

Apollo® 7 & 20 mL

High-Performance Concentrators

with Accelerated Conical Focusing

A breakthrough development supported by ongoing
U.S. National Institutes of Health SBIR Grant Research*.

Use these centrifugal ultrafiltration devices with combined simplicity, speed, capacity and recovery for quantitative concentration, purification and separation of proteins. Their unique truncated conical filtration chambers provide a high ratio of membrane area to sample size. This, in turn, provides a high degree of concentration in a single spin as well as better control of polarization and fouling at the membrane surface. Apollo has the largest available sample volumes for a given centrifuge tube size.

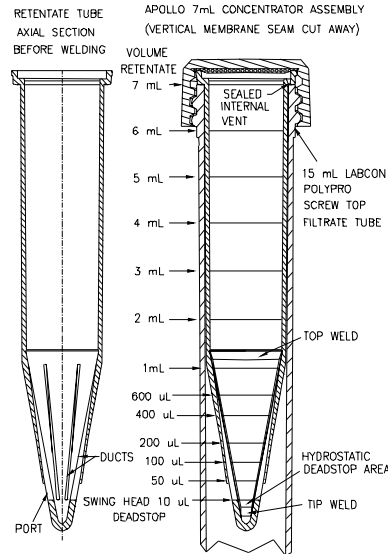
- *>90% quantitative recovery of micrograms of retained protein*
- *Quantative salt/buffer exchange in a single spin. 1000x plus concentration factor capability*
- *Fast concentration of up to 20mL of protein*
- *Biosafety No aerosol generation or airlocking.
No need for hand contact with wetted surfaces*
- *No invert spin required*

*This product is offered for research use only.
Not for clinical use nor for preparation of fluids
to be used for human injection.*

*NCRR Grant No. 2 R44 RR12066-02A1, US Patent 6,269,957, US Patent 6,357,601, PCT patents pending.

Performance Advantages

APOLLO® 7 & 20 mL High-Performance Concentrators For Quantitative Protein Separations



High recovery Quantitative recovery of even one monolayer of cytochrome c without invert spin. Larger hydrophilic membrane area. 98-99% protein retention, even after five diafiltration cycles. Deadstop maintains protein in solution.

Less waiting Fast concentration of monolayers or grams without loss of protein. Larger hydrophilic membrane area. Active deadstop accelerates concentration. No invert spin needed.

Maximal Concentration Factor 1,000x plus concentration factor, five times more than alternative devices. Quantitative buffer/salt exchange in one spin..

Solvent Compatibility Apollo housing materials, coupled with regenerated cellulose ultrafiltration membranes, provide for a wide range of solvent compatibility.

Larger volume Up to 7 mL (6 mL without decanting) in Apollo 7 mL and up to 20 mL in Apollo 20 mL.

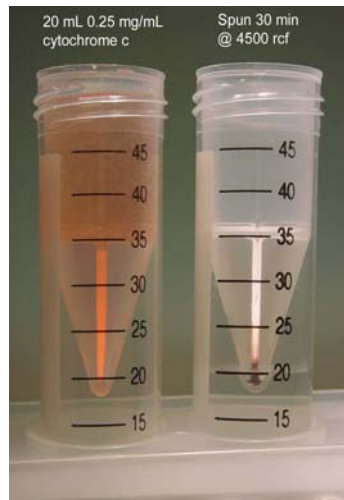
Biosafety Complete containment - internal vent eliminates aerosol generation without airlocking.

Reliability 100% pressure tested, lot release by 5x protein diafiltration.

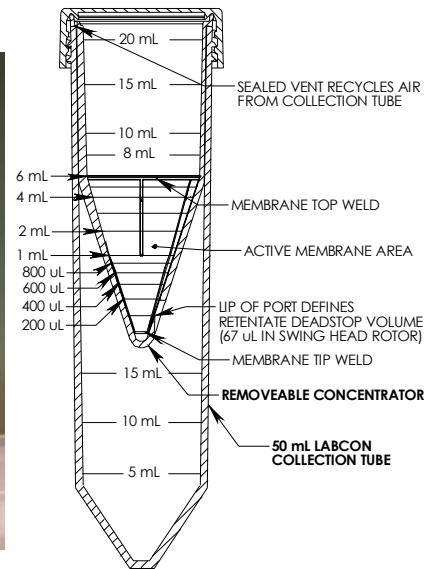
Higher flow options for larger proteins Choice of five different premium composite regenerated cellulose membranes also permit size fractionation.

Choice of rotor type Use with either fixed-angle or swing-head rotors.

Sample purity protected No O-rings or sealants, no leachable sealing material.



AXIAL SECTION OF APOLLO 20 mL CONCENTRATOR ASSEMBLY



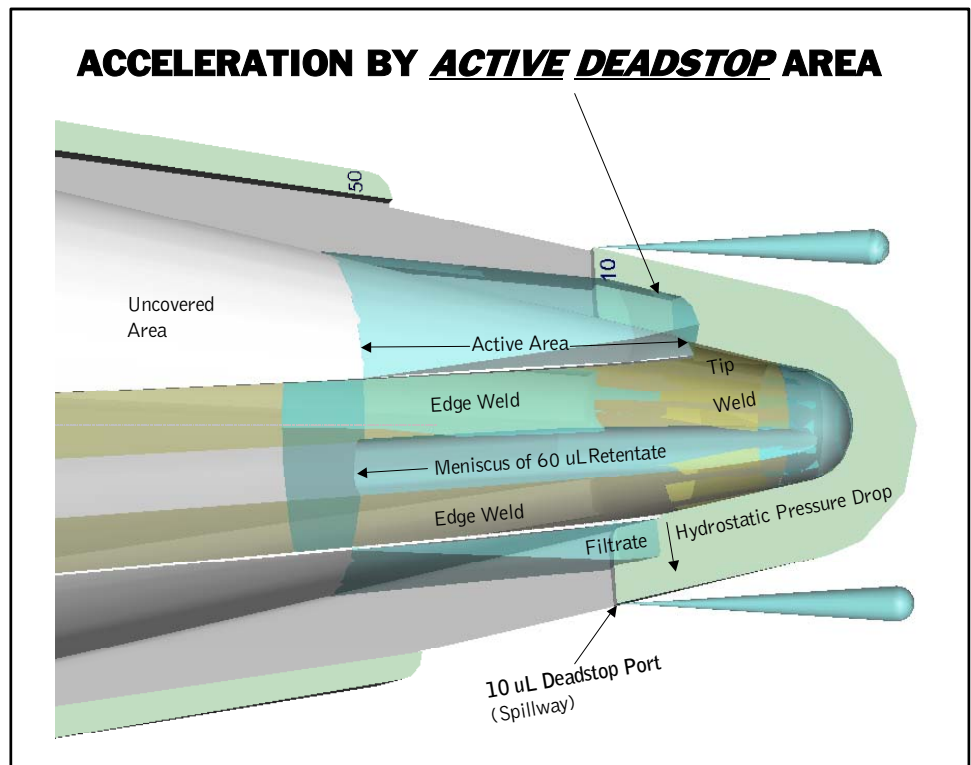
Applications

- Protein concentration and purification
- Desalting and buffer exchange
- Removal of unincorporated label
- Removal or exchange of cofactors or metals
- Buffer replacement following protein elution from ion-exchange, metal chelate, affinity or HIC columns
- Concentration of peaks following size exclusion chromatography
- Biosafe concentration of virus from tissue culture media, with passage of media protein



Optimized for performance

The high-performance ultrafiltration of Apollo is the result of accelerated conical focusing of retained proteins combined with improved use of regenerated cellulose membrane. The larger active membrane area reduces protein exposure to sticky plastic surfaces. The conical membrane shape extends below the level of the permeate ports. The active filtration area in the region below the ports supports a high filtration rate as the deadstop volume is approached. When the sample meniscus reaches the level of the permeate ports, hydrostatic pressure equalizes across the active membrane below the ports and filtration stops.



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The steep angle of the cone assures continuous removal of denser retained protein as it slides down into the recovery cup formed at the tip of the cone. This depolarization improves performance compared to designs with membrane placed at shallower angles to the centrifugal field. Apollo focuses all the retentate into a single drop with minimal bounding surfaces. This facilitates direct pipette recovery without the need for an inverted spin recovery step. The Apollo conical design also accepts a larger sample volume for a given tube size than other devices which constrict the membrane in a separate thin lower chamber.



About Orbital Biosciences

Orbital Biosciences uses our biochemical applications lab and state of the art 3D CAD/CAM modeling, mold making, and sealing technology to develop and manufacture innovative new laboratory separation products offering our customers major improvements in performance and cost-effectiveness. Over the past 33 years, Orbital's founder and president, William F. Bowers, Ph.D., a protein biochemist by training, has designed some of the most widely used laboratory ultrafiltration devices (Amicon 8MC, Centrifree*, Centricon* and Centriprep*). We welcome the opportunity to answer questions about our products or help with your separations problems.

*Registered Trademarks, Millipore Corp.



Selection and Ordering of Devices

Apollo devices are conservatively specified to retain >95% of proteins of molecular weight equal to the Quantitative Molecular Weight Limit (QMWL) rating.

QMWL	Description	Qty of Devices	Order No. Apollo 7 mL	Order No. Apollo 20 mL
5k Da	Sample pack, sealed devices and User Guide	2	AP0700500	AP2000500
5k Da	Rack of filters in capped tubes and User Guide	25	AP0700510	AP2000510
5k Da	Bulk bags of filters, tubes, caps and User Guide	250	AP0700520	AP2000520
5k Da	Bulk bags of filters only	1000	AP0700531	AP2000531
10k Da	Sample pack, sealed devices and User Guide	2	AP0701000	AP2001000
10k Da	Rack of filters in capped tubes and User Guide	25	AP0701010	AP2002010
10k Da	Bulk bags of filters, tubes, caps and User Guide	250	AP0701020	AP2002020
10k Da	Bulk bags of filters only	1000	AP0701031	AP2001031
30k Da	Sample pack, sealed devices and User Guide	2	AP0703000	AP2003000
30k Da	Rack of filters in capped tubes and User Guide	25	AP0703010	AP2003010
30k Da	Bulk bags of filters, tubes, caps and User Guide	250	AP0703020	AP2003020
30k Da	Bulk bags of filters only	1000	AP0703031	AP2003031
70k Da	Sample pack, sealed devices and User Guide	2	AP0707000	AP2007000
70k Da	Rack of filters in capped tubes and User Guide	25	AP0707010	AP2007010
70k Da	Bulk bags of filters, tubes, caps and User Guide	250	AP0707020	AP2007020
70k Da	Bulk bags of filters only	1000	AP0707031	AP2007031
150k Da	Sample pack, sealed devices and User Guide	2	AP0715000	AP2015000
150k Da	Rack of filters in capped tubes and User Guide	25	AP0715010	AP2015010
150k Da	Bulk bags of filters, tubes, caps and User Guide	250	AP0715020	AP2015020
150k Da	Bulk bags of filters only	1000	AP0715031	AP2015031
	Rack of 25 tubes and caps	25	AP0700000	AP2000000
	Case of tubes & caps	500	AP07TC	AP20TC



Terms and Conditions

Call, Fax or Email to obtain pricing. **VISA and Master Card payment now accepted.** Otherwise, payment terms are net 30 days. F.O.B shipping point is Topsfield, MA. Shipping, handling and taxes due will be added to the invoice. Where partial deliveries are made, payment will be due on the portion delivered. Orders are subject to acceptance by Orbital Biosciences at current prices.

Claims

Claims for shipping damage are to be made to the transportation company. Obvious damage apparent on delivery should be noted on the delivery receipt. If damage is found after unpacking, the shipping company should be notified within 48 hours of delivery, requesting the preparation of a "Bad Order" report, to ensure damage recovery from the carrier. Orbital Biosciences should also be informed within 10 days of receipt of damaged goods or shortages. Lost shipment claims should be made within 30 days of the original order.

Returns

All returns must be made bearing a returned goods authorization number obtained from Orbital Biosciences. To obtain credit or exchange, requests must be made within 10 days of receipt of order.

Warranty

Orbital Biosciences warrants the quality of its products to be free of defects when used under the labeled intended conditions, and will replace any of its products that are defective. Since Orbital Biosciences cannot control the conditions of use of its products, we do not warrant suitability or optimal results in any specific application, nor that use of our products will not infringe on any patents. Orbital Biosciences furnishes its products For Research Use Only, not for use on humans, upon the condition that the purchaser assumes all risks and liabilities and that neither the manufacturer nor the seller shall be liable for any loss or damage, direct or consequential, arising from the use or inability to use our products.



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