



**FreeZone®**

Freeze Dry Systems and Accessories



*Protecting your  
laboratory environment*

**LABCONCO®**



# FreeZone® Freeze Dry Systems

AN OVERVIEW

## FreeZone® 2.5–18 Liter Freeze Dry Systems

**DEFROST** switch with LED indicator light. Controls the hot gas chamber defrost function found on all FreeZone 6, 12 and 18 Liter Console Systems.

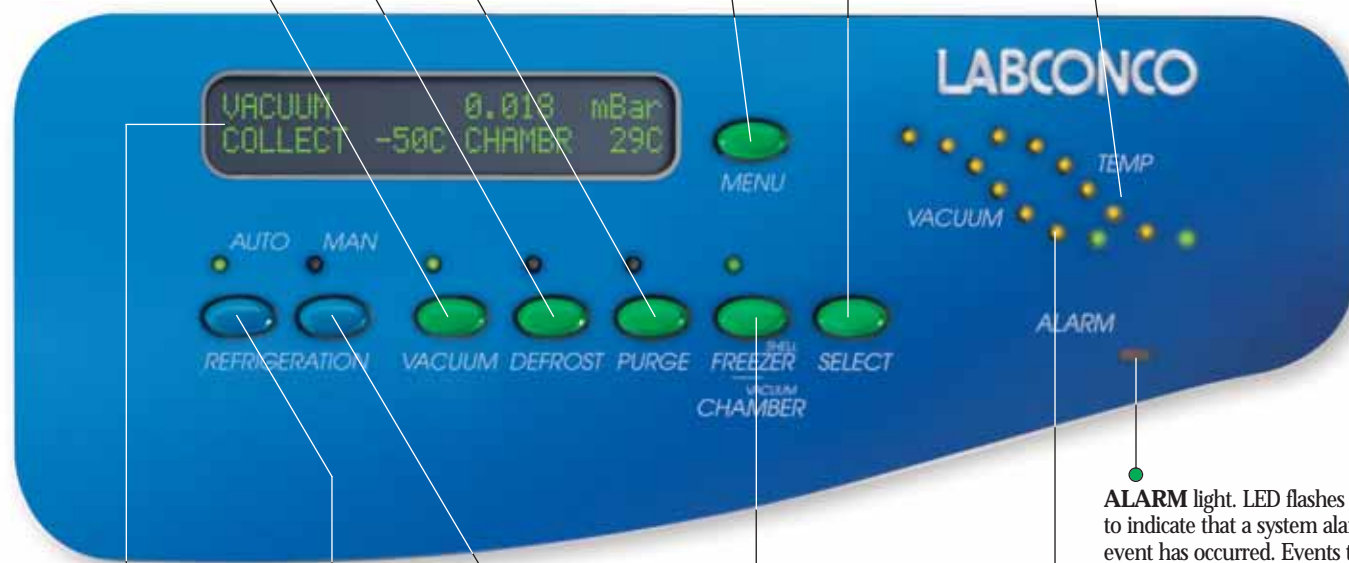
**VACUUM** switch with LED indicator light. Starts or stops the vacuum pump.

**PURGE** switch with LED indicator light. Controls the optional purge valve available on FreeZone 6, 12 and 18 Liter Console Systems. The green LED illuminates when the purge valve is closed, isolating the pump from the collector chamber.

**MENU** switch. Press to change screen display.

**SELECT** switch. Press to select desired vacuum or temperature unit of measure or set-up parameters.

**TEMPERATURE GRAPH DISPLAY.** Provides at-a-glance monitoring of the collector temperature. The highest LED illuminates amber to indicate that the temperature is warmer than +10° C. The indicators sequence down when the temperature reaches +10, 0, -10, -20, -30 and -40° C. When the collector temperature reaches -40° C, the lowest LED illuminates green, indicating temperature is right to add samples.



**LCD.** Displays system set-up and operating parameters and alarm messages. The user may configure the display to show vacuum in mBar, Pa or Torr and temperature in ° F or ° C. Other displays include: total duration of refrigeration operation and total duration since the refrigeration system was last serviced (in hours); total duration of vacuum operation and total duration since the vacuum pump was last serviced (in hours); time between RS-232 transmissions (10, 30, 60, 300 or 600 second intervals); and alarm messages: power failure, improper line voltage supply, collector temperature rise above -40° C, service vacuum pump (after 1000 hours of vacuum use) and moisture in collector.

**MANUAL** refrigeration switch with LED indicator light. Press to start the refrigeration only.

**AUTO** mode switch with LED indicator light. Controls refrigeration and the automatic mode process. In the automatic mode, the system activates the vacuum pump when the collector temperature reaches -40° C.

**SHELL FREEZER** switch with LED indicator light. Controls the optional shell freezer rollers and refrigeration module available on FreeZone 6 Liter Console Freeze Dry Systems.

**VACUUM CHAMBER** switch with LED indicator light. Controls the optional mini vacuum drying chamber available on FreeZone 6, 12 and 18 Liter Console Freeze Dry Systems.

**ALARM** light. LED flashes red to indicate that a system alarm event has occurred. Events that trigger the audible/visual alarm are: power failure, improper line voltage supply, collector temperature rise above -40° C, service vacuum pump (after 1000 hours of vacuum use), and moisture in collector. Pressing the Menu Switch displays the alarm message on the LCD.

**VACUUM GRAPH DISPLAY.** Provides at-a-glance monitoring of relative system vacuum level. The highest LED illuminates amber to indicate that the vacuum level is above 2.0 mBar. The indicators sequence down when the vacuum level reaches 2.0, 1.0, 0.8, 0.6, 0.45 and 0.12 mBar. When the vacuum level is between 0.45 and 0.12, the lowest LED flashes green. Below 0.12 mBar, the lowest LED illuminates green steadily, indicating samples may be attached to the freeze dry system.



# FreeZone® 2.5 Liter Benchtop Freeze Dry Systems

## FEATURES & BENEFITS

**CFC-free refrigeration system** ensures rapid, environmentally-safe cooling. The condensing module cools the collector coil to -50° C (-58° F), ideal for freeze drying aqueous samples. The system uses a non-flammable refrigerant that contains no ozone-damaging chlorofluorocarbons (CFCs).

**Rear-mounted 3/4" vacuum connection extends vertically**, requiring less space.

**Attachment lid** makes connection of accessories easy. Select from accessory drying chambers and manifolds (sold separately).

**Upright, stainless steel collector chamber** speeds and simplifies defrost. Hot water may be poured into the chamber, or collected ice may be allowed to melt overnight. Models are available with Teflon-coated collector coil and chamber for additional corrosion resistance.

❖ **LCD** displays system set-up and operating parameters and alarm messages.

**Easy-to-follow operating instructions** are printed on the right-hand side.

**Rear-mounted electrical receptacle** allows connection of the vacuum pump (pump sold separately).

**Automatic start-up** is quick and easy to use. Pressing one button initiates the collector cool-down and vacuum pull-down sequence. Or, manually override this feature at any time using the separate switches for manual refrigeration and vacuum.

**Collector drain hose** is accessible from the left-hand side for convenient defrost. It extends about nine inches and retracts within the cabinet when not in use.

**Rear-mounted RS-232 port** may be used to transmit data to a user-supplied computer. The time between data transmissions may be set to occur at 10, 30, 60, 300 or 600 second intervals.

**Factory wired.** All models include a 3-wire cord with 20 amp NEMA plug.

❖ **Vacuum break valve** protects the system from oil backstreaming by bleeding air into the system when power to the freeze dryer or vacuum pump is shut off. If a brief power outage occurs (< approximately 5 minutes), the freeze dryer will restart and the refrigeration and vacuum system will resume operation once power is restored. If the power failure is long (> approximately 5 minutes) and the collector warms above safe limits, the freeze dryer will not automatically restart, which prevents melted sample from being drawn into the collector and liquid from harming the vacuum pump.

**Vacuum and temperature graphs** display relative system vacuum and collector temperature. Amber LED "waves" illuminate when vacuum and temperature levels are out of range for adding samples. Green LED lights indicate that conditions are right to add samples.

❖ **Red alarm light** flashes and beeper sounds to indicate that an abnormal system event has occurred. Pressing the Menu Switch displays the alarm message on the LCD.

**Vacuum control valve** maintains setpoint vacuum level to speed the freeze dry process.

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

❖ **Benchtop cabinet** has small footprint. Compact cabinet of durable epoxy-coated steel with brushed stainless steel front panel and four rubber feet fits easily atop a countertop or laboratory cart.



**ETL listed.** Models for operation on 115 volts, 60 Hz or 230 volts, 60 Hz carry the ETL mark signifying they are certified to UL Standard 61010A-1 and CAN/CSA C22.2 No. 1010.1.



**CE marking.** All 220/240 volt, 50 Hz models conform to the CE (European Community) requirements for electrical safety and electromagnetic compatibility.

❖ *Exclusive feature*



# FreeZone® 2.5 Liter Benchtop Freeze Dry Systems

SPECIFICATIONS & ORDERING INFORMATION

## All models feature:

- Upright stainless steel collector coil capable of removing 2 liters of water in 24 hours and holding 2.5 liters of ice before defrosting.
- 1/4 hp CFC-free refrigeration system to cool collector to -50° C (-58° F).
- ❖ Compact benchtop design with a small footprint.
- ❖ Brushed stainless steel and glacier white, epoxy-coated steel exterior with blue accents.
- ❖ LCD that displays system operating parameters, set-up parameters and alarm messages. It may be user-configured to display vacuum in mBar, Pa or Torr and temperature in ° F or ° C. It also displays total number of hours of refrigeration system operation and time since the refrigeration system was serviced and the total number of hours of vacuum pump operation and time since the vacuum pump was serviced (in hours).
- ❖ Red alarm light that flashes and beeper that sounds to indicate that an abnormal system event has occurred, including: power failure, improper line voltage supply, collector temperature rise above -40° C, service vacuum pump (after 1000 hours of vacuum use), and moisture in collector. Pressing the Menu Switch displays the alarm message on the LCD.
- LED vacuum and temperature “waves” for at-a-glance display of relative system vacuum and collector temperature.
- ❖ Moisture sensor that prevents refrigeration or vacuum start-up when moisture is detected in the collector chamber area.
- Vacuum control valve that maintains setpoint vacuum level.
- ❖ Vacuum break valve that bleeds air into the system when power to the freeze dryer or vacuum pump is shut off. If a power outage less than approximately 5 minutes occurs, the freeze dryer will restart and the refrigeration and vacuum system will resume operation once power is restored. If the power failure is more than approximately 5 minutes and the collector warms above safe limits, the freeze dryer will not automatically restart.
- Rear-mounted RS-232 port to transmit data to a user-supplied computer. Transmission intervals may be user-configured for 10, 30, 60, 300 or 600 seconds.
- Automatic start-up switch for collector cool-down and vacuum pull-down with manual override switches.
- Side-mounted, retractable, 9" collector drain hose.
- Clear acrylic lid, 3/4" thick, with 3" diameter port for connection of drying accessories (sold separately).
- Side-mounted power switch and rear-mounted electrical receptacle (for vacuum pump connection).
- 3/4" OD vacuum connection, three feet of 3/4" ID vacuum hose and two clamps.
- Overall dimensions: 12.6" w x 17.9" d x 16.9" h (32.0 cm x 45.4 cm x 42.9 cm).

## Models conform to the following standards:

- UL Standard 61010A-1 (60 Hz models).
- CAN/CSA C22.2 No. 1010.1 (60 Hz models).
- CE Conformity marking (220/240 volts, 50 Hz models).

## Options include:

- Teflon-coated collector coil and chamber for processes involving corrosive compounds.
- Domestic or international electrical configuration. Models wired for 115 volts, 60 Hz include a 3-wire cord with 20 amp NEMA 5-20P plug. Models wired for 220/240 volts, 50 Hz or 208/230 volts, 60 Hz include a 3-wire cord with 20 amp NEMA 6-20P plug.



FreeZone 2.5 Liter Benchtop Freeze Dry System 7670520, Clear Chamber with Valves 7443500, General Purpose Vacuum Pump 7438700, Portable Table 8025000 and miscellaneous glassware.

## All models require (not included):

- Vacuum pump with a displacement of at least 86 liters per minute, 0.002 mBar ultimate pressure and fitting suitable for 3/4" ID vacuum hose. See pages 44-46.
- Drying accessory. See pages 40-42.
- Freeze dry glassware if not bulk freeze drying. See pages 48-51.

Catalog Number	Electrical Requirements (without vacuum pump)	Teflon-Coated Collector Coil & Chamber	Shipping Weight
7670520	115V, 60 Hz, 6.0 A		82 lbs. (37 kg)
7670521	115V, 60 Hz, 6.0 A	•	82 lbs. (37 kg)
7670540	208/230V, 60 Hz, 2.5 A		82 lbs. (37 kg)
7670541	208/230V, 60 Hz, 2.5 A	•	82 lbs. (37 kg)
7670530*	220/240V, 50 Hz, 2.5 A		82 lbs. (37 kg)
7670531*	220/240V, 50 Hz, 2.5 A	•	82 lbs. (37 kg)

❖ Exclusive feature

\* International electrical configuration