

# Universal Refrigerated Centrifuge

Model **5910**

Inverter Microprocessor-controlled



**KUBOTA**

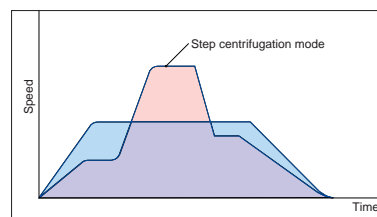
**ISO**  
9001  
CERTIFIED  
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# ▶ Newly employs a tool-less rotor that is easy to set up.

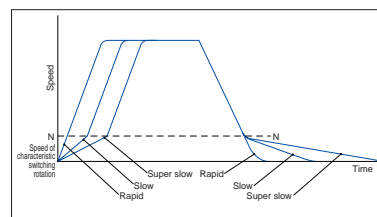
▶ **Conforms to the international safety standard IEC 61010-2-020. Forward-looking concerning safety.** (Products after August 2000 conform.)

▶ **Employs a new special damper that has a large damping effect. The drive section requires minimum maintenance.**  
Centrifuging is possible with the samples balanced by eye measure.

- **The tool-less rotors can be set or changed without using a tool.** (except angle rotors)
- **For routine work. 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.
  - Acceleration and deceleration curve can be varied in three steps according to the sample and purpose. Density-gradient centrifuging is possible.
  - 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.
  - Lid lock release by a foot switch (optional), eliminating the need for touching the panel.
- **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.
- **Complete with various sensors for higher safety. Stops when an abnormality is detected.**
  - Comes with automatic rotor identification function (patented). Rotor type is automatically identified and overspeed detection is enabled when a rotor is simply placed on the drive shaft.
  - Comes with imbalance detection, abnormally high temperature detection, abnormality detection of spin sensor and temperature sensor, and a circuit breaker.
- **Comes with a GMP requirements tachometer port.**  
Makes it easy to check the actual rotor speed.
- **A variety of rotors and accessories are available for multi-purpose applications.**  
The swinging bucket rotor ST-410 (optional) accommodates anti-biohazard sealing caps.
- **Sample temperature is kept at 4°C at the maximum speed of any rotor** (at ambient temperature of 25°C).
- **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).
- **A safety cabinet with an anti-biohazard HEPA filter (Class I) can be set** (optional).

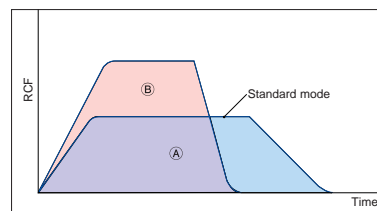


**Step centrifuging function**



**Acceleration and deceleration characteristics**

- Very slow acceleration and deceleration are suitable for centrifuging of samples that are sensitive to stirring.
- Suitable for the density gradient method and for blood washing or other centrifuging operations of samples that are apt to stir.
- For very slow acceleration and deceleration, a characteristic changeover speed N can be set.



**Integrator function g-sec value**

- The integrator function can reproduce the same centrifugal effect.  $A = B$



**ST-720**  
**Swinging bucket rotor**



**ST-410**  
**Swinging bucket rotor**  
Photographed with sealing caps put on.



**Sealing cap**  
Code No. S17111 (optional)



**ST-480**  
**Swinging bucket rotor**



**PT-20/21**  
**Plate rotor**  
6 x microtiter plates  
With the PT-21, ethanol precipitation is possible at 3,100 xg.

## Rotor, Bucket, Tube Rack Table for model 5910

Rotor Name	Nominal Capacity	Tube sizes (mm) diam. x length	Maximum Speed rpm	Maximum RCF xg	Bucket Code No.	Tube Rack Adaptor Code No.
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### Swinging Bucket Rotors

ST-720 *7	80 x 2mL	9.5-11 x 36-42	3,500	2,290	053-5820	055-4800
	96 x RIA tube	10-12.3 x 65-95	3,500	2,190	053-5820	055-4730
	48 x 5/7mL narrow blood collecting tube *8	12-13.3 x 63-110	3,500	2,310	053-5820	055-4990
	24 x 8mL CPT cell preparation tube *9	13.5-15.8 x 81-130	3,500	2,310	053-5820	055-6900
	80 x 10mL	12.5-13.8 x 65-95	3,500	2,260	053-5820	055-4740
	48 x 10mL Vacutainer tube/15mL	15-17.2 x 81-110	3,500	2,330	053-5820	055-4750
	68 x 5/7mL narrow blood collecting tube *8	12.5-13.7 x 62-110	3,500	2,300	053-5840	055-0260
	68 x 10mL Vacutainer tube/15mL	15-17.2 x 52-110	3,500	2,300	053-5840	—
	28 x 15mL Conical tube	17 x 121	3,500	2,300	053-5840	—
	32 x 15mL Conical tube	17 x 121	3,500	2,330	053-5820	055-4780
	8 x 50mL	27-36.4 x 85-110	3,500	2,330	053-5820	055-4760
	16 x 50mL Conical tube	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 tube *1	61 x 118	3,500	2,330	053-5820	055-4850
	4 x 200mL Conical tube *1	61 x 130	3,500	2,330	053-5820	055-4850
	4 x 225mL Conical tube *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-410 *7	48 x 2mL	10.7 x 42	5,000	4,160	attached to rotor	S17008
	48 x 5mL	12.5 x 55-75	5,000	4,160	attached to rotor	S17006
	48 x 7mL	12-12.5 x 100-112	5,000	4,160	attached to rotor	S17007
	28 x 7mL Vacutainer tube	12.5-13 x 75-106	5,000	4,160	attached to rotor	S17027
	12 x 15mL Conical tube *2	16.5 x 120.6	5,000	4,160	attached to rotor	S17019
	12 x 15mL Conical tube *2	16.5 x 120.6	5,000	4,470	S13130	—
	28 x 10mL Vacutainer tube/15mL	15.5-17 x 87-110	5,000	4,160	attached to rotor	S17015
	4 x 50mL	34 x 110	5,000	4,160	attached to rotor	S17050
	4 x 50mL	27-35.8 x 82-110	5,000	4,160	attached to rotor	055-5670
	4 x 50mL Conical tube	29.5 x 117	5,000	4,160	attached to rotor	S17049
	4 x 100mL	44-45 x 110	5,000	4,160	attached to rotor	S17100
4 x 200mL	56.5 x 104	5,000	4,160	attached to rotor	—	
ST-480 *7	64 x 2mL	9.5-11 x 36-42	3,000	1,570	053-7030	—
	48 x 10mL	12-13.3 x 46-110	3,000	1,600	053-7190	—
	32 x 10mL Vacutainer tube/15mL	15-17.2 x 86-110	3,500	2,270	053-7130	—
	4 x 50mL *3 *4	27-38 x 100-110	5,000	4,640	053-7110	—
	8 x 50mL *4	27-38 x 100-110	3,500	2,270	053-7150	—
	16 x 15mL Conical tube	17 x 121	5,000	4,640	053-5790	055-1270
	4 x 50mL Conical tube *5	30 x 117	5,000	4,640	053-5010	—
8 x 50mL Conical tube *5	30 x 117	3,500	2,270	053-5020	—	

### Swinging Bucket Rotors for micro plates

PT-20 *7	6 x Micro plates *6	86 (W) x 128 (D) x 52 (H)	4,000	1,790	attached to rotor	—
	2 x Deep well plate *6					
PT-21 *7	6 x Micro plates *6	86 (W) x 130 (D) x 62 (H)	5,000	3,100	attached to rotor	—
	2 x Deep well plate *6					
PT-89 *7	8 x Micro plates *6	86 (W) x 130 (D) x 89 (H)	2,400	1,080	attached to rotor	055-6370
	4 x Deep well plate *6					
PT-745S *7	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 plate *6					

### Angle Rotors

RA-288M3	24 x 12mL	15.9-16.5 x 97-120	8,500	9,690	—	—
RA-410M3	8 x 15mL Conical tube	17 x 121	8,500	9,530	—	055-1280
	8 x 50mL Conical tube	30 x 117	8,500	9,690	—	—
RA-500M3	10 x 50mL	26.4-29.2 x 98-121	8,500	9,690	—	—
AT-360	24 x 15mL	15-17.2 x 96-130	3,500	2,270	—	—

\*1 Conical tubes 175 mL, 200 mL, and 225 mL can be centrifuged by using supporters.

The 175 mL conical tube is made by Falcon (code No. 2076) and needs a cushion (code No. 2090).

The 200 mL conical tube is made by Nalge Nunc (code No. 376813) and needs a cushion adapter (code No. 377585).

The 225 mL conical tube is made by Falcon (code No. 2075) and needs a cushion (code No. 2090).

\*2 sealing cap cannot be used on this tube rack. sealing cap (code no. S17111) can be used on a 12 x 15 mL conical tubes with code No. S13130.

\*3 sealing adapter against biohazard for 50 mL conical tube (code no. 055-5760) and for 15 mL conical tube (code no. 055-5750) can be used.

\*4 15 mL glass tubes can be used if an adapter (code no. 055-7400) is added and need a rubber cushion (code no. 024-1400) sold separately.

\*5 15 mL conical tubes can be used if an adapter (code no. 055-1280) is added.

\*6 If micro plates are used, it is possible to stack them in double or more on each bucket. However, be sure to test the strength of those plates prior to centrifugation. The micro plate at the bottom may be crushed.

\*7 Contact your dealer in case you use two or more swinging bucket rotors and/or swinging bucket rotors for micro plates.

\*8 5/7mL narrow tube made by Sekisui (Insepack II), Termo (Venject II), Nipro (Neotube) and Becton Dickinson (Vacutener) can be used. Tube for flow cytometry can be used.

\*9 The CPT cell preparation tube is made by Becton Dickinson (Vacutener 8mL for CPT cell separation).



**PT-89**  
Plate rotor

Can centrifuge 8 microtiter plates or a filter plate + 2 deep-well plates.  
Can centrifuge a plate up to 89 mm in height.



**PT-745S**  
Plate rotor

Can centrifuge 12 microtiter plates or a plate up to 90 mm in height.  
Ethanol precipitation is possible at 3,100 xg.



**RA-288M3**  
Fixed-angle rotor  
24 x 12mL



**RA-410M3**  
Fixed-angle rotor

Can centrifuge 50mL and 8 x 15mL Conical tube.



**RA-500M3**  
Fixed-angle rotor  
10 x 50mL

# Specifications

## Model 5910

- Maximum Speed ● 8500 rpm
- Maximum RCF ● 9690 xg
- Maximum Capacity ● 1020 mL
- Control system ● Micro-processor control (Brushless motor)  
Speed, RCF, Time, Acceleration & Deceleration, 5 channel memories
- Speed setting ● From 200 to 8500 rpm, 10 rpm increments
- Speed indication ● Digital display, From 0 to 8900 rpm, 10 rpm increments
- RCF setting ● From 10 to 9690 xg, 10 xg increments
- RCF indication ● Digital display, From 0 to 10620 xg, 10 xg increments
- Integrator setting and indication ● Digital display, From 1.00 to 9.99 x 10<sup>9</sup> g · sec  
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 5910 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.

## Anti-biohazard sealing adapters

For use with the buckets (Code No. 053-7110) on a swinging bucket rotor.

High maximum speed and high maximum RCF while inexpensive.



Swinging bucket rotor  
ST-480



Code No. 055-5760  
For use with 50ml Conical (TC)  
5,000 rpm  
4,560 xg



Code No. 055-5750  
For use with 15ml Conical (TC)  
5,000 rpm  
4,580 xg



Code No. 055-4310  
For use with 50ml oak ridge tube  
5,000 rpm  
4,440 xg



### 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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