FreeZone® Triad® Benchtop Freeze Dryers



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LABCONCO®

The considerate freeze dryer.

Your samples are our motivation. Because we know how much freeze drying matters. Tissue research. Drug discoveries. Vaccine development. Lives saved.

Your freeze dried samples may need to be stoppered in vials under vacuum. Or you may have a variety of samples on trays and in flasks. If so, consider the FreeZone® Triad®.

Triad makes selecting the right freeze dryer system easy. How? By combining a benchtop lyophilizer with a built-in stoppering tray dryer for vials and four port manifold for flasks. Its -85° C collector can handle either aqueous or dilute acetonitrile samples. Add a vacuum pump and you're ready to go. Ready to start your work.

As we've done since 1974, we build each FreeZone by hand. With care. And the highest quality materials. Your Triad will last and last.

We considered everything. All in one system. Versatile sample handling. Durability. Triad.

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Lyo-Works™ Operating System

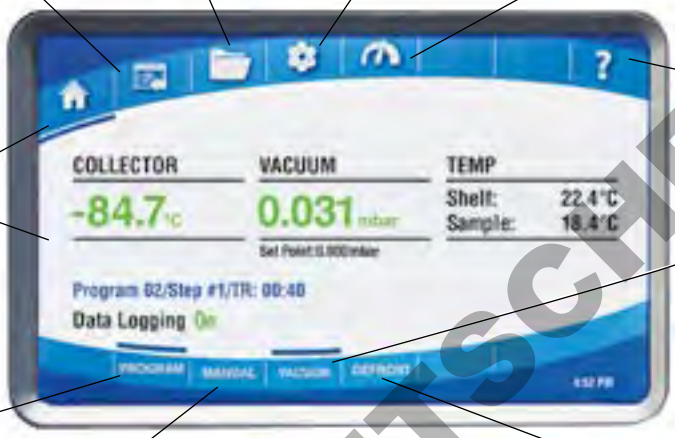
Features & Benefits

Programs
Lets you create, edit, view and initiate programs. Stores up to 30 programs with up to 16 steps each. Each step may include ramp rate, shelf temperature, hold time and vacuum.

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 more.

Sensors
Displays temperature values for collector, vacuum, shelf and sample sensors.



Help
Access diagnostic tools.

Home
Get at-a-glance collector temperature, vacuum pressure, shelf and sample temperature, program step and data logging mode.

Vacuum Button
Manually starts/stops the vacuum pump or change the vacuum set point.

Program Button
Opens the Programs screen.

Manual Button
Manually starts/stops the collector and shelf temperature control. Select from three modes: shelf to Max Cold, freeze dry flasks only, and maintain shelf temperature to set point.

Defrost Button
Manually starts/stops defrost. Automatically turns off when collector reaches +60° C or after two hours of defrost.

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. You'll experience peace of mind about the integrity of your samples throughout lyophilization, even when you're not in the lab.

Lyo-Works lets you monitor, record and store the condition of your samples.

- Real time on-screen tables and graphs to immediately show sample status so you can make adjustments if needed
- Data and program storage for repeatability of protocols
- Data transfer via Ethernet or USB port (no additional recorders or computers needed)

Your samples and time are valuable. Find out how your samples are doing every step of the way from your smartphone—at work or away.

- Get email updates on your samples' status
- Get email notifications when your freeze dryer's set points are outside of normal range

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

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Features & Benefits



❇ **Pneumatic mechanism stoppers containers on shelf**
Containers are stoppered while chamber is under vacuum and without the use of compressed gas. Atmospheric pressure causes the diaphragm to expand. The pressurized diaphragm forces the plate down, pushing the stoppers into the containers.



❇ **Environmentally-safe refrigeration**
Two compressors cool the collector coil to -85° C (-121° F), ideal for samples with low eutectic points including ones containing dilute acetonitrile. Refrigeration and heat alter the temperature of fluid circulating through channels in the shelf. Shelf may be set to pre-freeze and then to lyophilize. Safe refrigerant is non-flammable and does not contain hydrochlorofluorocarbons (HCFCs) or chlorofluorocarbons (CFCs) that can damage the ozone.

❇ **Collector drain pan and hose**
Stainless steel drain pan catches defrosted condensate. Remove the pan for cleaning.

Four valve ports
Versatile Triad lets you freeze dry samples in flasks and on the shelf at the same time.

Pre-freeze samples to save money and time
Samples may be frozen on the shelf at a controlled rate, eliminating the need for a separate freezer and product transfer.



❇ Labconco exclusive feature

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Specifications

Application suitability:

- Small sample loads or numerous sample batches containing water or acetonitrile
- Stoppering vials or serum bottles under vacuum
- Limited floor space

All models feature:

❇ Stainless steel collector coil capable of removing 1.84 L of water in 24 hours and holding 2.5 L of ice before defrosting*

❇ Two 1/3 hp HCFC/CFC-free refrigeration compressors cool the collector to -85° C (-121° F) and work in concert with a 1000-watt heater to cool and heat fluid medium circulating through channels in the shelf. Not for use with samples containing methanol or ethanol

- Processing shelf, 12.4" w x 14.5" d (31.5 x 36.8 cm). Spacing between shelf and top of chamber accommodates containers with stoppers up to 148 mm maximum height
- One probe for monitoring temperature of sample in chamber
- Pirani vacuum sensor
- Temperature ramp and hold programming from -55° C to +50° C (-67° F to +122° F) and -75° C (-103° F) during pre-freezing. Controls temperature to ±1° C of set point. Memory to store 30 programs with 16 segments each including number of steps, ramp rate, shelf temperature, hold time and vacuum level

❇ Full color, 5" capacitive touch screen with Lyo-Works OS:

- Real time display of collector temperature and vacuum level
- Creation and storage for up to 30 programs with up to 16 steps each. Ability to set ramp rate, shelf temperature, shelf temperature time and vacuum set point per step
- Manual start-up buttons for collector and shelf temperature control and vacuum pull down
- Alerts, diagnostic tests, user manual and defrost control
- Data logging stores and displays data in table or graph format, and may be exported via USB or Ethernet
- Settings include language (English, Spanish, French, German, or Italian), time, temperature (° C or ° F) and vacuum (mBar, Torr or Pa)
- Alerts can be emailed to user-entered addresses via Ethernet connection
- Vacuum pump maintenance alert
- Security lock-out

❇ Pneumatic stoppering mechanism with diaphragm and plate. **No compressed gas is required**



- Stoppering control knob, vacuum release control knob and 1/8" OD user-supplied sterile/inert gas backfill port
- Four left side-mounted neoprene valves with molded plastic knobs and fittings that accommodate 1/2" and 3/4" flask adapters

❇ USB port and Ethernet connection

- Electrical receptacle for vacuum pump
- Hot gas defrost with stainless steel drain pan, silicone drain hose and auto shut off at +60° C (+140° F)
- Vacuum control valve

❇ Vacuum break valve

- Stainless steel and powder-coated steel exterior
- Clear acrylic door, 1" thick, with silicon gasket and latch
- 3/4" OD vacuum connection. 36" long, 3/4" ID vacuum hose with two clamps

Models conform to the following standards:

- 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)

⚠California **WARNING:** Cancer - P65Warnings.ca.gov

Options include:

- Region-specific electrical plug configurations

All models require (not included):

- Vacuum pump with a displacement of at least 98 L/min, 0.002 mBar ultimate pressure and fitting for 3/4" ID vacuum hose. See page 7
- Freeze dry glassware if not bulk freeze drying

Serum Bottle Capacity

Catalog Number	7575010	7575210	7575310	7573210	7573410	7573610	7573810	7574010	7574210
Volume	2 ml	3 ml	5 ml	10 m	20 ml	30 ml	50 ml	100 ml	125 ml
Shelf Capacity	400	441	233	196	121	86	64	42	36

*Freeze drying rate will be lower for samples other than plain water. For optimum performance, room temperature should be 21° C (70° F) or colder.

❇ Labconco exclusive feature

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Ordering Information



Catalog Number Configurator:

Use this key to configure the nine digit catalog number to order your FreeZone Triad Benchtop Freeze Dryer.

7 9 4 0 0 1 0 ☐ ☐

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

10 = 230V, 60 Hz, 12A with plug for North America
15 = 230V, 60 Hz, 12A with plug for Saudi Arabia
30 = 230V, 50 Hz, 12A with Schuko plug
40 = 230V, 50 Hz, 12A with plug for China/Australia
50 = 230V, 50 Hz, 12A with plug for Great Britain (UK)
70 = 230V, 50 Hz, 12A with plug for India

Plug Configurations


230V, 60 Hz
for North America


230V, 60 Hz
for Saudi Arabia


230V, 50 Hz
Schuko


230V, 50 Hz
for China/Australia


230V, 50 Hz
for Great Britain (UK)


230V, 50 Hz
for India

Actual Dimensions & Shipping Weight

Overall Dimensions (w x d x h)	Shipping Weight
28.3" x 29.5" x 27.7" (71.9 x 74.9 x 70.4 cm)	440 lbs. (200 kg)

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Vacuum Pumps

Selection Guide & Ordering Information

The Rotary Vane, Combination and Scroll Vacuum Pumps provide the deep vacuum needed for good freeze drying results.

Find the recommended Rotary Vane, Combination and/or Scroll Vacuum Pump for your Triad based on your sample type.

Sample Contains	Pump Type	Recommend Pump (≥98 lpm)*	Recommended Pump (≥163 lpm)
Water	Rotary Vane	**7739402**	**7739403**
Acids & Solvents	Combination	**7584002**	—
	Scroll	—	**7587002**

Rotary Vane



Combination



Scroll



General Purpose Rotary Vane Vacuum Pumps

For use with aqueous samples. Ultimate vacuum (total pressure) 2 x 10^{-3} mBar (1.5 micron). With cast aluminum casing, rubber feet, lifting bracket, on/off switch, two inlet adapters (1/2" and 3/4" OD). Two position selector: High Vacuum and High Throughput. Three position gas ballast: Closed, Low Flow and High Flow. Single phase direct drive motor, totally enclosed and fan cooled, with thermal overload protection. Isolation valve seals the inlet to prevent oil and air contamination of the system in the event of power failure. Include 230V reverse IEC plug, four each one liter bottles of vacuum pump oil and one exhaust filter with oil mist and odor filter elements.

Catalog Number	Electrical Configuration	Displacement at 60 Hz (50 Hz) L/min	Shipping Weight
7739402	230V, 50/60 Hz, 2.4A	117 (98) L/min	62 lbs. (28 kg)
7739403	230V, 50/60 Hz, 4.0A	195 (163) L/min	65 lbs. (30 kg)

7584002—VACUUBRAND HYBRID** Combination Vacuum Pump

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. Two-stage rotary vane pump and two-stage, chemical-resistant diaphragm pump. Diaphragm pump removes the condensible vapors in the rotary vane pump before they can contaminate the oil, to extend oil and pump life. Pump oil lasts up to 10 times longer than in conventional rotary vane pumps. Ultimate vacuum (partial pressure) 2 x 10^{-3} mBar (1.5 micron). Pressure control valve compensates for the different volumes displaced by the two pumps. Glass separator captures downstream condensate vapors. Includes 230V reverse IEC plug, lifting handle, 3/4" OD inlet adapter, one liter bottle of vacuum pump oil, power switch, power cord and plug. 115 (98) L/min displacement at 60 Hz (50 Hz). Operates on 230V, 50/60 Hz, 2.7A. Shipping weight 66 lbs. (30 kg)

7587002—Scroll Vacuum Pump

For use with acids below 20% concentration and solvents including acetonitrile. Low maintenance, longer lasting. Does not require oil for lower lifetime operation costs, less maintenance is needed compared to oil pumps. Lubrication-free, hermetically-free environment for totally clean and dry vacuum. Two spiral scrolls compress air and vapors to move them toward the exhaust. Ultimate vacuum (partial pressure) 2 x 10^{-3} mBar (5.3 micron). Quiet operation of <52 dB(A). Glass separator captures downstream condensate vapors. Includes 3/4" inlet adapter, power switch, power cord and plug. 195 (189) L/min displacement at 60 Hz (50 Hz). Operates on 230V, 50/60 Hz, 2.7A. Shipping weight 59 lbs. (26 kg)

*Faster freeze drying rates may be achieved by using pumps with larger displacement capacities.
**VACUUBRAND HYBRID™ is a trademark of VACUUBRAND GMBH + CO KG.

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Vacuum Pumps

Accessories

1472200—Inlet Filter. For Rotary Vane Pumps 7739402 and 7739403. Prevents oil back streaming and prevents submicron particle damage. Includes filter assembly and one filter cartridge. Life is approximately 1000 hours at 1.33 x 10^{-2} mBar (10 microns) vacuum. Shipping weight 1.0 lb. (0.5 kg)

1473400—Replacement Exhaust Filter. For Rotary Vane Pumps 7739402 and 7739403. Removes oil mist and odor from exhaust. Includes filter assembly, one oil mist filter cartridge and one odor filter cartridge. Oil mist filter life approximately one year and odor filter cartridge life approximately six months at 1.33 x 10^{-2} mBar (10 microns) vacuum. Shipping weight 1.0 lb. (0.5 kg)

7584300—VACUUBRAND* B-Oil. One liter. Replacement oil for Combination Vacuum Pumps 7584000 and 7584002. Shipping weight 2.0 lbs. (0.9 kg)

7541300—Vacuum Pump Oil. One gallon (3.8 L) synthetic hydrocarbon oil. Shipping weight 12 lbs. (5 kg)

Vacuum Pump Oil. Hydro-treated paraffinic hydrocarbon oil. Replacement oil for Rotary Vane Pumps 7739402 and 7739403.

Catalog Number	Volume	Shipping Weight
1988000	One liter	2.0 lbs. (0.9 kg)
1988001	One gallon (3.8 L)	12 lbs. (5 kg)

1473500—Oil Return Kit. Allows extended operation of the pump with the ballast open and helps to keep oil purged of contaminants. When excess oil collects in the filter, it is directed back to the pump to conserve oil. Stainless steel cylinder and tubing with clamp. Shipping weight 0.5 lb. (0.2 kg)

7587300—Pump Silencer. For Scroll Pump 7587002. Filters exhaust and silence exhaust pump noise. Includes filter, centering ring and exhaust outlet clamp. Shipping weight 2.0 lbs. (0.9 kg)

7587200—Tip Seal Replacement Kit. For Scroll Pump 7587002. Includes two tip seals, two o-rings, exhaust valve and spring and other small components. Shipping weight 2.0 lbs. (0.9 kg)

7587500—Bearing Replacement Service Kit. For Scroll Pump 7587002. Includes contact bearings, shaft end cap, washers, screws, plugs and o-rings. Shipping weight 2.0 lbs. (0.9 kg)

7373436—Wire-Reinforced PVC Tubing. 3/4" ID. 3' length. Shipping weight 5.0 lbs. (2.3 kg)

Visit labconco.com for ordering information on serum bottles, vials, flasks, carts and other accessories.

*VACUUBRAND™ is a trademark of VACUUBRAND GMBH + CO KG.

ISO 9001 CERTIFIED

Made in the U.S.A.

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Product design subject to change without notice.

3-35-06/19/18