Instructions For Use

S241.5 and SX241.5 Swinging-Bucket Rotors

For Use in the Beckman Coulter
Microfuge 22R (S241.5),
Allegra X-22 Series (SX241.5), and
Allegra X-30 Series (SX241.5) Centrifuges

CE

MMR-TB-003AD
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Beckman Coulter, Inc.
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Brea, CA 92821 U.S.A.

BECKMAN COULTER

S241.5 and SX241.5 Swinging-Bucket Rotors

MMR-TB-003AD (January 2016)

Contact Us

If you have any questions, contact our Customer Support Center.

- Worldwide, find us via our website at www.beckmancoulter.com/customersupport/support
- In the USA and Canada, call us at 1-800-369-0333.
- Outside of the USA and Canada, contact your local Beckman Coulter Representative.

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 rotors 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 S241.5 and SX241.5 Rotors

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.

These rotors were 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 S241.5 and SX241.5 rotors, their safety in these rotors cannot be ascertained by Beckman Coulter. Use of other manufacturers' components or accessories in the S241.5 and SX241.5 rotors 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 these rotors.

Hook all six buckets, loaded or empty, to the rotor for every run. Make sure that filled containers are loaded symmetrically into the rotor and that opposing 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*, and derate the run speed as appropriate.

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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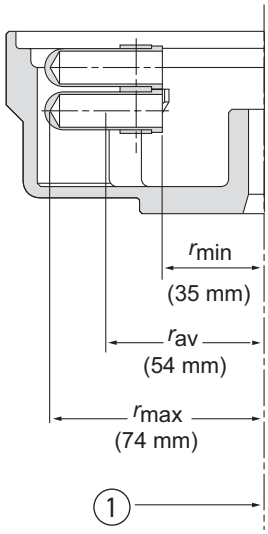
S241.5 and SX241.5 Swinging-Bucket Rotors

Specifications for the S241.5 Rotor

NOTE The S241.5 rotor is used in the Microfuge 22R centrifuge *only*.



1. Axis of Rotation

Maximum speed 14,000 rpm

Critical speed range[a] 500 to 700 rpm

Density rating at maximum speed 1.2 g/mL

Relative Centrifugal Field[b] at maximum speed
at r_{max} (74 mm) $16{,}220 \times g$

Conditions requiring speed reductions see *Run Speeds*

Maximum allowable imbalance of opposing loads 10 grams

Number of buckets or carriers 6

Available labware see Table 1

Nominal tube capacity (largest tube) 2.2 mL

Nominal rotor capacity 52.8 mL

Approximate acceleration time to maximum speed (fully loaded) 30 sec

Approximate deceleration time from maximum speed (fully loaded) 33 sec

Weight of fully loaded rotor 1.68 kg (3.70 lb)

Rotor and lid material aluminum

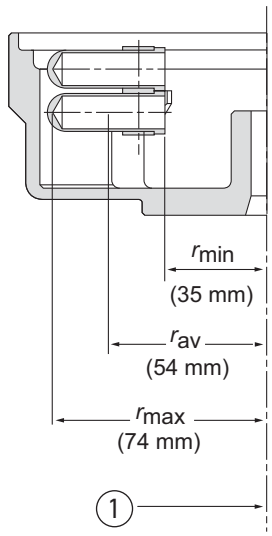
Bucket material thermoplastic

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

Specifications for the SX241.5 Rotor

NOTE The SX241.5 rotor is used in the Allegra X-22 Series and Allegra X-30 Series centrifuges *only*.



1. Axis of Rotation

Maximum speed
- Allegra X-30R and Allegra X-22R centrifuges 14,000 rpm
- Allegra X-30 and Allegra X-22 centrifuges 12,500 rpm

Critical speed range[a] 500 to 700 rpm

Density rating at maximum speed 1.2 g/mL

Relative Centrifugal Field[b] at maximum speed at r_{max} (74 mm)
- Allegra X-30R and Allegra X-22R centrifuges $16{,}244 \times g$
- Allegra X-30 and Allegra X-22 centrifuges $12{,}950 \times g$

Conditions requiring speed reductions see *Run Speeds*

Maximum allowable imbalance of opposing loads 10 grams

Number of buckets or carriers 6

Available labware see Table 1

Nominal tube capacity (largest tube) 2.2 mL

Nominal rotor capacity 52.8 mL

Approximate acceleration time to maximum speed (fully loaded) 37 sec

Approximate deceleration time from maximum speed (fully loaded) 51 sec

Weight of fully loaded rotor 1.68 kg (3.70 lb)

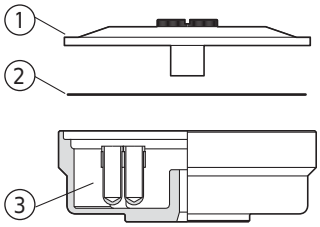
Rotor and lid material aluminum

Bucket material thermoplastic

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 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 (rw^2) to the standard acceleration of gravity (g) according to the following formula: RCF = rω2/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 = 1.12r (RPM/1000)^2

Description



1. Lid Assembly (368883)
2. Lid O-ring (368888)
3. Bucket

These Beckman Coulter rotors have been manufactured in an ISO 9001 or 13485 facility for use with the specified Beckman Coulter centrifuges.

The S241.5 and SX241.5 are swinging-bucket rotors that can centrifuge up to twenty-four 250-µL to 2.2-mL tubes. These rotors develop centrifugal forces that can efficiently pellet subcellular organelles, viruses, bacteria, mitochondria, chloroplasts, or algae.

Although the rotors are similar in form and function, they are not interchangeable; the S241.5 rotor cannot be used in Allegra X-22 Series or Allegra X-30 centrifuges, and the S241.5 rotor cannot be used in the Microfuge 22R.

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

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

Preparation and Use

Specific information about the S241.5 and SX241.5 rotors is given here. Information about the centrifuges is contained in the respective centrifuge manuals, 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 S241.5 and SX241.5 rotors, their safety in these rotors cannot be ascertained by Beckman Coulter. Use of other manufacturers' components or accessories in these rotors 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 these rotors.

Prerun Safety Checks

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

1 Make sure that the rotor, buckets, and rotor lid are clean and show no signs of corrosion or cracking. If any evidence of damage is present, do not centrifuge the rotor.

2 Verify that the tubes and accessories being used are listed in Table 1.

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

Installing the Rotor Yoke

1 Before installing the yoke in the centrifuge, lightly coat the drive hole with Spinkote™ lubricant (306812).

⚠ CAUTION

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 Fasten the tie-down screw (365806 for the S241.5, 361367 for the SX241.5) onto the drive shaft.

- Use the T-handle rotor wrench (365636 for both rotors) to tighten the tie-down screw firmly on the 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 tie-down screw is tight.

Loading the Buckets

For runs at other than room temperature, refrigerate or warm the rotor and precool the centrifuge beforehand for faster equilibration.

⚠ WARNING

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

To ensure optimal performance and stability, the rotor must be loaded symmetrically. Two factors affect symmetric loading:

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

For best results, load opposing buckets or carriers with the same type of labware containing the same amounts of fluid of equal density. Additionally, opposing buckets and their contents should weigh approximately the same (within 10 grams).

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. 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 bucket. Opposing buckets should also be filled the same way.

Using Buckets

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 to avoid tripping the imbalance detector.

1 Load the filled containers into the buckets (see *Tubes*, page 7 for tube information).

2 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 six buckets, loaded or empty, to the rotor yoke. If only two buckets are filled, place them in opposite positions on the yoke. All positions must contain buckets during a run. Never run the rotor with less than six positions filled.

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

4 Put the lid in place and tighten it by hand.

Operation

1 Refer to the centrifuge instruction manual for centrifuge operation.

2 See *Run Speeds*, page 8, 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 rotor lid.

2 Remove the buckets from the centrifuge.

3 Remove the labware from the buckets.

4 If removing the rotor yoke, turn the T-handle wrench to the left (counterclockwise) to loosen the tie-down screw.

- Lift the yoke straight up and off the drive shaft.

Tubes

The S241.5 and SX241.5 rotors hold up to twenty-four 250-µL to 1.8-mL tubes, listed in Table 1. The rotors also hold commercially available 2.0 and 2.2-mL tubes, and commercially available 500 to 750-µL tubes.

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

Table 1 Available Tubes for the S241.5 and SX241.5 Rotors

Description	Dimensions	Volume	Part Number	Adapter	Max Speed (rpm)
polyethylene tube with attached cap	11 ´ 45 mm	1.8 mL	340196 (pkg/500)	a	10,000
polyallomer tube with attached cap (natural)	11´ 40 mm	1.5 mL	357448 (pkg/500)	a	14,000
polypropylene tube with separate cap	11 ´ 40 mm	1.5 mL	343169 (pkg/500)	a	14,000
polyethylene tube, plain	7 × 40 mm	400 µL	314326 (pkg/1000)	361247 (pkg/24)	11,500
polyethylene tube, Heparin-Lithium Fluoride coated	7 ´ 40 mm	400 µL	652824 (pkg/1000)	361247 (pkg/24)	11,500
polyethylene tube, Heparin-Lithium coated	7 × 40 mm	400 µL	652825 (pkg/1000)	361247 (pkg/24)	11,500
polyethylene tube, Heparin-Lithium Fluoride coated	5 ´ 45 mm	250 µL	652821 (pkg/1000)	361247 (pkg/24)	11,500
polyethylene tube, Heparin-Lithium coated	5 × 45 mm	250 µL	652822 (pkg/1000)	361247 (pkg/24)	11,500
polyethylene tube, plain	5 × 45 mm	250 µL	652823 (pkg/1000)	361247 (pkg/24)	11,500
500 to 750-µL tubes		500 to 750 µL	commercially available	364690 (pkg/24)	11,500

a. No adapter is required with this tube; however, adapter 364701 (pkg/12) can be used.

Temperature Limits

- 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.

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:

1. 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:

$$\text{reduced maximum speed} = (14{,}000 \text{ rpm})^{*} \sqrt{\frac{1.2 \text{ g/mL}}{\rho}}$$

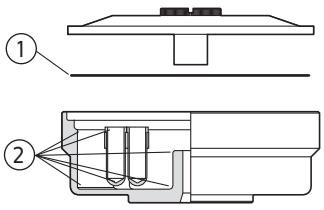
*Use 12,500 for nonrefrigerated Allegra X-22 and Allegra X-30 centrifuges

   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. *Note, however, that the use of this formula may still produce maximum speed figures that are higher than the limitations imposed by the use of certain tubes or adapters.* In such cases, use the lower of the two figures.
2. *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.

Care and Maintenance

Maintenance

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. Rotor O-ring (368888)
2. Check for Corrosion

1 Periodically (at least monthly) inspect the rotor yoke, buckets, and lid, 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.

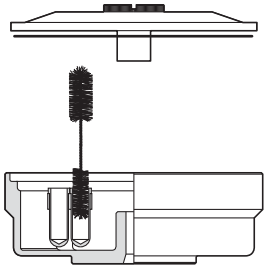
2 Before using the tie-down screw, check it for damage such as distortion, splitting, or stripped threads.

- Replace it if it is damaged.

3 Approximately once a week, and after cleaning and/or autoclaving, lubricate the rotor pins and pin sockets with a lubricant such as Spinkote™ (306812).

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.

Cleaning



Wash 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.

1 Wash the rotor yoke, buckets, and lid 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 the rotor components in a dishwasher. Do not soak the rotor 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, lubricate the drive hole with Spinkote (306812) to prevent the rotor from sticking.

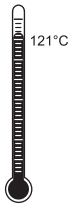
Decontamination

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 other components are contaminated with toxic or pathogenic materials, follow appropriate decontamination procedures as directed by your laboratory safety officer. 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 an hour. Place the rotor yoke and buckets 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.

Storage

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

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

S241.5 rotor assembly	368882
S241.5 lid assembly	368883
Tie-down screw, S241.5	365806
SX241.5 rotor assembly	392271
SX241.5 lid assembly	392272
Tie-down screw, SX241.5	361367
Lid O-ring	368888
Bucket (set of 2)	368887
T-handle rotor wrench	365636

NOTE The same O-ring, buckets, and T-handle rotor wrench are used in both the S241.5 and SX241.5 rotors.

Other

Tubes and adapters	see Table 1
Spinkote lubricant (2 oz)	306812
Silicone vacuum grease (1 oz)	335148
Rotor Cleaning Kit	339558
Beckman Solution 555 (1 qt)	339555
Rotor cleaning brush	339379

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.

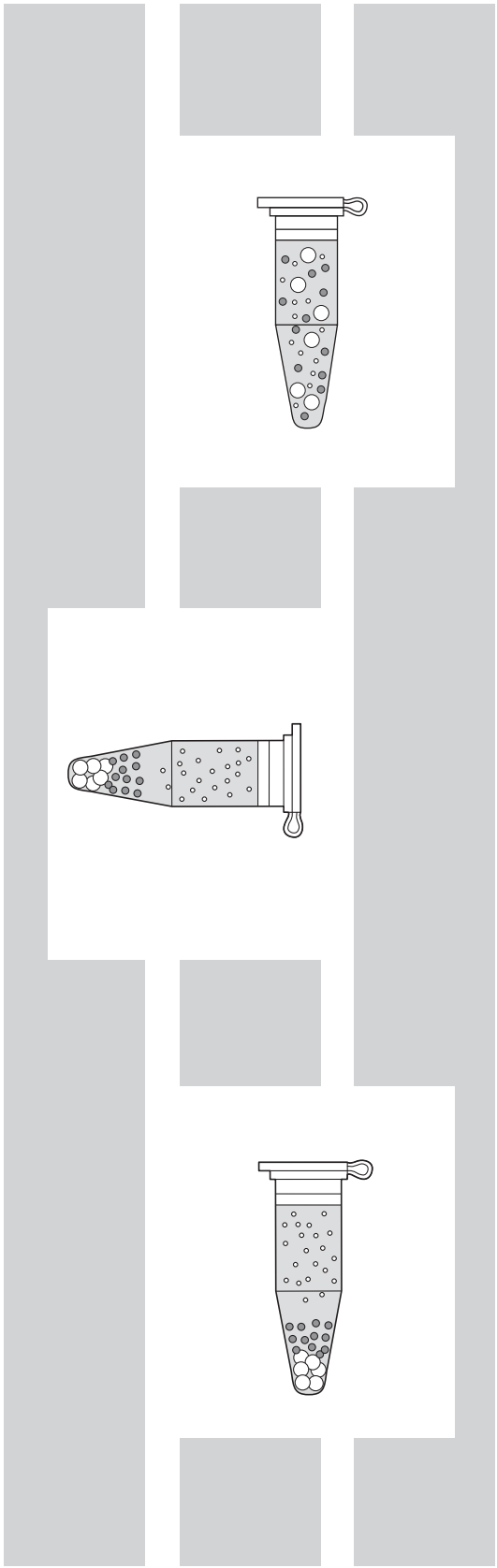
This warranty is void if the rotor has been subjected to customer misuse such as operation or maintenance contrary to the instructions in the Beckman Coulter rotor or centrifuge manual.

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 NEITHER BECKMAN COULTER, INC. NOR ITS SUPPLIERS SHALL HAVE ANY 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-22 Series (GS22-IM-6)

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

Microfuge 22R (MMR-IM-5)

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

Allegra X-30 Series (B01145)

- Safety
- Introduction
- 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)

Available in hard copy or electronic pdf by request.

Available at www.beckmancoulter.com

www.beckmancoulter.com

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