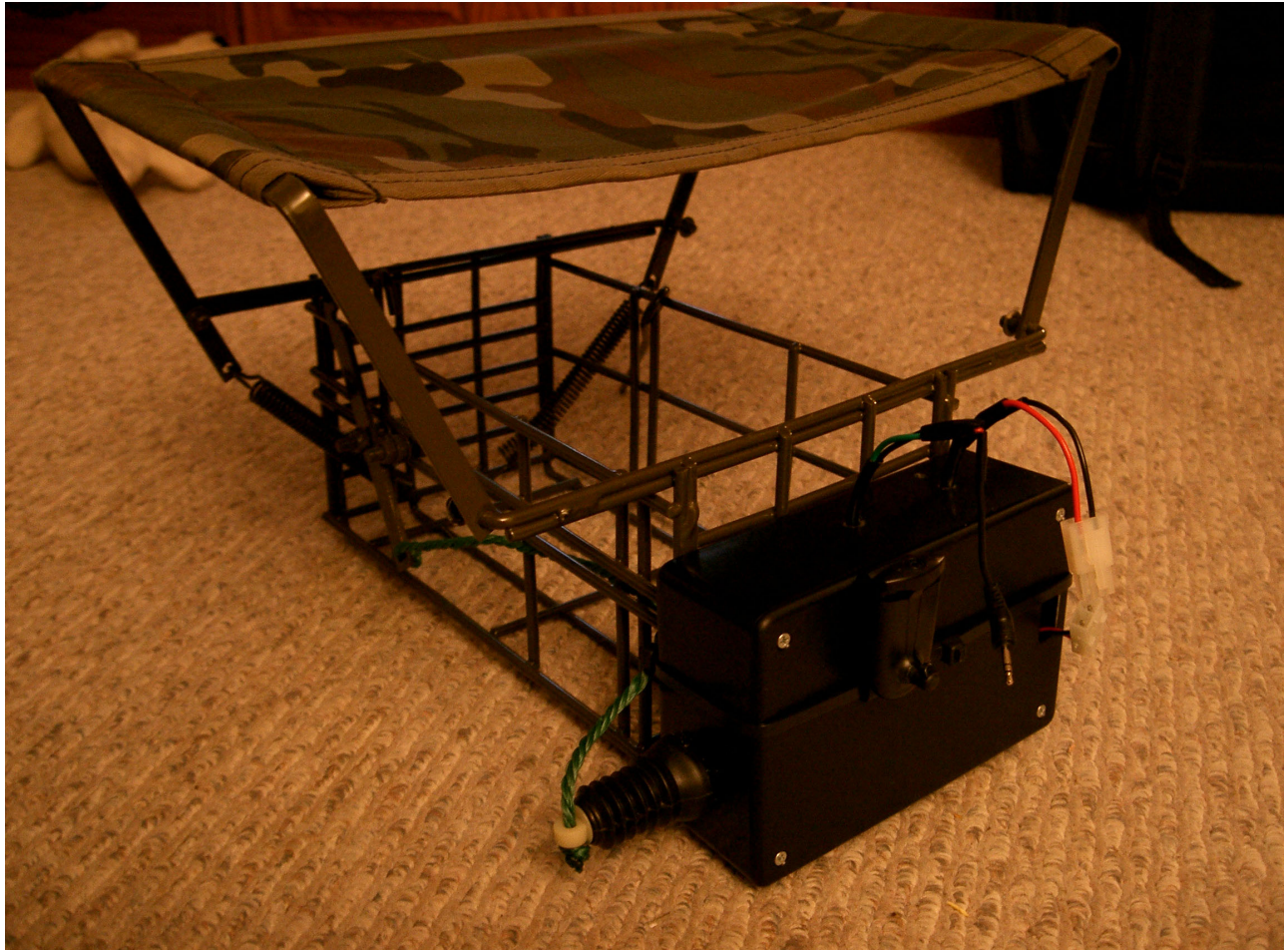


Remote Bird Launcher Project Plans



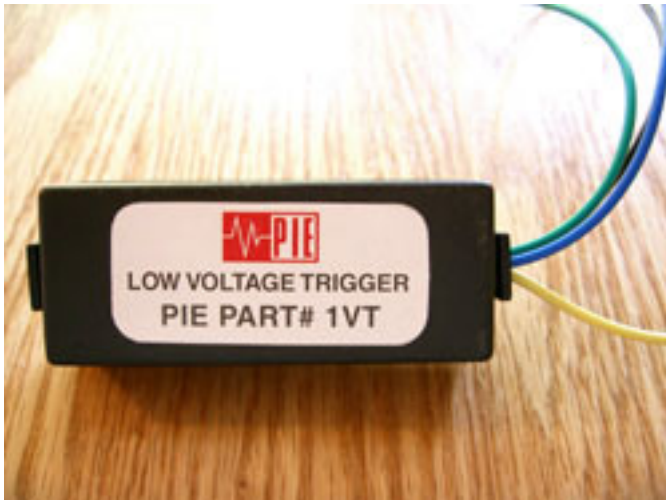
Turn your manual bird launcher into a remote-release launcher for a fraction of the price!

By: J. Steven Ayres

Special Thanks: Greg Jennings, PA_Sportsman, & dhondtm of <http://www.gundogforum.com>
Greg Jennings, jtm, volraider, laremac, & proline of <http://uplandbirddog.com>

Without the help of these individuals, I would have never been able to put together this tutorial. Original plans came from these folks.

For this project you will need the following components:



Low Voltage Trigger



Two-Way Radios with headphone jack



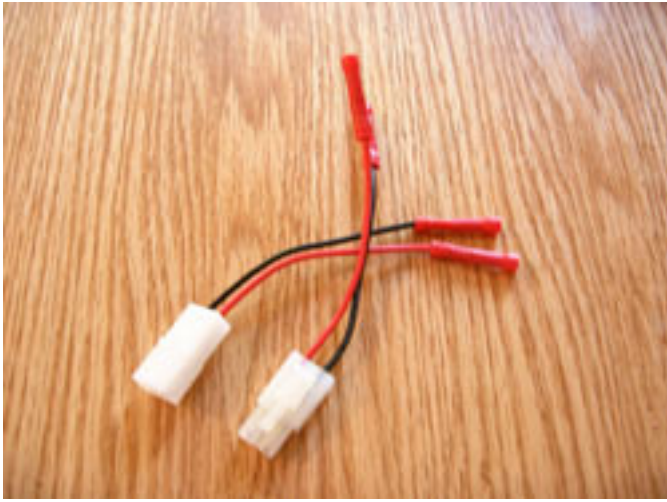
2-wire Actuator Arm



9.6v Rechargeable Battery Pack (and charger)



Motorola-style Plug or Adapter (if applicable) These are discontinued on clearance from RadioShack for \$.97



Battery Repair Kit (RadioShack)



Project Box 6"x4"x2" (RadioShack)

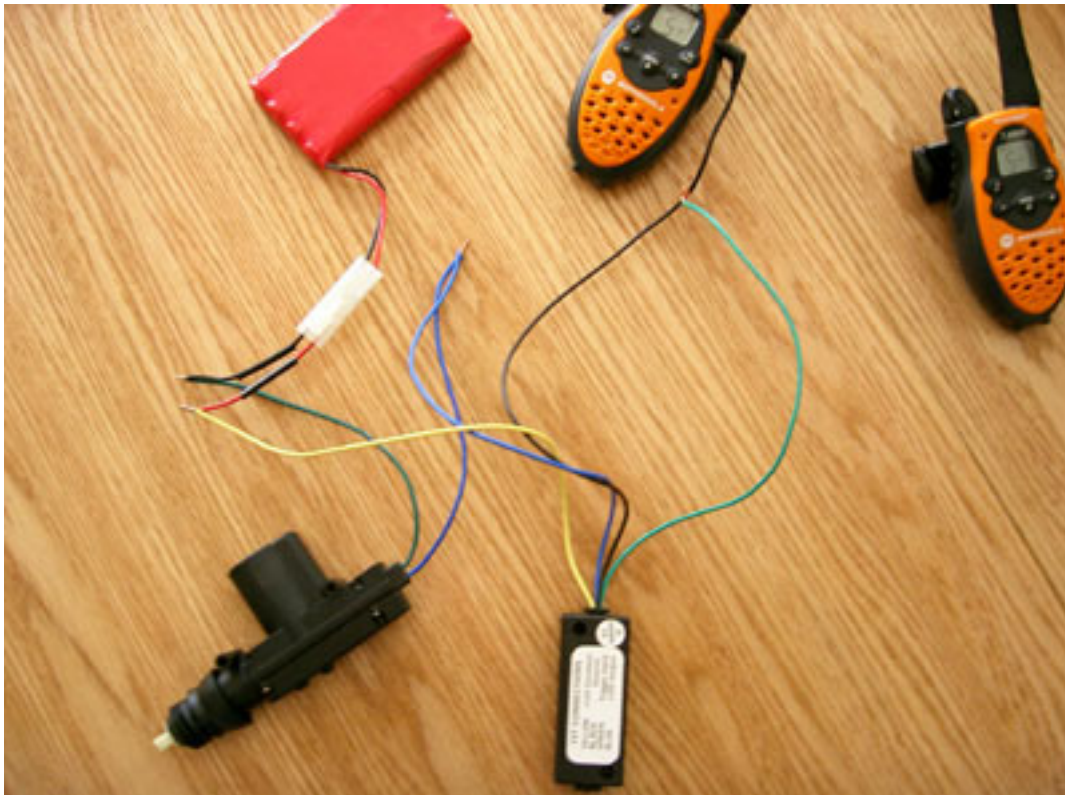


9vDC SPDT Relay



Appropriate Plug for your Radios.

Note: If your radios are the two-hole kind (one hole for earpiece, one for microphone), then you will need either a 1/8" or 3/32" mono plug (RS 274-286 or 274-290). If they are the type of radios that have one hole for both the mic and earphone, then you will need either a 1/8" or 3/32" stereo plug (RS 274-284 or 274-244).



1. First things first, connect everything together to make sure all your parts work. In the photo above, I did not have the 9vDC relay. Actually, the relay is not always necessarily needed. If you use a manual launcher that trips easily, you may not need it. If, however, you use a launcher that needs a little more force to trip (like myself), then you will need the 9vDC relay for the power boost.

Notice the way things are connected above. Starting with the battery: The battery is connected to the opposite battery repair kit piece. That piece is connected to both the trigger (red positive – yellow 12v constant) and the actuator arm (black negative – green wire).

From there, the actuator is connected to the trigger (blue wire – blue 12v output), and the trigger is connected to the two-way radio plug (green trigger input – audio out red) (black ground – copper ground).

This test is vital to know the polarity of your actuator. The way I have mine set up here, when the device is triggered the result is that the actuator arm will extend with force. To have your actuator pull from an extended position instead (depending on which way you will string your trip cord), just reverse the blue and green actuator wires.



This is a close-up picture of the way the plug is connected. Since I am using a pair of Motorola 2-way radios, I am able to utilize the cheaper adapter that was discontinued and is on clearance from RadioShack. I cut the adapter near the end and stripped back the shielding to reveal a red wire, a white wire and some copper shielding wire.

Through trial and error, I have found out that the red wire is the audio “hot” and the white wire is the microphone “hot.” To make the trigger work, you must connect the green trigger input wire to the red audio hot wire, and the black trigger ground wire to the copper shielding wire of the plug.

This can be tedious work since the wires within this plug adapter are very small. It is very important that the white microphone hot wire be peeled back so that it will not ever touch either of the other wires. If it does touch them the radio will attempt to enter VOX mode and the result will be something similar to pushing the PTT button on the *receiving* radio.

If using a solder-type plug for a different style radio, be sure to connect the black trigger wire to the outer shielding part of the plug and connect the green trigger wire to the audio-out part of the plug. I have heard that the audio out part of a stereo plug will be the back conductor on a 3/32” plug and will be the front conductor on a 1/8” plug. **ALWAYS TEST TO MAKE SURE IT WORKS BEFORE SOLDERING!**



2. This step is completely optional. What I did here was cut down the lifts on the inside of the project box and trim the metal plate that came with the box. The plate fits flush to the inside of the box and is an optional cover piece as compared to the plastic cover piece that goes over the edge of the box.

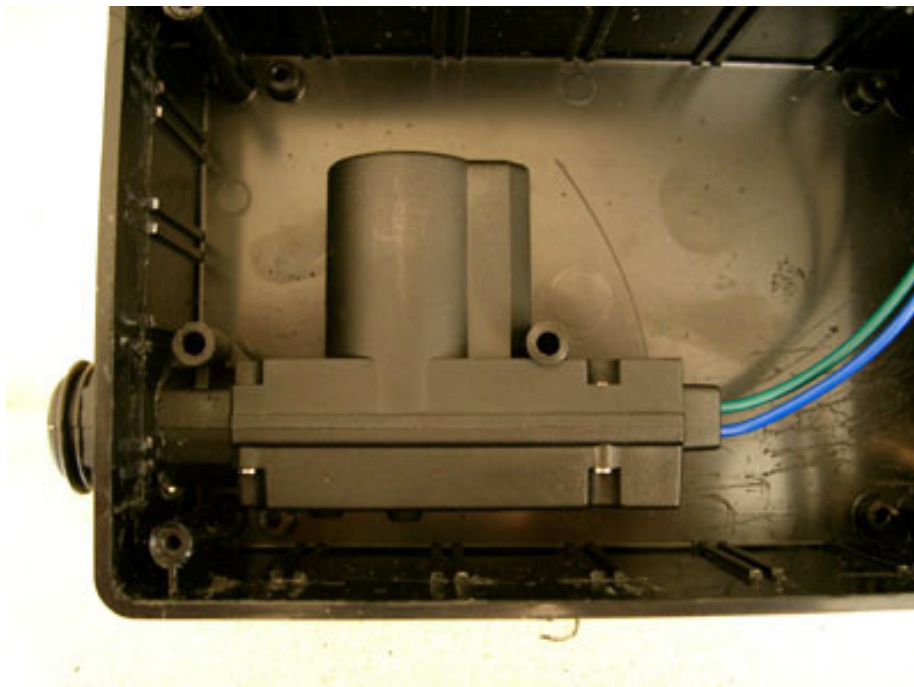
By doing this I have utilized the plate as a barrier between the inside electronics and the battery for easier battery removal when necessary, and for an extra dust and moisture barrier.

Since I didn't have a dremel tool to use for grinding, I had to use a sharp utility knife to make these cuts. This was a lot of work, though, and I probably wouldn't do it again. Ugh.



3. Drill a hole where you will place the actuator arm in the project box (out the left short side when the open side is up). The actuator arm takes a 1" hole. If you don't have a 1" drill bit, you can drill multiple holes with a smaller drill bit and then file out the circle like I did.

The rubber boot will easily pop off the actuator arm. Do this so that it is easier to push the arm through the hole, as seen in the next picture.



4. Seat the arm in the box so it protrudes as far as possible through the hole. Once in place, drill mounting holes through the back of the box and set in place with the screws that came with the actuator arm.

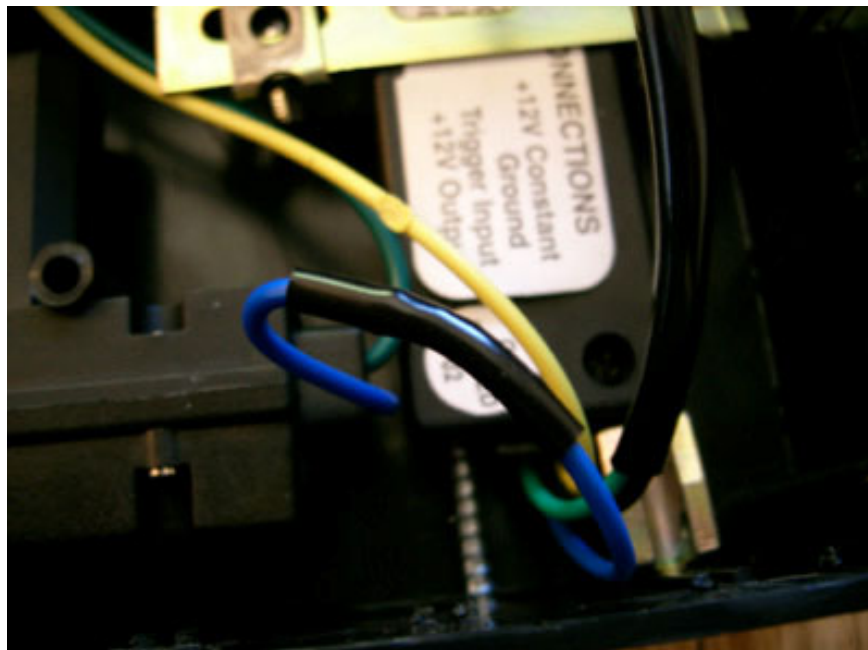


5. Seat the trigger inside the box next. You will have to drill a small hole in the top wall for the red led to set into as shown in the photo above. Clip off a section of the mounting bracket that came with the actuator arm and use the rest of the hardware as shown to firmly mount the trigger to the bottom of the box.

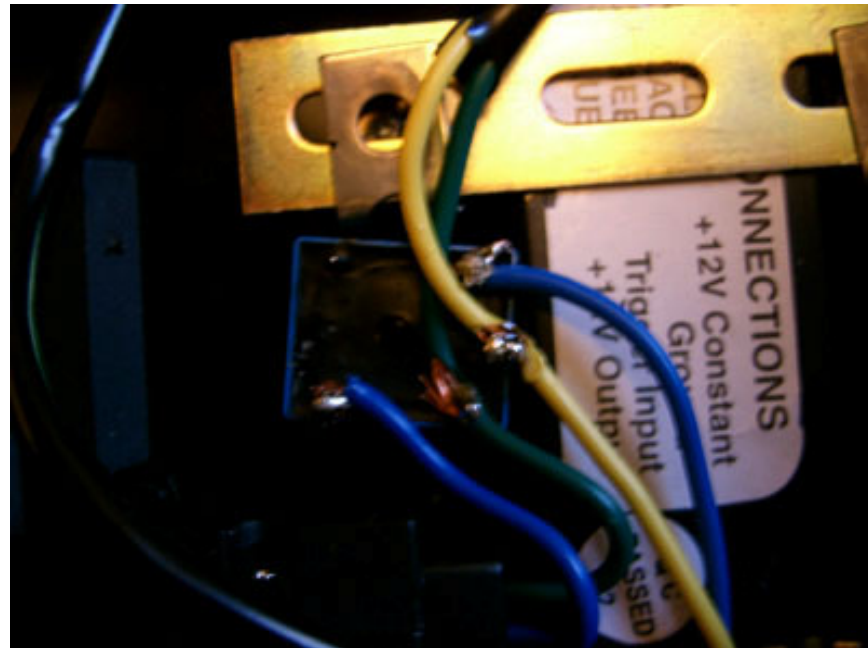
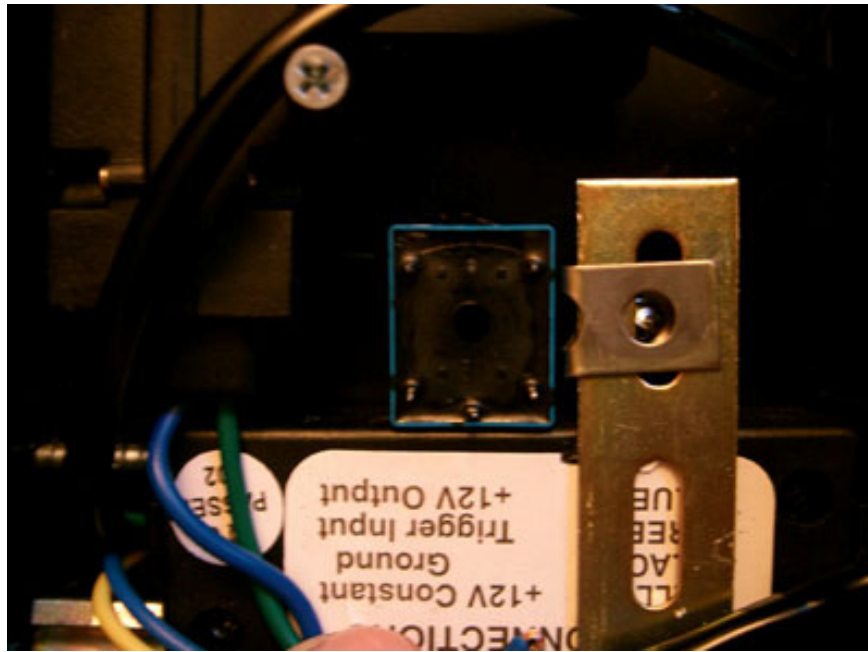


6. Once both the actuator and the trigger are mounted in the project box, the back side should look like the photo above (note the screws).

At this point, you can and probably should apply some silicone-based epoxy around the hole that the actuator comes through. This will create a seal that will help keep water and dirt out of the electronics. You can now replace the rubber boot on the actuator arm. It will go on easier if the arm is extended, as shown in the photo below.



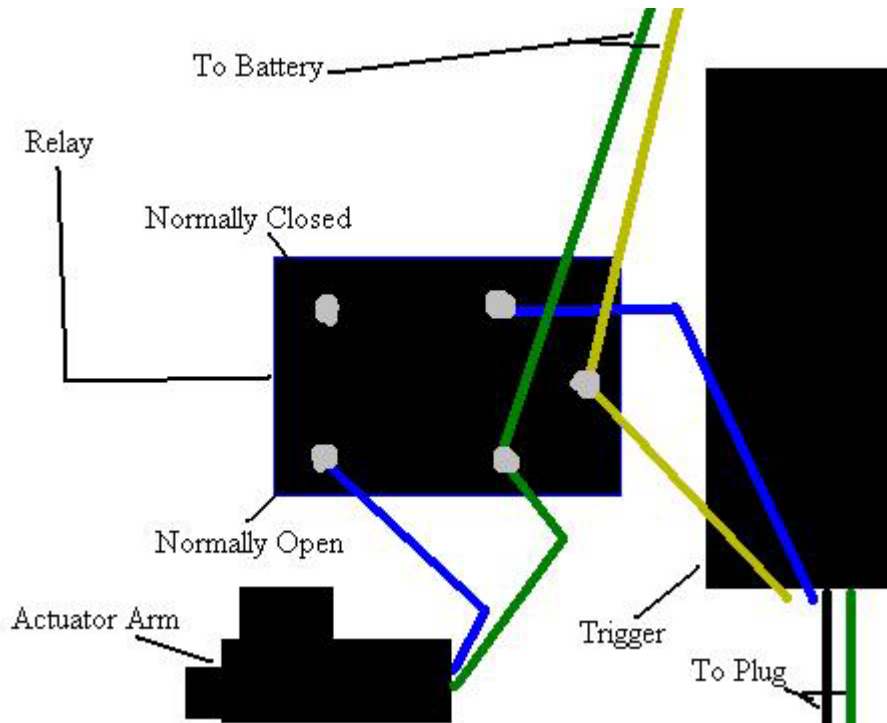
7. At this point, if you do not need the relay, you can connect the blue wires as done in the test. I soldered the wires together and then slipped a piece of heat-shrink tubing over the connection and applied heat from a hair dryer. Note that in the photo above I used a piece of the actuator mounting kit as a spacer for the trigger, to keep it pushed up against the top of the project box.



8. If you need the relay, seat it between the trigger and the actuator as shown. I secured mine by using some epoxy glue.

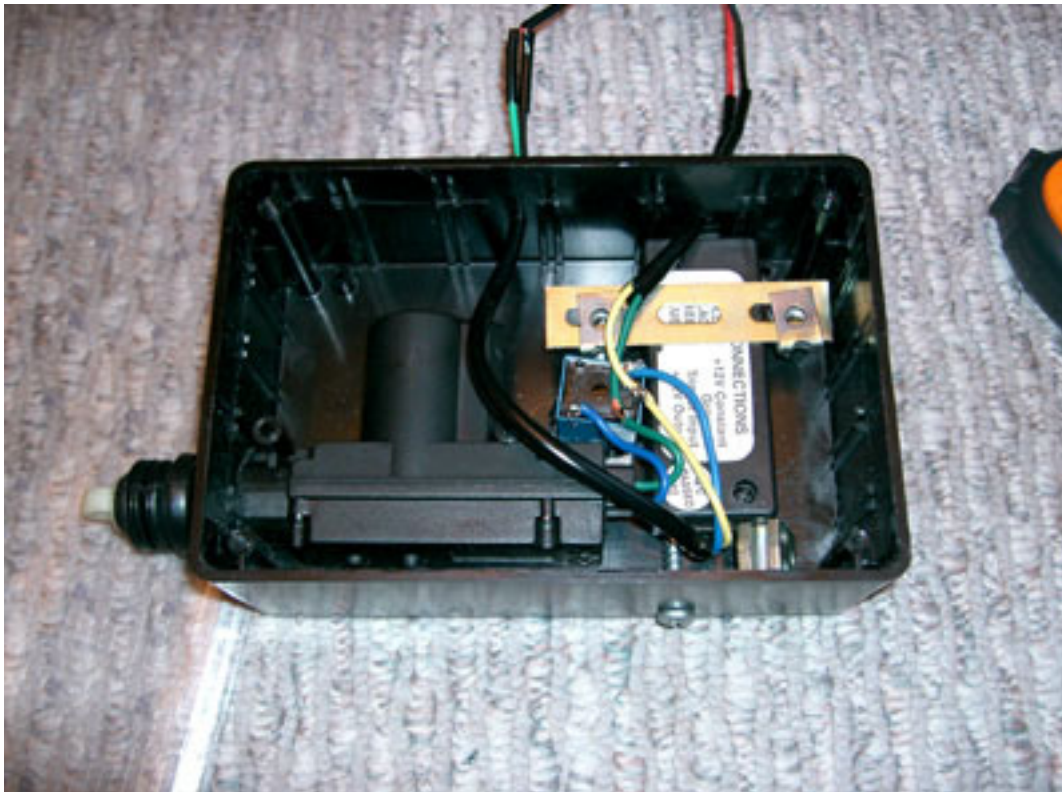
Connect the blue wires to the points as shown. The blue actuator wire should be soldered to the terminal labeled 'normally open' and the blue trigger wire should be soldered to the opposite corner.

Next, strip a section out of the yellow trigger and green actuator wires. The yellow wire, which should be connecting to the red battery wire, should be soldered to the only middle terminal on the relay. The green wire, which should be connecting to the black battery wire, should be soldered to the last open terminal that isn't the 'normally closed' (bottom right, as shown in the picture).



Here is a wiring diagram that clearly shows how the relay should be hooked up.

Here is a photo of the inner electronics of the box. Note that you should drill two more holes in the top of the box to thread through the battery and audio trigger wires. I used heat-shrink tubing to keep the wires together, and over all the soldered connections.

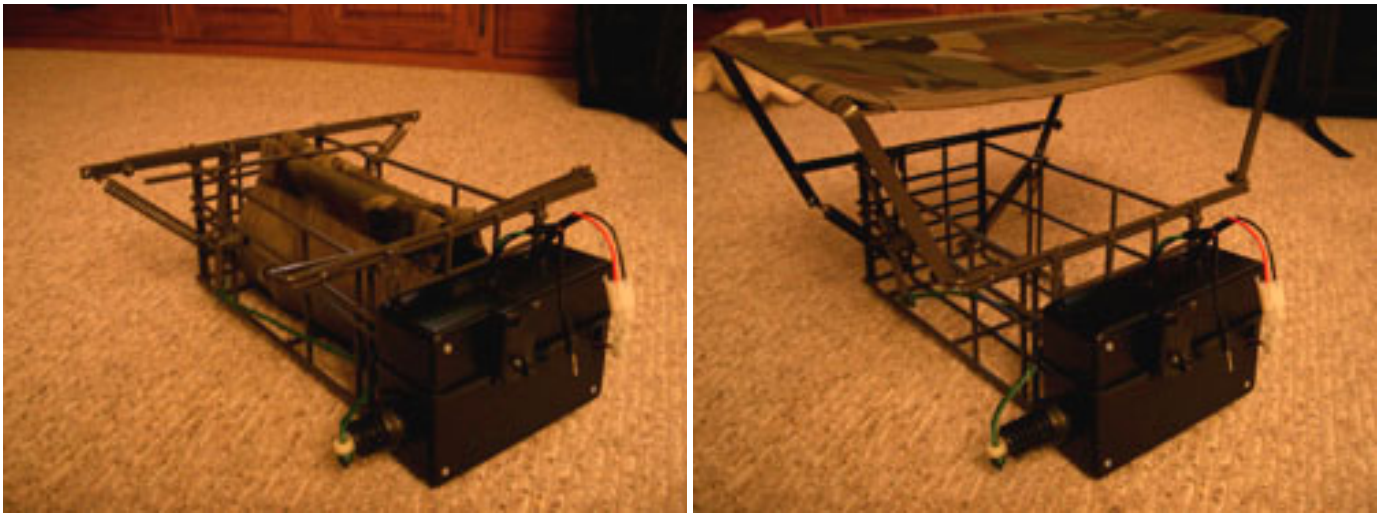




Here is a close-up photo of the wires coming out of the top of the box. The wires on the right connect to the battery and the wires on the left connect to the audio plug.

9. Next, seat the metal plate over the electronics. Place the battery pack in this chamber and thread the connection wires through a pre-punched hole in the lid of the project box. In the photo on the right, you can see that I put my belt-clip through the zip ties that I used to mount the box to the launcher. This works well, but velcro can also be used.





10. Once everything is connected you should be ready to launch. Fasten your electronics box to your bird launcher and tie the pull string to the actuator arm. If you wired the arm to extend upon trigger, you can simply thread the string through the wire cage and out to the end of the arm. Once the arm extends, it pulls the cord and launches the bird.

End Notes:

With this design you can charge the battery without ever opening the box again. It is also very secure from water, dirt and debris. I fastened the box to my launcher by using three medium sized zip-ties around the sides of the box.

I also used some black electrical tape around the exposed wires to keep the right ones together. This will reduce stress on the wires and decrease the possibility of them becoming disconnected.

It is always best to connect and turn on the receiving radio before you connect the battery pack to the electronics (via the repair kit cord). By doing this, you will avoid the risk of having a premature launch in your face by a radio that beeps when you turn it on or connect an earphone.

You can substitute a 9v battery in place of the 9.6v battery pack. You will not need the battery repair kit, but you will need a 9v battery clip. Doing such will require some appropriate modifications. I would also assume that this would necessitate the use of the relay in order to have enough power to forcibly move the actuator arm.

Parts List, detailed:

2-wire Actuator Arm

<http://www.partsexpress.com> \$3.50 each when ordering four or more, plus shipping
<http://www.ebay.com> can usually get smaller quantity cheaper, including shipping

PIE 1VT Low-voltage Trigger

<http://www.discountcarstereo.com> \$19 each, plus shipping

9vDC SPDT Relay

RadioShack 275-005 \$4.29 each

<http://www.allelectronics.com> CAT# RLY-264 \$1.25 each, plus shipping

9.6v Battery Pack

<http://www.batteryspace.com> pack: \$4.99 each, plus shipping

pack & charger: \$14.95 each, plus shipping

Project Box Enclosure, 6"x4"x2"

RadioShack 270-1806 \$4.99 each

Appropriate Plug

1/8" mono: RadioShack 274-286 or 274-287 \$2.99 per 2-pack

1/8" stereo: RadioShack 274-284 \$3.99 per 2-pack

3/32" mono: RadioShack 274-290 \$2.99 per 2-pack

3/32" stereo: RadioShack 274-244 \$2.99

Motorola style: RadioShack 21-1896 \$0.97 (discontinued and on clearance)

2-way Radios with Accessory Jack (weather resistant is a plus)

For example, Motorola T4900 – Best Buy \$24.99 per pair on sale

Necessary Tools:

Low-wattage soldering iron and thin solder

Good Phillips screwdriver

Drill and various bits for mounting holes, and a file to widen actuator hole if no 1" drill bit is present

Tin snips for cutting mounting bracket to secure trigger

Wire strippers and/or sharp utility knife

Silicone epoxy, such as Plumber's Goop glue

Heat shrink tubing if desired

Black electrical tape

Zip-ties for mounting the box and velcro, if desired, for mounting the radio to the box