S500T

Product name	Benchtop Centrifuge
Swing rotor	
Max. capacity	68×15 mL
Max. speed	4,800 rpm
Max. RCF	4,300×g
Angle rotor	
Max. capacity	8×50 mL conical tube
Max. speed	6,000 rpm
Max. RCF	5,350×g
Size	44(W)×53(D)×32(H) cm Height with opened lid: 76 cm
Weight	110V: 37 kg, 220/230V: 39 kg
Power consumption: calorific value	520W, 1.9MJ/h (Power-saving mode: Approx. 7W)
Power requirements	Single phase 110 ± 10 % V 50/60Hz, 15A Single phase 220 ± 10 % V 50/60Hz, 8A Single phase 230 ± 10 % V 50/60Hz, 8A
Rated voltage, rated current	110V: 7.0A, 220V: 3.2A, 230V: 3.1A
Use environment	Temperature: 10 – 35 ℃
	Humidity: 30 – 85%
	Atmospherics pressure: 70 – 106 kPa (700 – 1,060 mbar)
Conforming standard	IEC61010-2-020
Driving method	Direct-drive (directly connected to brushless motor)
Control method	Inverter microprocessor control (brushless motor)
Error display	Lid open, imbalance, over-speed, motor, rotation sensor, lid sensor, inverter, rotor sensor, imbalance sensor
Stoppage alarm	11 types of sounds + silent, 5 levels of sound volume (including silent)
Rotation radius settings	It can be set for each rotor.
Centrifugation increments	3 steps (rotation speed, time)
Speed setting range	200 – 6,000 rpm
	10 or 100 rpm increments
RCF setting range	10 – 5,350×g
	10 or 100×g increments
Timer setting range	1 sec. to 99 hours and 59 min.
	Sec.: 1 sec. increments
	Min.: 1 min. increments
	Hour: 1 hour increments
	Hold
Temperature setting range	—
Refrigerated	—
Program memory	99 channels (5 for direct invocation using the panel button)
Acceleration / deceleration	3 steps

S500FR

Product name	Floor-standing Refrigerated Centrifuge
Swing rotor	
Max. capacity	4×500 mL
Max. speed	4,800 rpm
Max. RCF	4,300×g
Angle rotor	
Max. capacity	8×50 mL conical tube
Max. speed	8,500 rpm
Max. RCF	9,690×g
Size	54(W)×64(D)×84(H) cm Height with opened lid: 136 cm
Weight	116 kg
Power consumption: calorific value	690W, 2.5MJ/h (Power-saving mode: Approx. 7W)
Power requirements	Single phase 110 ± 10 % V, 50/60Hz, 15A Single phase 220 ± 10 % V, 50/60Hz, 10A Single phase 230 ± 10 % V, 50/60Hz, 10A
Rated voltage, rated current	110V: 8.4A, 220V: 4.3A, 230V: 4.1A
Use environment	Temperature: 10 – 35 ℃
	Humidity: 30 – 85%
	Atmospherics pressure: 70 – 106 kPa (700 – 1,060 mbar)
Conforming standard	IEC61010-2-020
Driving method	Direct-drive (directly connected to brushless motor)
Control method	Inverter microprocessor control (brushless motor)
Error display	Lid open, imbalance, over-speed, motor, rotation sensor, temperature sensor, lid sensor, inverter, abnormal temperature, rotor sensor, imbalance sensor
Stoppage alarm	11 types of sounds + silent, 5 levels of sound volume (including silent)
Rotation radius settings	It can be set for each rotor.
Centrifugation increments	3 steps (rotation speed, time)
Speed setting range	200 – 8,500 rpm
	10 or 100 rpm increments
RCF setting range	10 – 9,690×g
	10 or 100×g increments
Timer setting range	1 sec. to 99 hours and 59 min.
	Sec.: 1 sec. increments
	Min.: 1 min. increments
	Hour: 1 hour increments
	Hold
Temperature setting range	−10 to +40℃ 1℃ increments
Refrigerated	R134a 0.28 kg GWP 1,430
Program memory	99 channels (3 for direct invocation using the panel button)
Acceleration / deceleration	3 steps

Kubota has acquired ISO 9001 and ISO 13485 certification.

Precautions for use

Products in this catalogue are designed for use only by people who have the requisite technical knowledge, and must always be used with considerable care and only for their intended purpose. People who do not have adequate technical knowledge or training should only use the products under appropriate supervision by someone with expert knowledge, or else accidents are likely to occur.

Prohibited

Please immediately stop using the products in any of the cases listed on the right.

- The rotor or buckets appear to be damaged or corroded.
- When the replacement period (years of operation, operating lifetime) of a rotor has passed.
- The equipment emits a burning smell or becomes abnormally hot.
- You receive a weak electric shock when you touch the equipment with your bare hands.
- When any other abnormality or indication of failure is noticed.

IMPORTANT

If any of the cases listed at the left occurs, immediately turn off the power, disconnect the power cable plug or connecting terminals from the main power outlet, place a “Do not use” sign on the unit, and contact the nearest branch of Kubota Corporation.

Safety Precautions

To use the equipment safely, be sure to read the instruction manual carefully before you start operations.

Do not misplace the instruction manual.
Keep the instruction manual nearby so that you can refer to it whenever necessary.

- The term of supplying spare parts for repair is 7 years after discontinuation of production (except spare parts which we are unable to procure).
- This catalogue is not for distribution in the USA, Canada and Mexico as products shown are not for sale in these countries.

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KUBOTA

Multipurpose Centrifuge S500 Series

S500 Series

unified design,
innovation
and
user-oriented

Universal design

Visual and intuitive operation in an interface with a rounded body offering smooth lines and sharp lines. This design shattered the traditional image of hard, square centrifuges, while our new centrifuge is packed full of the latest technology.

Benchtop Centrifuge
S500T

Floor-standing Refrigerated Centrifuge
S500FR Refrigerated

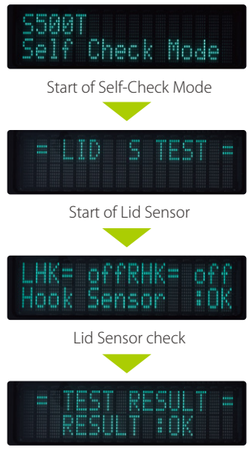
Innovation–New Function

Self-check function to support daily inspection of your centrifuge

Daily operation checks of previous centrifuges were not able to check whether sensors and lid sensors operated normally; however, the "Self-Check Function" mounted on the S500 Series allows easy checks of sensors and lid sensor operation during daily inspection by just operating the centrifuge in accordance with the display.
This new function has been developed for our customers for safe and reliable use of the centrifuge.

The self-check function checks the following items and judges acceptability. After the results of the self-check function are displayed, the available use frequency until the equipped rotor alarm is displayed.

- Lid sensor
- Rotor sensor
- Imbalance sensor
- Temperature sensor (S500FR only)
- Inverter
- Rotation sensor
- Operation test



Fail-Safe Function
Early detection of Imbalance

ST-724M, ST-2504MS, ST-480M (For S500T/S500FR)
ST-5004M (For S500FR)

A big imbalance usually causes contact between bucket and chamber and breakage.
The impact can damage both the motor and shaft.
Fixing this damage requires high costs and the centrifuge cannot be used during repair.
KUBOTA prevents damage to centrifugal tubes and loss of time by the fail-safe function, as well as providing a centrifuge that can be used comfortably.

Responding to User Needs in a Multitude of Ways

Mixed Loading MiX

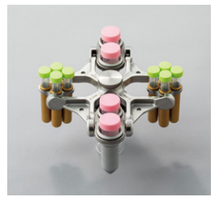
KUBOTA achieved Mixed Loading where two different types of buckets ca n be centrifuged at the same time. Moreover, frequently used combin ations of buckets are offered as a set as standard so that the a ccessories become more affordable.

Available swing rotors:
ST-724M, ST-2504MS, ST-5004M, ST-480M

ST-724M
16×15mL conical tubes;
8×50mL conical tubes

ST-2504MS
8×15mL conical tubes;
2×50mL conical tubes

ST-5004M
14×15mL conical tubes;
6×50mL conical tubes



ST-480M
8×15mL conical tubes;
4×50mL conical tubes

User Interface 3 direct memory 5-channel 5 direct memory 5-channel

S500T direct memory 5-channel
S500FR direct memory 3-channel

Three Short-Cut Program Keys for Direct Access.
Larger and prominent START / STOP / OPEN buttons for simple operation. Centrifugeoperation for routine work can be performed with these simple keys.
Settings can be adjusted using the arrow keys.
Menu and error displays have also been enhanced.

S500T

S500FR

user-oriented

Equipped with self-luminous display (VFD) VFD Minimum view angle of 126°

- Equipped with technology unique to Japan, VFD (Vacuum fluorescent display)
- Visibility of display generally depends on the contrast ratio of dots in the display. VFD dots are self-luminous and other parts are blacked-out. Therefore, the contrast ratio is large and displays can be identified clearly from a distance.

- With a minimum viewing angle of 126°, the wide viewing angle allows you to see the display even from an angle.
- The display blinks to notify you of the end of centrifugation.

Viewport rpm

- It responds to speed measurement for inspections by using an tachometer.

Power-saving mode eco

- S500FR automatically stops the refrigeration process and turns off the display. Power consumption in this mode is approximately 7 W.
- S500T automatically turns off the display. Power consumption in this mode is approximately 7 W.

Motorized lid lock

- A newly developed motorized lid lock system.
- A light touch is all that is needed to activate the lid motor and lock it automatically.

Responding to User Needs in a Multitude of Ways

Compact body, but wide interior

It has a wide chamber (diameter: 38 cm), but compact body (height: 32 cm, depth: 53 cm). (For S500T only)

Equipped with a delayed start function after setting samples

Settings to delay start of operation, which is convenient for serum separation, are available. (Up to 900 sec.)

Easy spin-down with flashing function

Rotor rotates only while the start button is pressed.

Automatic identification of rotors by rotor sensor

It prevents the set rotor from rotating more than the maximum speed. Use frequency is recorded for each rotor.

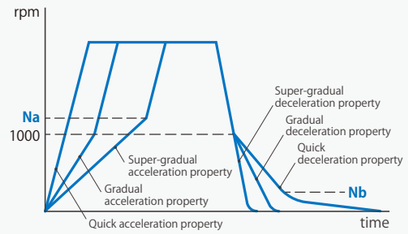
Equipped with a toolless rotor

Rotor can be set and exchanged easily without tools.(excluding RA-508C)

Changeable acceleration and deceleration curve

It prevents flying up during collection of cells, etc.

Acceleration/deceleration property graph



- In cases of gradual acceleration property, property switch speed "Na" can be set at variables of 100 rpm increments between 0 and the maximum speed.
- In cases of gradual deceleration property, natural deceleration (no brakes) can be performed.

user-oriented

KUBOTA's Dedication to Safety

IEC61010-2-020 : International safety requirements for centrifuges

- Centrifuge rotors store large amounts of kinetic energy when spinning at high rates. All of the rotors pass strict tests for durability under maximum load, but wear and external factors mean that rotor breakage during centrifugation cannot be entirely ruled out.
- Centrifuges that meet the IEC61010-2-020 requirements will retain fragments within the centrifuge if the rotor breaks during centrifugation, ensuring user safety.

Rotor durability

- The rotating parts of the centrifuge, its rotors and buckets, are made of metal, such as stainless steel and aluminum.
- If a metal plate is bent and straightened over and over, it will eventually break due to metal fatigue.
- Rotors and buckets undergo repeated "bending and straightening" during spin-up and spin-down. After a specified period of use or number of operations is reached, these parts may break due to metal fatigue.
- To use KUBOTA's products safely, we ask that you replace any rotor that has reached the end of its life time. We appreciate your understanding and cooperation.

To deliver quality products to KUBOTA's customers:

- KUBOTA manufactures prototypes at the development phase and implements durability tests based on actual use conditions.
  Only products that pass the strict durability tests can proceed to the next stage.
- After durability tests, we produce additional prototypes and perform field tests in workplaces with actual users. Feedback from these users is then incorporated in the products.
- Experienced engineers perform release inspections.
  Every unit is inspected carefully by activating the centrifuge and carefully monitoring its sounds and vibrations.

Safety

Rotor specifications

This tube rack is convenient and available for 5 mL, 7 mL, and 10 mL blood collection tubes and 15 mL glass tubes.

⚠ Rotors are subject to durability. For more details, please contact us.

Swing rotor

	Tube																				
	Nominal capacity	36×1.5/2mL	72×1.5/2mL	80×1.5/2mL	68×5~7mL thin blood collection tube	24×8mL CPT cell preparation tube	80× 10mL glass tube	68×10mL long blood collection tube / 15mL glass tube	28×5-10mL blood collection tube/ 15mL glass tube	48×5-10mL blood collection tube/ 15mL glass tube	48×5-10mL blood collection tube/ 15mL glass tube	16×15mL conical tube	28×15mL conical tube	28×15mL conical tube	32×15mL conical tube	4×50mL glass tube	8×50mL glass tube	12×50mL glass tube
	Tube size:Diameter×Length(mm)	9.5~11×36~42			12~13.7×62~110	13.5~15.8×81~130	12~13.8×65~95	15~17.2×52~110	12~17.2×72~110		12~16.8×72~110	17×121				27~36.4×85~110		
	Max. speed(rpm)	4,800	4,000	3,500	3,500	3,500	3,500	3,500	4,800	4,000	3,500	4,800	3,500	4,000	3,500	4,800	3,500	4,000
	Max. RCF(×g)	4,250	3,040	2,290	2,300	2,310	2,080	2,300	4,150	2,970	2,300	4,280	2,300	3,060	2,330	4,150	2,330	2,990
ST-724M Max 3,500rpm Max 2,380×g	Code No.	–	–	055-4800	Bucket Code No. 053-5840 ×4; Adaptor Code No. 055-0260 ×1	055-6900 ×2	055-4740	Bucket Code No. 053-5840 ×4	–	–	055-0880 ×3	–	Bucket Code No. 053-5840 ×4	–	055-4780	–	055-4760	–
	Bucket 053-5820 (Set of 4) Buckets are optional.																	
ST-2504MS Max 4,800rpm Max 4,300×g	Code No.	055-1190	–	–	–	–	–	–	055-1140 ×3	–	–	055-1160	–	–	–	055-1150	–	–
	Sealing caps 055-0964 (Set of 4) Buckets are equipped with rotor. Sealing caps are optional.																	
ST-5004M Max 4,000rpm Max 3,080×g	Code No. (S500FR only)	–	055-0770	–	–	–	–	–	–	055-0730 ×3	–	–	–	055-0750	–	–	–	055-0740
	Buckets and sealing caps are equipped with rotor																	

	Tube																				
	Nominal capacity	4×50mL conical tube	12×50mL conical tube	16×50mL conical tube	16×15mL conical tube 8×50mL conical tube	8×15mL conical tube 2×50mL conical tube	14×15mL conical tube 6×50mL conical tube	4×100mL glass tube			4×175mL conical tube	4×175/200/225mL conical tube		4×250mL			4×500mL∗9	4× Self-Standing sputum tube	8× Self-Standing sputum tube	Self-Standing sputum tube		
																				×8	×12	×16
	Tube size:Diameter×Length(mm)	30×117			17×121/30×117			38~46.5×83~120	38~46.5×113~120		61×118	61×118/61×130/61×137		60~62×100~134.4			85×135	ϕ48 cap diam. ϕ35 tube diam.	ϕ37 cap diam. ϕ31 tube diam.	ϕ48 cap diam. ϕ35 tube diam.	ϕ37 cap diam. ϕ31 tube diam.	ϕ31 cap diam. ϕ28 tube diam.
	Max. speed(rpm)	4,800	4,000	3,500	3,500	4800	4,000	3,500	4,800	4,000	4,800	3,500	4,000	3,500	4,800	4,000	4,000	4,800	4,000	3,500		
	Max. RCF(×g)	4,250	3,040	2,330	2,330	4,280/4,250	3,060/3,040	2,330	4,250	2,970	4,250	2,330	3,080	2,380	4,300	3,080	3,080	4,250	3,020	2,250	2,290	2,300
ST-724M Max 3,500rpm Max 2,380×g	Code No.	–	–	055-6070	055-1600 ×11	–	–	055-4770	–	–	–	055-4850 ×5 ×6	–	055-4850	–	–	–	–	–	055-0430	055-0440	055-0450
	Bucket 053-5820 (Set of 4) Buckets are optional.																					
ST-2504MS Max 4,800rpm Max 4,300×g	Code No.	055-1170	–	–	–	055-1610 ×12	–	–	055-1200	–	∗5	–	–	–	can be used without adaptors	–	–	055-1210	–	–		
	Sealing caps 055-0964 (Set of 4) Buckets are equipped with rotor. Sealing caps are optional.																					
ST-5004M Max 4,000rpm Max 3,080×g	Code No. (S500FR only)	–	055-0760	–	–	–	055-1620 ×13	–	–	055-1180	–	–	055-0780 ×5 ×6 ×7	–	–	055-0780	can be used without adaptors	–	055-0800	–		
	Buckets and sealing caps are equipped with rotor																					

∗1. Thin blood collection tubes of 5 to 7 mL of Sekisui Insepack II, Terumo Venoject II, Nipro Neo tube, and BD Vacutainer can be used. Tubes for flow cytometry can also be used.
∗2. This tube is for 8 mL Vacutainer CPT blood collection tubes for the separation of mononuclear cells of BD (nominal: φ16×125).
∗3. Thin and thick blood collection tubes of 5 to 10 mL of Sekisui Insepack II, Terumo Venoject II, Nipro Neo tube, and BD Vacutainer can be used. Tubes for flow cytometry can also be used.
∗4. When using the bucket No. 053-5840 only, bucket No. 053-5820 is not necessary. Glass spitz tubes (tapered tubes) cannot be used with this bucket.
∗5. Falcon 175 mL conical tubes (Catalog No. 352076) can be centrifuged using a cushion (Catalog No. 352090).
∗6. Nunc 200 mL conical tubes (Catalog No. 376813) can be centrifuged using a cushion (Catalog No. 377585). Falcon 225 mL conical tubes (Catalog No. 352075) can be centrifuged using a cushion (Catalog No. 352090).
∗7. When centrifuging a 200/225 mL conical tube, a sealing cap cannot be used.
∗8. 250 mL flat-bottomed bottles of Nalgene, Herolab, and Corning can be used.
∗9. 500 mL bottles (Code No. K15501C/polypropylene copolymer) can be used.
∗10. Mix set are exclusively for S500T/S500FR and cannot be used for other models.
∗11. This bucket (Code No. 055-1600) is sold as a set 2 of Code No. 055-4780 and 2 of Code No. 055-6070.
∗12. This bucket (Code No. 055-1610) is sold as a set 2 of Code No. 055-1160 and 2 of Code No. 055-1170.
∗13. This bucket (Code No. 055-1620) is sold as a set 2 of Code No. 055-0750 and 2 of Code No. 055-0760.

ロータスペック

Swing rotor		Tube		Flow cytometry						
		Nominal capacity	48×1.5/2mL	16×5-10mL blood collection tube/ 15mL glass tube	4×7-10mL long blood collection tube / 15mL glass tube	8×7-10mL long blood collection tube / 15mL glass tube	32×7-10mL long blood collection tube / 15mL glass tube	4×50mL glass tube	8×50mL glass tube
		Tube size:Diameter×Length(mm)	9.5~11×36~42	12~17×65~107	12~17.2×86~110			27~38×100~110	
		Max. speed(rpm)	3,500	3,500	3,500(5,000)	3,500	3,500	3,500(5,000)	3,500
		Max. RCF(×g)	1,880	2,220	2,230(4,560)	2,230	2,270	2,270(4,640)	2,270
ST-480M	Code No.		053-5040	053-4930 ∗5	053-7110	053-7150	053-7130∗5	053-7110	053-7150
Max 3,500rpm Max 2,380×g				∗1			∗2		
ST-504M	Code No.		–	–	055-7080	–	–	053-7080	–
Max 5,000rpm Max 4,860×g									
ST-480M·ST-504M	Code No.		–	–	055-7400 ∗2 ∗3 (Set of 4)	055-7400 ∗2 ∗3 (Set of 4)	–	–	–

Please select bucket and adapter. They are optional (sold separately).

Max speed and RCF of ST-504M are the figures in parentheses.

Swing rotor		Tube					MiX ∗6	Sealing type for biohazard countermeasures	
		Nominal capacity	16×15mL conical tube	4×15mL conical tube	4×50mL conical tube	8×15mL conical tube	8×50mL conical tube	8×15mL conical tube 4×50mL conical tube	4×15mL conical tube	4×50mL conical tube
		Tube size:Diameter×Length(mm)	17×121	17×121	30×117	17×121	30×117	17×121/30×117	17×121	30×117
		Max. speed(rpm)	3,500	3,500(5,000)	3,500(5,000)	3,500	3,500	3,500	3,500(5,000)	3,500(5,000)
		Max. RCF(×g)	2,340	2,370(4,840)	2,380(4,860)	2,370	2,380	2,340/2,380	2,370(4,840)	2,380(4,860)
ST-480M	Code No.		053-1590	053-5010		053-5020		053-6040 ∗7	053-0040 ∗4	
Max 3,500rpm Max 2,380×g										
ST-504M	Code No.		–	053-4970		–		–	053-0050 ∗4	
Max 5,000rpm Max 4,860×g										
ST-480M·ST-504M	Code No.		–	055-1280 (Set of 2)	–	055-1280 (Set of 2)	–	–	055-1280 (Set of 2)	–

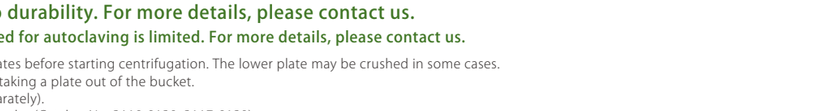
Rotors are subject to durability. For more details, please contact us.

⚠ **Rotors are subject to durability. For more details, please contact us.**

∗1. A blood collection tube with a cap diameter of 18 mm or less and a length under the cap of 61 mm or more can be used. Thick/thin and long/short blood collection tubes of 5 to 10 mL of Sekisui Insepack II, Terumo Venoject II, Nipro Neo tube, and BD Vacutainer can be used. Tubes for flow cytometry can also be used.
∗2. A blood collection tube with a cap diameter of 18 mm or less and a length under the cap of 85 mm or more can be used. Thick/thin and long blood collection tubes of 7 to 10 mL of Sekisui Insepack II, Terumo Venoject II, Nipro Neo tube, and BD Vacutainer can be used.
∗3. Rubber cushions (Code No. 024-0159/10 pieces) that are sold separately are necessary.
∗4. A bucket with a sealing cap. Sealing cap and O ring (silicon) are included as standard.
∗5. This is shipped with rubber cushion (Code No. 024-0159) equipped.
∗6. MiX set are exclusively for S500T and S500FR and cannot be used for former models.
∗7. This bucket (Code No. 053-6040) is sold as a set 2 of Code No. 053-1590 and 2 of No. 053-5020.

Plate rotor	Plate	Nominal capacity	Plate size: Diameter×Length(mm)	Max. speed (rpm)	Max. RCF (×g)	Adaptor Code No.
PT-22M		2×PCR plate 6×MTP 2×DWP ∗1	86(W)×130(D)×62(H)	5,000	3,100	–
PT-89M		2×PCR plate 8×MTP 4×DWP ∗1	86(W)×130(D)×89(H)	2,400	1,080	055-6370 (Set of 2) ∗2,3
PT-745MS (S500FR only)		2×PCR plate 12×MTP 4×DWP ∗1	86(W)×128(D)×90(H)	4,200	3,100	055-6380 (Set of 2) ∗2,3

Tray
055-6380(option)
(Set of 2)



Angle rotor	Tube	Nominal capacity	Tube size:Diameter ×Length(mm)	AT-508C Max. speed (rpm)	AT-508C Max. speed (rpm)	RA-508C Max. speed (rpm)	RA-508C Max. RCF (×g)	Adaptor Code No.
AT-508C 8×50mL conical tube		8×12mL plastic ∗4	15.7~16.4×102~105	6,000	5,110	8,500	9,370	055-1120 (Set of 8)
		8×14mL ∗5	17×100	6,000	4,990	8,500	9,130	055-0550 (Set of 4)
		8×15mL conical tube	17×121	6,000	5,270	8,500	9,530	055-1280 (Set of 2)
RA-508C 8×50mL conical tube (S500FR only)		8×50mL conical tube	30×117	6,000	5,350	8,500	9,690	–
Lid (Code No.028-1260) is optional.	Sartorius ⓐ ⓑ ⓒ	ⓐ Vivaspin 2	16.7×129	6,000	5,270	7,780	7,990	055-1280 (Set of 2)
		ⓑ Vivaspin 6	16.7×129					
		ⓒ Vivaspin 15R/20	30×117	6,000	5,350	6,680	5,990	–
	Millipore ⓓ ⓔ	ⓓ Amicon Ultra-4	17.3×124	6,000	5,270	7,540	7,500	055-1280 (Set of 2)
		ⓔ Amicon Ultra-15	29.7×121	5,800	5,000	6,100	4,990	–

⚠ **Rotors are subject to durability. For more details, please contact us.**

※The number of times allowed for autoclaving is limited. For more details, please contact us.

∗1. Please test the strength of plates before starting centrifugation. The lower plate may be crushed in some cases.
∗2. This tray is convenient when taking a plate out of the bucket.
∗3. The tray is optional (sold separately).
∗4. This tube is a Nalgene plastic tube (Catalog No. 3110-0120, 3117-0120).
∗5. This tube is a Falcon tube (Catalog No. 352006, 352018, 352059).