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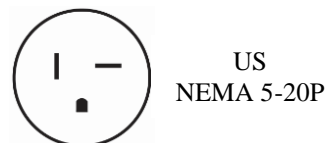
## Freeze Dryer Installation Guide

*Note: This Quick Installation Guide may not provide all the information necessary for your particular installation. Refer to the User's Manual for details and precautions.*

### Preparations

#### Proper Electrical Supply

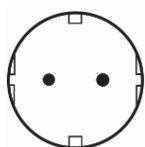
- 115V models
  - 20 Amp dedicated single phase circuit.
  - Properly grounded receptacle for NEMA 5-20P plug.



- 230V models
  - 15 Amp dedicated single phase circuit.
  - Properly grounded receptacle that matches the plug supplied with the unit (230V models are supplied with one of the following plugs):



US  
(NEMA 6-15P)



EU



China



UK

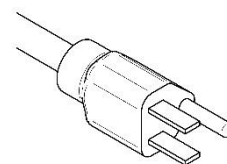


India

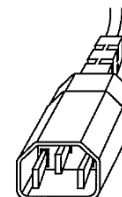
- If the plug does not match the available receptacle, remove the plug and replace it with an approved plug of the suitable style.
- Note:
  - Additional appliances on the same circuit may cause the current to exceed the rating of the circuit breaker or fuse.
  - Frequency must agree with the serial tag rating. Improper frequency will damage the compressor.

## Rotary Vane Vacuum Pump Requirements

- 2.5 Liter, 4.5 Liter models
  - 86 liters per minute minimum displacement
  - .002 mbar ultimate vacuum
- 6 Liter, 12 Liter, 18 Liter models
  - 98 liters per minute minimum displacement (144 liters per minute recommended)
  - .002 mbar ultimate vacuum
- Plug Requirements on vacuum pump power cord
  - 115V models - NEMA 5-15P plug
  - 230V models - reverse IEC plug
- Hose barb connection to fit .75-inch inside diameter hose



NEMA 5-15P plug

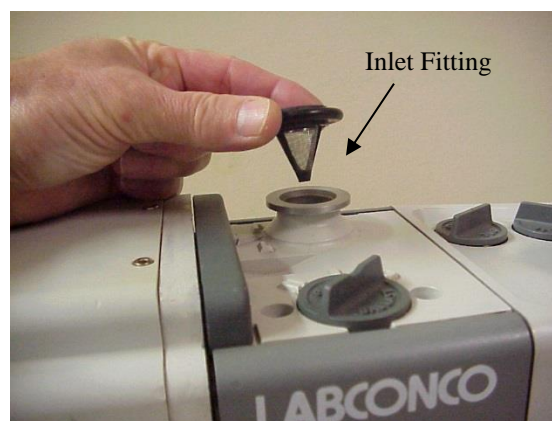


Reverse IEC plug

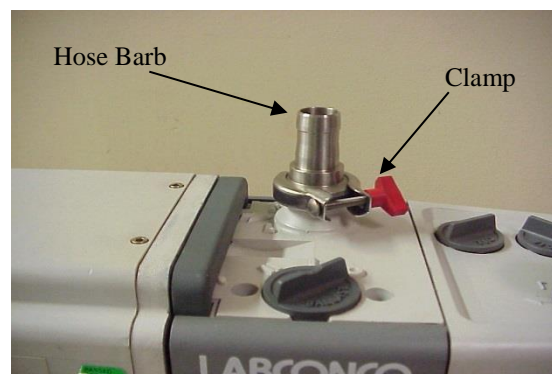
## Installation

### Vacuum Pump Set Up

- Remove protective caps from inlet and outlet ports.
- Some vacuum pumps have inlet fittings that clamp to the pump. Place the centering ring with filter screen on the inlet fitting.



- Place the hose barb fitting on top of the centering ring.
- Secure the fitting with the clamp.



- Attach the exhaust filter to the exhaust port. Some pumps have filters that screw in. Others require that a centering ring is placed on the fitting and then a clamp secures it, similar to the inlet fitting

NOTE: Rotary vane vacuum pumps must have an exhaust filter to prevent oil mist from exiting the pump and depleting the oil supply.



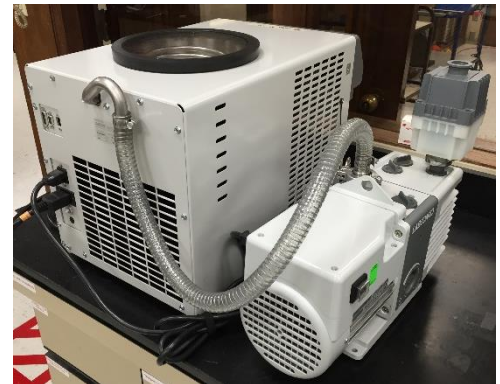
- Fill the pump with oil so the level is between the lines on the sight gauge on the end of the pump housing.
- Verify that the vacuum pump voltage setting agrees with the Freeze Dryer voltage shown on the serial number label. Reconfigure if necessary. See pump instructions.
- Turn the vacuum pump power switch ON.
- Set the gas ballast to closed or minimum position.



## Vacuum Pump Connections

### • Benchtop models

- Position the vacuum pump near the Freeze Dryer.
- Attach one end of the vacuum hose to the port on the Freeze Dryer and the other end to the inlet port of the vacuum pump. Clamp both ends securely.
- Connect the vacuum pump power cord into the receptacle (labeled vacuum pump) on the back of the Freeze Dryer.



### • Console models

- CAUTION - Make sure that power to the Freeze Dryer is disconnected.
- Remove the front panel (left side) from the Freeze Dryer by inserting a screw driver into the slot below the panel. Turn the fastener a quarter turn and pull out on the bottom of the panel. If more access is needed the other front panel (right side) can also be removed by removing the two screws with a 5/16" nut driver.



- Place the vacuum pump inside the cabinet.
- Connect the vacuum hose to the inlet fitting of the vacuum pump and clamp securely.



- Reinstall the front panel by sliding the top edge into the slot in the bottom of the control panel and then push bottom of the front panel towards the freeze dryer. Turn the fastener a quarter turn to lock the panel in place.



- CAUTION - Make sure that power to the Freeze Dryer is disconnected before removing the lower back panel. Do NOT remove the upper back panel.
- Plug the vacuum pump power cord into the receptacle in the junction box labeled Vacuum Pump.
- Replace the rear panel.



## Installing a Drying Chamber or Manifold

- **2.5L and 4.5L Benchtop Models**
  - To secure the chamber or manifold to the collector chamber lid, refer to the instructions provided with the chamber or manifold.
  - Place the chamber (or manifold) with the lid on top and centered on the collector chamber.



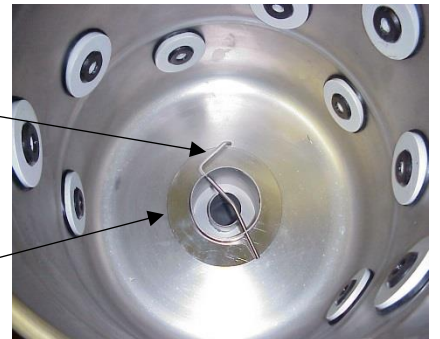


- **6L, 12L and 18L Console models**
  - Place the flat rubber gasket over the inlet port.
  - Place the chamber over the gasket.
  - Reaching into the chamber, set the stainless steel spacer over the port opening. Slide the lock pin through the holes in the port and rotate over center (stainless steel drying chamber only).



Lock Pin

Spacer



- **Manifolds-** see instructions supplied with Manifolds.

## Refrigeration & Vacuum Test

- Connect the power cord into the receptacle on the back of the Freeze Dryer and insert the other end into a suitable wall receptacle.
- Allow the Freeze Dryer's software to start up (approximately 90 seconds).
- Make sure the lid is on the collector chamber, a manifold or chamber is in place, and the barb fitting is removed from the quick connect drain fitting.
- Make sure all sample valves (on chamber or manifold) are closed.
- Press the AUTO button (on Home Screen)
- The refrigeration system (Collector) and the indicator bar above the collector button will turn ON immediately.
- When the collector temperature cools to  $-40^{\circ}\text{C}$ , the vacuum pump will start automatically and the indicator bar above the vacuum button will turn ON.
- Collector temperature should reach  $-50^{\circ}\text{C}$ ,  $-84^{\circ}\text{C}$  or  $-105^{\circ}\text{C}$  within 40 minutes (depending on freeze dryer model and ambient temperature).
- Vacuum should reach 0.133 mbar or less within 15 minutes from the time that the vacuum pump started (with a clean & dry system).
- If the Freeze Dryer fails to perform as expected, consult the User's Manual for troubleshooting information or call Labconco.