



Procedure 03-8083-P05

Helium Leak Detection



Purpose:

To check the vacuum integrity of all chambers.

Scope:

For use with all vacuum chambers.

Equipment:

HLT-160 Leak Detector
Edwards Mechanical Booster
Leybold Turbo Vac 1000C
TPG (Total Pressure Controller) 300
Turbotronik NT 1000
Turbo Blower
Pfeiffer Roughing Pump
Water supply
Miller Coolmate 3 cooler
Helium Gas

Procedure:

1. Turn on the roughing pump and blower by the switch on the wall and the cooler.
2. Turn on compressor.
3. Open valve #1 on the pump by plugging the power source into it.
4. When pressure reaches 1.0×10^{-2} Torr (or 1.3×10^{-2} mbar) on the TPG 300 unplug gate valve #1, plug power source into gate valve #2, allow to pump for 2 minutes and press "start" on the Turbotronik.
5. When "normal operation" light comes on on the Turbotronik NT 1000, turn the red switch on gate valve (#3) from a horizontal to vertical position making sure pressure is still below 5.0×10^{-2} Torr.
6. When vacuum reaches base pressure or sensitivity specified by the customer turn on the HLT-160 Leak Detector.
7. If optimum base pressure cannot be reached, remove chamber from pumps and perform a bake-out. The bake-out shall consist of heating chamber to 150C for 6 hours, then resume with leak check.
8. When the "vent" light comes on on the hand control of the HLT-160, push the "pump" button and wait approximately 1 minute.
9. Plug power source into valve #4.
10. Helium is used to detect leaks in the chamber. Run the wand connected to the tank of helium along all welds, flanges and seals.
11. If no alarm is heard then there are no leaks, and go on to step (12). If the alarm sounds on the hand control, there is a leak and it has to be located on the chamber, documented on an NCR and repaired. To pin-point leak, use methyl hydrate around suspected leak and watch the TPG 300 reading. A pressure reading increase indicates that methyl hydrate has leaked inside the chamber. Once the leak has been fixed, initiate the testing procedure again.
12. If base pressure or sensitivity is consistent with what the company has requested then the chamber has passed, release vacuum and remove pumps and fill out the test certification form.