

REPAIR C.R.T. SHORTS FAST

How many times have you had tv's come in to your shop with picture tube shorts and maybe had to turn the work away or the customer didn't want to pay the price of a new tube? The problem is that the raster is all one color (most often blue or green) and there is usually observable retrace-most likely a short.

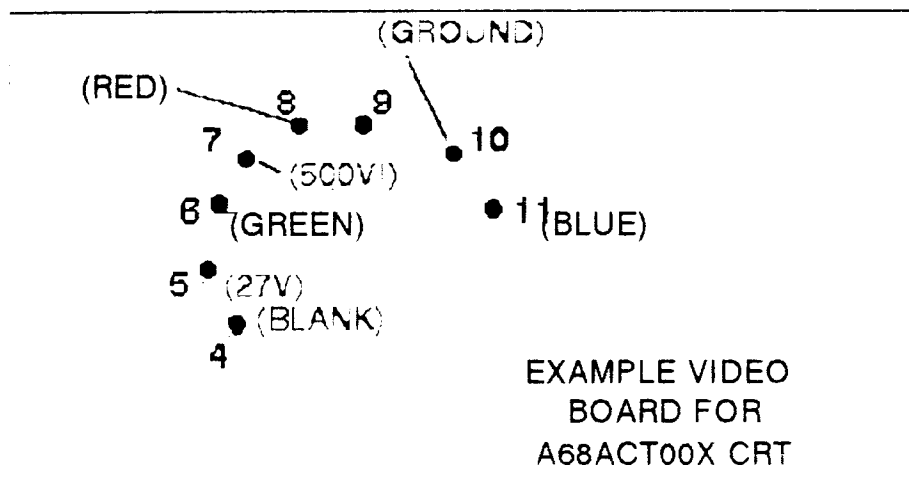


FIG. 1

PLEASE NOTE: ALL SCHEMATICS RESEARCHED START PIN COUNT AT FIRST POSITION AS NUMBER 4 (FOUR)

The short is usually cathode to ground or cathode to screen grid. Whichever color is present on screen is the cathode that is shorted and of course will be the point on the crt board that has low or zero voltage present. The crt studied in this paper is the A68ACT00X (often used in Zenith products). This procedure can be used with other tubes, but it is most important that you use a schematic and understand what-is-where on the particular crt pin-out. Always use a schematic to verify pin out until you are familiar with the pin-outs or else you can get yourself into a shocking predicament. The A68ACT00X has a crt board with the above pin-out. All the schematics referring to this CRT list the first pin position (bottom left) as number four (4).

It is very important that you understand that the pins start with the number 4 and that you understand what each pin represents AND what voltage is present at each pin. Pin 4 (first position) is blank. Pin 5 (next position) is the screen grid. 21-26V. The cathodes, pins 6, 8, and 11, usually have around 140-180v present. Pin 7 is G1, 550v. Never, Never use pin 7 (fourth position) in this procedure or you could have a very dangerous explosion. Study the above chart and become familiar with it before proceeding.

The next page describes the tools you will need and a very effective procedure for restoring the picture to about 90% of "previously unrestorable" picture tubes.

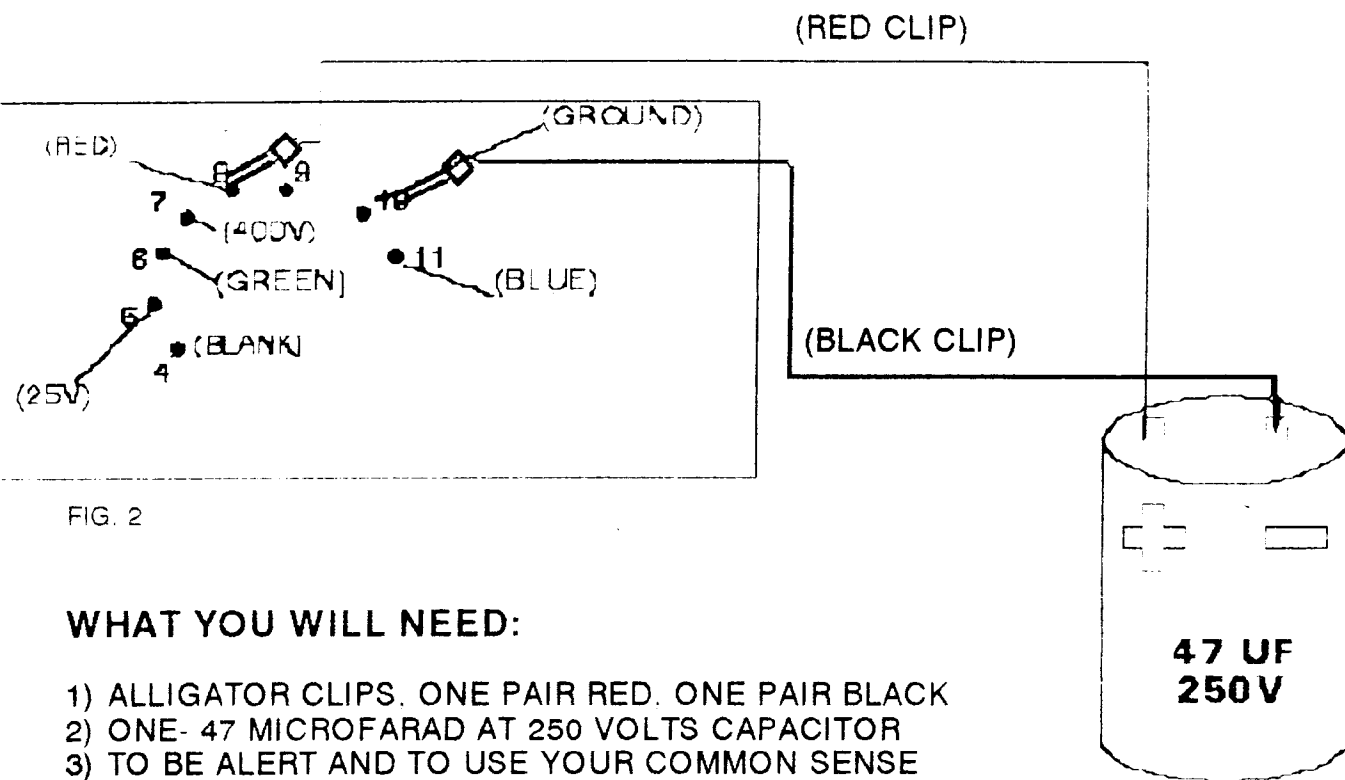


FIG. 2

WHAT YOU WILL NEED:

- 1) ALLIGATOR CLIPS, ONE PAIR RED, ONE PAIR BLACK
 - 2) ONE- 47 MICROFARAD AT 250 VOLTS CAPACITOR
 - 3) TO BE ALERT AND TO USE YOUR COMMON SENSE
- HINT: IT IS ALWAYS A GOOD IDEA TO CHECK THE VALUE OF YOUR CAPACITOR PRIOR TO EACH USE!

STEP ONE:

Determine if the crt is shorted. Do all that is possible to rule out other circuitry malfunctions. Is the raster all one color? Is retrace evident? Is the voltage present at the cathode pin on the crt board low for the particular color that is dominating the raster? If you found the answers to these questions to be yes, then you probably have a shorted crt. Does the voltage at the pcb pin in question stay low when the board is removed from the CRT? If the answer is no then you most definitely have a shorted CRT.

Our example will be an all blue raster with some retrace evident. The voltages at pins 6, 8, and 11 should read about 140-150v each, but our tube is shorted blue cathode to ground so when we measure pin 11, we find 0V present. We need to remove the short from either the blue cathode to ground or to screen grid. Look at the above diagram. You first need to charge up the capacitor by applying the ground clip (black) of the capacitor to pin 10, ground on crt board.

Now apply the positive side of the capacitor through the red clip to a good 140-180V source for a **count of three**. The good voltage source in our diagram above is the red cathode, pin 8. Be careful to **NOT** touch pin 7, which has higher voltage present, usually around 400V, but may be higher.

After charging the capacitor refer to the figure 3 and instructions on the next page.

STEP TWO:

After you charge the capacitor by placing the red (positive) alligator clip on a good crt video board pin (pin 8, or red in our example), move the red clip to pin 11 and touch it sharply, not too delicately, as you must make good contact.

Warning: there will be a spark, but no explosion! Be sure to discharge the capacitor on pin 11 when raster is all blue. Refer to the illustration below.

The picture should now be restored. Just like magic, isn't it? If it isn't restored, either repeat the procedure or place the ground clip on pin 6 and repeat the process. There may be a cathode to screen grid short.

After a few attempts, this process should be very easy for you and you'll be less apprehensive about charging and discharging the capacitor. Please always use service literature to determine the crt board pin configuration. The example here is for the A68ACT00X crt, used in Zenith televisions and others. It had a shorted blue cathode (all blue picture). This procedure will work with other crt types and other cathode shorts. Simply charge and discharge the cap appropriately on the appropriate pins.

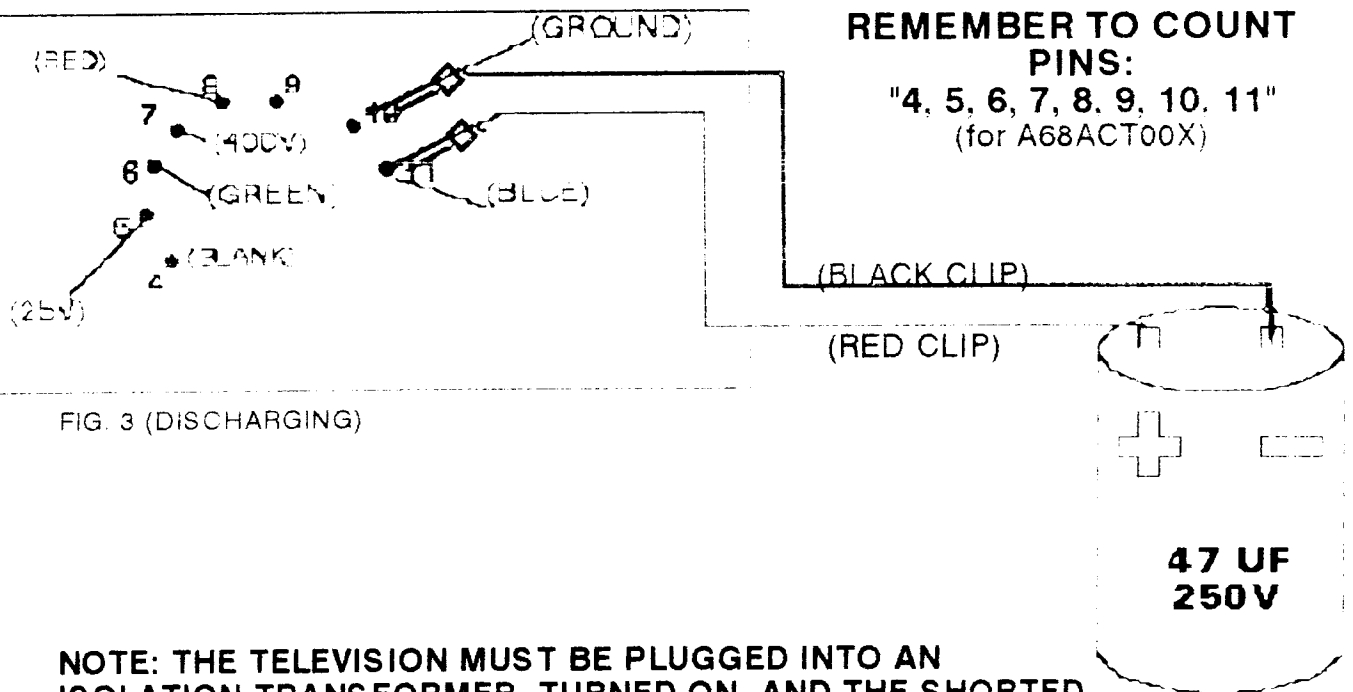


FIG. 3 (DISCHARGING)

NOTE: THE TELEVISION MUST BE PLUGGED INTO AN ISOLATION TRANSFORMER, TURNED ON, AND THE SHORTED CONDITION MUST BE PRESENT (THE SCREEN MUST BE ALL ONE COLOR) DURING THE DISCHARGING OF THE CAPACITOR IN ORDER TO RESTORE THE PICTURE.