Boston Valve Filler to Military Valve Adapter Fabricated on a Lathe, version 1.1

By R. G. Sparber

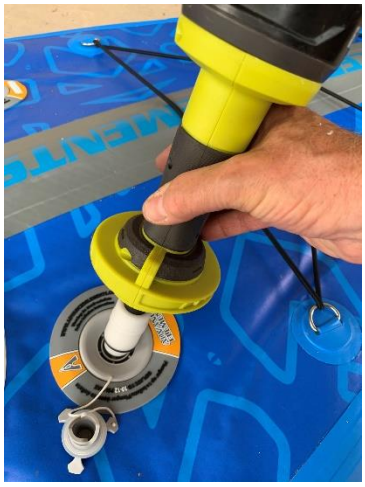
My Advanced Elements AirVolution™ kayak uses a type of Military valve. It has many wonderful features, but compatibility with a Boston valve filler is not one of them.

My Ryobi high-volume/low-pressure inflator has a Boston valve filler. With a bit of reverse engineering, I designed an adapter.

This project requires a lathe with a boring bar to cut the taper. It took me under 30 minutes to make one.

Looking inside, you can see an orange rod. This rod pushes down on the plunger within the Military valve to open it.

An O-ring fits over the small diameter and provides a seal. Given the low pressure, this is effective.



Here you see the adapter installed on the Ryobi in the deflated configuration. It is so effective that if I push on the button when done, air rushes ***in***.

The O-ring came in a box marked 7/8 x 1-1/8 x 1. The 7/8 makes sense as the ID but I'm not sure about the rest. It is about 1/8-inch thick.

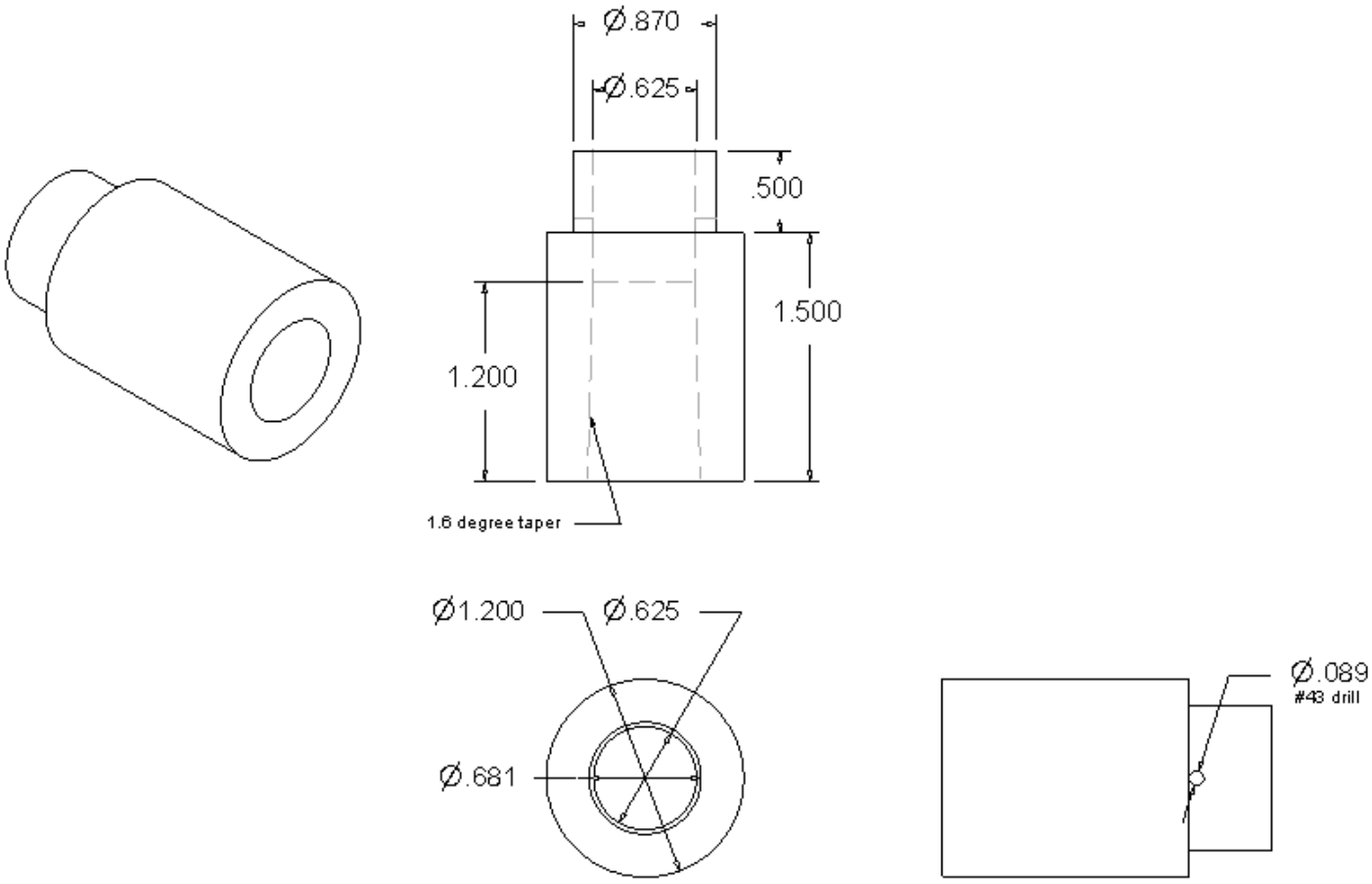
The orange bar is a length of Weedwacker line. It has a diameter of around 0.09 inches and is force-fit into the cross holes. After installation, I trimmed it flush with a razor blade.

A slightly thicker line works, but you will have to adjust the cross hole diameter. Going thinner could cause excessive deflection. Going a lot thicker will interfere with the airflow.

I measured the taper and found it to be about 1.6°. It works fine but may not be exactly right.

The adapter is made from Delrin because that is what I had on hand. It machines beautifully.

The outside of the adapter is not critical. I chose to cut a ridge in it to make pulling it off of the Boston fitting easier. I suggest you do any machining of the outside before drilling the hole through the center. This hole weakens the part, making it harder to securely chuck up.



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