Instructions For Use

FX6100 Fixed-Angle Rotor

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

GX-TB-005BB
February 2014

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BECKMAN COULTER

FX6100 Fixed-Angle Rotor

GX-TB-005BB (February 2014)

Find us on the World Wide Web at:
www.beckmancoulter.com

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Revision History

This document applies to the latest software listed and higher versions. When a subsequent software version changes the information in this document, a new issue will be released.

Issue BB, 02/14
The following sections have changed subsequent to revision BA:

- Table 2, Available Beckman Coulter Bottles and Tubes for the FX6100 Rotor
- Thickwall Tubes
- Polycarbonate and Polypropylene Bottles
- Beckman Coulter, Inc. Benchtop Rotor Warranty

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

⚠ 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.

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 FX6100 Rotor

Handle body fluids with care because they can transmit disease. No known test offers complete assurance that such fluids are free of micro-organisms. Some of the most virulent—Hepatitis (B and C) viruses, HIV (I–V), atypical mycobacteria, and certain systemic fungi—further emphasize the need for aerosol protection. Handle other infectious samples according to good laboratory procedures and methods to prevent spread of disease. Because spills may generate aerosols, observe proper safety precautions for aerosol containment.

Do not run toxic, pathogenic, or radioactive materials in this rotor without taking appropriate safety precautions. Biosafe containment should be used when Risk Group II materials (as identified in the World Health Organization *Laboratory Biosafety Manual*) are handled; materials of a higher group require more than one level of protection.

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

This rotor was developed, manufactured, and tested for safety and reliability as part of a Beckman Coulter centrifuge/rotor system. Its safety or reliability cannot be assured if used in a non-Beckman Coulter centrifuge or in a Beckman Coulter centrifuge that has been modified without Beckman Coulter's approval.

Although rotor components and accessories made by other manufacturers may fit in the FX6100 rotor, their safety in this rotor cannot be ascertained by Beckman Coulter. Use of other manufacturers' components or accessories in the FX6100 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.

Make sure that filled containers are loaded symmetrically into the rotor and that opposing bottles or tubes are filled to the same level with liquid of the same density.

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

Never exceed the maximum rated speed of the rotor and labware in use. Refer to the section on *Run Speeds*.

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

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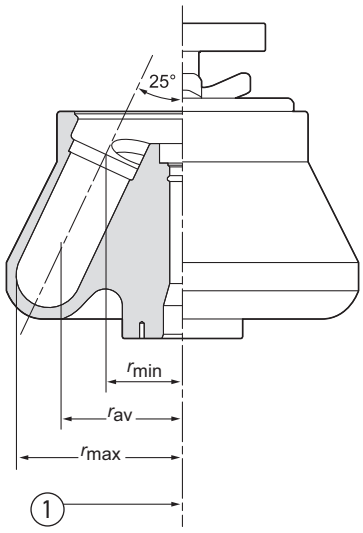
FX6100 Fixed-Angle Rotor

Specifications



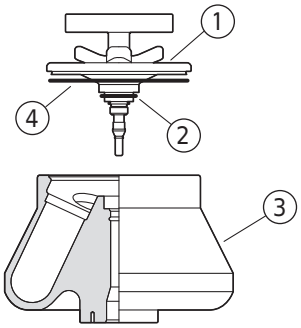
1. Axis of Rotation

Maximum speed	10,200 RPM
Density rating at maximum speed	1.2 g/mL
Critical speed range[a]	850 to 950 RPM
Relative Centrifugal Field[b] at maximum speed	
at r_{max} (98.0 mm)	11,400 × *g*
at r_{av} (66.5 mm)	7,800 × *g*
at r_{min} (35.0 mm)	4,100 × *g*
k factor at maximum speed	280
Conditions requiring speed reductions	see *Run Speeds*
Number of tube cavities	6
Nominal tube dimensions (largest bottle)	38 × 102 mm
Nominal tube capacity (largest bottle)	100 mL
Nominal rotor capacity	600 mL
Approximate acceleration time to maximum speed (fully loaded)	1 1/2 min
Approximate deceleration time from maximum speed (fully loaded)	1 1/3 min
Weight of fully loaded rotor	7.5 kg (16.5 lb)
Rotor and lid material	aluminum

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 (2 π RPM /60), and *g* is the standard acceleration of gravity (9807 mm/s^2). After substitution: RCF = 1.12*r* (RPM/1000)^2

Description



1. Lid (369739)
2. Small O-ring (010179)
3. Rotor Body
4. Large O-ring (870612)

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

The FX6100 is a fixed-angle rotor designed to centrifuge up to six 100-mL tubes at a 25-degree angle to the axis of rotation. Applications for this rotor include density gradient separations of erythrocytes, cell lysate fractions, granules, as well as differential separation of DNA, proteins, and viruses. Up to 600 mL of sample volume can be centrifuged per run.

The rotor and lid are made of aluminum and are anodized for corrosion resistance—the rotor is black and the lid is blue. A lubricated O-ring in the rotor maintains atmospheric pressure in the rotor during centrifugation. A tie-down device is used to secure the rotor to the centrifuge drive hub.

The rotor was tested* to demonstrate containment of microbiological aerosols under normal operating conditions of the associated Beckman Coulter centrifuge, when used and maintained as instructed.

The centrifuge identifies the rotor during the run by means of a magnetic sensor system in the 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.

* Validation of microbiological containment was done at an independent third-party testing facility (CAMR, Porton Down, UK, or USAMRIID, Ft. Detrick, MD, U.S.A.). Improper use or maintenance may affect seal integrity and thus containment.

Preparation and Use

Specific information about the FX6100 rotor is given here. Information about the centrifuge is contained in the centrifuge manual, which should be used together with this manual for complete centrifuge, rotor, and accessory operation.

NOTE Although rotor components and accessories made by other manufacturers may fit in the FX6100 rotor, their safety in this rotor cannot be ascertained by Beckman Coulter. Use of other manufacturers' components or accessories in the FX6100 rotor may void the rotor warranty and should be prohibited by your laboratory safety officer. Only the components and accessories listed in this publication should be used in this rotor.

Prerun Safety Checks

Read the Safety Notice section at the front of this manual before using the rotor.

1 Make sure that the rotor, lid, and all tubes or bottles and accessories are clean and show no signs of corrosion or cracking.

2 If fluid containment is required, *use capped bottles or tubes.*

- All containers carrying physiological fluids should be capped, and not overfilled, to prevent leakage.

3 Check the chemical compatibilities of all materials used (refer to *Chemical Resistances,* publication IN-175).

Rotor Preparation

For low-temperature runs, precool the rotor in the centrifuge or in a refrigerator before use—especially before short runs—to ensure that the rotor reaches the required temperature. A suggested precooling cycle is a minimum of 30 minutes at 2000 RPM with the temperature set at 0°C.

NOTE Temperatures may vary slightly between centrifuges. If sample temperature is crucial, test temperature settings on your instrument using water samples.

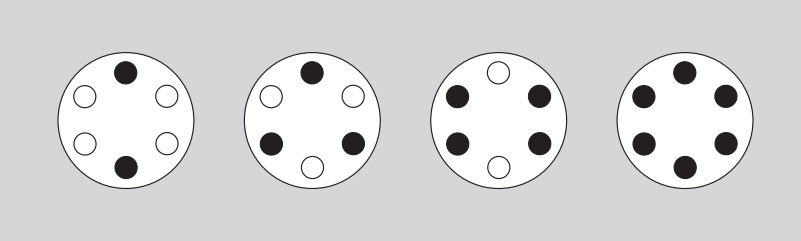
1 Be sure that the metal threads in the rotor are clean and lightly but evenly coated with Spinkote™ lubricant (306812).

2 Load the filled containers symmetrically into the rotor (see *Tubes and Bottles* on page 5 for tube and bottle information).

- If fewer than six tubes are being run, they must be arranged symmetrically in the rotor (see Figure 1).

- *Opposing tubes must be filled to the same level with liquid of the same density*—maximum imbalance is 6 grams.

Figure 1 Typical Examples of Arranging Tubes or Bottles in the Rotor



NOTE Two, three, four, or six containers can be centrifuged per run, if they are arranged in the rotor as shown in Figure 1.

Operation

1 Be sure the lid O-rings are lightly but evenly coated with silicone vacuum grease (335148).

2 Put the lid in place and use the "daisy" knob to tighten it by hand as firmly as possible.

⚠ CAUTION

Do not drop the rotor onto the drive shaft. The shaft can be bent or damaged if the rotor is forced sideways or dropped onto the shaft.

3 Install the rotor into the centrifuge by centering it over the drive shaft and lowering it straight down.

4 Turn the tie-down T-bar to the right (clockwise) to secure the rotor to the drive shaft.

5 Refer to the instrument instruction manual for centrifuge operation.

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 If removing the rotor, turn the tie-down T-bar to the left (counterclockwise) to release it and lift it straight up and off the drive shaft.

2 Turn the "daisy" knob counterclockwise to remove the rotor lid and unload the containers.

Tubes and Bottles

Tubes and bottles 38 mm in diameter and up to 108 mm long can be run in the FX6100 rotor without adapters. Smaller tubes and bottles can be used with adapters listed in Table 1. Available Beckman Coulter tubes and bottles are listed in Table 2.

Fill tubes and bottles at least half full. Speed reduction may be required if containers are less than 75 percent full.

To minimize the possibility of leakage from capped tubes or bottles, load the containers with sample, secure the caps, and precool the loaded labware to run temperature before beginning the run.

Refer to *Chemical Resistances* for information on the chemical compatibilities of labware materials.

Table 1 Bottle and Tube Adapters for the FX6100 Rotor[a]

Adapter Part Number (set of 6)	Tube or Bottle Type[b]	Tube Dimensions (mm)	Nominal Tube Volume (mL)
392830	round-bottom tube or bottle	29 × 108	50
392268	conical tube	30 × 115	50
392821	conical tube	29 × 114	35
392822	bottle	25.7 × 95 25 × 92	30
392823	bottle	18 × 107	15
392270	conical tube	17 × 120	15
392824	round-bottom bottle	16 × 82	10

a. Unless otherwise indicated, adapters are polypropylene

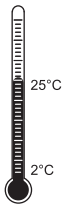
b. Observe manufacturer's recommendations for RCF and temperature limitations.

Table 2 Available Beckman Coulter Bottles and Tubes for the FX6100 Rotor

Dimensions and Volume	Tube Description	Part Number	Max. Fill Volume[a] (mL)	Required Accessory		Max Speed[b]/ RCF/ *k* Factor
				Description	Part Number	
38 × 102 mm 100 mL	polypropylene bottle w/screw cap	355624 (pkg/6)	93.0	none		10,200 RPM 11,400 × *g*
38 × 102 mm 94 mL	polypropylene thickwall tube	355643 (pkg/25)	50.7	none		10,200 RPM 11,400 × *g*
38 × 102 mm 94 mL	polycarbonate thickwall tube	355628 (pkg/25)	50.7	none		10,200 RPM 11,400 × *g*
38 × 104 mm 85 mL	polycarbonate bottle w/cap assembly	363081 (pkg/6)	74.5	none		10,200 RPM 11,400 × *g*
38 × 104 mm 80 mL	polypropylene bottle w/screw cap	363082 (pkg/6)	67.4	none		10,200 RPM 11,400 × *g*
38 × 102 mm 70 mL	polycarbonate bottle w/cap assembly	355620 (pkg/6)	66.2	none		10,200 RPM 11,400 × *g*
29 × 104 mm 50 mL	polycarbonate bottle w/screw cap	357002 (pkg/25)	38.5	polypropylene adapter	392830 (pkg/6)	10,200 RPM 11,400 × *g*
29 × 104 mm 50 mL	polypropylene bottle w/screw cap	357003 (pkg/25)	38.5	polypropylene adapter	392830 (pkg/6)	10,200 RPM 11,400 × *g*
29 × 104 mm 50 mL	polycarbonate tube	363647 (pkg/25)	36.5	polypropylene adapter	392830 (pkg/6)	10,200 RPM 11,400 × *g*
29 × 104 mm 50 mL	polypropylene tube	357007 (pkg/25)	36.5	polypropylene adapter	392830 (pkg/6)	10,200 RPM 11,400 × *g*
29 × 104 mm 50 mL	polycarbonate tube	363075 (pkg/8)	38.5	polypropylene adapter	392830 (pkg/6)	10,200 RPM 11,400 × *g*
18 × 98 mm 15 mL	polypropylene tube	342082 (pkg/100)	8.5	polypropylene adapter	392823 (pkg/6)	10,200 RPM 11,400 × *g*
18 × 98 mm 15 mL	polyethylene tube	342081 (pkg/100)	8.5	polypropylene adapter	392823 (pkg/6)	10,200 RPM 11,400 × *g*
18 × 98 mm 15 mL	polycarbonate tube	342080 (pkg/100)	8.5	polypropylene adapter	392823 (pkg/6)	10,200 RPM 11,400 × *g*
16 × 76 mm 10 mL	polycarbonate tube	355630 (pkg/25)	8.5	polypropylene adapter	392824 (pkg/6)	10,200 RPM 11,400 × *g*
16 × 76 mm 10 mL	polypropylene tube	355640 (pkg/25)	8.5	polypropylene adapter	392824 (pkg/6)	10,200 RPM 11,400 × *g*

a. Fill bottles and tubes at least half full. Containers may be filled less than or equal to the maximum fill volumes provided here.

b. Maximum speeds listed are guidelines only. These speeds have been achieved in reliability tests at Beckman Coulter, but because of manufacturing variances no guarantee of performance or fit is expressed or implied.



Temperature Limits

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

Thickwall Tubes

Thickwall polypropylene and polycarbonate tubes can be run partially filled (at least half filled) with or without caps, but all opposing tubes for a run must be filled to the same level with liquid of the same density. Do not overfill capless tubes.

Polycarbonate and Polypropylene Bottles

Capped polycarbonate and polypropylene bottles can be run partially filled (not less than half full). Again, all opposing containers for a run must be filled to the same level with liquid of the same density.

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 revolutions per minute (RPM).

The maximum run speed listed in the rotor specifications is for operation when all conditions are within the standard specifications. Speeds must be reduced under the following circumstances:

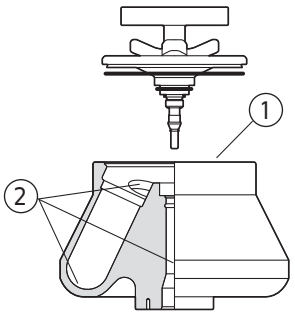
- When certain glass or plastic tubes are used, reduce rotor speed to prevent tube breakage. Follow the manufacturers' recommendations regarding maximum speed capacity for the tubes. Because the strength of tubes can vary between lots, and depend on handling and usage, Beckman Coulter highly recommends that you pretest these tubes in this rotor (using water instead of valuable sample) to determine optimal operating conditions.
- If nonprecipitating solutions more dense than 1.2 g/mL are centrifuged, the maximum allowable run speed must be reduced according to the following equation:

$$\text{reduced maximum speed} = (10\,200\ \text{RPM}) \sqrt{\frac{1.2\ \text{g/mL}}{\rho}}$$

where ρ is the density of the tube contents. This speed reduction will protect the rotor from excessive stresses due to the added tube load.

- *Further speed limits must be imposed* when self-forming-gradient salts are centrifuged, as the equation does not predict concentration limits/speeds that are required to avoid precipitation of salt crystals.
- Speed reduction may be required to reduce noise when running partially filled tubes if opposing tube imbalance exceeds 6 grams.

Care and Maintenance



1. Rotor Body **2.** Check for Corrosion

NOTE If a glass tubes break, remove the glass very carefully from the adapter or cavity. Imbedded glass particles that remain in cavities or adapters can cause tube failure during subsequent runs.

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.

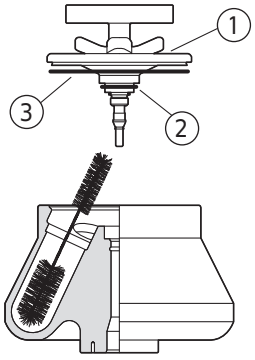
1 Periodically (at least monthly) inspect the rotor, especially inside cavities, for rough spots, cracks, pitting, white powder deposits (frequently aluminum oxide), or heavy discoloration.

- 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.

2 Regularly apply a thin, even coat of Spinkote lubricant (306812) to the rotor drive hole to prevent rotor sticking.

Refer to *Chemical Resistances* 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.

Cleaning



1. Lid
2. Small O-Ring (010179
3. Large O-Ring (870612)

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

Under normal use, wash the rotor frequently (at least weekly) to prevent buildup of residues. If the rotor is left in the centrifuge for long periods of time, remove it at least once a month for cleaning and lubrication.

1 Remove the O-rings and wash the rotor, lid, and O-rings 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 Rinse the cleaned rotor and components with distilled water.

3 Air-dry the rotor and lid upside down.

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

4 Lightly but evenly lubricate the rotor drive-hole threads with Spinkote (306812).

5 Apply a thin, even coat of silicone vacuum grease (335148) to the O-rings, then replace them in the lid.

6 Clean metal threads every 6 months, or as necessary.

- Use a brush and concentrated Solution 555.
- Rinse and dry thoroughly, then lubricate lightly but evenly with Spinkote to coat all threads.

Decontamination

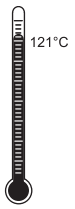
If the rotor (and/or accessories) becomes contaminated with radioactive material, decontaminate it using a solution that will not damage the anodized surfaces. Beckman Coulter has tested a number of solutions and found two that do not harm anodized aluminum: RadCon Surface Spray or IsoClean Solution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

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

While Beckman Coulter has tested these methods and found that they do not damage the rotor or components, no guarantee of 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 and all rotor components can be autoclaved at 121°C for up to one hour. Remove the lid from the rotor and place the rotor, lid, and O-ring in the autoclave upside down.
- 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.

* 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.

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

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

Storage

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

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 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

FX6100 rotor assembly	369735
Lid assembly	369738
Large O-ring	870612
Small O-ring	010179

Other

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

Spinkote lubricant (2 oz)	306812
Silicone vacuum grease (1 oz)	335148
Rotor Cleaning Kit	339558
Beckman Solution 555 (1 qt)	339555

Beckman Coulter, Inc.
Benchtop Rotor 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.

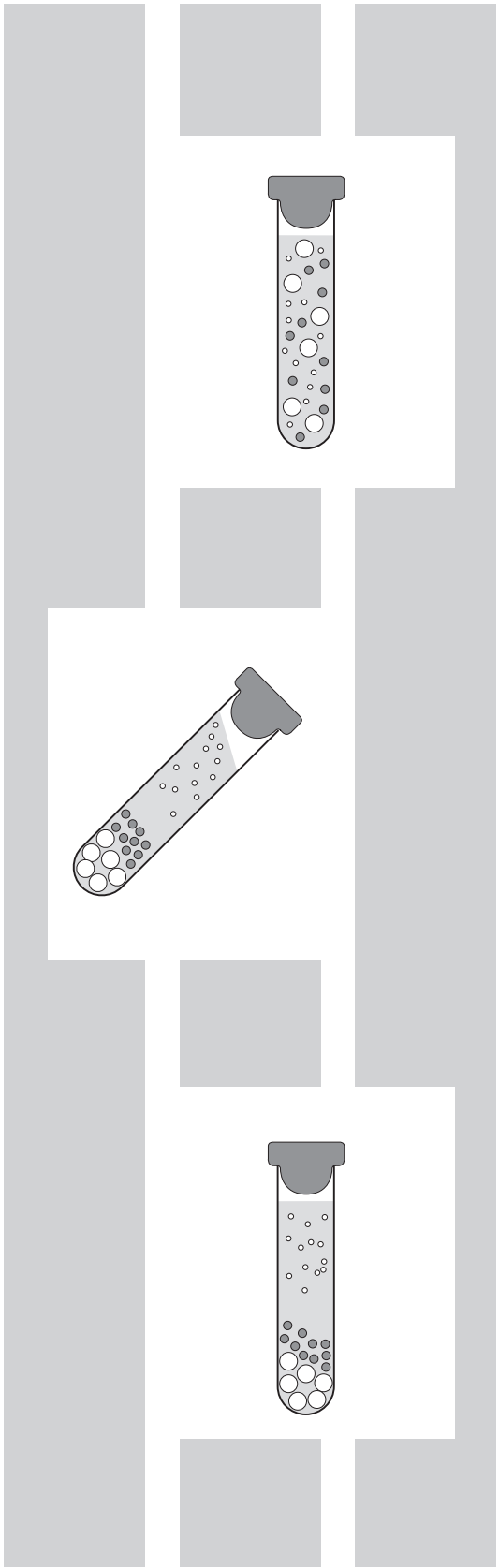
This warranty is void if the rotor has been subjected to customer misuse such as operation or maintenance contrary to the instructions in the Beckman Coulter rotor or centrifuge manual.

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)

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