# Standard $8''$ LEED Filament:

# Field Replacement Guide

(Dated: May 25, 2012)

## I. INTRODUCTION

This manual provides basic field replacement procedures for the standard 8″ LEED filament. One should use this material as a basic guide and reference.

## II. STEP BY STEP PROCEDURES

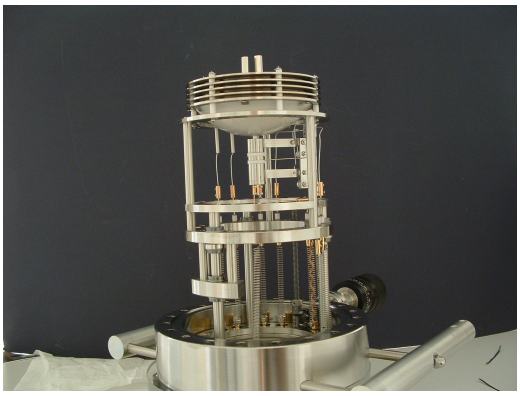
1. 

FIG. 1: It may be helpful to place the LEED on a lazy susan in a "cleanroom" type of setting.

2. Be sure to raise the gun all the way up to give yourself adequate clearance when working with the filament.

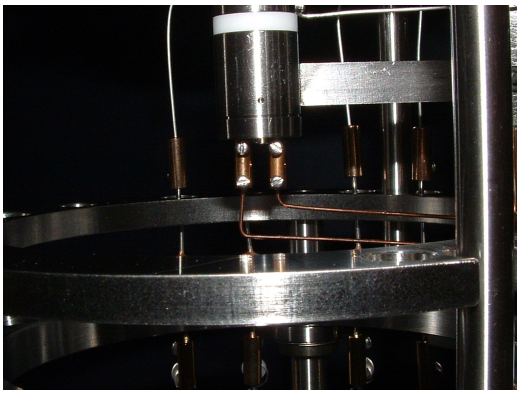
3. 

FIG. 2: Pictured is the base of the gun, where the filament resides.

5. Note that these wires are aligned such that they are hidden behind the gun bracket above. When reassembling, be sure to keep this in mind.

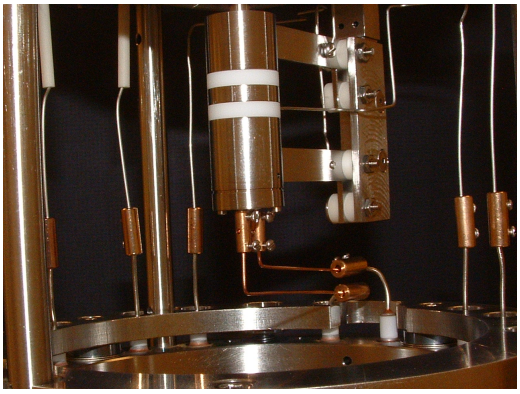
4. 

FIG. 3: In order to remove the filament, it is helpful to isolate it by first removing the two wires and inlines below it.

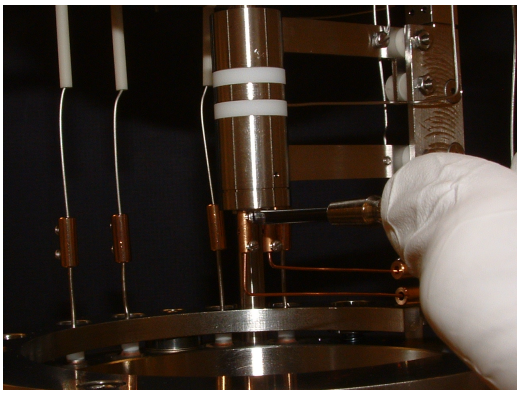
6. 

FIG. 4: Remove the two inlines from the filament leads as pictured.

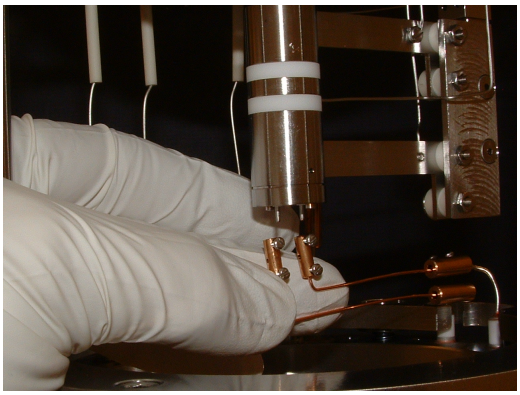
7. 

FIG. 5: Two inlines removed from filament leads.

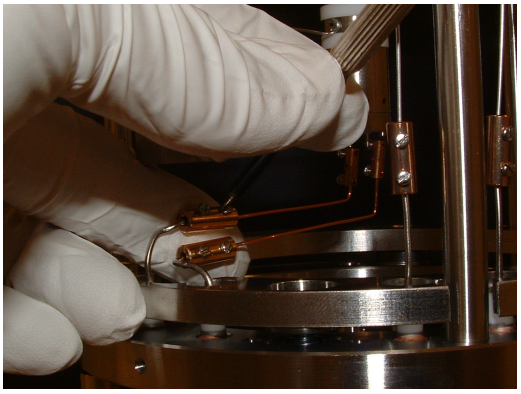
8. 

FIG. 6: Remove the other side of the wires at the bottom inlines as pictured and set them aside for now.

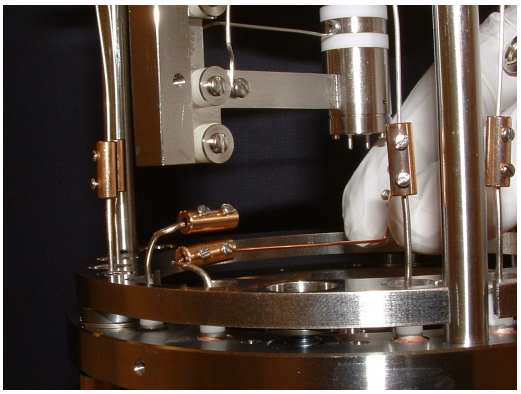
9. 

FIG. 7: Wires being removed and set aside.

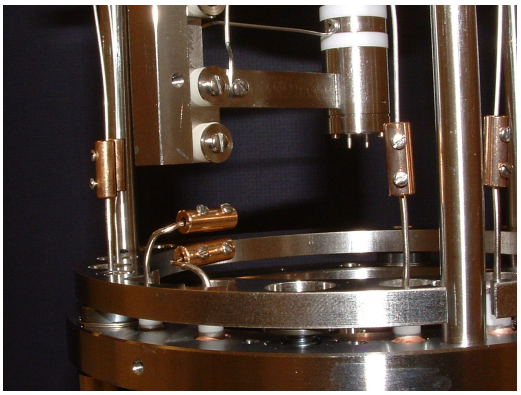
10. 

FIG. 8: Both wires removed and filament base is now isolated.

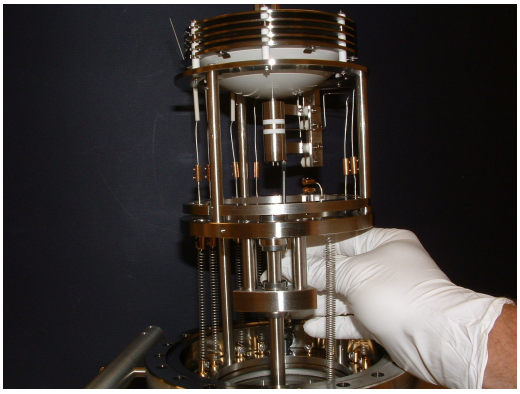
11. 

FIG. 9: Now sneak a flat head screwdriver in as pictured and remove the $0-90$ screws from the filament base being careful not to drop them.

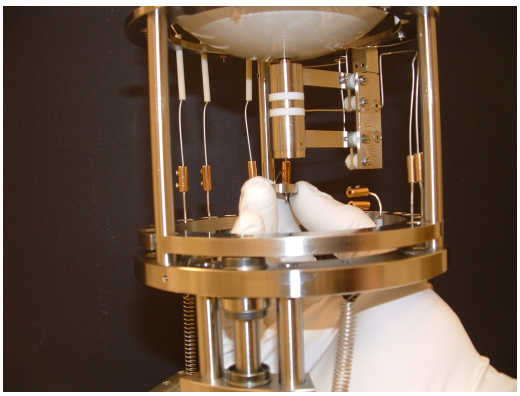
12. 

FIG. 10: When removing second $0-90$ screw be sure to hold the filament base as it will want to fall out. Go ahead and remove the filament now and take note of the ceramic spacers inside.

13. Note that there are two ceramic spacers which isolate the leads from the metal base. The small stepped side goes down towards the holes in the base. Go ahead and put the new filament into the base now with the spacers in position.

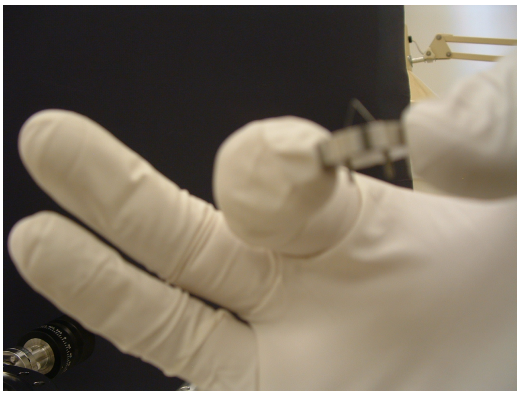
14. 

FIG. 11: Install the new filament.

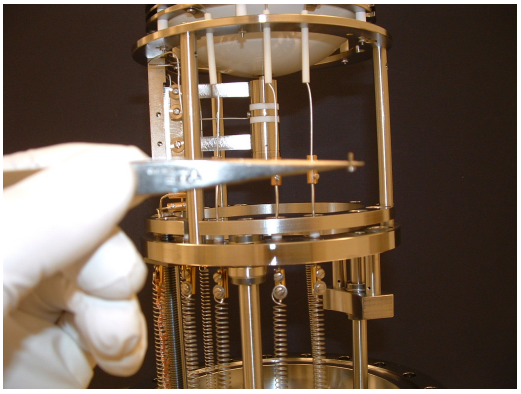
15. 

FIG. 12: Hold the filament up with one hand and insert a screw into the hole with some tweezers.

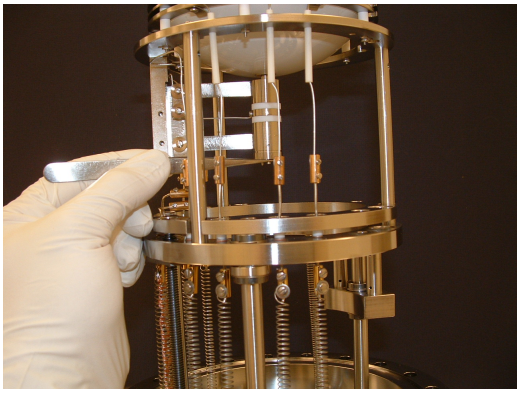
16. 

FIG. 13: The tweezers are now holding the filament and screw in position. Note that the filament leads are rotated 90° from the mounting holes.

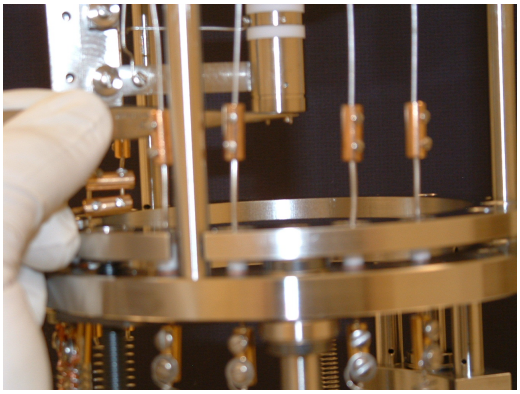
17. 

FIG. 14: Note that the tweezers are holding the threaded part of the screw to make room for the screwdriver.

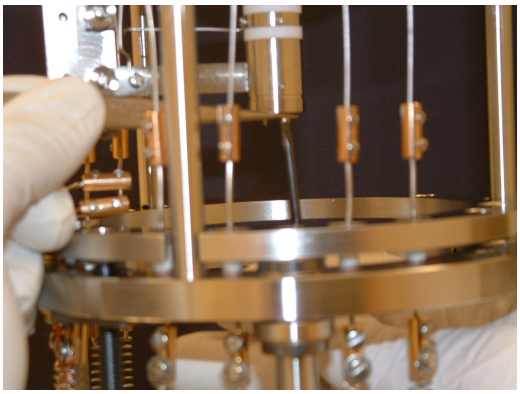
18. 

FIG. 15: Screw in the first screw by sneaking a flathead screwdriver in while still holding everything with the other hand.

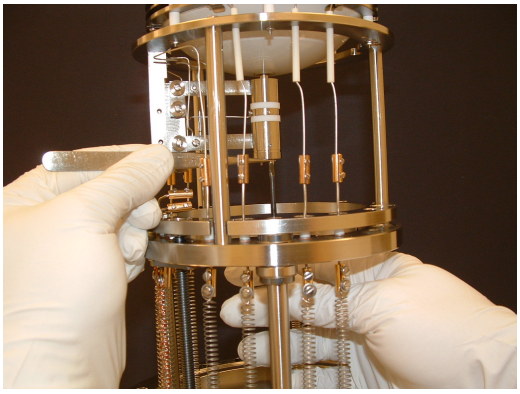
19. 

FIG. 16: Note the location where my hand is with the screwdriver. This provides just enough room to maneuver the screwdriver. Go ahead and secure both screws making them tight, but do not over tighten them.

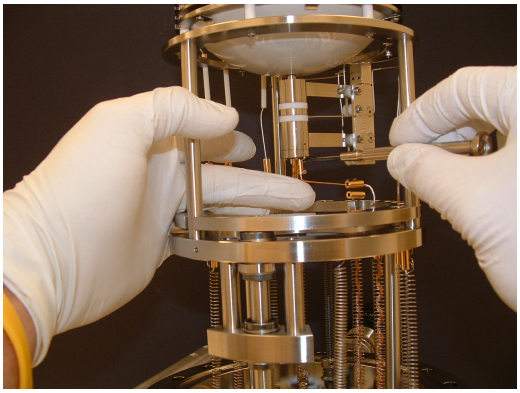
20. 

FIG. 17: Now the filament wires are ready to go back on starting with the filament side. Be sure that the inline does not contact the filament plate! This would cause an electrical short!

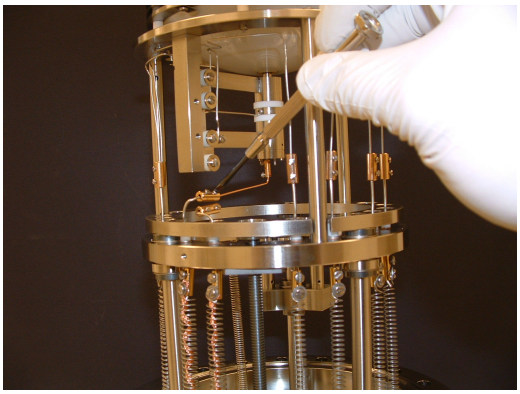
21. 

FIG. 18: Tighten the bottom inline next.

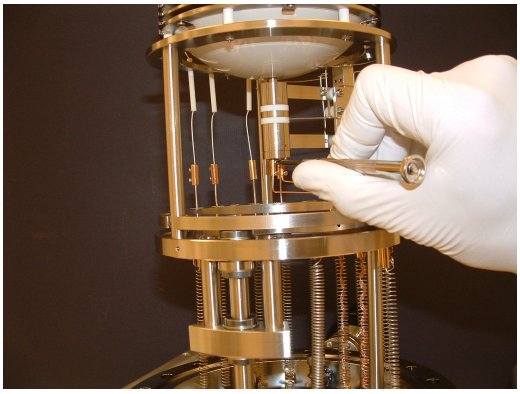
22. 

FIG. 19: Move on to the next one. Again, be sure that the inline is not touching the metal plate above it!

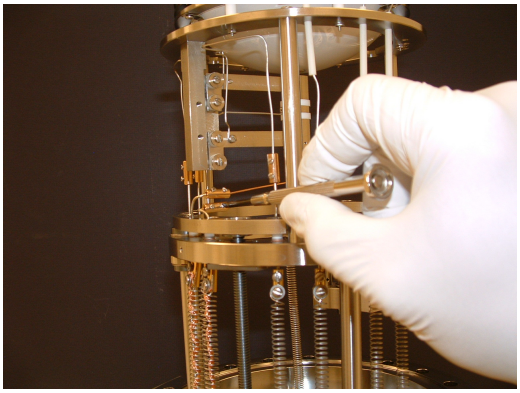
23. 

FIG. 20: Tighten the bottom inline next.

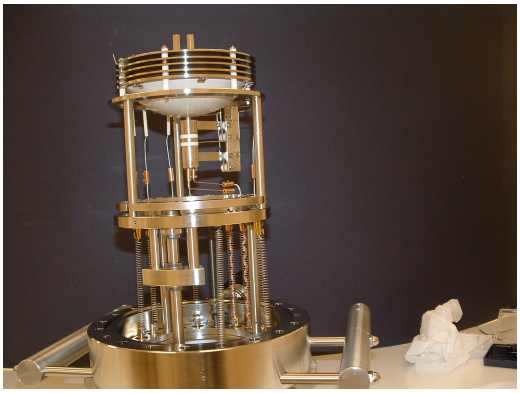
24. 

FIG. 21: Now you are almost done! The last step is to re-align the filament wires with the gun bracket above.

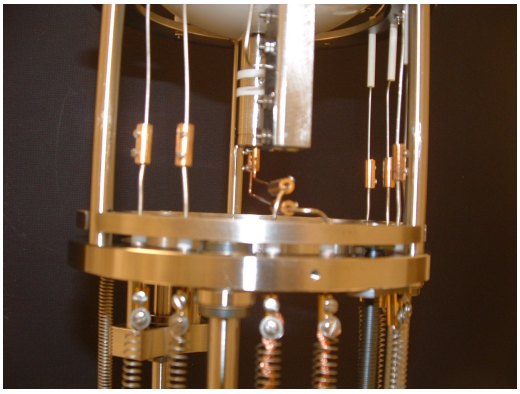
25. 

FIG. 22: Filament wires should be nearly coplanar with the brackets above them.

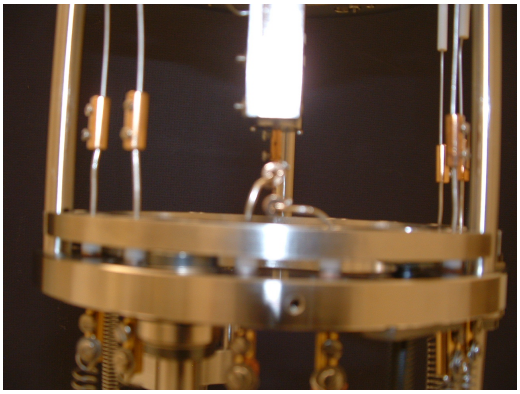
26. 

FIG. 23: Filament wires “perfectly” inline.

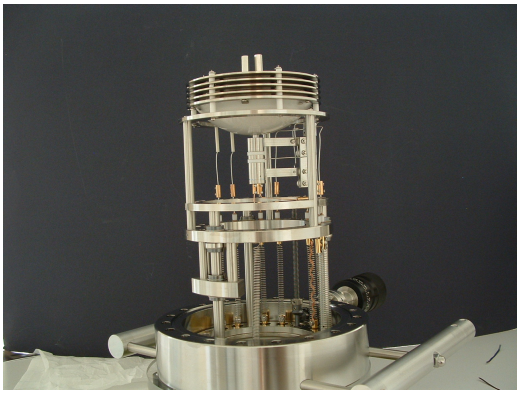
27. 

FIG. 24: You are now done! Be sure to test the filament for shorts before powering on.