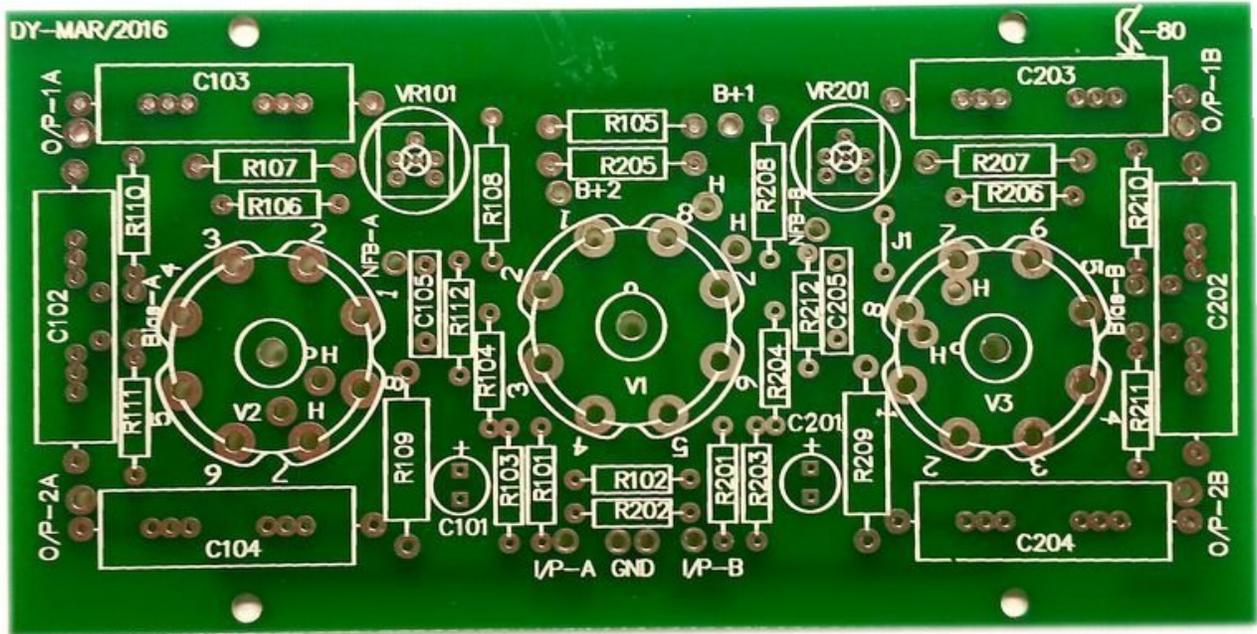


Marantz 8B Driver for the Dynaco® ST-70



Classic Valve Design



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.

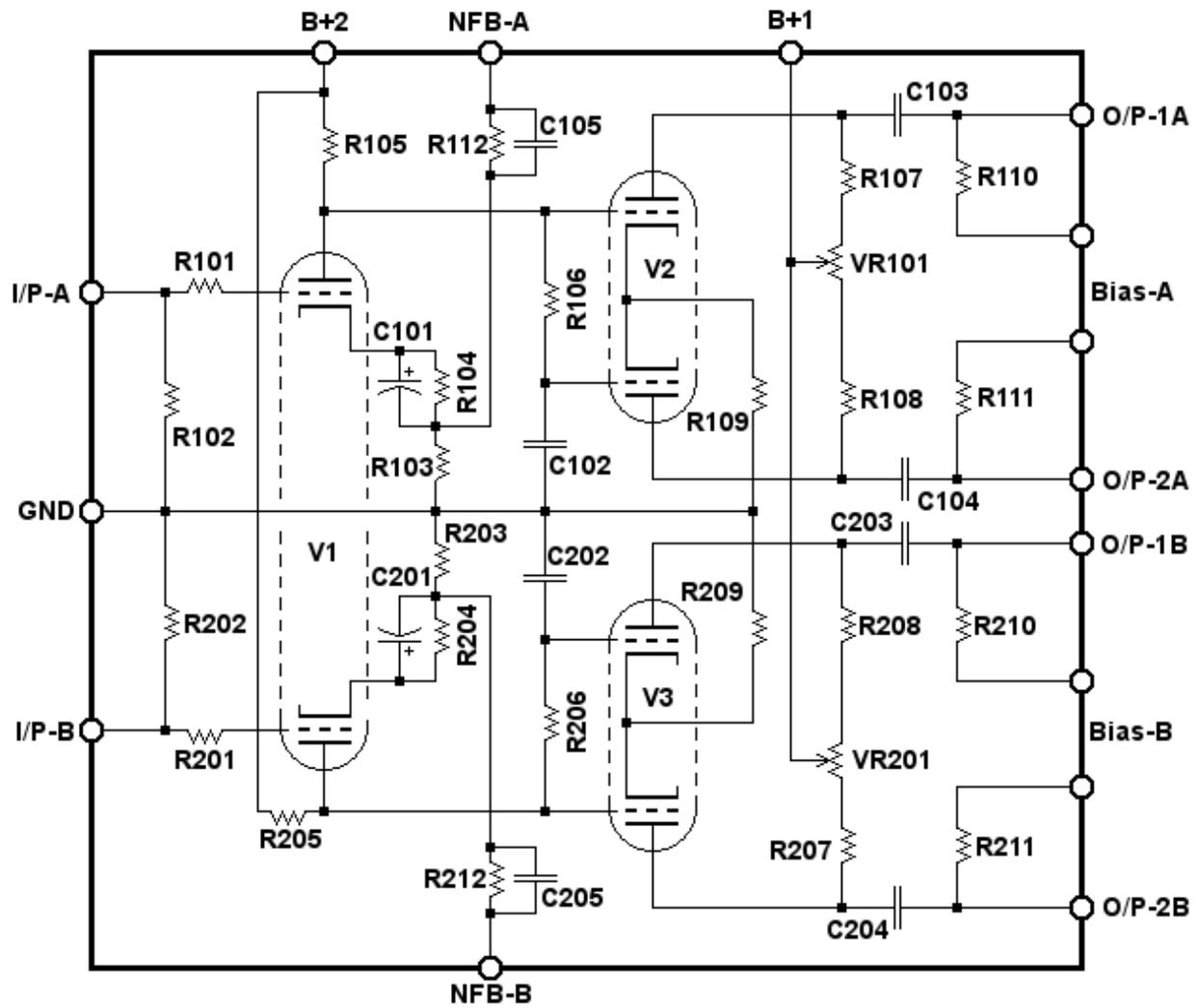


* Dynaco trademark currently in registration dispute at time of writing *

See CIPO registration 1699617 for more info

<http://www.ic.gc.ca/eic/site/cipointernet-internetopic.nsf/eng/home>

* 8B is © Marantz. This is a clone adaptation for the ST-70 *



Parts List

Resistors:

(all resistors are ½ watt, 5% unless otherwise noted)
(Metal Film specified where low noise is critical)

R101, 201: 10K Carbon Film (or non-inductive film resistor type).

R102, 202: 100K Metal Film or 1Meg Metal Film if you're adding a volume control to make an integrated amplifier (to protect the amp if the volume control wiper lifts).

R103, 203: 150 ohms

R104, 204: 2.4K

R105, 205: 56K, 1 watt

R106, 206: 1Meg

R107, 207: 16K, 2 watts

R108, 208: 18K, 2 watts

R109, 209: 13K, 3 watts (Digikey PPC13KW-3JCT-ND or Mouser 594-5093NW13K00J or equivalent, for example)

R110, 111, 210, 211: 100K (EL34 grid bleeder - 100K to 220K is OK, not critical)

R112, 212: 3.3K, Carbon Film (see text)

VR101, 201: 5K, 1 watt (Digikey 987-1177-ND or Mouser 858-93PR5KLF or equivalent, for example)

Capacitors:

C101, 201: 47uF, 6.3V, audio type (Elna Silmic-II, Nichicon Muse, etc.)

C102, 103, 104, 202, 203, 204: 470n (0.47uF), 630V polypropylene

C105, 205: See Text

Valves:

V1, 2, 3: 6SN7

Sockets

Assembly

Assembling the PCB is fairly straightforward and needs few adjustments for optimization when complete.

For optimization, you will need an oscilloscope and a function generator with 1KHz square and sine wave capability.

Don't have either an oscilloscope or function generator? Use matched section V2 and V3 and set the trimmer potentiometers to centre slot and ignore C105 and C205 and well as the next sections on setting up the variable resistors and choosing C105 and 205.

Tweaking the NFB

It has been our experience that a lot of people like to adjust the NFB for optimum performance in their system.

Someone with speakers that have excellent control may find the given NFB value too low of resistance, while others with difficult to control speakers may find it too high.

Ideally, with a resistor substitution box or resistor wheel, you want to change this value with the unit operating into the speakers it will be used on. Chose the value that sounds best to your ears.

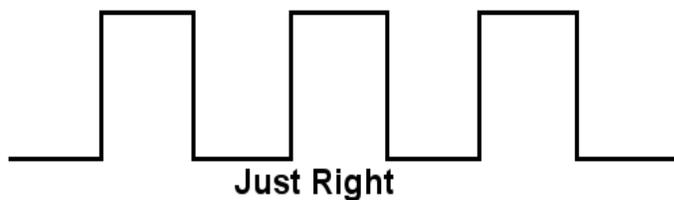
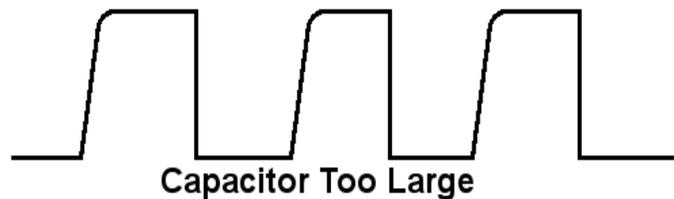
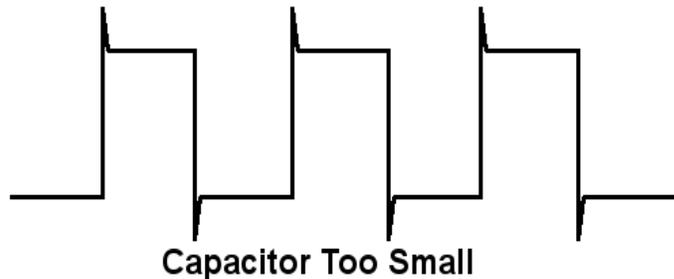
Choosing C105 and C205

The reason this capacitor's value is not set in the parts list is the value will be determined by the type of output transformers you chose.

Vintage Dynaco, modern replacement Dynaco, Edcor, James, Tamura, etc. will have different coupling and leakage parameters. Different plate-to-plate impedance ratios will also affect the value of these capacitors.

Once you have assembled and tested your board and amplifier and everything is working, you can determine the optimum value with the following procedure:

- Add a dummy load to the speaker terminals (4, 8 or 16 ohm is unimportant, as long as the amplifier is correctly loaded).
- Hook the oscilloscope to the speaker terminals loaded.
- With a 1KHz sine wave, adjust the drive so you have 1 watt RMS output. This is determined by $\text{SQRT}(W \cdot R)$ or roughly a *peak to peak* sine of 8 volts across 8 ohms, 11.3 volts across 16 ohms or 5.6 volts across 4 ohms.
- Switch the generator to square wave.
- Observe the waveforms.



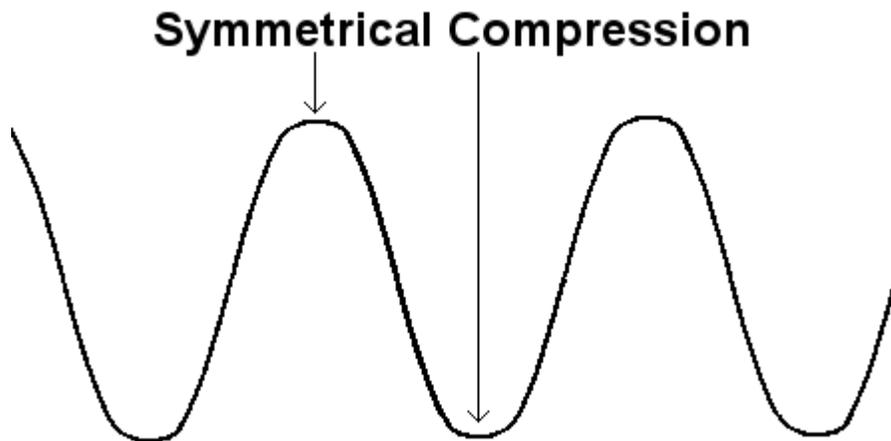
This is where a capacitor substitution box comes in handy. If you don't have one, simply tack temporarily your experimental capacitor across R112 and R212 until the value closest to the final waveform is achieved.

Setting The Variable Resistors

This time, we're going to use the function generator solely in the sine wave position. make sure you have enough output to drive the amplifier into clipping.

- Turn the gain of the function generator up until the sine wave at the output *just* begins to compress or clip (most likely only one half will do so at this point).

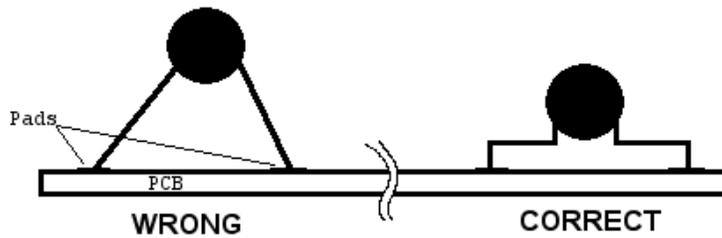
- Adjust trimmer for symmetrical distortion:



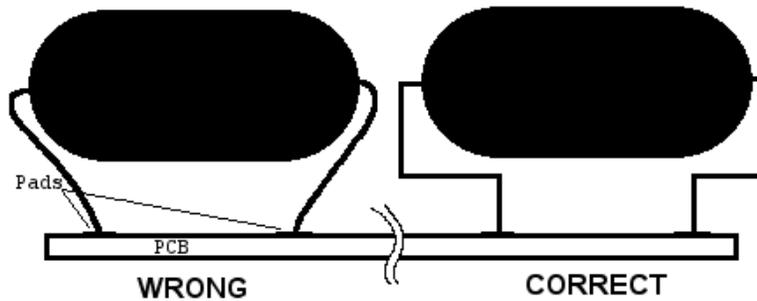
Parts Fitting

Sometimes due to availability or choice, smaller or larger pad spacing components (often capacitors) are used compared to the pad spacings available on the PCB. There is a right and wrong way of mounting them for reliability.

Smaller Component



Larger Component



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