



# Instructions For Use

## **SX4750A Swinging-Bucket Rotor**

For Use in the Beckman Coulter  
Allegra X-12 Series,  
Allegra X-14 Series, and  
Allegra X-15R Centrifuges



GX-TB-004EE  
February 2018



Beckman Coulter, Inc.  
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Brea, CA 92821 U.S.A.



## **SX4750A Swinging-Bucket Rotor**

GX-TB-004EE (February 2018)

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- Outside of the USA and Canada, contact your local Beckman Coulter Representative.

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Original Instructions

# Revision History

When a subsequent version changes the information in this document, a new issue will be released to the Beckman Coulter website. For updates, go to [beckmancoulter.com/ifu](http://beckmancoulter.com/ifu) and download the most recent manual or system help for your instrument.

## **Issue EB, 8/13**

The following section has changed subsequent to revision EA:

- Replacement Rotor Parts

## **Issue EC, 8/13**

The following sections have changed subsequent to revision EB:

- Table 2, Beckman Coulter Tubes and Bottles for the SX4750A Rotor
- Beckman Coulter, Inc. SX4750A Warranty

## **Issue ED, 11/15**

The following sections have changed subsequent to revision EC:

- *Symmetrical and Balanced Loading*

## **Issue EE, 02/18**

The following sections have changed subsequent to revision ED:

- *Description*, footnote \* on page -2
- *Aerosolve Cannisters*, footnote \* on page -4
- *Using Multiwell-Plate Carriers*, step 3 on page -16
- *Replacement Rotor Parts*

**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 use this equipment. 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 your Beckman Coulter Representative.

This safety notice summarizes information basic to the safe use of the rotor described in this manual. The international symbol displayed to the left 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.

## Alerts for Warning, Caution, and Note

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



**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.

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

## Safety Information for the SX4750A Rotor

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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.

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

## Safety Notice

Safety Information for the SX4750A Rotor

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

Although rotor components and accessories made by other manufacturers may fit in the SX4750A rotor, their safety in this rotor cannot be ascertained by Beckman Coulter. Use of other manufacturers' components or accessories in the SX4750A 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.

Attach all four buckets or carriers, loaded or empty, to the rotor for every run. Make sure that filled containers are loaded symmetrically into the rotor and that opposing containers are filled to the same level with liquid of the same density.

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 ultracentrifuge.

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

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.

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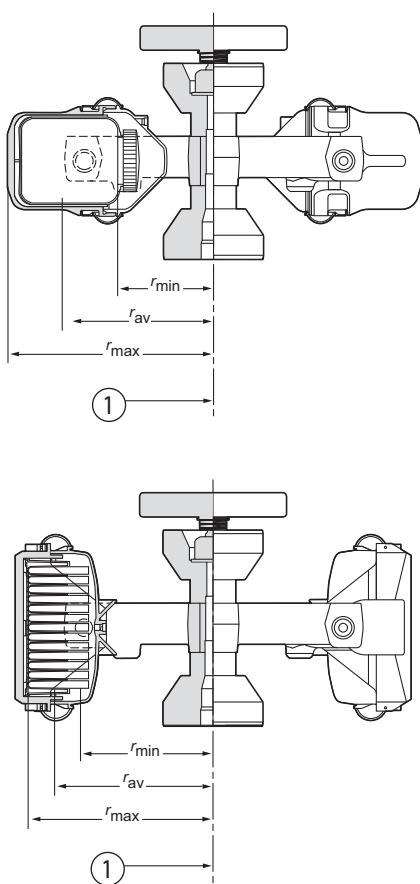
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# SX4750A Swinging-Bucket Rotor

## Specifications



1. Axis of Rotation

### Maximum speed

Allegra X-15R (tube-and-bottle buckets)	4750 RPM
Allegra X-15R (multiwell-plate carriers)	4450 RPM
Allegra X-14 series (tube-and-bottle buckets)	4300 RPM
Allegra X-14 series (multiwell-plate carriers)	4000 RPM
Allegra X-12 series (all buckets)	3750 RPM

Critical speed range<sup>a</sup> .....580 to 720 RPM

Maximum solution density ..... 1.2 g/mL

### Relative Centrifugal Field<sup>b</sup> at maximum speed

using tube-and-bottle buckets ( $r_{\max} = 207.8$ mm)	$5250 \times g^c$
using multiwell-plate carriers ( $r_{\max} = 183.2$ mm)	$4060 \times g^c$

Conditions requiring speed reductions ..... see Speed Derating

Number of buckets/carriers .....4

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

### Maximum load allowed in each multiwell-plate carrier at rated speed (excluding weight of carrier and cover)

..... 360 grams

Total maximum allowable imbalance of opposing loads .....50 grams

Maximum rotor capacity ..... 3 liters

Approximate acceleration time ..... 80 seconds

Approximate deceleration time ..... 81 seconds

Weight of fully loaded rotor (buckets with covers) ..... 15.4 kg (33.9 lb)

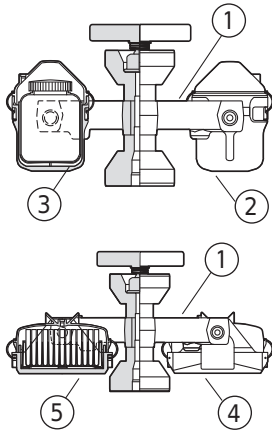
Rotor yoke material ..... stainless steel

Bucket and carrier material ..... anodized aluminum

- 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.
- 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,  $\omega$  is the angular velocity in radians per second ( $2\pi \text{ RPM}/60$ ), and  $g$  is the standard acceleration of gravity ( $9807 \text{ mm/s}^2$ ). After substitution:  $RCF = 1.12r (\text{RPM}/1000)^2$
- RCF inside buckets is  $5095 \times g$  (tube-and-bottle buckets— $r_{\max} 201.6$  mm) or  $3919 \times g$  (multiwell plate carriers— $r_{\max} 176.7$  mm).

## Description

---



- |           |             |
|-----------|-------------|
| 1. Yoke   | 4. Carrier  |
| 2. Bucket | 5. Carriage |
| 3. Bottle |             |

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

The SX4750A 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) or single- to quad-pack blood bags as well as multiwell plates in carriers. Special adapters are also available that allow centrifugation of Corning canted-neck 75-cm<sup>2</sup> and 25-cm<sup>2</sup> 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 high-impact plastic have been tested\* to demonstrate containment of microbiological aerosols under normal conditions of the associated Beckman Coulter centrifuge when used and maintained as instructed. A captive tie-down device is used to secure the rotor to the drive shaft during centrifugation.

The ARIES (Automated Rotor Imbalance Equilibrating System) technology provides imbalance compensation for rotors with buckets that are up to 50 grams unbalanced.

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.

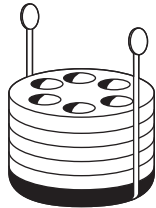
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\* Validation of microbiological containment was done at an independent third-party testing facility (Public Health England). Improper use or maintenance may affect seal integrity and thus containment.

## Buckets and Accessories

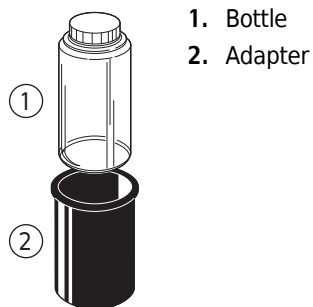
Several types of labware can be run in the buckets, depending on your application.

### Modular Disk Adapters



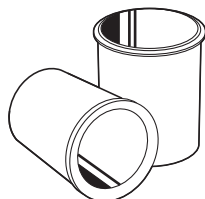
Tubes are supported in modular disk adapters, which can also serve as tube racks in the laboratory. The adapter disks are color coded by the tube size they accommodate (see [Table 1](#)); the number of disks used in an adapter assembly depends upon the length of tubes used. A tube decanter is available 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



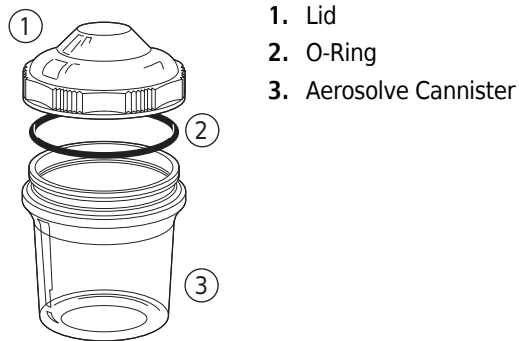
Bottles are supported in polypropylene adapters that fit inside the rotor buckets. The adapters accommodate four bottle sizes, including two conical bottles (see [Table 1](#)).

### Blood Bag Cups



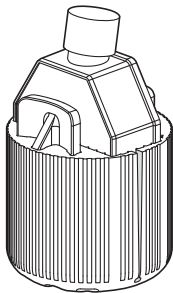
Polypropylene cups provide support for blood bags in the rotor buckets. Blood bag cups are available in two sizes: one for single- or double-pack bags, and one for triple- or quad-pack bags (see [Table 1](#)).

## Aerosolve Cannisters



Aerosolve cannisters, designed to contain aerosol leakage and liquid spills, can be used in the SX4750A 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



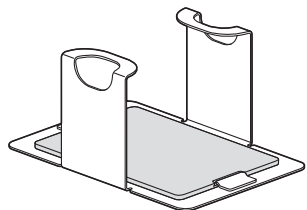
75-cm<sup>2</sup> Flask Adapter

Specially designed EPDM (ethylene propylene) adapters can be used to centrifuge Corning 25-cm<sup>2</sup> (two per bucket) or 75-cm<sup>2</sup> (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. Eliminating 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.

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\* 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.

## Multiwell-Plate Carriages



Used in the multiwell-plate carriers to facilitate loading and unloading and to provide support to the labware during centrifugation, each multiwell-plate carriage can hold up to four stacked multiwell plates (not to exceed 55.9 mm/2.2 in. in depth) or one deep-well plate. Each carrier can also carry a 96-well kit for high-throughput processing (such as DNA or RNA kit). A polypropylene pad provides support for the labware.

## Run Preparation

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*Specific information about the SX4750A 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 SX4750A rotor, their safety in this rotor cannot be ascertained by Beckman Coulter. Use of other manufacturers' components or accessories in the SX4750A 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

**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](#), [Table 2](#), and [Table 3](#).
-

## Installing the Rotor Yoke

**NOTE** Before the first use of a new rotor, attach the tie-down T-bar (369718) 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).



**Never drop the rotor yoke onto the centrifuge drive shaft. The drive shaft can be damaged if the rotor is forced sideways or dropped onto it.**

---

- 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 and precool the centrifuge beforehand for fast equilibration.



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 other hazardous materials in this rotor without taking all 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 retirement date are marked on the side of each bucket or 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.

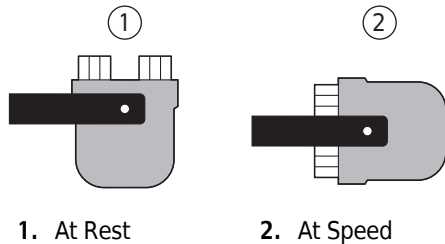
**NOTE** The light purple 500-mL adapters (349945) replace the previous tan adapters. There is a weight difference between the old tan adapters and the current purple adapters. If you run a mix of the purple and tan adapters, be sure to run matching colors in opposing positions or rotor imbalance could occur.

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 (see [Figure 1](#)).
2. The rotor should be loaded symmetrically with respect to its center of rotation. However, unlike other rotors, it is not necessary to balance opposing loads carefully.

For best results, load opposing buckets or carriers with the same type of labware. Unlike other rotors, the ARIES rotors do not require careful balancing of opposing loads. Imbalances of up to 50 grams can be accommodated. Do not exceed the rated maximum load for buckets (1000 grams each for tube-and-bottle buckets; 360 grams each for multiwell-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 1](#)). In multitube 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.



In multiwell plate carriers, samples should be loaded into the wells symmetrically with respect to the pivotal axis of the bucket, and opposing carriers should contain similar loads.

**NOTE** The ARIES rotors are designed to accommodate imbalances of up to 50 grams. It is not necessary to carefully balance opposing tubes as in regular rotors. In fact, doing so may result in vibration during early acceleration as the ARIES device adjusts to equilibrium.

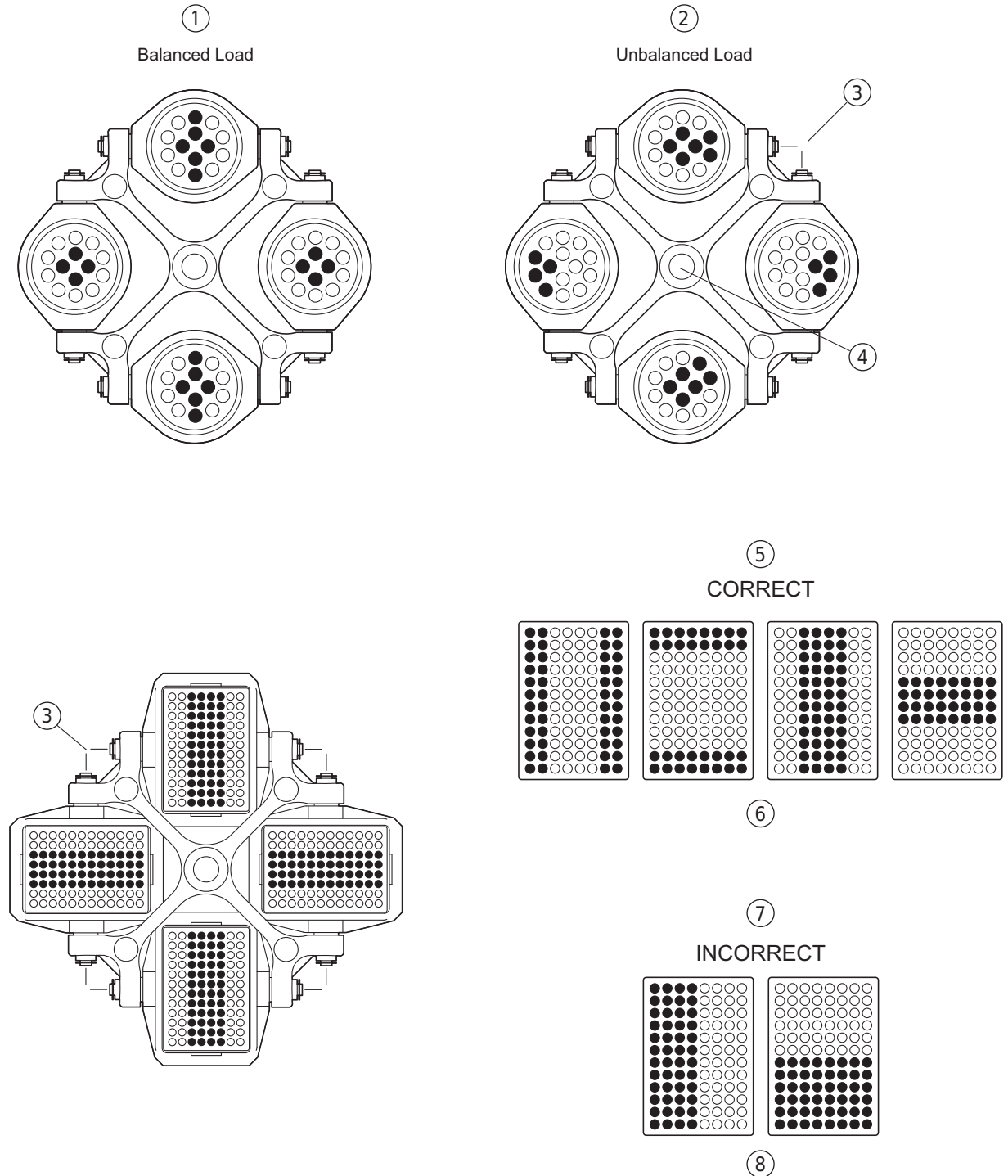
## Using Tube and Bottle Buckets

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).

---

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

**Figure 1** Examples of Correctly and Incorrectly Loaded Buckets and Carriers



- |                           |  |
|---------------------------|--|
| 1. Balanced Load          | 5. CORRECT   |
| 2. Unbalanced Load        | 6. Examples of Symmetrically Loaded Multiwell Plates (load opposite plates the same way) |
| 3. Pivotal Axis of Bucket | 7. INCORRECT   |
| 4. Center of Rotation     | 8. Examples of Nonsymmetrically Loaded Multiwell Plates                                  |

**CAUTION**

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.

You can load buckets before or after they are installed on the rotor yoke. In either case, we recommend filling the appropriate labware first and then loading the labware into the buckets.

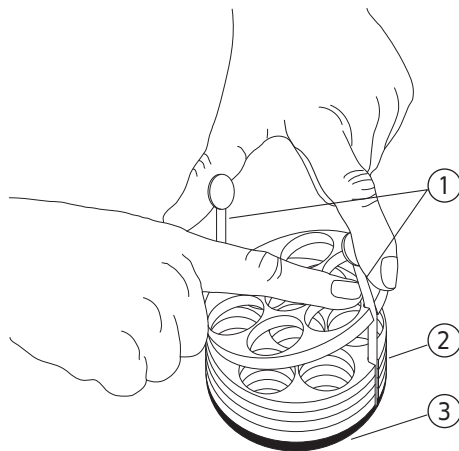
## Using Tubes

### 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 (see [Figure 2](#)).

**Figure 2** 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.
- (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](#), above).

### ***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](#), above.)

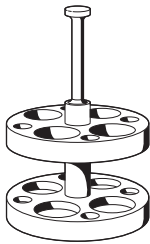
### ***Using Bottles in Adapters***

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](#), above.)

## Using Aerosolve Cannisters



**Do not run chloroformed samples in Aerosolve cannisters. Chloroform vapors can damage the cannister material.**



### 1. Aerosolve Tube Rack

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](#) lists the Aerosolve tube racks and the number and sizes of tubes they accommodate. When Aerosolve cannisters are used in the SX4750A rotor buckets, 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

**NOTE** This rotor is suitable for obtaining cell-free plasma or for cell packing.

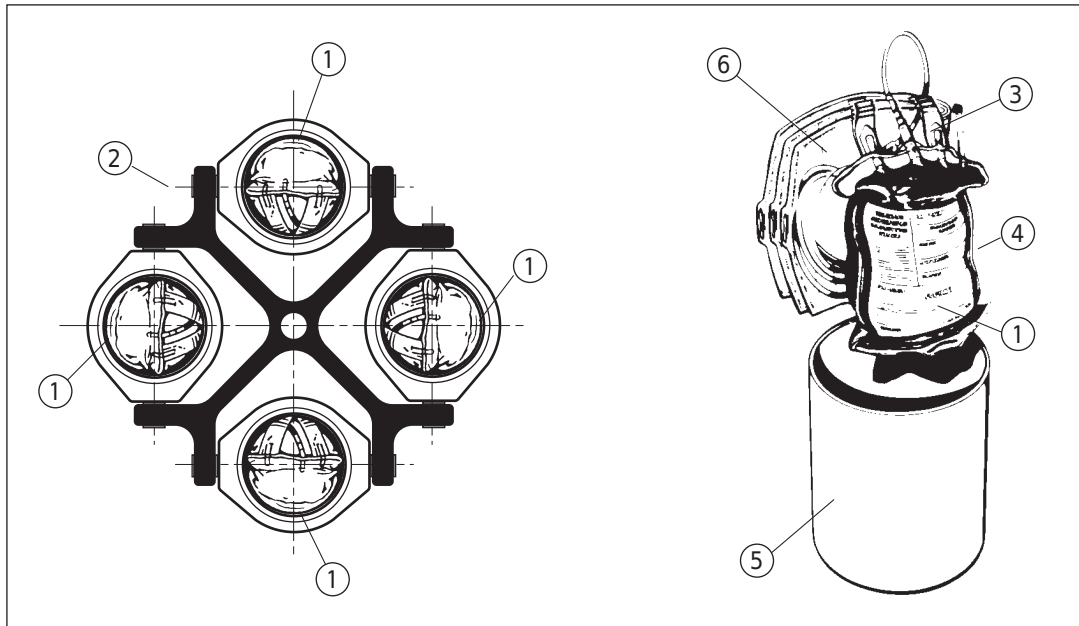
The yellow 90-mm cup (356856) accommodates up to two single bags or one double pack; the orange 97-mm cup (356857) supports either one triple or one quad pack. *Do not pour liquid directly into blood bag cups.* Fit blood bags into cups before loading the cups into the rotor buckets. Load the blood bag 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 3](#)).

**Figure 3** 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.
- 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 3](#)) with the label facing out.
- 
- 5** Place bucket covers on rotor buckets to prevent blood bags or tubing from contacting the rotor yoke during centrifugation.

**CAUTION**

If bucket covers are not used, make sure the superstructure of the blood bag protruding from the cup does not inhibit the bucket from reaching its horizontal position. If it does, remove the cup from the rotor and reposition the blood bag so that it seats further into the cup. 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 both the rotor and the centrifuge.

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-cm<sup>2</sup> flask adapter information or GX-TB-006 for 75-cm<sup>2</sup> 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 bioseal, 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

**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.

Install the cover as follows:

- 1 Make sure that the bucket and the bucket cover surfaces are clean, dry, and undamaged.
- 2 Make sure 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.

---

### 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**

**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. All four positions must contain buckets or carriers during a run. Never run the rotor with only two positions filled.**

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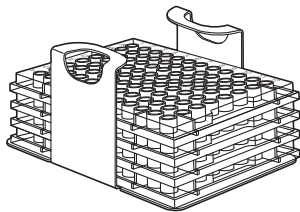
2 Gently swing the buckets to ensure that they are properly seated on the pivot pins.

---

## Using Multiwell-Plate Carriers

If only two filled multiwell-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 three Beckman Coulter plates per carrier, place a 96-well cap strip (see [Table 3](#)) 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 multiwell-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' multiwell plates.\* RCF and stacking limitations vary widely between manufacturers—pretest other manufacturers' plates using water instead of valuable sample.

---

\* See [Table 4](#) on page 24 for plates recommended for use in stacks of four at maximum speed.

- 
- 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.



**All four positions must contain buckets or carriers during a run. Never run the rotor with only two positions filled. If two tube-and-bottle buckets and two multiwell-plate carriers are run, position the similar buckets opposite each other. Select multiwell-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.

**NOTE** When using multiwell-plate carriers, enter SX4750A as the rotor and limit top speed of the instrument to 3750 RPM in an Allegra X-12 series centrifuge, 4000 RPM in an Allegra X-14 series centrifuge, or 4450 RPM in an Allegra X-15R centrifuge (when running up to three stacked Beckman Coulter plates separated by cap strips; reduce speed to 2700 RPM if running four stacked plates).

Set rotor speed using RPM values only. To set speed to a specific RCF, use the RPM-to-RCF conversion chart (GX-TB-015) to determine the applicable RPM to enter.

- 
- 2 See [Run Speeds](#) for information about speed limitations.
-

## 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 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](#), [Table 2](#), and [Table 3](#). RCF limitations for some non-Beckman Coulter multiwell plates are shown in [Table 4](#).

### 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](#) can be run in the SX4750A rotor. Fill tubes at least half full; speed reduction may be required for fill volumes below 75 percent. Refer to [Table 3](#) for Beckman Coulter labware that can be centrifuged in multiwell-plate carriers.

**Table 1** Adapters and Blood Bag Cups Available for the SX4750A 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
tube decanter	3 5	10 12	37	148	—	—	1	343108 <sup>a</sup> (each)	—
1.5-mL adapter plate	1.5 & 1.8	11	26	104	—	—	1	354511 <sup>a</sup> (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 $\times$ 115 mm	7	28	195.6	4943	393266 <sup>a</sup>	393267 <sup>a</sup>	

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 <sup>2</sup> )	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 ( $\times g$ ) <sup>a</sup>	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	12	24	96	180	4530	359489	358993
orange	10	14	18	72	175	4414	359483	359161
purple	12 3 & 5	16	12	48	177	4469	359484	359162
		12	6	24	178	4490		
white (vials)	15	14	10	40	174	4389	344517 (each)	—
green	15 & 20 3 & 5	18	12	48	174	4389	359485	359163
		12	6	24	176	4439		
lt. green	15 (conical) 3 & 5 (round bottom)	17	6	24	181	4565	359487	358991
		12	6	24	180	4539		
lime green	50 (conical) 3 & 5 (round bottom)	30	4	16	181	2850	359488	358992
		12	4	16	180	4539		
yellow	50 3 & 5	29	4	16	177	4464	359486	359164
		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 ( $\times g$ ) <sup>a</sup>	Adapter Part Number	
							Set of Two	Set of Four
orange	230	62	1	4	180	4534	—	356985
Cannister Kit <sup>b</sup>	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.
- b. Cannisters and lids are made of polyphenylsulphone; O-rings are ethylene propylene. Cannister kit includes the pad (361269) that must be used beneath the cannister.

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 (qty one)
orange (conical)	230	62	4	195.1	4921	356983 (use with 349946)
yellow	250	62	4	195.1	4921	349946
warm red (conical)	250 <sup>a</sup>	62	4	203.2	5125	349849
light purple <sup>b</sup>	500	70	4	200.2	6050	349945
blue	750	96	4	195.2	4921	349846

- 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 SX4750A Rotor

OPEN-TOP TUBES					
Dimensions	Volume (mL) <sup>a</sup>	Description	Part Number	Adapter	
				Set of Two	Set of Four
16 × 76 mm	10	polypropylene	355640	349471 359484 <sup>b</sup>	359150 359162 <sup>b</sup>
16 × 76 mm	10	polycarbonate	355630	349471 359484 <sup>b</sup>	359150 359162 <sup>b</sup>
16 × 76 mm	10	stainless steel	301108	359471 359484 <sup>b</sup>	359150 359162 <sup>b</sup>
18 × 98 mm	15	polycarbonate	342080	359473	359152
18 × 98 mm	15	polyethylene	342081	359473	359152

**Table 2** Beckman Coulter Tubes and Bottles for the SX4750A Rotor (Continued)

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

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

**SX4750A Swinging-Bucket Rotor**  
Operation

- b. Adapter used in Aerosolve cannister (part number 359232).
- c. Tube retainers and adapter plates are sold individually.

<b>CONICAL TUBES</b>					
Dimensions	Volume (mL) <sup>a</sup>	Description	Part Number	Adapter	
				Set of Two	Set of Four
62 × 141 mm	230	polycarbonate (with cap)	356987	349946	356983 356985 <sup>b</sup>
62 × 141 mm	230	polypropylene (with cap)	356989	349946	356983 356985 <sup>b</sup>
<b>BIOVIALS</b>					
14 × 55 mm	4	polypropylene	566353	359470 344517 (each)	359149

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

<b>BOTTLES</b>					
Dimensions	Volume (mL) <sup>a</sup>	Description	Part Number	Adapter	
				Set of Two	Set of Four
29 × 104 mm	50	polycarbonate (with cap assembly)	361693	359474 359486	359153 359164 <sup>b</sup>
29 × 104 mm	50	polycarbonate (with screw cap)	357002	359474 359486 <sup>b</sup>	359153 359164 <sup>b</sup>
29 × 104 mm	50	polypropylene (with cap assembly)	357001 or 361694	359474 359486 <sup>b</sup>	359153 359164 <sup>b</sup>
29 × 104 mm	50	polypropylene (with screw cap)	357003	359474 359486 <sup>b</sup>	359153 359164 <sup>b</sup>
28.5 × 107 mm	50	Teflon with high-speed screw cap	363076 <sup>c</sup>	359474 359486 <sup>b</sup>	359153 359164 <sup>b</sup>
62 × 141 mm	230	conical, wide-mouth polycarbonate	356987 <sup>c</sup>	356983 (use w/349946)	—
62 × 141 mm	230	conical, wide-mouth polypropylene	356989 <sup>c</sup>	356983 (use w/349946)	—
62 × 136 mm	250	polycarbonate (with screw cap, round bottom)	355673	349946	—
62 × 122 mm	250	wide-mouth polycarbonate (with cap)	356013	349946	—
62 × 122 mm	250	wide-mouth polypropylene (with cap)	356011	349946	—
62 × 122 mm	250	wide-mouth polycarbonate	358275	349946	—



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

- 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 Multiwell-Plate Carriers

Description	Volume	Part Number	Available Accessory	
			Description	Part Number
Multiwell plate, 96-well, nonsterile	300 µL/well	609844 <sup>a</sup> (pkg/100)	Cap strip, nonsterile <sup>a</sup>	267002 (pkg/10)
			Cap strip, sterile <sup>a</sup>	267005 (pkg/10)
			Aluminum foil lid <sup>b</sup>	538619 (pkg/100)
Deep-well polystyrene plate, 96-well, nonsterile	1 mL/well	267001 (pkg/24)	Cap strip, nonsterile <sup>a</sup>	267002 (pkg/10)
			Cap strip, sterile <sup>a</sup>	267005 (pkg/10)
			Aluminum foil lid <sup>b</sup>	538619 (pkg/100)
Deep-well polystyrene plate, 96-well, sterile	1 mL/well	267004 (pkg/24)	Cap strip, nonsterile <sup>a</sup>	267002 (pkg/10)
			Cap strip, sterile <sup>a</sup>	267005 (pkg/10)
			Aluminum foil lid <sup>b</sup>	538619 (pkg/100)
Deep-well polypropylene plate, 96-well, nonsterile	1 mL/well	267006 (pkg/24)	Cap strip, nonsterile <sup>a</sup>	267002 (pkg/10)
			Cap strip, sterile <sup>a</sup>	267005 (pkg/10)
			Aluminum foil lid <sup>b</sup>	538619 (pkg/100)
Deep-well polypropylene plate, 96-well, sterile	1 mL/well	267007 (pkg/24)	Cap strip, nonsterile <sup>a</sup>	267002 (pkg/10)
			Cap strip, sterile <sup>a</sup>	267005 (pkg/10)
			Aluminum foil lid <sup>b</sup>	538619 (pkg/100)
Square-well polypropylene plate	2 mL/well	140504 (pkg/24)	Aluminum foil lid <sup>b</sup>	538619 (pkg/100)

- a. Caps are optional; however, if stacking two or three multiwell 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 Multiwell-Plate Carriers

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

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

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

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

Do not select rotational speed in excess of:

- 4750 RPM for tube-and-bottle buckets or 4450 RPM for multiwell-plate carriers in an Allegra X-15R,
- 4300 RPM for tube-and-bottle buckets or 4000 RPM for the multiwell-plate carriers in an Allegra X-14 series, or
- 3750 RPM for either buckets or carriers in an Allegra X-12 series centrifuge.

(Up to three Beckman Coulter plates can be run per carrier at maximum multiwell-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' multiwell plates.) If using multiwell plates for runs exceeding 2 hours in a warm and/or humid environment, speed reduction may be required to maintain low sample temperatures.

## Care and Maintenance

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### Maintenance

**NOTE** 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.

---

**1** Periodically (at least monthly) inspect the rotor yoke, buckets, and/or multiwell-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 your Beckman Coulter representative for information about the Field Rotor Inspection Program and the rotor repair center.

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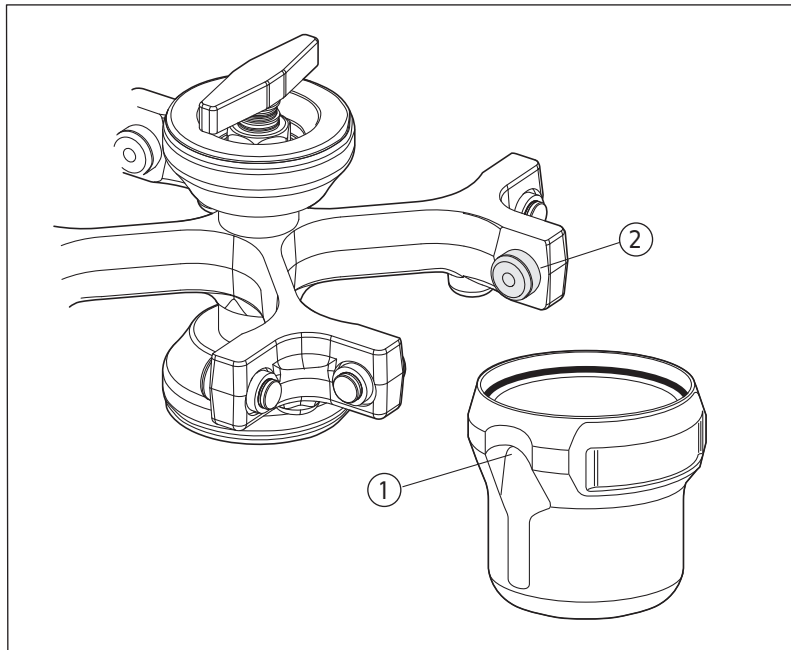
**2** Approximately every 400 runs, and after cleaning and/or autoclaving, wipe the rotor pins and pin sockets (see [Figure 4](#)) with a paper towel, then coat the sockets with Paint On Graphite Lubricant (977212).

- Allow the lubricant to dry for at least 5 minutes before installing the rotor in a centrifuge.

- 
- 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-cm<sup>2</sup> cell culture flask adapter maintenance or GX-TB-006 for 75-cm<sup>2</sup> flask adapters.

Store the rotor in a dry environment (not in the centrifuge). Refer to *Chemical Resistances* (publication IN-175) for the chemical compatibilities of rotor and accessory materials. Your Beckman Coulter representative provides contact with the Field Rotor Inspection Program and the rotor repair center.

**Figure 4** Lubricating Pivot Pin/Bucket Contact Areas



1. Lubrication Area (both pin sockets)      2. Rotor Pin

## 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 to prevent buildup of residues.

- 
- 1** Wash the rotor yoke, buckets, bucket covers, and multiwell-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.

- 
- 2** Thoroughly rinse the cleaned rotor components with distilled water.

- 
- 3** Air-dry the rotor components upside down.

- Do not use acetone to dry the rotor.

- 4 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.

### Bottle Adapters and Blood Bag Cups

- 1 Use a mild detergent such as Beckman Solution 555 (339555), diluted 10 to 1 with water, and a soft brush to clean bottle adapters and blood bag cups.
- 2 Thoroughly rinse with water and air-dry upside down.

### Cell Culture Flask Adapters

Refer to publication GX-TB-007 (25-cm<sup>2</sup> flask adapters) or GX-TB-006 (75-cm<sup>2</sup> flask adapters) for cell culture flask adapter cleaning instructions.

## Decontamination



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.

If the rotor or accessories are contaminated with toxic or pathogenic solutions, follow appropriate decontamination procedures. Check *Chemical Resistances* to be sure the decontamination method will not damage any part of the rotor.

## Sterilization and Disinfection

- The rotor yoke, buckets, adapters, and multiwell-plate carriers can be autoclaved at 121°C for up to an hour. Blood bag cups, bucket and carrier covers, and Aerosolve cannisters can be autoclaved at that temperature for about 15 minutes. (Do not autoclave Aerosolve cannisters purchased prior to April 1993, or any components made of Noryl.) Remove the covers from the buckets and place the rotor yoke, buckets, covers, and/or multiwell-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.
- Ethanol (70%)\* or hydrogen peroxide (6%) may be used on all rotor components, including those made of plastic. Bleach (sodium hypochlorite) may be used, but may cause discoloration of anodized surfaces. Use the minimum immersion time for each solution, per laboratory standards.

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

## Tube Breakage



**To reduce the potential for corrosion, clean buckets or carriers thoroughly immediately following a tube or well plate breakage.**

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.

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\* 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 Biodex Medical Systems (Shirley, New York); internationally, contact the U.S. office to find the dealer closest to you.

\* Flammability hazard. Do not use in or near operating ultracentrifuges.

## Aerosolve Cannisters



**When working with potentially hazardous materials, open cannisters in an appropriate hood or biological safety cabinet in case of tube breakage.**

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.

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- 1 Fill the bucket with water.

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

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

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  - 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.\*

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  - 5 Scrub the adapter with a brush and decant the ethyl acetate mixture into a waste bottle for proper disposal.

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  - 6 Rinse with water and air-dry the bucket and tube adapter.

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 6% sodium hypochlorite (undiluted bleach).

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\* Flammability hazard. Do not use in or near operating centrifuges.

- 2 Leave the cannister to soak overnight.
- 3 Carefully dislodge the tube rack and scrub it with a brush.
- 4 Decant the bleach into a waste bottle for proper disposal.
- 5 Rinse with water and air-dry the cannister and tube rack.

## Storage

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

## Returning a Rotor

Before returning a rotor or accessory for any reason, prior permission must be obtained from Beckman Coulter, Inc. This form may be obtained from your local Beckman Coulter sales office. The form, entitled *Returned Material Authorization* (RMA) for United States returns or *Returned Goods Authorization* (RGA) for international returns, 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.

To protect our personnel, 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.

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



## Supply List

**NOTE** Publications referenced in this manual can be obtained at [www.beckmancoulter.com](http://www.beckmancoulter.com) or by calling Beckman Coulter at 1-800-742-2345 in the United States, or by contacting your local Beckman Coulter office.

Call Beckman Coulter Sales (1-800-742-2345 in the United States) for detailed information on ordering parts and supplies. For your convenience, a partial list is given below.

### Replacement Rotor Parts

SX4750A rotor assembly (tube-and-bottle buckets)	369704
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
Multiwell-plate carrier (set of 2)	392806
Multiwell-plate carrier cover (set of 2)	393071
Multiwell-plate carriage (set of 2)	392873
Multiwell-plate support pad (set of 4)	392872
Bucket/carrier cover air-vent filter (set of 60)	368148
Tie-down T-bar	369718

### Other

**NOTE** For MSDS information, go to the Beckman Coulter website at [www.beckmancoulter.com](http://www.beckmancoulter.com)

Adapters	see <a href="#">Table 1</a>
Tubes and bottles	see <a href="#">Table 2</a>
Multiwell-plate labware	see <a href="#">Table 3</a>
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 1 cannister, 1 lid, 1 O-ring, silicone vacuum grease, and 1 pad)	359232
Aerosolve cannister O-ring (ethylene propylene)	345366
Aerosolve pad (placed beneath cannister in bucket)	
(polyethylene)	361269
Tube racks for Aerosolve cannisters	See <a href="#">Table 1</a>

**SX4750A Swinging-Bucket Rotor**  
Supply List

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 <sup>2</sup> (pkg of 2)	369292
Cell culture flask adapter, 25-cm <sup>2</sup> (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

# Beckman Coulter, Inc.

## SX4750A 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.

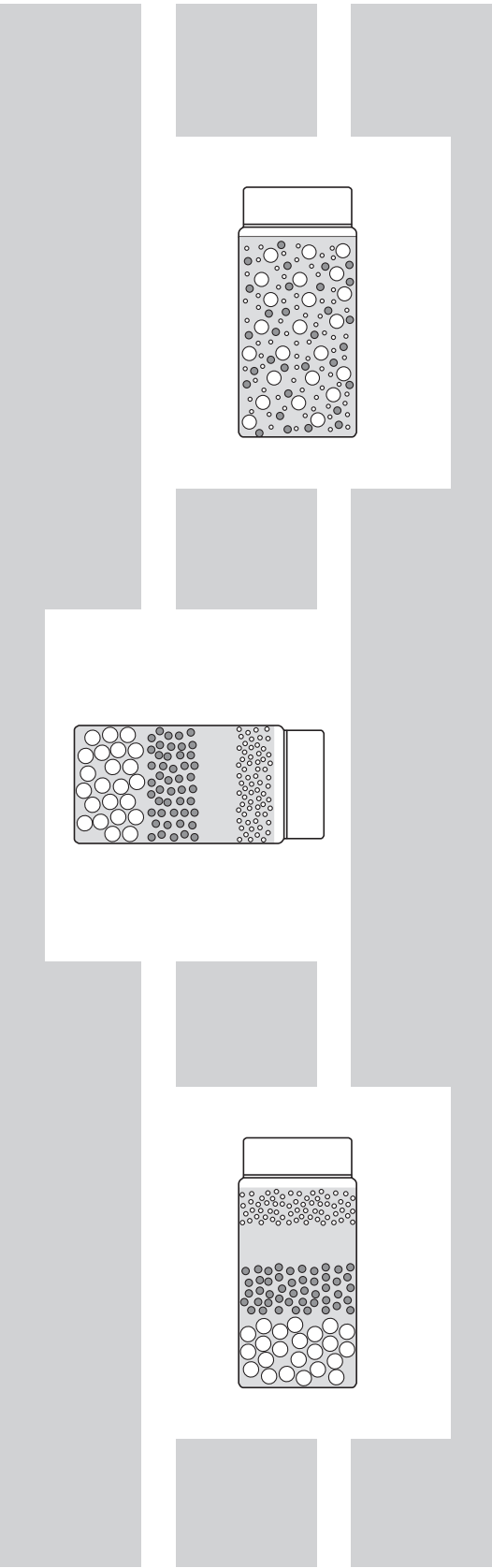
This warranty is void if the rotor is operated with a rotor drive unit or in a centrifuge unmatched to the rotor characteristics or operated in a Beckman Coulter centrifuge that has been improperly disassembled, repaired, or modified.

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

## **Allegra X-12 Series (GX-IM-5)**

- Description
- Installation
- Operation
- Troubleshooting
- Care and Maintenance

## **Allegra X-14 Series (B07493)**

- Description
- Installation
- Operation
- Troubleshooting
- Care and Maintenance

## **Allegra X-15R (GXR-IM-4)**

- Description
- Installation
- Operation
- Troubleshooting
- Care and Maintenance

Available in hard copy or electronic pdf by request.

## **Additional References**

- Chemical Resistances for Beckman Coulter Centrifugation Products (IN-175)
- Use and Care of Tubes and Bottles (IN-192)
- Using Adapters for Corning 25-cm<sup>2</sup> Cell Culture Flask in SX4750 and SX4750A Rotors (GX-TB-007)
- Using Adapters for Corning 75-cm<sup>2</sup> Cell Culture Flask in SX4750 and SX4750A Rotors (GX-TB-006)

Available in hard copy or electronic pdf by request.

Available at [www.beckmancoulter.com](http://www.beckmancoulter.com)

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