

HuskyADAPT

Toy Adaptation Guide

Required Materials: links to possible places to purchase items are provided, however, feel free to use what you already have or purchase materials somewhere else if it is more convenient

- **Glasses/Safety Glasses (for soldering):**
 - <https://tinyurl.com/yc62oq6k>
- **Screwdrivers:**
 - Flathead
 - Philips head – multiple sizes
 - Screwdriver Sets
 - <https://tinyurl.com/ycp72xa8>
- **Soldering Iron:**
 - Lower end/less expensive
 - <https://tinyurl.com/ycku2gr>
 - Higher end/more expensive
 - <https://tinyurl.com/vwhxs4e>
- **Ventilation System:**
 - Working near a window works as adequate ventilation
 - Fume extractor
 - Article listing 5 highly rated fume extractors:
<https://10bestranked.com/solder-fume-extractors/>
- **Sponge or brass wool ball** to clean iron tip (may come with soldering iron/stand). Any wet kitchen sponge or tissue can act as a substitute for sponge and brass wool
 - High Temperature Sponge
 - <https://tinyurl.com/ybaw7tcr>
 - Brass Wool
 - <https://tinyurl.com/y7kkg3s2>
- **Solder Stand** (iron may already include this item)
 - <https://tinyurl.com/yc2thjhx>
 - <https://tinyurl.com/yabb9stu>
- **Lead Free Solder** – May come with iron
 - <https://tinyurl.com/5n8t32r3>
- **Scissors**
- **Wire Strippers**
 - Wires can be stripped with a knife/scissors, but it will be more difficult
 - <https://tinyurl.com/yao4cqkx>
- **Files/Drill**

HuskyADAPT

Toy Adaptation Guide

- Files can be used to facilitate making the hole that the mounted audio jack goes into as well as smoothing down rough edges that may be created from taking the toy apart
 - <https://tinyurl.com/yb9o43fu>
- A drill can be used in place of a hand file: <https://tinyurl.com/4r5h4fe5>
- **Switch/Test Button**
 - In order to test and use your toy, you'll need a switch. There are many different kinds of switches, and you will want to get one that works with the user's abilities
 - If you need help determining which switch is best, feel free to reach out to us or we recommend consulting an occupational therapist/assistive technologist
 - Accessible switches can be very expensive. If you don't have access to a switch, sometimes headphones that have a pause button can work as a substitute to test the toy
 - Example button switches
 - <https://tinyurl.com/y97wxgn9>
 - <https://tinyurl.com/y887hpn8>
 - <https://tinyurl.com/yavgwcv5>
- **Wire** - for connecting the audio jack to the toy
 - <https://tinyurl.com/y8dx8ec9>
- **Audio Jack** – How the button will connect to the toy
 - Mounted jack - <https://tinyurl.com/yahogqq9>
 - Standard jack - <https://tinyurl.com/2j5v2efm>

How to Adapt Toys

1. Toy Assessment

Carefully remove the toy from its packaging, making sure to maintain the packaging if you plan to repackage and donate the toy after adaptation. Examine how the toy is activated (a button, remote, etc) and what the activation does (sounds, light, motion).

2. Toy Disassembly

Take the necessary section of the toy apart to find the circuitry controlling the function. This typically involves unscrewing a section of the toy near where the batteries are located until the circuit board is accessible. Do this carefully and keep track of all parts as you will need to put it back together.

3. Circuit Assessment

HuskyADAPT

Toy Adaptation Guide

Examine the circuit to identify the batteries, lights, motors, and other components. Using a test wire (a small piece of single stranded wire with both ends stripped), test combinations of two points by touching the ends of the wire to different metal points on the circuit board. This requires trial and error and there may be multiple combinations of points that will activate the toy.

4. Wire Preparation

Using 8-10 inches of the 24 AWG double stranded wire, separate one inch on each end of the wire and strip approximately $\frac{1}{4}$ inch of insulation off each wire on both ends.

5. Exit Plan

Make a game plan for where the mounted jack will sit on the toy after it is soldered. This means identifying a good location where the jack can sit without interfering with the circuit board or reassembly of the toy. Using the drill and/or file, drill a hold in the toy just large enough to fit the mounted jack.

6. Wire Soldering

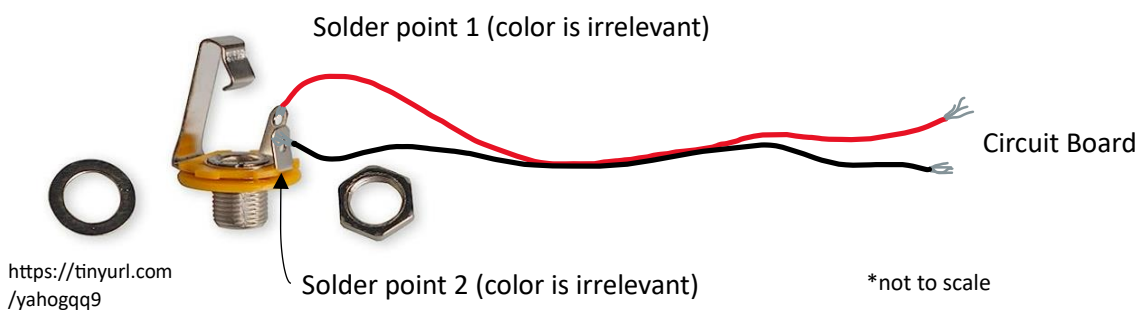
Using one end of the double stranded wire, solder the two wired ends to the two identified points on the circuit board that activated the toy (the colors of the wire are irrelevant when soldering the two points). Touch the two wires on the opposite end together to test whether the soldered connections are working correctly. The toy should activate. If possible, circle or tie the wire around a sturdy component within the toy so that when the wire is moved/pulled, the soldering connection is not under unnecessary strain.

7. Female Jack Soldering

Using the other end of the double stranded wire, solder each wire end to the metal prongs on the audio jack.

Note: the soldering points for different jacks may vary. Generally, one wire should be soldered to ground and another to L or R, so if unsure of which points to solder, look up your specific jack to find these points. If using one of the jacks linked above, see below for specific instructions.

Mounted jack: a mounted jack is an audio jack that sits directly on the toy so when plugging in the switch, the plug goes directly into the toy. With a mounted jack, all the soldered wire is contained inside the toy and not visible to the user.



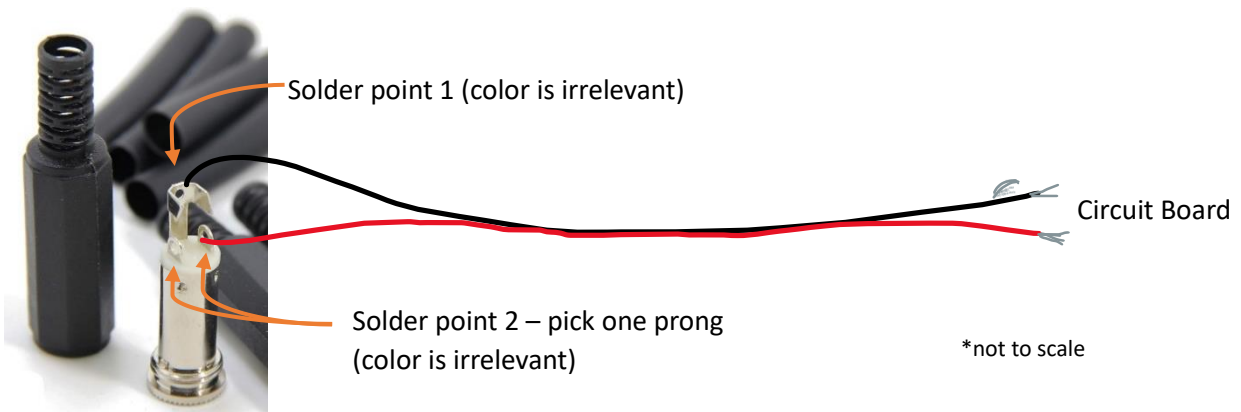
HuskyADAPT

Toy Adaptation Guide

Once soldered, thread the jack through the previously drilled/filed hole so that the screw faces outwards and use the washer and hex nut to secure the jack to the toy from the outside.

Standard jack: An adapted toy with a standard jack has part of the double stranded wire threaded out through the toy with the jack at the end of the wire so it is not directly mounted on the toy.

- Once one end of the wire is soldered to the circuit board, thread the other end through the previously drilled/filed hole
- **Thread the black cover piece (pictured below) onto the wire such that the thinner ridged portion is closest to the toy. This is a vital step to do before soldering the rest of the jack**



<https://tinyurl.com/mr45zkwu>

- Once soldered, gently pull the black cover piece up to the metal soldered bit. It should cover all of the soldered points and gently screw into the top. This may take some fidgeting to get the black piece to cover the wire but be gentle as to not dislodge the solder.

8. Toy Reassembly

Close the toy as carefully as possible. After reassembling, test the toy with an alternative activation switch

HuskyADAPT

Toy Adaptation Guide



Toy with a mounted jack



Toy with a standard jack