

How-to Modify a Game Buzzer as an Adaptive Controller

MATERIALS

- Game Buzzer (or google search “Answer Buzzer”)
- 1/8” Auxiliary Audio Cable, 6FT

TOOLS

- Soldering Kit
- Multimeter
- Wire Cutters / Wire Strippers
- Mini Screwdriver Set
- Razor Blade (helps)
- Diagonal Cutters
- Small round file (optional)

This modification takes a “game buzzer” and adds an auxiliary cable to it for the purpose of using it as an adaptive controller for a switch adapted toy or other accessibility device (Xbox, etc.)

Difficulty level: moderate, with a working knowledge of soldering.

SPECIFICATIONS:

- Cost Approx: \$5
- Actuation Force: 18.8oz; 1.175lb
- Diameter: 70mm



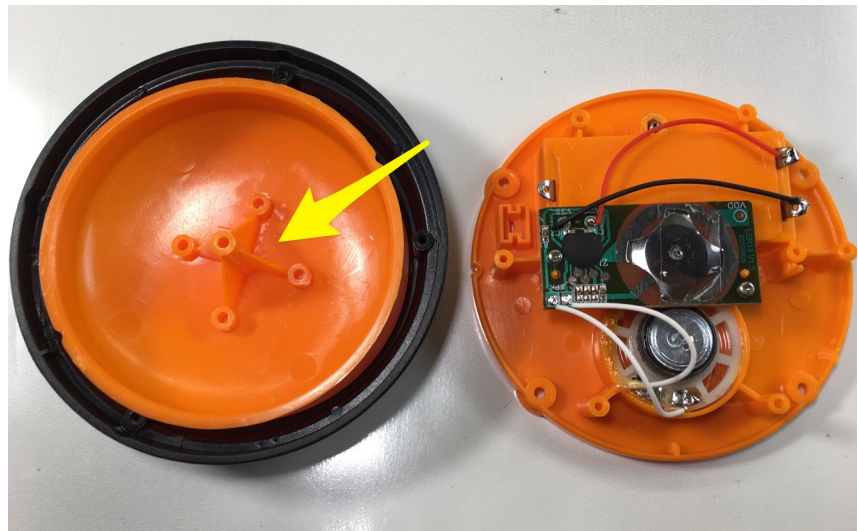


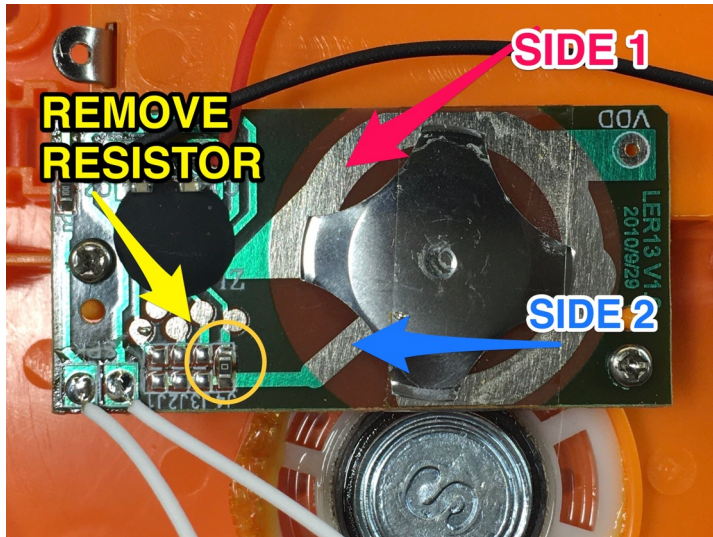
Begin by removing the rubber pads. QTY: 4



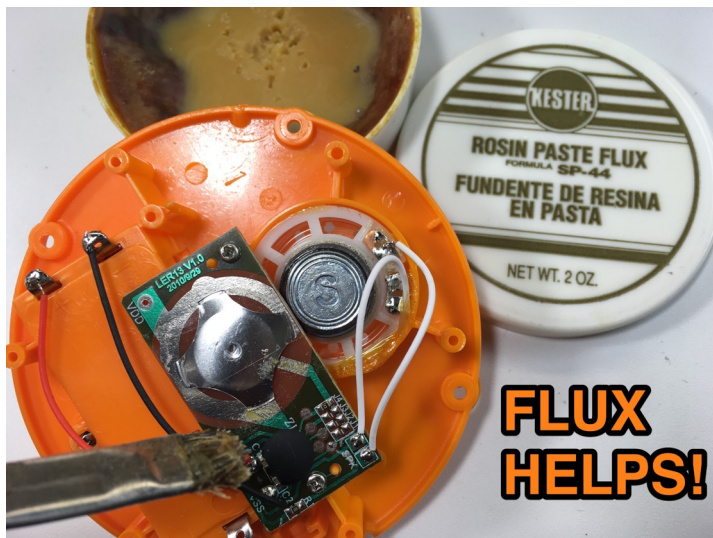
Followed by the screws. QTY: 4

This looks like a possible weak point, if you ever begin to see failures here consider using a plastic putty epoxy in this area to reinforce the structure.



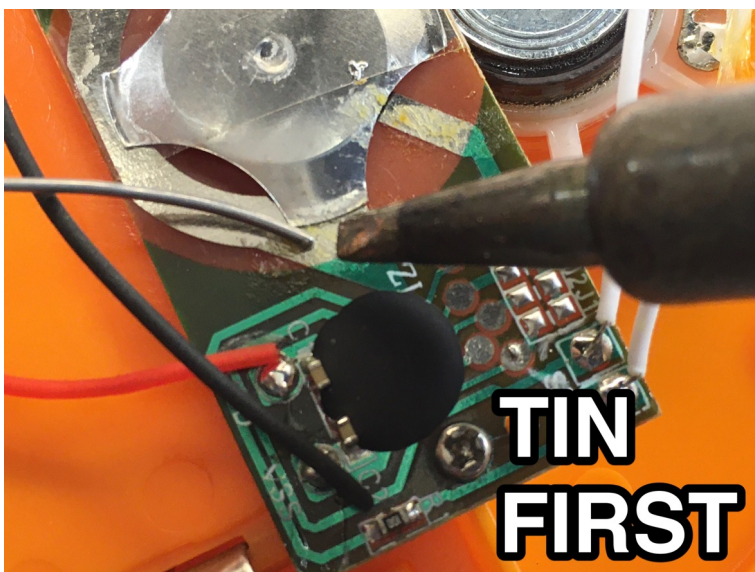


- 1) This particular game buzzer has a working circuit in it, that we won't be using so it needs to be isolated from our push button. Otherwise, devices that connect to it may not always work. Instead of cutting the traces going to the button, removal of the small resistor was enough to isolate the switch. Remove the resistor labeled "0".
- 2) Notice the 2 sides of the switch, where you will be soldering.



The acid in the flux makes for a much easier time when it comes to soldering.

Care must be taken with the thin piece of tape covering the push button switch. If it's covering one of the traces, cut the piece of tape off it with your razor blade.



Work the solder in until it catches nicely on the circuit trace.



**CLEAN OFF
THE FLUX
92% ALCOHOL**

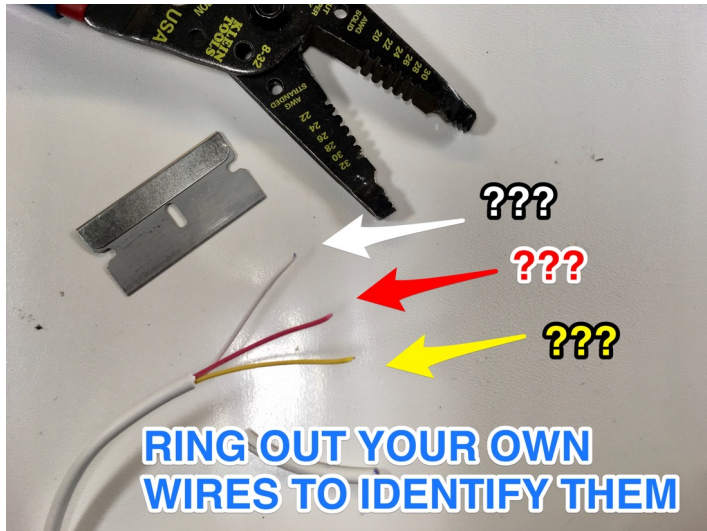
Prepare your 6 foot wire by cutting it in half.

Note: 3 foot wire show but



A combination of 92% rubbing alcohol, a stiff brush, followed by an absorbent cotton swab cleans things up nicely. Now that it's tinned, let's prepare the cable.



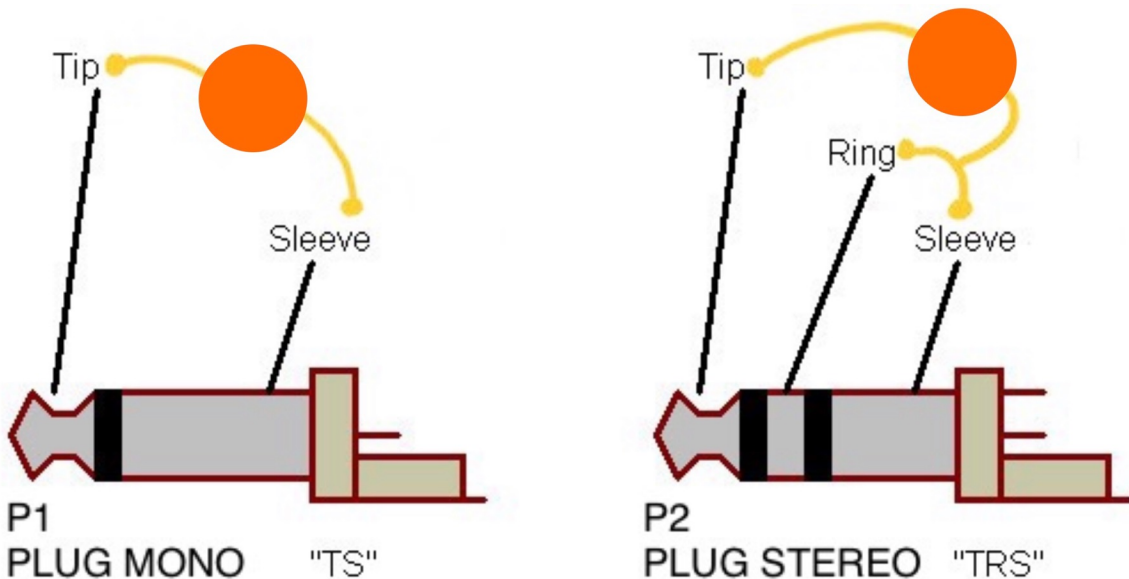


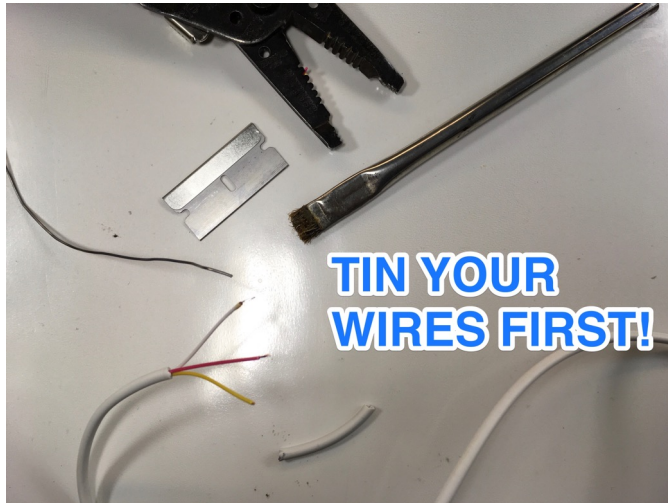
Strip the outer sleeve approximately 1.5". This will give you enough slack to wrap the wire wherever you need to when it's time to close everything back up.

Strip the individual wires. If your auxiliary cable has enameled wire, you can sand off the enamel with sand paper or burn off the enamel with a match/ lighter.

Identify each wire. The *TIP*, *RING* and *SLEEVE* respectively. Set your multimeter to the ohm setting with the buzzer on. Your reading should be less than 5 ohms.

See the diagram below for reference.





Tinning your wires will go a long way when you're ready to solder.

Flux. Solder. Alcohol. Clean.

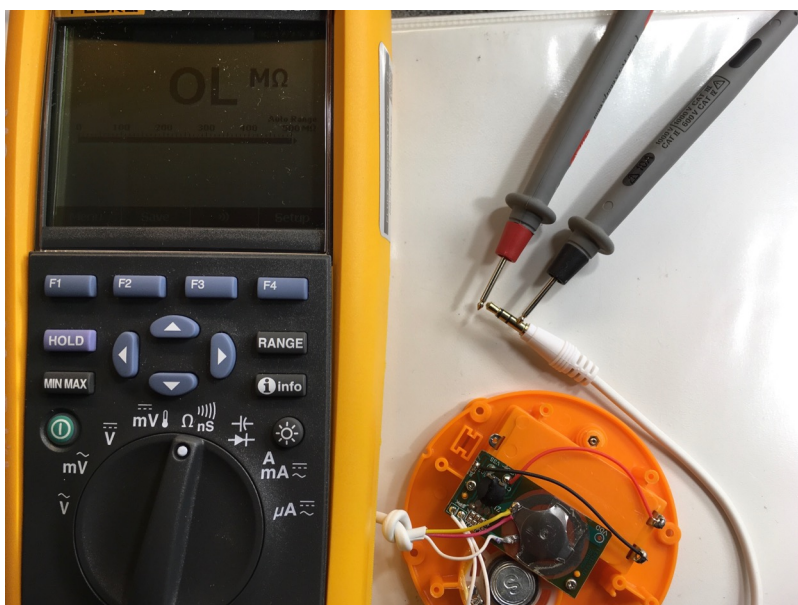
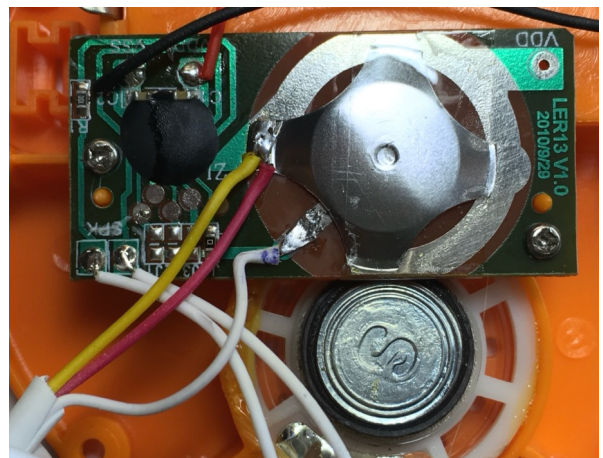
The soldering connection will be as follows:

- RING/SLEEVE on Side 1 of the switch.
- TIP on Side 2 of the switch.

This is ideal because of the space allowance on the traces but if you got these connections backwards, it's ok as either way will work.

Your wires should be routed out of the way, off of the top of the button. The wires should not interfere with the push buttons' operation. The wires should be long enough to clear the circuit board and eventually tuck underneath it when you close everything back up.

Solder the wires in the direction shown and place the wire in the location shown.



Ring out your work to check that your switch is closing correctly, do this by pressing on the push button while checking with your multimeter for a good connection. You should be seeing less than 5 ohms.



Using a pair of diagonal cutters trim a hole on the side of the base (shown here in orange). You can use the razor blade as a scribe to mark where you will cut out the hole.

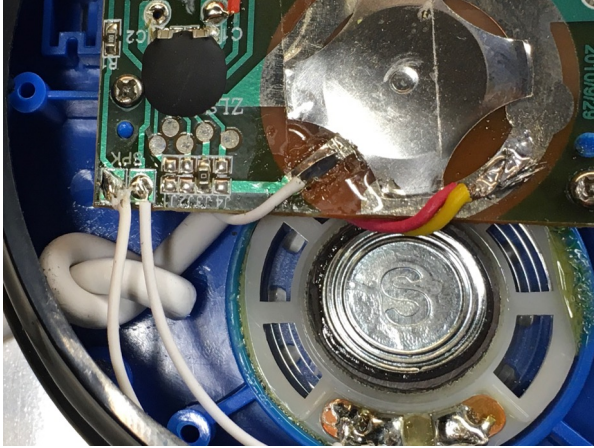
Note: that the base is directional and will screw back on only one way, so the wires must be routed accordingly. Double check proper fit by making sure the screw holes in the cover will fit to the housing before you cut out the hole for the cable.

Cut out the second hole in the middle plastic trim piece (shown here in black).

Note: As you cut the case and fit the cable you can remove the button cover so you can see where the cable will be routed.



You can clean up the rough edges with a thin round file.



Tie a knot in your cable so that it will not be pulled out. Route your wires carefully and out of the way. When you test the button, make sure it feels the same as when you started. Also try spinning the cover around until it “sits” in place.



Check everything one last time before you close it up. Way to go!