

VirTis AdVantage Plus

Benchtop Freeze Dryer



Key Features

- Advanced pilot/production scale performance in a compact benchtop unit.
- Available with up to three usable product drying shelves.
- Optional pneumatic stoppering system available for processing in vials.
- Six-liter ice condensing capacity.

Performance Specifications

Item	ES	XL	EL
Shelf Temperature Control Range (°C) [‡]	-40 to 60	-40 to 60	-55 to 60
Lowest Shelf Temperature (50 Hz / 60 Hz, °C)	-42 / -45	-57 / -60	-62 / -65
Lowest Condenser Temperature (50 Hz / 60 Hz, °C)	-50 / -53	-67 / -70	-82 / -85
Maximum Condenser Capacity (L)	6	6	6
Maximum Ice Condensing Capacity in 24 hours (L) [†]	4	4	4
Maximum Deposition Rate (L/hour) [†]	0.17	0.17	0.17
Shelf Pull-Down from 20 °C to -40 °C (minutes) [§]	≤ 45	≤ 40	≤ 30
Number of Compressors	1	1	2
Compressor Horsepower	3/4	3/4	1/3, 3/4
System Refrigerant	MO 89	R245fa / R508B	R508B, R407C
Vacuum Rate of Rise (mT/hour)	≤ 60	≤ 60	≤ 60
Volume-Based Leak Rate (mbar·L/sec)	≤ .0009	≤ .0009	≤ .0009
Temperature Uniformity (°C) [¶]	± 1.0	± 1.0	± 1.0

Note: Performance specifications are based on SP Scientific test data from units operating at an ambient room temperature of approximately 20 °C. SP Scientific recommends an operating range of 15-25 °C (59-77 °F).

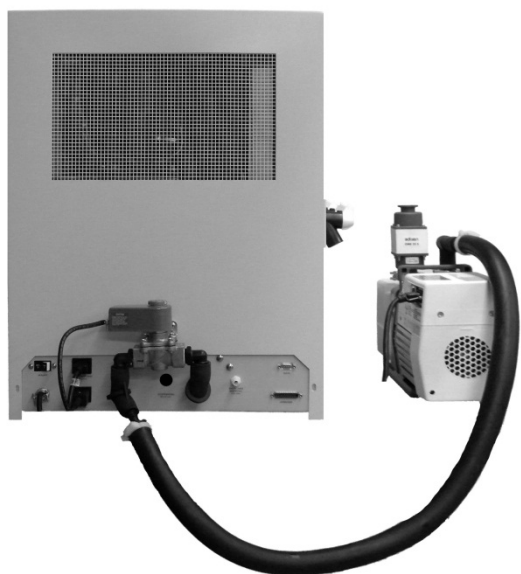
Electrical Requirements

	ES and XL		EL	
	208/230	200/240	208/230	200/240
Voltage (VAC) [*]	208/230	200/240	208/230	200/240
Hertz [*]	60	50	60	50
Phase [*]	1	1	1	1
Breaker Amperage [*]	10	10	15	15
NEMA Receptacle	6-15R	N/A	6-15R	N/A

Utility Requirements

Item	ES	XL	EL
Compressed Air (Stoppering only, psig)	60-90	60-90	60-90
With Vacuum Pump			
Approx. Peak Heat Generated (BTU/h)	5,000	5,000	7,000
Without Vacuum Pump			
Approx. Peak Heat Generated (BTU/h)	4,000	4,000	6,000

Standard Configuration



Advantage Plus

Dimensional Data

Width (in / mm)	25.75 / 654
Depth (in / mm)	28 / 711
Height (in / mm)	28.75 / 730
Approximate Weight (lb / kg) ^{¶¶}	320 / 145

Shelf Configuration

Number of Shelves	Minimum Shelf Clearance (in / mm)	Shelf Area (in ² / cm ²)
1 Shelf	6.25 / 158	143 / 922
2 Shelves	2.87 / 73	286 / 1,844
3 Shelves	1.75 / 44.5	429 / 2,766

Materials of Construction

Chamber Construction	304 Stainless Steel
Shelf Construction	316L Stainless Steel
Chamber Door	Full-View Acrylic
Condenser Coil	316L Stainless Steel
Quick-Seal Body	Neoprene
Quick-Seal Knob	Polypropylene

Additional Information

Nominal Shelf Size (W x D x TH)	10.25 in X 14 in X 0.375 in (260 mm X 355 mm X 9.5 mm)
Vacuum Pump (Required, not included)	Two-Stage Rotary Vane or Suitable Dry Pump
Defrost Type	Hot Gas
Refrigerant Type	CFC Free
Condenser Type	Internal
Compressed Air Inlet (Stoppering)	1/4-inch FPT fitting
Stoppering (Optional)	Top-Down Pneumatic
Inert Gas Port	3/8-inch Hose Barb fitting

* VirTis units are highly customizable and SP Scientific can configure any unit to conform to the service requirements of a wide range of international voltage and phase configurations. Contact SP Scientific for more information.

† The specified Maximum Ice Condensing Capacity in 24 Hours and the Maximum Deposition Rate are based on the process of freeze-drying water as aggressively as possible. The freeze dryer's ability to collect ice at an hourly rate or over a specified period will always be application dependent.

‡ Shelf temperature controlled to within ± 1.0 °C of the setpoint within the Shelf Temperature Control Range.

§ Shelf pull-down times are based on tests performed with no load at "pre-seal" pressure (approximately 400-500 mbar). The increased mass of stainless steel and additional heat transfer fluid for units with more than one shelf will increase the pull-down time. Use the following multipliers when determining the pull-down time specification for the following shelf configurations:

- 2-shelf units, standard pull-down time x 1.5
- 3-shelf units, standard pull-down time x 2.0

¶ Shelf temperature deviations shall not exceed the specification relative to the mean of the highest and lowest temperature readings.

¶¶ Weight given is for an Advantage Plus with EL refrigeration package. Units with an ES or XL refrigeration package shall have a lower total weight.