

# 'Orange Peel' RGB – Install Process – Intellivision (NTSC) – Model 1

Kevin Smith's newest RGB solution 'Orange Peel' is for all models of the Intellivision and is a great piece of kit that provides not only RGB with two different selectable palettes, but also great quality composite and s-video as well! This guide is to provide you with the information needed for installing these RGB boards on Intellivision systems. This guide focuses specifically on the model 1 version consoles.

**NOTE: – This guide requires experience using a soldering iron and understanding the basics of electronics and tools. I take no responsibility if you follow these instructions to modify your system as you do so at your own risk!**

## Tools Needed:–

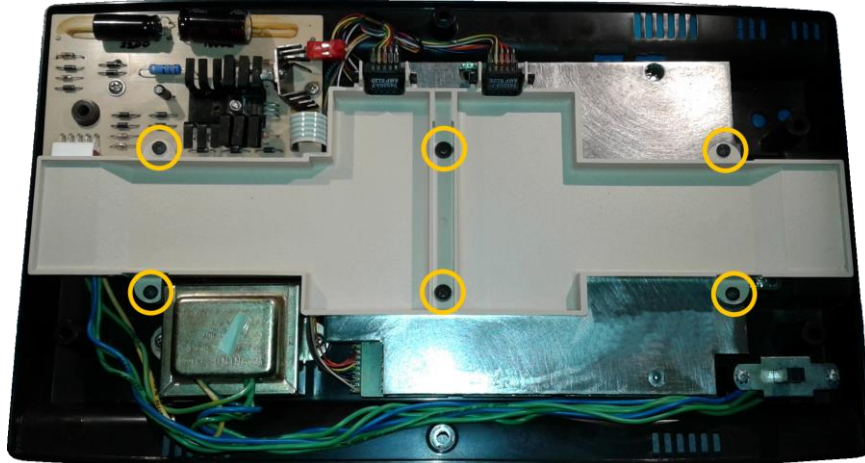
- 'Orange Peel' RGB Intellivision board
- #2 Phillips screwdriver
- Tweezers or small needle nose pliers
- Soldering iron
- Solder
- De-solder braid/wick or de-soldering iron
- Lengths of small gauge wire
- Side/Flush cutters
- Multi-meter

## Disassembling the Intellivision:–

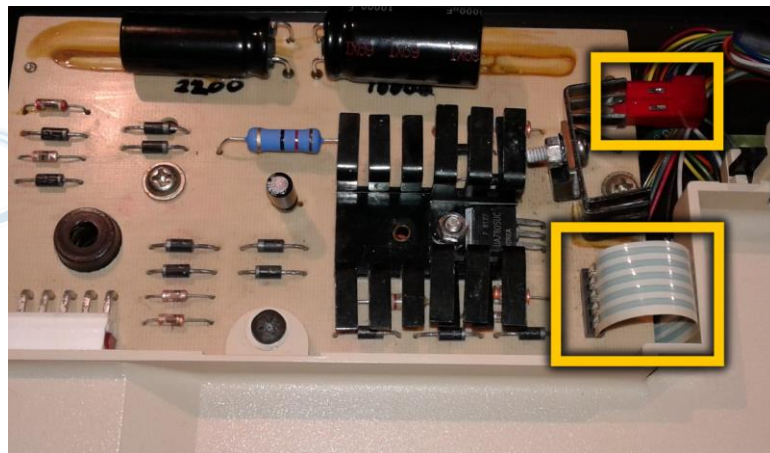
1. Start by removing the top cover from the Intellivision by removing the 6 screws along the bottom of the case. Refer to the yellow circles in the picture below for screw locations. Then pull up on the power switch to remove the cover button on the switch.



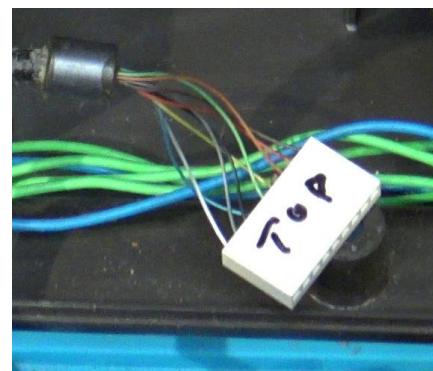
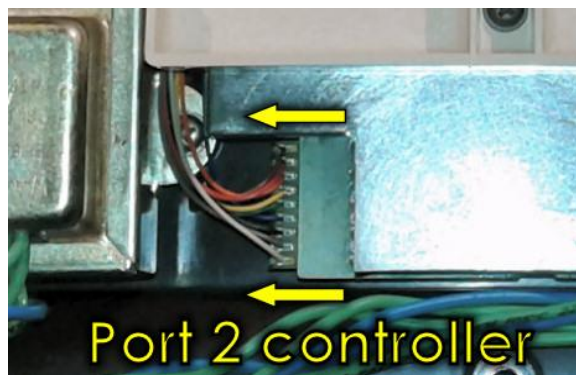
2. Remove the controller tray assembly by removing the 6 screws as shown below.



3. Disconnect the power ribbon cable and extra voltage wire from the power supply board to remove the main PCB assembly from the console shell.



4. Remove the controller cable harnesses from the main PCB by carefully pulling the Molex style connectors away from the controller header pins on the PCB. **NOTE:- Wiring faces upward from the connector when installed. Labeling the connectors is advised!**



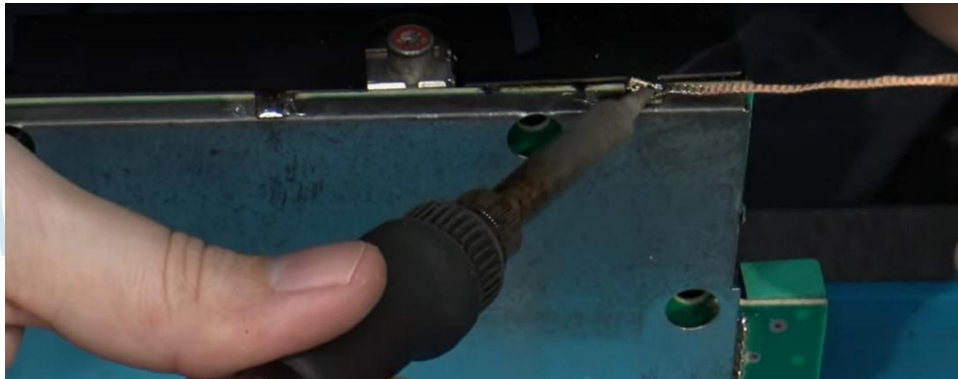
## Main board preparations -

### ***RF Shield Removal: - Not so fun***

The two halves of the RF shield will need to be removed from around the main board for this installation.

***NOTE:- As the RF shield is a bit a challenge to remove, you do NOT have to reattach it if you don't want. It is advised to reattach the shiny and smaller half of the RF shield to protect the solder side of the PCB.***

1. Start by setting your soldering iron to a pretty high temperature as the shielding will draw quite a bit of heat away when you try and remove the solder from the tabs.
2. Use de-solder braid/wick or a de-soldering pump to try and remove as much solder as you can from on top and around the tabs that surround the PCB. There are 3 tabs on each of the long sides with 2 tabs on each end. The smaller RF shield has a large tab soldered to the center section of the cartridge slot pins that must be separated if you need to remove that RF shield as well.



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3. Use a flat blade screwdriver or similar to get under the tabs to help pull them away from the PCB edges as you apply your soldering iron onto the tabs to loosen the remaining solder holding the tab down in place.



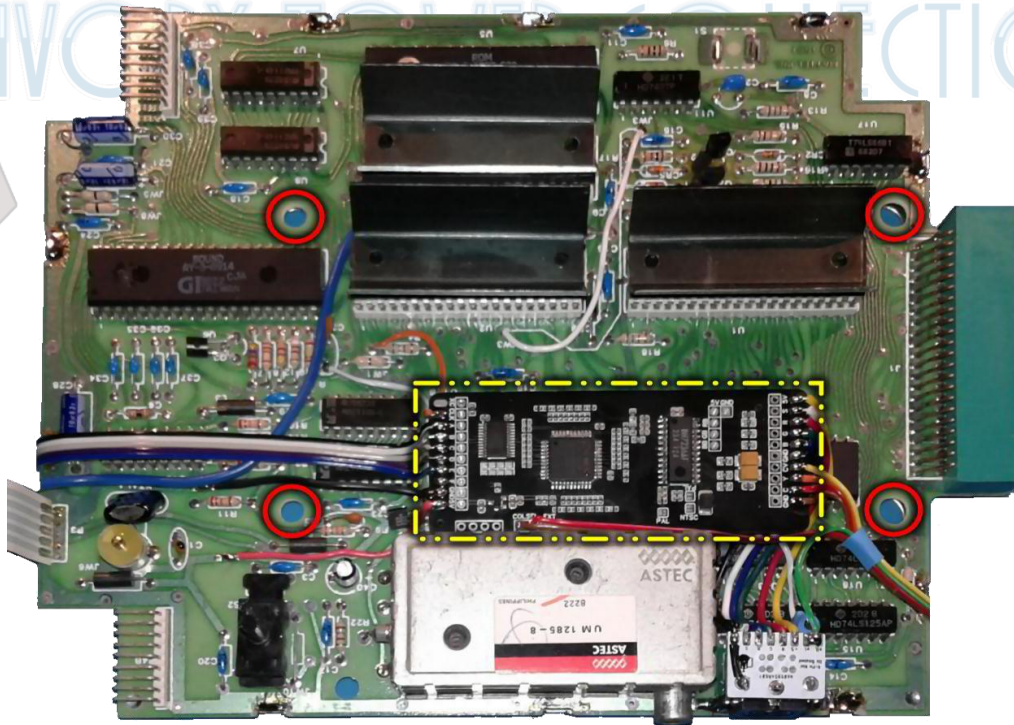
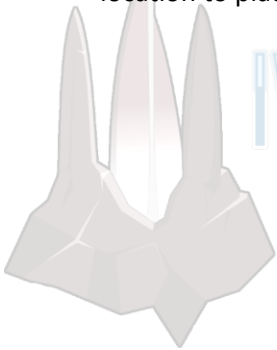


4. Once all the tabs appear to be loose, use a flat bladed screwdriver to wedge between the shielding and the mainboard to gently pry the shields halves away from each other and away from the main board PCB.



#### RGB board installation:- Board placement & Wiring

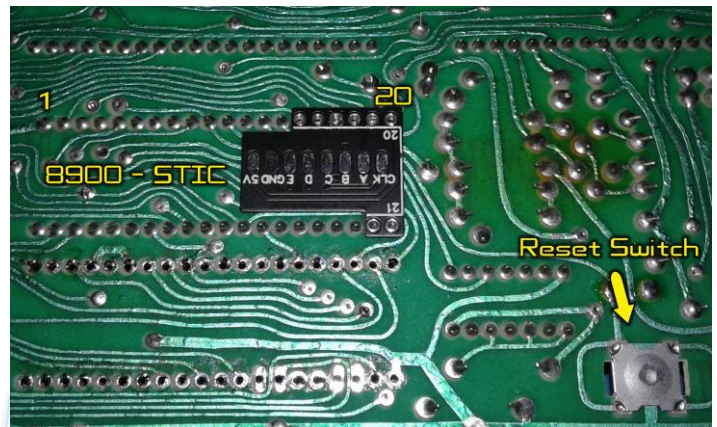
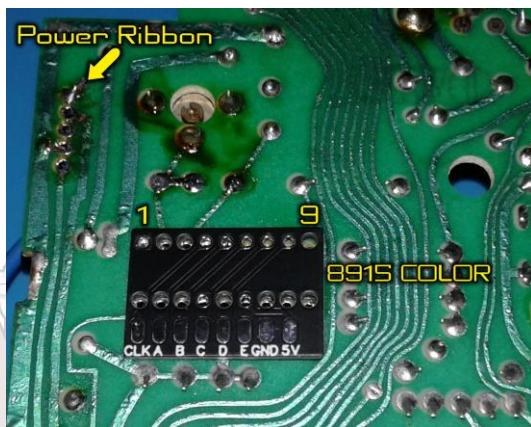
Decide where you want to place your RGB board for the install. Keep in mind the holes circled in red in the picture below as you cannot cover those areas with the RGB board or wiring. Outlined in yellow is one possible location to place the RGB board using Velcro or double-sided foam tape attached to the top of IC chips.



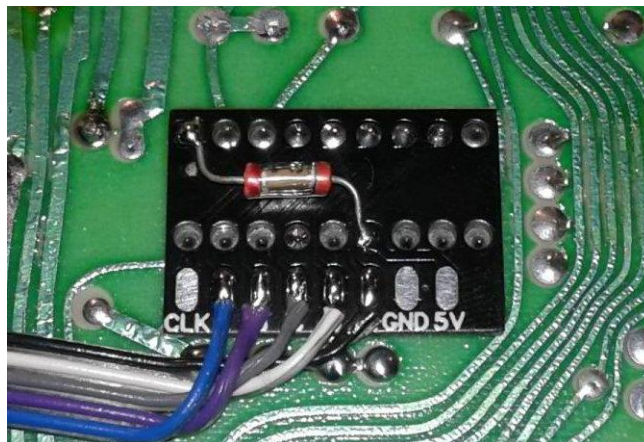
**Note:- Remember to install the RGB board for easy logical wire runs from both the input and output sides of the board.**

## Wiring up the RGB board:- Input wiring connections

1. Install the small QSB board for whichever IC chip you choose to take the power, ground, & other signals from. The kit includes two QSB boards. The one marked 8915 is for use on the small Color IC chip while the one marked as 8900 is for use with the larger STIC graphics chip. Only one of the QSB boards is needed and you don't have to use them if you don't wish. The QSBs are attached by placing them over the pins of the IC chips from the bottom side of the main board and then soldering the QSBs onto the pins. On some Intellivision consoles, you could require de-solder braid to remove excess solder or trim leads off components that come through the board that might block and prevent the QSB from seating properly and flush on the pins to be soldered down.

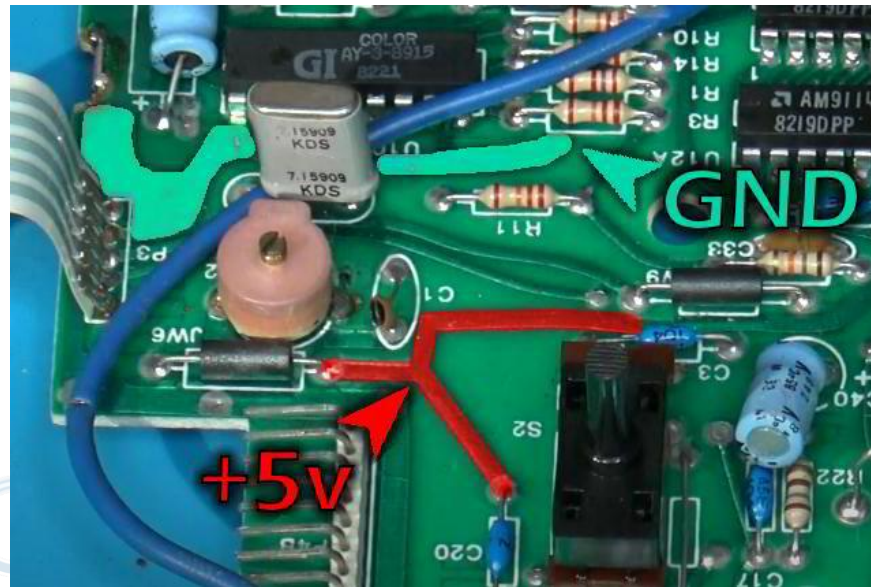


**Note:-** Some model 1 Intellivisions might have a bypass capacitor installed across pins 1 and 13 of the Color IC chip on the PCB solder side. This is a factory installed component and requires having to remove it to install the QSB. The capacitor should be reinstalled after on top of the QSB as shown below:

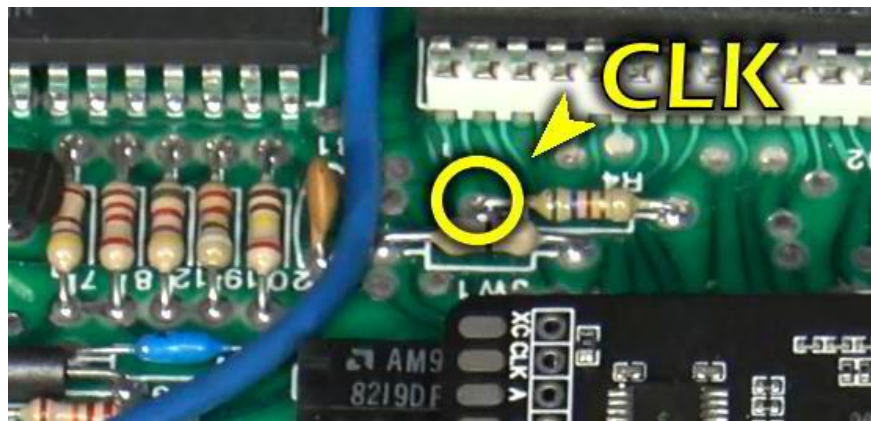




2. Solder wiring to the input section of the RGB board first. Route wiring around the side of the main board, trim, and solder to the pads on the QSB that match the pads on the input side of the RGB board. So, A to A, B to B, and so on. Ground, Clock, and +5v can also be attached from alternate locations on the top side of the main board. +5 can be found on the side of the ferrite bead labeled as JW6 or capacitor C20 near the channel select switch. Ground can be had from anywhere along the larger outer trace on the main board, but a few spots have been shown in the picture. CLK (clock) can be gotten from the left side leg of resistor R4 just under the lower left of the large IC labeled as U2 near the center of the main board. Refer to the following pictures for guidance.

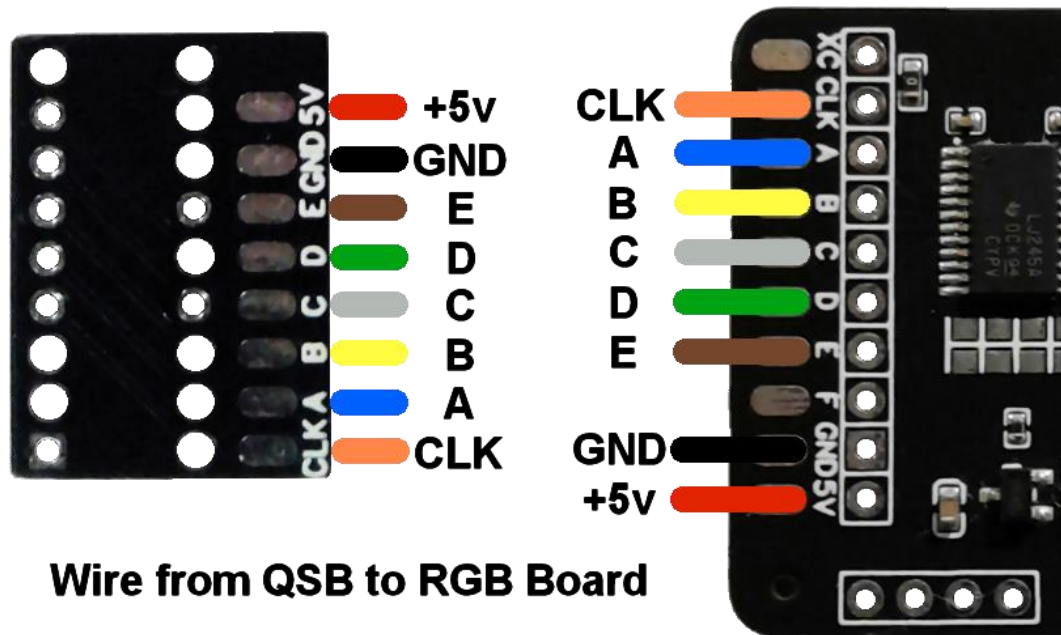


*Sample locations for +5v and ground*

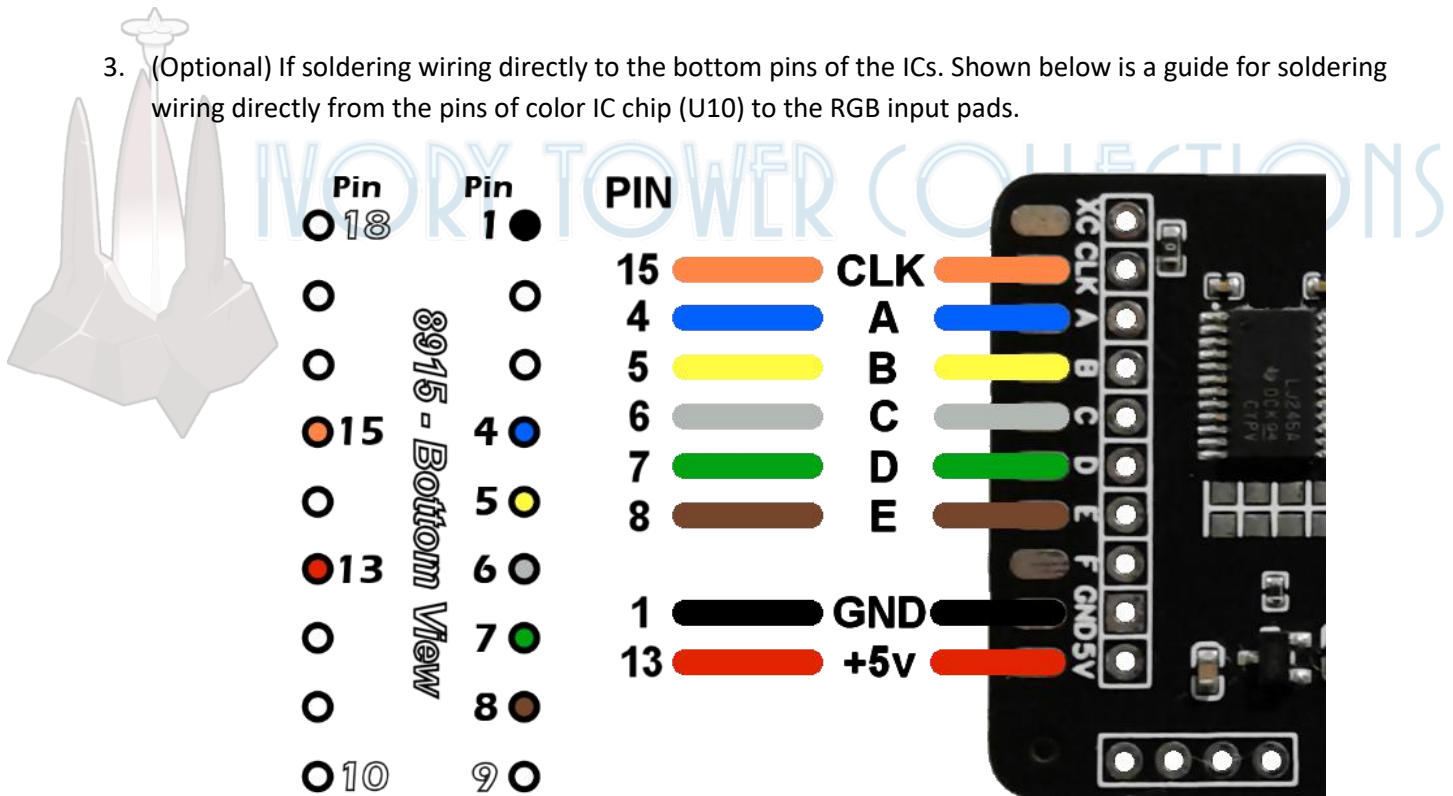


*Alternate clock signal from left leg of R4*

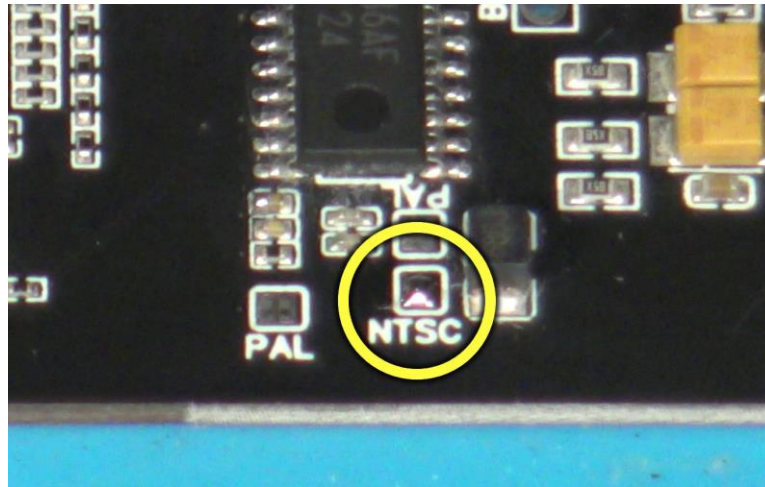




3. (Optional) If soldering wiring directly to the bottom pins of the ICs. Shown below is a guide for soldering wiring directly from the pins of color IC chip (U10) to the RGB input pads.



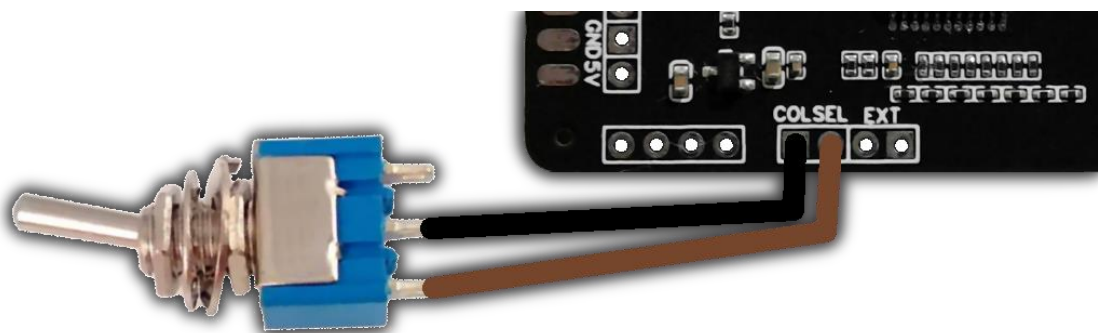
4. For proper NTSC output, apply some solder to jumper the NTSC pad on the RGB board as shown below.



5. Audio can be taken from the 2<sup>nd</sup> pin/wire on the RF modulator or from the south leg of C31 near the lower right of the sound IC chip. Solder a wire from one of these points and run the other end to your audio out jacks.



6. Solder wiring from the COL SEL vias on the RGB board and run the wires to the toggle switch if you want the ability to change between the two output color palettes.

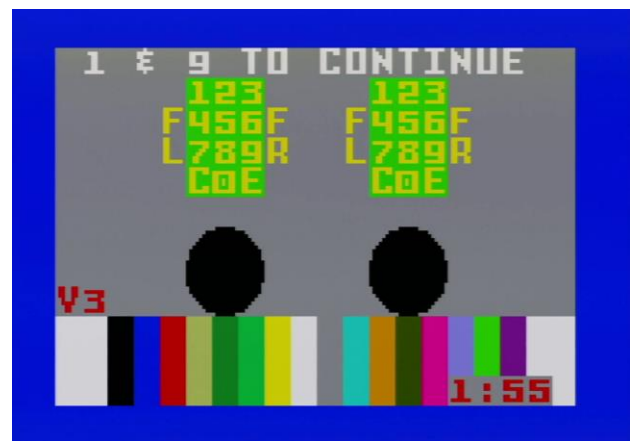


**NOTE:-** If no switch is installed, the default palette will always be active. If you jumper the pads together, then the alternate palette will always be active. Examples of the two can be seen on the next page.





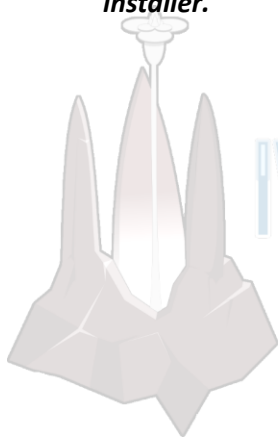
Default Palette



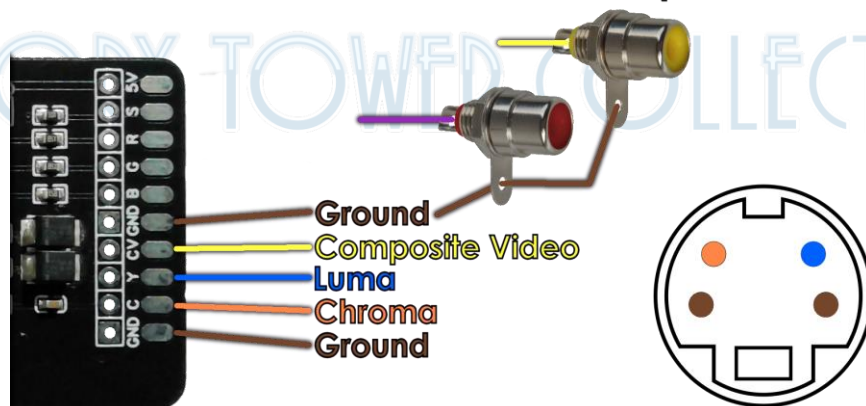
Alternate Palette

## Output wiring diagrams:-

There are several outputs available from the RGB board to provide video output. Below are diagrams that show wiring needed for each output option. Placement of the AV output jacks is up to the discretion of the installer.

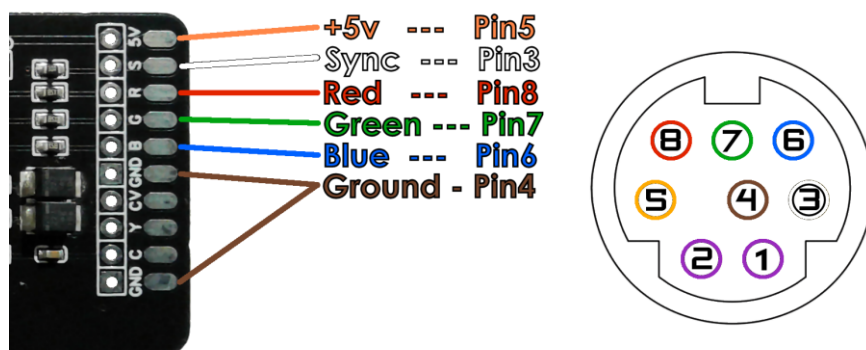


### 4-Pin S-Video & RCA Outputs



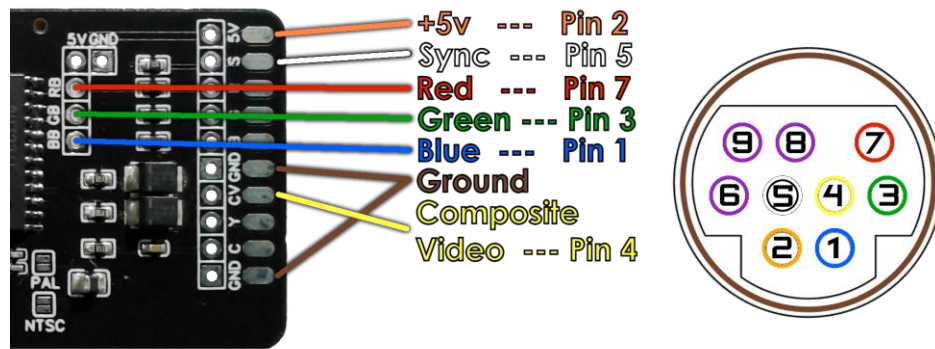
From Main Board --- Audio - To RCA

### 8-Pin Mini Din RGB Output



From Main Board --- Audio - Pin 1&2

## 9-Pin Mini Din RGB Output : SEGA



From Main Board --- Audio - Pins 6,8,9

Now you should be ready to enjoy your new RGB, s-video, & composite outputs for the highest quality picture and sound you can get from your Intellivision. Be sure to check your work with a multi-meter before final re-assembling to verify no loose wire connections or shorts before you power on your console to test.

