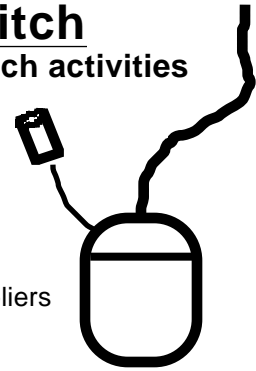


Adapting a Mouse for a Single Switch

Inexpensive switch interface for motor training games/switch activities that run on a mouse click!!!
(Gretchen Hanser MS, OTR/L, 2000)



Materials:

- sacrificial MacIntosh or PC Mouse
- 24 gauge stranded speaker wire
- thin solder
- 1/8" Inline Jack (Radio Shack #274-333)

Equipment:

- soldering iron
- wire stripper
- needle nose pliers
- nippers
- x-acto knife
- small phillips head screwdriver
- Optional: Dremmel Tool/Drill

Preparation of Wire and Plug:

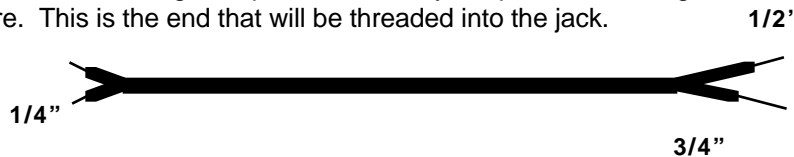
1. **Cut 8 inches of wire.**
2. **Separate the wires** on both ends. Use an X-acto knife or strippers to separate them. On one end, separate the wires, so the "legs" are 1" long. On the other end, separate them, so the "legs" are 2" long.



3. **Strip the plastic coating** off the ends. On the end with 1" legs, strip off 1/4" of coating. This end will be attached to the circuit board on the mouse.



On the other end with 2" legs, strip them unevenly, strip 1/2" of coating off of one wire and 3/4" off the other wire. This is the end that will be threaded into the jack.



4. **Unscrew the the cap on the jack. Thread the jack.** The secret to a good circuit interrupter is in this part. Don't let bare wires touch inside of the jack; if this happens your circuit interrupter won't work. You may have to do some more stripping. Notice that the holes inside the jack are at different heights; use the end of the wire that has been unevenly stripped to accomodate for the height of these holes.

Thread the short terminal first with the wire that has 1/2" of coating stripped off (the one that has less bare wire showing). Always thread from inside to outside. Pull wire all the way through until the rubber coating is touching the terminal. Bend excess wire to the side to keep it from coming back out of the hole.

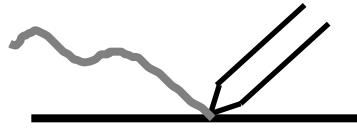


Thread the longer terminal second. Always thread inside to outside. Pull the wire through the hole until the rubber coating is touching the terminal; fold excess wire to the side.



5. You are ready to **solder!** **Solder the jack first.**

- Use the tip of your soldering iron to **preheat the connection** for a few seconds. This will permit the solder to flow quickly and evenly around the connection.
- After preheating, touch solder to the tip of the iron and to the area where you want the solder to go.



- You want the solder to pool, flatten out and look shiny. If you end up with a large, dull, gray ball of solder, the area you were soldering did not get hot enough.

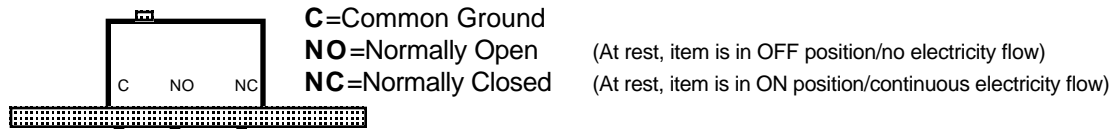
6. After soldering, **use needle nose pliers to fold down the metal prongs** on the long terminal. Fold the prongs onto the **1 piece** of wire that passes through the hole in the long terminal. Use the nippers to **snip off excess wire**.



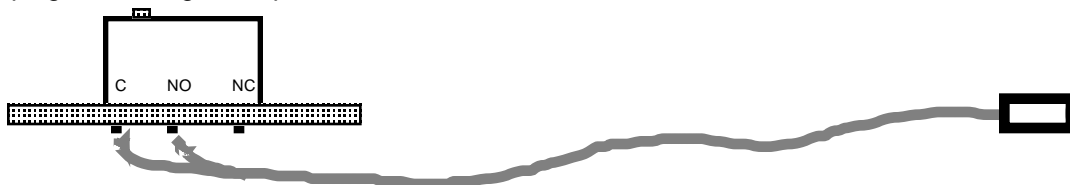
7. **Screw cap onto jack.**

8. **Open up the mouse to get to the circuit board.** Turn the mouse over and look for small screws. Often, there are 1-3 screws which are covered up by small labels or stickers. Locate the screws and remove them. Before taking the whole thing apart, turn the mouse right side up, and then lift off lid.

- Carefully look at how everything is positioned, especially how and where wires run.
- Notice where the microswitch is that “clicks” when you push down on the mouse button.
- Carefully lift the circuit board out of the mouse; some mice will have it screwed down.
- As you are lifting board out, notice how it fits around the ball and tracking system underneath it.
- Examine the microswitch on the circuit board closely. On PC mice, you will be working on the left click switch. Notice that there are 3 very small sets of letters that correspond to the terminals that stick out on the underside of the circuit board.



9. **Solder your wires onto the C and NO terminals** on the underside of the circuit board. Tin the short ends of the exposed wire by using the soldering iron to apply solder onto the wire. Position and secure the circuit board down to the working surface so that it is still; you can use tape or helping hands/alligator clips.



- When handling the circuit board, be careful to not scratch the surface of it.
- When soldering, be careful to not put too much solder on that connects your wire with another circuit/line.
- Apply a small amount of solder onto the soldering iron. Hold the wire onto the area you wish to connect it to; hold soldering iron on the area to melt the solder.

10. **Temporarily re-assemble circuit board in mouse and look for an exit site for the wire.** Use nippers or a notching file to **make an exit site**. Look carefully on the inside of the mouse lid to see where projections are to help it snap into place; be careful not to notch those. You want to make sure that when you put the circuit board back into place, it doesn't sit too high up because of where you have soldered. This will cause the lid to hold the click button down in the ON position. You can use a Dremmel tool, drill or soldering iron to sand out or melt plastic to make room for what you have soldered and/or the exiting wire.

11. **Re-assemble** and test!! Mouse should still function as a regular mouse even without a switch plugged in.