

Plasma Cutter Cylindrical Guide, Version 1.0

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My plasma cutter² uses an RF pilot, so the tip does not touch the stock.



A wire standoff maintains the gap between tip and stock.



The problem surfaces when you change the angle of the cutter's handle relative to the guiding edge. This rotation causes the distance from this edge to the center of the plasma stream to change.



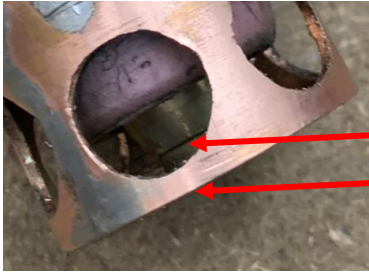
My solution was to fabricate a cylinder that replaced the wire standoff. It slides over the ceramic cone, and three screws lightly engage the existing groove.

I was initially concerned that the copper cylinder might melt if the plasma blew back. It has not been a problem. In fact, I used solder to attach the three brass nuts to the copper cylinder, and the assembly did not get hot enough to soften the solder.

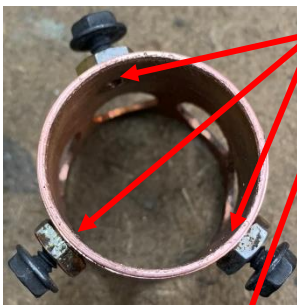
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² Bestarc 500DP version 3

I started with a 1-inch length of 1-inch ID copper pipe and bored it out on my lathe to about 1.01 inches. The goal is a smooth sliding fit over the ceramic.



Then I trimmed the overall length of the pipe so the tip of the cutter was back from the bottom edge by the same distance as seen with the wire guide, while the top of the pipe was flush with the top of the ceramic.



I drilled three #36 holes about 120° apart and tapped them 6-32, using the ceramic sleeve as my guide for the distance from the top edge of the cylinder to the center of the groove.



Using a 29/64-inch drill³, I drilled a series of holes at the other end of the cylinder. My goal was to have about 0.1 inches from the bottom end of the cylinder to the bottom of each hole.

I also wanted about 0.1 inches between holes.

I then threaded three screws through brass nuts and engaged the three tapped holes. They held well enough for me to use my MAPP torch to heat the assembly and feed in 60/40 solder. The solder did not get into the threads, so the screws turned freely.



I slide the guide over the ceramic and finger-tighten the screws. Dross sometimes kicks back into the guide but does not stick to the copper.

³ My 1/2-inch drill was too long to fit the set up.

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