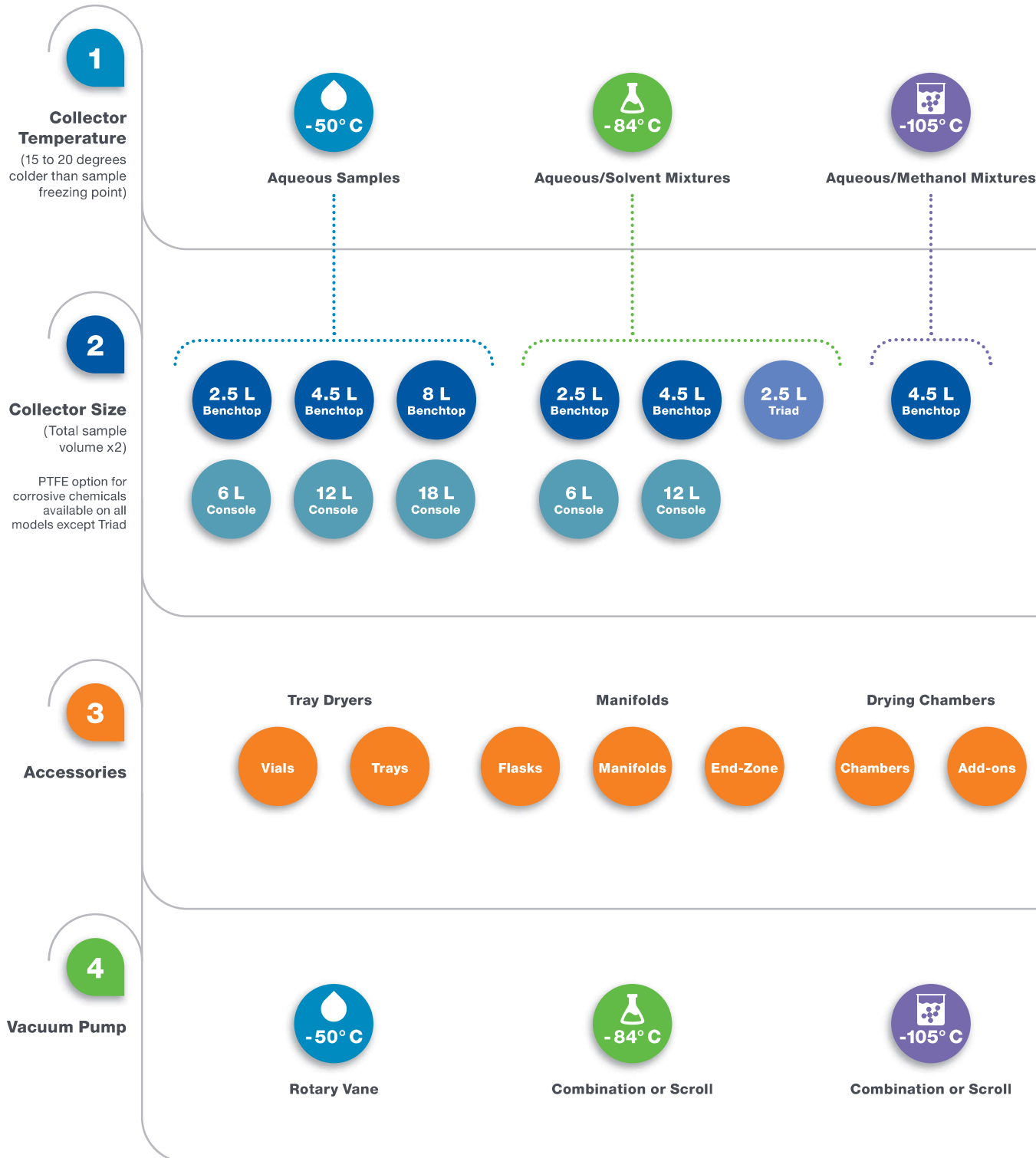


FreeZone® Freeze Dryers

Steps to Selecting a Freeze Dryer



FreeZone® Freeze Dryers

FreeZone Product Lines

Freeze Dryers



2.5 L

4.5 L

8 L

Benchtop



2.5 L

Triad Benchtop



6 L

12 L

18 L

Console and
Console with Stoppering Tray Dryer

Accessories



Tray Dryers

Vials

Trays



Manifolds

Flasks

Manifolds

End-Zone



Drying Chambers

Chambers

Add-ons



Vacuum Pumps



Rotary Vane Pump

-50° C



Chemically Resistant
Rotary Vane Pump

-84° C

-105° C



Combination Pump

-84° C

-105° C



Scroll Pump

-84° C

-105° C

Lyo-Works™ Operating System

Features & Benefits

Data Logging

Starts/stops logging. View the data in table or graph form.

Settings

Select language, security code, sensor calibration, time/date/time zone, alert emails and other settings.

Sensors

Displays temperature values for sensors.

Tray Dryers

Allows you to program or manually control shelf temperatures of installed tray dryers with temperature control.

Programs

Lets you create, edit, view and initiate programs. Stores up to 30 programs with up to 16 steps each.

Home Screen

Get at-a-glance collector temperature, vacuum pressure, and, if equipped, built-in shell freezer temperature.

End Point Detection

When End-Zone is installed, indicates when end point is reached for each sensor.

Help

Access diagnostic tools, user manuals, videos, and updates

Shell Freezer

Controls optional built-in shell freezer.

Purge

Controls the optional purge valve.

Auto

Initiates the start up sequence: collector cool down, vacuum pull down and optional purge valve. Ensures collector reaches -40° C before vacuum is applied.

Collector

Manually starts/stops the collector and starts/stops defrost.

Vacuum

Manually starts/stops the vacuum pump.



Lyo-Works is more than a large touch screen display. It's a set of powerful controls and useful insights about your freeze drying process. Lyo-Works gives you greater peace of mind about the integrity of your samples throughout lyophilization, even when you're not in the lab.



USB port and Ethernet connection

Lets you easily output Lyo-Works data in CSV format to a flash drive or via email.

See how Lyo-Works works at labconco.com/lyo-works.

FreeZone® Benchtop Freeze Dryers

Features & Benefits



Vacuum break valve

prevents oil backstreaming when power to the freeze dryer or pump is shut off.

Patented* moisture sensor

protects the vacuum pump by preventing refrigeration or vacuum start-up when moisture is detected in collector chamber area.

Durable steel cabinet

Benchtop models fit countertops and lab carts.

USB port and Ethernet to download onboard data.

Upright, stainless steel collector chamber

speeds and simplifies defrost. Available with PTFE-coated collector coil and chamber for additional corrosion resistance.

Quick disconnect drain hose fitting

for convenient defrost.

Vacuum control valve

maintains set point vacuum level to speed the freeze drying process.

Hot gas defrost

automatically shuts off when defrosting is complete.

Full one year warranty

*U.S. Patent No. 6,968,631



FreeZone® Benchtop Freeze Dryers

Ordering Information



2.5 Liter

Light sample loads



4.5 Liter

Light to moderate sample loads



8 Liter

Moderate sample loads

Catalog Number Configurator Use this key to configure the nine digit catalog number.

7 0 0

Select the **REFRIGERATION TEMPERATURE**

of your freeze dryer's collector. This is the second digit.

0 = -50° C (-58° F). For samples containing water.

1 = -84° C (-119° F). For low eutectic point samples containing water or acetonitrile.

2 = -105° C (-157° F) at 60 Hz or -102° C (-152° F) at 50 Hz.

For low eutectic point samples containing water, acetonitrile or dilute methanol or ethanol. (4.5 L only)

Select the **CAPACITY** of your freeze dryer's collector.

These are the third and fourth digits.

02 = 2.5 L **04** = 4.5 L **08** = 8 L (-50° C only)

Select the **COLLECTOR COIL**, **CHAMBER MATERIAL**, and **REFRIGERANT** of your freeze dryer. Natural refrigerant only available on multi-plug electrical configurations (ending in -90). This is the sixth digit.

1 = 1 = Stainless steel, Standard refrigerant

2 = PTFE-coated stainless steel, Standard refrigerant

5 = Stainless steel, Natural refrigerant

6 = PTFE-coated stainless steel, Natural refrigerant

Select the **ELECTRICAL CONFIGURATION** and **OUTLET TYPE** of your freeze dryer. These are the eighth and ninth digits.

00 = 115V, 60 Hz, with 20A plug for North America

10 = 230V, 60 Hz, with plug for North America

15 = 230V, 60 Hz, with plug for Saudi Arabia

30 = 230V, 50 Hz, with Schuko plug

40 = 230V, 50 Hz, with plug for China/Australia

50 = 230V, 50 Hz, with plug for Great Britain (UK)

70 = 230V, 50 Hz, with plug for India

90 = 230V, 50 Hz, with Schuko, China/Australia, Great Britain (UK) and India

All models require a vacuum pump with proper displacement and 3/4" hose fitting, drying accessory, and freeze dry glassware if not bulk freeze drying

Electrical Requirements, Dimensions & Shipping Weights

Collector Capacity	Water removed in 24 hrs	Refrigeration Temperature	Volts	Amps	Overall Dimensions (w x d x h)	Shipping Weight
2.5 L*	2 L	-50° C (-58° F)	115	14**	14.5" x 19.2" x 16.9"	120 lbs. (54 kg)
2.5 L	2 L	-50° C (-58° F)	230	7†	14.5" x 19.2" x 16.9"	120 lbs. (54 kg)
2.5 L*	2.2 L	-84° C (-119° F)	115	16**	14.5" x 24.5" x 16.9"	165 lbs. (75 kg)
2.5 L	2.2 L	-84° C (-119° F)	230	10†	14.5" x 24.5" x 16.9"	165 lbs. (75 kg)
4.5 L*	2 L	-50° C (-58° F)	115	14**	16.5" x 22.4" x 18.9"	139 lbs. (63 kg)
4.5 L	2 L	-50° C (-58° F)	230	7†	16.5" x 22.4" x 18.9"	139 lbs. (63 kg)
4.5 L*	4 L	-84° C (-119° F)	115	16**	22.5" x 26.5" x 18.5"	197 lbs. (89 kg)
4.5 L	4 L	-84° C (-119° F)	230	10†	22.5" x 26.5" x 18.5"	197 lbs. (89 kg)
4.5 L*	2.5 L	-105° C (-15° F)	115	16**	22.5" x 26.5" x 18.5"	205 lbs. (93 kg)
4.5 L	2.5 L	-105° C (-15° F)	230	10†	22.5" x 26.5" x 18.5"	205 lbs. (93 kg)
8 L*	4 L	-50° C (-58° F)	115	14*	22.5" x 26.5" x 18.5"	173 lbs. (79 kg)
8 L	4 L	-50° C (-58° F)	230	7**	22.5" x 26.5" x 18.5"	173 lbs. (79 kg)

*Requires 20 amp dedicated circuit.

**System amperage shown includes 8 amp maximum vacuum pump rating. †System amperage shown includes 4.5 amp maximum vacuum pump rating.

Vacuum Pumps

Features & Benefits



Scroll Vacuum Pumps

- Designed for use with acids below 20% concentration and solvents including acetonitrile
- Two spiral scrolls compress air and vapors to move them toward the exhaust
- Oil-free design has no hydrocarbons
- Ultimate vacuum 7×10^{-3} mBar (5.3 micron) for 7587000
- Ultimate vacuum (partial pressure) 2×10^{-2} mBar (15 micron) for 7587100



VACUUBRAND HYBRID* Vacuum Pumps

- Designed for use with acids and other harsh chemicals including TFA, TFA by-products, acetonitrile, HBe and HNO_3 present in samples such as HPLC-prepared and peptide purified materials
- Comprised of a two-stage rotary vane pump and two-stage, chemical-resistant diaphragm pump. Superior solvent and acid handling capabilities
- Ultimate vacuum 2×10^{-3} mBar (1.5 micron)



Chemically Resistant Rotary Vane Vacuum Pump

- Designed for use with harsh chemicals such as TFA, acetonitrile, HBr, and others
- System includes continuous acid neutralization and oil filtration, extending the service interval of the pump in caustic conditions
- Large oil chamber slows oil breakdown within pump
- Ultimate vacuum 2×10^{-3} mBar (1.5 micron)



General Purpose Rotary Vane Vacuum Pumps

- Designed for use with aqueous samples
- Single phase direct drive motor, totally enclosed and fan cooled. Should the motor overheat, the thermal overload device switches off the pump. When the pump cools down, the motor automatically restarts
- Ultimate vacuum 2×10^{-3} mBar (1.5 micron)

FreeZone Model		Sample Contains	Pump Type	Recommended Pump (≥98 lpm)**		Recommended Pump (≥130 lpm)	
				115 Volts	230 Volts	115 Volts	230 Volts
	Benchtop 2.5, 4.5, & 8 Liter or Dry Ice Freeze Dryer	Water	Rotary Vane	1472100	7739402	1467700	7739403
		Acids & Solvents	CR Rotary Vane	7584500	7584501	7584500	7584501
		Acids & Solvents	Hybrid	7584000	7584002		
		Acids & Solvents	Scroll	7587100	7587100	7587000	7587000
	Console 6, 12 & 18 Liter	Water	Rotary Vane	1472100	7739402	1467700	7739403
		Acids & Solvents	CR Rotary Vane	7584500	7584501	7584500	7584501
		Acids & Solvents	Hybrid	7584000	7584002		
		Acids & Solvents	Scroll	7587100	7587100	7587000	7587000
	Console 6, 12 & 18 Liter with Stoppering Tray Dryer, Bulk Tray Dryer or Tall Clear Chamber	Water	Rotary Vane			1467700	7739403
		Acids & Solvents	CR Rotary Vane			7584500	7584501
		Acids & Solvents	Scroll			7587000	7587000
	Triad	Water	Rotary Vane		7739402		7739403
		Acids & Solvents	CR Rotary Vane		7584501		7584501
		Acids & Solvents	Hybrid		7584002		
		Acids & Solvents	Scroll		7587100		7587000

*VACUUBRAND™ and VACUUBRAND HYBRID™ are trademarks of VACUUBRAND GMBH + CO KG.

**Faster freeze drying rates may be achieved by using pumps with larger displacement capacities.

Accessories

Vacuum Pump Oil, Filters and Accessories

Vacuum Pump Oil

Cat. No.	Product Name	Volume	Shipping Weight	Compatibility
1988000	Vacuum Pump Oil	One liter	2.0 lbs. (0.9kg)	Rotary Vane Pump
1988001	Vacuum Pump Oil	One gallon (3.8L)	12 lbs. (5kg)	Rotary Vane Pump
7772700	Gold Vacuum Pump Oil	One liter	2.0 lbs. (0.9kg)	CR Rotary Vane Pump
7584300	VACUUBRAND B-Oil	One liter	2.0 lbs. (0.9kg)	Hybrid Pump
7541300	Vacuum Pump Oil	One gallon (3.8L)	12 lbs. (5kg)	Hybrid Pump

1473500—Oil Return Kit. For Rotary Vane Pump. Allows extended operation of the pump with the ballast open and helps to keep oil purged of contaminants. Includes stainless steel cylinder and tubing with clamp. Shipping weight 0.5 lb. (0.2 kg)

Vacuum Pump Filters

Cat. No.	Product Name	Shipping Weight	Compatibility
1472200	Inlet Filter Assembly and Cartridge	1.0 lb. (0.5kg)	Rotary Vane Pump
1472500	Replacement Inlet Filter Cartridge	0.5 lb. (0.2kg)	Rotary Vane Pump
1473400	Replacement Exhaust Filter	1.0 lb. (0.5kg)	Rotary Vane Pump
1473200	Replacement Oil Mist Exhaust Filter Cartridge	0.5 lb. (0.2 kg)	Rotary Vane Pump
1473300	Replacement Odor Exhaust Filter Cartridge	0.5 lb. (0.2 kg)	Rotary Vane Pump
7584600	Alumina Filter Element for Oil Sump	1.0 lb. (0.5kg)	CR Rotary Vane Pump

7587300 - Pump Silencer. Filters the exhaust while silencing exhaust pump noise. Includes filter, centering ring and clamp to attach to exhaust outlet. Shipping weight 2.0 lbs. (0.9 kg)

7587200 - Tip Seal Kit for Scroll Vacuum Pump. Tip Seal Replacement Kit provides all parts needed to replace tip seals in Scroll Vacuum Pumps. Includes two tip seals and O-rings. Labconco recommends replacing tip seals every 40,000 hours of pump use. Shipping weight 0.5 lbs (0.2 kg)

Product Shelves & Test Tube Racks



Product Shelves. For bulk samples, microwell plates or serum bottles. Aluminum 10" dia. with 1/4" rims, three steel support rods and rubber feet. **Requires Chamber (not included).**

7317100—Three. Overall height: 9.8".
Shipping weight 4.5 lbs. (2.0 kg)

7317200—Five. Overall height: 17.5".
Shipping weight 7.0 lbs. (3.2 kg)



Round Test & Microcentrifuge Tube Racks. 304 stainless steel. 9.0" dia. x 2.5" h. Holds up to 104 each 12-13 mm test tubes or microcentrifuge tubes. For use with 7317100, 7317200 and Heated Product Shelf Chambers with nine-digit catalog numbers. **Tubes not included.**

7379000—Round Test Tube Rack. Shipping weight 2.8 lbs. (1.3 kg)

7379001—Microcentrifuge Tube Rack. Includes adapter plate for microcentrifuge tubes. Shipping weight 2.8 lbs. (1.3 kg)

Accessories

Chambers



304 Stainless Steel Drying Chambers. Clear lid with neoprene gasket and valves and plastic molded knobs. For 1/2" and 3/4" flask adapters.

7522800—12-Port. 304 stainless steel chamber with 1/2" thick acrylic lid and twelve neoprene valves. 8.0" dia. x 9.75" h. Shipping weight 11 lbs. (5 kg)

7522801—12-Port. PTFE-coated 304 stainless steel chamber with 1/2" thick acrylic lid and twelve neoprene valves. 8.0" dia. x 9.75" h. Shipping weight 11 lbs. (5 kg)

7522900—16-Port. 304 stainless steel chamber with 3/4" thick acrylic lid and sixteen neoprene valves. 13.0" dia. x 13.0" h. Shipping weight 21 lbs. (10 kg)

7522901—16-Port. PTFE-coated 304 stainless steel chamber with 3/4" thick acrylic lid and sixteen neoprene valves. 13.0" dia. x 13.0" h. Shipping weight 21 lbs. (10 kg)

7555200—0-Port. 304 stainless steel chamber with 3/4" thick glass lid, vacuum release valve, and pass-through for electrical cords. For use with 7317100 product shelves. 13.0" dia. x 13.0" h. Shipping weight 21 lbs. (10 kg)



Clear Chambers with Valves. For bulk drying with flask drying option. Includes acrylic base, anodized aluminum lid, and eight neoprene valves with molded plastic knobs. For 1/2" and 3/4" flask adapters. 8" dia. opening and cap for 3" dia. attachment port.

7318802—Short. For use with 7317100 product shelves. 12.0" ID dia. x 15.0" h. Shipping weight 22 lbs. (10 kg)

7318800—Tall. For use with 7317100 and 7317200 product shelves. 12.0" ID dia. x 22.8" h. Shipping weight 25 lbs. (11 kg)



Clear Chambers. For view of product shelves during bulk drying. Includes acrylic lid and base, neoprene gasket, vacuum release valves and pass-through for electrical cords. 8" dia. opening and cap for 3" dia. attachment port on console freeze dryer.

7318702—Short. For use with 7509200, 7509201 and 7317100 product shelves 12.0" ID dia. x 16.5" h. Shipping weight 17 lbs. (8 kg)

7318700—Tall. For use with 7509400, 7509401 and 7317200 product shelves 12.0" ID dia. x 24.3" h. Shipping weight 20 lbs. (10 kg)

Drying Accessories

Heated Shelf Chambers



Heated Product Shelf Chambers with Valves. For bulk drying and flask drying. Eight ports accommodate both 1/2" and 3/4" flask adapters. Includes 12" dia. acrylic cylinder and base, 10" dia. removable shelves, and temperature probes. Controlled heat settings -20 C (-4F) to + 60 C (+140F). Shelves do not cool. Overall dimensions: 13.5" w x 16.8" d x 14.2" h or 21.8" h. Has 8" dia. opening and cap for 3" dia. attachment port.



Heated Product Shelf Chambers. For bulk drying solid samples or drying small serum bottles or vials. Include 12" dia. acrylic cylinder and base, 10" dia. removable shelves, temperature probes and vacuum release valve. Controlled heat settings -20 C (-4F) to + 60 C (+140F). Shelves do not cool. Overall dimensions: 13.5" w x 15.2" d. x 14.2" h or 21.8" h. Has 8" dia. opening and cap for 3" dia. attachment port.

7 8 0 8 0

Select of **NUMBER OF VALVES**. This is the sixth digit.

- 1** = Zero Valves
- 2** = 8 Valves

Select of **NUMBER OF SHELVES**. This is the seventh digit.

- 0** = 3 shelves
- 1** = 5 shelves

Select the **ELECTRICAL CONFIGURATION** and **OUTLET TYPE** of your freeze dryer. These are the eighth and ninth digits.

- 00** = 115V, 60 Hz, with 20A plug for North America
- 10** = 230V, 60 Hz, with plug for North America
- 15** = 230V, 60 Hz, with plug for Saudi Arabia
- 30** = 230V, 50 Hz, with Schuko plug
- 40** = 230V, 50 Hz, with plug for China/Australia
- 50** = 230V, 50 Hz, with plug for Great Britain (UK)
- 70** = 230V, 50 Hz, with plug for India
- 90** = 230V, 50 Hz, with Schuko, China/Australia, Great Britain (UK) and India

Accessories

Tray Dryer and Shelf



7204300—6-Port Manifold with Isolation Valve. For 1/2" or 3/4" flask adapters. **Not for use with Small Tray Dryers.** 30.1" w x 20.6" d x 13.5" h. Shipping weight 45 lbs. (21 kg)

7726500—6-Port Tray Dryer Manifold. Not field installable with 7761500. **Not for use with Small Tray Dryers.** 30.0" w x 16.5" d x 7.0" h. Shipping weight 19 lbs. (9 kg)

7761500—Isolation Valve. Separates tray and freeze dryers to shorten time necessary to reestablish working vacuum levels and provide a means for checking end point. Includes valve and handle, clamps and couplings. Not field installable with 7726500. **Not for use with Small Tray Dryers.** Shipping weight 5.0 lbs. (2.3 kg)

7756300—Shelf Spacers. Assist stoppering of partial loads of small serum bottles. 304 stainless steel. One pair. 9.0" w x 13.0" d x 2.5" h. Shipping weight 3.0 lbs. (1.4 kg)



Bulk Trays. Contain pre-frozen liquids for bulk drying. 304 stainless steel with 0.9" lip. **Large Tray not for use with Small Tray Dryer.** Shipping weight 3.0 lbs. (1.4 kg)

7377900—Small. 10.3" x 11.6"

7756200—Large. 12.4" x 14.5" Compatible with Stoppering Tray Dryer, Bulk Tray Dryer, and Triad

7756100—Tray with Slide-Out Bottom. Stainless steel. **Not for use with Small Tray Dryer.** 12.0" w x 14.0" d. Shipping weight 5.0 lbs. (2.3 kg)



7369600—Microwell Plate Holder. Holds a 127.8 x 85.5 mm microplate. 5.7" w x 8.0" d x 0.7" h. One each. Aluminum. **Microplate not included.** Shipping weight 2.0 lbs. (0.9 kg)



Rectangular Test Tube & Microcentrifuge Tube Racks. 304 stainless steel. 12.0" w x 10.0" d x 2.5" h. Holds up to 70 each 12-13 mm test tubes or microcentrifuge tubes. **Tubes not included.**

7370000—Test Tube Rack. Shipping weight 2.8 lbs. (1.3 kg)

7370001—Microcentrifuge Tube Rack. Includes adapter plate for microcentrifuge tubes. Shipping weight 3.5 lbs. (1.6 kg)



7439300—Microcentrifuge Tube Holder. 3.0" w x 2.25" d x 1.0" h. Holds twelve 1.7 ml tubes. Anodized aluminum. One each. May be placed on any flat freeze drying surface. **Tubes not included.** Shipping weight 0.6 lb. (0.3 kg)



7516200—Support Grid. Stainless steel tray with removable plastic grid holds 144 containers of 12 mm dia. 7.0" w x 7.0" d. Shipping weight 2.5 lbs. (1.1 kg)

Accessories

Manifolds

Manifolds. 304 stainless steel with neoprene valves and molded plastic knobs. For 1/2" and 3/4" flask adapters.



7201700—4-Port. 8.6" w x 8.6" d x 11.2" h.
Shipping weight 5.5 lbs. (2.5 kg)



7201800—8-Port. 8.6" w x 8.6" d x 15.7" h.
Shipping weight 8.5 lbs. (3.9 kg)



7522300—20-Port. 27.4" w x 8.7" d x 11.0" h.
Shipping weight 15 lbs. (7 kg)



7201900—14-Port. For Console models only.
24.3" w x 10.6" d x 10.3" h.
Shipping weight 21 lbs. (10 kg)



7202000—28-Port. For Console models only.
24.3" w x 10.6" d x 18.3" h.
Shipping weight 38 lbs. (17 kg)

Accessories

Fast-Freeze™ Flasks

Fast-Freeze Flasks. Flasks should be filled to no more than one-third of their volume. Includes silicone top, glass bottom and a supply of filter paper. Amber-colored glass helps to protect light-sensitive samples and is available in four sizes. Clear available in 10 sizes.

Adapters are required (not included).

- Compatible with all major brands of laboratory freeze dry apparatus
- Variety of adapters available
- No complex filter retainer is necessary. One hundred filters supplied with each flask
- High strength borosilicate glass bottom to withstand extreme temperatures and high vacuum
- Entire flask may be autoclaved



Flask Size	Catalog Number		Flask Top Diameter*	Flask Bottom Dimensions (h x d)	Shipping Weight
	Clear Flask	Amber Flask			
40 ml	7540000		1/2"	76 x 34 mm	1.0 lb. (0.5 kg)
80 ml	7540200		1/2"	115 x 34 mm	1.0 lb. (0.5 kg)
120 ml	7540300		3/4"	68 x 59.2 mm	1.0 lb. (0.5 kg)
150 ml	7540400		3/4"	85 x 59.2 mm	1.0 lb. (0.5 kg)
300 ml	7540600	7540601	3/4"	145 x 59.2 mm	1.5 lbs. (0.7 kg)
600 ml	7540800	7540801	3/4"	135 x 90.2 mm	2.0 lbs. (0.9 kg)
750 ml	7541100	7541101	3/4"	162 x 90.2 mm	2.0 lbs. (0.9 kg)
900 ml	7540900	7540901	3/4"	190 x 90.2 mm	2.2 lbs. (1.0 kg)
1200 ml	7541000		3/4"	240 x 90.2 mm	2.2 lbs. (1.0 kg)
2000 ml	7541200		3/4"	380 x 90.2 mm	2.2 lbs. (1.0 kg)



7544810—Replacement Filter Paper. 1000 (10 packages of 100). 1" dia. (28mm). Pore size 17 microns. Shipping weight 0.5 lb. (0.2 kg)

*Valves on the freeze dryers, drying chambers and manifolds fit adapters with both 1/2" and 3/4" dia.

Accessories

Fast-Freeze™ Adapters

Flask Adapters. Connect Fast-Freeze Flasks to the valve ports on your drying chamber or manifold. Borosilicate glass or stainless steel adapters in 1/2" and 3/4" dia. **Required for operation.** Shipping weight 0.5 lb. (0.2 kg)



Straight Stainless Steel	
7547000	1/2" to 1/2"
7547200	3/4" to 3/4"

Straight Borosilicate Glass	
7545000	1/2" to 1/2"
7545200	3/4" to 3/4"
7545400	1/2" to 3/4" and 3/4" to 1/2"



45° Bend Stainless Steel	
7547400	1/2" to 1/2"
7547600	3/4" to 3/4"

45° Bend Borosilicate Glass	
7545600	1/2" to 1/2"
7545800	3/4" to 3/4"
7546000	1/2" to 3/4" and 3/4" to 1/2"



7543800—Stainless Steel Adapter 29/32. Allows connection of 29/32 round bottom flasks to valve ports on drying chambers and manifolds. Shipping weight 1.0 lb. (0.5 kg)



7543900—Aseptic Adapter. For use with Fast-Freeze Flasks in place of an adapter. Allows a flask to be filled under sterile conditions prior to lyophilization and transported in a closed position before and after. 3/4" OD for connection between a Fast-Freeze Flask and a valve port on any Labconco Drying Chamber or Manifold. Corrosion-resistant PTFE. 1.75" w x 0.75" d x 3.2" h. Shipping weight 0.5 lb. (0.2 kg)



7540100—FreeZone Freeze Dry Glassware Kit. Includes one each flask and adapters: 7540800 (600 ml) and 7540600 (300 ml), 7547200 (3/4" straight stainless steel) and 7547600 (3/4" 45° bend stainless steel). Shipping weight 5.0 lbs. (2.0 kg)

Accessories

Fast-Freeze™



Tube Holders. Stainless steel. Hold tubes in an upright position inside a Fast-Freeze Flask or Lymph-Lock Flask. **Tubes and glassware are not included.** Shipping weight 1.0 lb. (0.5 kg)

7442600—Holds 15 tubes. For 12 or 13 mm dia tubes. 144 h x 83.3 d mm. For flasks 900 ml or larger.

7442700—Holds 30 tubes. For 0.5, 1.0 and 2.0 ml microcentrifuge tubes. 139 h x 83.3 d mm. For flasks 900 ml or larger.

7379400—Holds 9 tubes. For 15 ml tubes. 170 h x 88.9 d mm. For flasks 1200 ml or larger.

7379500—Holds 4 tubes. For 50 ml tubes. 30 h x 116 d mm. For flasks 1200 ml or larger.



7369700—Slant Freeze Flask Holder. Slant freezing increases the surface area to volume ratio, maximizing freeze drying rate. Angle is manually adjustable from 5° to 35°. Powder-coated steel. 10.4" w x 4.5" d x 6.7" h. Shipping weight 3.5 lbs. (1.6 kg)



Flask Holders. Help to prevent sample meltback. Hold Fast-Freeze Flask containing the sample inside a larger Fast-Freeze Flask so that sample is insulated. Stainless steel. **Flasks not included.** Shipping weight 1.0 lb. (0.5 kg)

7543300—Small. For use with inner flasks 7540000 (40 ml), 7540200 (80 ml) and outer flasks 7541100 (750 ml), 7541101 (750 ml), 7540900 (900 ml), 7540901 (900 ml).

7543400—Large. For use with inner flasks 7540300 (120 ml), 7542400 (150 ml), 7540600 (300 ml), 7540601 (300 ml) and outer flask 7541000 (1200 ml).

Accessories

Serum Bottles & Ampules

Serum Bottles. Specifically designed for lyophilization with uniform thin walls to even freezing and drying. Serum Bottles, Stoppers and Seals supplied in packages of 100.



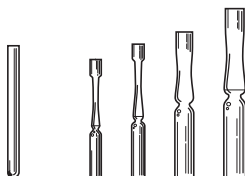
Size	20 mm Corkage	13 mm Corkage	Split Stoppers	Aluminum Seals
2 ml		7575010	7576010	7577010
3 ml		7575210	7576010	7577010
5 ml	7573010		7576210	7577110
10 ml	7573210		7576210	7577110
20 ml	7573410		7576210	7577110
30 ml	7573610		7576210	7577110
50 ml	7573810		7576210	7577110
100 ml	7574010		7576210	7577110
125 ml	7574210		7576210	7577110



Seal Crimpers. Secure tear-away Aluminum Seals. Shipping weight 3.0 lbs. (1.4 kg)

7578000—For 13 mm corkage.

7578100—For 20 mm corkage.



Ampules.
Borosilicate glass.
Package of 100.

Size	Straight	Pre-Scored Flat Bottom
1 ml	7572710	7570610
2 ml		7570810
5 ml		7571010
10 ml		7571210



Ampule Pods. Attach to a single drying chamber or manifold valve port. Polypropylene base with 15 silicone tubing ports, 15 plugs and two clamps. Include one straight stainless steel adapter for connection to a drying accessory valve port. 3.8" w x 3.8" d x 7.5" h. Shipping weight 2.5 lbs. (1.1 kg)

7205100—1/4" ID tubing port dia. For use with 7572710 and 7571010.

7205101—3/8" ID tubing port dia. For use with 7570610, 7570810 and 7571210.



7593401—Ampule Valve Adapters. Connect ampules to valve ports.
Package of 10. Shipping weight 0.5 lb. (0.2 kg)



7762700—Three Way Adapter. Permits attachment of three ampules to a single valve port. Ampules are attached using Ampule Valve Adapters 7593401 or 1/8" surgical tubing (**valve adapters and tubing not provided**). Cavity in adapter body can be filled with cotton fiber media to help prevent contamination between samples. Shipping weight 0.2 lb. (0.1 kg)



7578500—Oxygen/Natural Gas Sealing Torch. Specifically designed for flame sealing freeze dry ampules. Seals all types of heat-resistant glass. Connects to natural gas, butane or propane and oxygen with 1/4" ID hose connectors. Shipping weight 3.0 lbs. (1.4 kg)

FreeZone® Freeze Dryers

Specifications

All models feature:

- ❖ Full color, 5" capacitive touch screen with Lyo-Works OS:
 - Real time display of collector temperature, vacuum level and optional End-Zone end point detection
 - Automatic and manual start-up modes for collector cool down and vacuum pull down
 - Vacuum set point, alerts, diagnostic tests, user manual, defrost control and optional drying accessory control
 - Data logging stores and displays data in table or graph format, and may be exported via USB
 - Settings include language (English, Spanish, French, German, Italian, Portuguese, Chinese, and Japanese), time, temperature (°C or °F) and vacuum (mBar, Torr or Pa)
 - Alerts can be emailed to user-entered addresses via Ethernet connection
 - Diagnostics and QR Resources
 - Maintenance alert settings for vacuum pump and refrigeration
 - Security lock-out
- ❖ USB port and Ethernet connection
- End-Zone compatible (End-Zone Starter Kit sold separately. (See page 26)
- Vacuum control valve and break valve
- ❖ Patented* vacuum line moisture sensor
- Stainless steel and powder-coated steel exterior
- Quick-disconnect drain hose fitting with hose connector. 18" of 1/4" ID silicone tubing and clamp included
- Collectors reaching -50°C include acrylic lid. Collectors reaching -84°C or -105°C include stainless steel lid
- Hot gas defrost with auto shut off at +60°C (+140°F)

Benchtop models also feature:

- Upright stainless steel collector coil capable of holding 2.5, 4.5 or 8 liters of ice before defrosting. Collector lid, 3/4" thick, has neoprene gasket and 3" dia. port to connect drying accessories (sold separately)
- Electrical receptacle for vacuum pump connection
- 3/4" OD vacuum connection, 50" of 3/4" ID vacuum hose and two clamps

Console models also feature:

- Upright stainless steel collector coil capable of holding 6, 12 or 18 liters of ice before defrosting. Collector lid, 3/4" thick, has neoprene gasket
- Console cabinet with interior space for vacuum pump (sold separately) and two-piece, removable front panel with viewing window
- Clear acrylic chamber lid, 3/4" thick, with neoprene gasket
- Exterior electrical receptacle for vacuum pump connection

- 3/4" OD vacuum connection, 36" of 3/4" ID vacuum hose and two clamps

Standards conformance & regulations:

- UL Standard 61010-1 (115/230V, 60 Hz models)
 - CAN/CSA C22.2 No. 61010-1 (115/230V, 60 Hz models)
 - CE Conformity marking (230V, 50 Hz models)
- @ **WARNING:** Cancer — P65Warnings.ca.gov (California only)

Benchtop options include:

- **For 2.5 and 4.5 L:** Single 1/3 hp HCFC/CFC-free refrigeration system to cool collector to ~-50°C (~-58°F), two 1/3 hp HCFC/CFC-free refrigeration systems to cool collector to ~-84°C (~-119°F) or **for 4.5 L only:** two 1/2 hp HCFC/CFC-free refrigeration systems to cool collector to ~-105°C (~-157°F) at 60 Hz or ~-102°C (~-152°F) at 50 Hz. **For 8 L:** Single 3/4 hp HCFC/CFC-free refrigeration system to cool collector to ~-50°C (~-58°F)
- PTFE-coated collector coil and chamber for corrosive compounds
- Region-specific electrical plug configurations

Console options include:

- Single 3/4 hp (6 L), 1 hp (12 L) or 1-1/2 hp (18 L) HCFC/CFC-free refrigeration system to cool collector to ~-50°C (~-58°F) or two 1/3 hp (6 L) or 3/4 hp (12 L) HCFC/CFC-free refrigeration systems to cool collector to ~-84°C (~-119°F)
- Purge valve - temporarily isolates vacuum from the system to optimize performance before or after freeze drying
- PTFE-coated collector coil and chamber for corrosive compounds
- Built-in shell freezer with stainless steel bath, 5.5" w x 12.5" d x 7.5" h, that includes 1/2 hp HCFC/CFC-free refrigeration system to cool heat transfer solution to -40°C (-40°F), 3/4" thick high-density polyethylene lid, neoprene gasket and quick-disconnect drain hose fitting and 18" of 1/4" ID silicone tubing with clamp (6 L -50°C only)
- Built-in stainless steel mini vacuum drying chamber, 5.1" w x 13.0" d x 2.5" h, that includes 50-watt heater with microprocessor control to +60°C (+140°F), 3/4" thick clear acrylic lid and neoprene gasket. (Chamber is not cooled.)
- Region-specific electrical plug configurations

All models require (not included):

- Vacuum pump with a displacement of at least 98 L/min, 0.02 mBar ultimate pressure and fitting for 3/4" ID vacuum hose. See pages 19-20
- Drying accessory. See pages 14-15, 17-18, 22, 24-25
- Freeze dry glassware if not bulk freeze drying. See pages 29-32

❖ Labconco exclusive feature
*U.S. Patent No. 6,968,631

