

Round Holes in Panels

Eventually, we all make a panel for mounting electronic components.

Often it is not easy or practical to dismantle a panel to add a new switch.

Below are tools that can be used to help manage making round holes in plastic and aluminum materials.

1. We are all familiar with the common drill bit.



For the most part, these bits are quite acceptable for holes in panels but there are better alternatives.

Never use these bits for enlarging existing holes as they may cut and grab at the circumference of the existing hole resulting in panel damage and possible trauma to your hand.

People often use a large bit of this type to remove burrs from an existing hole but a 'Counter Sink' bit is a better choice.



2. The 'Brad Bit' is well suited for panel hole drilling. It allows you to easily position the bit to the exact center location. This bit does not lend itself to enlarging a hole as centering is next to impossible after a hole has been cut. Use these bits for the initial hole boring.



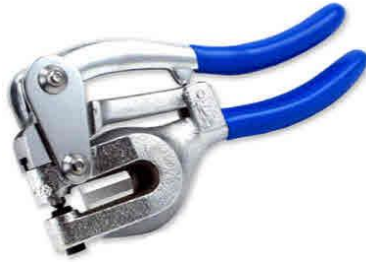
3. The 'Body Reamer' is a must-have hand tool for the electronics hobbyist. You can make small and large adjustments to enlarge an existing hole in a panel, even make a new hole without any drilling.



You can purchase less superior reamers than the above Body reamer. These also do an acceptable job. Note: trying to enlarge a hole too much with this tool will result in a polygon shaped hole.



4. A hand punch for making holes is great for speed and accurate hole production. If you have several panels with the same hole placement, first accurately punch a template panel. Next place this template over a new panel and clamp the two using small clamps. Position the hole punch at each hole and punch the blank panel holes. To speed things up, several punches can be used with separate sized dies. The reach of the punch is about 2”.



5. A ‘Unibit’ is also great to have in your hand tool collection. These bits are great for enlarging existing holes and are a must-have tool when drilling plastic materials. Purchase a bit that has two cutting edges opposite each other on its surface. Warning; you can easily go to the next step size if you are not careful.



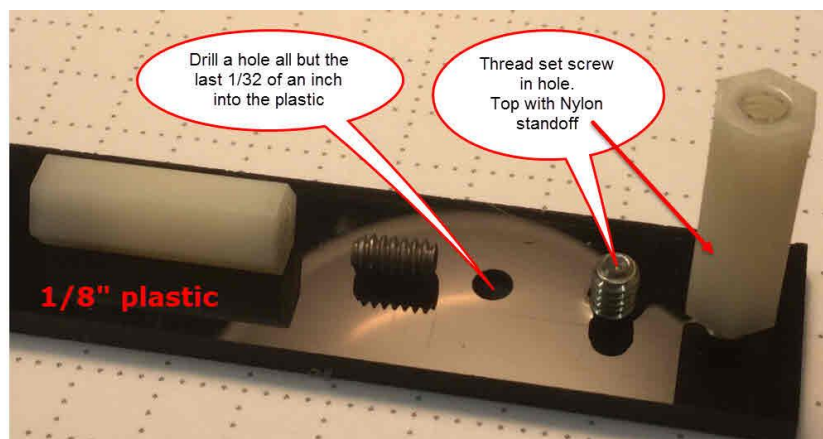
6. If you have access to a CNC machine a ‘D’ bit or engraving bit is great for making holes of **ANY** size. Select a carbide bit with a small cutting angle ~15°. The simple ‘D’ bit has only one cutting flute, but there are versions that have 2 and 3 flutes. Experiment to find what is best for your material. **Note:** remember when you cut through the material you enlarge the hole size when using these bits. One half of the bit cuts past the CAD hole size. Thus, CAD holes, should be reduced in size to account for this enlarging. For example, if you want a 1” hole, the hole drawn in the CAD program should be 0.98” (if the bit enlarges holes by 20 thou).



7. End mill bits have a squared off look to their appearance. These bits are usually used in a CNC machine; however, they can be used in a drill press if you clamp your work. You can partially drill though 1/8” material then add a ‘Grub’ or ‘Set’ screw in the hole. This allows you to mount things like LCD displays without seeing the mounting screw on the finished panel side.



Set screw



8. Rounded files are always handy to have. Both metal files and modern diamond edged files are a must in your tool bag. Get an assortment of diameters. Use the largest diameter so you do not distort the roundness of a hole when you enlarge its size. For 'Rat Tail' files, buy the fine-tooth variety.



Nice to have tools:

- Pin Vice



- De-Burring Tools



- Ring Mandrel with sand paper, or several different diameter dowels.



- Keyless Drill Chuck that fits into a screwdriver handle. Get one that goes down to zero.



Things to consider when making holes:

Measure accurately, take into consideration what is to be mounted behind the panel.

Don't rush.

Mask your work.

Remember to set the drill press hole depth.

Pre-drill a hole then enlarge it as needed.