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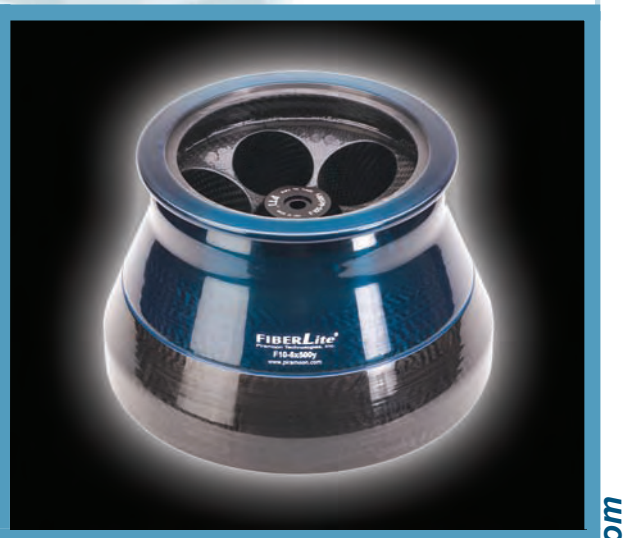
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FIBERLite®
Piramoon Technologies, Inc.®

Floor Model Carbon Fiber Rotors





PRODUCT CATALOG

www.piramoon.com

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Centrifugation Innovator using Carbon Fiber Technology

FIBER*Lite* products can be ordered directly or through our distributors. To obtain a quote or find a distributor near you, call (800)784-3843 (U.S.A.), fax (408)988-1196, or visit our website at **www.piramoon.com**.

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Now You Have A Better Choice!



- Less weight
- No corrosion
- Lifetime Warranty
- Fully Autoclavable

The Versatile FIBERLite Conical Tubes Rotors



F15-8x50c

- Max. RPM: 15,000
- Max. RCF: 25,679 x g



F13-14x50cy

- Max. RPM: 13,000
- Max. RCF: 29,000 x g

These specifically designed F15-8x50c and F13-14x50cy rotors have exacting tolerances to run inexpensive conical propylene tubes. Now, for the first time, you can quickly sediment nucleic acids, biological particles, or other samples in disposable and non-disposable conical tubes at g-forces greater than 25,000 x g.

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A Word from Our Founder

At FIBER*Lite* Centrifuge (Piramoon Technologies, Inc.) our mission has been and will always be safety in the laboratory. We believe that using proprietary manufactured carbon fiber composite technology has provided this opportunity for life science industry.

Over the last number of years, FIBER*Lite* has produced in excess of forty different types of carbon fiber centrifuge rotors. These products have been distributed to laboratories, universities and research centers worldwide and they are used in a variety of floor and table top model centrifuges manufactured by major manufacturers.

We appreciate your business and continually remind ourselves that because of you, our company has steadily prospered over the years.

Thank you,

Al Piramoon,
President and CEO

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Preface

This Catalog contains general information for using FIBER*Lite* centrifuge rotors for centrifugation using most manufacturer's high/superspeed and ultracentrifuges.

A great deal of information is compiled in this catalog and we urge you to read it carefully, particularly if this is your first experience with FIBER*Lite* centrifuge products.

You will find specifications for all FIBER*Lite*'s currently produced centrifuge rotors. Also included are rotor materials, components and replacement parts to help you choose a particular tube or bottle for your application.

A final section tells you how to care for your rotor and choose the best rotor for your research methods.

Remember, good rotor care means long rotor life and great centrifugation results.

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Carbon Fiber Rotor Technology

Now you can enjoy the benefits of space-age technology in carbon fiber centrifuge rotors. Replace aging aluminum and titanium alloy rotors with FIBER*Lite* carbon fiber rotors, made with the same composite material technology used in the space shuttle. With strength matching that of steel at a fraction of the weight, carbon fiber rotors are leagues ahead of metallic rotors with respect to strength, weight, durability and safety. FIBER*Lite* Centrifuge, Piramoon Technologies, Inc. is the only manufacturer of carbon fiber centrifuge rotors in tube sizes from 1.5 mL to 1000 mL. All FIBER*Lite* rotors have been designed for use in specific centrifuges. All rotors are guaranteed to meet the performance specifications listed in this catalog.

Safety is our Mission

At FIBERLite Centrifuge our mission is to improve safety. Considering an ultracentrifuge rotor may experience up to 1,000,000 times the force of gravity, the importance of safety is evident. Carbon fiber rotors are stronger than metallic rotors. Carbon fiber rotors are significantly safer than conventional metallic rotors since even the most carefully designed metallic rotor may not be protected against such factors as fatigue, stress and corrosion. The reduced weight of FIBERLite rotors makes them easier to handle and significantly reduces the risk of lower-back injury that could result from lifting heavy metallic rotors in and out of centrifuges.

Advantages of Carbon Fiber Rotors

Features	Benefits
Up to 65% less weight than equivalent metallic rotors	1. Shorter run times 2. Ease of use 3. Less wear and tear on the centrifuge drive system 4. Below OSHA Safety lifting limits
Compatible with all earlier floor model centrifuges	5. No need to buy an expensive new centrifuge
FIBERLite rotors are insulators	6. Samples are kept at a constant temperature during centrifugation 7. Less wear and tear on refrigeration system
FIBERLite rotors will not corrode	8. Not corroded with alkalis, caustic aqueous solutions and most organic solvents. 9. Rotors are autoclavable indefinitely for sterile use.
FIBERLite rotors do not fatigue	10. No deration for extended run cycles and adapters can be used at max g-forces.
FIBERLite rotors are compression molded	11. Rotor cavities are "molded" to the exact tolerances. Oakridge bottles lasts longer and conical tubes can be run at max g-forces.
Limited Lifetime Warranty	12. Unlimited number of run cycles.

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Advantages of Carbon Fiber Technology

FIBER*Lite* rotors are up to half the weight of equivalent metallic rotors. The reduced weight makes them much easier to handle and significantly reduces the risk of lower-back injury that could result from lifting heavy metallic rotors in and out of centrifuges. They also reduce wear and tear on the centrifuge drive system and decrease maintenance costs. Total run times for larger rotors will be shorter due to faster acceleration and deceleration of the lighter rotors. Unlike metal rotors, carbon fiber rotors are not derated. The rotor can run at rated speed for the life of the rotor since carbon fiber does not fatigue as metal does. Super strong FIBER*Lite* rotors consist of carbon fibers embedded in an inert epoxy resin, with up to 60% of the composite structure consisting of carbon fibers. The inherent properties of the resultant composite structure give these rotors unprecedented strength, low weight, high resistance to corrosion, heat, fatigue and other environmental influences, so they are virtually indestructible. In addition, due to the excellent insulating properties of these rotors biological samples are kept at constant temperature much longer than in metallic rotors.

Enhanced Liquid Containment (ELC)

A selection of super speed and general-purpose rotors is available in both standard models with a straight top and lid, and Enhanced Liquid Containment (ELC) models with a special lid and curve annulus at the top. The annulus has a total inner volume that is equal to the volume of one bottle used in that rotor. ELC models are designed to contain any fluid leaks that occur during centrifugation, eliminating the severe imbalance problems and spindle damage that may occur if fluid is allowed to enter the centrifuge chamber. It also provides a convenient handle for lifting large rotors out of the centrifuge.

Compatibility of Rotors with High Speed and Ultracentrifuges

Each rotor comes with a factory–installed centrifuge hub that is specific for the intended centrifuge. This feature allows the rotors to work seamlessly in most popular high /super speed centrifuges. All rotors are tested to 100% confidence level before they are ready for shipment.

The hubs of some high/ super speed centrifuges can be replaced with ultra speed hubs to enable some high speed rotors to be run in most ultracentrifuges. In this catalog these rotors are called ultra high speed rotors and information is given for their use in the pertinent ultracentrifuge.

FIBER*Lite* rotors accept standard bottles and tubes including conical tubes currently used in metallic rotors. During testing conical tubes were found to perform at higher g-forces in the FIBER*Lite* rotors than in metallic rotors.

All rotors can be washed or soaked in a wide range of laboratory detergents as can be observed in the chemical resistance chart found in appendix 1 of this catalog. The rotors are autoclavable and are backed by a limited lifetime warranty.

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Rotor Model Naming Convention

The following diagram indicates how FIBER*Lite*® rotor models are named. The type of rotor, maximum speed, centrifuge manufacturer and rotor volume are indicated for most rotor models.



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Centrifugal Force

The centrifugal forces (Max RCF) given for rotors in this catalog are calculated using the following formula: $g = 1.12r\ (rpm/1000)^2$ where **(r)** is the radius in millimeters.

K Factor

The relative pelleting efficiency of each rotor is measured by its K-Factor, or clearing factor:

$$k = \frac{\ln(r_{max}/r_{min})}{\omega^2} \times \frac{10^{13}}{3600}$$

where R max is the maximum radial distance to the bottom of the tube in millimeters and R min is the radial distance to the solution meniscus in millimeters. ω is the angular velocity or 0.10472 x rpm. The K-factor can be used in the following equation to estimate time t in hours required for pelleting : t = k/s where s (in Svedberg units) is the sedimentation coefficient.

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Section 1

This Section shows the popular metallic rotors commonly used in most research institutions. The compatible FIBER*Lite* rotor equivalent to these rotors is listed with each metallic rotor.



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Quick Cross Reference Review

Sorvall Rotor Equivalents

High / Super Speed Equivalents

Sorvall Rotor Model	Compatible FIBER*Lite*® Rotor	Page No.
GS-3	F10S-6x500 mL F10S-6x500y mL* F12S-6x500y mL*	22 24 26
GSA	F14S-6x250 mL F14S-6x250y mL*	30 32
SLA-600	F18S-12x50 mL	38
SLA-600TC	F13S-14x50cy mL F15S-8x50c mL	28 34
SLA-1500	F14S-6x250 mL F14S-6x250y mL*	30 32
SLA-3000	F10S-6x500 mL F10S-6x500y mL* F12S-6x500y mL*	22 24 26
SLC-1500	F14S-6x250 mL F14S-6x250y mL*	30 32
SLC-3000	F10S-6x500 mL F10S-6x500y mL* F12S-6x500y mL*	22 24 26
SLC-4000	F7S-4x1000y mL* F9S-4x1000y mL*	20 20
SLC-6000	F8S-6x1000y mL*	18
SS-34	F21S-8x50 mL F21S-8x50y mL*	42 44

High / Super

Low Speed / Large Volume Equivalents

Sorvall Rotor Model	Compatible FIBER*Lite*® Rotor	Page No.
H-6000	F6S-6x1000y mL*	68

Low / Large

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Sorvall Rotor Equivalents

Ultra Speed Equivalents

Ultra

Sorvall Rotor Model	Compatible FIBER*Lite*® Rotor	Page No.
A-621	F19L-6x200 mL	76
A-641	F40L-6x100 mL F45L-6x100 mL	86 88
A-841	F65L-8x39 mL	94
Surespin 630/36	F30L-8x39 mL	78
T-647.5	F40L-6x100 mL F45L-6x100 mL	86 88
T-865.1	F65L-6x13.5 mL	92
T-875	F65L-6x13.5 mL	92
T-880	F65L-6x13.5 mL	92
T-890	F65L-6x13.5 mL	92
T-1250	F50L-8x39	90
T-1270	F65L-6x13.5 mL	92
TH-641	F65L-6x13.5 mL	92

Micro Ultra Speed Equivalents

Micro Ultra

Sorvall Rotor Model	Compatible FIBER*Lite*® Rotor	Page No.
AH-650	F55L-30x5.0 mL	114
Stepsaver 70V6	F55L-30x3.0 mL F55L-30x5.0 mL	112 114
TFT 45.6	F55L-48x1.0 mL	116
TH-660	F55L-30x5.0 mL	114
RP 45A	F30L-48x1.5/2.0 mL F55L-30x1.5/2.0 mL	108 110

Beckman Rotor Equivalents

High / Super Speed Equivalents

High / Super

Beckman Rotor Model	Compatible FIBER*Lite*® Rotor	Page No.
JA-10	F10B-6x500 mL F10B-6x500y mL*	22 24
JA-12	F13B-14x50cy mL* F15B-8x50c mL	28 34

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Beckman Rotor Equivalents

High / Super Speed Equivalents

Beckman Rotor Model	Compatible FIBER*Lite*® Rotor	Page No.
JA-14	F14B-6x250 mL F14B-6x250y mL*	30 32
JA-17	F18B-12x50 mL F18BA-12x50 mL	38 38
JA-18	F20B-6x100 mL	40
JA-20	F21B-8x50 mL F21B-8x50y mL*	42 44
JLA-8.1000	F8BA-6x1000y mL*	18
JLA-9.1000	F9BA-4x1000y mL*	20
JLA-10.500	F10B-6x500 mL F10B-6x500y mL* F10BA-6x500y mL*	22 24 24
JLA-16.250	F14BA-6x250y mL* F16BA-6x250y mL*	32 36

High / Super

Low Speed / Large Volume Equivalents

Beckman Rotor Model	Compatible FIBER*Lite*® Rotor	Page No.
JA-10	F6B-6x500 mL F6B-6x500y mL*	62 65
JA-14	F6B-6x250 mL	58
JLA-9.1000	F6B-4x1000y mL*	66
JS-3.0	F6B-6x1000y mL*	68
JS-4.2	F6B-6x1000y mL*	68
JS-5.2	F6B-6x1000y mL*	68

Low / Large

Ultra Speed Equivalents

Beckman Rotor Model	Compatible FIBER*Lite*® Rotor	Page No.
SW 28	F30L-8x39 mL	78
SW 41 Ti	F65L-6x13.5 mL	92
Type 16	F19L-6x200 mL	76
Type 21	F45L-6x100 mL	88
Type 28	F30L-8x50 mL F30L-12x50 mL	80 84
Type 30	F30L-12x39 mL F30L-12x50 mL	82 84

Ultra

*Includes FIBER*Lite*® exclusive Enhanced Liquid Containment (ELC) safety feature

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Beckman Rotor Equivalents

Ultra Speed Equivalents

Ultra

Beckman Rotor Model	Compatible FIBER*Lite*® Rotor	Page No.
Type 35	F40L-6x100 mL F45L-6x100 mL	86 88
Type 40	F65L-6x13.5 mL	92
Type 42.1	F30L-8x39 mL	78
Type 45 Ti	F40L-6x100 mL F45L-6x100 mL	86 88
Type 50 Ti	F65L-6x13.5 mL	92
Type 50.2 Ti	F50L-8x39 mL F65L-8x39 mL	90 94
Type 55.2 Ti	F50L-8x39 mL F65L-8x39 mL	90 94
Type 60 Ti	F65L-8x39 mL	94
Type 70 Ti	F65L-8x39 mL	94
Type 70.1 Ti	F65L-6x13.5 mL	92
Type 75 Ti	F65L-6x13.5 mL	92
Type 90 Ti	F65L-6x13.5 mL	92

Micro Ultra Speed Equivalents

Micro Ultra

Beckman Rotor Model	Compatible FIBER*Lite*® Rotor	Page No.
SW 50.1	F55L-30x5.0 mL	114
SW 55	F55L-30x5.0 mL	114
Type 25	F55L-48x1.0 mL	116
Type 42.2	F55L-48x1.0 mL	116
Type 50.3 Ti	F55L-48x1.0 mL	116
Type 50.4 Ti	F55L-48x1.0 mL	116
TLA 45	F30L-48x1.5/2.0 mL F55L-30x1.5/2.0 mL F55L-48x1.5/2.0 mL	108 110 118
TLS 55	F55L-30x5.0 mL	114
TLV-100	F55L-30x3.0 mL	112
VTi 65	F55L-30x3.0 mL F55L-30x5.0 mL	112 114

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Jouan Rotor Equivalents

High / Super Speed Equivalents

Jouan Rotor Model	Compatible FIBER*Lite*® Rotor	Page No.
AG 100.18	F15J-6x100 mL	40
AK 50c	F15J-8x50c	34
AK 50.17	F18J-12x50 mL	38
AK 50.22	F21J-8x50 mL F21J-8x50y mL*	42 44
AK 100.21	F20J-6x100 mL	40
AK 250.14	F14J-6x250 mL F14J-6x250y mL*	30 32
AK 500.11	F10J-6x500 mL F10J-6x500y mL*	22 24

High / Super

Micro High / Super Speed Equivalents

Jouan Rotor Model	Compatible FIBER*Lite*® Rotor	Page No.
AB2.14	F21J-48x1.5/2.0 mL	54

Micro High / Super

Hitachi Rotor Equivalents

High / Super Speed Equivalents

Hitachi Rotor Model	Compatible FIBER*Lite*® Rotor	Page No.
R9AF	F9HI-4x1000 mL	20
R10A3	F9HI-6x500 mL	22
R13AF3	F13HI-6x250 mL	30
R15A	F13HI-14x50cy mL* F15HI-8x50c mL	28 34
R18A	F15HI-8x50c mL	34

High / Super

Low Speed / Large Volume Equivalents

Hitachi Rotor Model	Compatible FIBER*Lite*® Rotor	Page No.
R7AF2	F7HI-6x1000y* mL	68
R7AF3	F7HI-6x1000y* mL	68
R9AF2	F7HI-4x1000y* mL	66

Low / Large

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Section 2

High / Super Speed Rotors for

. Beckman: **J2-21/Avanti Series**

. Sorvall: **RC2/RC5/RC6/RC26/Evolution RC/RC4(USA)-Multifuge4(Europe)**

. Jouan: **KR22i/KR25i/GR20.22**

. Hitachi: **CR21/22 Series**

List of Rotors	Page Number
F8-6x1000y mL	18
F9-4x1000y mL	20
F10-6x500 mL	22
F10-6x500y mL	24
F12-6x500y mL	26
F13-14x50cy mL	28
F14-6x250 mL	30
F14-6x250y mL	32
F15-8x50c mL	34
F16BA-6x250y mL	36
F18-12x50 mL	38
F20-6x100 mL	40
F21-8x50 mL	42
F21-8x50y mL	44
H3 Standard	46
H3 Large Volume	48



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Applications for High / Super Speed Rotors:

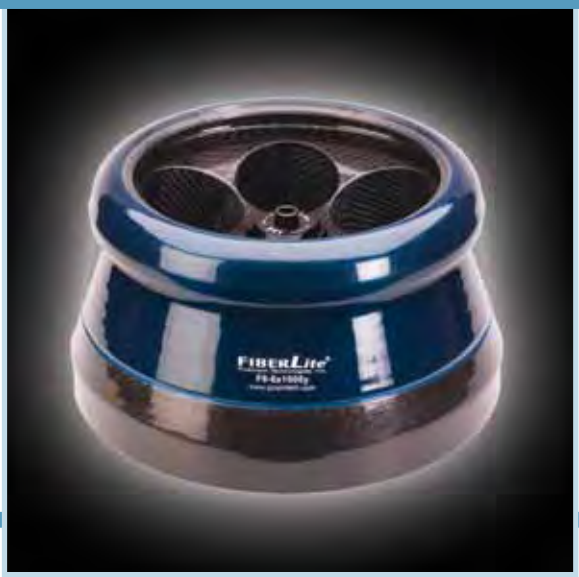
		Suggested Rotors	Page Number
Proteins	1. Ammonium sulfate precipitation	F14-6x250 mL F14-6x250y mL	30 32
	2. Centrifugal filtration	F13-14x50cy mL F15-8x50c mL	26 34
Subcellular Fractions	1. Chromatin/Nucleosomes - Sucrose gradient isolation	F18-12x50 mL F21-8x50 mL F21-8x50y mL	38 42 44
	2. Mitochondria - Pelleting - Sucrose gradient isolation	F20-6x100 mL F21-8x50 mL F21-8x50y mL	40 42 44
	3. Nuclei - Pelleting	F18-12x50 mL F20-6x100 mL	38 40
	4. Membranes - Pelleting - Sucrose/Percoll gradient	F20-6x100 mL F21-8x50 mL F21-8x50y mL	40 42 44
	5. Cytosol - Clarification	F20-6x100 mL F21-8x50 mL F21-8x50y mL	40 42 44
Lysate/ Homogenate	1. Clearing debris and large particles	F8-6x1000y mL F9-4x1000y mL F10-6x500 mL F10-6x500y mL F12-6x500y mL F14-6x250 mL F14-6x250y mL	18 20 22 24 26 30 32
Nucleic Acids	1. DNA - Phenol/$CHCL_3$ extraction - Alcohol Precipitation	F18-12x50 mL F21-8x50 mL F21-8x50y mL	38 42 44
	2. RNA - Phenol/$CHCL_3$ extraction - Alcohol precipitation - Lithium precipitation	F18-12x50 mL F21-8x50 mL F21-8x50y mL	38 42 44
Cells	1. Pelleting Bacteria 2. Other density gradient separations	F14-6x250 mL F14-6x250y mL F18-12x50 mL F21-8x50 mL F21-8x50y mL	30 32 38 42 44
Viruses	1. Pelleting 2. PEG precipitates	F8-6x1000y mL F9-4x1000y mL F10-6x500 mL F10-6x500y mL F12-6x500y mL	18 20 22 24 26

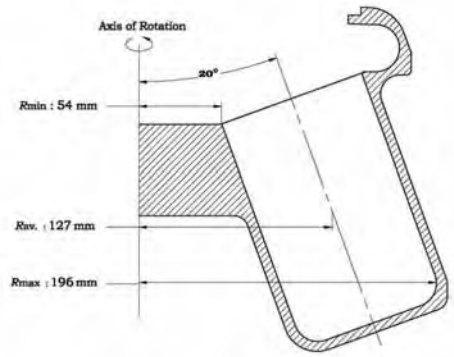
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F8-6x1000y mL

Fixed Angle Carbon Fiber Rotor

6x1000y mL





for

Sorvall and Beckman Avanti Centrifuges

Features

- y = (ELC) Enhanced Liquid Containment
- Lifetime warranty
- Safer than metallic rotors
- Corrosion free
- Cold room compatible
- Easy to handle
- Fully autoclavable
- Reduced wear on centrifuge drive
- Rapid acceleration and deceleration
- Highly resistant to radiolabel contamination

Specifications

- Max. Speed: 8,500 rpm
- Max. g-force: 15,860 x g
- Max. radius (r_{max}): 196 mm
- Min. radius (r_{min}): 54 mm
- Tube Angle: 20°
- k factor: 4,514
- Rotor Capacity: 6 x 1000 mL (6000 mL)
- Max Tube Size: ϕ98 x 175mm (3.86 x 6.89 in.)
- Rotor Mass: 15.19 kg (35.68 lbs.)
- Liquid Containment: Yes

Applications

- General-purpose rotor for largest volume samples
- Processing of particulate materials and debris in solutions
- Also bacteria and mammalian cells from cell cultures and subcellular organelles from tissue homogenates

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Unique Features

- Large volume rotor for pelleting cells from cultures
- Lighter than Titanium or Aluminum rotors and will not corrode
- Autoclavable and can be used with tube adapters at max speeds indefinitely
- ELC protection to contain sample leakage

	For Sorvall Centrifuge	For Beckman Avanti Centrifuge
FIBER*Lite* Rotor Model	F8S-6x1000y mL	F8BA-6x1000y mL
FIBER*Lite* Part No.	096-061108	096-061110
Will Spin In	Evolution RC	Avanti Series (J-20 XP / J-20 I / J-HC)
Will Replace	SLC-6000	JLA-8.1000

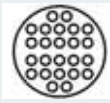
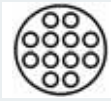
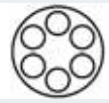
Rotor Accessories and Replacement Parts

Lid Assembly	099-061108	099-061110
O-Ring Refresher Kit	021-061108	021-061110
Extraction Tool	017-061108	017-061110

Recommended Bottles with Cap Assemblies

Tube Style Material	Part No.	Volume (Nominal)	Tube Manufacturer Maximum Recommended g-Force
Polypropylene wide mouth and cap (Set of 2)	010-0173	1000 mL	15,241 x g
Polycarbonate wide mouth and cap (Set of 2)	010-1078	1000 mL	15,241 x g

Recommended Adapters

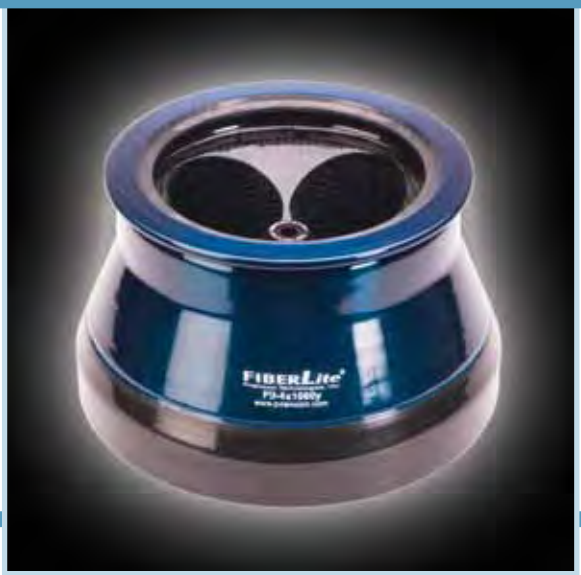
010-1131 1000 mL to 30x3.0 mL		010-1089 1000 mL to 24x5.0 mL		010-1085 1000 mL to 18x10/8.0 mL		010-1087 1000 mL to 14x15 mL	
010-1079 1000 mL to 12x15 mL Conical		010-1095 1000 mL to 7x30 mL		010-1091 1000 mL to 6x50 mL		010-0180 1000 mL to 5x50 mL Conical	
010-1093 1000 mL to 3x100 mL		010-1132 1000 mL to 175 mL Conical		010-0150 1000 mL to 250 mL		010-1096 1000 mL to 250 mL Conical	
010-0145 1000 mL to 500 mL		010-1097 1000 mL to 500 mL Conical					

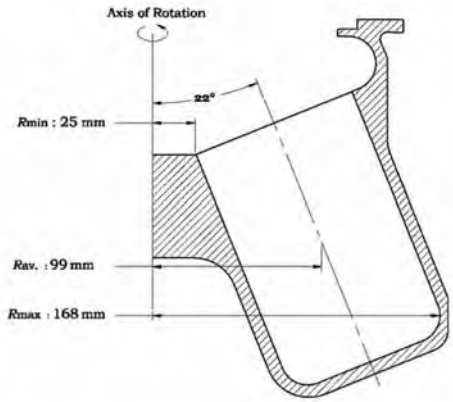
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F9-4x1000y mL

Fixed Angle Carbon Fiber Rotor

4x1000y mL





for
Sorvall, Beckman, Jouan, and Hitachi Centrifuges

Features

- y = (ELC) Enhanced Liquid Containment
- Lifetime warranty
- Safer than metallic rotors
- Corrosion free
- Cold room compatible
- Easy to handle
- Fully autoclavable
- Reduced wear on centrifuge drive
- Rapid acceleration and deceleration
- Highly resistant to radiolabel contamination

Specifications

- Max. radius (r_{max}): 168 mm
- Min. radius (r_{min}): 25 mm
- Tube Angle: 22°
- Rotor Capacity: 4 x 1000 mL (4000 mL)
- Max Tube Size: ϕ98 x 175mm (3.86 x 6.89 in.)
- Rotor Mass: 13.79 kg (30.4 lbs.)
- Liquid Containment: Yes

Sorvall (Evolution RC), Beckman, and Jouan

- Max. Speed: 9,000 rpm
- Max. g-force: 15,241 x g
- k factor: 5,950

Sorvall (RC2/RC5/RC6/RC26)

- Max. Speed: 7,000 rpm
- Max. g-force: 9,220 x g
- k factor: 9,836

Applications

- Large volume general-purpose rotor
- Processing bacteria from fermentation tanks
- Clarification of cell lysates
- Clean up of debris from water pollution studies
- Differential centrifugation of subcellular organelles from tissue homogenates

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Unique Features

- Large volume rotor for pelleting cells from cultures
- Autoclavable and can be used with tube adapters at max speeds indefinitely
- ELC protection to contain sample leakage

	For Sorvall Centrifuge		For Beckman Centrifuge		For Jouan Centrifuge		For Hitachi Centrifuge
FIBER*Lite* Rotor Model	F9S-4x1000y	F7S-4x1000y	F9B-4x1000y	F9BA-4x1000y	F9J-4x1000	F9J-4x1000	F9HI-4x1000
FIBER*Lite* Part No.	096-041004	096-041046	096-041032	096-041044	096-041042	096-041041	096-041043
Will Spin In	Evolution RC	RC2/RC5/ RC6/RC26	J2-21 Series	Avanti Series	KR22i	KR25i	CR21/22 Series
Will Replace	SLC-4000	SLC-4000	No Equivalent	JLA-9.1000	No Equivalent	No Equivalent	R9AF

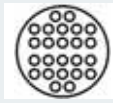
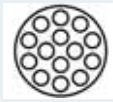
Rotor Accessories and Replacement Parts

Lid Assembly	099-041004	099-041046	099-041032	099-041044	099-041042	099-041041	099-041043
O-Ring Refresher Kit	021-041004	021-041046	021-041032	021-041044	021-041042	021-041041	021-041043
Extraction Tool	017-041004	017-041046	017-041032	017-041044	017-041042	017-041041	017-041043

Recommended Bottles with Cap Assemblies

Tube Style Material	Part No.	Volume (Nominal)	Tube Manufacturer Maximum Recommended g-Force
Polypropylene wide mouth and cap (Set of 2)	010-0173	1000 mL	15,241 x g
Polycarbonate wide mouth and cap (Set of 2)	010-1078	1000 mL	15,241 x g

Recommended Adapters

010-1131 1000 mL to 30x3.0 mL		010-1089 1000 mL to 24x5.0 mL		010-1085 1000 mL to 18x10/8.0 mL		010-1087 1000 mL to 14x15 mL	
010-1079 1000 mL to 12x15 mL Conical		010-1095 1000 mL to 7x30 mL		010-1091 1000 mL to 6x50 mL		010-0180 1000 mL to 5x50 mL Conical	
010-1093 1000 mL to 3x100 mL		010-1132 1000 mL to 175 mL Conical		010-0150 1000 mL to 250 mL		010-1096 1000 mL to 250 mL Conical	
010-0145 1000 mL to 500 mL		010-1097 1000 mL to 500 mL Conical					

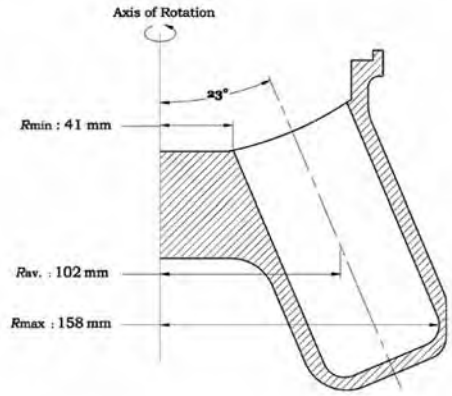
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F10-6x500 mL

Fixed Angle Carbon Fiber Rotor

6x500 mL





for

Sorvall, Beckman, Jouan, and Hitachi Centrifuges

Features

- Lifetime warranty
- Safer than metallic rotors
- Corrosion free
- Cold room compatible
- Easy to handle
- Fully autoclavable
- Reduced wear on centrifuge drive
- Rapid acceleration and deceleration
- Highly resistant to radiolabel contamination

Specifications

- Max. radius (r_{max}): 158 mm
- Min. radius (r_{min}): 41 mm
- Tube Angle: 23°
- Rotor Capacity: 6 x 500 mL (3000 mL)
- Max Tube Size: ϕ69 x 160mm (2.75 x 6.5 in.)
- Rotor Mass: 11.27 kg (24.8 lbs.)
- Liquid Containment: No

Sorvall, Beckman, and Jouan

- Max. Speed: 10,000 rpm
- Max. g-force: 17,696 x g
- k factor: 3,413

Hitachi

- Max. Speed: 9,000 rpm
- Max. g-force: 14,334 x g
- k factor: 4,214

Applications

- Pelleting bacterial cells from tissue culture
- Pelleting debris and plant life from water pollution studies
- Clarifying lysates and pelleting particles from other types of homogenates

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Unique Features

- Large volume rotor for pelleting cells from cultures
- Lighter than Titanium or Aluminum rotors and will not corrode
- Autoclavable and can be used with tube adapters at max speeds indefinitely

	For Sorvall Centrifuge	For Beckman Centrifuge	For Jouan Centrifuge		For Hitachi Centrifuge
FIBER*Lite* Rotor Model	F10S-6x500 mL	F10B-6x500 mL	F10J-6x500 mL	F10J-6x500 mL	F9HI-6x500 mL
FIBER*Lite* Part No.	096-062062	096-062058	096-062125	096-062119	096-062133
Will Spin In	RC2/RC5/RC6/RC26/ Evolution RC	J2-21 Series	KR22i	KR25i	CR21/CR22 Series
Will Replace	GS-3/SLA-3000/ SLC-3000	JA-10/JLA-10.500	AK 500.11	AK 500.11	R10A3

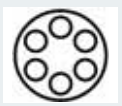
Rotor Accessories and Replacement Parts

Lid Assembly	099-062062	099-062058	099-062125	099-062119	099-062133
O-Ring Refresher Kit	021-062062	021-062058	021-062125	021-062119	021-062133
Extraction Tool	017-062062	017-062058	017-062125	017-062119	017-062133

Recommended Bottles with Cap Assemblies

Tube Style Material	Part No.	Volume (Nominal)	Tube Manufacturer Recommended g-Force
Polypropylene (Set of 6)	010-0512	500 mL	17,696 x g
Polycarbonate (Set of 6)	010-0509	500 mL	17,696 x g

Recommended Adapters

010-1137 500 mL to 14x3.0 mL		010-1108 500 mL to 14x5.0 mL		010-1103 500 mL to 7x10/8.0 mL		010-1105 500 mL to 6x15 mL	
010-1099 500 mL to 6x15 mL Conical		010-1115 500 mL to 3x30 mL		010-1112 500 mL to 2x50 mL		010-1102 500 mL to 50 mL Conical	
010-1114 500 mL to 100 mL		010-0152 500 mL to 175 mL Conical		010-0151 500 mL to 250 mL		010-1135 500 mL to 250 mL Conical	

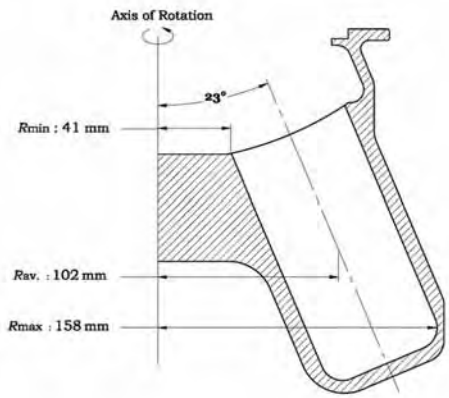
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F10-6x500y mL

Fixed Angle Carbon Fiber Rotor

6x500y mL





for

Sorvall, Beckman, and Jouan Centrifuges

Features

- y = (ELC) Enhanced Liquid Containment
- Lifetime warranty
- Safer than metallic rotors
- Corrosion free
- Cold room compatible
- Easy to handle
- Fully autoclavable
- Reduced wear on centrifuge drive
- Rapid acceleration and deceleration
- Highly resistant to radiolabel contamination

Specifications

- Max. Speed: 10,000 rpm
- Max. g-force: 17,696 x g
- Max. radius (r_{max}): 158 mm
- Min. radius (r_{min}): 41 mm
- Tube Angle: 23°
- k factor: 3,413
- Rotor Capacity: 6 x 500 mL (3000 mL)
- Max Tube Size: ϕ69 x 160mm (2.75 x 6.5 in.)
- Rotor Mass: 12.06 kg (26.58 lbs.)
- Liquid Containment: Yes

Applications

- Clarifying lysates and pelleting particles from other types of homogenates
- Pelleting bacterial cells from tissue culture
- Pelleting debris and plant life from water pollution studies

www.piramoon.com

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Unique Features

- Large volume rotor for pelleting cells from cultures
- Lighter than Titanium or Aluminum rotors and will not corrode
- Autoclavable and can be used with tube adapters at max speeds indefinitely
- ELC protection to contain sample leakage

	For Sorvall Centrifuge	For Beckman Centrifuge		For Jouan Centrifuge	
FIBER*Lite* Rotor Model	F10S-6x500y mL	F10B-6x500y mL	F10BA-6x500y mL	F10J-6x500y mL	F10J-6x500y mL
FIBER*Lite* Part No.	096-062063	096-062059	096-062114	096-062126	096-062120
Will Spin In	RC2/RC5/RC6/RC26/ Evolution RC	J2-21 Series	Avanti Series	KR22i	KR25i
Will Replace	GS-3/SLA-3000/ SLC-3000	JA-10/ JLA-10.500	JLA-10.500	AK 500.11	AK 500.11

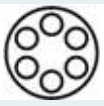
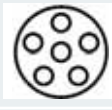
Rotor Accessories and Replacement Parts

Lid Assembly	099-062063	099-062059	099-062114	099-062126	096-062120
O-Ring Refresher Kit	021-062063	021-062059	021-062114	021-062126	021-062120
Extraction Tool	017-062063	017-062059	017-062114	017-062126	017-062120

Recommended Bottles with Cap Assemblies

Tube Style Material	Part No.	Volume (Nominal)	Tube Manufacturer Recommended g-Force
Polypropylene (Set of 6)	010-0512	500 mL	17,696 x g
Polycarbonate (Set of 6)	010-0509	500 mL	17,696 x g

Recommended Adapters

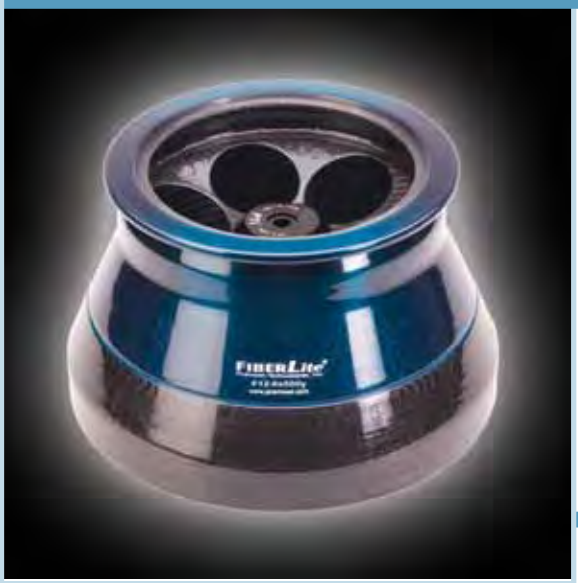
010-1137 500 mL to 14x3.0 mL		010-1108 500 mL to 14x5.0 mL		010-1103 500 mL to 7x10/8.0 mL		010-1105 500 mL to 6x15 mL	
010-1099 500 mL to 6x15 mL Conical		010-1115 500 mL to 3x30 mL		010-1112 500 mL to 2x50 mL		010-1102 500 mL to 50 mL Conical	
010-1114 500 mL to 100 mL		010-0152 500 mL to 175 mL Conical		010-0151 500 mL to 250 mL		010-1135 500 mL to 250 mL Conical	

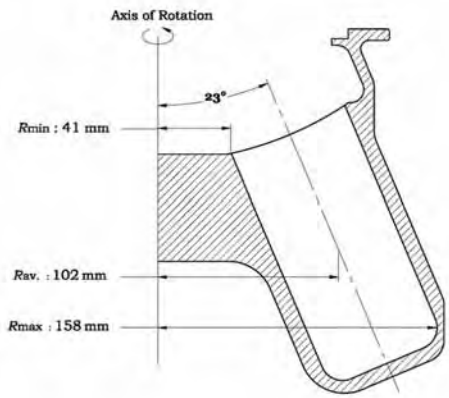
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F12-6x500y

Fixed Angle Carbon Fiber Rotor

6x500y mL





for
Sorvall Centrifuges

Features

- y = (ELC) Enhanced Liquid Containment
- Lifetime warranty
- Safer than metallic rotors
- Corrosion free
- Cold room compatible
- Easy to handle
- Fully autoclavable
- Reduced wear on centrifuge drive
- Rapid acceleration and deceleration
- Highly resistant to radiolabel contamination

Specifications

- Max. Speed: 12,000 rpm
- Max. g-force: 25,480 x g
- Max. radius (r_{max}): 158 mm
- Min. radius (r_{min}): 41 mm
- Tube Angle: 23°
- k factor: 2,370
- Rotor Capacity: 6 x 500 mL (3000 mL)
- Max Tube Size: ϕ69 x 160mm (2.75 x 6.5 in.)
- Rotor Mass: 12.06 kg (26.58 lbs.)
- Liquid Containment: Yes

Applications

- Clarifying lysates and pelleting particles from other types of homogenates
- Pelleting bacterial cells from tissue culture
- Pelleting debris and plant life from water pollution studies

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Unique Features

- Largest high volume rotor with highest g-forces for greatest throughput
- ELC protection to contain sample leakage
- Highest RCF in its class

For Sorvall Centrifuge

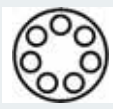
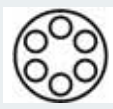
FIBER*Lite* Rotor Model	F12S-6x500y mL
FIBER*Lite* Part No.	096-062116
Will Spin In	Evolution RC
Will Replace	GS-3/SLA-3000/SLC-3000

Lid Assembly	099-062116
O-Ring Refresher Kit	021-062116
Extraction Tool	017-062116

Recommended Bottles with Cap Assemblies

Tube Style Material	Part No.	Volume (Nominal)	Tube Manufacturer Recommended g-Force
Polypropylene (Set of 6)	010-0512	500 mL	17,696 x g
Polycarbonate (Set of 6)	010-0509	500 mL	17,696 x g

Recommended Adapters

010-1137 500 mL to 14x3.0 mL		010-1108 500 mL to 14x5.0 mL		010-1103 500 mL to 7x10/8.0 mL		010-1105 500 mL to 6x15 mL	
010-1099 500 mL to 6x15 mL Conical		010-1115 500 mL to 3x30 mL		010-1112 500 mL to 2x50 mL		010-1102 500 mL to 50 mL Conical	
010-1114 500 mL to 100 mL		010-0152 500 mL to 175 mL Conical		010-0151 500 mL to 250 mL		010-1135 500 mL to 250 mL Conical	

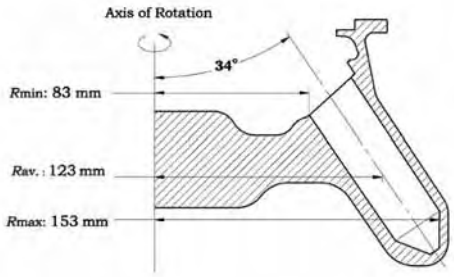
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F13-14x50cy mL

Conical Fixed Angle Carbon Fiber Rotor

14x50cy mL





for
Sorvall, Beckman, Jouan, and Hitachi Centrifuges

Features

- y = (ELC) Enhanced Liquid Containment
- Lifetime warranty
- Safer than metallic rotors
- Corrosion free
- Cold room compatible
- Easy to handle
- Fully autoclavable
- Reduced wear on centrifuge drive
- Rapid acceleration and deceleration
- Highly resistant to radiolabel contamination

Applications

- Pelleting cells, bacteria, or subcellular fraction
- Phase separations and binding studies

Specifications

- Max. radius (r_{max}): 153mm
- Min. radius (r_{min}): 83mm
- Tube Angle: 34°
- Rotor Capacity: 14 x 50 mL (700 mL)
- Max Tube Size: ϕ28.5 x 134mm (1.12 x 5.2 in.)
- Rotor Mass: 7.0 kg (15.44 lbs.)
- Liquid Containment: Yes

Sorvall (RC2/RC5/RC6/RC26/ Evolution RC), Beckman (J2-21 series), Jouan, and Hitachi

- Max. Speed: 13,000 rpm
- Max. g-force: 28,960 x g
- k factor: 916

Beckman (Avanti)

- Max. Speed: 12,000 rpm
- Max. g-force: 24,676 x g
- k factor: 1,075

Sorvall (RC4, Multifuge 4)

- Max. Speed: 10,000 rpm
  (*Will run at 10,000 rpm, which is the maximum speed of centrifuge)*
- Max. g-force: 17,136 x g
- k factor: 1,547

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Unique Features

- Most versatile fixed angle rotor
- Can be used instead of swinging bucket rotor for some pelleting
- Cavities specially molded to use conical tubes at g-forces above 25,000 x g
- Useful for centrifugal filtration devices
- ELC protection to contain sample leakage

	For Sorvall Centrifuge		For Beckman Centrifuge		For Jouan Centrifuge		For Hitachi Centrifuge
FIBER*Lite* Rotor Model	F13S-14x50cy	F10S-14x50cy	F13B-14x50cy	F13BA-14x50cy	F13J-14x50cy	F13J-14x50cy	F13HI-14x50cy
FIBER*Lite* Part No.	096-145001	096-145017	096-145007	096-145008	096-145014	096-145013	096-145015
Will Spin In	RC2/RC5/ RC6/RC26/ Evolution RC	RC4(USA)/ Multifuge4 (Europe)	J2-21 Series	Avanti	KR22i	KR25i	CR21/CR22 Series
Will Replace	SLA-600TC	No Equivalent	JA-12	JA-12	No Equivalent	No Equivalent	R15A ***(Use rotor code R13AF3)***

Rotor Accessories and Replacement Parts

Lid Assembly	099-145001	099-145017	099-145007	099-145008	099-145014	099-145013	099-145015
O-Ring Refresher Kit	021-145001	021-145017	021-145007	021-145008	021-145014	021-145013	021-145015

Recommended Bottles

Rotors are compatible with Corning, Falcon, and Nunc brand bottles

Recommended Adapters

010-1124 50 mL Conical to 8/10 mL		010-0376 50 mL Conical to 15 mL		010-0378 50 mL Conical to 15 mL Conical		010-0377 50 mL Conical to 50 mL	

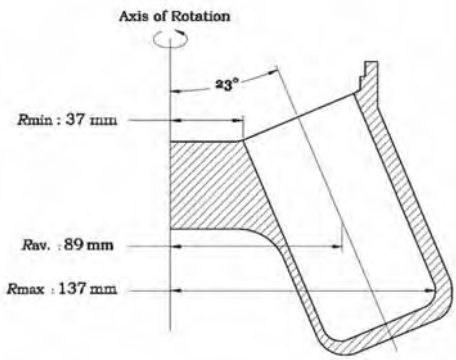
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F14-6x250 mL

Fixed Angle Carbon Fiber Rotor

6x250 mL





for

Sorvall, Beckman, Jouan, and Hitachi Centrifuges

Features

- Lifetime warranty
- Safer than metallic rotors
- Corrosion free
- Cold room compatible
- Easy to handle
- Fully autoclavable
- Reduced wear on centrifuge drive
- Rapid acceleration and deceleration
- Highly resistant to radiolabel contamination

Specifications

- Max. radius (r_{max}): 137 mm
- Min. radius (r_{min}): 37 mm
- Tube Angle: 23°
- Rotor Capacity: 6 x 250 mL (1500 mL)
- Max Tube Size: ϕ62 x 120mm (2.5 x 5.5 in.)
- Rotor Mass: 7.90 kg (17.42 lbs.)
- Liquid Containment: No

Sorvall, Beckman, and Jouan (KR22i/KR25i)

- Max. Speed: 14,000 rpm
- Max. g-force: 30,074 x g
- k factor: 1,690

Jouan (GR20.22)

- Max. Speed: 10,000 rpm
- Max. g-force: 15,344 x g
- k factor: 3,312

Hitachi

- Max. Speed: 13,000 rpm
- Max. g-force: 25,931 x g
- k factor: 1,960

Applications

- General-purpose large volume rotor
- Also for plant tissue homogenates
- For processing lysates and homogenates
- Ammonium sulphate precipitation of proteins and enzymes

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Unique Features

- Most popular large volume, high g-force, lightweight rotor
- General-purpose pelleting of lysates and homogenates

	For Sorvall Centrifuge	For Beckman Centrifuge	For Jouan Centrifuge			For Hitachi Centrifuge
FIBER*Lite* Rotor Model	F14S-6x250 mL	F14B-6x250 mL	F14J-6x250 mL	F14J-6x250 mL	F10J-6x250 mL	F13HI-6x250 mL
FIBER*Lite* Part No.	096-062032	096-062033	096-062127	096-062122	096-062138	096-062132
Will Spin In	RC2/RC5/ RC6/RC26/ Evolution RC	J2-21 Series	KR22i	KR25i	GR20.22	CR21/22 Series
Will Replace	GSA/SLA-1500/ SLC-1500	JA-14	AK250.14	AK250.14	No Equivalent	R13AF3 ***(Use rotor code R13AF3)***

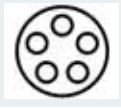
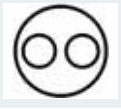
Rotor Accessories and Replacement Parts

Lid Assembly	099-062032	099-062033	099-062127	099-062122	099-062138	099-062132
O-Ring Refresher Kit	021-062032	021-062033	021-062127	021-062122	021-062138	021-062132
Extraction Tool	017-062032	017-062033	017-062127	017-062122	017-062138	017-062132

Recommended Bottles with Cap Assemblies

Tube Style Material	Part No.	Volume (Nominal)	Tube Manufacturer Recommended g-Force
Polypropylene (Set of 6)	010-0510	250 mL	36,413 x g includes Sealing Cap
Polycarbonate (Set of 6)	010-0363	250 mL	36,413 x g includes Sealing Cap

Recommended Adapters

010-1138 250 mL to 10x3.0 mL		010-1071 250 mL to 9x5.0 mL		010-1117 250 mL to 7x10/8.0 mL		010-1074 250 mL to 5x15 mL	
010-1073 250 mL to 5x15 mL Conical		010-1072 250 mL to 2x30 mL		010-0138 250 mL to 50 mL		010-0136 250 mL to 50 mL Conical	
010-1119 250 mL to 100 mL		010-1121 250 mL to 250 mL Conical					

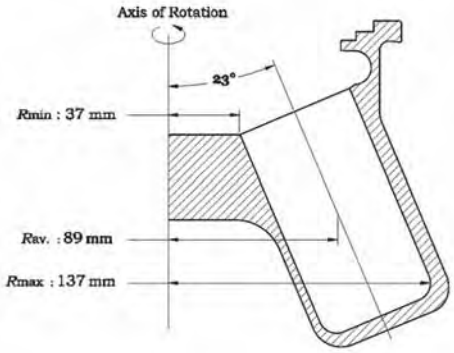
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F14-6x250y mL

Fixed Angle Carbon Fiber Rotor

6x250y mL





for
Sorvall, Beckman, and Jouan Centrifuges

Features

- y = (ELC) Enhanced Liquid Containment
- Lifetime warranty
- Safer than metallic rotors
- Corrosion free
- Cold room compatible
- Easy to handle
- Fully autoclavable
- Reduced wear on centrifuge drive
- Rapid acceleration and deceleration
- Highly resistant to radiolabel contamination

Specifications

- Max. radius (r_{max}): 137 mm
- Min. radius (r_{min}): 37 mm
- Tube Angle: 23°
- Rotor Capacity: 6 x 250 mL (1500 mL)
- Max Tube Size: ϕ62 x 120mm (2.5 x 5.5 in.)
- Rotor Mass: 8.21 kg (18.12 lbs.)
- Liquid Containment: Yes

Sorvall(RC2/RC5/RC6/RC26/ Evolution RC), Beckman, and Jouan

- Max. Speed: 14,000 rpm
- Max. g-force: 30,074 x g
- k factor: 1,690

Sorvall(RC4,Multifuge 4)

- Max. Speed: 10,000 rpm
- Max. g-force: 15,344 x g
- k factor: 3,312

Applications

- General-purpose large volume rotor
- Also for plant tissue homogenates
- For processing lysates and homogenates
- Ammonium sulphate precipitation of proteins and enzymes

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Unique Features

- Large volume rotor for pelleting cells from cultures
- Lighter than titanium or aluminum rotors and will not corrode
- Autoclavable and can be used with tube adapters at max speeds indefinitely
- ELC protection to contain sample leakage

	For Sorvall Centrifuge		For Beckman Centrifuge		For Jouan Centrifuge	
FIBER*Lite* Rotor Model	F14S-6x250y	F10S-6x250y	F14B-6x250y	F14BA-6x250y	F14J-6x250y	F14J-6x250y
FIBER*Lite* Part No.	096-062034	096-062174	096-062038	096-062107	096-062128	096-062123
Will Spin In	RC2/RC5/ RC6/RC26/ Evolution RC	RC4(USA)/ Multifuge4 (Europe)	J2-21 Series	Avanti Series	KR22i	KR25i
Will Replace	GSA/SLA-1500/ SLC-1500	No Equivalent	JA-14	JLA-16.250	AK 250.14	AK 250.14

Rotor Accessories and Replacement Parts

Lid Assembly	099-062034	099-062174	099-062038	099-062107	099-062128	099-062123
O-Ring Refresher Kit	021-062034	021-062174	021-062038	021-062107	021-062128	021-062123
Extraction Tool	017-062034	017-062174	017-062038	017-062107	017-062128	017-062123

Recommended Bottles with Cap Assemblies

Tube Style Material	Part No.	Volume (Nominal)	Tube Manufacturer Recommended g-Force
Polypropylene (Set of 6)	010-0510	250 mL	36,413 x g includes Sealing Cap
Polycarbonate (Set of 6)	010-0363	250 mL	36,413 x g includes Sealing Cap

Recommended Adapters

010-1138 250 mL to 10x3.0 mL		010-1071 250 mL to 9x5.0 mL		010-1117 250 mL to 7x10/8.0 mL		010-1074 250 mL to 5x15 mL	
010-1073 250 mL to 5x15 mL Conical		010-1072 250 mL to 2x30 mL		010-0138 250 mL to 50 mL		010-0136 250 mL to 50 mL Conical	
010-1119 250 mL to 100 mL		010-1121 250 mL to 250 mL Conical					

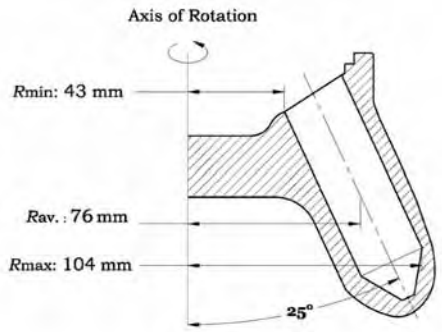
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F15-8x50c mL

Conical Fixed Angle Carbon Fiber Rotor

8x50c mL





for

Sorvall, Beckman, Jouan, and Hitachi Centrifuges

Features

- Lifetime warranty
- Safer than metallic rotors
- Corrosion free
- Cold room compatible
- Easy to handle
- Fully autoclavable
- Reduced wear on centrifuge drive
- Rapid acceleration and deceleration
- Highly resistant to radiolabel contamination

Specifications

- Max. Speed: 15,000 rpm
- Max. g-force: 26,208 x g
- Max. radius (r_{max}): 104 mm
- Min. radius (r_{min}): 43 mm
- Tube Angle: 25°
- k factor: 993
- Rotor Capacity: 8 x 50c mL (400 mL)
- Max Tube Size: ϕ28.5 x 134mm (1.12 x 5.2 in.)
- Rotor Mass: 4.18 kg (9.24 lbs.)
- Liquid Containment: No

Applications

- Pelleting cells, bacteria, or subcellular fractions
- Phase separations and binding studies

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Unique Features

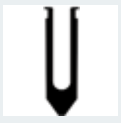
- Smaller volume versatile conical tube rotor
- General-purpose pelleting of lysates and homogenates

	For Sorvall Centrifuge	For Beckman Centrifuge	For Jouan Centrifuge			For Hitachi Centrifuge
FIBER*Lite* Rotor Model	F15S-8x50c mL	F15B-8x50c mL	F15J-8x50c mL	F15J-8x50c mL	F15J-8x50c mL	F15-HI8x50c mL
FIBER*Lite* Part No.	096-085031	096-085017	096-085062	096-085059	096-085067	096-085065
Will Spin In	RC2/RC5/ RC6/RC26/ Evolution RC	J2-21Series	KR22i	KR25i	GR20.22	CR21/22 Series
Will Replace	SLA-600TC	JA-12	AK50c	AK50c	No Equivalent	R15A/R18A
Rotor Accessories and Replacement Parts						
Lid Assembly	099-085031	099-085017	099-085062	099-085059	099-085067	099-085065
O-Ring Refresher Kit	021-085031	021-085017	021-085062	021-085059	021-085067	021-085065

Recommended Bottles

Rotors are compatible with Corning, Falcon, and Nunc brand bottles

Recommended Adapters

010-1124 50 mL Conical to 8/10 mL		010-0376 50 mL Conical to 15 mL		010-0378 50 mL Conical to 15 mL Conical		010-0377 50 mL Conical to 50 mL	

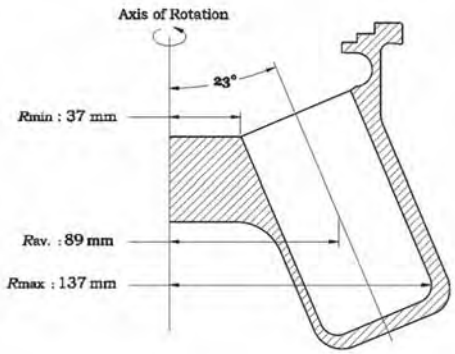
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F16-6x250y mL

Fixed Angle Carbon Fiber Rotor

6x250y mL





for
Beckman Avanti Centrifuges

Features

- y = (ELC) Enhanced Liquid Containment
- Lifetime warranty
- Safer than metallic rotors
- Corrosion free
- Cold room compatible
- Easy to handle
- Fully autoclavable
- Reduced wear on centrifuge drive
- Rapid acceleration and deceleration
- Highly resistant to radiolabel contamination

Specifications

- Max. Speed: 16,000 rpm
- Max. g-force: 39,281 x g
- Max. radius (r_{max}): 137 mm
- Min. radius (r_{min}): 37 mm
- Tube Angle: 23°
- k factor: 1,294
- Rotor Capacity: 6 x 250 mL (1500 mL)
- Max Tube Size: ϕ62 x 120mm (2.5 x 5.5 in.)
- Rotor Mass: 8.21 kg (18.12 lbs.)
- Liquid Containment: Yes

Applications

- General-purpose large volume rotor
- For processing lysates, homogenates, and ammonium sulphate precipitation of proteins and enzymes
- Also for plant tissue homogenates

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Unique Features

- Large volume rotor for pelleting cells from cultures
- Lighter than titanium or aluminum rotors and will not corrode
- Autoclavable and can be used with tube adapters at max speeds indefinitely
- ELC protection to contain sample leakage

For Beckman Avanti Centrifuge

FIBER*Lite* Rotor Model	F16BA-6x250y mL
FIBER*Lite* Part No.	096-062136
Will Spin In	Avanti Series
Will Replace	JLA16.250

Rotor Accessories and Replacement Parts

Lid Assembly	099-062136
O-Ring Refresher Kit	021-062136
Extraction Tool	017-062136

Recommended Bottles with Cap Assemblies

Tube Style Material	Part No.	Volume (Nominal)	Tube Manufacturer Recommended g-Force
Polypropylene (Set of 6)	010-0510	250 mL	36,413 x g includes Sealing Cap
Polycarbonate (Set of 6)	010-0363	250 mL	36,413 x g includes Sealing Cap

Recommended Adapters

010-1138 250 mL to 10x3.0 mL		010-1071 250 mL to 9x5.0 mL		010-1117 250 mL to 7x10/8.0 mL		010-1074 250 mL to 5x15 mL	
010-1073 250 mL to 5x15 mL Conical		010-1072 250 mL to 2x30 mL		010-0138 250 mL to 50 mL		010-0136 250 mL to 50 mL Conical	
010-1119 250 mL to 100 mL		010-1121 250 mL to 250 mL Conical					

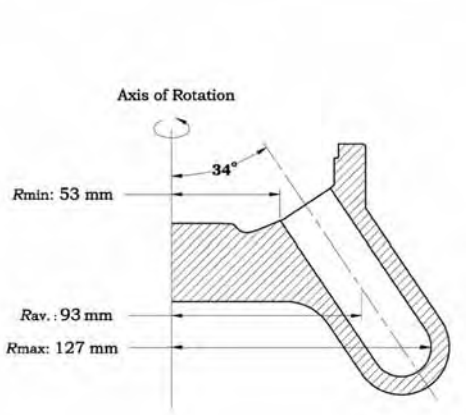
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F18-12x50 mL

Fixed Angle Carbon Fiber Rotor

12x50 mL





for

Sorvall, Beckman, Jouan, and Hitachi Centrifuges

Features

- Lifetime warranty
- Safer than metallic rotors
- Corrosion free
- Cold room compatible
- Easy to handle
- Fully autoclavable
- Reduced wear on centrifuge drive
- Rapid acceleration and deceleration
- Highly resistant to radiolabel contamination

Specifications

- Max. Speed: 18,000 rpm
  This rotor will run at 16,500 rpm in Sorvall RC2/RC5 Series.
- Max. g-force: 46,086 x g
- Max. radius (r_{max}): 127 mm
- Min. radius (r_{min}): 53 mm
- Tube Angle: 34°
- k factor: 682
- Rotor Capacity: 12 x 50 mL (600 mL)
- Max Tube Size: ϕ29 x 105mm (1.12 x 4 in.)
- Rotor Mass: 6.87 kg (15.16 lbs.)
- Liquid Containment: No

Applications

- Subcellular fractions harvesting of bacteria, lysate clarifications, and cell membranes processing
- Sucrose gradient isolation of mitochondria
- Endoplasmic reticulum
- Gradient separation of cells with Percoll, Ficoll or Optiprep gradients

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Unique Features

- Multipurpose high speed rotor for some density gradients
- Pelleting and clarifying cell lysates

	For Sorvall Centrifuge	For Beckman Centrifuge		For Jouan Centrifuge		For Hitachi Centrifuge
FIBER*Lite* Rotor Model	F18S-12x50	F18B-12x50	F18BA-12x50	F18J-12x50	F18J-12x50	F18HI-12x50
FIBER*Lite* Part No.	096-124022	096-124011	096-124032	096-124034	096-124038	096-124035
Will Spin In	RC2/RC5/RC6/ RC26/Evolution RC	J2-21 Series	Avanti Series	KR22i	KR25i	CR21/22 Series
Will Replace	SLA-600	JA-17	JA-17	AK 50.17	AK 50.17	No Equivalent

Rotor Accessories and Replacement Parts

Lid Assembly	099-124022	099-124011	099-124032	099-124034	099-124038	099-124035
O-Ring Refresher Kit	021-124022	021-124011	021-124032	021-124034	021-124038	021-124035
Extraction Tool	017-124022	017-124011	017-124032	017-124034	017-124038	017-124035

Recommended Bottles with Cap Assemblies

Tube Style Material	Part No.	Volume (Nominal)	Tube Manufacturer Recommended g-Force
Polypropylene (Set of 2)	010-0332	50 mL	69,549 x g
Polycarbonate (Set of 2)	010-0507	50 mL	69,549 x g
Polyallomer (Set of 2)	010-1160	50 mL	69,549 x g

Recommended Adapters

010-1127 50 mL to 4x1.0 mL		010-1128 50 mL to 3.0 mL		010-1068 50 mL to 8.0/10 mL		010-1144 50 mL to 12 mL	
010-0382 50 mL to 15 mL		010-1123 50 mL to 15 mL Conical		010-0167 50 mL to 30 mL			

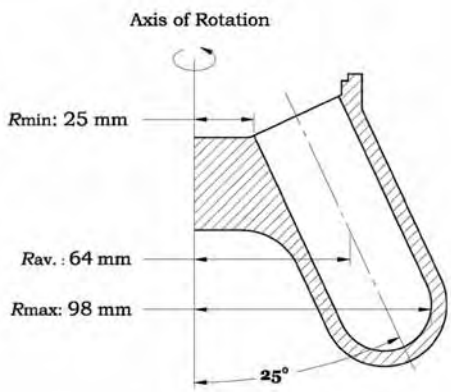
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F20-6x100 mL

Fixed Angle Carbon Fiber Rotor

6x100 mL





for
Sorvall, Beckman, and Jouan Centrifuges

Features

- Lifetime warranty
- Safer than metallic rotors
- Corrosion free
- Cold room compatible
- Easy to handle
- Fully autoclavable
- Reduced wear on centrifuge drive
- Rapid acceleration and deceleration
- Highly resistant to radiolabel contamination

Specifications

- Max. radius (r_{max}): 98 mm
- Min. radius (r_{min}): 25 mm
- Tube Angle: 25°
- Rotor Capacity: 6 x 100 mL (600 mL)
- Max Tube Size: ϕ40 x 115mm (1.12 x 4 in.)
- Rotor Mass: 6.50 kg (14.34 lbs.)
- Liquid Containment: No

Sorvall, Beckman, and Jouan (KR22i/KR25i)

- Max. Speed: 20,000 rpm
- Max. g-force: 43,904 x g
- k factor: 864

Jouan (GR20.22)

- Max. Speed: 15,000 rpm
- Max. g-force: 24,696 x g
- k factor: 1536

Applications

- Large volume harvesting of bacteria and cell homogenates
- Sucrose gradient isolation of mitochondria, membranes, and gradient separation of whole cells with Ficoll, Metrizamide, or Optiprep solutions.

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Unique Features

- Large capacity multipurpose high speed rotor for density gradients
- Pelleting and clarifying cell lysates

	For Sorvall Centrifuge	For Beckman Centrifuge	For Jouan Centrifuge		
FIBER*Lite* Rotor Model	F20S-6x100 mL	F20B-6x100 mL	F20J-6x100 mL	F20J-6x100 mL	F15J-6x100 mL
FIBER*Lite* Part No.	096-064025	096-064024	096-064026	096-064162	096-064161
Will Spin In	RC2/RC5/RC6/ RC26/Evolution RC	J2-21 Series	KR22i	KR25i	GR20.22
Will Replace	No Equivalent	JA-18	AK 100.21	AK100.21	AG100.18
Rotor Accessories and Replacement Parts					
Lid Assembly	099-064025	099-064024	099-064026	099-064162	099-064161
O-Ring Refresher Kit	021-064025	021-064024	021-064026	021-064162	021-064161

Recommended Bottles with Cap Assemblies

Tube Style Material	Part No.	Volume (Nominal)	Tube Manufacturer Recommended g-Force
Polycarbonate (Set of 2)	010-0515	94 mL	50,000 x g

Recommended Adapters

010-1125 100 mL to 6x1.0 mL		010-1126 100 mL to 3x3.0 mL		010-0191 100 mL to 13.5 mL		010-0189 100 mL to 38.5 mL	

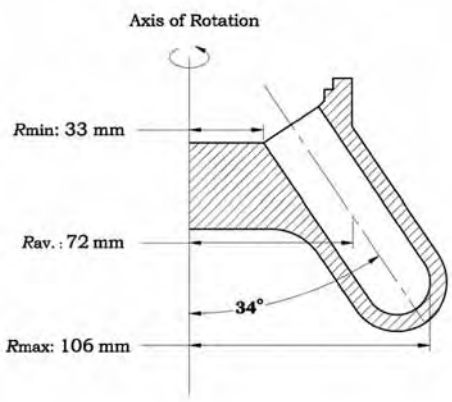
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F21-8x50 mL

Fixed Angle Carbon Fiber Rotor

8x50 mL





for
Sorvall, Beckman, and Jouan Centrifuges

Features

- Lifetime warranty
- Safer than metallic rotors
- Corrosion free
- Cold room compatible
- Easy to handle
- Fully autoclavable
- Reduced wear on centrifuge drive
- Rapid acceleration and deceleration
- Highly resistant to radiolabel contamination

Specifications

- Max. radius (r_{max}): 106 mm
- Min. radius (r_{min}): 33 mm
- Tube Angle: 34°
- Rotor Capacity: 8 x 50 mL (400 mL)
- Max Tube Size: ϕ29 x 105mm (1.13 x 4.0 in.)
- Rotor Mass: 4.43 kg (9.78 lbs.)
- Liquid Containment: No

Sorvall, Beckman, and Jouan (KR22i/KR25i)

- Max. Speed: 21,000 rpm
- Max. g-force: 52,356 x g
- k factor: 669

Jouan (GR20.22)

- Max. Speed: 15,000 rpm
- Max. g-force: 26,712 x g
- k factor: 1,312

Applications

- Subcellular fractions harvesting, bacteria pelleting, lysate clarification, and cell membranes
- Processing also sucrose gradient isolation of mitochondria, endoplasmic reticulum, and gradient isolation of mitochondria, endoplasmic reticulum, and gradient separation of cells with Percoll, Ficoll, Optiprep or Nycodenz solutions.

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Unique Features

- Multipurpose high speed rotor for some density gradients
- Pelleting and clarifying cell lysates

	For Sorvall Centrifuge	For Beckman Centrifuge	For Jouan Centrifuge		
FIBER*Lite* Rotor Model	F21S-8x50 mL	F21B-8x50 mL	F21J-8x50 mL	F21J-8x50 mL	F15J-8x50 mL
FIBER*Lite* Part No.	096-084005	096-084004	096-084052	096-084057	096-084071
Will Spin In	RC2/RC5/RC6/ RC26/Evolution RC	J2-21 Series	KR22i	KR25i	GR20.22
Will Replace	SS-34	JA-20	AK50.22	AK50.22	No Equivalent
Rotor Accessories and Replacement Parts					
Lid Assembly	099-084005	099-084004	099-084052	099-084057	099-084071
O-Ring Refresher Kit	021-084005	021-084004	021-084052	021-084057	021-084071

Recommended Bottles with Cap Assemblies

Tube Style Material	Part No.	Volume (Nominal)	Tube Manufacturer Recommended g-Force
Polypropylene (Set of 2)	010-0332	50 mL	69,549 x g
Polycarbonate (Set of 2)	010-0507	50 mL	69,549 x g
Polyallomer (Set of 2)	010-1160	50 mL	69,549 x g

Recommended Adapters

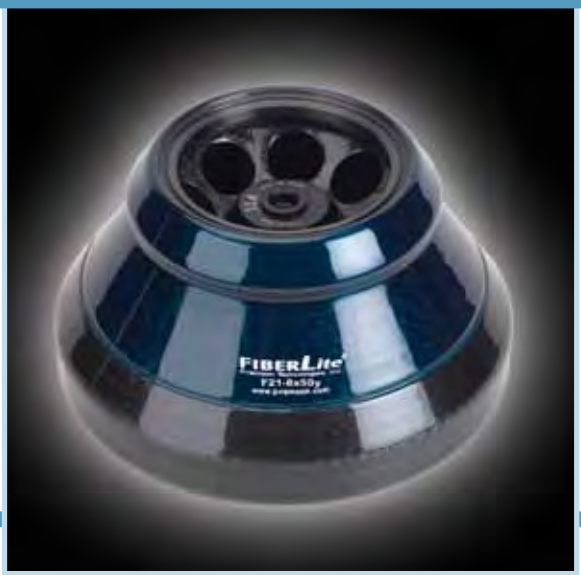
010-1127 50 mL to 4x1.0 mL		010-1128 50 mL to 3.0 mL		010-1068 50 mL to 8.0/10 mL		010-1144 50 mL to 12 mL	
010-0382 50 mL to 15 mL		010-1123 50 mL to 15 mL Conical		010-0167 50 mL to 30 mL			

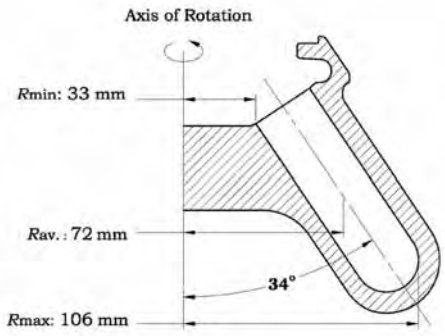
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F21-8x50y mL

Fixed Angle Carbon Fiber Rotor

8x50y mL





for
Sorvall, Beckman, and Jouan Centrifuges

Features

- y = (ELC) Enhanced Liquid Containment
- Lifetime warranty
- Safer than metallic rotors
- Corrosion free
- Cold room compatible
- Easy to handle
- Fully autoclavable
- Reduced wear on centrifuge drive
- Rapid acceleration and deceleration
- Highly resistant to radiolabel contamination

Specifications

- Max. Speed: 21,000 rpm
- Max. g-force: 52,356 x g
- Max. radius (r_{max}): 106 mm
- Min. radius (r_{min}): 33 mm
- Tube Angle: 34°
- k factor: 669
- Rotor Capacity: 8 x 50 mL (400 mL)
- Max Tube Size: ϕ29 x 105mm (1.13 x 4.0 in.)
- Rotor Mass: 4.23 kg (9.34 lbs.)
- Liquid Containment: Yes

Applications

- Subcellular fractions harvesting, bacteria pelleting, lysate clarification, and cell membranes
- Processing also sucrose gradient isolation of mitochondria, endoplasmic reticulum, and gradient isolation of mitochondria, endoplasmic reticulum, and gradient separation of cells with Percoll, Ficoll, Optiprep or Nycodenz solutions.

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Unique Features

- Multipurpose high speed rotor for some density gradients
- Pelleting and clarifying cell lysates

	For Sorvall Centrifuge	For Beckman Centrifuge	For Jouan Centrifuge	
FIBER*Lite* Rotor Model	F21S-8x50y mL	F21B-8x50y mL	F21J-8x50y mL	F21J-8x50y mL
FIBER*Lite* Part No.	096-084018	096-084019	096-084061	096-084058
Will Spin In	RC2/RC5/RC6/ RC26/Evolution RC	J2-21 Series	KR22i	KR25i
Will Replace	SS-34	JA-20	AK50.22	AK50.22

Rotor Accessories and Replacement Parts

Lid Assembly	099-084018	099-084019	099-084061	099-084058
O-Ring Refresher Kit	021-084018	021-084019	021-084061	021-084058

Recommended Bottles with Cap Assemblies

Tube Style Material	Part No.	Volume (Nominal)	Tube Manufacturer Recommended g-Force
Polypropylene (Set of 2)	010-0332	50 mL	69,549 x g
Polycarbonate (Set of 2)	010-0507	50 mL	69,549 x g
Polyallomer (Set of 2)	010-1160	50 mL	69,549 x g

Recommended Adapters

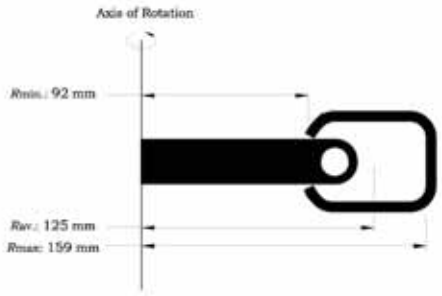
010-1127 50 mL to 4x1.0 mL		010-1128 50 mL to 3.0 mL		010-1068 50 mL to 8.0/10 mL		010-1144 50 mL to 12 mL	
010-0382 50 mL to 15 mL		010-1123 50 mL to 15 mL Conical		010-0167 50 mL to 30 mL			

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H3 Standard

Carbon Fiber Rotor





for
Sorvall and Beckman Centrifuges

Features

- Lifetime warranty
- Safer than metallic rotors
- Corrosion free
- Cold room compatible
- Easy to handle
- Fully autoclavable
- Reduced wear on centrifuge drive
- Rapid acceleration and deceleration
- Highly resistant to radiolabel contamination

Specifications

- Max. Speed: 3,200 rpm
- Max. g-force: 2,000 x g
- Max. radius (r_{max}): 169mm
- Min. radius (r_{min}): 95mm
- k factor: 42,711

Applications

H-3 Standard with Microplates:

- Pelleting Cells
- Spining down liquid
- Precipitating particles
- Processing samples through filters

H-3 Standard with Adapters:

- Isolation of cells
- Collection of plasma from blood
- Harvesting subcellular organelles
- Collection of physiological fluids for diagnostic tests

www.piramoon.com

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Unique Features

- Extra Large Swinging Bucket rotor with carbon fiber body and buckets
- Useful for General Molecular Biology and cell culture separations to accommodate vacutainer and glass tubes including standard and deep-well microplates

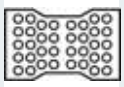
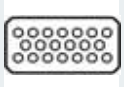
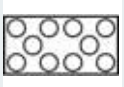
	For Sorvall Centrifuge	For Beckman Centrifuge
FIBER*Lite* Rotor Model	H3S Standard	H3B Standard
FIBER*Lite* Part No.	096-028014	096-028012
Will Spin In	RC2/RC5/RC6/ RC26/Evolution RC	J2 Series
Will Replace	No Equivalent	No Equivalent
Rotor Accessories and Replacement Parts		
Refresher Kit	021-028014	021-028012

Microplate Capacities

The H3 carrier accommodates up to 4 2 mL deep-well plates or up to 16 standard-well plates per run

Tube Volume (mL)	No. per rack	No. per run	Part No.
Microplates (Std.)	4	8	018-029015
Microplates 2mL (Deep-Well)	2	4	018-029015

Recommended Adapters

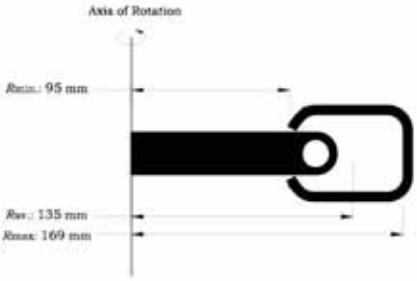
018-029011 18x10 mL		018-029012 15x15 mL Conical		018-029013 5x50 mL Conical	

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H3 Large Volume

Carbon Fiber Rotor





for
Sorvall Centrifuges

Features

- Lifetime warranty
- Safer than metallic rotors
- Corrosion free
- Cold room compatible
- Easy to handle
- Fully autoclavable
- Reduced wear on centrifuge drive
- Rapid acceleration and deceleration
- Highly resistant to radiolabel contamination

Specifications

- Max. Speed: 3,200 rpm
- Max. g-force: 2,000 x g
- Max. radius (r_{max}): 169mm
- Min. radius (r_{min}): 95mm
- k factor: 42,711

Applications

H-3 Large Volume with Microplates:

- Pelleting Cells
- Spining down liquid
- Precipitating particles
- Processing samples through filters

H-3 Large Volume with Adapters:

- Isolation of cells
- Collection of plasma from blood
- Harvesting subcellular organelles
- Collection of physiological fluids for diagnostic tests

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Unique Features

- Extra Large Swinging Bucket rotor with carbon fiber body and buckets
- Useful for General Molecular Biology and cell culture separations to accommodate vacutainer and glass tubes including standard and deep-well microplates

	For Sorvall Centrifuge	For Beckman Centrifuge
FIBER*Lite* Rotor Model	H3S Large Volume	H3B Large Volume
FIBER*Lite* Part No.	096-028017	096-028022
Will Spin In	Evolution RC	Avanti Series (J-20 XP / J-20 I / J-HC/ J-26 XP)
Will Replace	No Equivalent	No Equivalent

Rotor Accessories and Replacement Parts

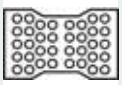
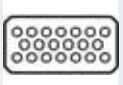
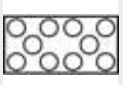
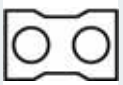
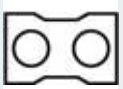
Refresher Kit	021-028017	021-028022

Microplate Capacities

The H3 carrier accommodates up to 82 mL deep-well plates or up to 32 standard-well plates per run

Tube Volume (mL)	No. per rack	No. per run	Part No.
Microplates (Std.)	16	32	018-029020
Microplates 2mL (Deep-Well)	4	8	018-029020

Recommended Adapters

018-029017 36x10 mL		018-029018 20x15 mL Conical		018-029019 10x50 mL Conical		018-029021 2x175 mL Conical	
018-029024 2x250 mL Conical		018-029022 2x250 mL Conical		018-029023 500 mL Conical			

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Section 3

Micro Volume
High / Super Speed Rotors for

. Beckman: **J2-21 Series**
. Sorvall: **RC2/RC5/RC6/RC26/Evolution RC**
. Jouan: **KR22i/KR25i/GR20.22**

List of Rotors	Page Number
F21-30x1.5/2.0 mL	52
F21-48x1.5/2.0 mL	54



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Applications for Micro Volume High / Super Speed Rotors:

		Suggested Rotors	Page Number
Proteins	1. Ammonium sulfate precipitation	N/A	N/A
	2. Centrifugal filtration	N/A	N/A
Lipoprotein	1. Density gradient fractionation	N/A	N/A
	2. Fractionation by flotation	F21-48x1.5/2.0 mL	54
Subcellular Fractions	1. Chromatin/Nucleosomes - Sucrose gradient isolation	N/A	N/A
	2. Mitochondria - Pelleting - Sucrose gradient isolation	F21-30x1.5/2.0 mL	52
	3. Nuclei - Pelleting	F21-30x1.5/2.0 mL	52
	4. Membranes - Pelleting - Sucrose/Percoll gradient fractionation	F21-30x1.5/2.0 mL	52
	5. Cytosol - Clarification	F21-30x1.5/2.0 mL	52
	6. Microsome - Pelleting - Sucrose gradient isolation - Microsomal membrane fractionation	N/A	N/A
	7. Ribosomes/Polysomes - Pelleting - Size fractionation in sucrose gradients	N/A	N/A
Lysate/ Homogenate	1. Clearing debris and large particles	N/A	N/A
Nucleic Acids	1. DNA - Phenol/$CHCL_3$ extraction - Alcohol Precipitation	F21-30x1.5/2.0 mL	52
	2. RNA - Phenol/$CHCL_3$ extraction - Alcohol precipitation - Lithium precipitation	F21-30x1.5/2.0 mL	52
Cells	1. Pelleting Bacteria 2. Other density gradient separations	F21-48x1.5/2.0 mL	54
Viruses	1. Pelleting 2. PEG precipitates	F21-48x1.5/2.0 mL	54

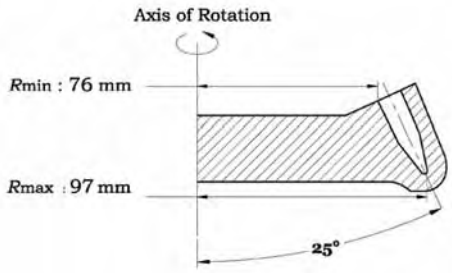
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F21-30x1.5/2.0 mL

Fixed Angle Carbon Fiber Rotor

30x1.5/2.0 mL





for
Sorvall, Beckman, and Jouan Centrifuges

Features

- Lifetime warranty
- Safer than metallic rotors
- Corrosion free
- Cold room compatible
- Easy to handle
- Fully autoclavable
- Reduced wear on centrifuge drive
- Rapid acceleration and deceleration
- Highly resistant to radiolabel contamination

Applications

- Purifying viruses
- Pelleting mammalian cells
- Subcellular organelles
- Fractionation of lipoproteins
- Clarifying cell lysates
- Pelleting nucleic acids

Specifications

- Max. radius (r_{max}): 97 mm
- Min. radius (r_{min}): 76 mm
- Tube Angle: 25°
- Rotor Capacity: 30x1.5 mL (45 mL)
- Max Tube Size: 11x38 mm
- Rotor Mass: 1.75 kg (3.85 lbs.)

Sorvall, Beckman, and Jouan (KR22i/KR25i)

- Max. Speed: 21,000 rpm
- Max. g-force: 47,910 x g
- k factor: 140

Jouan (GR20.22)

- Max. Speed: 16,000 rpm
- Max. g-force: 27,812 x g
- k factor: 241

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Unique Features:

- Micro volume multiple microcentrifuge tube rotor for pelleting small samples
- Pelleting small samples
- Can be used in high / super speed centrifuges at maximum speeds

	For Sorvall Centrifuge	For Beckman Centrifuge	For Jouan Centrifuge		
FIBER*Lite* Rotor Model	F21S-30x1.5/2.0 mL	F21B-30x1.5/2.0 mL	F21J-30x1.5/2.0 mL	F21J-30x1.5/2.0 mL	F16J-30x1.5/2.0 mL
FIBER*Lite* Part No.	096-304022	096-304021	096-304023	096-304133	096-304132
Will Spin In	RC2/RC5/RC6/RC26 Evolution RC	J2-21 Series	KR22i	KR25i	GR20.22
Will Replace	No Equivalent	No Equivalent	No Equivalent	No Equivalent	No Equivalent
Rotor Accessories and Replacement Parts					
Lid Assembly	099-304022	099-304021	099-304023	099-304133	099-304132
O-Ring Refresher Kit	021-304022	021-304021	021-304023	021-304133	021-304132

Recommended Bottles with Cap Assemblies

Tube Style Material	Part No.	Volume (Nominal)	Tube Manufacturer Recommended g-Force
Polycarbonate (Set of 2)	010-1081	1.5 mL	42,500 x g
Polyallomer Flip Cap (Set of 2)	010-1157	1.5 mL	250,000 x g
Polypropylene Screw Cap (Set of 2)	010-1158	1.5 mL	250,000 x g

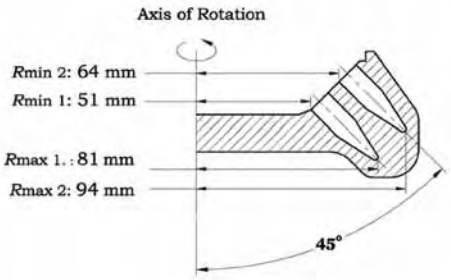
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F21-48x1.5/2.0 mL

Fixed Angle Carbon Fiber Rotor

48x1.5/2.0 mL





for

Sorvall, Beckman, and Jouan Centrifuges

Features

- Lifetime warranty
- Safer than metallic rotors
- Corrosion free
- Cold room compatible
- Easy to handle
- Fully autoclavable
- Reduced wear on centrifuge drive
- Rapid acceleration and deceleration
- Highly resistant to radiolabel contamination

Applications

- Purifying viruses
- Pelleting mammalian cells
- Subcellular organelles
- Fractionation of lipoproteins
- Clarifying cell lysates
- Pelleting nucleic acids

Specifications

- Max. radius (r_{max}): 94 mm
- Min. radius (r_{min}): 64 mm
- Tube Angle: 45°
- Rotor Capacity: 48x1.5 mL (72 mL)
- Max Tube Size: 11x38 mm
- Rotor Mass: 1.75 kg (3.85 lbs.)

Sorvall, Beckman, and Jouan (KR22i/KR25i)

- Max. Speed: 21,000 rpm
- Max. g-force: 46,428 x g
- k factor: 221

Jouan (GR20.22)

- Max. Speed: 16,000 rpm
- Max. g-force: 26,952 x g
- k factor: 380

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Unique Features:

- Largest number of microcentrifuge tubes in micro volume rotor
- Pelleting mini preparations of nucleic acid samples
- Can be used in high / super speed centrifuges at maximum speeds

	For Sorvall Centrifuge	For Beckman Centrifuge	For Jouan Centrifuge		
FIBER*Lite* Rotor Model	F21S-48x1.5/2.0 mL	F21B-48x1.5/2.0 mL	F21J-48x1.5/2.0 mL	F21J-48x1.5/2.0 mL	F16J-48x1.5/2.0 mL
FIBERLite **Part No.**	096-484020	096-484037	096-484025	096-484036	096-484035
Will Spin In	RC2/RC5/RC6/RC26/ Evolution RC	J2-21 Series	KR22i	KR25i	GR20.22
Will Replace	No Equivalent	No Equivalent	AB2.14	No Equivalent	No Equivalent
Rotor Accessories and Replacement Parts					
Lid Assembly	099-484020	099-484037	099-484025	099-484036	099-484035
O-Ring Refresher Kit	021-484020	021-484037	021-484025	021-484036	021-484035

Recommended Bottles with Cap Assemblies

Tube Style Material	Part No.	Volume (Nominal)	Tube Manufacturer Recommended g-Force
Polycarbonate (Set of 2)	010-1081	1.5 mL	42,500 x g
Polyallomer Flip Cap (Set of 2)	010-1157	1.5 mL	250,000 x g
Polypropylene Screw Cap (Set of 2)	010-1158	1.5 mL	250,000 x g

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Section 4

Low Speed / Large Volume Rotors for

. Beckman: **J6 Series**
. Sorvall: **RC3 Series**
. Hitachi: **CR7**

List of Rotors	Page Number
F6-6x250 mL	58
F6-6x250y mL	60
F6-6x500 mL	62
F6-6x500y mL	64
F6-4x1000y mL	66
F6-6x1000y mL	68
F6-14x50cy mL	70
H3 Large Volume	72



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Applications for Low Speed / Large Volume Rotors:

		Suggested Rotors	Page Number
Proteins	1. Ammonium sulfate precipitation	N/A	N/A
	2. Centrifugal filtration	F6-14x50cy mL	70
Subcellular Fractions	1. Nuclei -Pelleting	F6-6x250 mL F6-6x250y mL	58 60
Lysate/ Homogenate	1. Clearing debris and large particles	F6-6x250 mL F6-6x250y mL F6-6x500 mL F6-6x500y mL	58 60 62 64
Cells	1. Pelleting Bacteria 2. Pelleting mammalian cells 3. Isolation of mononuclear cells 2. Other separations	F6-4x1000y mL F6-6x1000y mL F6-6x250 mL F6-6x250y mL	66 68 58 60
Viruses	1. Pelleting 2. PEG precipitates	F6-6x500 mL F6-6x500y mL	62 64

** Adapters can be used for smaller volumes*

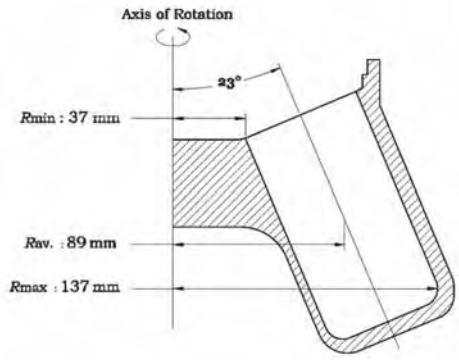
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F6-6x250 mL

Fixed Angle Carbon Fiber Rotor

6x250 mL





for
Sorvall and Beckman Centrifuges

Features

- Lifetime warranty
- Safer than metallic rotors
- Corrosion free
- Cold room compatible
- Easy to handle
- Fully autoclavable
- Reduced wear on centrifuge drive
- Rapid acceleration and deceleration
- Highly resistant to radiolabel contamination

Specifications

- Max. Speed: 6,000 rpm
- Max. g-force: 5,524 x g
- Max. radius (r_{max}): 137 mm
- Min. radius (r_{min}): 37 mm
- Tube Angle: 23°
- k factor: 9,200
- Rotor Capacity: 6 x250 mL (1500 mL)
- Max Tube Size: ϕ62 x 120mm (2.5 x 5.5 in.)
- Rotor Mass: 7.90 kg (17.42 lbs.)
- Liquid Containment: No

Applications

- General-purpose rotor for multi volume samples
- Processing of particulate materials and debris in solution and bacteria from cell cultures
- Also subcellular organelles from tissue homogenates

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Unique Features:

- Most popular large volume, high g-force, lightweight rotor
- General-purpose pelleting of lysates and homogenates

	For Sorvall Centrifuge	For Beckman Centrifuge
FIBER*Lite* Rotor Model	F6S-6x250 mL	F6B-6x250 mL
FIBER*Lite* Part No.	096-062041	096-062040
Will Spin In	RC3 Series	J6 Series
Will Replace	No Equivalent	JA-14

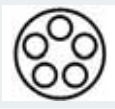
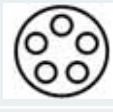
Rotor Accessories and Replacement Parts

Lid Assembly	099-062041	099-062040
O-Ring Refresher Kit	021-062041	021-062040
Rotor Extraction Tool	017-062041	017-062040

Recommended Bottles with Cap Assemblies

Tube Style Material	Part No.	Volume (Nominal)	Tube Manufacturer Recommended g-Force
Polypropylene (Set of 6)	010-0510	250 mL	36,413 x g includes Sealing Cap
Polycarbonate (Set of 6)	010-0363	250 mL	36,413 x g includes Sealing Cap

Recommended Adapters

010-1138 250 mL to 10x3.0 mL		010-1071 250 mL to 9x5.0 mL		010-1117 250 mL to 7x10/8.0 mL		010-1074 250 mL to 5x15 mL	
010-1073 250 mL to 5x15 mL Conical		010-1072 250 mL to 2x30 mL		010-0138 250 mL to 50 mL		010-0136 250 mL to 50 mL Conical	
010-1119 250 mL to 100 mL		010-1121 250 mL to 250 mL Conical					

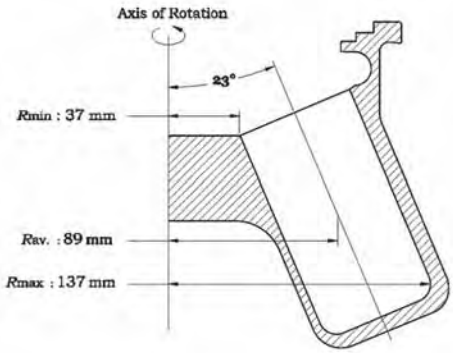
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F6-6x250y mL

Fixed Abgle Carbon Fiber Rotor

6x250y mL





for
Sorvall and Beckman Centrifuges

Features

- y = (ELC) Enhanced Liquid Containment
- Lifetime warranty
- Safer than metallic rotors
- Corrosion free
- Cold room compatible
- Easy to handle
- Fully autoclavable
- Reduced wear on centrifuge drive
- Rapid acceleration and deceleration
- Highly resistant to radiolabel contamination

Specifications

- Max. Speed: 6,000 rpm
- Max. g-force: 5,524 x g
- Max. radius (r_{max}): 137 mm
- Min. radius (r_{min}): 37 mm
- Tube Angle: 23°
- k factor: 9,200
- Rotor Capacity: 6 x 250 mL (1500 mL)
- Max Tube Size: ϕ62 x 120mm (2.5 x 5.5 in.)
- Rotor Mass: 8.21 kg (18.12 lbs.)
- Liquid Containment: Yes

Applications

- General-purpose large volume rotor
- For processing lysates, homogenates, and ammonium sulphate precipitation of proteins and enzymes
- Also for plant tissue homogenates

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Unique Features:

- Most popular large volume, high g-force, lightweight rotor
- General-purpose pelleting of lysates and homogenates
- ELC protection to contain sample leakage

	For Sorvall Centrifuge	For Beckman Centrifuge
FIBER*Lite* Rotor Model	F6S-6x250y mL	F6B-6x250y mL
FIBER*Lite* Part No.	096-062043	096-060042
Will Spin In	RC3 Series	J6 Series
Will Replace	No Equivalent	No Equivalent

Rotor Accessories and Replacement Parts

Lid Assembly	099-062043	099-060042
O-Ring Refresher Kit	021-062043	021-060042
Extraction Tool	017-062043	017-060042

Recommended Bottles with Cap Assemblies

Tube Style Material	Part No.	Volume (Nominal)	Tube Manufacturer Recommended g-Force
Polypropylene (Set of 6)	010-0510	250 mL	36,413 x g x g includes Sealing Cap
Polycarbonate (Set of 6)	010-0363	250 mL	36,413 x g includes Sealing Cap

Recommended Adapters

010-1138 250 mL to 10x3.0 mL		010-1071 250 mL to 9x5.0 mL		010-1117 250 mL to 7x10/8.0 mL		010-1074 250 mL to 5x15 mL	
010-1073 250 mL to 5x15 mL Conical		010-1072 250 mL to 2x30 mL		010-0138 250 mL to 50 mL		010-0136 250 mL to 50 mL Conical	
010-1119 250 mL to 100 mL		010-1121 250 mL to 250 mL Conical					

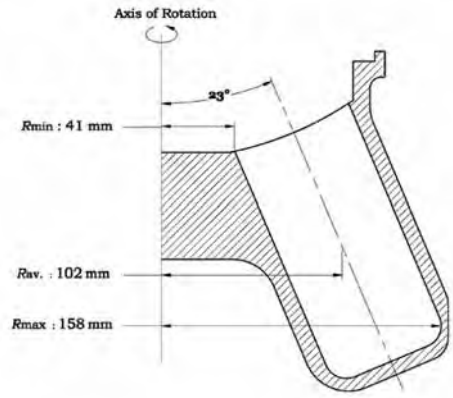
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F6-6x500 mL

Fixed Angle Carbon Fiber Rotor

6x500 mL





for
Sorvall and Beckman Centrifuges

Features

- Lifetime warranty
- Safer than metallic rotors
- Corrosion free
- Cold room compatible
- Easy to handle
- Fully autoclavable
- Reduced wear on centrifuge drive
- Rapid acceleration and deceleration
- Highly resistant to radiolabel contamination

Specifications

- Max. Speed: 6,000 rpm
- Max. g-force: 6,371 x g
- Max. radius (r_{max}): 158 mm
- Min. radius (r_{min}): 41 mm
- Tube Angle: 23°
- k factor: 9,481
- Rotor Capacity: 6 x 500 mL (3000 mL)
- Max Tube Size: ϕ69 x 160mm (2.75 x 6.5 in.)
- Rotor Mass: 11.07 kg (24.4 lbs.)
- Liquid Containment: No

Applications

- General-purpose rotor for extra large volume
- Processing of particulate materials and debris in solution and bacteria from cell cultures
- Also subcellular organelles from tissue homogenates
- Also debris from water pollution studies

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Unique Features:

- Large volume rotor for pelleting cells from cultures
- Lighter than Titanium or Aluminum rotors and will not corrode
- Autoclavable and can be used with tube adapters at max speeds indefinitely

	For Sorvall Centrifuge	For Beckman Centrifuge
FIBER*Lite* Rotor Model	F6S-6x500 mL	F6B-6x500 mL
FIBER*Lite* Part No.	096-062066	096-062068
Will Spin In	RC3 Series	J6 Series
Will Replace	No Equivalent	JA-10

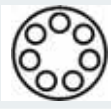
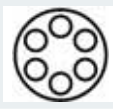
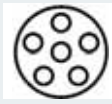
Rotor Accessories and Replacement Parts

Lid Assembly	099-062066	099-062068
O-Ring Refresher Kit	021-062066	021-062068
Rotor Extraction Tool	017-062066	017-062068

Recommended Bottles with Cap Assemblies

Tube Style Material	Part No.	Volume (Nominal)	Tube Manufacturer Recommended g-Force
Polypropylene (Set of 6)	010-0512	500 mL	17,696 x g
Polycarbonate (Set of 6)	010-0509	500 mL	17,696 x g

Recommended Adapters

010-1137 500 mL to 14x3.0 mL		010-1108 500 mL to 14x5.0 mL		010-1103 500 mL to 7x10/8.0 mL		010-1105 500 mL to 6x15 mL	
010-1099 500 mL to 6x15 mL Conical		010-1115 500 mL to 3x30 mL		010-1112 500 mL to 2x50 mL		010-1102 500 mL to 50 mL Conical	
010-1114 500 mL to 100 mL		010-0152 500 mL to 175 mL Conical		010-0151 500 mL to 250 mL		010-1135 500 mL to 250 mL Conical	

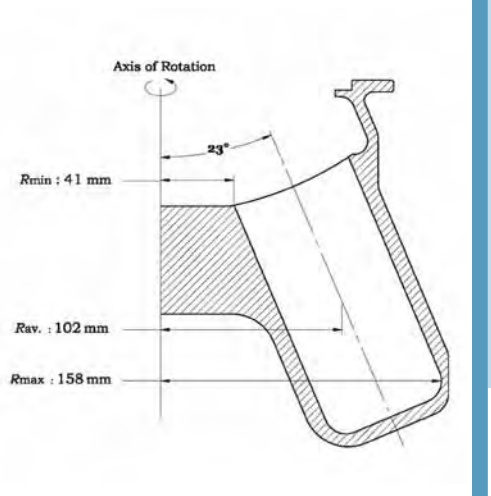
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F6-6x500y mL

Fixed Angle Carbon Fiber Rotor

6x500y mL





for
Sorvall and Beckman Centrifuges

Features

- y = (ELC) Enhanced Liquid Containment
- Lifetime warranty
- Safer than metallic rotors
- Corrosion free
- Cold room compatible
- Easy to handle
- Fully autoclavable
- Reduced wear on centrifuge drive
- Rapid acceleration and deceleration
- Highly resistant to radiolabel contamination

Specifications

- Max. Speed: 6,000 rpm
- Max. g-force: 6,371 x g
- Max. radius (r_{max}): 158 mm
- Min. radius (r_{min}): 41 mm
- Tube Angle: 23°
- k factor: 9,481
- Rotor Capacity: 6 x 500 mL (3000 mL)
- Max Tube Size: ϕ69 x 160mm (2.75 x 6.5 in.)
- Rotor Mass: 12.06 kg (26.58 lbs.)
- Liquid Containment: Yes

Applications

- General-purpose rotor for large volume samples
- Processing of particulate materials and debris in solution and bacteria from cell cultures
- Also subcellular organelles from tissue homogenates
- Also debris from water pollution studies

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Unique Features:

- Large volume rotor for pelleting cells from cultures
- Lighter than Titanium or Aluminum rotors and will not corrode
- Autoclavable and can be used with tube adapters at max speeds indefinitely
- ELC protection to contain sample leakage

	For Sorvall Centrifuge	For Beckman Centrifuge
FIBER*Lite* Rotor Model	F6S-6x500y mL	F6B-6x500y mL
FIBER*Lite* Part No.	096-062067	096-062069
Will Spin In	RC3 Series	J6 Series
Will Replace	No Equivalent	JA-10

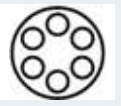
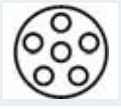
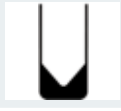
Rotor Accessories and Replacement Parts

Lid Assembly	099-062067	099-062069
O-Ring Refresher Kit	021-062067	021-062069
Rotor Extraction Tool	017-062067	017-062069

Recommended Bottles with Cap Assemblies

Tube Style Material	Part No.	Volume (Nominal)	Tube Manufacturer Recommended g-Force
Polypropylene (Set of 6)	010-0512	500 mL	17,696 x g
Polycarbonate (Set of 6)	010-0509	500 mL	17,696 x g

Recommended Adapters

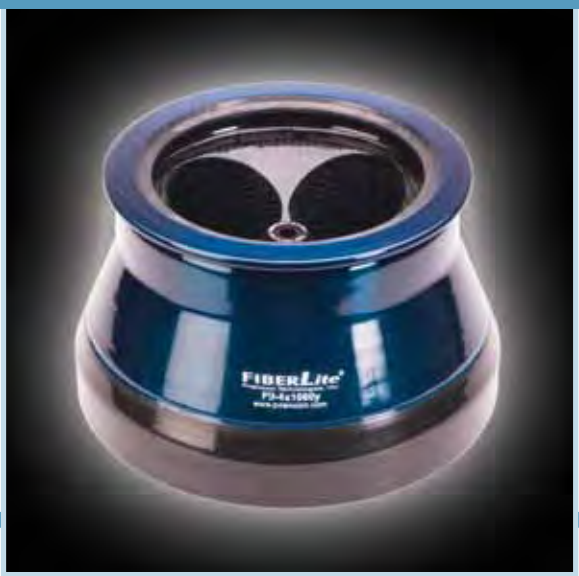
010-1137 500 mL to 14x3.0 mL		010-1108 500 mL to 14x5.0 mL		010-1103 500 mL to 7x10/8.0 mL		010-1105 500 mL to 6x15 mL	
010-1099 500 mL to 6x15 mL Conical		010-1115 500 mL to 3x30 mL		010-1112 500 mL to 2x50 mL		010-1102 500 mL to 50 mL Conical	
010-1114 500 mL to 100 mL		010-0152 500 mL to 175 mL Conical		010-0151 500 mL to 250 mL		010-1135 500 mL to 250 mL Conical	

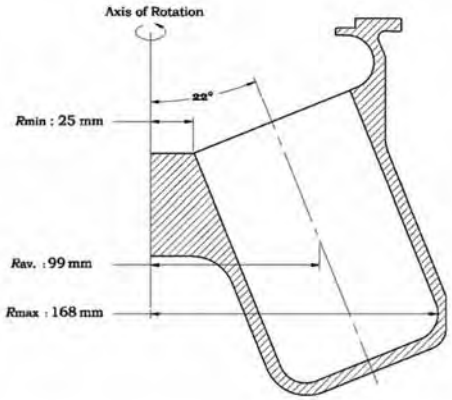
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F6-4x1000y mL

Fixed Angle Carbon Fiber Rotor

4x1000y mL





for

Sorvall and Beckman Centrifuges

Features

- y = (ELC) Enhanced Liquid Containment
- Lifetime warranty
- Safer than metallic rotors
- Corrosion free
- Cold room compatible
- Easy to handle
- Fully autoclavable
- Reduced wear on centrifuge drive
- Rapid acceleration and deceleration
- Highly resistant to radiolabel contamination

Specifications

- Max. radius (r_{max}): 168 mm
- Min. radius (r_{min}): 25 mm
- Tube Angle: 22°
- Rotor Capacity: 4 x 1000 mL (4000 mL)
- Max Tube Size: ϕ98 x 175mm (3.86 x 6.89 in.)
- Rotor Mass: 13.79 kg (30.4 lbs.)
- Liquid Containment: Yes

Sorvall and Beckman

- Max. Speed: 6,000 rpm
- Max. g-force: 6,774 x g
- k factor: 13,389

Hitachi

- Max. Speed: 7,000 rpm
- Max. g-force: 9,220 x g
- k factor: 9,836

Applications

- General-purpose FIBER*Lite* exclusive rotor for extra large volume
- Processing of particulate materials and debris in solution and bacteria from cell cultures
- Also subcellular organelles from tissue homogenates
- Also debris from water pollution studies

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Unique Features:

- Large volume rotor for pelleting cells from cultures
- Lighter than Titanium or Aluminum rotors and will not corrode
- Autoclavable and can be used with tube adapters at max speeds indefinitely
- ELC protection to contain sample leakage

	For Sorvall Centrifuge	For Beckman Centrifuge	For Hitachi Centrifuge
FIBER*Lite* Rotor Model	F6S-4x1000y mL	F6B-4x1000y mL	F7HI-4x1000y mL
FIBER*Lite* Part No.	096-041006	096-041007	096-041047
Will Spin In	RC3 Series	J6 Series	CR7
Will Replace	No equivalent	JLA-9.1000	R9AF2

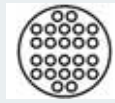
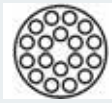
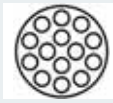
Rotor Accessories and Replacement Parts

Lid Assembly	099-041006	099-041007	099-041047
O-Ring Refresher Kit	021-041006	021-041007	021-041047
Rotor Extraction Tool	017-041006	017-041007	017-041047

Recommended Bottles with Cap Assemblies

Tube Style Material	Part No.	Volume (Nominal)	Tube Manufacturer Maximum Recommended g-Force
Polypropylene wide mouth and cap (Set of 2)	010-0173	1000 mL	15,241 x g
Polycarbonate wide mouth and cap (Set of 2)	010-1078	1000 mL	15,241 x g

Recommended Adapters

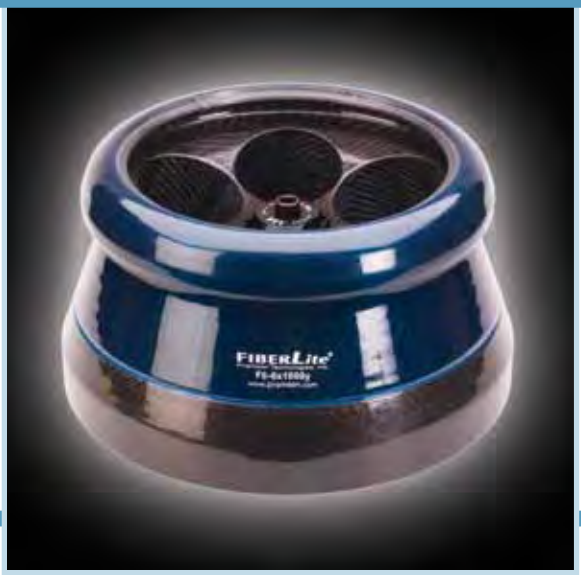
010-1131 1000 mL to 30x3.0 mL		010-1089 1000 mL to 24x5.0 mL		010-1085 1000 mL to 18x10/8.0 mL		010-1087 1000 mL to 14x15 mL	
010-1079 1000 mL to 12x15 mL Conical		010-1095 1000 mL to 7x30 mL		010-1091 1000 mL to 6x50 mL		010-0180 1000 mL to 5x50 mL Conical	
010-1093 1000 mL to 3x100 mL		010-1132 1000 mL to 175 mL Conical		010-0150 1000 mL to 250 mL		010-1096 1000 mL to 250 mL Conical	
010-0145 1000 mL to 500 mL		010-1097 1000 mL to 500 mL Conical					

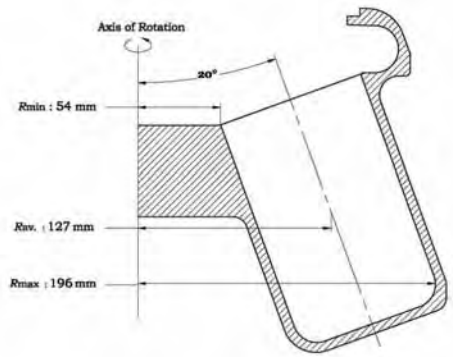
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F6-6x1000y

Fixed Angle Carbon Fiber Rotor

6x1000y mL





for

Sorvall, Beckman, and Hitachi Centrifuges

Features

- y = (ELC) Enhanced Liquid Containment
- Lifetime warranty
- Safer than metallic rotors
- Corrosion free
- Cold room compatible
- Easy to handle
- Fully autoclavable
- Reduced wear on centrifuge drive
- Rapid acceleration and deceleration
- Highly resistant to radiolabel contamination

Specifications

- Max. radius (r_{max}): 196 mm
- Min. radius (r_{min}): 54 mm
- Tube Angle: 20°
- Rotor Capacity: 6 x 1000 mL (6000 mL)
- Max Tube Size: ϕ98 x 175mm (3.86 x 6.89 in.)
- Rotor Mass: 15.19 kg (35.68 lbs.)
- Liquid Containment: Yes

Sorvall and Beckman

- Max. Speed: 6,000 rpm
- Max. g-force: 7,903 x g
- k factor: 9,060

Hitachi

- Max. Speed: 7,000 rpm
- Max. g-force: 10,756 x g
- k factor: 6,656

Applications

- General-purpose rotor for extra large volume
- Processing of particulate materials and debris in solutions
- Also bacteria and mammalian cells from cell cultures and subcellular organelles from tissue homogenates

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Unique Features:

- Large volume rotor for pelleting cells from cultures
- Lighter than Titanium or Aluminum rotors and will not corrode
- Autoclavable and can be used with tube adapters at max speeds indefinitely
- ELC protection to contain sample leakage

	For Sorvall Centrifuge	For Beckman Centrifuge	For Hitachi Centrifuge
FIBER*Lite* Rotor Model	F6S-6x1000y mL	F6B-6x1000y mL	F7HI-6x1000y mL
FIBER*Lite* Part No.	096-061011	096-061010	096-061134
Will Spin In	RC3 Series	J6 Series	CR7
Will Replace	H-6000	JS-3.0/JS-4.2/JS-5.2	R7AF2/R7AF3

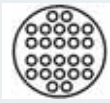
Rotor Accessories and Replacement Parts

Lid Assembly	099-061011	099-061010	099-061134
O-Ring Refresher Kit	021-061011	021-061010	021-061134
Rotor Extraction Tool	017-061011	017-061010	017-061134

Recommended Bottles with Cap Assemblies

Tube Style Material	Part No.	Volume (Nominal)	Tube Manufacturer Maximum Recommended g-Force
Polypropylene wide mouth and cap (Set of 2)	010-0173	1000 mL	15,241 x g
Polycarbonate wide mouth and cap (Set of 2)	010-1078	1000 mL	15,241 x g

Recommended Adapters

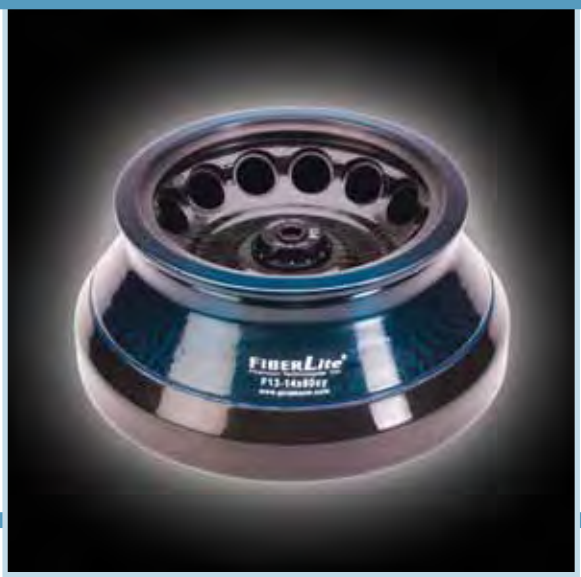
010-1131 1000 mL to 30x3.0 mL		010-1089 1000 mL to 24x5.0 mL		010-1085 1000 mL to 18x10/8.0 mL		010-1087 1000 mL to 14x15 mL	
010-1079 1000 mL to 12x15 mL Conical		010-1095 1000 mL to 7x30 mL		010-1091 1000 mL to 6x50 mL		010-0180 1000 mL to 5x50 mL Conical	
010-1093 1000 mL to 3x100 mL		010-1132 1000 mL to 175 mL Conical		010-0150 1000 mL to 250 mL		010-1096 1000 mL to 250 mL Conical	
010-0145 1000 mL to 500 mL		010-1097 1000 mL to 500 mL Conical					

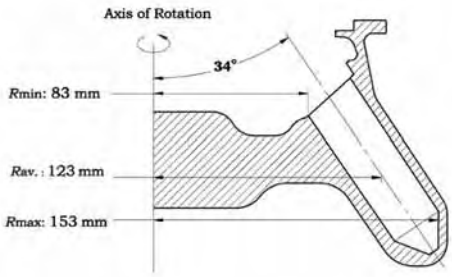
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F6-14x50cy mL

Conical Fixed Angle Carbon Fiber Rotor

14x50cy mL





for
Beckman Centrifuges

Features

- y = (ELC) Enhanced Liquid Containment
- Lifetime warranty
- Safer than metallic rotors
- Corrosion free
- Cold room compatible
- Easy to handle
- Fully autoclavable
- Reduced wear on centrifuge drive
- Rapid acceleration and deceleration
- Highly resistant to radiolabel contamination

Specifications

- Max. Speed: 6,000 rpm
- Max. g-force: 6,169 x g
- Max. radius (r_{max}): 153mm
- Min. radius (r_{min}): 83mm
- Tube Angle: 34°
- k factor: 4,298
- Rotor Capacity: 14 x 50 mL (700 mL)
- Max Tube Size: ϕ28.5 x 134mm (1.12 x 5.2 in.)
- Rotor Mass: 7.0 kg (15.44 lbs.)
- Liquid Containment: Yes

Applications

- Pelleting cells, bacteria, or subcellular fraction
- Phase separations and binding studies

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Unique Features

- Most versatile fixed angle rotor
- Can be used instead of swinging bucket rotor for some pelleting
- Cavities specially molded to use conical tubes at g-forces above 25,000 x g
- Useful for centrifugal filtration devices
- ELC protection to contain sample leakage

For Beckman Centrifuge

FIBER*Lite* Rotor Model	F6B-14x50cy
FIBER*Lite* Part No.	096-145012
Will Spin In	J6 Series
Will Replace	No Equivalent

Rotor Accessories and Replacement Parts

Lid Assembly	099-145012
O-Ring Refresher Kit	021-145012
Extration Tool	017-145012

Recommended Bottles and Adapters

Rotors are compatible with Corning, Falcon, and Nunc brand bottles

Recommended Adapters

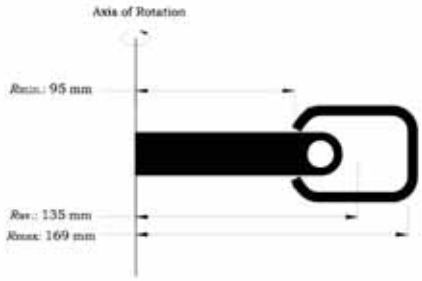
010-1124 50 mL Conical to 8/10 mL		010-0376 50 mL Conical to 15 mL		010-0378 50 mL Conical to 15 mL Conical		010-0377 50 mL Conical to 50 mL	

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H3 Large Volume

Carbon Fiber Rotor





for
Sorvall and Beckman Centrifuges

Features

- Lifetime warranty
- Safer than metallic rotors
- Corrosion free
- Cold room compatible
- Easy to handle
- Fully autoclavable
- Reduced wear on centrifuge drive
- Rapid acceleration and deceleration
- Highly resistant to radiolabel contamination

Specifications

- Max. Speed: 3,200 rpm
- Max. g-force: 2,000 x g
- Max. radius (r_{max}): 169mm
- Min. radius (r_{min}): 95mm
- k factor: 42,711

Applications

H-3 Large Volume with Microplates:

- Pelleting Cells
- Spining down liquid
- Precipitating particles
- Processing samples through filters

H-3 Large Volume with Adapters:

- Isolation of cells
- Collection of plasma from blood
- Harvesting subcellular organelles
- Collection of physiological fluids for diagnostic tests

www.piramoon.com

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Unique Features

- Extra Large Swinging Bucket rotor with carbon fiber body and buckets
- Useful for General Molecular Biology and cell culture separations to accommodate vacutainer and glass tubes including standard and deep-well microplates

	For Sorvall Centrifuge	For Beckman Centrifuge
FIBER*Lite* Rotor Model	H3S Large Volume	H3B Large Volume
FIBER*Lite* Part No.	096-028015	096-028016
Will Spin In	RC3 Series	J-6 Series
Will Replace	No Equivalent	No Equivalent

Rotor Accessories and Replacement Parts

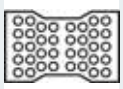
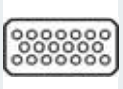
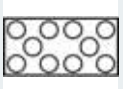
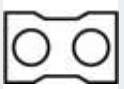
O-Ring Refresher Kit	021-028015	021-028016

Microplate Capacities

The H3 carrier accommodates up to 82 mL deep-well plates or up to 32 standard-well plates per run

Tube Volume (mL)	No. per rack	No. per run	Part No.
Microplates (Std.)	16	32	018-029020
Microplates 2mL (Deep-Well)	4	8	018-029020

Recommended Adapters

018-029017 36x10 mL		018-029018 20x15 mL Conical		018-029019 10x50 mL Conical		018-029021 2x175 mL Conical	
018-029024 2x250 mL Conical		018-029022 2x250 mL Conical		018-029023 500 mL Conical			

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Section 5

Ultra Speed Rotors for

. Beckman: L Series

. Sorvall: OTD/Discovery/Ultra Pro 80

List of Rotors	Page Number
F19-6x200 mL	76
F30-8x39 mL	78
F30-8x50 mL	80
F30-12x39 mL	82
F30-12x50 mL	84
F40-6x100 mL	86
F45-6x100 mL	88
F50-8x39 mL	90
F65-6x13.5 mL	92
F65-8x39 mL	94

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Applications for Ultra Speed Rotors:

		Suggested Rotors	Page Number
Proteins	1. Ammonium sulfate precipitation	F19-6x200 mL	76
	2. Centrifugal filtration	F19-6x200 mL	76
Lipoprotein	1. Density gradient fractionation	F40-6x100 mL F45-6x100 mL	86 88
	2. Fractionation by flotation	F40-6x100 mL F45-6x100 mL	86 88
Subcellular Fractions	1. Chromatin/Nucleosomes - Sucrose gradient isolation	F50-8x39 mL F65-8x39 mL	90 94
	2. Mitochondria - Pelleting - Sucrose gradient isolation	F30-8x50 mL F30-12x50 mL F40-6x100 mL	80 84 86
	3. Nuclei - Pelleting	F40-6x100 mL F45-6x100 mL	86 88
	4. Membranes - Pelleting - Sucrose/Percoll gradient	F40-6x100 mL F45-6x100 mL	86 88
	5. Cytosol - Clarification	F50-8x39 mL	90
	6. Microsome - Pelleting - Sucrose gradient isolation - Microsomal membrane	F40-6x100 mL F45-6x100 mL F65-6x13.5 mL	86 88 92
	7. Ribosomes/Polysomes - Pelleting - Size fractionation in sucrose	F65-6x13.5 mL	92
Lysate/ Homogenate	1. Clearing debris and large particles	F19-6x200 mL	76
Nucleic Acids	1. DNA - Phenol/$CHCL_3$ extraction - Alcohol Precipitation	F50-8x39 mL F65-8x39 mL	90 94
	2. RNA - Phenol/$CHCL_3$ extraction - Alcohol precipitation - Lithium precipitation	F50-8x39 mL F65-8x39 mL	90 94
Cells	1. Pelleting Bacteria 2. Other density gradient separations	F19-6x200 mL	76
Viruses	1. Pelleting 2. PEG precipitates	F50-8x39 mL F65-8x39 mL	90 94

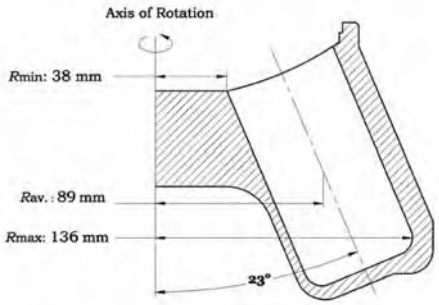
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F19-6x200 mL

Fixed Angle Carbon Fiber Rotor

6x200 mL





for
Sorvall and Beckman Ultra Centrifuges

Features

- Lifetime warranty
- Safer than metallic rotors
- Corrosion free
- Cold room compatible
- Easy to handle
- Fully autoclavable
- Reduced wear on centrifuge drive
- Rapid acceleration and deceleration
- Highly resistant to radiolabel contamination

Specifications

- Max. Speed: 19,000 rpm
- Max. g-force: 54,988 x g
- Max. radius (r_{max}): 136 mm
- Min. radius (r_{min}): 38 mm
- Tube Angle: 23°
- k factor: 894
- Rotor Capacity: 6 x200 mL (1200 mL)
- Max Tube Size: ϕ62 x 120mm (2.5 x 5.5 in.)
- Rotor Mass: 20 lbs
- Liquid Containment: No

Applications

- General-purpose rotor for extra large volume
- Processing of particulate materials and debris in solution and bacteria from cell cultures
- Also subcellular organelles from tissue homogenates

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Unique Features:

- Highest capacity lightweight ultra speed rotor
- General-purpose pelleting

	For Sorvall Ultra Centrifuge	For Beckman Ultra Centrifuge
FIBER*Lite* Rotor Model	F19L-6x200 mL	F19L-6x200 mL
FIBER*Lite* Part No.	096-067030	096-067030
Will Spin In	OTD/Discovery/Ultra Pro 80	L Series
Will Replace	A-621	Type 16

Rotor Accessories and Replacement Parts

Lid Assembly	099-067030	099-067030
O-Ring Refresher Kit	021-067030	021-067030

Recommended Bottles with Cap Assemblies

Tube Style Material	Part No.
Polyallomer (Set of 2)	010-0372

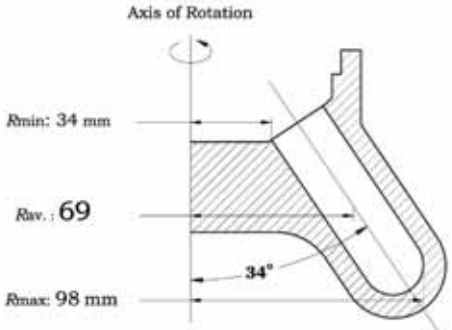
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F30-8x39 mL

Fixed Angle Carbon Fiber Rotor

8x39 mL





Features

- Lifetime warranty
- Safer than metallic rotors
- Corrosion free
- Cold room compatible
- Easy to handle
- Fully autoclavable
- Reduced wear on centrifuge drive
- Rapid acceleration and deceleration
- Highly resistant to radiolabel contamination

Specifications

- Max. Speed: 30,000 rpm
- Max. g-force: 92,736 x g
- Max. radius (r_{max}): 92 mm
- Min. radius (r_{min}): 39 mm
- Tube Angle: 34°
- k factor: 241
- Rotor Capacity: 8 x 39 mL (312 mL)
- Max Tube Size: ϕ29 x 105mm (1.13 x 4.0 in.)
- Rotor Mass: 3.63 kg (8.0 lbs.)
- Liquid Containment: No

Applications

- Subcellular organelle separations
- Pelleting of microsomes

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Unique Features:

- Multipurpose ultra speed rotor
- Pelleting and density gradient studies

	For Sorvall Ultra Centrifuge	For Beckman Ultra Centrifuge
FIBER*Lite* Rotor Model	F30L-8x39 mL	F30L-8x39 mL
FIBER*Lite* Part No.	096-087041	096-087041
Will Spin In	OTD/Discovery/Ultra Pro 80	L Series
Will Replace	Surespin 630/Surespin 636	SW 28/Type 42.1

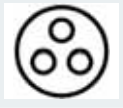
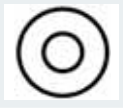
Rotor Accessories and Replacement Parts

Lid Assembly	099-087041	099-087041
O-Ring Refresher Kit	021-087041	021-087041

Recommended Bottles with Cap Assemblies

Tube Style Material	Part No.	Volume (Nominal)	Tube Manufacturer Recommended g-Force
Polycarbonate (Set of 2)	010-0514	39 mL	118,944 x g

Recommended Adapters

010-1139 39 mL to 3x1.0 mL		010-1141 39 mL to 3.0 mL		010-1142 39 mL to 13.5 mL	

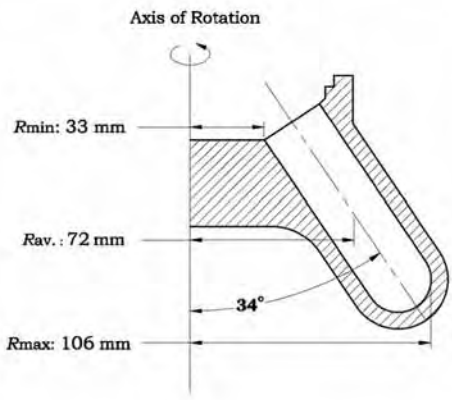
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F30-8x50 mL

Fixed Angle Carbon Fiber Rotor

8x50 mL





for
Sorvall and Beckman
Ultra Centrifuges

Features

- Lifetime warranty
- Safer than metallic rotors
- Corrosion free
- Cold room compatible
- Easy to handle
- Fully autoclavable
- Reduced wear on centrifuge drive
- Rapid acceleration and deceleration
- Highly resistant to radiolabel contamination

Specifications

- Max. Speed: 30,000 rpm
- Max. g-force: 106,848 x g
- Max. radius (r_{max}): 106 mm
- Min. radius (r_{min}): 33 mm
- Tube Angle: 34°
- k factor: 328
- Rotor Capacity: 8 x 50 mL (400 mL)
- Max Tube Size: ϕ29 x 105mm (1.13 x 4.0 in.)
- Rotor Mass: 4.43 kg (9.78 lbs.)
- Liquid Containment: No

Applications

- Subcellular organelle separations
- Pelleting of microsomes

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Unique Features:

- Multipurpose ultra speed rotor
- Pelleting and density gradient separations of subcellular organelles

	For Sorvall Ultra Centrifuge	For Beckman Ultra Centrifuge
FIBER*Lite* Rotor Model	F30L-8x50 mL	F30L-8x50 mL
FIBER*Lite* Part No.	096-087021	096-087021
Will Spin In	OTD/Discovery/Ultra Pro 80	L Series
Will Replace	No Equivalent	Type 28

Rotor Accessories and Replacement Parts

Lid Assembly	099-087021	099-087021
O-Ring Refresher Kit	021-087021	021-087021

Recommended Bottles with Cap Assemblies

Tube Style Material	Part No.	Volume (Nominal)	Tube Manufacturer Recommended g-Force
Polypropylene (Set of 2)	010-0332	50 mL	69,549 x g
Polycarbonate (Set of 2)	010-0507	50 mL	69,549 x g
Polyallomer (Set of 2)	010-1160	50 mL	69,549 x g

Recommended Adapters

010-1127 50 mL to 4x1.0 mL		010-1128 50 mL to 3.0 mL		010-1068 50 mL to 8.0/10 mL		010-1144 50 mL to 12 mL	
010-0382 50 mL to 15 mL		010-1123 50 mL to 15 mL Conical		010-0167 50 mL to 30 mL			

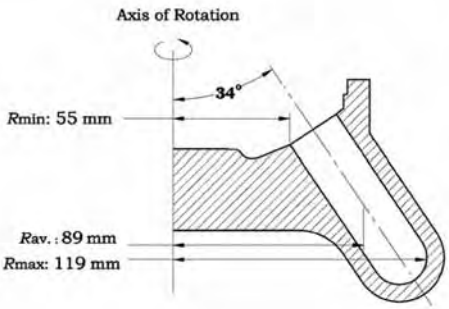
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F30-12x39 mL

Fixed Angle Carbon Fiber Rotor

12x39 mL





for
Sorvall and Beckman
Ultra Centrifuges

Features

- Lifetime warranty
- Safer than metallic rotors
- Corrosion free
- Cold room compatible
- Easy to handle
- Fully autoclavable
- Reduced wear on centrifuge drive
- Rapid acceleration and deceleration
- Highly resistant to radiolabel contamination

Specifications

- Max. Speed: 30,000 rpm
- Max. g-force: 126,000 x g
- Max. radius (r_{max}): 125 mm
- Min. radius (r_{min}): 56 mm
- Tube Angle: 34°
- k factor: 226
- Rotor Capacity: 12 x 39 mL (468 mL)
- Max Tube Size: ϕ29 x 105mm (1.13 x 4.0 in.)
- Rotor Mass: 4.8 kg (10.6 lbs.)
- Liquid Containment: No

Applications

- Subcellular organelle separations
- Pelleting of microsomes

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Unique Features:

- High capacity multipurpose ultra speed rotor
- Pelleting and density gradient studies

	For Sorvall Ultra Centrifuge	For Beckman Ultra Centrifuge
FIBER*Lite* Rotor Model	F30L-12x39 mL	F30L-12x39 mL
FIBER*Lite* Part No.	096-127036	096-127036
Will Spin In	OTD/Discovery/Ultra Pro 80	L Series
Will Replace	No Equivalent	Type 30

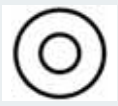
Rotor Accessories and Replacement Parts

Lid Assembly	099-127036	099-127036
O-Ring Refresher Kit	021-127036	021-127036

Recommended Bottles with Cap Assemblies

Tube Style Material	Part No.	Volume (Nominal)	Tube Manufacturer Recommended g-Force
Polycarbonate (Set of 2)	010-0514	39 mL	118,944 x g

Recommended Adapters

010-1139 39 mL to 3x1.0 mL		010-1141 39 mL to 3.0 mL		010-1142 39 mL to 13.5 mL	

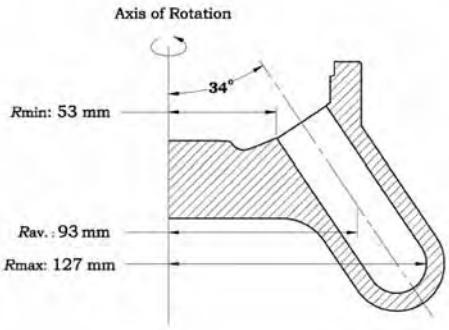
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F30-12x50

Fixed Angle Carbon Fiber Rotor

12x50 mL





for
Sorvall and Beckman Centrifuges

Features

- Lifetime warranty
- Safer than metallic rotors
- Corrosion free
- Cold room compatible
- Easy to handle
- Fully autoclavable
- Reduced wear on centrifuge drive
- Rapid acceleration and deceleration
- Highly resistant to radiolabel contamination

Specifications

- Max. Speed: 30,000 rpm
- Max. g-force: 128,016 x g
- Max. radius (r_{max}): 127 mm
- Min. radius (r_{min}): 53 mm
- Tube Angle: 34°
- k factor: 246
- Rotor Capacity: 12 x 50 mL (600 mL)
- Max Tube Size: ϕ29 x 105mm (1.13 x 4.0 in.)
- Rotor Mass: 6.87 kg (15.16 lbs.)
- Liquid Containment: No

Applications

- Harvesting bacteria
- Processing tissue homogenates, subcellular organelles, routine pelleting, and phase separation
- Also sucrose density gradient for separating subcellular fractions from tissue homogenates

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Unique Features:

- Multipurpose ultra speed rotor for use with Oak Ridge bottles
- Pelleting studies

	For Sorvall Centrifuge	For Beckman Centrifuge
FIBER*Lite* Rotor Model	F30L-12x50 mL	F30L-12x50 mL
FIBER*Lite* Part No.	096-127031	096-127031
Will Spin In	OTD/Discovery/Ultra Pro 80	L Series
Will Replace	No Equivalent	Type 30/Type 28

Rotor Accessories and Replacement Parts

Lid Assembly	099-127031	099-127031
O-Ring Refresher Kit	021-127031	021-127031

Recommended Bottles with Cap Assemblies

Tube Style Material	Part No.	Volume (Nominal)	Tube Manufacturer Recommended g-Force
Polypropylene (Set of 2)	010-0332	50 mL	69,549 x g
Polycarbonate (Set of 2)	010-0507	50 mL	69,549 x g
Polyallomer (Set of 2)	010-1160	50 mL	69,549 x g

Recommended Adapters

010-1127 50 mL to 4x1.0 mL		010-1128 50 mL to 3.0 mL		010-1068 50 mL to 8.0/10 mL		010-1144 50 mL to 12 mL	
010-0382 50 mL to 15 mL		010-1123 50 mL to 15 mL Conical		010-0167 50 mL to 30 mL			

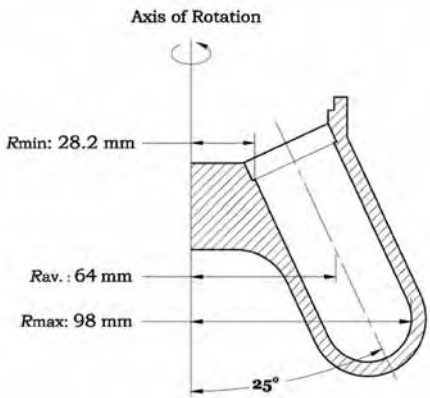
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F40-6x100 mL

Fixed Angle Carbon Fiber Rotor

6x100 mL





for
Sorvall and Beckman Ultra Centrifuges

Features

- Lifetime warranty
- Safer than metallic rotors
- Corrosion free
- Competitively priced
- Cold room compatible
- Easy to handle
- Fully autoclavable
- Reduced wear on centrifuge drive
- Rapid acceleration and deceleration
- Highly resistant to radiolabel contamination

Specifications

- Max. Speed: 40,000 rpm
- Max. g-force: 175,616 x g
- Max. radius (r_{max}): 98 mm
- Min. radius (r_{min}): 28.2 mm
- Tube Angle: 25°
- k factor: 197
- Rotor Capacity: 6 x 100 mL (600 mL)
- Max Tube Size: ϕ40 x 115mm (1.58 x 4.53 in.)
- Rotor Mass: 6.50 kg (14.34 lbs.)
- Liquid Containment: No

Applications

- Extra large volume ultra speed rotor
- Pelleting microsomes and other cytosol fractions
- Also used for density gradient fractionation of lipoprotein sub-fractionation

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Unique Features:

- Largest high volume lightweight ultra speed rotor
- Separating subfractions of lipoproteins and subcellular organelle

	For Sorvall Ultra Centrifuge	For Beckman Ultra Centrifuge
FIBER*Lite* Rotor Model	F40L-6x100 mL	F40L-6x100 mL
FIBER*Lite* Part No.	096-067106	096-067106
Will Spin In	OTD/Discovery/Ultra Pro 80	L Series
Will Replace	A-641/T-647.5	Type 45 Ti/Type 35

Rotor Accessories and Replacement Parts

Lid Assembly	099-067106	099-067106
O-Ring Refresher Kit	021-067106	021-067106

Recommended Bottles with Cap Assemblies

Tube Style Material	Part No.	Volume (Nominal)	Tube Manufacturer Recommended g-Force
Polycarbonate (Set of 2)	010-1066	100 mL	220,000 x g

Recommended Adapters

010-1125 100 mL to 6x1.0 mL		010-1126 100 mL to 3x3.0 mL		010-0191 100 mL to 13.5 mL		010-0189 100 mL to 38.5 mL	

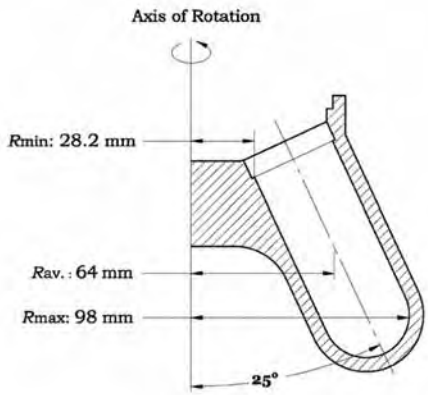
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F45-6x100 mL

Fixed Angle Carbon Fiber Rotor

6x100 mL





for
Sorvall and Beckman Ultra Centrifuges

Features

- Lifetime warranty
- Safer than metallic rotors
- Unlimited lifetime
- Corrosion free
- Competitively priced
- Cold room compatible
- Easy to handle
- Fully autoclavable
- Reduced wear on centrifuge drive
- Rapid acceleration and deceleration
- Highly resistant to radiolabel contamination

Specifications

- Max. Speed: 45,000 rpm
- Max. g-force: 222,264 x g
- Max. radius (r_{max}): 98 mm
- Min. radius (r_{min}): 28.2 mm
- Tube Angle: 25°
- k factor: 156
- Rotor Capacity: 6 x 100 mL (600 mL)
- Max Tube Size: ϕ40 x 115mm (1.58 x 4.53 in.)
- Rotor Mass: 6.50 kg (14.34 lbs.)
- Liquid Containment: No

Applications

- Extra large volume ultra speed rotor
- Pelleting microsomes and other cytosol fractions
- Also used for density gradient fractionation of lipoprotein sub-fractionation

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Unique Features:

- Largest high g-force ultra speed rotor
- Rapid throughput fractionation of lipoprotein subfractions and subcellular organelles

	For Sorvall Ultra Centrifuge	For Beckman Ultra Centrifuge
FIBER*Lite* Rotor Model	F45L-6x100 mL	F45L-6x100 mL
FIBER*Lite* Part No.	096-067086	096-067086
Will Spin In	OTD/Discovery/Ultra Pro 80	L Series
Will Replace	A-641/T-647.5	Type 45 Ti/Type 35/Type 21

Rotor Accessories and Replacement Parts

Lid Assembly	099-067086	099-067086
O-Ring Refresher Kit	021-067086	021-067086

Recommended Bottles with Cap Assemblies

Tube Style Material	Part No.	Volume (Nominal)	Tube Manufacturer Recommended g-Force
Polycarbonate (Set of 2)	010-1066	100 mL	220,000 x g

Recommended Adapters

010-1125 100 mL to 6x1.0 mL		010-1126 100 mL to 3x3.0 mL		010-0191 100 mL to 13.5 mL		010-0189 100 mL to 38.5 mL	

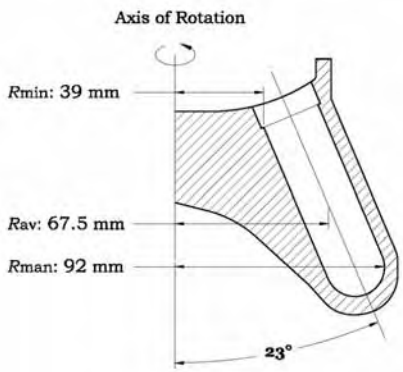
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F50-8x39 mL

Fixed Angle Carbon Fiber Rotor

8x39 mL





for
Sorvall and Beckman
Ultra Centrifuges

Features

- Lifetime warranty
- Safer than metallic rotors
- Corrosion free
- Competitively priced
- Cold room compatible
- Easy to handle
- Fully autoclavable
- Reduced wear on centrifuge drive
- Rapid acceleration and deceleration
- Highly resistant to radiolabel contamination

Specifications

- Max. Speed: 50,000 rpm
- Max. g-force: 257,600 x g
- Max. radius (r_{max}): 92 mm
- Min. radius (r_{min}): 39 mm
- Tube Angle: 34°
- k factor: 87
- Rotor Capacity: 8 x 39 mL (312 mL)
- Max Tube Size: ϕ29 x 105mm (1.13 x 4.0 in.)
- Rotor Mass: 3.63 kg (8.0 lbs.)
- Liquid Containment: No

Applications

- Subcellular organelle separations
- Pelleting of microsomes

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Unique Features:

- Multipurpose high g-force ultra speed rotor
- Pelleting gradient studies

	For Sorvall Ultra Centrifuge	For Beckman Ultra Centrifuge
FIBER*Lite* Rotor Model	F50-8x39 mL	F50-8x39 mL
FIBER*Lite* Part No.	096-087051	096-087051
Will Spin In	OTD/Discovery/Ultra Pro 80	L Series
Will Replace	T-1250	Type 55.2 Ti/Type 50.2 Ti

Rotor Accessories and Replacement Parts

Lid Assembly	099-087051	096-087051
O-Ring Refresher Kit	021-087051	021-087051

Recommended Bottles with Cap Assemblies

Tube Style Material	Part No.	Volume (Nominal)	Tube Manufacturer Recommended g-Force
Polycarbonate (Set of 2)	010-0514	39 mL	118,944 x g

Recommended Adapters

010-1139 39 mL to 3x1.0 mL		010-1141 39 mL to 3.0 mL		010-1142 39 mL to 13.5 mL	

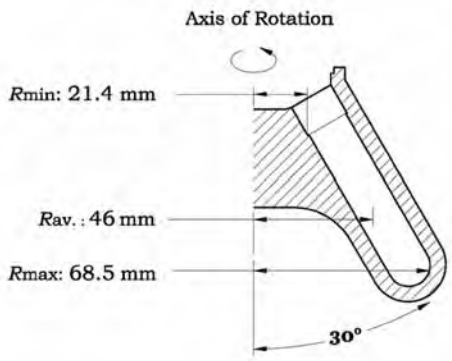
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F65-6x13.5 mL

Fixed Angle Carbon Fiber Rotor

6x13.5 mL





for
Sorvall and Beckman Ultra Centrifuges

Features

- Lifetime warranty
- Safer than metallic rotors
- Corrosion free
- Cold room compatible
- Easy to handle
- Fully autoclavable
- Reduced wear on centrifuge drive
- Rapid acceleration and deceleration
- Highly resistant to radiolabel contamination

Specifications

- Max. Speed: 65,000 rpm
- Max. g-force: 324,142 x g
- Max. radius (r_{max}): 68.5 mm
- Min. radius (r_{min}): 21.4 mm
- Tube Angle: 30°
- k factor: 70
- Rotor Capacity: 6 x 13.5mL (81.0 mL)
- Max Tube Size: ϕ16x 96.8mm (0.63 x 3.8 in.)
- Rotor Mass: 6.8 lbs
- Liquid Containment: No

Applications

- Pelleting of small molecular weight particles, purification of viruses with polyethylene glycol gradients, separation of nucleic acids, (RNA) using cesium sulphate gradients
- Separating plasmid DNA also single and double stranded DNA
- Using cesium chloride-ethidium bromide gradients in overnight runs

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Unique Features:

- Highest G-Force (330,000 x g) ultra speed rotor for differential centrifugation studies
- Used for separating small molecular weight proteins, viruses and isolating nucleic acid samples in cesium chloride gradients

	For Sorvall Ultra Centrifuge	For Beckman Ultra Centrifuge
FIBER*Lite* Rotor Model	F65L-6x13.5 mL	F65L-6x13.5 mL
FIBER*Lite* Part No.	096-067135	096-067135
Will Spin In	OTD/Discovery/Ultra Pro 80	L Series
Will Replace	T-865.1/T-875/T-880/T-890/T-1270/TH 641	Type 40/Type 50 Ti/Type 70.1 Ti/Type 75 Ti/ Type 90 Ti/SW 41 Ti
Rotor Accessories and Replacement Parts		
Lid Assembly	099-067135	099-067135
O-Ring Refresher Kit	021-067135	021-067135

Recommended Bottles with Cap Assemblies

Tube Style Material	Part No.	Volume (Nominal)	Tube Manufacturer Recommended g-Force
Polycarbonate (Set of 2)	010-0128	10.4 mL	450,000 x g

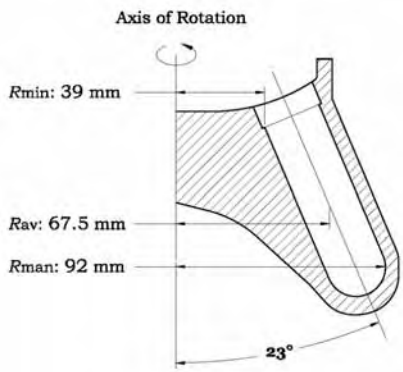
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F65-8x39 mL

Fixed Angle Carbon Fiber Rotor

8x39 mL





for
Sorvall and Beckman
Ultra Centrifuges

Features

- Lifetime warranty
- Safer than metallic rotors
- Corrosion free
- Competitively priced
- Cold room compatible
- Easy to handle
- Fully autoclavable
- Reduced wear on centrifuge drive
- Rapid acceleration and deceleration
- Highly resistant to radiolabel contamination

Specifications

- Max. Speed: 65,000 rpm
- Max. g-force: 435,344 x g
- Max. radius (r_{max}): 92 mm
- Min. radius (r_{min}): 39 mm
- Tube Angle: 23°
- k factor: 51
- Rotor Capacity: 8 x 39 mL (312 mL)
- Max Tube Size: ϕ29 x 105mm (1.13 x 4.0 in.)
- Rotor Mass: 3.63 kg (8.0 lbs.)
- Liquid Containment: No

Applications

- Subcellular organelle separations
- Pelleting of microsomes

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Unique Features:

- Multipurpose high g-force ultra speed rotor
- Pelleting gradient studies

	For Sorvall Ultra Centrifuge	For Beckman Ultra Centrifuge
FIBER*Lite* Rotor Model	F65L-8x39 mL	F65L-8x39 mL
FIBER*Lite* Part No.	096-087075	096-087075
Will Spin In	OTD/Discovery/Ultra Pro 80	L Series
Will Replace	A-865/T-1250/T-865	Type 60 Ti/Type 55.2 Ti/Type 50.2 Ti/Type 60 Ti/ Type 70 Ti

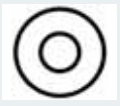
Rotor Accessories and Replacement Parts

Lid Assembly	099-087075	099-087075
O-Ring Refresher Kit	021-087075	021-087075

Recommended Bottles with Cap Assemblies

Tube Style Material	Part No.	Volume (Nominal)	Tube Manufacturer Recommended g-Force
Polycarbonate (Set of 2)	010-0514	39 mL	118,944 x g

Recommended Adapters

010-1139 39 mL to 3x1.0 mL		010-1141 39 mL to 3.0 mL		010-1142 39 mL to 13.5 mL	

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Section 6

Ultra High / Super Speed Rotors for

. Beckman: **L Series**

. Sorvall: **OTD/Discovery/Ultra Pro 80**

List of Rotors	Page Number
F16-6x250 mL	98
F18-12x50 mL	100
F20-6x100 mL	102
F21-8x50y mL	104



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Applications for Ultra High / Super Speed Rotors:

		Suggested Rotors	Page Number
Lipoprotein	1. Density gradient fractionation	N/A	
Subcellular Fractions	1. Chromatin/Nucleosomes - Sucrose gradient isolation	F21-8x50y mL	104
	2. Mitochondria - Pelleting - Sucrose gradient isolation	F20-6x100 mL F21-8x50y mL	102 104
	3. Nuclei - Pelleting	F18-12x50 mL F20-6x100 mL	100 102
	4. Membranes - Pelleting - Sucrose/Percoll gradient fractionation	F21-8x50y mL	104
	5. Cytosol - Clarification	F21-8x50y mL F20-6x100 mL	98 102
	6. Microsome - Pelleting - Sucrose gradient isolation - Microsomal membrane fractionation	N/A	N/A
	7. Ribosomes/Polysomes - Pelleting - Size fractionation in sucrose gradients	F21-8x50y mL	104
Lysate/ Homogenate	1. Clearing debris and large particles	F16-6x250 mL F20-6x100 mL	98 102
Nucleic Acids	1. DNA - Phenol/$CHCL_3$ extraction - Alcohol Precipitation	F21-8x50y mL	104
	2. RNA - Phenol/$CHCL_3$ extraction - Alcohol precipitation - Lithium precipitation	F21-8x50y mL	104
Cells	1. Pelleting Bacteria 2. Other density gradient separations	F16-6x250 mL F20-6x100 mL	98 102
Viruses	1. Pelleting 2. PEG precipitates	F16-6x250 mL F20-6x100 mL	98 102

** The LHS rotors can be used in the ultra centrifuges for high speed applications*

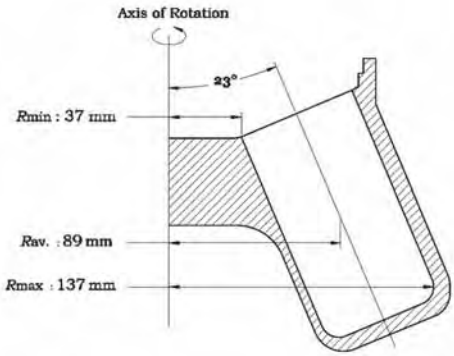
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F16-6x250

Fixed Angle Carbon Fiber Rotor

6x250 mL





for
Sorvall and Beckman
Ultra Centrifuges

Features

- Lifetime warranty
- Safer than metallic rotors
- Unlimited lifetime
- Corrosion free
- Competitively priced
- Cold room compatible
- Easy to handle
- Fully autoclavable
- Reduced wear on centrifuge drive
- Rapid acceleration and deceleration
- Highly resistant to radiolabel contamination

Specifications

- Max. Speed: 16,000 rpm
- Max. g-force: 39,281 x g
- Max. radius (r_{max}): 137 mm
- Min. radius (r_{min}): 37 mm
- Tube Angle: 23°
- k factor: 1,293
- Rotor Capacity: 6 x 250 mL (1500 mL)
- Max Tube Size: ϕ40 x 115mm (1.12 x 4 in.)
- Rotor Mass: 3.42 kg (7.5 lbs.)
- Liquid Containment: No

Applications

- Will replace JA-14 6x250 mL rotor with 500 mL to 250 mL adapters
- Clarifying lysates and pelleting particles from other types of homogenates
- Pelleting bacterial cells from tissue culture
- Pelleting debris and plant life from water pollution studies

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Unique Features:

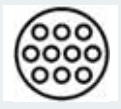
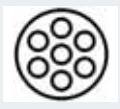
- This high / super speed rotor can be used in a standard floor model centrifuge
- Most popular large volume, high g-force, lightweight rotor
- General-purpose pelleting of lysates and homogenates

	For Sorvall Ultra Centrifuge	For Beckman Ultra Centrifuge
FIBER*Lite* Rotor Model	F16LHS-6x250 mL	F16LHS-6x250 mL
FIBER*Lite* Part No.	096-062079	096-062079
Will Spin In	OTD/Discovery/Ultra Pro 80	L Series
Will Replace	No Equivalent	No Equivalent
Rotor Accessories and Replacement Parts		
Lid Assembly	099-062079	099-062079
O-Ring Refresher Kit	021-062079	021-062079
Extraction Tool	017-062079	017-062079

Recommended Bottles with Cap Assemblies

Tube Style Material	Part No.	Volume (Nominal)	Tube Manufacturer Recommended g-Force
Polypropylene (Set of 6)	010-0510	250 mL	36,413 x g includes Sealing Cap
Polycarbonate (Set of 6)	010-0363	250 mL	36,413 x g includes Sealing Cap

Recommended Adapters

010-1138 250 mL to 10x3.0 mL		010-1071 250 mL to 9x5.0 mL		010-1117 250 mL to 7x10/8.0 mL		010-1074 250 mL to 5x15 mL	
010-1073 250 mL to 5x15 mL Conical		010-1072 250 mL to 2x30 mL		010-0138 250 mL to 50 mL		010-0136 250 mL to 50 mL Conical	
010-1119 250 mL to 100 mL		010-1121 250 mL to 250 mL Conical					

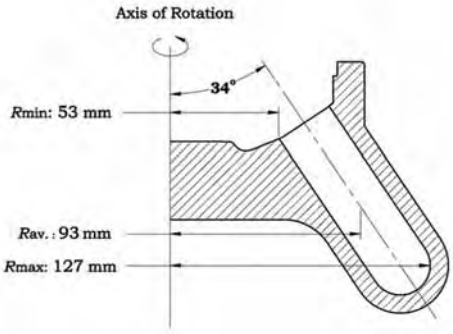
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F18-12x50

FIxed Angle Carbon Fiber Rotor

12x50 mL





for
Sorvall and Beckman
Ultra Centrifuges

Features

- Lifetime warranty
- Safer than metallic rotors
- Unlimited lifetime
- Corrosion free
- Competitively priced
- Cold room compatible
- Easy to handle
- Fully autoclavable
- Reduced wear on centrifuge drive
- Rapid acceleration and deceleration
- Highly resistant to radiolabel contamination

Specifications

- Max. Speed: 18,000 rpm
- Max. g-force: 46,086 x g
- Weight: 13.2 lb
- Max. radius (r_{max}): 127 mm
- Min. radius (r_{min}): 53 mm
- Tube Angle: 34°
- k factor: 682
- Rotor Capacity: 12 x 50 mL (600 mL)
- Max Tube Size: ϕ29 x 105mm (1.12 x 4 in.)
- Rotor Mass: 6.87 kg (15.16 lbs.)
- Liquid Containment: No

Applications

- Subcellular fractions harvesting of bacteria, lysate clarifications, and cell membranes processing
- Sucrose gradient isolation of mitochondria
- Endoplasmic reticulum
- Gradient separation of cells with Percoll, Ficoll or Optiprep

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Unique Features:

- This high / super speed rotor can be used in a standard floor model centrifuge
- Multipurpose high speed rotor for some density gradients
- Pelleting and clarifying cell lysates

	For Sorvall Ultra Centrifuge	For Beckman Ultra Centrifuge
FIBER*Lite* Rotor Model	F18LHS-12x50 mL	F18LHS-12x50 mL
FIBER*Lite* Part No.	096-124041	096-124041
Will Spin In	OTD/Discovery/Ultra Pro 80	L Series
Will Replace	No Equivalent	No Equivalent

Rotor Accessories and Replacement Parts

Lid Assembly	099-124041	099-124041
O-Ring Refresher Kit	021-124041	021-124041
Extraction Tool	017-124041	017-124041

Recommended Bottles with Cap Assemblies

Tube Style Material	Part No.	Volume (Nominal)	Tube Manufacturer Recommended g-Force
Polypropylene (Set of 2)	010-0332	50 mL	69,549 x g
Polycarbonate (Set of 2)	010-0507	50 mL	69,549 x g
Polyallomer (Set of 2)	010-1160	50 mL	69,549 x g

Recommended Adapters

010-1127 50 mL to 4x1.0 mL		010-1128 50 mL to 3.0 mL		010-1068 50 mL to 8.0/10 mL		010-1144 50 mL to 12 mL	
010-0382 50 mL to 15 mL		010-1123 50 mL to 15 mL Conical		010-0167 50 mL to 30 mL			

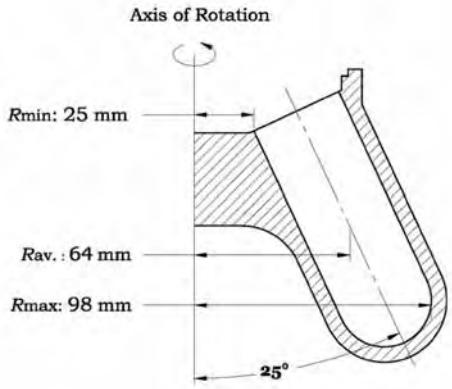
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F20-6x100

Fixed Angle Carbon Fiber Rotor

6x100 mL





for
Sorvall and Beckman
Ultra Centrifuges

Features

- Lifetime warranty
- Safer than metallic rotors
- Unlimited lifetime
- Corrosion free
- Competitively priced
- Cold room compatible
- Easy to handle
- Fully autoclavable
- Reduced wear on centrifuge drive
- Rapid acceleration and deceleration
- Highly resistant to radiolabel contamination

Specifications

- Max. Speed: 20,000 rpm
- Max. g-force: 43,904 x g
- Max. radius (r_{max}): 98 mm
- Min. radius (r_{min}): 25 mm
- Tube Angle: 25°
- k factor: 864
- Rotor Capacity: 6 x 100 mL (600 mL)
- Max Tube Size: ϕ40 x 115mm (1.12 x 4 in.)
- Rotor Mass: 3.42 kg (7.5 lbs.)
- Liquid Containment: No

Applications

- General-purpose rotor for extra large volume
- Processing of particulate materials and debris in solution and bacteria from cell cultures
- Also subcellular organelles from tissue homogenates

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Unique Features:

- This high / super speed rotor can be used in a standard floor model centrifuge
- Large capacity multi purpose high speed rotor for density gradients
- Pelleting and clarifying cell lysates

	For Sorvall Ultra Centrifuge	For Beckman Ultra Centrifuge
FIBER*Lite* Rotor Model	F20LHS-6x100 mL	F20LHS-6x100 mL
FIBER*Lite* Part No.	096-064167	096-064167
Will Spin In	OTD/Discovery/Ultra Pro 80	L Series
Will Replace	No Equivalent	No Equivalent
Rotor Accessories and Replacement Parts		
Lid Assembly	099-064167	099-064167
O-Ring Refresher Kit	021-064167	021-064167

Recommended Bottles with Cap Assemblies

Tube Style Material	Part No.	Volume (Nominal)	Tube Manufacturer Recommended g-Force
Polycarbonate (Set of 2)	010-1066	100 mL	43,456 x g

Recommended Adapters

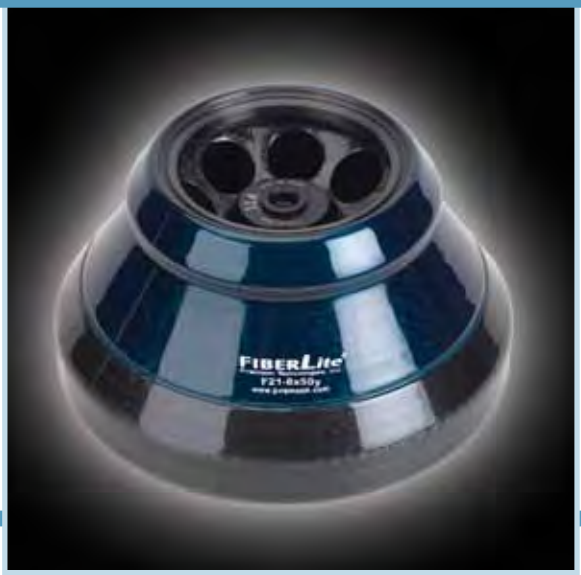
010-1125 100 mL to 6x1.0 mL		010-1126 100 mL to 3x3.0 mL		010-0191 100 mL to 13.5 mL		010-0189 100 mL to 38.5 mL	

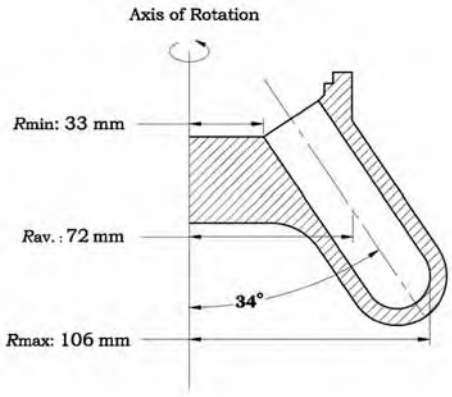
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8x50y mL

F21-8x50y

Fixed Angle Carbon Fiber Rotor





for
Sorvall and Beckman
Ultra Centrifuges

Features

- y = (ELC) Enhanced Liquid Containment
- Lifetime warranty
- Safer than metallic rotors
- Unlimited lifetime
- Corrosion free
- Competitively priced
- Cold room compatible
- Easy to handle
- Fully autoclavable
- Reduced wear on centrifuge drive
- Rapid acceleration and deceleration
- Highly resistant to radiolabel contamination

Specifications

- Max. Speed: 21,000 rpm
- Max. g-force: 52,356 x g
- Max. radius (r_{max}): 106 mm
- Min. radius (r_{min}): 33 mm
- Tube Angle: 34°
- k factor: 669
- Rotor Capacity: 8 x 50 mL (400 mL)
- Max Tube Size: ϕ29 x 105mm (1.13 x 4.0 in.)
- Rotor Mass: 4.23 kg (9.34 lbs.)

Applications

- Will replace JA-14 6x250 mL rotor with 500 mL to 250 mL adapters
- Clarifying lysates and pelleting particles from other types of homogenates
- Pelleting bacterial cells from tissue culture
- Pelleting debris and plant life from water pollution studies

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Unique Features:

- This high / super speed rotor can be used in a standard floor model centrifuge
- Multipurpose high speed rotor for some density gradients
- Pelleting and clarifying cell lysates
- ELC protection to contain sample leakage

	For Sorvall Ultra Centrifuge	For Beckman Ultra Centrifuge
FIBER*Lite* Rotor Model	F21LHS-8x50y mL	F21LHS-8x50y mL
FIBER*Lite* Part No.	096-084069	096-084069
Will Spin In	OTD/Discovery/Ultra Pro 80	L Series
Will Replace	No Equivalent	No Equivalent

Rotor Accessories and Replacement Parts

Lid Assembly	099-084069	099-084069
O-Ring Refresher Kit	021-084069	021-084069

Recommended Bottles with Cap Assemblies

Tube Style Material	Part No.	Volume (Nominal)	Tube Manufacturer Recommended g-Force
Polypropylene (Set of 2)	010-0332	50 mL	69,549 x g
Polycarbonate (Set of 2)	010-0507	50 mL	69,549 x g
Polyallomer (Set of 2)	010-1160	50 mL	69,549 x g

Recommended Adapters

010-1127 50 mL to 4x1.0 mL		010-1128 50 mL to 3.0 mL		010-1068 50 mL to 8.0/10 mL		010-1144 50 mL to 12 mL	
010-0382 50 mL to 15 mL		010-1123 50 mL to 15 mL Conical		010-0167 50 mL to 30 mL			

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Section 7

Micro Volume Ultra Speed Rotors for

. Beckman: **L Series**

. Sorvall: **OTD/Discovery/Ultra Pro 80**

List of Rotors	Page Number
F30-48x1.5/2.0 mL	108
F55-30x1.5/2.0 mL	110
F55-30x3.0 mL	112
F55-30x5.0 mL	114
F55-48x1.0 mL	116
F55-48x1.5/2.0 mL	118



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Applications for Micro Volume Ultra Speed Rotors:

		Suggested Rotors	Page Number
Proteins	1. Ammonium sulfate precipitation	N/A	N/A
	2. Centrifugal filtration	N/A	N/A
Lipoprotein	1. Density gradient fractionation	F55-48x1.0 mL	116
	2. Fractionation by flotation	F55-48x1.0 mL	116
Subcellular Fractions	1. Chromatin/Nucleosomes - Sucrose gradient isolation	F55-30x1.5/2.0 mL	110
	2. Mitochondria - Pelleting - Sucrose gradient isolation	F30-48x1.5/2.0 mL F55-30x1.5/2.0 mL F55-30x3.0 mL	108 110 112
	3. Nuclei - Pelleting	F55-30x5.0 mL	114
	4. Membranes - Pelleting - Sucrose/Percoll gradient fractionation	F55-30x5.0 mL	114
	5. Cytosol - Clarification	F55-30x5.0 mL	114
	6. Microsome - Pelleting - Sucrose gradient isolation - Microsomal membrane fractionation	F55-30x3.0 mL	112
	7. Ribosomes/Polysomes - Pelleting - Size fractionation in sucrose gradients	F55-30x3.0 mL	112
Lysate/ Homogenate	1. Clearing debris and large particles	F55-30x5.0 mL	114
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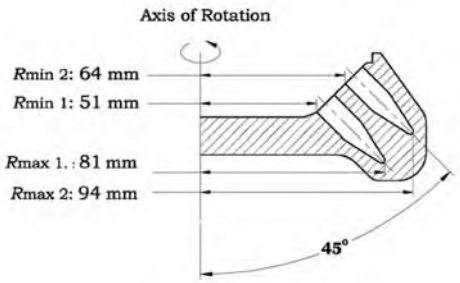
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F30-48x1.5/2.0 mL

Fixed Angle Carbon Fiber Rotor

48x1.5/2.0 mL





for
Sorvall and Beckman Ultra Centrifuges

Features

- Lifetime warranty
- Safer than metallic rotors
- Corrosion free
- Cold room compatible
- Easy to handle
- Fully autoclavable
- Reduced wear on centrifuge drive
- Rapid acceleration and deceleration
- Highly resistant to radiolabel contamination

Specifications

- Max. Speed: 30,000 rpm
- Max. g-force: 94,752 x g
- Max. radius (r_{max}): 94 mm
- Min. radius (r_{min}): 64 mm
- Tube Angle: 45°
- k factor: 108
- Rotor Capacity: 48x1.5 mL (72 mL)
- Max Tube Size: ϕ11x38 mm
- Rotor Mass:

Applications

- Replaces the need for TL100 applications
- Purifying viruses
- Pelleting mammalian cells
- Subcellular organelles
- Fractionation of lipoproteins
- Clarifying cell lysates
- Pelleting nucleic acids

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Unique Features:

- Largest number of microcentrifuge tubes in micro volume rotor
- Pelleting mini preparations of nucleic acid samples
- Can be used in high / super speed centrifuges at maximum speeds

	For Sorvall Ultra Centrifuge	For Beckman Ultra Centrifuge
FIBER*Lite* Rotor Model	F30L-48x1.5/2.0 mL	F30L-48x1.5/2.0 mL
FIBER*Lite* Part No.	096-487017	096-487017
Will Spin In	OTD/Discovery/Ultra Pro 80	L Series
Will Replace	RP 45A	TLA 45

Rotor Accessories and Replacement Parts

Lid Assembly	099-487017	099-487017
O-Ring Refresher Kit	021-487017	021-487017

Recommended Bottles with Cap Assemblies

Tube Style Material	Part No.	Volume (Nominal)	Tube Manufacturer Recommended g-Force
Polycarbonate (Set of 2)	010-1081	1.5 mL	42,500 x g
Polyallomer Flip Cap (Set of 2)	010-1157	1.5 mL	250,000 x g
Polypropylene Screw Cap (Set of 2)	010-1158	1.5 mL	250,000 x g

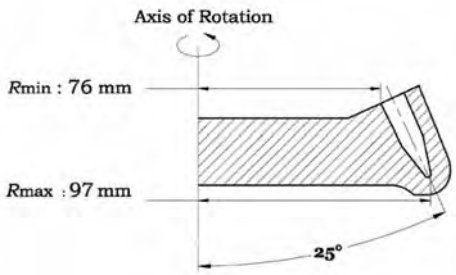
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F55-30x1.5/2.0 mL

Fixed Angle Carbon Fiber Rotor

30x1.5/2.0 mL





for
Sorvall and Beckman
Ultra Centrifuges

Features

- Lifetime warranty
- Safer than metallic rotors
- Corrosion free
- Cold room compatible
- Easy to handle
- Fully autoclavable
- Reduced wear on centrifuge drive
- Rapid acceleration and deceleration
- Highly resistant to radiolabel contamination

Specifications

- Max. Speed: 55,000 rpm
- Max. g-force: 328,636 x g
- Max. radius (r_{max}): 97 mm
- Min. radius (r_{min}): 76 mm
- Tube Angle: 25°
- k factor: 20
- Rotor Capacity: 30x1.5 mL (45 mL)
- Max Tube Size: 11x38 mm
- Rotor Mass: 1.75 kg (3.85 lbs.)

Applications

- Replaces the need for Sorvall and Beckman micro ultracentrifuges
- Purifying viruses
- Pelleting mammalian cells
- Subcellular organelles
- Fractionation of lipoproteins
- Clarifying cell lysates
- Pelleting nucleic acids

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Unique Features:

- Micro volume multiple microcentrifuge tube rotor for pelleting small samples
- Pelleting small samples
- Can be used in high / super speed centrifuges at maximum speeds

	For Sorvall Ultra Centrifuge	For Beckman Ultra Centrifuge
FIBER*Lite* Rotor Model	F55L-30x1.5/2.0 mL	F55L-30x1.5/2.0 mL
FIBER*Lite* Part No.	096-307128	096-307128
Will Spin In	OTD/Discovery/Ultra Pro 80	L Series
Will Replace	RP 45A	TLA 45
Rotor Accessories and Replacement Parts		
Lid Assembly	099-307128	099-307128
O-Ring Refresher Kit	021-307128	021-307128

Recommended Bottles with Cap Assemblies

Tube Style Material	Part No.	Volume (Nominal)	Tube Manufacturer Recommended g-Force
Polycarbonate (Set of 2)	010-1081	1.5 mL	42,500 x g
Polyallomer Flip Cap (Set of 2)	010-1157	1.5 mL	250,000 x g
Polypropylene Screw Cap (Set of 2)	010-1158	1.5 mL	250,000 x g

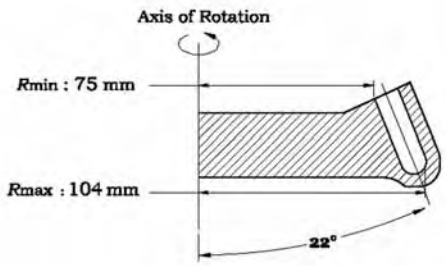
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F55-30x3.0 mL

Fixed Angle Carbon Fiber Rotor

30x3.0 mL





for
Sorvall and Beckman
Ultra Centrifuges

Features

- Lifetime warranty
- Safer than metallic rotors
- Corrosion free
- Cold room compatible
- Easy to handle
- Fully autoclavable
- Reduced wear on centrifuge drive
- Rapid acceleration and deceleration
- Highly resistant to radiolabel contamination

Specifications

- Max. Speed: 55,000 rpm
- Max. g-force: 352,352 x g
- Max. radius (r_{max}): 104 mm
- Min. radius (r_{min}): 75 mm
- Tube Angle: 22°
- k factor: 27
- Rotor Capacity: 30x3 mL (90 mL)
- Max Tube Size: 11x38 mm
- Rotor Mass: 1.75 kg (3.85 lbs.)

Applications

- Replaces the need for Sorvall and Beckman micro ultracentrifuges
- Purifying viruses
- Pelleting mammalian cells
- Subcellular organelles
- Fractionation of lipoproteins
- Clarifying cell lysates
- Pelleting nucleic acids

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Unique Features:

- Micro volume multiple microcentrifuge tube rotor for pelleting small samples
- Pelleting small samples
- Can be used in high / super speed centrifuges at maximum speeds

	For Sorvall Ultra Centrifuge	For Beckman Ultra Centrifuge
FIBER*Lite* Rotor Model	F55L-30x3.0 mL	F55L-30x3.0 mL
FIBER*Lite* Part No.	096-307129	096-307129
Will Spin In	OTD/Discovery/Ultra Pro 80	L Series
Will Replace	Stepsaver 70V6	VTi 65/TLV-100
Rotor Accessories and Replacement Parts		
Lid Assembly	099-307129	099-307129
O-Ring Refresher Kit	021-307129	021-307129

Recommended Bottles with Cap Assemblies

Tube Style Material	Part No.	Volume (Nominal)	Tube Manufacturer Recommended g-Force
Polycarbonate (Set of 2)	010-1081	1.5 mL	42,500 x g
Polyallomer Flip Cap (Set of 2)	010-1157	1.5 mL	250,000 x g
Polypropylene Screw Cap (Set of 2)	010-1158	1.5 mL	250,000 x g

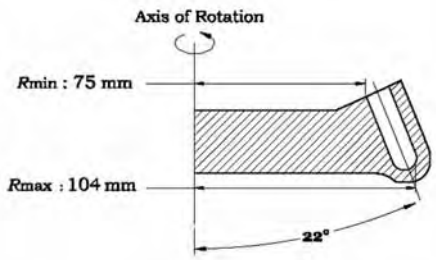
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F55-30x5.0 mL

Fixed Angle Carbon Fiber Rotor

30x5.0 mL





for
Sorvall and Beckman Ultra Centrifuges

Features

- Lifetime warranty
- Safer than metallic rotors
- Corrosion free
- Cold room compatible
- Easy to handle
- Fully autoclavable
- Reduced wear on centrifuge drive
- Rapid acceleration and deceleration
- Highly resistant to radiolabel contamination

Specifications

- Max. Speed: 55,000 rpm
- Max. g-force: 352,352 x g
- Max. radius (r_{max}): 104 mm
- Min. radius (r_{min}): 75 mm
- Tube Angle: 22°
- k factor: 27
- Rotor Capacity: 30x5 mL (150 mL)
- Max Tube Size: 11x38 mm
- Rotor Mass: 1.75 kg (3.85 lbs.)

Applications

- Replaces the need for Sorvall and Beckman micro ultracentrifuges
- Purifying viruses
- Pelleting mammalian cells
- Subcellular organelles
- Fractionation of lipoproteins
- Clarifying cell lysates
- Pelleting nucleic acids

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Unique Features:

- Micro volume multiple microcentrifuge tube rotor for pelleting small samples
- Pelleting small samples
- Can be used in high / super speed centrifuges at maximum speeds

	For Sorvall Ultra Centrifuge	For Beckman Ultra Centrifuge
FIBER*Lite* Rotor Model	F55L-30x5.0 mL	F55L-30x5.0 mL
FIBER*Lite* Part No.	096-307131	096-307131
Will Spin In	OTD/Discovery/Ultra Pro 80	L Series
Will Replace	Stepsaver 70V6/AH-650/TH-660	VTi 65/SW 50.1/SW 55/TLS 55
Rotor Accessories and Replacement Parts		
Lid Assembly	099-307131	099-307131
O-Ring Refresher Kit	021-307131	021-307131

Recommended Bottles with Cap Assemblies

Tube Style Material	Part No.	Volume (Nominal)	Tube Manufacturer Recommended g-Force
Polycarbonate (Set of 2)	010-1081	1.5 mL	42,500 x g
Polyallomer Flip Cap (Set of 2)	010-1157	1.5 mL	250,000 x g
Polypropylene Screw Cap (Set of 2)	010-1158	1.5 mL	250,000 x g

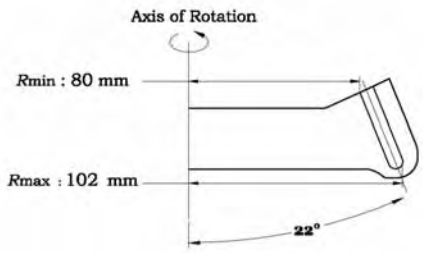
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F55-48x1.0 mL

Fixed Angle Carbon Fiber Rotor

48x1.0 mL





for
Sorvall and Beckman
Ultra Centrifuges

Features

- Lifetime warranty
- Safer than metallic rotors
- Corrosion free
- Cold room compatible
- Easy to handle
- Fully autoclavable
- Reduced wear on centrifuge drive
- Rapid acceleration and deceleration
- Highly resistant to radiolabel contamination

Specifications

- Max. Speed: 55,000 rpm
- Max. g-force: 345,576 x g
- Max. radius (r_{max}): 102 mm
- Min. radius (r_{min}): 80 mm
- Tube Angle: 22°
- k factor: 20
- Rotor Capacity: 48x1 mL (48 mL)
- Max Tube Size: 8x51 mm
- Rotor Mass: 1.75 kg (3.85 lbs.)

Applications

- Purifying viruses
- Pelleting mammalian cells
- Subcellular organelles
- Fractionation of lipoproteins
- Clarifying cell lysates
- Pelleting nucleic acids

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Unique Features:

- Largest number of microcentrifuge tubes in micro volume rotor
- Pelleting mini preparations of nucleic acid samples
- Can be used in high / super speed centrifuges at maximum speeds

	For Sorvall Ultra Centrifuge	For Beckman Ultra Centrifuge
FIBER*Lite* Rotor Model	F55L-48x1.0 mL	F55L-48x1.0 mL
FIBER*Lite* Part No.	096-487030	096-487030
Will Spin In	OTD/Discovery/Ultra Pro 80	L Series
Will Replace	TFT 45.6	Type 25/Type Ti 50.4/Type 42.2/Type 50.3 Ti
Rotor Accessories and Replacement Parts		
Lid Assembly	099-487030	099-487030
O-Ring Refresher Kit	021-487030	021-487030

Recommended Bottles with Cap Assemblies

Tube Style Material	Part No.	Volume (Nominal)	Tube Manufacturer Recommended g-Force
Polycarbonate (Set of 2)	010-1081	1.5 mL	42,500 x g
Polyallomer Flip Cap (Set of 2)	010-1157	1.5 mL	250,000 x g
Polypropylene Screw Cap (Set of 2)	010-1158	1.5 mL	250,000 x g

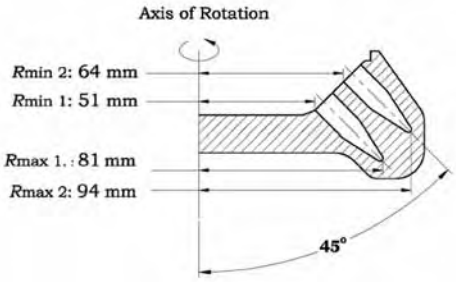
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F55-48x1.5/2.0 mL

Fixed Angle Carbon Fiber Rotor

48x1.5/2.0 mL





for
Sorvall and Beckman Ultra Centrifuges

Features

- Lifetime warranty
- Safer than metallic rotors
- Corrosion free
- Cold room compatible
- Easy to handle
- Fully autoclavable
- Reduced wear on centrifuge drive
- Rapid acceleration and deceleration
- Highly resistant to radiolabel contamination

Specifications

- Max. Speed: 55,000 rpm
- Max. g-force: 345,576 x g
- Max. radius (r_{max}): 94 mm
- Min. radius (r_{min}): 64 mm
- Tube Angle: 45°
- k factor: 20
- Rotor Capacity: 48x1.5/2.0 mL (72 mL)
- Max Tube Size: 11x38 mm
- Rotor Mass: 1.75 kg (3.85 lbs.)

Applications

- Purifying viruses
- Pelleting mammalian cells
- Subcellular organelles
- Fractionation of lipoproteins
- Clarifying cell lysates
- Pelleting nucleic acids

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Unique Features:

- Largest number of microcentrifuge tubes in micro volume rotor
- Pelleting mini preparations of nucleic acid samples
- Can be used in high / super speed centrifuges at maximum speeds

	For Sorvall Ultra Centrifuge	For Beckman Ultra Centrifuge
FIBER*Lite* Rotor Model	F55L-48x1.5/2.0 mL	F55L-48x1.5/2.0 mL
FIBER*Lite* Part No.	096-487031	096-487031
Will Spin In	OTD/Discovery/Ultra Pro 80	L Series
Will Replace	No Equivalent	TLA 45

Rotor Accessories and Replacement Parts		
Lid Assembly	099-487031	099-487031
O-Ring Refresher Kit	021-487031	021-487031

Recommended Bottles with Cap Assemblies

Tube Style Material	Part No.	Volume (Nominal)	Tube Manufacturer Recommended g-Force
Polycarbonate (Set of 2)	010-1081	1.5 mL	250,000 x g
Polyallomer Flip Cap (Set of 2)	010-1157	1.5 mL	250,000 x g
Polypropylene Screw Cap (Set of 2)	010-1158	1.5 mL	250,000 x g

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Section 8

FIBER*Lite* Centrifuge Inc.
General Information & Appendices

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Appendix 1: Chemical Resistance	129
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Q.1 Who is FIBER*Lite*® Centrifuge, Inc. (PTI)?

FIBER*Lite* Centrifuge was founded in 1993 and is the leading manufacturer of high quality carbon fiber centrifuge rotors. FIBER*Lite* Centrifuge manufactures rotors for most models of high speed, ultra speed, low speed/high volume and table top centrifuges. We also make rotors for specific scientific applications, using carbon fiber technology.

Q.2 In which centrifuges will FIBER*Lite* Centrifuge carbon fiber rotors operate?

FIBER*Lite* Centrifuge, Inc. carbon fiber rotors are designed for use in specific centrifuges from various manufacturers, including Beckman, Sorvall, Jouan, and other popular brands. Each rotor is tested 100% confidence level before it is shipped.

Q.3 What is unique about this product line?

FIBER*Lite* Centrifuge rotors are made of carbon fiber, resulting in rotors that are up to half the weight of equivalent metallic rotors. The reduced weight makes them much easier to handle and significantly reduces the risk of lower back injury, which could result from lifting heavy metallic rotors in and out of centrifuges. FIBER*Lite* Centrifuge rotors also help centrifuge efficiency by reducing wear and tear on the centrifuge drive system, and in turn decreasing maintenance costs. Total run times for larger rotors will be much shorter due to rapid acceleration and deceleration.

The inherent properties of carbon fiber give the rotors unprecedented strength, low weight, high resistance to corrosion, chemicals, heat, fatigue, and environmental influences as well as exposure to radioactive labels.

A selection of Super Speed and general purpose rotors are available in two forms: standard and Enhanced Liquid Containment (ELC) versions. The standard version has a straight top and lid. The ELC version contains a special lid and curved annulus at the top of the rotor. ELC models are designed to contain any fluid leaks that may occur during centrifugation, eliminating the severe imbalance problems and spindle damage that may occur. The annulus also serves as a convenient handle to ease lifting and transporting the rotor. Each rotor comes with a factory-installed specific hub that makes it fully compatible with the intended centrifuge. This feature allows the rotors to work seamlessly in most popular centrifuges from major manufacturers. Rotors accept standard bottles and tubes used in equivalent metallic rotors. Rotors can be autoclaved or placed in a cold room and are backed by a limited lifetime warranty.

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Q.4 Are FIBER*Lite* Centrifuge carbon fiber rotors more expensive than the metallic rotors I'm using now?

A. No, in fact sometimes they are less expensive. Depending on which rotor you are currently using. FIBER*Lite* Centrifuge carbon fiber rotors are not only competitively priced, but they can be the best investment for your budget due to the unlimited life span.

Q.5 How long do FIBER*Lite* Centrifuge rotors last?

A. All FIBER*Lite* Centrifuge rotors have a limited lifetime warranty and so, provided that you follow the instructions for use and care of rotors, they should last indefinitely.

Q.6 Will FIBER*Lite* Centrifuge rotors work in my centrifuge?

A. FIBER*Lite* Centrifuge rotors are designed to be compatible with the centrifuges of most major manufacturers.

Q.7 Can I use standard tubes and bottles that I have used in metal rotors?

A. All FIBER*Lite* Centrifuge rotors are designed to use standard bottles and tubes similar to equivalent metallic rotors.

Q.8 Will my warranty or maintenance agreement become invalid if I use a FIBERLite Centrifuge carbon fiber rotor in my centrifuge?

A. No. FIBER*Lite* Centrifuge, Inc. will honor all aspects of your manufacturer's centrifuge warranty service agreement if any FIBER*Lite* Centrifuge rotor, when examined, caused any damage to your new centrifuge. See page 128 for the Guarantee Statement.

Q.9 How much lighter are FIBER*Lite* Centrifuge rotors compared with equivalent metal rotors?

A. FIBER*Lite* Centrifuge rotors are up to half the weight of equivalent metallic rotors.

Q.10 What are the major advantages of lightweight FIBER*Lite*® Centrifuge rotors?

A. Lightweight FIBER*Lite* Centrifuge rotors are easy to handle with less risk of personal injury and they reduce wear and tear on the centrifuge drive system.

Q.11 Do centrifuges still operate correctly with lightweight rotors?

A. The weight of FIBER*Lite* Centrifuge rotors is sufficient to ensure the proper and safe functioning of centrifuge.

Q.12 How do the prices of FIBER*Lite* Centrifuge rotors compare with those of metallic rotors?

A. The prices of FIBER*Lite* Centrifuge rotors are generally less than comparable metallic ones.

Q.13 Do the heat insulation properties of the carbon composite material used for FIBER*Lite* Centrifuge rotors cause any problems?

A. No, in fact the heat insulation properties of carbon fiber material are a positive advantage because cold samples can be run at a constant temperature much longer than they can be in a metallic rotor.

Q.14 Since carbon fiber material is so inert is there any need to clean rotors?

A. Yes, it is important to ensure that the rotor is kept clean. Otherwise, the accumulations of chemical substance in rotor pockets may create a hazard, for example, evaporation may significantly increase the concentration of these solutions. FIBER*Lite* Centrifuge recommends the use of a specially formulated detergent, FIBER*Clene*™, for cleaning all of its rotors.

Q.15 What types of chemicals might damage my FIBER*Lite* Centrifuge rotors?

A. While carbon fibers composites are inert, the resin may be attacked by prolonged exposure to some chemicals. A comprehensive list of chemical resistance is available in appendix 1 or on our web site (www.piramoon.com).

Q.16 Do I need to change my centrifugation conditions when I am using FIBER*Lite* Centrifuge rotors?

A. FIBER*Lite* Centrifuge rotors have very similar dimensions as the equivalent metallic rotors and so it is not necessary to change the centrifugation conditions. However, the run time will be shorter because of the faster acceleration and deceleration of the lighter weight FIBER*Lite* Centrifuge rotors.

Q.17 If my FIBER*Lite* Centrifuge rotor becomes contaminated how can I decontaminate it?

A. FIBER*Lite* Centrifuge rotors can be washed in a wide range of laboratory detergents in order to remove radioactive contamination. We recommend the use of FIBER*Clene*™ for removing all types of contamination. Unlike metallic rotors, most radioisotopes such as 32P-phosphate can be wiped off of any surface of FIBER*Lite* Centrifuge rotors.

Q.18 Can I sterilize my FIBER*Lite* Centrifuge rotors by autoclaving even though they contain metal and carbon fiber material?

A. Yes, compression molded rotors are thermo set as part of the manufacturing process and can be autoclaved to 121°C.

Q.19 In the unlikely event of rotor failure how much damage will be done to my centrifuge?

A. FIBER*Lite*® Centrifuge's rotors have 70% less kinetic energy upon failure and cannot cause a catastrophic incident like their metallic counterparts.

Q.20 What if my centrifuge is damaged while I am using a FIBER*Lite* Centrifuge rotor?

A. If the damage was caused by a manufacturing defect of the rotor, FIBER*Lite* Centrifuge will repair or replace the centrifuge damaged by our rotor.

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Q.21 How does one read a FIBER*Lite* Centrifuge rotor model number, such as F13B-14x50cy?

A. The rotor model naming convention indicates the speed, capacity, centrifuge type and special features of the rotor (see page 9).

Q.22 How can I order my FIBER*Lite* Centrifuge rotor?

A. FIBER*Lite* Centrifuge rotors can be purchased through any one of their distributors including VWR International®, Fisher Scientific®, and ISC BioExpress®. They can also be ordered by calling 800.784.3843 (US only).

Q.23 What is the K Factor for a rotor?

A. The K-Factor is a constant used to compare different rotors for their sedimenting efficiencies. This constant is based on the sedimentation coefficient (s) with respect to the time (t) for particles in solution concentrating at the bottom of a centrifuge tube during Centrifugation. (K = t / s)

Total Run times calculated from the above formula may be longer for most metallic rotors although their K-factor may appear to have better sedimenting efficiency than comparable carbon fiber rotors. Carbon Fiber rotors are lighter and accelerate and decelerate faster than metallic rotors, therefore, their total calculated run times are shorter.

Q.24 Is heat transfer to samples greater in carbon fiber rotors than metallic rotors at high g-forces?

A. No. Heat transfer to samples in carbon fiber rotors, due to air friction, is less in carbon fiber rotors than in metallic rotors. Carbon fiber materials are insulators of temperature while metallic materials are conductors of temperature. Additionally, the carbon fiber rotors will hold a constant temperature much longer than metallic rotors. The centrifuge refrigeration system will therefore, cycle less when carbon fiber rotors are used than when metallic rotors are used.

Q.25 What are the tolerances relating to imbalance when comparing carbon fiber rotors against metallic rotors?

A. Carbon fiber rotors are not susceptible to slight imbalances as do metallic rotors, because of their light weight. Carbon fiber rotors also do not elongate at high speeds as do metallic rotors, therefore imbalances of approximately 1% of sample volume per tube in small rotors, and 2.5% to 5% of sample volume per tube in large volume rotors can be tolerated in carbon fiber rotors. The metallic rotors are restricted to imbalance tolerance of 0.5% for small rotors and 2% for large volume rotors. In carbon fiber rotors tubes can be filled at equal levels "by eye" whereas with metallic rotors tubes must be filled and balanced within 0.1 to 2.0 grams per tube according to rotor volumes.

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Care of FIBERLite Centrifuge Carbon Fiber Rotors

Introduction

Carbon fiber rotors are extremely durable and designed to give many years of continuos service in all types of laboratories. This article describes the procedures that should be used to ensure the long life of your rotor which has a lifetime warranty.

Basic procedures

The most important procedure for all rotors is to ensure that the rotors are cleaned regularly after use. This is essential not only for safety purposes but also to maximize the life of the rotor. Particular care must be taken in cleaning and decontaminating rotors after they have been used with hazardous materials such as radioisotopes or infectious organisms and these aspects are dealt with in later sections of this article. While carbon fiber rotors are not affected by the corrosive actions of salts, all rotors contain some metal components and these can corrode depending on the exact alloy present. Hence, all rotors should be cleaned at least on a daily basis.

Routine washing of rotors

Unlike metal rotors, carbon fiber rotors can be washed with strong laboratory detergent solutions, even alkaline detergents. Rotors can be either washed in detergent solutions or, if necessary, the rotor pockets can be filled with detergent solution and left overnight to remove any residual deposits. We recommend the use of FIBER*Clene* cleaning agent since this has been specially formulated for cleaning carbon fiber material and is very safe environmentally. It is important to note that the metal parts of the rotor should not be exposed to detergent solution for any prolonged length of time as otherwise they may corrode. If deposits of the material have accumulated in the rotor, then it may be necessary to use a soft brush to dislodge them from the surface. Scratches will affect the cosmetic appearance of the rotor, but unlike metal rotors, scratches do not affect the chemical resistance of the rotor material in any way.

Removal of radioisotopes

Most radioisotopes can be readily removed from FIBER*Lite* Centrifuge rotors because they do not usually bind to the surfaces of composite rotors in the same tenacious way as they do to metallic rotors. Hence, carbon fiber rotors are much easier to decontaminate than metallic rotors. There are a number of commercially available detergents for removing radioisotopes from centrifuge rotors and these can be used for decontaminating FIBER*Lite* Centrifuge rotors. In addition, most general laboratory detergents can be used to remove radioisotopes from carbon fiber rotors without harming the carbon fiber material or the rotor finish. However we recommend FIBER*Clene* for cleaning FIBER*Lite* Centrifuge rotors. In most cases, radioisotopic contamination can be removed simply by wiping the affected part of the rotor with a tissue soaked in the cleaning agent or detergent. In the case of high levels of contamination, it may be necessary to soak the rotor overnight to achieve complete removal of the radioisotope.

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Disinfection procedures for removing infectious agents

Infectious agents can be broadly classified into fungi, bacteria, viruses, and prions. Centrifuge rotors may become contaminated with one or more of these infectious agents depending on the application that the rotor is being used for. It is essential that after any work with samples that may be associated with infectious agents, the rotor is immediately disinfected before further use.

When the rotor is regularly used with infectious agents, a clear schedule of decontamination should be instituted and the rotor should be clearly marked as being likely to be contaminated with biohazardous material.

Disinfection of rotors can be carried out in a number of different ways. However, some methods, for example UV light irradiation are not very practical for centrifuge rotors. In other cases, the chemical susceptibility of rotor material(s) restricts the type of disinfection process that can be used. For example, sterilization with ethylene oxide vapor or disinfection with 10% hydrogen peroxide are not recommended for FIBER*Lite* Centrifuge carbon fiber rotors. In contrast, the use of 0.1 M sodium hydroxide, recommended for inactivating prions, is compatible with carbon fiber rotors but not with aluminum rotors. The final choice of disinfection used for the rotor depends primarily on the nature of the infectious agent thought to be contaminating the rotor. For example, in terms of disinfection by heat treatment, relatively low temperatures of about 60° C while bacterial spores are very heat resistant and are only killed inactivate many viruses by autoclaving. In fact, autoclaving is the preferred method for disinfecting rotors because it does not involve any chemicals, some of which are harmful and even suspected carcinogens. When using chemical disinfection it is essential to ensure that all parts of the rotor are treated, preferably for at least 30 minutes, although some infectious agents may require treatment for up to 10-12 hours for complete sterilization. The table below summarizes the disinfection properties of various procedures.

The recommendations given here are only for guidelines. Before implementing any of these procedures, the user should verify that they are appropriate by consulting the appropriate reference sources.

Sterilization or disinfection agent	Fungi	Bacterial Cells	Bacterial Spores	Lipid Viruses	Non-Lipid Viruses	Prions
Autoclaving (1210 C)[1]	++++	++++	++++	++++	++++	++++
Formaldehyde (37%)	++++	++++	++++	++++	++++	+++
Glutaraldehyde (2%)[2]	++++	++++	++++	++++	++++	++++
70% ethanol	+	++++	-	++++	+	-
Phenolic solutions[3]	++++	++++	+	++++	++	-

[1] 15psi (1 bar) for 15 minutes	++++	Recommended
[2] Commercially available as Cidex®	+++	Probably effective in most cases
[3] Commercially available as Lysol®	++	Effective in most cases
	+	Limited Use

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Inspection of rotors

Each FIBER*Lite*® Centrifuge rotor has been designed to last a lifetime and, provided that the rotor has been used correctly, should not require maintenance other than routine cleaning. However, if it is possible that the rotor has been overstressed by, for example, centrifuging samples with a density greater than 1.2 g/ml without derating the maximum speed of the rotor or if the rotor has been dropped onto a solid surface (e.g. concrete) from a height of 1.0m (3ft) or more sufficient to mark the outside of the rotor, then it should be returned to the factory for inspection.

Keep Your Laboratory Safe

Inspecting metallic centrifuge rotors on a regular basis is critical to ensuring the safety of everyone involved with the laboratory. Metallic centrifuge rotors undergo a process called elongation during centrifugation, causing them to expand up to 14% of their original size. Due to the tremendous forces placed on the metallic rotors, they eventually fatigue and begin to corrode. Our goal at FIBER*Lite* is to identify these rotors and get them out of service.

We are proud to offer complimentary rotor inspections for each of your bench-top and floor model centrifuges. We can arrange, at your convenience, to have one of our factory certified technicians evaluate the safety of your existing metallic rotors. Once the unsafe rotors have been identified, the technician can offer replacement rotors that will permanently solve your corrosion and safety issues. Listed below are some of the amazing advantages to working with FIBER*Lite* Centrifuge products.

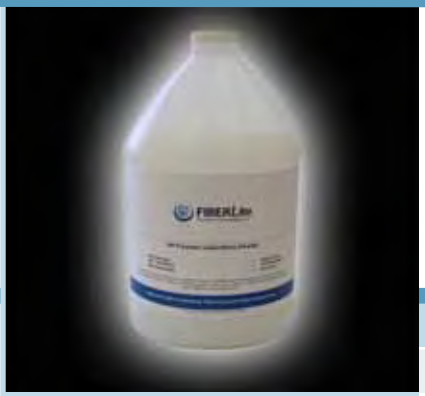
. These rotors do not fail catastrophically, greatly improving laboratory safety
. Up to 60% lighter than metallic rotors, reducing the danger of lower back injuries
. Ergonomic design allows for ease of placement and retrieval of rotor
. Inert, non-porous material cleans easily and resists radiolabel contamination
. Superior fluid containment properties available
. Carbon Fiber rotors are fully autoclavable
. Non-corroding Carbon Fiber rotors have a limited lifetime warranty
. Reduced weight supports for faster acceleration and deceleration
. Centrifuge drive systems are longer lasting and require minimal maintenance

With our evaluation of your metallic rotors we provide documentation for each rotor inspected as well as a general report on the work completed. Furthermore, we will provide the end user, if present, with information on how they can improve the safety and extend the life of their remaining metallic rotors. We at FIBER*Lite* Centrifuge are committed to improving laboratory safety and centrifuge reliability through the use of patented Carbon Fiber Technology.

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FIBERClene™

Carbon Fiber Centrifuge Rotor Cleaner



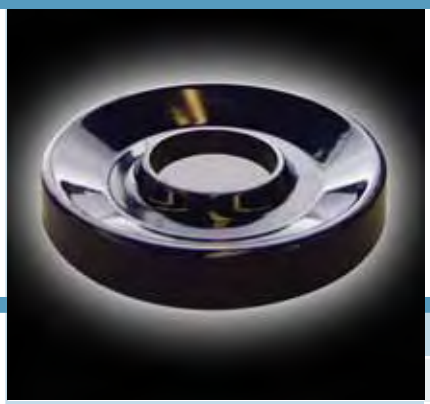
Suitable for all conventional and carbon fiber rotors. Reduces odors and bacterial growth by eliminating protein residues.
Will not oxidize or degrade metal, rubber, vinyl, plastic or glass. Helps extend the life of your FIBER*Lite* centrifuge rotors. Applies easily with cloth or soft brush-rinse with water and wipe to dry.

Model Name	Quantity	Catalog No.	Rotor Model
FIBERClene	1 gal.	013-0107	All carbon fiber rotors

- Easy to Use
- Biodegradable
- Non-toxic
- Non-abrasive
- Non-hazardous
- Non-flammable
- No mixing required

FIBERStand™

Centrifuge Rotor Stand



Suitable for supporting all metallic and carbon fiber rotors. Polyurethane base keeps rotor from slipping. Useful for rotor storage.

One size fits all: 11 inch diameter, 2lbs, Blue.

Model Name	Quantity	Catalog No.	Rotor Model
FIBERStand	1 each.	099-0107	All carbon fiber rotors

- Polyurethane
- Protects rotors
- Easy to clean

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Appendix 1
Chemical Resistance

Appendix 1 gives the Chemical Resistance Charts below to indicate the general chemical resistances of various materials to a number of chemicals. Both the materials and chemicals are commonly used in experiments involving centrifuges and ultracentrifuges. By reading down a particular column, the reader can determine the resistance of that material to each chemical - either satisfactory(S), marginally satisfactory (M), unsatisfactory (U) or unknown (blank). The chemicals are listed by their most common name within six categories (gradient forming media, acids, salts, solvents, bases, and other).

This chart has no guarantee for tubes or bottles. The user should test them under actual conditions of use because chemical resistance varies with speed, temperature, etc.

Based on FIBER*Lite testing, the following are recommendations for tube/chemical compatibility* FIBER*Lite does not guarantee the performance listed in this chart. You should test them under actual conditions of use, because chemical resistance varies with speed, temperature, etc.*

PA--(Polyallomer)	SS--(Stainless Steel)	TI--(Titanium Alloy)	NBR--(Nitrile-Butadione)
PC--(Polycarbonate)	PET--(Polyethylene Terephthalate)	PPO--(Polyphenylene Oxide)	NY--(Nylon)
PE--(Polyethylene)	AL--(Aluminum Alloy)	POM-(Polyacetal)	SI--(Silicon Rubber)
PP--(Polypropylene)	CF--(Carbon Fiber)	CR--(Neoprene Rubber)	VI--(Victon, Fluorine Rubber)

S Satisfactory	U Unsatisfactory
M Marginal	- No Test Made

CHEMICALS	PA	PC	PE	PP	SS	PET	AL	CF	TI	PPO	POM	CR	NBR	NY	SI	VI
GRADIENT MEDIUM																
Cesium Acetate	S	S	S	S	M	-	M	S	S	S	S	S	S	S	S	S
Cesium Bromide	S	S	S	S	M	S	M	S	S	S	S	S	S	S	S	S
Cesium Chloride	S	S	S	S	M	S	M	S	S	S	S	S	S	S	S	S
Cesium Formate	S	S	S	S	M	S	M	S	S	S	S	S	S	S	S	S
Cesium Iodide	S	S	S	S	M	S	M	S	S	S	S	S	S	S	S	S
Cesium Sulfate	S	S	S	S	M	S	M	S	S	S	S	S	S	S	S	S
Dextran (Sulfate)	S	S	S	S	M	S	M	S	S	S	S	S	S	S	S	S
Ficoll-Paque	S	S	S	S	M	-	M	S	S	S	S	S	S	S	S	S
Glycerol	S	S	S	S	S	S	M	S	S	S	S	S	S	S	S	S
Metrizamide	S	S	S	S	M	-	M	S	S	S	S	S	S	S	S	S
Potassium Bromide	S	S	S	S	M	S	U	S	S	S	S	S	S	S	S	S
Rubidium Bromide	S	S	S	S	M	S	M	S	S	S	S	S	S	S	S	S
Rubidium Chloride	S	S	S	S	M	S	M	S	S	S	S	S	S	S	S	S
Sodium Bromide	S	S	S	S	M	S	U	S	S	S	S	S	S	S	S	S
Sodium Iodide	S	S	S	S	M	S	M	S	S	S	S	S	S	S	S	S
Sucrose	S	S	S	S	S	S	M	S	S	S	S	S	S	S	S	S
Sucrose, alkaline	S	U	S	S	M	U	M	S	S	S	S	S	S	S	S	S

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PP--(Polypropylene)	CF--(Carbon Fiber)	CR--(Neoprene Rubber)	VI--(Victon, Fluorine Rubber)

S Satisfactory	U Unsatisfactory
M Marginal	- No Test Made

CHEMICALS	PA	PC	PE	PP	SS	PET	AL	CF	TI	PPO	POM	CR	NBR	NY	SI	VI
ACIDS																
Acetic Acid (5%)	S	S	S	S	M	S	S	S	S	S	M	S	M	S	S	M
Acetic Acid (60%)	S	U	M	M	U	U	S	M	S	S	U	M	M	-	M	U
Acetic Acid (glacial)	S	U	M	M	U	U	S	U	S	S	U	U	U	U	U	U
Aqua Regia	U	U	U	U	U	-	U	U	S	U	U	U	U	-	M	M
Boric Acid	S	S	S	S	S	S	U	S	S	S	U	S	S	S	S	S
Chromic acid (10%)	S	M	S	S	U	S	U	S	S	S	U	U	U	U	M	S
Chromic acid (50%)	M	U	S	S	U	-	U	U	S	U	U	-	-	-	-	S
Citric Acid	S	S	S	S	S	S	S	S	S	M	U	S	S	M	S	S
Formic Acid (50%)	S	M	S	S	U	S	U	M	S	S	U	S	U	U	S	U
Hydrochloric Acid (10%)	S	M	S	S	U	S	U	S	S	S	U	S	S	-	S	S
Hydrochloric Acid (35%)	S	U	S	S	U	U	U	M	M	S	U	M	M	U	U	M
Hydrofluoric Acid (10%)	S	M	S	S	U	-	U	S	U	-	U	S	U	S	-	-
Hydrofluoric Acid (50%)	M	U	S	S	U	-	U	M	U	U	U	S	U	-	U	M
Lodoacetic Acid	S	M	S	S	S	M	S	S	S	S	S	M	-	M	M	M
Lactic Acid	S	S	M	S	S	-	-	-	S	S	-	-	-	-	-	S
Mercaptoacetic Acid	M	U	U	U	S	U	U	S	S	S	S	M	-	U	U	S
Nitric Acid (10%)	S	S	S	S	M	S	M	S	S	S	U	U	U	M	M	S
Nitric Acid (50%)	S	M	M	M	M	U	M	U	S	S	U	U	U	M	U	S
Oleic Acid	S	S	S	S	U	S	S	S	S	S	U	U	-	S	M	M
Oxalic Acid	S	S	S	S	U	-	M	S	M	S	U	S	M	S	U	S
Perchloric Acid	M	U	M	M	U	U	U	U	S	S	U	-	U	U	U	S
Phosphoric Acid (10%)	S	S	S	S	M	S	U	S	U	S	U	S	S	U	U	S
Phosphoric Acid (50-85%)	M	U	S	S	M	S	U	S	U	M	U	U	S	U	U	S
Piric Acid	M	U	S	S	U	-	U	M	U	S	U	U	S	U	U	S
Stearic Acid	S	S	S	S	S	S	S	S	S	S	S	S	S	S	M	S
Sulfuric Acid (10%)	S	S	S	S	U	S	U	M	U	M	U	S	S	S	U	S
Sulfuric Acid (50%)	S	U	S	S	U	S	U	U	U	U	U	S	-	M	U	S
Sulfuric Acid (98%)	S	U	M	S	M	U	U	U	U	M	U	U	U	U	U	S
Tartaric Acid	-	-	-	-	-	-	-	S	-	-	-	S	S	-	S	-
Trichloroacetic Acid	S	M	S	S	U	U	U	S	U	S	U	U	-	U	U	U

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PA--(Polyallomer)	SS--(Stainless Steel)	TI--(Titanium Alloy)	NBR--(Nitrile-Butadione)
PC--(Polycarbonate)	PET--(Polyethylene Terephthalate)	PPO--(Polyphenylene Oxide)	NY--(Nylon)
PE--(Polyethylene)	AL--(Aluminum Alloy)	POM-(Polyacetal)	SI--(Silicon Rubber)
PP--(Polypropylene)	CF--(Carbon Fiber)	CR--(Neoprene Rubber)	VI--(Victon, Fluorine Rubber)

S Satisfactory	**U Unsatisfactory**
M Marginal	**- No Test Made**

CHEMICALS	PA	PC	PE	PP	SS	PET	AL	CF	TI	PPO	POM	CR	NBR	NY	SI	VI
SALTS																
Aluminium Chloride	S	S	S	S	U	S	U	M	U	S	U	S	S	M	M	S
Ammonium Acetate	S	S	S	S	S	S	S	S	S	S	S	S	-	S	S	S
Ammonium Carbonate	S	U	S	S	S	S	S	S	S	S	S	S	U	S	S	S
Ammonium Chloride	S	-	-	-	-	-	-	S	-	-	S	S	S	-	S	-
Ammonium Phosphate	S	M	S	S	M	-	U	S	S	S	S	S	S	S	S	S
Ammonium Sulfate	S	S	S	S	M	S	S	S	S	S	S	S	S	S	S	U
Barium Salts	S	S	S	S	M	S	M	S	S	S	S	S	S	S	S	S
Calcium Chloride	S	M	S	S	M	S	M	S	S	S	S	S	S	S	S	S
Calcium Hypochlorite	S	M	S	S	U	-	U	M	S	S	M	M	M	S	S	S
Ferric Chloride	M	S	S	S	U	-	U	S	S	S	M	S	S	S	S	S
Guanidine Hydrochloride	S	S	S	S	U	S	U	S	S	S	S	S	-	S	S	S
Guanidine Thiocyanate	S	-	S	S	-	U	-	-	S	-	-	-	-	-	-	-
Magnesium Chloride	S	S	S	S	M	S	M	S	S	S	S	S	S	S	S	S
Nickel Salts	S	S	S	S	S	S	M	S	S	S	S	S	-	S	S	S
Potassium Acetate	S	M	S	S	S	-	M	-	S	-	-	-	-	-	-	-
Potassium Carbonate	S	S	S	S	S	S	M	S	S	S	S	S	-	S	S	S
Potassium Chloride	S	S	S	S	U	S	U	S	S	S	S	S	-	S	S	S
Potassium Iodide	S	S	S	S	S	S	M	S	S	S	S	S	-	S	S	S
Potassium Permanganate	S	S	S	S	M	S	S	S	S	S	S	M	-	U	M	S
Silver Nitrate	S	S	S	S	M	S	U	S	S	S	S	M	-	S	U	S
Sodium Bicarbonate	-	-	-	-	-	-	-	S	-	-	S	S	S	-	S	S
Sodium Carbonate	S	S	S	S	S	S	M	S	S	S	S	S	S	S	S	S
Sodium Chloride	S	S	S	S	M	S	U	S	S	S	S	S	S	S	S	S
Sodium Dichromate	S	S	S	S	-	-	M	-	S	-	-	-	-	S	-	-
Sodium Nitrate (10%)	S	S	S	S	S	S	S	S	S	S	S	S	S	S	U	S
Sodium Phosphate	-	-	-	-	-	-	-	S	-	-	S	S	S	-	U	S
Sodium Sulfate	S	S	S	S	M	S	U	S	S	S	S	S	-	S	S	S
Sodium Thiosulfate	-	-	-	-	-	-	-	S	-	-	S	S	S	-	S	S
Zinc Chloride	S	S	S	S	U	S	M	S	S	S	U	S	S	S	S	S
Zinc Sulfate	S	S	S	S	S	S	U	S	S	S	S	M	S	S	S	S

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S Satisfactory	**U Unsatisfactory**
M Marginal	**- No Test Made**

CHEMICALS	**PA**	**PC**	**PE**	**PP**	**SS**	**PET**	**AL**	**CF**	**TI**	**PPO**	**POM**	**CR**	**NBR**	**NY**	**SI**	**VI**
SOLVENTS																
Acetone (50%)	U	U	S	U	S	U	S	M	S	U	M	U	U	M	S	U
Amyl alcohol	S	M	U	U	-	-	S	M	S	M	S	S	S	S	S	M
Benzene	U	U	U	U	S	U	S	U	S	U	M	U	U	S	S	S
Carbon Tetrachloride	U	U	U	U	M	U	U	U	U	U	M	U	M	S	S	S
Chloroform	U	U	U	U	S	U	U	M	U	U	M	U	U	S	S	S
Cresol	-	U	U	U	S	U	S	M	S	U	S	U	U	U	U	U
Diethyl Ether	U	U	U	U	S	U	S	U	S	U	S	U	U	S	S	U
Diethyl Ketone	U	U	U	M	M	-	S	M	S	-	M	U	M	S	S	U
Dimethyl Sulfoxide	M	U	S	S	S	U	S	S	S	S	S	U	-	S	S	U
Dimethylformamide	M	U	S	S	S	U	S	M	S	U	S	S	-	S	S	U
Ethyl Acetate	U	U	M	U	M	U	M	M	S	U	M	M	U	S	S	U
Ethyl Alcohol (50%)	S	U	S	S	S	M	S	S	S	S	M	S	-	S	S	S
Ethyl Alcohol (95%)	S	U	S	S	S	U	S	M	S	S	M	S	S	S	S	S
Ethylene Glycol	S	U	S	S	M	-	S	S	S	S	S	S	S	S	S	S
Isopropyl Alcohol	S	U	S	S	S	-	S	S	U	S	S	M	-	S	S	S
Methyl Alcohol	S	U	S	S	S	M	S	M	S	S	M	S	S	S	S	U
Methyl Ethyl Ketone	U	U	U	U	S	U	S	U	S	U	M	U	U	S	S	U
Methylene Chloride	U	U	U	U	M	U	U	S	U	U	S	U	-	M	M	M
N-Butyl Alcohol	M	M	M	S	-	-	M	M	S	M	S	S	S	S	S	S
Phenol (1%)	S	U	S	S	S	U	U	M	S	M	S	U	U	U	U	S
Toluene	U	U	U	U	S	U	S	M	U	U	M	U	U	S	S	S
Xylene	U	U	U	U	S	U	S	M	S	U	M	U	U	U	U	S

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S Satisfactory	U Unsatisfactory
M Marginal	- No Test Made

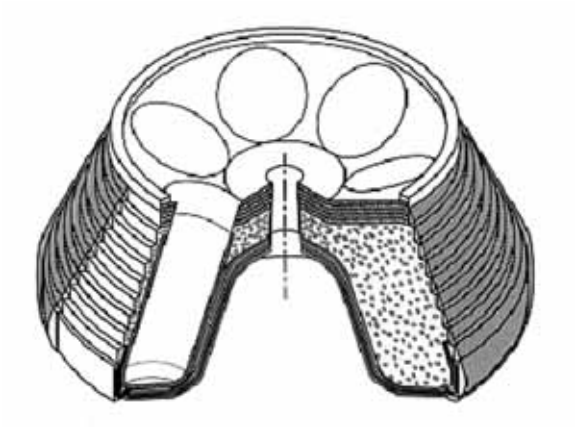
CHEMICALS	PA	PC	PE	PP	SS	PET	AL	CF	TI	PPO	POM	CR	NBR	NY	SI	VI
BASES																
Ammonium Hydroxide (10%)	S	U	S	S	S	-	U	S	S	S	U	S	U	S	S	S
Ammonium Hydroxide (28%)	S	U	S	S	S	U	U	M	S	S	U	S	-	S	S	U
Aniline (10%)	U	U	U	M	S	U	S	M	S	U	S	U	U	U	S	S
Potassium Hydroxide (5%)	S	U	S	S	M	M	U	S	M	S	U	S	-	S	M	S
Potassium Hydroxide (45%)	S	U	S	U	M	U	U	S	U	S	U	S	S	U	U	M
Pyridine (50%)	M	U	S	S	U	U	U	U	U	U	M	U	U	S	S	U
Sodium Hydroxide (1%)	S	U	S	S	S	M	U	S	S	S	U	S	-	S	M	S
Sodium Hydroxide (10%)	S	U	S	S	S	M	U	S	S	S	U	S	S	S	U	S
Sodium Hydroxide (50%)	M	U	S	M	S	U	U	S	M	M	U	-	-	S	U	U
OTHERS																
Culture Media	S	S	S	S	-	-	S	-	-	M	-	-	-	-	-	-
Diethylpyrocarbonate	S	U	S	S	S	U	S	S	S	U	S	S	-	S	S	S
Ethylene Oxide Vapor	S	M	S	S	S	-	S	U	S	-	-	U	U	S	S	U
Formaldehyde (40%)	S	S	S	S	M	S	M	S	S	S	S	S	S	S	S	U
Hydrogen Peroxide (3%)	S	S	S	S	S	S	S	M	S	S	M	S	U	S	U	S
Hydrogen Peroxide (5%)	S	S	S	S	S	S	S	M	U	U	U	M	U	U	U	M
Kerosene	U	U	U	U	S	U	S	S	S	U	S	U	S	S	S	S
Liquid Paraffin	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
2-Mercaptoethanol	S	M	S	S	S	U	S	M	S	S	S	U	-	S	S	S
Milk	S	S	-	-	-	-	S	-	-	M	-	-	-	-	-	-
Petroleum	M	M	U	U	U	S	-	S	S	S	S	S	S	S	S	S
Serum	S	S	-	-	-	-	S	-	-	M	-	-	-	-	-	-
Sodium Hypochlorite (5%)	S	U	M	M	S	S	M	U	S	S	U	U	M	S	S	S
Tris Buffer (neutral)	S	S	S	S	S	S	S	S	S	U	S	S	-	S	S	S
Triton X-100	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Vegetable Oils	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Urea	S	S	S	S	S	S	S	S	S	S	S	S	-	S	S	S

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Appendix 2
Currently Issued Patents

	PAT. NO.	Title
1	6,296,798	Process for compression molding a composite rotor with scalloped bottom
2	6,056,910	Process for making a net shaped composite material fixed angle centrifuge rotor
3	5,876,322	Helically woven composite rotor
4	5,833,908	Method for compression molding a fixed centrifuge rotor having sample tube aperture inserts
5	5,776,400	Method for compression molding a composite material fixed angle rotor
6	5,759,592	Compression mold for forming a composite material fixed angle rotor
7	5,643,168	Compression molded composite material fixed angle rotor
8	5,609,741	Method of manufacturing a composite material
9	5,601,522	Fixed angle composite centrifuge rotor fabrication with filament windings on angled surfaces
10	5,554,271	Method of manufacturing a composite material
11	5,540,126	Automatic lay-up machine for composite fiber tape
12	5,527,257	Rotor having endless straps for mounting swinging buckets
13	5,505,684	Centrifuge construction having central stator
14	5,683,341	Quill Shaft Suspension for centrifuge rotor having central stator

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United States Patent

5,643,168

(International Pub. No. WO 96/35156

COMPRESSION MOLDED COMPOSITE MATERIAL FIXED ANGLE ROTOR

Inventor: Piramoon, *et al*

Assignee: Piramoon Technologies, Inc.

Granted July 1, 1997, 7 Claims

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Appendix 3

Lifetime Limited Warranty Statement

FIBER*Lite* Centrifuge, Inc. / Piramoon Technologies, Inc. designs, manufactures and sells centrifugation products incorporating advanced composites technology. FIBER*Lite* Centrifuge is the exclusive and sole provider of this limited warranty (the "warranty") for its Products offered at the time of purchase.

FIBER*Lite* Centrifuge's composite rotors are manufactured to be direct replacements of conventional rotors and to run in certain existing models of centrifuges sold by other centrifuge manufacturers. Composite rotors are designed and tested to specifications exceeding those published by the manufacturers of these centrifuges. Rotors manufactured of advanced composite materials have performance characteristics and maintenance requirements that are different from rotors of metallic construction. The owners are strongly urged to read the instruction manual to familiarize themselves with these requirements. Failure to follow the instructions may void the limited warranty provided below.

Limited Warranty

Effective July 1, 1997, and subject to the conditions specified below, all FIBER*Lite* Centrifuge rotors are warranted against defects of material and workmanship which develop during their life-time after delivery by FIBER*Lite* Centrifuge or by an authorized FIBER*Lite* Centrifuge distributor, provided that investigation and factory inspection by FIBER*Lite* Centrifuge discloses that such defect developed under normal and proper use, such use including, but not limited to speeds not in excess of the maximum speed of the rotor (properly reduced for certain fluid densities, fluid gradients, tube assemblies, and adapters) as specified in the instruction manual. FIBER*Lite* Centrifuge will correct either by repair or, at its discretion, by replacement any defects of material or workmanship, which develop within the warranty period. Furthermore, should a centrifuge be damaged due to the failure of a FIBER*Lite* Centrifuge rotor covered by this limited warranty, FIBER*Lite* Centrifuge will, at its discretion, repair or replace the rotor and will assume the cost of repairing the damaged centrifuge.

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Conditions

1. This warranty may not be assigned, extended or otherwise transferred to a third party without the prior written consent of FIBER*Lite* Centrifuge Inc.

2. This warranty covers rotors only and FIBER*Lite* Centrifuge shall not be liable for damage to accessories or ancillary supplies including but not limited to seals, o-rings, bottles and tubes, bottle and tube caps, bottle and tube adapters, or bottle and tube contents.

3. This warranty is void if the rotor is operated or maintained in a manner contrary to the instructions in the User's manual for either the rotor or the centrifuge, or if the rotor is modified without the written permission of FIBER*Lite* Centrifuge.

Rotor Replacement

Any rotor claimed to be defective should be returned to FIBER*Lite* Centrifuge, Piramoon Technologies, Inc. for a thorough analysis. To acquire a returns authorization number, please call customer service at (800)784-3843 / (408)988-1103 or visit our web page at www.piramoon.com.

DISCLAIMER

It is expressly agreed that the above limited warranty states FIBER*Lite*® Centrifuge's entire and exclusive liability and buyer's exclusive remedy for any claim or damages of goods or parts, their design, suitable for use, installation or operation. This limited warranty shall be in lieu of all other express or implied warranties, including but not limited to the warranty of fitness and the warranty of merchantability, which are herein expressly disclaimed. Furthermore, FIBER*Lite*® Centrifuge shall have no liability for special or consequential damages of any kind whatsoever, including but not limited to lost profits, arising out of the manufacture, use, sale, handling, repair, maintenance, or replacement of the product; and except as otherwise provided in this limited warranty, FIBER*Lite*® Centrifuge's liability shall not under any circumstances exceed the contract price for the products for which liability is claimed.



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