Colecovision Composite Video and Audio Mod Installation

Thank you for your business. This kit was adapted from schematics that were available on the internet. We build a custom PC board to make this kit easier to assemble and install. It will typically take an evening to install.

WARNING: Do this at your own risk. Only you are responsible for any damage to your system. These instructions were created during an actual installation of the mod board on a Colecovision console.

** All work on this board is assuming that the front of the board is towards you. The front is where the edge connector is for the expansion module. **

This kit comes with all the parts needed to install it EXCEPT for some double stick tape to hold the mod board in place.

It comes with:
- PC board and components
- Red, white, and yellow RCA jacks
- Power and ground wires
- Well shielded miniature coax cables
- Heat shrink tubing to cover the mod board when finished.

You'll need:
- A drill with a ¼" bit
- Solder and soldering iron
- # 2 Phillips type screwdriver
- A small pair of cutters (trim the component leads)
- A hobby knife (to strip wires
- A pointed tool such as a dental pick (to straighten the braid on the coax)
- A larger pair of cutters (trimming and cutting the RF shields)
- A few matches or a heat gun (shrink the heat shrink tubing)
- A piece of double stick tape (to keep the module in place when finished)

First install the components onto the board. Location for the components is shown in the picture below.
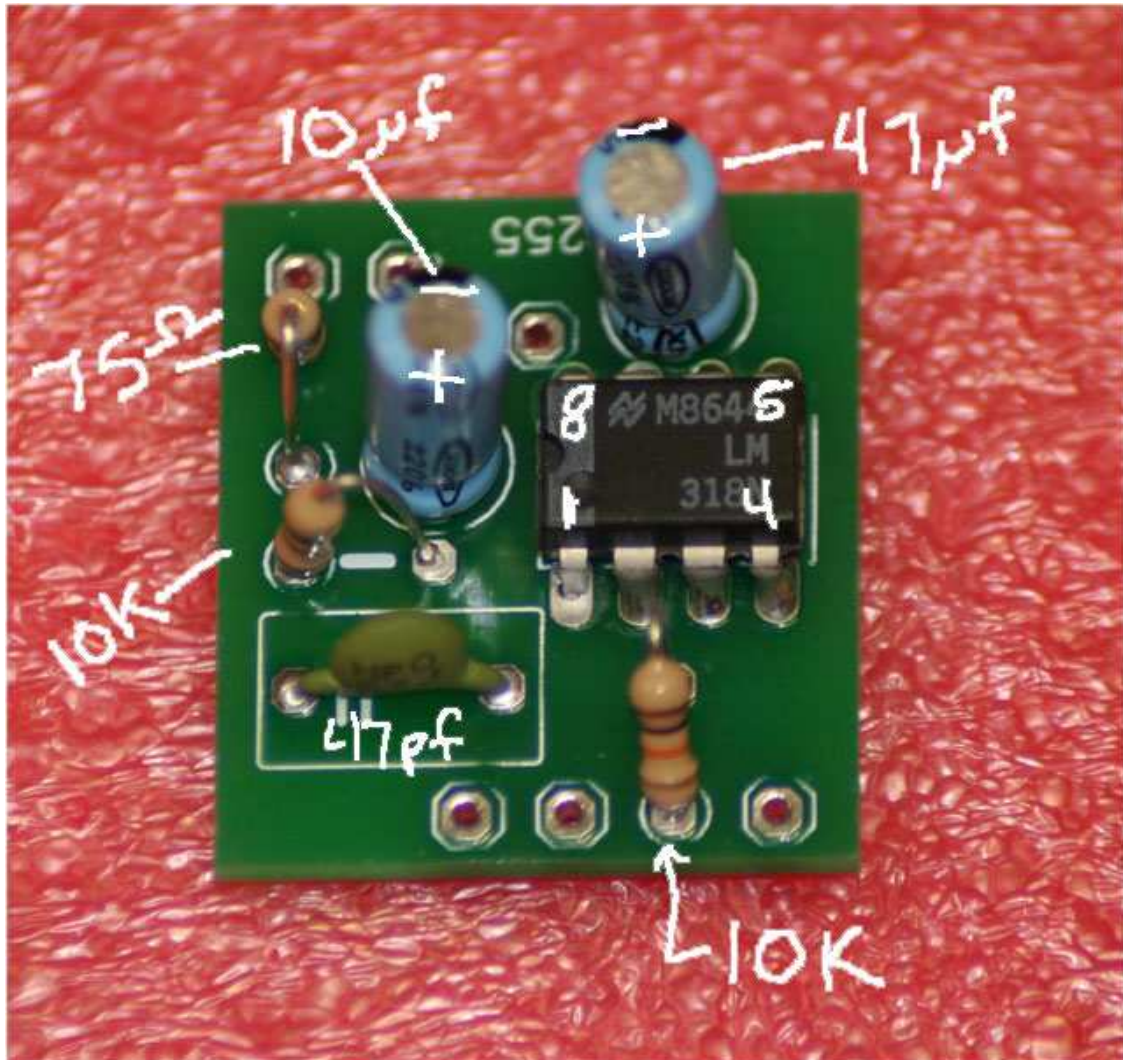
The resistors are color coded for identification. Full resistor color code charts are available on the internet.

75 ohm = Purple, Green, Black, Gold
10K, or 10,000 ohm = Brown, Black, Orange, Gold

Be careful to orient the electrolytic capacitors properly! They have a big stripe down one side that signifies the negative lead. If you put them in backwards they may not work, or worse yet, they could explode like a firecracker.

When finished, the board will have six solder points that have not been used yet. These are for the inputs, outputs, and grounds.

The top left of the picture shows the video output connections. The top right is for power. The bottom right is for ground while the middle bottom is for the video input connections.
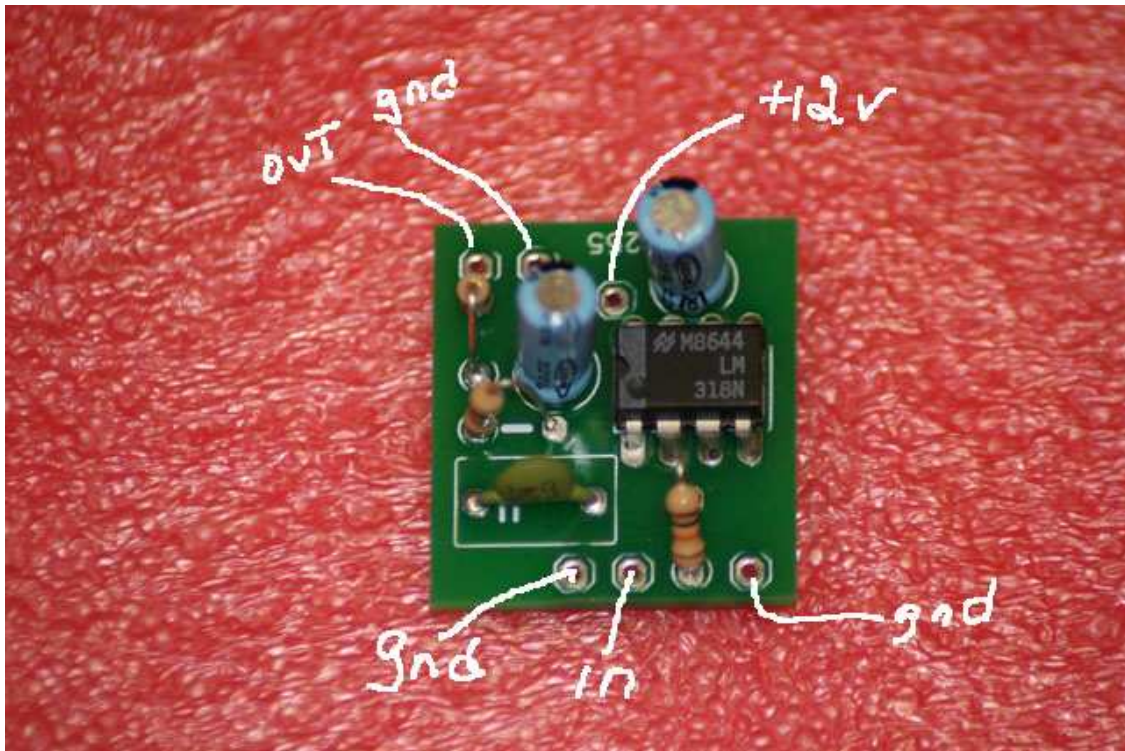

Disassemble the Colecovision

Take 8 screws from the bottom. Carefully peel the silver & black Colecovision sticker from the front panel to reveal 3 more screws. Remove those and the front panel will come off. The expansion module door will fall out as well. It's only held in by the front panel's pressure against the case.

Take the 2 screws out of the RF shield then use a hot soldering iron to melt the solder by the expansion bay connector holding the shield in place. Remove the shield and remove the last 2 screws holding the board in place.

Locate a source of +12v to power the module. Use the RED wire with the kit for this connection. Jumper WJ2 connects to +12v as does the left side pad of filter L3. Use L3 if you have already modified the Colecovision for 4516/4164 DRAM chips. Use WJ2 if you have not as it will be easier to use. Be careful to not short something when soldering to the jumper!

A ground connection is next. Use the BLACK wire for this. Just below the right side pad for L3 is a set of 3 solder points on a big section of trace. This is a ground connection that will work well.
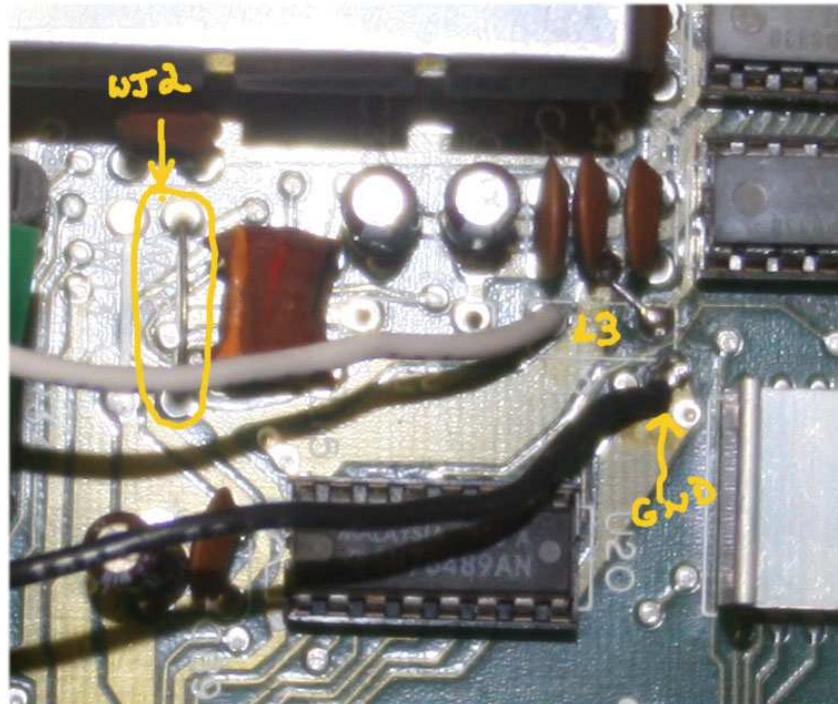

Solder the +12v and the ground wires to the video mod board. The wires should lay so they go to the right of the board. This will make it easy to install the heat shrink tubing over the mod board when finished.

Now... why use Red and Black? Isn't red used for +5v? In the PC world, yes, but on the Colecovision RED is used for the +12v connection from the power jack to the board. If the same color combinations are used for the mod then it's easier to troubleshoot.

Trim back about 1/2" of insulation from the outside of the SHORT piece of thin coaxial cable. Use a needle or pointed PCB tool to separate the ground braid away from the center conductor. Solder the braid and the center conductor to the input connections on the mod board. When finished lay the wires so they go to the right of the board.
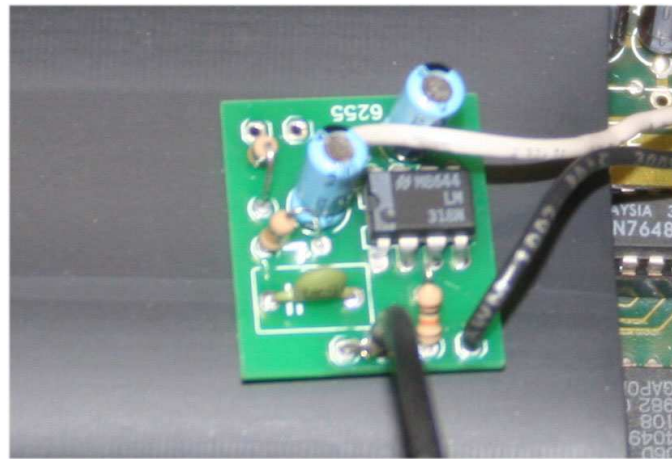

Remove the top cover from the RF modulator. On the front side at the right there is a portion of the side that is bent inward and soldered to the board inside the modulator. Cut the right side of that bend out and fold the edges over. Take the top of the modulator and break off the tab that covers that part of the side. The idea is to make a small hole for the coax to go into the modulator for tapping the video signal. DO NOT USE YOUR GOOD CUTTERS TO DO THIS. This RF Modulator shield is made of thin steel and lightweight electronics cutters may break when trying to cut this.
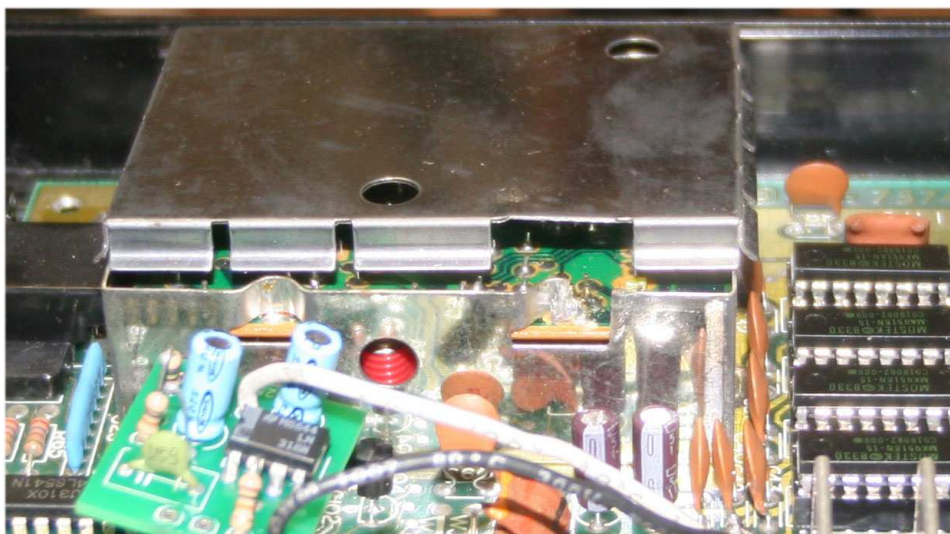
Trim back about 1" of insulation from the other end of the thin coax that is connected to the inputs on the video mod board. Separate the braid from the center conductor.

Inside the RF modulator is a row of pins on the right side. Count from the front towards the back and locate the 3rd pin. Just to the left of this pin is an empty solder pad. Solder the center wire to this pad. Trim back the ground braid and solder it to the modulator where the shield is soldered to the board. This is right next to where the wire enters the modulator. Soldering both of these wires in place is easier if the wires are tinned first.
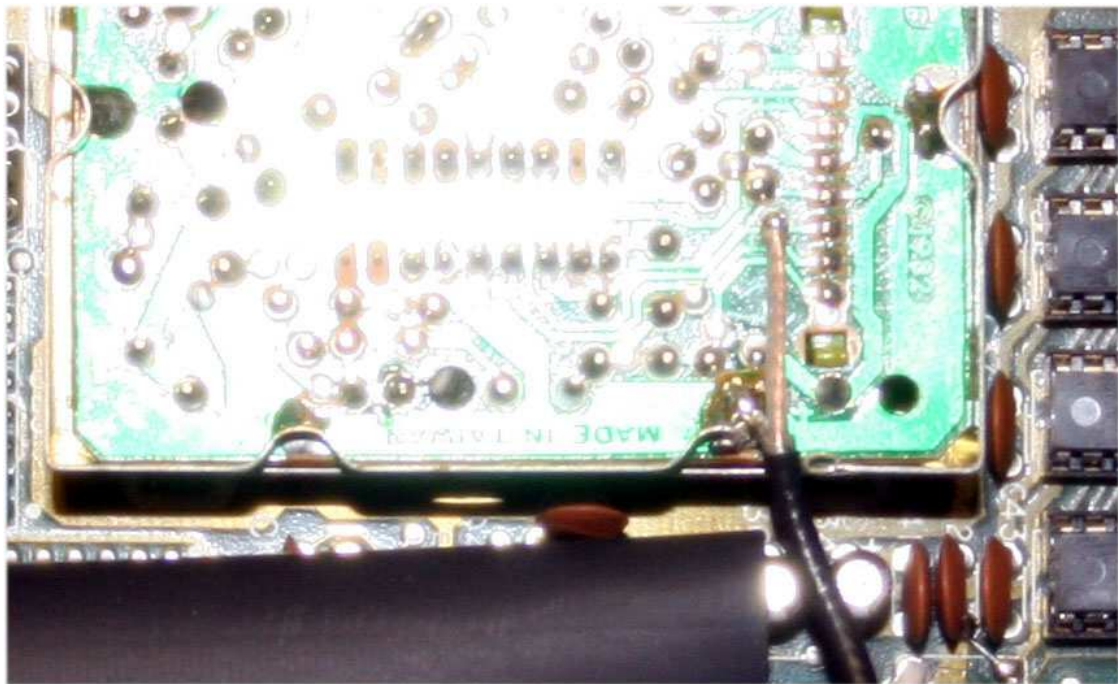
Put the cover back on the RF modulator. If it doesn't fit, ensure the sides of the modulator where it was cut for the coaxial cable are straight.

Now drill holes in the back of the bottom section of the case for the three jacks. Space them about 1" apart. If you wish to locate them closer together then make sure your cables have enough room to fit onto the jacks.

BE CAUTIOUS WHEN DRILLING! The plastic is thick, but easily cut. Do not use much pressure and DO GO SLOW with the drill. When the bits cut all the way through they tend to grab on the sides of the cut and get pulled straight into the case. If you have the circuit board inside the case it could get damaged by the bit.

When inserting the jack, use the YELLOW jack for the video connection. This one should be inserted in the hole closest to the RF Modulator. The yellow plastic ring goes on the outside of the case while the washer, solder ring, and nut go on the inside, in that order. The washer will help keep the heat of the soldering iron from getting to the case when soldering the wires to the jack. Wait to install the other jacks.

Trim back about 1/2" of insulation from the outside of the LONG piece of thin coaxial cable. Use a needle or pointed PCB tool to separate the ground braid away from the center conductor. Solder the braid and the center conductor to the output connections on the mod board. When finished lay the wires so they go to the right of the board.

Trim back about 1/2" of insulation from the other end of the LONG piece of thin coaxial cable. Use a needle or pointed PCB tool to separate the ground braid away from the center conductor. Solder the braid and the center conductor to the connections on the yellow jack installed on the rear panel of the case.
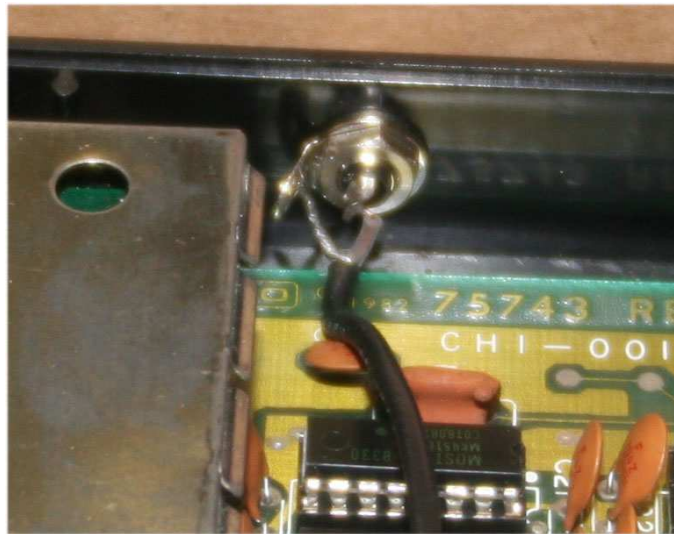
Hook up the system and test. If it doesn't work, double check your building of the kit and wiring.

Now cover the mod board with the heat shrink tubing and use a match or lighter to carefully shrink the tubing to cover the board. Use some double stick tape (not supplied) to stick the mod in place inside the game.

The video portion is done. Next up, the audio!

These instructions have you tap the audio in a different place. Rather than tap directly from the sound chip the audio is sourced from capacitor C88. This allows for better audio outputs from expansion modules such as the Expansion Module 1 that plays Atari 2600 cartridges.

Install the white and red jacks into the holes drilled earlier. When tightening them, line up the ground lugs to where they are on top of each other. Once the jacks are installed, solder the 2 ground lugs together.

Take the SHORT piece of wire and solder it between the two center lugs on the audio jacks. The Colecovision only has mono output so the audio connection goes to both jacks.

(It's easier to install 2 jacks than to mess with Y cables between your Colecovision and your TV, monitor, or stereo system.)

Trim back about 3/4" of insulation from one end of the LONG piece of thin coaxial cable. Use a needle or pointed PCB tool to separate the ground braid away from the center conductor. Solder the braid and the center conductor to the connections on the audio jacks installed on the rear panel of the case.
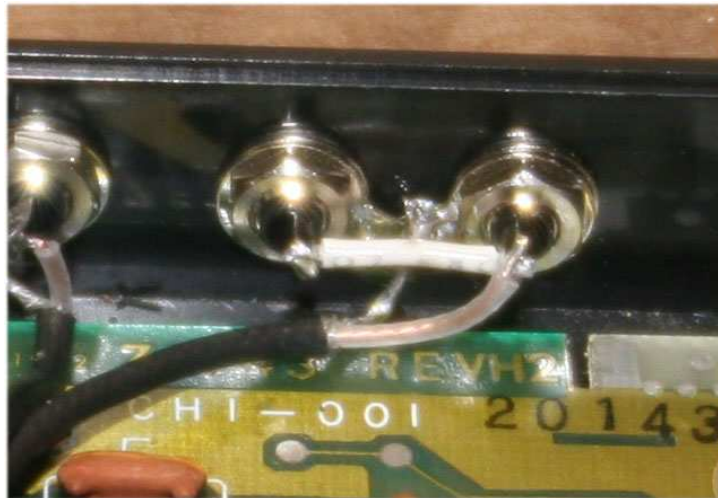
Trim back about 1/4" of insulation from the other end of the LONG piece of thin coaxial cable. Use a needle or pointed PCB tool to separate the ground braid away from the center conductor. Tin the wires and the pins on the chip to make this step easier.

At the back of the Colecovision board, next to the RF Modulator is capacitor C88. Scrape away some of the coating on the ground trace between C88 and the RF Modulator. Take your soldering iron and tin the scraped section on the board. This will make it easier to solder the wire in place.

Solder the ground braid to the scraped trace then solder the center of the coaxial cable to the pin of C88 CLOSEST to the RF Modulator.
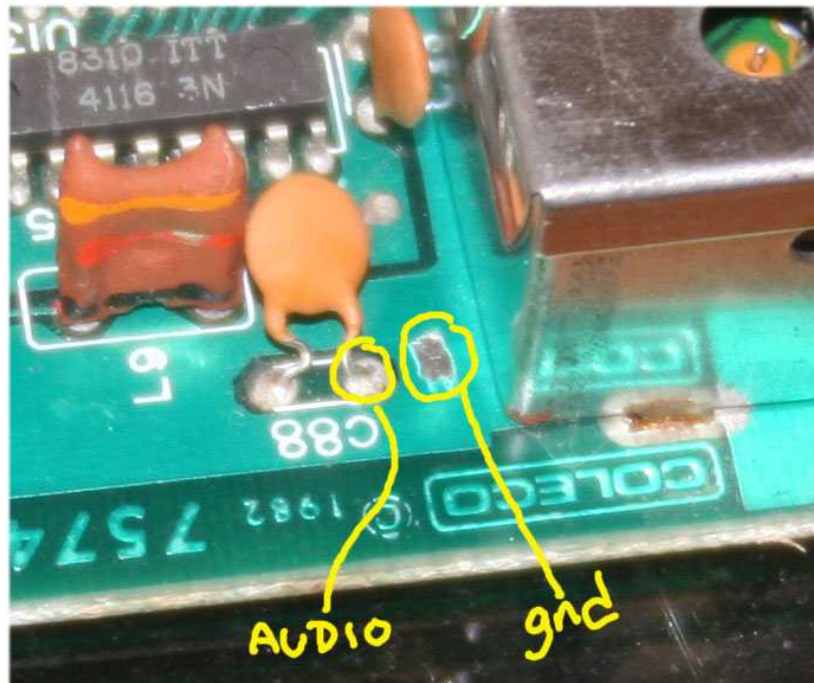
The final step is to take the top RF shield and cut it to allow for the cables to be routed out to the jacks on the back of the case. Turn the RF shield so that the back is towards you. There will be four holes on the left and 2 big notches on the right. The big notches are for the TV channel switch and the RF output. Cut a line straight up through from the bottom to the bottom of the right most hole. Fold the edges back inwards and crimp them to the inside of the shield to keep the sharp edges from cutting the cables. Again, do NOT use your good cutters to do this!

Test the system. If all is working then reassemble the Colecovision and enjoy!

Don't forget to solder that blob back where the top RF shield meets the board otherwise the RF outputs may have extra noise on them.