

Solder Turrets

Discover solder turrets to make your PC board work easier and more reliable.

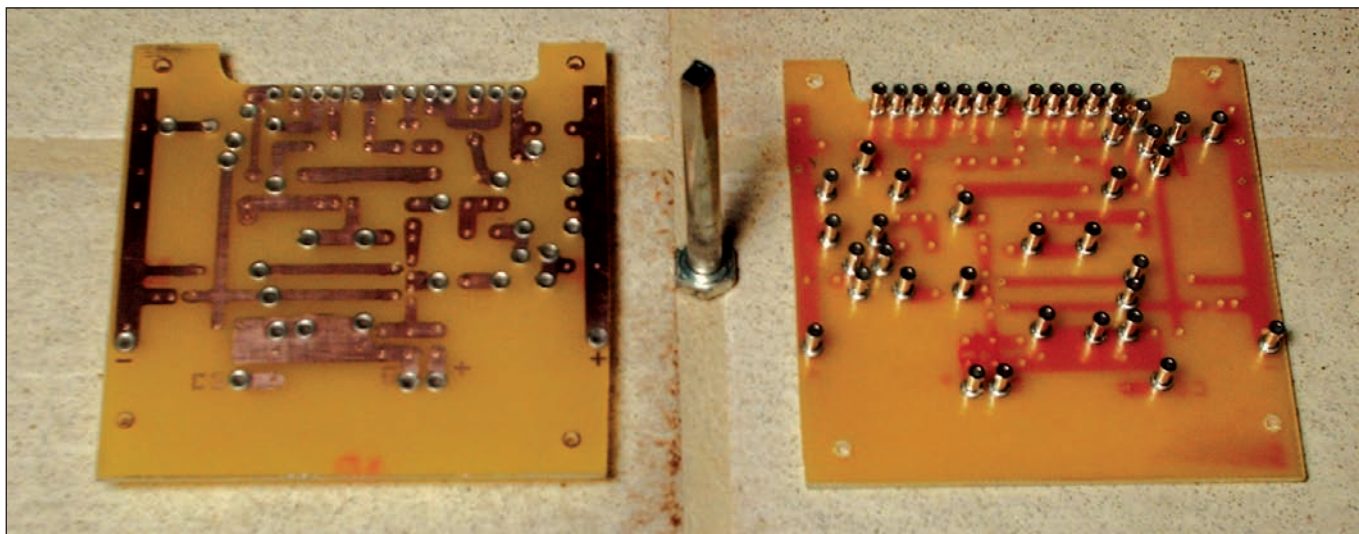


PHOTO 1: PC boards modified for solder turret use.

My amplifier project has caused me to make, install, modify, and repair a series of PC boards, now involving a third iteration.

Whenever I needed to change the value of a component, I had to remove the entire board and attached power transistors for access to the foil traces, which deteriorated rapidly to my great displeasure.

As I looked back on the frustrating debugging efforts spent on the first two boards, failing solder joints emerged as the main trouble source. Consequently, I decided to maximize the use of “solder turrets” to improve the reliability of the board-to-wire connections.

After much digging, I rediscovered “solder turrets” in the Mouser catalog at the very end of the hardware section, where they are called “standardized terminals” and are strangely absent from the index. These old friends from long ago offered a slick answer to all my reliability problems.

SOLDER TURRET EXAMPLE

Photo 1 shows a pair of PC boards modified for solder turret use. I drilled the boards with holes to fit the turrets, which

I swaged into place by forming a shop head on the underside of the PC. After mounting the turrets, I tinned all foil traces and soldered the turrets. The problem of lifted foil traces thus disappeared entirely.

TOOLING

You can purchase a mandrel to put in a bench vise to hold the upside-down turrets while forming their shop heads. I found it very expedient to simply drill, grind, and file the end of a bolt to produce a perfectly serviceable mandrel. The hole in the end of the bolt is made to just fit the head of the turret, but support it by its flange during forming.

The bolt was narrowed because my turret layout crowded them together rather closely, mainly because the foils were originally spaced for simple wire connections.

FORMING THE SHOP HEADS

Place the turret upside-down in the hole in the mandrel, lower the PC board foil-side up over the protruding turret, and use a hammer and center punch to form the shop head on the turret. I finish by flattening that head with a few light taps of the hammer.

My too-close turrets needed to be filed to miss each other, and I used a fine saw to separate some shop heads, simply because the boards were adaptations. Any new board layouts will include proper spacing for the turrets.

SOLDERING

Because the turrets are hollow, it is a simple matter to solder jumper wires and component leads into them and later repeat the process if any servicing is required. Wires can, where necessary, be soldered to the outside of the turret.

Several power transistors have their leads attached to the underside of the boards, but this is easy and reliable thanks to the hollow turrets. The boards are mounted with ¼" nylon spacers, so the underside transistor mounting maximizes lead length which eases fastening them to a heatsink.

CONCLUSION

The small effort spent attaching turrets to PC boards is repaid ten times over during their use. A certain smug satisfaction pervades me whenever I work on the amp, because it has once more become a pleasure to do so. *aX*