

HIGH-PERFORMANCE & HIGH-CAPACITY CENTRIFUGES

INGENUITY MEETS PRACTICALITY.



Brilliance
at every turn.




ENHANCES YOUR WORKFLOW
EASY TO USE POWERFUL
TIME-SAVERS SUSTAINABLE
STREAMLINED MORE THROUGHPUT
MORE CONTROL





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 BioSafe instruments and accessories are available across our centrifuge product line and are identified with these icons:

 BioSafe and BioSafety are terms intended to describe the enhanced biocontainment features of our products.

 BioCertified is a term used to describe our products which have been tested and validated to demonstrate containment of microbiological aerosols by an independent, third-party facility (Health Protection Agency, Porton Down, UK or USAMRIID, Ft. Detrick, MD, USA). Improper use or maintenance may affect seal integrity and, thus, containment.

 BioEnhanced is a term intended to describe our products' enhanced level of biocontainment by design.

Rotors with the BioCertified symbol and 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, as well as frequently used formulas.

Contact your local Beckman Coulter office



Avanti JXN Series

A new level of freedom and high performance.

Whatever your application, from simple pelleting to rate zonal separations, the Avanti JXN Series offers newfound momentum. Rely on the Avanti JXN-26 to boost your productivity, or reach speeds of up to 30,000 rpm with the Avanti JXN-30.

Flexibility reaches a whole new level with the MobileFuge remote application for Avanti centrifuges. Users can easily monitor and control centrifuge functions via computer, using Virtual Network Computing (VNC) software or mobile device using the custom MobileFuge app available for Apple® iOS and Android™ devices. Whether you are across the lab or across the campus, you can always keep an eye on your centrifuge. Work has never been so flexible.

1 Ergonomic design

- Low work surface height for easier installation and unloading of rotors
- Foot pedal for hands-free door operation
- Door swings up and out of the way for easy access to the rotor chamber
- Large digital readouts make operation simpler

2 Gain flexibility with MobileFuge

- Set and monitor run parameters and email diagnostic results
- Control and monitor the centrifuge from your Apple® iOS and Android™ device with MobileFuge
- Get alerts and diagnostics remotely

3 Intuitive interface

- User-friendly, large LCD screen
- View set and actual run conditions simultaneously
- Select rotor by name, not by arcane number code
- 11 accel/12 decel rates
- Delay start
- Run times to 99:59, Hold, and ω^{21} integrator for applications that require exquisite reproducibility

4 Safe and sustainable

- Friction Reduction System (FRS) allows quicker, quieter, and cooler runs
- Uses less energy than traditional centrifuges
- BioSafe† options
- Dynamic rotor inertia check
- High-torque, Switched Reluctance (SR) drive cycle shortens cycle times*

5 Advanced, easy-to-use data management

- Perfect to support shared lab or GMP environments
- On-screen text sensitive “help” screen
- Up to 1,000 user-defined programs
- Set up and store numerous protocols
- Password protection for up to 50 unique user profiles
- Network multiple instruments
- Data logging and real-time run graphing

6 Versatile across rotors and applications

- Compatible with an extensive library of rotors
- Fixed-angle and swinging bucket options available
- Fully compatible with lightweight J-Lite rotors
- Dynamic Rotor Inertia Check (DRIC) and rotor recognition provide redundant safety checks to assure no rotor can be run above its rated speed
- Temperature control is optimized ensuring sample quality and avoiding unwanted artifacts
- SW and FA rotors capable of greater than 100,000 x g



High Performance Centrifugation

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Specifications	Avanti JXN-26	Avanti JXN-30
Maximum Speed/g-Force	26,000 rpm / 81,770 x g	30,000 rpm / 110,500 x g
Maximum Capacity	6 Liters	4 Liters
Speed Control	Low Speed (1,000 to 10,000): ± 10 rpm High Speed (10,001 to max): ± 0.1% rpm	Low Speed (1,000 to 10,000): ± 10 rpm High Speed (10,001 to max): ± 0.15% rpm
Set Temperature	-10°C to 40°C in 1° increments	-20° to 40° C in 1° increments
Temperature Control	± 2°C of chamber temperature after equilibration ^a	±2° C of chamber temperature after equilibration ^a
Ambient Operating Range	16°C to 38°C ^b	16° C to 38° C ^b
Accel Decel	Maximum, timed (1 to 10 min from 0 to 500 rpm) Maximum, timed (1 to 10 min from 500 to 0 rpm) or coast	Maximum, timed (1 to 10 min from 0 to 500 rpm) Maximum, timed (1 to 10 min from 500 to 0 rpm) or coast
Heat Output	5,120 BTU/hr (1.5 kW) ^c	5,120 BTU / hr (1.5 kW)
Drive Type / Cooling	SR* drive / Air-cooled	SR* drive / Air-cooled
Refrigeration	Refrigerant 404A (HVC)	Refrigerant 404A (HVC)
Noise output (1 m in front of instrument, 1.5 m above the floor)	62 dBa ^d	62 dBa
Dimensions (with door closed)	71 W x 86 D x 86 H cm (28 W x 34 D x 34 H in)	71 W x 86 D x 86 H cm (28 W x 34 D x 34 H in)
Weight	290 kg (640 lbs)	310 kg (680 lbs)
HEPA Filter	Pharmaceutical-grade sterilizing filter system	Pharmaceutical-grade sterilizing filter system

Part Numbers**

Model	230 V, 50 Hz, 24A	200–240 V, 50/60 Hz, 24A	220 V, 3-Phase, 50 Hz, 12A
Avanti JXN-26 IVD	B38623	B38619	B38618
Avanti JXN-26 Non-IVD	B37912	B34183	B34182
Make BioSafe [†] with HEPA filter kit for Avanti JXN-26 (external mount)	B37916	B37916	B37916

Model	230 V, 50 Hz, 24A	200–240 V, 50/60 Hz, 24A	220 V, 3-Phase, 50 Hz, 12A
Avanti JXN-30 IVD	B38624	B38621	B38620
Avanti JXN-30 Non-IVD	B37913	B34193	B34192

a: Proprietary algorithm applied to provide an estimated sample temperature.

b: To reach temperatures above ambient, the centrifuge is dependent on the frictional heat generated inside the chamber during operation. At low run speeds or low ambient temperatures, the centrifuge may not be able to achieve some higher temperatures.

c: JA-20 rotor running at 20,000 rpm at 4°C.

d: JA-30.50 Ti rotor with chamber pre-cooled and running at 26,000 rpm.

* SR drives are manufactured by Beckman Coulter, Inc. with technology licensed from Switched Reluctance Drives Limited.

**Availability varies by geography. Contact your local sales representative to determine the correct part numbers for ordering.

† BioSafe is a term intended to describe the enhanced biocontainment features of our products.

High Performance Centrifugation

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Avanti J-26S XP Series High Performance Centrifuge

One instrument with many possibilities.

The Avanti J-26S combines high performance, complete BioSafety* systems and long-term durability, making it an incredibly capable choice for any lab environment. Along with high speed, it offers low heat output, imbalance tolerance and low noise.

Versatility is delivered by a vast range of separations. Plus, ergonomic design features, such as lower instrument height and hand-free door operation, makes it easy to use. For extra peace of mind, the Avanti J-26S has an impact-resistant lid, a full containment barrier and automatic rotor identification.



Specifications

Maximum Speed/g-Force	26,000 rpm / 81,800 x g
Maximum Capacity	6 Liters
Speed Control	Low Speed \pm 10 rpm of set speed High Speed \pm 0.1% rpm of set speed
Set Temperature	-10°C to 40°C in 1° increments
Temperature Control	\pm 2°C of set temperature
Ambient Operating Range	16°C to 38°C
Accel / Decel Profiles	2 / 3
Heat Output	6900 BTU/hr (2.0 kW)
Drive Type / Cooling	SR** drive / Air-cooled
Refrigeration	Non-CFC, non-ozone depleting refrigerant
Sound Level	57 dBA (0.91 m / 3 ft from instrument at maximum speed)
Sterile Filter	Available
Dimensions (with door closed)	71 W x 86 D x 86 H cm (28 W x 34 D x 34 H in)
Weight	290 kg (640 lbs)
User-Defined Programs	None
Time Settings	1 to 180 minutes, Hold
Delayed Start	No
Key Lock-Out	No

Part Numbers

Model	200/208/240 V 50/60 Hz	230 V 50 Hz	220/380 V 50 Hz, 3-Phase
Avanti J-26S XP	B14535	B14536	B14537
Avanti J-26S XP with Elutriation	B14541	B14542	B14543
BioSafe Package	200/208/240 V 50/60 Hz	230 V 50 Hz	220/380 V 50 Hz, 3-Phase
Avanti J-26S XP	B22984	B22985	B22987

* BioSafety is a term intended to describe the enhanced biocontainment features of our products.

** SR drives are manufactured by Beckman Coulter, Inc. with technology licensed from Switched Reluctance Drives Limited.

High Performance/High Capacity Centrifugation

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Rotor Compatibility Chart



	Avanti JXN-30 Max. RPM/ g-Force	Avanti JXN-26 Max. RPM/ g-Force	Avanti J-26S Max. RPM/ g-Force	Avanti J-E Max. RPM/ g-Force	J6-MI	Avanti J-HC	Angle	Containment	
Fixed-Angle Rotors									
JA-30.50 Ti	30 000 108 860	26 000 81 800	26 000 81 800	N/A	N/A	N/A	34°	Single- or dual-locking lid/fluid annulus	
JA-25.50†	25 000 75 600	25 000 75 600	25 000 75 600	21 000 53 300	N/A	N/A	34°	Single- or dual-locking lid/fluid annulus	BIOC
JA-25.15†	25 000 74 200	25 000 74 200	25 000 74 200	N/A	N/A	N/A	25°	Single- or dual-locking lid/fluid annulus	BIOC
JA-21	21 000 50 400	21 000 50 400	21 000 50 400	21 000 50 400	N/A	N/A	40°		BIOC
JA-20.1†	20 000 51 500	20 000 51 500	20 000 51 500	20 000 51 500	N/A	N/A	23°		
JA-20†	20 000 48 400	20 000 48 400	20 000 48 400	20 000 8 400	N/A	N/A	34°		BIOC
JA-18.1	18 000 42 100	18 000 42 100	18 000 42 100	N/A	N/A	N/A	45°	N/A	
JA-18†	18 000 47 900	18 000 47 900	18 000 47 900	16 000 37 800	N/A	N/A	23°	N/A	BIOC
JA-17†	17 000 39 800	17 000 39 500	17 000 39 500	17 000 39 800	N/A	N/A	25°		BIOC
JLA-16.250†	16 000 38 400	16 000 38 400	16 000 38 400	16 000 38 400	N/A	N/A	25°	Single- or dual-locking lid/fluid annulus	BIOC
JA-14.50†	14 000 35 000	14 000 35 000	14 000 35 000	14 000 35 000	N/A	N/A	35°	Single- or dual-locking lid/fluid annulus	BIOC
JA-14†	14 000 30 100	14 000 30 100	14 000 30 100	14 000 30 100	N/A	N/A	25°		BIOC
JA-12†	12 000 23 200	12 000 23 200	12 000 23 200	12 000 23 200	N/A	N/A	35°	Single- or dual-locking lid/fluid annulus	BIOC
JLA-10.500†	N/A	10 000 18 500	10 000 18 500	10 000 18 500	N/A	N/A	20°	Sealing canister covers	BIOC
JA-10	10 000 17 700	10 000 17 700	10 000 17 700	10 000 17 700	6 000 6 370	10 000 17 700	25°		
JLA-9.1000	9 000 16 800	9 000 16 800	9 000 16 800	6 300 8 230	N/A	N/A	20°	Integrated bottle seal	
JLA-8.1000†	N/A	8 000 15 970	8 000 15 970	N/A	N/A	8 000 15 970	20°	Integrated bottle seal	BIOC

†This rotor was tested to demonstrate containment of microbiological aerosols under normal operating conditions of the associated Beckman Coulter centrifuge, when used and maintained as instructed. Validation of the microbiological containment was done at an independent, third-party facility (CAMR, Porton Down, UK or USAMARIID, Ft. Detrick, MD, USA). Improper use or maintenance may affect seal integrity and, thus, containment.

High Performance /High Capacity Centrifugation

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Rotor Compatibility Chart (continued)

	Avanti JXN-30 Max. RPM/ g-Force	Avanti JXN-26 Max. RPM/ g-Force	Avanti J-26S Max. RPM/ g-Force	Avanti J-E Max. RPM/ g-Force	J6-MI	Avanti J-HC	Angle	Containment	
Swinging Bucket Rotors									
JS-24.38	24 000 103 900	10 000 18 000	10 000 18 000	N/A	N/A	N/A	Horz.	Cap, O-ring	
JS-24.15	24 000 110 500	10 000 19 200	10 000 19 200	N/A	N/A	N/A	Horz.	Cap, O-ring	
JS-13.1	13 000 26 500	13 000 26 500	13 000 26 500	N/A	N/A	N/A	Horz.		
JS-7.5	7 500 10 400	7 500 10 400	7 500 10 400	N/A	N/A	N/A	Horz.	N/A	
JS-5.3	N/A	5 300 6 130	5 300 6 130	5 300 6 130	N/A	N/A	Horz.	N/A	
JS-4.3	N/A	4 300 4 220	4 300 4 220	N/A	N/A	N/A	Horz.	Bucket Covers	
JS-4.0	N/A	4 000 4 050	4 000 4 050	N/A	N/A	N/A	Horz.	Aeroseal Cover	
JS-5.2	N/A	N/A	N/A	N/A	5 200 6 840	N/A	Horz.	Aeroseal Cover	
JS-5.0	N/A	N/A	N/A	N/A	N/A	5 000 7 480	Horz.		
JS-4.2	N/A	N/A	N/A	N/A	4 200 5 020	4 200 5 020	Horz.	Aeroseal Cover	
JS-4.2A	N/A	N/A	N/A	N/A	4 200 5 020	N/A	Horz.	Aeroseal Cover	
JS-4.2SM	N/A	N/A	N/A	N/A	4 200 4 900	N/A	Horz.		
JS-4.2SMA	N/A	N/A	N/A	N/A	4 200 4 900	N/A	Horz.		
JS-4.0	N/A	N/A	N/A	N/A	4 000 4 050	N/A	Horz.	Aeroseal Cover	
JS-3.0	N/A	N/A	N/A	N/A	3 000 2 560	N/A	Horz.	Aeroseal Cover	
Elutriation, Continuous Flow, and Zonal Rotors									
JE-5.0	N/A	N/A	5 000 4 700	N/A					
JCF-Z Std. Core	20 000 39 900	20 000 39 900	20 000 39 900	N/A					
JCF-Z Large Core	20 000 39 900	20 000 39 900	20 000 39 900	N/A					
JCF-Z Small Core	20 000 36 300	20 000 36 300	20 000 36 300	N/A					
JCF-Z Reograd Core	20 000 39 900	20 000 39 900	20 000 39 900	N/A					
JCF-Z Zonal Core	20 000 39 900	20 000 39 900	20 000 39 900	N/A					

High Performance/High Capacity Centrifugation

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High Performance and High Capacity Rotor Summary

Rotor Type	Part Number	Maximum Speed (rpm)	Maximum Force at r_{min} (g)	Maximum Force at r_{max} (g)	k Factor	Number Tubes/Bottles and Size (diameter x length) mm/in.	Rotor Capacity (mL)	Approx. Accel. Time ¹ (min:sec)	Comments
Fixed-Angle Rotors									
JA-30.50 Ti	363420 Biosafety	30 000	40 320	108 860	280	8 x 50 mL 29 x 104 mm (1.125 x 4 in.)	400 mL	5:15 ^a	Harvesting bacteria, processing tissue culture, subcellular particulates, routine pelleting such as precipitates and phase separation.
	363421 Single Lock Lid								
JA-25.50	363058 Biosafety Lid	25 000	26 950	75 600	418	8 x 50 mL 29 x 104 mm (1.125 x 4 in.)	400 mL	3:30 ^b	High-force, efficient pelleting of cell particles from tissue homogenates. Short column virus purification.
	363055 Single Lock Lid								
JA-25.15	363050 Biosafety Lid	25 000	36 400/ 22 400	74 200/ 60 200	265/ 380	24 x 15 mL 18 x 100 mm (0.75 x 4 in.)	360 mL	3:15 ^b	High-force, efficient pelleting of subcellular particles, bacteria, algae, and chloroplasts. Short column banding of virus and subcellular particles.
	363054 Single Lock Lid								
JA-21	334845	21 000	22 200	50 400	470	18 x 10 mL 16 x 80 mm (0.625 x 3 in.)	180 mL	1:30 ^b	High-force, fast, efficient separation of many samples in small volume. Viruses, bacteriophage, mitochondria, nuclei.
JA-20.1	342095	20 000	28 700/ 21 100	51 500/ 43 900	371/ 465	32 x 15 mL 18 x 99 mm (0.625 x 4 in.)	480 mL	1:30 ^b	High-force, large volume. Has 2 concentric rows of 15-mL tubes. Efficient separation of particles with 100 S or larger sedimentation coefficients.
JA-20	334831	20 000	14 300	48 400	769	8 x 50 mL 29 x 104 mm (1.125 x 4 in.)	400 mL	1:30 ^b	Harvesting bacteria and cell membranes, processing tissue homogenates, separating cell particulates.
JA-18.1	347824	18 000 ^c	34 500 ^c	42 100 ^c	156 ^c	24 x 1.8 mL 11 x 38 mm (0.4 x 1.5 in.)	43.2 mL	1:20 ^b	High-force sedimentation in microcentrifuge-sized tubes under refrigerated conditions. Tube oriented at either a 25° or 45° angle.
JA-18	369679	18 000	23 200	47 900	566	10 x 100 mL 38 x 102 mm (1.5 x 4 in.)	1 liter	6:30 ^b	High-force, large volume. Pelleting bacteria, cell membranes, and subcellular organelles.
JA-17	369691	17 000	18 180	39 800	1 060	14 x 50 mL 29 x 104 mm (1.125 x 4 in.)	700 mL	2:30 ^b	Harvesting bacteria and cell membranes, processing tissue homogenates, separating cell particulates.
JLA-16.250	363930 Biosafety Lid	16 000	13 200	38 400	1090	6 x 250 mL 62 x 120 mm (2.5 x 5.5 in.)	1.5 liters	3:30 ^b	Harvesting bacteria and cell membranes, processing tissue homogenates, separating cell particulates.
	363934 with Single Lock Lid								
JA-14.50	B19955 Biosafety Lid	14 000	19 000	35 000	787	16 x 50 mL 30 x 115 mm	800 mL	2:00	Pelleting and density gradient separations, proteins, nucleic acids, cells, viruses and blood.
	B19956 Single Lock Lid								
JA-14	339247	14 000	7 680	30 100	1 764	6 x 250 mL 62 x 120 mm (2.5 x 4.8 in.)	1.5 liters	4:00 ^b	General-purpose, large-volume, and multi-tube processing.
JA-12	360992 Biosafety Lid	12 000	11 500	23 200	1 244	12 x 50 mL 30 x 103 mm conical (1.17 x 4 in.)	600 mL	3:30 ^b	General pelleting of cells, bacteria, and food products. Separating of proteins, viruses, and subcellular fractions. Phase separations and binding studies.
	360993 with Single-locking Lid								

¹ Accel times are approximate, and subject to change.

^b Typical accel time in Avanti J-25 Series.

^a Typical accel time in Avanti JXN-30.

^c At a 45° angle.

High Performance/High Capacity Centrifugation

High Performance and High Capacity Rotor Summary (continued)

Rotor Type	Part Number	Maximum Speed (rpm)	Maximum Force at r_{min} (g)	Maximum Force at r_{max} (g)	k Factor	Number Tubes/Bottles and Size (diameter x length)	Rotor Capacity (mL)	Approx. Accel. Time ¹ (min:sec)	Comments
Fixed-Angle Rotors (continued)									
JLA-10.500	369681 with Canisters	10 000	6 050	18 600	2 850	6 x 500 mL 69 x 160 mm (2.75 x 6.5 in.)	3 liters	2:30 ^a	Lightweight, high-volume, fixed-angle rotor for initial processing of tissue homogenate and other large particles.
JA-10	369687	10 000	4 260	17 700	3 610	6 x 500 mL 69 x 160 mm (2.75 x 6.5 in.)	3 liters	4:30 ^a	High-volume, fixed-angle rotor for initial processing of tissue homogenate and other large particles.
JLA-9.1000	366754	9 000	7 440	16 800	2 544	4 x 1000 mL 95 x 191 mm (3.8 x 7.65 in.)	4 liters	2:30 ^b	General purpose, large-volume processing, pelleting of bacteria cell organelles, viruses, and precipitates.
JLA-8.1000	363688	8 000	8 530	15 970	2 482	6 x 1000 mL 95 x 191 mm (3.8 x 7.65 in.)	6 liters	6:00 ^b	General purpose, large-volume processing, pelleting of bacteria subcellular organelles, viruses and precipitates.
Swinging-Bucket Rotors									
JS-24.38	360743	24 000	48 600	103 900	334	6 x 38.5 mL 25 x 89 mm (1 x 3.5 in.)	231 mL	5:15 ^c	Harvesting bacteria, processing tissue homogenates, subcellular particulates, routine pelleting such as precipitates and phase separations.
JS-24.15	362396	24 000	50 900	110 500	376	6 x 15 mL 16 x 96 mm (0.625 x 3.75 in.)	90 mL	5:15 ^c	Harvesting bacteria, processing tissue homogenates, subcellular particulates, routine pelleting such as precipitates and phase separations.
JS-13.1	346963	13 000	7 760	26 500	1 841	6 x 50 mL 29 x 105 mm (1.125 x 4 in.)	300 mL	2:30 ^a	Density gradient centrifugation of cells. Sedimentation of nuclei and protein or nuclei acid precipitates. Clarification of tissue homogenates.
JS-7.5	336380	7 500	3 210	10 400	5 287	4 x 250 mL 62 x 136 mm (2.5 x 5.5 in.)	1 L	1:00 ^a	Initial processing of cells and removal of cell debris from culture media. Accepts round-bottom bottles for easier handling of pellets.
JS-5.3 (AllSpin)	368690	2 920	5 170	6 870	various	4 x 500 mL conical 24 microplates	2 L	2:00 ^d	Sucrose/glycerol gradients, centrifugal filtration, binding studies, clearing debris/large particles, pelleting, plasma protein precipitates.
JS-5.2*	339087	5 200	2 600	6 840	9 051	4 Liters 4 Blood Bags 12 Microplates 148 RIA-Tubes	4 L	2:30	Rapid sedimentation of protein precipitates, large particles, cells, and cell debris. It can be used for binding studies and separating serum from whole blood.
JS-5.0	367820	5 000	3 020	7 480		4 x 2.25 L	9 L	3:30	Separating bacterial yeast, and tissue homogenates; harvesting cultures.
JS-4.3	362734	3 250	1 532	4 220	11 800	4 x 750 mL 96 x 130 mm (3.8 x 5.2 in.)	3 L	1:00 ^b	Rapid sedimentation of protein precipitates, large particles, cells, binding studies, and separating serum from whole blood.

¹ Accel times are approximate and subject to change.

^a Typical accel time in Avanti J-25 Series.

^b Typical accel time in Avanti J-26 XP Series.

* Only for J6-MI.

^c Typical accel time in Avanti JXN-30 (JS rotors using mandatory slow accel setting).

^d Typical accel time in Avanti J-E.

High Performance/High Capacity Centrifugation

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High Performance and High Capacity Rotor Summary (continued)

Rotor Type	Part Number	Maximum Speed (rpm)	Maximum Force at r_{min} (g)	Maximum Force at r_{max} (g)	k Factor	Number Tubes/Bottles and Size (diameter x length)	Rotor Capacity (mL)	Approx. Accel Time	Comments
Swinging-Bucket Rotors (continued)									
JS-4.2	339080	4 200	2 250	5 020	11 504	6 Liters, 6 Blood Bags, 18 Microplates, 336 RIA-Tubes	6 L	2:30	Rapid sedimentation of protein precipitates, large particles, cells, and cell debris. It can be used for binding studies and separating serum from whole blood.
JS-4.2A**	366695	4 200	2 250	5 020	11 504	6 Liters, 6 Blood Bags, 18 Microplates, 336 RIA-Tubes	6 L	2:30	Rapid sedimentation of protein precipitates, large particles, cells, and cell debris. It can be used for binding studies and separating serum from whole blood.
JS-4.2/SM**	348394	4 200	2 290	4 900		6 Blood Bags 18 Microplates		2:30	Separation of serum from whole blood, blood component separation.
JS-4.2/SMA**	366670	4 200	2 290	4 900		6 Blood Bags 18 Microplates		2:30	Separation of serum from whole blood, blood component separation.
JS-4.0	339086	4 000	1 540	4 050	15 296	4 x 000 97 x 167 (3.82 x 6.57 in.)	4 L	2:00 ^b	Rapid sedimentation of protein precipitates, large particles, cells and cell debris, as well as binding studies and separating serum from whole blood.
JS-3.0*	339086	3 000	1 150	2 560		6 x 1000 97 x 167	6L		
Continuous-Flow Rotor									
JCF-Z	335140 (standard core)	20 000	32 000	39 900	100	N/A	660 mL		Purification of viruses and/or concentration of large volumes of solution. Pelleting or sedimenting on a sucrose cushion. Maximum pellet size: 400 mL.
	357544 (small pellet core)	20 000	23 300	36 300	281	N/A	240 mL		Pelleting liquids that contain a low ratio of solids—such as bacterial cultures, or water containing clay particles or algae. Maximum pellet size: 200 mL.
	336283 (large pellet core)	20 000	22 850	39 900	293	N/A	1 250 mL		Pelleting solutions that have high solid-to-water ratios as high as 1:2 slurries. Maximum pellet size: 800 mL.
Zonal Rotor									
JCF-Z	354006	20 000	9 000	39 900	710	69 mm	1 900 mL		Fast start up. Dynamic loading and unloading. Isopycnic banding, linear, and discontinuous gradients. Subcellular fractions from tissue homogenates, algae, and chloroplasts.
Reorienting Gradient Rotor									
JCF-Z	354005	20 000	11 650	39 900	779	63 mm	1 750 mL		No rotating seal. Static loading and unloading. Gradient reorients in rotor. Especially useful for fragile material such as DNA strands.
Elutriation									
JE-5.0	356900	5 000	2 410	4 700	6 785	—	40 mL		The counterflow centrifugation elutriation system is a gentle, yet powerful technique for harvesting large populations of living cells, resulting in high viability rates.

*JS-3.0 rotor is for use in Beckman Coulter J6 Series centrifuges only per IFU J6-TB-0075C.

**Only for J6.

ROTOR SELECTION BY APPLICATION†																							
Bioseparation	Specific Application	JA-30.50 Ti	JA-25.50	JA-25.15	JA-21	JA-20.1	JA-20	JA-18	JA-18.1	JA-17	JLA-16.250	JA-14.50	JA-14	JA-12	JLA-10.500	JA-10	JLA-9.1000	JLA-8.1000	JS-24.38	JS-13.1	JS-5.3	JS-4.2	
Protein	Pelleting ammonium sulfate precipitation	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
	Sucrose/glycerol gradient	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■				■	■		
	Centrifugal filtration 1-50 mL	■	■	■	■	■			■		■	■	■	■						■		■	
Subcellular Fractions	Centrifugal filtration <1.0 mL																			■	■		
	Chromatin/Nucleosomes	■	■	■	■	■	■	■	■	■		■								■			
Microsomes	Pelleting	■	■	■	■	■	■	■	■			■								■			
	Microsomal membrane fraction	■	■	■	■	■	■	■	■	■		■								■			
	Mitochondria	■	■	■	■	■	■	■	■	■		■								■			
Nucleic	Pelleting	■	■	■	■	■	■	■	■	■		■								■			
	Sucrose gradient isolation	■	■	■	■	■	■	■	■	■		■								■			
Cell Membranes	Pelleting	■	■	■	■	■	■	■	■	■		■								■			
	Sucrose gradient isolation	■	■	■	■	■	■	■	■	■		■								■			
	Binding studies	■	■	■	■	■	■	■	■	■		■								■	■	■	
Ribosomes/Polysomes	Pelleting	■	■	■	■	■	■	■	■	■	■	■	■		■	■				■			
	Sucrose gradient isolation	■	■	■	■	■	■	■	■	■		■								■			
Cytosol	Clarification	■	■	■	■	■	■	■	■	■		■								■			
Lysate/Tissue Homogenates	Clearing debris and large particles	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Clearing Media	Clearing debris and large particles	■	■								■	■	■		■	■	■	■	■	■		■	■
Nucleic Acids	Pelleting alcohol precipitation	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■				■	■		
	Phenol/chloroform extraction	■																		■	■	■	■
	Minipreps in 96-well plates																					■	■
	Spin columns																					■	
Cells	Pelleting bacteria	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
	Pelleting mammalian cells	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
	Density gradient separation	■	■	■	■	■	■	■	■	■	■	■	■	■						■	■	■	
Viruses	Pelleting	■	■	■	■	■	■	■	■	■		■								■			
	PEG precipitates	■	■	■	■	■	■	■	■	■		■	■	■						■	■	■	■
	Density gradient isolation	■	■	■	■	■	■	■	■	■		■								■		■	
Blood	Pelleting	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
	Plasma protein precipitation	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■				■	■		
	Blood sample preparation										■		■		■	■	■	■	■	■	■	■	■
	Density gradients to isolate blood cells															■	■			■	■	■	■

♦Maximum rotor speeds may differ between instrument models. For complete rotor specifications, please refer to our High Performance and High Capacity centrifuge catalog or visit beckmancoulter.com.
³BioSafe when used with Aerosol covers. ⁴BioSafe when used with Aerosolve canisters. ⁵J6-MI must have door and strobe.
[†]Selected rotor has the capability (x g, volume, labware) to accommodate the application, but may not be the most optimal/efficient choice for the specific application.
 All labware sold separately.

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.

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 polypropylene tubes should be used.

The last column of the “Quick Reference Chart to Tube Materials and Their Properties” on page 2-3 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 www.beckmancoultercentrifugation.com) 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. Polypropylene 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 2-4.

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 polypropylene. 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 polypropylene tubes should be used, depending on the need for transparency.

As there are currently no wettable 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 www.beckmancoultercentrifugation.com).

The method chosen for sterilization has direct bearing on the number of reuses one can expect from a tube. Tubes and bottles of polypropylene, 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.

If maximum reuse is a major consideration, either polypropylene (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.

A Quick-Reference Chart to Tube Materials and Their Properties

Property	Thinwall Polypropylene	Thickwall Polypropylene	Ultra-Clear	Polycarbonate	Polypropylene	Polyethylene	Cellulose Propionate
Optical	transparent	translucent	transparent	transparent	translucent	transparent/translucent	transparent
Autoclaveable	yes	yes	no	yes**	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	M	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

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

** Table life will be significantly reduced by autoclaving.

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

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General Filling and Sealing Requirements for Tubes and Bottles

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

Tubes and Bottles

High-Performance and High-Capacity Bottles

Nominal Capacity	Size mm	Material	Bottle & Cap Assy	Bottle with Screw-On Caps	Bottle Only	Insert Only	O-ring	Screw-On 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	PE	N.A.	364695	N.A.	N.A.	N.A.	N.A.
10 mL	16.1 x 81.1	PTFE	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	PE	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	PTFE*	N.A.	363076	N.A.	N.A.	N.A.	N.A.
50 mL	29 x 104	PE	357001 361694	357003	N.A.	358627	961582	356284
50 mL	29 x 104	PC	357000 361693	357002	N.A.	358627	961582	356284
70 mL	38 x 102	PC	355620	N.A.	355655	334545	870384	334547
85 mL	38 x 104	PC	363081	N.A.	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	355624	355626	N.A.	N.A.	355625
180 mL	55 x 104	PE	N.A.	361245	N.A.	N.A.	N.A.	N.A.
230 mL	62 x 141	PE	356989	N.A.	356988	N.A.	N.A.	344691
230 mL	62 x 141	PC	356987	N.A.	356986	N.A.	N.A.	344691
250 mL	62 x 120	W PC	356013	355673	358275	N.A.	927860	358977
250 mL	62 x 122	W PP	356011	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	W PC	355605	355664	355649	334419	870411	356260
500 mL	69 x 160	W PP	355607	355665	355650	334419	870411	356260
500 mL	69 x 160	W PC	361690	N.A.	355649	N.A.	927860	360954
500 mL	69 x 160	W PP	361691	N.A.	355650	N.A.	927860	360954
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
1000 mL	95 x 191	PC	A98812	N.A.	366751	393898	A98817	B10317
1000 mL	95 x 191	PP	A98813	N.A.	A98814	393898	A98817	B10317
1000 mL	95 x 191	PP	B29896	N.A.	A98814	393898	A98817	B29894
1000 mL	97 x 167	PC	N.A.	355675	341984	N.A.	N.A.	344693
1000 mL	97 x 167	PP	N.A.	355676	341985	N.A.	N.A.	344693

PA = Polyallomer PC = Polycarbonate PE = Polyethylene PP = Polypropylene PPSU = Polyphenylsulfone
 PTFE = Polytetrafluoroethylene C = Conical W = Wide-Mouth N.A. = Not Available

* With high-speed screw-on caps.

Tubes and Bottles

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Adapters and Sleeves for Non-Beckman Coulter Tubes/Bottles*

Rotor	Tube Vol. mm	Size	# of Places Number	Part	Rotor	Tube Vol.	Size mm	# of Places	Part Number
JA-30.50	5 mL	12 x 75	1	356970	JA-10	5 mL	12 x 75	10	356967
	7 mL	13 x 100	1	356976		7 mL	13 x 100	9	356973
JA-25.50	5 mL	12 x 75	1	356970	15 mL	Conical	5	356960	
	7 mL	13 x 100	1	356976	15 mL	Round-bottom	5	356994	
JA-21	5 mL	12 x 75	1	356972	50 mL	Conical	1	356965	
JA-20.1	5 mL	12 x 75	1	356971	50 mL	Round-bottom	1	356996	
	7 mL	13 x 100	1	356977	JS-13.1	5 mL	12 x 75	1	356970
JA-20	5 mL	12 x 75	1	356970		7 mL	13 x 100	1	356976
	7 mL	13 x 100	1	356976	JS-7.5	5 mL	12 x 75	9	356968
JA-18	5 mL	12 x 75	3	356969		7 mL	13 x 100	8	356974
	7 mL	13 x 100	3	356975	15 mL	Conical	4	356964	
	15 mL	Conical	1	356962	50 mL	Conical	1	356966	
	50 mL	Conical	1	356963	JS-4.2 & JS-4.2A	3 mL	Conical	26	339100
JA-17	5 mL	12 x 75	1	356970		15 mL	Conical	14	339102
	7 mL	13 x 100	1	356976	250 mL	Conical	1	349849	
JLA 16.250/ JA-14	5 mL	12 x 75	9	356968					
	7 mL	13 x 100	8	356974					
	15 mL	Conical	4	356964					
	15 mL	Round-bottom	5	356995					
	50 mL	Conical	1	356966					
	50 mL	Round-bottom	1	356997					
JLA-10.500	5 mL	12 x 75	10	356967					
	7 mL	13 x 100	9	356973					
	15 mL	Conical	5	356960					
	15 mL	Round-bottom	5	356994					
	50 mL	Conical	1	356965					
	50 mL	Round-bottom	1	356996					

Adapters for Glass Tubes in Beckman Coulter Rotors*

Rotor Volume	Tube	Tube Material Part Number	Adapter	Rotor	Tube Volume	Tube Material	Adapter Part Number
JA-30.50	15 mL	Corex, Pyrex	870329	JS-13.1	30 mL	Corex	870331
	30 mL	Corex	870331		15 mL	Corex, Pyrex	870329
JA-25.50	15 mL	Corex, Pyrex	870329	JS-7.5	150 mL	Corex	339362
	30 mL	Corex	870331		30 mL	Corex	356997/870331
JA-20.1	15 mL	Pyrex	342643		15 mL	Corex, Pyrex	356995
JA-20/JA-17	15 mL	Corex, Pyrex	870329	JS-4.2 & JS-4.2A	3 mL	Pyrex Conical	339100
	30 mL	Corex	870331		15 mL	Corex, Pyrex, Corex & Pyrex Conical and Conical Graduated	339102
JA-18	15 mL	Corex, Pyrex	870329/347539	30 mL	Corex	341977	
	30 mL	Corex	870331/347539	150 mL	Corex	339108/339362	
JA-14	150 mL	Corex	339362				
	30 mL	Corex	356997/870331				
	15 mL	Corex	356995				
	15 mL	Corex, Pyrex Conical	356964				
JA-10.500	150 mL	Corex	362750/339362				
	30 mL	Corex	356996/870331				
	15 mL	Corex, Pyrex Conical	356960				
JA-10	150 mL	Corex	362750/339362				
	30 mL	Corex	356996/870331				
	15 mL	Corex, Pyrex Conical	356960				

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

Tubes and Bottles

Tubes and Bottles Used in High-Performance and High-Capacity Rotors

Nominal Filling Capacity (mL)	Nominal Size (mm)	Inches	Part No.	Rotors
Quick-Seal Polypropylene Tubes				
100.0	38 x 102	1.5 x 4.0	345776	JA-18
Quick-Seal Ultra-Clear Tubes				
100.0	38 x 102	1.5 x 4.0	345778	JA-18
Quick-Seal Bell-Top Tubes, Polypropylene				
4.3	16 x 38	0.65 x 2.5	356562	JS-24.15
6.3	16 x 45	0.65 x 1.8	345830	JS-24.15
8.0	16 x 58	0.65 x 2.25	344621	JS-24.15
8.5	25 x 38	0.65 x 2.5	358652 (konical)	JS-24.38
10.0	16 x 67	0.65 x 2.5	344622	JS-24.15
15.0	25 x 38	1 x 1.5	343664	JS-24.38
23.0	25 x 76	1 x 1.5	358654 (konical)	JS-24.38
27.0	25 x 64	1 x 2.5	343665	JS-24.38
33.0	25 x 83	1 x 3.25	344623	JS-24.38
Open-Top Tubes, Polypropylene				
15.0	16 x 96	0.65 x 3.85	361707	JS-24.15
25.0	25 x 76	1.0 x 3.0	358125 (konical)	JS-24.38
30.0	25 x 89	1.0 x 3.5	358126 (konical)	JS-24.38
38.5	25 x 89	1.0 x 3.5	326823	JS-24.38
Open-Top Tubes, Polypropylene, Thickwall				
4.0	13 x 64	0.5 x 2.5	355644	JA-25.15
10.0	16 x 76	0.65 x 3.0	355640	JA-25.15, JA-21, JA-20.1, JS-5.2, JS-4.3, JS-4.2, JS-4.2A, JS-4.0, JS-3.0
12.5	16 x 95	0.625 x 3.75	361708 (konical)	JS-24.15
32.0	25 x 89	1.0 x 3.5	355642	JS-24.38
Open-Top Tubes, Polycarbonate				
15.0	18 x 100	0.725 x 4.0	342080	JA-25.15, JA-20.1, JS-5.2, JS-4.3, JS-4.2, JS-4.2A, JS-4.0, JS-3.0
50.0	29 x 104	1.125 x 4.0	363647	JA-30.50, JA-25.50, JA-20, JA-18, JA-17, JA-14, JLA-10.500, JA-10, JLA-9.1000, JLA-8.1000, JS-7.5, JS-5.2, JS-4.3, JS-4.2, JS-4.2A, JS-4.0, JS-3.0
Open-Top Tubes, Polycarbonate, Thickwall				
4.0	13 x 64	0.5 x 2.5	355645	JA-25.15
10.0	16 x 76	0.65 x 3.0	355630	JA-25.15, JA-21, JA-20.1, JS-13.1, JS-5.2, JS-4.3, JS-4.2, JS-4.2A, JS-4.0, JS-3.0
32.0	25 x 89	1.0 x 3.5	355631	JS-24.38
Open-Top Tubes, Polyethylene, Thickwall				
15.0	18 x 100	0.725 x 4.0	342081	JA-25.15, JA-20.1, JS-5.2, JS-4.3, JS-4.2, JS-4.2A, JS-4.0, JS-3.0

Tubes and Bottles

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Nominal Filling Capacity (mL)	Nominal Size (mm)	Inches	Part No.	Rotors
Open-Top Tubes, Polypropylene, Thickwall				
4.0	13 x 64	0.5 x 2.5	355645	JA-25.15
15.0	18 x 100	0.725 x 4.0	342082	JA-25.15, JA-20.1, JS-5.2, JS-4.3, JS-4.2, JS-4.2A, JS-4.0, JS-3.0
50.0	29 x 104	1.125 x 4.0	357007	JA-30.50 Ti, JA-25.50, JA-20, JA-18, JA-17, JLA-16.250, JA-14, JLA-10.500, JA-10, JLA-9.1000, JLA-8.1000, JS-7.5, JS-5.2, JS-4.3, JS-4.2, JS-4.2A, JS-4.0, JS-3.0
Open-Top Tubes, Ultra-Clear				
15.0	16 x 96	0.65 x 3.8	361706	JS-24.15
38.5	25 x 89	1.0 x 3.5	344058	JS-24.38
Tubes with Snap-On Caps, Polypropylene				
1.5	11 x 38	0.4 x 1.5	357448 - Natural	JA-30.50 Ti, JA-25.50, JA-20, JA-18.1, JA-18, JS-13.1, JS-5.2, JS-4.3, JS-4.2, JS-4.2A, JS-4.0, JS-3.0
Tubes with Snap-On Caps, Polycarbonate				
50.0	29 x 104	1.125 x 4.0	363664	JA-30.50 Ti, JA-25.50, JLA-16.250, JA-14, JLA-10.500, JA-10, JLA-9.1000, JLA-8.1000, JS-13.1, JS-7.5, JS-5.2, JS-4.3, JS-4.2, JS-4.2A, JS-4.0, JS-3.0
Tubes with Snap-On Caps, Polypropylene				
1.5	11 x 38	0.4 x 1.5	356090 - Natural	JA-30.50 Ti, JA-25.50, JA-20, JA-18, JA-18.1, JS-13.1, JS-5.2, JS-4.2, JS-4.3, JS-4.2A, JS-4.0, JS-3.0
1.5	11 x 38	0.4 x 1.5	356091 - Blue	JA-20, JA-18, JA-18.1, JS-13.1, JS-5.2, JS-4.3, JS-4.2, JS-4.2A, JS-4.0, JS-3.0
1.5	11 x 38	0.4 x 1.5	356093 - Yellow	JA-20, JA-18, JA-18.1, JS-13.1, JS-5.2, JS-4.3, JS-4.2, JS-4.2A, JS-4.0, JS-3.0
1.5	11 x 38	0.4 x 1.5	356094 - Orange	JA-20, JA-18, JA-18.1, JS-13.1, JS-5.2, JS-4.3, JS-4.2, JS-4.2A, JS-4.0, JS-3.0
1.5	11 x 38	0.4 x 1.5	343169- Natural (cap separate)	JA-18.1, JA-18, JS-5.2, JS-4.3, JS-4.2, JS-4.2A, JS-4.0, JS-3.0
50.0	29 x 103	1.125 x 4.0	357005 - Natural (cap separate)	JA-30.50 Ti, JA-25.50, JA-20, JA-17, JLA-16.250, JA-14, JLA-10.500, JA-10, JLA-9.1000, JLA-8.1000, JS-13.1, JS-7.5, JS-5.2, JS-4.3, JS-4.2, JS-4.2A, JS-4.0, JS-3.0
Tubes with Snap-On Caps, Polyethylene				
1.8	11 x 39	0.4 x 1.5	340196 - Natural	JA-20, JA-18.1, JA-18, JS-13.1, JS-5.2, JS-4.3, JS-4.2, JS-4.2A, JS-4.0, JS-3.0
Bio-Vial Tubes				
4.0	14 x 55	.5625 x 2.25	566353 - Polypropylene	JLA-16.250, JA-14, JLA-10.500, JA-10, JLA-9.1000, JLA-8.1000, JS-7.5, JS-5.2, JS-4.3, JS-4.2, JS-4.2A, JS-4.0, JS-3.0
Bottles Only				
70.0	38 x 102	1.5 x 4.0	355655 - Polycarbonate	JS-5.2, JS-4.2, JS-4.2A, JS-4.0, JS-3.0
100.0	38 x 102	1.5 x 4	355626 - Polypropylene	JS-5.2, JS-4.2, JS-4.2A, JS-4.0, JS-3.0
500.0	69 x 160	2.75 x 6.5	355649 - Polycarbonate	JS-5.2, JS-4.2, JS-4.2A, JS-4.0, JS-3.0
500.0	69 x 160	2.75 x 6.5	355650 - Polypropylene	JS-5.2, JS-4.3, JS-4.2, JS-4.2A, JS-4.0, JS-3.0
1000.0	95 x 191	3.75 x 7.5	366751 - Polycarbonate	JLA-9.1000, JLA-8.1000
1000.0	95 x 191	3.75 x 7.5	A98814 - Polypropylene	JLA-9.1000, JLA-8.1000

Tubes and Bottles

Nominal Filling Capacity (mL)	Nominal Size (mm)	Inches	Part No.	Rotors
Bottles with Cap Assemblies, Polypropylene				
50.0	29 x 104	1.25 x 4.0	357001	JA-30.50 Ti, JA-20, JA-17, JLA-16.250, JA-14, JLA-10.500, JA-10, JLA-9.1000, JLA-8.1000, JS-5.2, JS-4.3, JS-4.2, JS-4.2A, JS-4.0, JS-3.0
50.0	29 x 104	1.25 x 4.0	361694	JA-25.50, JA-17, JA-14, JS-5.2, JS-4.3, JS-4.2, JS-4.2A, JS-4.0, JS-3.0
Bottles with Cap Assemblies, Polycarbonate				
50.0	29 x 104	1.25 x 4.25	361693	JA-25.50, JA-17, JS-4.3
50.0	29 x 104	1.25 x 4.25	357000	JA-30.50 Ti, JA-20, JA-17, JLA-16.250, JA-14, JLA-10.500, JA-10, JLA-9.1000, JLA-8.1000, JS-7.5, JS-5.2, JS-4.3, JS-4.2, JS-4.2A, JS-4.0, JS-3.0
70.0	38 x 102	1.5 x 4.0	355620	JA-18, JS-5.2, JS-4.2, JS-4.2A, JS-4.0, JS-3.0
500.0	62 x 166	2.75 x 6.5	361690	JLA-10.500
250.0	62 x 122	2.5 x 4.75	358275 (wide mouth)	JS-5.2, JS-4.2, JS-4.3, JS-4.2A, JS-4.0, JS-3.0
500.0	69 x 160	2.75 x 6.5	355605 (wide mouth)	JA-10, JLA-9.1000, JLA-8.1000, JS-5.2, JS-4.2, JS-4.2A, JS-4.0, JS-3.0
1000.0	95 x 191	3.8 x 7.65	A98812	JLA-9.1000, JLA-8.1000
Bottles with Cap Assemblies, Polypropylene				
10.4	16 x 76	0.6 x 3.0	355603	JS-7.5
250.0	62 x 120	2.5 x 4.75	358326 (wide mouth)	JS-5.2, JS-4.3, JS-4.2, JS-4.2A, JS-4.0, JS-3.0
500.0	69 x 160	2.75 x 6.5	355607 (wide mouth)	JA-10, JLA-9.1000, JLA-8.1000, JS-5.2, JS-4.3, JS-4.2, JS-4.2A, JS-4.0, JS-3.0
500.0	69 x 160	2.75 x 6.5	361691	JLA-10.500
1000.0	95 x 191	3.8 x 7.65	A98813	JLA-9.1000, JLA-8.1000
1000.0	95 x 191	3.8 x 7.65	B29896	JLA-9.1000, JLA-8.1000
Bottles with Screw-On Caps, Polypropylene				
50.0	29 x 104	1.25 x 4.0	357003	JA-30.50 Ti, JA-25.50, JA-20, JA-18, JA-17, JLA-16.250, JA-14, JLA-10.500, JA-10, JLA-9.1000, JLA-8.1000, JS-13.1, JS-7.5, JS-5.2, JS-4.3, JS-4.2, JS-4.2A, JS-4.0, JS-3.0
Bottles with Screw-On Caps, Polycarbonate				
10.0	16 x 80	0.6 x 3.2	355672	JA-30.50 Ti, JA-25.50, JA-25.15, JA-21, JA-20.1, JA-20, JA-17, JS-13.1, JS-5.2, JS-4.2, JS-4.2A, JS-4.0, JS-3.0
50.0	29 x 104	1.25 x 4.0	357002	JA-30.50 Ti, JA-25.50, JA-20, JA-18, JA-17, JLA-16.250, JA-14, JLA-10.500, JA-10, JS-13.1, JS-7.5, JS-5.2, JS-4.3, JS-4.2, JS-4.2A, JS-4.0, JS-3.0
230.0	62 x 141	2.5 x 5.25	356987 (conical)	JA-14, JS-7.5, JS-5.2, JS-4.3, JS-4.2, JS-4.2A, JS-4.0, JS-3.0
250.0	62 x 120	2.5 x 4.75	356013 (wide mouth)	JLA-16.250, JA-14, JLA-10.500, JA-10, JLA-9.1000, JLA-8.1000, JS-7.5, JS-5.2, JS-4.3, JS-4.2, JS-4.2A, JS-4.0, JS-3.0
250.0	62 x 136	2.5 x 5.5	355673	JS-7.5, JS-5.2, JS-4.3, JS-4.2, JS-4.2A, JS-4.0, JS-3.0
500.0	69 x 160	2.75 x 6.5	355664	JS-5.2, JS-4.2, JS-4.2A, JS-4.0, JS-3.0
750.0	96 x 130	3.75 x 5.25	358299	JS-5.2, JS-4.3, JS-4.2, JS-4.2A, JS-4.0, JS-3.0
1000.0	97 x 167	3.75 x 6.75	355675	JS-5.2, JS-4.2, JS-4.2A, JS-4.0, JS-3.0
Bottles with Screw-On Caps, Polypropylene				
100.0	38 x 102	1.5 x 4.0	355624	JA-18, JS-5.2, JS-4.2, JS-4.2A, JS-4.0, JS-3.0
230.0	62 x 141	2.5 x 5.5	356989 (conical)	JA-14, JS-7.5, JS-5.2, JS-4.3, JS-4.2, JS-4.2A, JS-4.0, JS-3.0
250.0	62 x 120	2.5 x 4.75	356011 (wide mouth)	JLA-16.250, JA-14, JLA-10.500, JA-10, JLA-9.1000, JLA-8.1000, JS-7.5, JS-5.2, JS-4.3, JS-4.2, JS-4.2A, JS-4.0, JS-3.0
500.0	69 x 159	2.75 x 6.5	355665	JA-10, JS-5.2, JS-4.3, JS-4.2, JS-4.2A, JS-4.0, JS-3.0
750.0	96 x 130	3.75 x 5.25	356855	JS-5.2, JS-4.3, JS-4.2, JS-4.2A, JS-4.0, JS-3.0
1000.0	97 x 167	4.0 x 6.75	355676	JS-5.2, JS-4.2, JS-4.2A, JS-4.0, JS-3.0
Bottles with Screw-On Caps, Polytetrafluoroethylene (PTFE)				
50.0	28.5 x 107	1.25 x 4.25	363076	JS-4.2



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