



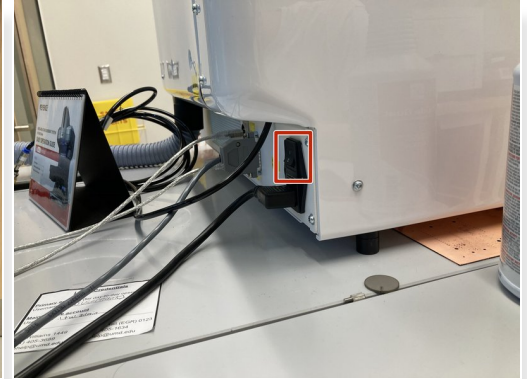
ProtoMat S64

The first step of PCB fabrication is to drill the vias and fiducials.

Written By: Jimmy Nolan

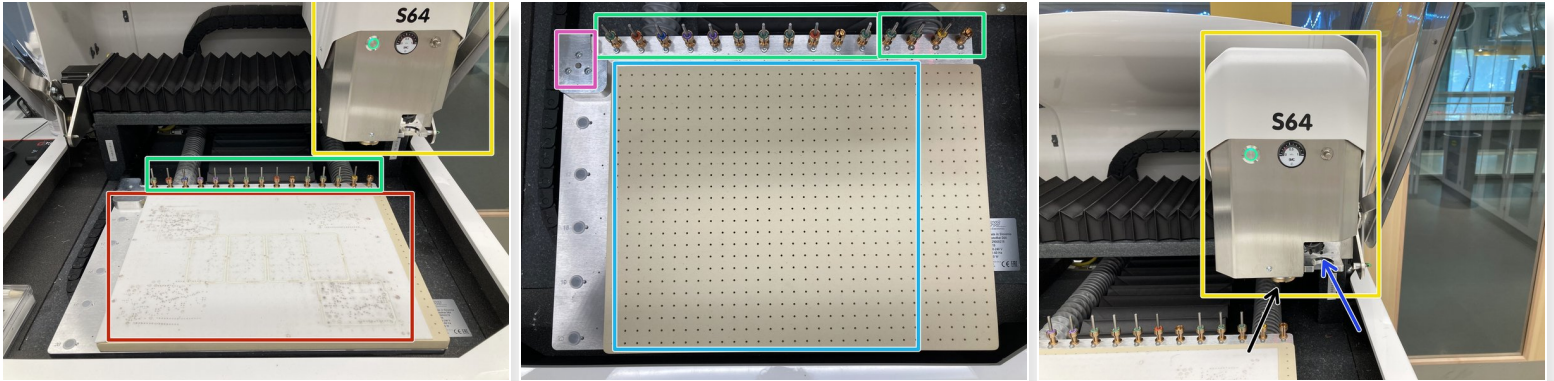


Step 1 — Machine Basics Exterior



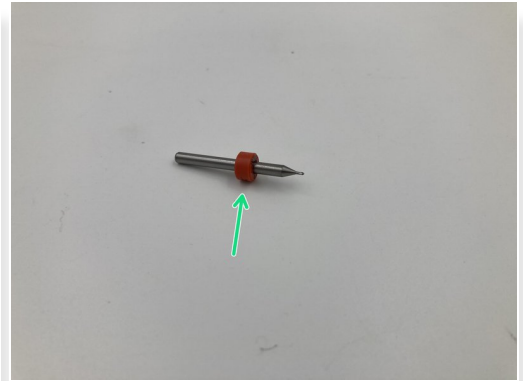
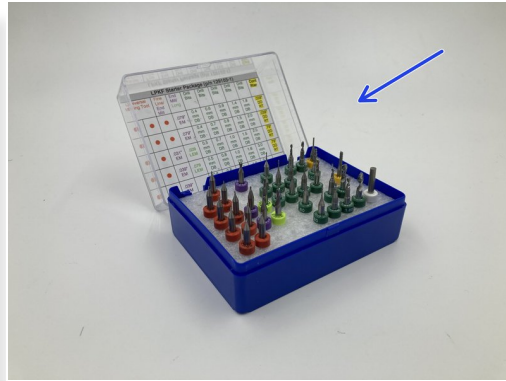
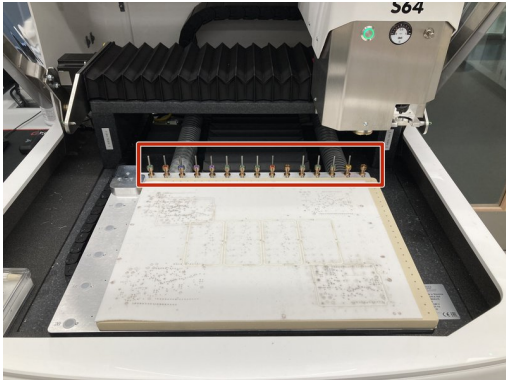
- Handle on the front is used to open and close the front shield
- Power button is located on the back side of the machine

Step 2 — Machine Basics Interior



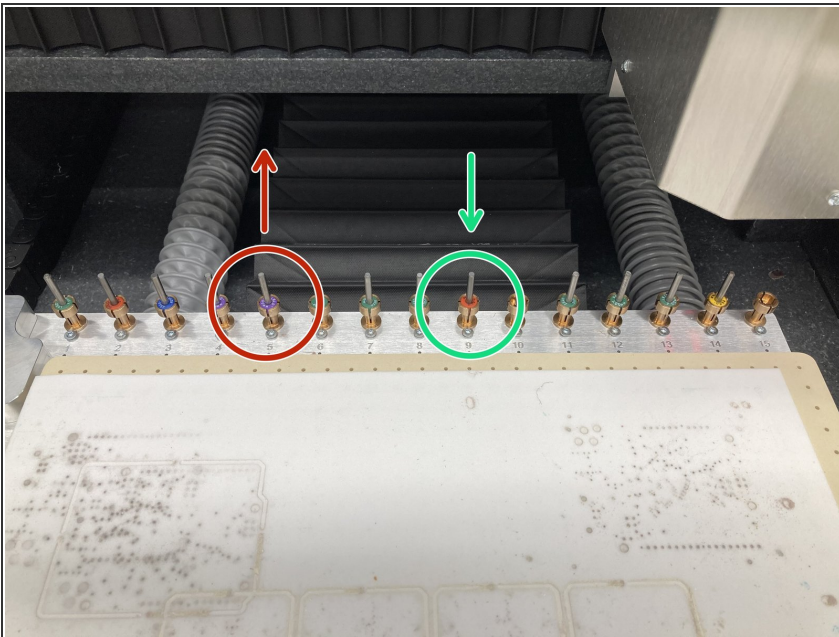
- **Air permeable material** - used to protect the vacuum table
- **Tool Holder** - holds tools and allows for automatic tool changing
- **Machine Head** - for lack of a better term, but moves side to side, hold tools, and is responsible for milling
- **Vacuum Table** - provides a vacuum that holds the PCB down
- **Tool Calibration Area** - the S64 uses this block to set the Z height of the cutting tool
- **Camera** - used to focus on cut marks and find fiducials on the board
- **Tool Collet** - holds the cutting tool

Step 3 — Cutting Tools



- Held in the tool changer
- Extra Tools and tools of different sizes are held in cases
- Each tool has a color marker to determine type and size

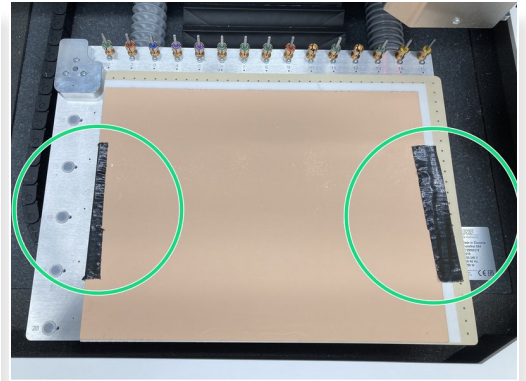
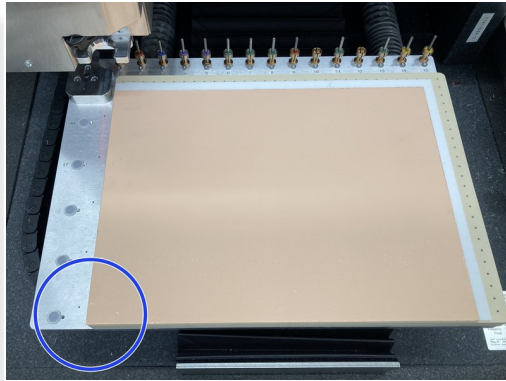
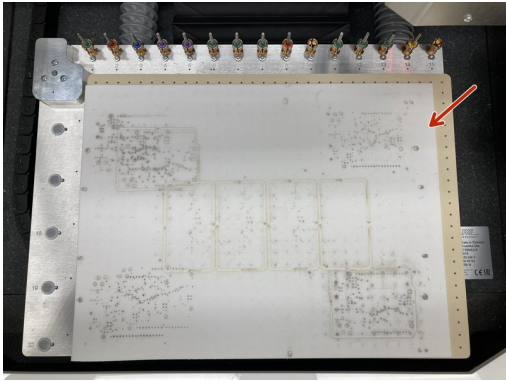
Step 4 — Changing tools in the Tool Holder




- To remove tools, simply pull it out of the holder
- To replace, simply place the tool in the holder with the tip pointing down
- ① Make sure the tool pressed down so that the top of the colored label is flush with the top of the holder

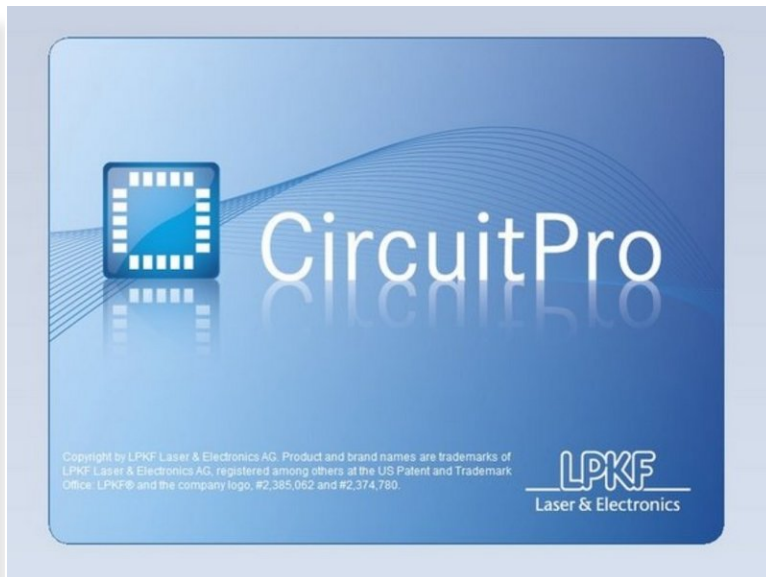
⚠ Only change tools when using CircuitPro; it keeps track of which tools are currently in the holder and their conditions

Step 5 — Mounting Materials



- Make sure air permeable sheet is on the S64
 - Place board material on the sheet with the bottom left corners lined up
 - Tape the sides of the material down
-  The board is now ready for milling

Step 6 — Next Steps



- You now know enough to begin operating the ProtoMat S64
- [Read this guide in order to set up a PCB using CircuitPro](#)