

Casio DH100/200 Octave drop mod

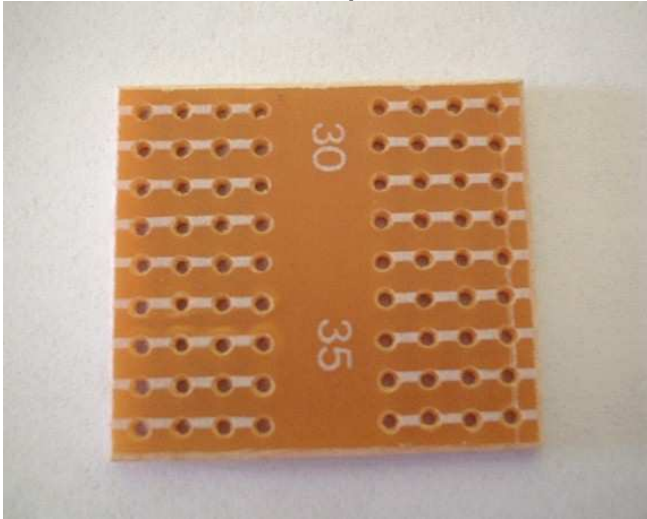
By Kerry Bradley

Photos and documentation by Graham Meredith and Kerry Bradley

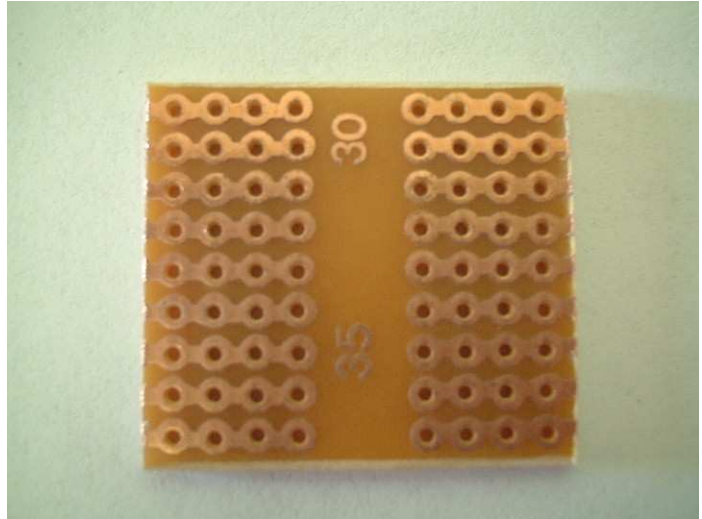
Parts required

“Vero board” circuit board strips or similar, cut to the size shown below:

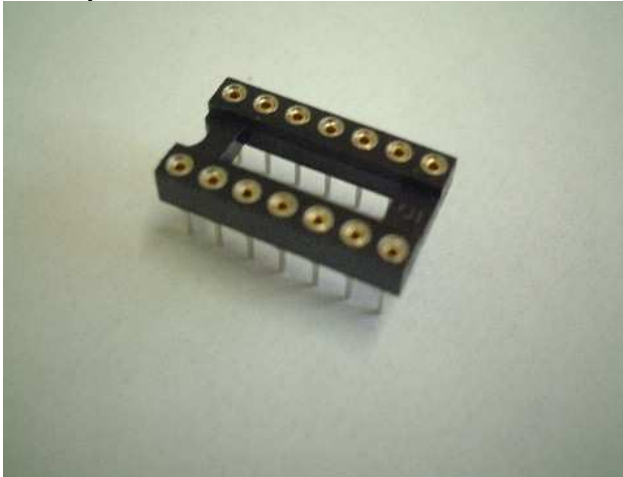
Top side



Track side



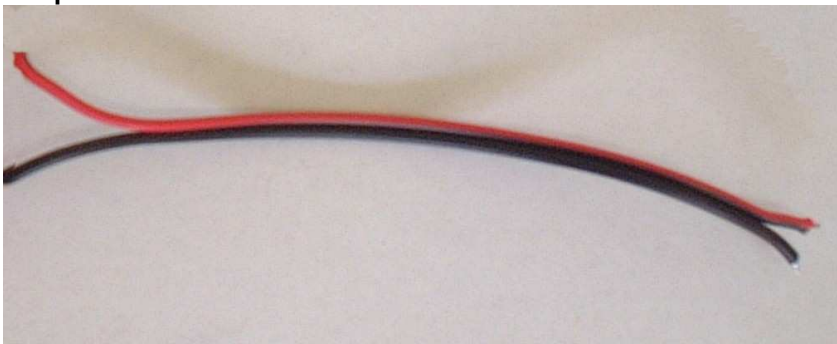
1 x 14-pin IC socket:



3 feet of rainbow cable:



12" piece of medium thick red and black cable:



1 x CD4013 D-type Flip Flop IC:

<http://www.jameco.com/webapp/wcs/stores/servlet/ProductDisplay?langId=-1&storeId=10001&catalogId=10001&productId=12677>



1 x DPDT slide switch:

I like the slide switch simply because it matches the other switches on the DH100. It means cutting a rectangle slot in the casing, though (hard). Alternatively, you can use this DPDT toggle switch, which just requires drilling a hole to mount it (easy):



Equipment

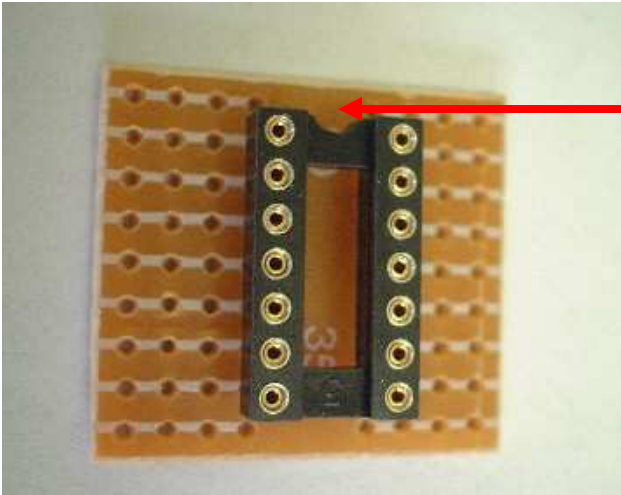
Soldering iron, 15W or less, with a very fine tip

Solder

Magnifying glass

Procedure:

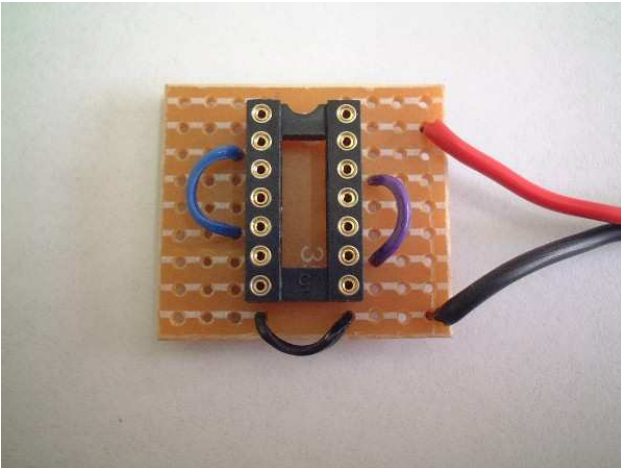
Remove the batteries from the horn and unscrew all the fastening screws holding the body together (there is one in the battery compartment also). Pull the two body halves apart and rest them on a table.



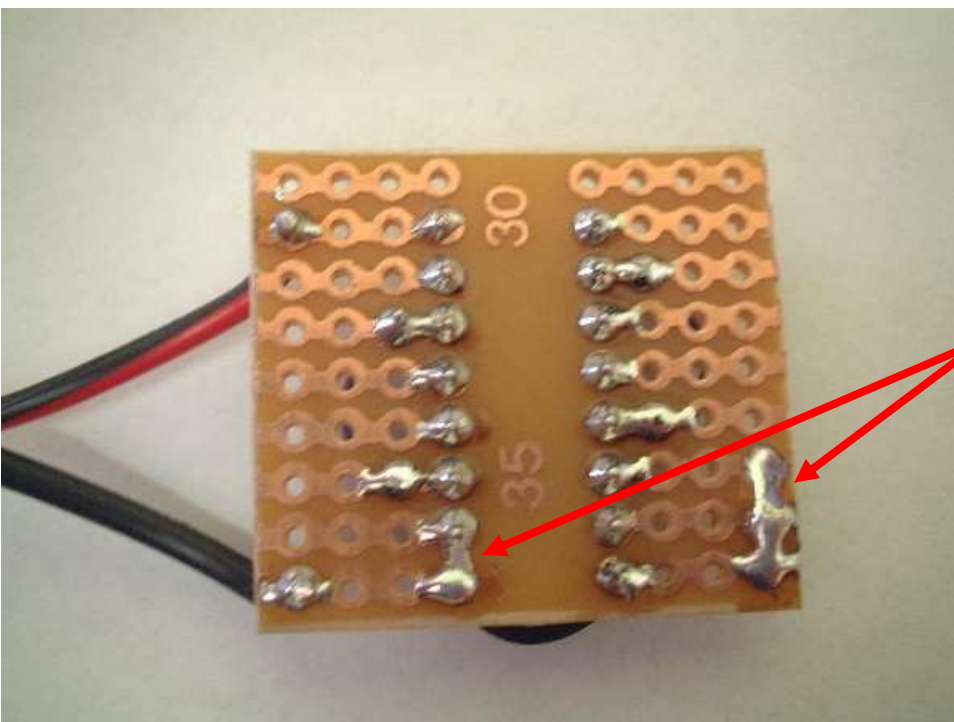
Mount the IC socket in the middle of the board as shown.

Make sure the cutout notch is at the top, for correct orientation.

Turn the board over and solder its legs to the tracks on the board



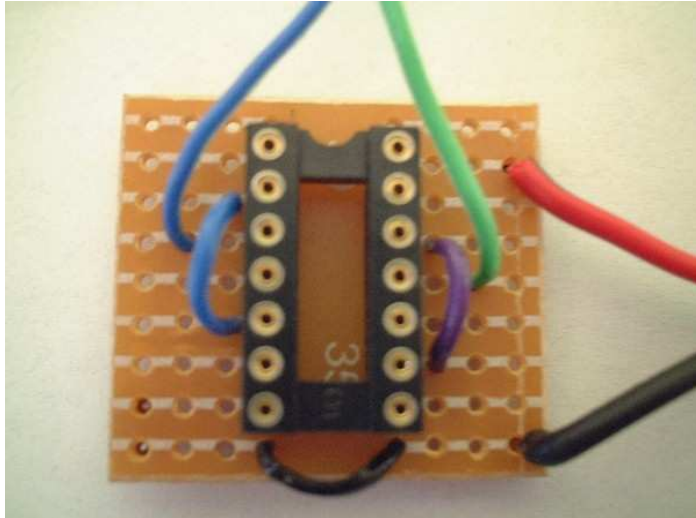
Solder the coloured connecting link wires in place as shown. Solder the thicker red and black power supply wires in place as shown



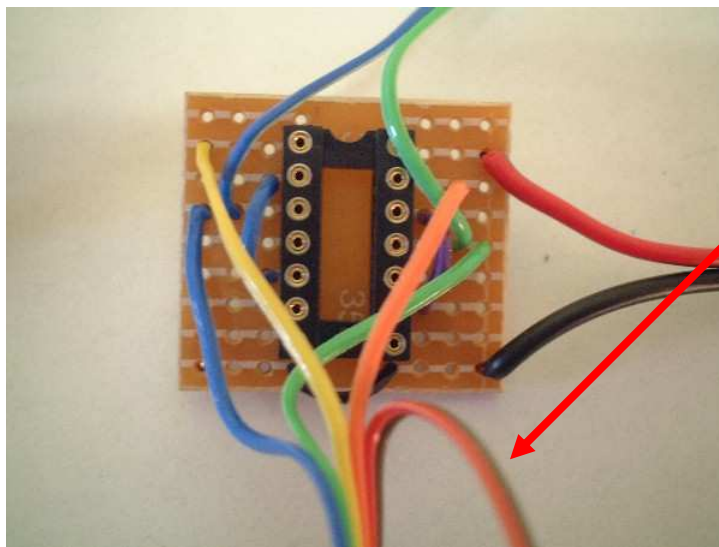
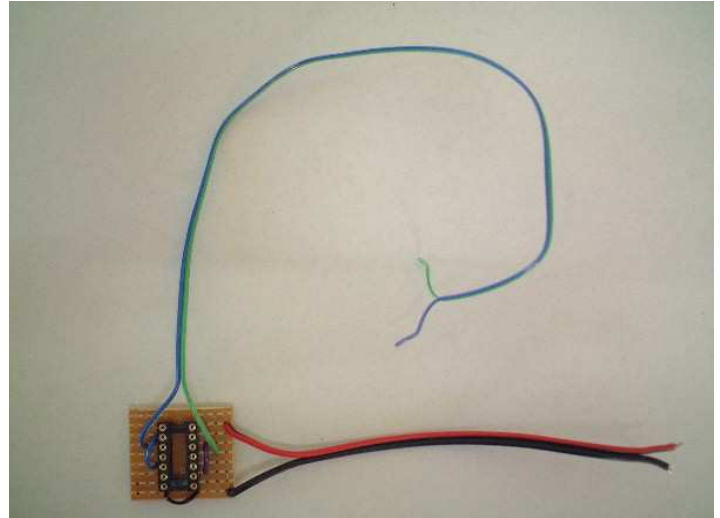
Here is how the track side of the board should look after this is done.

Bridge these tracks together with solder to join them. Use lots of solder, and they will flow together. This will save you using an extra piece of wire to do the same job.

Solder in place a 12" strip of green and blue rainbow wire in the places shown.



Your board should now look like this:



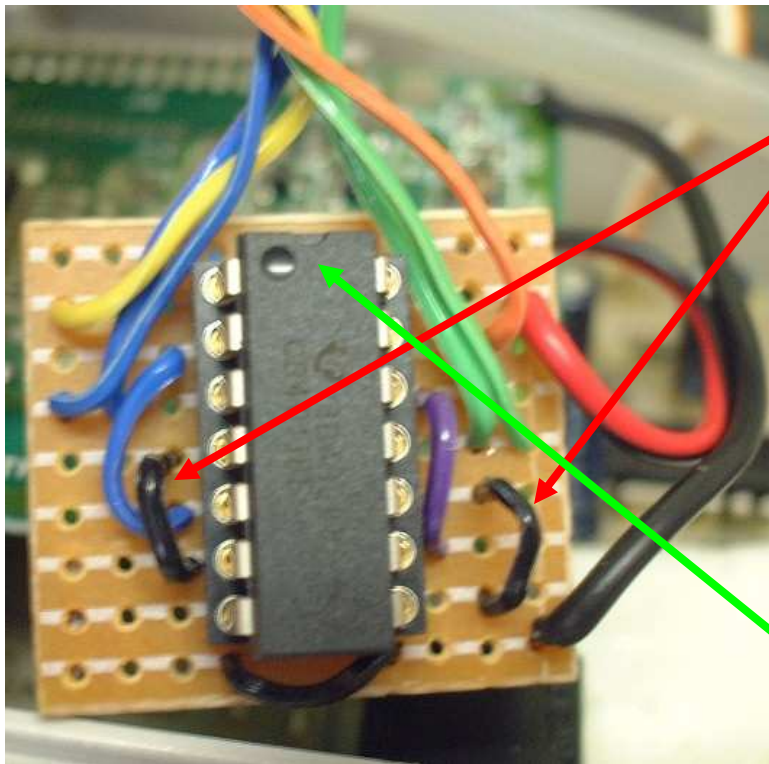
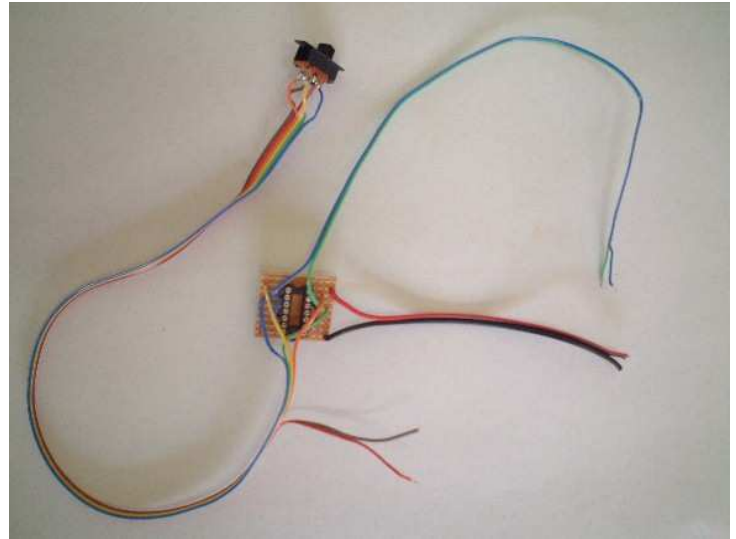
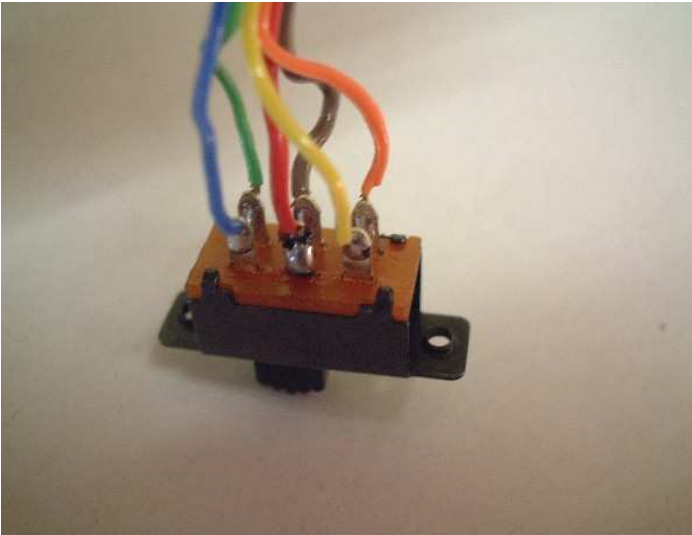
Take a 12" long strip of **blue**, **green**, **yellow**, **orange**, **red** and **brown** rainbow cable.

Solder the wires in the places shown, but leave the **red** and **brown** wires disconnected.

Note that the **blue** and **green** wires connect to the other **blue** and **green** wires already in place.

Take the DPDT slide switch and connect the other ends of the 12" long strip of blue, green, yellow, orange, red and brown rainbow cable to the terminals of the switch as shown.

Your board should now look like this:



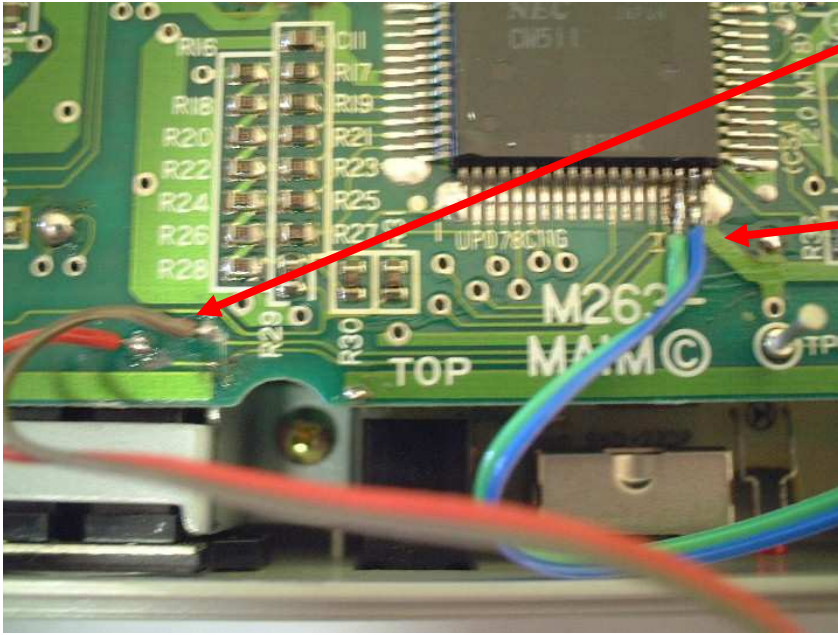
Add 2 more black connecting wires here, and solder them in place.

Insert the 4013 IC into the socket as shown.

Make sure the IC is orientated correctly with the small semi-circle notch in the top of the IC and the circle at the top as shown. If it is put in upside down it won't work, and it could damage it.

Mounting the circuit board in the DH100/200

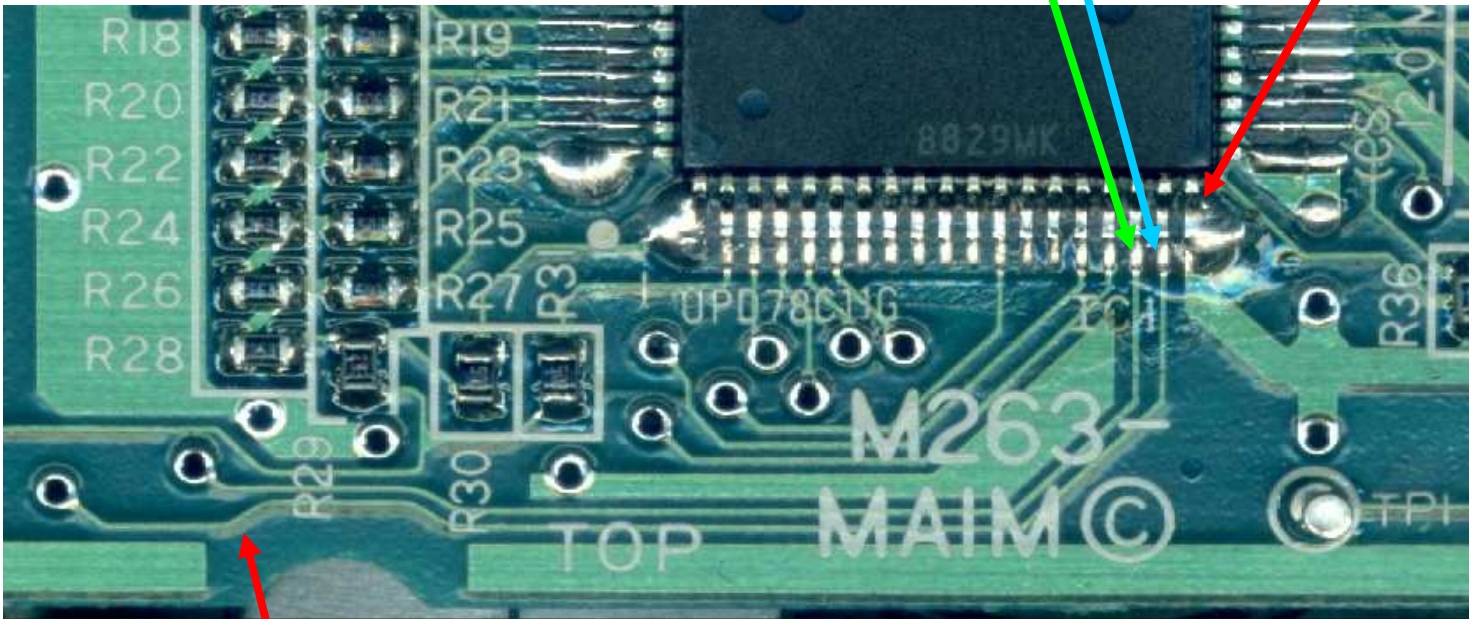
Remove the batteries from the horn, unscrew all the screws holding the body together (there's one in the battery compartment also). Separate the body halves and rest them on a table. Locate the top circuit board in the horn – it is the one immediately visible when you open the horn up. You can leave the board in place as you work on it.



Solder the free ends of the **red** and **brown** wires into the free solder holes in the board.

Solder the free ends of the **blue** and **green** wires to the pins of the DH100 processor chip as shown. You will need to use a soldering iron with a very fine tip, and maybe a magnifying glass!

Make sure nothing gets soldered to this pin, or any solder blobs connect it to the pin next to it. This pin is the 5V power supply pin!

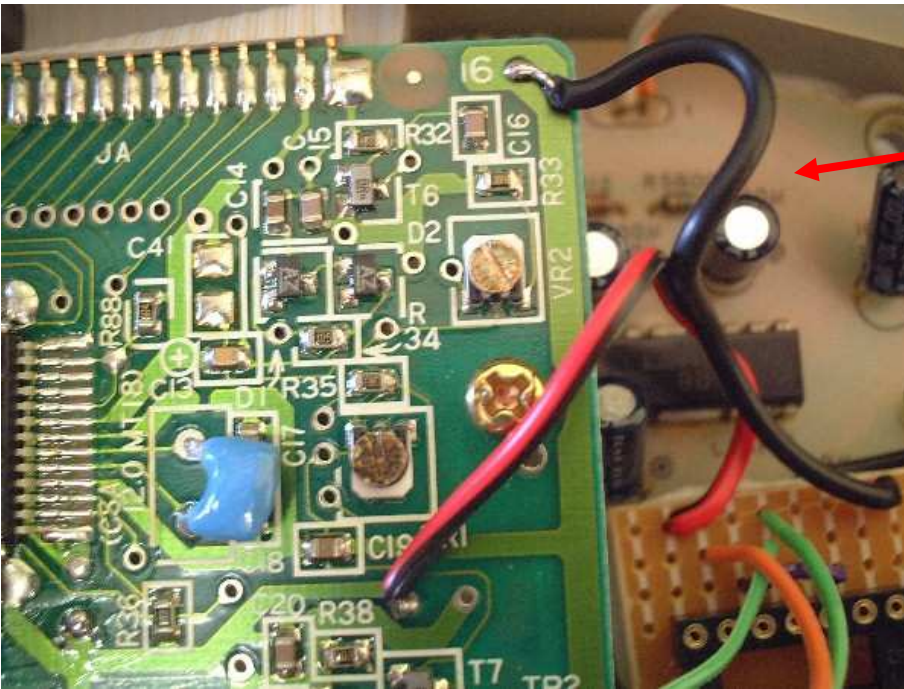


Cut these 2 circuit tracks here

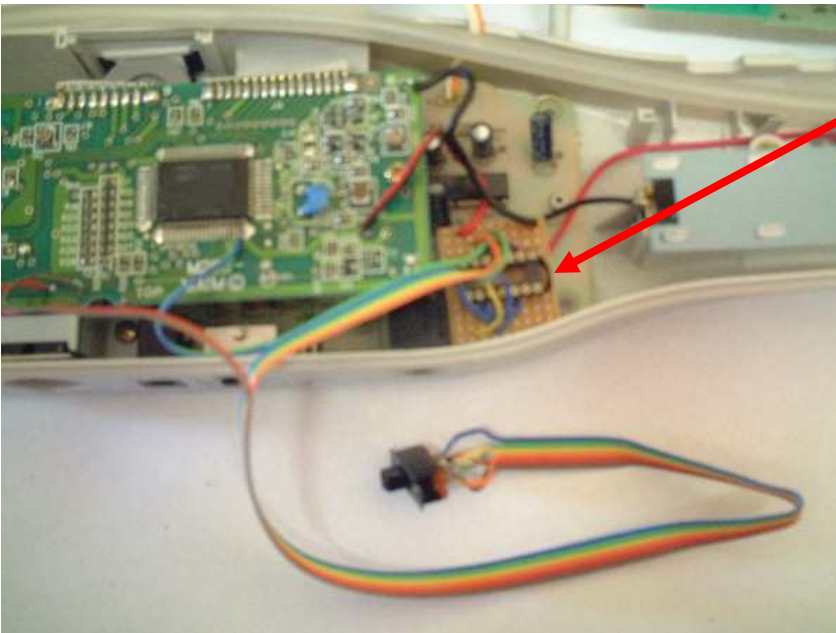
Use a sharp hobby knife and cut the tracks cleanly and completely.

red and brown wires

These photos courtesy of Andreas and Kerry



Connect the thicker red and black power supply wires to the points shown here



Mount the circuit board in the DH100/200 here with some thick double-sided foam tape.

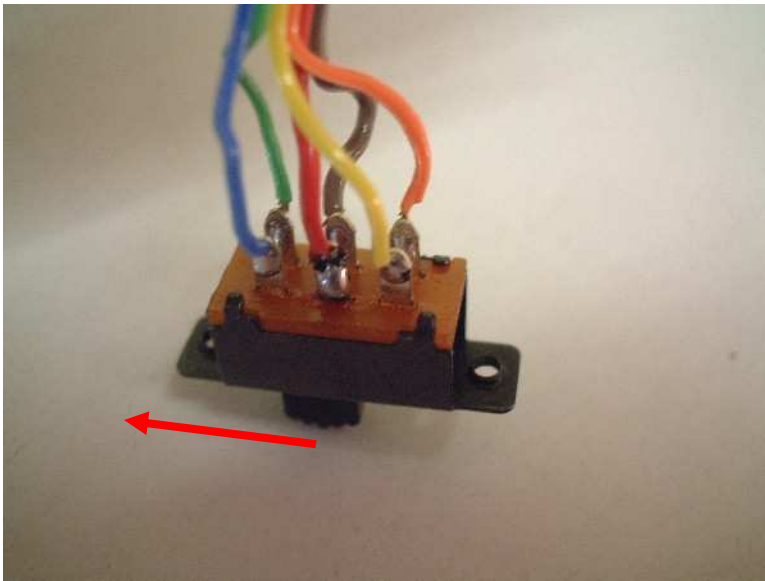
Make sure it doesn't obstruct any support posts when the 2 halves of the horn are put back together.

The construction is now complete!

Testing the Octave Drop mod.

Loosely put the 2 halves of the horn back together, and leave the switch hanging out the side somewhere. When you know it works, you can then cut a neat slot in the side of the horn for it to fit in permanently.

Set the Octave Drop switch to the position shown here:



Set the BREATH switch to OFF, so you can play it without blowing into it.

Connect an AC adapter to power the horn (batteries are a bit difficult to keep in place when the horn is not assembled, but you can use them if you have no adapter).

Switch the horn on, and play the keys. You should get the normal sound.

Now switch the switch to the other position. Play the keys. You should get the sound 1 octave lower. If so, congratulations! You've done it!

If you get no sound, check your wiring. Check especially where the **blue** and **green** wires solder onto the processor legs on the DH circuit board. If you get the normal sound instead of 1 octave lower, check that the traces have been cut on DH the circuit board thoroughly.

Once the circuit is working, you can now mount the switch in a convenient location on the horn, using a drill and square file to make a neat cutout hole.