

## **B-A ION GAUGE CHECK AND REPLACEMENT**

### **TOOLS:**

- 1) Voltmeter with the ability to measure resistance in Ohms.
- 2) American Standard ball end hex (allen) wrench set.

### **SUPPLIES:**

- 1) BA gauge 1.33 flange (AB p/n V210005)-USED FOR STR BA1 ONLY
- 2) BA gauge 2.75 flange (AB p/n V210007)
- 3) Copper gasket 1.33 inch (AB p/n V200061)-USED FOR STR BA1 ONLY
- 4) Copper gasket 2.75 inch (AB p/n V200062)

### **PROCEDURE:**

- 1) Voyager DE-PRO and DE-STR have two ion gauges. The STR has a smaller diameter 1.33 inch con-flat flange (CFF) for the source (BA1), part number V210005. The STR BA 2 ion gauge is 2.75 inch CFF, part number V210007. BA 1 monitors the source pressure while BA 2 monitors the mirror pressure. The Voyager DE and DE PRO use an ion gauge that has a 2.75 inch CFF, part number V210007.
- 2) Use a voltmeter to verify if the B-A ion gauge is shorted or if the filament is open "burnt out."
- 3) Ohm ( $\Omega$ ) the filament (the two middle pins labeled #3 and #4 on figure 1). The reading should be (0.1-3) ohms. If the reading shows an open circuit the gauge should be replaced.
- 4) Ohm ( $\Omega$ ) the Grid and Filament (Pins #2 & #3, then pins #4 & #5). The readings should show an open circuit. If it is shorted then the gauge should be replaced.

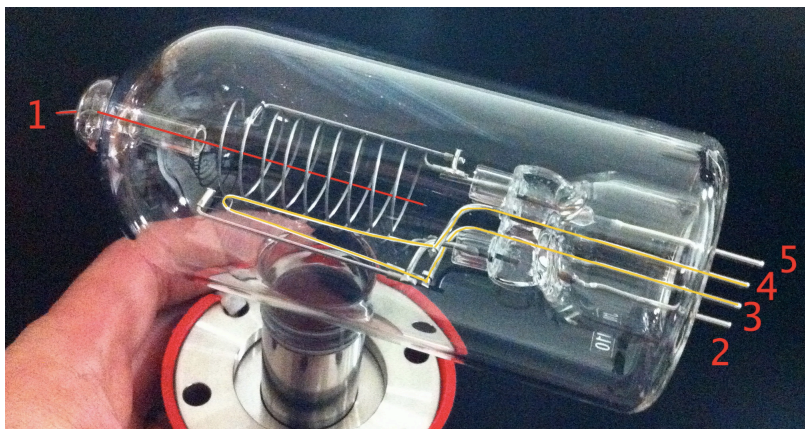
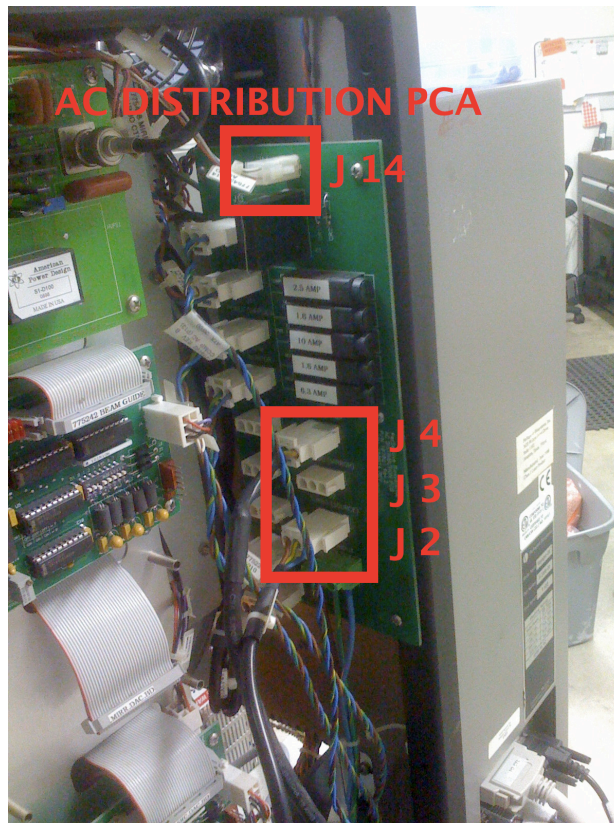


Figure 1: **PIN 1:** Collector, **PIN 2 and 5:** Grid, **PIN 3 and 4:** Filament

- 5) Replacing the ion gauge.
  - a) Shut down the Voyager computer.
  - b) Turn off the Voyager main power switch.
  - c) Vent the Voyager after the turbo pumps have finished spinning (wait about 20 minutes).
  - d) Remove the defective ion gauge using the appropriate hex wrench. Note the orientation of the ion gauge. The new ion gauge should be installed in the same orientation. Verify that the ion gauge is oriented so the flight tube can be moved without causing damage to the gauge.
  - e) Remove the existing copper gasket and replace with a new copper gasket.
  - f) Inspect the replacement ion gauge and insure that the COLLECTOR wire is not touching the GRID (Figure 1). Install the new ion gauge. Tighten the hex (allen) screws enough to insure there are no vacuum leaks.
  - g) Remove the turbo pump power connector(s) from the AC distribution board.
  - h) Turn the main power switch for the Voyager back on.
  - i) Wait for the TC2 pressure to reach  $<8 \times 10^{-2}$ . If the pressure does not drop initialize the compressor or dry gas line to the pneumatics. If you do not know how to do this manually you can place the sample stage in the load position.
  - j) Plug the turbo pump power connector Source J2 and Mirror J3 back into the AC distribution board.



- k) Wait 5 minutes. Turn on the ion gauge by pressing the EMIS button for the appropriate BA channel on the multi-gauge controller. **ONLY PRESS THE EMIS AND CHAN BUTTONS ON THE MULTI-GAUGE CONTROLLER.** The EMIS button turns the gauge ON and OFF. The CHAN button toggles between channels TC1, TC2..TC4, BA1, BA2

