



Instructions For Use

JS-4.750 Swinging-Bucket Rotor

For Use in the Beckman Coulter
Avanti J-15 Series Centrifuges



B80289AF
August 2020



Beckman Coulter, Inc.
250 S. Kraemer Blvd.
Brea, CA 92821 U.S.A.



JS-4.750 Swinging-Bucket Rotor Instructions For Use B80289AF (August 2020)

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EC REP

Beckman Coulter Eurocenter S.A.
22, rue Juste-Olivier
Case Postale 1044
CH - 1260 Nyon 1, Switzerland
Tel: +41 (0) 22 365 36 11

Glossary of Symbols is available at
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*May be covered by one or more pat. - see
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Original Instructions

Revision Status

Initial Issue B80289AA, 05/2017

Issue AB, 08/2017

Changes or additions were made to: *Specifications; Loading the Buckets; Using Blood Bag Cups; Symmetrical and Balanced Loading.*

Issue AC, 02/2018

Changes or additions were made to: Aerosolve Cannisters, footnote * on page -5; Multi-well Plate Carriers; Multi-well Plate Carriers, footnote * on page -6; Symmetrical and Balanced Loading, step 3; Replacement Rotor Parts.

Issue AD, 04/2018

Changes or additions were made to: Specifications; Loading the Buckets; Using Blood Bag Cups; Using Multi-well Plate Carriers.

Issue AE, 12/2018

Changes or additions were made to: [Related Documents](#), removed unavailable manual; Removed Symbols Glossary. See beckman.com/techdocs (PN C24689).

Issue AF, 8/2020

Changes or additions were made to: [Specifications](#)

For labeling updates, go to beckman.com/techdocs and download the latest version of the manual or system help for your instrument.

Note: *Changes that are part of the most recent revision are indicated in text by a bar in the margin of the amended page.*

Safety Notice

Read all product manuals and consult with Beckman Coulter-trained personnel before attempting to operate the instrument. Do not attempt to perform any procedure before carefully reading all instructions. Always follow product labeling and manufacturer's recommendations. If in doubt as to how to proceed in any situation, [Contact us](#).

Beckman Coulter, Inc. urges its customers and employees to comply with all national health and safety standards such as the use of barrier protection. This may include, but is not limited to, protective eyewear, gloves, and suitable laboratory attire when operating or maintaining this or any other automated laboratory instrumentation.

WARNING

If the equipment is used in a manner not specified by Beckman Coulter, Inc., the protection provided by the equipment may be impaired.

CAUTION

If you purchased this product from anyone other than Beckman Coulter or an authorized Beckman Coulter distributor, and, if it is not presently under a Beckman Coulter Service Maintenance Agreement, Beckman Coulter cannot guarantee that the product is fitted with the most current mandatory engineering revisions or that you will receive the most current information bulletins concerning the product. If you purchased this product from a third party and would like further information concerning this topic, [contact us](#).

Alerts for Danger, Warning, Caution, and Note

All Warnings and Cautions in this document include an exclamation point, framed within a triangle.

The exclamation point symbol is an international symbol which serves as a reminder that all safety instructions should be read and understood before installation, use, maintenance, and servicing are attempted.

DANGER

DANGER indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

 **WARNING**

WARNING indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

 **CAUTION**

CAUTION indicates a potentially hazardous situation, which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

IMPORTANT IMPORTANT is used for comments that add value to the step or procedure being performed. Following the advice in the IMPORTANT adds benefit to the performance of a piece of equipment or to a process.

NOTE NOTE is used to call attention to notable information that should be followed during installation, use, or servicing of this equipment.

JS-4.750 Rotor Safety Precautions

IMPORTANT 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 centrifuge not of Beckman Coulter's manufacture or in a Beckman Coulter centrifuge that has been modified without Beckman Coulter's approval.

NOTE Although rotor components and accessories made by other manufacturers may fit in the JS-4.750 rotor, their safety in this rotor cannot be ascertained by Beckman Coulter. Use of other manufacturers' components or accessories in the JS-4.750 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.

Safety During Installation and/or Maintenance

 **WARNING**

Risk of injury or equipment damage. Vapors from flammable reagents or combustible fluids could enter the centrifuge air system and be ignited by the motor. Do not use the centrifuge in the vicinity of flammable liquids or vapors, and do not run such materials in the instrument.

Perform only the maintenance described in the appropriate User's Manual for the Avanti J-15 Series Centrifuges. Maintenance other than that specified in the User's Manual should be performed only by a Beckman Coulter Representative.

IMPORTANT It is your responsibility to decontaminate components of the instrument before requesting service by a Beckman Coulter Representative or returning parts to Beckman Coulter for repair. Beckman Coulter will NOT accept any items which have not been decontaminated where it is appropriate to do so. If any parts are returned, they must be enclosed in a sealed plastic bag stating that the contents are safe to handle and are not contaminated.

Any servicing of this equipment that requires removal of any covers can expose parts that involve the risk of electric shock or personal injury. Make sure that the power switch is off and the centrifuge is disconnected from the main power source by removing the Mains (power) plug from the outlet receptacle, and refer such servicing to qualified personnel.

Do not replace any centrifuge components with parts not specified for use on this instrument.

Radiation Safety



Use universal precautions when working with radioactive materials. Means must be available to decontaminate the instrument and dispose of radioactive waste.

Chemical and Biological Safety



Use universal precautions when working with pathogenic materials. Means must be available to decontaminate the instrument and to dispose of biohazardous waste.

NOTE Observe all warnings and cautions listed for any external devices attached or used during operation of the instrument. Refer to applicable external device user's manuals for operating procedures of that device.

NOTE For Safety Data Sheets (SDS/MSDS) information, go to the Beckman Coulter website at <https://www.beckman.com/techdocs>.



Risk of chemical injury from bleach. To avoid contact with the bleach, use barrier protection, including protective eyewear, gloves, and suitable laboratory attire. Refer to the Safety Data Sheet for details about chemical exposure before using the chemical.

 **WARNING**

Risk of personal injury or equipment damage. Ethanol is a flammability hazard. Do not use it in or near operating centrifuges.

 **WARNING**

Risk of personal injury or property damage. 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. Always observe appropriate cautionary procedures as defined by your safety officer when using flammable solvents.

 **WARNING**

Risk of personal injury or contamination. Before running with chemical or biological samples, test new labware types to determine if normal operation of the rotor may involve the use of materials that are toxic, flammable, or otherwise biologically harmful. When using such materials, observe the following precautions:

- Handle infectious samples according to good laboratory procedures and methods to prevent the spread of disease.
- Observe all cautionary information printed on the original solutions' containers prior to their use.
- Dispose of all waste solutions according to your facility's waste disposal procedures.
- Operate the instrument in accordance with the instructions outlined in this manual and take all the necessary precautions when using pathological, toxic, or radioactive materials.
- Splashing of liquids may occur; therefore, take appropriate safety precautions, such as using safety glasses and wearing protective clothing, when working with potentially hazardous liquids.
- Use an appropriately-contained environment when using hazardous materials.
- Observe the appropriate cautionary procedures as defined by your safety officer when using flammable solvents in or near a powered-up instrument.
- Always observe appropriate cautionary procedures as defined by your safety officer when using flammable solvents or toxic, pathological, or radioactive materials.

 **WARNING**

Risk of contamination. 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.

 **WARNING**

Risk of personal injury or contamination. 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.

 **CAUTION**

Risk of contamination. If disassembly reveals evidence of leakage, you should assume that some fluid escaped the rotor. Apply appropriate decontamination procedures to the centrifuge and accessories as determined by your laboratory safety officer.

Mechanical Safety

 **WARNING**

Risk of personal injury. To avoid injury due to moving parts, observe the following:

- Never attempt to exchange labware or reagents while the instrument is operating.
- Never attempt to physically restrict any of the moving components of the instrument.
- **NEVER** attempt to slow or stop a rotor by hand.
- **Keep the instrument work area clear to prevent obstruction of the movement.**

Rotors are designed for use at the speeds indicated; however, speed reductions may be required because of weight considerations of tubes, adapters, and/or the density of the solution being centrifuged. Be sure to observe the instructions in the applicable rotor manual.

The strength of containers can vary between lots, and will depend on handling and usage. We highly recommend that you pretest them in the rotor (using buffer or gradient of equivalent density to the intended sample solution) to determine optimal operating conditions. Scratches (even microscopic ones) significantly weaken glass and polycarbonate containers.

To help prevent premature failures or hazards by detecting stress corrosion, metal fatigue, wear or damage to anodized coatings, and to instruct laboratory personnel in the proper care of rotors, Beckman Coulter offers the Field Rotor Inspection Program (FRIP). This program involves a visit to your laboratory by a specially trained Beckman Coulter representative, who will inspect all of your

rotors for corrosion or damage. The representative will recommend repair or replacement of at risk rotors to prevent potential rotor failures. [Contact us](#) to request this service.

California Prop 65 Warning

This product may contain a chemical known to the State of California to cause cancer, or birth defects or other reproductive harm.

Cleaning

Observe the cleaning procedures outlined in this user's manual for the rotor. Prior to cleaning equipment that has been exposed to hazardous material:

- Contact the appropriate Chemical and Biological Safety personnel.
- Review the Chemical and Biological Safety information in the user's manual.

Maintenance

Perform only the maintenance described in this manual. Maintenance other than that specified in this manual should be performed only by your Beckman Coulter Representative.

IMPORTANT It is your responsibility to decontaminate components of the instrument before requesting service by a Beckman Coulter Representative or returning parts to Beckman Coulter. Beckman Coulter will NOT accept any items which have not been decontaminated where it is appropriate to do so. If any parts are returned, they must be enclosed in a sealed plastic bag stating that the contents are safe to handle and are not contaminated.

Disposal

Clean and decontaminate the rotor per the Care and Maintenance section of this manual before disposal. Users are encouraged to check with local waste disposal authorities for specific disposal requirements.

JS-4.750 Swinging-Bucket Rotor Safety Messages

 **CAUTION**

Risk of equipment damage. The drive shaft can be damaged if the rotor is forced sideways or dropped onto it. Never force or drop the rotor yoke onto the centrifuge drive shaft.

 **CAUTION**

Risk of contamination. Buckets are designed to be used only with modular disk adapters, bottle adapters, cell culture flask adapters, Aerosolve cannisters, and blood bag cups. Do not pour samples directly into buckets, bottle sleeves, or blood bag cups. Do not load bottles, cell culture flasks, or tubes directly into the buckets. Do not use labware that is not specified for use in this rotor.

 **CAUTION**

Risk of equipment damage. Chloroform vapors can damage Aerosolve cannister material. Do not run chloroformed samples in Aerosolve cannisters.

 **CAUTION**

Risk of equipment damage or contamination. If bucket covers are not used, the superstructure of the blood bag protruding from the cup may inhibit the bucket from reaching its horizontal position. Allowing the blood bags to contact the rotor yoke during centrifugation can cause the bucket to come off the pivot pins and can seriously damage to both the rotor and the centrifuge. Always ensure blood bags are properly seated in the cups and do not contact the rotor yoke prior to centrifugation.

 **CAUTION**

Risk of equipment damage. Never run the rotor with only two positions filled. All four positions on the rotor must contain buckets or carriers during a run. Attach all four buckets, loaded or empty, to the rotor yoke. If only two buckets are filled, place them in opposite positions on the yoke.

 **CAUTION**

Risk of contamination. If disassembly of the buckets or carriers reveals evidence of leakage, you should assume that some fluid escaped the rotor. Apply appropriate decontamination procedures to the centrifuge and accessories as determined by your laboratory safety officer.

 **CAUTION**

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

 **CAUTION**

Risk of equipment damage. Corrosion begins in scratches and may open fissures in the carriers and carriages with continued use. Do not use sharp tools on the rotor that could cause scratches in the carrier and carriage surfaces.

 **CAUTION**

Risk of equipment damage. Salts and other corrosive materials can damage the rotor and rotor components. Wash the rotor and rotor components immediately if salts or other corrosive materials are used or if spillage has occurred, according to your laboratory safety procedures. Do not allow corrosive materials to dry on buckets.

 **CAUTION**

Risk of contamination. If the rotor or accessories are contaminated with toxic or pathogenic solutions, follow appropriate decontamination procedures as determined by your laboratory safety officer.

 **CAUTION**

Risk of contamination or equipment damage. Tubes and well plates can break during centrifugation. To reduce the potential for corrosion, clean buckets or carriers thoroughly immediately following a tube or well plate breakage, according to your laboratory safety procedures.

 **WARNING**

Risk of personal injury or contamination. Tubes and well plates can break during centrifugation. When working with potentially hazardous materials, open cannisters in an appropriate hood or biological safety cabinet. Consult your laboratory safety officer regarding the proper methods to use.

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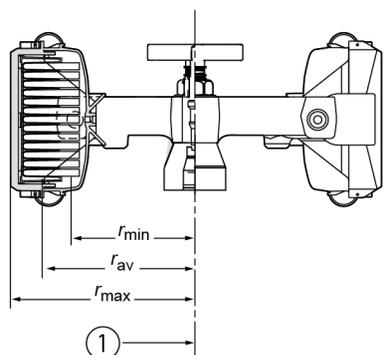
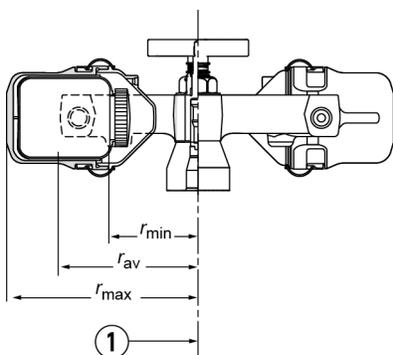
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JS-4.750 Swinging-Bucket Rotor

Specifications



1. Axis of Rotation

Maximum Speed

using tube-and-bottle buckets

Avanti J-15	4550 RPM
Avanti J-15R (120 VAC)	4550 RPM
Avanti J-15R (200-230 VAC)	4750 RPM

using multi-well plate carriers

Avanti J-15	4350 RPM
Avanti J-15R	4450 RPM

Critical speed range^a 1400 - 1600 RPM

Maximum solution density 1.2 g/mL

Relative Centrifugal Field^b at maximum speed

using tube-and-bottle buckets (at $r_{max} = 207.8$ mm)

J-15 & J-15R (120 VAC)	$4820 \times g^c$
J-15R (230 VAC)	$5250 \times g^c$

(at $r_{min} = 82.9$ mm)

J-15 & J-15R (120 VAC)	$1920 \times g$
J-15R (230 VAC)	$2090 \times g$

using multi-well plate carriers (at $r_{max} = 183.2$ mm)

J-15	$3880 \times g^c$
J-15R	$4060 \times g^c$

Conditions requiring speed reductions see [Run Speeds](#)

Number of buckets/carriers 4

BUCKETS

Maximum allowable imbalance of opposing loads..... 12 grams

Available tubes and bottles see [Table 2](#)

Maximum load allowed in each tube-and-bottle bucket
at rated speed

(excluding weight of bucket and cover)..... 1000 grams

MULTIPLATE CARRIERS

Total maximum allowable imbalance of opposing loads 8.5 grams

Maximum load allowed in each
multi-well plate carrier at rated speed

(excluding weight of carrier and cover)..... 360 grams

a. 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 or running at the critical speed range is characterized by some vibration.

b. 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: $RCF = r\omega^2/g$ —where r is the radius in millimeters, ω is the angular velocity in radians per second (2π RPM/60), and g is the standard acceleration of gravity (9807 mm/s²). After substitution: $RCF = 1.12r$ (RPM/1000)²

c. RCF inside buckets is $5090 \times g$ (tube-and-bottle buckets— r_{max} 201.6 mm) or $3920 \times g$ (multi-well plate carriers— r_{max} 176.7 mm).

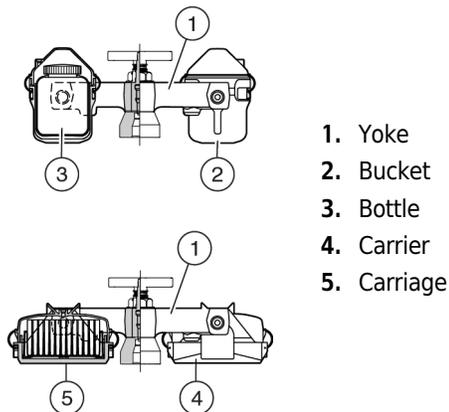
JS-4.750 Swinging-Bucket Rotor

Description

Specifications (continued)

Maximum rotor capacity	3 liters
Approximate acceleration time to maximum speed (may vary between instruments) (fully loaded)	95 seconds
Approximate deceleration time from maximum speed (may vary between instruments) (fully loaded)	65 seconds
Weight of fully loaded rotor (buckets with covers).....	12.6 kg (27.8 lb)
Rotor yoke material	stainless steel
Bucket and carrier material.....	anodized aluminum

Description



This Beckman Coulter rotor has been manufactured in an ISO 9001 or 13485 facility for use with the Beckman Coulter Avanti J-15 Series centrifuges.

The JS-4.750 is a four-place swinging-bucket rotor. The rotor buckets carry adapters that allow centrifugation of a wide range of tube and bottle sizes (from 1.5 mL reaction vials to 750 mL bottles) single- to quad-pack blood bags, and multi-well plates in carriers. Special adapters are also available that allow centrifugation of Corning 75 cm² and 25 cm² cell culture flasks. The rotor develops centrifugal forces that are suitable for rapidly sedimenting protein precipitates, large particles, cells, and cell debris.

The rotor yoke is made of stainless steel. Black anodized aluminum buckets and carriers can be run by placing them over pivot pins on the arms of the yoke; they swing out to horizontal position during centrifugation.

Transparent covers made of a high impact plastic are available for the rotor buckets. Covers have been tested (see [Bio-Safety](#)) to demonstrate containment of microbiological aerosols under normal conditions when used and maintained as instructed. Each cover requires an O-ring that seats on a ledge inside the bucket. The covers, which are held in place by attached latch assemblies, can be used with some bottles (see [Table 2, Beckman Coulter Tubes and Bottles for the JS-4.750 Rotor](#)), and all blood bags, cell culture flasks, and tubes listed in this manual. The covers will contain liquids and broken tube particles, reducing the need to clean the centrifuge chamber and allowing the user to take appropriate precautions before opening the covers in the event of tube breakage. A captive tie-down device is used to secure the rotor to the drive shaft during centrifugation.

The centrifuge identifies the rotor during the run by means of a magnetic sensor system in the centrifuge rotor chamber and magnets imbedded in the rotor. The overspeed system ensures that the rotor does not exceed its permitted speed.

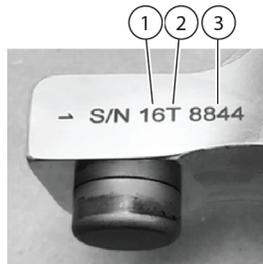
Refer to the Warranty at the back of this manual for warranty information.

Bio-Safety

Validation of microbiological containment for the rotor bucket covers was done at an independent third-party testing facility: Public Health England, Porton Down, UK. Improper use or maintenance may affect seal integrity and thus containment.

Serial Number

Figure 1 Serial number on rotor

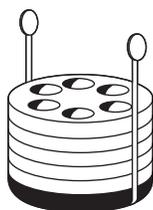


1. Year
2. Manufacturer code
3. Serialized number

Accessories

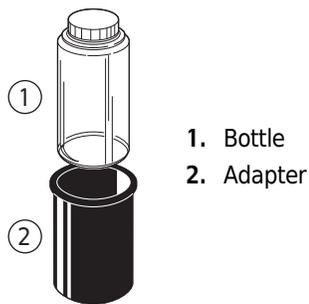
Several types of labware can be run in the buckets, depending on your application.

Modular Disk Adapters



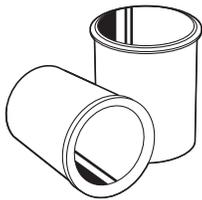
Tubes are supported in modular disk adapters, which can also serve as tube racks in the laboratory. The adapter disks are color coded by the tube size they accommodate (see [Table 1](#)); the number of disks used in an adapter assembly depends upon the length of tubes used. A tube decanter is available to hold either 10 mm or 12 mm tubes securely in the blue adapter, allowing all the tubes to be decanted at once. Additionally, 1.5 mL Microfuge tubes can be run using a special plate that fits on top of the blue adapter. Both of these accessories are described in [Table 1](#). Beckman Coulter tubes and bottles available for use in the rotor buckets are described in [Table 2](#).

Bottle Adapters



Bottles are supported in adapters that fit inside the rotor buckets. The adapters are ribbed for strength and accommodate three bottle sizes, including one conical bottle (see [Table 1](#)).

Blood Bag Cups

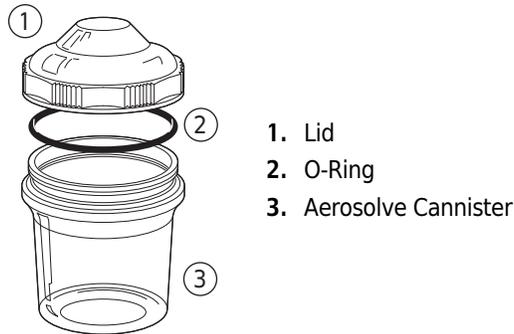


Cups provide support for blood bags in the rotor buckets. Blood bag cups are available in two sizes: one for single- or double-pack bags, and one for triple- or quad-pack bags (see [Table 1](#)).

Aerosolve Cannisters

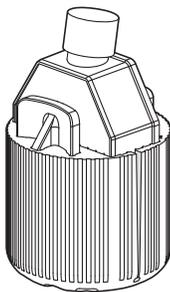
⚠ CAUTION

Risk of equipment damage. Chloroform vapors can damage Aerosolve cannister material. Do not run chloroformed samples in Aerosolve cannisters.



Aerosolve cannisters, designed to contain aerosol leakage and liquid spills, can be used in the JS-4.750 buckets when this additional containment is required. The cannister was tested* to demonstrate containment of microbiological aerosols under normal operating conditions of the associated Beckman Coulter centrifuge, when used and maintained as instructed. Aerosolve cannisters hold a variety of tube sizes in racks, or they can be used as 500 mL wide-mouth bottles.

Cell Culture Flask Adapters

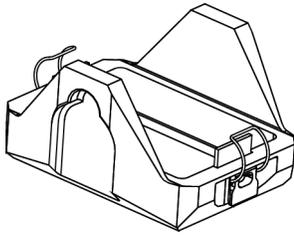


75 cm² Flask Adapter

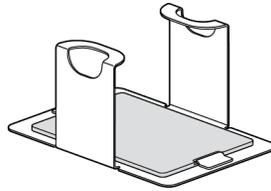
Specially designed adapters can be used to centrifuge Corning 25 cm² (two per bucket) or 75 cm² (one per bucket) canted-neck cell culture flasks. Using these adapters, the separation and concentration step of the cell culturing process can be accomplished in the flask. Elimination of the need to transfer cultures into tubes for centrifugation and back into flasks minimizes the risk of contamination, as well as saving time and labware.

* Validation of microbiological containment was done at an independent third-party testing facility (Public Health England). Improper use or maintenance may affect seal integrity and thus containment.

Multi-well Plate Carriers



Multi-well plate Carrier



Carriage and Pad



Multi-well plate Carrier Cover

The multi-well plate carriers are placed over pivot pins on the arms of the rotor yoke and swing out to horizontal position during centrifugation. Carriages facilitate loading and unloading of the carriers and provide support to labware during centrifugation. A pad in the carriage provides support for the labware during centrifugation.

Multi-well plates are used for many applications, including culturing small populations of cells, immunoassays, and serial dilution of small liquid volumes. Carriages used in the carriers can each hold up to four stacked multi-well plates (not to exceed 55.9 mm (2.2 in.) in depth) or one deep-well or square well plate. Each carrier can also carry a multi-well kit for high-throughput processing (such as DNA or RNA kit).

Transparent covers, made of a high-impact plastic, are available for the carriers. Covers have been tested* to demonstrate containment of microbiological aerosols under normal conditions of the associated Beckman Coulter centrifuge when used and maintained as instructed. Each cover has a gasket that seats on the carrier. The covers are held in place by attached latch assemblies. They will contain liquids and broken labware particles, reducing the need to clean the centrifuge chamber, and allowing you to take appropriate precautions before opening the covers in the event of breakage. Refer to publication GX-TB-012 for use and care of covers.

Run Preparation

Specific information about the JS-4.750 rotor is given here. Information about the use and care of the centrifuge is contained in the centrifuge manual, which should be used together with this manual for complete rotor and centrifuge operation.

NOTE Although rotor components and accessories made by other manufacturers may fit in the JS-4.750 rotor, their safety in this rotor cannot be ascertained by Beckman Coulter. Use of other manufacturers' components or accessories in the JS-4.750 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.

* Validation of microbiological containment was done at an independent third-party testing facility (Public Health England, Porton Down, UK). Improper use or maintenance may affect seal integrity and thus containment.

Prerun Safety Checks

IMPORTANT Read the [Safety Notice](#) section at the front of this manual before using the rotor.

- 1 Make sure that the rotor yoke, buckets and/or carriers, and covers are clean and show no signs of corrosion or cracking.
 - If any evidence of damage is present, do not centrifuge the rotor.
- 2 Check the chemical compatibilities of all materials used (refer to *Chemical Resistances*, publication IN-175).
- 3 Verify that the tubes, bottles, and accessories being used are listed in
 - [Table 1, Adapters and Blood Bag Cups Available for the JS-4.750 Rotor.](#)
 - [Table 2, Beckman Coulter Tubes and Bottles for the JS-4.750 Rotor.](#)
 - [Table 3, Beckman Coulter Labware for Use with Multi-well Plate Carriers.](#)
 - [Table 4, Commercially Available Labware for Use with Multi-well Plate Carriers.](#)

Installing the Rotor Yoke

NOTE Before the first use of a new rotor, attach the tie-down T-bar (B77582) to the rotor yoke. Screw it down as far as possible.

- 1 Before installing the yoke in the centrifuge, lightly lubricate the drive hole with a lubricant such as Spinkote (306812).

 **CAUTION**

Risk of equipment damage. The drive shaft can be damaged if the rotor is forced sideways or dropped onto it. Never force or drop the rotor yoke onto the centrifuge drive shaft.

- 2 Carefully lower the yoke straight down onto the centrifuge drive shaft.
 - Be sure the yoke is properly seated on the shaft.
- 3 Turn the tie-down T-bar to the right (clockwise) to tighten the yoke firmly on the drive shaft.

NOTE If the rotor yoke is left in the centrifuge between runs, before each run make sure it is properly seated on the drive shaft, and that the T-bar is tight.

Loading the Buckets

For runs at other than room temperature, refrigerate or warm the rotor. On the Avanti J-15R model, precool the centrifuge beforehand for fast equilibration.

WARNING

Risk of contamination. 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.

WARNING

Risk of personal injury or contamination. 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.

Symmetrical and Balanced Loading

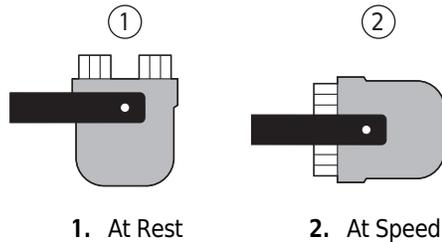
Beckman Coulter supplies buckets and carriers in weight-matched sets to make balancing easier (the weight and manufacturing date are marked on each bucket and carrier). Modular disk adapters are also sold in weight-matched sets. However, there are variances in weight between sets, as well as variance in weight between previously purchased adapters. To prevent accidental imbalance it is important to keep matched sets of buckets as well as matched sets of adapters together, and to weigh other adapters to be sure they are approximately the same. Marking matched adapter sets will help you keep them together.

You can load buckets before or after installing them on the rotor yoke. In either case, fill the labware first and then load the labware into the buckets. To ensure optimal performance and stability, the rotor must be loaded symmetrically. Two factors affect symmetric loading:

1. The buckets or carriers must be loaded symmetrically with respect to their pivotal axes.
2. The rotor should be loaded symmetrically with respect to its center of rotation.

For best results, load opposing buckets or carriers with the same type of labware containing the same amounts of fluid of equal density. Additionally, opposing buckets or carriers and their contents should weigh approximately the same (within 12 grams for buckets and within 8.5 grams for carriers). Do not exceed the rated maximum load for buckets (1000 grams each for tube-and-bottle buckets; 360 grams each for multi-well plate carriers).

It is not necessary to completely fill all tubes* or positions in buckets; however, partially filled buckets must be balanced with respect to the bucket pivotal axis (see [Figure 2](#)). In multi-tube adapters, each tube should be placed so that its weight is balanced by a tube in a diametrically opposite position across the pivotal axis in the same adapter. Adapters placed in opposing buckets should also be filled the same way.



Using Tube and Bottle Buckets

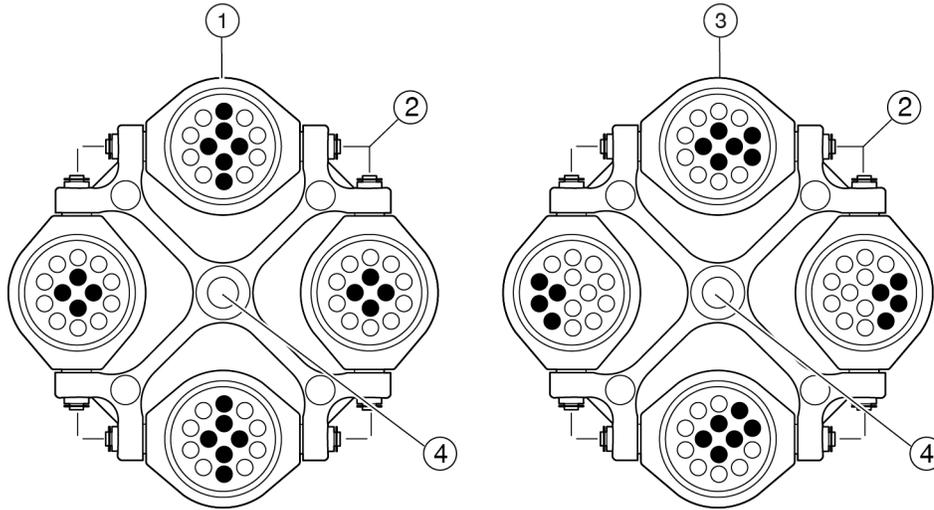
Whether you are running tubes, bottles, cell culture flasks, or blood bags, you must load the buckets symmetrically around the center of rotation and each bucket must be loaded symmetrically with respect to its pivotal axis (see [Symmetrical and Balanced Loading](#), above).

CAUTION

Risk of contamination. Buckets are designed to be used only with modular disk adapters, bottle adapters, cell culture flask adapters, Aerosolve cannisters, and blood bag cups. Do not pour samples directly into buckets, bottle sleeves, or blood bag cups. Do not load bottles, cell culture flasks, or tubes directly into the buckets. Do not use labware that is not specified for use in this rotor.

* Fill tubes at least half full. Speed reduction may be required for fill volumes below 75 percent.

Figure 2 Examples of Correctly and Incorrectly Loaded Buckets



1. Balanced Load (Correct)
2. Pivotal Axes of Buckets

3. Unbalanced Load (Incorrect)
4. Center of Rotation

NOTE Contents of opposing buckets must be the same and each bucket must be balanced on its pivotal axis.

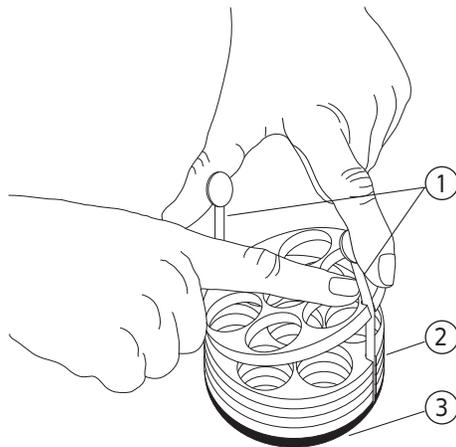
Using Tubes

Assembling Modular Disk Adapters

Refer to [Table 1](#) to determine which color adapter is required for the tubes you are using and the number of disks needed to support the length of the tubes.

- 1 Select the appropriate adapter base (from [Table 1](#)) and attach a bail to it ([Figure 3](#)).

Figure 3 Assembling a Modular Disk Adapter



1. Bails
2. Disks
3. Base

-
- 2** Position one of the disks so that its grooves are aligned with the bail.
- Push the disk down until the bail snaps into the grooves.

-
- 3** Add more disks in this way until the height of the assembly is nearly as tall as the tubes you will be using.

NOTE If the height of the disks is very tall, you may have to push the bail into the grooves of the top disks by hand.

- Remove or add disks to the bail to accommodate shorter or longer tubes.
 - If the tubes fit too snugly in the adapter's rubber base, apply a light film of powder, such as talcum powder, to prevent the tubes from sticking.
-

Loading Tubes in Adapters

When placing tubes in modular disk adapters, it is important to make sure that they will not contact the rotor yoke during a run.

- One way to do this is to place empty tubes in an adapter, place the adapter in a bucket on the rotor yoke, and manually swing the bucket to the horizontal position, making sure that all tubes clear the yoke.
- Another method is to place the adapter in a bucket and position a bucket cover over the tubes, checking that tubes do not touch the cover.

If all positions in an adapter are not filled, load the adapter symmetrically with respect to its pivotal axis (see [Symmetrical and Balanced Loading](#)).

Loading Adapters in the Buckets

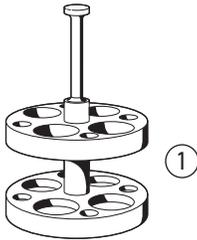
After placing tubes in the disk adapters, lower the adapters into the buckets so that the bails line up with the rotor pivot pins. If only two loaded adapters are run, place them in opposing buckets. The other two buckets should contain empty modular disk adapters (do not centrifuge empty cell culture flask adapters) to prevent imbalance. (See [Symmetrical and Balanced Loading](#)).

Using Bottles in Adapters

Load bottles into their appropriate adapters (see [Table 1](#)), then place the filled adapters in the rotor buckets. If only two bottles are run, place them in opposite buckets. Make sure the other two buckets contain at least a minimal "blank" load (such as empty modular disk adapters) to prevent rotor imbalance. If modular disk adapters are not available, use two water-filled bottles in adapters to balance the load (See [Symmetrical and Balanced Loading](#)).



Risk of equipment damage. Chloroform vapors can damage Aerosolve cannister material. Do not run chloroformed samples in Aerosolve cannisters.



1. Aerosolve Tube Rack

Using Aerosolve Cannisters

Aerosolve cannisters can be used as wide-mouth bottles or with tubes in racks that are specially designed to fit in the cannisters. [Table 1, Adapters and Blood Bag Cups Available for the JS-4.750 Rotor](#) lists the Aerosolve tube racks and the number and sizes of tubes they accommodate. Pads (361269) must be placed beneath the cannisters in the buckets to provide support and prevent the cannisters from being damaged during centrifugation. These pads are included in the Aerosolve cannister kits (359232). Bucket covers cannot be used with Aerosolve cannisters.

Using Blood Bag Cups

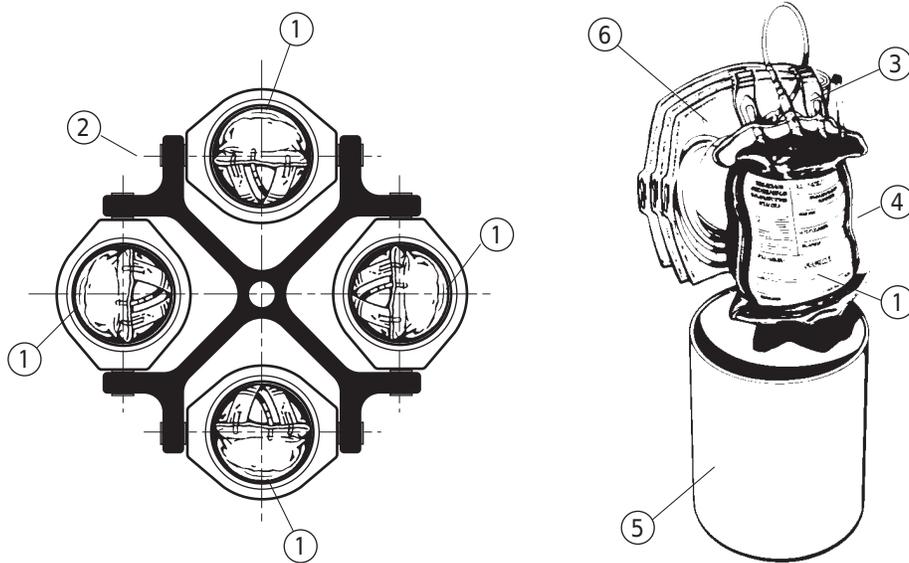
The yellow 90 mm cup (356856) accommodates up to two single bags or one double pack; the orange 97 mm cup (356857) supports either one triple or one quad pack. *Do not pour liquid directly into blood bag cups.* Fit blood bags into cups before loading the cups into the rotor buckets. Load the blood bag cups as follows:

- 1 Load the bags as far down into the cups as possible.

NOTE Make sure the bags stay as vertical as possible, with no folds at the top or corners. If folds are present, blood cells could remain in the folds and then mix with the plasma when the bag is removed.

- 2 Sandwich the tubing between the blood bag and any transfer packs (see [Figure 4](#)).

Figure 4 Blood Bag Loading Procedures



- | | |
|---|--|
| 1. Blood Bag Label | 4. Blood Bag Seam |
| 2. Blood Bag Seam Aligned with Pivotal Axis of Bucket | 5. Blood Bag Cup |
| 3. Ports | 6. Sandwich Coiled Tubing between Transfer Bags and Filled Blood Bag |

- 3 Make sure the loaded blood bag cups opposite each other on the rotor yoke are approximately the same weight (within 12 grams).
 - Soft, pliable balancing pads that will not puncture blood bags (see the [Supply List](#)) can be used to maintain weight balance, if necessary.
- 4 Place loaded cups into rotor buckets.
 - To reduce the possibility of bag breakage, align the blood bag seam with the rotor pivot pins (see [Figure 4](#)) with the label facing out.

⚠ CAUTION

Risk of equipment damage or contamination. If bucket covers are not used, the superstructure of the blood bag protruding from the cup may inhibit the bucket from reaching its horizontal position. Allowing the blood bags to contact the rotor yoke during centrifugation can cause the bucket to come off the pivot pins and can seriously damage to both the rotor and the centrifuge. Always ensure blood bags are properly seated in the cups and do not contact the rotor yoke prior to centrifugation.

- 5 Place bucket covers on rotor buckets to prevent blood bags or tubing from contacting the rotor yoke during centrifugation.
-

If only two filled cups are run, place them in opposing buckets. The other two buckets should contain similar “blank” loads to prevent imbalance (either empty modular disk adapters or water-filled blood bags in cups).

Using Cell Culture Flask Adapters

Refer to publication GX-TB-007 for 25 cm² flask adapter information or GX-TB-006 for 75 cm² flask adapters. These publications are supplied with the respective adapters.

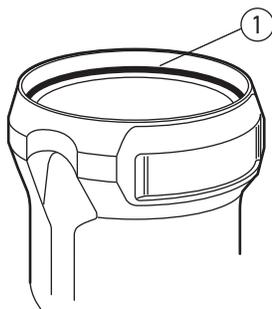
NOTE A dry release agent is used to facilitate removal of cell culture flask adapters from buckets following centrifugation. To avoid compromising the bucket/cover bio-seal, the release agent should not be allowed on the bucket O-ring. When running cell culture flasks, use the provided adapter to apply the dry release agent to the bucket cavity and take care to avoid contamination of the O-ring.

Using Bucket Covers

Install the cover as follows:

NOTE Because of the shape of the covers, 130 mm tubes can be used *only* in the center cavities of the adapters when covers are used.

- 1 Make sure that the bucket and the bucket cover surfaces are clean, dry, and undamaged.
 - 2 Ensure that the O-ring (961648) is in good condition and lightly coated with silicone vacuum grease (335148).
 - Place the O-ring on the ledge inside the bucket.
-



1. Insert O-ring here
 - 3 Place the cover on the bucket with the latches perpendicular to the pin sockets.
 - 4 Snap the latches down and secure them under the bucket rim.
-

-
- 5 To remove the cover after a run, carefully release the latches and then remove the cover.
-

Loading Buckets Onto the Yoke

- 1 Attach each bucket to the yoke by aligning the grooves in the bucket sides with the pivot pins, then sliding the buckets down until the pivot pins are seated in the bucket pockets.

 **CAUTION**

Risk of equipment damage. Never run the rotor with only two positions filled. All four positions on the rotor must contain buckets or carriers during a run. Attach all four buckets, loaded or empty, to the rotor yoke. If only two buckets are filled, place them in opposite positions on the yoke.

- 2 Gently swing the buckets to ensure that they are properly seated on the pivot pins.
-

Using Multi-well Plate Carriers

Fill the labware first, then load the labware into carriages and the carriages into the carriers. You must load the carriers symmetrically around the center of rotation and each carrier must be loaded symmetrically with respect to its pivotal axis. Refer to the applicable rotor manual for complete information about symmetrical and balanced loading.

Symmetrical and Balanced Loading

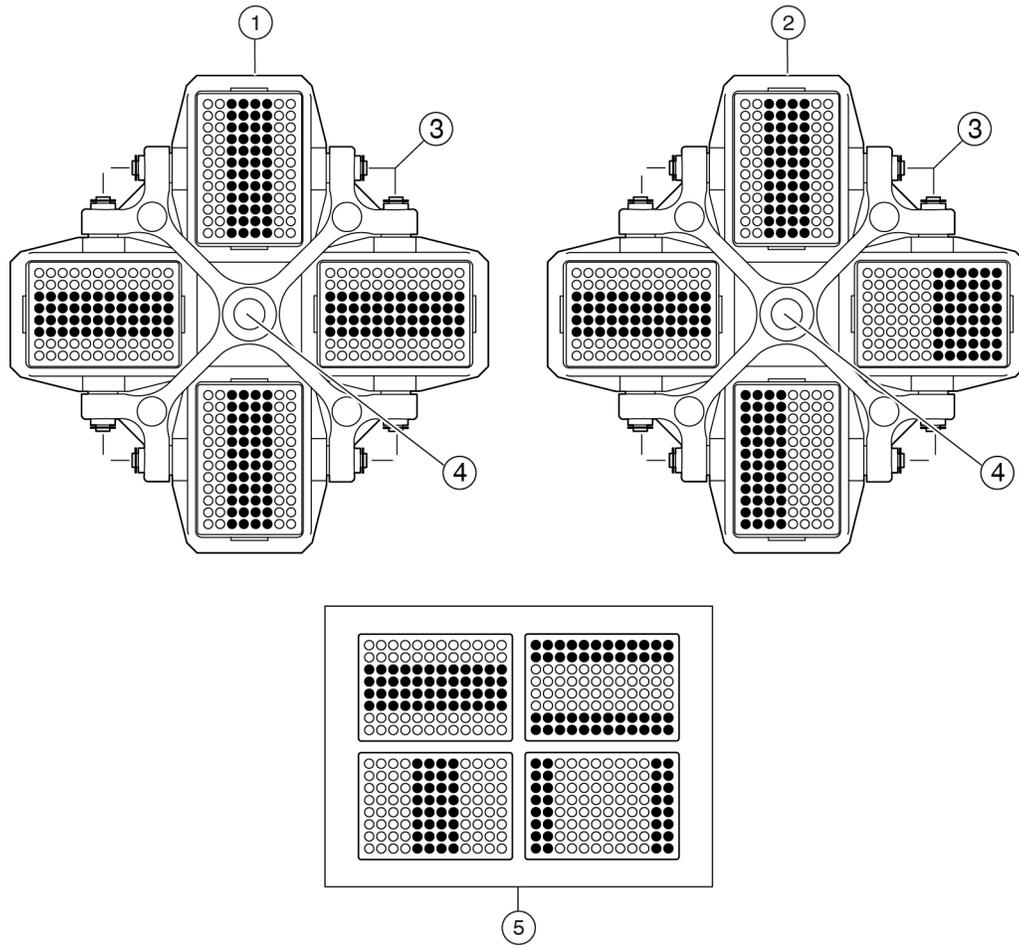
NOTE Beckman Coulter supplies carriers in weight-matched sets to make balancing easier (the weight and retirement date are marked on the side of each). To prevent accidental imbalance it is important to keep matched sets of carriers together.

Two factors affect symmetric loading:

1. The carriers must be loaded symmetrically with respect to their pivotal axes.
2. The rotor should be loaded symmetrically with respect to its center of rotation.

For best results, load opposing carriers with the same type of labware containing the same amounts of fluid of equal density. Additionally, opposing carriers and their contents should weigh approximately the same (within 8.5 grams). Do not exceed the rated maximum load for multi-well plate carriers of 360 grams each.

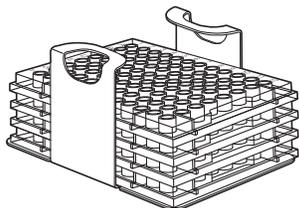
Figure 5 Examples of Correctly and Incorrectly Loaded Multi-well Plates



1. Balanced Load (Correct)
2. Unbalanced Load (Incorrect)
3. Pivotal Axes of Buckets
4. Center of Rotation
5. Examples of Symmetrically Loaded Multi-well Plates (load opposite plates the same way)

If only two filled multi-well plate carriers are run, install them opposite each other in the rotor and run two additional carriers or buckets (they can be empty) to prevent rotor imbalance.

- 1 Insert the filled plate(s) into the carriage.
 - If using two or more Beckman Coulter plates per carrier, place a 96-well cap strip (see [Table 3, Beckman Coulter Labware for Use with Multi-well Plate Carriers](#)) between the plates to prevent breakage during centrifugation.



NOTE Up to three Beckman Coulter plates, separated by cap strips, can be run per carrier at maximum multi-well plate speeds. If running four Beckman Coulter plates, cap strips cannot be used due to height limitations; reduce run speed to 2700 RPM. Observe manufacturer's run speed and stacking limitations if using other manufacturers' multi-well plates. See [Table 4, Commercially Available Labware for Use with Multi-well Plate Carriers](#) for plates recommended for use in stacks of four at maximum speed. RCF and stacking limitations vary widely between manufacturers — pretest other manufacturers' plates using water instead of valuable sample.

- 2 Grasp the carriage by the handles and lower it into the carrier.

- 3 Make sure that carrier cover gaskets are in good condition and secured to the covers.

IMPORTANT The seal surfaces of the gaskets and carriers must be free of dust, fibers, and other contaminants that could affect the seal.

- 4 Put covers on the carriers with the latches perpendicular to the pin sockets.

- Snap the latches down and secure them under the carrier rim.

- 5 Attach each carrier to the yoke by aligning the grooves in the sides with the pivot pins, then sliding the carrier down until the pivot pins are seated in the pin pockets.

 **CAUTION**

Risk of equipment damage. Never run the rotor with only two positions filled. All four positions on the rotor must contain buckets or carriers during a run. If two tube-and-bottle buckets and two multi-well plate carriers are run, position the similar buckets opposite each other. Select multi-well plate carrier speed when running mixed sets.

-
- 6 Gently swing the carriers to ensure that they are properly seated on the pivot pins.
-

Operation

- 1 Refer to the instrument instruction manual for centrifuge operation.
-
- 2 See [Run Speeds](#) for information about speed limitations.
-

Removal and Sample Recovery

 **CAUTION**

Risk of contamination. If disassembly of the buckets or carriers reveals evidence of leakage, you should assume that some fluid escaped the rotor. Apply appropriate decontamination procedures to the centrifuge and accessories as determined by your laboratory safety officer.

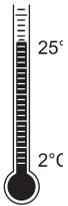
-
- 1 Remove the buckets or carriers from the centrifuge.
-
- 2 Remove the labware from the buckets or carriers.
-
- 3 If removing the rotor yoke, turn the tie-down T-bar to the left (counterclockwise) to loosen it.
 - Lift the yoke straight up and off the drive shaft.
-

Tubes, Bottles, and Accessories

The rotor uses labware listed in [Table 1, Adapters and Blood Bag Cups Available for the JS-4.750 Rotor](#); [Table 2, Beckman Coulter Tubes and Bottles for the JS-4.750 Rotor](#); and [Table 3, Beckman Coulter Labware for Use with Multi-well Plate Carriers](#). RCF limitations for some non-Beckman Coulter multi-well plates are shown in [Table 4, Commercially Available Labware for Use with Multi-well Plate Carriers](#).

Beckman Coulter does not recommend the use of one tube in preference to another nor guarantee the acceptability of the sample tube to produce quality results. If you need information on a tube not listed here, [contact us](#).

Temperature Limits



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

Labware

Beckman Coulter tubes and bottles listed in [Table 2, Beckman Coulter Tubes and Bottles for the JS-4.750 Rotor](#) can be used in tube-and-bottle buckets. Refer to [Table 3, Beckman Coulter Labware for Use with Multi-well Plate Carriers](#) for Beckman Coulter labware that can be centrifuged in multi-well plate carriers.

Table 1 Adapters and Blood Bag Cups Available for the JS-4.750 Rotor

MODULAR DISK ADAPTERS (polypropylene)									
Color Code	Nom. Tube Vol. (mL)	Nom. Tube Dia. (mm)	Max. No. Tubes per Adapter	Max. No. Tubes in Rotor	r_{\max} at Adapter Bottom (mm)	RCF at Maximum Speed ($\times g$)	No. Disks per Adapter	Adapter Part No.	
								Set of Two	Set of Four
blue	3 5	10 12	37	148	184.7	4659	5	359469	359148
tan	3 & 5	13	30	120	184.7	4659	5	359478	359157
orange	7 & 10	14	24	96	184.7	4659	6	359470	359149
purple	12	16	19	76	184.7	4659	7	359471	359150
green (conical)	15	18	14	56	194.7	4911	6	359472	359151
green	15 & 20	18	14	56	184.7	4659	7	359473	359152
lt. green (conical)	30 & 50	30	4	16	191	4817	5	359475	359154
yellow	50	29	7	28	184.7	4659	6	359474	359153
dk. blue	50	35	4	16	184.7	4659	7	359476	359155
brown	100	44	2	8	184.7	4659	3	359477	359156
blue	1.5 & 1.8	11	26	104	—	—	1	354511 ^a (each)	—
tube decanter	3 5	10 12	37	148	—	—	1	343108 ^a (each)	—

a. Tube retainers and adapter plates are sold individually.

SOLID ADAPTER (polypropylene)								
Color Code	Nominal Tube Volume	Nominal Tube Size	Maximum Number of Tubes per Adapter	Maximum Number of Tubes in Rotor	r_{\max} at Adapter Bottom (mm)	RCF at Maximum Speed ($\times g$)	Adapter Part No.	
							Set of Two	Set of Four
grey	50 mL conical	29 x 115 mm	7	28	195.6	4943	393266 ^a	393267 ^a

- a. Do not autoclave this adapter. Use cold/chemical sterilization techniques only. Refer to [Sterilization and Disinfection](#).

CELL CULTURE FLASK ADAPTERS (EPDM)					
Color Code	Flask Size (cm ²)	Number Flasks per Adapter	r_{\max} at Flask Bottom (mm)	RCF at Maximum Speed ($\times g$)	Part Number (qty two)
orange	75	1	195.3	2080	369292
green	25	2	177.5	2000	369295

BLOOD BAG CUPS (polypropylene)						
Color Code	Cup Capacity	Size (mm)	Number Bags per Cup	r_{\max} at Cup Bottom (mm)	RCF at Maximum Speed ($\times g$)	Part Number (qty one)
yellow	single bag double pack	90	2	196.2	4949	356856
orange	triple pack quad pack	97	1	196.7	4961	356857

AEROSOLVE CANNISTER RACKS (polypropylene)								
Color Code	Nom. Tube Vol. (mL)	Nom. Tube Dia. (mm)	Max. No. Tubes per Adapter	Max. No. Tubes in Rotor	r_{\max} at Adapter Base (mm)	RCF at Maximum Speed ($\times g$) ^a	Adapter Part Number	
							Set of Two	Set of Four
white	1.5	11	24	96	174	4389	354495 (each)	—
blue	3 & 5	12	24	96	174	4389	359482	359160
tan	5	13	24	96	180	4530	359489	358993
orange	10	14	18	72	175	4414	359483	359161
purple	12	16	12	48	177	4469	359484	359162
	3 & 5	12	6	24	178	4490		
green	15 & 20	18	12	48	174	4389	359485	359163
	3 & 5	12	6	24	176	4439		
lt. green	15 (conical)	17	6	24	181	4565	359487	358991
	3 & 5 (round bottom)	12	6	24	180	4539		
lime green	50 (conical)	30	4	16	181	4565	359488	358992
	3 & 5 (round bottom)	12	4	16	180	4539		
yellow	50	29	4	16	177	4464	359486	359164
	3 & 5	12	4	16	178	4490		

AEROSOLVE CANNISTER RACKS (polypropylene)								
Color Code	Nom. Tube Vol. (mL)	Nom. Tube Dia. (mm)	Max. No. Tubes per Adapter	Max. No. Tubes in Rotor	r_{\max} at Adapter Base (mm)	RCF at Maximum Speed ($\times g$) ^a	Adapter Part Number	
							Set of Two	Set of Four
warm red	230 (conical)	62	1	4	180	4534	—	356985
Cannister Kit	500	—	—	—	183	4616	359481	359232

a. Tube racks used with Aerosolve cannisters do not provide full tube support; some manufacturers' plastic and glass tubes cannot withstand the maximum forces generated by this rotor when used in these racks. Beckman Coulter highly recommends that you pretest other manufacturers' tubes (in the appropriate Aerosolve cannister labware) using water samples.

BOTTLE ADAPTERS (polypropylene)						
Color Code	Nominal Bottle Volume (mL)	Nominal Bottle Diameter (mm)	Maximum Number Bottles in Rotor	r_{\max} at Bottle Bottom (mm)	RCF at Maximum Speed ($\times g$)	Adapter Part Number
orange (conical)	230	62	4	195.1	4921	356983 (pkg 4) use with 349946 (each)
yellow	250	62	4	195.1	4921	349946 (each)
warm red (conical)	250 ^a	62	4	203.2	5125	349849 (each)
light purple ^b	500	70	4	200.2	5060	349945 (each)
blue	750	96	4	195.2	4921	349846 (each)

a. Corning polypropylene bottle.

b. Light purple adapter replaces the previous tan adapter. See note under *Symmetrical and Balanced Loading* for weight difference information.

Table 2 Beckman Coulter Tubes and Bottles for the JS-4.750 Rotor

OPEN-TOP TUBES					
Dimensions	Volume (mL) ^a	Description	Part Number	Adapter	
				Set of Two	Set of Four
16 × 76 mm	10	polypropylene	355640 (PKG 25)	359471 359484 ^b	359150 359162 ^b
16 × 76 mm	10	polycarbonate	355630 (PKG 25)	359471 359484 ^b	359150 359162 ^b
18 × 98 mm	15	polycarbonate	342080 (PKG 100)	359473	359152
18 × 98 mm	15	polyethylene	342081 (PKG 100)	359473	359152

Table 2 Beckman Coulter Tubes and Bottles for the JS-4.750 Rotor (Continued)

OPEN-TOP TUBES					
Dimensions	Volume (mL) ^a	Description	Part Number	Adapter	
				Set of Two	Set of Four
18 × 98 mm	15	polypropylene	342082 (PKG 100)	359473	359152
29 × 104 mm	50	polycarbonate, graduated	363075 (PKG 8)	359474 359486 ^b	359153 359164 ^b
29 × 103 mm	50	polypropylene	357007 (PKG 25)	359474 359486 ^b	359153 359164 ^b
29 × 103 mm	50	polycarbonate	363647 (PKG 25)	359474 359486 ^b	359153 359164 ^b
TUBES WITH SNAP-ON CAPS					
11 × 38 mm	1.5	polypropylene	357448 (PKG 500)	359469 354511 ^b (each) 354495 ^b (each)	359148
11 × 38 mm	1.5	polypropylene	356090 (PKG 500)	359469 354511 ^b (each) 354495 ^b (each)	359148
11 × 38 mm	1.5	blue polypropylene	356091 (PKG 500)	359469 354511 ^b (each) 354495 ^b (each)	359148
11 × 38 mm	1.5	green polypropylene	356092 (PKG 500)	359469 354511 ^b (each) 354495 ^b (each)	359148
11 × 38 mm	1.5	yellow polypropylene	356093 (PKG 500)	359469 354511 ^b (each) 354495 ^b (each)	359148
11 × 38 mm	1.5	orange polypropylene	356094 (PKG 500)	359469 354511 ^b (each) 354495 ^b (each)	359148
11 × 38 mm	1.5	polypropylene (caps included)	343169 (PKG 500)	359469 354511 ^b (each) 354495 ^b (each)	359148
11 × 39 mm	1.8	white polyethylene	340196 (PKG 500)	359469 354511 ^b (each) 354495 ^b (each)	359148
29 × 103 mm	50	polypropylene	357005 (PKG 25)	359474 359486 ^b	359153 359164 ^b
29 × 103 mm	50	polycarbonate	363664 (PKG 25)	359474 359486 ^b	359153 359164 ^b

a. Fill tubes at least half full. Speed reduction may be required for fill volumes below 75 percent.

b. Tube retainers and adapter plates are sold individually.

JS-4.750 Swinging-Bucket Rotor
Tubes, Bottles, and Accessories

CONICAL TUBES					
Dimensions	Volume (mL) ^a	Description	Part Number	Adapter	
				Set of Two	Set of Four
62 × 141 mm	230	polycarbonate (with cap)	356987 (PKG 6)	349946 (each)	356983 356985 ^b
62 × 141 mm	230	polypropylene (with cap)	356989 (PKG 6)	349946 (each)	356983 356985 ^b
BIOVIALS					
14 × 55 mm	4	polypropylene	566353 (PKG 1000)	359470 (each)	359149

a. Fill tubes at least half full. Speed reduction may be required for fill volumes below 75 percent.

b. Adapter used in Aerosolve cannister (part number 359232).

BOTTLES					
Dimensions	Volume (mL) ^a	Description	Part Number	Adapter	
				Set of Two	Set of Four
29 × 104 mm	50	polycarbonate (with cap assembly)	361693 (PKG 24)	359474 359486	359153 359164 ^b
29 × 104 mm	50	polycarbonate (with screw cap)	357002 (PKG 6)	359474 359486 ^b	359153 359164 ^b
29 × 104 mm	50	polypropylene (with cap assembly)	357001 (PKG 6) or 361694 (PKG 24)	359474 359486 ^b	359153 359164 ^b
29 × 104 mm	50	polypropylene (with screw cap)	357003 (PKG 25)	359474 359486 ^b	359153 359164 ^b
28.5 × 107 mm	50	Teflon with high-speed screw cap	363076 ^c	359474 359486 ^b	359153 359164 ^b
62 × 141 mm	230	conical, wide-mouth polycarbonate	356987 ^c (PKG 6)	—	356983 (use with 349946 (each))
62 × 141 mm	230	conical, wide-mouth polypropylene	356989 ^c (PKG 6)	—	356983 (use with 349946 (each))
62 × 136 mm	250	polycarbonate (with screw cap, round bottom)	355673 (PKG 6)	349946 (each)	—
62 × 122 mm	250	wide-mouth polycarbonate (with cap)	356013 (PKG 6)	349946 (each)	—
62 × 122 mm	250	wide-mouth polypropylene (with cap)	356011 (PKG 6)	349946 (each)	—

BOTTLES					
Dimensions	Volume (mL)^a	Description	Part Number	Adapter	
				Set of Two	Set of Four
62 × 122 mm	250	wide-mouth polycarbonate	358275 (PKG 6)	349946 (each)	—
62 × 120 mm	250	wide-mouth polypropylene	358326 (PKG 6)	349946 (each)	—
69 × 160 mm	500	polypropylene (with cap assembly)	355607 ^c (PKG 6)	349945 (each)	—
69 × 159 mm	500	polypropylene (with cap)	355665 ^c (PKG 6)	349945 (each)	—
69 × 159 mm	500	polypropylene	355650 ^c (PKG 6)	349945 (each)	—
96 × 130 mm	750	polycarbonate (with screw cap ^d)	358299 ^e (Qty 6)	349846 (each)	—
96 × 130 mm	750	polypropylene (with screw cap ^d)	356855 ^e (Qty 6)	349846 (each)	—

- a. Fill tubes at least half full. Speed reduction may be required for fill volumes below 75 percent.
- b. Adapter used in Aerosolve cannister (part number 359232).
- c. These tubes cannot be run with bucket covers in place.
- d. Replacement bottle cap part number is 356263 (set of 6).
- e. Do not load the 750 mL bottle directly into the bucket; always use the adapter.

Table 3 Beckman Coulter Labware for Use with Multi-well Plate Carriers

Description	Volume	Part Number	Available Accessory	
			Description	Part Number
Multi-well plate, 96-well, non-sterile	300 µL/well	609844 ^a (pkg/100)	Cap strip, non-sterile ^a	267002 (pkg/10)
			Cap strip, sterile ^a	267005 (pkg/10)
			Aluminum foil lid ^b	538619 (pkg/100)
Deep-well polystyrene plate, 96-well, non-sterile	1 mL/well	267001 (pkg/24)	Cap strip, non-sterile ^a	267002 (pkg/10)
			Cap strip, sterile ^a	267005 (pkg/10)
			Aluminum foil lid ^b	538619 (pkg/100)
Deep-well polystyrene plate, 96-well, sterile	1 mL/well	267004 (pkg/24)	Cap strip, non-sterile ^a	267002 (pkg/10)
			Cap strip, sterile ^a	267005 (pkg/10)
			Aluminum foil lid ^b	538619 (pkg/100)

Table 3 Beckman Coulter Labware for Use with Multi-well Plate Carriers

Description	Volume	Part Number	Available Accessory	
			Description	Part Number
Deep-well polypropylene plate, 96-well, non-sterile	1 mL/well	267006 (pkg/24)	Cap strip, non-sterile ^a	267002 (pkg/10)
			Cap strip, sterile ^a	267005 (pkg/10)
			Aluminum foil lid ^b	538619 (pkg/100)
Deep-well polypropylene plate, 96-well, sterile	1 mL/well	267007 (pkg/24)	Cap strip, non-sterile ^a	267002 (pkg/10)
			Cap strip, sterile ^a	267005 (pkg/10)
			Aluminum foil lid ^b	538619 (pkg/100)
Square-well polypropylene plate	2 mL/well	140504 (pkg/24)	Aluminum foil lid ^b	538619 (pkg/100)

- a. Caps are optional; however, if stacking two or three multi-well plates, use cap strips between plates for speeds greater than 2700 RPM.
b. Requires soft rubber roller (4 in.), part number 538618, for installation

Table 4 Commercially Available Labware for Use with Multi-well Plate Carriers

Description	Volume	Part Number	Required Accessory	
			Description	Part Number
BD Falcon ^a 96-well flat-bottom assay plate, clear polystyrene, standard surface, non-sterile	300 µL/well	BD Falcon 353915 ^b (5/bag, 50/case)	—	—
BD Falcon ^a 96-well flat-bottom ELISA plate, clear polystyrene, enhanced surface, non sterile	300 µL/well	BD Falcon 353279 ^b (25/sleeve, 100/case)	—	—
BD Falcon ^a 96-well flat-bottom assay plate, clear polystyrene, standard surface, non-sterile	300 µL/well	BD Falcon 353228 ^b (10/bag, 60/case)	—	—

- a. BD Falcon is a trademark of Becton, Dickinson and Company.
b. These plates can be run at 4450 RPM (4063 × g), up to four plates per carrier, without lids or cap strips.

Run Speeds

The centrifugal force at a given radius in a rotor is a function of 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 each speed is automatically calculated by the centrifuge software; if the RCF is entered, the centrifuge calculates the equivalent RPM (revolutions per minute). Run speeds must be reduced in the following circumstances:

- If the weight of the load in a *tube-and-bottle bucket* exceeds 1000 grams, or if the solution density is more than 1.2 g/mL, reduce the maximum allowable run speed according to the following equation:

For the J-15 and 120VAC J-15R:

$$\text{reduced maximum speed} = (4550 \text{ RPM}) \sqrt{\frac{1000 \text{ grams}}{\text{heaviest load in grams}}}$$

For the 200-230VAC J-15R:

$$\text{reduced maximum speed} = (4750 \text{ RPM}) \sqrt{\frac{1000 \text{ grams}}{\text{heaviest load in grams}}}$$

Do not select rotational speed in excess of 4750 RPM for tube-and-bottle buckets in the Avanti J-15 Series centrifuge.

- If the weight of the load in a *multi-well plate carrier* exceeds 360 grams, reduce the maximum allowable run speed according to the following equation:

For the J-15:

$$\text{reduced maximum speed} = (4350 \text{ RPM}) \sqrt{\frac{360 \text{ grams}}{\text{heaviest load in grams}}}$$

For the J-15R:

$$\text{reduced maximum speed} = (4450 \text{ RPM}) \sqrt{\frac{360 \text{ grams}}{\text{heaviest load in grams}}}$$

Do not select rotational speed in excess of 4450 RPM for multi-well plate carriers in the Avanti J-15 Series centrifuge.

NOTE If using multi-well plates for runs exceeding 2 hours in a warm and/or humid environment, speed reduction may be required to maintain low sample temperatures.

Up to three Beckman Coulter plates can be run per carrier at maximum multi-well plate speeds. If running four Beckman Coulter plates, reduce run speed to 2700 RPM. Observe manufacturer's run speed and stacking limitations if using other manufacturers' multi-well plates.

Care and Maintenance

Maintenance

 **CAUTION**

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

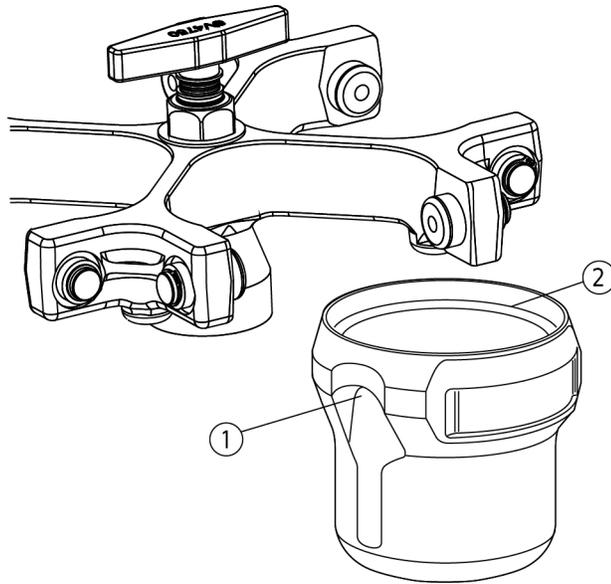
 **CAUTION**

Risk of equipment damage. Corrosion begins in scratches and may open fissures in the carriers and carriages with continued use. Do not use sharp tools on the rotor that could cause scratches in the carrier and carriage surfaces.

-
- 1 Periodically (at least monthly) inspect the rotor yoke, buckets, and/or multi-well plate carriers, especially inside cavities, for rough spots or pitting, white powder deposits—frequently aluminum oxide—or heavy discoloration.
 - If any of these signs are evident, do not run the rotor.
 - [Contact us](#) for information about the Field Rotor Inspection Program and the rotor repair center.

- 2 Approximately every 400 runs, and after cleaning and/or autoclaving, wipe the rotor pins and pin sockets (see [Figure 6](#)) with a paper towel, then coat the sockets with Paint On Graphite Lubricant (977212).
 - Allow the lubricant to dry for at least 5 minutes before installing the rotor in a centrifuge.

Figure 6 Lubricating Pivot Pin/Bucket Contact Areas



1. Lubrication Area (both pin sockets) 2. O-ring

- 3 Periodically check the manufacture date engraved on the bucket or carrier. Retire the bucket or carrier 5 years from the date indicated.

NOTE Buckets should not be used after 5 years from the manufacture date marked on the bucket. Carriers should not be used after 5 years from the manufacture date marked on the carrier. If at the time of purchase the marked manufacture date is less than 5 years from the date of purchase, the retirement date becomes the date of purchase plus 5 years.

- Refer to publication TJ6-TB-011 (supplied with the cannister kit) for information on Aerosolve cannister maintenance.
- Refer to publication GX-TB-007 for information on 25 cm² cell culture flask adapter or GX-TB-006 for 75 cm² culture flask adapter maintenance.

Store the rotor in a dry environment. Do not store the rotor in the centrifuge. Refer to *Chemical Resistances* (publication IN-175) for the chemical compatibilities of rotor and accessory materials. [Contact us](#) for information about the Field Rotor Inspection Program and the rotor repair center.

Cleaning

 **CAUTION**

Risk of equipment damage. Salts and other corrosive materials can damage the rotor and rotor components. Wash the rotor and rotor components immediately if salts or other corrosive materials are used or if spillage has occurred, according to your laboratory safety procedures. Do not allow corrosive materials to dry on buckets.

Under normal use, wash the rotor frequently to prevent buildup of residues.

1 Remove the cover O-ring from the bucket before cleaning.

2 Wash the rotor yoke, buckets, bucket covers, O-rings, and multi-well plate carriers and covers in a mild detergent, such as Beckman Solution 555 (339555), that won't damage the rotor.

- The Rotor Cleaning Kit (339558) contains two plastic coated 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 rotor components in a dishwasher. Do not soak in detergent solution for long periods, such as overnight.

3 Thoroughly rinse the cleaned rotor components with distilled water.

4 Air dry the rotor components upside down.

- *Do not use acetone to dry the rotor.*

5 Lubricate the pin contact areas with paint-on graphite Lubricant as described under [Maintenance](#).

6 Before reinstalling the rotor yoke, lightly lubricate the drive hole with Spinkote (306812) to prevent the rotor from sticking.

Modular Disk Adapters

1 To disassemble adapters for washing, first pull the bail out of the groove in the disks, then remove the disks and unsnap the bail from the rubber bottom.

- 2 Use a mild detergent such as Solution 555 (339555), diluted 10 to 1 with water, and a soft brush to scrub the adapters.
- 3 Rinse and dry, then reassemble.

Cell Culture Flask Adapters

Refer to publication GX-TB-007 (25 cm² flask adapters) or GX-TB-006 (75 cm² flask adapters) for cell culture flask adapter cleaning instructions.

Decontamination



CAUTION

Risk of contamination. If the rotor or accessories are contaminated with toxic or pathogenic solutions, follow appropriate decontamination procedures as determined by your laboratory safety officer.

WARNING

Risk of personal injury or equipment damage. Ethanol is a flammability hazard. Do not use it in or near operating centrifuges.

WARNING

Risk of chemical injury from bleach. To avoid contact with the bleach, use barrier protection, including protective eyewear, gloves, and suitable laboratory attire. Refer to the Safety Data Sheet for details about chemical exposure before using the chemical.

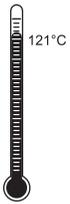
If a hazardous substance such as blood is spilled onto the instrument, clean up the spill by using 70% alcohol, a 10% bleach solution, or use your laboratory decontamination solution. Then follow your laboratory procedure for disposal of hazardous materials. If the instrument or accessories need to be decontaminated, [contact us](#).

If aluminum rotor components become contaminated with radioactive material, decontaminate them using a solution that will not damage the anodized surfaces. Beckman Coulter has tested a number of solutions and found two that do not harm anodized aluminum: RadCon Surface Spray or IsoClean Solution (for soaking),* and Radiacwash.†

While Beckman Coulter has tested these methods and found that they do not damage the rotor or components, no guarantee of decontamination is expressed or implied. Consult your laboratory safety officer regarding the proper decontamination methods to use.

Check *Chemical Resistances* (publication IN-175) to be sure the decontamination method will not damage any part of the rotor.

Sterilization and Disinfection



- The rotor yoke, buckets, adapters, and multi-well plate carriers can be autoclaved at 121°C for up to an hour. Carriages and support pads can be autoclaved at that temperature for up to 30 minutes. Blood bag cups, bucket and carrier covers, and Aerosolve cannisters can be autoclaved at that temperature for about 15 minutes. Remove the covers from the buckets and place the rotor yoke, buckets, covers, and/or multi-well plate carriers in the autoclave upside down. Before autoclaving, remove the air vent filter from each cover by gently pushing it out from underneath the cover with a pencil or other non-metal tool that will not scratch the cover material. After autoclaving, insert a new air vent filter (368148) into each cover.

WARNING

Risk of personal injury or equipment damage. Ethanol is a flammability hazard. Do not use it in or near operating centrifuges.

WARNING

Risk of personal injury or property damage. 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. Always observe appropriate cautionary procedures as defined by your safety officer when using flammable solvents.

WARNING

Risk of chemical injury from bleach. To avoid contact with the bleach, use barrier protection, including protective eyewear, gloves, and suitable laboratory attire. Refer to the Safety Data Sheet for details about chemical exposure before using the chemical.

- Ethanol (70%) or hydrogen peroxide (6%) may be used on all rotor components, including those made of plastic. High-quality, fragrance-free, gel-free bleach (5 to 6% solution of sodium hypochlorite - available chlorine) may be used, but may cause discoloration of anodized surfaces. Use the minimum immersion time for each solution, per laboratory standards.

* In U.S., contact Nuclear Associates (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).

† In U.S., contact Biomed Medical Systems (Shirley, New York); internationally, contact the U.S. office to find the dealer closest to you.

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.

Refer to *Use and Care of Tubes and Bottles* (publication IN-192), included in each box of tubes or bottles, for tube sterilization and disinfection procedures.

Tube Breakage

CAUTION

Risk of contamination or equipment damage. Tubes and well plates can break during centrifugation. To reduce the potential for corrosion, clean buckets or carriers thoroughly immediately following a tube or well plate breakage, according to your laboratory safety procedures.

WARNING

Risk of personal injury or contamination. Tubes and well plates can break during centrifugation. When working with potentially hazardous materials, open cannisters in an appropriate hood or biological safety cabinet. Consult your laboratory safety officer regarding the proper methods to use.

If a glass tube breaks, remove the glass very carefully from the adapter and bucket. Imbedded glass particles that remain in the bucket or adapters can cause tube failure during subsequent runs.

Aerosolve Cannisters

If a glass tube breaks in an Aerosolve cannister tube rack, discard and replace the O-ring and rubber tube cushion in the base of the rack. Imbedded glass particles that remain in the bucket or adapters can break tubes during subsequent runs.

SST or Corvac Tubes

If an SST or Corvac tube breaks, the tube's silicone gel barrier material becomes laced with glass fragments and the tube contents contaminate the entire tube adapter and bucket (or tube rack and cannister).

If one of these tubes breaks in an adapter in a bucket, use the following procedure.

- 1 Fill the bucket with water.
- 2 Autoclave the entire bucket and contents at 121°C for 20 minutes.

-
- 3 Decant any remaining water and dislodge the tube adapter (do not remove it) over a waste container.

 **WARNING**

Risk of personal injury or property damage. 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. Always observe appropriate cautionary procedures as defined by your safety officer when using flammable solvents.

- 4 Working under a hood and using plastic gloves, immerse the bucket and tube adapter (intact) in a beaker or similar vessel containing ethyl acetate.
-
- 5 Scrub the adapter with a brush and decant the ethyl acetate mixture into a waste bottle for proper disposal.
-
- 6 Rinse with water and air dry the bucket and tube adapter.

 **WARNING**

Risk of chemical injury from bleach. To avoid contact with the bleach, use barrier protection, including protective eyewear, gloves, and suitable laboratory attire. Refer to the Safety Data Sheet for details about chemical exposure before using the chemical.

If one of these tubes breaks in an *Aerosolve cannister*, use the following procedure.

-
- 1 Working in a biologic safety cabinet and wearing plastic gloves, open the cannister and immerse the cannister, lid, and contents (intact) in a beaker or similar vessel containing high-quality, fragrance-free, gel-free bleach (5 to 6% solution of sodium hypochlorite - available chlorine).
-
- 2 Leave the cannister to soak overnight.
-
- 3 Carefully dislodge the tube rack and scrub it with a brush.
-
- 4 Decant the bleach solution into a waste bottle for proper disposal.

-
- 5 Rinse with water and air dry the cannister and tube rack.
-

Disposal Information

Clean and decontaminate the rotor per the [Care and Maintenance](#) section of this manual before disposal. Users are encouraged to check with local waste disposal authorities for specific disposal requirements.

Storage

When it is not in use, store the rotor in a dry environment. Do not store the rotor in the centrifuge.

Troubleshooting

Refer to the *Avanti J-15 Series Centrifuges For IVD Use Instructions For Use* (PN B80286), or the *Avanti J-15 Series Centrifuges Instructions For Use* (PN B80287) for Troubleshooting information.

Returning a Rotor

Before returning a rotor or accessory for any reason, permission must be obtained from Beckman Coulter, Inc. [Contact us](#) to obtain the required form, entitled *Returned Material Authorization* (RMA) for United States returns, or *Returned Goods Authorization* (RGA) for international returns. The form should contain the following information:

- rotor type and 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 email address of the person to be notified upon receipt of the rotor or accessory at the factory,
- name and email address of the person to be notified about repair costs, etc.

NOTE It is the customer's responsibility to ensure that all 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/RMA form when mailing the rotor and/or accessories.

Supply List

NOTE Publications referenced in this manual can be obtained at www.beckman.com or [contact us](#).

[Contact us](#) for detailed information on ordering parts and supplies. For your convenience, a partial list is given below.

Replacement Rotor Parts

JS-4.750 rotor assembly (tube-and-bottle buckets)	B77580
Tube-and-bottle bucket (set of 2)	392804
Tube-and-bottle bucket cover (set of 2)	392805
Tube-and-bottle bucket O-ring (pkg/8)	961648
Tube-and-bottle bucket cover latch assembly	360587
JS-4.750 rotor assembly (multi-well plate carriers)	B83980
Multi-well plate carrier (set of 2)	392806
Multi-well Plate carrier cover (set of 2)	393070
Multi-well Plate carriage (set of 2)	392873
Multi-well Plate support pad (set of 4)	392872
Bucket/carrier cover air vent filter (set of 60)	368148
Tie-down T-bar	B77582

Other

NOTE For MSDS information, go to the Beckman Coulter website at www.beckman.com.

Adapters	see Table 1
Tubes and bottles.....	see Table 2
Multi-well Plate labware	see Table 3
Soft rubber roller (for aluminum foil lids)	538618
Tube decanter (for use with blue adapter).....	343108
includes:	
gasket for 10 mm dia tubes (silicone).....	343106
gasket for 12 mm dia tubes (silicone).....	343107
Adapter plate, 1.5 mL (for use with blue adapter)	354511
Aerosolve cannister kit (set of 4) (each kit includes 4 cannisters, 4 lids, 4 O-rings, silicone vacuum grease, and 4 pads).....	359232
Aerosolve cannister O-ring (ethylene propylene)	345366
Aerosolve pad (placed beneath cannister in bucket) (polyethylene)	361269
Tube racks for Aerosolve cannisters.....	See Table 1
Neoprene tube cushions	
for blue rack (pkg of 24)	344117
for orange rack (pkg of 18)	344118
for purple rack (pkg of 18; 12 large, 6 small).....	344119
for dark green rack (pkg of 18; 12 large, 6 small).....	344120
for yellow rack (pkg of 8; 4 large, 4 small).....	344121
Blood bag cup, 90 mm, yellow (polypropylene).....	356856
Blood bag cup, 97 mm, orange (polypropylene).....	356857
Balancing pads (six pads, 3 grams each, red)	358365
Cell culture flask adapter, 75 cm ² (pkg of 2)	369292
Cell culture flask adapter, 25 cm ² (pkg of 2)	369295
Rotor Cleaning Kit	339558
Solution 555 (1 qt).....	339555
Silicone vacuum grease (1 oz).....	335148
Spinkote lubricant (2 oz).....	306812
Paint On Graphite Lubricant	977212

JS-4.750 Swinging-Bucket Rotor
Supply List

Glossary

Avanti J-15 — Avanti 3 Liter non-refrigerated centrifuge

Avanti J-15R — Avanti 3 Liter refrigerated centrifuge

Angular Velocity, ω — Rate of rotation, measured in radians per second.

$$\omega = \frac{2\pi \text{ rpm}}{60}$$

or

$$\omega = 0.10472 \text{ rpm}$$

Anodized coating — A thin, hard layer of aluminum oxide formed electrochemically on aluminum rotor and/or accessory surfaces as a protective coating for corrosion resistance.

Autoclaving — Sterilization by heat (dry or steam).

Centrifugal Force — In a centrifugal field, the force which causes a particle to move away from the center of rotation.

Density — Mass per unit volume.

Erythrocytes — See RBC (red blood cells).

IFU — Instructions For Use

IVD — *In Vitro* Diagnostic

k factor — (clearing factor) Relative pelleting efficiency of the rotor at maximum rotation speed. As the k factor decreases, rotor efficiency increases.

$$k = \frac{2.53 \times 10^5 \times (r_{\max}/r_{\min})}{(\text{RPM}/1000)^2}$$

RCF — Relative centrifugal field; 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 equation:

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

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). Thus the relationship between RCF and RPM is:

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

r_{av} — (Average radius) the position of the liquid in the tube at the average distance from the axis of rotation when the rotor is at speed.

r_{max} — (Maximum radius) the position of the liquid in the tube at the maximum distance from the axis of rotation when the rotor is at speed.

r_{min} — (Minimum radius) the position of the liquid in the tube at the minimum distance from the axis of rotation when the rotor is at speed.

RBC — Red blood cells, or erythrocytes, carry oxygen to the tissues and carbon dioxide to the lungs for exhalation..

Solution 555 — Beckman Coulter concentrated rotor cleaning solution; recommended because it is a mild solution that has been tested and found effective and safe for Beckman Coulter rotors and accessories.

Swinging bucket rotor — A rotor that holds removable buckets or carriers. The buckets and carriers are placed over pivot pins on the arms of the yoke; they swing out to a horizontal position during centrifugation.

UI — User Interface

Yoke — The stainless steel structure that mounts on the centrifuge drive shaft and hold the buckets or carriers.

Beckman Coulter, Inc.

JS-4.750 Warranty

Subject to the conditions specified below and the warranty clause of the Beckman Coulter, Inc., terms and conditions in effect at the time of sale, Beckman Coulter 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 benchtop centrifuge rotor to the original buyer by Beckman Coulter 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.

Conditions

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.

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.

This warranty is void if the rotor is operated with a rotor drive unit or in a centrifuge unmatched to the rotor characteristics or operated in a Beckman Coulter centrifuge that has been improperly disassembled, repaired, or modified.

Thermoplastic rotors or components used in some benchtop centrifuges are warranted for one (1) year from date of purchase.

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.

Related Documents

Pre-installation Instructions for the Avanti J-15 Series Centrifuges

PN B80285

Avanti J-15 Series Centrifuges for In Vitro Diagnostic Use Instructions for Use

PN B80286

Avanti J-15 Series Centrifuges Instructions for Use

PN B80287

Avanti J-15 Series Centrifuges Safety Manual

PN B80288

JA-10.100 Fixed-Angle Rotor Instructions for Use

PN B80290

Instructions for Using the Anti-Rotation Anchoring Kit to Secure the Avanti J-15 Series Benchtop Centrifuges

PN B80291

JS-4.750 Swinging-Bucket Rotor and JA-10.100 Fixed Angle Rotor Safety Manual

PN C01058

Avanti J-15 Series Centrifuge Quick Start Guide

PN C01864

Chemical Resistances for Beckman Coulter Centrifugation Products

PN IN-175

Available in hard copy or electronic pdf by request.

Available at www.beckman.com

www.beckman.com

