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## **Labconco Dry Ice Benchtop Freeze Dry Chamber 7522700**

### **Introduction-**

For the laboratory with occasional lyophilization requirements, the Dry Ice Benchtop Freeze Dry System provides a simple, economical and reliable means of freeze-drying. The Dry Ice Benchtop Freeze Dry System is equipped with a center well for dry ice and solvent, which serves as a water vapor condenser and doubles as a convenient pre-freezing bath. Flasks, serum bottles and ampules may be pre-frozen by rotating them in the well.

The Dry Ice Benchtop Freeze Dry System is ideal for processing material with low eutectic points since dry ice cools alcohol or other heat transfer solutions to approximately  $-75^{\circ}\text{C}$  ( $-103^{\circ}\text{F}$ ). If your freeze dry needs are limited, the Dry Ice Freeze Dry System, coupled with a vacuum pump, vacuum gauge, tubing and glassware is an economical alternative.

### **Assembly of the System**

In order to assemble an operation system the following equipment must be supplied by the user.

Vacuum pump capable of achieving a vacuum level of  $10 \times 10^{-3}$  mBar

Vacuum gauge

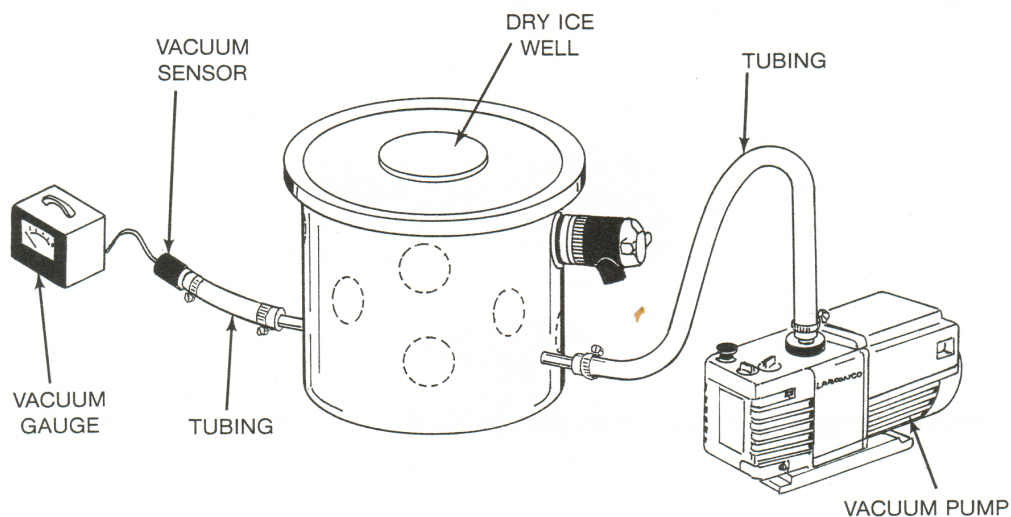
Vacuum tubing 1/2" inside diameter

Vacuum tubing 3/8" inside diameter

Clamps

Glassware

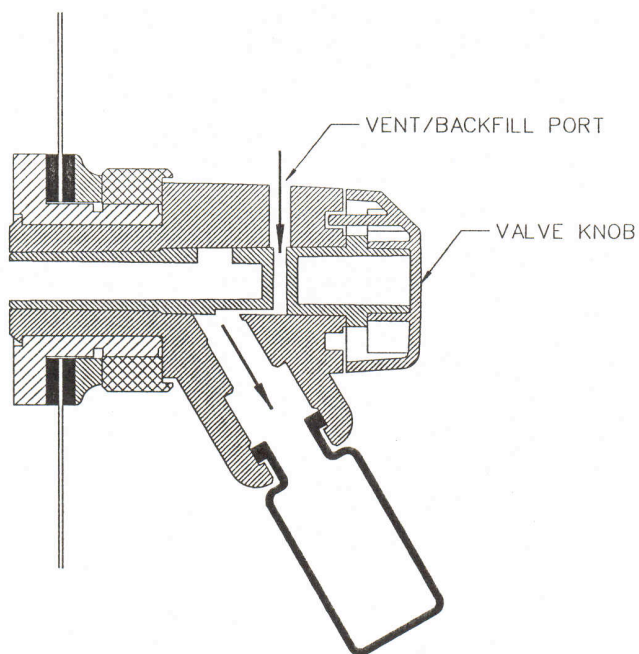
Attach the components together according to Figure 1 and clamp securely. For some non-critical applications it may be possible to freeze dry satisfactorily if a vacuum gauge is not in the system. If this system configuration is chosen, the port leading to the gauge must be plugged.



**Figure 1**

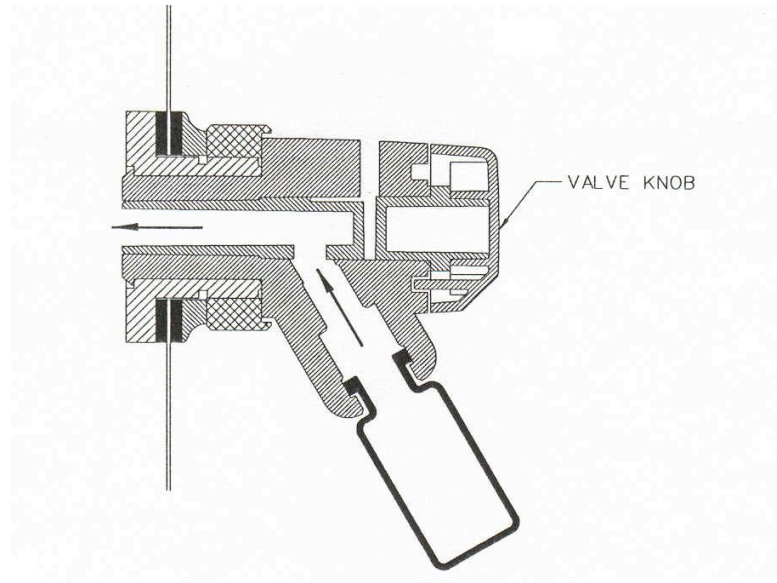
### System Operation

1. Remove the lid from the center chamber and put dry ice in the chamber. Add alcohol or other heat transfer solvent.
2. Allow the temperature to stabilize.
3. Make sure all sample valves are in the vent position. (The bevel on the knob should point away from the sample port). See Figure 2. This will allow vacuum to build in the system.



**Figure 2**

4. Samples may be pre-frozen by placing them in a freezer or by rotating them in the cold solvent in the center chamber.
5. Turn on the vacuum pump.
6. When the vacuum is below  $133 \times 10^{-3}$  mBar, samples may be added to the sample valve.
7. When the system is ready to begin lyophilization, attach the container with pre-frozen sample to the valve. Apply vacuum to the sample by rotating the knob to the vacuum position. (The bevel on the knob should be positioned toward the sample port). See Figure 3.



**Figure 3**

8. When a sample is added to the system, the vacuum will decay. It is important to allow the system vacuum to recover to  $133 \times 10^{-3}$  mBar before additional samples are added to the system.
9. Periodically check the quantity of dry ice in the center chamber and replenish as necessary.
10. Let samples run until primary and secondary freeze-drying is complete. Release vacuum by turning the valve to the vent position. The vent port may also be used to introduce sterile air or dry Nitrogen into the sample container.
11. When lyophilization is complete, break the vacuum in the system by turning a manifold valve to the vacuum position and immediately turn off the vacuum pump.
12. Allow all the dry ice to sublime and the system to warm up.
13. Remove the inner chamber and then drain the condensate from the outer chamber. Rinse and dry all components.

**CAUTION:**

Dry ice is extremely cold and can cause frostbite. Always wear insulated gloves or use tongs when handling.

**Notes:**

Always vent the vacuum line before turning off the vacuum pump.

Make sure all vacuum lines are secured to prevent leaks.

Wear appropriate protective attire and eye protection.

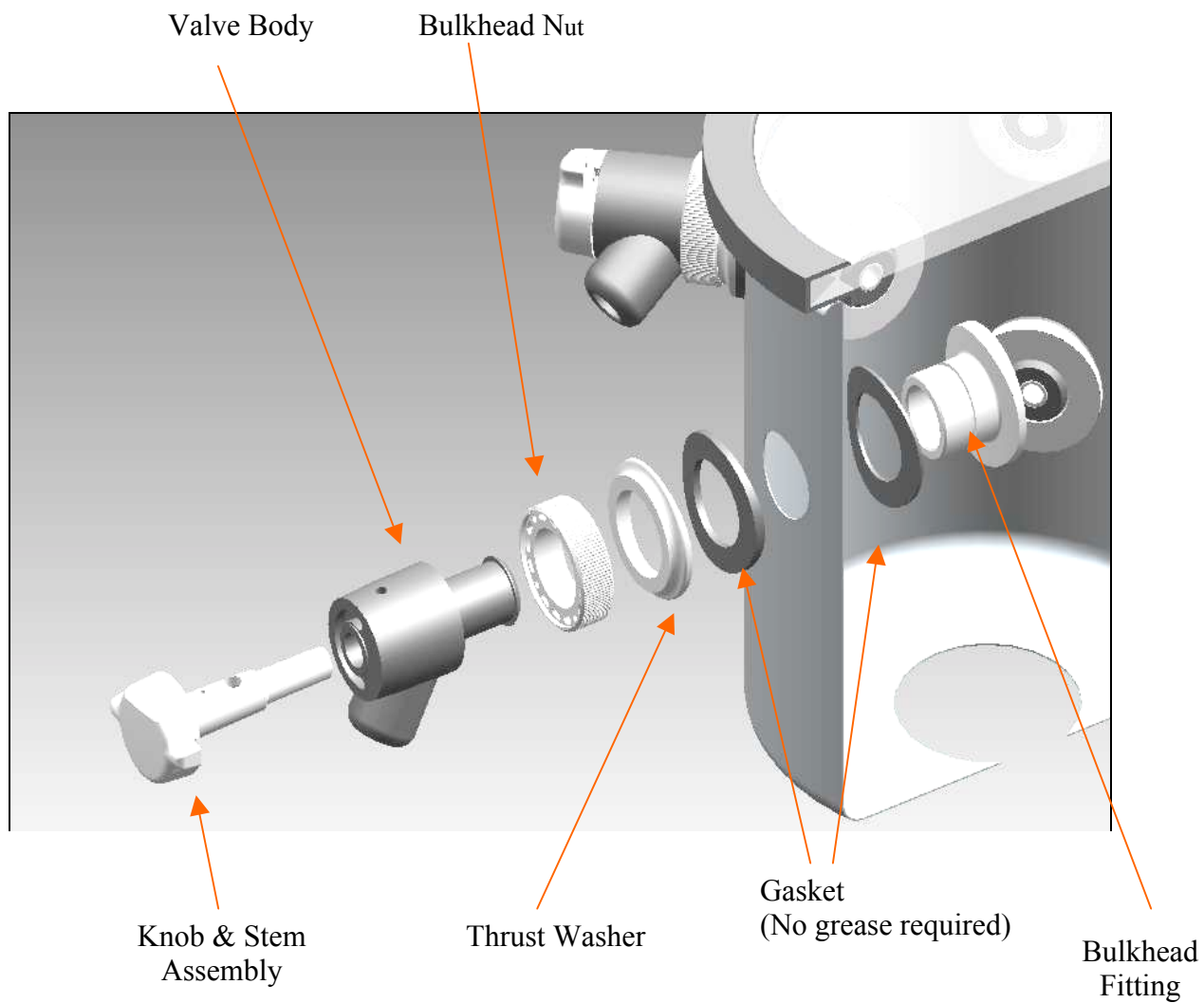
Clean stainless steel condenser after use.

Do not work with damaged, scratched, or chipped glassware.

**Troubleshooting:**

If the Freeze Dry system does not obtain a satisfactory vacuum, refer to the user's manual that was supplied with the Freeze Dry system. Vacuum problems concerning the drying chamber may be resolved by performing the following procedure.

1. Check all sample valves on the drying chamber to ensure all are closed or in the vent position. Check to ensure all fittings are tight and sealed properly against the chamber. Inspect valves for cracks or cuts.
2. Inspect the gasket under the chamber for cracks or defects. Ensure the gasket is clean. Apply a thin coat of vacuum grease to the gasket. Keep in mind too much vacuum grease can cause leaks.
3. When checking the sample valves, pull as much vacuum as possible. If a vacuum indication is displayed, wiggle or rotate the valves and watch the gauge for any fluctuations. Fluctuations can indicate a potential vacuum leak. If the valve seems to be in good condition, remove the valve and apply a thin coat of vacuum grease to the stem and the outside sealing surface of the valve body and reinstall the valve. **Do not apply vacuum grease to the sample valve gaskets, which seal to the wall of the Drying Chamber.** If the valve still seems to be the source of the problem, remove the valve and stopper the hole with a rubber stopper. Continue checking other valves.
4. Make sure the sample valve bulkhead nuts are tight. Either tighten by hand or use the wrench supplied with chamber. To use the wrench, first remove the knob and stem assembly and also the valve body. The pins on the wrench fit into the round holes of the nut. The nut should be snug, but avoid over-tightening. Replace the valve body, knob and stem assembly.



### **Valve Assembly (Stainless Steel Chamber)**

## **Warranty**

Labconco provides a warranty on all parts and factory workmanship. The warranty includes areas of defective material and workmanship, provided such defect results from normal and proper use of the equipment.

The warranty for all Labconco products will expire one year from date of installation or two years from date of shipment from Labconco, whichever is sooner, except the following:

- Purifier® Delta® Series Biological Safety Cabinets carry a three-year warranty from date of installation or four years from date of shipment from Labconco, whichever is sooner.
- SteamScrubber and FlaskScrubber Glassware Washers carry a two-year warranty from date of installation or three years from date of shipment from Labconco, whichever is sooner.
- Carts carry a lifetime warranty.
- Glassware is not warranted from breakage when dropped or mishandled.

This limited warranty covers parts and labor, but not transportation and insurance charges. In the event of a warranty claim, contact Labconco Corporation or the dealer who sold you the product. If the cause is determined to be a manufacturing fault, the dealer or Labconco Corporation will repair or replace all defective parts to restore the unit to operation. Under no circumstances shall Labconco Corporation be liable for indirect, consequential, or special damages of any kind. This statement may be altered by a specific published amendment. No individual has authorization to alter the provisions of this warranty policy or its amendments. Lamps and filters are not covered by this warranty. Damage due to corrosion or accidental breakage is also not covered.

## **Limitation of Liability**

The disposal and/or emission of substances used in connection with this equipment may be governed by various federal, state, or local regulations. All users of this equipment are required to become familiar with any regulations that apply in the user's area concerning the dumping of waste materials in or upon water, land, or air and to comply with such regulations. Labconco Corporation is held harmless with respect to user's compliance with such regulations.

## **Shipping Claims-**

If a shipment is received in visibly damaged condition, be certain to make a notation on the delivering carrier's receipt and have his agent confirm the damage on your receipt. Otherwise, the damage claim may be refused.

If concealed damage or pilferage is discovered, notify the carrier immediately and retain the entire shipment intact for inspection. Interstate Commerce Commission rules require that the claim be filed with the carrier within 15 days after delivery.

## **Contacting Labconco Corporation**

If you have questions that are not addressed in this manual, or if you need technical assistance, contact Labconco's Customer Service Department or Labconco's Product Service Department at 1-800-821-5525 or 1-816-333-8811, between the hours of 7:00 a.m. and 6:00 p.m., Central Standard Time.

Visit Labconco's web site at: <http://www.labconco.com> or email Labconco at: [labconco@labconco.com](mailto:labconco@labconco.com).