

Aluminum Nozzle with Graphite Insert

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Project Parameters:

- All Aluminum nozzles were melting with motors over "B". Had to find a better way!
- Still has to be made with nothing more complex than my drill press

Construction Results:

The 1/2 graphite rod I got some time ago from McMaster is coming in pretty handy. I have turned it down to about 1/4 inch for the insert. So far this nozzle has been tested up to the "E" class and still shows no sign of erosion. It does get a bit tricky to remove the nozzle after one of the larger motors due to the solids that wedge themselves between the graphite and aluminum but a little poke from the end does the trick.



This is how it looks with the nozzle out. Nozzle just slips in. No need to make it a tight fit as the internal motor pressure does the rest!



Assembled view of the nozzle. The protruding edge does not seem to hurt anything. Occasionally a rapidly ejecting igniter will put a line in the top face but no real damage.

The aluminum housing is drilled with a .125 inch hole. The graphite inserts I have made for this nozzle range from .040" to .100" I know a CAD drawing would do wonders here but this will have to do for now.

Conclusion:

Objective achieved! The nozzle holds up well. It is also pretty handy to use since I can make a "custom" nozzle insert in a lot less time than a full nozzle turning.