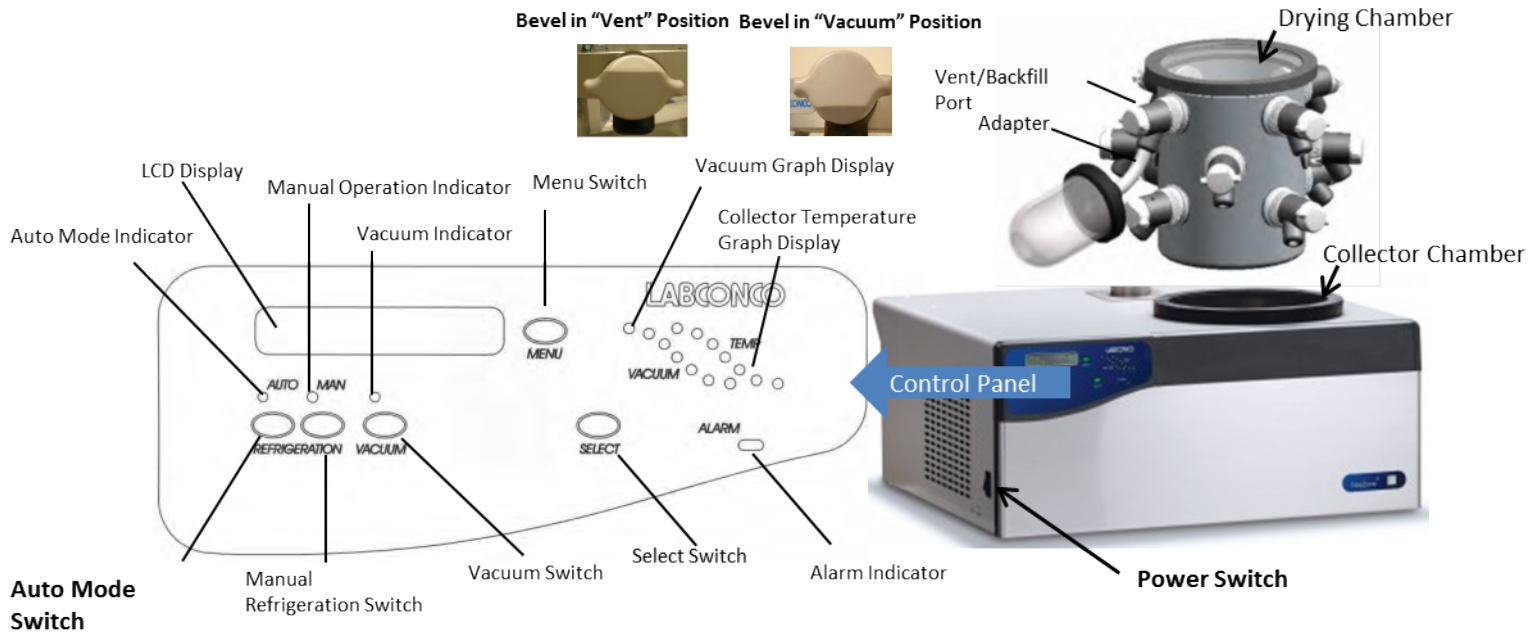


FreeZone 6 Liter Benchtop Freeze Dry Systems



Operation

- Clean collector chamber and drying chamber with a soft, lint-free cloth or paper towel to remove any accumulated moisture, dirt and contaminants.
- Inspect each sample valve on the accessory drying chamber or manifold and check for any visible damage and for improper installation that might cause a vacuum leak. Also check that each sample valve is closed or in the “vent” position.
- Turn on the connected Vacuum Pump.
- **Automatic Start-Up: To run the Auto Mode, press the panel switch labeled “REFRIGERATION AUTO”.** The green LED above the switch will illuminate. This will start the refrigeration system. When the collector reaches -40°C , the vacuum pump will start. The Temperature and Vacuum Graphs will indicate collector temperature and system vacuum. The LCD display will show the actual temperature of the collector. When the vacuum in the system is above 5 mBar the vacuum display will indicate “HI.” At 5 mBar and below, the display will show the actual vacuum. When the system vacuum is between 0.450 and 0.133 mBar, the lower green vacuum graph LED will flash. When the system vacuum level is <0.133 mBar, the green LED will be lit steadily indicating that most samples may be added.

- **Manual Start-Up:** To manually run the freeze dry process, press the REFRIGERATION MAN switch. This will start the refrigeration system. The green LED above the switch will illuminate. When the collector temperature reaches -40°C , the vacuum pump may be started by pressing the VACUUM switch. The Temperature and Vacuum Graphs will indicate collector temperature and system vacuum. The LCD display will show the actual temperature of the collector. When the vacuum in the system is above 5 mBar the vacuum display will indicate "HI." At 5 mBar and below, the display will show the actual vacuum. When the system vacuum is between 0.450 and 0.133 mBar, the lower green vacuum graph LED will flash. When the system vacuum level is <0.133 mBar, the green LED will be lit steadily indicating that samples may be added.
- **Pre-Freezing Samples**
- **Adding Samples**
 1. Connect a pre-frozen sample to a sample valve on the drying chamber or manifold using an adapter. Turn the plastic valve knob to the "VACUUM" position to open the valve. The bevel on the knob should be positioned toward the sample port to apply vacuum to the sample.
 2. Before adding another sample, allow system vacuum to return to 0.133 mBar or lower. Any combination of valves and sample sizes may be utilized at one time provided that the system vacuum and collector temperature remain sufficiently low to prevent melting of the frozen sample.
 3. When all the frost has disappeared from the outer surface of the sample container and no cold spots can be detected by handling the container, the sample is nearly dry. To be certain of low final moisture content, dry the sample for several hours past this point.
 4. To remove a container after drying is complete, turn the plastic knob on the valve to the "VENT" position, which closes the valve and vents the container. The sample container may now be removed. In the vent position the bevel on the valve knob should point away from the sample port.
- **Shut Down** At the end of a run or when a sufficient amount of condensate accumulates on the collector coil to obstruct the flow of vapor to the collector chamber, the Freeze Dryer should be defrosted. First, release system vacuum by turning the plastic knob on a valve to the open position or by pulling the collector chamber drain plug out of the drain hose. Now press the Vacuum Switch on the control panel to turn the vacuum pump OFF. Press the Refrigeration Switch next to the illuminated LED to turn OFF the refrigeration system. Turn OFF the Main Power Switch on the left hand side of the cabinet.

Potential Hazards



High Vacuum



Electrical Hazard



Chemical Hazard



Eye protection



Protective gloves



No-slip, closed shoes



Read Manual

Preventions to reduce exposure to hazards