# Introduction

Congratulations on purchasing the Resistor Volume Knob that allows you to adjust the volume on your Spirit Proton Pack by rotating a replica Dale PH-25 power resistor mounted on the side of the Ion Arm.

A Spirit Halloween Deluxe Proton Pack (not included) shown with the Resistor Volume Knob installed:

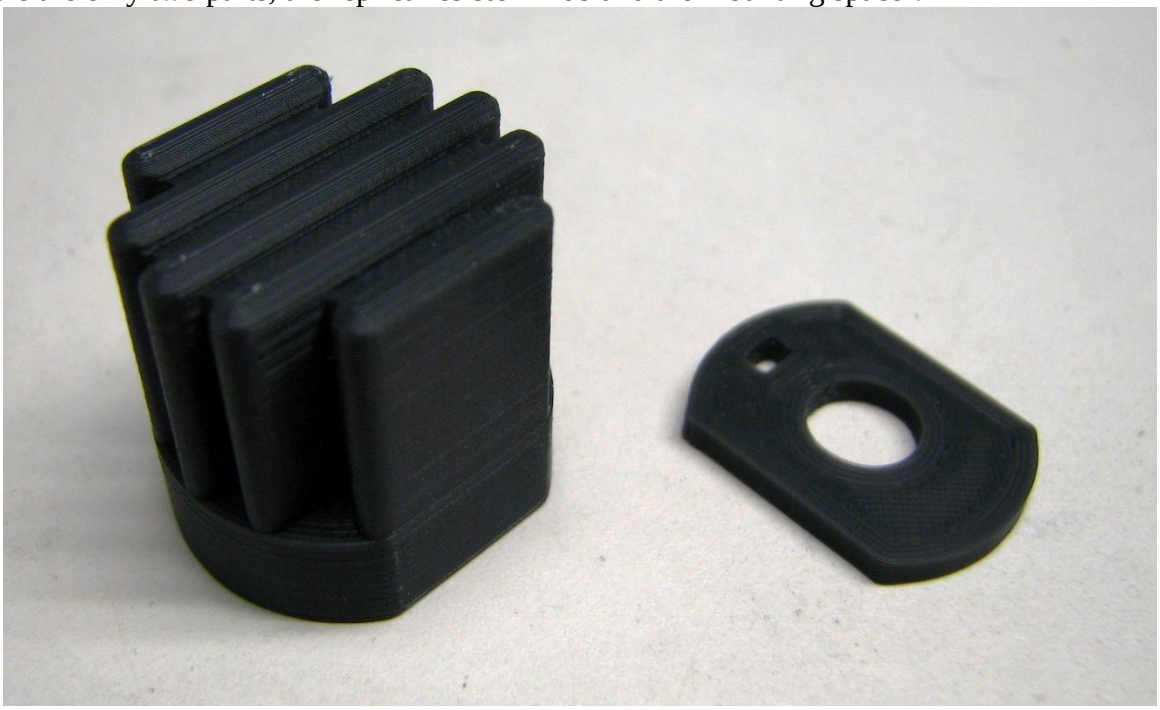


Here is a reference photo of a screen used pack:

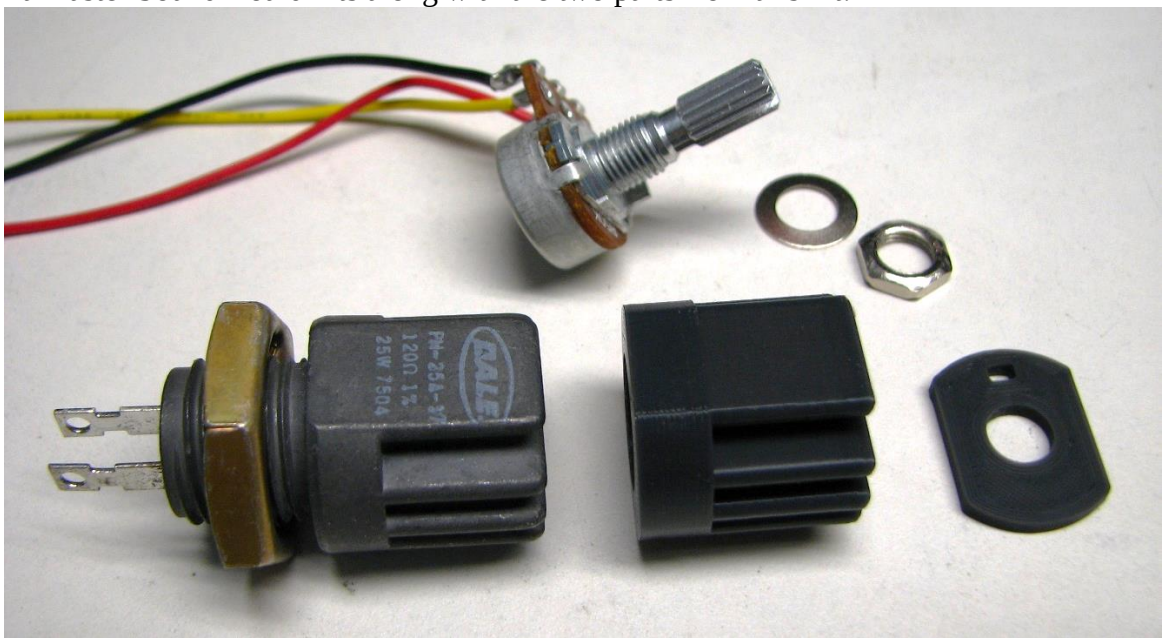


# Installation in the Spirit Halloween Pack

***Parts Identification:***
There are only two parts, the replica resistor knob and the mounting spacer:



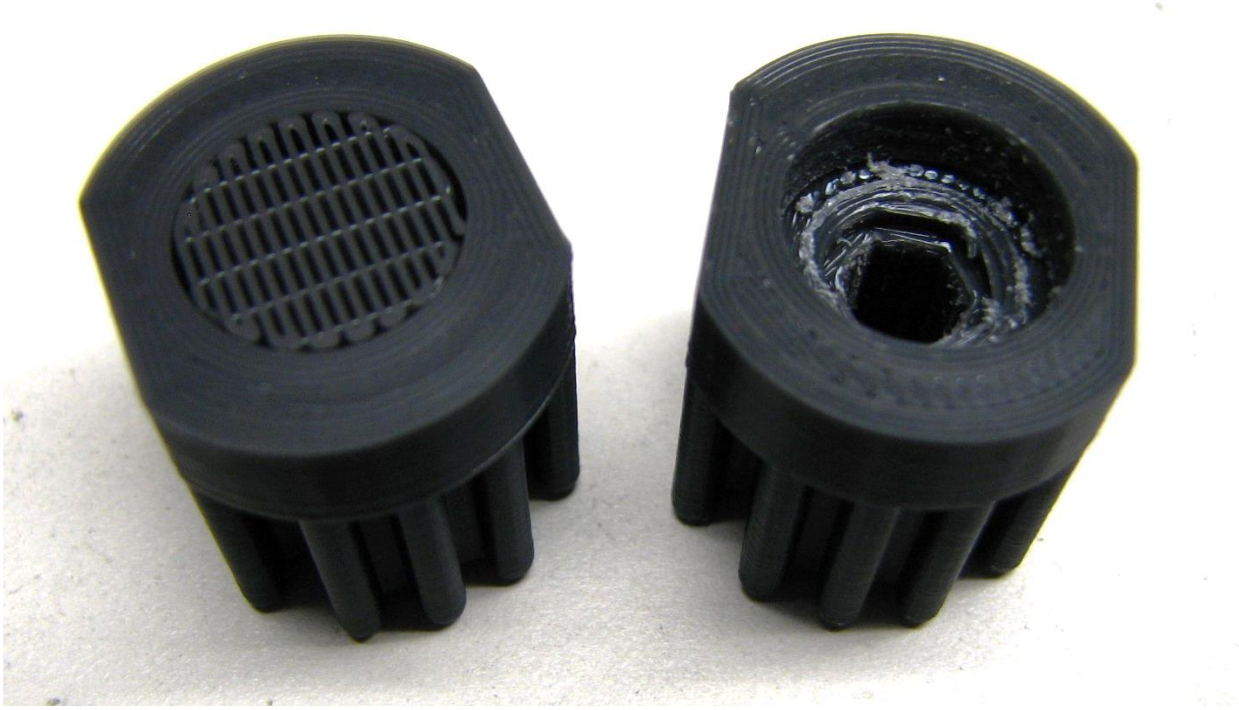
Shown here with a real Dale PH25 resistor and the volume pot from the Matty Blaster or the Spirit Blaster Sound Board kits along with the two parts from this kit:



***Pack Knob prep:***

The Knob is 3D printed and has “support structures” to enable the internal structures to be placed at the correct locations. I first use pliers and then a small straight screwdriver to pull and scrape the support structures out of the inside of the knob. This can leave a lumpy surface, but it is not visible once the knob is mounted.

On the left is the part as you will receive it and the part on the right has the support structures removed:



***Deluxe Spirit Pack Volume Potentiometer Install:***

Only a couple of things needed to get the volume control installed:

1) Remove the back cover of the pack – you do need access to the inside of the pack for this installation.

2) Remove the original knob
   Cut off this knob. It really isn't a very good replica of the ideal Dale resistor anyway. You do not need to get too close to the surface since the knob is not molded into the shell, just heat staked/glued by a central shaft.

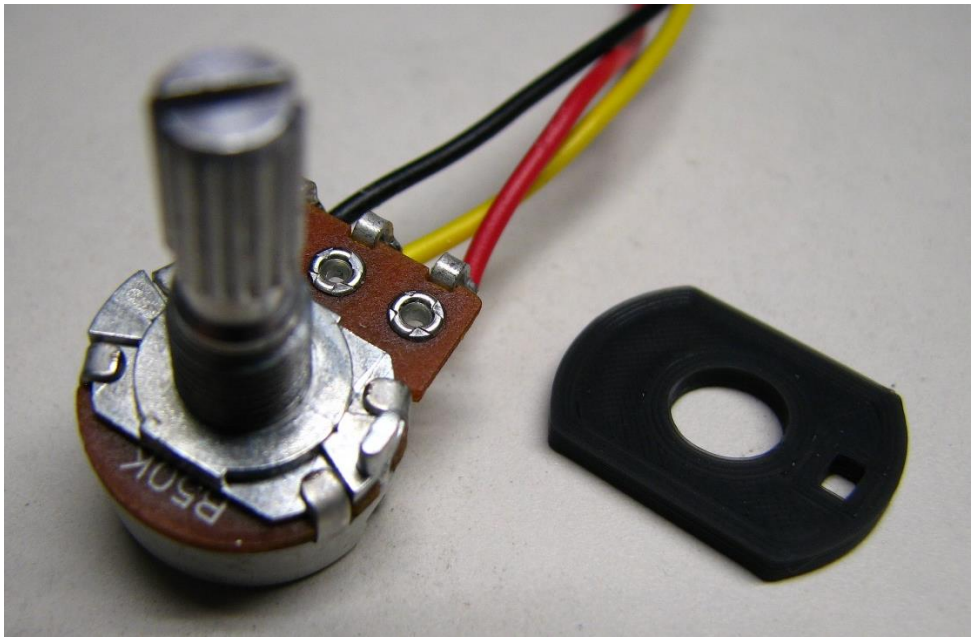


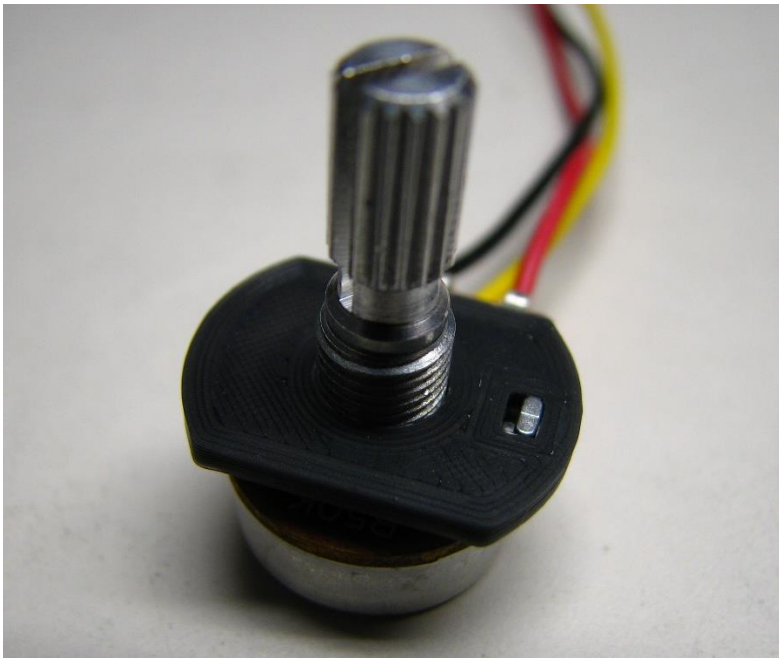
After the knob is cutoff about a 1/4" above the surface:



3) Next remove the leftover post.
   I used a 3/16” drill to get that out and then a 1/4” to make the hole. The 1/4” hole is too snug so either ream that out, or just use a larger bit. I used a 5/16” bit and that worked well but made a larger hole than needed. I suspect a 9/32” would be ideal, but I do not have one of those bits!

4) Mount/glue the spacer.
   The space sits on the potentiometer so that it sits at the correct depth once mounted in the pack.



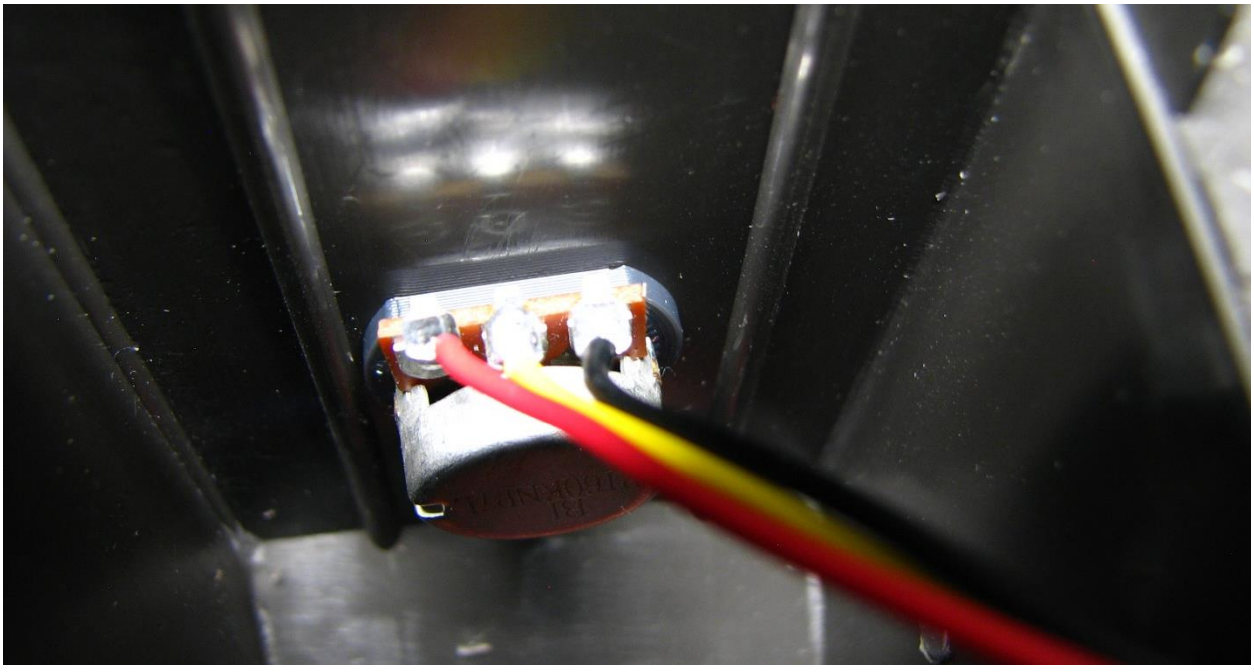



Do a test fit and mount before gluing.  Then glue the surface of the spacer that comes in contact with the shell and mount in the pack.  You do not _*need*_ to glue it, but gluing will help hold the volume knob in the correct orientation and not accidentally allow the potentiometer to rotate when you try and turn the knob too far.

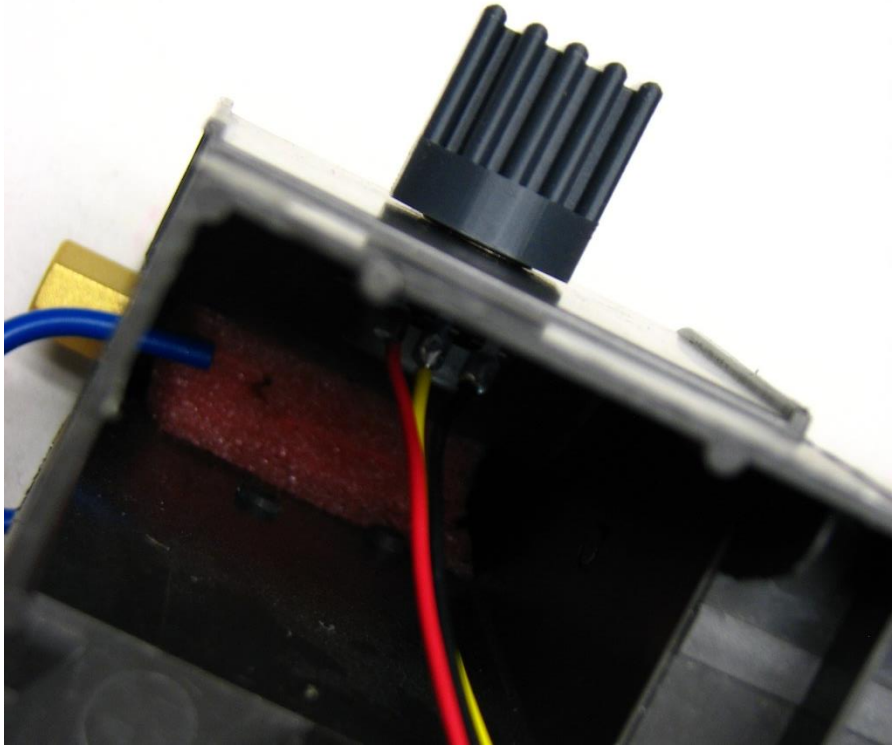
Once mounted the knob should look like this from the outside:



On the inside:



5) Next, just press the knob onto the knurled shaft of the potentiometer.
This does take some effort but making it easier would risk having the knob fall off.
Now put the pack's back cover on and you are done!



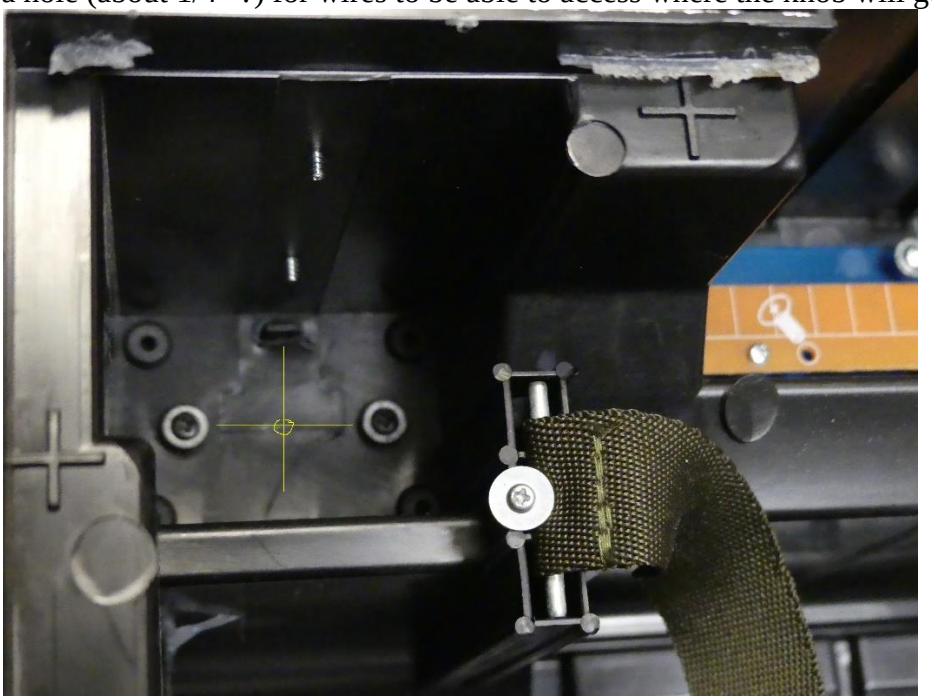


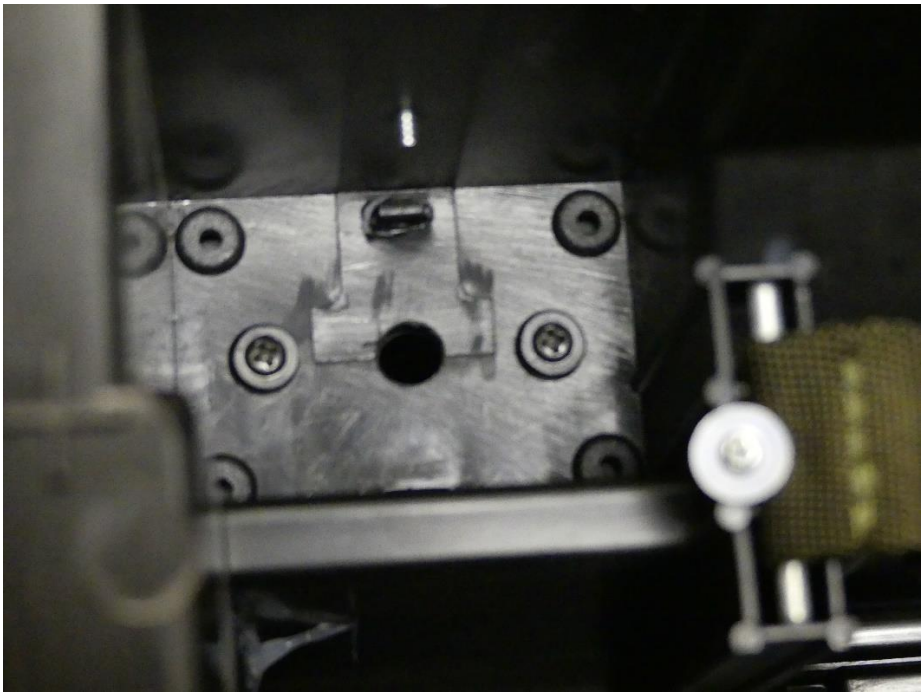
***Life-Size Spirit Pack Volume Potentiometer Install:***

Only a couple of things needed to get the volume control installed:

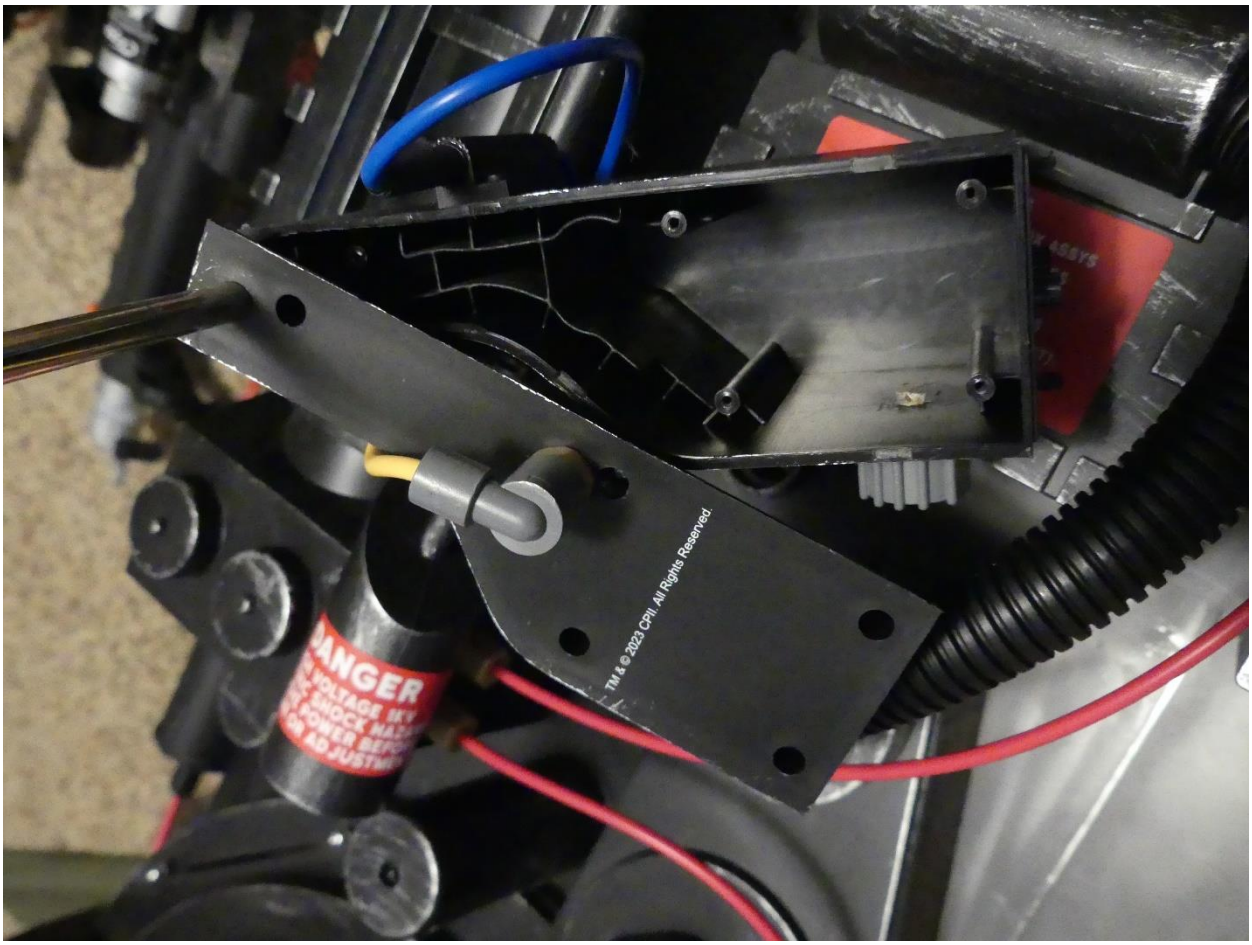
1) Remove the back cover of the pack – you do need access to the inside of the pack for this installation.

2) Drill a hole (about 1/4” ?) for wires to be able to access where the knob will go.

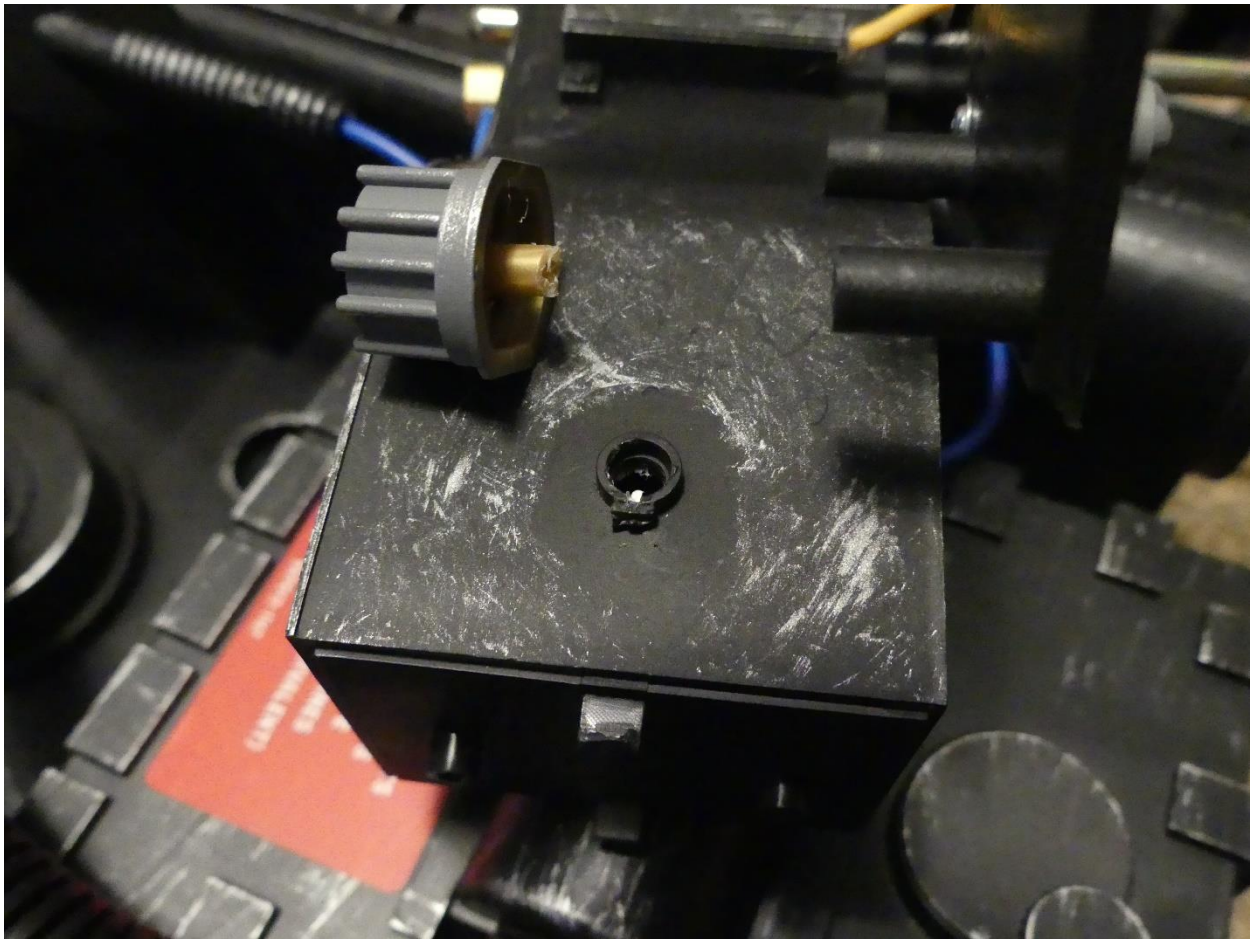




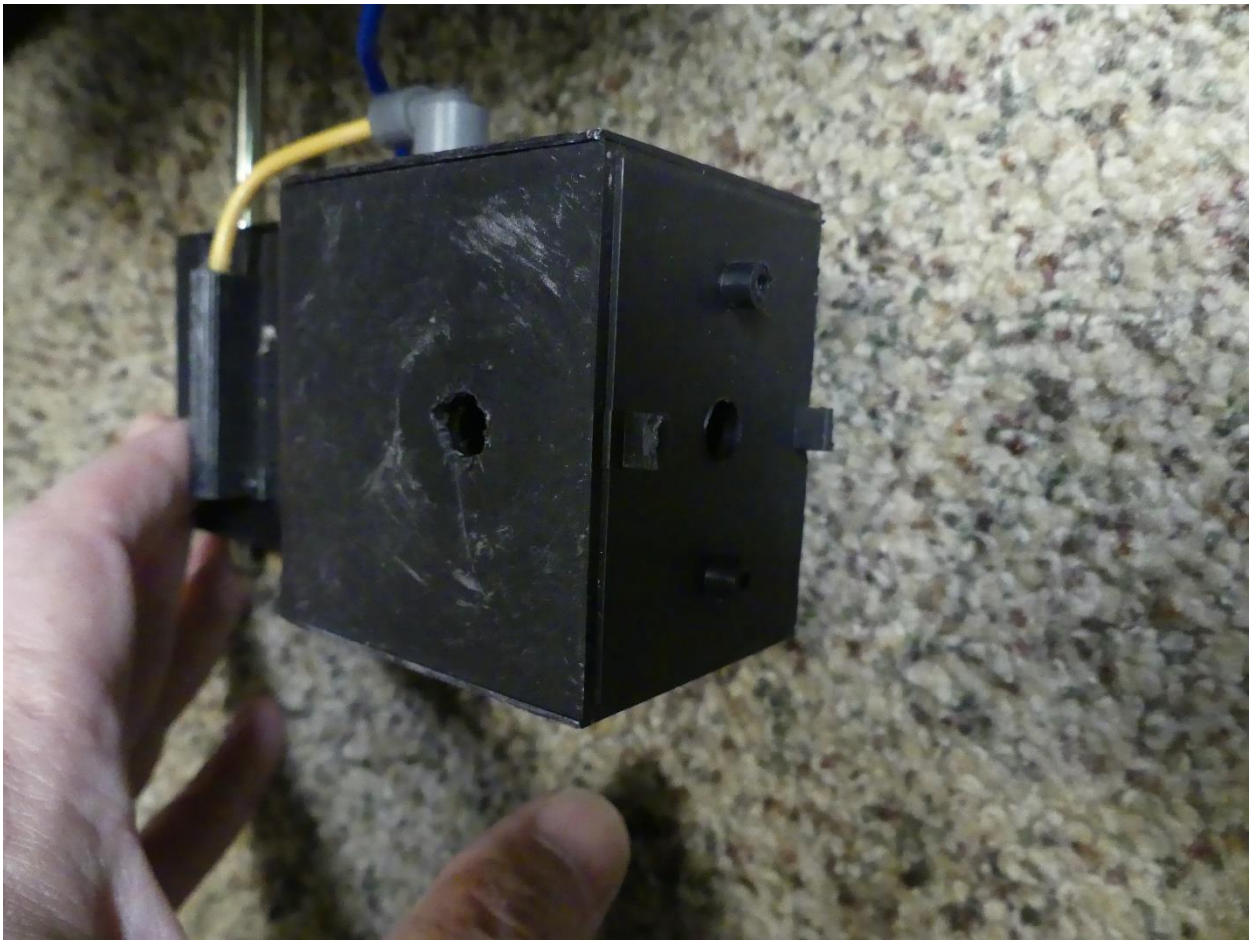
3) Remove and open up the Ion arm assembly be removing the 2 screws from inside the pack and the 5 screws holding the side on the assembly.



4) Remove the existing knob. It may have excess glue holding it in place. Scrape off as much as possible from the inside. I then just pulled and twisted on the knob and it cam right off:



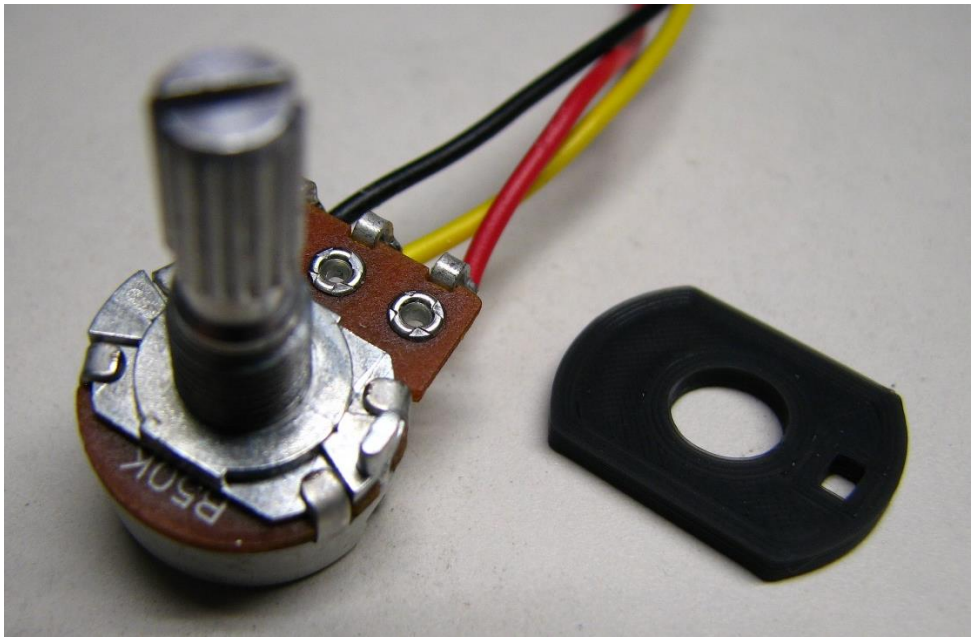
5) Then sand/grind the outside flat and drill a new hole for the potentiometer.

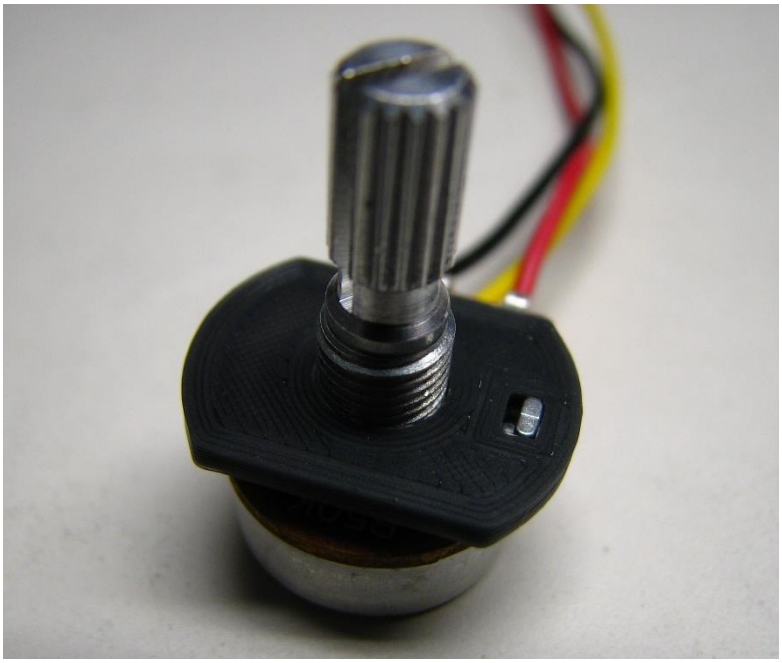


I used a 3/16” drill to get that out and then a 1/4” to make the hole. The 1/4” hole is too snug so either ream that out, or just use a larger bit. I used a 5/16” bit and that worked well but made a larger hole than needed. I suspect a 9/32” would be ideal, but I do not have one of those bits!

6) Next remove the leftover post.
I used a 3/16” drill to get that out and then a 1/4” to make the hole. The 1/4” hole is too snug so either ream that out, or just use a larger bit. I used a 5/16” bit and that worked well but made a larger hole than needed. I suspect a 9/32” would be ideal, but I do not have one of those bits!

7) Mount/glue the spacer.
The space sits on the potentiometer so that it sits at the correct depth once mounted in the pack.


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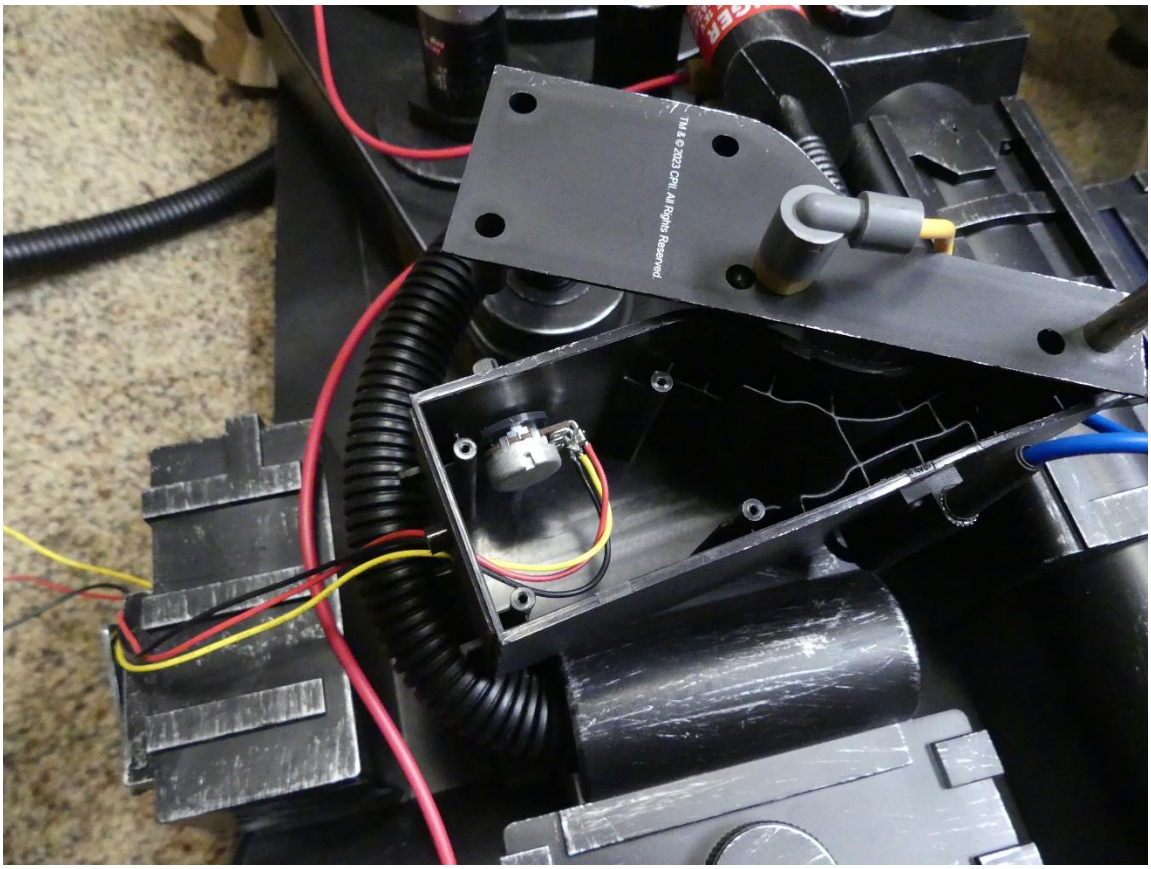


Do a test fit and mount before gluing.  Then glue the surface of the spacer that comes in contact with the shell and mount in the pack.  You do not _*need*_ to glue it, but gluing will help hold the volume knob in the correct orientation and not accidentally allow the potentiometer to rotate when you try and turn the knob too far.

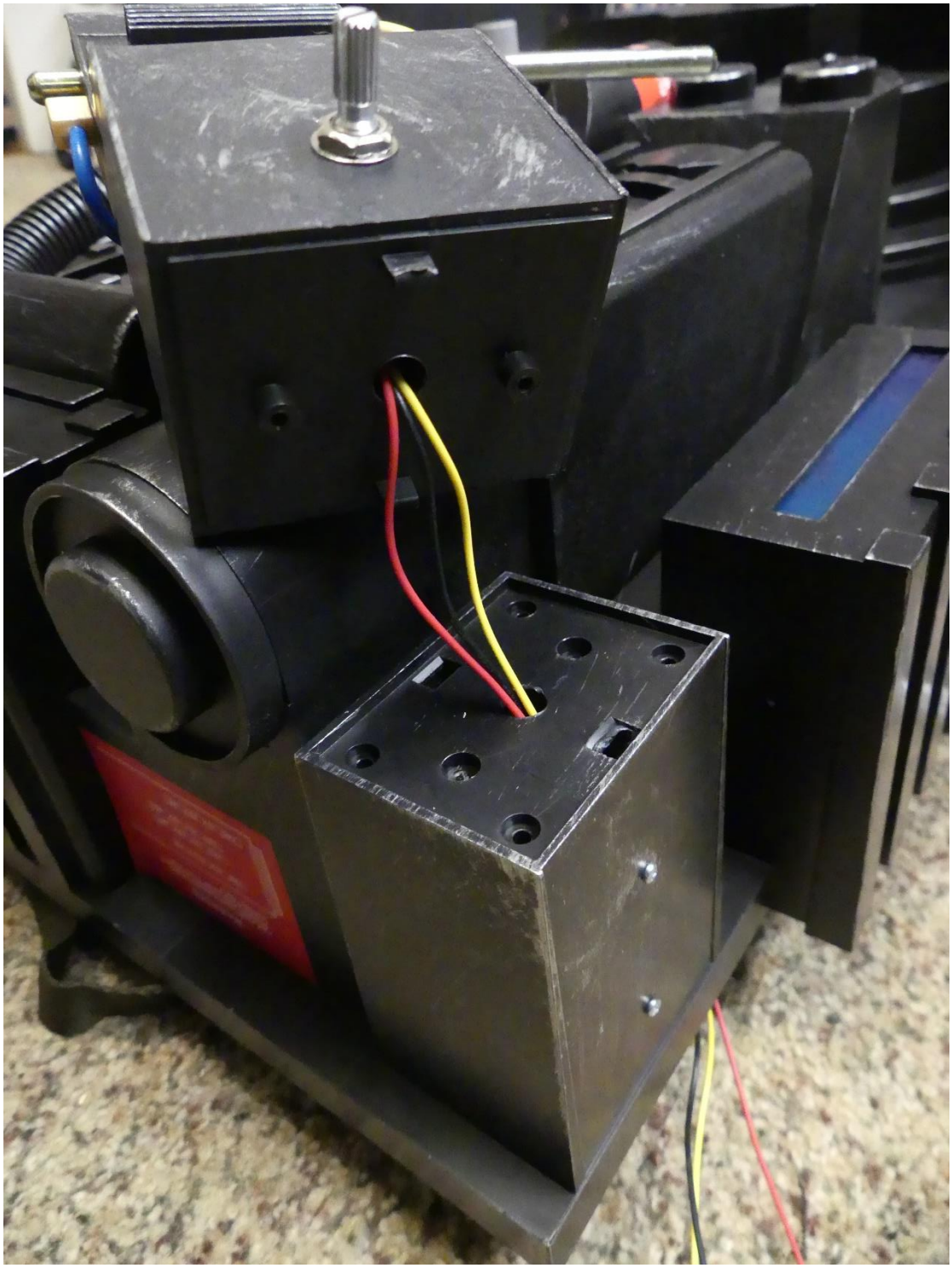
Once mounted the knob should look like this from the outside:

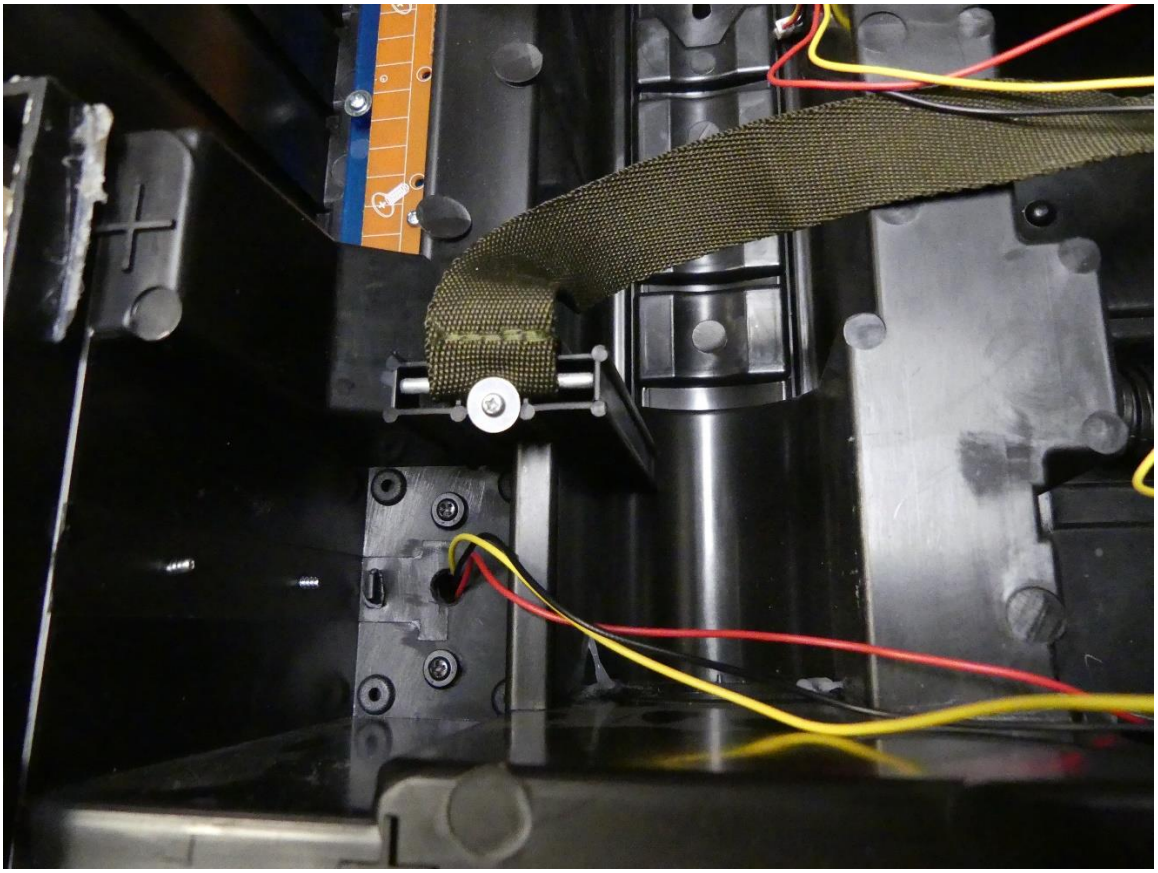


On the inside:



8) Screw the ion arm assembly cover back on with the 5 screws and thread the potentiometer wires through the drilled holes.





9) Next, mount the ion arm assembly and screw it back down with the 2 screws.
Then press the knob onto the knurled shaft of the potentiometer.
This does take some effort but making it easier would risk having the knob fall off.
Now put the pack's back cover on and you are done!

