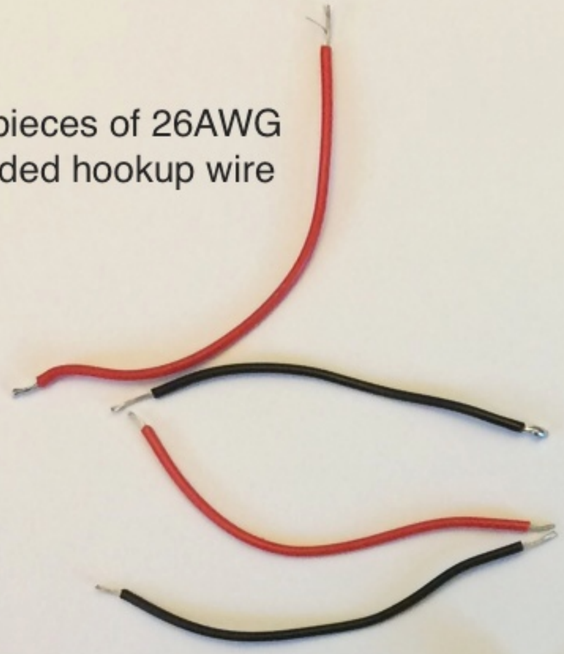
Parts Needed

4 2” pieces of 26AWG
stranded hookup wire



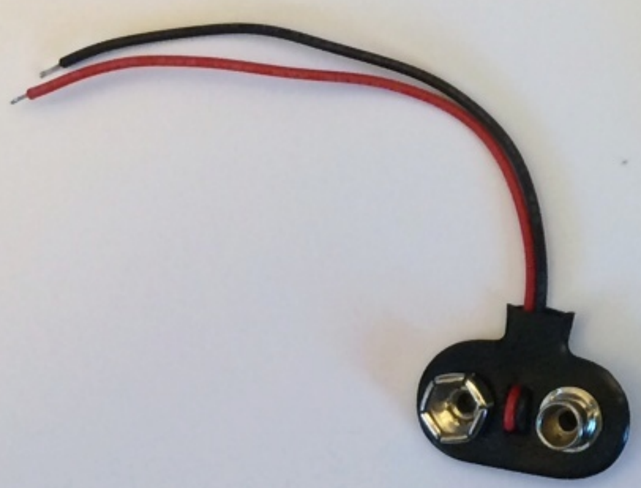
Panasonic mic capsul
Digikey part number:
668-1391-ND

Electrical
Tape

10K Resistor

3.3uf Capacitor

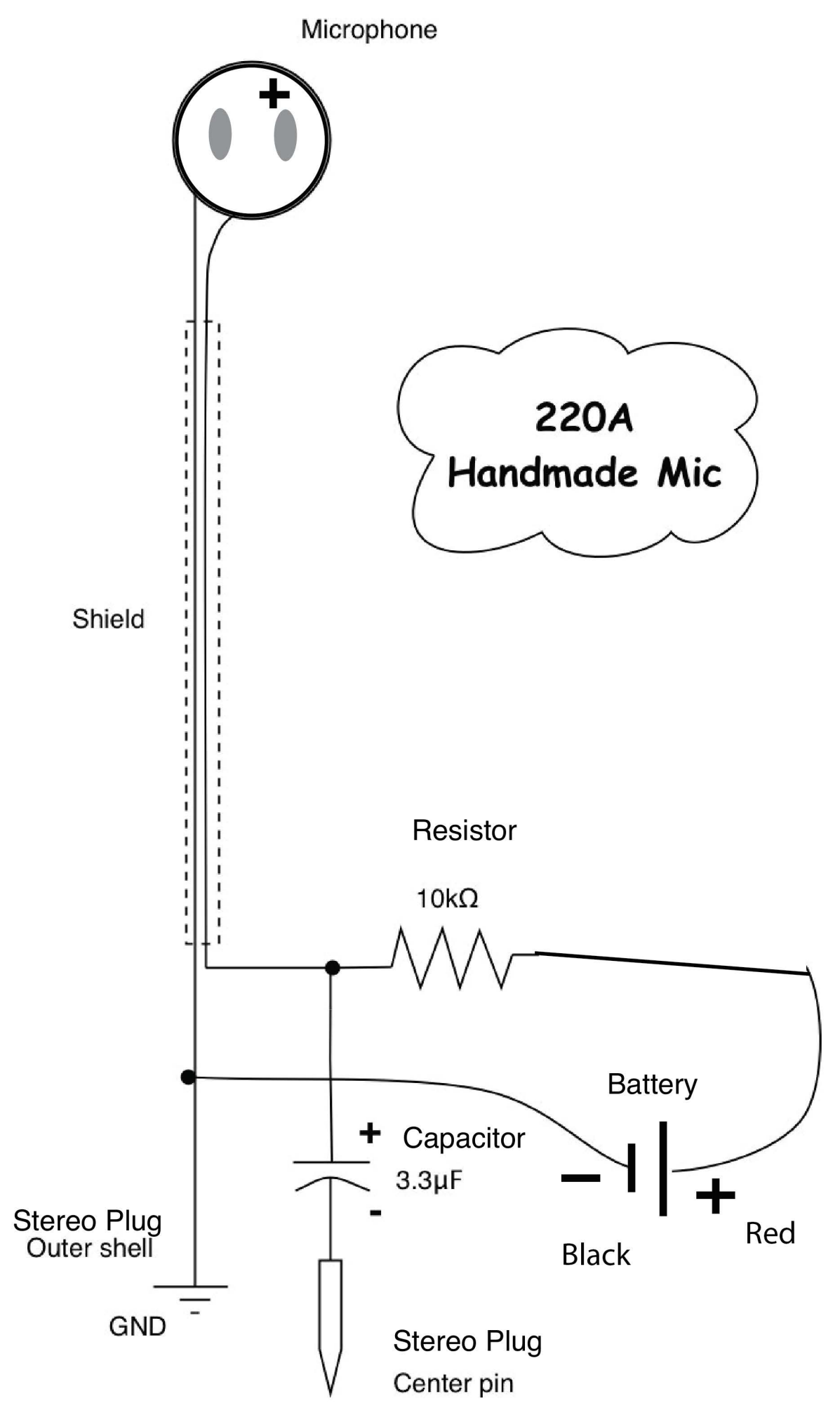
9v Battery holder

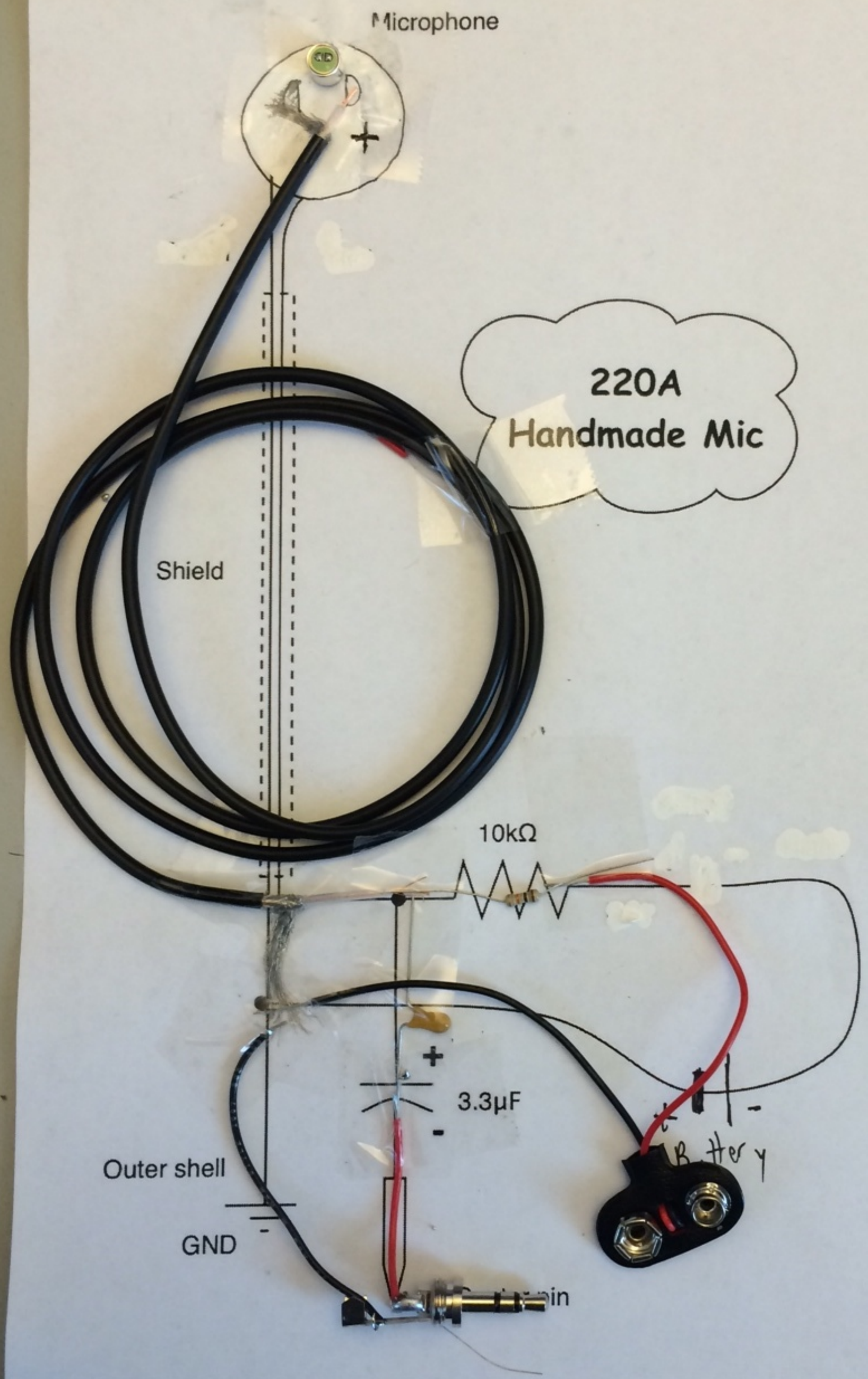


3.5mm Stereo
Audio Plug

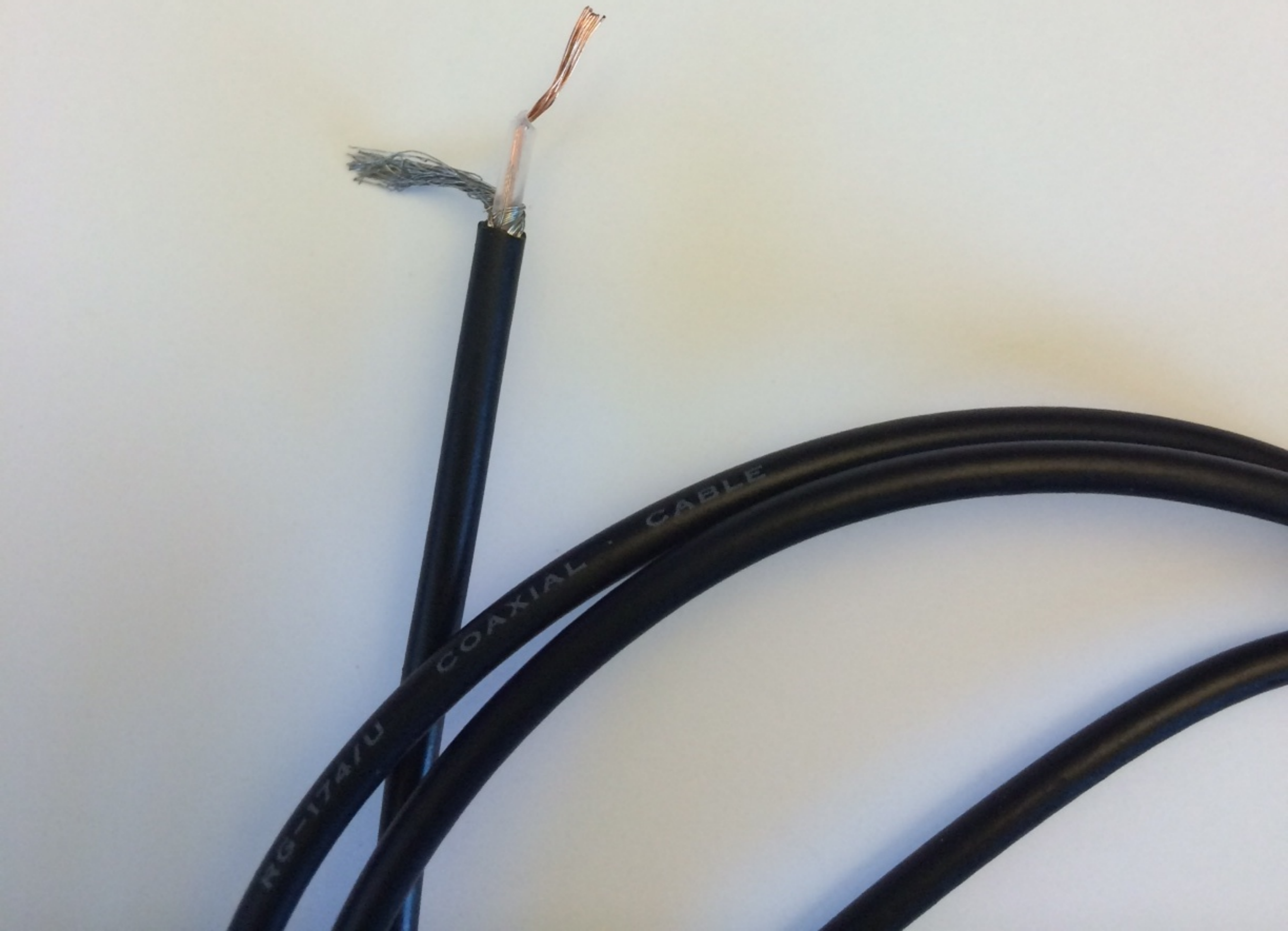
3 - 4 ft of coax cable
RG174

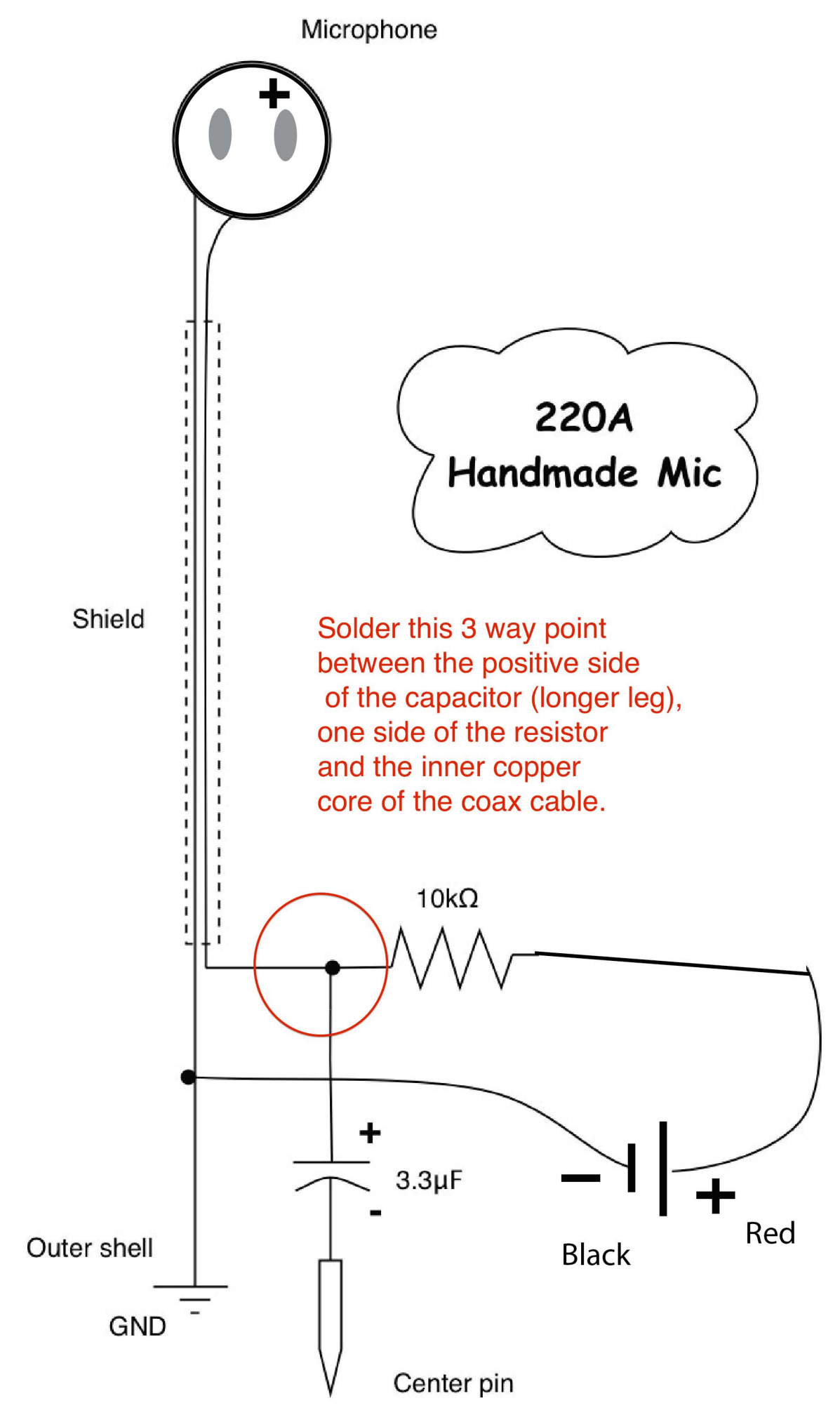
9v Battery

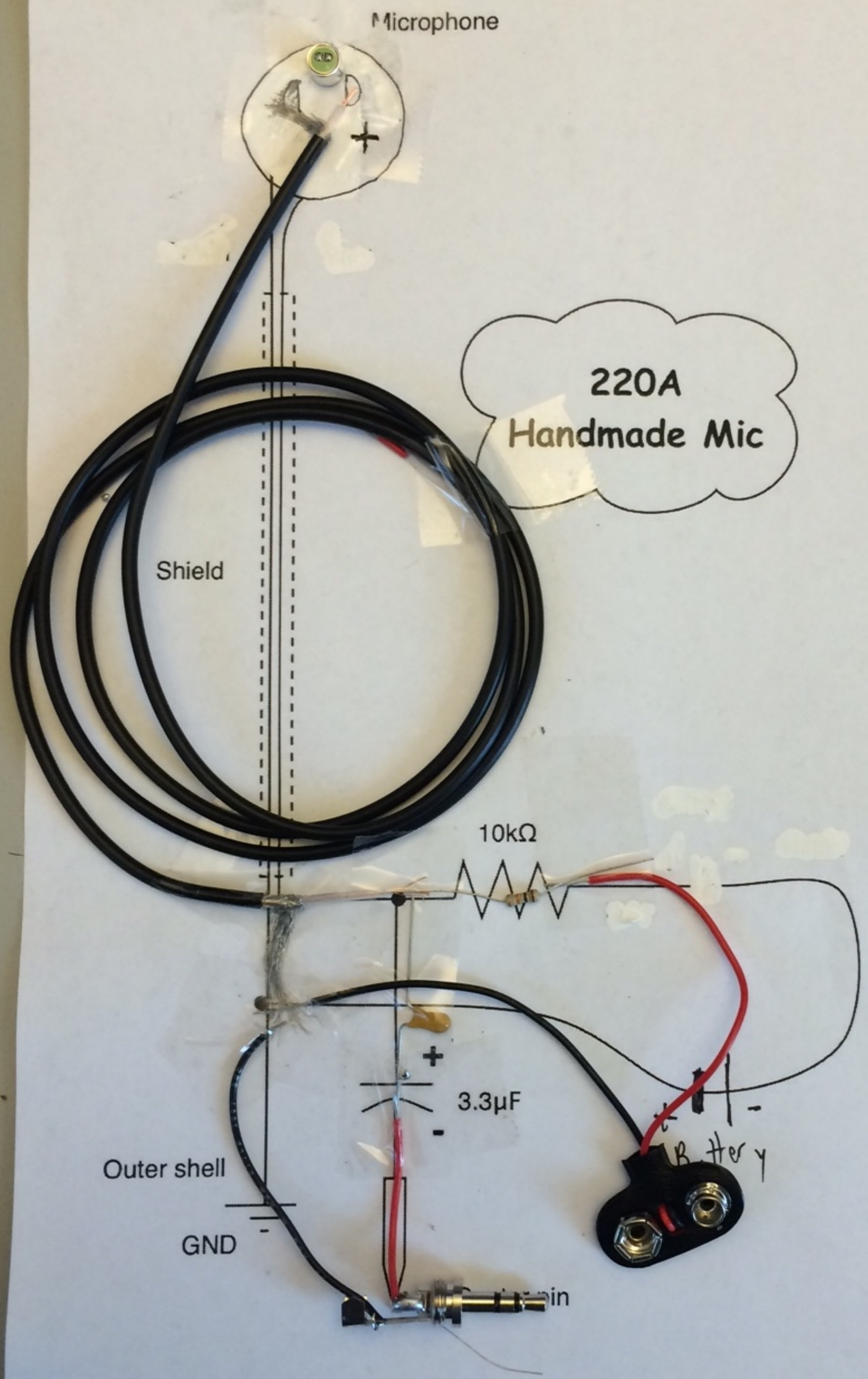

Microphone
+
220A
Handmade Mic
Shield
Resistor
10kΩ
Battery
+
Capacitor
3.3µF
-
Stereo Plug
Outer shell
GND
Stereo Plug
Center pin
Black
Red

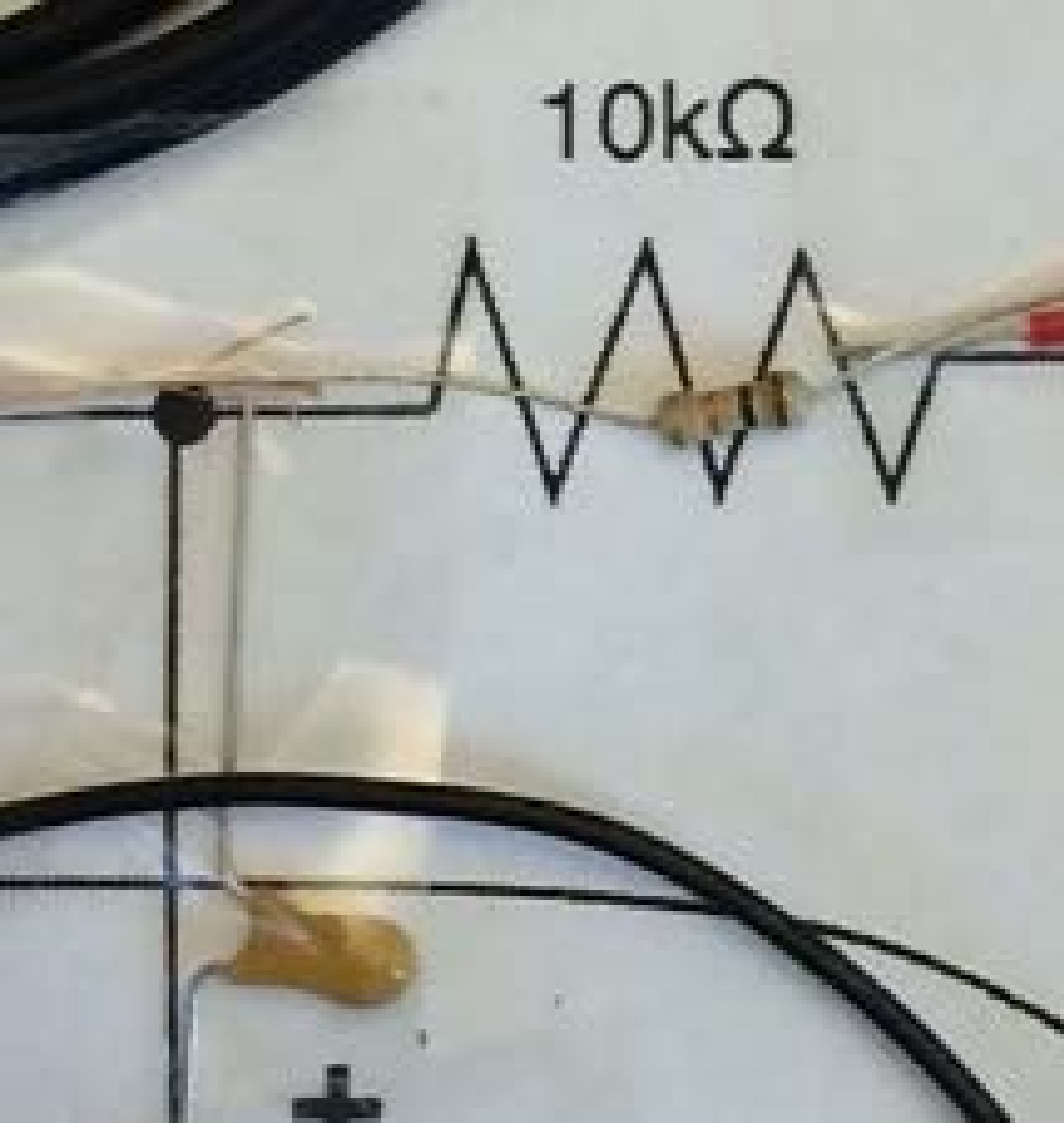

Microphone
220A
Handmade Mic
Shield
10kΩ
3.3µF
Outer shell
GND
+
-
Battery

Strip the coax wire down so that
about 1/4” of bare copper wire is showing,
1/4” of clear plastic is showing.
Pull the braided shielding over to the side.




Microphone
220A
Handmade Mic
Shield
Solder this 3 way point
between the positive side
of the capacitor (longer leg),
one side of the resistor
and the inner copper
core of the coax cable.
10kΩ
3.3µF
Outer shell
GND
Black
Red
Center pin


Microphone
220A
Handmade Mic
Shield
10kΩ
3.3µF
Outer shell
GND
+
-
Battery


10kΩ

Wrap all three wires together
near their components

Wrap all three wires together,
close to their actual components.
Solder that connection and then cut
off the excess.

This is where this should sit on the diagram

Bat

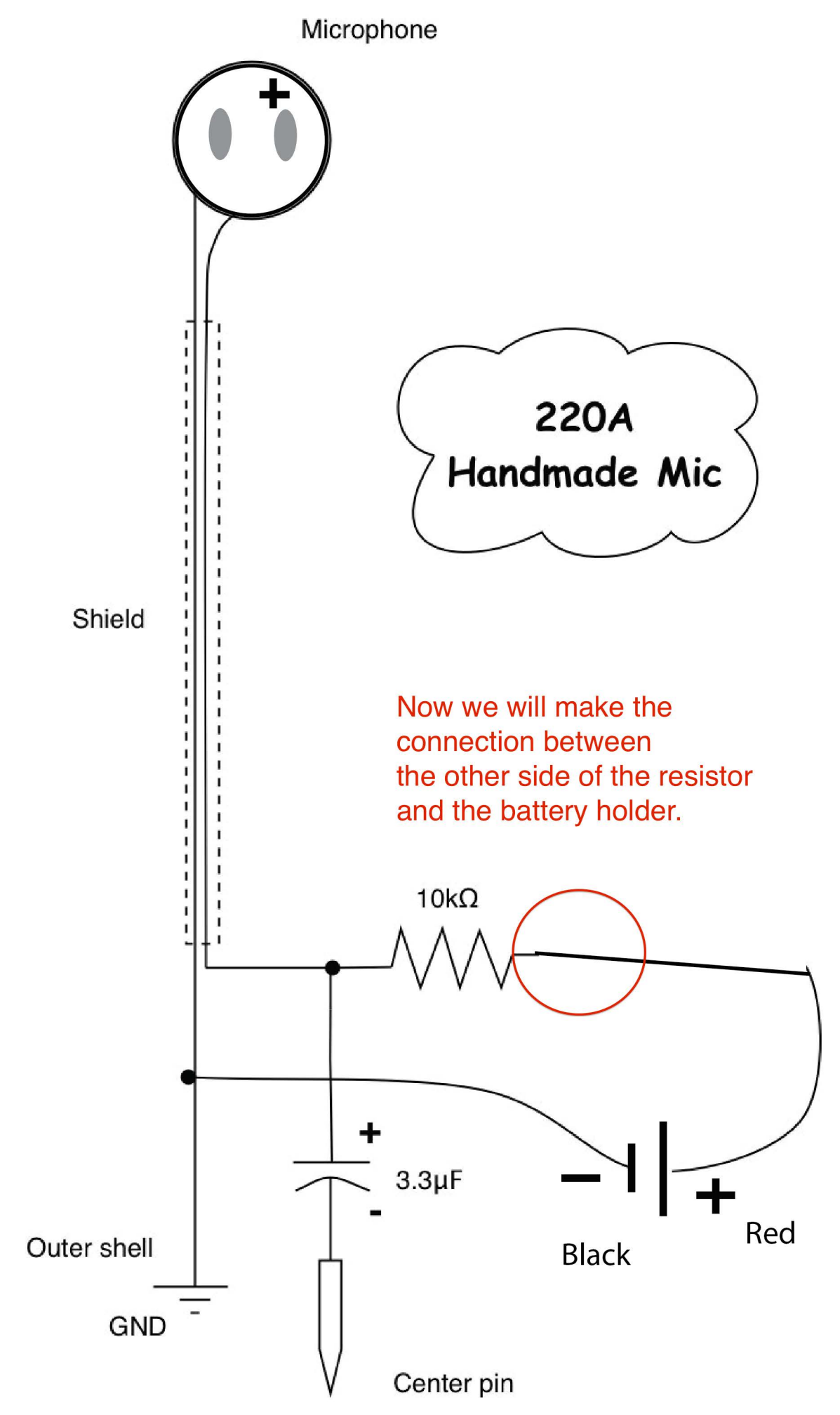
10kΩ

+

Red

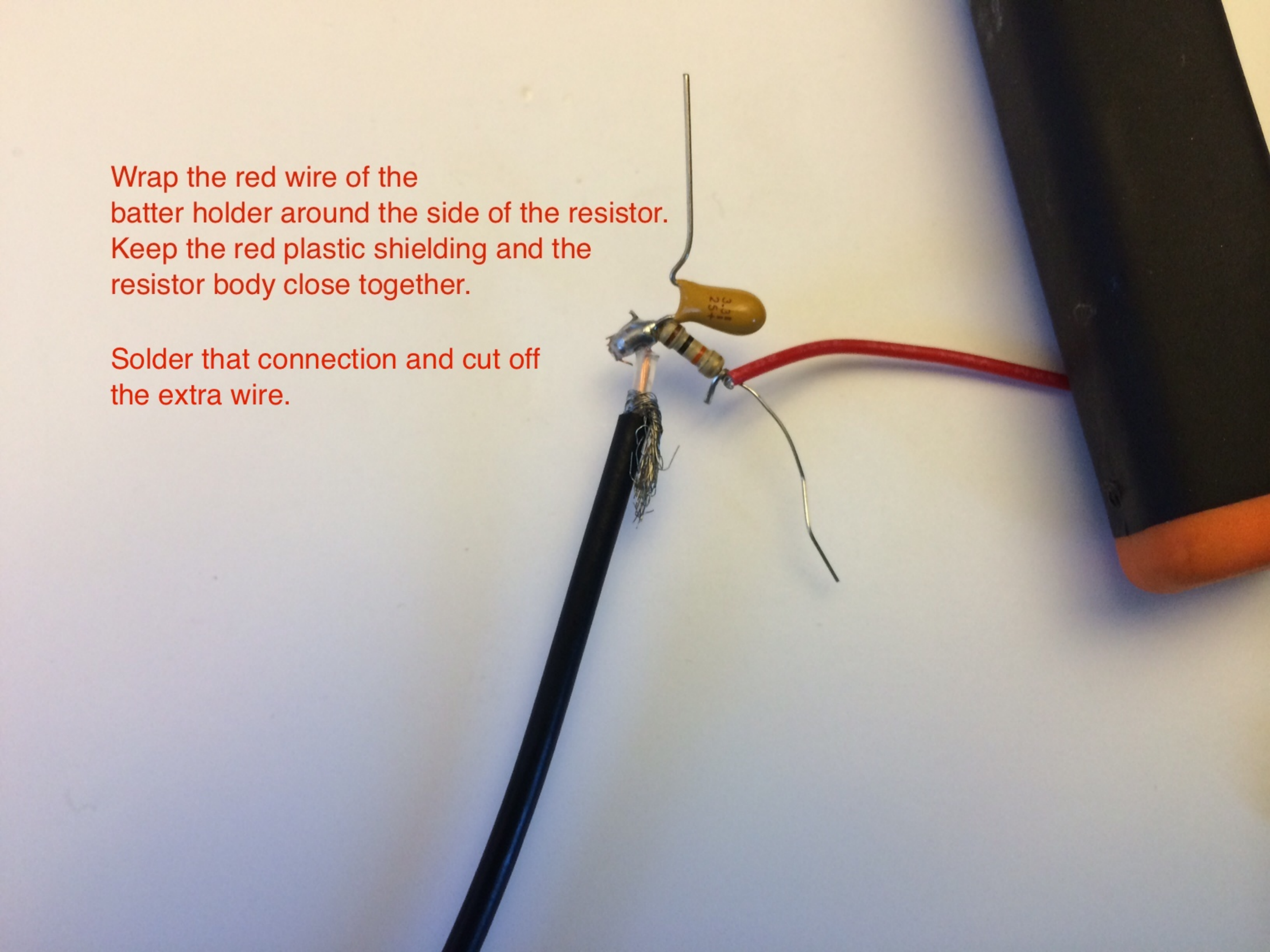
+

3.3µF


Microphone
220A
Handmade Mic
Shield
Now we will make the
connection between
the other side of the resistor
and the battery holder.
10kΩ
3.3µF
Outer shell
GND
Black
Red
Center pin

Wrap the red wire of the
batter holder around the side of the resistor.
Keep the red plastic shielding and the
resistor body close together.

Solder that connection and cut off
the extra wire.



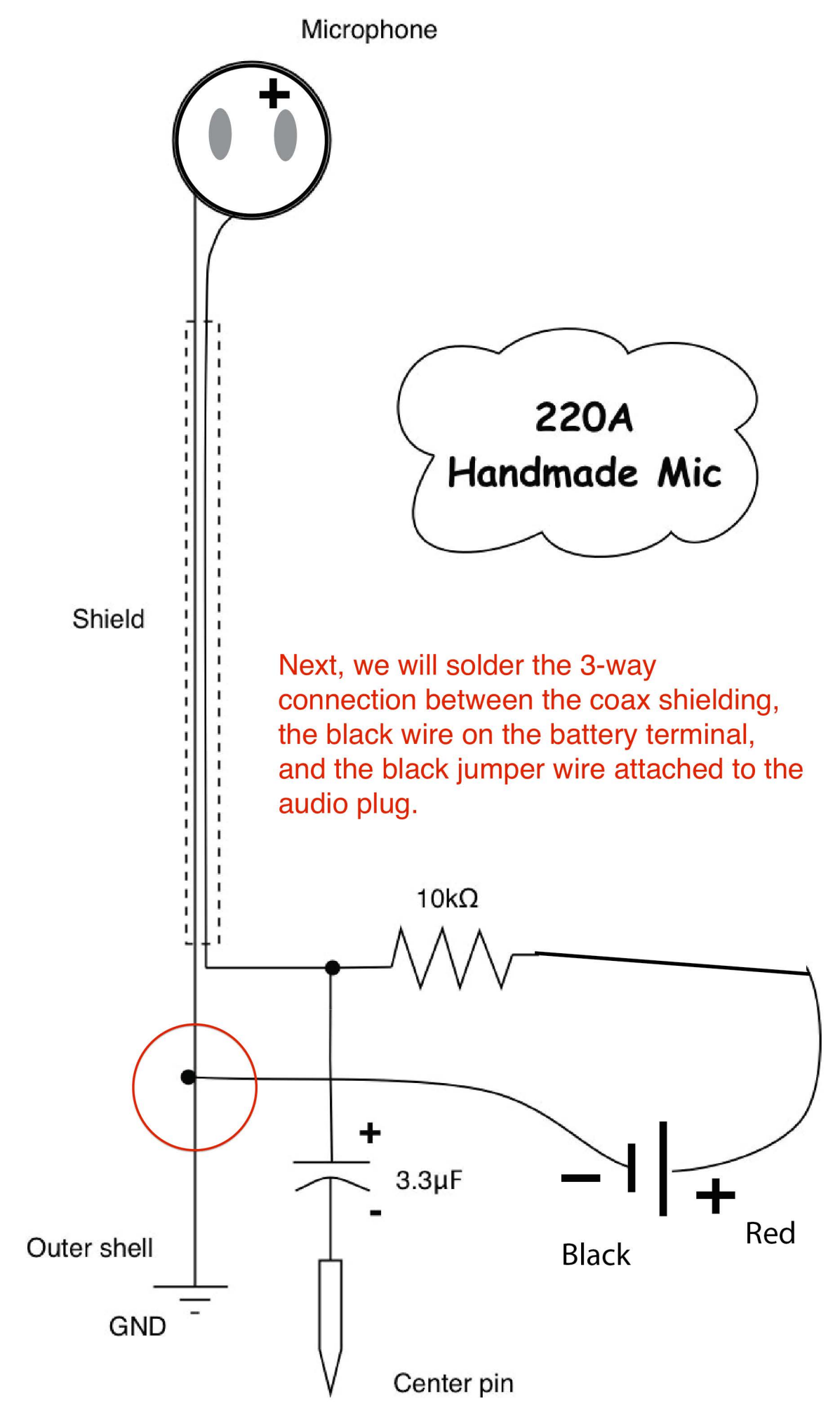
Solder 1 of the red jumper wires to the two small pins inside the audio plug.

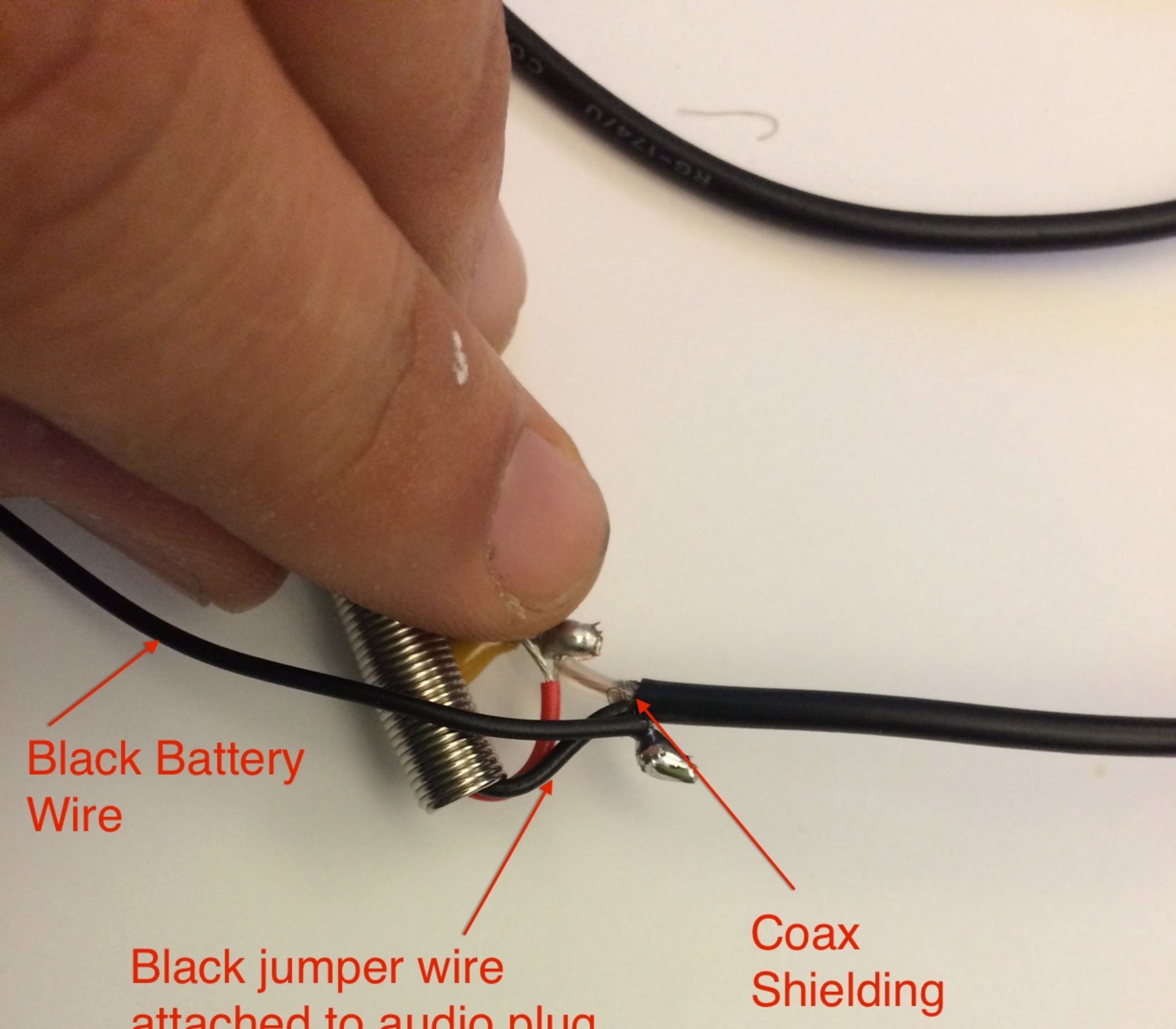
Make sure no solder or wire strands touch the larger metal tab.

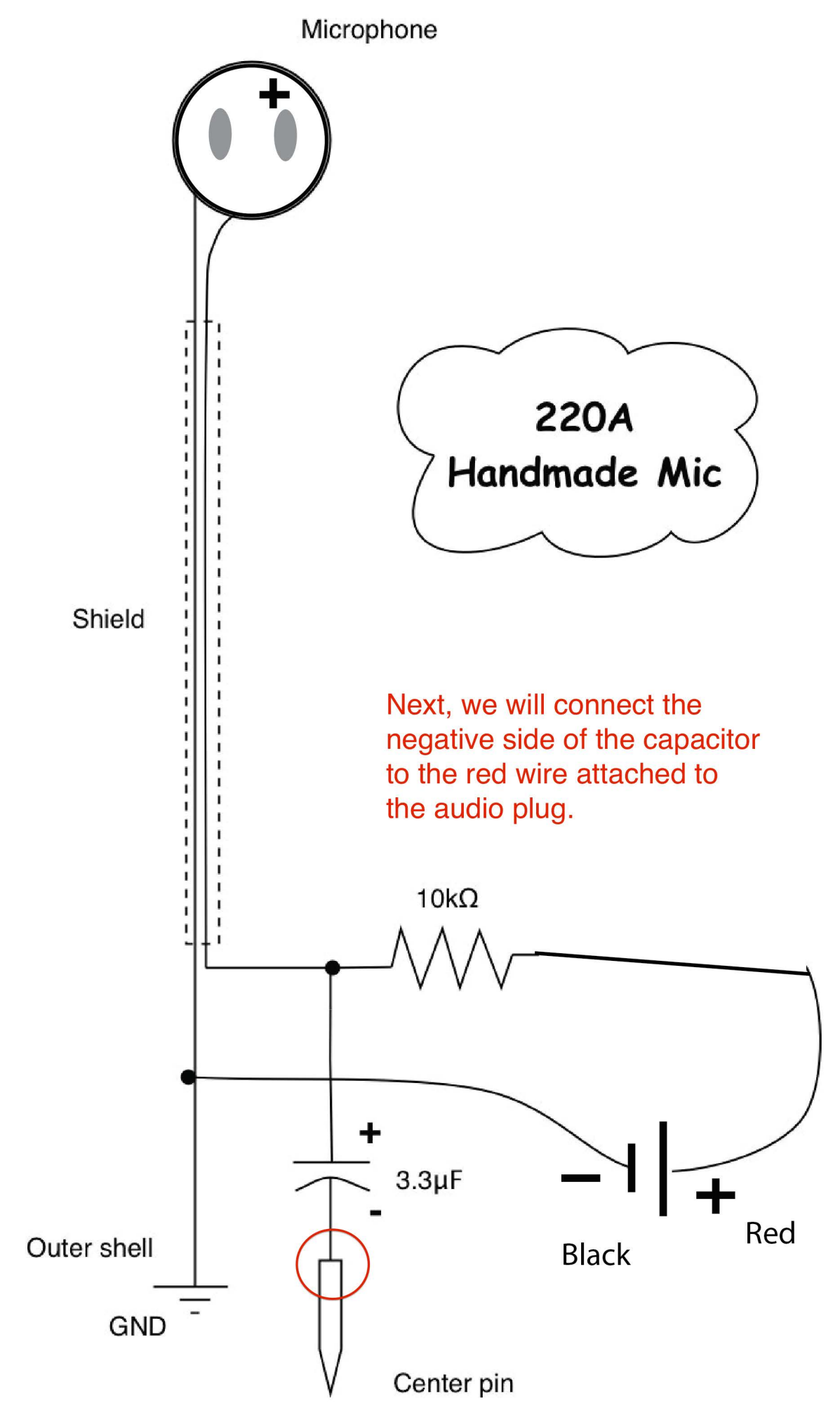
Solder 1 black jumper wire to the large metal tab in the plug.

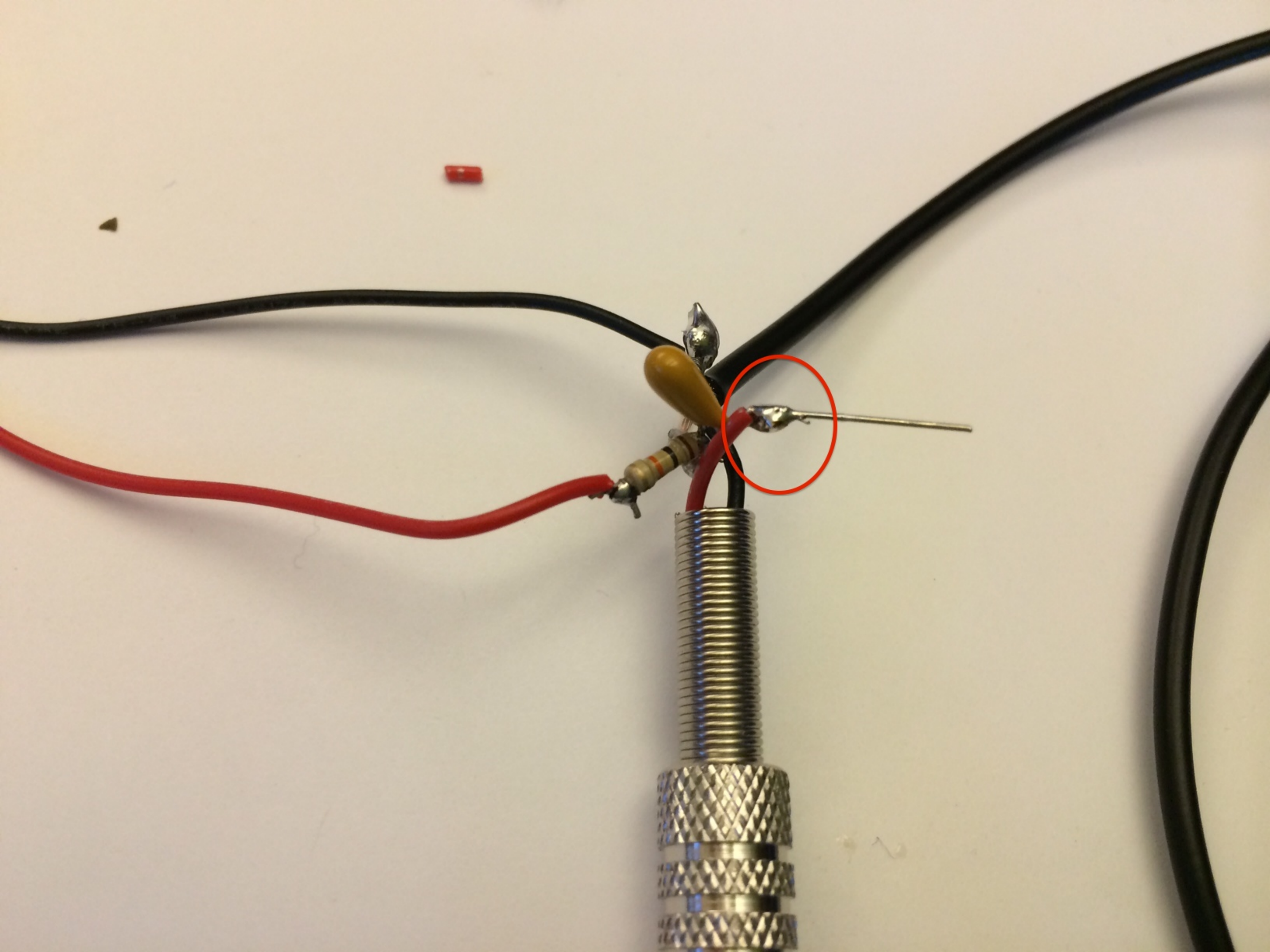
Slide the clear plastic cover over
the inside of the plug.

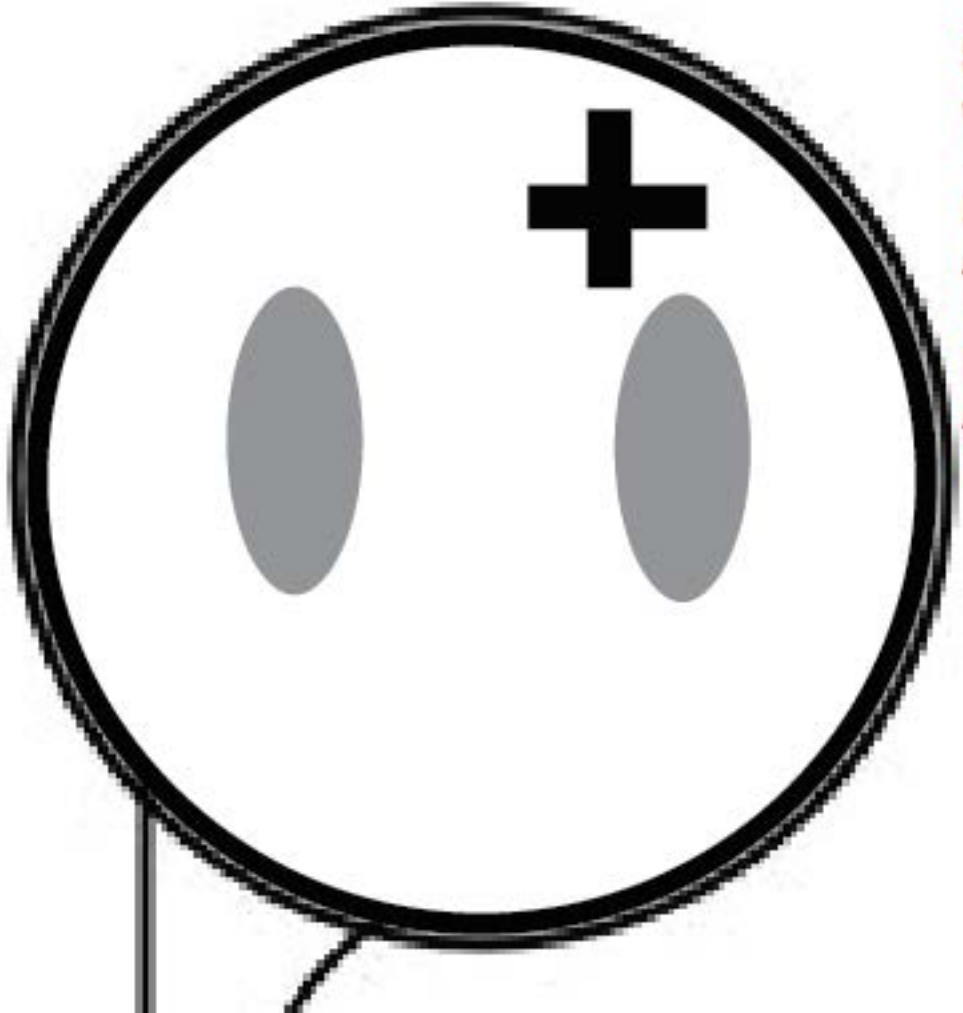
Screw the casing and spring
onto the plug.


Microphone
220A
Handmade Mic
Shield
Next, we will solder the 3-way connection between the coax shielding, the black wire on the battery terminal, and the black jumper wire attached to the audio plug.
10kΩ
3.3µF
Outer shell
GND
Black
Red
Center pin


Black Battery
Wire
Black jumper wire
attached to audio plug
Coax
Shielding


Microphone
220A
Handmade Mic
Shield
Next, we will connect the negative side of the capacitor to the red wire attached to the audio plug.
10kΩ
3.3µF
Outer shell
GND
Black
Red
Center pin

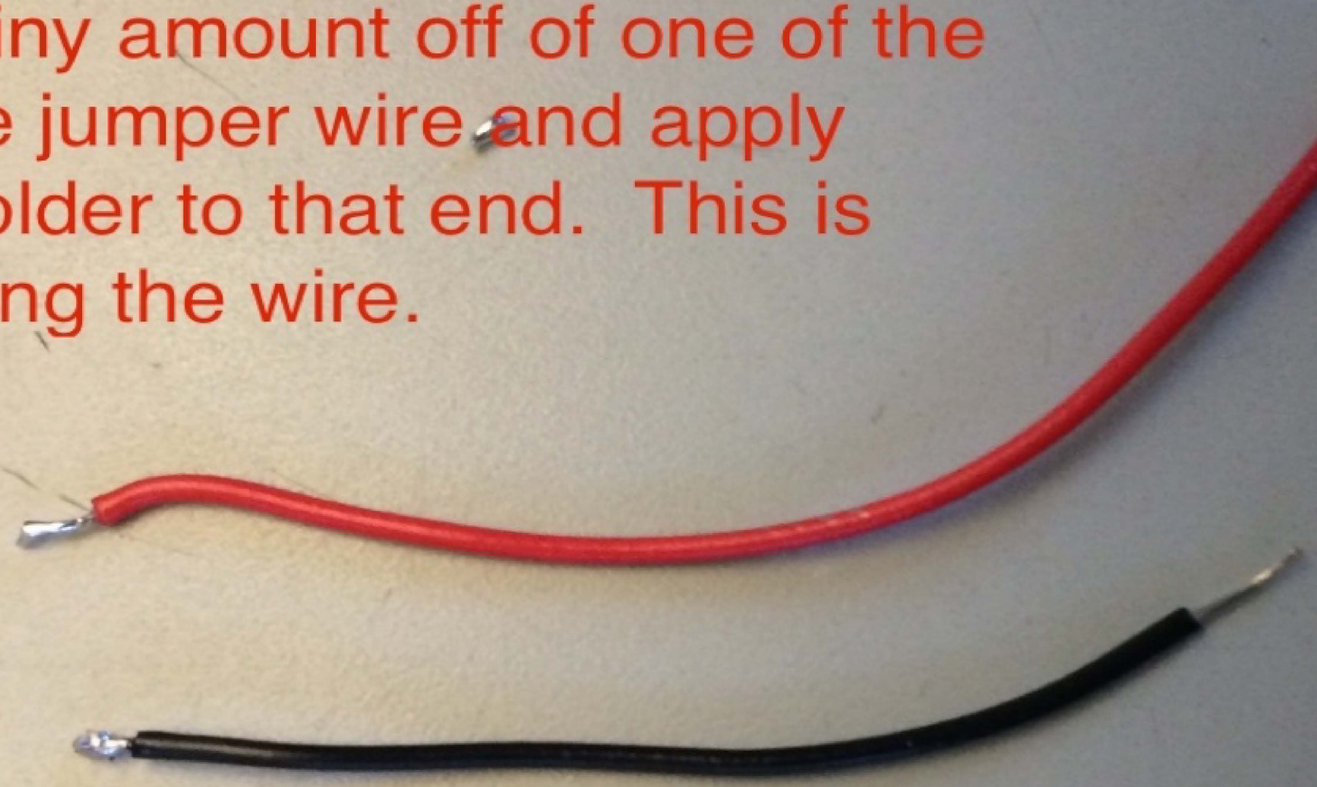




There should be two blobs of solder on the mic capsule. We will connect the remaining red jumper wire to the blob the positive sign and the remaining black jumper wire to the other blob.

Soldering to the mic capsule is the only challenging part of this project. To make it work, we have a couple of tricks we can use.

1) Strip a tiny amount off of one of the ends of the jumper wire and apply a dab of solder to that end. This is called tinning the wire.



2) Re-cut the wire so that only 1/8” is exposed.

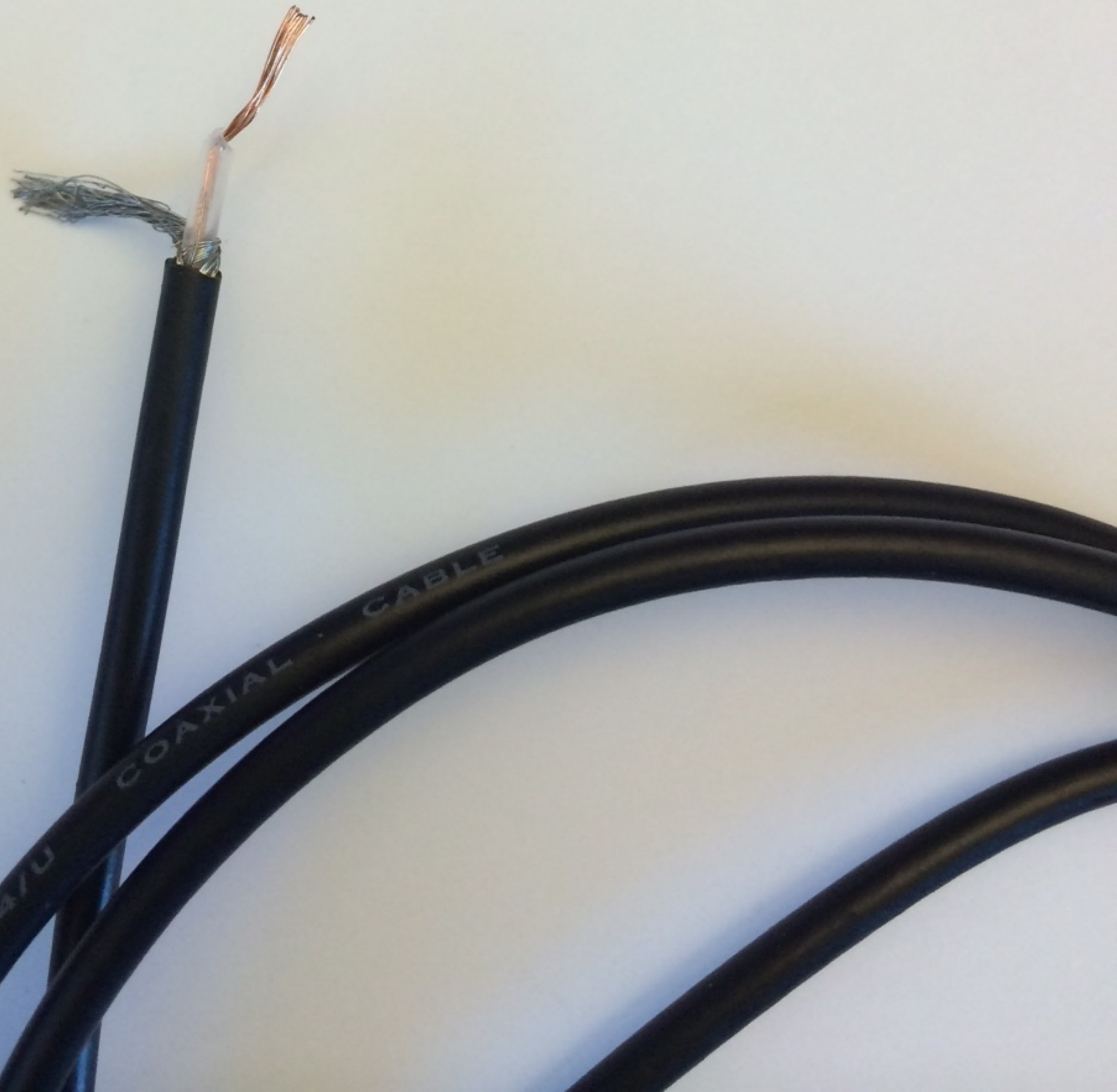
3) This will allow you to place that small blob onto the equally small blobs of solder on the mic capsule.

4) With the blobs resting on eachother, apply heat

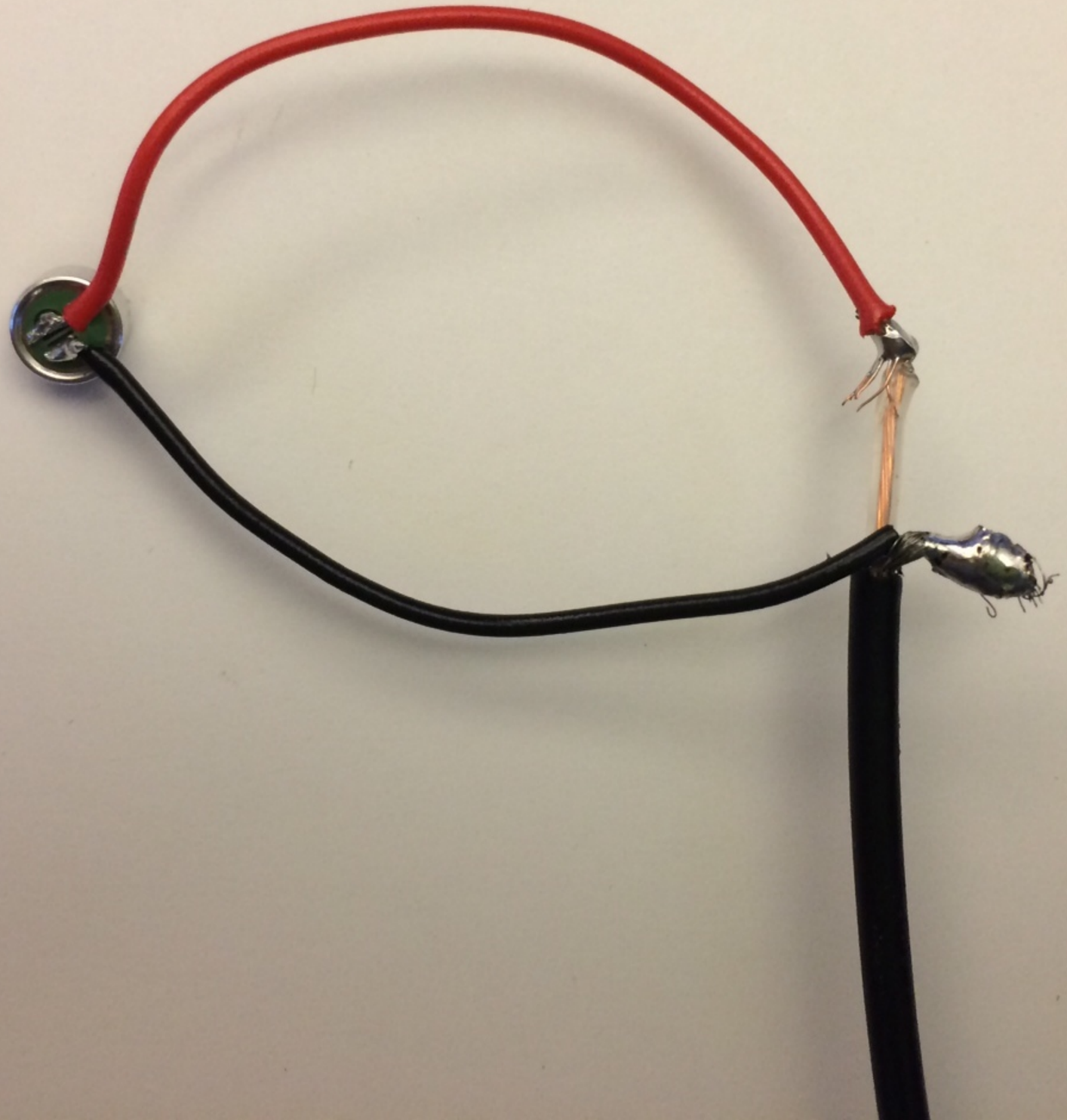
This is how it should look in the end. Note that the rubber coating on each jumper wire goes right up to the soldering point. If you leave excess exposed wire, you will create a short and your mic will not work.

Now, take the side of the coax that you did not solder to yet.

Strip the coax wire down so that
about 1/4” of bare copper wire is showing,
1/4” of clear plastic is showing.
Pull the braided shielding over to the side.



Solder the jumper wires to the exposed coax cable. Red should go to the inner core
Black should go to the shielding.



When you are done with all of these steps, carefully use electrical tape to wrap the individual connections, making sure to not allow any short circuits.

Plug a 9V battery into the battery terminal and test out your mic. It should work with most laptop mic inputs as well as the small test amplifiers we have in the lab.

When you are not using the mic, remember to disconnect the battery or it will run out.