INSTRUCTION MANUAL

Ti sublimation pump...
SYSTEM INSTALLATION

A. RECEIVING:

Shipment of systems to purchasers are generally made F.O.B. destination. Upon receipt of the system it should be checked immediately for bent or broken manifolds as well as other more obvious damage. Note any such damage on the receiving report and have the carrier acknowledge such shipping damage. This will expedite repairs on damaged systems. Check the packing list for receipt of all items noted, particularly those items which are packed separately and must be installed on site. Notify Perkin-Elmer immediately if any damages or shortages are detected.

B. UNPACKING:

1. Perkin-Elmer Ultra High Vacuum Systems are shipped under vacuum unless otherwise noted. The ion-getter pump power unit and Boostivac supply are shipped separately in protective cartons. Perkin-Elmer feedthroughs when ordered with the system are shipped installed with the exception of fragile devices such as ionization gauges which are shipped separately.

C. PREPARATION FOR OPERATING

1. Install the system and power units in a clean, dry location. The power units are mountable in any standard 19" electronic console.

2. Connect the Boostivac filament power cable to the Boostivac filament holder by means of the cannon plug and receptacle provided. Be sure to tighten the threaded retaining collar. The system is shipped with Boostivac filaments installed in the Boostivac filament holder.
3. Connect the high voltage cable at the rear of the ion pump power unit to the h voltage feedthrough located on the ion pump body. Be sure to tighten the threaded retaining collar.

4. Place the main breaker on the ion pump power unit to the OFF position. Place the ON-OFF switch on the Boostivac supply to the OFF position. Check the back panels of the power units to determine the voltage and cycle requirements of the units. Connect the ion pump power unit to a source of the appropriate voltage and cycle rated at 20 amperes. Connect the Boostivac power unit to a source of the appropriate voltage and cycles. If a Hubbell #3331 three prong Twist-Lok plug is provided on the end of the ion pump power cord, a Hubbell #3332 or #3333 receptacle must be provided at the source.

5. If the system is equipped with LN$_2$ cryo pumping, connect the LN$_2$ inlet to a LN$_2$ supply using the connector supplied. The recommended liquid nitrogen pressure is 20 p.s.i.g.

6. If the system is equipped with cooling fans, uncoil the power cord to the cooling fan from its shipping location about one of the fans and plug into the convenience outlet in back of the ion pump power unit.

D. **THE SYSTEM IS NOW READY FOR OPERATION.**
UP-TO-AIR (UTA) PROCEDURE FOR SYSTEMS
WITH POPPET VALVES

The operation described in this section must be performed manually when the system is brought from vacuum to atmospheric pressure so that the high vacuum chamber may be opened at the following steps:

1. Turn off the cryogenics controls and any ion gauge connections that might be damaged by heat. Cryogenic equipment is used inside the chamber to protect it from ambient pressure before proceeding.

2. To prevent additional care and cleanliness, Perkin-Elmer recommends the system be let UTA using dry nitrogen. This gas can be drawn off high pressure nitrogen gas cylinder using proper pressure reducing and safety techniques to assure against overpressurizing the chamber above 1 atmosphere. It is recommended that the nitrogen be filtered to remove metal particles and liquid contamination before being admitted to the vacuum system.

3. Close the poppet valve by rotating the crank clockwise.

4. Attach the nitrogen gas source to the system UTA valve by means of clean tubing, and always purge the tubing and the UTA valve before attaching the tube.

5. Turn on gas and slowly open the UTA valve, allowing the nitrogen to enter the system.

6. Once the system is UTA, the belljar can be raised.

7. As a reminder, be sure to close the UTA valve before starting the next run.
I. Sorption Pumps
   A. Bakeout sorption pumps for two (2) hours.
   B. Pre-chill sorption pumps for 15 minutes.

II. 224-0620 Power Unit (See Ion Pump Power Supply Instruction Manual)
   A. Main power breaker ON.
   B. Start-Run Switch to START.
   C. Meter Select Switch to 5 KV position.
   D. Filament Power Switch OFF.
   E. Timer to ZERO.
   F. Power Set Control to ZERO.
   G. Filament Select Switch to No. 1 position.
   H. Cycle Switch in Continuous Duty position.

III. Turn off all other instrumentation into system.

IV. Close Ion Pump Isolation Valve (Poppet Valve).

V. Chill System Cryo.

VI. System UTn2

VII. Pumpdown Log:

<table>
<thead>
<tr>
<th>ELAPSED TIME</th>
<th>PROCEDURE</th>
<th>PRESSURE</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Open Roughing Manifold Isolation Valve</td>
<td>1 ATM</td>
</tr>
<tr>
<td></td>
<td>Open Number 1 Sorption Pump Valve</td>
<td></td>
</tr>
<tr>
<td>0 - 30 sec.</td>
<td>Close Number 1 Sorption Pump Valve</td>
<td>1000u</td>
</tr>
<tr>
<td></td>
<td>Open Number 2 Sorption Pump Valve</td>
<td></td>
</tr>
</tbody>
</table>
When new filaments have been installed in the system, all BoostiVac filaments must be outgassed on the roughing cycle. Outgas all BoostiVac filaments following this procedure:

BoostiVac Power Switch ON.
Number 1 Filament to 50 AMPS for approximately 30 seconds.
Number 2 Filament to 50 AMPS for approximately 30 seconds.
Number 3 Filament to 50 AMPS for approximately 30 seconds.
Number 4 Filament to 50 AMPS for approximately 30 seconds.

BoostiVac power to 55 AMPS

Close roughing isolation valve. With ion pump power unit Start-Run Switch in START position and Meter Select Switch in 5 KV position, open ion pump isolation valve slowly - never let ion pump voltage drop below 2500 Volts.

Ion Pump Power Switch in RUN position.

Set BoostiVac Timer for 2 minute Off Cycle.
Cycle Switch in CYCLE position.
Set BoostiVac Timer for 5 minute Off Cycle.
Set BoostiVac Timer for 1 hour Off Cycle.

10-10 Torr range less than 1 x 10^-9 Torr ultimate.