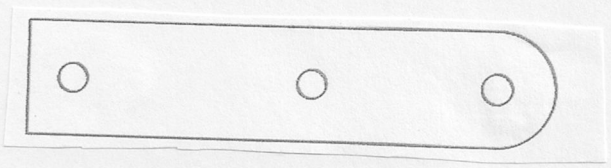
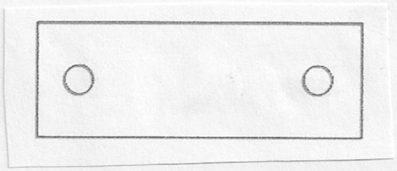
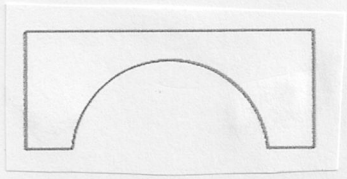


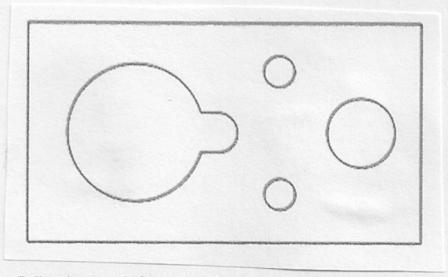
Bracket Base Plate



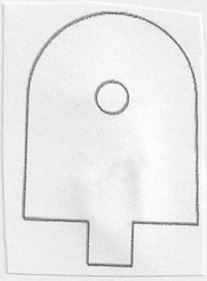
Bracket Top Plate



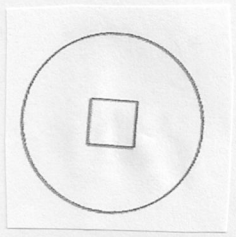
Circular Bracket 4 Each



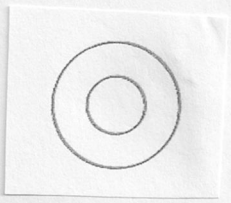
Motor Mount



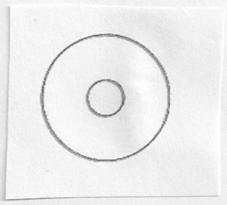
Plunger Tip



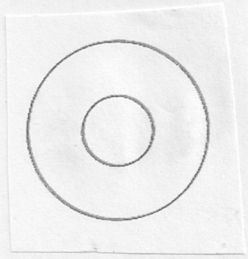
Plunger Tip Disc



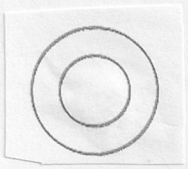
Nut Trap



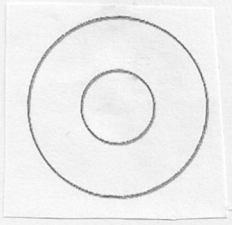
Nut Trap Bottom



Plunger Tube To Plunger Tip Adapter Disc

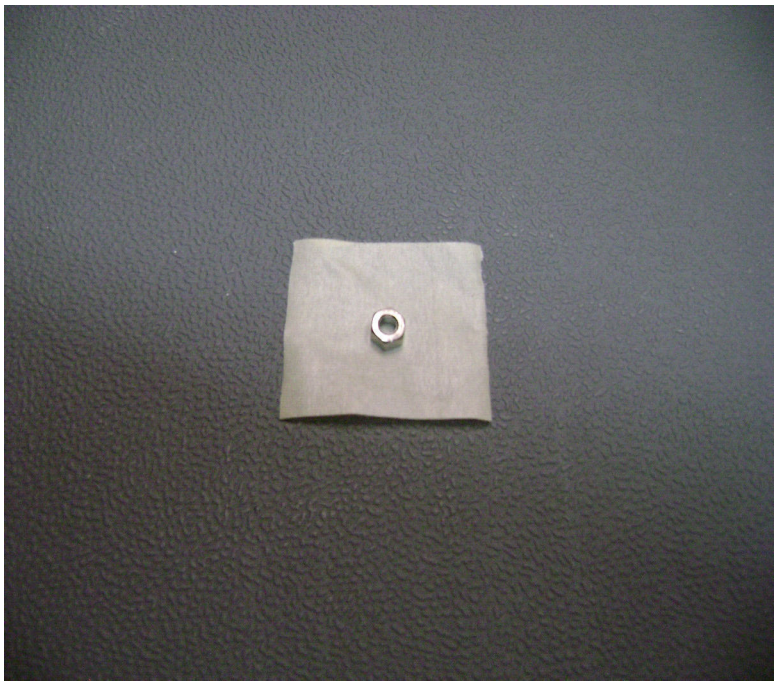


Plunger Mount Disc



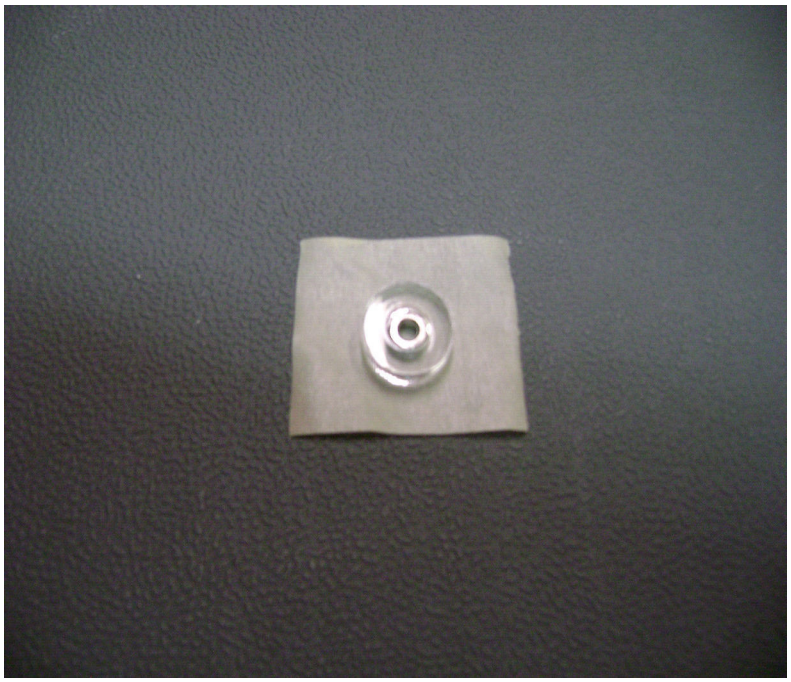
Bore Guide - (Slightly Bigger Hole)

Things you need to assemble the tube actuator. Left to right are small piece of masking tape, super glue,pen knife and small crosspoint screwdriver. You will also need a few drops of light oil.



Begin by sticking the m3 nut onto the center of a piece of masking tape.

Press the nut down firmly to be sure it seals to the nut well.



Locate the round disc that slips over the nut most closely. Press the disc firmly down so the nut is stuck in the center of the disc. Apply a small amount of glue around the nut filling in between the outside of the nut and the inside of the plastic disc. Do NOT allow any glue to get into the threads of the nut. It may be helpful to turn the assembly on its side to perform this operation. Lay the assembly down to completely dry.

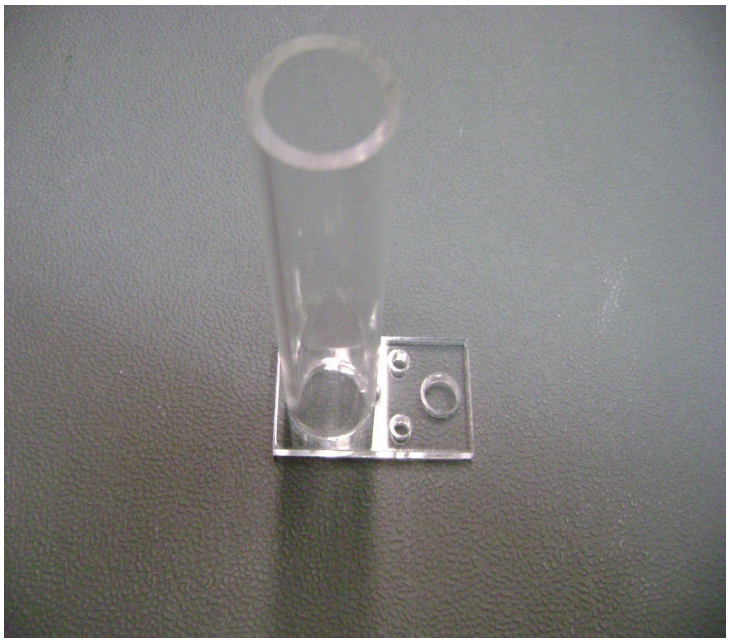
When the glue is 100% dry, remove the tape and the assembly will look like this.

Locate the disc with the smallest internal hole. Apply a small amount of glue to the surface , line it up with the side of the nut/disc assembly and press together. The nut is now trapped inside and centered, and the assembly should look like this.

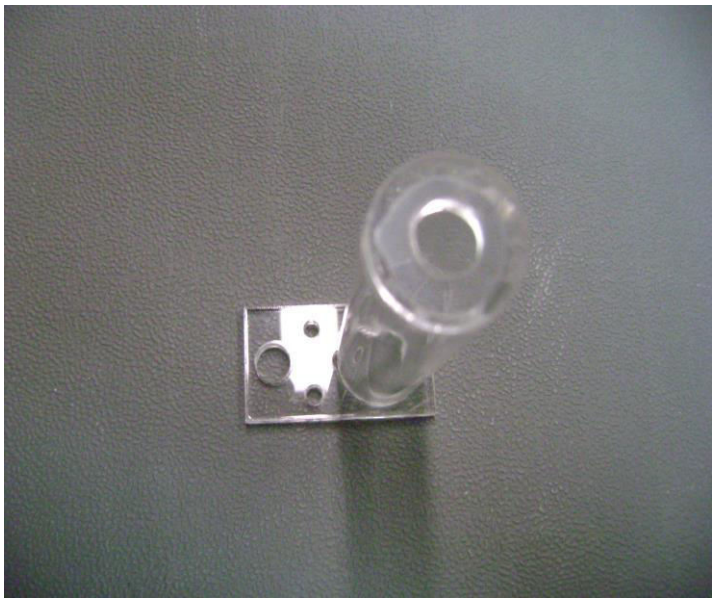
Locate the remaining small disc with the largest hole. The plunger tube slips tightly into the disc opening.

If you cannot press it on(Use no tools!) use the pen knife to shave a bit from the inside of the disc, until the tube can be pressed tightly into the disc. Make sure the plunger goes through the disc and is flush with the backside of the disc as shown. Do no add glue yet.

Coat the surface of the plunger disc with a light coat of glue and make sure to cover the tube and disc joint. Press this onto the trapped nut assembly side with the nut still exposed. Be careful to align the disc with the nutrap as you bring them together. The plunger is now complete and should look like this.



Glue the main tube body to the motor mount. Align the large hole in the plate with the inside of the main tube. The assembly should look like this.

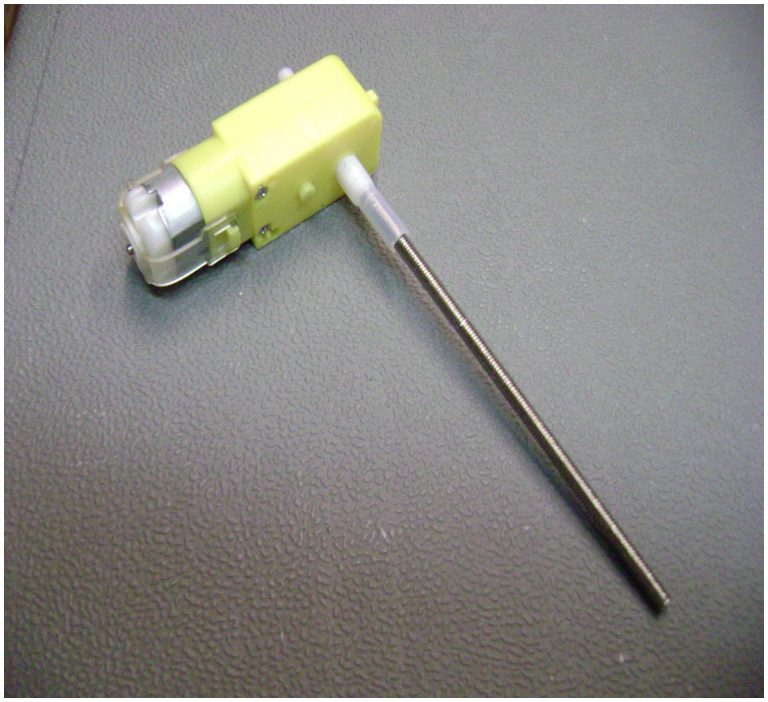


Locate the tube bore guide. It is the disc with the larger hole and the plunger tube fits easily into. Cement it to the tube end, making sure to align it with the tubes body. The finished tube assembly should look like this.

Find the disc with the square hole, and the plunger tip. Cement the tip to the disc in the center of the hole leaving a small gap on each side. Be sure to keep the tip up at a 90 degree angle when pressing together. The finished plunger tip should look like this.

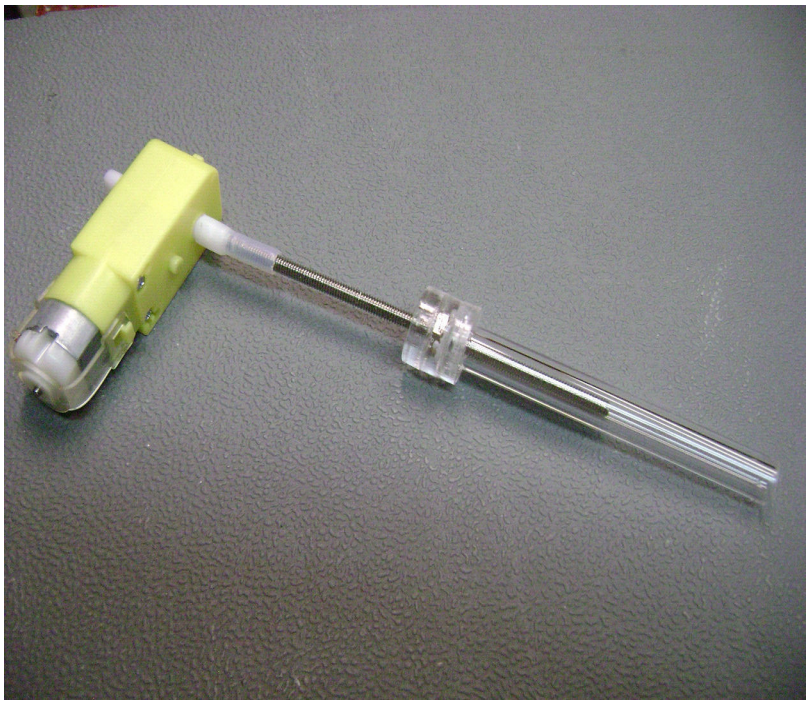
The remaining disc should be checked for fit on the plunger tube. Make sure it slips down onto the plunger rod easily. If it is tight, use the pen knife to shave the inside of the hole until it does. Then cement the disc as shown to the base of the pluinger tip. It should look like this.

Cut a piece of the flexible tubing 22 mm long and slip it onto the drivescrew approx 1 centimeter. This is the coupling for the motor shaft. It should look like this.

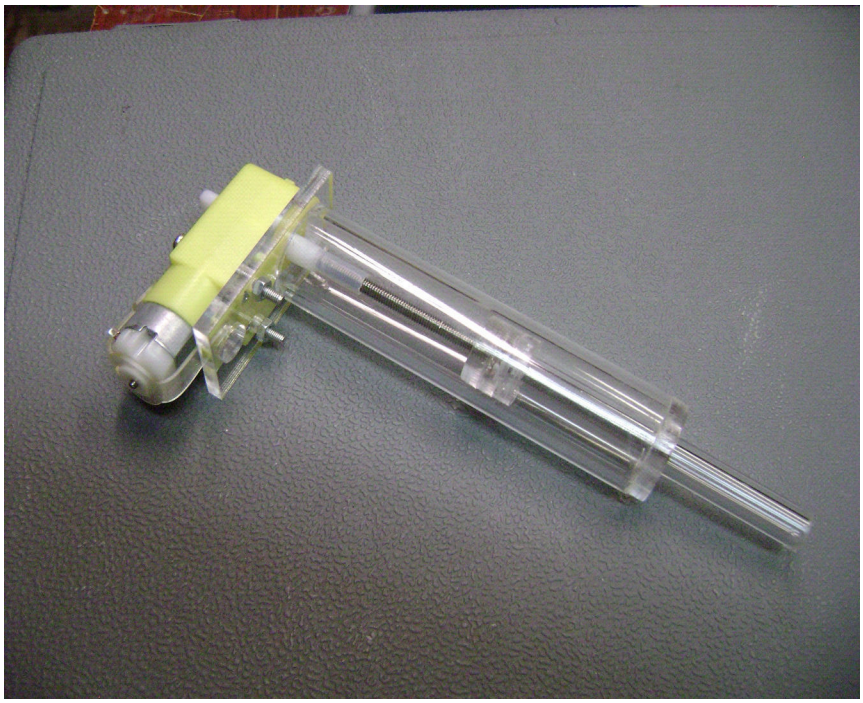


Press the fex coupling end onti the motor shaft. Press the rod tightly against the motor shaft.

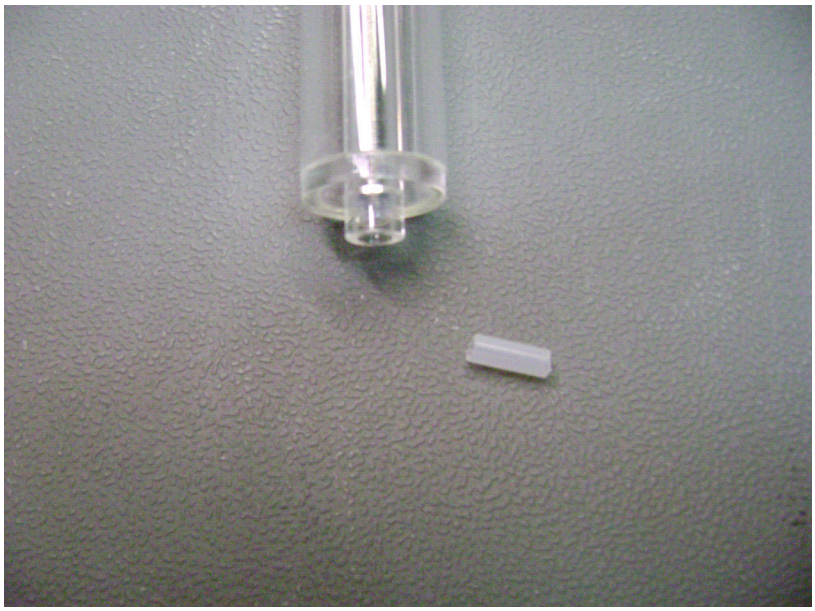
It should look like this.



Manually thread the plunger halfway down the threads as shown.



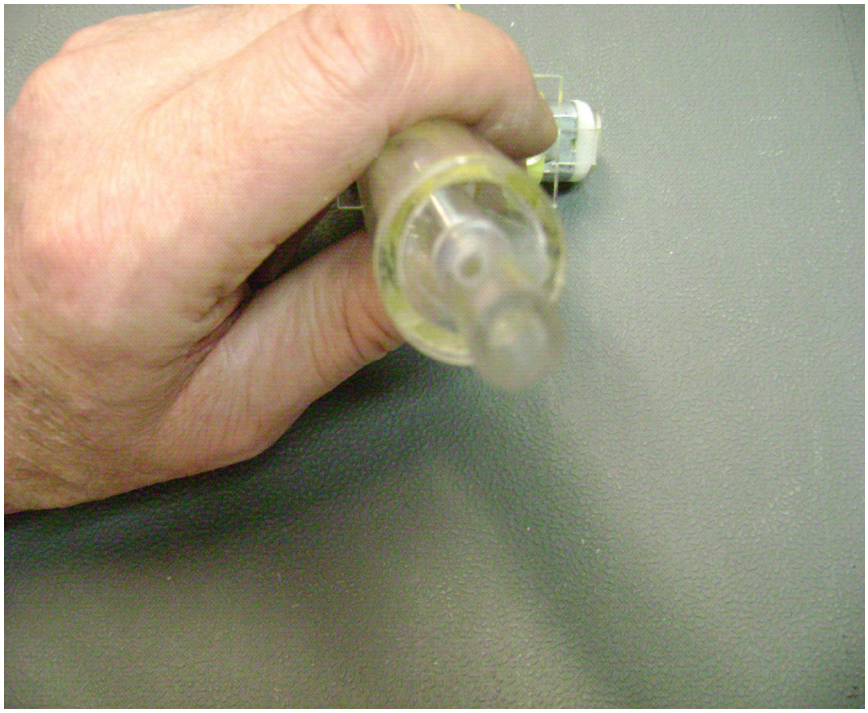
Lower the plunger/motor assembly into the main body tube and secure the motor with the screws/nuts provided. It should now look like this.



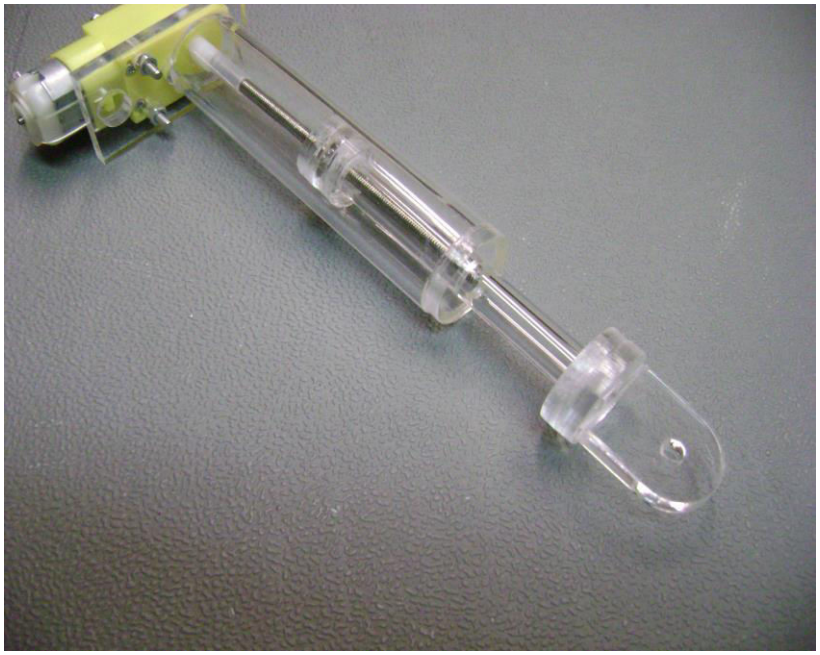
Cut a short 8mm long piece of flexible tubing. Thread the plunger down as fars as you

can as shown. Drop a few drops of light oil into the tube, then lightly lube the outside of the

flex tubing and press it onto the end of the threaded rod until flush with the end.

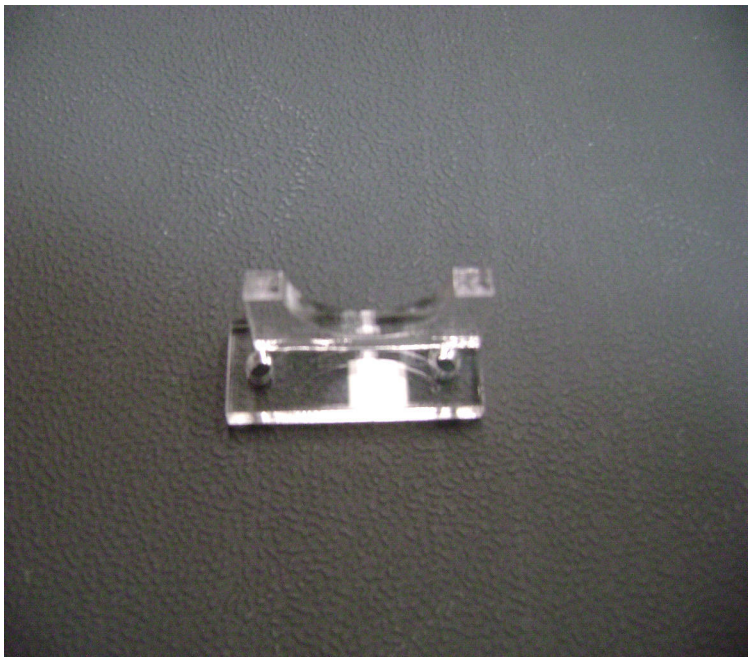


Unscrew the plunger tube out as shown and add a few more drops of light oil inside the plunger tube. Do NOT get oil on the outside of the plunger tube. If you do clean it off.



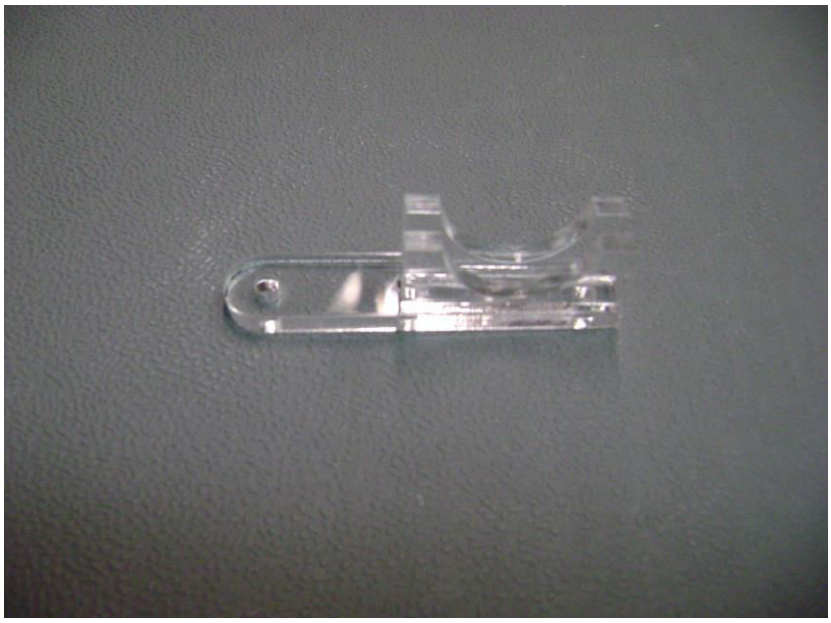
Cement the plunger tip assembly to the plunger rod as shown. Place a small amount of glue inside the plunger tip disc walls to accomplish this. Do not apply it to the tube.

As a final test, screw the plunger all the way out and then all the way in to be sure the motor and plunger are aligned straight. The motor can be shifted a small amount to make this adjustment. Tightn motor screws when you are satisfied. This compltes the actuator assembly.

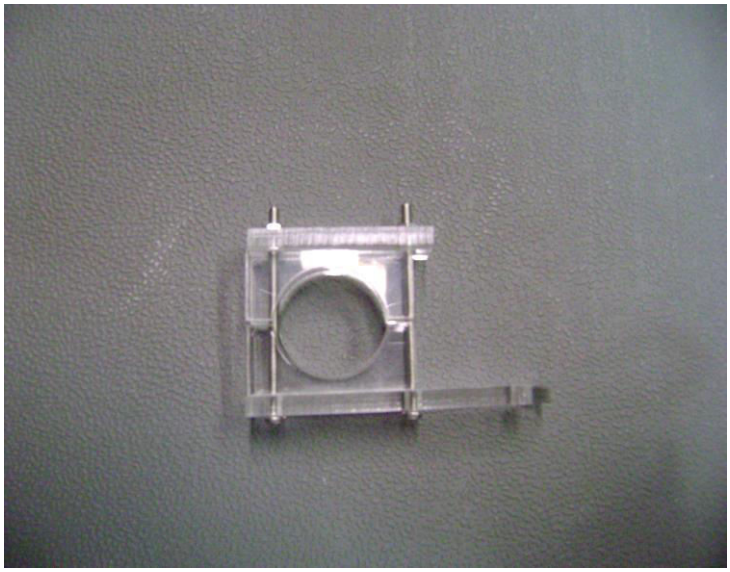


Locate the mounting bracket upper plate and a semi-circle plate. Glue them as shown, noting the circular plate is right up against the holes, and lined up on one end of the the bottom plate.

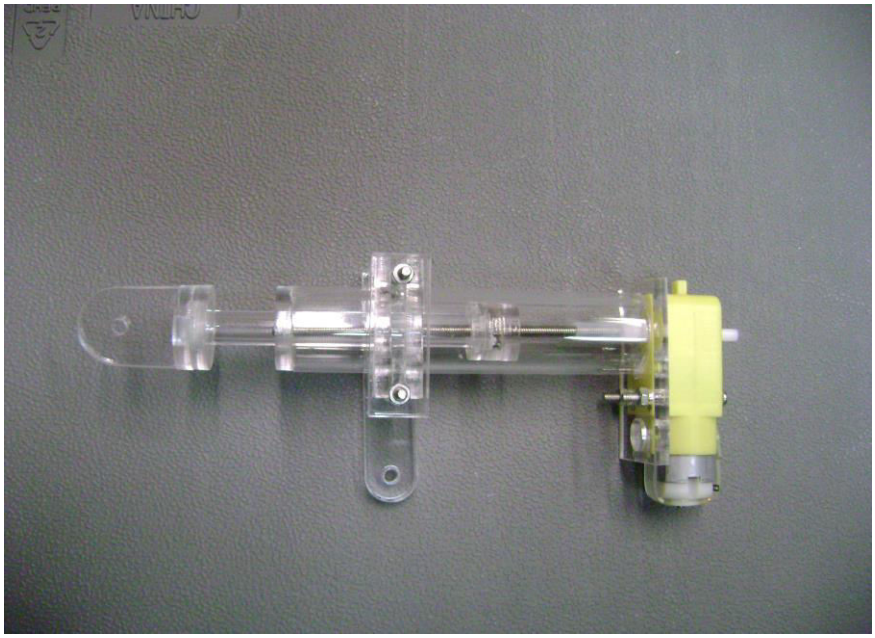
Line up the second circular plate the same as the first. The assembly should look like this.



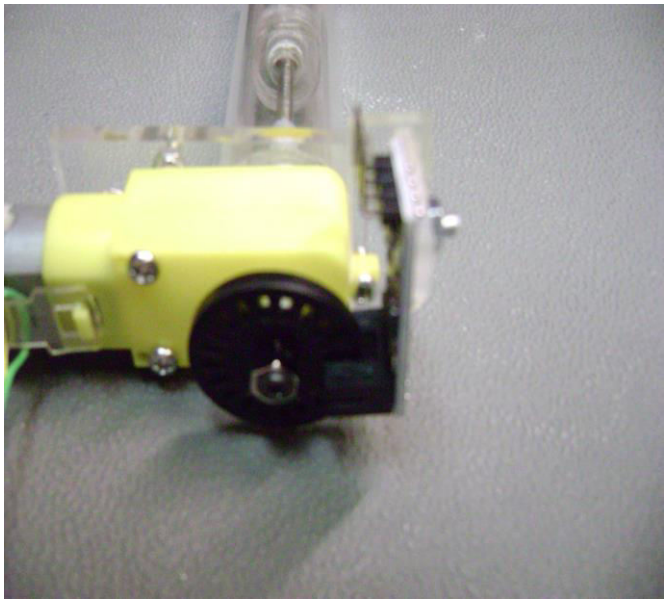
Glue the second set of circular plates on the mounting plate. The assembly should look like this. Again-the circular cut plate edges should be up against the plate holes.



Place the long mounting screws as shown. The mounting bracket is now complete. It should look like this.



This is how the bracket is secured to the tube actuator. Tighten the bracket screws as tight as they will go(not enough to break it of course)but snug.



If needed, the actuator can be fitted with an encoder wheel

and sensor to track the screw progress. These parts sold seperately.