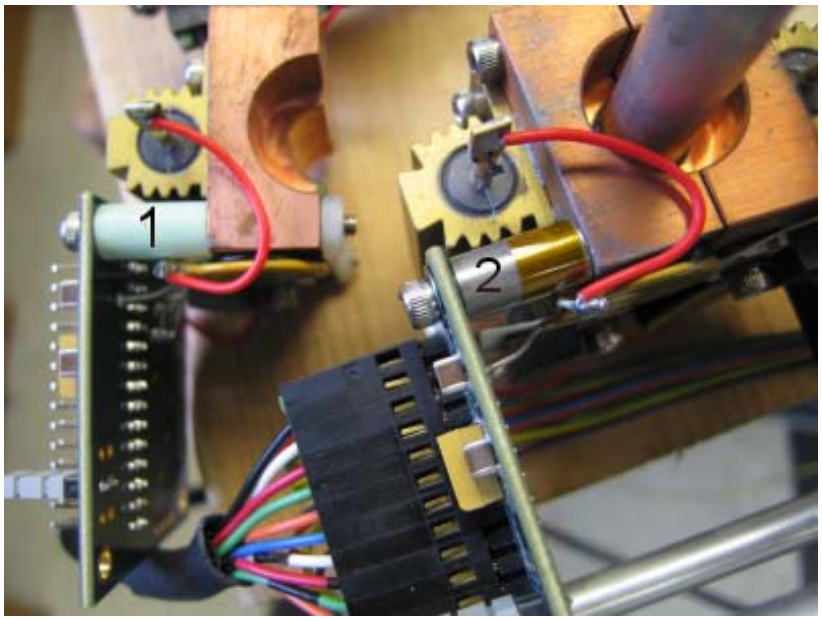
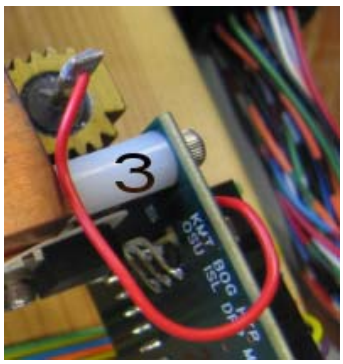
Update to KMTN BOG heater assemblies

1. *Replace two fiberglass standoffs with Stainless Steel.* The BOG heater assemblies clamp to the Cryotiger lines with two screws that go through one of the copper blocks and two screws that mount one of the PC Boards. The screws that originally mounted the PCB and provide clamping force go through ½" long green fiber-glass standoffs. The screws have been found to loose pre-load when cold. The update kit includes stainless steel standoffs and belville washers. It is not necessary to replace the white standoffs which support the second PCB.

    a. Update is to improve clamping of BOG heater on Cryotiger return line.
    b. Update should be performed on the three assemblies that are in service and the spare assembly.
    c. Power HE off before beginning
    d. Refer to the attached photo
    e. Standoff #1, green, is old style
    f. Standoff #2 is the new stainless steel part with Kapton tape on one end. The tape end must be installed next to the copper block
    g. Use a Belville washer, concave side towards the printed circuit board.
    h. Do Not replace standoff #3, white
    i. Verify that the lead from the MOV is insulated from the Stainless Steel standoff by the Kapton tape.





2. *Add jumper*. Each PCB has pins for a jumper to connect the power ground to the signal ground. The BOG heaters were delivered with a jumper on only one PCB. It has since been discovered that the BOG electronics can become unstable under some circumstances. Installing a jumper on both PCB appears to solve the problem.
   a. When the assemblies were delivered a jumper was installed on only one of the two printed circuit boards
   b. Install a jumper on all printed circuit boards