

Amplifone Modification Instructions for High Voltage Replacement Kit



**STAR
WARS**

BLACKWIDOW



GRAVITAR

**SPACE
DUEL**



WARNING!

Danger Potential

Although this kit has been designed to be easy-to-install, and has been tested in many installations; caution must be exercised when installing this kit. If you are uncertain of how to properly install this kit safely, consult a professional for installation assistance. Neither the manufacturer nor distributor assumes any responsibility for any accidents or damage caused by the installation or usage of this kit. By installing this kit you agree to not hold the manufacturer or distributor responsible for any damage as the result of, or arising out of the use of this kit.

High Voltage

This kit contains and generates high voltages capable of delivering lethal quantities of energy. To avoid serious injury or death, do not attempt to install this kit until you have read and understood all precautions and instructions included but not limited to the instructions with the kit.

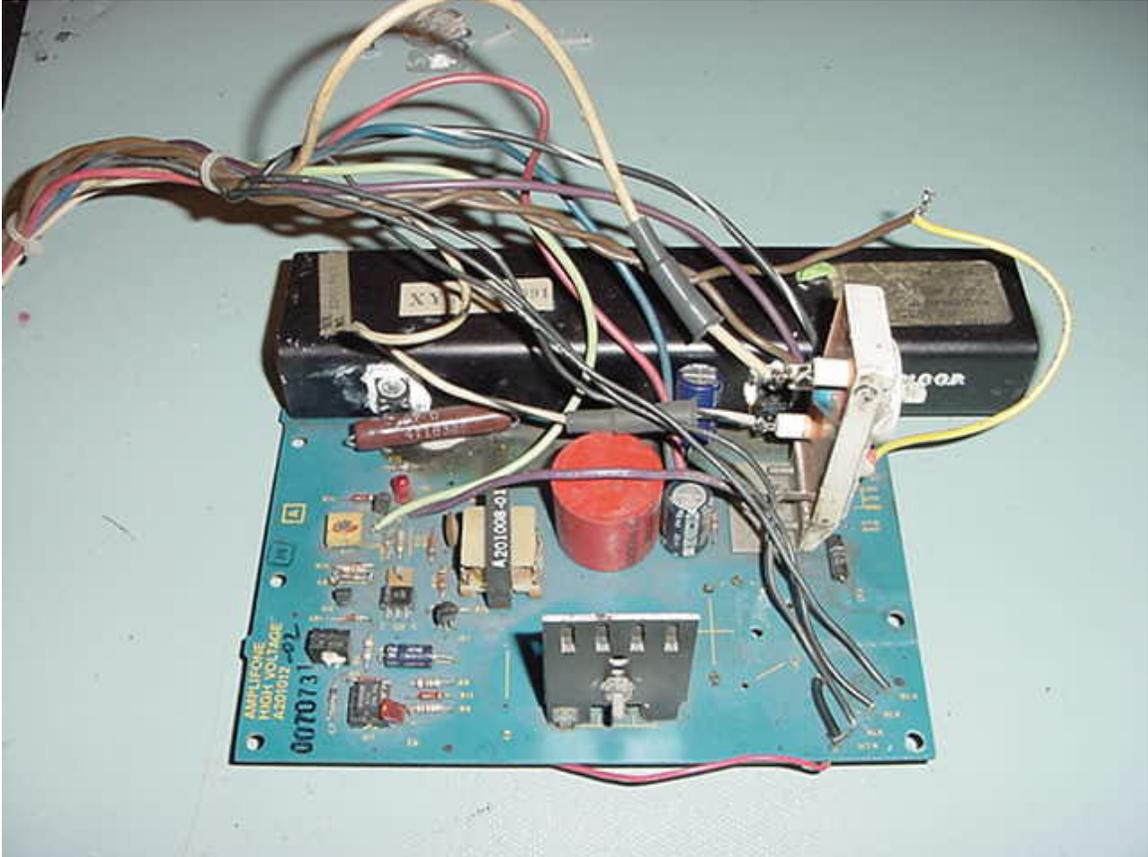
X-ray Radiation

This kit has been designed for minimum x-ray radiation exposure. However, to avoid possible exposure to soft x-ray radiation, it is imperative that you never modify or adjust the high voltage generating circuitry except as described herein.

Implosion Hazard

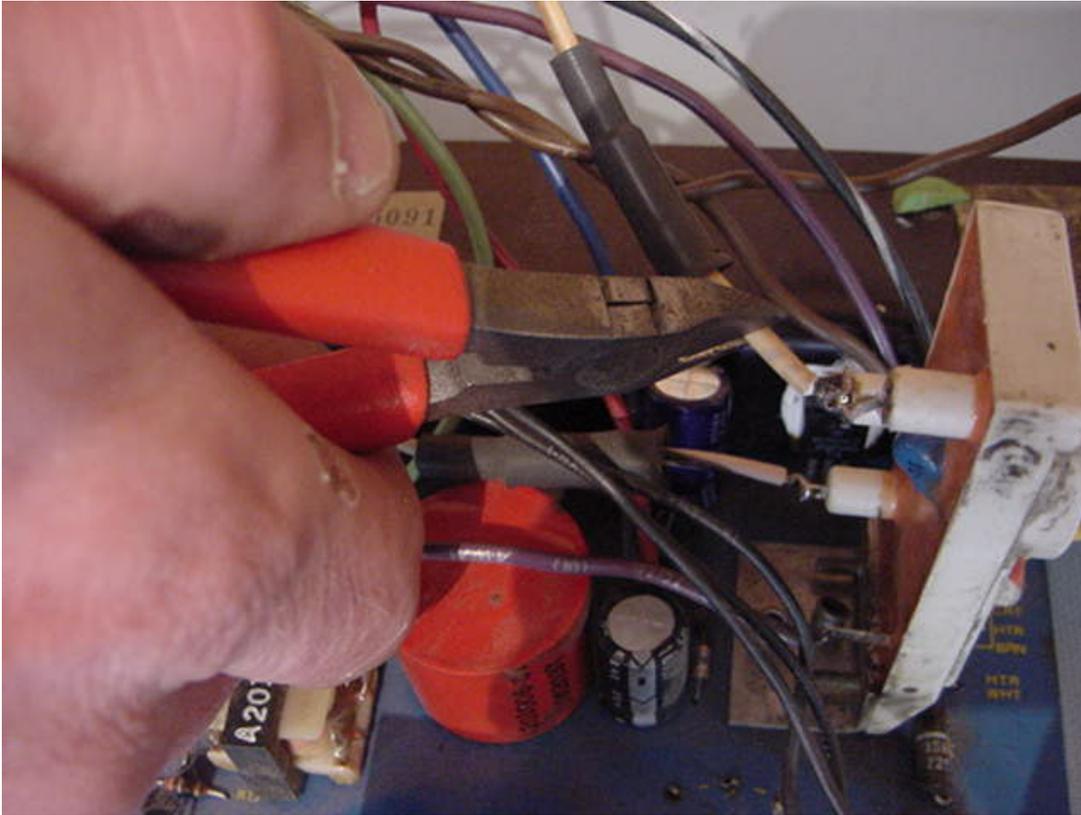
If the picture tube is damaged while installing this kit, it will implode. Shattered glass and the deflection yoke can fly 6 feet or more from the implosion. Always use care when working around the picture tube.

Although this procedure has been performed and tested with great results, no guarantee is made on the results you will have. This modification is for individuals experienced in electronics and familiar with reading wiring diagrams and schematics. Some fabrication may be involved for best fit and placements. If you feel you cannot perform this modification then don't.

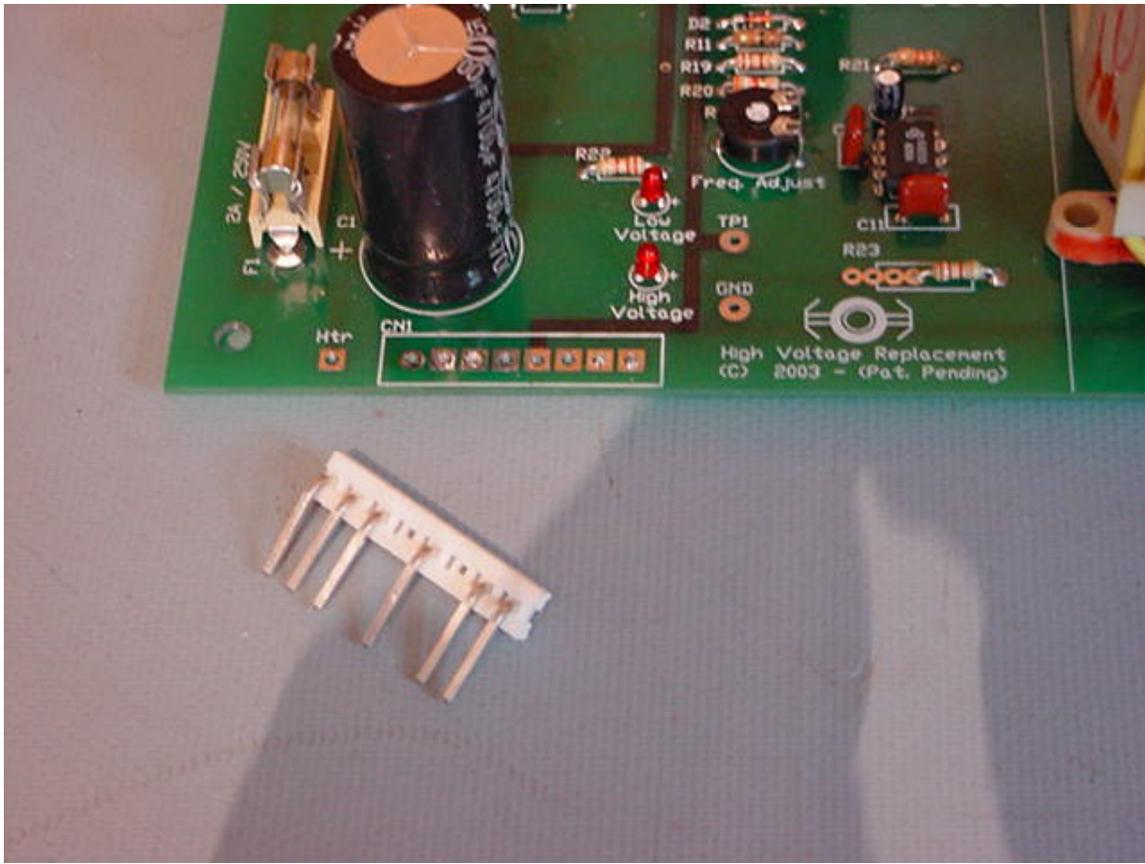


Okay lets get started...

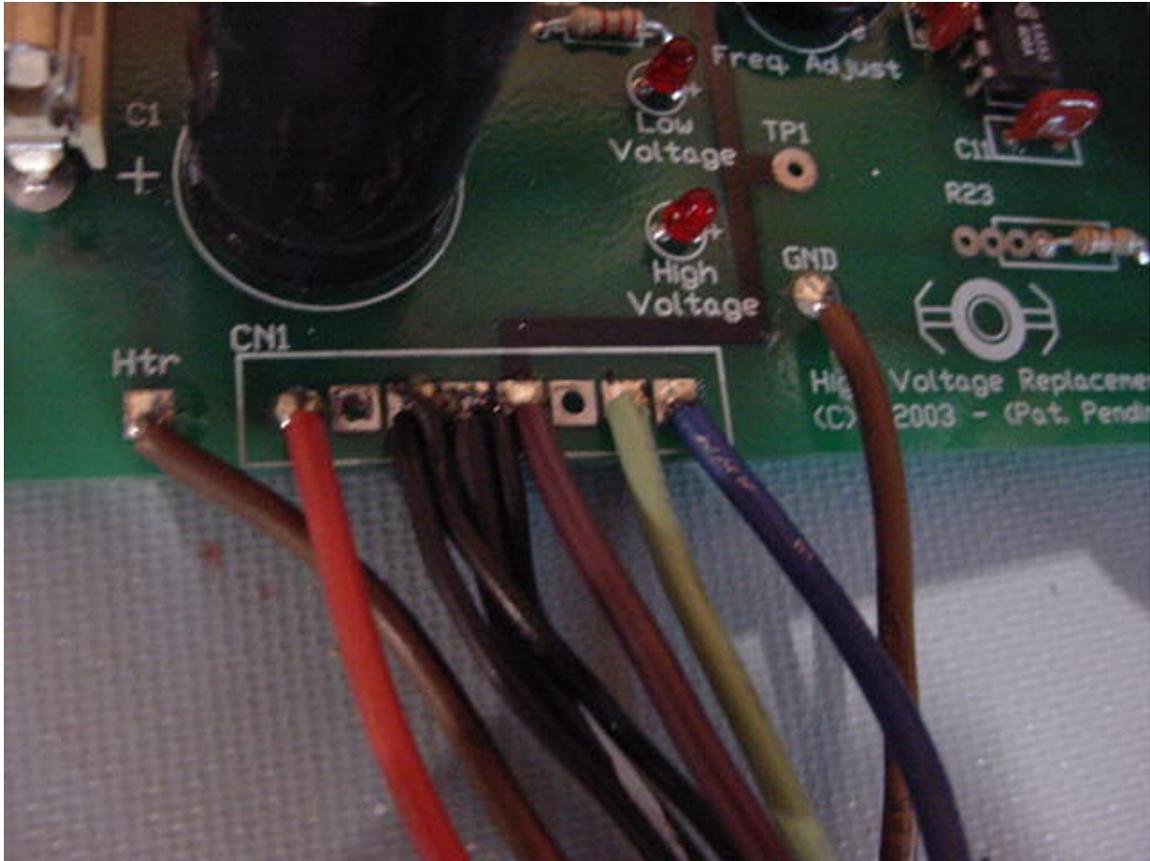
The picture above is an original Amplifone HV PCB less the Flyback transformer (It was Smoked) Along with the wiring harness we will reuse.



First cut all the wires close to the connection points on the old Amplifone HV PCB. We will reuse the wiring harness so take care in your snipping. Set the harness aside for now and put your old HV PCB in the trash, sell it on EBay or use it for a doorstep.



Remove CN1 from you new HV replacement PCB if its not already removed. Be sure not to pull any traces and clean the solder out from the holes.

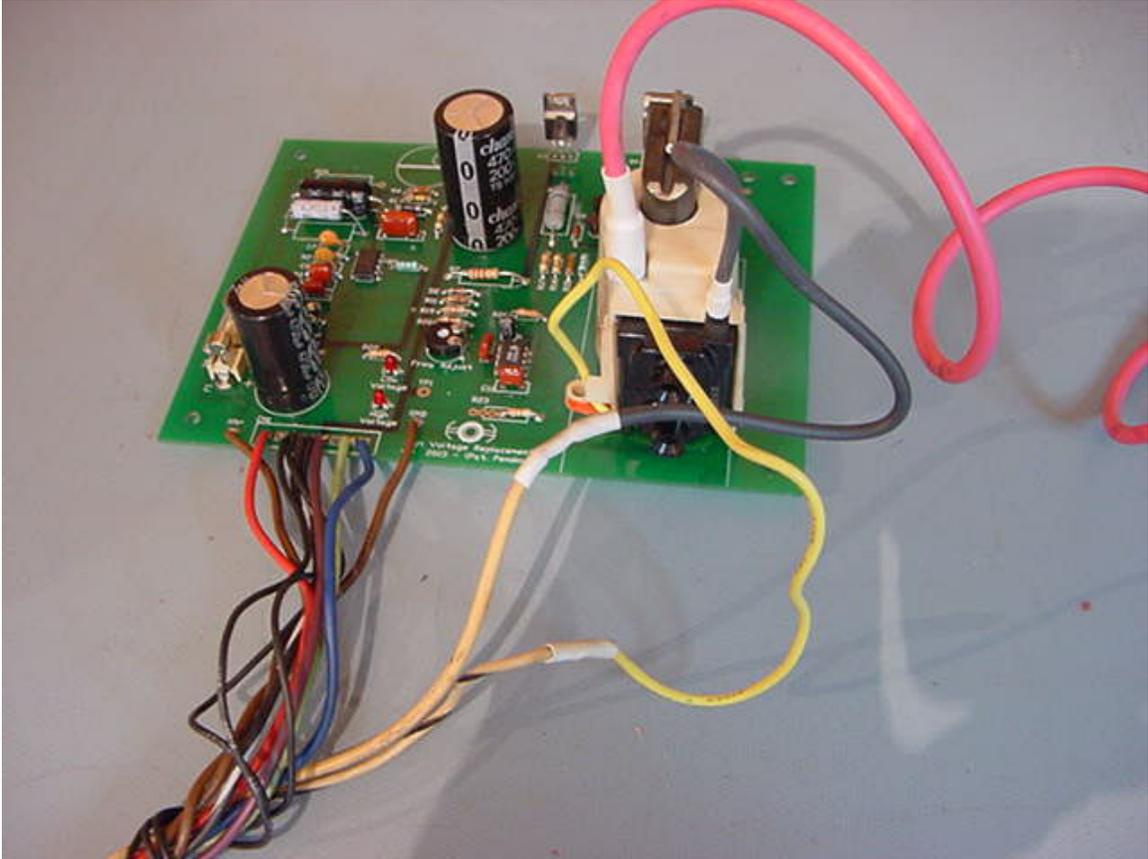


Solder the wires from your old wiring harness in place. Use the picture above and the wiring diagram below for reference. The holes are 1 – 8 from left to right not counting Htr.

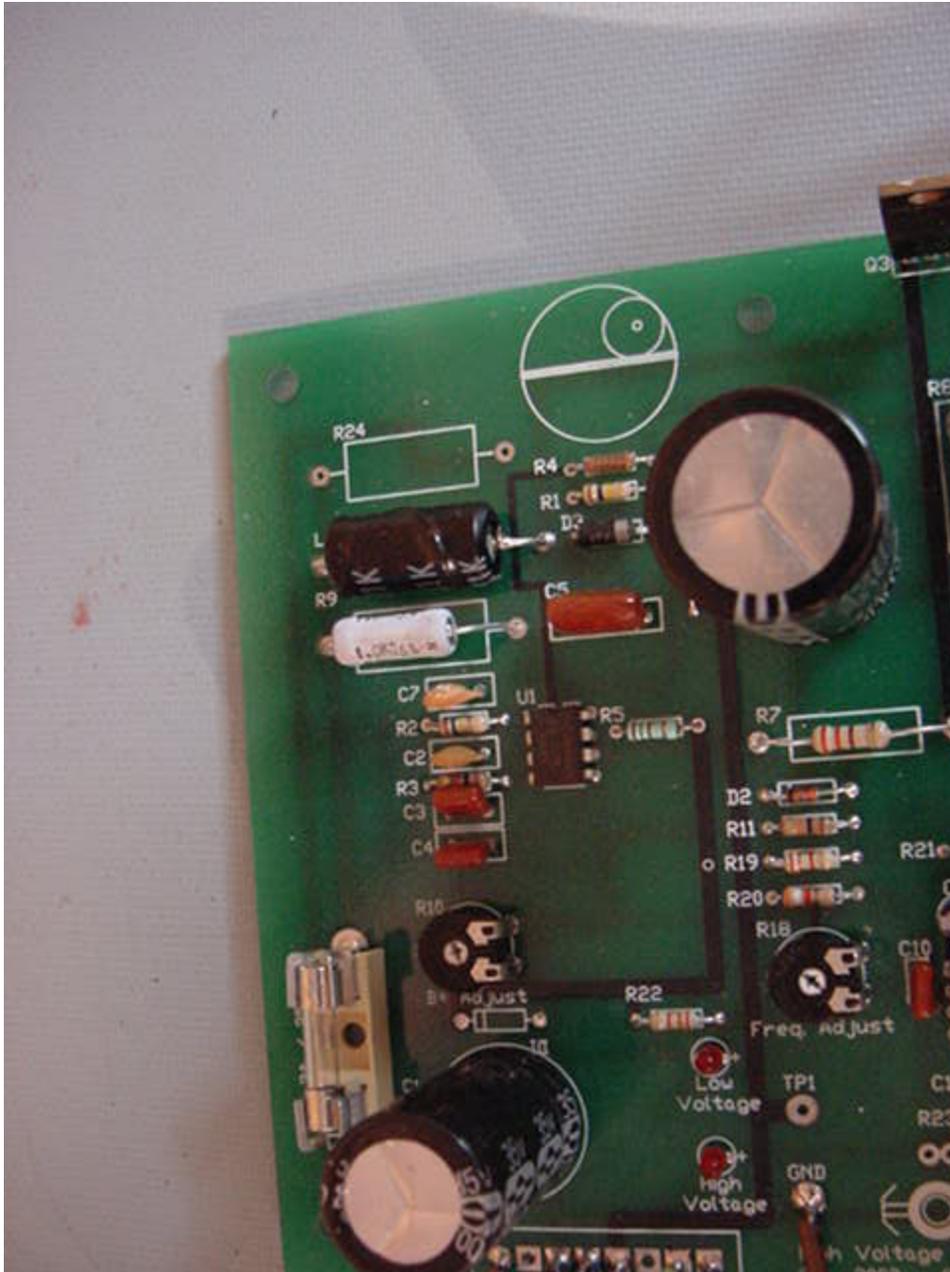
- 1- Red
- 2- N/C
- 3- Any 2 Black wires
- 4- The other 2 black wires that are left
- 5- Violet (looks brown in the picture but its Violet wire)
- 6- N/C
- 7- Green
- 8- Blue

Yellow Wire from flyback to white/with black stripe on harness
Black Wire from flyback to white wire on harness

HTR connects to the plain brown wire (pin #9 on picture tube socket).
GND connects to the brown wire with black writing (pin #10 on picture tube socket).



When finished wiring in your old harness it should look like the picture above.



R24 needs a 35 ohm 15 Watt resistor installed. If you cannot find this Value then use two 50 ohm 10 watts in parallel with one 10 ohm 10 watt is series with that to make a value of 35 ohms.

A heat sink will need to be fashioned for the two large Transistors on the NEW HV PCB. Use a square piece of aluminum 2" by 1" or so. Make sure the transistors are insulated from the heat sink and each other with Mica insulators. Use the plastic bolt, nut and insulators provided for this.

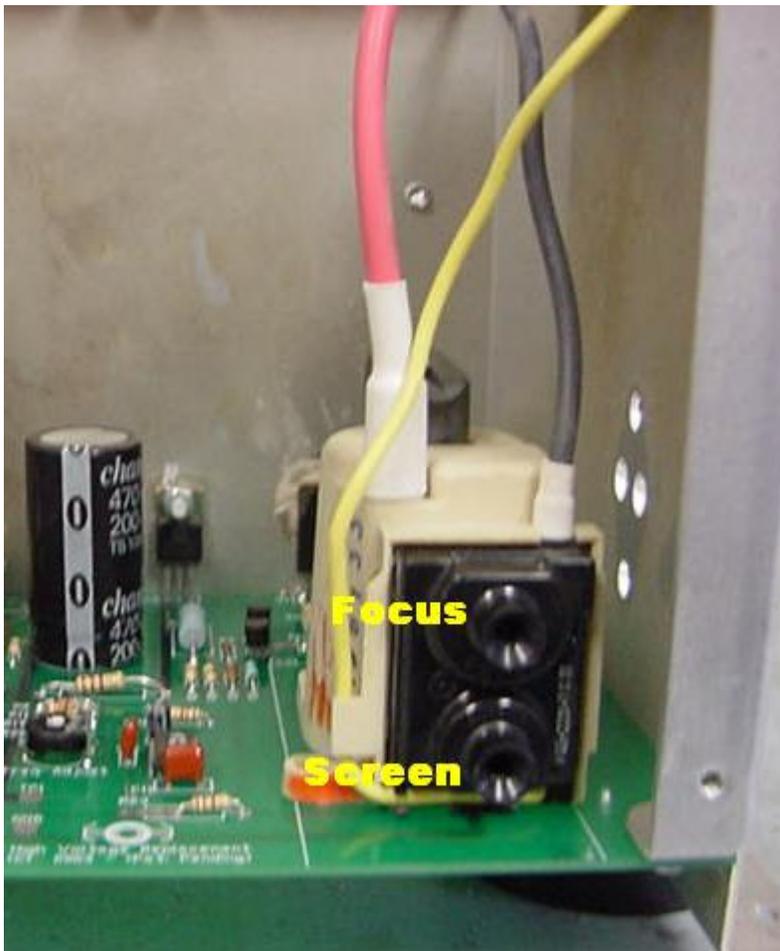
Place your new HV unit and harness back into your game and make sure that the DAG ground from the CRT is wired to Ground on the New HV PCB. See the wiring Diagram for info. If there is not a good ground from the CRT to the rest of the Grounds then the picture will be very shaky and blurry.

ADJUSTMENTS -

If you do not have the correct test equipment leave the B+ setting how it was set at the factory. It will be close enough for a good picture.

Power-up your game and make sure that both the Low power LED and High Voltage LED are lit. If not then go to the troubleshooting Section.

If both LED's light then adjust the Screen and Focus adjustments on the flyback for the best picture.



Congratulations - You're all done.

FINE TUNING THE VOLTAGES-



WARNING – If you do not have the proper tools and experience do not attempt this procedure. Just use the factory settings.

Turn the B+ adjustment pot fully clockwise. Power up the monitor and check the voltages at TP1 and GND. Very slowly turn the B+ pot counter clockwise until you read between +170 and +175 Volts DC. At this point you have correctly adjusted B+. **WARNING - DO NOT ADJUST HIGHER THAN +175 VOLTS DC.**

Turn off your monitor and hook up your HV probe to the anode of the monitor and ground. Turn on monitor and use the FREQ ADJUST pot to get no more than 19.5 kV DC at the anode.

Troubleshooting:

Fuse blows:

1. Although the board is marked for a 2 amp fuse the unit needs a 3 to 4 amp fuse. Be sure this is correct.
2. Your transistors are not insulated correctly and are shorted to the aluminum chassis. Double-check the mica insulators for proper installation

Low voltage LED and High voltage LED are not lit:

1. Blown fuse
2. You may have a problem with your monitor's Deflection PCB.

High Voltage LED not lit:

1. Slightly turn the Freq Adjust pot clockwise until the LED lights.

Screen blurry with retrace lines or Dim screen –

1. Adjust the focus and screen adjustments on the flyback transformer.
2. Make sure you have the yellow and black wires connected to the correct red and white wires.

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Circuit design © Fred Konopaska Arcadexpo
PCB Layout © Brian March Caliber Inc.

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