

Kapton Foil Installation Procedure

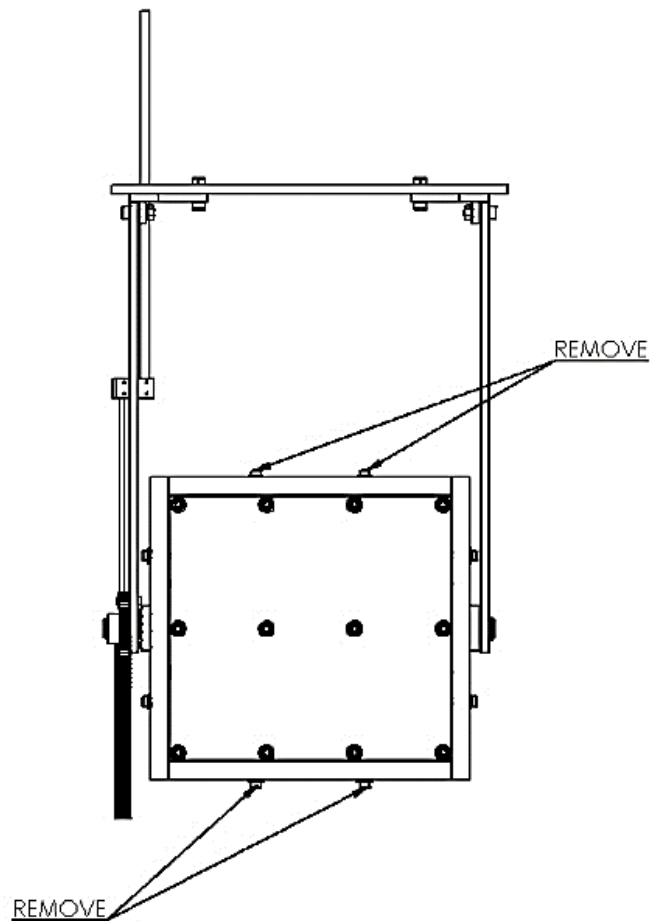
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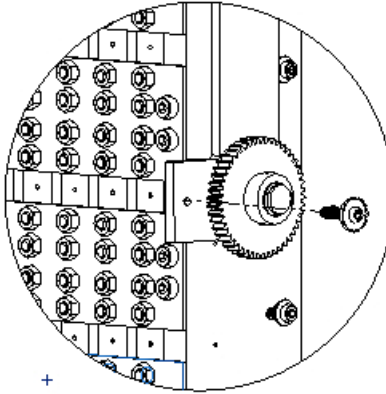
It is recommended that the following procedure be done on a table top or bench top surface. This requires un-mounting the mockup from the cryostat.

If this is not possible, 2-3 people will be needed to complete the foil installation.

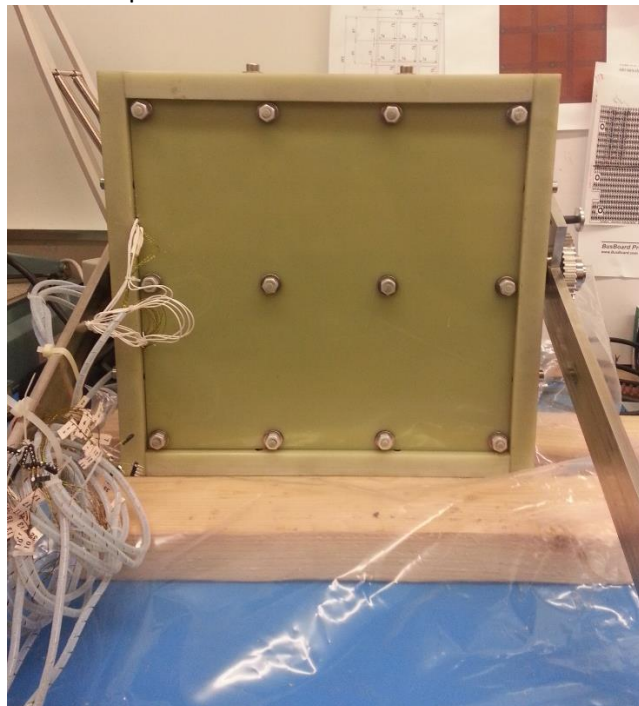
1. While mockup is still connected to the cryostat supports, remove either of the two pairs of machine screws shown below. This is so the mockup can sit on that surface without rocking.



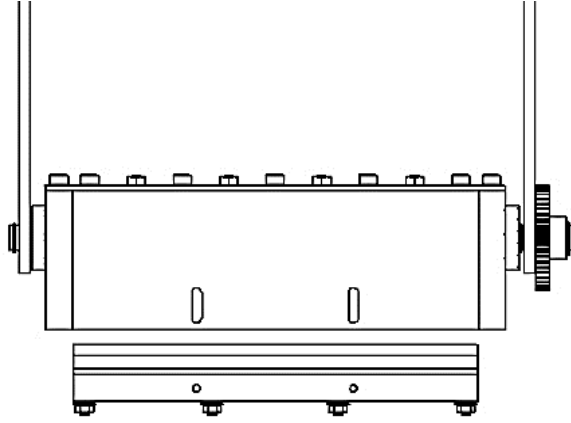
2. Un-mount the mockup from the cryostat and place on a table top or benchtop surface, sitting on the surface from which the two screws were removed.
 - a. The rack gear can be left in the cryostat by removing the guide screw and carefully moving the rack gear out of the way as the mockup is moved.



- b. Carefully disconnect the signal and heater wires from the cryostat feedthrough and coil for move.
 - c. If unable to un-mount the mockup from the cryostat, 2-3 people will be needed for further steps. Skip to Step #4.
3. Place the mockup on its side as show in the photo below, so that the side with the removed machine screws is on the bench top. The hanging arms should be positioned in the direction opposite that shown in the photo.

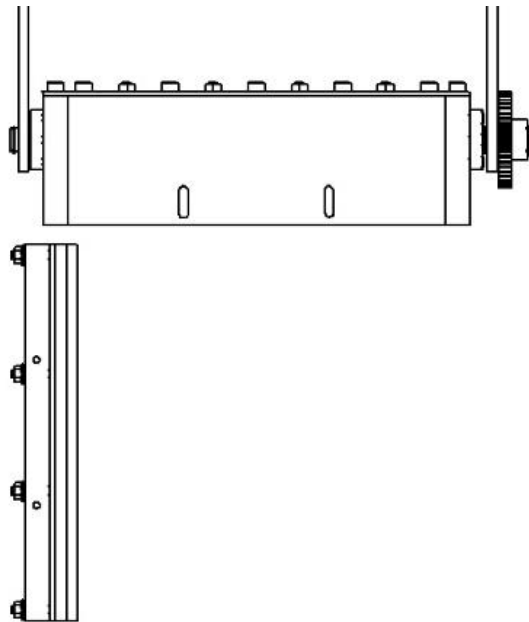


4. Remove the remaining machine screws holding the heater assembly in the mockup.
5. Carefully pull the heater assembly out of the mockup.
 - a. Tilting the mockup may be required to remove the heater assembly.
 - b. Don't put tension on the wires (not shown), they may break.



View from above

6. Rotate heater assembly out of the way, so that the foil can be inserted.
 - a. If mockup has not been removed from the cryostat, someone must hold the heater assembly without putting strain on the wires until the foil has been inserted and the heater assembly can be reinstalled.

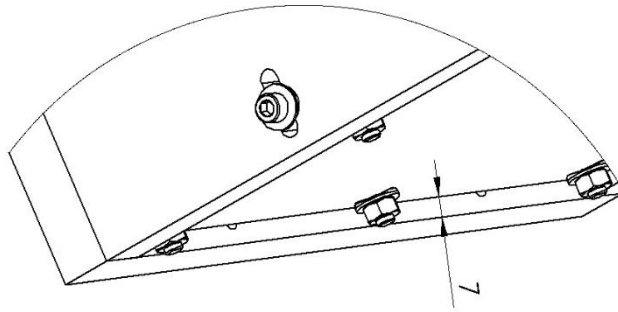


View from above

7. Install the Kapton foil using M3 machine screws.
 - a. No holes have been cut in the Kapton foil for the machine screws.
 - i. You will have to cut these holes.
 - b. The photo below shows the threaded holes in the HEC plates into which the machine screws go.
 - i. 5 holes on each of the two outer edges and 5 located near the middle of the HEC layer for a total of 15 screw points.
 - c. The Kapton foil may not need all the screw points to secure it in place. You can decide how many are needed.



8. Once the Kapton foil is secured, insert the heater assembly back into the mockup by going through steps 4-6 in reverse.
 - a. To set the 12mm gap:
 - i. Measure the distance from the bottom of the heater assembly, to the bottom of the G-10 walls.
 - ii. 12mm gap should yield a measurement of ~7mm
 - iii. Maximum gap ~20mm, minimum gap size ~0mm (M3 screw head height will be the minimum gap size.)



- b. Tighten the screws holding the heater assembly in place.
 - i. 15 Newton-meters should be sufficient torque, no more than 20 should be applied.
9. If the mockup was removed from the cryostat, reinstall it, and install the remaining screws needed to secure the heater assembly in place. Again tightening to approximately 15 Newton-meter torque.
10. Reconnect signal and heater wires to the cryostat feedthrough.
11. Before closing the cryostat, I suggest running a check on all the temperature probes and heaters to ensure all are still working correctly.