

 **adafruit learning system**

Zipper Switch

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Last updated on 2018-08-22 03:45:02 PM UTC

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Overview

Here's a fun way to make your clothes more interactive-- you can turn a zipper into a switch for activating lights, sounds, and more using stainless steel conductive thread.



The switch works like a momentary pushbutton. As the zipper pull travels along the teeth, two pads of conductive thread are bridged, momentarily creating an electrical connection.

This connection can be sensed by a microcontroller like FLORA or GEMMA with an activated internal pullup resistor, or be used in place of a push button in circuits like the TV-B-Gone or audio FX boards.

The zipper switch is not delivering current, and should not be used to drive LEDs-- it's a very weak connection that is only made momentarily and not suitable for more than a few milliamps of current.



Find a metal zipper pull, not plastic. If it's painted, use some sandpaper to sand it off.



The teeth of the zipper can be plastic or nylon, so long as the zipper pull is metal!

Stitch long strands



Use straight stitches to bring two long pieces of conductive thread to the edge of the zipper.



You can put 2-ply thread in the bobbin of your sewing machine, then pick up long tails with a needle and hand-stitch the rest.

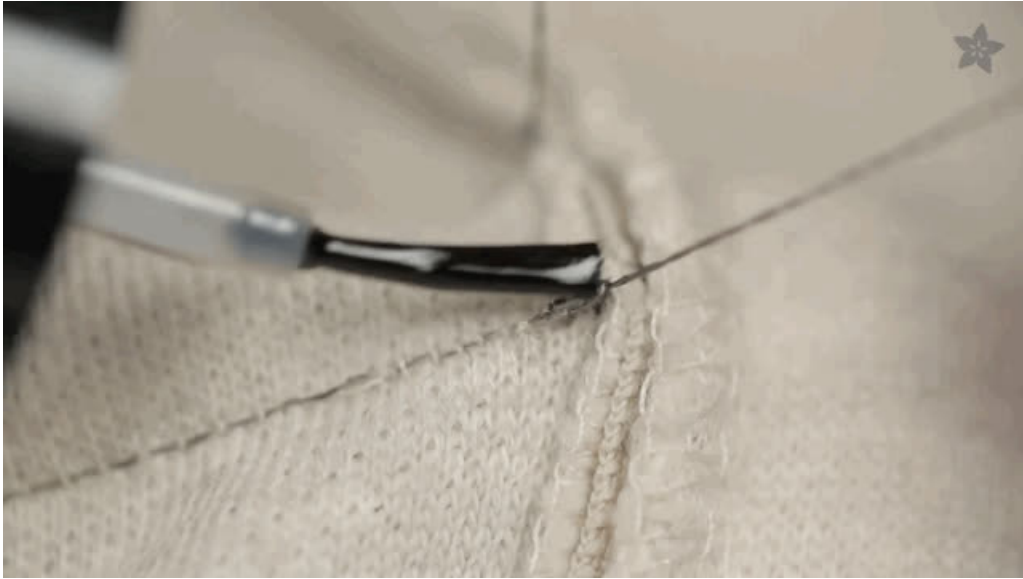
Stitch pads near zipper



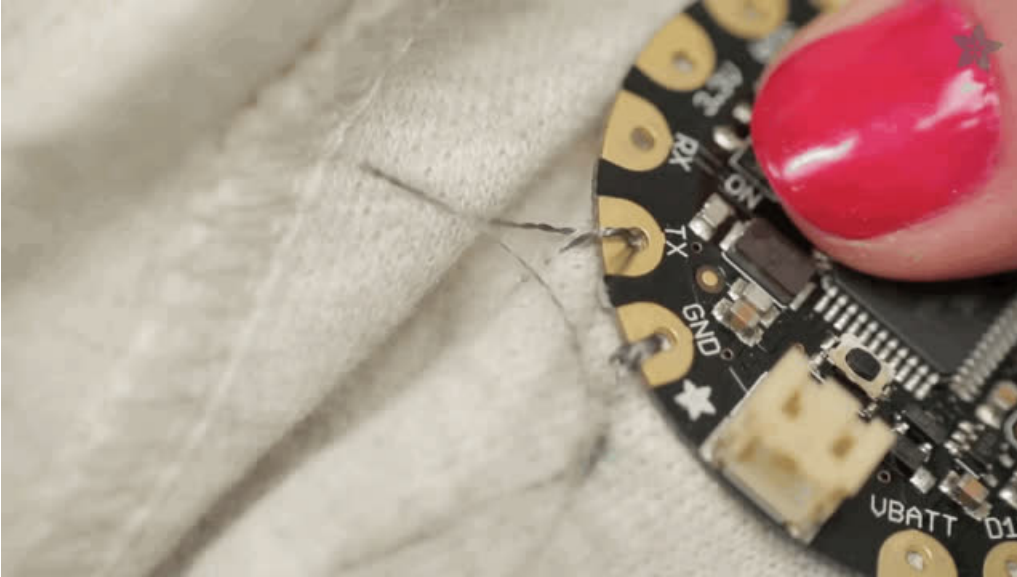
Build up stitches to make two small pads of thread. They should be close enough together that when the pull goes by, it briefly touches both pads at once.



You want the knots away from the zipper, so stitch a bit back and tie off, then seal with a dab of clear nail polish. Let it dry before cutting the thread short.



Attach to circuit



At the other ends of the thread, stitch one to ground and the other to a digital input on your FLORA or GEMMA microcontroller.



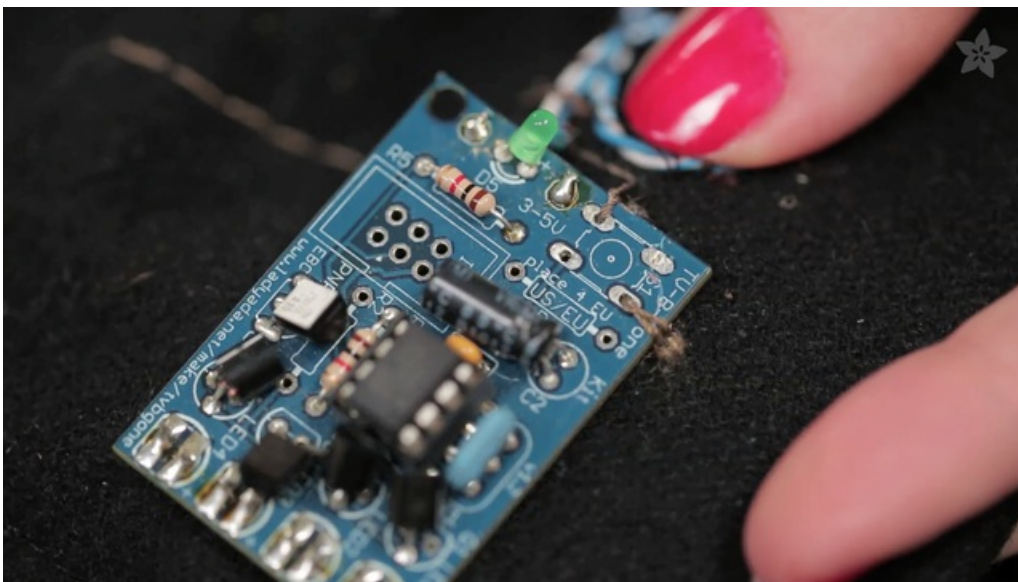
Don't forget to activate the internal pull up resistor when you set up your Arduino sketch.

```
void setup(){  
  pinMode(1, INPUT_PULLUP);  
}
```

Use it!



It acts like a momentary switch. You can use a zipper switch in place of a pushbutton, like in this TV-B-Gone jacket.



I stitched this a few years ago with silver conductive thread, and it's tarnished. That's why we carry only stainless steel thread! It's a little more expensive but will last a lot longer.