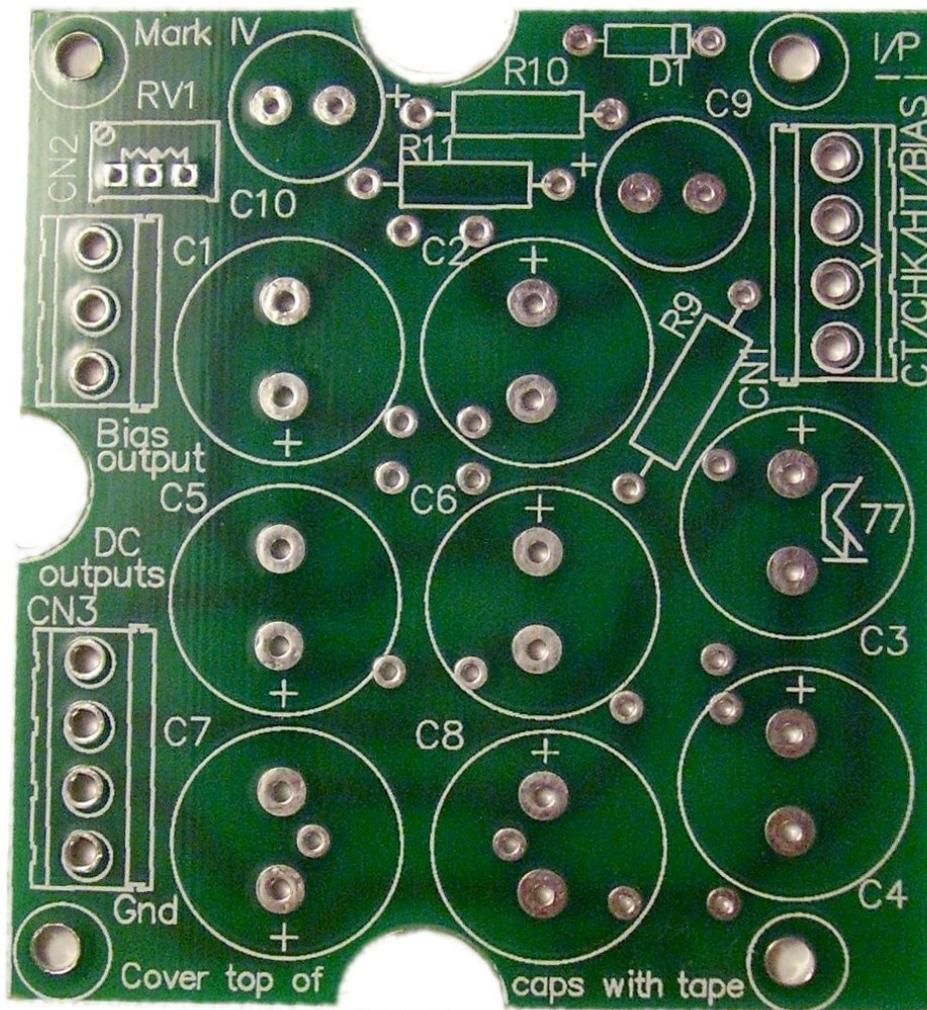


Power Supply Board

by *Classic Valve Design*
for the

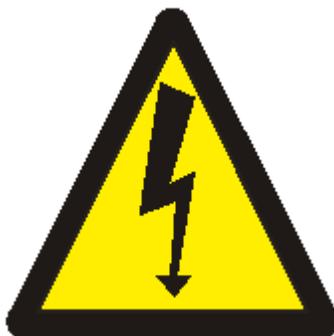
Dynaco® Mark-IV



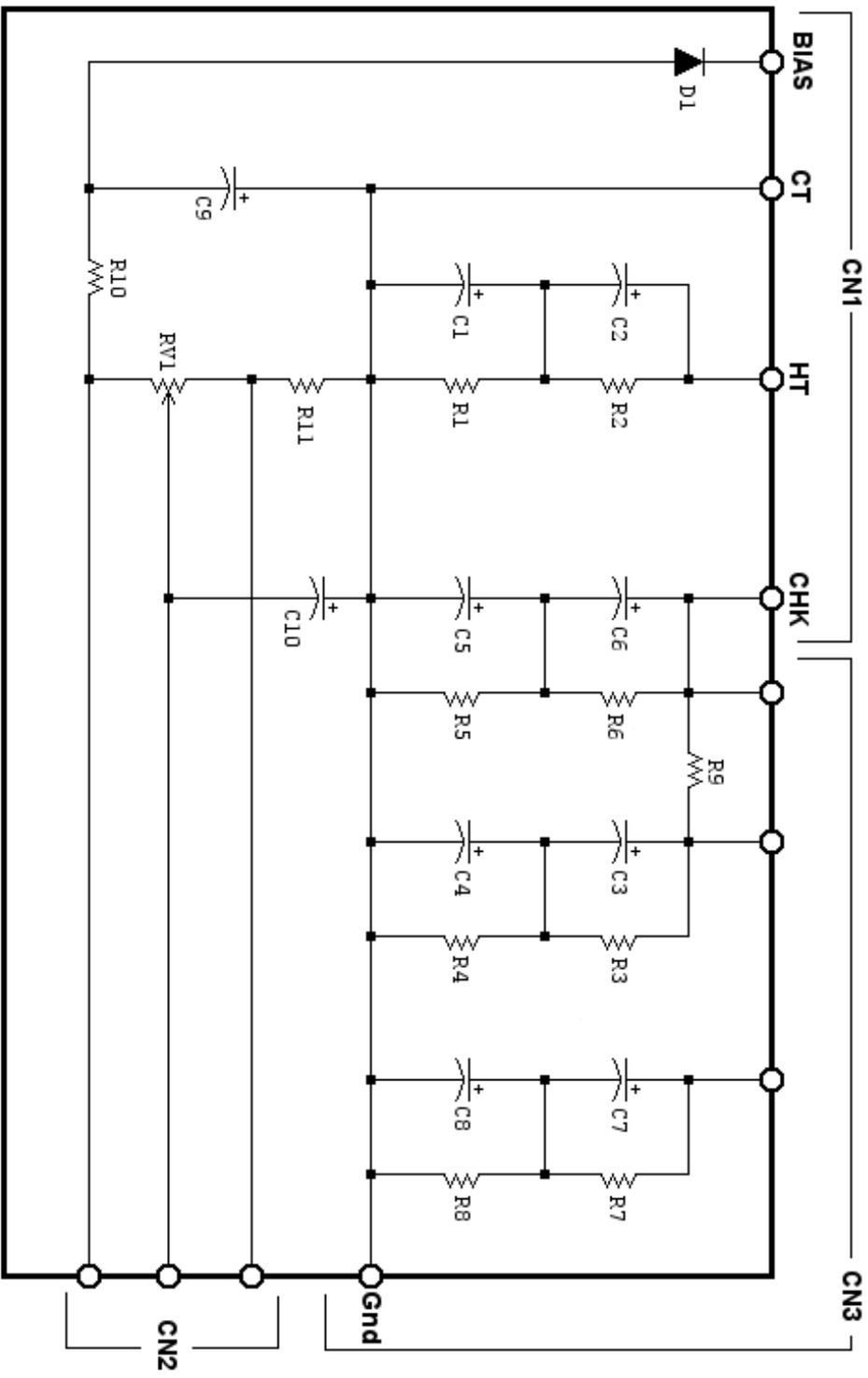


Classic Valve Design assumes no responsibility for circuit or user damage from the use or misuse of these boards or any other product. We simply provide these on an AS-IS basis with workmanship quality as the only thing guaranteed at this time.

This product is designed for and use around **LETHAL VOLTAGES**. We assume the user has a reasonably competent grasp of line operated electronics at the time of sale.



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* Board design is © Classic Valve Design *



Parts List

Capacitors:

C1 - C8: 68uF, 350V (Digikey part # P13556-ND or Mouse part # 667-EEU-ED2V680S)

C9, C10: 47uF, 160V (Digikey part # P13515-ND or Mouser part # 667-EEU-ED2C470)

(Cap types recommended due to size restrictions. Other types may work fine, just make sure they'll fit under the chassis)

Resistors:

R1 - R8: 220K, 1 watt

R9: 6.8K, 2 watt

R10, R11: 10K, ½ Watt

RV1: 10K, ½ watt trimmer, inline leads, top adjustment (Bourns 3296W-1-103RLF or equiv., or use chassis bias pot).

Semiconductors:

D1: 1N4007

Misc:

CN1, CN3: 4-position terminal block, 5mm or 5.08mm pin spacing
(or 2 x 2-position)

CN2: 3-position terminal block, 5mm or 5.08mm pin spacing

- Mounting hardware.

Circuit Notes

A **safety note** about the capacitors: ANY exposed tops of C2, C3, C6 and C7 are **HOT** at $\frac{1}{2}$ the rectified and filtered high voltage power supply voltage and should not be touched. The application of “circle stickers” found in stationary stores can be used to insulate these capacitor tops, or use electrical tape.

Likewise, because of the -V bias supply, the exposed tops of bias capacitors C9 and C10 are at full negative bias voltage (up to -110V). Again application of “circle stickers” found in stationary stores or electrical can be used to insulate these capacitor tops.

Please take care to make sure the capacitor's polarity is respected as outlined on the PCB and as per above schematic – reversed polarized electrolytics have a tendency to **EXPLODE**, spewing hot electrolyte all over the place!

C1 and C2 are the capacitors that the rectifier sees. The GZ34/5AR4 and the 5U4 variants will have no problem with 34uF, because the capacitor values are halved as they are stacked to increase voltage handling. So 2 x 68uF at 350V becomes 34uF at 700V in this circuit. The 5R4 variants aren't very happy with much above 15uF (though I haven't cooked one with 22uF in practise... yet). So use of 2 x 33uF will equal 16.5uF if you want to go the 5R4 route for sonic reasons.

Why have we stated particular manufacturer of caps? Size! There's a lot of stuff to fit on this board and *the electrolytics in the high voltage section can be no more than 18mm in diameter by 25mm high.*

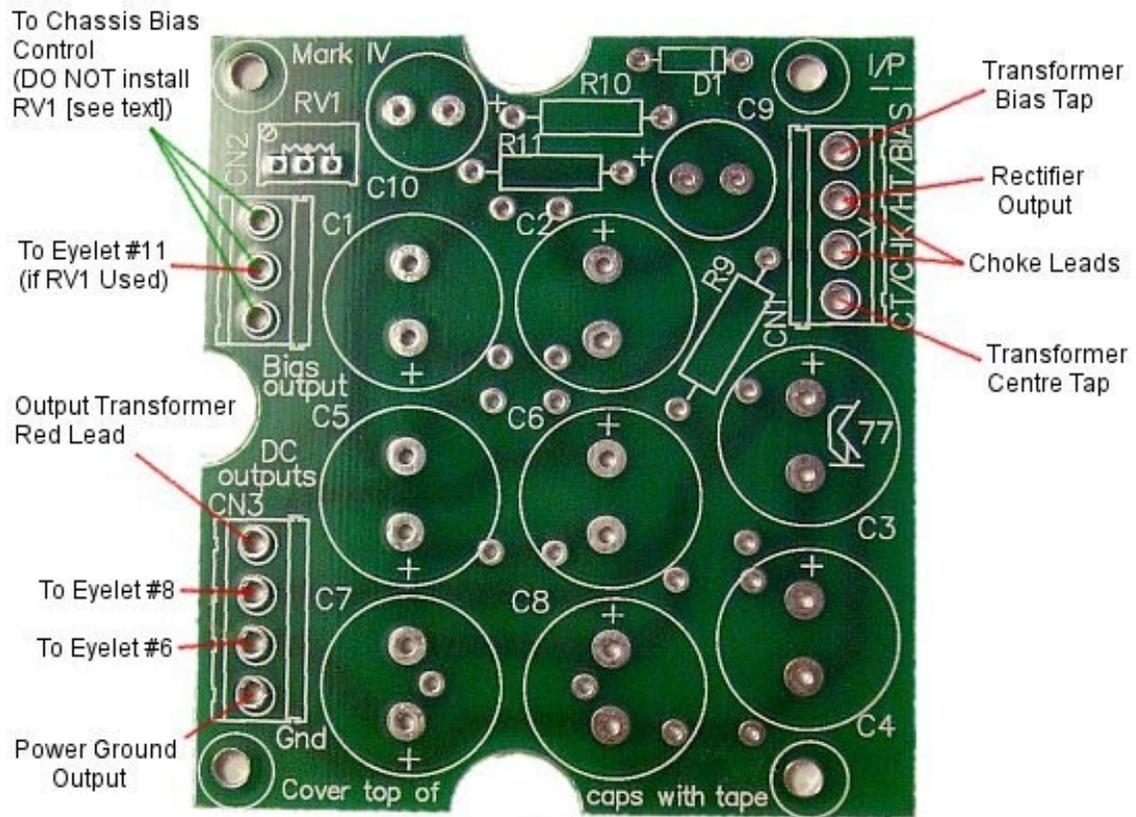
Assembly

The resistors R1 through R8 must be mounted on the board first. Clip the leads off as close as you can to the PCB without damaging the solder joint. Quality electronic "flush cutters" are good for this. The rest of the components may be mounted as normal.

You can choose to use the multi-turn trimmer for bias adjustment and not use the chassis mounted bias control. This allows for finer bias setting, but sacrifices the convenience of a top-mounted control.

If you choose to use the chassis bias potentiometer, omit RV1 completely (trying to use both will likely damage your amplifier). Hook the three pins of the chassis bias control to the three connectors on the power PCB with the centre connection to the potentiometer wiper and out to eyelet pin # 11 on the MK-IV driver board.

Hooking Up to the Circuitry



First Power Up and Biasing

Before first power up, **remove your GZ34/5AR4 rectifier** from the circuit. We want to test first that there is negative bias where there should be before applying B+ to the EL34 tubes.

- Remove both EL34 tubes.
- Connect a voltmeter on a setting to handle up to -80VDC to any EL34 grid (pin 5) and electrical ground.
- Turn on your MK-IV.
- A negative voltage should register immediately, as it's a SS rectified circuit. If it does not, go through your component mounting and wiring thoroughly!
- Adjust **RV1** for MAXIMUM negative voltage reading. This should be at least -34V.
- Turn off your MK-IV and replace the pulled rectifier tube and EL34 tubes. You are now ready for live biasing.
- Bias as per manual instructions.

Congratulations! Your MK-IV is now ready for service! :-)

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