




Benchtop and Microcentrifuges



TO MAKE HISTORY, YOU NEED HISTORY

Since the introduction of the first commercial ultracentrifuge in 1947 – the classic Beckman Model L – Beckman Coulter has been at the forefront of centrifuge innovation. Although the physics of this basic separation technique never change, Beckman Coulter continually designs new and innovative rotors and accessories, and develops advanced methods that allow the forces of centrifugation to be applied in new ways.

This centrifuge product selection guide is designed to help you determine the most efficient centrifuge tools for your laboratory.

Each section begins with a brief description of instruments that Beckman Coulter offers within that centrifuge category. Because biocontainment is a major concern in today's laboratories, Beckman Coulter provides a number of options that address this issue. Special biocontainment accessories are available across our centrifuge product line and are identified with this icon: 

Rotors with this symbol have been tested* to demonstrate containment of aerosols under normal operating conditions of the associated Beckman Coulter centrifuge when used and maintained as instructed.

Following the centrifuge descriptions, listings of their rotors are included with information on speed and g-force capability. Also included is information on tubes and bottles that can be used and the adapters they require.

Tubes and bottles are cross-referenced in a separate section that provides details on tube materials, chemical compatibility, tube designs, and tube closure options.

A reference section at the back of the guide includes quick-reference charts on instrument and tube selection and frequently-used formulas, as well as a listing of centrifuge literature and training tools available from Beckman Coulter.

* The rotors were tested for microbiological containment¹ at an independent, third-party testing facility² and found to be suitable for use with materials up to ACDP category.³ Improper use or maintenance may affect seal integrity and thus containment. Testing by these facilities does not imply their endorsement of these products.

1. Harper, G. J. (1984) Evaluation of sealed containers for use in centrifuges by a dynamic microbiological method. *J. Clin Pathol.* 37, 1134-1139.

2. CAMR, Porton Down, U.K., or USAMRIID, Fort Detrick, Maryland, U.S.A.

3. Advisory Committee on Dangerous Pathogens (1984). Categorization of pathogens according to hazard and categories of containment. HMSO, ISBN0 11 883761 3.

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Additional centrifugation resources:
<http://www.beckmancoulter.com/centrifugefirst>

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Benchtop Centrifugation

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Benchtop Centrifugation

1

Allegra® X-15R Benchtop Centrifuge



*Allegra X-15R Centrifuge with Cell Culture Flask Adapters**

Offering new power and flexibility on the bench, the Allegra® X-15R provides you with faster separations, optimized recoveries, and time savings.

Achieve Up to 5,250 x g in your 4 x 750-mL Swinging-Bucket Rotor

- Optimize recoveries
- Faster separations
- Save time
- Perfect for:
 - Filtration and concentration
 - Fast and slow blood component spins
 - Microbial cell harvesting

Directly centrifuge your cell culture flasks*

- Save time and labor
- Eliminate 15-mL or 50-mL conical tubes
- Reduce a potential contamination step

Complete your run—even with imbalance

- ARIES™ Smart Balance Rotor automatically corrects for imbalance up to 50 grams opposing loads

Enjoy the convenience of a truly innovative interface

- Numerical keypad
- Programmable: Stores up to ten user-defined programs

Part Numbers	Allegra X-15R (Refrigerated)
60 Hz, 208 V	392932
50 Hz, 230 V	392934
50/60 Hz, 200 V	392933

Specifications	
Maximum Speed	10 200 rpm/4 750 rpm†
Maximum g-force	11 400 x g/5 250 x g†
Speed Control	± 10 rpm of set speed
Drive Type	Brushless induction
Time Setting	Set (up to 99 hours 59 minutes), Hold, or Pulse (short run)
User-Defined Programs	10
Accel/Decel Rates	10 accel, 11 decel
Temperature Range	-10° to +40°C
Dimensions	34.3 cm (13.5 in) H x 62.2 cm (24.5 in) D x 76.2 cm (30 in) W
Weight	128 kg (283 lb)

* Adapters (patent pending) currently available for Corning 75cm² and 25cm² canted neck cell culture flasks. Corning is a trademark of Corning Incorporated.

† Using fixed angle rotors / Using swinging bucket rotors.

All rotors and carriers with covers are certified by CAMR, Porton Down, UK, for Biocontainment.

Benchtop Centrifugation

1

Allegra® X-12 Series Benchtop Centrifuges



Allegra X-12 Centrifuge

Simplify your processes and save time with the Allegra® X-12 Series Benchtop Centrifuges.

Directly centrifuge your cell culture flasks*

- Save time and labor
- Eliminate 15-mL or 50-mL conical tubes
- Reduce a potential contamination step

Complete your run—even with imbalance

- ARIES™ Smart Balance Rotor automatically corrects for imbalance up to 50 grams opposing loads

Enjoy the convenience of a truly innovative interface

- Numerical keypad
- Programmable: Stores up to ten user-defined programs

Part Numbers	Allegra X-12R (Refrigerated)	Allegra X-12 (Constant Controlled Temperature)
60 Hz, 208 V	392302	392472
50 Hz, 230 V	392304	392474
50/60 Hz, 200 V	392303	392473

Specifications

Maximum Speed	10 200 rpm/3 750 rpm [†]
Maximum <i>g</i> -force	11 400 x <i>g</i> [†] /3 270 x <i>g</i> [†]
Speed Control	± 10 rpm of set speed
Drive Type	Brushless induction
Time Setting	Set (up to 99 hours 59 minutes), Hold, or Pulse (short run)
User-Defined Programs	10
Accel/Decel Rates	10 accel, 11 decel
Temperature Range	-10° to +40°C (selectable) for Allegra X-12R; 18° to 22°C (preset) for Allegra X-12
Dimensions	
Allegra X-12 and X-12R	34.3 cm (13.5 in) H x 62.2 cm (24.5 in) D x 76.2 cm (30 in) W
Weight	
Allegra X-12 and X-12R	121 kg (267 lb)

* Adapters (patent pending) currently available for Corning 75cm² and 25cm² canted neck cell culture flasks. Corning is a trademark of Corning Incorporated.

[†] Using fixed angle rotors / Using swinging bucket rotors.

Benchtop Centrifugation

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Allegra® X-22 Series Compact Multipurpose Benchtop Centrifuges



Allegra X-22R Centrifuge

The compact Allegra® X-22 Series is up to 25 cm (10 inches) thinner than other comparable benchtop centrifuges. With a library of eleven rotors, the Allegra X-22 Series is the *space-saving multipurpose* solution for your requirements.

Specifications

Maximum Speed	15 500 rpm/14 500 rpm*
Maximum <i>g</i> -force	22 065 x <i>g</i> /19 309 x <i>g</i> *
Drive Type	Brushless induction
Time Setting	Timed up to 9 hr 59 min, pulse (short run), hold
Accel/Decel Rates	10 accel, 10 decel
Settable Temperature Range	-20° to +40°C/NA
Operating Temperature Range	2° to +40°C/Ambient
Dimensions	
Allegra X-22	35.5 cm (14 in) H x 55 cm (21.7 in) D x 46 cm (18.1 in) W
Allegra X-22R	37 cm (14.6 in) H x 70.7 cm (27.8 in) D x 46 cm (18.1 in) W
Weight (without Rotor)	
Allegra X-22	48 kg (106 lb)
Allegra X-22R	78 kg (172 lb)

Part Numbers	Allegra X-22 Benchtop	Allegra X-22R Refrigerated Benchtop
60 Hz, 120 V	392184	392187
50 Hz, 230 V	392185	392188
50/60 Hz, 100 V	392186	392189

* Using fixed angle rotor in Allegra X-22R/Using fixed angle rotor in Allegra X-22.

Benchtop Centrifugation

1

Allegra® 25R High-Performing Centrifuge



Allegra 25R Centrifuge

The Allegra® 25R High-Performing Benchtop Centrifuge is perfect for DNA—from bacteria and yeast pelleting—through isolation and purification—to post-reaction cleanup. With a wide range of interchangeable swinging bucket and fixed angle rotors, it accommodates from 0.25 mL to 500 mL, including popular 1.5 mL tubes for mini-preps and spin columns; 50 mL, 250 mL, and 500 mL tubes; 96-well plates; DNA kits; and PCR plates. With a maximum 15 000 rpm (25 160 x *g*), you can complete DNA sample prep quickly and efficiently before moving on to the rest of your DNA process.

Part Numbers	Allegra 25R (Refrigerated)
60 Hz, 208 V	369434
50/60 Hz, 200 V	369435
50 Hz, 230 V	369436

Specifications

Maximum Speed	15 000 rpm
Maximum <i>g</i> -force	25 160 x <i>g</i>
Speed Control	± 50 rpm of set speed
Drive Type	Brushless induction
Time Setting	9 hr 59 min timer, hold; pulse (short run)
Accel/Decel Rates	10 independent profiles
Settable Temperature Range	-20° to +40°C
Operating Temperature Range	2° to +40°C
Maximum Heat Output	6 824 Btu/h (2.0 kW)
Maximum Noise Output	< 68 dB
Dimensions	40.5 cm (16 in) H x 68.5 cm (27 in) D x 65.0 cm (25.6 in) W
Weight	124.0 kg (273.4 lb)

Benchtop Centrifugation

1

Allegra® 64R Centrifuge



Allegra 64R Centrifuge

The Allegra® 64R takes high *g*-forces (up to 64 400 x *g*) to the lab bench. Optimal for subcellular fractionation, proteins, and viruses—you can spin from 0.25 mL to 85 mL; operate at temperatures from 2° to 40°C; and select rotors that have been certified by Porton Down, UK, for biocontainment.

Part Numbers	Allegra 64R (Refrigerated)
60 Hz, 208 V	367586
60 Hz, 200 V	367585
50 Hz, 200 V	367584
50 Hz, 230 V	367587 (European Version)
50 Hz, 230 V	367588 (UK Version)



Specifications

Maximum Speed	30 000 rpm
Maximum <i>g</i> -force	64 400 x <i>g</i>
Speed Control	± 50 rpm of set speed
Drive Type	Brushless induction
Time Setting	9 hr 59 min timer, hold
Accel/Decel Rates	10 independent profiles
Settable Temperature Range	-20° to +40°C
Operating Temperature Range	2° to +40°C
Maximum Heat Output	65 400 Btu/h (1.58 kW)
Maximum Noise Output	65 dBa
Dimensions	38 cm (15.0 in) H x 66 cm (26.0 in) D x 61 cm (24.0 in) W
Weight	86 kg (190 lb)

Benchtop Centrifugation

1

Benchtop Centrifuges Rotor Summary

Rotor Type	Part Number	Maximum Speed (rpm)	Maximum Force (g) at r_{min}	Maximum Force (g) at r_{max}	k Factor	Number Tubes/Bottles and Size (diameter x length) mm / in.	Rotor Capacity (mL)	Approx. Accel. Time* (min:sec)	Rotor Angle	Biosafe	Allegra® X-15R	Allegra X-12 Series	Allegra X-22 Series	Allegra 25R	Allegra 21 Series†	Allegra 64R
Fixed-Angle Rotors																
F1202	364630	30 000	31 200 31 mm	64 396 64 mm	204	12 x 1.8 11 x 45 0.44 x 1.8	21.6	0:30‡	45°	No						•
Pellet subcellular organelles, viruses, bacteria, mitochondria, chloroplasts, or algae.																
F0630	361231	26 200	16 700 23 mm	59 860 78 mm	454	6 x 38.5 25.3 x 92 1 x 4	231	2:00‡	30°	No		•		•	•	
Pellet subcellular organelles, viruses, bacteria, mitochondria, chloroplasts, or algae.																
F2402H	361171	26 000	37 900 50 mm	62 084 82 mm	185	24 x 1.8 11 x 45 0.44 x 1.8	43.2	1:10‡	45°	Yes 		•		•	•	
Pellet subcellular organelles, viruses, bacteria, mitochondria, chloroplasts, or algae.																
F1010	361221	26 000	15 100 20 mm	57 438 76 mm	500	10 x 10 16.1 x 81.1 0.625 x 3	100	0:40‡	35°	No		•		•	•	
Pellet subcellular organelles, viruses, bacteria, mitochondria, chloroplasts, or algae.																
F3602	364600	22 000	30 900 57 mm	47 618 87 mm	224	36 x 1.8 11 x 45 0.48 x 1.8	64.8	2:00‡	45°	No				•	•	
Pellet subcellular organelles, viruses, bacteria, mitochondria, chloroplasts, or algae.																
F0650	364610	21 000	10 400 21 mm	41 400 84 mm	795	6 x 50 29 x 104 1.125 x 4.75	300	1:45‡	25°	No						•
Density gradient separations of erythrocytes, cell lysate fractions, granules; differential separation of DNA, proteins, and viruses.																
F0485	364620	20 000	9 410 21 mm	40 248 90 mm	920	4 x 85 38 x 104 1.5 x 4	340	1:15‡	30°	No						•
Pellet subcellular organelles, viruses, bacteria, mitochondria, chloroplasts, or algae.																
F0850	364640	16 500	10 100 33 mm	28 611 94 mm	973	8 x 50 29 x 104 1.125 x 4	400	2:00‡	25°	No		•		•	•	
Density gradient separations of erythrocytes, cell lysate fractions, granules; differential separation of DNA, proteins, and viruses.																
F0685	364650	15 500	6 730 25 mm	26 320 97 mm	1 428	6 x 85 38 x 104 1.5 x 4	510	1:45‡	25°	No		•		•	•	
Pellet subcellular organelles, viruses, bacteria, mitochondria, chloroplasts, or algae.																
TA-15-1.5	368298	15 000	16 900 67 mm	25 160 100 mm	428	30 x 1.5 11 x 45 0.5 x 1.8	45	0:34§	45°	Yes 			•			
Pellet subcellular organelles, viruses, bacteria, mitochondria, chloroplasts, or algae.																
FX301.5	392274	14 000**	14 708 67 mm	21 952 100 mm	519	30 x 2.2 11 x 45 0.5 x 1.8	66	1:00	45°	No		•				
Pellet subcellular organelles, viruses, bacteria, mitochondria, chloroplasts, or algae.																

* Acceleration times are approximate and are subject to change.

† The Allegra 21 Series has been made obsolete.




‡ Typical acceleration time in Allegra 64R using accel curve 9.

** In refrigerated centrifuges, maximum speed/RCF values in nonrefrigerated centrifuges are lower. Refer to Rotor Manual.

§ Typical acceleration time in Allegra 25R centrifuge.

Benchtop Centrifugation

Benchtop Centrifuges Rotor Summary (cont'd)

Rotor Type	Part Number	Maximum Speed (rpm)	Maximum Force (g) at r_{min}	Maximum Force (g) at r_{max}	k Factor	Number Tubes/Bottles and Size (diameter x length) mm / in.	Rotor Capacity (mL)	Approx. Accel. Time* (min:sec)	Rotor Angle	Biosafe	Allegra® X-15R	Allegra® X-12 Series [§]	Allegra X-22 Series	Allegra 25R	Allegra 21 Series [†]	Allegra 64R
Fixed-Angle Rotors (cont'd)																
FX6100	369735	10 200	4 100 35 mm	11 400 98 mm	—	6 x 100 38 x 102 1.5 x 4	600	1:30	25°	Yes 	•	•				
Density gradient separations of erythrocytes, cell lysate fractions, granules; differential separation of DNA, proteins, and viruses.																
TA-14-50	368303	14 000	7 250 33 mm	21 100 96 mm	1 380	8 x 50 29 x 104 1.25 x 4	400	0:37**	45°	No				•		
Pellet cells from large volumes or cell particles from tissue homogenates. Short-column methods used to purify large quantities of virus in gradients.																
TA-10-250	368293	10 000	3 920 35 mm	15 300 137 mm	3 450	6 x 250 62 x 141 2.5 x 5.75	1.5 L	2:00**	45°	No				•		
Pellet cells from large volumes or cell particles from tissue homogenates. Short-column methods used to purify large quantities of virus in gradients.																
C1015	364680	10 000	4 260 38 mm	10 392 93 mm	2 270	10 x 15 17 x 120 0.65 x 4.75	150	0:55*	25°	No			•	•	•	
Pellet subcellular organelles, viruses, bacteria, mitochondria, chloroplasts, or algae.																
C0650	364670	10 000	3 580 32 mm	10 400 92 mm	2 680	6 x 50 28.5 x 107 1.125 x 4.25	300	1:00*	25°	No			•	•	•	
General pelleting of cells, bacteria, and food products; separation of proteins, viruses, and subcellular fractions; phase separations; binding studies.																
Horizontal and Swinging Bucket Rotors																
SX241.5	392271	14 000 [†]	7 683 35 mm	16 244 74 mm	—	24 x 2.2 11 x 45 0.5 x 1.8	52.8	0:37	90°	No			•			
Pellet subcellular organelles, viruses, bacteria, mitochondria, chloroplasts, or algae.																
H6002	363000	12 200	5 840 35 mm	12 400 94 mm	—	60 x 1.8 11 x 38 0.5 x 1.5	108	0:25*	90°	Yes 				•	•	
Pellet subcellular organelles, viruses, bacteria, mitochondria, chloroplasts, or algae.																
S0410	364660	10 000	2 910 26 mm	10 733 96 mm	3 310	4 x 10 16 x 81.1 0.65 x 3.25	40	0:23*	90°	No					•	
Sediment protein precipitates, large particles, cells, cell debris, and for separations using gradients.																
TS-5.1-500	368308	5 100	2 500 87 mm	5 500 190 mm	7 600	4 x 500 85 x 135 3.5 x 5.5	2 L	1:00 [†]	90°	Yes 				•		
Sediment protein precipitates, large particles, cells, and cell debris.																



* Acceleration times are approximate and are subject to change.

[†] Allegra 21 Series has been made obsolete.

[‡] In refrigerated centrifuges; maximum speed/RCF values in nonrefrigerated centrifuges are lower. Refer to Rotor Manual.

** Typical accel time in Allegra 21 Series, accel curve 9, rotor fully loaded.

Benchtop Centrifuges Rotor Summary (cont'd)

Rotor Type	Part Number	Maximum Speed (rpm)	Maximum Force (g) at r_{min}	Maximum Force (g) at r_{max}	k Factor	Number Tubes/Bottles and Size (diameter x length) mm / in.	Rotor Capacity (mL)	Approx. Accel. Time* (min:sec)	Rotor Angle	Biosafe	Allegra® X-15R	Allegra X-12 Series	Allegra X-22 Series	Allegra 25R	Allegra 21 Series†	Allegra 64R
Horizontal and Swinging Bucket Rotors (cont'd)																
SX4250	392243	4 500 [‡]	1 610 71 mm	3 901 172 mm	—	4 x 250 61.6 x 125 2.5 x 4.9	1 L	0:36	90°	No			•			
Sediment protein precipitates, large particles, cells, and cell debris.																
SX4750	369702	4 750 [§]	NA	5 250 [§] 207.8 mm	—	4 x 750 96 x 30 3.85 x 5.25	3 L	0:80	90°	Yes 	•	•				
Rapid sedimentation of protein precipitates, large particles, cells, and cell debris.																
SX4750A	369704	4 750 [§]	NA	5 250 [§] 207.8 mm	—	4 x 750 96 x 30 3.85 x 5.25	3 L	0:80	90°	Yes 	•	•				
Rapid sedimentation of protein precipitates, large particles, cells, and cell debris.																
S2096	361111	3 000	706 70 mm	1 107 110 mm	3 310	2 plate carriers, 6 plates, 2 deepwell	576	0:21**	90°	No			•		•	
Serial dilution of liquid volumes.																
S5700	368954	5 700	5 040 138.6 mm	6 130 168.5 mm	—	10 microplates, 4 deepwell 2 96-well kits 2 PCR plates	960	0:47	90°	No				•		
High-throughput DNA sample preparation; serial dilution of small liquid volumes.																

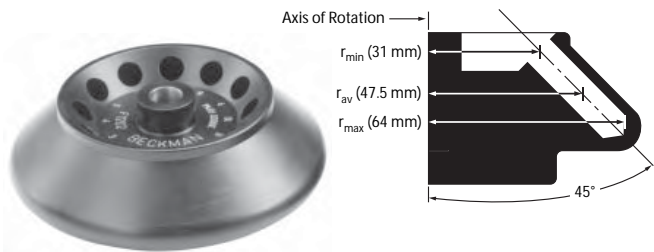
* Acceleration times are approximate and are subject to change.

† Allegra 21 Series centrifuges discontinued.

‡ In refrigerated centrifuges; maximum speed/RCF values in nonrefrigerated centrifuges are lower. Refer to Rotor Manual.

** Typical accel time in Allegra 21 Series, accel curve 9, rotor fully loaded.

§ In Allegra X-12 Series centrifuges, maximum speed and g-force are 3 750 RPM and 3 270 x g, respectively.



Fixed-Angle Rotor, Aluminum

Major applications: Pelletting subcellular organelles, DNA, viruses, bacteria, mitochondria, chloroplasts, or algae.

Max. RPM	Max. <i>g</i>	<i>k</i> Factor	Number of Tubes Volume/Size	Rotor Capacity
30 000	64 396	204	12 x 1.8 mL 11 x 45 mm 0.44 x 1.8 in	21.6 mL

For use in the Allegra® 64R centrifuge.

No. 364630. F1202 Fixed-Angle Rotor, for 30 000 rpm operation. Tubes and bottles not included.

Tubes

Tube Style/Material	Nominal Volume per Tube (mL)	Part No.	Quantity	Size (mm)	Required Adapters	Tubes per Adapter	<i>g</i> -Force	<i>k</i> Factor	Maximum Speed	
Open Top Tubes, Plain										
Polyethylene	250 µL	652823	1000	5 x 45	361247	1	9 500	----	11 500	
	400 µL	314326	1000	7 x 40	361247	1	9 500	----	11 500	
Open Top Tubes, Coated										
Polyethylene	Heparin/Lithium/Fluoride coated	250 µL	652821	1000	5 x 45	361247	1	9 500	----	11 500
	Heparin/Lithium coated	250 µL	652822	1000	5 x 45	361247	1	9 500	----	11 500
	Heparin/Lithium/Fluoride coated	400 µL	652824	1000	7 x 40	361247	1	9 500	----	11 500
	Heparin/Lithium coated	400 µL	652825	1000	7 x 40	361247	1	9 500	----	11 500
Tubes with Attached Caps										
Polyallomer	1.5	357448	500	11 x 38	364701	1	64 396	204	30 000	
Polyethylene	1.8	340196	500	11 x 39	364701	1	7 200	----	10 000	
Tubes with Separate Caps										
Polypropylene	400 µL	342867	1000	7 x 40	361247	1	9 500	----	11 500	
	1.5	343169	500	11 x 38	364701	1	64 396	204	30 000	
Tubes, Other Manufacturers										
500- to 750-µL Tubes	500 µL/ 700 µL	---	---		364690	1	---	---	11 500	

Rotor Replacement Parts

- 364633 Rotor Lid
- 961931 Rotor Lid O-ring
- 361367 Tie-down Screw
- 361371 T-handle Rotor Wrench

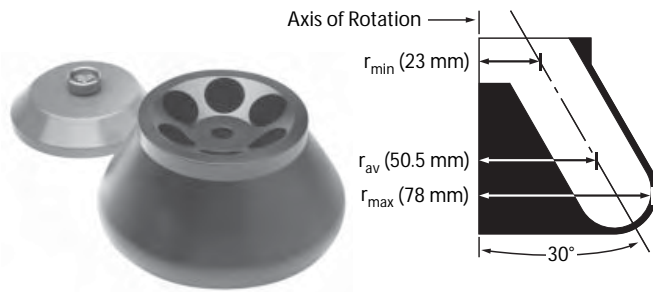
Adapters



F0630

6 x 38.5 mL

F0630



Fixed-Angle Rotor, Aluminum

Major applications: Pelletting subcellular organelles, viruses, bacteria, mitochondria, chloroplasts, or algae.

Max. RPM	Max. g	k Factor	Number of Tubes Volume/Size	Rotor Capacity
26 200*	59 860	454	6 x 38.5 mL 25 x 100 mm 1 x 4 in	231 mL

For use in Allegra® 64R, Allegra X-22 Series, and discontinued Allegra 21 Series centrifuges.

No. 361231. F0630 Fixed-Angle Rotor, for 26 200 rpm* operation. Tubes and bottles not included.

Bottles and Tubes

Tube Style/Material	Nominal Volume per Tube (mL)	Part No.	Quantity	Size (mm)	Required Adapters	Tubes per Adapter	g-Force	k Factor	Maximum Speed
Bottles with Cap Assemblies									
Polycarbonate	26.3	355616	3	25 x 89	----	----	59 860	454	26 200
Bottles with Screw Caps									
Polyallomer	30.0	363073	6	25.3 x 92	----	----	59 860	454	26 200
Polycarbonate	30.0	363070	6	25.3 x 92	----	----	59 860	454	26 200
Open Top Tubes									
Polyallomer, Thin-wall	34.0	326825	50	25 x 76	----	----	28 300	—	18 000
Polyallomer, Thick-wall	32.0	355642	25	25 x 89	----	----	59 860	454	26 200
Ultra-Clear™	38.5	344058	50	25 x 89	----	----	59 860	454	26 200

* In the Allegra 64R centrifuge. In the Allegra X22, the maximum rpm is 14 500 and the maximum g-force is 18 300. In the Allegra X-22R, the maximum rpm is 15 300 and the maximum g-force is 20 450. This rotor is rated at a lower speed in the Allegra 21 and 21R centrifuges, so g-forces and k factors are different. See the rotor manual for specific information.

Rotor Replacement Parts

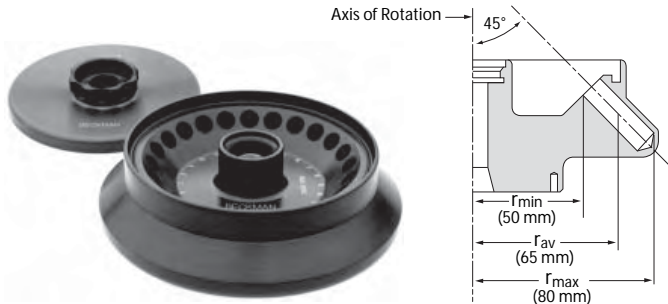
- 369353 Rotor Lid
- 961923 Rotor Lid O-ring
- 361367 Tie-down Screw
- 361371 T-handle Rotor Wrench

F2402H



24 x 1.8 mL

F2402H



Fixed-Angle Rotor, Aluminum

Major applications: Pelleting subcellular organelles, nucleic acids, viruses, bacteria, mitochondria, chloroplasts, or algae.

Max. RPM	Max. <i>g</i>	<i>k</i> Factor	Number of Tubes Volume/Size	Rotor Capacity
26 000 ^a	62 084	185	24 x 1.8 mL 11 x 45 mm 0.44 x 1.8 in	43.2 mL

For use in Allegra® 64R, Allegra X-22 Series, and discontinued Allegra 21 Series centrifuges.

No. 361171. F2402H Hermetically Sealed Biosafety Rotor, for 26 000 rpm^a operation. Tubes and bottles not included.

Tubes

Tube Style/Material	Nominal Volume per Tube (mL)	Part No.	Quantity	Size (mm)	Required Adapters	Tubes per Adapter	<i>g</i> -Force	<i>k</i> Factor	Maximum Speed	
Open Top Tubes, Plain										
Polyethylene	250 µL	652823	1000	5 x 45	361247	1	11 900	----	11 500	
	400 µL	314326	1000	7 x 40	361247	1	11 900	----	11 500	
Open Top Tubes, Coated										
Polyethylene	Heparin/Lithium/Fluoride coated	250 µL	652821	1000	5 x 45	361247	1	11 900	----	11 500
	Heparin/Lithium coated	250 µL	652822	1000	5 x 45	361247	1	11 900	----	11 500
	Heparin/Lithium/Fluoride coated	400 µL	652824	1000	7 x 40	361247	1	11 900	----	11 500
	Heparin/Lithium coated	400 µL	652825	1000	7 x 40	361247	1	11 900	----	11 500
Tubes with Attached Caps										
Polyallomer	1.5	357448	500	11 x 38	364701	1	62 084	----	20 000	
Polyethylene	1.8	340196	500	11 x 39	364701	1	8 960	----	10 000	
Tubes with Separate Caps										
Polypropylene	400 µL	342867	1000	7 x 40	361247	1	11 900	----	11 500	
	1.5	343169	500	11 x 38	364701	1	62 084	185	26 000	
Tubes, Other Manufacturers										
500- to 750-µL Tubes	500 µL/ 700 µL	---	---		364690	1	---	---	11 500	

^a In the Allegra 64R centrifuge. In the Allegra X22, the maximum rpm is 14 500 and the maximum *g*-force is 22 060. In the Allegra X-22R, the maximum rpm is 15 500 and the maximum *g*-force is 19 300. This rotor is rated at a lower speed in the Allegra 21 and 21R centrifuges, so *g*-forces and *k* factors are different. See the rotor manual for specific information.

Rotor Replacement Parts

- 974933 Rotor Lid O-ring (small)
- 361367 Tie-down Screw
- 361371 T-handle Rotor Wrench
- 974934 Rotor O-ring (large)
- 369352 Rotor Lid

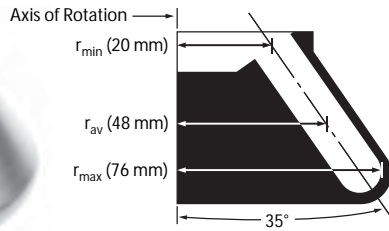
Adapters



F1010

10 x 10 mL

F1010



Fixed-Angle Rotor, Aluminum

Major applications: Pelleting subcellular organelles, viruses, bacteria, mitochondria, chloroplasts, or algae.

Max. RPM	Max. <i>g</i>	<i>k</i> Factor	Number of Tubes Volume/Size	Rotor Capacity
26 000*	57 438	500	10 x 10 mL 16.1 x 81.1 mm 0.625 x 3 in	100 mL

For use in Allegra® 64R, Allegra X-22 Series, and discontinued Allegra 21 Series centrifuges.

No. 361221. F1010 Fixed-Angle Rotor, for 26 000 rpm* operation. Tubes and bottles not included.

Bottles and Tubes

Tube Style/Material	Nominal Volume per Tube (mL)	Part No.	Quantity	Size (mm)	Required Adapters	Tubes per Adapter	<i>g</i> -Force*	<i>k</i> Factor	Maximum Speed*
Bottles with Screw Caps									
Polyallomer	10.0	364695	10	16.1 x 81.1	----	----	57 400	500	26 000
Polycarbonate	10.0	355672	25	16 x 80	----	----	57 400	500	26 000
Teflon†	10.0	364693	10	16.1 x 81.1	----	----	57 400	500	26 000
Tubes									
Polyallomer, Thick-wall	6.5	355646‡	25	16 x 64	----	----	----	----	26 000
	10.0	355640	25	16 x 76	----	----	57 400	500	26 000
Polycarbonate	6.5	355647‡	25	16 x 64	----	----	----	----	26 000
	10.0	355630	25	16 x 76	----	----	57 400	500	26 000
Ultra-Clear™	13.5	344085	50	16 x 76	----	----	57 400	500	26 000

* In the Allegra 64R centrifuge. This rotor is rated at 15 300 rpm/19 926 *x g* in the Allegra X-22R and at 14 500 rpm/17 896 *x g* in the Allegra X-22.

† Teflon is a registered trademark of E. I. Du Pont de Nemours & Company.

‡ To facilitate tube removal, place rubber pad (part number 342602) at the bottom of the tube cavity before inserting the tube.

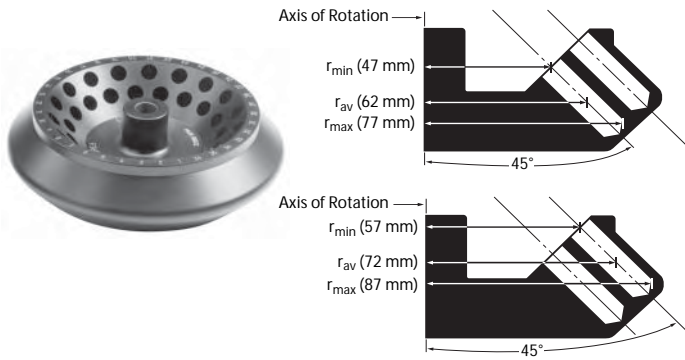
Rotor Replacement Parts

369351	Rotor Lid
961923	Rotor Lid O-ring
361367	Tie-down Screw
361371	T-handle Rotor Wrench

F3602

36 x 1.8 mL

F3602



Fixed-Angle Rotor, Aluminum

Major applications: Pelletting subcellular organelles, nucleic acids, viruses, bacteria, mitochondria, chloroplasts, or algae.

Max. RPM	Max. <i>g</i> Outer/Inner	<i>k</i> Factor Outer/Inner	Number of Tubes Volume/Size	Rotor Capacity
22 000	47 618/ 41 666	224/260	36 x 1.8 mL 11 x 45 mm 0.48 x 1.8 in	64.8 mL

For use in Allegra® 64R and discontinued Allegra 21 Series centrifuges.

No. 364600. F3602 Fixed-Angle Rotor, for 22 000 rpm^a operation. Tubes and bottles not included.

Tubes

Tube Style/Material	Nominal Volume per Tube (mL)	Part No.	Quantity	Size (mm)	Required Adapters	Tubes per Adapter	<i>g</i> -Force Outer/Inner	<i>k</i> Factor Outer/Inner	Maximum Speed
Tubes with Attached Caps									
Polyallomer	1.5	357448	500	11 x 38	364701	1	47 618/41 666	224/260	22 000
Polyethylene	1.8	340196	500	11 x 39	364701	1	9 740/8 620	1 070/1 250	10 000
Tubes with Separate Caps									
Polypropylene	250 µL	342865	1000	7 x 30	361247	1	12 900/11 400	809/944	11 500
	400 µL	342867	1000	7 x 40	361247	1	12 900/11 400	809/944	11 500
	1.5	343169	500	11 x 38	364701		47 618/41 666	224/260	22 000
Tubes, Plain									
Polyethylene	250 µL	652823	1000	5 x 45	361247	1	12 900/11 400	809/944	11 500
	400 µL	314326	1000	7 x 40	361247	1	12 900/11 400	809/944	11 500
Tubes, Coated									
Polyethylene	250 µL	652821*	1000	5 x 45	361247	1	12 900/11 400	809/944	11 500
	250 µL	652822†	1000	5 x 45	361247	1	12 900/11 400	809/944	11 500
	400 µL	652824*	1000	7 x 40	361247	1	12 900/11 400	809/944	11 500
	400 µL	652825†	1000	7 x 40	361247	1	12 900/11 400	809/944	11 500
Tubes, Other Manufacturers									
500- to 750-µL Tubes	500 µL/ 700 µL	—	—		364690	1	—	—	11 500

^a In the Allegra 64R centrifuge. This rotor is rated at a lower speed in the Allegra 21 and 21R centrifuges, so *g*-forces and *k* factors are different. See the rotor manual for specific information.

* Heparin-Lithium Fluoride coated.

† Heparin-Lithium coated.

Rotor Replacement Parts

- 369354 Rotor Lid
- 961929 Rotor Lid O-ring
- 361367 Tie-down Screw
- 361371 T-handle Rotor Wrench
- 361167 Lid Screw
- 361168 Lid Handle

Adapters

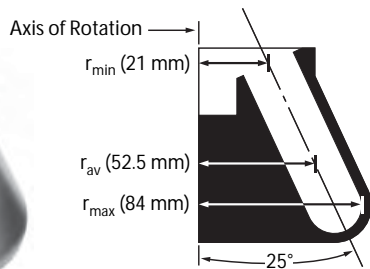




F0650

6 x 50 mL

F0650



Fixed-Angle Rotor, Aluminum

Major applications: Density gradient separations of erythrocytes, cell lysate fractions, granules, as well as different separations of DNA, proteins, and viruses.

Max. RPM	Max. <i>g</i>	<i>k</i> Factor	Number of Tubes Volume/Size	Rotor Capacity
21 000	41 400	795	6 x 50 mL 29 x 107 mm 1.125 x 4.25 in	300 mL

For use in the Allegra® 64R centrifuge.

No. 364610. F0650 Fixed-Angle Rotor, for 21 000 rpm operation. Tubes and bottles not included.

Bottles and Tubes

Tube Style/Material	Nominal Volume per Tube (mL)	Part No.	Quantity	Size (mm)	Required Adapters	Tubes per Adapter	<i>g</i> -Force	<i>k</i> Factor	Maximum Speed
Bottles with Cap Assemblies									
Polyallomer	50.0	357001	6	29 x 104	----	----	41 400	795	21 000
	50.0	361694	24	29 x 104	----	----	41 400	795	21 000
Polycarbonate	50.0	357000	6	29 x 104	----	----	41 400	795	21 000
Bottles with Screw Caps									
Polyallomer	50.0	357003	25	29 x 104	----	----	41 400	795	21 000
Polycarbonate	50.0	357002	25	29 x 104	----	----	41 400	795	21 000
Teflon® with High-speed Screw Cap	50.0	363076	8	28.5 x 107	----	----	41 400	795	21 000
Tubes									
Polycarbonate	50.0	363647	25	29 x 104	----	----	41 400	795	21 000
Polycarbonate, Graduated	50.0	363075	8	29 x 104	----	----	32 300	-----	18 500
Polypropylene	50.0	357007	25	29 x 104	----	----	41 400	795	21 000
Tubes with Snap-On Caps									
Polycarbonate	50.0	363664	25	29 x 104	----	----	28 611	973	16 500
Polypropylene	50.0	357005	25	29 x 104	----	----	28 611	973	16 500

* Teflon is a registered trademark of E. I. Du Pont de Nemours & Company.

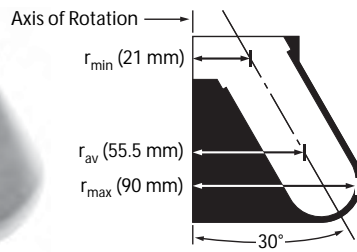
Rotor Replacement Parts

- 369355 Rotor Lid
- 961930 Rotor Lid O-ring
- 361367 Tie-down Screw
- 361371 T-handle Rotor Wrench

F0485

4 x 85 mL

F0485



Fixed-Angle Rotor, Aluminum

Major applications: Pelleting subcellular organelles, viruses, bacteria, mitochondria, chloroplasts, or algae.

Max. RPM	Max. <i>g</i>	<i>k</i> Factor	Number of Tubes Volume/Size	Rotor Capacity
20 000	40 248	920	4 x 85 mL 38 x 104 mm 1.5 x 4 in	340 mL

For use in the Allegra® 64R centrifuge.

No. 364620. F0485 Fixed-Angle Rotor, for 20 000 rpm operation. Tubes and bottles not included.

Bottles and Tubes

Tube Style/Material	Nominal Volume per Tube (mL)	Part No.	Quantity	Size (mm)	Required Adapters	Tubes per Adapter	<i>g</i> -Force	<i>k</i> Factor	Maximum Speed
Bottles with Cap Assemblies									
Polycarbonate	70.0	355620 [†]	6	38 x 102	-----	-----	40 248	920	20 000
	85.0	363081	6	38 x 104	-----	-----	40 248	920	20 000
Bottles with Screw Caps									
Polyallomer	50.0*	357003	25	29 x 104	347539	1	40 248	-----	20 000
Polycarbonate	50.0	357002	25	29 x 104	347539	1	40 248	-----	20 000
Polypropylene with Special Cap	80.0	363082	6	38 x 104	-----	-----	40 248	920	20 000
Tubes									
Polyallomer, Thick-wall	81.0	355643 [†]	25	38 x 102	-----	-----	40 248	920	20 000
Polyallomer, Thin-wall	94.0	345775 [†]	25	38 x 102	-----	-----	40 248	920	20 000
Polycarbonate	50.0	363647	25	29 x 104	347539	1	40 248	-----	20 000
	81.0	355628 [†]	25	38 x 102	-----	-----	40 248	920	20 000
Polypropylene	50.0	357007	25	29 x 104	347539	1	40 248	-----	20 000

* Run with reduced fill volume to prevent spilling/leaking.

[†] To facilitate tube removal, place rubber pad (part number 344120) at the bottom of the tube cavity before inserting the tube.

** Requires adapter pad 342604.

Rotor Replacement Parts

364623	Rotor Lid
961930	Rotor Lid O-ring
361367	Tie-down Screw
361371	T-handle Rotor Wrench

Adapters

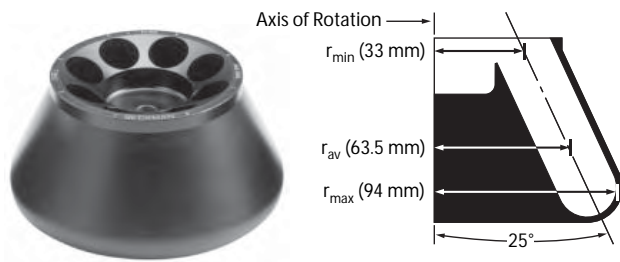
347539



F0850

8 x 50 mL

F0850



Fixed-Angle Rotor, Aluminum

Major applications: Density gradient separations of erythrocytes, cell lysate fractions, granules, as well as different separations of DNA, proteins, and viruses.

Max. RPM	Max. <i>g</i>	<i>k</i> Factor	Number of Tubes Volume/Size	Rotor Capacity
16 500*	28 611	973	8 x 50 mL 29 x 104 mm 1.125 x 4 in	400 mL

For use in Allegra® 64R, Allegra X-22 Series, and discontinued Allegra 21 Series centrifuges.

No. 364640. F0850 Fixed-Angle Rotor, for 16 500 rpm operation. Tubes and bottles not included.

Bottles and Tubes

Tube Style/Material	Nominal Volume per Tube (mL)	Part No.	Quantity	Size (mm)	Required Adapters	Tubes per Adapter	<i>g</i> -Force*	<i>k</i> Factor	Maximum Speed*
Bottles with Cap Assemblies									
Polyallomer	50.0	357001	6	29 x 104	----	----	28 611	973	16 500
	50.0	3616941	24	29 x 104	----	----	28 611	973	16 500
Polycarbonate	50.0	357000	6	29 x 104	----	----	28 611	973	16 500

Bottles with Screw Caps

Polyallomer	50.0	357003	25	29 x 104	----	----	28 611	973	16 500
Polycarbonate	50.0	357002	25	29 x 104	----	----	28 611	973	16 500
Teflon† with High-speed Screw Cap	50.0	363076	8	28.5 x 107	----	----	28 611	973	16 500

Tubes

Polycarbonate	50.0	363647	25	29 x 104	----	----	28 611	973	16 500
Polycarbonate, Graduated	50.0	363075	8	29 x 104	----	----	17 800	1 570	13 000
Polypropylene	50.0	357007	25	29 x 104	----	----	28 611	973	16 500

Tubes with Snap-On Caps

Polycarbonate	50.0	363664	25	29 x 104	----	----	28 611	973	16 500
Polypropylene	50.0	357005	25	29 x 104	----	----	28 611	973	16 500

* In the Allegra 64R centrifuge. This rotor is rated at 10 000 rpm/10 528 x *g* in the Allegra X-22R and at 9 000 rpm/8 528 x *g* in the Allegra X-22.

† Teflon is a registered trademark of E. I. Du Pont de Nemours & Company.

Rotor Replacement Parts

369358	Rotor Lid
961922	Rotor Lid O-ring
361367	Tie-down Screw
361371	T-handle Rotor Wrench

Adapters

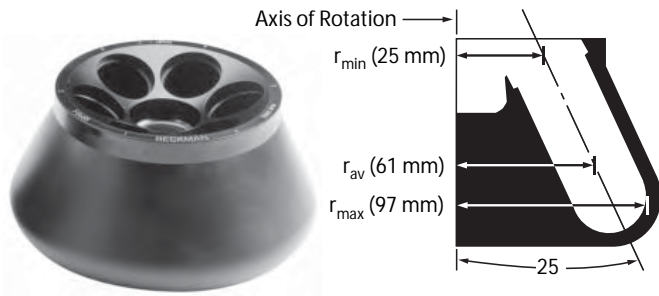
870329



F0685

6 x 85 mL

F0685



Fixed-Angle Rotor, Aluminum

Major applications: Pelletting subcellular organelles, viruses, bacteria, mitochondria, chloroplasts, or algae.

Max. RPM	Max. <i>g</i>	<i>k</i> Factor	Number of Tubes Volume/Size	Rotor Capacity
15 500*	26 320	1 428	6 x 85 mL 38 x 104 mm 1.5 x 4 in	510 mL

For use in Allegra® 64R, Allegra X-22 Series, and discontinued Allegra 21 Series centrifuges.

No. 364650. F0685 Fixed-Angle Rotor, for 15 500 rpm operation. Tubes and bottles not included.

Bottles and Tubes

Tube Style/Material	Nominal Volume per Tube (mL)	Part No.	Quantity	Size (mm)	Required Adapters	Tubes per Adapter	<i>g</i> -Force*	<i>k</i> Factor	Maximum Speed*
Bottles with Cap Assemblies									
Polycarbonate	70.0	355620†	6	38 x 102	-----	-----	26 320	1 428	15 500
	85.0	363081	6	38 x 104	-----	-----	26 320	1 428	15 500

Bottles with Screw Caps

Polyallomer	50.0	357003	25	29 x 104	347539	1	26 320	1 428	15 500
Polycarbonate	50.0	357002	25	29 x 104	347539	1	26 320	1 428	15 500
Polypropylene	80.0	363082	6	38 x 104	-----	-----	26 320	1 428	15 500
	100.0**	355624	6	38 x 102	-----	-----	26 320	1 428	15 500

Tubes

Polyallomer, Thick-wall	81.0	355643§	25	38 x 102	-----	-----	26 320	1 428	15 500
Polyallomer, Thin-wall	94.0	345775§	25	38 x 102	-----	-----	26 320	1 428	15 500
Polycarbonate	50.0	363647	25	29 x 104	347539	1	26 320	1 428	15 500
	81.0	355628§	25	38 x 102	-----	-----	26 320	1 428	15 500
Polypropylene	50.0	357007	25	29 x 104	347539	1	26 320	1 428	15 500

* In the Allegra 64R centrifuge. This rotor is rated at 10 000 rpm/10 864 x *g* in the Allegra X-22R and at 8 000 rpm/6 953 x *g* in the Allegra X-22.

† Requires adapter pad 342604.

** Run with reduced fill volume to prevent spilling/leaking.

§ To facilitate tube removal, place rubber pad (part number 344120) at the bottom of the tube cavity before inserting the tube.

Rotor Replacement Parts

364653	Rotor Lid
961929	Rotor Lid O-ring
361367	Tie-down Screw
361371	T-handle Rotor Wrench

Adapters

347539

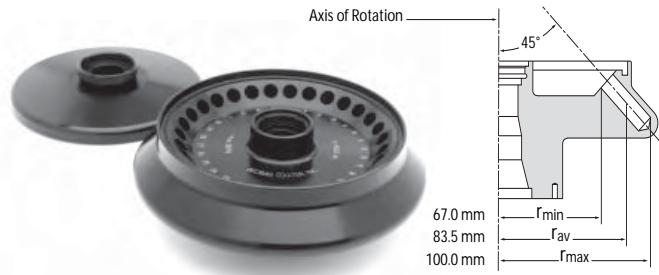


TA-15-1.5



30 x 1.5 mL

TA-15-1.5



Fixed-Angle Rotor, Aluminum

Major applications: Pelletting subcellular organelles, nucleic acids, viruses, bacteria, mitochondria, chloroplasts, or algae.

Max. RPM	Max. <i>g</i>	Rotor Capacity	Approximate Accel/Decel Time (min:sec)
15 000	25 160	30 x 1.5 mL 11 x 45 mm 0.5 x 1.8 in.	0:34/0:50

For use in the Allegra® 25R centrifuge.

No. 368298. TA-15-1.5 Fixed Angle Biosafety Rotor.

Tubes

Tube Style/Material	Nominal Volume per Tube (mL)	Part No.	Quantity	Size (mm)	Required Adapters	Tubes per Adapter	<i>g</i> -Force	<i>k</i> Factor	Maximum Speed	
Tubes with Snap-on Caps										
Polyallomer	Natural	1.5	357448	500	11 x 38	364701	1	----	----	15 000
Polyethylene	250 µL	652821†	1000	5 x 45	361247	1	----	----	11 500	
	250 µL	652822‡	1000	5 x 45	361247	1	----	----	11 500	
	250 µL	652823	1000	5 x 45	361247	1	----	----	11 500	
	400 µL	652824†	1000	7 x 40	361247	1	----	----	11 500	
	400 µL	652825‡	1000	7 x 40	361247	1	----	----	11 500	
	400 µL	314326	1000	7 x 40	361247	1	----	----	11 500	
	1.8	340196	500	11 x 39	364701	1	----	----	10 000	
Polypropylene	Natural	1.5	343169	500	11 x 38	364701	1	----	----	11 500

Tubes, Other Manufacturers

500- to 750-µL Tubes	500 µL/ 700 µL	—	—		364690	1	—	—	11 500
----------------------	-------------------	---	---	--	--------	---	---	---	--------

* With sealed rotor lid.

† Heparin-Lithium-Fluoride coated.

‡ Heparin-Lithium coated.

Rotor Replacement Parts

368299	Lid Assembly
368300	O-ring
368245	Tie-down Screw
368246	T-handle Rotor Wrench

Adapters

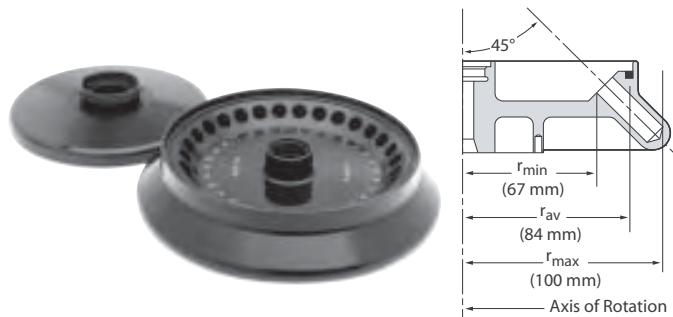
361247 364701



FX301.5

30 x 2.2 mL

FX301.5



Fixed-Angle Rotor, Material

Major applications: Pelleting, subcellular organelles, nucleic acids, viruses, bacteria, mitochondria, chloroplasts, or algae.

Max. RPM	Max. <i>g</i>	<i>k</i> Factor	Number of Tubes Volume/Size	Rotor Capacity
14 000*	21 920 [†]	519	30 x 2.2 mL 11 x 45 mm 0.48 x 1.8 in	66 mL

For use in Allegra® X-22 Series centrifuges.

No. 392274. FX301.5 Fixed-Angle Rotor Assembly. Tubes and bottles not included.

Tubes

Tube Style/Material	Nominal Volume per Tube (mL)	Part No.	Quantity	Size (mm)	Required Adapter	Tubes per Adapter	<i>g</i> -Force	<i>k</i> Factor	Maximum Speed
Tubes with Snap-on Caps									
Polyallomer	Natural, Attached cap	357448	500	11 x 38	---	1	---	---	14 000*
Polyethylene	Heparin-Lithium-Fluoride Coated	652821	1000	5 x 45	361247	1	---	---	11 500
	Heparin-Lithium Coated	652822	1000	5 x 45	361247	1	---	---	11 500
	Plain	652823	1000	5 x 45	361247	1	---	---	11 500
	Heparin-Lithium-Fluoride Coated	652824	1000	7 x 40	361247	1	---	---	11 500
	Heparin-Lithium Coated	652825	1000	7 x 40	361247	1	---	---	11 500
	Plain	314326	1000	7 x 40	361247	1	---	---	11 500
	Attached cap	340196	500	11 x 39	---	1	---	---	10 000
Polypropylene	Natural, Separate Cap	343169	500	11 x 38	---	1	---	---	14 000*
500- to 750- μ L Tubes**	500 μ L/ 700 μ L	---	---		364690	1	---	---	11 500

* In refrigerated centrifuges; maximum speed in unrefrigerated centrifuges is 13 000 rpm.

[†] In refrigerated centrifuges; *g*-force at r_{max} in unrefrigerated centrifuges is 19 515 \times *g*.

[‡] No adapter is required with this tube; however, adapter 364701 (pkg. of 12) can be used for proper conical support at higher speeds.

** Commercially available.

Rotor Replacement Parts

- 392275 Rotor Lid Assembly
- 368896 Lid O-ring
- 368991 Rotor O-ring
- 361367 Tie-down Screw
- 365636 T-handle Rotor Wrench

Adapters

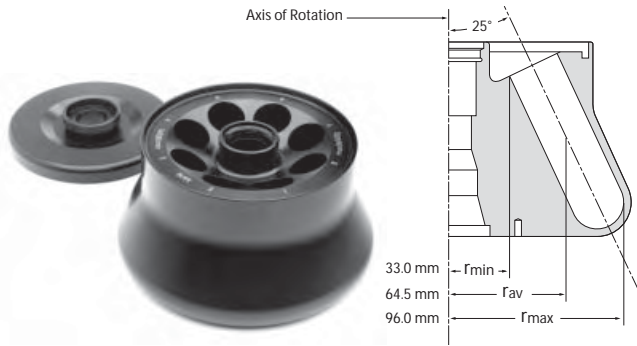
361247



TA-14-50

8 x 50 mL

TA-14-50



Fixed-Angle Rotor, Aluminum

Major applications: Pelletting cells from large volumes, or cell particles from tissue homogenates. Short-column methods (such as partially filled tubes) may also be used to purify large quantities of virus in a cushion gradient.

Max. RPM	Max. g	Rotor Capacity	Approximate Accel/Decel Time (min:sec)
14 000	21 100	8 x 50 29 x 104 mm 1.25 x 4 in.	0:37/0:59

For use in the Allegra® 25R centrifuge.

No. 368303. TA-14-50 Fixed Angle Rotor.

Bottles and Tubes

Tube Style/Material	Nominal Volume per Tube (mL)	Part No.	Quantity	Size (mm)	Required Adapters	Tubes per Adapter	g-Force	k Factor	Maximum Speed
Bottles with Cap Assemblies									
Polyallomer	50.0	357001	6	29 x 104	-----	-----	21 100	1 380	14 000
	50.0	361694	24	29 x 104	-----	-----	21 100	1 380	14 000
Polypropylene	50.0	357000	6	29 x 104	-----	-----	21 100	1 380	14 000
Bottles with Screw Caps									
Polyallomer	50.0	357003	25	29 x 104	-----	-----	21 100	1 380	14 000
Polycarbonate	50.0	357002	25	29 x 104	-----	-----	21 100	1 380	14 000
Teflon [†] with High-speed Screw Cap	50.0	363076	8	28.5 x 107	-----	-----	28 611	973	16 500
Tubes									
Polycarbonate	50.0	363647	25	29 x 104	-----	-----	21 100	1 380	14 000
Polycarbonate, Graduated	50.0	363075	8	29 x 104	-----	-----	17 800	1 570	13 000
Polypropylene	50.0	357007	25	29 x 104	-----	-----	21 100	1 380	14 000
Tubes with Snap-On Caps									
Polycarbonate	50.0	363664	25	29 x 104	-----	-----	21 100	1 380	14 000
Polypropylene	50.0	357005	25	29 x 104	-----	-----	21 100	1 380	14 000

Rotor Replacement Parts

- 368304 Lid Assembly
- 368305 O-ring
- 368245 Tie-down Screw
- 368246 T-handle Rotor Wrench

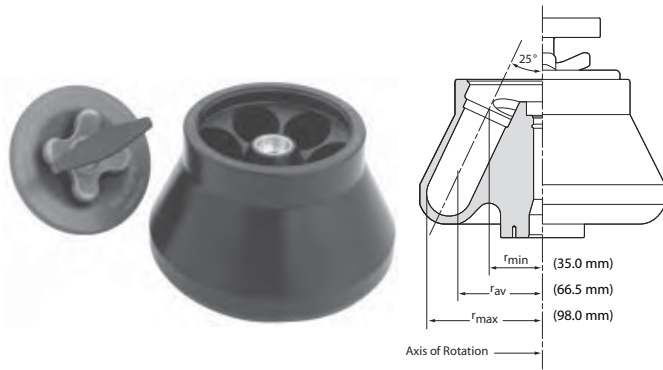


FX6100

Biosafety

6 x 100 mL

FX6100



Fixed-Angle Rotor, Aluminum

Major applications: Density gradient separations of erythrocytes, cell lysate fractions, granules; differential separation of DNA, proteins, and viruses.

Max. RPM	Max. g	Number of Tubes Volume/Size	Approximate Accel/Decel Time (min:sec)
10 200	11 400	6 x 100 mL 38 x 102 mm 1.5 x 4 in	1:30/1:20

For use in Allegra® X-12 Series centrifuges.

No. 369735. FX6100 Fixed Angle Biosafety Rotor.

Bottles and Tubes

Tube Style/Material	Nominal Volume per Tube (mL)	Part No.	Quantity	Size (mm)	Required Adapters	Tubes per Adapter	g-Force	k Factor	Maximum Speed
Bottles with Screw Caps									
Polyallomer	50.0	357003	25	29 x 104	392830	1	11 400	—	10 200
Polycarbonate	50.0	357002	25	29 x 104	392830	1	11 400	—	10 200
Polypropylene	80.0	363082	6	38 x 104	—	—	11 400	—	10 200
	100.0	355624	6	38 x 102	—	—	11 400	—	10 200
Bottles with Cap Assemblies									
Polycarbonate	70.0	355620	6	38 x 102	—	—	11 400	—	10 200
	85.0	363081	6	38 x 104	—	—	11 400	—	10 200
Tubes with Snap-on Caps									
Polyallomer	1.5	357448	500	11 x 38	344497**	3	—	—	10 200
Polyethylene	1.8	340196	500	11 x 39	344497**	3	—	—	10 000
Polypropylene	1.5	343169	500	11 x 38	344497**	3	—	—	10 200
Tubes									
Polyallomer, Thick-wall	81	355643*	25	38 x 102	—	—	11 400	—	10 200
Polyallomer	10	355640	25	16 x 76	392824	1	11 400	—	10 200
Polycarbonate	10	355630	25	16 x 76	392824	1	11 400	—	10 200
	15	342080	100	18 x 98	392823	1	11 400	—	10 200
	50	363647	25	29 x 104	392830	1	11 400	—	10 200
	50	363075	8	29 x 104	392830	1	11 400	—	10 200
	81	355628*	25	38 x 102	—	—	11 400	—	10 200
Polyethylene	15	342081	100	18 x 98	392823	1	11 400	—	10 200
Polypropylene	15	342082	100	18 x 98	392823	1	11 400	—	10 200
	50	357007	25	29 x 104	392830	1	11 400	—	10 200
Stainless Steel	10	301108	1	16 x 76	392824	1	11 400	—	10 200

* To facilitate tube removal, place rubber pad (part number 344120) at the bottom of the tube cavity before inserting the tube.

**Can be double stacked to be used inside 392830.

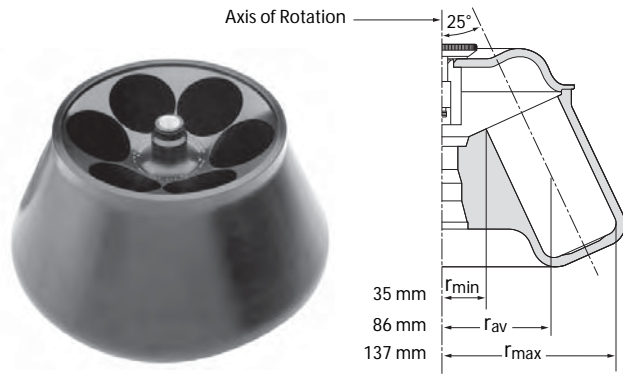
Rotor Replacement Parts

369738	Lid Assembly
870612	Large O-ring
010179	Small O-ring

TA-10-250

6 x 250 mL

TA-10-250



Fixed-Angle Rotor, Aluminum

Major applications: Pelleting cells from large volumes, or cell particles from tissue homogenates. Short-column methods (such as partially filled tubes) may also be used to purify large quantities of virus in a cushion gradient.

Max. RPM	Max. g	Rotor Capacity	Approximate Accel/Decel Time (min:sec)
10 000	15 300	6 x 250 62 x 141 mm 2.5 x 5.75 in.	2:00/2:00

For use in the Allegra® 25R centrifuge.

No. 368293. TA-10-250 Fixed Angle Rotor.

Bottles and Tubes

Tube Style/Material	Nominal Volume per Tube (mL)	Part No.	Quantity	Size (mm)	Required Adapters	Tubes per Adapter	g-Force	k Factor	Maximum Speed
Bottles with Cap Assemblies									
Polyallomer	50.0	357001	6	29 x 104	356997	1	-----	-----	10 000
	50.0	361694	24	29 x 104	356997	1	-----	-----	10 000
Polypropylene	50.0	357000	6	29 x 104	356997	1	-----	-----	10 000
Polypropylene, Wide-mouth	250.0	356011	6	62 x 122	-----	-----	15 300	3 450	10 000
Polycarbonate, Wide-mouth	250.0	356013	6	62 x 122	-----	-----	15 300	3 450	10 000
Bottles with Screw Caps									
Polyallomer	50.0	357003	25	29 x 104	356997	1	-----	-----	10 000
Polycarbonate	50.0	357002	25	29 x 104	356997	1	-----	-----	10 000
Tubes with Snap-On Caps									
Polycarbonate	50.0	363664	25	29 x 104	356997	1	-----	-----	10 000
Polypropylene	50.0	357005	25	29 x 104	356997	1	-----	-----	10 000
Conical Tubes									
Polycarbonate with Cap	230.0	356987	6	62 x 141	356983	1	-----	-----	10 000
Polypropylene with Cap	230.0	356989	6	62 x 141	356983	1	-----	-----	10 000
Open-Top Tubes									
Polycarbonate	50.0	363647	25	29 x 104	356997	1	-----	-----	10 000
Polypropylene	50.0	357007	25	29 x 103	356997	1	-----	-----	10 000

Rotor Replacement Parts

- 368245 Tie-down Screw
- 368246 T-handle Rotor Wrench

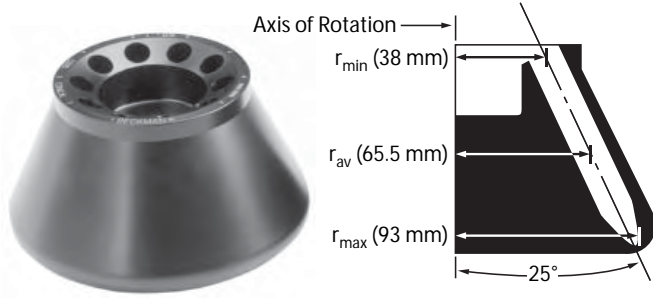
Adapters



C1015

10 x 15 mL

C1015



Fixed-Angle Rotor, Aluminum

Major applications: Pelleting of subcellular organelles, viruses, bacteria, mitochondria, chloroplasts, or algae.

Max. RPM	Max. <i>g</i>	<i>k</i> Factor	Number of Tubes Volume/Size	Rotor Capacity
10 000*	10 397	2 270	10 x 15 mL 17 x 120 mm 0.65 x 4.75 in	150 mL

For use in Allegra® 64R, Allegra X-22 Series, and discontinued Allegra 21 Series centrifuges.

No. 364680. C1015 Fixed-Angle Rotor, for 10 000 rpm operation. Tubes and bottles not included.†

Tubes

Tube Style/Material	Nominal Volume per Tube (mL)	Part No.	Quantity	Size (mm)	Required Adapters	Tubes per Adapter	<i>g</i> -Force	<i>k</i> Factor	Maximum Speed
Tubes									
Conical†	15.0	—	—	17 x 120	—	—	10 397	2 270	10 000

* In the Allegra 64R centrifuge. This rotor is rated at 9 500 rpm/9 299 *x g* in the Allegra X-22R and at 9 000 rpm/8 346 *x g* in the Allegra X-22.

† Tubes available from scientific supply vendors.

See chart on page 2-6 for adapters used with non-Beckman Coulter tubes and bottles.

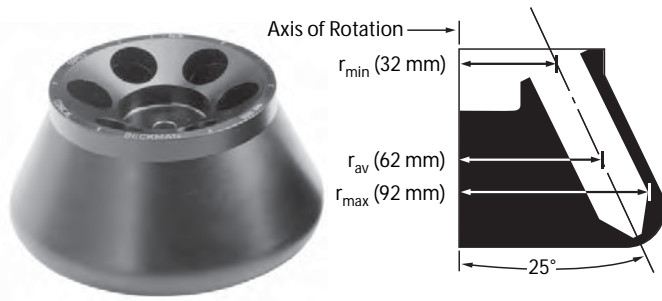
Rotor Replacement Parts

364683	Rotor Lid
961932	Rotor Lid O-ring
361367	Tie-down Screw
361371	T-handle Rotor Wrench

C0650

6 x 50 mL

C0650



Fixed-Angle Rotor, Aluminum

Major applications: General pelleting of cells, bacteria, and food products; separation of proteins, viruses, and subcellular fractions; phase separation; and binding studies.

Max. RPM	Max. <i>g</i>	<i>k</i> Factor	Number of Tubes Volume/Size	Rotor Capacity
10 000 [†]	10 400	2 680	6 x 50 mL 28.5 x 107 mm 1.125 x 4.25 in	300 mL

For use in Allegra® 64R, Allegra X-22 Series, and discontinued Allegra 21 Series centrifuges.

No. 364670. C0650 Fixed-Angle Rotor, for 10 000 rpm operation. Tubes and bottles not included.[†]

Tubes

Tube Style/Material	Nominal Volume per Tube (mL)	Part No.	Quantity	Size (mm)	Required Adapters	Tubes per Adapter	<i>g</i> -Force*	<i>k</i> Factor	Maximum Speed*
Tubes									
Conical [†]	50.0	—	—	28.5 x 107	—	—	10 400	2 680	10 000

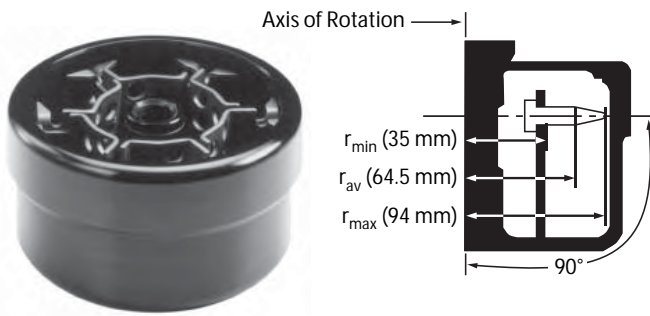
* In the Allegra 64R centrifuge. This rotor is rated at 9 500 rpm/9 420 x *g* in the Allegra X-22R and at 9 000 rpm/8 420 x *g* in the Allegra X-22.

[†] Tubes available from scientific supply vendors.

See chart on page 2–6 for adapters used with non-Beckman Coulter tubes and bottles.

Rotor Replacement Parts

- 369360 Rotor Lid
- 961922 Rotor Lid O-ring
- 361367 Tie-down Screw
- 361371 T-handle Rotor Wrench



Horizontal (Bowl) Rotor, Aluminum

Major applications: Pelleting subcellular organelles, viruses, bacteria, mitochondria, chloroplasts, or algae.

Max. RPM	Max. g	k Factor	Number of Tubes Volume/Size	Rotor Capacity
12 200*	12 400	N.A.	60 x 1.8 mL 11 x 39 mm 0.44 x 1.5 in	108 mL

For use in Allegra® 64R and discontinued Allegra 21 Series centrifuges.

No. 363000. H6002 Horizontal Biosafety Rotor, for 12 200 rpm operation. Tubes and bottles not included.

Tubes

Tube Style/Material	Nominal Volume per Tube (mL)	Part No.	Quantity	Size (mm)	Tube Holder Color & Part No. ¹ Set of 2/Set of 6	Tubes per Holder	g-Force	k Factor	Maximum Speed ²
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Tubes with Attached Caps

Polyallomer	1.5	357448	500	11 x 38	blue 345527/345524	10	12 400	-----	12 200
Polyethylene	1.8	340196	500	11 x 39	blue 345527/345524	10	8 320	-----	10 000

Tubes

Microtainer™	600 µL	-----	-----	-----	red 345526 red 345522 ¹	12 12	12 300	-----	12 200
Polypropylene	400 µL	342867	1000	7 x 40	dark green 345525 dark green 345521 ¹	14 14	11 600	-----	12 200
	500 µL	344319	500	8 x 28	red 345526 red 345522 ¹	12 12	9 950	-----	12 200
	1.5	343169	500	11 x 38	blue 345527/345524	10	12 400	-----	12 200

Plain Tubes

Polyethylene	250 µL	652823	1000	5 x 45	dark green 345525 dark green 345521 ¹	14 14	7 895	-----	11 500
	400 µL	314326	1000	7 x 40	dark green 345525 dark green 345521 ¹	14 14	7 820	-----	10 000

Coated Tubes

Polyethylene	Yellow	250 µL	652821	1000	5 x 45	dark green 345525	14	7 900	-----	11 500
						dark green 345521 ¹	14			
Polyethylene	Blue	250 µL	652822	1000	5 x 45	dark green 345525	14	7 900	-----	11 500
						dark green 345521 ¹	14			
Polyethylene	Yellow	400 µL	652824	1000	7 x 40	dark green 345525 dark green 345521 ¹	14 14	10 300	-----	11 500
Polyethylene	Blue	400 µL	652825	1000	7 x 40	dark green 345525 dark green 345521 ¹	14 14	10 300	-----	11 500

* In the Allegra 64R centrifuge. This rotor is rated at a lower speed in the Allegra 21 and 21R centrifuges, so g-forces and k factors are different. See the rotor manual for specific information.

¹ Bold numbers feature 30° resting angle to minimize remixing of loose pellets upon completion of run.

² Based on empirical tests of tube strength with the lid in place on the rotor.

™ Microtainer is a registered trademark of Becton, Dickinson and Company; available commercially.

Rotor Replacement Parts

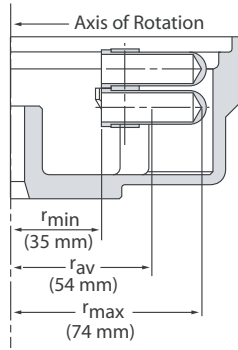
363002	Rotor Lid
363003	Rotor Lid Knob
344658	Rotor Lid O-ring
344659	Rotor O-ring
361367	Tie-down Screw
361371	T-handle Rotor Wrench

SX241.5

Biosafety

24 x 2.2 mL

SX241.5



Swinging Bucket Rotor, Aluminum

Major applications: Pelleting subcellular organelles, viruses, bacteria, mitochondria, chloroplasts, or algae.

Max. RPM	Max. <i>g</i>	<i>k</i> Factor	Number of Tubes Volume/Size	Rotor Capacity
14 000*	16 220 [†]	N.A.	24 x 2.2 mL 11 x 45 mm 0.44 x 1.8 in.	52.8 mL

For use in Allegra® X-22 Series centrifuges.

No. 392271. SX241.5 Biosafety Rotor Assembly.

Tubes

Tube Style/Material	Nominal Volume per Tube (mL)	Part No.	Quantity	Size (mm)	Required Adapters	Tubes per Adapter	<i>g</i> -Force	<i>k</i> Factor	Maximum Speed
Polyallomer Natural, Attached cap	1.5	357448	500	11 x 38	---	1	---	---	14 000*
Polyethylene	Heparin-Lithium-Fluoride Coated	250 µL	652821	1000	5 x 45	361247	1	---	11 500
	Heparin-Lithium Coated	250 µL	652822	1000	5 x 45	361247	1	---	11 500
	Plain	250 µL	652823	1000	5 x 45	361247	1	---	11 500
	Heparin-Lithium-Fluoride Coated	400 µL	652824	1000	7 x 40	361247	1	---	11 500
	Heparin-Lithium Coated	400 µL	652825	1000	7 x 40	361247	1	---	11 500
	Plain	400 µL	314326	1000	7 x 40	361247	1	---	11 500
Polypropylene Natural, Separate Cap	1.5	343169	500	11 x 38	---	1	---	---	10 000
500- to 750-µL Tubes [‡]	500 µL/ 700 µL	---	---	---	364690	1	---	---	14 000*

* In refrigerated centrifuges; maximum speed in unrefrigerated centrifuges is 12 500 rpm.
[†] In refrigerated centrifuges; *g*-force at r_{max} in unrefrigerated centrifuges is 19 515 × *g*.
[‡] No adapter is required with this tube; however, adapter 364701 (pkg. of 12) can be used.
 ** Commercially available.

Rotor Replacement Parts

- 368883 Rotor Lid Assembly
- 368888 O-ring
- 368887 Bucket (set of 2)
- 365806 Tie-down Screw
- 365636 T-handle Rotor Wrench

Adapters

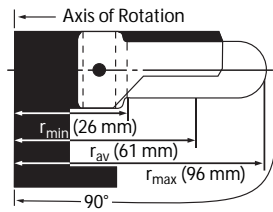
361247



S0410

4 x 10 mL

S0410



Swinging-Bucket Rotor, Anodized Aluminum

Major applications: Rapidly sediments protein precipitates, large particles, cells, cell debris, and for separations using gradients.

Max. RPM	Max. <i>g</i>	<i>k</i> Factor	Number of Tubes Volume/Size	Rotor Capacity
10 000	10 733	3 310	4 x 10 mL 16 x 81.1 mm 0.65 x 3.25 in	40 mL

For use in the Allegra® 64R centrifuge.

No. 364660. S0410 Swinging-Bucket Rotor Assembly, for 10 000 rpm operation. Tubes and bottles not included.

Bottles and Tubes

Tube Style/Material	Nominal Volume per Tube (mL)	Part No.	Quantity	Size (mm)	Required Adapters	Tubes per Adapter	<i>g</i> -Force	<i>k</i> Factor	Maximum Speed
Bottle with Cap Assembly									
Polycarbonate	10.0	355672	25	16 x 80	----	----	10 733	3 310	10 000
Bottles with Screw Caps									
Polyallomer	10.0	364695	10	16.1 x 81.1	----	----	10 733	3 310	10 000
Teflon [†]	10.0	364693	10	16.1 x 81.1	----	----	10 733	3 310	10 000
Tubes									
Polyallomer, Thick-wall	8.0	355646 [‡]	25	16 x 64	----	----	----	----	10 000
	10.0	355640	25	16 x 76	----	----	10 733	3 310	10 000
Polycarbonate	8.0	355647 [‡]	25	16 x 64	----	----	----	----	10 000
	10.0	355630	25	16 x 76	----	----	10 733	3 310	10 000
Ultra-Clear™	13.5	344085	50	16 x 76	----	----	10 733	3 310	10 000

* Teflon is a registered trademark of E. I. Du Pont de Nemours & Company.

† To facilitate tube removal, place rubber pad (part number 344120) at the bottom of the tube cavity before inserting the tube.

Rotor Replacement Parts

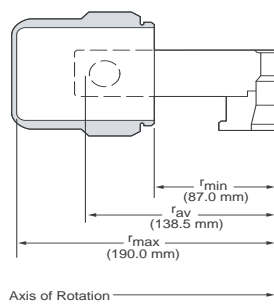
- 364633 Buckets (set of 4)
- 361367 Tie-down Screw
- 361371 T-handle Rotor Wrench

TS-5.1-500

Biosafety*

4 x 500 mL

TS-5.1-500



Swinging Bucket Rotor, Aluminum

Major applications: Sedimenting protein precipitates, large particles, cells, and cell debris.

Max. RPM	Max. g	Rotor Capacity	Approximate Accel/Decel Time (min:sec)
5 100	5 540	4 x 500 85 x 135 mm 3.5 x 5.5 in.	0:59/0:47

For use in the Allegra® 25R centrifuge.

No. 368308. TS-5.1-500 Swinging Bucket Biosafety Rotor.

Bottles and Tubes

Tube Style/Material	Nominal Volume per Tube (mL)	Part No.	Quantity	Size (mm)	Required Adapters	Tubes per Adapter	g-Force	k Factor	Maximum Speed
Bottles with Cap Assembly									
Polycarbonate	250.0	356013	6	62 x 122	368456	1	-----	-----	5 100
Polypropylene	250.0	356011	6	62 x 122	368456	1	-----	-----	5 100
Bottles with Screw Caps									
Polyallomer	10.0	364695	10	16.1 x 81.1	368468	12	-----	-----	5 100
Polycarbonate	10.0	355672	25	16 x 80	368468	12	-----	-----	5 100
	500.0	368454	2	85 x 135	-----	-----	5 540	-----	5 100
Polypropylene	500.0	368453	2	85 x 135	-----	-----	5 540	-----	5 100
Tubes with Caps									
Polyallomer	1.5	357448	500	11 x 38	368470	16	-----	-----	5 100
Open-Top Tubes									
Polyallomer, Thick-wall	10.0	355640	25	16 x 76	368468	12	-----	-----	5 100
Polycarbonate	6.5	355647	25	16 x 64	368468	12	-----	-----	5 100
	10.0	355630	25	16 x 76	368468	12	-----	-----	5 100

* With sealed bucket covers.

Rotor Replacement Parts

- 368452 Buckets (set of 2)
- 368472 Bucket Cover (set of 2)
- 368455 Bucket O-ring (set of 8)
- 368451 Microplate Carrier (set of 2)
- 368245 Tie-down Screw
- 368246 T-handle Wrench

Adapters

368456 368468 368470

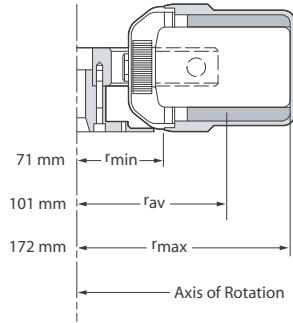




SX4250

4 x 250 mL

SX4250



Swinging-Bucket Rotor, Aluminum

Major applications: Rapidly sediments protein precipitates, large particles, cells, and cell debris. Can also be used for binding studies and for separating serum from whole blood.

Max. RPM	Max. <i>g</i>	<i>k</i> Factor	Number of Tubes Volume/Size	Rotor Capacity
4 500*	3 901†	—	4 x 250 mL 61.8 x 125 mm 2.5 x 5 in	1000 mL

For use in Allegra® X-22 Series centrifuges.

No. 392243. SX4250 Swinging-Bucket Rotor. Unshielded, four-place rotor with aluminum rotor yoke and removable aluminum swinging buckets, all anodized black for corrosion protection. Includes four buckets without covers.

Bottles and Tubes

Tube Style	Nominal Volume per Tube (mL)	Size (mm)	Required Adapter (set of 2)	Tubes per Adapter	Maximum Number of Tubes per Rotor
Microfuge/PCR Tubes	0.5 mL	7 x 19 mm	368471	24	96
Hemolyse or RIA Tubes	1.5/2.2 mL	11 x 38 mm	368470	16	64
	5 mL	12 x 75 mm	392263	25	100
Vacutainer	5 mL	12 x 75 mm	368467	16	64
	5 mL	13 x 75 mm	368467	16	64
Glass	7 mL	12 x 100 mm	368469	16	64
Vacutainer	10 mL	16 x 100 mm	368465	12	48
Monovettes	10 mL	17 mm	368465	12	48
Round-Bottom	10 mL	16.1 x 81.1 mm	368468	12	48
	10/15 mL	17 x 110 mm	368465	12	48
Conical	15 mL	17 x 120 mm	392257	5	20
Glass with Open-Top or Screw-on Cap	25 mL	24 x 100 mm	368463	5	20
Glass	25 mL	24 x 100 mm	368463	5	20
Round-Bottom	50 mL	28.5 x 107 mm	368477	4	16
	50 mL	28.5 x 100 mm	392258	3	12
Glass	50 mL	34 x 100 mm	392265	3	12
85 mL Oakridge	80/100 mL	44 x 100 mm	368459	1	4
	94 mL	38 x 112 mm	392261	1	4
Flat-bottom with Screw-on Cap	125 mL	50.5 x 99 mm	368458	1	4
	180 mL	56.5 x 113 mm	368457	1	4
	250 mL	61.8 x 125 mm	392256	1	4

* In refrigerated centrifuges; maximum speed in unrefrigerated centrifuges is 4 200 rpm.

† In refrigerated centrifuges; *g*-force at r_{max} in unrefrigerated centrifuges is 3 398 *x g*.

Replacement Parts

- 392266 Bucket Covers (set of 4)
- 392251 Bucket with Cover (set of 2)
- 392621 Bucket O-ring (set of 4)
- 361367 Tie-down Screw
- 365636 T-handle Rotor Wrench

Adapters

368457 368458 368459 368463 368465 368467 368468 368469 368470 368471 368477

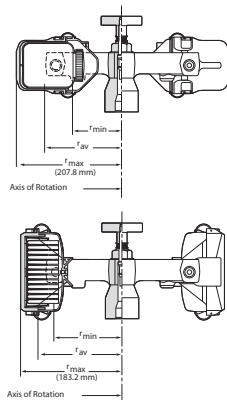


SX4750/4750A

Biosafety*

4 x 750 mL

SX4750/4750A



Swinging-Bucket Rotor, Stainless Steel/Aluminum

Major applications: Rapid sedimentation of protein precipitates, large particles, cells, and cell debris.

Max. RPM	Max. g	Number of Tubes Volume/Size	Approximate Accel/Decel Time (min:sec)
4 750†	5 250†	4 x 750 mL 96 x 130 mm 3.85 x 5.25 in	0:80/0:80

For use in Allegra® X-15R and Allegra X-12 Series centrifuges.

No. 369702. SX4750 Swinging-Bucket Biosafety Rotor. Four-place rotor with stainless-steel rotor yoke and removable aluminum swinging buckets. Buckets are interchangeable with SX4750µ Biosafety Microplate Carriers 392806 for spinning microtiter plates or microfuge tubes using rack inserts.

Bucket Covers

No. 392805. Set of two. Transparent bucket covers for SX4750 round rotor buckets to contain broken tubes. Independently certified by CAMR, Porton Down, UK, for biocontainment.

Aerosolve® Cannisters

No. 359232. Set of four.

No. 359481. Set of two.

Aerosolve Cannisters fit in SX4750 round rotor buckets. These Biosafety cannisters feature an O-ring seal and are completely transparent so a broken tube can be seen and proper precautions taken before you break the seal. Cannisters can also be used as 500-mL wide-mouth bottles. Specially designed adapters accommodate most popular tubes within the cannister. Independently certified by CAMR, Porton Down, UK, for biocontainment. **In the Tubes and Bottles chart following, adapters required for the use of tubes within Aerosolve Cannisters are listed in bold type.**

Cell Culture Flask Adapters‡

No. 369292. Accommodate Corning‡ 75 cm² Canted-Neck Cell Culture Flasks (PN 430641). One flask per adapter. 3 024 rpm; 2 080 x g.

No. 369295. Accommodate Corning 25 cm² Canted-Neck Cell Culture Flasks (PN 430639). Two flasks per adapter. 3 200 rpm; 2 000 x g.

* With sealed bucket covers.

† Rated at 3 750 rpm/3 270 x g in the Allegra X-12 Series centrifuges.

‡ Patent pending. Corning is a trademark of Corning Incorporated.

No. 369704. SX4750A Swinging-Bucket Biosafety Rotor. Four-place rotor with stainless-steel rotor yoke and removable aluminum swinging buckets. ARIES™ technology provides imbalance correction for rotors with buckets that are unbalanced up to 50 grams in opposing loads.

SX4750µ Biosafety Microplate Carriers

No. 392806. SX4750µ Biosafety Microplate Carrier Assembly. Includes carriage 392873 and rubber pad to cushion plates. Each carrier can hold up to 3 microplates, 1 deep-well/square well plate, 1 rack of MiniTubes, or other labware in 96-well format. Set of 2. Maximum allowable speed in Allegra X-12 is 3 750 rpm (2 890 x g), in Allegra X-15R, maximum allowable speed is 4 450 rpm (4 060 x g).

Replacement Parts for SX4750/SX4750A

392804	Bucket (set of 2)
392805	Bucket covers (set of 2)
961648	Replacement bucket O-ring (pkg/8)
360587	Bucket cover latch assembly

Replacement Parts for SX4750µ Microplate Carriers

393070	Bio-certified covers for SX4750µ microplate carriers
392812	Replacement cover gasket (set of 4)
392873	Replacement carriage, includes rubber pad (set of 2)
392872	Replacement rubber pad for carriage (set of 4)

Bottles and Tubes

Tube Style/Material	Nominal Volume per Tube (mL)	Part No.	Quantity	Size (mm)	Required Modular Disk Adapters Set of 2/Set of 4	Tubes per Adapter	g-Force*	k Factor	Maximum Speed*
Bottles, Wide-mouth									
Polycarbonate	250.0	358275	25	62 x 122	349946	1	5 250	---	4 750
Polypropylene	500.0	355650	6	69 x 159	349945	1	5 250	---	4 750
Polypropylene	250.0	358326	25	62 x 120	349946	1	5 250	---	4 750
Bottles with Cap Assemblies									
Polyallomer	50.0	357001	6	29 x 104	359474/359153 359486/359164 [†]	7 4	5 250	---	4 750
	50.0	361694	24	29 x 104	359474/359153 359486/359164 [†]	7 4	5 250	---	4 750
Polycarbonate	50.0	361693	24	29 x 104	359474/359153 359486/359164 [†]	7 4	5 250	---	4 750
Polycarbonate, Wide-mouth	250.0	356013	6	62 x 120	349946	1			
Polypropylene, Wide-mouth	250.0	356011	6	62 x 120	349946	1	5 250	---	4 750
	500.0	355607	6	69 x 160	349945	1	5 250	---	4 750
Bottles with Screw Caps									
Polyallomer	50.0	357003	25	29 x 104	359474/359153 359486/359164 [†]	7	5 250	---	4 750
Polycarbonate	50.0	357002	25	29 x 104	359474/359153 359486/359164 [†]	7	5 250	---	4 750
	250.0	355673	6	62 x 136	349946	1	5 250	---	4 750
	750.0	358299	6	96 x 130	349846	1	5 250	---	4 750
Polypropylene	750.0	356855	6	96 x 130	349846	1	5 250	---	4 750
Polypropylene, Wide-mouth	500.0	355665	6	69 x 159	349945	1	5 250	---	4 750
Teflon with High-Speed Cap	50.0	363076	8	28.5 x 107	359474/359153 359486/359164 [†]	7 4	5 250	---	4 750

* Rated at 3 750 RPM/3 270 x g Allegra X-12 Series centrifuges

† Adapters required for the use of tubes within Aerosolve Cannisters are listed in bold type.

Adapters



Bottles and Tubes

Tube Style/Material	Nominal Volume per Tube (mL)	Part No.	Quantity	Size (mm)	Required Modular Disk Adapters Set of 2/Set of 4	Tubes per Adapter	g-Force*	k Factor	Maximum Speed*
Open-Top Tubes									
Polyallomer, Thick-wall	10.0	355640	25	16 x 76	359471/359150 359484/359162 †	19 10	5 250	---	4 750
Polyethylene	15.0	342081	100	18 x 98	359473/359152	14	5 250	---	4 750
Polycarbonate	12.0	355630	25	16 x 76	359471/359150 359484/359162 †	19 10	5 250	---	4 750
	15.0	342080	100	18 x 98	359473/359152	14	5 250	---	4 750
	50.0	363647	25	29 x 104	359474/359153 359486/359164 †	7	5 250	---	4 750
Polycarbonate, Graduated	50.0	363075	8	29 x 104	359474/359153 359486/359164 †	7	5 250	---	4 750
Polypropylene	15.0	342082	100	18 x 98	359473/359152	14	5 250	---	4 750
	50.0	357007	25	29 x 104	359474/359153 359486/359164 †	7	5 250	---	4 750
Stainless Steel	12.0	301108	1	16 x 76	359471/359150 359484/359162 †	19 10	5 250	---	4 750
Tubes with Snap-On Caps									
Polyallomer	1.5	357448	500	11 x 38	359469/359148† 354495/ --- †	37 24	5 250	---	4 750
Polycarbonate	50.0	363664	25	29 x 104	359474/359153 359486/359164 †	7	5 250	---	4 750
Polycarbonate, Conical	230.0	356987	6	62 x 141	356983/---** 356985/ ---	1	5 250	---	4 750
Polyethylene	1.8	340196	500	11 x 39	359469/359148† 354495/ --- †	37 24	5 250	---	4 750
Polypropylene, Conical	230.0	356989	6	62 x 141	356983/---** 356985/ ---	1	5 250	---	4 750

* Rated at 3 750 rpm/3 270 x g in the Allegra X-12 Series centrifuges.

† Adapters required for the use of tubes within Aerosolve Cannisters are listed in bold type.

‡ Requires 1.5-mL adapter plate PN 354511.

** Requires adapter PN 349946, available 1 each pack.

Adapters



Bottles and Tubes

Tube Style/Material	Nominal Volume per Tube (mL)	Part No.	Quantity	Size (mm)	Required Modular Disk Adapters Set of 2/Set of 4	Tubes per Adapter	g-Force*	k Factor	Maximum Speed*
Tubes with Snap-On Caps (continued)									
Polypropylene	50.0	357005	25	29 x 104	359474/359153 359486/359164†	7	5 250	---	4 750
Orange	1.5	356094	500	11 x 38	359469/359148‡ 354495/ --- †	37	5 250	---	4 750
Yellow	1.5	356093	500	11 x 38	359469/359148‡ 354495/ --- †	37	5 250	---	4 750
Green	1.5	356092	500	11 x 38	359469/359148‡ 354495/ --- †	37	5 250	---	4 750
Blue	1.5	356091	500	11 x 38	359469/359148‡ 354495/ --- †	37	5 250	---	4 750
Natural	1.5	356090	500	11 x 38	359469/359148‡ 354495/ --- †	37	5 250	---	4 750
Natural**	1.5	343169	500	11 x 38	359469/359148‡ 354495/ --- †	37	5 250	---	4 750

BioVials

Polypropylene	4.0	566353	1 000	14 x 55	359470/359149 344517/ --- †	24	5 250	---	4 750
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Blood-Bag Cups

No. 356856. Yellow cup with inner diameter of 90 mm for single- or double-packs.

No. 356857. Orange cup with inner diameter of 97 mm for triple- or quad-packs.



SX4750µ Biosafety Microplate Carriers

No. 392806. SX4750µ Biosafety Microplate Carrier Assembly. Includes carriage 392873 and rubber pad to cushion plates. Each carrier can hold up to 3 microplates, 1 deep-well/square well plate, 1 rack of MiniTubes, or other labware in 96-well format. Set of 2. Maximum allowable speed is 3 750 rpm (2 890 x g).



* Rated at 3 750 rpm/3 270 x g in the Allegra X-12 Series centrifuges, 4 450 rpm/4 060 x g in Allegra X-15R.

† Adapters required for the use of tubes within Aerosolve Cannisters are listed in bold type.

‡ Requires 1.5-mL adapter plate PN 354511, sold individually.

** Separate cap.

Rotor Supplies

392804	Round Bucket (set of 2)
392805	Round Bucket Cover (set of 2)
961648	Round Bucket O-ring (pkg of 8)
360587	Round Bucket Cover Latch Assembly
368148	Bucket Cover Air-Vent Filter (pkg of 60)

Adapters

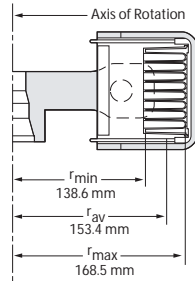
344517 349946 354495 359469 359470 359474 359486



S5700

10 x Microplates

S5700



Swinging-Bucket Rotor, Aluminum

Major applications: DNA sample preparation in microplates, deep-well plates, 96-well filtration kits, and PCR plates.

Max. RPM	Max. <i>g</i>	Number of Plates Volume/Size	Approximate Accel/Decel Time (min:sec)
5 700	6 130	5 x 96-well plates per side	0:47/0:20

For use in the Allegra® 25R centrifuge.

No. 368954. S5700 Swinging Bucket Rotor.

Microplates

No. of Wells	Description	Part No.	Quantity	<i>g</i> -Force	Maximum Speed
96	Multiwell Polystyrene plate	609844	pkg. 100	6 130	5 700
96	Deep-well (1-mL/well) Polystyrene Titer Plates, nonsterile	267001	24/ctn.	6 130	5 700
96	Deep-well (1-mL/well) Polystyrene Titer Plates, sterile	267004	24/ctn.	6 130	5 700
96	Deep-well (1-mL/well) Polypropylene Titer Plates, nonsterile	267006	24/ctn.	6 130	5 700
96	Deep-well (1-mL/well) Polypropylene Titer Plates, sterile	267007	24/ctn.	6 130	5 700
96	Square-well Polypropylene Titer Plates	140504	24/ctn.	6 130	5 700

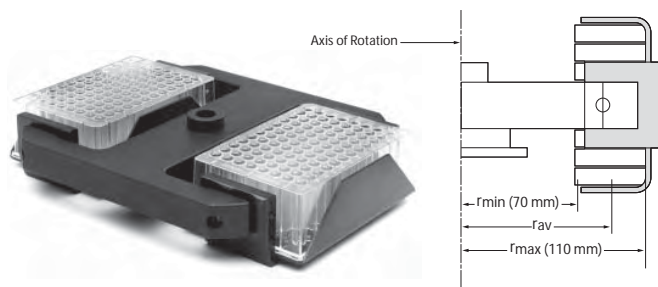
Rotor Replacement Parts

369330	S5700 Buckets (set of 2)
368920	S5700 Microplate Carrier (set of 2)
368245	Tie-down Screw
368246	T-handle Rotor Wrench
368957	Support Pad for Microplates (set of 4)
538618	Rubber Roller, 4 in., for Sealing Foil Microplate Lids

S2096

2 x Microtiter Plates

S2096



Swinging-Bucket Rotor (Unshielded), Anodized Aluminum

Major applications: Serial dilution of small liquid volumes.

Max. RPM	Max. g	Number of Plates Volume/Size	Approximate Accel/Decel Time (min:sec)
3 000	1 107	2 x 96 wells	0:21/0:20

For use in Allegra® X-22 Series and discontinued Allegra 21 Series centrifuges.

1

No. 361111. S2096 Microtiter Rotor Assembly, for 3 000 rpm operation. Unshielded, two-place rotor, designed to accommodate 96-well and deep-well microplates. Racks are available that accommodate 1-mL MiniTubes.

Microplates

No. of Wells	Description	Part No.	Quantity	g-Force	Maximum Speed
96	Microplates	373660	pkg. 100	1 110	3 000
96	Deep-well (1-mL/well) Polystyrene Titer Plates, nonsterile	267001	25/ctn.	1 110	3 000
96	Deep-well (1-mL/well) Polystyrene Titer Plates, sterile	267004	25/ctn.	1 110	3 000
96	Deep-well (1-mL/well) Polypropylene Titer Plates, nonsterile	267006	25/ctn.	1 110	3 000
96	Deep-well (1-mL/well) Polypropylene Titer Plates, sterile	267007	25/ctn.	1 110	3 000
96	Square-well Polypropylene Titer Plates	140504	25/ctn.	1 110	3 000

Accessories for Microplates

No. 267002. Caps for 96-well Deep-well Titer Plates, Nonsterile (10/ctn).

No. 267005. Caps for 96-well Titer Plates, Sterile (10/ctn).

MiniTube Racks, Tubes, and Accessories

No. 265272. MiniTube Rack

No. 265270. MiniTube Test Tubes (1-mL), Polystyrene, Nonsterile (400 strips of 12)

No. 265200. MiniTube Test Tubes (1-mL), Polypropylene, Nonsterile (400 strips of 12)

No. 265201. Caps for MiniTubes, Polyethylene, Nonsterile (80 strips of 12)

No. 265202. Caps for MiniTubes, Polyethylene, Sterile (80 strips of 12)

Rotor Replacement Parts

361367	Tie-down Screw
361371	T-handle Rotor Wrench
361112	Tray (set of 2)

Microcentrifugation

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Microcentrifugation

Microfuge® 16 Microcentrifuge

The Microfuge® 16 is fast and powerful—for optimal pelleting on the bench or in the cold room. Perfect for DNA, RNA, proteins, and virus cell isolation. Its maintenance-free motor spins up to 14 800 rpm (16 163 x g). Easy-to-read interface displays both speed (rpm) and force (rcf). Comes complete with a 24-place, aerosol-tight, autoclavable, fixed angle rotor. A convenient snap-on rotor lid (not aerosol tight) is included as an accessory to the rotor. Select timed, hold, or pulse (short) run times.



Microfuge 16 Microcentrifuge

Specifications

Maximum Speed	14 800 rpm
Maximum g-force	16 163 x g
Maximum capacity	24 x 2.2 mL
Drive Type	Brushless
Time Setting	0–99 minutes, 59 seconds, continuous, pulse (short run)
Accel/Decel Rates*	15 sec accel/13 sec decel to/from max speed
Power Consumption	95 W
Maximum Noise Output	≤ 60 dBa
Dimensions	17.6 cm (6.9 in) H x 26.6 cm (10.5 in) D x 22.6 cm (8.9 in) W
Weight	6.4 kg (14 lb)

* while using the FX241.5P rotor.

Part Numbers

A46472	50/60 Hz, 100/120 V, with FX241.5P rotor
A46471	50/60 Hz, 220/240 V, with FX241.5P rotor
A46474	50/60 Hz, 100/120 V
A46473	50/60 Hz, 220/240 V

Microcentrifugation

Microfuge® 18 Microcentrifuge

The Microfuge® 18 is fast and powerful—for optimal pelleting on the bench or in the cold room. Perfect for DNA, RNA, proteins, and virus cell isolation. Its maintenance-free motor spins up to 14 000 rpm (18 000 x g). Easy-to-read interface displays both speed (rpm) and force (rcf). Comes complete with a 24-place, aerosol-tight, autoclavable, fixed angle rotor. A convenient snap-on rotor lid is available as an accessory to the rotor. Select timed, hold, or pulse (short) run times.

Specifications

Maximum Speed	14 000 rpm
Maximum g-force	18 000 x g
Drive Type	Brushless
Time Setting	0–30 minutes, continuous, pulse (short run)
Accel/Decel Rates	18 sec accel/19 sec decel to/from max speed
Maximum Heat Output	170 Btu/h (50 W)
Maximum Noise Output	≤ 58 dBa
Dimensions	24.0 cm (9.5 in) H x 32.0 cm (12.6 in) D x 24.5 cm (9.7 in) W
Weight	13.0 kg (28.7 lb)



Microfuge 18 Microcentrifuge

Part Numbers

367160	50/60 Hz, 100/120 V, with F241.5P rotor
367161	50 Hz, 230 V, with F241.5P rotor

Microcentrifugation

Microfuge® 22R Microcentrifuge

The Microfuge® 22R refrigerated microcentrifuge offers high *g*-force (21 920 x *g*) for optimal pelleting. Its maintenance-free motor spins up to 14 000 rpm and maintains 4°C at maximum speed to protect precious samples. Perfect for DNA, RNA, proteins, and virus cell isolation. Available with six interchangeable rotors, all of which feature aerosol-tight lids to minimize contamination from broken or leaking tubes. Convenient snap-on rotor lids are available as accessories to the F241.5, F241.5P, and F40.25 rotors. All rotors are also autoclavable at 121°C. Easy-to-use control knobs and easy-to-read display.

Specifications

Maximum Speed	14 000 rpm
Maximum <i>g</i> -force	21 920 x <i>g</i>
Drive Type	Brushless induction
Time Setting	0–30 minutes, continuous, pulse (short run)
Accel/Decel Rates	18 sec accel/19 sec decel to/from max speed
Maximum Heat Output	2 150 Btu/h (630 W)
Maximum Noise Output	≤ 58 dBa
Dimensions	36.5 cm (14.4 in) H x 58.5 cm (23.0 in) D x 30.0 cm (11.8 in) W
Weight	41.0 kg (90.4 lb)






Microfuge 22R

Part Numbers

368826	60 Hz, 120 V
368827	50 Hz, 230 V
368828	50/60 Hz, 100 V
368830	60 Hz, 120 V with F241.5P rotor
368831	50 Hz, 230 V with F241.5P rotor
368832	50/60 Hz, 100 V with F241.5P rotor
A47877	60 Hz, 120 V with F301.5 rotor
A52953	50 Hz, 230 V with F301.5 rotor
A52954	50/60 Hz, 100 V with F301.5 rotor

Microcentrifugation

Microfuge® Centrifuges Rotor Summary

Rotor Type	Part Number	Maximum Speed (rpm)	Maximum Force (g) at r_{max}	Number Tubes/Bottles and Size (diameter x length) mm / in.	Rotor Capacity (mL)	Approx. Accel. Time* (min:sec)	Rotor Angle	Biosafe	Microfuge® 16	Microfuge® 18	Microfuge 22R
Fixed-Angle Rotors											
F241.5	365630	15 300	20 940	24 x 1.8 11 x 39 0.44 x 1.5	43.2	0:19	45°	Yes 			•
Pellet subcellular organelles, DNA, viruses, bacteria, or chloroplasts.											
F241.5P	367187	14 000	17 970	24 x 1.8 11 x 39 0.44 x 1.5	43.2	0:18	45°	No		•	•
Pellet subcellular organelles, nucleic acids, viruses, bacteria, or chloroplasts.											
F301.5	368894	14 000	21 920	30 x 2.2 11 x 39 0.44 x 1.8	66	0:40	45°	Yes 			•
Pellet subcellular organelles, viruses, bacteria, chloroplasts, mitochondria, or algae.											
F40.25	368898	14 000	17 500	40 x 0.25/0.45 7 x 40 0.25 x 1.5	18.0	0:19	30°	Yes 			•
Pellet subcellular organelles, DNA, viruses, bacteria, or chloroplasts.											
F12x8.2	369534	14 000	20 800/19 590 [†] 20 070/18 820 [‡]	12 x 8 (200 µL) PCR strip	19.2	0:38	45°	No		•	
Minimize post-PCR condensation, post-reaction cleanup.											
FX121.5P	A46476	14 800	15 183	12 x 1.5/2.2 11 x 40 0.44 x 1.6	26.4	0:13	45°	No	•		
Pelletting subcellular organelles, mitochondria, viruses, bacteria, chloroplasts, or algae.											
FX241.5P	A46475	14 800	16 163	24 x 1.5/2.2 11 x 40 0.44 x 1.6	52.8	0:15	32°/37°	No	•		
Pelletting subcellular organelles, mitochondria, viruses, bacteria, chloroplasts, or algae.											
Swinging Bucket Rotor											
S241.5	368882	14 000	16 220	24 x 2.2 11 x 45 0.44 x 1.8	52.8	0:30	90°	No			•
Pellet subcellular organelles, viruses, bacteria, chloroplasts, mitochondria, or algae.											

* To maximum speed, rotor fully loaded.

[†] Tubes 1 and 8: outer/inner.

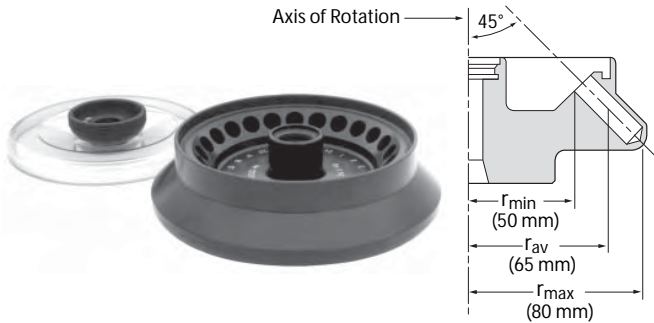
[‡] Tubes 4 and 5: outer/inner.

F241.5

Biosafety*

24 x 2.2 mL

F241.5



Fixed Angle Rotor, Aluminum

Major applications: Pelleting subcellular organelles, DNA, viruses, bacteria, or chloroplasts.

Max. RPM	Max. g	Number of Tubes Volume/Size	Approximate Accel/Decel Time (min:sec)
15 300	20 940	24 x 1.8 mL 11 x 39 mm 0.44 x 1.5 in	0:19/0:23

For use in the Microfuge® 22R microcentrifuge.

No. 365630. F241.5 Biosafety Rotor Assembly. Transparent high-impact plastic lid.

Tubes

Tube Style/Material	Nominal Volume per Tube (mL)	Part No.	Quantity	Size (mm)	Required Adapter	Tubes per Adapter	g-Force	k Factor	Maximum Speed
Polyallomer	Natural, Attached cap	357448	500	11 x 38	---	1	20 937	509	15 300
Polyethylene	Heparin-Lithium-Fluoride Coated	652821	1000	5 x 45	361247	1	---	---	11 500
	Heparin-Lithium Coated	652822	1000	5 x 45	361247	1	---	---	11 500
	Plain	652823	1000	5 x 45	361247	1	---	---	11 500
	Heparin-Lithium-Fluoride Coated	652824	1000	7 x 40	361247	1	---	---	11 500
	Heparin-Lithium Coated	652825	1000	7 x 40	361247	1	---	---	11 500
	Plain	314326	1000	7 x 40	361247	1	---	---	11 500
Polypropylene	Attached cap	340196	500	11 x 45	---	1	8 960	1 190	10 000
	Natural, Separate Cap	342867	1000	7 x 40	361247	1	---	---	11 500
		343169	500	11 x 38	---	1	20 937	509	15 300

* With high-impact lid.

Rotor Replacement Parts

- 369549 Convenient Snap-on Lid
- 365629 Rotor Lid Assembly
- 366746 Rotor Lid Knob
- 368990 O-ring
- 365806 Tie-down Screw
- 365636 T-handle Rotor Wrench

Adapters

361247

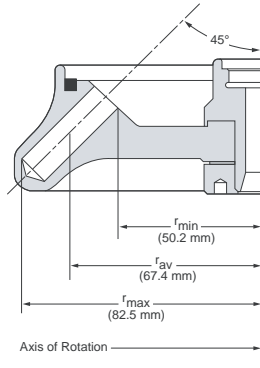


2

F241.5P

24 x 1.8 mL

F241.5P



Fixed Angle Rotor, High-Impact Thermoplastic

Major applications: Pelleting subcellular organelles, nucleic acids, viruses, bacteria, or chloroplasts.

Max. RPM	Max. <i>g</i>	Number of Tubes Volume/Size	Approximate Accel/Decel Time (min:sec)
14 000	17 970	24 x 1.8 mL 11 x 39 mm 0.44 x 1.5 in	0:18/0:19

For use in Microfuge® 16, 18, and 22R microcentrifuges.

No. 367187. F241.5P Rotor Assembly. Rotor is made of high-impact thermoplastic and snap-on lid is polycarbonate.

Tubes

Tube Style/Material	Nominal Volume per Tube (mL)	Part No.	Quantity	Size (mm)	Required Adapters	Tubes per Adapter	<i>g</i> -Force	<i>k</i> Factor	Maximum Speed
Polyallomer Natural	1.5	357448	500	11 x 38	-----	-----	17 600	607	14 000
Polyethylene	250 µL	652821	1000	5 x 45	361247	1	-----	-----	11 500
	250 µL	652822	1000	5 x 45	361247	1	-----	-----	11 500
	250 µL	652823	1000	5 x 45	361247	1	-----	-----	11 500
	400 µL	652824	1000	7 x 40	361247	1	-----	-----	11 500
	400 µL	652825	1000	7 x 40	361247	1	-----	-----	11 500
	400 µL	314326	1000	7 x 40	361247	1	-----	-----	11 500
Polypropylene Natural	1.8	340196	500	11 x 39	-----	-----	8 960	1 190	10 000
	400 µL	342867	1000	7 x 40	361247	1	-----	-----	11 500
	1.5	343169	500	11 x 38	-----	-----	17 600	607	14 000

Rotor Replacement Parts

- 369547 Convenient Snap-on Lid
- 367207 Aeroseal-tight Lid
- 365969 Tie-down Screw
- 365636 T-handle Rotor Wrench
- 369554 Tie-down Screw for Snap-on Cap
- 367182 Rubber Seal, Lid

Adapters

361247

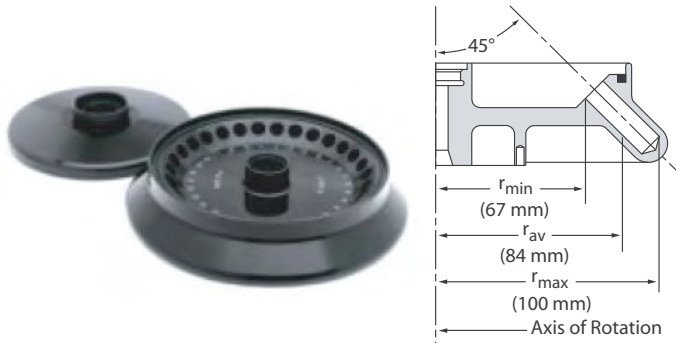


F301.5

Biosafety

30 x 2.2 mL

F301.5



Fixed Angle Rotor, Aluminum

Major applications: Pelleting subcellular organelles, viruses, bacteria, mitochondria, chloroplasts, or algae.

Max. RPM	Max. <i>g</i>	Number of Tubes Volume/Size	Approximate Accel/Decel Time (min:sec)
14 000	21 920	30 x 2.2 mL 11 x 45 mm 0.44 x 1.8 in.	0:40/0:38

For use in the Microfuge® 22R microcentrifuge.

No. 368894. F301.5 Biosafety Rotor Assembly.

Tubes

Tube Style/Material	Nominal Volume per Tube (mL)	Part No.	Quantity	Size (mm)	Required Adapter	Tubes per Adapter	<i>g</i> -Force	<i>k</i> Factor	Maximum Speed	
Polyallomer Natural, Attached cap	1.5	357448	500	11 x 38	364701*	1	---	---	14 000	
Polyethylene	Heparin-Lithium-Fluoride Coated	250 µL	652821	1000	5 x 45	361247	1	---	---	11 500
	Heparin-Lithium Coated	250 µL	652822	1000	5 x 45	361247	1	---	---	11 500
	Plain	250 µL	652823	1000	5 x 45	361247	1	---	---	11 500
	Heparin-Lithium-Fluoride Coated	400 µL	652824	1000	7 x 40	361247	1	---	---	11 500
	Heparin-Lithium Coated	400 µL	652825	1000	7 x 40	361247	1	---	---	11 500
	Plain	400 µL	314326	1000	7 x 40	361247	1	---	---	11 500
Polypropylene	1.8	340196	500	11 x 45	364701*	1	---	---	10 000	
Polypropylene Natural, Separate Cap	1.5	343169	500	11 x 38	364701*	1	---	---	14 000	
500- to 750-µL Tubes†	500 µL/ 700 µL	---	---		364690	1	---	---	11 500	

* No adapter is required with this tube; however, adapter 364701 (pkg. of 12) can be used.

† Commercially available.

Rotor Replacement Parts

- 368895 Rotor Lid Assembly
- 368896 Lid O-ring
- 368991 Rotor O-ring
- 365806 Tie-down Screw
- 365636 T-handle Rotor Wrench

Adapters

361247 364701



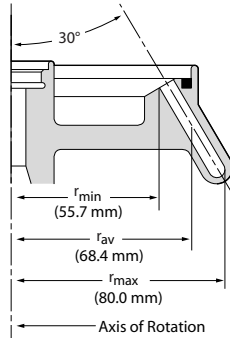
2

F40.25

Biosafety

40 x 0.25/0.40 mL

F40.25



Fixed Angle Rotor, Aluminum

Major applications: Pelleting subcellular organelles, viruses, bacteria, mitochondria, chloroplasts, or algae.

Max. RPM	Max. <i>g</i>	Number of Tubes Volume/Size	Approximate Accel/Decel Time (min:sec)
14 000	17 500	40 x 0.40 mL 7 x 40 mm 0.25 x 1.5 in.	0:40/0:38

For use in the Microfuge® 22R microcentrifuge.

No. 368898. F40.25 Biosafety Rotor Assembly.

Tubes

Tube Style/Material	Nominal Volume per Tube (mL)	Part No.	Quantity	Size (mm)	Required Adapters	Tubes per Adapter	<i>g</i> -Force	<i>k</i> Factor	Maximum Speed
Polyethylene	250 µL	652821	1000	5 x 45	361247	1	---	---	11 500
	250 µL	652822	1000	5 x 45	361247	1	---	---	11 500
	250 µL	652823	1000	5 x 45	361247	1	---	---	11 500
	400 µL	652824	1000	7 x 40	361247	1	---	---	11 500
	400 µL	652825	1000	7 x 40	361247	1	---	---	11 500
	400 µL	314326	1000	7 x 40	361247	1	---	---	11 500

Rotor Replacement Parts

- 369549 Convenient Snap-on Lid
- 368899 Rotor Lid Assembly
- 368896 Lid O-ring
- 368990 Rotor O-ring
- 365806 Tie-down Screw
- 365636 T-handle Rotor Wrench

Adapters

361247

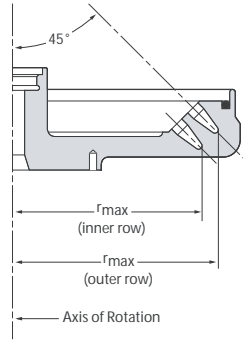


2

F12x8.2

12 x 8 Strips of 200 µL tubes

F12x8.2



Fixed Angle Rotor, Aluminum

Major applications: Minimizing post-PCR* condensation, post-reaction clean-up.

Max. RPM	Max. <i>g</i>	Number of Tubes Volume/Size	Approximate Accel/Decel Time (min:sec)
14 000	20 800 (outer row) 19 590 (inner row)	12 x 8 Strips 200 µL	0:38/0:35

For use in the Microfuge® 22R microcentrifuge.

No. 369534. F12x8.2 Rotor Assembly.

Tubes

Tube Style/Material	Nominal Volume per Tube (mL)	Part No.	Quantity	Size (mm)	Required Adapters	Tubes per Adapter	<i>g</i> -Force	<i>k</i> Factor	Maximum Speed
PCR Tubes	200 µL	†	---	---	---	---	---	---	14 000

* PCR is covered by patents owned by F. Hoffman-La Roche, Inc.

† Commercially available.

Rotor Replacement Parts

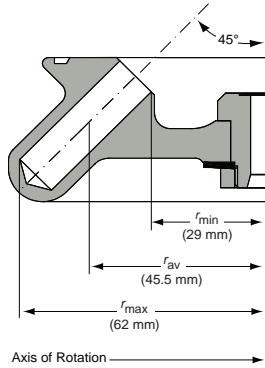
- 369535 Rotor Lid Assembly
- 368896 Rotor O-ring
- 369537 Lid O-ring
- 365806 Tie-down Screw
- 365636 T-handle Rotor Wrench

2

FX121.5P

12 x 1.5/2.2 mL

FX121.5P



Fixed Angle Rotor, High-Impact Thermoplastic

Major applications: Pelleting subcellular organelles, mitochondria, viruses, bacteria, chloroplasts, or algae.

Max. RPM	Max. <i>g</i>	Number of Tubes Volume/Size	Approximate Accel/Decel Time (min:sec)
14 800	15 183	12 x 1.5/2.2 mL 11 x 40 mm 0.44 x 1.6 in	0:13:0:11

For use in Microfuge® 16

No. A46476. FX121.5P Rotor Assembly. Rotor is made of high-impact thermoplastic and snap-on lid is polysulfone.

Tubes

Tube Style/Material	Nominal Volume per Tube (mL)	Part No.	Quantity	Size (mm)	Required Adapters	Tubes per Adapter	<i>g</i> -Force	<i>k</i> Factor	Maximum Speed
Polyallomer Natural	1.5	357448	500	11 x 40	-----	-----	15 183	-----	14 800
Polyethylene	250 µL	652821	1000	5 x 45	361247	1	-----	-----	11 500
	250 µL	652822	1000	5 x 45	361247	1	-----	-----	11 500
	250 µL	652823	1000	5 x 45	361247	1	-----	-----	11 500
	400 µL	652824	1000	7 x 40	361247	1	-----	-----	11 500
	400 µL	652825	1000	7 x 40	361247	1	-----	-----	11 500
	400 µL	314326	1000	7 x 40	361247	1	-----	-----	11 500
	1.8	340196	500	11 x 40	-----	-----	8 960	1 190	10 000
Polypropylene	1.5	343169	500	11 x 40	-----	-----	15 183	-----	14 800
PCR Tubes	200 µL	†	---	---	392294	---	---	---	14 800
	500/600/750 µL	†	---	---	364690	---	---	---	14 800

* PCR is covered by patents owned by F. Hoffman-La Roche, Inc.
† Commercially available.

Rotor Replacement Parts

A46477 Convenient Polysulfone Snap-on Lid

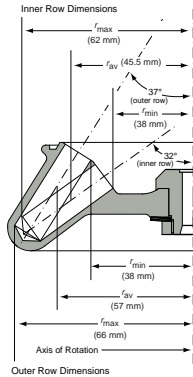
Adapters



FX241.5P

24 x 1.5/2.2 mL

FX241.5P



Fixed Angle Rotor, High-Impact Thermoplastic

Major applications: Pelleting subcellular organelles, mitochondria, viruses, bacteria, chloroplasts, or algae.

Max. RPM	Max. <i>g</i>	Number of Tubes Volume/Size	Approximate Accel/Decel Time (min:sec)
14 800	16 163	24 x 1.5/2.2 mL 11 x 40 mm 0.44 x 1.6 in	0:15/0:13

For use in Microfuge® 16

No. A46475. FX241.5P Rotor Assembly. Rotor is made of high-impact thermoplastic and snap-on lid is polysulfone.

Tubes

Tube Style/Material	Nominal Volume per Tube (mL)	Part No.	Quantity	Size (mm)	Required Adapters	Tubes per Adapter	<i>g</i> -Force	<i>k</i> Factor	Maximum Speed
Polyallomer Natural	1.5	357448	500	11 x 40	-----	-----	15 183	-----	14 800
Polyethylene	250 µL	652821	1000	5 x 45	361247	1	-----	-----	11 500
	250 µL	652822	1000	5 x 45	361247	1	-----	-----	11 500
	250 µL	652823	1000	5 x 45	361247	1	-----	-----	11 500
	400 µL	652824	1000	7 x 40	361247	1	-----	-----	11 500
	400 µL	652825	1000	7 x 40	361247	1	-----	-----	11 500
	400 µL	314326	1000	7 x 40	361247	1	-----	-----	11 500
	1.8	340196	500	11 x 40	-----	-----	8 960	1 190	10 000
Polypropylene	1.5	343169	500	11 x 40	-----	-----	15 183	-----	14 800
PCR Tubes	200 µL	†	---	---	392294	---	---	---	14 800
	500/600/750 µL	†	---	---	364690	---	---	---	14 800

* PCR is covered by patents owned by F. Hoffman-La Roche, Inc.
† Commercially available.

Rotor Replacement Parts

A46477 Convenient Polysulfone Snap-on Lid

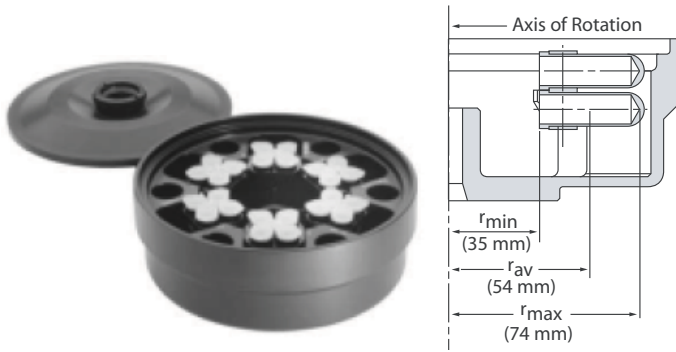
Adapters



S241.5

24 x 2.2 mL

S241.5



Swinging Bucket Rotor, Aluminum

Major applications: Pelleting subcellular organelles, viruses, bacteria, mitochondria, chloroplasts, or algae.

Max. RPM	Max. g	Number of Tubes Volume/Size	Approximate Accel/Decel Time (min:sec)
14 000	16 220	24 x 2.2 mL 11 x 45 mm 0.44 x 1.8 in.	0:30/0:33

For use in the Microfuge® 22R microcentrifuge.

No. 368882. S241.5 Rotor Assembly.

Tubes and Bottles

Tube Style/Material	Nominal Volume per Tube (mL)	Part No.	Quantity	Size (mm)	Required Adapters	Tubes per Adapter	g-Force	k Factor	Maximum Speed
Polyallomer Natural	1.5	357448	500	11 x 38	364701	1	---	---	14 000
Polyethylene	250 µL	652821	1000	5 x 45	361247	1	---	---	11 500
	250 µL	652822	1000	5 x 45	361247	1	---	---	11 500
	250 µL	652823	1000	5 x 45	361247	1	---	---	11 500
	400 µL	652824	1000	7 x 40	361247	1	---	---	11 500
	400 µL	652825	1000	7 x 40	361247	1	---	---	11 500
	400 µL	314326	1000	7 x 40	361247	1	---	---	11 500
	1.8	340196	500	11 x 45	364701	1	---	---	10 000
Polypropylene Natural	1.5	343169	500	11 x 38	364701	1	---	---	14 000
500- to 750-µL Tubes	500 µL/ 700 µL	---	---		364690	1	---	---	11 500

Rotor Replacement Parts

- 368883 Rotor Lid Assembly
- 368888 O-ring
- 368887 Bucket (set of 2)
- 365806 Tie-down Screw
- 365636 T-handle Rotor Wrench

Adapters

361247 364701



2

Tubes and Bottles

Tubes and Bottles for Every Application

No single tube design or material will meet all application requirements. A number of factors should be considered when a supply of tubes is ordered: the particular technique to be used, the nature of the sample and any solvent or gradient media, the desirability of reusing the tubes, and certain convenience factors. The properties listed below provide a guide for anyone involved in the tube selection process.

- **Strength and Flexibility**, to resist permanent deformation even when run in fixed angle rotors without tube caps
- **Chemical Resistance** to a wide range of bases, acids, and solvents
- **Transparency**, to permit a clear view of fractions and bands after centrifugation
- **Thin** enough to be sliced or punctured after centrifugation for fraction collection
- **Impermeable to Water**, to prevent aqueous solutions from permeating the tube wall and reaching the rotor cavity
- **Surface Properties** that prevent the adherence of nucleic acids and proteins
- **Temperature Tolerance** throughout a wide range of operating temperatures, without deforming at high temperatures or cracking when used close to 0°C
- **Autoclavable**, for convenient sterilization and reuse
- **Contaminant-free**, to avoid leaching extraneous materials into the sample, especially materials visible in the sensitive 240-280 nm range
- **Odor-free**, for pleasant handling

The full line of Beckman Coulter tubes includes a number of tube materials, each with its own distinct combination of properties to meet a variety of application requirements. Available are transparent, translucent, and opaque tubes; tubes that can be sliced or punctured; tubes that can be sterilized and reused; and tubes that are resistant to a variety of chemical compounds.

Tubes and Bottles

Tube Selection Considerations

Compatibility of Tube Material with Solvents and Sample

The chemical compatibility of the tube materials with the gradient-forming medium or other solvent is a prime consideration. Neutral sucrose and salt solutions cause no problem. But alkaline solutions, such as those frequently used for the separation of single-stranded forms of DNA, cannot be used in Ultra-Clear™ tubes or polycarbonate tubes and bottles. Sometimes DMSO is used in preparation of sucrose gradients for sedimentation of denatured RNA. Polycarbonate and Ultra-Clear tubes are incompatible with DMSO, so polyallomer tubes should be used.

The last column of the “Quick Reference Chart to Tube Materials and Their Properties” on page 3-4 gives some guidelines to the chemical resistances of the various tube materials. It must be emphasized, however, that other conditions of centrifugation (*g*-force, duration of run, etc.) have considerable effect on how well a tube material will withstand a particular solvent. Beckman Coulter publication IN-175, “Chemical Resistances for Beckman Coulter Centrifugation Products” (found on the Beckman Coulter web site at <http://www.beckman.com/resourcecenter/labresources/centrifuges/chemres.asp>) provides more detailed information about the chemical resistances of the various tube materials. The wisest course is to test any questionable combination under operating conditions before making the actual run.

The type of sample, in some cases, will affect selection of a specific tube material. DNA, in its denatured or single-stranded form, will adhere to the surface of some tube materials. Polyallomer would be the best choice. (Most of this work is done in highly alkaline media which are incompatible with polycarbonate.)

Lipoprotein separations are most often done in Ultra-Clear tubes because they are clear and sliceable; these properties simplify fraction location and recovery by tube slicing. When small lipoprotein samples are to be recovered by a fractionating device and clear tubes are desirable, there are alternatives: cellulose propionate, polycarbonate, and Ultra-Clear tubes.

Hazardous materials, either pathogenic or radioactive, should be centrifuged with extreme care. All possible precautions must be taken to avoid leakage of the sample into the rotor cavity during centrifugation.

To determine the optimum tube material for your specific sample and gradient medium, refer to the quick reference chart on page 3-4.

Gradient Formation and Fractionation

When choosing a tube for a density gradient run, some thought should be given to gradient formation and fractionation. If the bands or zones formed during centrifugation are indistinct, they may not be visible through a translucent material such as polyallomer. If optimum band visualization is important, Ultra-Clear tubes or tubes of polycarbonate or cellulose propionate should be used. Whenever collection of bands or zones must be

done by puncturing the tube or slicing, a thin, flexible tube wall is required. Ultra-Clear or polyallomer tubes should be used, depending on the need for transparency.

As there are currently no wetttable plastic centrifuge tubes available, gradients should be loaded into plastic tubes from the bottom up to avoid mixing.

High Temperature Centrifugation

Although modern centrifuges and rotors can operate at temperatures as high as 45°C, one cannot assume that every tube can be safely run over 25°C. Stainless steel and glass are the only materials which will not experience some deformation when subjected to high temperatures and long centrifugation times. Plastic tubes undergo some degree of softening at temperatures higher than 25°C. Whether or not this will cause permanent deformation is not a question of temperature alone. The centrifugal force field used, the duration of the centrifugation, the type of rotor, and even the tube angle all have an effect.

It's obviously impossible to give exact temperature limits for plastic tubes when so many other variables are involved. The safest policy is to pretest the tubes under the actual experimental conditions, but with water, rather than a valuable sample.

Tube Sizes

Tube sizes as indicated in the following charts are nominal sizes, and may vary somewhat from actual filling capacities. If a thickwall tube is run uncapped, the maximum filling volume will depend on the tube angle of the rotor to be used. See appropriate rotor instruction manuals for maximum filling levels of tubes.

Tube Cleaning, Sterilization, and Reuse

If tubes are to be reused, special care must be taken during cleaning and sterilization. All tubes can be washed by hand with a mild detergent such as Solution 555™ diluted 5-to-1 or 10-to-1 with water. This is particularly important for polycarbonate tubes and bottles which should not be exposed to a detergent with a pH higher than 8. Tubes and bottles should not be washed in commercial dishwashers as the detergents and high temperatures are too harsh. Solvents such as alcohol or acetone react unfavorably with many tube materials. If an organic solvent must be used in the cleaning procedure, consult bulletin IN-175 for a table of tube material/solvent compatibilities (or review the same document on the Beckman Coulter web site at <http://www.beckman.com/resourcecenter/labresources/centrifuges/chemres.asp>).

The method chosen for sterilization has direct bearing on the number of reuses one can expect from a tube. Tubes and bottles of polyallomer, polyethylene, and glass can all be autoclaved, although in general, cold sterilization methods are not as harsh as autoclaving. Cold sterilization is recommended for both polycarbonate and Ultra-Clear.

Tubes and Bottles

If maximum reuse is a major consideration, either polyallomer (preferably thickwall) or polycarbonate tubes and bottles should be selected, and cold sterilization methods used. If these tubes are run completely filled in swinging bucket rotors, most of them can be reused a number of times. Chances of permanent deformation will be greater whenever the tubes are run in fixed angle rotors, without caps, and/or partially filled. All of these conditions tend to stress the centripetal edge of the tube unduly. All tubes that have been used or autoclaved previously must be individually examined for signs of deformation or cracking before using them again.

Tube Closures

When other considerations have been resolved, convenience may be a deciding factor. Without a doubt, the most convenient tube closure is none at all; none are required for tubes run in swinging bucket rotors.

For tubes run in fixed angle rotors, alternatives to the standard tube cap assemblies are available. Bottles have three-piece cap assemblies which are easier to use than the more complex tube cap assemblies. Polycarbonate bottles are available for general-purpose fixed angle rotors, and are used frequently for differential centrifugation where band recovery is not a problem. Thickwall tubes can be run in all fixed angle rotors without caps, provided they are partially filled. (Refer to rotor manuals for more information on fill volumes.)

When closed tubes are required, Beckman Coulter offers some innovative and convenient options.

Tubes and Bottles

A Quick-Reference Chart to Tube Materials and Their Properties

Property	Thinwall Polyallomer	Thickwall Polyallomer	Ultra-Clear™	Polycarbonate	Polypropylene	Polyethylene	Cellulose Propionate
Optical	transparent	translucent	transparent	transparent	transparent	transparent/translucent	transparent
Autoclaveable	yes	yes	no	no	yes	no	no
Puncturable	yes	no	yes	no	no	yes	no
Sliceable	yes	no*	yes	no*	no	no	no*
Reusable	no	yes	no	yes	yes	yes	no
Acids (dilute or weak)	S	S	S	S	S	S	S
Acids (strong)	U	S	U	U	S	S	U
Alcohols (aliphatic)	U	S	U	U	S	S	U
Aldehydes	M	M	S	M	M	S	U
Bases	S	S	U	U	S	S	U
Esters	U	M	U	U	M	S	M
Hydrocarbons (aliphatic)	U	M	U	U	S	U	S
Hydrocarbons (aromatic and halogenated)	U	U	U	U	M	M	S
Ketones	U	M	U	U	M	M	U
Oxidizing Agents (strong)	U	U	U	M	M	M	M
Salts	S	S	M	M	S	S	S

S = satisfactory resistance M = marginal resistance U = unsatisfactory resistance

* Polyallomer, polycarbonate, and cellulose propionate tubes with diameters of 5 to 13 mm may be sliced using the CentriTube Slicer (part number 347960) and appropriate adapter plate.

Note: This information has been consolidated from a number of sources and is provided only as a guide to the selection of tube materials. Soak tests at 1 g (at 20°C) established the data for most of the materials; reactions may vary under the stress of centrifugation, or with extended contact or temperature variations. To prevent failure and loss of valuable sample, ALWAYS TEST SOLUTIONS UNDER OPERATING CONDITIONS BEFORE USE.

Warning: Do not use flammable substances in or near an operating centrifuge.

Tubes and Bottles

General Filling and Sealing Requirements for Tubes and Bottles

	Tube or Bottle	Swinging-Bucket Rotors	Fixed-Angle Rotors
Polyallomer	Thinwall tubes Thickwall tubes Quick-Seal tubes Bottles	Within 2 to 3 mm of top At least 1/2 full Full and heat-sealed Min. to max. (see rotor manual) with screw-on cap or cap assembly	Full with cap 1/2 full to max. capless level or full with cap Full and heat-sealed 1/2 full to max. (see rotor manual) with screw-on cap or cap assembly
Ultra-Clear	Open-top tubes Quick-Seal tubes	Within 2 to 3 mm of top Not used	Full with cap Full and heat-sealed
Polycarbonate	Thickwall tubes Bottles	At least 1/2 full At least 1/2 full	1/2 full capless level or full with cap or cap assembly Min. to max. (see rotor manual) with screw-on cap or cap assembly
Stainless Steel	Tubes	Any level	Any level with cap or cap assembly
Polypropylene	Tubes and bottles	At least 1/2 full	1/2 to max. capless level or full with cap or cap assembly
Polyethylene	Tubes	At least 1/2 full	1/2 to max. capless level or full with cap or cap assembly
Teflon	Tubes and bottles	At least 1/2 full	1/2 full to max. capless level or full with cap

Tubes and Bottles

Bottles Used in Benchtop Centrifuges

Nominal Capacity	Size mm	Material	Bottle & Cap Assy	Bottle with Screw Cap	Bottle Only	Insert Only	O-ring	Screw Cap Only
10 mL	16 x 80	PC	N.A.	355672	N.A.	N.A.	N.A.	N.A.
10 mL	16.1 x 81.1	PA	N.A.	364695	N.A.	N.A.	N.A.	N.A.
10 mL	16.1 x 81.1	T	N.A.	364693	N.A.	N.A.	N.A.	N.A.
26.3 mL	25 x 89	PC	355616	N.A.	340382	335258	870385	335259
30 mL	25.3 x 92	PA	363073	N.A.	N.A.	N.A.	N.A.	N.A.
30 mL	25.3 x 92	PC	N.A.	363070	N.A.	N.A.	N.A.	N.A.
40 mL	29 x 104	PC	N.A.	355628	N.A.	N.A.	N.A.	N.A.
50 mL	28.5 x 107	T*	N.A.	363076	N.A.	N.A.	N.A.	N.A.
50 mL	29 x 104	PA	357001 361694	357003	N.A.	358627	870655	356284
50 mL	29 x 104	PC	357000 361693	357002	N.A.	358627	961582	N.A.
70 mL	38 x 102	PC	355620	N.A.	355655	334545	870384	334547
85 mL	38 x 104	PC	363081	364718	N.A.	N.A.	N.A.	N.A.
85 mL	38 x 104	PP	N.A.	364719 363082	N.A. N.A.	N.A. N.A.	N.A. N.A.	N.A. N.A.
100 mL	38 x 102	PP	355624	N.A.	355626	N.A.	889633	355615
250 mL	62 x 120	W PC	356013	N.A.	358275	N.A.	927860	358977
250 mL	62 x 122	W PP	356011 358275 358326	N.A.	358326	N.A.	927860	358977
250 mL round-bottom	62 x 136	PC	N.A.	355673	N.A.	N.A.	N.A.	356261
500 mL	69 x 160	PC	355649	N.A.	339245	N.A.	N.A.	N.A.
500 mL	69 x 160	PP	355607	N.A.	355650	334419	870411	356260
500 mL	69 x 160	W PP	N.A.	355665	N.A.	N.A.	N.A.	N.A.
500 mL	85 x 135	PC	N.A.	368454	N.A.	N.A.	N.A.	N.A.
500 mL	85 x 135	PP	N.A.	368453	N.A.	N.A.	N.A.	N.A.
750 mL	96 x 130	PC	N.A.	358299	358297	N.A.	N.A.	344693
750 mL	96 x 130	PP	N.A.	356855	349815	N.A.	N.A.	344693

PA = Polyallomer PC = Polycarbonate PE = Polyethylene PP = Polypropylene T = Teflon C = Conical W = Wide-Mouth N.A. = Not Available

* With high-speed screw cap.

† With special cap.

Tubes and Bottles

Adapters for Non-Beckman Coulter Tubes/Bottles*

Rotor	Tube Vol.	Size (mm)	# of Places	Part Number
SX4250	0.5 mL	7 x 19 mm	24	368471
	5 mL	12 x 75 mm	25	392263
	5 mL	Hemolyse/RIA	16	368467
	5 mL	13 x 75 mm	16	368467
	7 mL	12 x 100 mm	16	368469
	10 mL	16 x 100 mm	12	368465
	10 mL	17 mm	12	368465
	10 mL	16.1 x 81.1 mm	12	368468
	10/15 mL	17 x 110 mm	12	368465
	15 mL	16 x 125 mm	12	368467
	15 mL	17 x 120 mm	5	392257
	25 mL	24 x 100 mm	5	368463
	50 mL	28.5 x 100 mm	5	368463
	50 mL	28.5 x 107 mm	4	368477
	50 mL	28.5 x 100 mm	3	392258
	50 mL	34 x 100 mm	3	392265
	85/94 mL	38 x 112 mm	1	392261
	80/100 mL	44 x 100 mm	1	368459
	125 mL	50.5 x 99 mm	1	368458
	180 mL	56.5 x 99 mm	1	368457
250 mL	61.8 x 125 mm	1	392256	
FX6100	Conical 15 mL	17 x 100 mm	1	392270
	30 mL		1	392822
	35 mL		1	392821
	Conical 50 mL	28.5 x 120 mm	1	392268
FX301.5	500-700 µL		1	364690
H6002	600 µL		12	345526
				345522
SX241.5	500-700 µL		1	364690
S241.5	500-700 µL		1	364690
F301.5	500-700 µL		1	364690

3

Adapters for Glass Tubes in Beckman Coulter Rotors*

Rotor	Tube Volume	Tube Material	Adapter Part Number
SX4250	80/100 mL	Glass	368459
	50 mL	Glass	392258
	25 mL	Glass with Open-top or Screw-on Cap	398463
	7 mL	Glass	368469

* Check with tube manufacturer for maximum allowable g-force.

† Correx and Pyrex are registered trademarks of Corning Glass Works, Inc.

Tubes and Bottles

Tubes and Bottles Used in Benchtop Centrifuges and Microcentrifuges

Nominal Filling Capacity (mL)	Nominal Size (mm)	Inches	Part No.	Rotors
Open-Top Tubes, Polyallomer, Thickwall*				
10.0	16 x 64	0.65 x 2.5	355646	F1010, S0410
10.0	16 x 76	0.65 x 3.0	355640	F1010, SX4750, SX4750A, S0410, TS-5.1-500, FX6100
32.0	25 x 89	1.0 x 3.5	355642	F0630
81.0	38 x 102	1.5 x 4.0	355643	F0485, F0685, FX6100
Open-Top Tubes, Polycarbonate, Thickwall*				
6.5	16 x 64	0.65 x 2.5	355647	F1010, S0410, TS-5.1-500
10.0	16 x 76	0.65 x 3.0	355630	F1010, SX4750, SX4750A, S0410, TS-5.1-500, FX6100
15.0	18 x 100	0.725 x 4.0	342080	SX4750, SX4750A, FX6100
50.0	29 x 104	1.125 x 4	363647	F0485, F0650, F0850, F0685, SX4750, SX4750A, TA-14-50, TA-10-250, FX6100
50.0	29 x 104	1.25 x 4	363075 (conical, grad.)	F0650, F0850, SX4750, SX4750A, FX6100, TA-14-50
81.0	38 x 102	1.5 x 4.0	355628	F0485, F0685, FX6100
Open-Top Tubes, Polyallomer				
34.0	25 x 76	1.0 x 3.0	326825	F0630
94.0	38 x 102	1.5 x 4.0	345775	F0485, F0685
Open-Top Tubes, Polyethylene, Plain				
0.25	5 x 45	0.2 x 1.8	652823	F1202, F2402H, F241.5, F241.5P, F301.5, F3602, F40.25, FX301.5, H6002, S241.5, SX241.5, TA-15-1.5
0.40	7 x 40	0.25 x 1.5	314326	F1202, F2402H, F241.5, F241.5P, F301.5, F3602, F40.25, FX301.5, H6002, S241.5, SX241.5, TA-15-1.5
15.0	18 x 100	0.725 x 4.0	342081	SX4750, SX4750A, FX6100
Open-Top Tubes, Polyethylene, Heparin/Lithium Coated				
0.25	5 x 45	0.2 x 1.8	652822	F1202, F2402H, F241.5, F241.5P, F301.5, F3602, F40.25, FX301.5, H6002, S241.5, SX241.5, TA-15-1.5
0.40	7 x 40	0.25 x 1.5	652825	F1202, F2402H, F241.5, F241.5P, F301.5, F3602, F40.25, FX301.5, H6002, S241.5, SX241.5, TA-15-1.5
Open-Top Tubes, Polyethylene, Heparin/Lithium/Fluoride Coated				
0.40	7 x 40	0.25 x 1.5	652821	F1202, F2402H, F241.5, F241.5P, F301.5, F3602, F40.25, FX301.5, H6002, S241.5, SX241.5, TA-15-1.5
0.40	7 x 40	0.25 x 1.5	652824	F1202, F2402H, F241.5, F241.5P, F301.5, F3602, F40.25, FX301.5, H6002, S241.5, SX241.5, TA-15-1.5
Open-Top Tubes, Polypropylene				
15.0	18 x 100	0.725 x 4	342082	SX4750, SX4750A, FX6100
50.0	29 x 104	1.125 x 4	357007	F0485, F0650, F0850, F0685, SX4750, SX4750A, TA-14-50, TA-10-250, FX6100
500.0	69 x 160	2.75 x 6.5	355650	SX4750, SX4750A
Open Top Tubes, UltraClear™				
13.5	16 x 76	0.65 x 3.0	344085	F1010, S0410
38.5	25 x 89	1.0 x 3.5	344058	F0630
Tubes with Snap-On Attached Caps, Polyallomer				
1.5	11 x 38	0.4 x 1.5	357448 - Natural	F1202, F2402H, F241.5, F241.5P, F301.5, F3602, FX301.5, SX4750, H6002, PTS-2000, S241.5, SX241.5, TA-15-1.5, TS-5.1-500, FX6100

* Nominal fill volume for these tubes can vary from 6.0 to 10.0 mL, depending on the rotor in which it is used due to different tube angles.

Tubes and Bottles

Nominal Filling Capacity (mL)	Nominal Size (mm)	Inches	Part No.	Rotors
Tubes with Snap-On Attached Caps, Polycarbonate*				
50.0	29 x 104	1.125 x 4	363664	F0850, SX4750, SX4750A, TA-14-50, TA-10-250
Tubes with Snap-On Attached Caps, Polyethylene				
1.8	11 x 39	0.4 x 1.5	340196 - Natural	F1202, F2402H, F241.5, F241.5P, F3602, SX4750, SX4750A, H6002, S241.5, SX241.5, TA-15-1.5, FX6100
Tubes with Snap-On Attached Caps, Polypropylene				
1.5	11 x 38	0.4 x 1.5	356090 - Natural	SX4750, SX4750A, PTS-2000, S4180
1.5	11 x 38	0.4 x 1.5	356091 - Blue	SX4750, SX4750A, PTS-2000, S4180
1.5	11 x 38	0.4 x 1.5	356092 - Green	SX4750, SX4750A, PTS-2000, S4180
1.5	11 x 38	0.4 x 1.5	356093 - Yellow	SX4750, SX4750A, PTS-2000, S4180
1.5	11 x 38	0.4 x 1.5	356094 - Orange	SX4750, SX4750A, PTS-2000, S4180
Tubes with Snap-On Separate Caps, Polypropylene				
0.4	7 x 40	0.25 x 1.5	342867	F1202, F2402H, F241.5, F241.5P, F3602, H6002
0.5	8 x 28	0.25 x 1.25	344319	F1202, F2402H, H6002
1.5	11 x 38	0.4 x 1.5	343169- Natural	F1202, F2402H, F241.5, F241.5P, F301.5, F3602, FX301.5, SX4750, SX4750A, H6002, S241.5, SX241.5, S4180, TA-15-1.5, FX6100
50.0	29 x 103	1.125 x 4	357005	F0850, SX4750, SX4750A, TA-10-250, TA-14-50
Conical Tubes				
50.0	29 x 104	1.25 x 4	363075 (polycarbonate, graduated)	F0650, F0850, SX4750, SX4750A, FX6100, TA-14-50
230.0	62 x 141	2.5 x 5.25	356987 (polycarbonate bottle with screw cap)	SX4750, SX4750A, TA-10-250
230.0	62 x 141	2.5 x 5.5	356989 (polypropylene bottle with screw cap)	SX4750, SX4750A, TA-10-250
Stainless Steel Tubes				
10.0	16 x 76	0.6 x 3	301108	SX4750, SX4750A, FX6100
Bio-Vial Tubes				
4.0	14 x 55	0.5625 x 2.25	566353 - Polypropylene	SX4750, SX4750A
Bottles with Caps, Polycarbonate				
500.0	69 x 160	2.75 x 6.5	355650	SX4750
Bottles with Cap Assemblies, Polyallomer				
50.0	29 x 104	1.25 x 4	357001	F0650, F0850, SX4750A, TA-10-250, TA-14-50, SX4750
50.0	29 x 104	1.25 x 4	361694	F0650, F0850, SX4750A, TA-10-250, TA-14-50, SX4750

* Nominal fill volume for these tubes can vary from 6.0 to 10.0 mL, depending on the rotor in which it is used due to different tube angles.



Tubes and Bottles

Nominal Filling Capacity (mL)	Nominal Size (mm)	Inches	Part No.	Rotors
Bottles with Cap Assemblies, Polycarbonate				
26.3	25 x 89	1.0 x 3.5	355616	F0630
50.0	29 x 104	1.25 x 4.25	361693	SX4750, SX4750A
50.0	29 x 104	1.25 x 4.25	357000	F0650, F0850, SX4750A, TA-10-250, TA-14-50
70.0	38 x 102	1.5 x 4.0	355620	F0485, F0685, FX6100
85.0	38 x 104	1.5 x 4.2	363081 (high-speed cap)	F0485, F0685, S4180, FX6100
250.0	62 x 122	2.5 x 4.75	358275 (wide mouth)	SX4750
Bottles with Cap Assemblies, Polypropylene				
250.0	62 x 120	2.5 x 4.75	358326 (wide mouth)	SX4750
250.0	62 x 120	2.5 x 4.75	356011 (wide mouth)	SX4750, TA-10-250, TS-5.1-500
500.0	69 x 160	2.75 x 6.5	355607	SX4750
Bottles with Screw Caps, Polyallomer				
10.0	16 x 81	0.75 x 3.25	364695	F1010, S0410, S4180, TS-5.1-500
30.0	25.3 x 92	1.0 x 3.75	363073	F0630
50.0	29 x 104	1.25 x 4.0	357003	F0485, F0650, F0685, F0850, SX4750, SX4750A, TA-10-250, TA-14-50, FX6100
Bottles with Screw Caps, Polycarbonate				
10.0	16 x 80	0.6 x 3.2	355672	F1010, S0410, S4180, TS-5.1-500
30.0	25.3 x 92	1.0 x 3.75	363070	F0630
50.0	29 x 104	1.125 x 4.0	357002	F0485, F0650, F0685, F0850, SX4750, SX4750A, TA-10-250, TA-14-50, FX6100
85.0	38 x 104	1.5 x 4.0	364718	F0485, S4180
230.0	62 x 141	2.5 x 5.25	356987 (conical)	SX4750, SX4750A, TA-10-250
250.0	62 x 120	2.5 x 4.75	356013 (wide mouth)	SX4750, SX4750A, TA-10-250, TS-5.1-500
250.0	62 x 136	2.5 x 5.5	355673	SX4750
500.0	69 x 160	2.75 x 6.5	368454	TS-5.1-500
750.0	96 x 130	3.75 x 5.25	358299	SX4750
Bottles with Screw Caps, Polypropylene				
85.0	38 x 104	1.5 x 4.0	363082	F0685, FX6100
85.0	38 x 104	1.5 x 4.0	364719	F0485, S4180
100.0	38 x 102	1.5 x 4.0	355624	F0485, F0685, FX6100
180.0	55 x 104	2.25 x 4.15	361245	S4180
230.0	62 x 141	2.5 x 5.5	356989 (conical)	SX4750, SX4750A, TA-10-250
500.0	69 x 159	2.75 x 6.5	355665	SX4750
500.0	85 x 135	3.5 x 5.5	368453	TS-5.1-500
750.0	96 x 130	3.75 x 5.25	356855	SX4750
Bottles with Screw Caps, Teflon				
10.0	16 x 81	1.25 x 3.25	364693	F1010, S0410
50.0	28.5 x 107	1.25 x 4.25	363076	F0650, F0850, SX4750, SX4750A

Tools and Supplies

Tools and Supplies

Rotor Cleaning Kit



339558 Rotor Cleaning Kit. Contains two 946-mL bottles of Solution 555™ Rotor Cleaning Concentrate, 339379 Rotor Cleaning Brush, and 339380 Rotor Cleaning Brush

Replacement Parts/Supplies

- 339555 Solution 555 Rotor Cleaning Concentrate (min. order two Bottles)
- 339379 Rotor Cleaning Brush, 3/8-in. (16 mm) and 1-in. (25.4 mm), for Rotor Cavity diameters from 7/16-in. (11 mm) to 1-in. (25.4 mm) (min. order three Brushes)
- 339380 Rotor Cleaning Brush, 1 1/4-in. (32 mm) and 1 1/2-in. (38 mm), for Rotor Cavity diameters from 1-in. (25.4 mm) to 1 1/2-in. (38 mm) (min. order three Brushes)

Reference

Reference

Guide to Centrifuge Selection

Centrifugation is a basic separation technique that is utilized at multiple stages in the study of sample components. Flexible rotor and adapter systems for each Beckman Coulter centrifuge allow them to be used across multiple application areas. To help you select the most appropriate centrifuge for your work, the following charts provide brief descriptions of the kinds of separations typically achieved using various centrifuges. These charts list frequent separation requirements for each sample type, and identify the centrifuges that are typically used to meet those requirements.

In addition to the separation and isolation of sample particles, centrifugation is increasingly being used as an analytical technique for the study of macromolecular interactions and the determination of molecular weights. Instruments for these applications are also listed below.

Quick-Reference Guide to Centrifuge Selection

Materials to Be Isolated	Specific Application	Centrifuges Typically Used					
		Allegra™ 25R	Allegra 64R	Allegra X-15R	Allegra X-12 Series	Allegra X-22 Series	Microfuge®
Proteins	Ammonium sulfate precipitates		●				●
	Sucrose/glycerol gradient isolation						
	Centrifugal filtration		●				
Preparative Centrifugation							
Lysates/Homogenates	Clearing debris and large particles	●	●	●	●	●	
Nucleic Acids	DNA	Alcohol precipitation	●	●		●	●
		Phenol/CHCl ₃ extraction	●	●		●	●
		Minipreps in 96-well plates	●	●		●	
		Spin columns	●	●		●	
	RNA	Phenol/CHCl ₃ extraction	●	●			●
	Alcohol precipitation	●	●			●	
	Lithium precipitation	●	●			●	
Cells	Isolation of mononuclear cells on Ficoll-Hypaque	●	●	●	●	●	
	Pelleting bacteria	●	●	●		●	
	Pelleting mammalian cells	●	●	●	●	●	
	Elutriation of viable cells		●			●	
	Other density gradient separations		●				
Viruses	Pelleting		●				
	PEG precipitates		●				



Reference

Useful Formulas

***k* Factor**

To determine *k* factor

$$k = \frac{\ln(r_{\max}/r_{\min})}{\omega^2} \times \frac{10^{-13}}{3600} \quad \text{OR} \quad k = \frac{2.53 \times 10^5 \ln(r_{\max}/r_{\min})}{(\text{RPM}/1000)^2}$$

To determine pelleting time in hours (*t*)

$$t = \frac{k}{s} \quad \text{where } s = \text{sedimentation coefficient in Svedbergs}$$

To relate pelleting time between rotors

$$\frac{k_1}{t_1} = \frac{k_2}{t_2}$$

To adjust *k* factor for runs less than maximum rotor speed

$$k_{\text{adj}} = k \left(\frac{\text{maximum rated speed of rotor}}{\text{actual run speed}} \right)^2$$

To relate relative centrifugal force (RCF) to speed (RPM):

$$\text{RCF}_{\max} = 1.12 r_{\max} \left(\frac{\text{RPM}}{1000} \right)^2 \quad \text{OR} \quad \text{RPM} = 10^3 \sqrt{\frac{\text{RCF}}{1.12 r_{\max}}}$$

*r*_{max} in mm

To relate the sedimentation coefficient (s) to rotational speed:

$$s = \frac{dr}{dt} \times \frac{1}{\omega^2 r}$$

Svedberg unit (S) equivalent:

$$S = 10^{-13} \text{ seconds}$$

Reduced run speed for dense solutions:

$$\text{reduced run speed} = \text{max rated speed of rotor} \times \sqrt{\frac{A}{B}}$$

where A = max. permissible density of rotor tube contents, and
B = actual density of the tubes to be centrifuged

Support Services

Beckman Coulter simplifies and automates your laboratory processes. From consultation in choosing products and services, through installation, training and support, we are committed to making your laboratory the most efficient and cost-effective operation it can be. Advancements in communications technology, system diagnostics and our field network makes it even easier for you to get the system support you need. With a variety of new programs in place, Beckman Coulter can bring your lab the most streamlined, intelligent and customer-focused service in the industry.

Whether your system service is provided on-call, on-line or on-site, you'll get the world class customer support you expect from a technology leader.

Support Services

ON-CALL: System Experts at Your Fingertips

Our customer call centers provide the first line of support in resolving your technical issues. As soon as you provide your unique System Identification Number, your call will be routed automatically to system and scientific specialists. The specialist who receives your call will have immediate access to your system's complete service history and your experience with the system. These qualified specialists can then immediately identify, isolate and resolve most technical issues – preventing simple problems from becoming more complicated. If the problem can't be resolved, our computer system will forward the information to the Beckman Coulter dispatch group for immediate assignment to a field system engineer.

ON-LINE: Product Support on Your Schedule

Our web-based information resource provides you with 24-hour-a-day access to a wide array of helpful information.

- FAQs, troubleshooting, MSDSs
- How to place service requests
- Part numbers
- Catalogs, product selection guides, rotor calculations and selection
- Customer Technical Support contact information

ON-SITE: Factory Trained Field System Engineers

When the need arises for on-site support, one of Beckman Coulter's professional field system engineers is always available to service your system on-site. Through our global network of system and process experts, a Beckman Coulter field

system engineer is available to provide hands-on support and keep your lab processes running smoothly. To meet the various needs of the scientific laboratory, Beckman Coulter offers a wide range of on-site technical solutions for your lab.

- Support agreement options
- Regulatory compliance programs (installation and operational qualification)
- Centrifuge rotor inspection programs
- Training
- Technical services on a time and material basis

Regardless of the support agreement selected, you are assured that Beckman Coulter provides only the finest quality support and is certified under ISO 9001 quality standards.

ON-FILE: Your System Identification Number

Your instrument's System Identification Number is your key to Beckman Coulter service and support. Use it to identify yourself whenever you call for technical assistance. Don't worry about a model or serial number – all the information we need is contained in the System Identification Number. If you have several instruments, each one will have a unique number. Please keep your System Identification Number accessible and readily available. It's just one more way we strive to give you the best customer support possible. If you do not already have a System Identification Number, contact the Beckman Coulter Customer Technical Support department.

CUSTOMER TECHNICAL SUPPORT

U.S.: (800) 743-2345

Canada: (800) 387-6799

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