
Animatronic Tail Construction How To, Actuator Construction

Built by Wolves for Wolves

<http://www.wolftronix.com/tail/actuator.htm>

A step by step guide on how to build your own animatronic tail

I have been told that I am doing a great service by having this "How To" available to the public, I do not charge anything for the viewing of it, I just make a few requests:

Share what you make as well, don't keep "trade secrets"

Send me some pics of your finished animatronic tail (which no one has done yet)

Try to innovate, it is a simple matter to copy another's work, believe me there is a lot that can be improved upon here, also my way is not always the best way

You may build an animatronic tail for yourself, but they are for personal use only, you may not profit from it, i.e. you can not sell animatronic tails to others, if another person wants to buy a tail from you, then refer them to this site

Wolf Tronix assumes no responsibility of any damage to you or others, including objects (such as table lamps, that could be knocked off the table by an inadvertent wag of the tail) due to the use of the tail, or construction of the tail, in other words, build this at your own risk!!!

Step 1. Obtain parts

You will need the following:

2 servo motors, 42oz/in or stronger

2 PVC 2" flat end caps

8 small wood screws

1 Dremel tool, with universal cutting disc bit, and sanding drum bit, and drill bit sized accordingly for screws

1 box of paperclips

1 soldering iron and solder

1 pair of pliers/cutters

7 pennies

1 Dremel sanding disc

1 pencil

24 hours of free time, plus or minus depending on your abilities

Step 2. Pulley construction

2.0 Take the PVC end caps and using the pencil mark a line around them, about 1/2" from the closed end



2.1 Using the Dremel tool with the universal cutting disc, cut on the line you just made, if you have a speed control on the Dremel tool, set it to a slow range, if the bit spins too fast it will melt the PVC and send it all over the place



2.2 Using the drum sanding bit, sand off all the burs



2.3 To find the center of the PVC end cap use the following process

2.3.0 Take the Dremel sanding disc, which is exactly the same size of the penny, and place it on one of the pennies



2.3.1 Mark the center hole, with the pencil

2.3.2 Using the Dremel tool, with the drill bit attached, drill a hole through the center mark you just made



2.3.3 Arrange the other 6 pennies in the PVC end cap, and place the one with the hole in it, in the center location



2.3.4 Mark the exact center hole

2.4 Drill a hole in the center of the mark



2.5 Take the four sided horn, that came with the servo, and place it in the center, fasten it with the screw used to attach it to the servo



2.6 Mark the four outer holes of the horn

2.7 Remove the horn



2.8 Drill out the four marked holes



2.9 Ream out the center hole, such that it is large enough for the servo mounting screw to pass completely through

2.10 Attach horn with four wood screws



2.11 Attach horn to servo motor with its mounting screw



2.12 Repeat steps 2.0 - 2.11 for the second servo



Step 3. Servo brace construction

3.0 Unbend a lot of paperclips

3.1 Using the soldering iron, solder a "box" to hold each servo motor housing



3.2 Align each servo motor housing such that, they are at right angles and rotated 90° with respect to each other

3.2.0 This can be accomplished by soldering only a single paperclip between the two, then bend that paperclip until the servos are correctly aligned

3.2.1 Make sure to leave clearance for the pulleys and cables that will go on later



3.3 Once the servos have been properly aligned, solder bracing paperclips to prevent movement



3.4 Continue to add bracing support until the actuator is solid, and has no flex, use lots of triangles the smaller the better



3.5 The actuator must be strong enough to handle all the stresses of moving the tail, as well as holding the tail, and keeping it attached to you, it should not be possible for you to bend any part of the actuator, it should feel as if it is made of one solid piece

Step 4. Attaching the Spine to the Actuator

4.0 Solder some more paperclips to build an attachment site for the spine to the actuator module



4.1 This needs to be extremely strong and needs to withstand side to side as well as front to back movements

4.2 Attach the brake cables to the pulleys by drilling two holes near the top of the pulley and then routing the cable into the holes, then bend the cable over and with the use of some pliers, force a small piece of paperclip into the hole as well, this will hold the cable in place



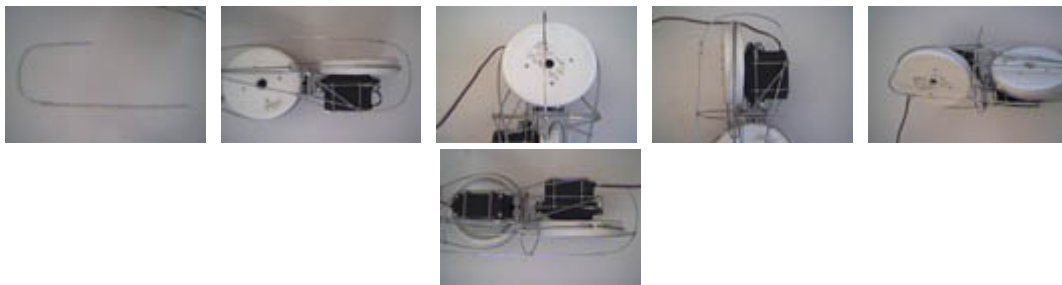
4.3 Turn the pulleys by hand the tail should move and the brake cable should also want to stay on the pulleys, if not then add some paperclips for wire guides



4.4 The wire guide shown in the above pic did come loose so use more bracing paperclips to keep it in place

Step 5. Protective Shell

5.0 Solder some more paperclips to build a protective shell around the actuator module



5.1 The shell should not support the weight of the tail, the belt loop will do that, and the belt loop should be attached to the actuator frame, that is why it was made really strong

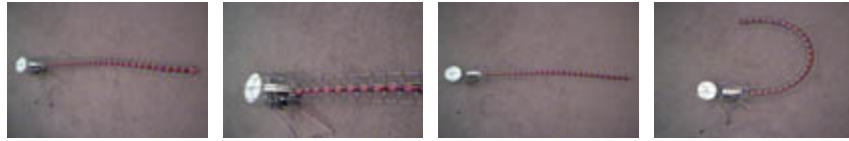


5.2 The shell should not be real ridged, it should be made slightly flexible, to absorb bumps



5.3 The shell pictured is only held in three locations the back and the sides

5.4 You should now have a tail that looks similar to this:



Back to [How To](#)
