

FIR Laser Pumpout Procedure

To perform a complete evacuation of the THz laser gas system from the vacuum pump to the gas bottle the following procedure should be used. This procedure assumes that the procedure entitled “Venting Procedure for THz Laser” has been followed and that the system is at or near atmospheric pressure.

- Ensure *Difluoromethane Bottle Valve* is closed.
- Ensure *Gas Regulator* is “Increased” all the way (CW), that is fully open.
- Ensure the following valves are fully open.
 - *THz Vacuum Valve*.
 - *External Gas Sources Valve*.
- The FIR laser vacuum system is completely exposed to the vacuum pump and can now be thoroughly evacuated.
- Turn on turbo pump system and observe pressure reading from the vacuum gauge connected to the manifold at the output of the vacuum pump.
- A “roughing” pump turns on first to bring the pressure to a satisfactory level for the turbo to work.
- When rough vacuum is reached the turbo will automatically turn on and slowly increase speed until it reaches ~1500Hz. This will take several minutes.
- Continue to pump until base pressure is reached <5mTorr.
- When specified base pressure has been reached adjust *Gas Regulator* on each laser all the way “Decreased” (CCW). This will isolate the fuel bottle from the pump.
- Close the *External Gas Sources Valve* (black knob CW).
- Leave the *THz Vacuum Valve* open to the vacuum pump (green handle CCW).
- The system is ready to receive gas pressure from the bottle.
- To ensure no contamination enters the gas source lines pressurize them as follows.
- Open *Difluoromethane Bottle Valve*.
- Turn *Gas Regulator Valve* slowly in the direction of “Increase” until ~5psi is read on the pressure gauge. It may take several turns of the regulator adjustment to achieve this pressure.
- Refer to *FIR Laser Startup Procedure* for detailed instructions on how to operate the laser.