

# Standard Operating Procedure for Start-Up and Shutdown of a System with a Turbomolecular Pump

## **Start-Up Procedure**

1. Set all cold trap baths to their lowest temperature (This will be  $-50^{\circ}\text{C}$  for an FP50-MA or  $-40^{\circ}\text{C}$  for an FP40-MA)
2. Once cold trap bath has reached its lowest temperature, make sure that the vacuum bleed valve and the right-angle valve below the turbopump is in the fully open position
3. Turn on the rotary vane vacuum pump and slowly close the vacuum bleed valve, approximately a  $\frac{1}{4}$ ' turn every 30 seconds or so until it is fully closed
4. Allow the vacuum to pull down to a maximum of  $3 \times 10^{-1}$  or 0.3 mm Hg
5. Move the toggle switch that is on the front of the turbopump (or on the control cabinet) from the stop to the start position. The green light on the front of the turbo will begin flashing and the turbo will start to spin. Ultimately achieving an rpm of 4000.
6. Allow vacuum to pull down (the minimum measurable value of the vacuum sensor is  $3.5 \times 10^{-5}$ ). Once the green light on the turbo stays a solid green color, the turbo is up to speed.
7. Once the desired vacuum has been reached, begin feeding material to the evaporator

## **Shutdown Procedure**

1. Discontinue the feed of material to the evaporator
2. Close the right-angle valve below the turbopump
3. Move the toggle switch to the stop position (The green light on the turbo will begin to flash)
4. Allow the vacuum to creep up slowly (The green light on the turbo will turn off permanently once the turbo has finished spinning)
5. Turn off the rotary vane pump and slowly start to open the vacuum bleed valve