

*BENCHTOP™ “K” SERIES FREEZE DRYERS  
(LYOPHILIZERS)*



*Committed to Product Excellence...and Continuous Support*



# BenchTop™ “K” Series Freeze Dryers



**BenchTop 2K Freeze Dryer shown with vacuum pump, lab cart, 8 port acrylic manifold, 3-shelf bulk rack—unheated**

VirTis® BenchTop™ “K” Series Freeze Dryers were developed to meet the demand for a research Freeze Dryer that would provide a full range of laboratory processing capability. The compact design plus the wide range of options and accessories make these freeze dryers the most versatile available.

The BenchTop “K” Series Freeze Dryers are offered in a range of condenser temperatures from -55°C to -105°C. This wide range of condenser temperatures provides the drying power required to freeze dry all aqueous and most organic based samples. Condenser sizes range from 3 to 9 liters, allowing for processing of a few samples or multiple user applications.

A wide selection of accessories allows any shape or size sample container to be processed. Manifolds can accommodate up to 18 flasks at once and adjustable racks allow samples in dishes or Tyvek® bags to be placed inside the manifold for drying.

A stoppering assembly enables vials to be easily stoppered under vacuum for long-term storage. Heated racks can be used to speed up the drying process and reduce processing time.

VirTis BenchTop “K” Series are extremely efficient and easy to operate. Each freeze dryer is offered with a choice of two user-friendly control systems. The SLC (Standard Lyo Control) is provided as standard. The optional ALC (Automatic Lyo Control) adds more features and allows recipe driven heat drying rack control. Both ALC and SLC systems enable precise pressure (vacuum) control to shorten the drying cycles through improved heat transfer. Powerful workstation software provides complete data collection and historical trending of your freeze drying cycles. An automated hot gas routine allows defrosting in minutes to enable quick turnaround of valuable samples.

## BenchTop™ Shell Bath Freezer

*Efficient, Convenient, and Easy to Use System for Prefreezing Samples for Lyophilization*

The VirTis Benchtop Shell Bath Freezer is the perfect processing companion to your VirTis brand Benchtop Freeze Dryer. This self-contained, compact freezing unit is designed to produce a coating on the inside of freeze-drying flasks. Using this method makes the freeze-drying process far more efficient by facilitating vapor flow from the sample during lyophilization.

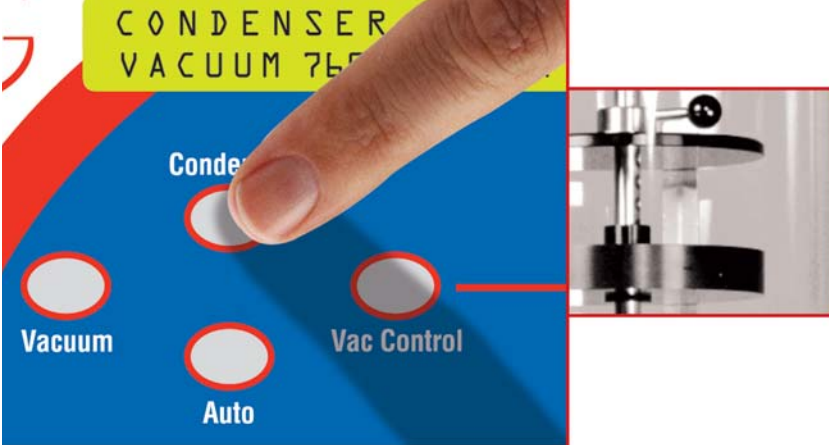
Freeze-drying flasks are simply placed on rollers and automatically rotated in a refrigerated bath containing alcohol or any other freeze resistant fluid. The Benchtop Shellbath Freezer is available in two temperature models, -45°C and -70°C.

### Ordering Information

Part Number	Temp.	Electrical*
445896	-45°C	115V
445897	-45°C	208-240V
445898	-70°C	115V
445899	-70°C	208-240V

\*208-240V are 50 or 60 Hz compatible





## Standard Features for BenchTop “K” Series

**Auto Start-up**—Activate all operating parameters in the correct sequence with one button start-up

**Freeze/Freeze Dry**—Utilize the condenser shelf accessory to freeze and freeze dry low transition temperature products inside the condenser

**Pressure Control**—Precisely control the vacuum for faster freeze drying and reproducible results

**Hot Gas Defrost**—Defrost the condenser in approximately ten minutes or less for fast turnaround of freeze drying cycles

**Compact Benchtop Footprint**—Designed to fit on a laboratory bench or small lab cart for more mobility

**Digital Display**—Precise setting and readout of vacuum and temperature with our ALC and SLC microprocessor systems.

**Environmentally Friendly**—CFC-free and energy efficient refrigeration systems

**Choice of Ultra Low Condenser Temperatures**—Enable processing of a full range of samples (-55, -75, -85, and -105°C)

**Wide Variety of Manifolds and Accessories**—Options to accommodate any processing configuration

**Patented Quickseal® Valves**—Supplied with all manifolds

**Standalone Condenser Capability**—For freezing and freeze drying of small samples

**Choice of Microprocessor Control System**—Select the ideal data acquisition and control system option for your application

**Complimentary Accessory Package**—Every freeze dryer includes: (1) 600 mL flask; (1) adapter for the flask; (1) package of filter paper (100 pcs); (1) tube of vacuum grease, and information on ordering accessories and glassware. All units supplied with appropriate vacuum tubing and clamps for installing a two-stage vacuum pump to get up and running immediately

All BenchTop K Series Freeze Dryers feature full range vacuum indication from atmosphere to 1 millitorr with vacuum ranges selectable in either millitorr or millibar.

## Flexible, Patented Shelf System for 2K and 4K Models



Shelf handle allows lowering the shelf onto the condenser surface for rapid vial freezing



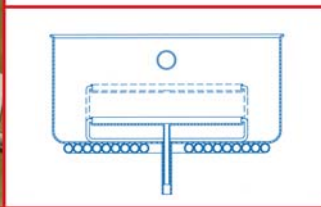
Handle is rotated to raise the shelf to the drying position



Shelf can also serve to rapidly remove the collected ice when defrosting







**BenchTop 2K  
Condenser with  
moveable drying shelf**



**BenchTop 2K Freeze Dryer  
shown with 8 port acrylic  
manifold, 3-shelf-unheated  
bulk rack**

## BenchTop™ 2K Freeze Dryer

The compact BenchTop 2K Freeze Dryers offer the flexibility of larger floor models in a smaller footprint. Designed with the small laboratory in mind, they are cost efficient and flexible for processing multiple variations of samples.

### **The following features are standard on this model:**

- Ability to condense up to 2 liters of ice in 24 hours with an overall condenser capacity of 3 liters total
- Standard Lyo Control (SLC) micro-processor system for monitoring critical freeze drying parameters such as condenser temperature and vacuum
- Refrigeration system with CFC-Free refrigerants and two temperature options of -55°C or -75°C
- Space saving footprint of 12.5" W x 19" D x 15.5" H (31.7 cm x 48.2 cm x 39.3 cm). Manifold not included in height
- Ability to freeze and freeze dry in the condenser with a VirTis patented 2-position shelf
- PC interface via RS232 port for use in collecting data with optional software
- Hot gas defrost for fast turnaround; defrost condenser in approximately 10 minutes
- System maintenance alarm tracks vacuum pump usage for notification to change oil

### **Specifications for ES and XL Models**

Condenser Blank-Off Temperature	ES -55°C / XL -75°C
Condenser Capacity in 24 Hours	2 L
Overall Condenser Capacity	3 L
SLC CONTROL SYSTEM	LCD Display
Condenser Temperature Scale	-150°C to +100°C
Vacuum Indication (Millitorr or Millibar selectable)	760 Torr to 1 Millitorr
Vacuum Regulation	Vacuum Bleed Type
Temperature-Vapor Pressure Conversion	Push Button
System Maintenance	Oil Change Message
PC Interface	RS232
Defrost Method	Hot Gas
Product Freezing in Condenser via 2-position shelf	ES -50°C / XL -65°C
System Refrigerant	CFC-Free
Condenser Type	Bottom external coil
Compressor Horsepower	ES, XL 1/3 HP
Average Time to 100 mtorr (0.13 mbar) (with recommended VirTis pump)	15 Minutes
Ultimate System Vacuum	10 mtorr (6.6 x 10 <sup>-3</sup> mbar)
Base Cabinet Dimensions: W x D x H	in. 12.5 x 19 x 15.5 cm 31.7 x 48.3 x 39.4
Weight (lbs/kg)	ES, XL 59 lbs./26.5 kg
Standard Voltages	115V/60, 208V/60, 220V/50

### **Available Models**

BenchTop 2K Freeze Dryer, ES Model	-55°C	115V/60 Hz
BenchTop 2K Freeze Dryer, ES Model	-55°C	208V/60 Hz
BenchTop 2K Freeze Dryer, ES Model	-55°C	220V/50 Hz
BenchTop 2K Freeze Dryer, XL Model	-75°C	115V/60 Hz
BenchTop 2K Freeze Dryer, XL Model	-75°C	208V/60 Hz
BenchTop 2K Freeze Dryer, XL Model	-75°C	220V/50 Hz

See pages 8-11 for available manifolds, vacuum pumps, and accessories. Vacuum pump, adapter, and manifold needed for operation.

Specifications are subject to change without notice.

# BenchTop™ 4K Freeze Dryer

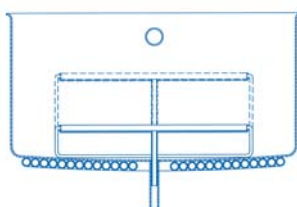
The BenchTop 4K Freeze Dryer with a heavy gauge stainless steel condenser meets the industry demand for a lower temperature condenser for freeze drying applications involving the use of organic solvents such as acetonitrile, TFA, DMSO, and DMF. Stainless steel manifolds and accessories are available.

## The following features are standard on this model:

- Offered in two ultra low condenser temperatures of -75°C and -105°C
- Total condenser capacity of 8 liters
- Hot gas defrost for fast turnaround, eliminating waiting time between freeze drying cycles
- Standard Lyo Control System (SLC) microprocessor for monitoring of critical parameters with optional Auto Lyo Control (ALC) for product and drying rack temperature indication
- Small footprint of 15.5" W x 19" D x 15.5" H (39.3 cm x 48.2 cm x 39.3 cm) on all models. Manifold not included in height
- Freezing and freeze drying of small samples accomplished easily in the condenser using the 2-position shelf
- All refrigeration systems use CFC-Free refrigerant
- PC interface via RS232 port can be used to collect critical data via the optional Lyo Control Software

**BenchTop 4K Freeze Dryer**  
shown with 12 port  
acrylic manifold, 5-shelf-  
unheated bulk rack

**BenchTop 4K Condenser**  
with moveable drying shelf



## Specifications for XL and ZL Models

Condenser Blank-Off Temperature	XL -75°C / ZL -105°C
Condenser Capacity in 24 Hours	3 L
Overall Condenser Capacity	8 L
SLC CONTROL SYSTEM	LCD Display
Condenser Temperature Scale	-150°C to +100°C
Vacuum Indication (Millitorr or Millibar-selectable)	760 Torr to 1 Millitorr
Vacuum Regulation	Vacuum Bleed Type
Temperature-Vapor Pressure Conversion	Push Button
System Maintenance	Oil Change Message
PC Interface	RS232
Defrost Method	Hot Gas
Product Freezing in Condenser via 2-position shelf	XL -65°C / ZL -90°C
System Refrigerant	CFC-Free
Condenser Type	Bottom external coil
Compressor Horsepower	XL 1/2 HP / ZL 2X 1/2 HP
Average Time to 100 mtorr (0.13 mbar) (with recommended VirTis pump)	15 Minutes
Ultimate System Vacuum	10 mtorr (6.6 x 10 <sup>-3</sup> mbar)
Base Cabinet Dimensions: W x D x H	in 15.5 x 19 x 15.5 cm 39.4 x 48.3 x 39.4
Weight (lbs/kg)	XL110/49.8 / ZL 131/59.4
Standard Voltages	115V/60, 208V/60, 220V/50

## Available Models

BenchTop 4K Freeze Dryer, XL Model	-75°C	115V/60 Hz
BenchTop 4K Freeze Dryer, XL Model	-75°C	208V/60 Hz
BenchTop 4K Freeze Dryer, XL Model	-75°C	220V/50 Hz
BenchTop 4K Freeze Dryer, ZL Model	-105°C	208V/60 Hz
BenchTop 4K Freeze Dryer, ZL Model	-105°C	220V/50 Hz

See pages 8-11 for available manifolds, vacuum pumps, and accessories. Vacuum pump, adapter, and manifold needed for operation.  
Specifications are subject to change without notice.



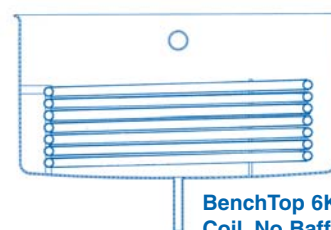
**BenchTop 6K Freeze Dryer**  
shown with 12 port acrylic  
manifold, 3-shelf-unheated  
stoppering assembly rack

## BenchTop™ 6K Freeze Dryer

The BenchTop 6K Freeze Dryer has much more capacity than its name would imply. Designed for small labs needing a large capacity condenser that doesn't take up premium space in the lab, it is the ideal answer for many users.

**The following features are standard on these models:**

- Will handle 5 liters of condensate in 24 hours
- Total condenser capacity of 9 liters
- Offered in two refrigeration systems standard -55°C for mostly aqueous-based samples and -85°C low temperature cascade for samples containing percentages of high vapor pressure solvents
- Hot gas defrost for fast turnaround time; eliminating waiting time between freeze drying cycles
- Convenient access drain hose located on front of the cabinet for easy cleanup
- Small footprint of 15.5" W x 19" D x 15.5" H (39.3 cm x 48.2 cm x 39.3 cm) Manifold not included in height
- Standard Lyo Control (SLC) micro-processor for monitoring of critical parameters and vacuum level control to assist in speeding up the drying process
- Excellent as a solvent trap
- High deposition rate loading with robust stainless steel condenser design



**BenchTop 6K Internal  
Coil, No Baffle**

### Specifications for ES and EL Models

Condenser Blank-Off Temperature	ES -55°C / EL -85°C
Condenser Capacity in 24 Hours	5 L
Overall Condenser Capacity	9 L
SLC CONTROL SYSTEM	LCD Display
Condenser Temperature Scale	-150°C to +100°C
Vacuum Indication (Millitorr or Millibar selectable)	760 Torr to 1 Millitorr
Vacuum Regulation	Vacuum Bleed Type
Temperature Vapor Pressure Conversion	Push Button
System Maintenance	Oil Change Message
PC Interface	RS232
Defrost Method	Hot Gas
Product Freezing in Condenser via 2-position shelf	ES -25°C / EL -40°C
System Refrigerant	CFC-Free
Condenser Type	Internal coil
Compressor Horsepower	ES 1/2 HP / EL 2X 1/2 HP
Average Time to 100 mtorr (0.13 mbar) (with recommended VirTis pump)	18 Minutes
Ultimate System Vacuum	10 mtorr (6.6 x 10 <sup>-3</sup> mbar)
Base Cabinet Dimensions: W x D x H	in 15.5 x 19 x 15.5 cm 39.4 x 48.3 x 39.4
Weight (lbs/kg)	ES 101 / 45.8 EL 131 / 59.4
Standard Voltages	115V/60, 208V/60, 220V/50

### Available Models

BenchTop 6K Freeze Dryer, ES Model	-55°C	115V/60 Hz
BenchTop 6K Freeze Dryer, ES Model	-55°C	208V/60 Hz
BenchTop 6K Freeze Dryer, ES Model	-55°C	220V/50 Hz
BenchTop 6K Freeze Dryer, EL Model	-85°C	208V/60 Hz
BenchTop 6K Freeze Dryer, EL Model	-85°C	220V/50 Hz

See pages 8-11 for available manifolds, vacuum pumps, and accessories. Vacuum pump, adapter, and manifold needed for operation.  
Specifications are subject to change without notice.



# Accessories for the BenchTop™ K Series Freeze Dryers

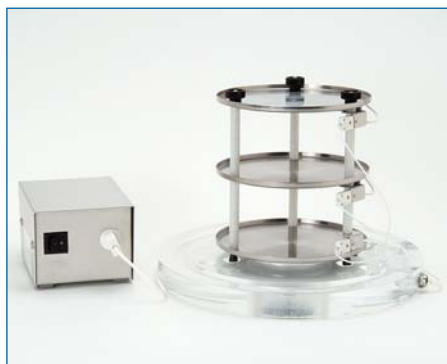


## Bulk Racks–Unheated

Available in 3, 4, or 5-shelf configurations, these racks are designed for freeze drying samples in a variety of different container types including vials, serum bottles, small dishes, and microtiter plates. Shelves are easily removed, adjusted or added to accommodate different processing requirements. Additional shelves and spacers can be purchased separately.

Part Number	Description	Shelf Size (dia.)
391825	3-Shelf Bulk Rack–Unheated	8" (200 mm)
395045	4-Shelf Bulk Rack–Unheated	8" (200 mm)
397322	5-Shelf Bulk Rack–Unheated	8" (200 mm)
402651	3-Shelf Bulk Rack–Unheated <sup>1</sup>	10.5" (266 mm)
402668	4-Shelf Bulk Rack–Unheated <sup>1</sup>	10.5" (266 mm)
402675	5-Shelf Bulk Rack–Unheated <sup>1</sup>	10.5" (266 mm)

<sup>1</sup>For use with BenchTop 4K or 6K



## Bulk Racks–Heated

Offered in 3, 4, or 5-shelf configurations (for BenchTop 4K and 6K models only), heated racks can be used in the 12 port acrylic manifold for processing vials and small bulk samples. When used in units with SLC controller, shelf temperature can be set to 38°C. In units with ALC controller, shelf temperature can be varied from +20°C to 80°C. Shelves are adjustable and easily configured as required. All shelves are 8" (200 mm) in diameter.

Part Number	Description	Controller
405713	3-Shelf Bulk Rack–Heated 100/125V	SLC
405720	3-Shelf Bulk Rack–Heated 200/240V	SLC
424202	3-Shelf Bulk Rack–Heated w/thermocouple	ALC
405737	4-Shelf Bulk Rack–Heated 100/125V	SLC
405751	4-Shelf Bulk Rack–Heated 200/240V	SLC
424226	4-Shelf Bulk Rack–Heated w/thermocouple	ALC
405768	5-Shelf Bulk Rack–Heated 100/125V	SLC
405775	5-Shelf Bulk Rack–Heated 200/240V	SLC
424233	5-Shelf Bulk Rack–Heated w/thermocouple	ALC



## Stoppering Assembly Racks–Unheated

Utilizing a unique screw assembly, these racks can be used to manually stopper vials under vacuum after the freeze drying process is complete. Available in 2 or 3-shelf configurations with easy adjustment to accommodate a wide range of application requirements. The 2-shelf units fit into the 8 port acrylic manifold and the 3-shelf units are used with the 12 port acrylic manifold.

Part Number	Description	Shelf Size (dia.)
388726	2-Shelf Stoppering Rack–Unheated	8" (200 mm)
395359	3-Shelf Stoppering Rack–Unheated <sup>1</sup>	8" (200 mm)

<sup>1</sup>For use with BenchTop 4K or 6K



## Single Shelf Sealing/Stoppering Heated Accessory

Convenient sealing/stoppering device for use with BenchTop 2K, 4K, and 6K freeze dryers. Vials can be processed in the condenser and stoppered under vacuum once freeze drying is complete. Easily accommodates a wide variety of vial sizes from 2 mL to 50 mL.

Part Number	Description	
445318	Sealing/Stoppering Accessory for 2K	110/125V/60 Hz
445319	Sealing/Stoppering Accessory for 2K	200/240V/50 Hz
445321	Sealing/Stoppering Accessory for 4K and 6K	110/125V/60 Hz
445322	Sealing/Stoppering Accessory for 4K and 6K	200/240V/50 Hz



## Stoppering Assembly Racks–Heated

When used with an SLC controller, the temperature of the shelves for the Heated Stoppering Rack can be set at 38°C. Used with the ALC controller, the temperature can be varied from 20°C to 80°C. Shelves are 8" in diameter.

Part Number	Description	Controller
405690	3-Shelf Stoppering Rack–100/125V <sup>1</sup>	SLC
405706	3-Shelf Stoppering Rack–208/240V <sup>1</sup>	SLC
424240	3-Shelf Stoppering Rack–Thermocouple <sup>1</sup>	ALC

<sup>1</sup>For use with BenchTop 4K or 6K

## 8 Port Acrylic Manifold

The 8 Port Acrylic Manifold is supplied complete with eight 3/4" (19 mm) VirTis patented Quickseal® valves for attaching a variety of flasks, ampules or vials. Top plug is removable to allow for use with the 2-shelf stoppering assembly. Clear acrylic allows easy viewing of samples on stoppering assembly or bulk racks.

Part Number	Description	Dimensions
391962	8 Port Acrylic Manifold	14"H x 9.5"W (356 x 241 mm)
405614	Adapter Plate	

## 12 Port Acrylic Manifold

The 12 Port Acrylic Manifold is supplied complete with twelve 3/4" (19 mm) VirTis patented Quickseal valves. These valves can accommodate a variety of sample containers such as flasks, vials or ampules. This manifold can be used with a variety of heated and unheated bulk rack assemblies along with the 3-shelf stoppering assembly.

Part Number	Description	Dimensions
402538	12 Port Acrylic Manifold	17.9"H x 12"W (455 mm x 305 mm)
403092	Adapter Plate	

## Acrylic Cold Trap Plate

Acrylic plate for use with BT2, 4K, or 6K to enable the freeze dryer to be used as a cold trap for other equipment such as vacuum concentrator or gel dryer.

Part Number	Description
369770	Acrylic Cold Trap Plate for BenchTop 2K
405485	Acrylic Cold Trap Plate for BenchTop 4K and 6K

## Stainless Steel Multi Port Drum Manifolds

The Stainless Steel Drum Manifold is supplied complete with either twelve or eighteen 3/4" (19 mm) VirTis patented Quickseal valves. Stainless steel manifolds are recommended for applications involving high percentages of organic solvents and acids. Three tiered adjustable rack can be placed inside for drying of vials or small trays.

Part Number	Description
345876	12 Port Stainless Steel Drum Manifold
345884	18 Port Stainless Steel Drum Manifold
427517	Acrylic Adapter Plate for Stainless Steel Drum Manifold
427524	Stainless Steel Adapter Plate for Stainless Steel Drum Manifold





### 12 Port Stainless Steel Vertical Manifold

Vertical Stainless Steel Manifold for use with multiple small samples and/or large flasks. Comes complete with twelve 3/4" (19 mm) VirTis patented Quickseal® valves. When using large flasks support/condensate tray is recommended.

Part Number	Description
345835	12 Port Stainless Steel Vertical Manifold
427517	Adapter Plate

### Wide Mouth Filter Seal Flasks

These flasks are designed to make freeze drying simple. All VirTis flasks have flat bottoms for stability and wide mouths. Available in seven different sizes for a wide range of samples, the snap-on silicone rubber top provides a leakproof seal without vacuum grease for maintenance-free sample processing. A replaceable filter is secured with an O-ring to prevent cross-contamination and product dispersion.

VirTis borosilicate flasks and silicone lids are autoclavable and are also offered with a safety coating. The safety coating will contain glass in the case of breakage and will also protect the outer surface of the glass from scratching and chipping.

Part Number	Maximum Capacity	Working Capacity
235390	40 mL	20 mL
235382	75 mL	35 mL
118174	150 mL	75 mL
118208	300 mL	150 mL
118232	600 mL	300 mL
118273	1200 mL	600 mL
118307	2000 mL	1,000 mL

\* Contact SP Industries for part numbers of safety coated flasks. Also available for 600 mL and larger flasks with high purity platinum cured silicone lids.



### Manifold Adapters for Freeze Drying Flasks

Flasks require an adapter to connect them to valves. Adapters are offered in plastic, glass or stainless steel for different applications and customer preference.

Many other adapters for ampules, vials, and even round bottom flasks are offered. Call customer service at 800.431.8232 or e-mail us at [csvirtis@SPindustries.com](mailto:csvirtis@SPindustries.com) regarding your specific requirements.

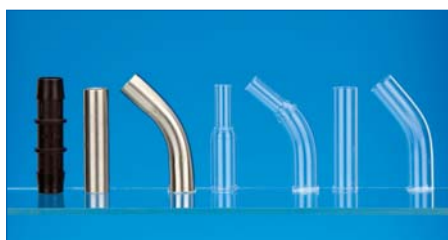
Part Number	Material	Shape	Port Size	Compatible Flasks
367424	Plastic	Straight	3/4"	150 - 2000 mL
179655	Glass	Straight	3/4"	150 - 2000 mL
177923	Stainless Steel	Straight	3/4"	150 - 2000 mL
177899	Glass	45°	3/4"	150 - 2000 mL
177931	Stainless Steel	45°	3/4"	150 - 2000 mL
179622	Glass	Straight	3/4"	40 & 75 mL
177873	Glass	45°	3/4"	40 & 75 mL

### Ampule Adapter

Fits into a standard VirTis 3/4" (19 mm) VirTis patented Quickseal valve on any manifold. This adapter can hold 19 ampules at a time and is designed for fast freezing and freeze drying of small ampules in multiple batches.

Part Number	Description
413534	Ampule Adapter

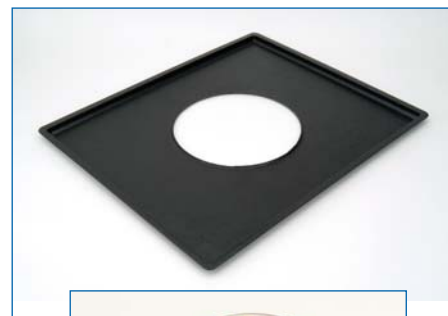
\* Ampules, torches, and parts available by calling customer service.



## Support/Condensate Tray

Can be used with 2K, 4K, or 6K freeze dryer. When placed below the manifold, it will capture any moisture from glassware attached to the manifold. Also supplies support for larger vessels such as the 1200 or 2000 mL VirTis flasks.

Part Number	Description
391979	Support/Condensate Tray for BT2K
402682	Support/Condensate Tray for BT4K, BT6K



## Windmill Drying Indicator

End of drying indicator used inside the acrylic manifolds provides a quick visual indication of the end of the freeze drying process.

Part Number	Description
353730	Windmill Drying Indicator



## Vacuum Pumps

All VirTis® vacuum pumps are corrosion resistant and adapt easily to the BenchTop Freeze Dryers. They plug into the back of the freeze dryer via an I.E.C. line cord. Pumps are gas ballasted, two-stage with oil level sight glass.

Part Number	Description
412513	37 Liter Vacuum Pump 115/125V (with oil mist eliminator)
412506	37 Liter Vacuum Pump 220/240V (with oil mist eliminator)
379199	65 Liter Vacuum Pump 115/125V (with VBS)
379205	65 Liter Vacuum Pump 220/240V (with VBS)
253013	Oil Mist Eliminator
185181	Vacuum Pump Oil (1 gal.)



## Workstation Software

Interactive Windows®-based software that allows complete trending of all process transducers. Provides plot and datalogging output formats.

Part Number	Description
445265	Freeze Drying Workstation Software

## Lab Cart

18" x 24" (45.7 cm x 60.9 cm) lab cart for BT2, 4K, and 6K comes with two solid galvanized steel shelves, two chrome U-shaped handles, and four 5" swivel casters. Cart can accommodate a total of 600 lbs. (272 kg) of weight.

Part Number	Description
392174	Lab Cart




## Vacuum Brake Solenoid (VBS)

Vacuum brake solenoid located in-line between pump and condenser to prevent oil backflow to condenser or samples in the event of a power failure. Can also be used for vacuum regulation with the ALC control system.

Part Number	Description
130195	Vacuum Brake Solenoid 110/125V
130203	Vacuum Brake Solenoid 220/240V





*The VirTis® brand name has been synonymous with quality freeze dryers since 1953. Considered the world's leading name in freeze drying technology, the VirTis product line includes: laboratory, pilot plant, and production capacity freeze dryers; ultrasonic cell disrupters; fermenters; homogenizers; and process control systems.*

*Along with Hotpack®, Hull®, and Wilmad-LabGlass®, VirTis® is an SP Industries' brand name. A global leader in providing innovative products and services for science and industry, SP Industries is well positioned to support all of its brand name products.*

*The company continues to invest heavily in validation and commissioning competencies and to provide after sales service and application support.*

## ISO 9001:2000 REGISTERED

**Limited Warranty** All VirTis® Freeze Dryers are covered by a one year, all parts and labor, and two year refrigeration warranty.



*Committed to Product Excellence...and Continuous Support*

### SP Industries

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**SP TechCare**

**Hull**

**Wilmad | LabGlass**

**Hotpack**

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