	15 x 32	—	—	—	—	464976A	15 glass tube ass'y	16.5 x 105	50 pcs/box		
	4,000	2,900	15 (TC) x 24	—	—	S307335A	15TC x 6S adapter (4 pcs/box)	—	15ml culture tube	17 x 120	—		
	4,000	2,860	50 (TC) x 8	—	—	S307336A	50TC x 2S adapter (4 pcs/box)	—	50ml culture tube	30 x 115	—		
	4,000	2,860	10 x 4	—	—	S308695A	10x10SB adapter (4 pcs/box)	—	10-4ml blood collection tube	—	—		
	Shield cap	4,000	2,900	5 x 28	S410523A	(4 pcs/box)	S409812A	5 x 7S adapter (4 pcs/box)	—	4 - 5ml blood collection tube	12-13 x 75 - 78	—	
		4,000	2,900	7 x 28	—	—	S409811A	10 x 7S adapter (4 pcs/box)	—	7ml blood collection tube	12 - 13 x 100	—	
		3,000	1,630	10 x 28	—	—	—	—	464977A	10 glass tube ass'y	12.0 x 105	50 pcs/box	
		4,000	2,900	10 x 28	—	—	S409810A	15 x 7S adapter (4 pcs/box)	—	10ml blood collection tube	16.0 x 100	—	
		3,000	1,630	15 x 28	—	—	—	—	464976A	15 glass tube ass'y	16.5 x 105	50 pcs/box	
		4,000	2,770	50 x 4	—	—	S409813A	50 x 1S adapter (4 pcs/box)	473866A	50 glass tube ass'y	35.0 x 100	10 pcs/box	
		4,000	2,900	15 (TC) x 12	—	—	S409976A	15TC x 3S adapter (4 pcs/box)	—	15ml culture tube	17 x 120	—	
		4,000	2,900	15 (TC) x 16	—	—	S409814A	15TC x 4S adapter (4 pcs/box)	—	15ml culture tube	17 x 120	—	
4,000	2,900	50 (TC) x 4	—	—	S409815A	50TC x 1S adapter (4 pcs/box)	—	50ml culture tube	30 x 115	—			
4,000	2,900	160 x 4	—	—	S410251A	160 x 1S adapter (4 pcs/box)	S306847A	160PP bottle ***	52.0 x 120	10 pcs/box			
4,000	2,900	160 x 4	—	—	—	—	S306848A	160PC bottle ***	52.0 x 120	10 pcs/box			
—	—	—	—	—	—	—	S410008A	160 cap	—	2 pcs/box			
4,000	2,900	250 x 4	—	—	—	—	—	** 250PPCO flat-bottom bottle	61.6 x 135	(Nalgene)			
4,000	2,900	250 x 4	—	—	—	—	—	** 250PC flat-bottom bottle	61.6 x 135	(Nalgene)			
Shield cap	—	—	—	—	—	S410252A	Shield cap (4 pcs/box) can be used with round bucket, but not used with 15TC x 4S adapter and 250 bottle.	—	—	—	—		
T8H31 (90588500)	8,000	7,100	(0.2 x 96)	—	—	—	—	—	Micro Amp optical 96 - well reaction plate	—	—		

Notes: 1. ■ indicates tubes available on the market. Purchase directly from your local supplier.
 2. When ordering bucket sets, tubes and bottles, please reconfirm the Part No. for the specified product before placing your order.
 3. **Wide-opening-type bottles manufactured by Nalgene. Nalgene product part Nos. are 250PPCO bottle: 3141-0250; 250PC bottle: 3140-0250.
 4. ***Caps are not included with 160PP/PC bottles. Please purchase 160 caps separately for use with these bottles.
 5. If one of these rotors is to be used in a previously delivered CF16RXII (MFG No.0112 or before).
 centrifuge, please contact your nearest Hitachi Koki's representative for information on product adaptability.

CF-RX Series Compact Centrifuges

Considering safety and the environment, use the RX series!
A wide range of centrifugation and purification is achieved with various functions and outstanding ease of operation.

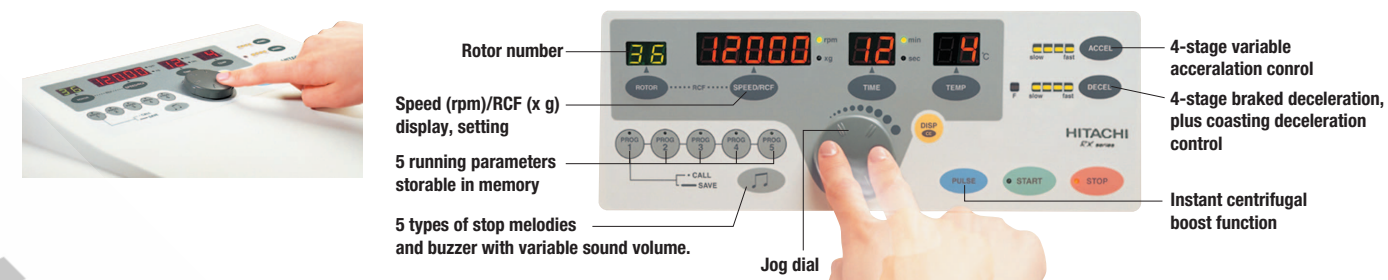
Reliable control at low-speed rotation!

- Controllable in 10 rpm increments from 300 rpm through 5,000 rpm.
- Best for centrifuging cells, etc. with a middle-capacity swinging bucket rotor (T4SS31/T5SS31).
- Swinging bucket rotor (T5S32) for microplate also usable.

Best for processing varied samples!

- Multi-place rotor (T3S51/T3S52) of 15 ml x 80 can be used.
- Accepts up to 50 g imbalance when combined with automatic balancing rotor. (T3S52)
- Newly developed 2-axis coaxial drive motor enables stabilized centrifugation of low-speed high-capacity rotors and high-speed rotors. **PAT. P**

Easy-to-use jog dial



Global standard

Safer compact centrifuges! Compliance with CE marking requirements

- **Mechanical safety (Compliance with IEC 61010-2-020 requirements)**
 - CF5RX/CF9RX/CF12RX centrifuges have passed the MCA (maximum credible accident) test. This test confirms that no fragments are expelled from the centrifuge in the event of an accident.
- **Electrical safety (Compliance with IEC 61010-2-020 requirements)**
 - Operator safety is ensured even under a single fault condition.
 - Double electric insulation construction for prevention of electric shock and all units have passed a general inspection under high-voltage conditions.
- **Electromagnetic compatibility (EMC Directive: Compliance with EN61326 and other requirements)**
 - Strong immunity to erroneous operation or other malfunction from external electromagnetic emissions. (Protection from nearby lightning strikes and static electricity in dry winter air.)
 - Negligible electromagnetic emissions that would make peripheral equipment operate erroneously.

Environment-friendly design

Meeting Hitachi's environmental standards!

- **Hitachi himac CF5RX/CF9RX/CF12RX centrifuges are environment-friendly products.**
 - More recyclable, energy-saving and resource-saving than the conventional models in the market.
 - Reduced the use of hazardous substances

CF-RX series specifications

Model	CF5RX	CF9RX	CF12RX
Type of centrifuge	Refrigerated compact	Versatile high-capacity	Versatile high-capacity
Maximum speed (rpm)	5,000	9,000	12,000
Maximum RCF (x g)	4,170 (T5SS31 rotor)	10,600 (T9A31 rotor)	16,100 (T14A31 rotor)
Drive motor*	Inverter motor (brushless)		
Rotation control range (rpm)	300 to 5,000	300 to 9,000	300 to 12,000
Timer	5-55 sec/1-99 min., with HOLD function		
Temperature setting range (°C)	-9 to +40		
Dimensions (mm)	490 (W) x 550 (D) x 852 (H)	600 (W) x 632 (D) x 876 (H)	600 (W) x 632 (D) x 876 (H)
Power requirements	AC115V-10%, 15A, 60Hz		
	AC200/208V-10%, 8A, 50/60Hz		
	AC220/230/240-10%, 8A, 50Hz		
Weight (kg)	AC115V	110	136
	AC200-240V	115	142

- Notes: 1. CF9RX/CF12RX are centrifuges designed exclusively for automatic identification rotors (ID rotors **PAT.**). They cannot use conventional-type (non-automatic identification) rotors.
2. CF5RX is compatible with both automatic identification rotors (ID rotors **PAT.**) and non-automatic identification rotors. Non-automatic identification rotors, however, cannot be identified its model automatically.
3. CF9RX/CF12RX use a newly developed 2-axis coaxial drive motor system.
4. CF-RX series compact centrifuges comply with the CE marking.

Versatile
High-Capacity
Centrifuges

Refrigerated
Compact
Centrifuge



CF5RX CE



CF9RX CE

CF12RX CE

himac **CF-RX** SERIES Hitachi Compact Centrifuge

CF5RX/CF9RX/CF12RX

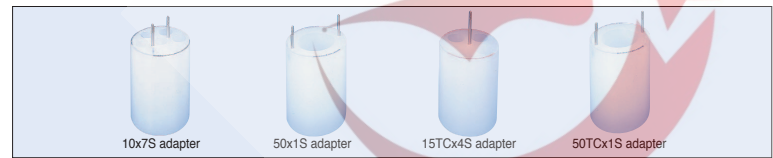
CF5RX/CF9RX/CF12RX -compatible rotors



CF5RX/CF9RX/CF12RX -compatible rotors



Adapters for T5SS31



Adapters for T4SS31



CF5RX -compatible rotors



CF9RX/CF12RX -compatible rotors(used with an optional bucket)



CF-RX series rotor list

Type	Model	Part No. (ID rotor)	Max. nominal tube capacity (ml x number of tubes **)	ID No.	Max. speed (rpm) (max. RCF (x g))			
					CF5RX	CF9RX	CF12RX	
					x: Not usable			
High-capacity fixed angle, horizontal rotor	T6AP31	90590700	50TC x 8	25	5,000 (3,310)	6,000 (4,770)	6,000 (4,770)	
	T8H31	90588500	MP (0.2 x 98) x 4	23	5,000 (2,780)	8,000 (7,100)	8,000 (7,100)	
	T9A31	90587400	50TC x 8	24	5,000 (3,270)	9,000 (10,600)	9,000 (10,600)	
	T11A33	90588700	50 x 8	28	5,000 (2,990)	9,000 (9,700)	11,000 (14,500)	
	T11A34	90588800	80 x 6 {50TC x 6}	29	5,000 (3,050)	9,000 (9,900)	11,000 (14,800)	
	T15A41	90591300	50TCx4 or 15TCx4	42	5,000 (2,470)	9,000 (8,010)	12,000 (14,250)	
	T15A42	90591400	50TCx4 or 15TCx4	42	5,000 (2,470)	9,000 (8,010)	12,000 (14,250)	
High-speed fixed angle rotor for microtube	T11A32	90588300	2 x 48	32	5,000 (2,490/2,320)	9,000 (8,100/7,500)	11,000 (12,000/11,200)	
	T12A31	90590100	PCR tube 0.2 x 48	33	5,000 (2,440)	9,000 (7,900)	12,000 (14,100)	
	T15S31 *	90588200	2 x 16	34	5,000 (2,170)	9,000 (7,000)	12,000 (12,500)	
	T15H31 *	90590000	2 x 48	35	5,000 (2,070)	9,000 (6,700)	12,000 (11,900)	
	T16A31	90587500	2 x 18	36	5,000 (2,090)	9,000 (6,800)	12,000 (12,100)	
	T14A31	90588600	2 x 30	37	5,000 (2,790)	9,000 (9,000)	12,000 (16,100)	
	T15AP31	90589300	2 x 18	41	5,000 (2,090)	9,000 (6,800)	12,000 (12,100)	
	T15A34	90589500	10 x 8	44	5,000 (2,070)	9,000 (6,700)	12,000 (11,900)	
	T15A35	90589600	30 x 6	45	5,000 (2,330)	9,000 (7,600)	12,000 (13,400)	
	T15A36	90589700	50 x 4 {15TC x 4}	46	5,000 (2,430)	9,000 (7,900)	12,000 (14,000)	
	T15A37	90589800	80 x 4	47	5,000 (2,320)	9,000 (7,500)	12,000 (13,300)	
	T15A38	90590800	2 x 36	48	5,000 (2,400/2,000)	9,000 (7,700/6,600)	12,000 (13,800/11,700)	
	T15A39	90589900	2 x 24	49	5,000 (2,390)	9,000 (7,700)	12,000 (13,700)	
	T15A43	90591500	2/1.5 x 36 0.2 x 18	43	5,000 (2,400/2,040)	9,000 (7,780/6,600)	12,000 (13,830/11,740)	
	T15A44	90591600	2/1.5 x 18 0.5 x 18 0.2 x 18	43	5,000 (2,400/2,040)	9,000 (7,780/6,600)	12,000 (13,830/11,740)	
	Multi-place swinging bucket rotor	T5SS31	90587700	250 x 4 {15TC x 16}	50	4,800 (4,170)	4,800 (4,170)	4,800 (4,170)
		T5S32	90587600	96DW/96MP x 2	55	4,800 (3,120)	4,800 (3,120)	4,800 (3,120)
T5S33		90591700	96DWx4 or 96MPx12	56	4,700 (3,100)	x	x	
T4SS31		90588100	50TC x 8	60	4,000 (2,900)	4,000 (2,900)	4,000 (2,900)	
T3S51 *		90590400	500 x 4	65	x	3,000 (2,150)	3,000 (2,150)	
T3S52 *		90590500	500 x 4	66	x	3,000 (2,150)	3,000 (2,150)	

Notes: 1. * Buckets are optional items.
2. ** MP: microplate; TC: culture tube; 96DW: 96-hole deep well plate; 96MP: 96-hole microplate.
Regarding rotors that can revolve culture tubes, the maximum nominal capacity is shown in { }.
3. For specifications of tubes, bottles and adapters, see p. 34.

Optional accessories: Rotors for CF5RX/CF9RX/CF12RX

Type	Model (Part No.)	Max. speed (rpm)	Max. RCF (x g)	Nominal capacity (ml x number of samples)	Bucket (box)		Tube adapter		Tube/bottle								
					Part No.	Name	Part No.	Name	Part No.	Name	Tube size (φ x L) mm	Selling unit					
For microtube	T12A31 (90590100)	12,000	14,100	For PCR 0.2 x 48	—	—	—	—	—	—	—	—	—	—	—	—	—
	T16A31 (90587500)	16,000	21,400	2/1.5 x 18	—	—	487292A	0.4 adapter (4 pcs/box)	—	—	—	—	—	—	—	—	—
	T14A31 (90588600)	14,000	21,900	2/1.5 x 30	—	—	489237A	glass adapter (A) (4 pcs/box)	489240A	0.5 glass tube	9 x 35	100 pcs/box	—	—	—	—	—
	T15AP31 (90589300)	15,000	18,800	2/1.5 x 18	—	—	489238A	0.5 adapter (4 pcs/box)	489239A	0.5 round bottom glass tube	6 x 47	100 pcs/box	—	—	—	—	—
	T15A39 (90589900)	15,000	21,500	2/1.5 x 24	—	—	487293A	0.75 adapter (4 pcs/box)	—	—	—	—	—	—	—	—	—
	T15A38 (90590800)	15,000	21,600	2/1.5 x 36	—	—	489237A	glass adapter (A) (4 pcs/box)	489240A	0.5 glass tube	9 x 35	100 pcs/box	—	—	—	—	—
	T11A32 (90588300)	11,000	12,000/11,200	2/1.5 x 48	—	—	—	—	—	—	—	—	—	—	—	—	—
	T15S31 (90588200)	15,000	19,500	0.25 x 40	S407958A	0.4S3	—	—	—	—	—	—	—	—	—	—	—
	Without bucket 4 buckets/set	—	—	0.25 x 16	S407956A	1.5S3	487292A	0.4 adapter (4 pcs/box)	—	—	—	—	—	—	—	—	—
	—	—	—	0.4 x 40	S407958A	0.4S3	—	—	—	—	—	—	—	—	—	—	—
	—	—	—	0.4 x 16	—	—	—	—	—	—	—	—	—	—	—	—	—
	For medium capacity	T15H31 (90590000)	15,000	18,600	0.25 x 60	S409874A	0.4H3	—	—	—	—	—	—	—	—	—	—
Without bucket 6 buckets/set		—	—	0.25 x 48	S409872A	1.5H3	487292A	0.4 adapter (4 pcs/box)	—	—	—	—	—	—	—	—	—
—		—	—	0.4 x 60	S409874A	0.4H3	—	—	—	—	—	—	—	—	—	—	—
—		—	—	0.4 x 48	S409872A	1.5H3	487292A	0.4 adapter (4 pcs/box)	—	—	—	—	—	—	—	—	—
—		—	—	0.5 x 60	S409873A	0.75H3	—	—	—	—	—	—	—	—	—	—	—
T15A43		15,000	21,800 (1.5/2.0ml outside) 18,400 (1.5/2.0ml inside) 15,900 (0.2ml PCR)	1.5/2.0 x 36	—	—	—	—	—	—	—	—	—	—	—	—	—
T15A44		15,000	21,800 (1.5/2.0ml)	1.5/2.0 x 18	—	—	—	—	—	—	—	—	—	—	—	—	—
—		—	—	0.5 x 18	—	—	48923A	glass adapter(A) (4 pcs/box)	489241A	1.0 round bottom glass tube	9 x 35	100 pcs/box	—	—	—	—	—
—		—	—	0.2 x 18	—	—	48923A	glass adapter(A) (4 pcs/box)	489240A	0.5 glass tube	9 x 35	100 pcs/box	—	—	—	—	—
T15A34 (90589500)		15,000	18,800	8.5 x 8	—	—	—	—	—	—	—	—	—	—	—	—	—
T15A35 (90589600)		15,000	21,100	9 x 8	—	—	—	—	—	—	—	—	—	—	—	—	—
T15A36 (90589700)		15,000	21,800	9.1 x 8	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	26 x 6	—	—	—	—	—	—	—	—	—	—	—	—	—	
—	—	—	28.5 x 6	—	—	—	—	—	—	—	—	—	—	—	—	—	
—	—	—	11 x 4	—	—	S407959A	15TA50 adapter (2 pcs/box)	—	—	—	—	—	—	—	—	—	
—	—	—	33 x 4	—	—	—	—	—	—	—	—	—	—	—	—	—	
—	—	—	35 x 4	—	—	—	—	—	—	—	—	—	—	—	—	—	
—	—	—	42 x 4	—	—	—	—	—	—	—	—	—	—	—	—	—	
T15A37 (90589800)	15,000	21,200	73 x 4	—	—	—	—	—	—	—	—	—	—	—	—	—	
T15A41*	15,000	22,200	50 x 4	—	—	—	—	—	—	—	—	—	—	—	—	—	
—	—	—	15 x 4	—	—	—	—	—	—	—	—	—	—	—	—	—	
T15A42*	15,000	22,200	50 x 4	—	—	—	—	—	—	—	—	—	—	—	—	—	
—	—	—	15 x 4	—	—	—	—	—	—	—	—	—	—	—	—	—	

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

Optional accessories: Rotors for CF5RX/CF9RX/CF12RX

Model (Part No.)	Max. speed (rpm)	Max. RCF (x g)	Nominal capacity (ml x number of samples)	Bucket (box)		Tube adapter		Tube/bottle						
				Part No.	Name	Part No.	Name	Part No.	Name	Tube size (φ x L) mm	Selling unit			
T6AP31 (90590700)	6,000	4,770	50 (TC) x 8	—	—	—	—	—	50ml culture tube	30 x 115	—			
T9A31 (90587400)	9,000	10,600	50 (TC) x 8	—	—	S409424A	15TA50T adapter (B) (2 pcs/box)	—	15ml culture tube	17 x 120	—			
						S409424A	15TA50T adapter (B) (2 pcs/box)	—	15ml culture tube	17 x 120	—			
T11A33 (90588700)	11,000	14,500	50 x 8	—	—	—	—	S306352A	50PP bottle ass'y	29 x 106	10 pcs/box			
						—	—	328352A	50PC bottle ass'y	29 x 106	10 pcs/box			
						—	—	S302921A	50PP bottle (B) ass'y	29 x 108	10 pcs/box			
T11A34 (90588800)	11,000	14,600	80 x 6	—	—	—	—	S308433A	70PC bottle (B) ass'y	38 x 106	6 pcs/box			
			80 x 6			—	—	—	332094A	80PA bottle ass'y	38 x 108	10 pcs/box		
T5SS31 (90587700)	4,800	4,170	5 x 28	Incl.	—	—	—	—	50ml culture tube	30 x 115	—			
			7 x 28			—	—	Incl.	50TA80 (6 pcs/box)	—	—	—		
			10 x 28			S409812A	5 x 7S adapter (4 pcs/box)	—	4 - 5ml collect blood tube	12 - 13 x 75 - 78	—			
			10 x 28			S409811A	10 x 7S adapter (4 pcs/box)	—	7ml collect blood tube	12 - 13 x 100	—			
			15 x 28			S409810A	15 x 7S adapter (4 pcs/box)	—	10 glass tube ass'y	12.0 x 105	50 pcs/box			
			50 x 4			—	—	—	10ml collect blood tube	16.0 x 100	—			
			15 (TC) x 12			—	—	—	15 glass tube ass'y	16.5 x 115	50 pcs/box			
			15 (TC) x 16			—	—	—	50 glass tube ass'y	35.0 x 100	10 pcs/box			
			50 (TC) x 4			—	—	—	15ml culture tube	17 x 120	—			
			160 x 4			—	—	—	15ml culture tube	17 x 120	—			
			160 x 4			—	—	—	50ml culture tube	30 x 115	—			
			250 x 4			—	—	—	S306847A	160PP bottle ***	52.0 x 120	10 pcs/box		
250 x 4	—	—	—	S306848A	160PC bottle ***	52.0 x 120	10 pcs/box							
—	—	—	—	S410008A	160 cap	—	2 pcs/box							
—	—	—	—	—	**	250PPCO flat-bottom bottle	61.6 x 135	(Nalgene®)						
—	—	—	—	—	**	250PC flat-bottom bottle	61.6 x 135	(Nalgene®)						
Shield cap	S410252A Shield cap (4 pcs/box), but not used with 15TC x 4S adapter and 250 bottle.													
T5S32 (90587600)	4,800	3,120	96DW x 2	Incl.	—	—	—	—	96-hole Deep Wellplate	128 x 86 x 55 (H)	—			
			96MP x 2			—	—	—	96-hole microplate	128 x 86 x 14 (H)	—			
			0.2 x 192			S408786A	0.2 x 96MP adapter (2 pcs/box)	—	0.2ml tube for PCR	—	—			
			2/1.5 x 48			S408787A	2 x 48S adapter (4 pcs/box)	—	2.0/1.5PP tube	10.8 x 40.5	—			
T5S33 (90591700)	4,700	3,100	96DW x 4	—	—	—	—	—	96-hole Deep Wellplate	128x86x55(H)	—			
			96MP x 12			—	—	—	96-hole microplate	128x86x14(H)	—			
T4SS31 (90588100)	4,000	2,380	5 x 32	Incl.	—	S307332A	5 x 8S adapter (4 pcs/box)	—	4 - 5ml collect blood tube	12 - 13 x 75 - 78	—			
			7 x 32			S307333A	10 x 8S adapter (4 pcs/box)	—	7ml collect blood tube	12 - 13 x 100	—			
			10 x 32			—	—	—	10 glass tube ass'y	12.0 x 105	50 pcs/box			
			10 x 32			—	—	—	10ml collect blood tube	16.0 x 100	—			
			15 x 32			—	—	—	15 glass tube ass'y	16.5 x 105	50 pcs/box			
			15 (TC) x 24			—	—	—	15ml culture tube	17 x 120	—			
			50 (TC) x 8			—	—	—	50ml culture tube	30 x 115	—			
			10 x 4			—	—	—	S308695A	10x10SB adapter (4 pcs/box)	—	10-4ml collect blood tube	—	—
			5 x 28			—	—	—	S409812A	5 x 7S adapter (4 pcs/box)	—	4 - 5ml collect blood tube	12 - 13 x 75 - 78	—
			7 x 28			—	—	—	S409811A	10 x 7S adapter (4 pcs/box)	—	7ml collect blood tube	12 - 13 x 100	—
			10 x 28			—	—	—	—	—	—	10ml collect blood tube	16.0 x 100	—
			10 x 28			—	—	—	—	—	—	15 glass tube ass'y	16.5 x 105	50 pcs/box
15 x 28	—	—	—	—	—	—	50 glass tube ass'y	35.0 x 100	10 pcs/box					
50 x 4	—	—	—	—	—	—	15ml culture tube	17 x 120	—					
15 (TC) x 12	—	—	—	—	—	—	15ml culture tube	17 x 120	—					
15 (TC) x 16	—	—	—	—	—	—	50ml culture tube	30 x 115	—					
50 (TC) x 4	—	—	—	—	—	—	S306847A	160PP bottle ***	52.0 x 120	10 pcs/box				
160 x 4	—	—	—	—	—	—	S306848A	160PC bottle ***	52.0 x 120	10 pcs/box				
160 x 4	—	—	—	—	—	—	S410008A	160 cap	—	2 pcs/box				
250 x 4	—	—	—	—	—	—	**	250PPCO flat-bottom bottle	61.6 x 135	(Nalgene®)				
250 x 4	—	—	—	—	—	—	**	250PC flat-bottom bottle	61.6 x 135	(Nalgene®)				
Shield cap	S410252A Shield cap (4 pcs/box) can be used with round bucket adapter, but not used with 15TC x 4S adapter and 250 bottle.													
T8H31 (90588500)	8,000	7,100	(0.2 x 96)	—	—	—	—	—	Micro Amp optical 96 - well reaction plate	—	—			
*Applied Biosystems Co., Ltd.														

Notes: 1. ■ indicates tubes available on the market. Purchase directly from your local supplier.
 2. *T15A41, T15A42 can use 50 ml and 15 ml culture tubes without adapters. However, it cannot utilize these tubes at the same time, so use only one of them at a time.
 Self-standing-type culture tubes cannot be used.
 3. When ordering bucket sets, tubes and bottles, please reconfirm the Part No. for the specified product before placing your order.

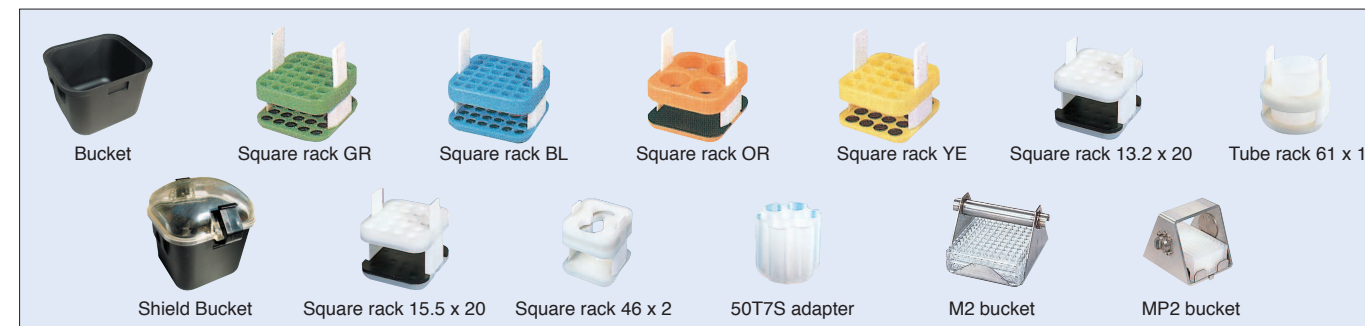
4. **Wide-opening-type bottles manufactured by Nalgene®. Nalgene® product part Nos. are 250PPCO bottle: 3141-0250; 250PC bottle: 3140-0250.
 5. ***Caps are not included with 160PP/PC bottles. Please purchase 160 caps separately for use with these bottles.

Optional accessories: Rotors for CF9RX/CF12RX

Model (Part No.)	Max. speed (rpm)	Max. RCF (x g)	Nominal capacity (ml x number of sample)	Bucket (box)		Applicable rack/adaptor		Tube/bottle					
				Part No.	Name	Part No.	Name	Part No.	Name	Tube size (φ x L)mm	Selling unit		
T3S51 (90590400)	3,000	2,150	500 x 4	S304312B	Bucket (4 pcs/box)	—	—	S303830A	500PA tube	98 x 100	4 pcs/box		
						10 x 144	—	S301437A	Square rack BL (4 pcs/box)	464977A	10 glass tube	12 x 120	50 pcs/box
						7 x 120	—	S301438A	Square rack GR (4 pcs/box)	—	5ml-7ml glass tube	13-14 x 120	—
						15 x 80	—	S301439A	Square rack YE (4 pcs/box)	464976A	15 glass tube	16.5 x 120	50 pcs/box
						50 x 16	—	S301440A	Square rack OR (4 pcs/box)	473866A	50 glass tube	36.5 x 120	10 pcs/box
						10 x 144	—	S307169A	Square rack BL (B) (4 pcs/box)	464977A	10 glass tube	12 x 120	50 pcs/box
						7 x 120	—	S307170A	Square rack GR (B) (4 pcs/box)	—	5ml-7ml glass tube	13-14 x 120	—
						15 x 80	—	S307171A	Square rack YE (B) (4 pcs/box)	464976A	15 glass tube	16.5 x 120	50 pcs/box
						50 x 16	—	S307172A	Square rack OR (B) (4 pcs/box)	473866A	50 glass tube	36.5 x 120	10 pcs/box
						50 x 28*	—	S305213A	50T7S adapter (4 pcs/box)	—	Culture tube (Sarstedt, Iwaki, Sumilon, Falcon)	30 x 115	—
						50 x 24	—	S307309A	Square rack 29.5 x 6 (B) (4 pcs/box)	—	50ml culture tube (freestanding/conical bottom)	30 x 115	—
						5 x 80	—	S303779A	Square rack 13.2 x 20 (4 pcs/box)	—	Terumo Venoject	12.4 x 75	—
7 x 80	—	—	—	—	Terumo Venoject II	13.2 x 78	—						
5 x 80	—	—	—	—	Sekisui Insepack	12.6 x 75	—						
7 x 80	—	—	—	—	—	13.1 x 75	—						
4 x 80	—	—	—	—	—	13.3 x 75	—						
5 x 80	—	—	—	—	—	12.7 x 75	—						
7 x 80	—	—	—	—	—	12.7 x 103	—						
1.5 x 112	2,050	—	—	S303783A	Square rack 11.4 x 28 (4 pcs/box)	—	1.5ml micro tube	11 x 39	—				
2.0 x 112	—	—	—	—	—	—	2.0ml micro tube	—	—				
10 x 80	2,850	1,940	—	S303781A	Square rack 15.5 x 20 (4 pcs/box)	—	Terumo Venoject	15.4 x 100	—				
6 x 80	3,000	2,150	—	—	—	—	Terumo Venoject II, Sekisui Greiner Insepack	15.6 x 100	—				
100 x 8	—	—	—	—	—	—	Sekisui Insepack	15.2 x 75	—				
225 x 4	—	—	—	S303582A	Square rack 46 x 2	—	Nichiden-Rika Glass Co., Ltd. Round bottom glass tube	45 x 120	—				
175 x 4	—	—	—	S303580A	Tube rack 61 x 1 (4 pcs/box)	—	Culture tube (Falcon)**	60 x 140	—				
15 x 48	—	—	—	—	—	—	60 x 120	—					
—	—	—	—	S306504A	Square rack 15 TC x 12 (4 pcs/box)	—	Culture tube (Sarstedt, Iwaki, Sumilon, Falcon)	17 x 120	—				
The same specification as for bucket, above.	—	—	—	S304311B	Shield bucket (4 pcs/box)	The same racks/adapters/tubes/bottles as those listed above except for tube rack 61 x 1 can be used.							
2,000	850	96/120MP x 4	—	S300711A	M2 bucket (4 pcs/box)	—	—	—	96/120-hole microplate	128x86x34	—		
3,000	2,010	96MP/DW x 4	—	S305173A	MP2 bucket (4 pcs/box)	—	—	—	Microplate/Deep well plate	128x86x92	—		
T3S52 (90590500)	The same specification as for T3S51, above.	—	—	S304312B	Bucket (4 pcs/box)	The same rack/adaptor/tube/bottle as for T3S51 can be used.							
				S304311B	Shield bucket (4 pcs/box)	The T3S52 swinging bucket rotor equips it with unique automatic balancer. Max. 50g/bucket imbalance condition can be compensated by the automatic balancer.							
				S300711A	M2 bucket (4 pcs/box)	PAT.							
				S305173A	MP2 bucket (4 pcs/box)	PAT.							

Notes: 1. ■ indicates tubes available on the market. Purchase directly from your local supplier.
 2. *Freestanding 50 ml culture tube cannot be used.
 3. Falcon is registered trademark of Becton Dickinson and Company. Iwaki is registered trademark of Iwaki Glass Co., Ltd. Sarstedt is registered trademark of Nichiden-Rika Glass Co., Ltd. Sumilon is registered trademark of Sumitomo Bakelite Co., Ltd. BIO-BIK is registered trademark of Ina-Optica Co., Ltd.
 4. **To prevent deformation, be sure to use Falcon-brand cushions (P/N2090) without fail.
 5. ***The PCR plate requires the PCR tube rack (LP-0351) made by Funakoshi Co., Ltd.

■ Square racks/buckets/adaptor for T3S51/T3S52



Refrigerated Compact Centrifuge

Soft contours outside and an all-new design for wide versatility inside. Ideally suited for routine work such as clinical testing.



CF7D2

- Accepts high-capacity and multi-place test-tube rotors (RT3S3): 500 ml x 4, 15 ml x 72, 3-10 ml x 120.
- Use with a wide variety of tube racks and culture tubes.
- Equipped with a refrigerator (300W).

Specifications	
Model	CF7D2
Speed range (rpm)	300-7,000
Max. RCF (x g)	6,570 (T7A2 rotor)
Max. processing volume (ml x tubes)	500 x 4, 3-10 x 120
Speed control method	Automatic microprocessor controlled
Speed indication	Digital
Dimensions (mm)	570 (W) x 590 (D) x 810 (H)
Power requirements	AC 115V±10%, 15A/AC 220V±10%, 8A, 50/60Hz
Weight (kg)	80

Optional accessories: Tube racks for RT3S3 with CF7D2



Optional accessories: Rotors for CF7D2

Rotor model	Applicable assembly/rack/adaptor/tube		Max. speed (rpm)	Max. RCF (x g)	Nominal capacity (ml) x number of samples	Tube size (Ø x L) mm	Applicable tube (□ indicates tubes available on the market)	
	Part No.	Name (selling unit)						
T5SS	S409810A	15 X 7S adapter (4/pack)	4,800	4,170	15 x 28	15.4 x 100	Terumo Venoject 10ml	
			3,000	1,630		15.6 x 100	Terumo Venoject II 10ml, Sekisui Greiner Insepack 10ml	
			4,800	4,170		16.5 x 100	15 glass tube (50/box) 464976A	
	S409811A	10 x 7S adapter (4/pack)	4,800	4,170	10 x 28	12.4 x 100	Terumo Venoject 7ml	
			3,000	1,630		13.2 x 100	Terumo Venoject II 7ml	
			4,800	4,170		12.7 x 100	Sekisui Greiner Insepack 7ml	
	S409812A	5 x 7S adapter (4/pack)	4,800	4,170	5 x 28	12.4 x 75	Terumo Venoject 5ml	
			3,000	1,630		13.2 x 78	Terumo Venoject II 5ml	
			4,800	4,170		12.7 x 75	Sekisui Insepack 4ml, Sekisui Greiner Insepack 5ml	
	S409813A	50 x 1S adapter (4/pack)	3,990	3,990	50 x 4	35.0 x 100	50 glass tube (10/box) 473866A	
			4,170	4,170		15 (TC) x 16	17.0 x 120	15ml culture tube (conical bottom)
			4,170	4,170		50 (TC) x 4	30.0 x 115	50ml culture tube (conical bottom) *2
			4,170	4,170		15 (TC) x 12	17.0 x 120	15ml culture tube (conical bottom)
			4,000	2,900		160 x 4	52 x 120	160PP bottle (10 pcs/box) *4 S306847A
			4,000	2,900		160 x 4	52 x 120	160PC bottle (10 pcs/box) *4 S306848A
T4SS	S307332A	5 x 8S adapter (4/pack)	4,000	2,380	5 x 32	12-13 x 75-78	4-5ml collect blood tube	
			4,000	2,860		7 x 32	12-13 x 100	7ml collect blood tube
			3,000	1,610		10 x 32	12 x 105	10 glass tube (50 pcs/box) 464977A
			4,000	2,860		10 x 32	15-16 x 100	10ml collect blood tube
			3,000	1,610		15 x 32	16.5 x 100	15 glass tube (50 pcs/box) 464976A
			4,000	2,900		15 x 24	17 x 120	15ml culture tube
	S307336A	50TC x 2S adapter (4/pack)	4,000	2,860	50 x 8	30 x 115	50ml culture tube *2	
			4,000	2,900		5 x 28	12-13 x 75-78	4-5ml collect blood tube
			4,000	2,900		7 x 28	12-13 x 100	7ml collect blood tube
			3,000	1,630		10 x 28	12 x 105	10 glass tube (50 pcs/box) 464977A
			4,000	2,900		10 x 28	16 x 100	10ml collect blood tube
			3,000	1,630		15 x 28	16.5 x 105	15 glass tube (50 pcs/box) 464976A
Optional round bucket (S410523A, 4/pack)	S409810A	15 x 7S adapter (4/pack)	4,000	2,770	50 x 4	35 x 100	50 glass tube (10 pcs/box) 473866A	
			4,000	2,900		15(TC) x 12	17 x 120	15ml culture tube
			4,000	2,900		15(TC) x 16	17 x 120	15ml culture tube
			4,000	2,900		50(TC) x 4	30 x 115	50ml culture tube *2
			4,000	2,900		160 x 4	52 x 120	160PP bottle (10 pcs/box) *4 S306847A
			4,000	2,900		160 x 4	52 x 120	160PC bottle (10 pcs/box) *4 S306848A
	S410251A	160 x 1S adapter (4/pack)	4,000	2,900	160 x 4	52 x 120	160PP bottle (10 pcs/box) *4 S306847A	
			4,000	2,900		52 x 120	160PC bottle (10 pcs/box) *4 S306848A	
			—	—		—	—	160 cap (2 pcs/box) S410008A
			4,000	2,900		250 x 4	61.6 x 135	250 PPCO bottle, Nalgene3141-0250
			4,000	2,900		250 x 4	61.6 x 135	250 PC bottle, Nalgene3140-0250
			4,000	2,900		250 x 4	61.6 x 135	250 PC bottle, Nalgene3140-0250
Shield cap	S410252A	Shield cap (4/pack) can be used with round bucket, not applicable for 15TC x 4S adapter and 250 bottle	—	—	—	—		

Optional accessories: Rotors for CF7D2

Rotor model	Applicable assembly/rack/adaptor/tube		Max. speed (rpm)	Max. RCF (x g)	Nominal capacity (ml x number of samples)	Tube size (Ø x L) mm	Applicable tube (□ indicates tubes available on the market)	
	Part No.	Name (selling unit)						
T3SS3	S304026A	10 x 10 assembly (4/pack, with 50 glass tubes)	3,400	2,060	DW x 2 MP x 10	128 x 86 x 43-74	Micro plate	
			3,600	2,190		128 x 86 x 14	Deep well plate, Deep well plate with filter	
			3,600	2,350		15 x 24	12 x 105	15 glass tube (50 pcs/box) 464976A
			3,000	1,630		15 x 32	17 x 120	Culture tube (Sarstedt, Iwaki, Sumilon, Falcon)
			3,000	1,630		15 x 40	16.5 x 110	15 glass tube (50 pcs/box) 464976A
RT5S4	S304148A	50 x 1 assembly with bucket stand (with 10 glass tubes)	4,530	3,910	15 x 16	17 x 120	Culture tube (Sarstedt, Iwaki, Sumilon, Falcon)	
			4,630	4,250		50 x 4	35 x 100	50 glass tube (10 pcs/box) 473866A
	S305550A	15TC x 4 assembly (4/pack)	4,600	3,910	15 x 16	17 x 120	Culture tube (Sarstedt, Iwaki, Sumilon, Falcon)	
			4,630	4,250		50 x 4	35 x 100	50 glass tube (10 pcs/box) 473866A
	S408295A	50TS50 adapter (4/pack)	4,360	4,360	50 x 4	30 x 115	Culture tube (Sarstedt, Iwaki, Sumilon, Falcon)	
			2,900	2,900		1.5/2.0 x 4	11 x 39	1.5 ml micro tube
	S408198A	1.5 x 4SG adapter (4/pack)	2,900	2,900	1.5/2.0 x 4	11 x 39	2.0 ml micro tube	
			4,620	4,620		50 x 4	30 x 115	Culture tube (Sarstedt, Iwaki, Sumilon, Falcon)
	S305549A	50TC x 1 assembly (4/pack)	4,620	4,620	50 x 4	30 x 115	Culture tube (Sarstedt, Iwaki, Sumilon, Falcon)	
			4,620	4,620		50 x 4	30 x 115	Culture tube (Sarstedt, Iwaki, Sumilon, Falcon)
S304147A	50 x 2 assembly (4/pack, with 10 glass tubes)	2,350	2,350	50 x 8	35 x 100	50 glass tube (10 pcs/box) 473866A		
		3,600	2,200		15 x 8	16.5 x 110	15 glass tube (50 pcs/box) 464976A	
S408198A	1.5 x 4SG adapter (4/pack)	1,500	1,500	1.5/2.0 x 8	11 x 39	1.5 ml micro tube		
		2,390	2,390		50 x 8	30 x 115	50 ml culture tube	
S306706A	50TC x 2 assembly	4,000	2,900	50 x 4	35 x 100	50 glass tube (10 pcs/box) 473866A		
		4,000	2,900		50TC shield bucket (4/pack)	30 x 115	Culture tube (Sarstedt, Iwaki, Sumilon, Falcon)	
S409541A	50TC shield bucket (4/pack)	2,000	700	96 holes x 4 120 holes x 4	128 x 86 x 14 130 x 92 x 12	96-hole microplate 120-hole microplate		
		7,000	6,410		50 x 8	30 x 15	Culture tube (Sarstedt, Iwaki, Sumilon, Falcon)	
S408945A	13A50T adapter (B) (2/pack)	5,860	5,860	13 x 8	17 x 101	Culture tube (Sarstedt, Iwaki, Sumilon, Falcon)		
		6,250	6,250		15 x 8	17 x 120	Culture tube (Sarstedt, Iwaki, Sumilon, Falcon)	
T7A	S306352A	50PA bottle assembly	7,000	6,570	50 x 10	29 x 103	(10 pcs/box)	
			6,000	4,550		15 x 10	17 x 120	Culture tube (Sarstedt, Iwaki, Sumilon, Falcon)
			4,000	2,030		12 x 105	10 glass tube (50 pcs/box) 464977A	
			4,000	2,030		98 x 100	500PA tube (4 pcs/box) S303830A	
			4,000	2,030		12 x 120	10 glass tube (50 pcs/box) 464977A	
T7A2	S307167A	50PA thick-walled tube	7,000	6,570	50 x 10	29 x 103	(10 pcs/box)	
			7,000	6,570		50PC tube	(10 pcs/box)	
			7,000	6,570		50SS tube	(2 pcs/box)	
			7,000	6,570		50PA bottle assembly	(10 pcs/box)	
			7,000	6,570		50PC bottle assembly	(10 pcs/box)	
			6,000	4,550		15 x 10	17 x 120	Culture tube (Sarstedt, Iwaki, Sumilon, Falcon)
			4,000	2,030		12 x 105	10 glass tube (50 pcs/box) 464977A	
			4,000	2,030		98 x 100	500PA tube (4 pcs/box) S303830A	
			4,000	2,030		12 x 120	10 glass tube (50 pcs/box) 464977A	
			4,000	2,030		7 x 96	13-14 x 120	5 ml - 7 ml glass tube
RT3S3	S307167A	50PA thick-walled tube	1,870	1,870	50 x 10	29 x 103	(10 pcs/box)	
			1,870	1,870		15 x 120	10 glass tube (50 pcs/box) 464977A	
			1,870	1,870		15 x 72	16.5 x 120	15 glass tube (50 pcs/box) 464976A
			1,870	1,870		50 x 16	36.5 x 120	50 glass tube (10 pcs/box) 473866A
			1,870	1,870		10 x 16	12 x 120	10 glass tube (50 pcs/box) 464977A
			1,870	1,870		10 x 120	12 x 120	10 glass tube (50 pcs/box) 464977A
			1,870	1,870		7 x 96	13-14 x 120	5 ml - 7 ml glass tube
			1,870	1,870		15 x 72	16.5 x 120	15 glass tube (50 pcs/box) 464976A
			1,870	1,870		50 x 16	36.5 x 120	50 glass tube (10 pcs/box) 473866A
			1,870	1,870		10 x 16	12 x 120	10 glass tube (50 pcs/box) 464976A
			1,870	1,870		225	60 x 140	Culture tube (Falcon) *5
			1,870	1,870		175	60 x 120	Culture tube (Falcon) *5
			1,870	1,870		250	61.7 x 122	250 ml bottle (Nalgene) 3122-0250/3120-0250
			1,870	1,870		100	45 x 120	100 ml round-shaped sinking-use tube (Nichiden-Rika Glass)
			S303581A	Tube rack 11.4 x 24 (4/pack)		1,770	1,770	1.5 2.0
3,000	3,000	15.4 x 100			Terumo Venoject			
S304667A	Tube rack 15.5 x 18 (4/pack)	1,870	1,870	10 x 72	15.6 x 100	Terumo Venoject II, Sekisui Greiner Insepack, Sekisui Insepack		
		1,870	1,870		6 x 72	15.2 x 75	Sekisui Greiner Insepack	
		1,870	1,870		10 x 72	15.6 x 100	Sekisui Greiner Insepack	
		1,870	1,870		5 x 72	12.4 x 78	Terumo Venoject	
		1,870	1,870		7 x 72	12.9 x 100	Terumo Venoject	
		1,870	1,870		5 x 72	13.2 x 78	Terumo Venoject II	
		1,870	1,870		7 x 72	13.2 x 100	Terumo Venoject II	
		1,870	1,870		4 x 72	12.6 x 75	Sekisui Insepack	
		1,870	1,870		5 x 72	12.7 x 75	Sekisui Insepack	
		1,870	1,870		4 x 72	13.1 x 75	Sekisui Greiner Insepack	
S304528A	Tube rack 17 x 10 (4/pack)	2,080	2,080	15 ml culture tube x 40	17 x 120	Culture tube (Iwaki, Falcon, Sarstedt, Sumilon)		
		1,870	1,870		50 ml culture tube x 28	30 x 115	Culture tube (Iwaki, Falcon, Sarstedt, Sumilon)	
S305213A	50T7S adapter (4/pack)	2,000	2,000	50 ml culture tube x 20	17 x 120	Culture tube (Iwaki, Falcon, Sarstedt, Sumilon)		
		3,000	1,650		50 ml culture tube x 28	30 x 115	Culture tube (Iwaki, Falcon, Sarstedt, Sumilon)	
S307253A	Tube rack 29.5 x 5 (B) (4/pack)	2,000	2,000	96 MP x 4	128 x 86 x 32	Microplate		
		3,000	1,650		96 DW x 4	128 x 86 x 55	Microplate/Deep well plate	

Notes: 1. Falcon is registered trademark of Becton Dickinson and Company. Iwaki is registered trademark of Iwaki Glass Co., Ltd. Sarstedt is registered trademark of Nichiden-Rika Glass Co., Ltd. Sumilon is registered trade mark of Sumitomo Bekelite Co., Ltd. *2. Freestanding 50 ml culture tubes cannot be used.

*3. Freestanding 50 ml culture tubes can also be used. *4. Caps are not included with 160PP/PC bottles. Please purchase 160 caps separately for use with these bottles. *5. To prevent deformation, be sure to use cushions manufactured by Falcon (Part No. 2090).

CT Series Tabletop Centrifuges

This tabletop centrifuges are suitable for routine work of centrifugation in the laboratories and the examination rooms. There are two models depending on your required volume of centrifugation at a time. Their stylish design carries simple operation with various functions and safety features harmonizing global standards as our priority. Wide selection of rotor and adaptor to be used with commercially available test tubes, micro plates and blood collection tubes are also offered.

Tabletop Centrifuges



CT6E

CE

CT6EL

CE

himac **CT** SERIES Hitachi Tabletop Centrifuge

CT6E/CT6EL

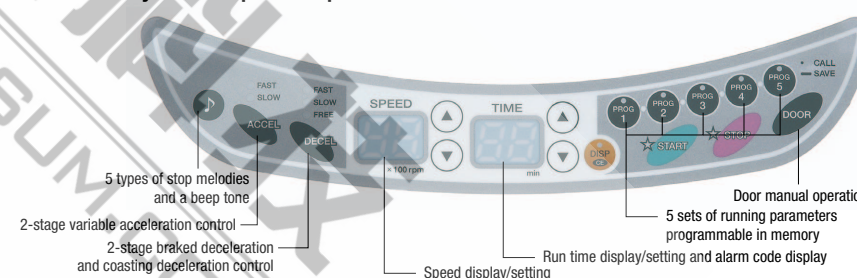
User-friendly

- Easy-to-use operation panel
- 5 sets of running parameters are programmable.
- Audible alarm of end of running is selectable from 5 melodies, beep and mute.
- Acceleration and deceleration settings are optimally selectable according to samples.

Faster acceleration and deceleration than ever

himac original powerful and inverter controlled brushless motor has realized faster acceleration and deceleration than ever. Reduced acceleration and deceleration time makes process time shorter in single cycle of the routine work. For example, it takes only approx. 30 seconds to reach 3,000rpm by CT6E with T4SS rotor.

Easy-to-use operation panel



Compact

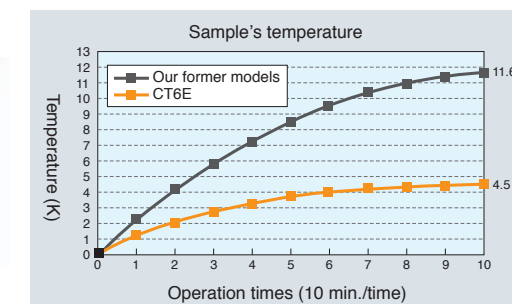
Low-height body allows rotor to be loaded/unloaded smoothly and speedily!

CT6E/CT6EL tabletop centrifuges are compact for smooth and speedy loading/unloading of samples. The height from the bottom to the opening is 270 mm (60 mm lower than our former models.)



Increase of sample's temperature is minimized

When you repeat centrifugation to process large number of sample tube using the same rotor, temperature of rotor is increased as centrifugation is repeated due to air frictions. It causes increase of sample's temperature. Our new design controls air flow in a chamber during centrifugation based on the latest fluid analysis and CAE analysis technology, and minimizes increase of sample's temperature. It is very helpful in routine work, especially when centrifugation is repeated to process large number of sample tube, to avoid any unexpected negative effect to the samples.



Specifications

Model	CT6E	CT6EL
Maximum speed	6,000 rpm (T6AP fixed angle rotor)	6,000 rpm (T6AP2 fixed angle rotor)
Maximum RCF	4,770 x g (T6AP fixed angle rotor)	4,770 x g (T6AP2 fixed angle rotor)
Maximum capacity	1,000 ml (250 ml x 4 tubes) (T5SS swinging bucket rotor)	2,000 ml (500 ml x 4 tubes) (T3S6 swinging bucket rotor)
Speed control range	300 to 6,000 rpm (in increments of 100 rpm)	
Timer	1 minute to 99 minutes (in increments of 1 minute) with a HOLD function (continuous operation)	
Acceleration/deceleration time variable	2-stage variable acceleration, 2-stage braked deceleration and coasting deceleration	
Memory-based programmed operation	5 programmed operations possible (speed, run time, acceleration/deceleration settings and rotor stop signal)	
Rotor stop signal	Selectable from 5 melodies, a beep tone and mute setting	
Drive motor	Brushless DC motor (inverter control)	
Safety device	Door interlock, dual overspeed detection, imbalance detection, motor temperature abnormality detection, etc.	
Compliance with standards	IEC 61010-2-020, EN61326, complies with CE marking requirements.	
Heat radiation	600W	
Power requirements	Single phase , AC200-240V , 10A , 50/60Hz AC100-120V , 15A , 50/60Hz	
Dimensions (mm)	440W x 595D x 330H	540W x 720D x 330H
Weight (kg)	45	55

Global standard

Safer tabletop centrifuges! Compliance with CE marking requirements

- Mechanical safety (Compliance with IEC 61010-2-020 requirements)**
 - CT6E/CT6EL tabletop centrifuges have passed the MCA (maximum credible accident) test. This test confirms that no fragments are expelled from the centrifuge in the event of an accident.
- Electrical safety (Compliance with IEC 61010-2-020 requirements)**
 - Operator safety is ensured even under a single fault condition.
 - Double electric insulation construction for prevention of electric shock and all units have passed a general inspection under high-voltage conditions.
- Electromagnetic compatibility (EMC directive: Compliance with EN61326 and other requirements)**
 - Strong immunity to erroneous operation or other malfunction from external electromagnetic emissions. (Protection from nearby lightning strikes and static electricity in dry winter air.)
 - Negligible electromagnetic emissions that would make peripheral equipment operate erroneously.

Environment-friendly design

Meeting Hitachi's environmental standards!

- Hitachi himac CT6E/CT6EL tabletop centrifuges are environment-friendly products.**
 - More recyclable, energy-saving and resource-saving than the conventional models in the market.
 - Reduced the use of hazardous substances



ROTOR

Rotor list of CT6E

T5SS 90585900 <p>Shield cap (option) S410252A(4pcs/box)</p>	T4SS 90584100 <p>Round bucket(option) S410523A(4pcs/box) Shield cap (option) S410252A(4pcs/box) The shield cap can be used with round bucket, but cannot be used with 157CX4S adapter and 250 PPCO/PC (Nalgene) bottle.</p>	T5SS3 90591000 <p>For microplate up to 75 mm length is possible</p>	RT2S2 90583000 <p>For microplate up to 40 mm length is possible</p>	T6AP 90591100 <p>For culture tube and ultrafiltration *Please refer to p. 23 for details</p>
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Adapters

Adapters for T4SS <p>5x8S adapter, 10x8S adapter, 15x8S adapter, 15TCx6S adapter, 50TCx2S adapter, 10x10SB adapter, 15x10S adapter</p>	Adapters for T5SS <p>50x1S adapter, 50TCx1S adapter, 15x7S adapter, 15TCx4S adapter, 15TCx3S adapter, 10x7S adapter, 5x7S adapter</p>
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Rotor list of CT6EL

T3S6 90585200 <p>Bucket S304312B (4pcs/box), M2 bucket S300711A (4pcs/box), Bucket S304311B (4pcs/box), MP2 bucket S305173A (4pcs/box) *Please select a bucket for each optional use</p>	T3S7 90583400 <p>For Hitachi automatic analyzing devices</p>	T3S8 90590900 <p>For microplate up to 90 mm length is possible Square bucket (option) S308070A (4pcs/box)</p>	T6AP2 90591200 <p>For culture tube and ultrafiltration *Please refer to p. 24 for details</p>
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Adapters

For T3S6 square rack/adaptor <p>Square rack GR, Square rack BL, Square rack OR, Square rack YE, Square rack 13.2x20, Square rack 15.5x20, Square rack 46x2, Tube rack 61x1, 507TS adapter</p>	For T3S8 adaptor <p>250x1S adapter, 15x16S adapter</p>
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Rotors for CT6E

Rotor (Part No.)	Bucket/Assembly/Rack/Adapter		Max speed (rpm)	Max RCF (x g)	Nominal capacity *1	Tube size (φx L)mm	Applicable tube (● tubes available on the market)		
	Part No.	Model							
T4SS (90584100) (Square bucket as standard) 	S307332A	5 x 8S adapter (4pcs/box)	4,000	2,380	5 x 32	12~13 x 75~78	●4/5ml blood tube (Venoject, Insepack, Vacutainer, Hemoguard)		
	S307333A	10 x 8S adapter (4pcs/box)	4,000	2,860	7 x 32	12~13 x 100	●7ml blood tube (Venoject, Insepack, Vacutainer, Hemoguard)		
			3,000	1,610	10 x 32	12.0 x 105	10 glass tube (50pcs/box) 464977A		
	S308695A	10 x 10SB adapter (4pcs/box)	4,000	2,830	10 x 40	Multi type	●10/7.5/4.5ml for blood tube ※Standard 15ml glass tube is not available.		
	S307334A	15 x 8S adapter (4pcs/box)	4,000	2,860	10 x 32	15~16 x 32	●10ml blood tube(Venoject, Insepack, Vacutainer, Hemoguard)		
			3,000	1,610	15 x 32	16.5 x 100	15 glass tube (50pcs/box) 464976A		
S308546A	15 x 10S adapter (4pcs/box)	4,000	2,860	10 x 40	15.4 x 100	●10ml blood tube(Venoject, Insepack, Vacutainer, Hemoguard)			
		3,000	1,610	15 x 40	16.5 x 100	15 glass tube (50pcs/box) 464976A			
S307335A	15TC x 6S adapter (4pcs/box)	4,000	2,900	15 x 24	17 x 120	●15ml culture tube (V bottom)			
S307336A	50TC x 2S adapter (4pcs/box)	4,000	2,860	50 x 8	30 x 115	●50ml culture tube (V bottom) *3			
T5SS (90585900) (Round bucket as standard) 	S409810A	15 x 7S adapter (4pcs/box)	4,800	4,170	10 x 28	15.4 x 110	●10ml blood tube(Termo Venoject)		
			3,000	1,630	15 x 28	16.5 x 110	●10ml blood tube(Termo Venoject II 10ml Sekisui Greiner, Insepack 10ml)		
	S409811A	10 x 7S adapter (4pcs/box)	4,800	4,170	7 x 28	12.4 x 100	●7ml blood tube(Termo Venoject)		
						13.2 x 100	●7ml blood tube(Termo Venoject II)		
			3,000	1,630	10 x 28	12.7 x 100	●7ml blood tube(Sekisui Greiner, Insepack)		
	S409812A	5 x 7S adapter (4pcs/box)	4,800	4,170	5 x 28	12.0 x 105	10 glass tube (50pcs/box) 464977A		
						12.4 x 75	●5ml blood tube(Termo Venoject)		
						13.2 x 78	●5ml blood tube(Termo Venoject II)		
						12.7 x 75	●4/5ml blood tube(Sekisui Insepack 4ml, Sekisui Greiner Insepack 5ml)		
	S409813A	50 x 1S adapter (4pcs/box)	4,800	3,980	50 x 4	35.0 x 100	50 glass tube (10pcs/box) 473866A		
						12.4 x 75	●5ml blood tube (Sekisui Insepack)		
	S409814A	15TC x 4S adapter (4pcs/box)	4,800	4,170	15(TC) x 16	17.0 x 120	●15ml culture tube (V bottom)		
S409815A	50TC x 1S adapter (4pcs/box)	4,800	4,170	50(TC) x 4	30.0 x 115	●50ml culture tube (V bottom) *3			
S409976A	15TC x 3S adapter (4pcs/box)	4,800	4,170	15(TC) x 12	17.0 x 120	●15ml culture tube (V bottom)			
S410251A	160 x 1S adapter (4pcs/box)	4,800	4,170	160 x 4	52.0 x 120	160PP bottle (10pcs/box) S306847A (Cap optional) 160PC bottle (10pcs/box) S306848A (Cap optional) 160cap (2pcs/box) S410008A			
T5SS3 (90591000) 	—	—	4,800	4,170	250 x 4	61.6 x 135	●250PP bottle (Nalgene) 3141-0250 ●250PC bottle (Nalgene) 3140-0250		
			4,800	3,170	96MPx6pcs	—	●96 well microplate		
			4,800	3,170	96DWx2pcs	—	●96 well microplate		
			4,800	3,170	PCRx2pcs	—	●PCR 96 well plate		
S408786A	0.2 x 96MP adapter (2pcs/box)	4,800	3,170	PCRx2pcs	—	●1.5ml/2.0ml microtube			
S408787A	2 x 48S adapter (4pcs/box)	4,800	3,170	1.5/2.0 x 96	—	●1.5ml/2.0ml microtube			
RT2S2 (90583000) 	—	—	2,000	700	96MPx4pcs	—	●96 well microplate *4		
T6AP (90591100) 	—	—	4,750	2,990	50 x 8	—	●Centrirep (Nihon Millipore)		
			6,000	4,770			●Amicon Ultra-15 (Nihon Millipore)		
			6,000	4,770			●Vivaspin 2, Vivaspin 6 (Saritorius)		
			S409424A	15TA50T adapter (B) (2pcs/box)	6,000		4,630	15 x 8	●50ml culture tube (V bottom) *3
									●15ml culture tube (V bottom)
									●Amicon Ultra-4 (Nihon Millipore)
									●Vivaspin 2, Vivaspin 6 (Saritorius)
S411361A	Centricon adapter (2pcs/box)	6,000	4,770	15 x 8	—	●Centricon (Nihon Millipore)			
S411363A	Centriplus adapter (2pcs/box)	4,800	3,000		●Centriplus (Nihon Millipore)				
S411365A	Ultrafree-CL adapter (2pcs/box)	6,000	3,950		●Ultrafree-CL (Nihon Millipore)				




*1. Capacity is indicated by nominal capacity of tube-bottle. Real capacity in actual use may be smaller than the nominal capacity depending upon rotor structure, tube shape, etc.

*2. Adapter and shield cap for T5SS can be used. The max. speed is 4,000rpm.

*3. The independent type 50ml culture tube cannot be used.

*4. When a centrifuge is to be loaded with two or more plates, please test preliminarily because of the possibility of a lower plate collapsing.

*5. It is not available to use shield cap for 15TC x 4S adapter and 250ml bottle.

Rotors for CT6EL							
Rotor (Part No.)	Bucket/Accessory/Rack/Adapter		Max speed (rpm)	Max RCF (x g)	Nominal capacity *1	Tube size (φ x L)mm	Applicable tube (● tubes available on the market)
	Part No.	Model					
T3S6 (90585200) Bucket is option 	S303779A	Square rack 13.2 x 20 (4pcs/box)	3,000	2,000	4/5 x 80	—	● 4/5ml blood tube (Venoject, Insepack, Vacutainer, Hemoguard)
	S303781A	Square rack 15.5 x 20 (4pcs/box)	3,000	2,000	7 x 80	13.2 x 100	● 7ml blood tube (Venoject, Insepack, Vacutainer, Hemoguard)
	S301438A	Square rack GR (4pcs/box) *4	3,000	2,090	6 x 80	15.2 x 75	● 6ml blood tube (Venoject, Insepack, Vacutainer, Hemoguard)
	S307170A	Square rack GR(B) (4pcs/box) *4	3,000	2,090	10 x 80	15.4 x 100	● 10ml blood tube (Venoject, Insepack, Vacutainer, Hemoguard)
	S301437A	Square rack BL (4pcs/box) *4	3,000	2,090	10 x 144	12 x 105	● 5/7ml glass tube
	S307169A	Square rack BL(B) (4pcs/box) *4	3,000	2,090	10 x 144	12 x 105	10 glass tube (50pcs/box) 464977A
	S301439A	Square rack YE (4pcs/box) *4	3,000	2,070	15 x 80	16.5 x 120	15 glass tube (50pcs/box) 464976A
	S307171A	Square rack YE(B) (4pcs/box) *4	3,000	2,070	15 x 80	16.5 x 120	50 glass tube (10pcs/box) 473866A
	S301440A	Square rack OR (4pcs/box) *4	3,000	2,070	50 x 16	36.5 x 120	● 100ml glass tube (Nihon Rika Glass)
	S307172A	Square rack OR(B) (4pcs/box) *4	3,000	2,070	50 x 16	36.5 x 120	● 15ml culture tube (V bottom)
	S303676A	Square rack 46 x 2 (4pcs/box)	3,000	2,010	100 x 8	45 x 120	● 50ml culture tube (V bottom) *2
	S306504A	Square rack 15TC x12 (4pcs/box)	3,000	2,050	15 x 48	17 x120	● 175ml culture tube (Falcon) *3
	S305213A	50T7S adapter (4pcs/box)	3,000	2,060	50 x 28	30 x 115	● 225ml culture tube (Falcon) *3
	S303580A	Tube rack 61 x 1 (4pcs/box)	3,000	2,040	175 x 4	60 x 140	● 500PA tube (4pcs/box) S303830A
M2 bucket (4pcs/box) (S300711A) 	—	—	3,000	2,150	500 x 4	98 x 100	● 1.5ml/2.0ml microtube
	S303783A	Square rack 11.4 x 28 (4pcs/box)	3,000	2,050	1.5/2.0x112	11 x 39	● 96 well microplate
	S300711A	M2 bucket (4pcs/box)	2,000	850	96MPx4pcs	128 x 86 x 34	● 96 well microplate
MP2 bucket (4pcs/box) (S305173A) 	—	—	2,000	850	96MPx4pcs	128 x 86 x 92	● 96 deep well plate
	S305173A	MP2 bucket (4pcs/box)	3,000	2,010	96DWx4pcs	128 x 86 x 92	● 96 deep well plate
	S304921A	13.3 x 18 adapter (4pcs/box)	2,800	1,860	4/5 x 72	12.4 x 75	● 4/5ml blood tube (Venoject, Insepack, Vacutainer, Hemoguard)
T3S7(90583400) 	S304922A	15.7 x 18 adapter (4pcs/box)	2,800	1,860	7 x 72	12.4 x 100	● 6ml blood tube (Venoject, Insepack, Vacutainer, Hemoguard)
	—	—	2,800	1,790	6 x 72	15.2 x 75	● 7ml blood tube (Venoject, Insepack, Vacutainer, Hemoguard)
	—	—	2,800	1,790	10 x 72	15.4 x 100	● 10ml blood tube (Venoject, Insepack, Vacutainer, Hemoguard)
T3S8 (90590900) 	—	—	3,000	1,940	96MPx16pcs	128 x 86 x 15	● 96 well microplate
	—	—	3,000	1,940	96DWx8pcs	128 x 86 x 45	● 96 deep well plate
	—	—	3,000	1,940	PCR96x4pcs	—	● For PCR 96 well plate
	S308063A	15 x 16S adapter (4pcs/box)	3,000	2,150	15 x 64	15.6 x 100	● 6ml blood tube (Venoject, Insepack, Vacutainer, Hemoguard)
	S308073A	10 x 16S adapter (4pcs/box)	3,000	2,150	15 x 64	15.6 x 100	● 10ml blood tube (Venoject, Insepack, Vacutainer, Hemoguard)
	S308065A	15TC x 9S adapter (4pcs/box)	3,000	2,150	15 x 36	17 x 120	15 glass tube (50pcs/box) 464976A
	S308064A	50TC x 4S adapter (4pcs/box)	3,000	2,150	50 x 16	30 x 115	● 4/5ml blood tube (Venoject, Insepack, Vacutainer, Hemoguard)
	S308066A	250 x 1S adapter (4pcs/box)	3,000	2,120	250 x 4	62 x 124	● 7ml blood tube (Venoject, Insepack, Vacutainer, Hemoguard)
	—	—	3,000	2,150	15 x 36	17 x 120	10 glass tube (50pcs/box) 464977A
	—	—	3,000	2,150	50 x 16	30 x 115	● 15ml culture tube (V bottom)
T6AP2 (90591200) 	—	—	4,750	2,990	50 x 8	—	● 50ml culture tube (V bottom) *2
	—	—	6,000	4,770	50 x 8	—	● 15ml culture tube (V bottom)
	—	—	6,000	4,770	50 x 8	—	● Amicon Ultra-15 (Nihon Millipore)
	S409424A	15TA50T adapter(B) (2pcs/box) Accessory (8pcs)	6,000	4,630	15 x 8	—	● Vivaspin 20 (Saritorius)
	S411361A	Centricon adapter (2pcs/box)	6,000	4,770	15 x 8	—	● 50ml culture tube (V bottom) *2
	S411363A	Centriplus adapter (2pcs/box)	4,800	3,000	15 x 8	—	● 15ml culture tube (V bottom)
	S411365A	Ultrafree-CL adapter (2pcs/box)	6,000	3,950	15 x 8	—	● Amicon Ultra-4 (Nihon Millipore)

*1. Capacity is indicated by nominal capacity of tube-bottle. Real capacity in actual use may be smaller than the nominal capacity depending on rotor structure, tube shape, etc.
 *2. The independent type 50ml culture tube cannot be used.
 *3. Please order Falcon-brand cushions separately: for 225ml (352075) and 175ml (352076), order cushions (352090) made by Becton Dickinson
 *4. Please choose depending on the tube length (except for cap). Without(B): 55~75mm, with(B): 76~120mm

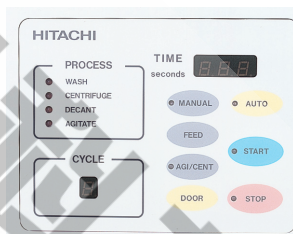
Blood Cell Washing Centrifuge

Automatic centrifuges for Coomb's test and blood cell washing. Automatic microcomputer control substantially shortens blood cell washing time—as many as 24 samples in three minutes (washing three times). Sized for convenient counter-top placement.



MC450 CE

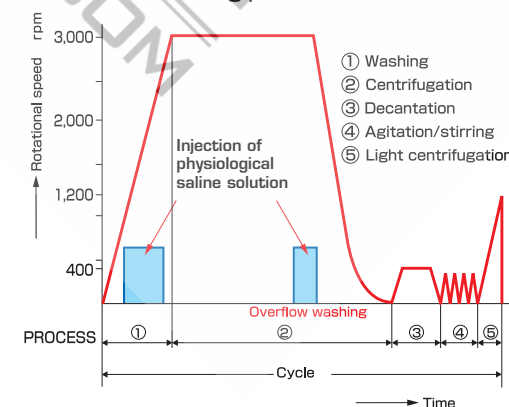
Washing cycles are under full-automatic operation!
 (Physiological saline solution injection ▶ Centrifugation ▶ Decantation ▶ Agitation/stirring)



The process for post-sample injection/agitation centrifugation is also automatically operated.

New operation process

Corpuscle washing is automatically carried out based on the following processes:



Attachment and separation of test tubes are easy due to a new-type distributor.



Specifications	
Model	MC450
Samples	Test-tube size 24 (φ 10, φ 12 x 75 mm)
Speed (rpm)	1,200 rpm (190 x g)/3,000 rpm (1,180 x g)
Process display	4-stage display: WASH → CENTRIFUGATION → DECANT → AGITATE
Manual operation speed	3,000 rpm or 1,200 rpm
Timer	Automatic/manual: 1 - 99 sec./1 - 999 sec.
Termination signal	Selection can be made from among 5 kinds of melodies and electronic buzzers.
Power requirements	AC 115V ± 10%, 10A, 50/60Hz, AC 220V ± 10%, 5A, 50/60Hz
Dimensions (mm)	370 (W) x 450 (D) x 410 (H)
Weight (kg)	29
Standard	EN61010-1, EN61010-2-020, EN61326 comply with CE mark.

Note: MC450 meets current European Community guidelines and is CE labeled.

Standard accessories	
Rotor	1
Distributor	1
Tank for physiological saline solution (with liquid level detector)	1 (capacity : 5L)
Test-tube (φ 12 x 75 mm)	50
Drain hose (m)	2.0
Instruction manual	1

- The overflow method is used for the washing process to improve corpuscle washing potential. (This is the washing method in which physiological saline solution is injected into the test tube again after centrifugation so that some physiological saline solution will overflow.)
- Due to the use of a new-type distributor, attachment and separation of test tubes have become easier.
- The drain cover and chamber can be dismantled easily, so cleaning has become simple.
- Because decanting rotational speed can be set precisely (7 stages), it is possible to increase the degree of corpuscle dryness through adjustment of physiological saline solution remaining after washing.
- The new door interlocking mechanism further enhances safety.
- Audible alarm of the end of washing can be chosen from among five kinds of melodies and buzzers.
- This model complies with current EU requirements for mechanical and electrical safety and electromagnetic compatibility.

Large-scale Continuous Flow Ultracentrifuge



CE

himac CC40 SERIES

Large-scale Continuous Flow Ultracentrifuge

CC40/CC40S

The above photo shows the model CC40 with options.

himac CC40 series is designed expressly to purify large-volume samples such as vaccines. Depending on the optional cores and sample feed systems selected, the CC40 series can be used to purify the active components of viruses by continuous flow centrifugation or by batch centrifugation using the density gradients solution, and even rough separation of large-volume samples for pelleting.



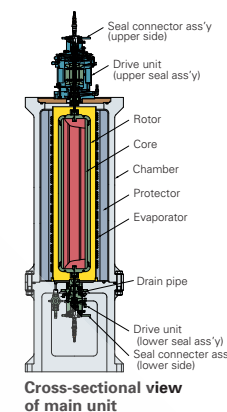
CE



CE

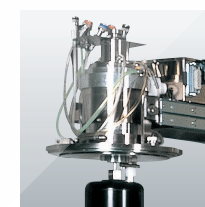
Model CC40

This model is designed expressly to purify large-volume corpuscle samples such as vaccines. Its high performance is defined by an 8.0 L maximum capacity with batch centrifugation and 7.7 L maximum capacity with continuous flow centrifugation, speeds of up to 40,000 rpm and a maximum RCF of 118,000 x g.



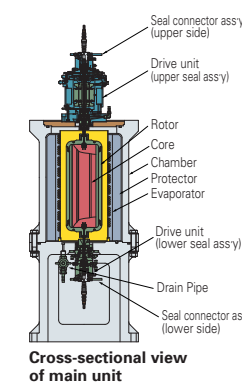
The most reliable drive system in the world

Drive system of the CC40 series is himac original and the latest high-frequency induction motor. We have experience over 25 years to use the high-frequency induction motor for drive system of the large-scale continuous flow ultracentrifuge since our 1st model was launched into the market. This drive system does not require an extra space for a separate air turbine compressor which widely used in conventional type of large-scale continuous flow ultracentrifuge in the market. Our drive system keeps on sophisticating continuously; it has established reputation of the most reliable drive system nowadays.



Model CC40S

With approximately one-half the capacity of the CC40, the CC40S is ideal for research, development and small-volume production of pharmaceuticals. This model has a maximum continuous centrifugation capacity of 1.6 liters, maximum speeds of 40,000 rpm and maximum RCF of 118,000 x g.



Designed with safety in mind

CC40 series comply with international standards and/or requirements, such as EN60204-1, EN61000-6-4, EN61000-6-2. Of course CC40 series carry the CE mark with them.

Stable High Speed and High Centrifugal Force

Our reliable drive system stably offers maximum speed of 40,000 rpm and maximum RCF of up to 118,000 x g to support a wide variety of separation and density gradient centrifugation applications, even if titanium-made core is used.

Quiet Operation

The high-frequency induction motor reduces operating noise to 68dB at 40,000 rpm.

Specifications of the main body

Specifications and features of the CC40

Model	CC40
Max. speed (rpm)/max. RCF (x g)	40,000/118,000
Speed control accuracy	±100 rpm
Rotor temperature control accuracy	±2°C (0 to 40°C)
Vacuum system/ultimate vacuum	Oil rotary vacuum pump/26.7 Pa (0.2 Torr)
Drive motor	Induction motor
Dimensions (mm)	1,750 (W) x 1,150 (D) x 2,950 (H), height to the control panel: 1,270
Weight (kg)	880 (main unit: 630, control unit: 250)
Power requirements	Single phase, AC 200/208/220/230/240 V ±10%, 30A, 50/60 Hz

Notes: 1. Installation charge is not included.
2. The rotor is an option

Specifications and features of the CC40S

Model	CC40S
Max. speed (rpm)/max. RCF (x g)	40,000/118,000
Speed control accuracy	±100 rpm
Rotor temperature control accuracy	±2°C (0 to 40°C)
Vacuum system/ultimate vacuum	Oil rotary vacuum pump/26.7 Pa (0.2 Torr)
Drive motor	Induction motor
Dimensions (mm)	1,750 (W) x 1,150 (D) x 2,160 (H), height to the control panel: 1,270
Weight (kg)	750 (main unit: 500, control unit: 250)
Power requirements	Single phase, AC 200/208/220/230/240 V ±10%, 30A, 50/60 Hz

Notes: 1. Installation charge is not included.
2. The rotor is an option

Now two types of control unit are available for your options.

Conventional Control Unit (Standard)



If you are looking for a cost-effective model, the conventional control unit equipped with LED display and keypad operation controller is available. This conventional control unit offers simplified operation to users. The operational data, such as speed, time temperature etc., can be output to an optional chart recorder which supports FDA 21 CFR Part 11 and construct the data logging system comprehensively. In addition, you can upgrade controller to Windows® based touch sensitive LCD panel PC controller at option, so that CC40 series offer the same ability to manage operating log data as well as New optional control unit does.

New Control Unit (Option)



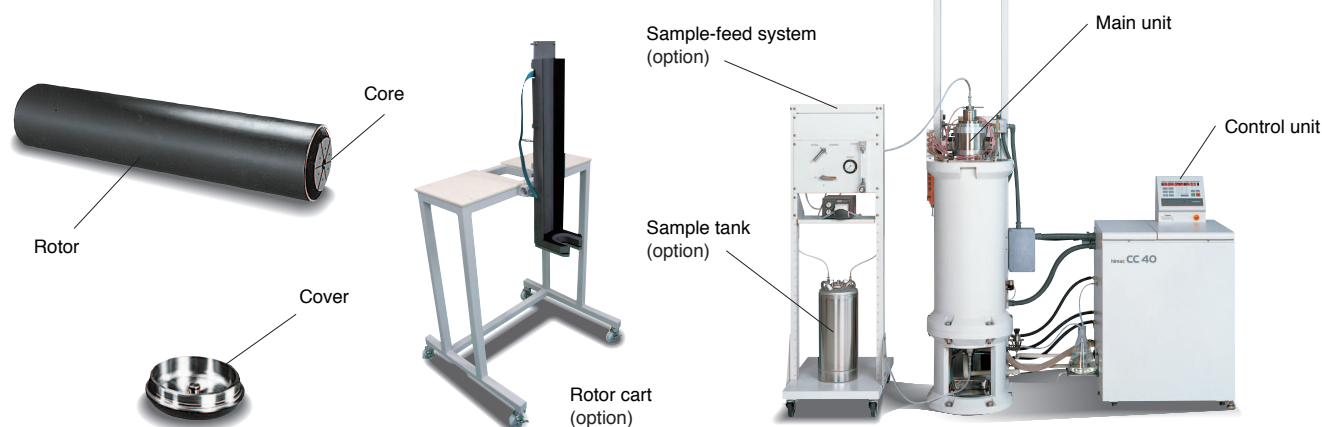
Windows® based touch sensitive LCD panel PC controller enclosed in an IP65 industrial housing offers simplified operation to users. Our intelligible screen design with GUI (graphic user interface) and high contrast against back screen enables users to identify operating status at a glance and operate the system easily. All operations such as parameter setting are done by touching icons or pop-up keyboard on the LCD. Access level of users is securely controlled by ID and password. Of course, the new control unit supports FDA 21 CFR Part 11 so that operating data is handled with the highest security and prevented from corruption. In addition, operating log data can be output in CSV format via USB port for your data management or analysis by commercially available data base or spreadsheet software. Ethernet communications is also accommodated.

* Screen design is subject to change due to upgrade of software without advanced notice.

Configuration

- Control unit (controller, refrigeration unit and vacuum pump)
- Main unit (vacuum chamber, motor and lift)
- Rotor cart for installing and replacing the rotor (option)
- Maintenance tools and spare parts
- Operation manual
- Rotor and core (option) Sample feed system (option)

Note: Please see p. 48 for information on other options.



Various options to conform to customers'usage purpose

The CC40 series have many options to offer maximum flexibility to conform to customers' usage purpose. We are very flexible to customize the CC40 series upon request of users. Following is examples of options available for the CC40 series;

Mechanical Option

- **Stainless Steel Construction**
Control unit housing and rotor lift, including oil box conforming to IP65 housing, of the main unit are also made of the stainless steel to offer the cleanest environmental in the pharmaceutical manufacturing facility. Of course, you can select stainless steel material for rotor chamber as well as an optional rotor cart, a sample feed system and a template at your option. In addition, all sample-contacting metallic parts of the CC40 series can be changed to corrosion-resistance stainless steel according to U.S. FDA current Good Manufacturing Practice (cGMP) requirement.
- **Remote Operation**
Installation of the CC40 series is very flexible. Control unit can be place at either sides of the main unit. In addition to install both units in the same room, such as the clean room, it is possible to install the main unit in the clean room and the control unit outside of clean room for remote operation. An additional control panel can be placed beside the main unit. (patent approved)
- **Vacuum Filter**
To prevent from any contaminations into the working room, vacuum filter can be assembled in the vacuum suction line.
- **Sterilize-in-Place (SIP)**
To sterilize the rotor and the parts in contact with sample, steam or chemical sterilization in installed placed is possible.
- **Sanitization of FSCL (Face Seal Cooling Line)**
To keep FSCL in hygienic after sterilization, FSCL can be modified for direct sanitation using hot water.

After installation Option

- **Documentation support**
To support your official inspection or audit of cGMP, we can provide documentation of the CC40 series that supports your cGMP documentation. Of course, FAT (factory acceptance test) is conducted and its documentation is provided.
- **IQ/OQ Validation**
Do you feel that IQ/OQ validation is so complicated? Do not worries about it, our engineers help you to set up protocols and validate IQ/OQ on you request.
- **Service Support**
Operation of the CC40 series is very stable and reliable. However, in case of any malfunction; our certified well-trained service engineer will fix and repair the malfunction upon your call. Regular maintenance program or extended warranty program is also available to keep your systems always perfect conditions.
- **Application Support**
If you need any support in application, such as scale up to production volume from process developing volume, our well-experienced application scientists are ready to support your preparation for commercial production using CC40 series upon your request.

For further details about the system configurations, the above options or other customization, please consult with your nearest Hitachi Koki representatives.

Wide Selection of Rotors and Cores*1

Rotors

Two types of rotors are available for each CC40 and CC40S. One is a regular flow type and the other one is a high flow type. Both types of rotors are made of titanium alloy that shows strong corrosion resistance and high heat resistance.

Titanium alloy made cores

There are several types of cores available for method of centrifugation or target volume. The titanium alloy shows high heat resistance and is suitable for SIP option. Patent approved himac original super light titanium cores*1 are lighter than NORLYL® made cores in the same size. This light weight of core realized the highest RCF 118,000 x g at 40,000 r.p.m. versus other similar cores available in the market; also it makes its operation easy.

*1 : available in core (D), core (H), core (A) and core (AH)

NORLYL® made cores

NORLYL® resin (PPO) is a superior material in terms of strength and chemical resistance. It shows satisfactory characteristics in saline solution in the range of pH4 to pH10. However, it can be damaged by hydrocarbon fluids and cannot be used in their presence. In addition, unique himac original scale-up rotors are available, if you begin process development with small volume and move to the manufacturing scale later.

O-ring

O-rings are made of FDA approved material. This material was chosen for its high safety with regard to pharmaceutical supply products and so on.

For details about rotors and core types, please refer to the specification chart.

Rotor model		C40CT4*1				C40CT3			
Type of cores	Core (H) (High Flow Type)	Ti Core (H) (High Flow Type)	Core (D)	Ti Core (D)	Core (E)*2	Core (F)	Core (G)		
External appearance of cores									
Max. speed (rpm)	40,000				118,000				
Max. RCF (x g)	118,000				66				
Max. revolving radius: Rmax (mm)	66				31				
Rotor weight (kg)	Titanium alloy								
RCF (x g) at outside radius of center body	97,500				37,600		97,500	47,600	
Radius of center body: Rmin (mm)	54.5				21		54.5	26.6	
Core length (mm)	761								
Core material	Norlyl®	Titanium	Norlyl®	Titanium	Norlyl®(Polyphenylene Oxide) Registered by General Electric.				
Core weight (kg)	7.7	7.6	7.7	7.5	2.8	7.5	3.0		
Capacity (l)	3.2				8		7.7		
Max. flow rate (l/hr)	50				-		50		
O-ring material	EPDM (Ethylene-propylene rubber, USP Class VI compliant)								
Applications	Density gradient centrifugation of virus, liposome, etc. (For high viscosity sample)		Density gradient centrifugation of virus, liposome, etc.		Batch centrifugation of HBsAg etc.		Rough separation of large-volume samples for pelleting.		

Note: *1. The C40CT4 rotor assembly, using Core (H) and Titanium core (H), is designed with 30% lower flow restriction compared to the C40CT3 rotor assembly using the same cores. Which allows for a higher flow rate for viscous samples.
*2. The Core (E) is not for continuous flow but for batch centrifuge operation.

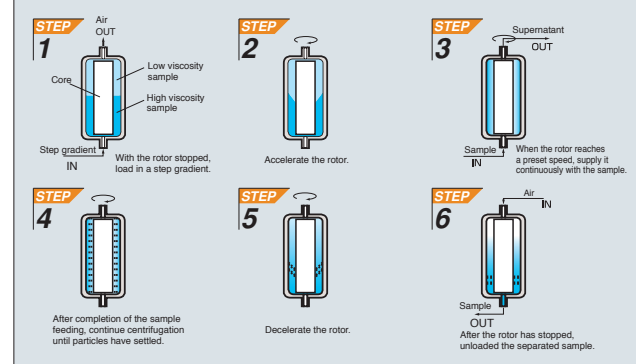
*3. The shape and size are the same as Core (H).
*4. The shape and size are the same as Core (D).
*5. For details about himac scale-up rotors, please kindly contact us.

Rotor model		C40CTS4*		C40CTS3	
Type of cores	Core (AH) (High Flow Type)	Ti Core (AH) (High Flow Type)	Core (A)	Ti Core (A)	Core (B)
External appearance of cores					
Max. speed (rpm)	40,000		118,000		
Max. RCF (x g)	118,000		66		
Max. revolving radius: Rmax (mm)	66		15		
Rotor weight (kg)	Titanium alloy				
RCF (x g) at outside radius of center body	97,500		382		
Radius of center body: Rmin (mm)	54.5		3.9		
Core length (mm)	382		1.6		
Core material	Norlyl®	Titanium	Norlyl®	Titanium	Norlyl®
Core weight (kg)	4.0	4.3	4.0	4.2	3.9
Capacity (l)	1.6		Preclarifier 0.15		
Max. flow rate (l/hr)	50		-		
O-ring material	EPDM (Ethylene-propylene rubber, USP Class VI compliant)				
Applications	Density gradient centrifugation of virus, liposome, etc. (For high viscosity sample)		Density gradient centrifugation of virus, liposome, etc.		The preclarifier core permits separation of cells and fractions.

Note: * The C40CTS4 rotor assembly and Core (AH) is designed with 30% lower flow restriction compared to the C40CTS3 rotor assembly and Core (H). Which allows for a higher flow rate for viscous samples.

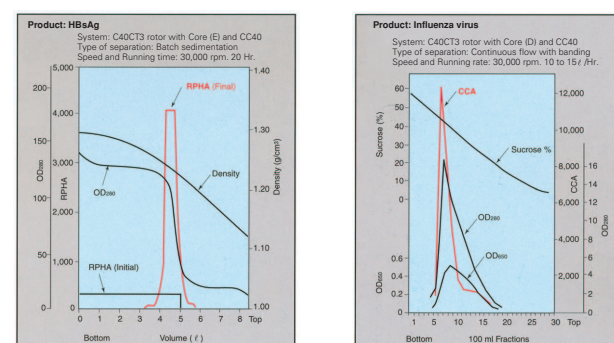
Example of a gradient separation

Note: Common in the CC40 and the CC40S



Applications

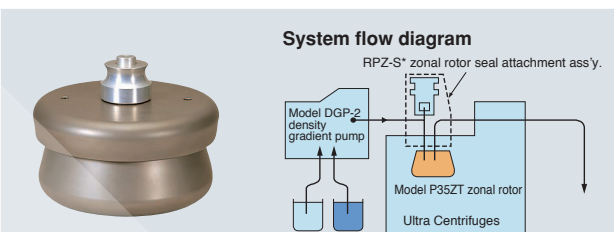
Note: The followings are examples of the application for CC40. Please inquire concerning the application for CC40S.



Zonal centrifugation system

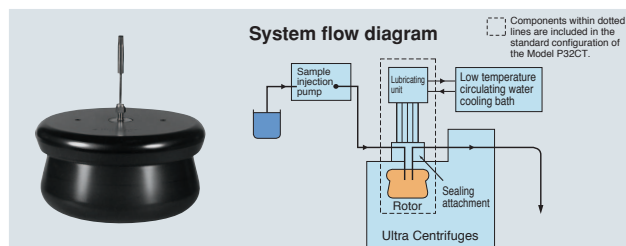


In zonal centrifugation, a density gradient is developed within the zonal rotor running at low speed. Next, the samples to be separated are loaded through the center of the zonal rotor and are separated at a preset high speed. After separation, the gradient is unloaded and collected through the center by injecting high-density fluid from the outside wall of the zonal rotor while the rotor is running at 3,000 rpm. The desired fractions are moved into the fraction collector via a spectrophotometer using a flow cell which monitors and records the optical density of the fractions.



P35ZT : Zonal Rotor Part No.9022520M

The P35ZT zonal rotor is designed to be used with himac preparative ultracentrifuge. Proceeded volume by P35ZT is approximately one fifth of CC40 with core of batch centrifugation, but it is suitable for research development and small lot production of vaccine, biological drug and diagnosis reagent as well as process development of industrial scale manufacturing.



P32CT : Continuous Flow Rotor Part No.9022660M

The P32CT continuous flow rotor is designed to be used with himac preparative ultracentrifuge. Processed volume by P32CT is approximately one fifth of CC40S, but it is suitable for research, development and small lot production of vaccine, biological drug and diagnosis reagent as well as process development of industrial scale manufacturing.

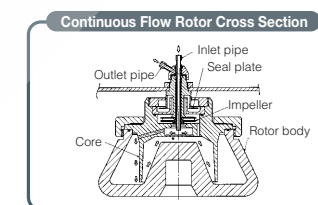
Choice of core type

Nominal capacity of P32CT with standard core is 430ml. For separating samples containing much sediment or performing separation after increasing density gradient, the 940ml core ass'y increases the rotor capacity to 940ml. The flow volume performance is about 35% less than that of standard core.

Type	Model	Part No. (automatic)	Max. speed (rpm)	Max. RCF (xg)	Nominal capacity (ml) x number of samples	K-factor
Zonal	P35ZT	9022520M	35,000	122,000	1,690ml	303
Continuous flow	P32CT	9022660M	32,000	102,000	430ml	42

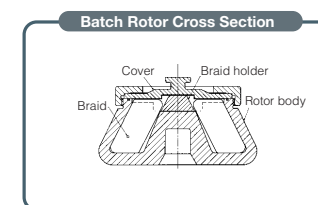
R18C/R13C/R10C : Continuous flow rotors for himac High-peed Refrigerated Centrifuges

This continuous flow rotor series is designed to separate for micron-size particles, such as bacteria and yeast. This continuous flow rotor series can be used in two ways, the one is continuous flow separation and the other is batch separation for pelleting.



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



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.

Type	Item Model	Part No.	Maximum speed (rpm)		Maximum RCF (xg)		Weight (kg)	For tubes		Standard accessories
			CR22G III	CR21G III	CR22G III	CR21G III		Nominal capacity (ml) x number of tubes	Tube dimensions (dia. x mm)	
Continuous rotor	R18C	90431900	18,000 (16,000)		34,960 (27,630)		7.5	1,000	□	□
			R18C seal unit (E) for CR22G III/21G III (Part No. S203036A), 18 batch unit for CR22G III/21G III (Part No. 217247A)							
	R13C	90432000	13,000		21,260		9.2	2,200	□	□
			R13C seal unit (E) for CR22G III/21G III (Part No. S203037A), 13 batch unit for CR22G III/21G III (Part No. 217248A)							
R10C	90432100	10,000		14,590		11.8	3,200	□	□	
		R10C seal unit (E) for CR22G III/21G III (Part No. S203038A), 10 batch unit for CR22G III/21G III (Part No. 217250A)								