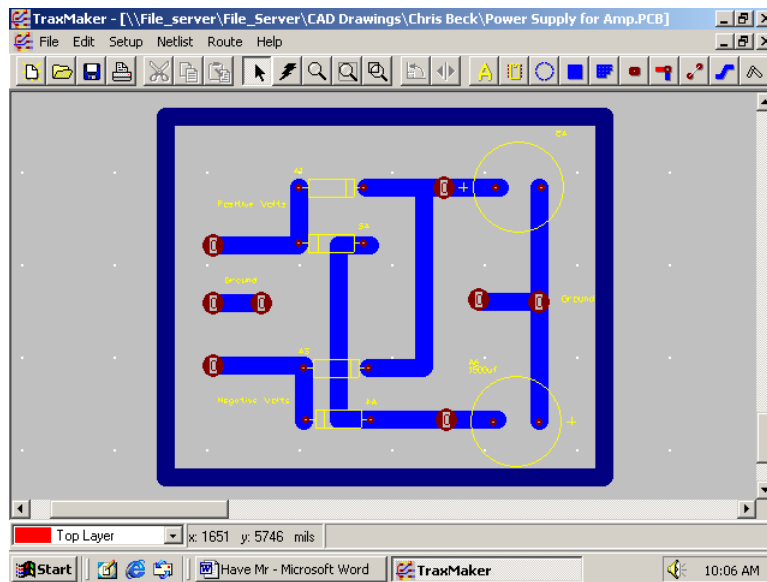
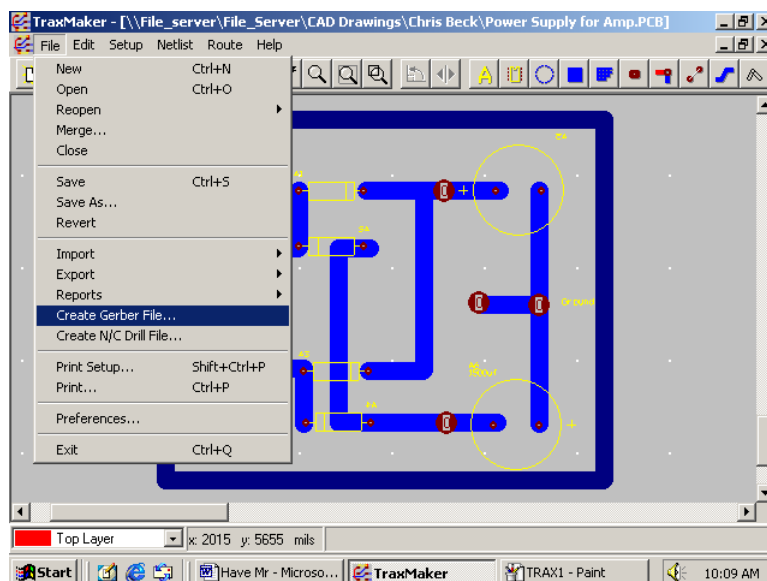


Quick Circuit Mill Machine Instructions

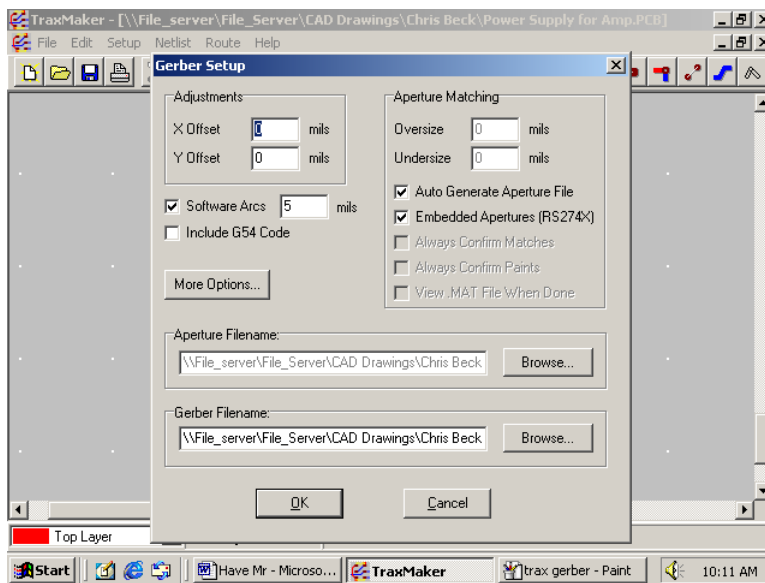
1. Have Mr. Johnson look over your traxmaker circuit, please print out circuit in draft format and get an extra copy of your schematic.
2. Save you traxmaker file on to the server under Cad Drawings.
3. Open traxmaker on the mill machine computer.



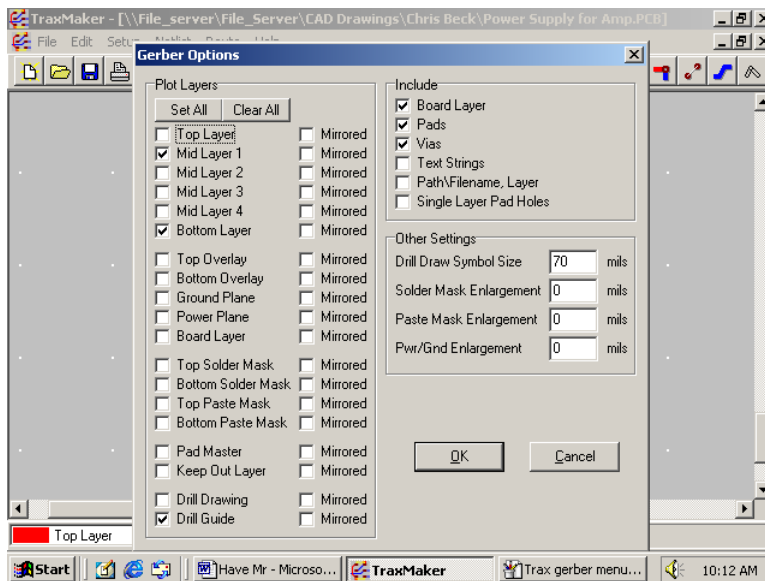
4. Create Gerber file, Under File Tab.



5. Click on more Options

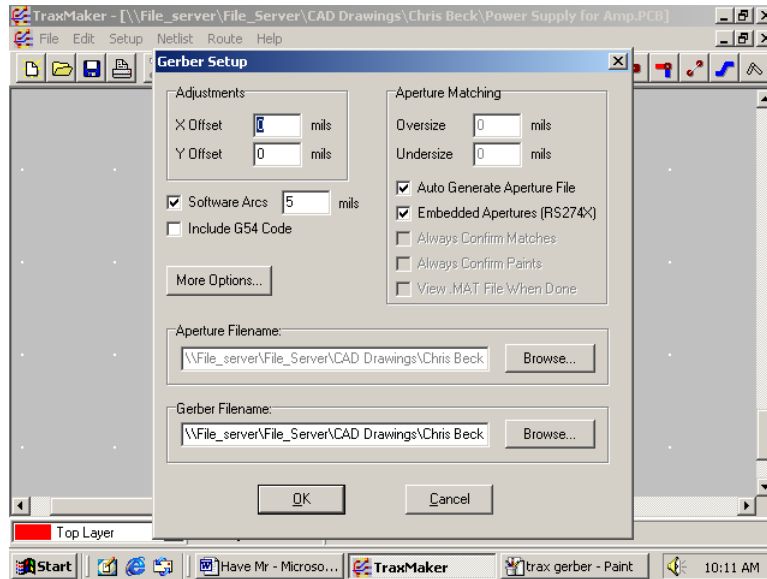


6. Select Midlayer, Bottom Layer, Drill Guide, Board Layer, Pads and Vias

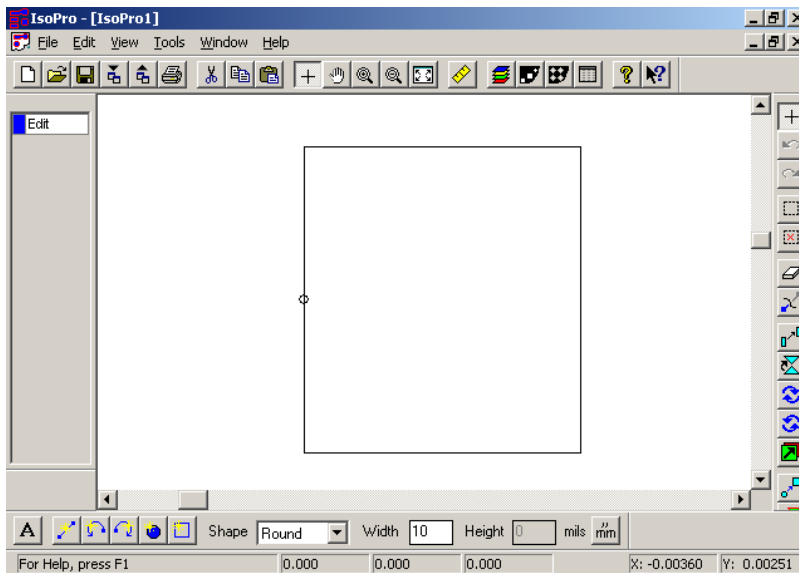


7. Click OK

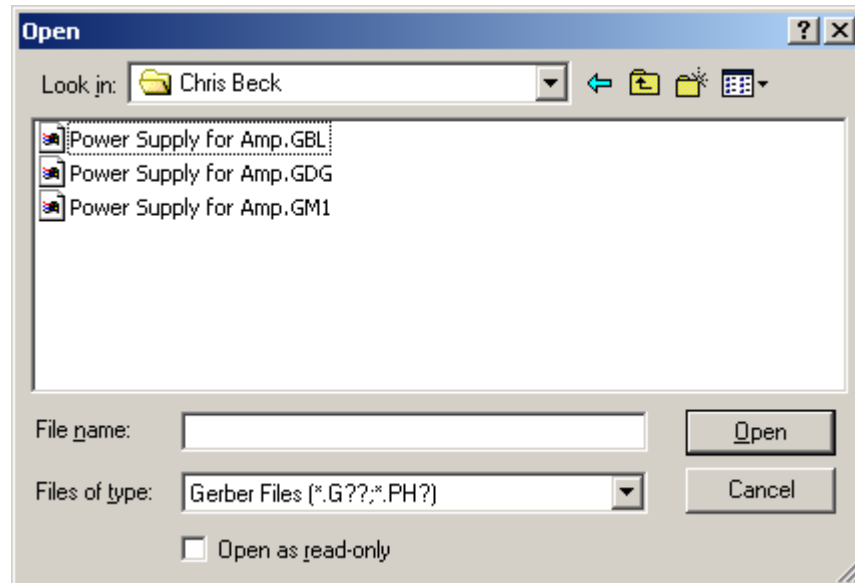
- Click OK again, this should save the Gerber file to the location where your traxmaker file is located



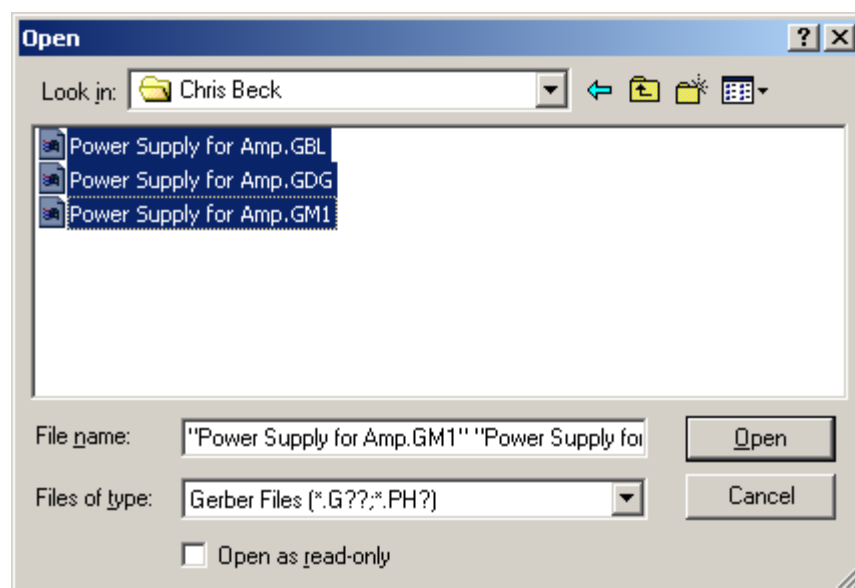
- A box will pop up saying “Gerber File Generation Finished” Click OK
- Open IsoPro



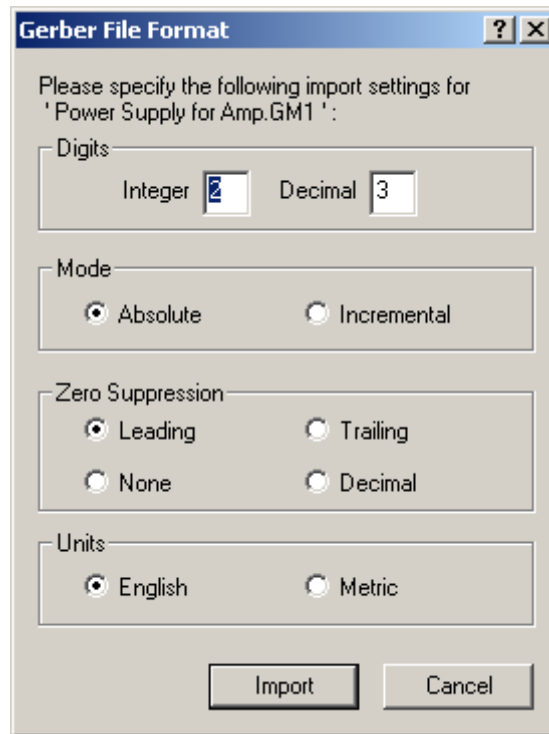
11. Click File then Open, you have to change files of type from IsoPro Files (*.iso) to Gerber Files (*.G??;*.PH?)



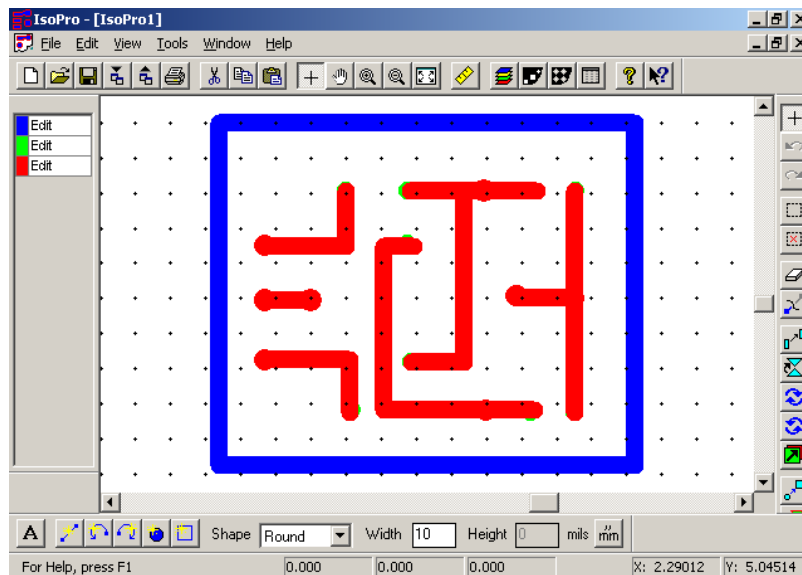
12. Open all three Gerber files, GBL GDG GM1. You Select all three by holding the Ctrl Key and click on each file.



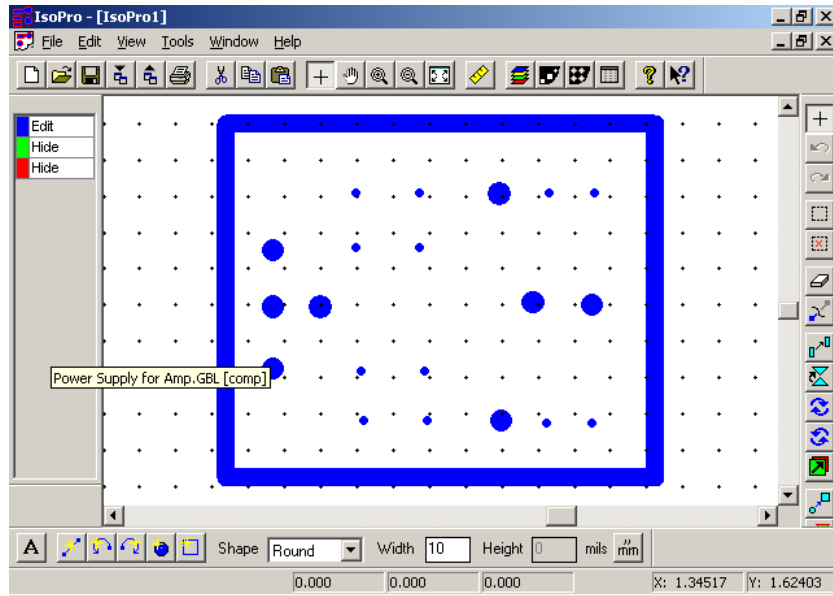
13. Click on Import three times on all three files



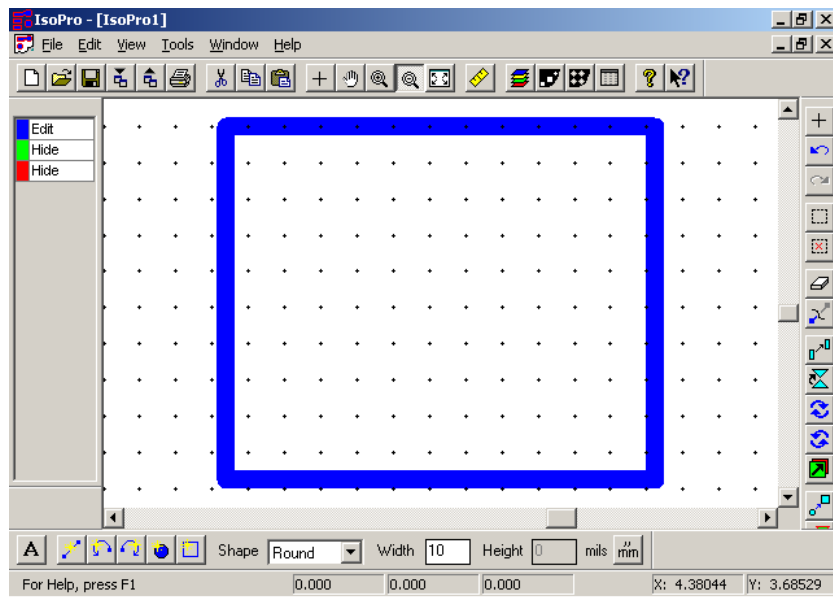
14. Your screen should display all three layers.



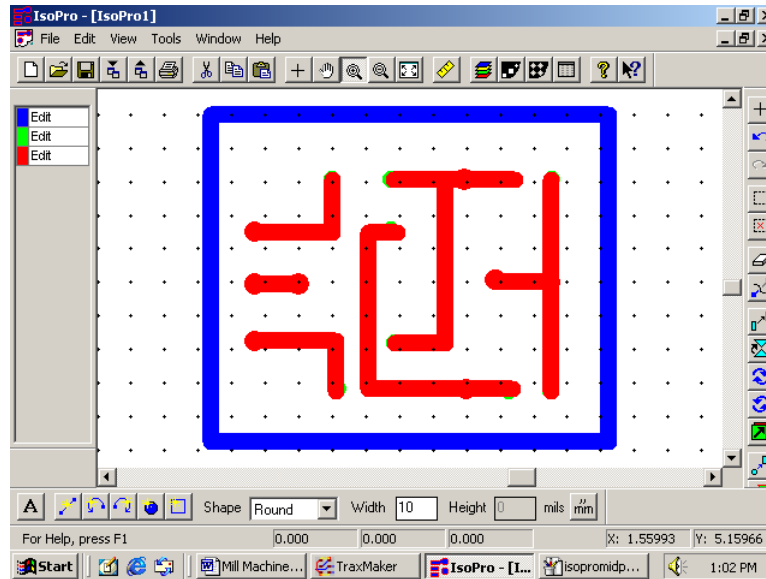
15. Left Click on the Green (GDG) and Red (GBL) layer twice until it displays Hide on both layers. The only layer that should show is the midlayer (GM1)



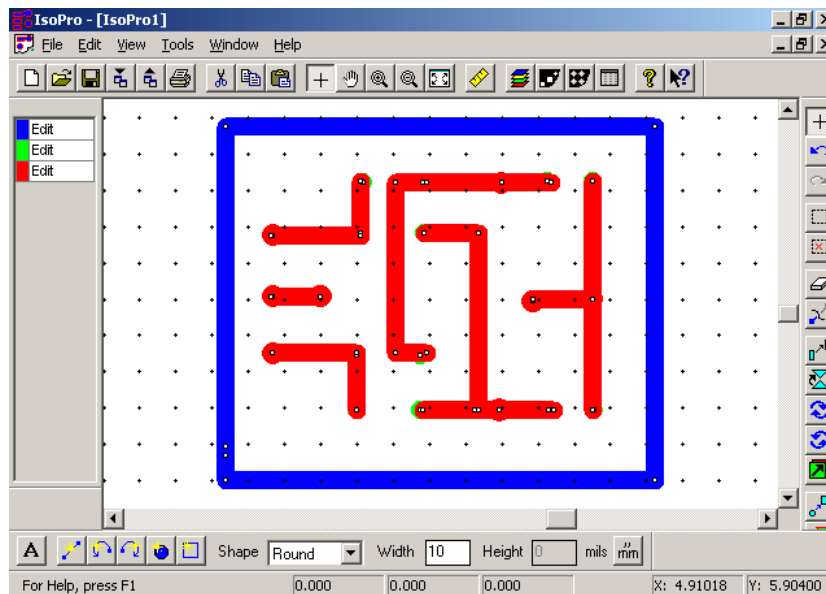
16. Click Edit, then Select, then All Pads. All the pads in the midlayer will highlight. Then Press Delete, you shouldn't see nay pads on the midlayer layer.



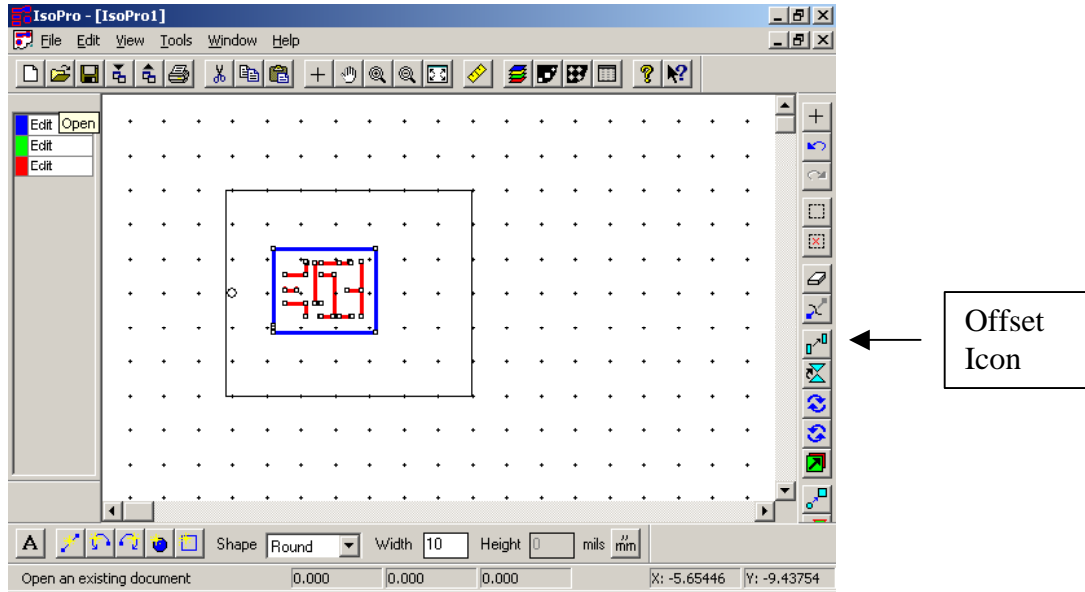
17. Right Click on the Green (GDG) and Red (GBL) layer once until it displays Edit on both layers. Both layers should show.



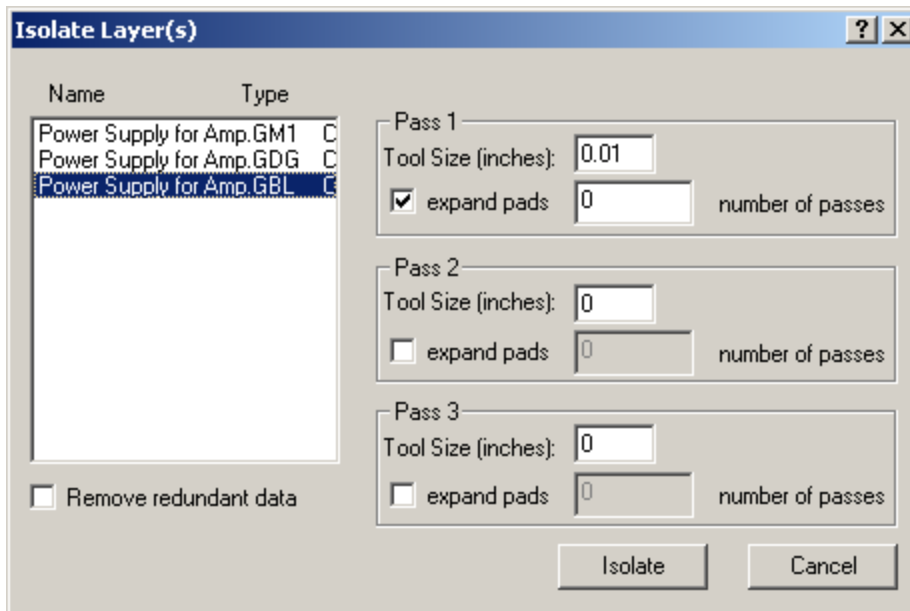
18. Click on Edit then Select all data, then click on tools then Mirror. This will flip the board so it can mill on the copper side.



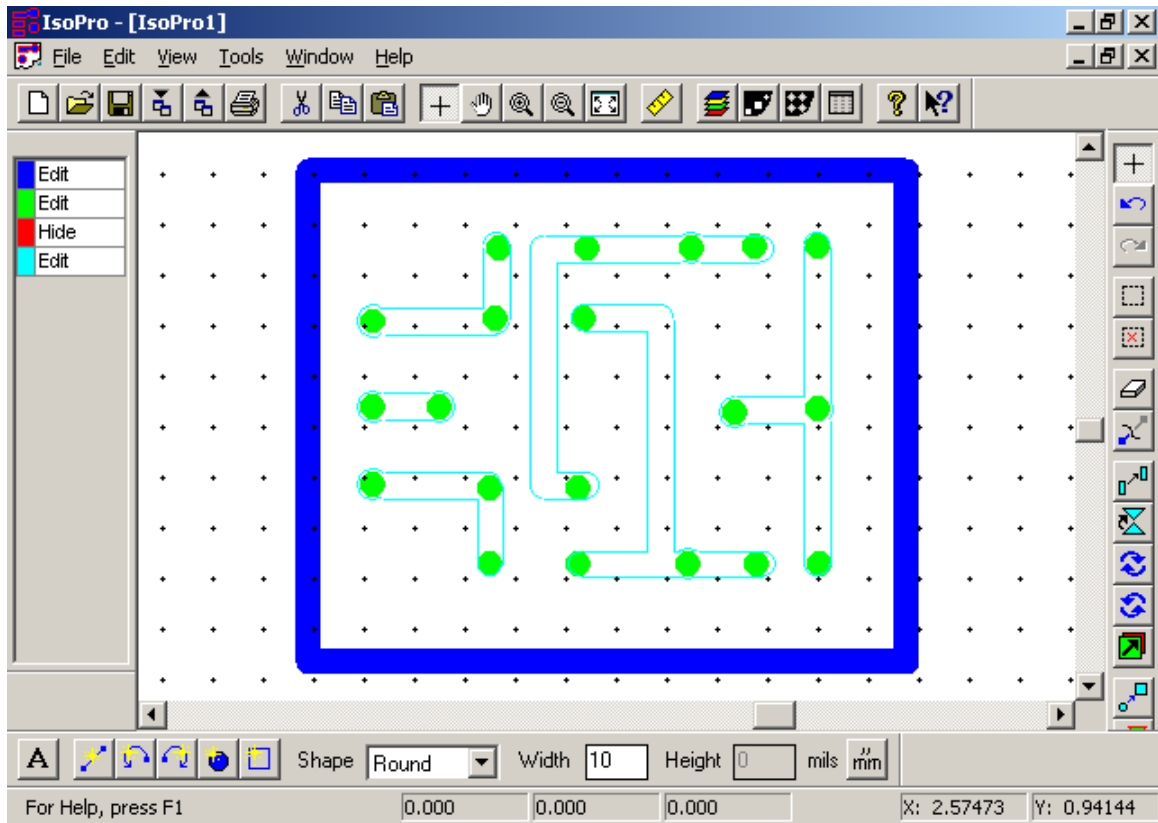
19. Click on offset, then place the board in the middle of the black square, the black square represents the edges of PCB on the mill machine. Click Edit then Deselect All Data



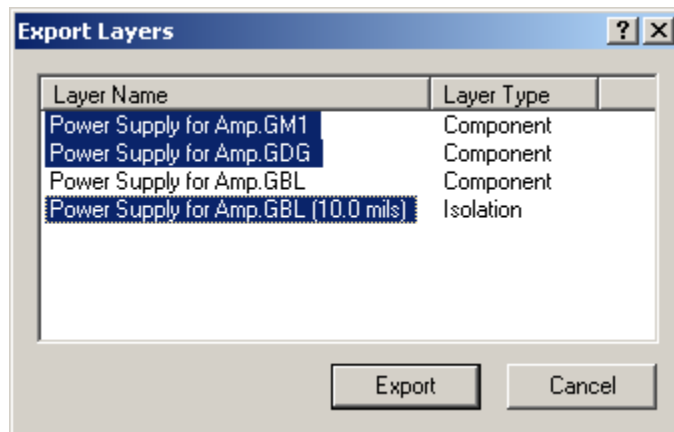
20. Click on tools then Isolate, highlight bottom layer (GBL) and click on isolate



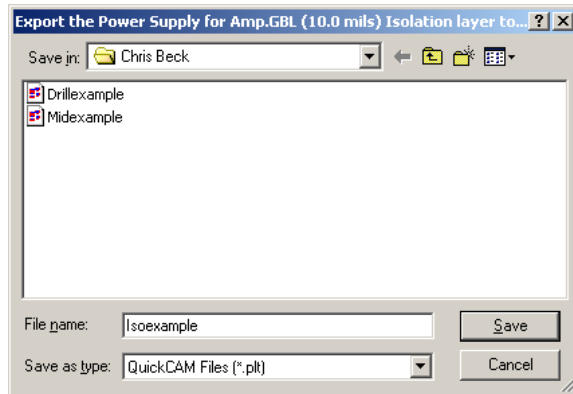
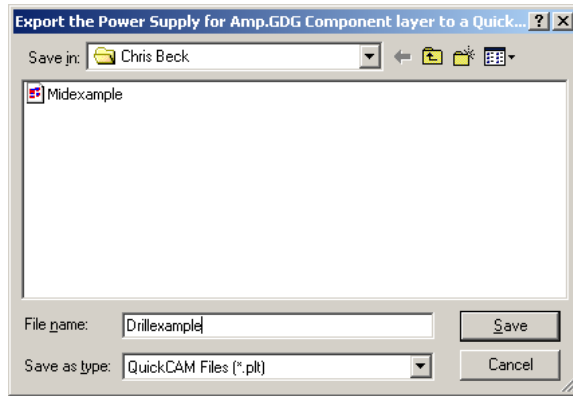
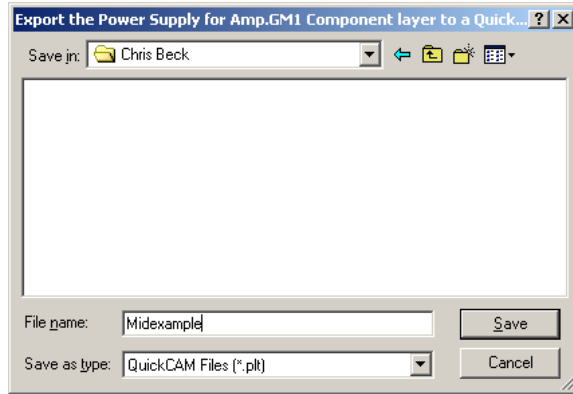
21. Hide the bottom layer and it should look like this



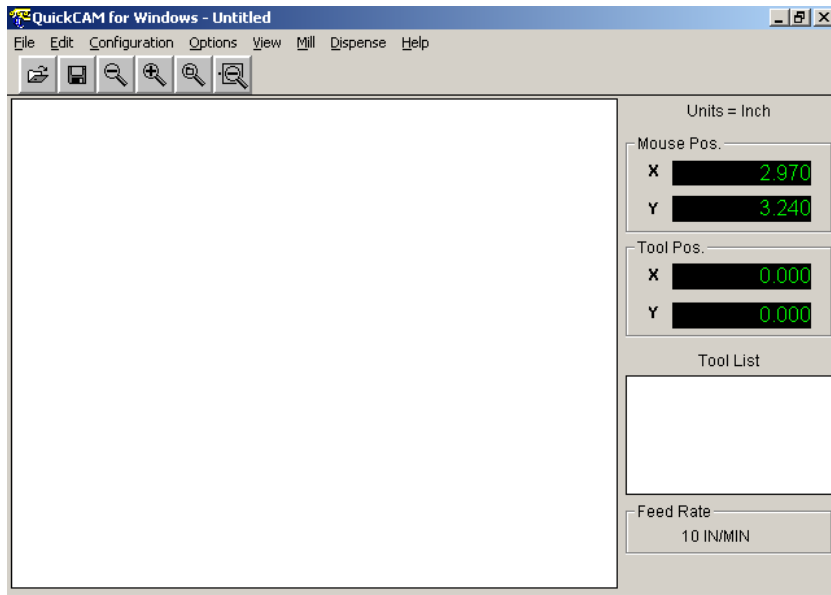
22. Click file then export as QuickCam File, then highlight GM1, GDG, GBL (10.0 mils). Then Click export.



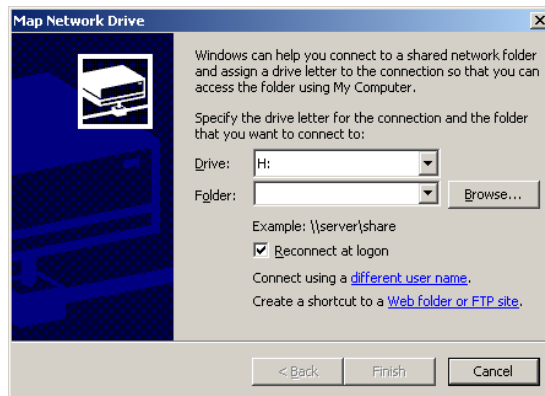
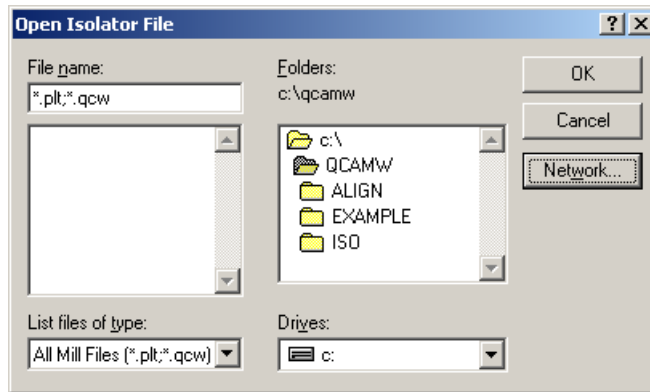
23. Label Each file by layer first then your name, ie. Midexample, Drillexample, Isoexample. Click Save for each.



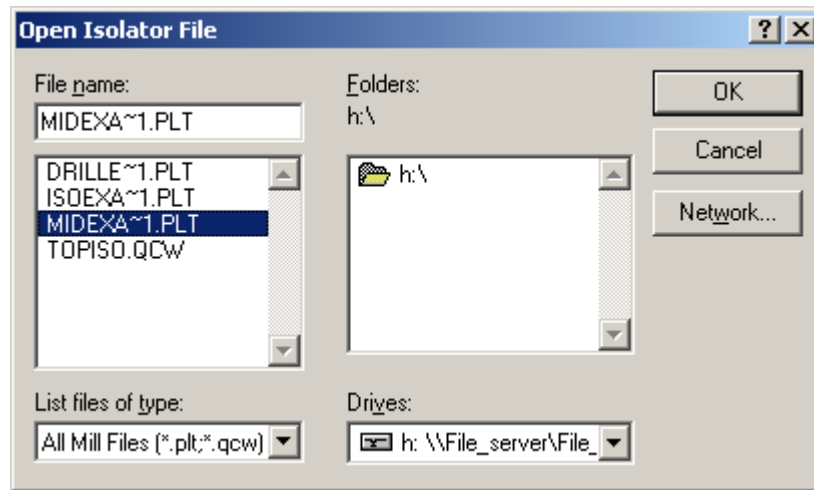
24. Open Quick Cam



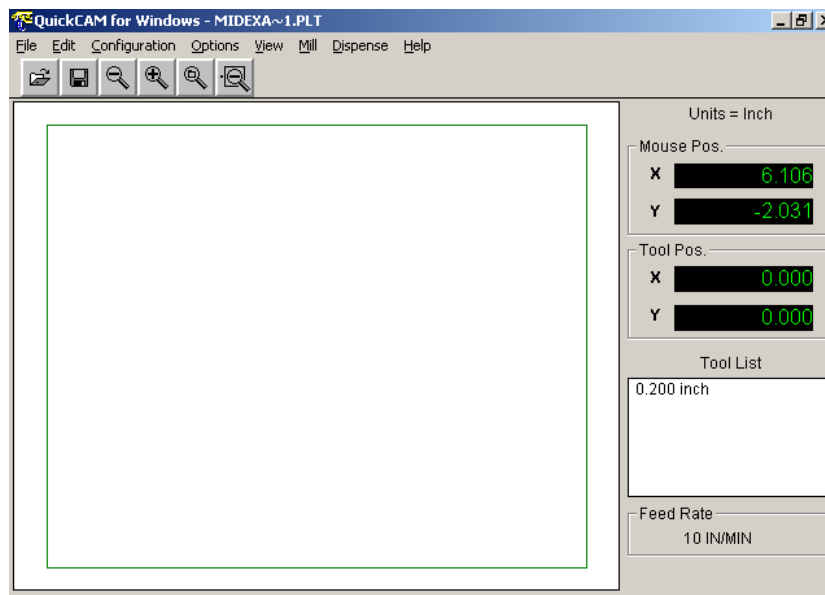
25. Click File then Open, Click on Network and select where your file is located on the files server



26. Open the Midlayer file, click OK

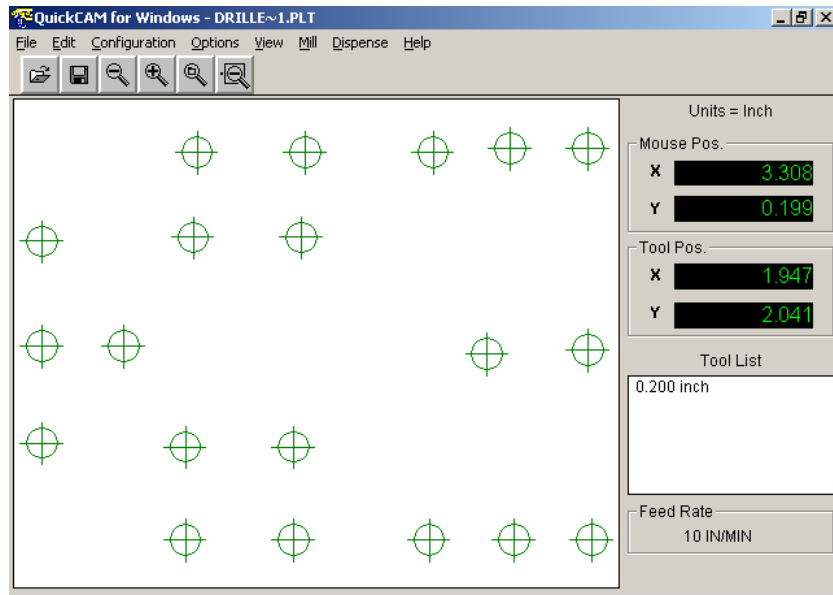


27. Click on View to see the midlayer, there is a bug in the program you must hit view to see the layer.

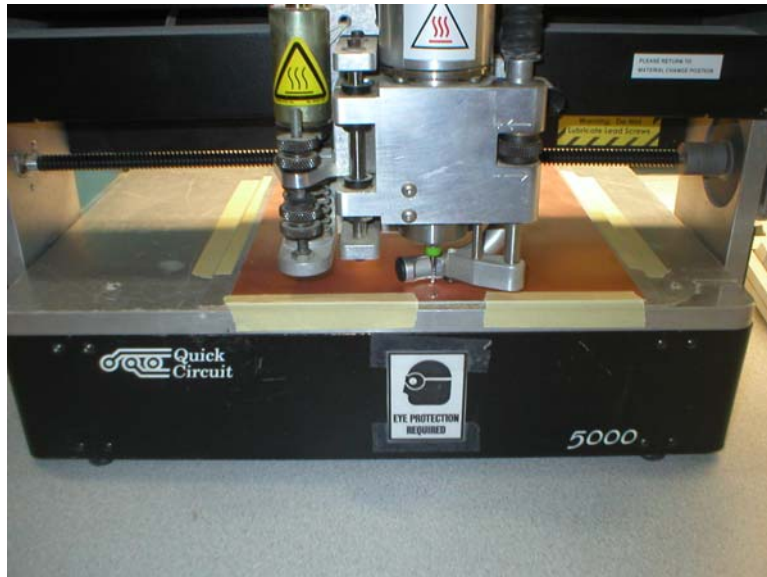


28. Go to each corner of the midlayer, click the right mouse button and jump to point, this will see if your board falls on the copper PCB.

29. Click on File and Open your drill file, then press View



30. Click Options then Go Home



31. Click Options then Jog Mill Tool, press the down arrow until the head moves a little beyond the edge of the PCB



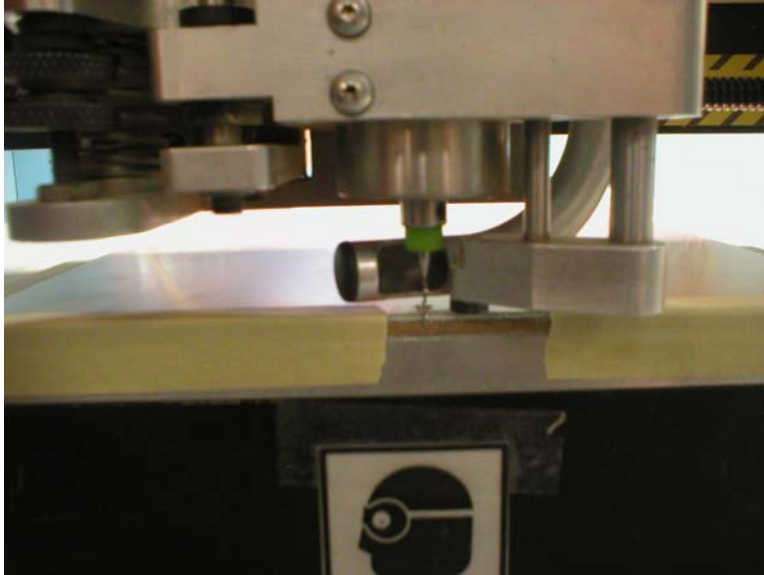
32. Change the bit to the drill bit, remove the current bit with the Allen wrench



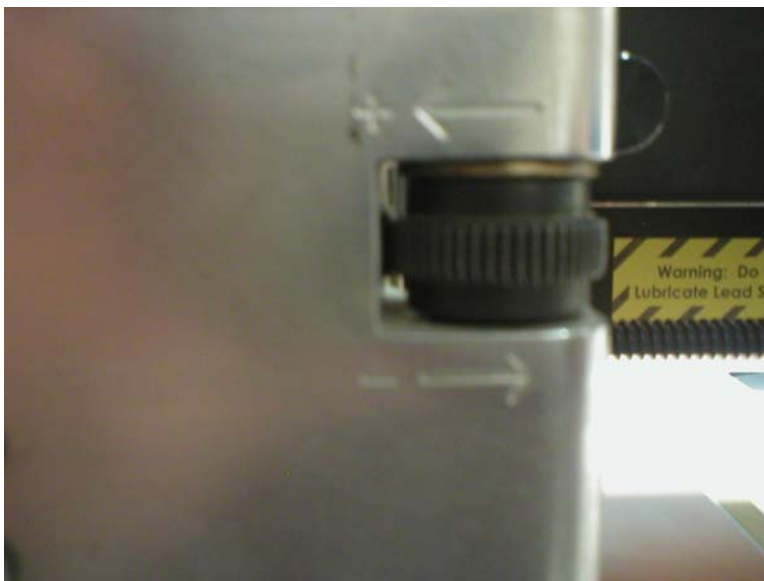
33. The Drill Bit should look like this



34. Move the head close to the edge of the board so the bit comes in contact with the side of the PCB, do not hold down the head while moving.



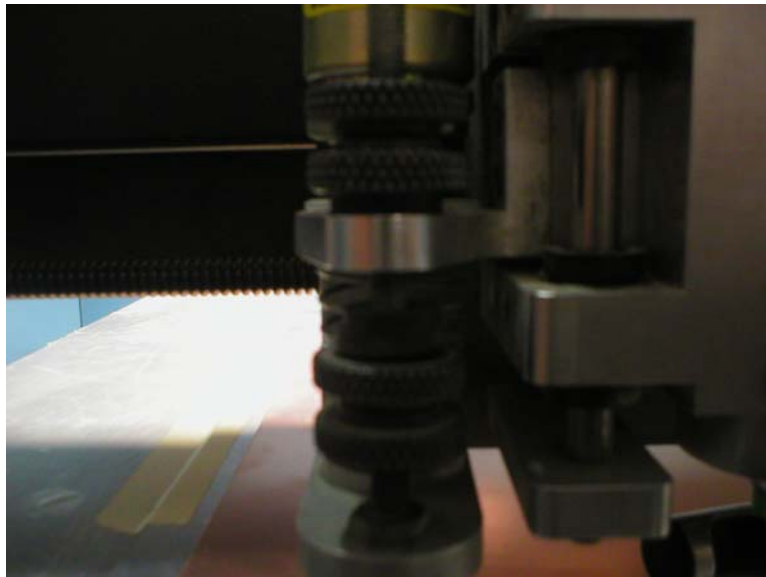
35. Hold Down Head and adjust this knob so the bit goes halfway into the backer board.



36. Adjust this knob down all the way while the head is in the lowered position, this sets the maximum force to pull downward while drilling.



37. Adjust the top knob so that the bit is 3/16 of an inch above the PCB, adjust the bottom knob so that it provides a little cushioning for the head in the down position.

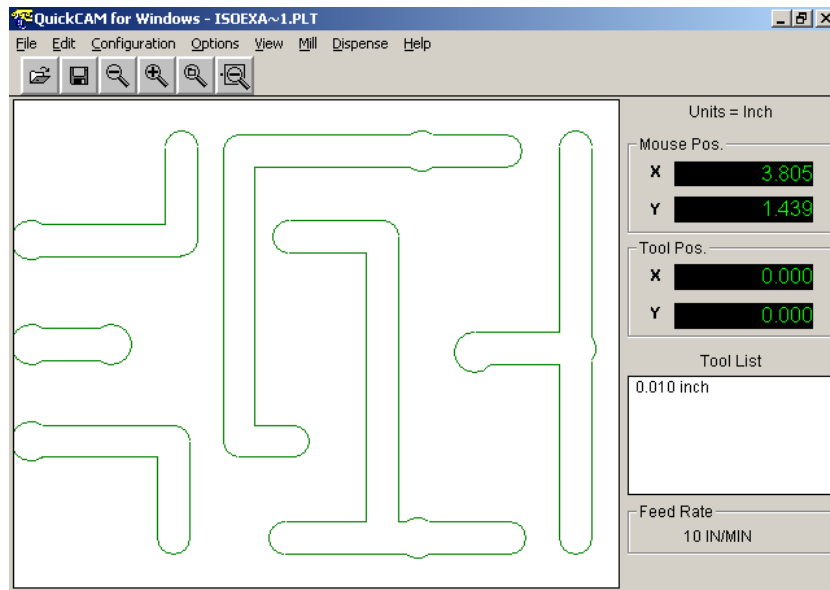


38. Once the bit is set up call Mr. Johnson over to check, the bits are very expensive!

39. Once Mr. Johnson gives the Okay, Move head back into the Home Position, click on options then go home.



40. You are now ready to mill the drill file.
41. Click Mill, then Mill/Drill File. Click Insert .0200" Tool and open the lower draw to prove cool air for the vacuum cleaner.
42. After milling, the head will return back to the Home Position
43. Click on Files and Open your isolation file, then press View



44. Click Options then Jog Mill Tool, press the down arrow until the head moves a little beyond the edge of the PCB



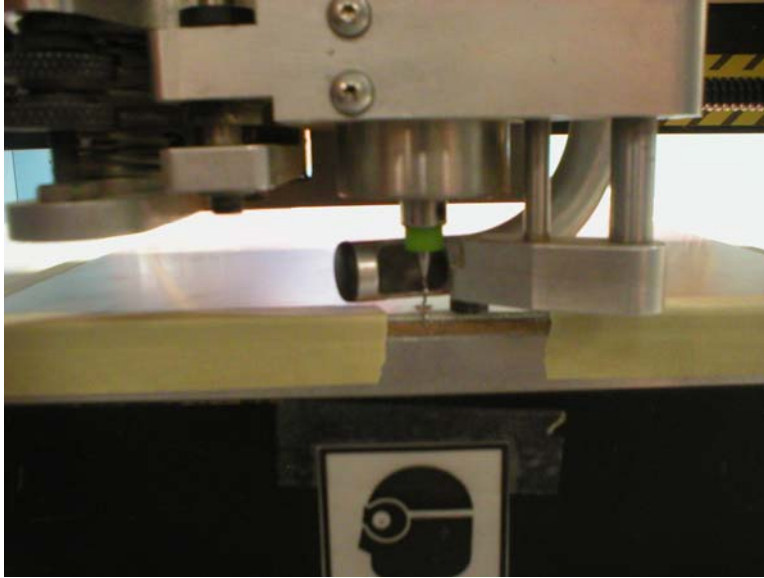
45. Change the bit to the drill bit, remove the current bit with the Allen wrench



46. The Isolation Bit should look like this

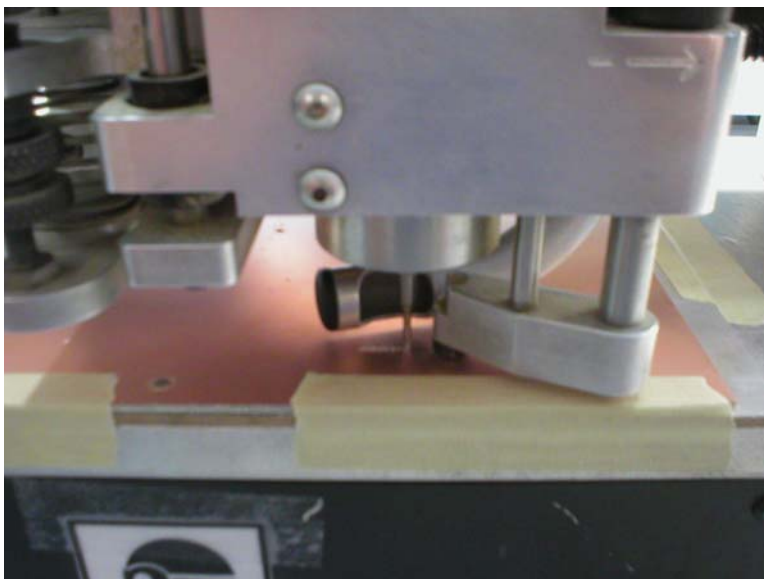


47. Make sure the isolation bit is high enough to clear the PCB and click on Options and Go Home.



48. Move the mill head to an empty position on the PCB, click Options and Jog Mill Tool. Once at the Empty spot, manually place head down and adjust the +/- Knob so that the bit barely touches the PCB

49. While in Jog Mill tool click on Turn Spindle On and Click on lower tool. Adjust this knob so the bit goes to a fingernail with depth and press the right arrow key to move the mill head keep adjusting the +/- knob until you get to finger nail depth.

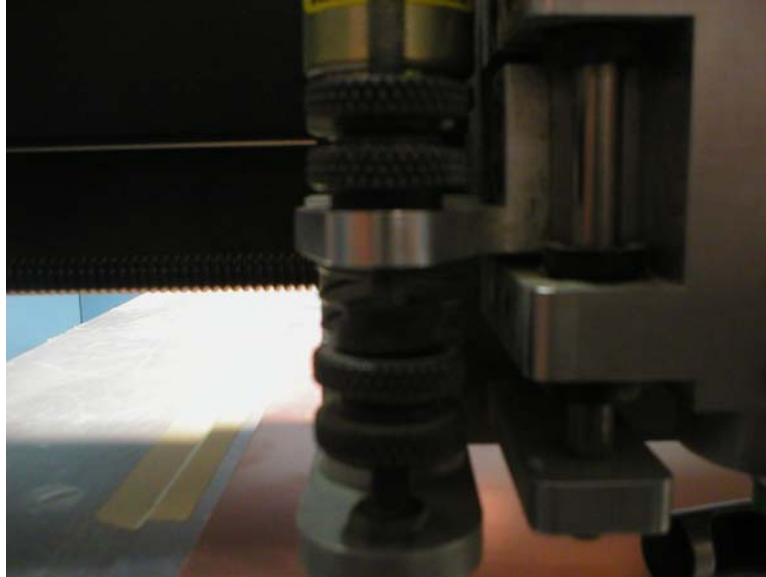




50. Adjust this knob down all the way while the head is in the lowered position, this sets the maximum force to pull downward while isolating.



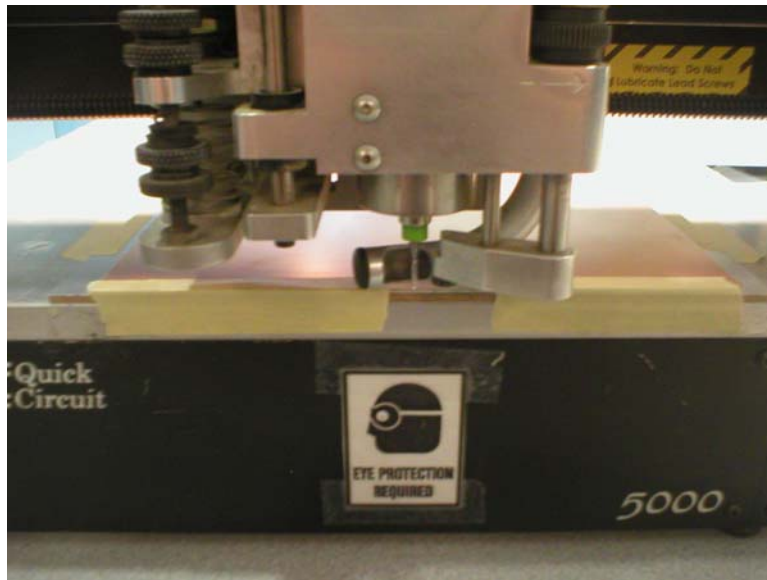
51. Adjust the top knob so that the bit is $\frac{3}{16}$ of an inch above the PCB, adjust the bottom knob so that it provides a little cushioning for the head in the down position.



52. Once the bit is set up call Mr. Johnson over to check, the bits are very expensive!
53. Once Mr. Johnson gives the Okay, Move head back into the Home Position, click on options then go home.



54. You are now ready to mill the drill file.
55. After milling, the head will return back to the Home Position
56. Click Options then Jog Mill Tool, press the down arrow until the head moves a little beyond the edge of the PCB



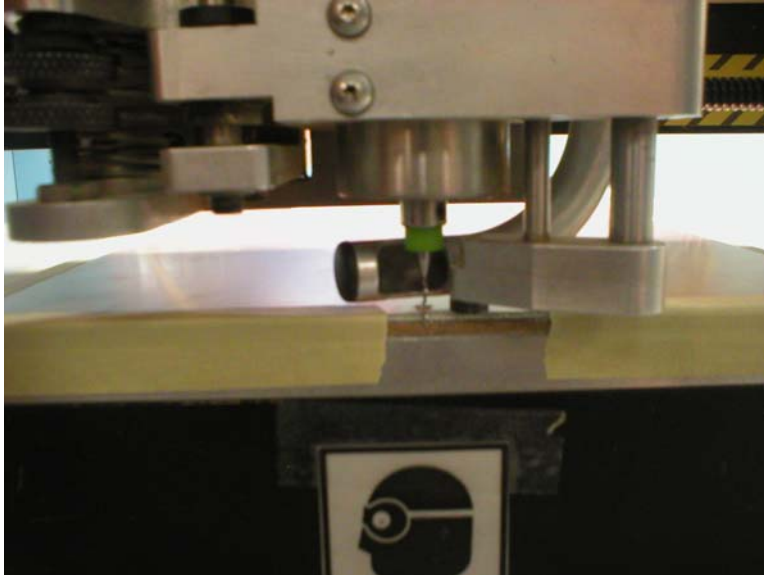
57. Change the bit to the drill bit, remover the current bit with the Allen wrench



58. The Mill Bit should look like this



59. Move the head close to the edge of the board so the bit comes in contact with the side of the PCB, do not hold down the head while moving.



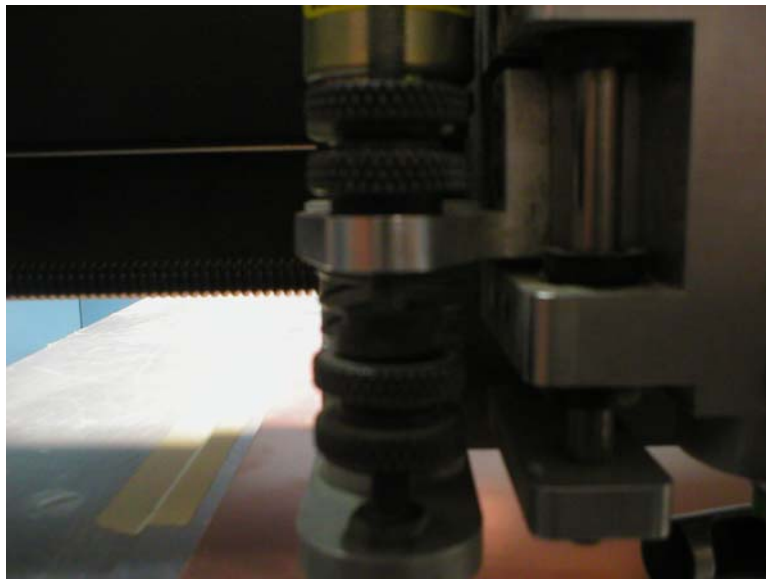
- . Adjust this knob so the bit goes halfway into the backer board.



60. Adjust this knob down all the way while the head is in the lowered position, this sets the maximum force to pull downward while drilling.



61. Adjust the top knob so that the bit is 3/16 of an inch above the PCB, adjust the bottom knob so that it provides a little cushioning for the head in the down position.



62. Once the bit is set up call Mr. Johnson over to check, the bits are very expensive!

63. Once Mr. Johnson gives the Okay, Move head back into the Home Position, click on options then go home.



64. Open the Midlayer file, You are now ready to mill the Midlayer file.

Mill Machine Drill Bit Identification



DRILL BIT



END MILL



COPPER MILL



CONTOUR ROUTER

Drill Bit = .040" for component holes
End Mill = not used
Copper Mill = "T1" for isolation layer
Contour Router = .0625" for board cut out