

JS-13.1 Swinging Bucket Rotor



**Used In Beckman Coulter J2, J6,
and Avanti® J Series Centrifuges**



SAFETY NOTICE

This safety notice summarizes information basic to the safe use of the rotor described in this manual. The international symbol displayed above is a reminder to the user that all safety instructions should be read and understood before operation or maintenance of this equipment is attempted. When you see the symbol on other pages of this publication, pay special attention to the safety information presented. Observance of safety precautions will also help to avoid actions that could damage or adversely affect the performance of the rotor. This rotor was developed, manufactured, and tested for safety and reliability as part of a Beckman Coulter centrifuge/rotor system. Its safety or reliability cannot be assured if used in a non-Beckman Coulter centrifuge or in a Beckman Coulter centrifuge that has been modified without Beckman Coulter's approval.



Handle body fluids with care because they can transmit disease. No known test offers complete assurance that such fluids are free of micro-organisms. Some of the most virulent—Hepatitis (B and C) viruses, HIV (I–V), atypical mycobacteria, and certain systemic fungi—further emphasize the need for aerosol protection. Handle other infectious samples according to good laboratory procedures and methods to prevent spread of disease. Because spills may generate aerosols, observe proper safety precautions for aerosol containment. Do not run toxic, pathogenic, or radioactive materials in this rotor without taking appropriate safety precautions. Biosafe containment should be used when Risk Group II materials (as identified in the *World Health Organization Laboratory Biosafety Manual*) are handled; materials of a higher group require more than one level of protection.



The rotor and accessories are not designed for use with materials capable of developing flammable or explosive vapors. Do not centrifuge such materials in nor handle or store them near the centrifuge.



Although rotor components and accessories made by other manufacturers may fit in the JS-13.1 rotor, their safety in this rotor cannot be ascertained by Beckman Coulter. Use of other manufacturers' components or accessories in the JS-13.1 rotor may void the rotor warranty and should be prohibited by your laboratory safety officer. Only the components and accessories listed in this publication should be used in this rotor.



Load all six buckets, loaded or empty, into the rotor before every run. Make sure that filled containers are loaded symmetrically into the rotor and that opposing bottles or tubes are filled to the same level with liquid of the same density.



If disassembly reveals evidence of leakage, you should assume that some fluid escaped the rotor. Apply all appropriate safety and decontamination procedures to the centrifuge and accessories as required.



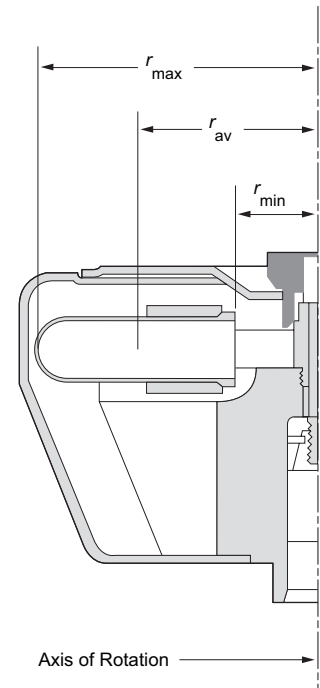
Never exceed the maximum rated speed of the rotor and labware in use. Refer to the section on RUN SPEEDS.



Do not use sharp tools on the rotor that could cause scratches in the rotor surface. Corrosion begins in scratches and may open fissures in the rotor with continued use.

JS-13.1 SWINGING BUCKET ROTOR

SPECIFICATIONS



Maximum speed	13 000 rpm
Minimum speed	1 000 rpm*
Critical speed range†	600 to 800 rpm
Maximum solution density.	1.2 g/mL
Relative Centrifugal Field‡ at maximum speed	
At r _{max} (140 mm)	26 500 × g
At r _{av} (91 mm)	17 200 × g
At r _{min} (41 mm)	7 760 × g
k factor at maximum speed (full tubes)	1 841
Number of buckets	6
Available tubes and bottles.	see Table 3
Nominal bucket capacity	50 mL
Nominal rotor capacity.	300 mL
Weight of fully loaded rotor.	9 kg (20 lb)
Approximate acceleration time to maximum speed	
(rotor fully loaded)	2.5 min
Approximate deceleration time from maximum speed	
(maximum brake, rotor fully loaded)	2.5 min
Rotor material.	aluminum
Rotor entry code for	
microprocessor-controlled J2 and J6 series centrifuges	13

* Buckets are not completely horizontal below this speed.

† The critical speed range is the range of speeds over which the rotor shifts so as to rotate about its center of mass. Passing through the critical speed range is characterized by some vibration.

‡ Relative Centrifugal Field (RCF) is the ratio of the centrifugal acceleration at a specified radius and speed ($r\omega^2$) to the standard acceleration of gravity (g) according to the following formula:

$$RCF = \frac{r\omega^2}{g}$$

where r is the radius in millimeters, ω is the angular velocity in radians per second ($2 \pi \text{RPM} / 60$), and g is the standard acceleration of gravity (9807 mm/s^2). After substitution:

$$RCF = 1.12 r \left(\frac{\text{RPM}}{1000} \right)^2$$

DESCRIPTION

This rotor has been manufactured in a registered ISO 9001 or 13485 facility for use with the specified Beckman Coulter centrifuges.

The JS-13.1, rated for 13 000 rpm, is a swinging bucket rotor designed to centrifuge up to six 50-mL tubes. Used in Beckman Coulter J2, J6, and Avanti® J centrifuges, the rotor develops centrifugal forces that efficiently process tissue homogenates, cells, and subcellular particles by either pelleting or density gradient separations. Short-column methods (such as partially filled tubes) may be used to shorten run times.

The rotor and lid are made of aluminum—the rotor is painted black and the lid is blue-anodized. The knob in the rotor lid secures the rotor to the drive hub. The air pressure differential caused by the rotor as it spins keeps the lid in place.

A plastic strip (see Figure 1) fits around the edge of the rotor windshield to protect the edges of the windshield and cover. Pins in the rotor drive hole mate with grooves in the centrifuge drive hub (older model centrifuges), or with drive hub teeth (new model centrifuges), to prevent the rotor from slipping during acceleration and deceleration.

The JS-13.1 rotor is warranted for 7 years (see the Warranty).



Figure 1. The JS-13.1 Swinging Bucket Rotor

PREPARATION AND USE

Specific information about the JS-13.1 rotor is given here. Information common to this and other rotors is contained in the manual Rotors and Tubes for J Series Centrifuges (publication JR-IM), which should be used with this manual for complete rotor and accessory information.

NOTE

Although rotor components and accessories made by other manufacturers may fit in the JS-13.1 rotor, their safety in this rotor cannot be ascertained by Beckman Coulter. Use of other manufacturers' components in the JS-13.1 rotor may void the rotor warranty and should be prohibited by your laboratory safety officer. Only the components and accessories listed in this publication should be used in this rotor.

PRERUN SAFETY CHECKS



Read the SAFETY NOTICE at the front of this manual before using the rotor.

1. Make sure that the rotor, buckets, and all tubes or bottles and accessories are clean and show no signs of corrosion or cracking.
2. Verify that the bottles or tubes being used are listed in Table 3.
3. Check the chemical compatibilities of all materials used (refer to Appendix A in *Rotors and Tubes*, or to *Chemical Resistances*, publication IN-175).

ROTOR PREPARATION

For runs at other than room temperature, refrigerate or warm the rotor before the run for fast equilibration.

ROTOR INSTALLATION

Two metal pins inside the rotor drive hole engage with teeth on the centrifuge drive spindle hub to prevent the rotor from slipping during acceleration and deceleration (see Figure 2). When the rotor is properly installed, the pins sit either in the spindle hub grooves or on top of the hub surface (see Figure 3).

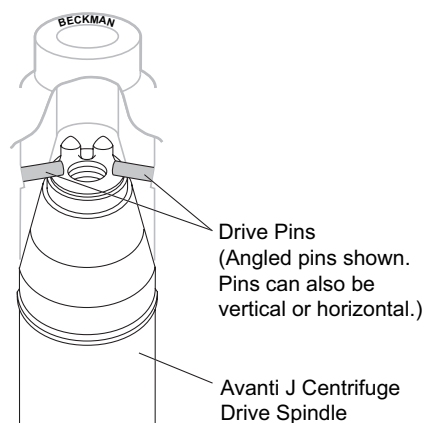


Figure 2. Rotor Drive Pin Location Orientation

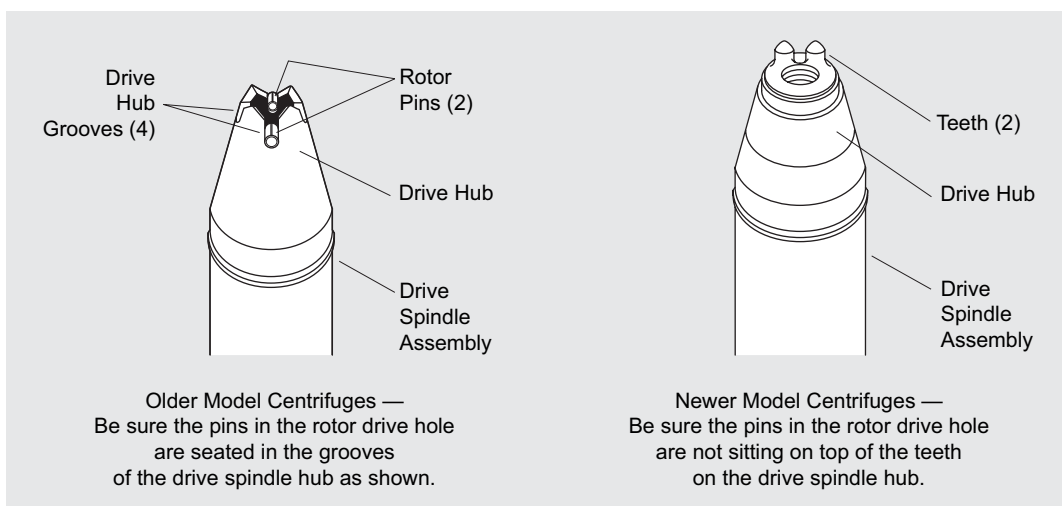


Figure 3. Centrifuge Drive Spindle Hub Configurations

In rotors manufactured since early 1997, the rotor pins are positioned parallel to the BECKMAN name engraved at the center of the rotor body. Knowing the pin orientation before you install the rotor will help to ensure that you position the rotor properly on the hub, minimizing the chance of hub damage. Follow the steps below.

1. A lifting handle is provided with the rotor. Remove the lid from the rotor and, while holding the hex rotor tie-down with one hand, screw the long end of the lifting handle into the threads in the top of the tie-down bolt until it is tight.
2. Turn the rotor until the BECKMAN name is either horizontal or perpendicular to the drive hub pins or teeth. Alternately, rotate the drive spindle to align the spindle hub pins or teeth with the rotor drive pins.
3. Carefully lower the rotor straight down onto the centrifuge drive spindle hub (see Figure 4).

**CAUTION**

The centrifuge drive spindle can be bent if the rotor is forced sideways or dropped onto it. Do not drop the rotor onto the spindle hub.

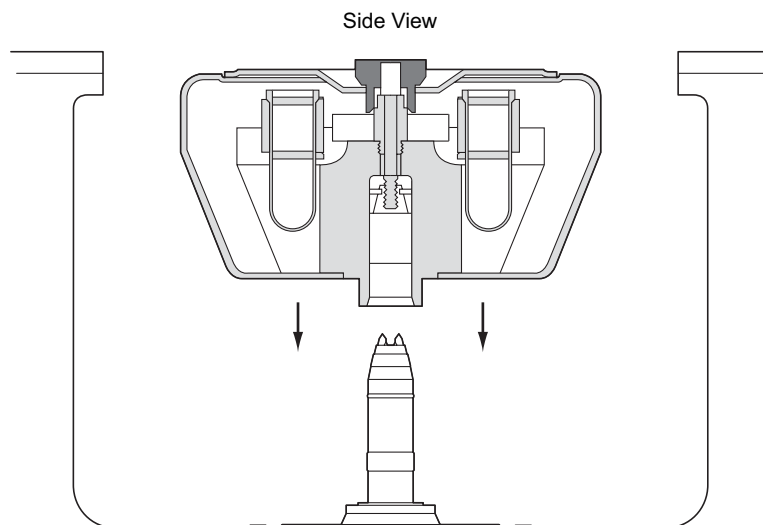
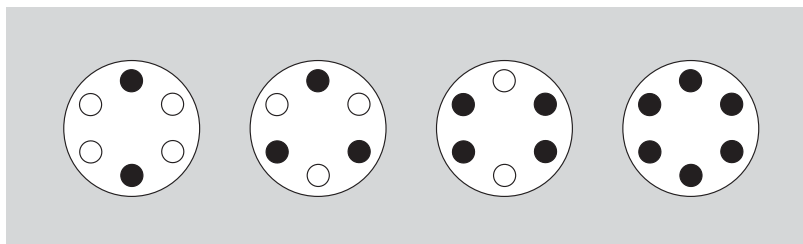


Figure 4. Installing the Rotor

4. Slowly turn the rotor, making sure that it is properly seated. (In rare cases, the rotor pins can rest on top of the drive spindle hub pins or teeth and not seat on the hub surface. This can prevent the rotor from being secured to the spindle. Turning the rotor slightly after installing it will move pins into proper position.)
5. After the rotor is seated, hold onto the tie-down bolt and unscrew the lifting handle.
6. Place the lid on the rotor. Press down on the knob of the lid and screw the knob down tight. Turning the knob to the right (clockwise) attaches the rotor to the hub; the lid remains free and may be slipped on or off while the rotor remains secured in the centrifuge.
7. Remove the lid and fill the rotor, making sure all buckets swing freely. Opposing loads should balance to within 5 grams. *All six buckets, loaded or empty, must be installed in the rotor during centrifugation.* If fewer than six tubes are being run, they must be arranged symmetrically in the rotor (see Figure 5).



*Figure 5. Arranging Tubes Symmetrically in the Rotor Buckets.
Two, three, four, or six tubes can be centrifuged per run
if they are arranged in the rotor as shown.
All buckets must be attached to the rotor, whether loaded or empty.*

NOTE

Bucket collars are numbered 1 through 6, as are the buckets (in sets of six). Load the rotor so that bucket numbers correspond with collar numbers. If additional buckets are purchased, we recommend that you do not mix sets. Buckets are matched within sets by weight and some variance may exist between sets.

8. Replace the lid on the rotor, slipping the knob down firmly over the hex hub. The lid can be slipped on and off the rotor between subsequent runs. No further turning of the lid handle is required as long as the rotor remains firmly secured to the spindle.

OPERATION

- Precool the rotor in the centrifuge or in a refrigerator before use—especially before short runs—to ensure that the rotor reaches the set temperature. A suggested precooling cycle is a minimum of 30 minutes at 2000 rpm at the required temperature.
- If fluid containment is required, *use capped bottles or tubes*. It is strongly recommended that all containers carrying physiological fluids be capped, and not overfilled, to prevent leakage.
- If you are using an Avanti J series centrifuge, select the JS-13.1 rotor. If you are using a microprocessor-controlled J2 or J6 series centrifuge, enter rotor code 13. Refer to your centrifuge instruction manual for additional information.
- Although this rotor was designed to run with the lid in place, it can be run without the lid. Once the rotor is fastened to the drive spindle, the lid can be lifted off. If the rotor is run without the lid, air friction and turbulence may prevent the rotor from reaching its top speed. Temperature control may also be impaired.
- During a run, buckets swing 90 degrees from their at-rest position. The pivotal axis of a bucket can be imagined as a line extending across the bucket from one pivot pin to the other. If a bucket is loaded so that its weight is unequally distributed on either side of its pivotal axis it will not hang vertically at rest and, more importantly, will not swing to a horizontal position during a run. As a result extra stress will be placed on the bucket, tubes, and/or bottles, increasing the possibility of breakage or rotor imbalance.



WARNING

If the rotor is left in the centrifuge between runs, make sure that the rotor is seated on the drive hub and that the tie-down knob is tight before each run.

RUN CONDITIONS

TIME



Run times for pelleting in the JS-13.1 rotor can be estimated if the sedimentation coefficients (s) of the particles of interest are known. Use the rotor's k factor (1841 for full tubes at maximum speed)¹ in the following equation to estimate the run time t (in hours) required to pellet particles of known sedimentation coefficient s (in Svedberg units).

$$t = \frac{k}{s} \quad (1)$$

Run times can be estimated for centrifugation at less than maximum speed by adjusting the k factor as follows:

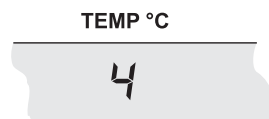
$$k_{\text{adj}} = k_{\text{rated}} \left(\frac{13\,000}{\text{actual run speed}} \right)^2 \quad (2)$$

For tubes used in adapters or tubes that nominally hold less than 50 mL, the k factor is not 1841. Calculate these k factors using equation (3).

$$k_{\text{rated}} = \frac{2.53 \times 10^5}{\text{RPM}^2} \left(\ln \frac{a}{b} \right) \quad (3)$$

where a is the actual r_{max} of the tube, measured in millimeters from the center of the rotor, and b is the actual r_{min} (radius of the liquid meniscus) of the tube. This value for k_{rated} can be substituted in equations (1) and (2) to estimate run times for these containers.

TEMPERATURE



To ensure that the JS-13.1 rotor reaches the required temperature during the run, follow the appropriate instructions below for the centrifuge model being used.

¹ Based on sedimentation in water at 20°C.

NOTE

If the rotor is run without the lid, temperature control may be impaired in all centrifuge models.

Avanti J Series Centrifuges

Enter the run temperature according to the instructions in your centrifuge instruction manual. No additional input is required.

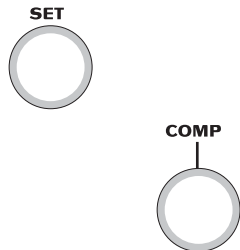
J2 and J6 Series Centrifuges

Enter the required run temperature and the appropriate temperature compensation settings on the control panel following the instructions below. Table 1 provides compensation settings for centrifuge models J2-HS and J2-21. Temperature compensation values for other centrifuge models must be determined empirically. Table 1 values can be used as a starting point for testing.

Table 1. Temperature Compensation Settings for Centrifuge Models J2-HS and J2-21. Interpolate if intermediate values are required.

Rotor Speed (rpm)	Required Sample Temperature (°C, green bar)						
	-20	-10	2	5	10	20	40
13 000	N	-10	-10	-10	-10	-10	-9
11 000	N	-8	-8	-8	-7	-6	-5
8 000	-6	-5	-4	-4	-3	-3	N
5 000	-4	-3	-1	-1	-1	-1	N

An "N" indicates that the rotor cannot achieve the required temperature at this speed.



Analog J2 and J6 Series Centrifuges

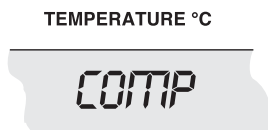
1. Turn the SET knob on the centrifuge control panel to the required sample temperature.
2. For models J2-HS and J2-21, find the compensation value in Table 1 that corresponds to the required temperature and run speed. Set the COMP dial to that setting. Temperature compensation settings for other centrifuge models must be determined empirically.

Microprocessor-Controlled J2 and J6 Series Centrifuges

Temperature compensation values for these centrifuge models must be determined empirically.

Enter rotor code 13, then follow the steps below.

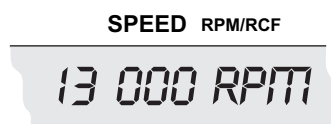
1. Press the [TEMP] key on the centrifuge control panel and then use the keypad to enter the sample temperature.
2. Press [COMP ADJ]. The word “COMP” flashes below the TEMPERATURE display and the display flashes.
3. Use the keypad to enter the compensation value. Press the [±.] key to enter a minus sign; pressing it again will remove the minus sign.
4. Check the temperature display. (If the entry is incorrect, press [CE] and reenter the digits.)
5. When the entry is correct, press [ENTER/RECALL].



NOTE

To clear a COMP ADJ entry, press [COMP ADJ], [0], and [ENTER/RECALL].

RUN SPEEDS



The centrifugal force at a given radius in a rotor is a function of run speed. Comparisons of forces between different rotors are made by comparing the rotors' relative centrifugal fields (RCF). When rotational speed is adjusted so that identical samples are subjected to the same RCF in two different rotors, the samples are subjected to the same force. The RCF at a number of rotor speeds is provided in Table 2.

Do not select rotational speeds higher than the maximums you have determined to be appropriate for your protocols (in no case above 13 000 rpm or above the limit shown in Table 3). When solutions more dense than 1.2 g/mL are centrifuged in this rotor, use equation (4) to calculate the reduced maximum allowable speed.

$$\text{reduced maximum speed} = (13\,000 \text{ rpm}) \sqrt{\frac{1.2 \text{ g/mL}}{\text{density of tube contents}}} \quad (4)$$

RUN PROCEDURE



WARNING

Operator error or tube failure may generate aerosols. Toxic, pathogenic, or other hazardous materials must not be run in this rotor unless all appropriate safety precautions are taken. See the Safety Notice at the beginning of this manual.



CAUTION

Make sure that the rotor is properly seated and securely fastened to the drive spindle before each run.

When the rotor is properly loaded and installed in the centrifuge, you are ready to perform the run. Refer to the applicable centrifuge instruction manual for operating instructions.

Table 2. Relative Centrifugal Fields for the JS-13.1 Rotor.

Entries in this table are calculated from the formula

$$RCF = 1.12 r (RPM/1000)^2$$

and then rounded to three significant digits.

Rotor Speed (rpm)	Relative Centrifugal Field ($\times g$)		
	At r_{\max} (140 mm)	At r_{av} (91 mm)	At r_{\min} (41 mm)
13 000	26 500	17 200	7 760
12 500	24 500	15 900	7 180
12 000	22 600	14 700	6 610
11 500	20 700	13 500	6 070
11 000	19 000	12 300	5 560
10 500	17 300	11 200	5 060
10 000	15 700	10 200	4 590
9 500	14 200	9 200	4 140
9 000	12 700	8 260	3 720
8 500	11 300	7 360	3 320
8 000	10 000	6 520	2 940
7 500	8 820	5 730	2 580
7 000	7 680	4 990	2 250
6 500	6 620	4 310	1 940
6 000	5 640	3 670	1 650
5 500	4 740	3 080	1 390
5 000	3 920	2 550	1 150
4 500	3 180	2 060	929
4 000	2 510	1 630	734
3 500	1 920	1 250	562
3 000	1 410	917	413
2 500	980	637	287
2 000	627	407	183
1 500	352	229	103
1 000	156	101	45

If you are using a microprocessor-controlled J2 or J6 series centrifuge, be sure to enter code 13. Refer to your centrifuge instruction manual for additional information.

NOTE

Line voltage fluctuations can cause variations in acceleration and deceleration times.

REMOVAL AND SAMPLE RECOVERY



CAUTION

If disassembly reveals evidence of leakage, you should assume that some fluid escaped the rotor. Apply appropriate decontamination procedures to the centrifuge and accessories.

1. Remove filled tubes from the rotor before removing the rotor from the centrifuge.
2. Turn the lid knob to the left (counterclockwise) to unscrew the tie-down bolt from the centrifuge drive spindle.
3. Lift the rotor straight up off the drive spindle. Alternately, you can use the lifting handle and removal tool (346965) to remove the rotor by screwing the long end of the handle into the threads in the top of the tie-down bolt.

If the rotor sticks to the drive spindle hub, screw the short end of the removal tool into the threaded opening to force the rotor up and off the hub. In J2 and J6 series centrifuges, lubricate the drive hub with Spinkote lubricant before use to prevent sticking. Avanti J drive hubs do not need lubrication.

BOTTLES AND TUBES

The JS-13.1 rotor uses the bottles and tubes listed in Table 3. Be sure to use only those items listed and observe the maximum fill volumes and speed limits shown. (Maximum fill volume is the maximum amount of fluid that can be centrifuged in the listed container.) To minimize the possibility of leakage from capped tubes or bottles, load tubes or bottles with sample, secure the caps, and precool the loaded, sealed labware to run temperature before beginning the run.

Refer to Appendix A in *Rotors and Tubes* for information on the chemical resistances of tube and accessory materials.

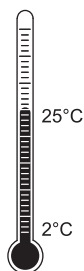
Table 3. Available Bottles and Tubes for the JS-13.1 Rotor.
Use only the items listed here and observe fill volumes and maximum run speeds.

Tube		Part Number	Max. Fill Volume mL (approx)	Required Accessory			Max Speed
Dimensions and Volume	Description			Description	Part Number	Tubes per Adapter	
29 x 104 mm 50 mL	polycarbonate w/snap-on cap (pkg/25)	363664	45	none		—	13 000
29 x 104 mm 50 mL	polypropylene w/snap-on cap (pkg/25)	357005	45	none		—	13 000
29 x 104 mm 50 mL	polyallomer w/screw-on cap (pkg/25)	357003	45	none		—	13 000
29 x 104 mm 50 mL	polycarbonate w/screw-on cap (pkg/25)	357002	45	none		—	13 000
16 x 76 mm 10 mL	polycarbonate tube (pkg/25)	355630	9	adapters	342327*/870329 (rubber)	4	13 000
16 x 80 mm 10 mL	polycarbonate bottle w/screw-on cap (pkg/25)	355672	10	adapters	342327*/870329	1	13 000
11 x 39 mm 1.8 mL	polyethylene tube (pkg/500)	340196	1.8	adapter	344497‡	3	13 000
11 x 39 mm 1.5 mL	polyallomer tube (pkg/500)	357448	1.5	adapter	344497	3	13 000
11 x 39 mm 1.5 mL	polypropylene tube, natural (pkg/500)	356090	1.5	adapter	344497	3	13 000
11 x 39 mm 1.5 mL	polypropylene tube, blue (pkg/500)	356091	1.5	adapter	344497	3	13 000
11 x 39 mm 1.5 mL	polypropylene tube, green (pkg/500)	356092	1.5	adapter	344497	3	13 000
11 x 39 mm 1.5 mL	polypropylene tube, yellow (pkg/500)	356093	1.5	adapter	344497	3	13 000
11 x 39 mm 1.5 mL	polypropylene tube, orange (pkg/500)	356094	1.5	adapter	344497	3	13 000
13 x 100 mm 7 mL	commercially available round-bottom tubes	—	7 mL	adapter	356976‡	1	13 000
12 x 74 mm 5 mL	commercially available round-bottom tubes	—	5 mL	adapter	356970‡	1	13 000

*Noryl. Noryl is a registered trademark of GE Plastics.

† Polypropylene.

‡ Delrin. Delrin is a registered trademark of E.I. Du Pont de Nemours & Company.



Temperature Limits

- Plastic containers have been tested for use at temperatures between 2 and 25°C. For centrifugation at other temperatures, pretest containers under anticipated run conditions.
- If plastic containers are frozen before use, make sure that they are thawed to at least 2°C before centrifugation.



Thickwall Tubes

Thickwall polyallomer, polypropylene, and polycarbonate tubes can be run partially filled (at least half filled) with or without caps, but all opposing tubes for a run must be filled to the same level with liquid of the same density. Do not overfill capless tubes; be sure to note the fill volumes and run speeds shown in Table 3.



Polycarbonate and Polyallomer Tubes

Capped polycarbonate or polyallomer tubes may be centrifuged completely or partially filled (not less than half full). Again, all opposing containers for a run must be filled to the same level.

CARE AND MAINTENANCE

INSPECTION

Periodically (at least monthly) inspect the rotor components for rough spots or pitting, white powder deposits—frequently aluminum oxide—or heavy discoloration. If any of these signs are evident, do not use the rotor. Contact your Beckman Coulter representative for information about the Field Rotor Inspection Program (FRIP) and the rotor repair center.

MAINTENANCE

- Routinely apply a light coat of Spinkote lubricant to the centrifuge drive hub (J2 and J6 series centrifuges only) and to the rotor drive hole to prevent the rotor from sticking.
- Do not use sharp tools on the rotor, as they can scratch the anodized surface. Corrosion begins in scratches and may open fissures in the metal with continued use.

Refer to Appendix A in *Rotors and Tubes* for the chemical resistances of rotor and tube materials. Your Beckman Coulter representative provides contact with the Field Rotor Inspection Program and the rotor repair center.

CLEANING

Wash the rotor and rotor components immediately if salts or other corrosive materials are used or if spillage has occurred. Do not allow corrosive materials to dry on the rotor.

Under normal use, wash the rotor frequently (at least weekly) to prevent buildup of residues. Special care should be taken to clean and dry this rotor so liquids and corrosives that may be trapped by the windshield do not damage the rotor. If the rotor is left in the centrifuge for long periods of time, remove the rotor from the centrifuge at least once a month for cleaning and lubrication.



1. Wash all rotor components, using a mild detergent such as Beckman Solution 555™ (339555). The Rotor Cleaning Kit (339558) contains two brushes and two quarts of Solution 555 for use with rotors and accessories. Dilute the detergent 10 to 1 with water.

NOTE

Do not wash the rotor components or accessories in a dishwasher. Do not soak components in detergent solution for long periods of time, such as overnight.

2. Thoroughly rinse the cleaned rotor and components with distilled water.
3. Air-dry the rotor upside down. *Do not use acetone to dry the rotor.*

Clean metal threads every 6 months, or as necessary. Use a brush and concentrated Solution 555. Rinse and dry thoroughly, then lubricate lightly but evenly with Spinkote to coat all threads.

DECONTAMINATION



If the rotor (and/or accessories) becomes contaminated with radioactive material, decontaminate it using a solution that will not damage the anodized surfaces. Beckman Coulter has tested a number of solutions and found several that do not harm anodized aluminum: RadCon Surface Spray or IsoClean Solution (for soaking),² and Radiacwash.³

NOTE

IsoClean can cause fading of colored anodized surfaces. Use it only when necessary and remove it promptly from surfaces.

While Beckman Coulter has tested these methods and found that they do not damage the rotor or components, no guarantee of sterility or disinfection is expressed or implied. When sterilization or disinfection is a concern, consult your laboratory safety officer regarding proper methods to use.



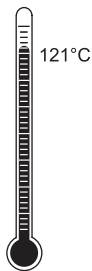
If the rotor or other components are contaminated with toxic or pathogenic materials, follow appropriate decontamination procedures as outlined by your laboratory safety officer. Refer to *Rotors and Tubes* to evaluate your rotor's ability to withstand a given chemical solution.

STERILIZATION AND DISINFECTION

- The rotor and all rotor components can be autoclaved at 121°C for up to one hour. Place the rotor in the autoclave upside down, with the lid removed.

² In U.S.A., contact Nuclear Associated (New York); in Eastern Europe and Commonwealth States, contact Victoreen GmbH (Munich); in South Pacific, contact Gammasonics Pty, Ltd. (Australia); in Japan, contact Toyo Medic Co. Ltd. (Tokyo).

³ In U.S.A., contact Biodex Medical Systems (Shirley, NY); internationally, contact the U.S. office to find the dealer nearest you.



- Ethanol (70%)⁴ may be used on all rotor components. Refer to Appendix A in *Rotors and Tubes* for other chemical resistances of tubes, bottles, and accessories.

While Beckman Coulter has tested these methods and found that they do not damage components, no guarantee of sterility or disinfection is expressed or implied. When sterilization or disinfection is a concern, consult your laboratory safety officer.

Refer to publication IN-192, included in each box of tubes or bottles, for tube and bottle sterilization and disinfection procedures.

TUBE BREAKAGE

If a glass bottle or tube breaks, remove the glass very carefully from the rotor and/or adapter. Imbedded glass particles that remain in the rotor cavities or adapters can cause tube failure during subsequent runs. Clean the rotor thoroughly *immediately* following a bottle or tube breakage.

STORAGE

When the rotor is not in use, store it in a dry environment (not in the centrifuge) with the lid removed to allow air circulation so moisture will not collect in the tube cavities.

⁴ Flammability hazard. Do not use in or near operating centrifuges.

RETURNING A ROTOR

Before returning a rotor or accessory for any reason, prior permission (a Returned Goods Authorization form) must be obtained from Beckman Coulter, Inc. This RGA form, which may be obtained from your local Beckman Coulter sales office, should contain the following information:

- rotor serial number,
- history of use (approximate frequency of use),
- reason for the return,
- original purchase order number, billing number, and shipping number, if possible,
- name and phone number of the person to be notified upon receipt of the rotor or accessory at the factory, and
- name and phone number of the person to be notified about repair costs, etc.

To protect our personnel, it is the customer's responsibility to ensure that the parts are free from pathogens and/or radioactivity. Sterilization and decontamination must be done before returning the parts. Smaller items (such as tubes, bottles, etc.) should be enclosed in a sealed plastic bag.

*All parts must be accompanied by a note, plainly visible on the outside of the box or bag, stating that they are safe to handle and that they are not contaminated with pathogens or radioactivity. **Failure to attach this notification will result in return or disposal of the items without review of the reported problem.***

Use the address label printed on the RGA form when mailing the rotor and/or accessories to:

Beckman Coulter, Inc.
1050 Page Mill Road
Palo Alto, CA 94304

Attention: Returned Goods

Customers located outside the United States should contact their local Beckman Coulter office.

SUPPLY LIST



NOTE

Publications referenced in this manual can be obtained by calling Beckman Coulter at 1-800-742-2345 in the United States, or by contacting your local Beckman Coulter office.

Contact Beckman Coulter Sales (1-800-742-2345 in the United States) or your local Beckman Coulter office, or see the *Beckman Coulter High Performance, High Speed, High Capacity Rotors, Tubes & Accessories* catalog (BR-8102, available at www.beckman-coulter.com) for detailed information on ordering parts and supplies. For your convenience, a partial list is given below.

REPLACEMENT ROTOR PARTS

JS-13.1 rotor assembly	346963
Rotor lid assembly.	346964
Bucket set	346976
Plastic windshield trim	346979
Rotor tie-down assembly.	364862
Tie-down kit	364921

SUPPLIES

Bottles, tubes, and adapters.	see Table 3
Rotor Cleaning Kit	339558
Silicone vacuum grease (1 oz)	335148
Solution 555 (1 qt).	339555
Spinkote lubricant (2 oz).	306812
Lifting handle and removal tool	346965

J SERIES SWINGING BUCKET ROTOR WARRANTY

Subject to the conditions specified below and the warranty clause of the Beckman Coulter, Inc., terms and conditions of sale in effect at the time of sale, Beckman Coulter, Inc. agrees to correct either by repair, or, at its election, by replacement, any defects of material or workmanship which develop within seven (7) years after delivery of a J series rotor to the original buyer by Beckman Coulter, Inc. or by an authorized representative, provided that investigation and factory inspection by Beckman Coulter discloses that such defect developed under normal and proper use. Should a Beckman Coulter centrifuge be damaged due to a failure of a rotor covered by this warranty, Beckman Coulter will supply free of charge all centrifuge parts required for repair.

REPLACEMENT

Any product claimed to be defective must, if requested by Beckman Coulter be returned to the factory, transportation charges prepaid, and will be returned to Buyer with the transportation charges collect unless the product is found to be defective, in which case Beckman Coulter will pay all transportation charges.

A defective rotor will be replaced by Beckman Coulter at its then current list price less a credit based upon the age of the rotor (years since date of purchase). The Buyer shall not receive credit until the claimed defective rotor is returned to Beckman Coulter's Palo Alto, California, facility or delivered to a Beckman Coulter Field Service representative.

The replacement price (cost to Buyer) for the respective rotor shall be calculated as follows:

$$\text{Replacement price} = \text{Current rotor list price} \times \frac{\text{years}}{7}$$

CONDITIONS

1. Except as otherwise specifically provided herein, this warranty covers the rotor only and Beckman Coulter shall not be liable for damage to accessories or ancillary supplies including but not limited to (i) tubes, (ii) tube caps, (iii) tube adapters, or (iv) tube contents.

2. This warranty is void if the rotor has been subjected to customer misuse such as operation or maintenance contrary to the instructions in the Beckman Coulter rotor or centrifuge manual.
3. This warranty is void if the rotor is operated with a rotor drive unit or in a centrifuge unmatched to the rotor characteristics, or is operated in a Beckman Coulter centrifuge that has been improperly disassembled, repaired, or modified.
4. Each bucket, whether purchased with a rotor assembly or purchased separately, is covered by this warranty for seven (7) years from the date of purchase, and will be replaced or repaired during such period according to the terms and conditions of this warranty. The date of manufacture marked on the bucket may be earlier than the date of purchase, and the expiration date marked on the bucket, which is seven (7) years after the date of purchase, may be correspondingly offset.
5. Buckets should not be used after the expiration date marked on the bucket. If at the time of purchase the marked expiration date is less than 7 years from the date of purchase, the expiration date becomes the date of purchase plus seven (7) years. Use of a bucket after such expiration date voids Beckman Coulter's warranty obligations with respect to any rotor and/or centrifuge in which such a bucket is used.

DISCLAIMER

IT IS EXPRESSLY AGREED THAT THE ABOVE WARRANTY SHALL BE IN LIEU OF ALL WARRANTIES OF FITNESS AND OF THE WARRANTY OF MERCHANTABILITY AND THAT BECKMAN COULTER, INC. SHALL HAVE NO LIABILITY FOR SPECIAL OR CONSEQUENTIAL DAMAGES OF ANY KIND WHATSOEVER ARISING OUT OF THE MANUFACTURE, USE, SALE, HANDLING, REPAIR, MAINTENANCE, OR REPLACEMENT OF THE PRODUCT.

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