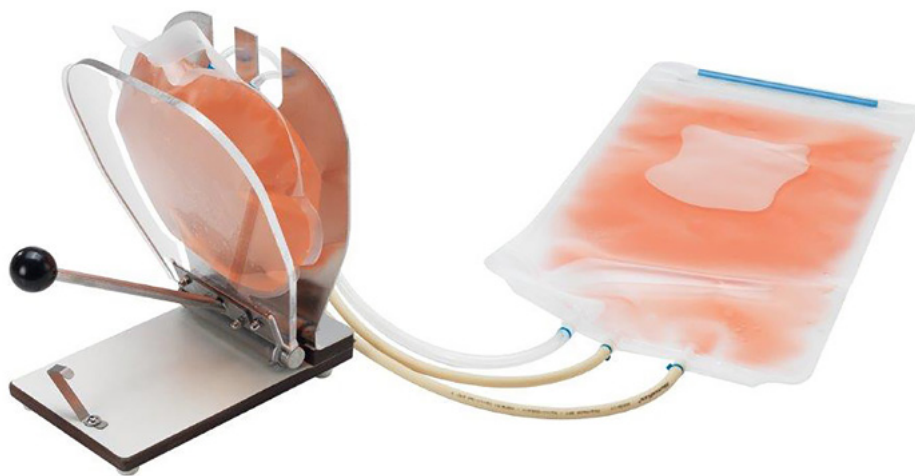




Bioprocessing

Centrifuge solutions for bioprocessing

Cell separation is a critical step in biological manufacturing processes and choosing the right method is key to a successful production. Centrifugation, in combination with other separation techniques such as filtration and chromatography, is the method of choice for the removal of materials from mammalian cell culture bioreactors and the bacterial fermentation process. Both batch and continuous-flow centrifuges can be used for the harvesting, clarification, purification and concentration steps. Centrifuges offer versatility, flexibility, low capital expense, ease of use, and low shear damage in an optimized footprint. A wide range of consumables, including tubes, bottles, and bioprocess containers support different centrifugation needs. Additionally, data collection software offers process tracking and compliance solutions.



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Overview

Centrifuge solutions for bioprocessing

Thermo Scientific™ Centrifuge Solutions provide the benefits of trusted biotechnology design, reduced-decontamination and cleanup protocols, and simplified current good manufacturing practice (cGMP) compliance. Our centrifuges have been designed by industry professionals who

understand the needs of a modern lab, with compact designs that require minimal space and integrated solutions that allow secure, continuous-flow production. Cleaner, faster, and higher-yield bioseparation is the goal, and our centrifuge solutions can help you achieve it.

Harvest



Thermo Scientific™ Sorvall™ BIOS 16
Bioprocessing Centrifuge



Thermo Scientific™
Swinging Bucket Rotors



Thermo Scientific™ 2,000 mL BIOS
and SteriBios™ Bottles



Thermo Scientific™ CentriPAK™
BioProcess Container (BPC)

Clarification



Thermo Scientific™ Sorvall™ BIOS A Centrifuge



Thermo Scientific™ Sorvall™ LYNX
6000 Superspeed Centrifuge



Thermo Scientific™
Fiberlite™ Rotors



Purification/ concentration



Thermo Scientific™ Sorvall™
WX+ Ultracentrifuge Series



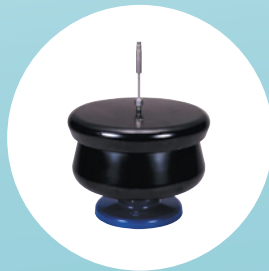
Thermo Scientific™ Sorvall™
CC40 Ultracentrifuges



Thermo Scientific™ Sorvall™ LYNX
4000 Superspeed Centrifuge



Thermo Scientific™ Fiberlite™
and SteriBios™ Bottles



Thermo Scientific™
TZ-32 Zonal Rotor

Harvest

Solutions for bioprocessing

Thermo Scientific™ centrifuges are designed for high-quality harvesting applications. Their enhanced capacity of up to 16 liters of sample volume, compact footprint, and innovative features help optimize operations, maximize productivity, and simplify efficiency.

Thermo Scientific™ Sorvall™ BIOS 16 Bioprocessing Centrifuge

These centrifuges are designed for high-quality harvesting and for separation and purification bioprocessing methods that require run-to-run reproducibility and traceability. The Sorvall BIOS 16 centrifuge provides outstanding capacity to maximize productivity.

- Thermo Scientific™ Auto-Door™ Technology (automatic centrifuge door opening and closing)
- Thermo Scientific™ Auto-Lid™ Function: rotor lid opening and closing with lid storage
- The large, bright, and interactive Thermo Scientific™ Centri-Touch™ Interface for all centrifuge functions offers:
 - Glove- and detergent-friendly
 - Simple and quick run setup
 - Convenient touchscreen keyboard for direct input of program parameters
 - Highly visible backlit display of set and actual run conditions
 - Real-time connection with the Thermo Scientific™ Centri-View™ App to monitor protocols on your smart device
- Certified by UL



Thermo Scientific™ Swinging Bucket Rotors for the Sorvall BIOS 16 centrifuge

High-throughput sample processing with the flexibility to select higher capacity rotors or match existing workflows.



Description	8 x 2,000 mL rotor	8 x 1,000 mL rotor	6 x 2,000 mL rotor	6 x 1,000 mL rotor
Maximum speed	3,900 rpm	4,600 rpm	4,700 rpm	5,400 rpm
Maximum RCF	5,374 x g	7,117 x g	7,187 x g	8,500 x g

Thermo Scientific™ 2,000 mL BIOS Bottle and SteriBIOS™ Bottle

BIOS and SteriBIOS Bottles are ideal to use with the Sorvall BIOS 16 centrifuge at operating temperatures from 4°C to 40°C. Process up to 16 L in a single run with speeds up to 7,187 x g.

- Graduated, wide-mouth design simplifies decanting, resuspensions, and pellet removal
- Translucent design eases decanting and resuspensions
- Polypropylene resin
- USP Class VI USP <88>, Cytotoxicity USP <87>
- FDA compliance - 21 CFR Part 177 Section 1520,
- Lot controlled
- BSE and TSE transmission safe

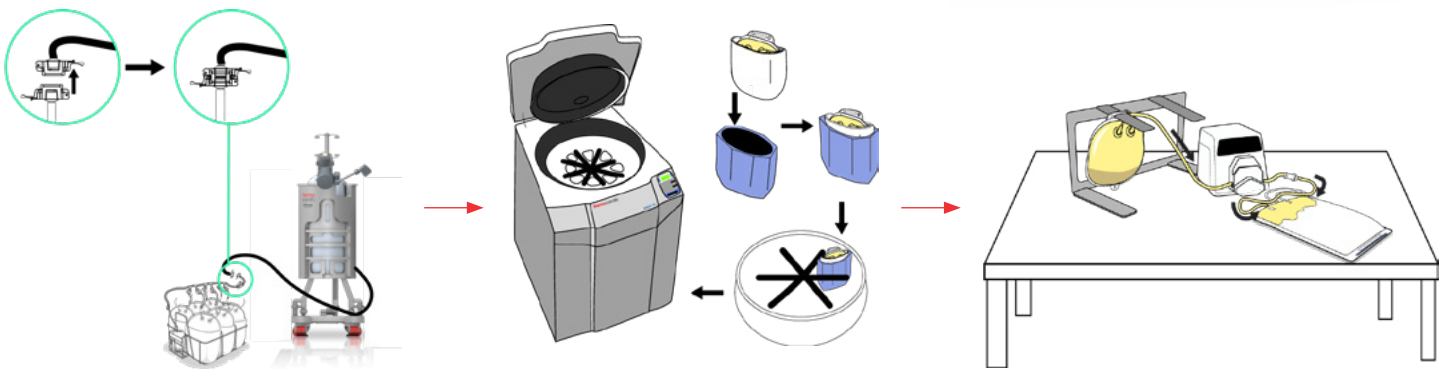
SteriBIOS 2 L bottles are available for single-use applications to minimize cross-contamination, sterilized using Beta irradiation following standards ISO 11137-1 and ISO 11137-2 (non-sterile).



Thermo Scientific™ CentriPAK™ BioProcess Container (BPC)

The CentriPAK BPC provides a single-use, sterilized closed system for centrifugation. This next-generation centrifuge container is specifically designed for use in combination with the Sorvall BIOS 16 centrifuge with 6 x 2,000 mL and 8 x 2,000 mL swinging bucket rotors.

- Sterilized closed system: supports security against cross-contamination by sterilization during production
- High-efficiency separation: enables centrifugation for high-throughput and gentle separations
- Single use: minimizes time consumption on preparation and cleaning



Aseptic connection between the CentriPAK BPC and the reactor.

CentriPAK BPC with adapter placed into the BIOS 16 Swinging Bucket Rotor for the Sorvall BIOS 16 centrifuge.

Extraction using a pump.

Not approved or intended for, and should not be used for, medical, clinical, surgical, or other patient-oriented applications.

Clarification

Solutions for bioprocessing

Maximize your upstream and downstream productivity through enhanced harvest, clarification, and purification techniques. Our robust centrifuge solutions are designed for nearly all of your bioseparation applications, ranging from R&D-scale to large-scale production of: biologics, recombinant protein, vaccines, cell therapies, veterinary pharmaceuticals, and biofuels. Explore our range of bioprocessing centrifuges, meticulously engineered to deliver exceptional quality, consistent performance, and run-to-run traceability.



Thermo Scientific™ Sorvall™ BIOS A Centrifuge

This centrifuge is designed for high quality harvesting, separation, and purification and .

- Helps ensure run-to-run reproducibility
- 10 L capacity
- RCF up to 12,000 x g
- Auto-Door technology (automatic centrifuge door opening and closing)
- The large, bright, and interactive Centri-Touch interface for all centrifuge functions offers:
 - Glove- and detergent-friendly
 - Simple and quick run setup
 - Convenient touchscreen keyboard for direct input of program parameters
 - Highly visible backlit display of set and actual run conditions
 - Real-time connection with the Centri-Vue app to monitor protocols on your smart device
- Application flexibility



Thermo Scientific™ Fiberlite™ F6-10x1000 LEX Rotor

A fixed angle rotor for the Sorvall BIOS A centrifuge. The Fiberlite F6-10x1000 LEX Carbon Fiber Rotor offers the benefit of corrosion and fatigue resistance.

Description	Thermo Scientific™ Fiberlite™ F6-10x1000 LEX Rotor
Maximum speed	6,250 rpm
Maximum RCF	12,000 x g



Thermo Scientific™ Sorvall™ LYNX Superspeed Centrifuge Series

Sorvall LYNX 4000 and 6000 superspeed centrifuges contain powerful technologies with push-button controls and security, designed to enable application flexibility for consistent results and maximum uptime.

- Accommodates up to 6 L at 17,568 x g and 4 L at 20,584 x g
- Thermo Scientific™ Auto-Lock™ Rotor Exchange allows quick change of rotors between applications
- Light-weight carbon fiber rotors improve ergonomics and help facilitate a safer work environment
- Certified cleanroom compatibility at Class ISO 6 according to DIN EN ISO 14644-1
- Scale-up flexibility using continuous-flow or zonal rotors



Thermo Scientific™ Fiberlite Bottles

Fiberlite centrifuge bottle systems are designed to achieve maximum centrifuge performance in Sorvall superspeed centrifuges with the volume versatility of 1,000 mL (at 20,584 x g), 500 mL (at 24,471 x g) and 250 mL (at 30,240 x g) in both polypropylene copolymer (PPCO) and polycarbonate (PC) options.

- Ideal for bacterial, yeast tissue isolations, and viral harvesting
- Smooth inner walls designed to reduce shearing in mammalian culture separations
- Flexibility of material to match application requirements
 - PPCO bottles designed for excellent chemical resistance
 - PC bottles designed for excellent clarity and mechanical strength
 - Thermo Scientific™ 1,000 mL SteriBIOS™ Bottle, made of PPCO, is available for single-use applications to minimize cross contamination.

Purification/ concentration

Solutions for bioprocessing

Thermo Scientific™ Sorvall™ WX+ Ultracentrifuge Series

Maximize space in your lab with the small footprint of the Sorvall WX+ Ultracentrifuge Series. The extensive rotor portfolio of these centrifuges supports labware from microtubes to 250 mL bottles, providing application and scale-up flexibility from research to production.

- High g-force and large capacity reduces total run time
- Carbon fiber rotors prolong rotor life without derating speed
- Large volume separations at high g-forces (102,000 x g) and speed (32,000 rpm) with TCF-32 continuous-flow rotor and TZ-32 zonal rotor
- Optional LogManager software supports CFR 21 Part 11 compliance in terms of eSignature, audit trail and encrypted data files



Thermo Scientific™ Sorvall™ CC40 Ultracentrifuges

The portfolio of Sorvall CC40 series ultracentrifuges is a bioprocessing solution for large-scale isolation and purification of viral particles or nanosized particles used in the development and manufacture of vaccines and other bio-products with sample protection and maximized yield.

- Maximum RCF up to 118,000 x g to support a wide variety of separation and density-gradient centrifugation applications
- High-throughput continuous and batch processing with up to 7.7 L maximum capacity with continuous-flow operation, and 8.0 L maximum with batch operation
- Connection to Thermo Scientific™ Integrated Process Control (IPC) reveals process automation according to your specific protocols and cross-contamination prevention

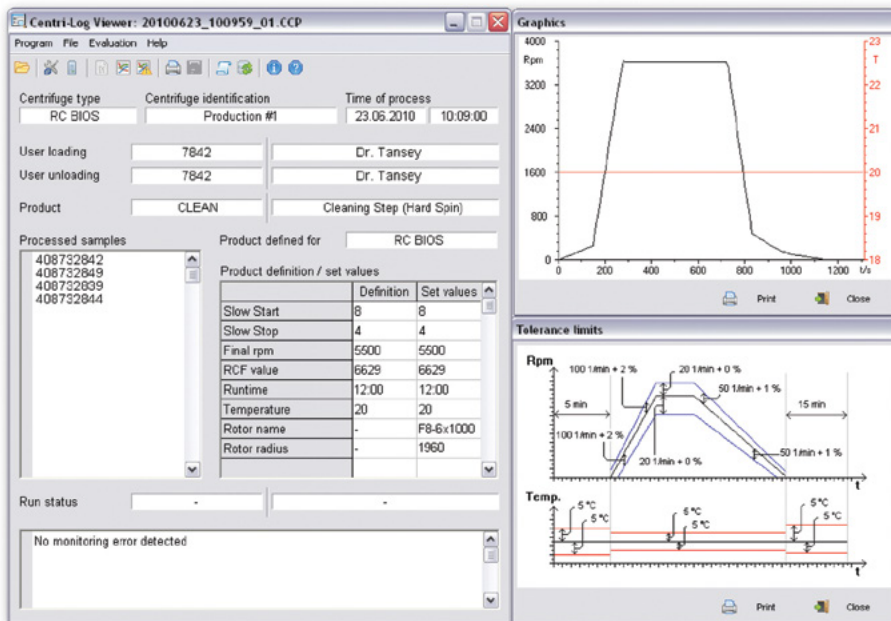


Software

Data collection and traceability

Data management software

Thermo Scientific™ Centri-Log™ Plus (BIOS and LYNX centrifuges), Log-Manager (WX+ centrifuges), and CCManager (CC40 series centrifuges) data collection software provide effective quality control for the documentation of centrifugation processes. This logging and monitoring enables lifecycle management of processed samples, equipment optimization, and compliance with standard operating procedures e.g. cGMP and FDA CFR 21 Part 11.



Service and support

Compliance services

On-site qualification

Unity™ Lab Services, as part of Thermo Fisher Scientific, offers on-site qualification services¹ that help ensure your laboratory equipment meets global standards and mitigates the risk of regulatory non-compliance. Our full-range compliance portfolio provides improved productivity, single-vendor convenience, a no-charge requalification guarantee², and comprehensive documentation reports that give you peace of mind by supporting your quality management system, traceability, and audit readiness. Our standardized field qualifications for centrifuges include IQ and OQ services. Semi-customized protocols are available. Contact your local sales or service team for services in your location.

- **Installation qualification³** - Component verification, assembly verification, installation verification, site verification
- **Operational qualification** - System configuration (set points, alarms and safety), system functionality (all functional attributes), reference measurements for up to 3 rotors (temperature, speed, time)
- **Cycle testing** - A point-in-time test exercise of predefined duration that surpasses singular verification and routine speed, time, and temperature monitoring activities for helping to ensure that the equipment is performing in accordance with the intended use of the system.

Selecting the right compliance services solution is a significant part of your quality system. Our factory-trained, highly skilled field service engineers will support your project from the time of order until regulatory sign-off to help you pass qualifications the first time. Our one-and-done best practices ultimately help you reduce costs and maintain operational uptime.

1. Compliance services are only available in select locations including the United States, Germany, France, the United Kingdom, Ireland, Spain, Portugal, Italy, Austria, Switzerland, Norway, Sweden, Denmark, Belgium and the Netherlands. For more information, contact your local sales or service representative.
2. Our no-charge requalification guarantee for laboratory equipment applies only to equipment under a qualifying Unity Lab Services equipment service plan or warranty and includes requalification on covered corrective maintenance repair at no additional charge. Terms and conditions apply.
3. Installation of equipment is not included within our IQ services. Additional fees apply for inside delivery shipping method or for full installation and setup of equipment.



Learn more at thermofisher.com/bioprocessing-centrifuges

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