

# Universal Refrigerated Centrifuge

Model **5922**

High Speed Type



**KUBOTA**

**ISO**  
9001  
CERTIFIED  
KUBOTA MFG. CORP.

# RCF of 20,630 x g, Tool-less rotor, and



Employs a tool-less rotor that is easy to set. In addition, the rotors now in use can be used commonly. (See the Rotor list.)

Maximum speed 15,000 rpm  
Maximum RCF 20,630 x g

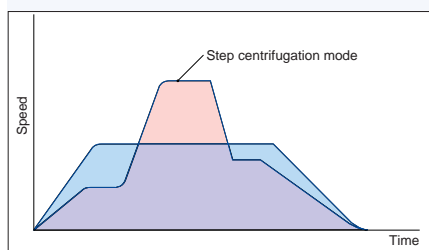
A versatile refrigerated centrifuge  
Microtiter plates, deep-well plates, medium-capacity fixed-angle rotors, multi-tube-loading swinging bucket rotors available

Aims at safety in design and conforms to the international safety standard IEC 61010-2-020.

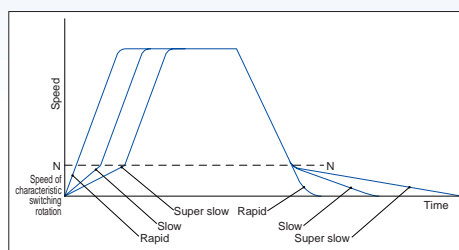
Short acceleration/deceleration time at both high and low speeds

10 sec/10 sec for 18 x 2ml tubes AT-2018M rotor at 15,000 rpm

25 sec/25 sec for 4 x 200ml tubes ST-410M swinging bucket rotor at 5,000 rpm

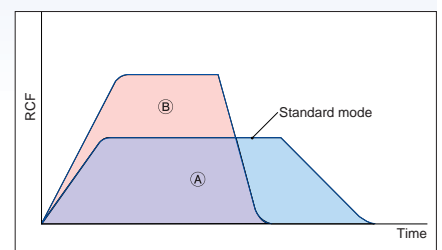


Step centrifuging function



Acceleration or deceleration characteristics

- Super slow acceleration or deceleration is suitable for centrifugation of a sensitive sample easy to float.
- Suitable for centrifugation of a sample easy to float, such as the density gradient method and blood cell cleaning.
- The speed of characteristic switching rotation N for super slow acceleration and super slow deceleration can be set.



Integrator function

**g · sec value**

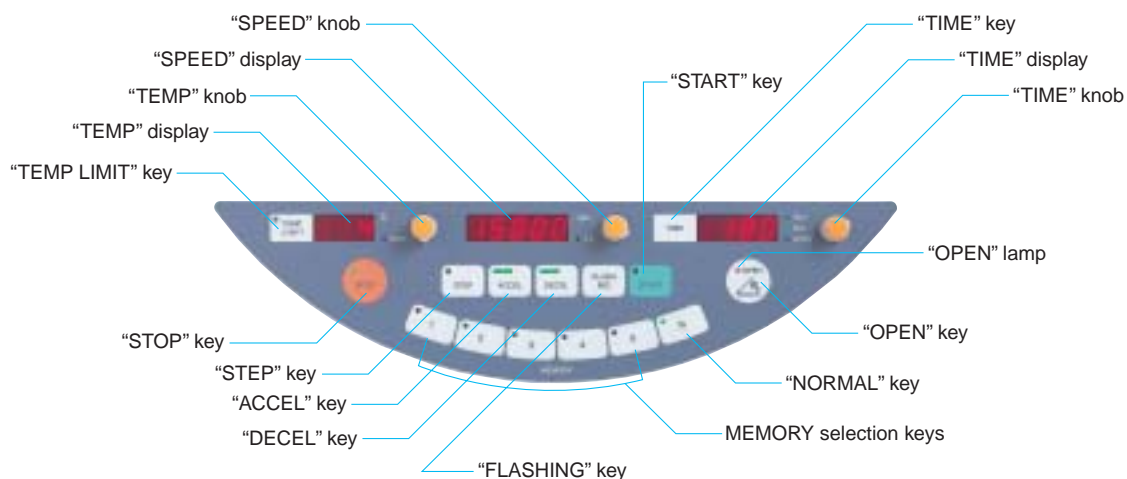
- The integrator function can reproduce the identical centrifugal effect. (A) = (B)

# types of rotors available.

## Features

- The tool-less rotors can be set or changed without using a tool. (See the Tool-less Rotor column of the Rotor list.)
- Various types of rotors are available and one unit can accommodate them in a versatile manner.
  - Three types of micro rotors  
Maximum speed 15,000 rpm, maximum RCF 20,630 x g (AT-2018M / 2724M)  
Multi-rotor that can accommodate 4 types of buckets (MT-2036M)
  - The medium-capacity fixed-angle rotor 8 x 50 ml Conical (TC). Three additional types.
  - Four types of plate rotors. A high-speed plate rotor (PT-21M) can do ethanol precipitation.
  - Anti-biohazard rotors
    - (1) A swinging bucket rotor (ST-410M) that can accommodate a sealing cap and is capable of a maximum speed of 5,000 rpm and maximum 4,470 x g
    - (2) A swinging bucket rotor (ST-410M) that can be autoclaved (121°C), a micro rotor (AT-2018M), and plate rotors (PT-21M/20M)
  - Three types of multi-tube-loading swinging bucket rotors  
Select from anything between 4 x 250ml bottles to 80 x 2ml tubes
- Easy-to-use and convenient functions
  - Memory flushing function for easy spin-down (patent pending)  
Automatically memorizes the duration of spin-down operation ranging from 1 to 90 seconds. Merely pressing the key the next time starts the spin-down for the memorized duration.
  - 5 operation condition memory settings are available, and one-touch saving, access and operation are possible.
  - Equipped with a GMP requirements tachometer port. Actual rotor speed is easy to check.
  - Acceleration and deceleration curve can be varied in three steps according to the sample and purpose. Density-gradient centrifuging is possible.
  - RCF (xg)-set operation function and stepped centrifugal force function
- Integrator function that can attain optimization of centrifuging conditions. g-sec value (integrated RCF value) can be measured, and operation with this value set is possible.
- The timer can be set up to 990 minutes or seconds. During hold operation, the elapsed time of operation is displayed.
- Safety pursued
  - Designed with safety in mind and in conformance with the international safety standard IEC 61010-2-020. Conformance to this standard will become increasingly important in the future.
  - It is designed so that no fragments will be ejected from the centrifuge even if the rotor is broken.
  - The lid lock is interlocked, and a twin lock system of 2 right and left hooks is employed. The interlock is protected against shocks and employs an electrical double protection circuit.
  - Equipped with various sensors for higher safety. Stops at occurrence of an abnormality. Equipped with an automatic rotor identification function, rotor setting state detector and imbalance detector.
- Sample temperature kept at 4°C  
(At an ambient temperature of 25°C. See Rotor list for details.)
- Designed considering friendliness to the global environment and recycling.  
Employs CFC-free HFC134a for the refrigerant. On the main unit, only a small amount of plastic is used to reduce the load on the environment.
- A thermostatic refrigerated centrifuge (-20 to 60°C) is available (optional).  
On some rotors, however, the sample temperature may exceed 4°C if operated at the maximum rotor speed (at an ambient temperature of 25°C).
- A safety cabinet with an anti-biohazard HEPA filter (Class I) can be set (optional).

## Improvement of ease of setting and operations, and visibility is designed-in.



# 14 types of rotors available.

## Micro rotor



Autoclaving (121°C) possible

### AT-2018M Micro rotor

18 x 2 ml  
15,000 rpm, 20,630 xg



### AT-2724M Multiangle rotor

24 x 2 ml, 12 x 0.5/0.2 ml  
15,000rpm, 20,630 xg  
3 types of tubes, 2, 0.5, and 0.2ml can be used without an adapter.

## Plate rotor



Autoclaving (121°C) possible

### PT-21M/PT-20M Plate rotor

PT-21M/RMP-21M: 5,000 rpm, 3,100 xg  
PT-20M/RMP-20M: 4,000 rpm, 1,790 xg  
The PT-21M/RMP-21M can do ethanol precipitation at 3,100 xg.



### PT-89M Plate rotor

2,400 rpm, 1,080 xg  
Can centrifuge 8 microtiter plates or a deep-well plate + 2 filter plates.  
Can centrifuge plates up to 89 mm in height.

## Plate rotor



### PT-745M Plate rotor

Can centrifuge 12 microtiter plates or 4 deep-well plates. Can do ethanol precipitation at 3,100 xg.

## Medium-capacity fixed-angle rotor



### RA-288M2 Fixed-angle rotor

24 x 12ml  
10,000rpm, 13,420 xg



### RA-410M2 Fixed-angle rotor

8 x 50/15ml Conical (TC)  
10,000 rpm, 13,420 xg



### RA-500M2 Fixed-angle rotor

10 x 50 ml  
10,000 rpm, 13,420 xg

## MT-2036M multi-rotor



With swing buckets  
11,000 rpm, 10,010 xg



With fixed-angle buckets  
11,000 rpm, 9,880 xg



With buckets that serve as 8 serial PCR tubes  
10,000 rpm, 7,710 xg



With horizontal buckets  
11,000 rpm, 10,010 xg

### The multi-rotor MT-2036M reduces costs.

- Four different kinds of centrifuging are possible only by changing buckets.
  - (1) Swing bucket 2-0.2ml
  - (2) Dual-purpose fixed-angle bucket, 8 serial PCR tubes 2-0.2ml
  - (3) Fixed-angle bucket 2-0.2ml
  - (4) Horizontal bucket 2-0.2ml
- Since the rotor unit doesn't need to be changed, it can be used for various purposes at low cost.
- Time saving is possible.  
With 2 sets of buckets, preparation of the next centrifuging is possible during centrifuging.

## Fixed-angle rotor



### AT-360M2 Fixed-angle rotor

24 x 15 ml  
3,500 rpm, 2,270 xg



### ST-720M Swinging bucket rotor

3,500 rpm, 2,380 xg  
The tube rack set in the rotor is for Conical (TC).



### ST-410M Swinging bucket rotor

5,000 rpm, 4,470 xg  
The cover at the top of the bucket is a sealing cap (Code No. S17111) (optional).  
\* The combination above was grouped for photographing, and this arrangement cannot be used.



### ST-480M Swinging bucket rotor

MAX. 5,000rpm, 4,640 xg

Autoclaving (121°C) possible

## Rotor, Bucket, Tube Rack Table for model 5922

Rotor Name	Nominal Capacity	Tube sizes (mm) diam. x length	Maximum Speed rpm	Maximum RCF xg	Bucket Code No.	Tube Rack Adaptor Code No.	
<b>Micro rotor</b>							
AT-2018M	18 x 2ml	9.5–11.0 x 36–42	15,000	20,630	—	—	
	18 x 0.5ml	7.0–7.9 x 25–34	15,000	18,110	—	055-7590	
	18 x 0.4ml	5.4–6.1 x 26–48	15,000	20,120	—	055-7580	
	18 x 0.2ml PCR	5.9–6.3 x 20–24	15,000	15,850	—	055-0500	
AT-2724M	24 x 2ml	9.5–11.0 x 36–42	15,000	20,630	—	—	
	12 x 0.5ml	7.0–7.9 x 25–34	15,000	16,850	—	—	
	24 x 0.4ml	5.4–6.1 x 26–48	15,000	20,380	—	055-7580	
	18 x 0.2ml PCR	5.9–6.3 x 20–24	15,000	14,840	—	—	
<b>Multi-rotor</b>							
MT-2036M	Swing buckets	24 x 2ml	9.5–11.0 x 36–42	11,000	10,010	053-9850	—
		24 x 0.5ml	7.0–7.9 x 25–34	11,000	8,250	053-9850	055-7590
		32 x 0.5ml	7.0–7.9 x 25–34	11,000	8,790	053-9860	—
		24 x 0.4ml	5.4–6.1 x 26–48	11,000	9,740	053-9850	055-7580
		40 x 0.4ml	5.4–6.1 x 26–48	11,000	9,880	053-9870	—
	24 x 0.2ml PCR	5.9–6.3 x 20–24	11,000	6,490	053-9850	055-0500	
	Fixed-angle buckets	24 x 2ml	9.5–11.0 x 36–42	11,000	9,880	053-9880	—
		24 x 0.5ml	7.0–7.9 x 25–34	11,000	8,390	053-9880	055-7590
		36 x 0.5ml	7.0–7.9 x 25–34	11,000	9,880	053-9890	—
		24 x 0.4ml	5.4–6.1 x 26–48	11,000	9,740	053-9880	055-7580
		60 x 0.4ml	5.4–6.1 x 26–48	11,000	9,740	053-9900	—
	Buckets that serve as 8 serial PCR tubes	24 x 0.2ml PCR	5.9–6.3 x 20–24	11,000	6,900	053-9880	055-0500
		12 x 0.2ml PCR	5.9–6.3 x 20–24	10,000	4,920	053-6210	055-0500
		8 x 0.2ml 8 serial PCR #7	5.9–6.3 x 20–24	10,000	7,710	053-6210	—
		12 x 2ml	9.5–11.0 x 36–42	10,000	6,710	053-6210	—
	Horizontal buckets	12 x 0.5ml	7.0–7.9 x 25–34	10,000	5,810	053-6210	055-7590
		12 x 0.4ml	5.4–6.1 x 26–48	10,000	6,600	053-6210	055-7580
		36 x 2ml	9.5–11.0 x 36–42	11,000	10,010	053-9910	—
		36 x 0.5ml	7.0–7.9 x 25–34	11,000	8,250	053-9910	055-7590
		48 x 0.5ml	7.0–7.9 x 25–34	11,000	9,880	053-9920	—
36 x 0.4ml		5.4–6.1 x 26–48	11,000	9,740	053-9910	055-7580	
100 x 0.4ml		5.4–6.1 x 26–48	11,000	10,010	053-9930	—	
36 x 0.2ml PCR	5.9–6.3 x 20–24	11,000	6,490	053-9910	055-0500		
<b>Fixed-angle rotor</b>							
RA-288M2	24 x 12ml	15.9–16.5 x 97–120	10,000 #8	13,420	—	—	
RA-410M2	8 x 15ml Conical (TC)	17 x 121	10,000 #8	13,190	—	055-1280	
	8 x 50ml Conical (TC)	30 x 117	10,000 #8	13,420	—	—	
RA-500M2	10 x 50ml	26.4–29.2 x 98–121	10,000 #8	13,420	—	—	
AT-360M	24 x 15ml	15–17.2 x 95–130	3,500	2,270	—	—	
<b>Plate rotor</b>							
PT-20M	6 x Micro plates #6	86 (W) x 128 (D) x 52 (H)	4,000	1,790	attached to rotor	—	
	2 x Deep well plates #6						
PT-21M	6 x Micro plates #6	86 (W) x 130 (D) x 62 (H)	5,000	3,100	attached to rotor	—	
	2 x Deep well plates #6						
PT-89M	8 x Micro plates #6	86 (W) x 130 (D) x 89 (H)	2,400	1,080	attached to rotor	—	
	4 x Deep well plates #6						
PT-745M	12 x Micro plates #6	86 (W) x 128 (D) x 90 (H)	4,200	3,100	attached to rotor	055-6380	
	4 x Deep well plates #6						
<b>Swinging bucket rotor</b>							
ST-720M	80 x 2ml	9.5–11 x 36–42	3,500	2,290	053-5820	055-4800	
	96 x 1.8ml Sample cup	17 x 38	3,500	2,040	053-5820	055-4940	
	96 x RIA tube	10–12 x 70–95	3,500	2,190	053-5820	055-4730	
	80 x 10ml	12–14 x 70–95	3,500	2,260	053-5820	055-4740	
	48 x 10ml Vacutainer tube/15ml	15–17.2 x 75–110	3,500	2,330	053-5820	055-4750	
	68 x 10ml Vacutainer tube/15ml	15–17.2 x 75–110	3,500	2,300	053-5840	—	
	28 x 15ml Conical (TC)	17 x 121	3,500	2,300	053-5840	—	
	32 x 15ml Conical (TC)	17 x 121	3,500	2,330	053-5820	055-4780	
	8 x 50ml	27–36.5 x 75–110	3,500	2,330	053-5820	055-4760	
	16 x 50ml Conical (TC)	30 x 117	3,500	2,330	053-5820	055-6070	
	4 x 100ml	38–46.5 x 75–120	3,500	2,330	053-5820	055-4770	
	4 x 175ml Conical (TC) #1	61 x 118	3,500	2,330	053-5820	055-4850	
	4 x 200ml Conical (TC) #1	61 x 130	3,500	2,330	053-5820	055-4850	
	4 x 225ml Conical (TC) #1	61 x 137	3,500	2,330	053-5820	055-4850	
4 x 250ml	60–61.8 x 100–130	3,500	2,380	053-5820	055-4850		
ST-410M	48 x 2ml	10.7 x 42	5,000 #8	4,160	attached to rotor	S17008	
	48 x 5ml	12.5 x 75	5,000 #8	4,160	attached to rotor	S17006	
	48 x 7ml	12–12.5 x 100–112	5,000 #8	4,160	attached to rotor	S17007	
	28 x 7ml Vacutainer tube	12.5–13 x 75–106	5,000 #8	4,160	attached to rotor	S17027	
	12 x 15ml Conical (TC) #2	16.5 x 120.6	5,000 #8	4,160	attached to rotor	S17019	
	12 x 15ml Conical (TC) #2	16.5 x 120.6	5,000 #8	4,470	S13130	—	
	28 x 10ml Vacutainer tube/15ml	15.5–17 x 90–110	5,000 #8	4,160	attached to rotor	S17015	
	4 x 50ml	34 x 110	5,000 #8	4,160	attached to rotor	S17050	
	4 x 50ml	27–36.5 x 75–110	5,000 #8	4,160	attached to rotor	055-5670	
	4 x 50ml Conical (TC)	29.5 x 117	5,000 #8	4,160	attached to rotor	S17049	
4 x 100ml	44–45 x 110	5,000 #8	4,160	attached to rotor	S17100		
4 x 200ml	56.5 x 104	5,000 #8	4,160	attached to rotor	—		
ST-480M	64 x 2ml	9.5–11 x 42	3,000	1,570	053-7030	—	
	48 x 10ml	12–14 x 85–110	3,000	1,600	053-7190	—	
	24 x 10ml Vacutainer tube/15ml	15–17.2 x 85–110	3,500	2,270	053-7120	—	
	32 x 10ml Vacutainer tube/15ml	15–17.2 x 85–110	3,500	2,270	053-7130	—	
	4 x 50ml #3, 4	27–36.5 x 85–110	5,000	4,640	053-7110	—	
	8 x 50ml #4	27–36.5 x 85–110	3,500	2,270	053-7150	—	
	16 x 15ml Conical (TC)	17 x 121	5,000	4,640	053-5790	055-1270	
	4 x 50ml Conical (TC) #5	30 x 117	5,000	4,640	053-5010	—	
8 x 50ml Conical (TC) #5	30 x 117	3,500	2,270	053-5020	—		

#1. The 175ml Conical (TC) is made by Falcon Corporation (Code No. 2076) and requires a cushion (Code No. 2090).

The 200ml Conical (TC) is made by Nalge Nunc International (Code No. 376813) and requires a cushion adaptor (Code No. 377585).

The 225ml Conical (TC) is made by Falcon Corporation (Code No. 2075) and requires a cushion (Code No. 2090).

#2. The S17019 tube rack cannot accommodate a sealing cap. The 12 x 15ml Conical (TC) of Code No. S13130 can accommodate a sealing cap (Code No. S17111).

#3. Can accommodate an anti-biohazard sealing adapter, 50ml Conical (TC) (Code No. 055-5760) and 15ml Conical (TC) (Code No. 055-5750).

#4. Can accommodate a 15ml glass tube if an adapter (Code No. 055-7400) is attached. A bottom rubber sold separately (Code No. 024-1400) is required.

#5. Can accommodate a 15ml Conical (TC) if an adapter (Code No. 055-1280) is attached.

#6. To use this, do a plate strength test before centrifuging. The lower plate can be broken.

#7. Centrifugal force of the outer tube.

#8. Cooling below 7°C is possible at this speed. Cooling below 4°C is possible with the RA-288M2/410M2/500M2 at 9,000 rpm/10,870 xg and with the ST-410M at 4,500 rpm/3,370 xg.

# Specifications

## Model 5922

- Maximum Speed ● 15000 rpm
- Maximum RCF ● 20630 xg
- Maximum Capacity ● 1020 ml
- Control system ● Micro-processor control (Brushless motor)  
Speed, RCF, Time, Acceleration & Deceleration, 5 channel memories
- Alarm display ● Lid open, Imbalance, Over speed,  
Function for detecting an occurrence of electrical abnormality in motor, inverter,  
lid interlock and speed sensor.
- Acceleration / Deceleration ● Three-level selectors; Rapid, Slow and Super Slow
- Speed setting ● From 200 to 15000 rpm, 10 rpm increments
- Speed indication ● Digital display, From 0 to 15500 rpm, 10 rpm increments
- RCF setting ● From 10 to 20630 xg, 10 xg increments
- RCF indication ● Digital display, From 0 to 22030 xg, 10 xg increments
- Integrator setting and indication ● Digital display, From 1.00 to 9.99 x 10<sup>9</sup> g · sec
- Timer setting and indication ● Digital display, with Hold and Electric buzzer  
from 1 sec. to 100 sec., in 1 sec. increment setting  
from 100 sec. to 990 sec., in 10 sec increments setting  
from 1 min. to 100 min., in 1 min. increment setting  
from 100 min. to 990 min., in 10 min. increments setting
- Temperature setting and indication ● Digital display, 1°C increments setting and indication from -20°C to 40°C
- Power requirements ● Single phase AC115V±10%, 50/60Hz, 15A  
Single phase AC220V±10%, 230V±10%, 50/60Hz, 10A
- Rated voltage and Rated current ● 115V, 12A 220/230V, 7.5A
- Power consumption and Heat output ● 115V, 910W · 3.3MJ/h 220/230V, 1.2kW · 4.3MJ/h
- Dimensions, weight ● 50(W) x 65(D) x 85(H)cm<sup>3</sup>, 110kg
- Test standard ● Manufactured and tested in accordance with IEC 61010-2-020

(※1) Those of projections are not included.

All specifications and external appearance subject to change without notice.

\* On Model 5922 only use KUBOTA made rotor, adapter and tube rack. Do not attempt use rotors, adapters or tube racks made by other manufacturers.

\* The rotor mentioned in the catalogue is usable on other KUBOTA centrifuge models. For details, refer to the catalogues relevant to each model.

\* Follow instructions given in the relevant Instruction & Service Manual for operating centrifuges.



### Safety Precautions

• For your safe use of this equipment, be sure to read the instruction manual carefully before you start its operation.

Parts may be adversely affected by heat, humidity and specimens or deteriorated by aging resulting in functional failures or may even lose their safety characteristic to cause accidents.



DISCONTINUE USE

Always discontinue use when phenomena listed at right appear.

- The rotor or bucket has been found to be damaged or corroded.
- A burnt smell comes out of the equipment.
- You receive a minor electrification when you touch the equipment body by a naked hand.
- Some other abnormality or failure has been found occurring.

### IMPORTANT

To prevent occurrences of functional failures or accidents, turn off the power switch, pull out the power cable plug from the plug socket and be sure to contact your nearest Kubota Dealer, or an office of Kubota Corporation when there is no Kubota Dealer in your neighbourhood.

## KUBOTA CORPORATION

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