



## Materials:

You're going to need magnets. I've had nice luck with  $\frac{1}{8}$ " round by  $\frac{1}{8}$ " deep neodymium magnets (poles perpendicular to the circular faces). Source either the number of strings on your instrument or twice that (see below).

Next up, inductors. Match the number of strings on your instrument. I use Digkey #495-5616-1-ND inductors. These are 100 mH. Possibly any similar inductor would do fine. I've tried different coils and these ones seem to be the best. They may have ferric material at the core that helps things along. I think they sound nice.

For my first pickups, I simply drilled  $\frac{1}{8}$ " holes into a piece of scrap to make the pickup.

If you'd like to laser cut a humbucker-sized piece of acrylic for mounting, download my svg file, on [sympathykeyroom.com](http://sympathykeyroom.com)

~~The spacing is untested. My personal guitars only use 4 strings.~~  
**I'm uploading a new svg file with more pronounced neck/bridge spacing. These have been tested and align really nicely to the strings.**

## Assembly:

Decide whether you want one or two magnets per coil. I'm happy with the output I get with two per coil. ~~It seems like better practice to use one per. The separation should be better with one per. In theory, signal to noise would be better with two per, but you're more likely to overdrive the phono preamp. Who knows. Good luck.~~

Update: I've tested - 2 magnets per is the way to go

Please get all of the magnets into your mounting with the magnetic poles facing the same direction on each. This should help you reduce hum.

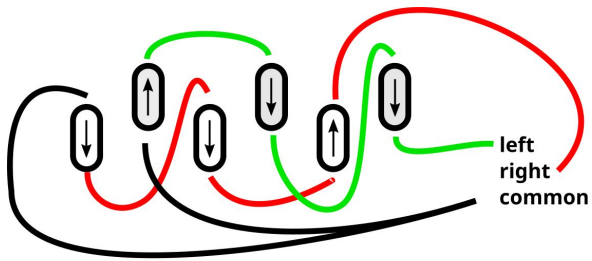
(getting the magnets in place can be frustrating)

**No! No! No!**

**Each set of magnets must be the opposite polarity.**

**Otherwise, you won't get good signal separation. So magnets under the even strings north polarity, magnets under odd strings south polarity.**

Glue everything together. Cover the wet epoxy with turmeric for color.



Pictured is my hunch for the best wiring for a six string. The coils in each series don't have to be in phase. Ideally, they are only picking up the string they are directly under, so there's no risk of phase cancellation with a string that's an entire two strings away. If all three were in phase, you would have 300% of the hum of a single coil. Putting one out of phase knocks it down to 200% in phase and 100% out of phase, resulting finally in 100% noise from a series of three. Possibly, you could hide a 4th dummy coil without a magnet to each set of three. Wire the dummy coil in the opposite direction and in theory this would phase cancel more noise.

Don't forget to connect the ground to someplace on your bridge/existing wiring.

Good luck mounting it. You'll want to get the inductors themselves fairly close to the strings for good separation.

**Schematic:**

I use a stereo 1/4" cable to go from the guitar to a passive adapter box that allows me to interface with a phono preamp and also pad the preamp level back down to guitar levels.

Note that this works if you send both signals to the same amp. Either use 2 channels on the same amp, or mix the signals before sending to a single channel. You could wind up with ground loops if you use two amps.

phono preamp

pickup:

