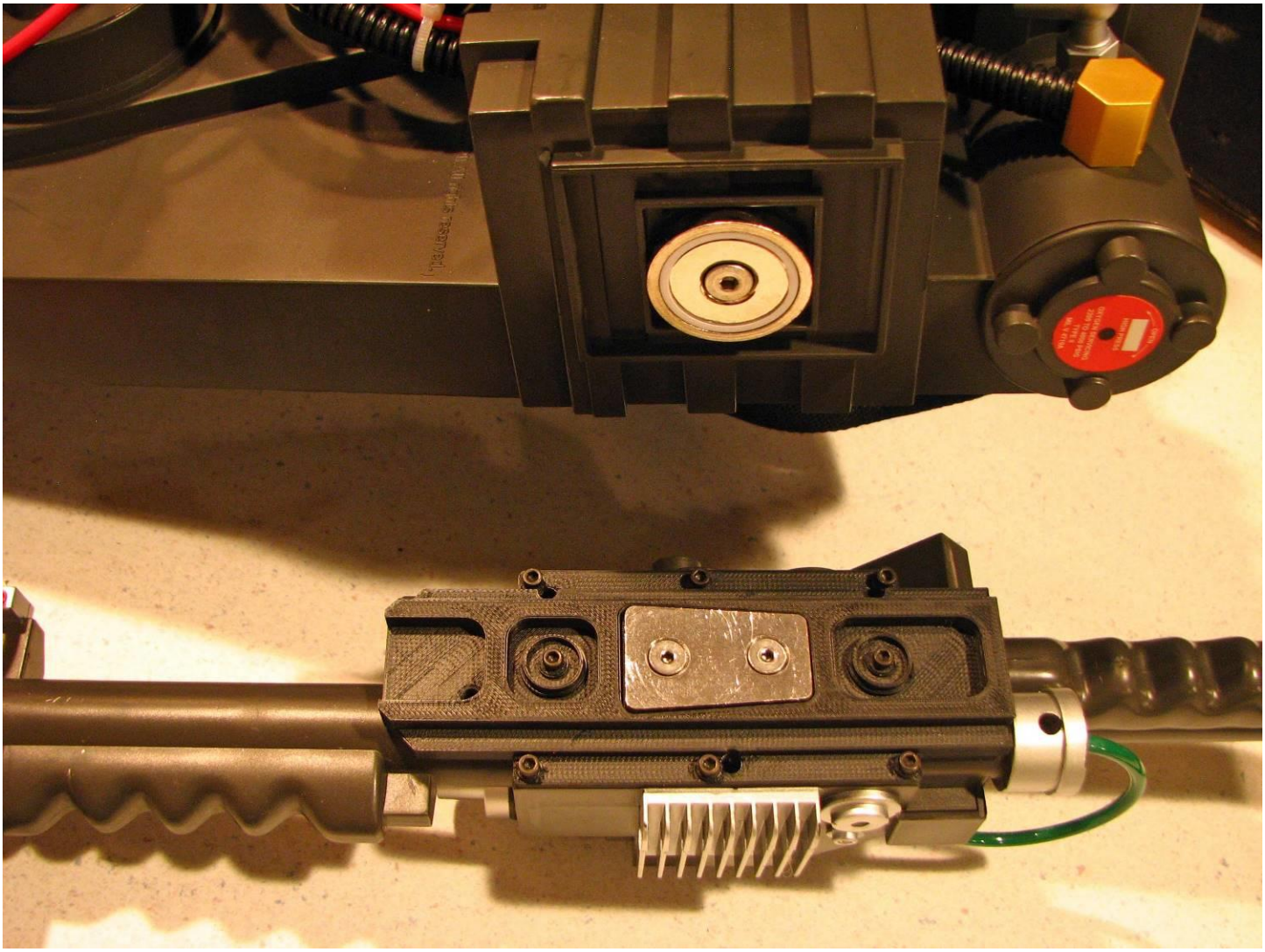
Introduction

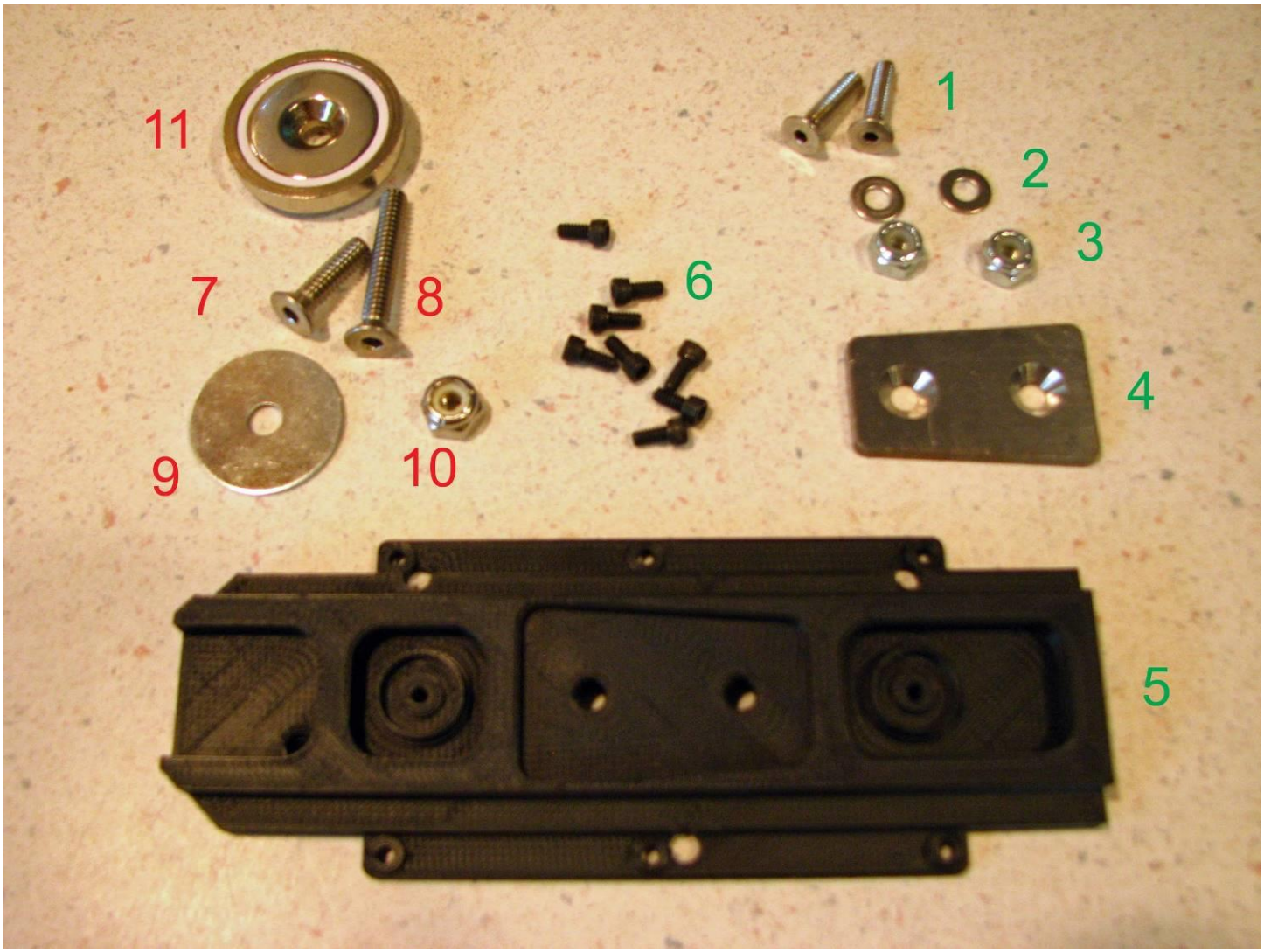
Congratulations on purchasing the Spirit Rails Magnetic Attach that allows easy wand to pack removal and reattachment by just getting close!

The Spirit Rails Magnetic Attach Kit is designed to work in the Spirit Halloween Deluxe Proton Pack but does require some modifications to the bottom of the wand. The pack is not permanently altered, but since you are modifying the wand, it may not matter. The post on the wand and the hole on the side of the pack will be replaced by a set of rails on the wand with a steel plate and a magnet that will cover the hole on the side of the pack.

When you are all done, the wand and side of the proton pack will look like this (a Spirit Cosmetic Kit has also been installed, so maybe some tubing is different on your Spirit pack):



Spirit Lights Kit Contents



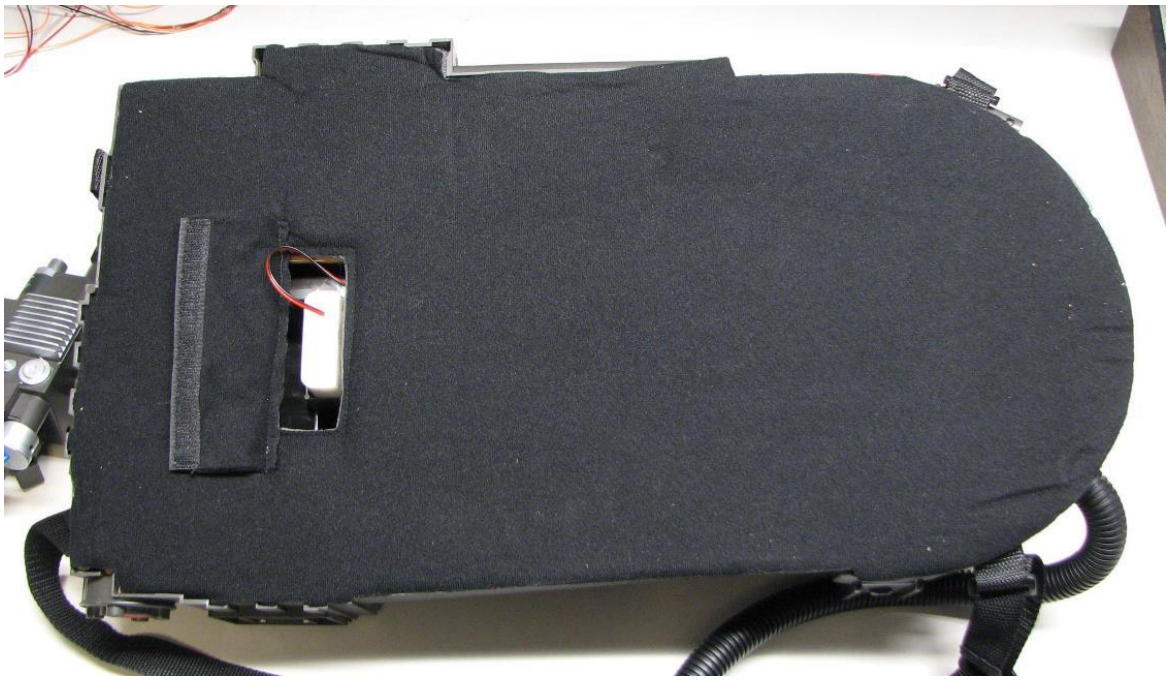
The Spirit Lights Upgrade Kit contains multiple parts to complete the installation into your pack.

1) 2x #8 3/4" screws for mounting the plate
2) 2x #8 washers for mounting the plate
3) 2x #8 lock nuts for mounting the plate
4) Steel mounting plate (it really likes the magnet!)
5) 3D Printed Rails for bottom of wand
6) 8x #4 1/4" black screws for visual enhancement of the rails
7) #10 3/4" screw for mounting magnet in short configuration
8) #10 1 1/4" screw for mounting magnet in long configuration
9) Large fender washer for holding magnet
10) Large Magnet to work with the steel plate and hold your wand to the pack

Installation of the Magnet in the Spirit Pack

Getting started:
The first step is to remove the back of the Spirit Pack so we can access the inside of the pack shell.

Flip the pack over and we need to locate the screws that hold the fabric covered cardboard “motherboard” to the back of the pack.



You have two main choices here, 1) remove the fabric to expose the cardboard and then glue the fabric back on when done, or 2) make small cuts in the fabric above each screw and leave the fabric attached to the cardboard. I liked option #2 as I expect to open up the pack again (for new wand and sound electronics, hint hint!)

Open the battery cover and then stick your hand between the cardboard and the fabric that is glued to the cardboard around the edges. You can feel around and locate 4 of the 5 screws that are holding the cardboard to the plastic pack.

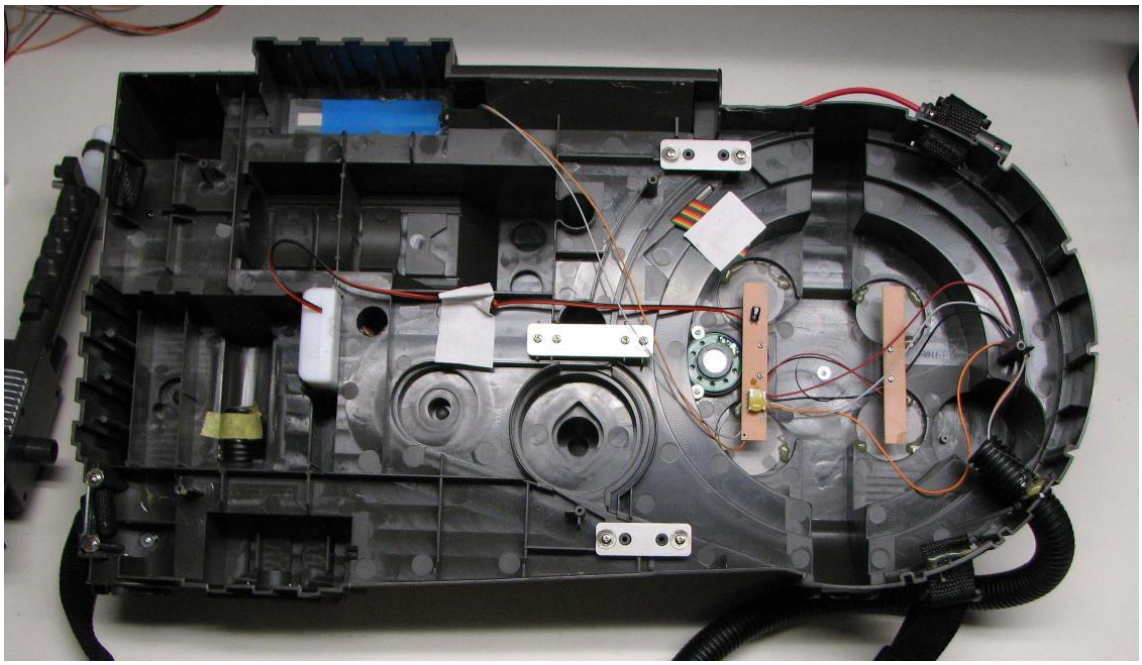
When located, use the X-acto knife or razor blade to make a small cut in the fabric to expose the head of the tiny Philips head screw. I could reach 4 of the screws, but the 5th I could not feel from inside, so pressed around the material from above and located the screw. Knowing where they are would have helped, so here I pulled the material around the screw and washer so you could easily see where you _*should*_ find these screws:



After re-installing the back cover, the screws can still be essentially hidden and only small cuts in the material above them allow easy access for the next time you want access in to the pack.

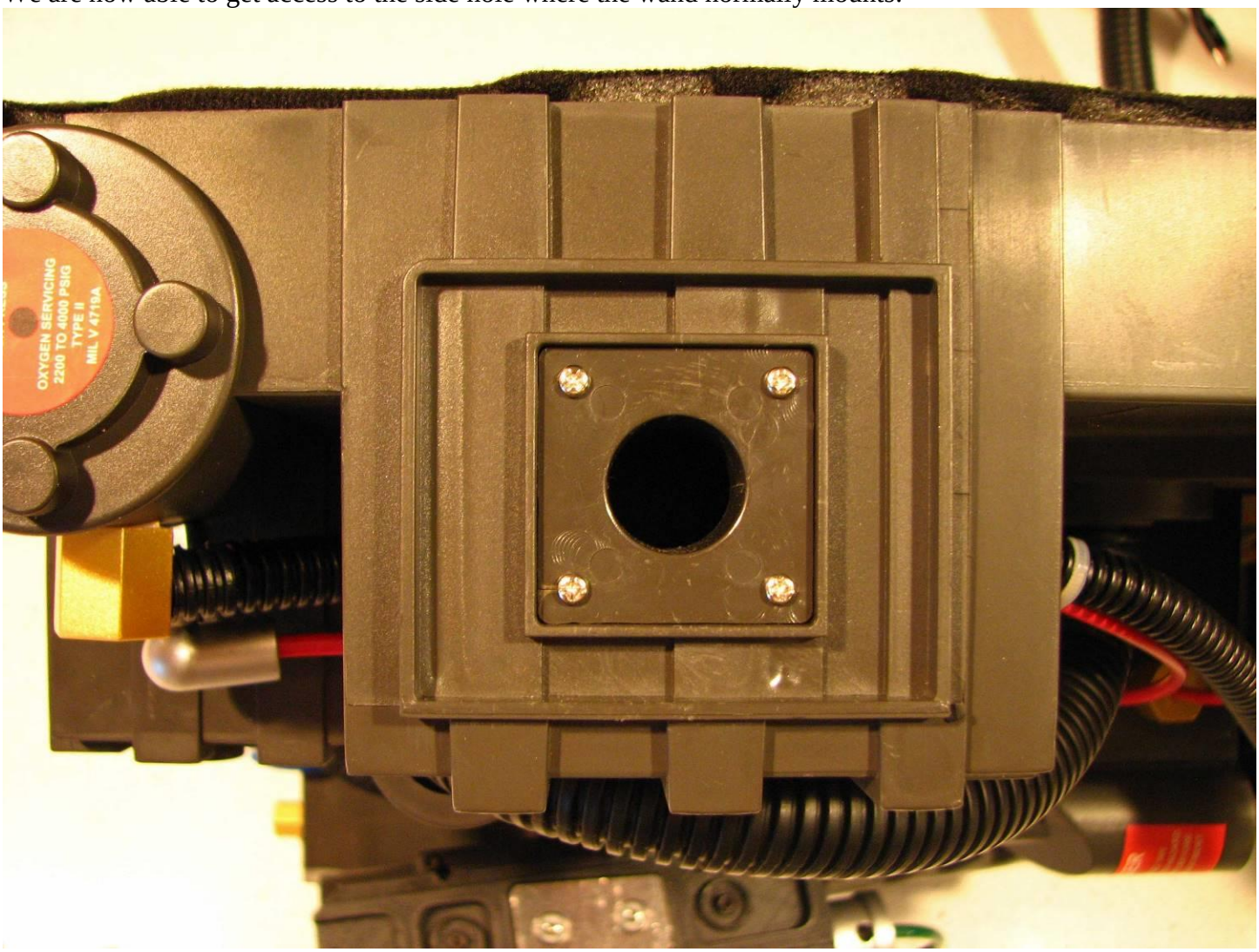
The screws aren't the only thing holding the cardboard onto the pack, and the cardboard is not very stiff, so great care should be taken removing the cardboard backing from the pack. Near the straps, the loom and some random spots along the edge, glue to hold those items of the fabric also oozed out enough to connect the cardboard to something else in the pack. I used a flat screwdriver to carefully separate the cardboard and the pack plastic, frame or loom while slightly lifting the cardboard. I worked my way all around the edge before lifting the cardboard fully from the pack. I did not have any places in the middle of the pack have glue, it was only around the outside edges.

Once you get the back removed, here is the view inside the pack:



You can leave the screws in the cardboard or remove them and put them in the posts they come from so they don't get lost.

We are now able to get access to the side hole where the wand normally mounts:



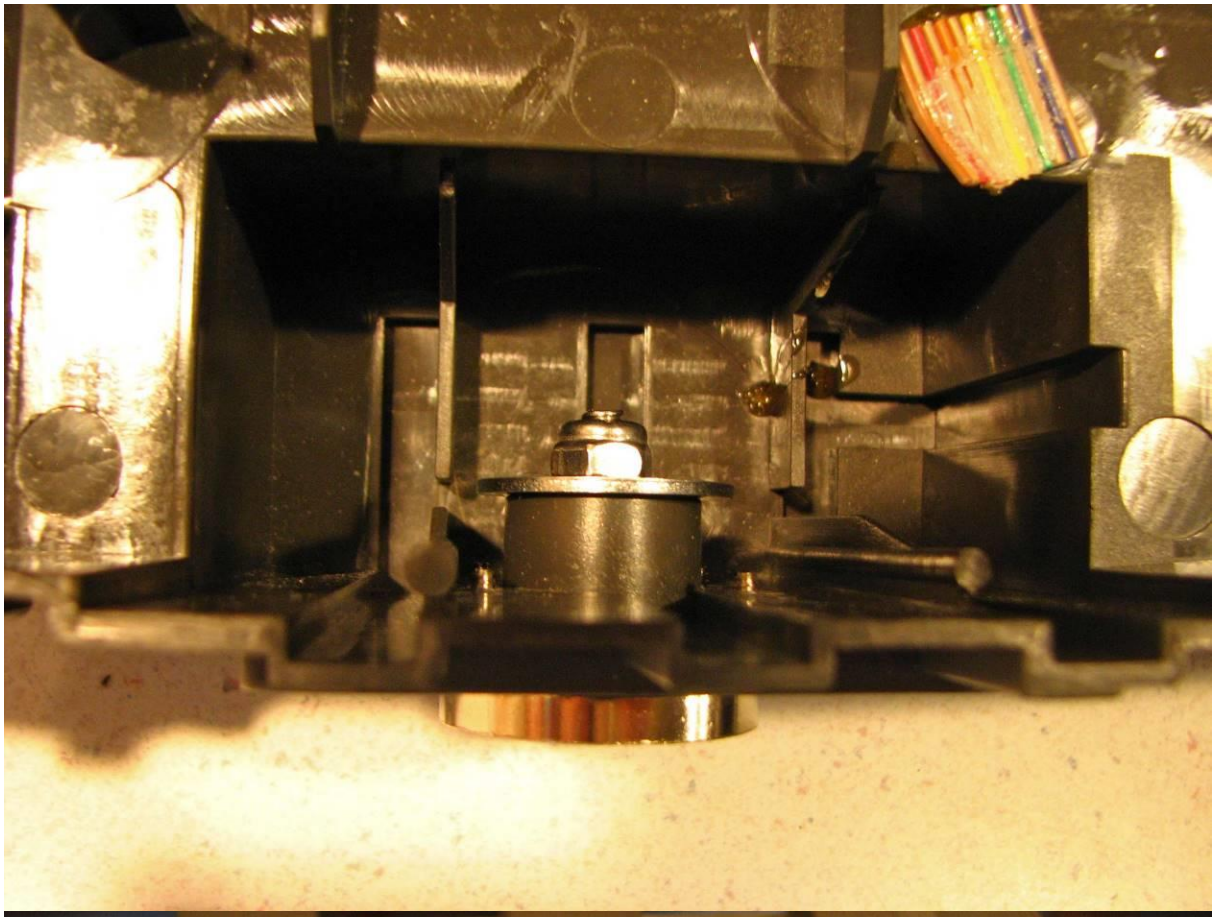
There are two different ways to mount the magnet, depending on whether the existing hole cover is used or not.

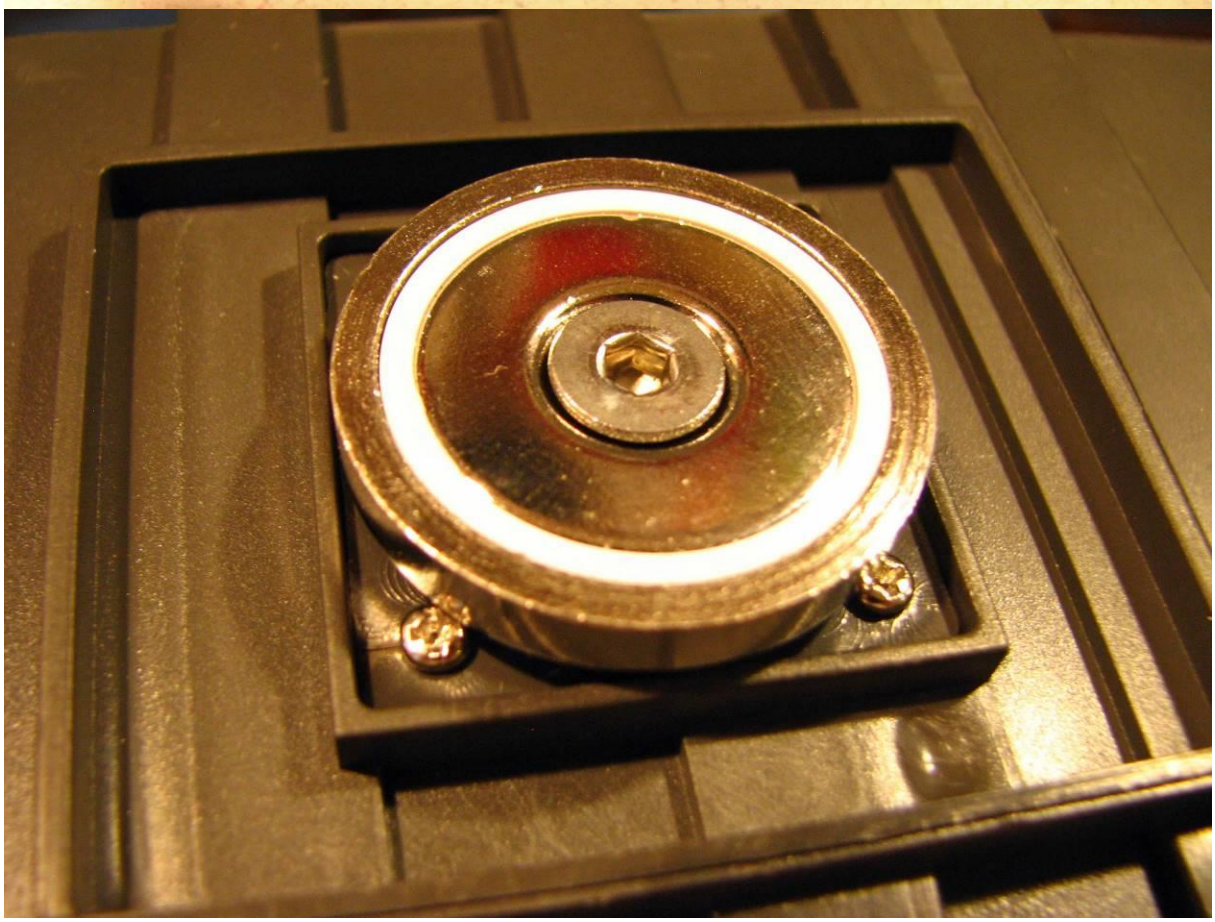
Tools needed:

- 1/8" Hex Key
- 3/8" open end wrench
- Philips Screwdriver (for short screw method)

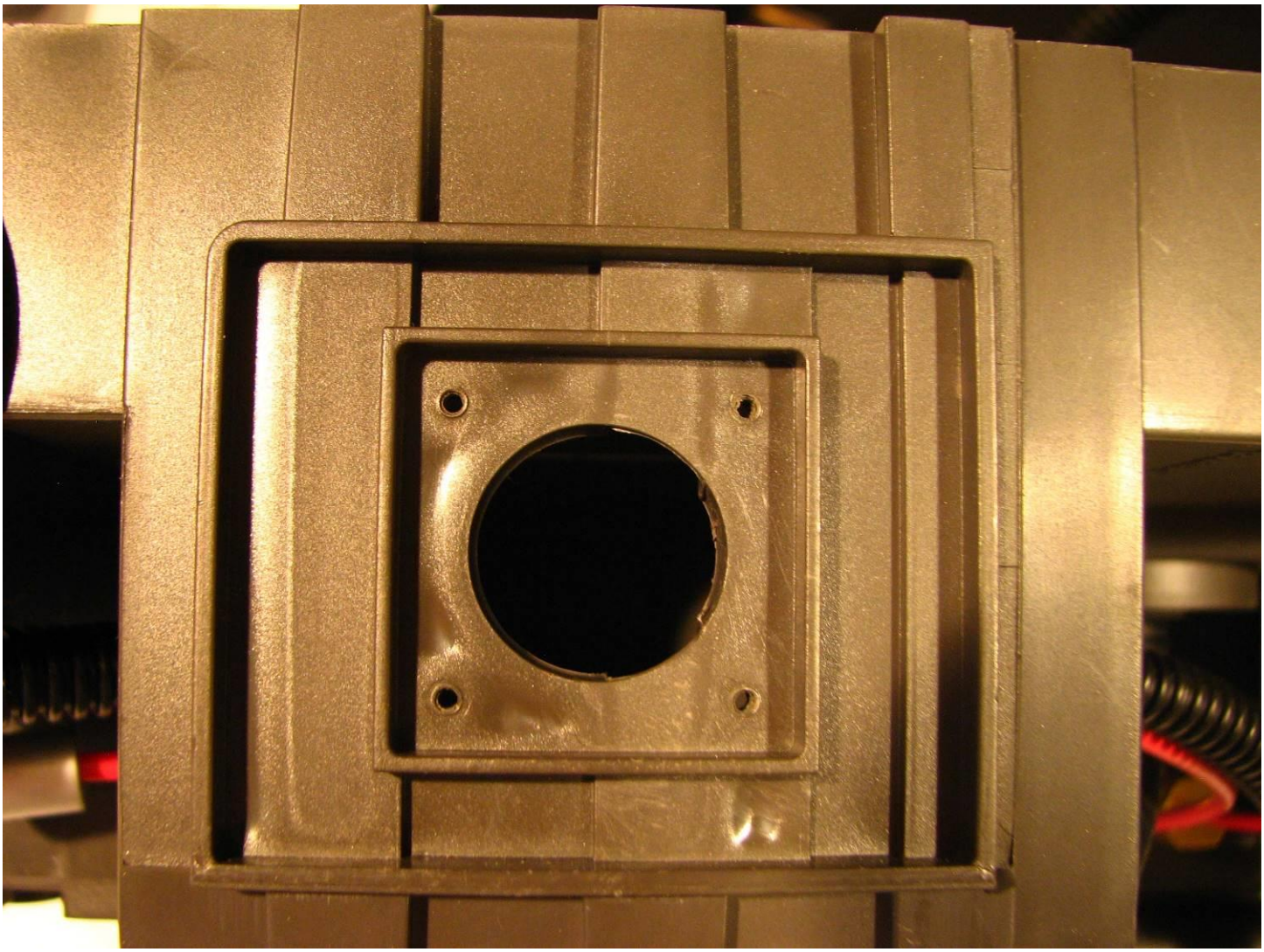
The long Screw method:

Place the longer screw (part #8) through the magnet and the magnet on top of the plate shown above. It fits OK, but rests somewhat on the existing screws. The longer screw reaches the inside of the pack and the fender washer (part #9) and lock nut (part #10) can be tightened down to hold the magnet in place.

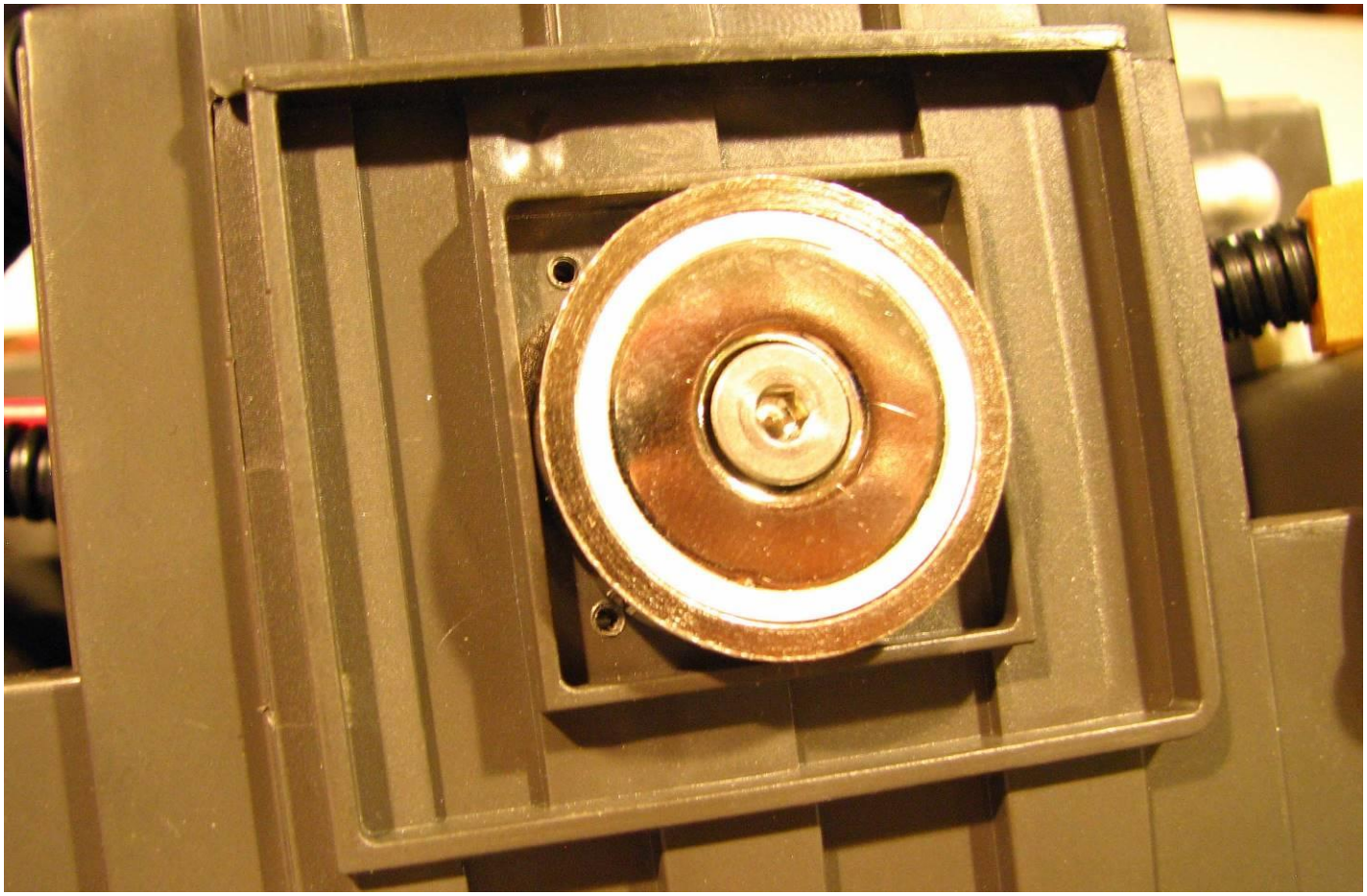


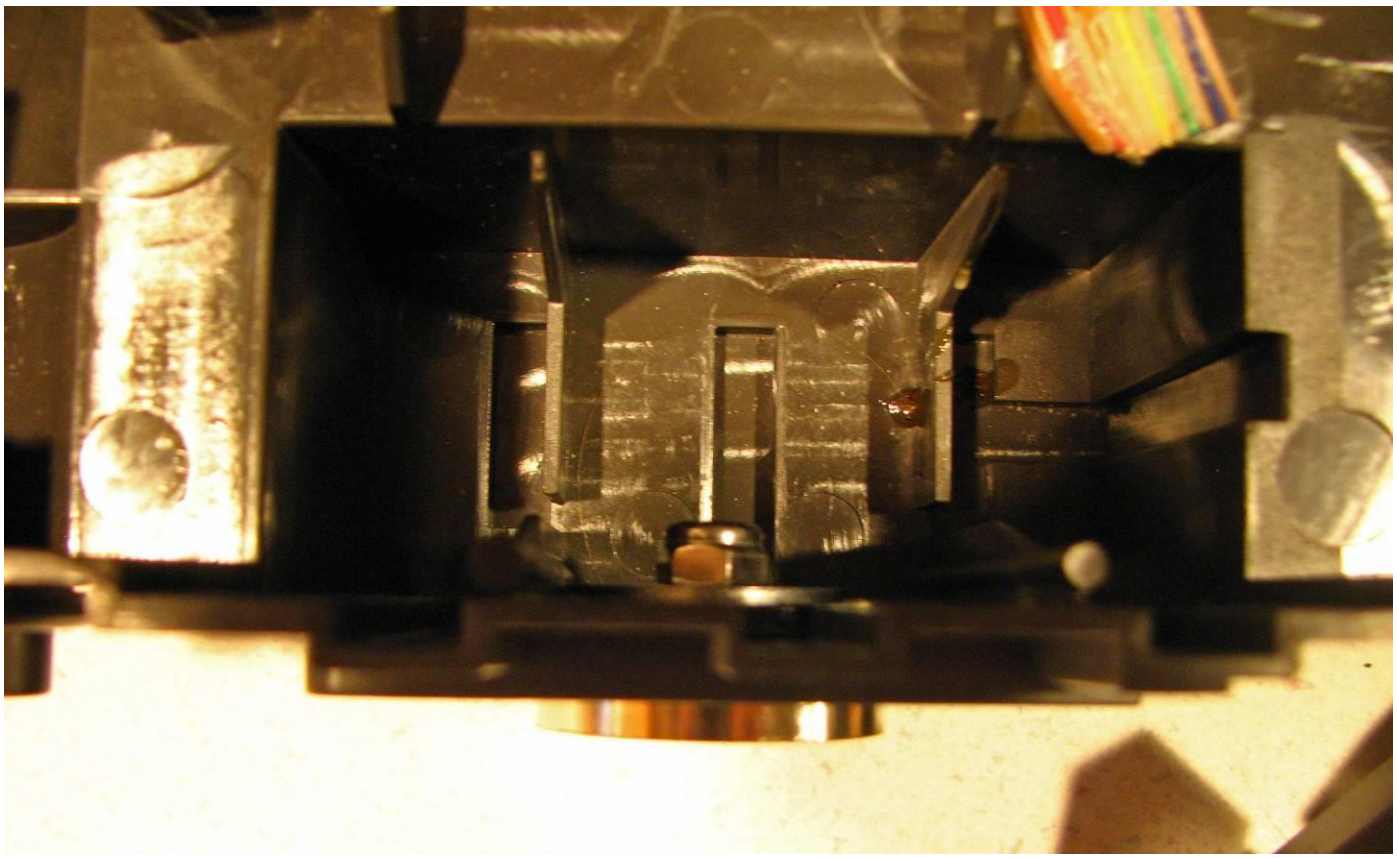


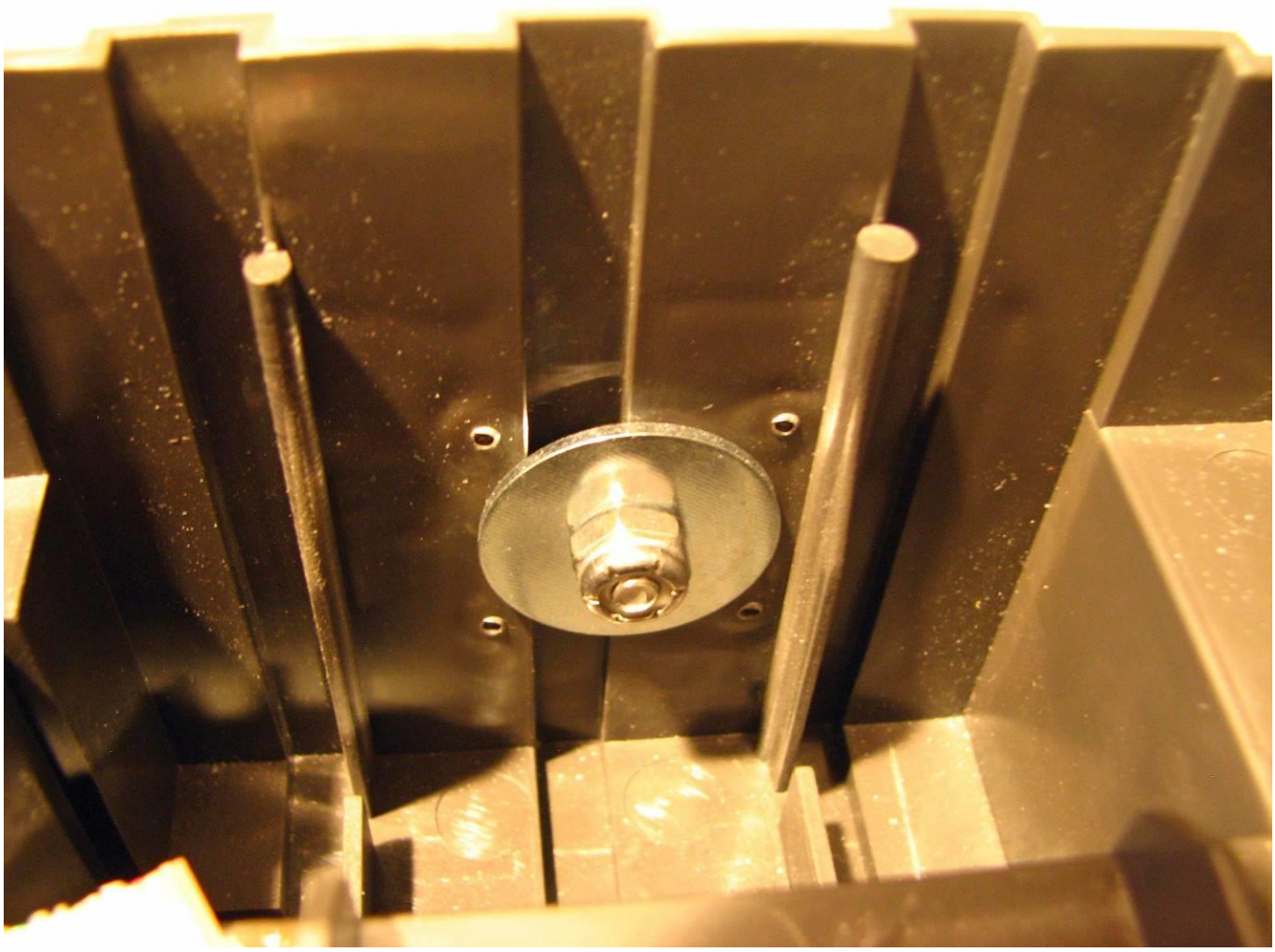
The Short Screw method:
Remove the 4 screws holding in the molded piece and the molded piece that makes a nice cylinder into the pack. When removed the side of the pack looks like this:



Place the shorter screw (part #7) through the magnet and the magnet on top of the hole shown above. It fits very nicely and is secured by the four raised walls that surround the hole. Without the molded plastic plate, the shorter screw reaches the inside of the pack and the fender washer (part #9) and lock nut (part #10) can be tightened down to hold the magnet in place.







That’s all the mods to the pack, so now just put the back of the pack on and screw it down.

Installation of the Rail onto the Spirit Wand

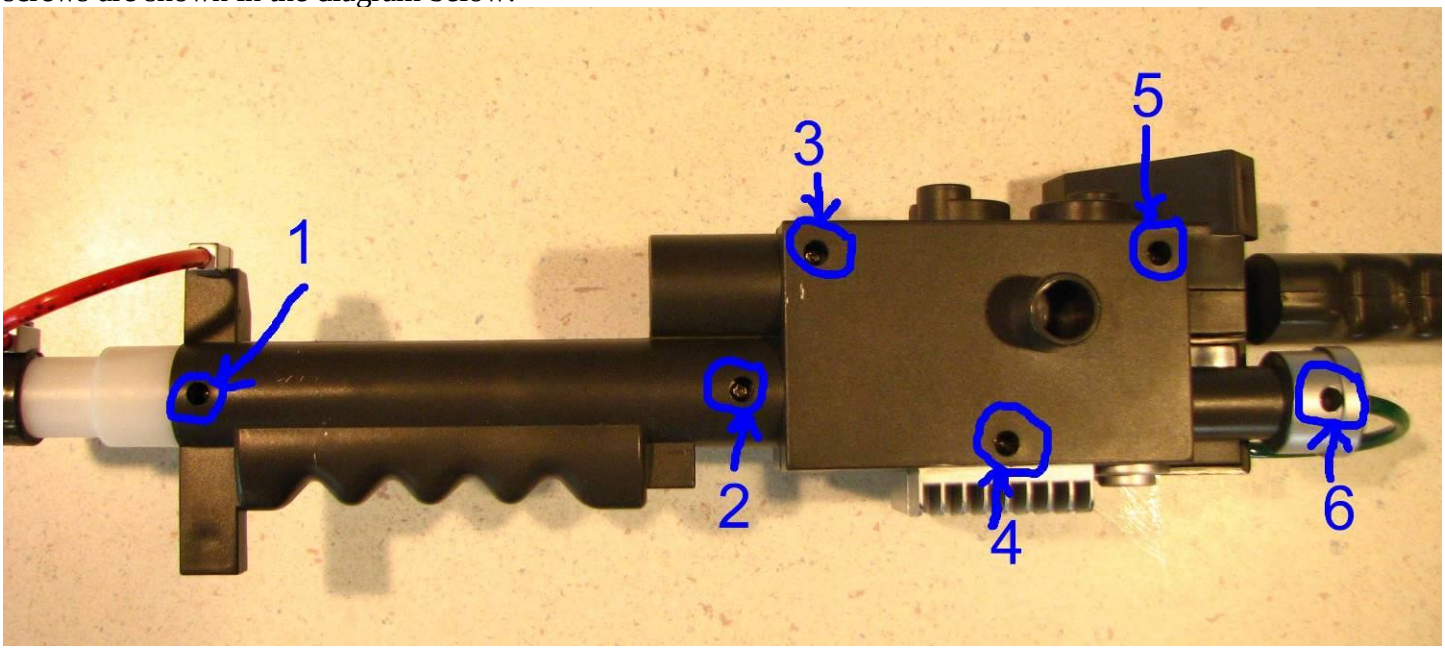
The Spirit Wand will require a few more tools and will modify the wand permanently.

Tools needed:

- Motorized small tool to cut and grind (I use a Dremel)
  - Cutting blade
  - Small diameter grinding wheel
- Drill and drill bits
  - 1/16”, 3/32”, 1/8”, and 3/16” drill bits
- 3/32” Hex Key
- 11/32” open end wrench or socket
- Philips Screwdriver (small diameter shaft)

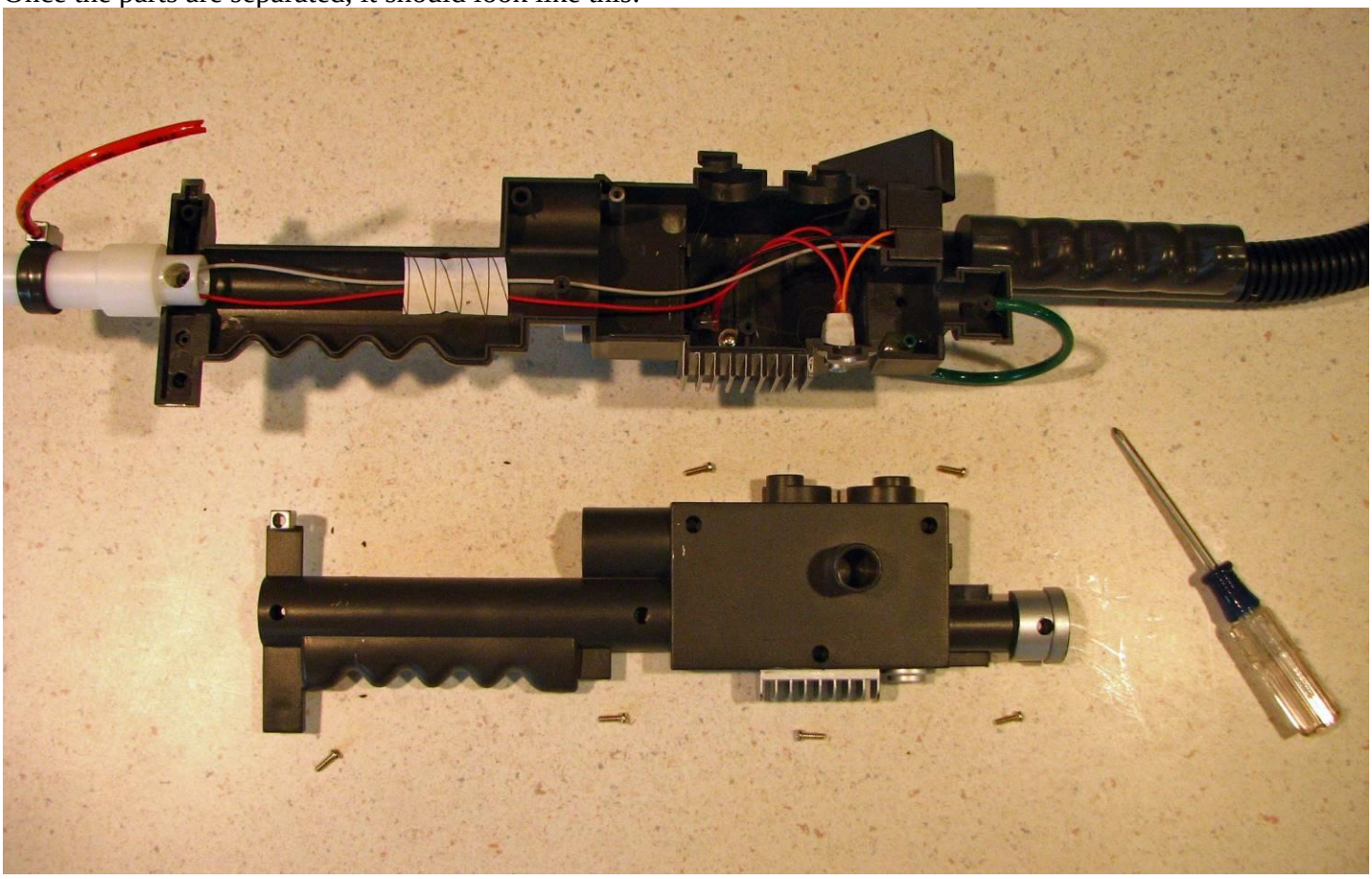
Removing the bottom of the wand:

Using the small Philips screwdriver, remove the 6 screws holding the bottom plate onto the Spirit Wand. The 6 screws are shown in the diagram below:



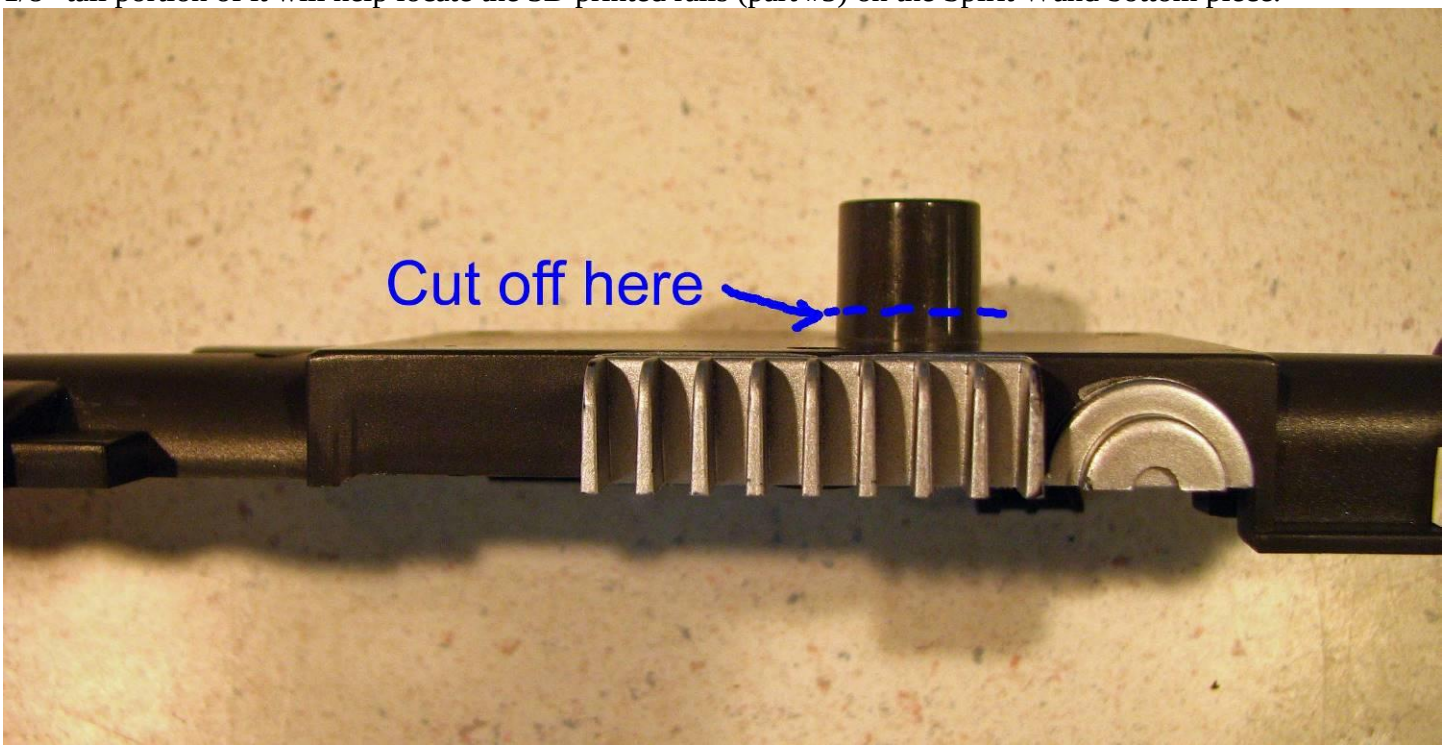
When lifting off the bottom plate, take care near screw #1. This can be a tight connection between the bottom piece and the white wand tip piece. Carefully pry the parts away from each other. There are also two wires that go around this post so do not damage those wires.

Once the parts are separated, it should look like this:

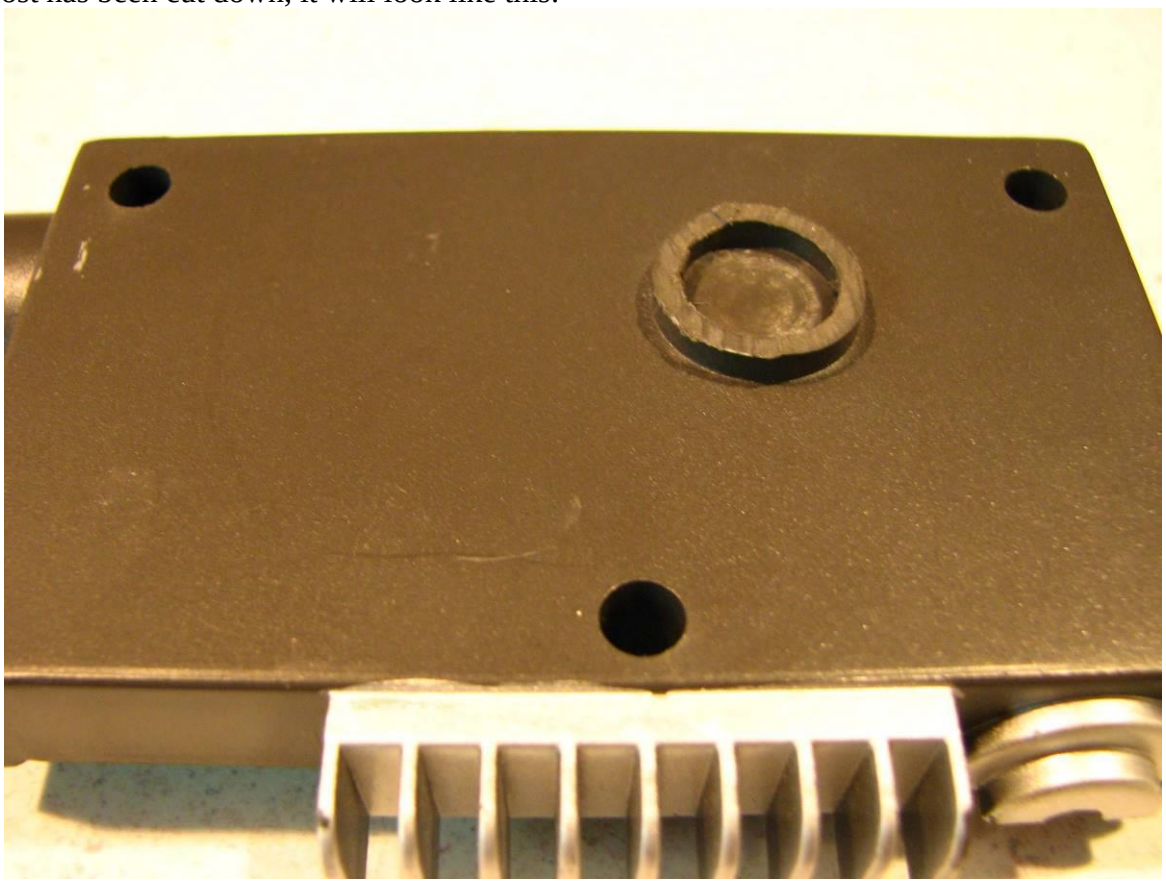


Save the screws, because we will need to put them back in once we have finished modifying the bottom piece.

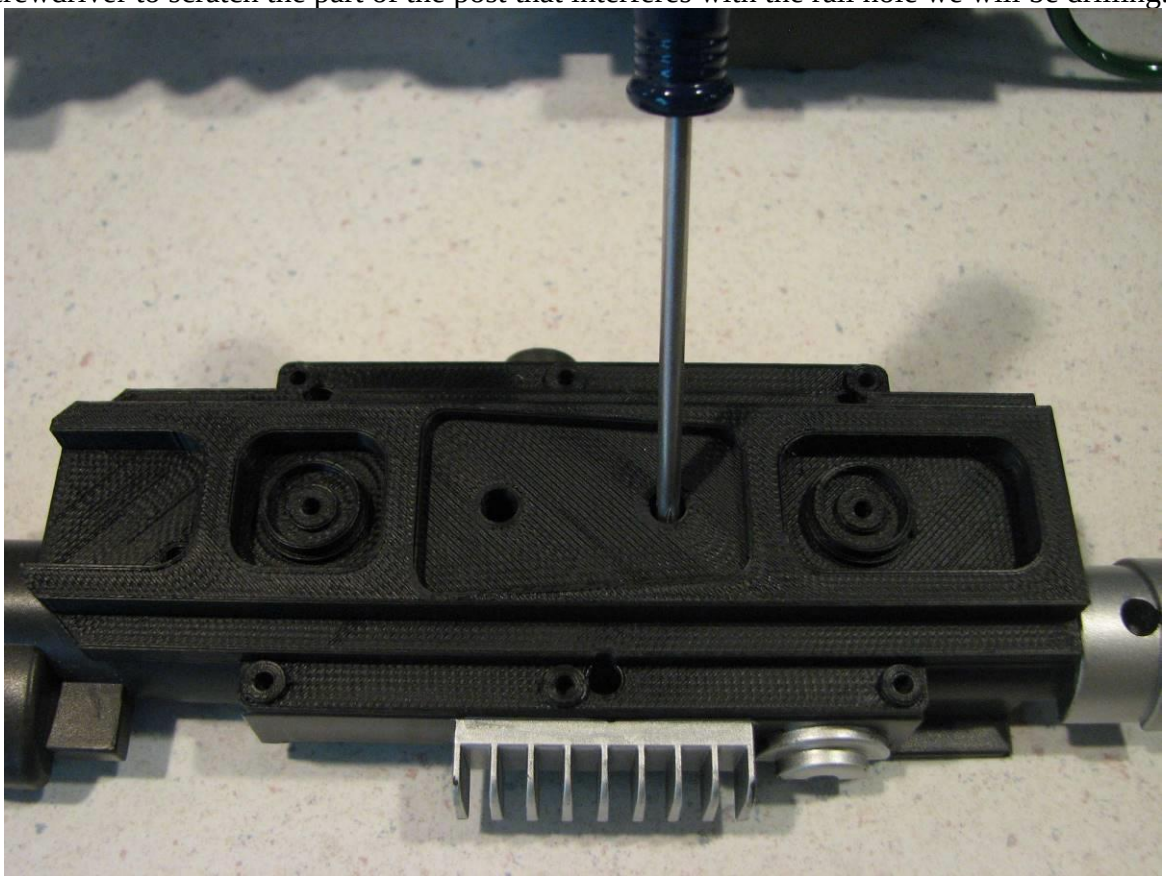
The post on the bottom piece needs to be mostly cut-off since we no longer want to see it. Leaving about an 1/8" tall portion of it will help locate the 3D printed rails (part #5) on the Spirit Wand bottom piece.



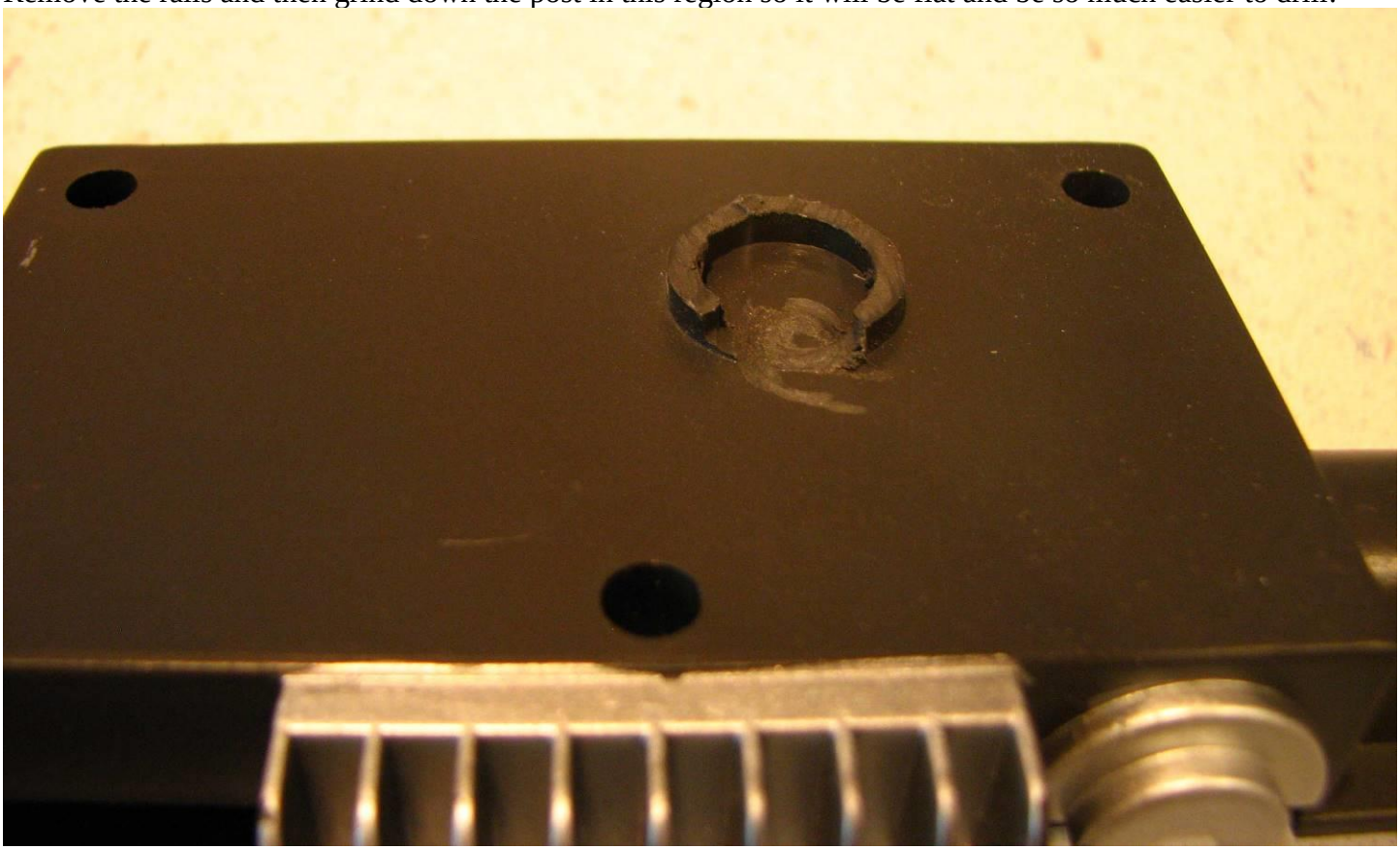
After the post has been cut down, it will look like this:



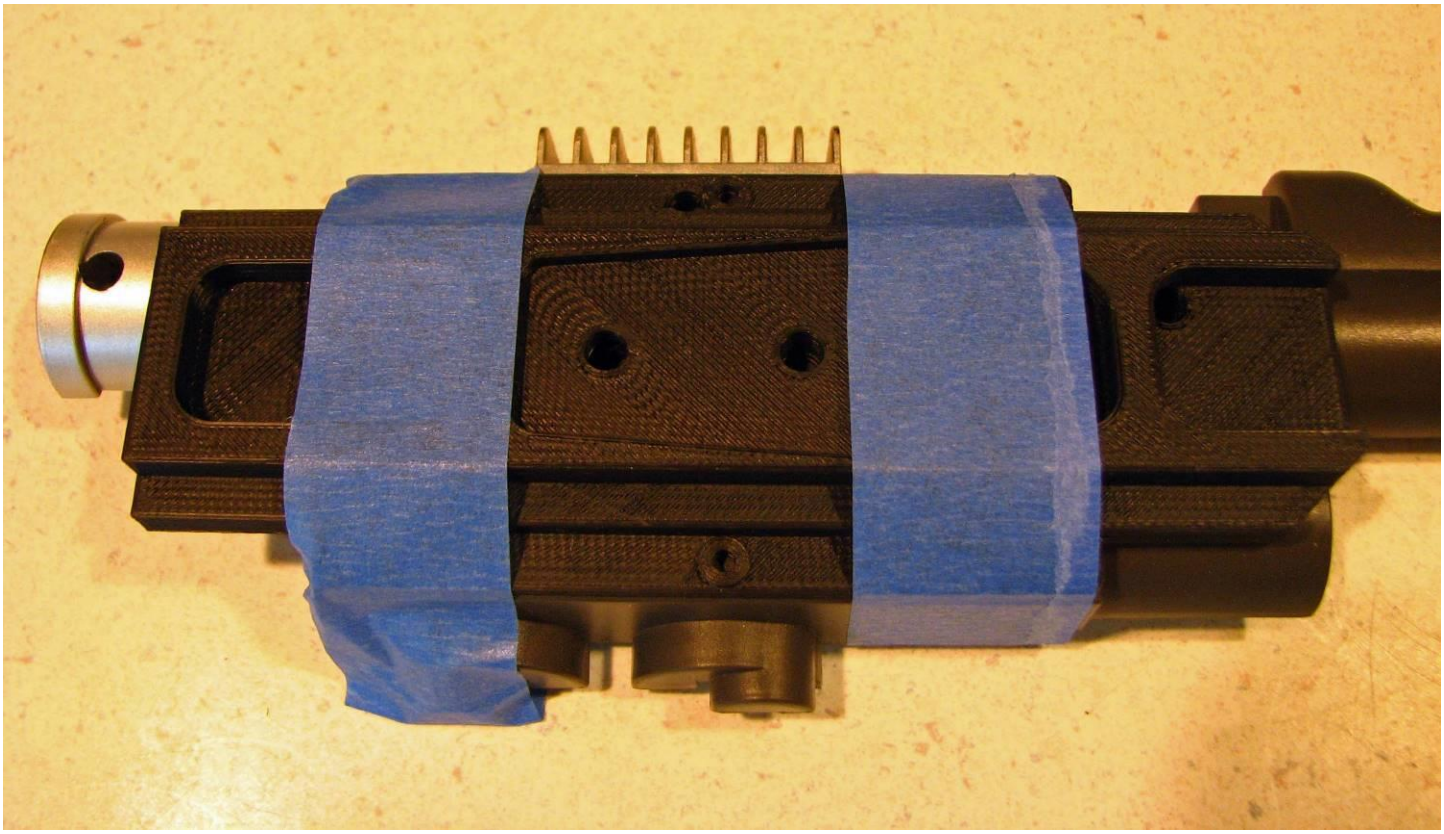
Now set the rails on the bottom and mark the section of the post that will interfere with us drilling a hole. I just used the screwdriver to scratch the part of the post that interferes with the rail hole we will be drilling:



Remove the rails and then grind down the post in this region so it will be flat and be so much easier to drill!

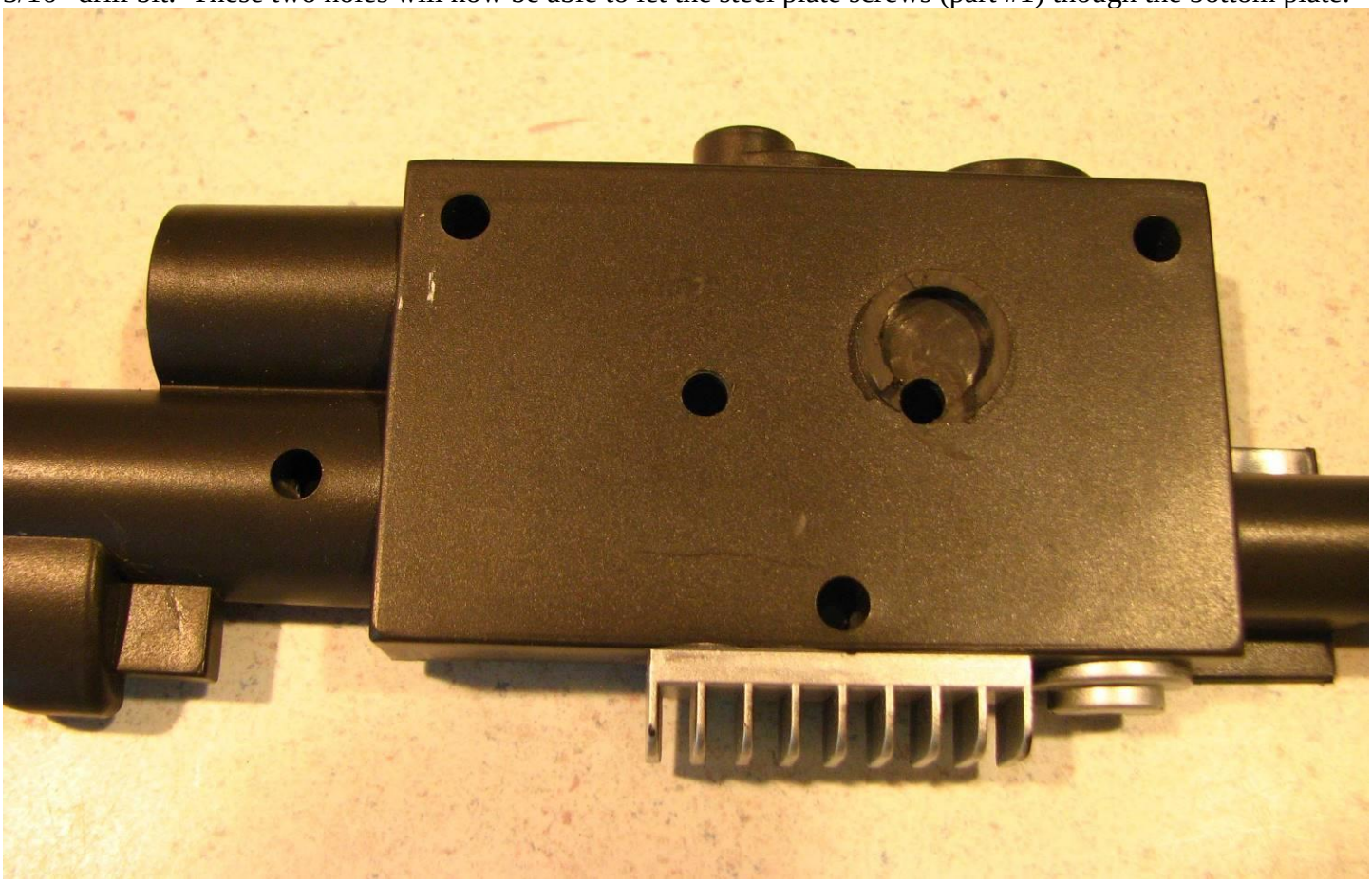


Now we need to drill the main two holes that will hold the rails and steel plate onto this Spirit Wand Bottom Piece. Place the rail on the bottom and align the rails so that it is centered on the bottom plate and tape it in place. There is some wiggle room to help aid in alignment in case of some variations in manufacturing the wand.



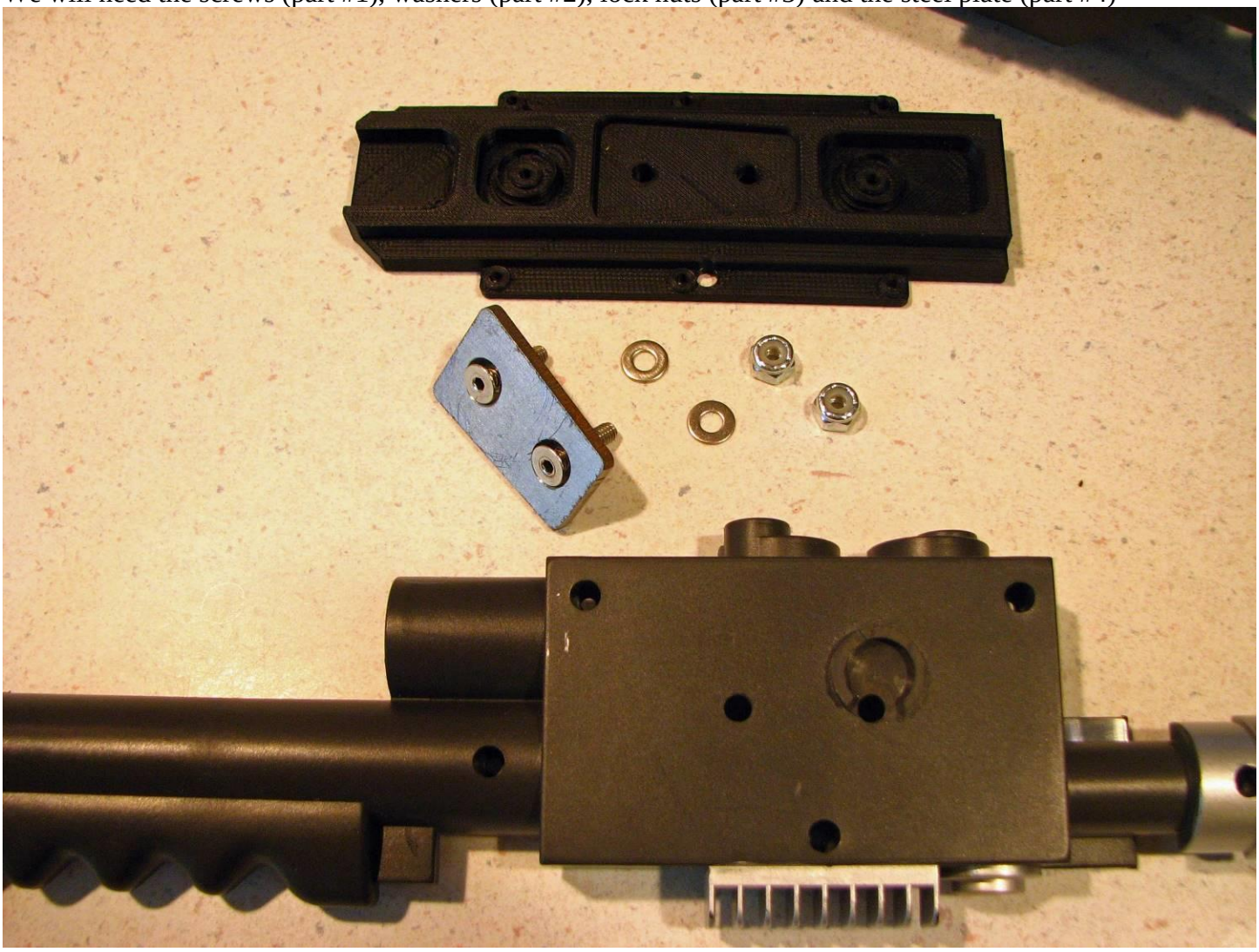
Now using the 1/8” bit, carefully drill down the center of the two holes where the steel plate will be mounted. The drill bit is smaller than the holes since we do not want to remove any material from the 3D printed rails and only want to mark the center of the holes in the bottom piece.

After drilling the 1/8” center holes, remove the 3D printed rails and make the two holes larger by drilling with a 3/16” drill bit. These two holes will now be able to let the steel plate screws (part #1) though the bottom plate.



Next we will be mounting the rails just so we can carefully mark where we will be drilling out an additional 6 holes.

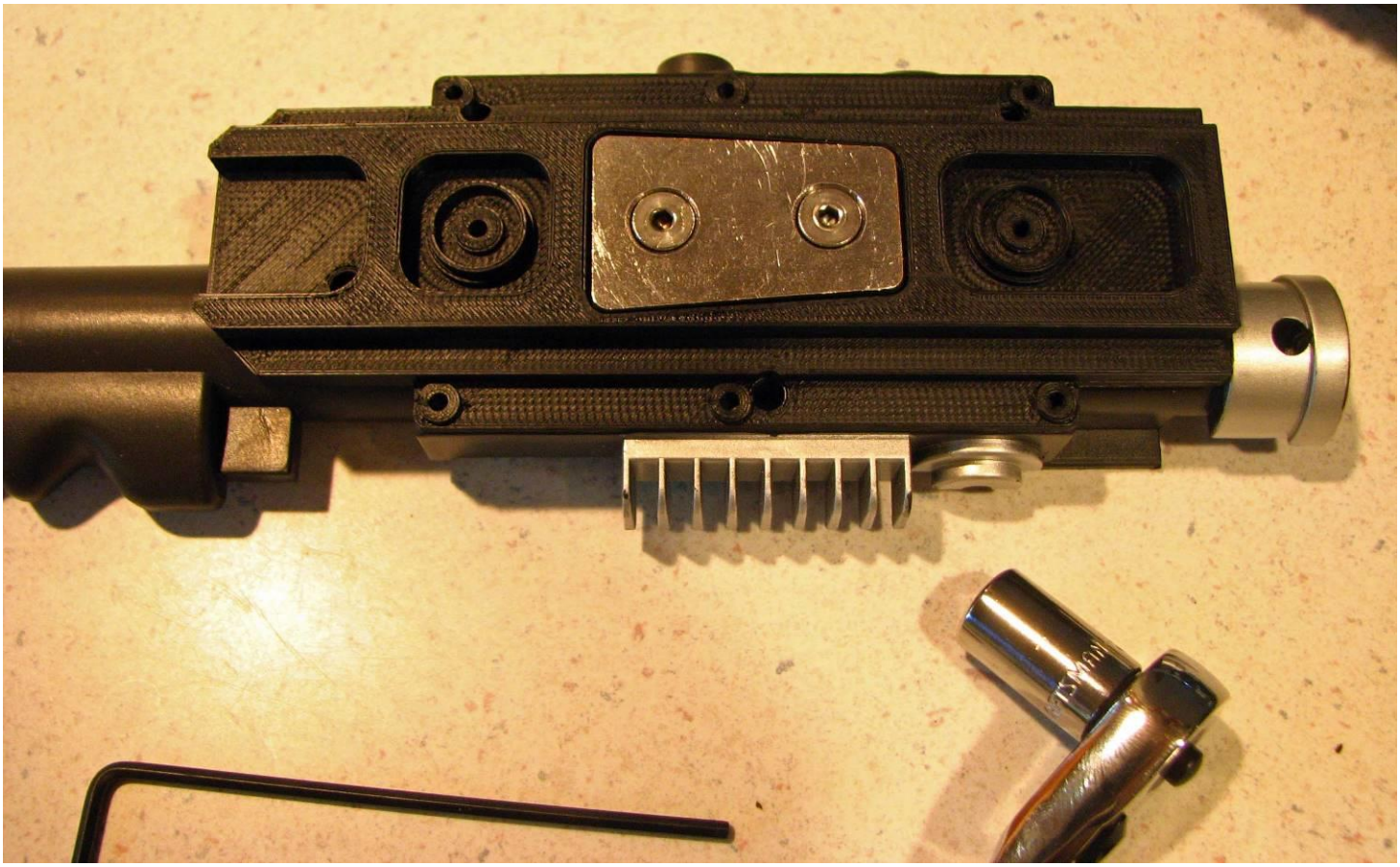
We will need the screws (part #1), washers (part #2), lock nuts (part #3) and the steel plate (part #4)



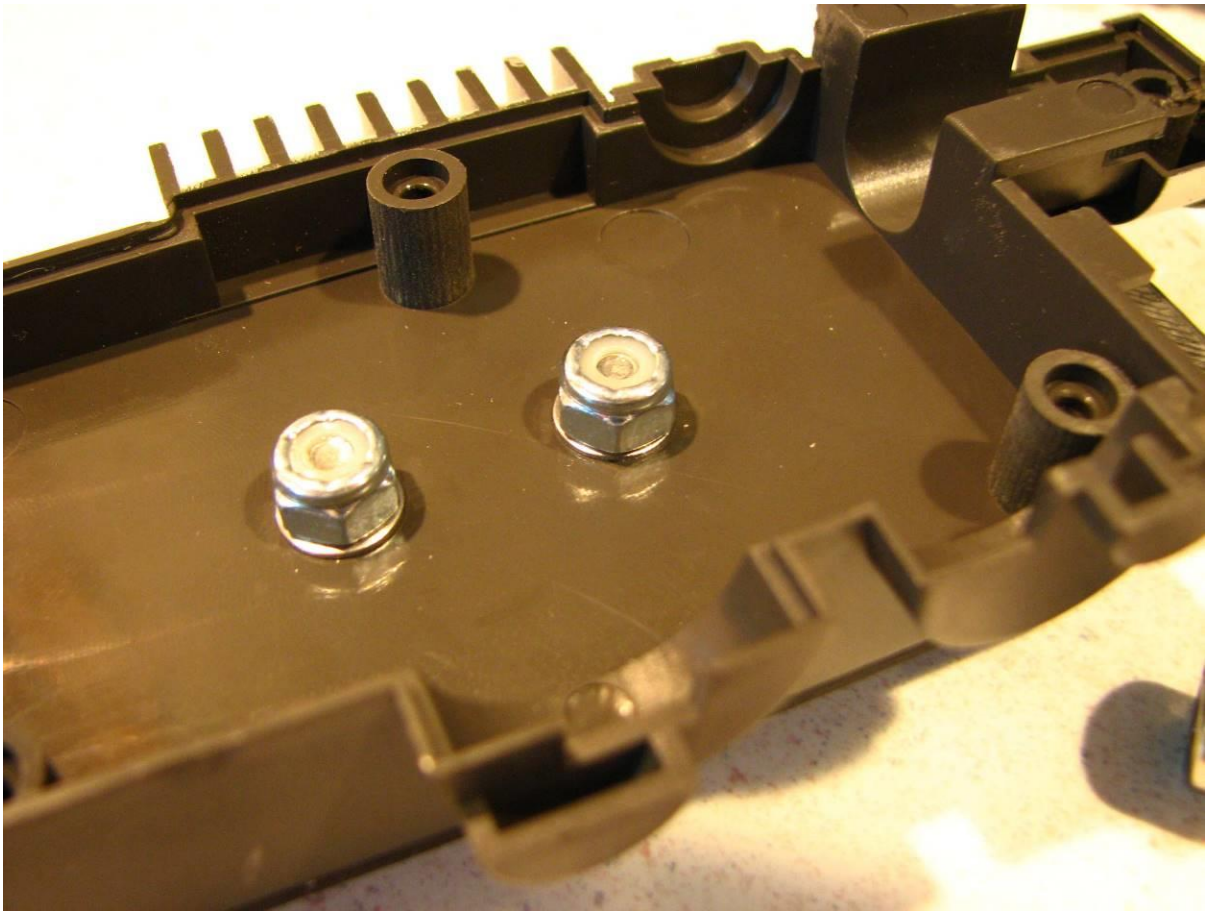
Using the 3/32” Hex Key and 11/32” socket, attach the steel plate to the rails and the Spirit Wand Base Piece and make sure the rails are well aligned before tightening.

The Steel Plate (part #4) can rust. If this is an issue or you want to be sure it is not an issue, you would need to sand the part to remove any rust and then apply a clear coat of sealant to protect the surface.

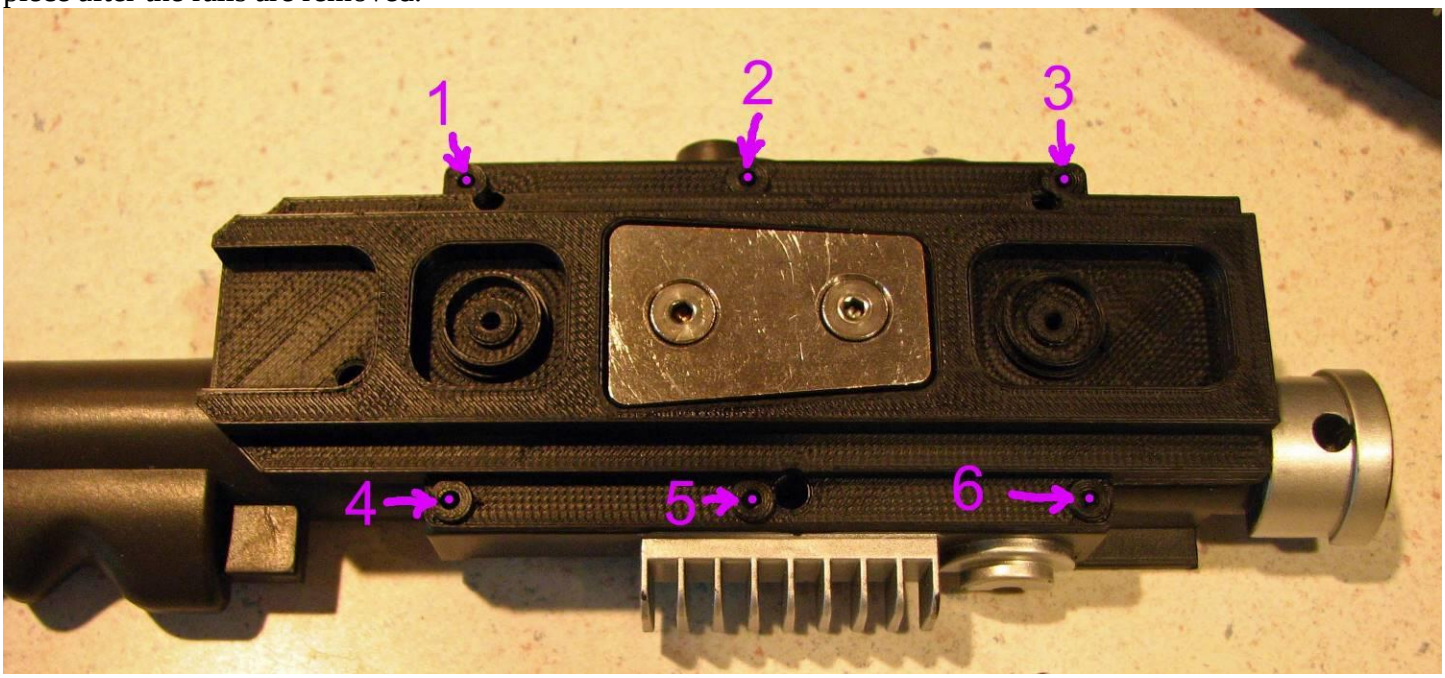
When attached it should look like this:



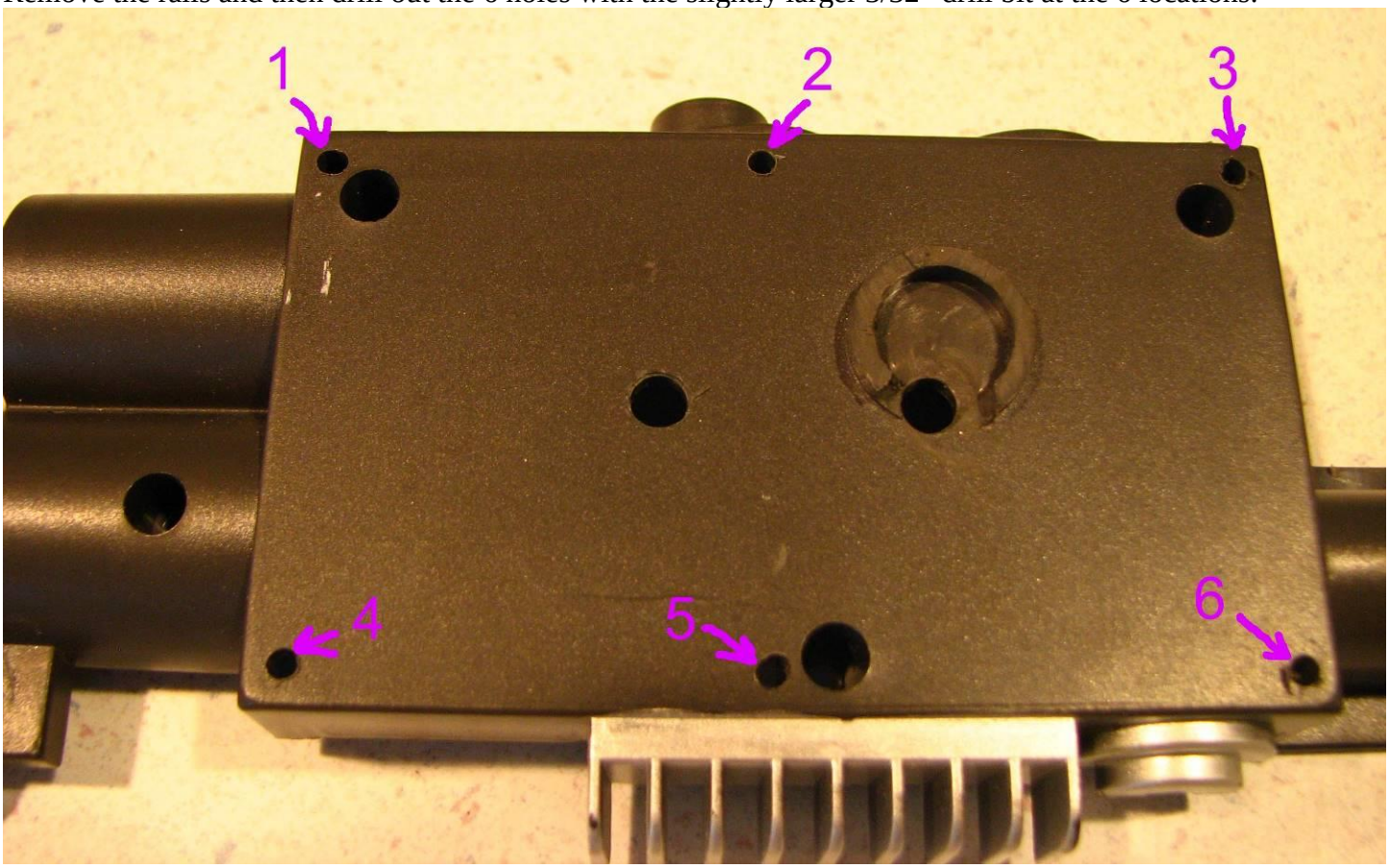
And inside:



Using the tint 1/16” drill bit, drill marks into the Spirit Wand Base (holes are fine) in the 6 outer edge places. Take care not to remove any of the 3D printed rails material – we only want to know where to drill into the base piece after the rails are removed.

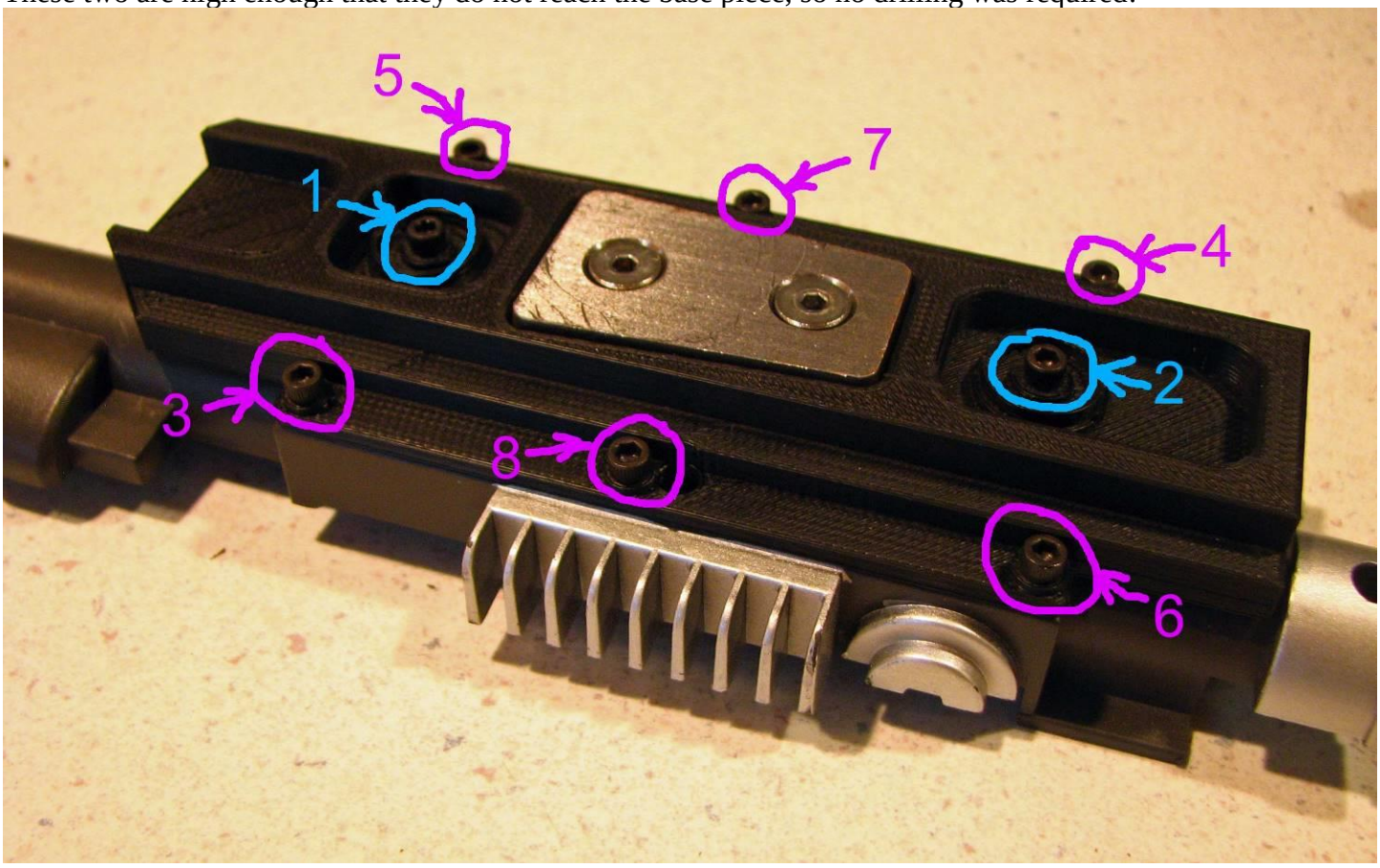


Remove the rails and then drill out the 6 holes with the slightly larger 3/32” drill bit at the 6 locations:



Now you get to reattach the steel plate and railing for possibly the last time! Align the steel plate and rails and slightly tighten it down to the base plate. Allow some ability to align the rails since we will be adding 6 screws that will also need to be able to get into their holes in the base piece.

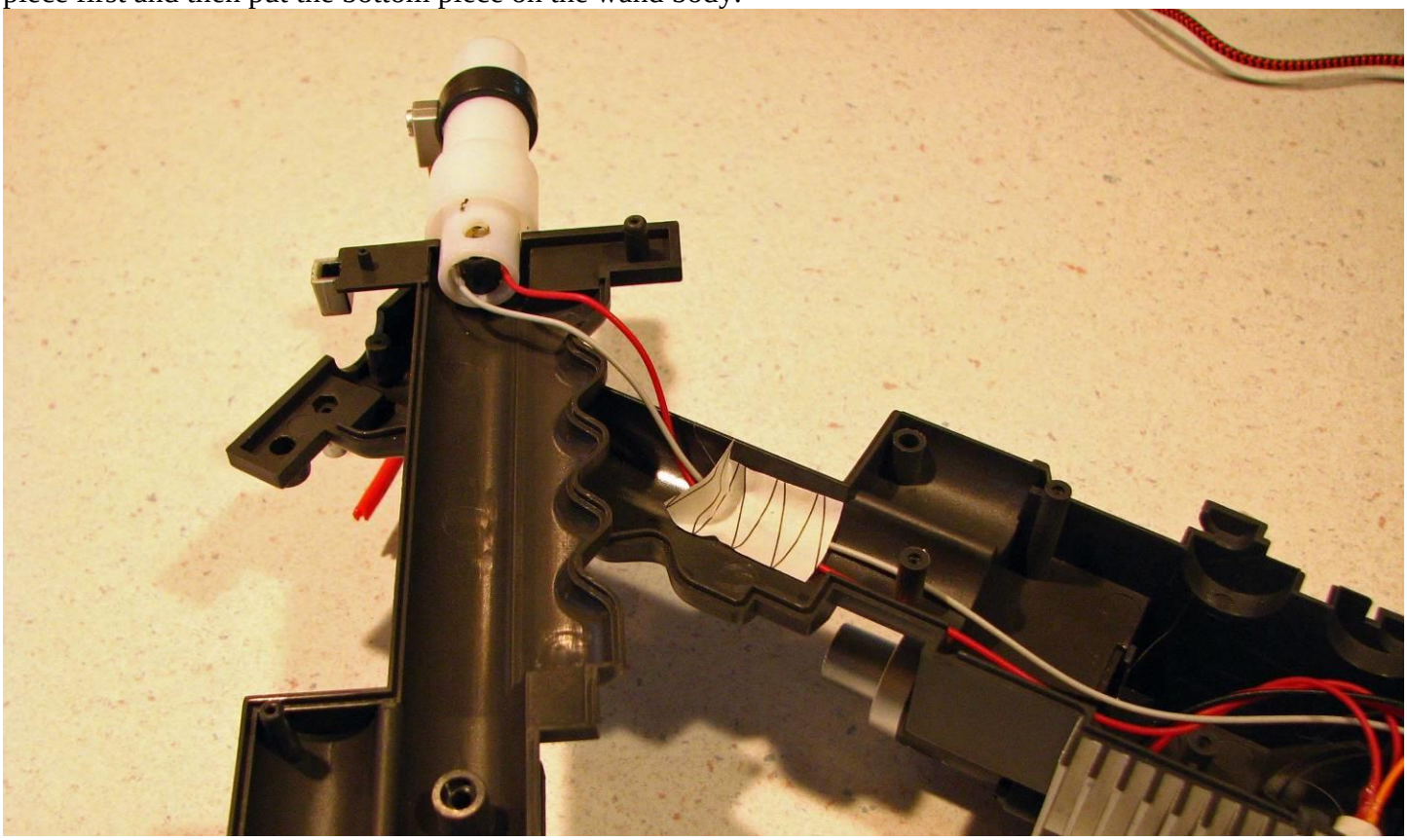
Using the 3/32” hex Key, install 2 of the #4 black screws into the top rails (#1 and #2 in the photo below). These two are high enough that they do not reach the base piece, so no drilling was required!



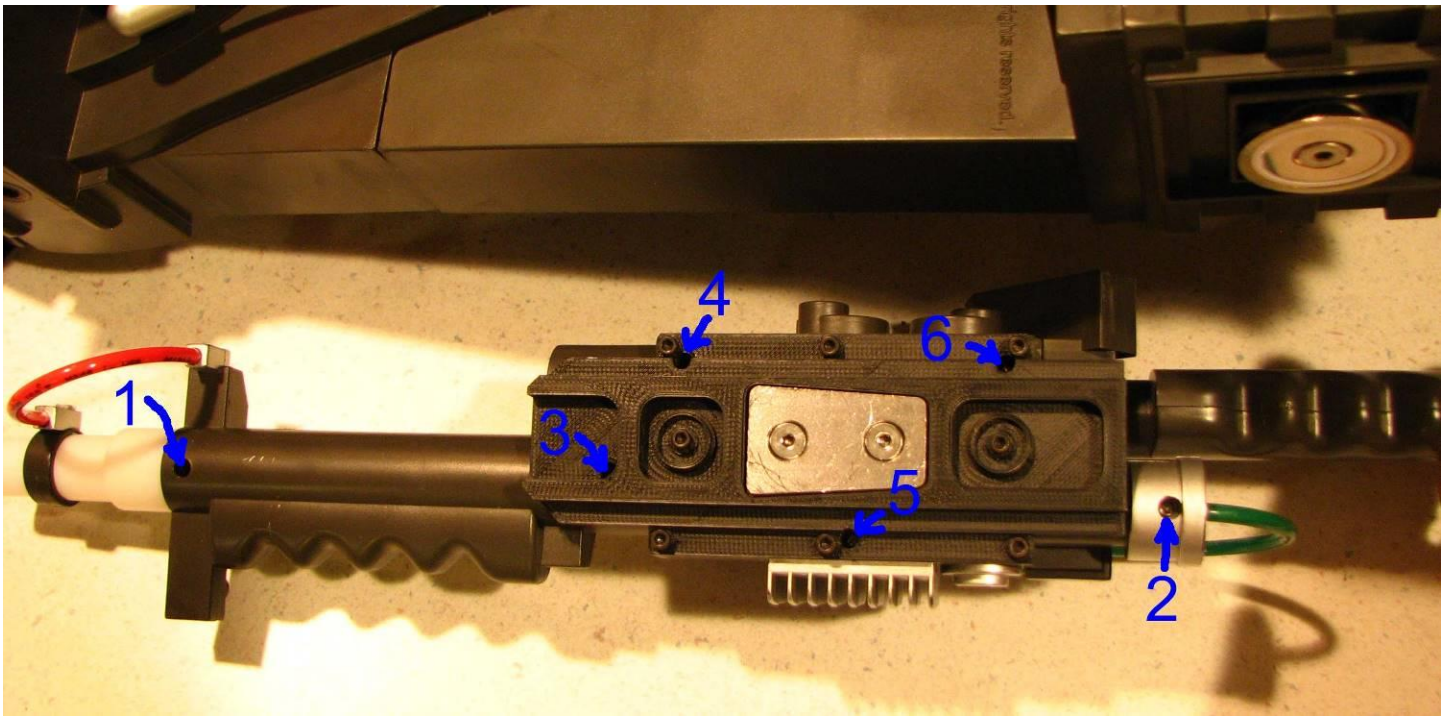
Then install the remaining 6 screws around the edges (#3-#8) in the suggested order shown in the above image.

Tighten the steel plate screws (part #1) to make sure the steel plate is very securely attached to the Spirit Wand Base Piece.

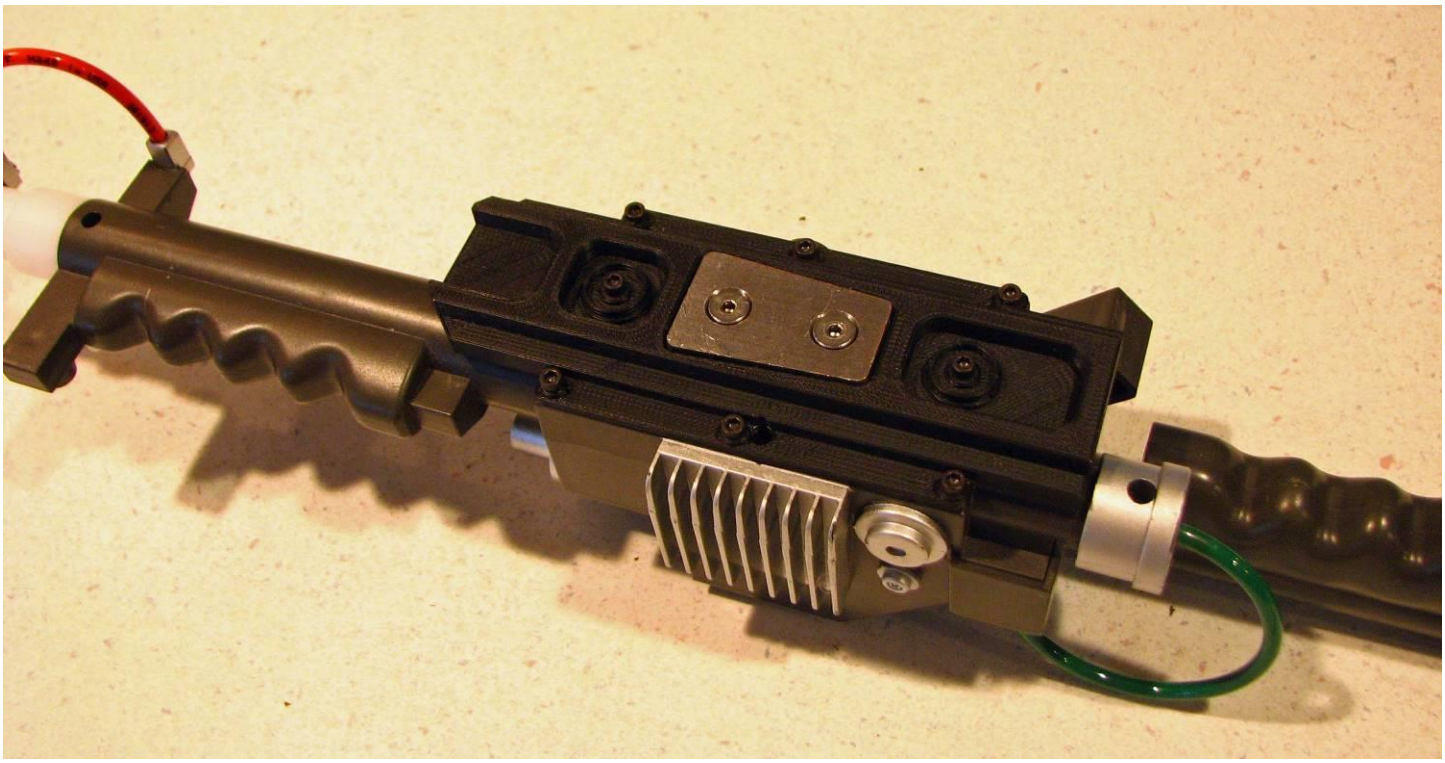
Now we need to reattach the modified base piece back to the wand. The first step is to get the white wand tip part and LED wires back onto the bottom piece. You may be able to just have the white tip on the wand first and just put the bas on top of it, but I had some trouble with that so moved the white wand tip to the bottom piece first and then put the bottom piece on the wand body:



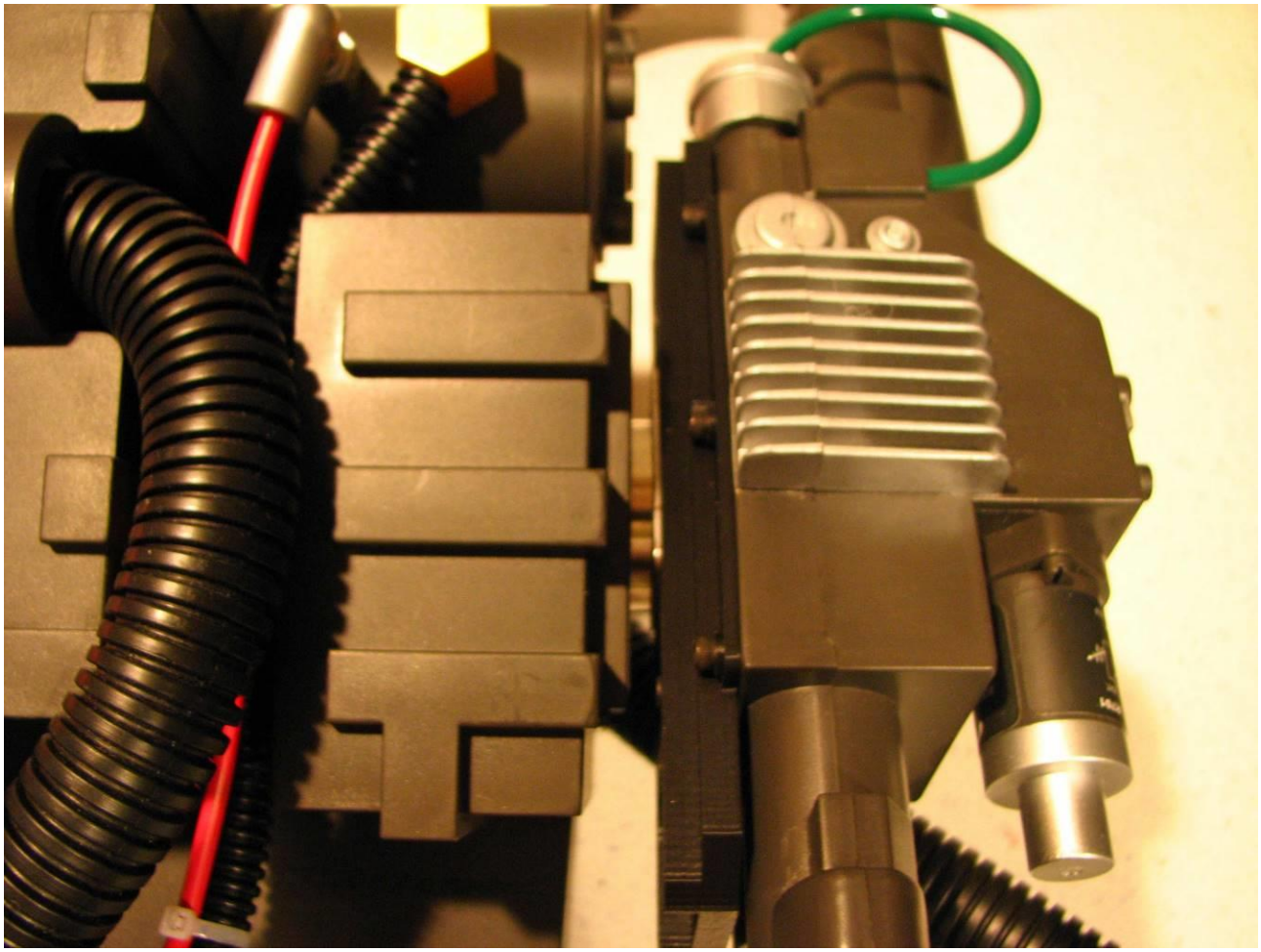
Now flip it over and press the two pieces together. At the back side, do not forget to make sure the green (or blue) tubing is in place before putting the screws back in. Find those 6 screws that you originally removed and put them back in. See the recommended order of installing the screws in the following image:



The wand is now finished and can now be easily attached to the pack!



Wand being held onto the side of the pack:



A word of caution about magnets:

There is now a strong magnet mounted on the side of your pack. Most items do not care, but there are still a few items that can be damaged by strong magnetic fields.

A magnet can erase credit card strips but should have no effect on the embedded chip (EMV) in new credit cards. It can affect CRT (tube) based TVs and displays, but those are getting fairly hard to find. Not a problem for LCD displays. Though floppy discs (remember those?) and hard discs can be affected by magnets, CDs, DVDs, SD cards, MP3 players, Cell Phones, etc should not be affected by magnets.

When in doubt, just keep things a few feet away from strong magnets.