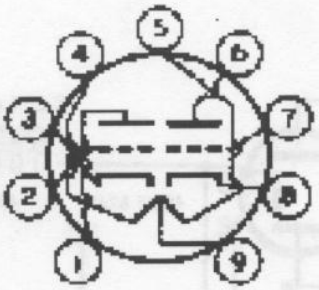
Pin 1 – Plate of Unit No.2
Pin 2 – Grid of Unit No.2
Pin 3 – Cathode of Unit No.2
Pins 4 & 9 – Heater of Unit No.2
Pins 5 & 9 – Heater of Unit No.1



Pin 6 – Plate of Unit No.1
Pin 7 – Grid of Unit No.1
Pin 8 – Cathode of Unit No.1
Pin 9 – Heater Mid-Tap

Bottom View of Tube Sockets on Board

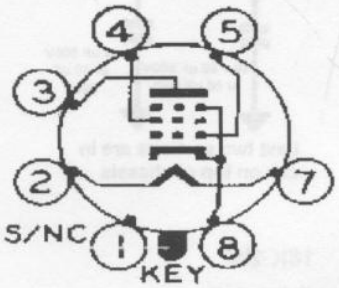
Typical voltage readings, V1(tube closest to input)
Pin 1 60 to 105V
Pin 2 30 to 60V **Voltages DC, VTVM or DMM**
Pin 3 35 to 65V
Pin 6 30 to 60V
Pin 7 0V
Pin 8 1 to 1.5V

Typical voltage readings, V2(tube closest to 6550/KT88)
Pins 1 & 3 270 to 380V
Pins 2 & 7 60 to 105V **Voltages DC, VTVM or DMM**
Pins 3 & 8 65 to 110V

Between pins 4 or 5 and pin 9, both tubes, 6.3VAC

DC Voltages on pads on PC Board:
Pads 1, 2A, 2B and 3: Bias voltage, usually about -50 to -60V (negative voltage), set for correct biaset voltage (1.56V with original 11.2 ohm Biaset resistor)
Pad 4: 480 volts or more
Pad 5: 400 to 440V
Pad 6: 360 to 400V
Pad 7: 0 volts
Pads 8 & 9: 6.3V AC between these
Pads 10 & 11: 0 volts.

Voltages vary depending on tube types and condition of tubes, line (mains) voltage and tolerance of original power transformer.



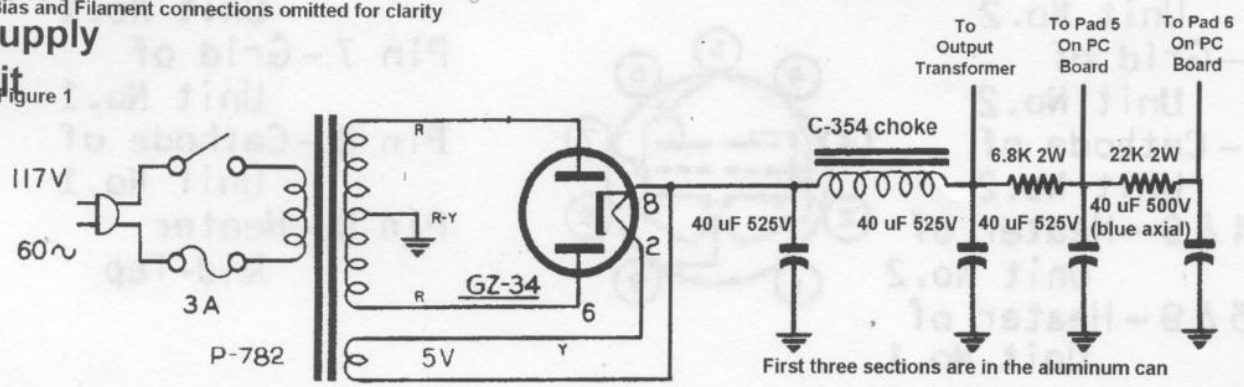
Base pinout (bottom view) of KT88, 6550, and KT90 tubes.
Note that on 6CA7/EL34 tubes, pins 1 must be connected to pin 8 or ground.
Voltage readings:
Pin 1: 0V or same as pin 8
Pins 2 & 7:6.3V between these two
Pin 3: 480 to 540V
Pin 4: 485 to 545V
Pin 5: Bias voltage, usually -50 to -60 to suit
Pin 8: Biaset voltage usually 1.56 (see text)

MK3/Mk2 Power Supply Kit

Alternative Power Supply arrangements

Bias and Filament connections omitted for clarity

Figure 1



Bias and Filament connections omitted for clarity

Figure 2

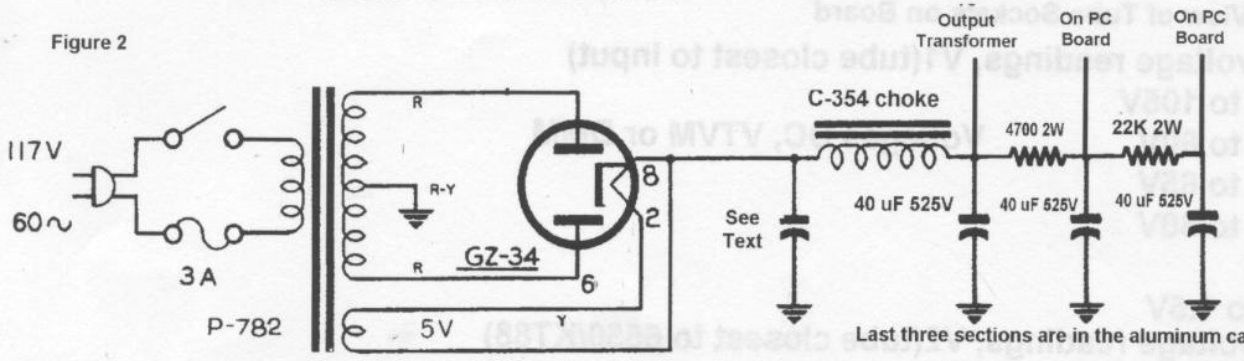


Figure 3

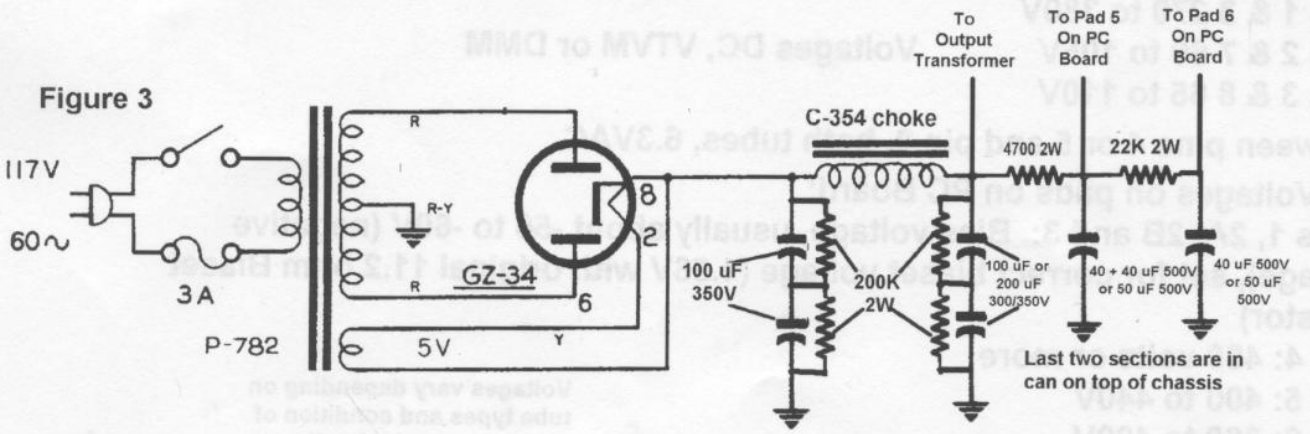
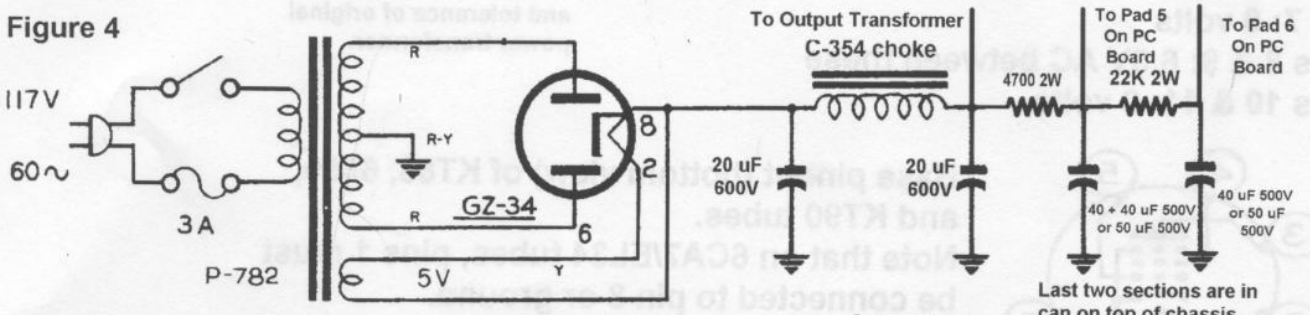
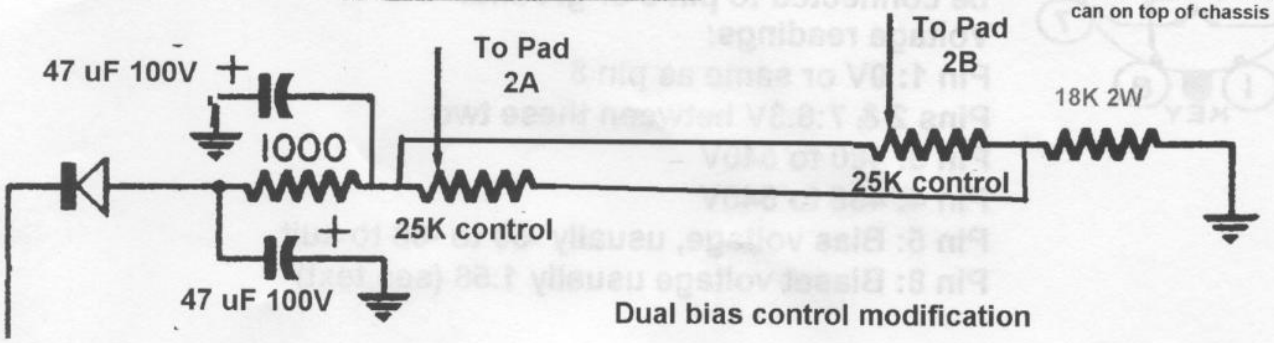
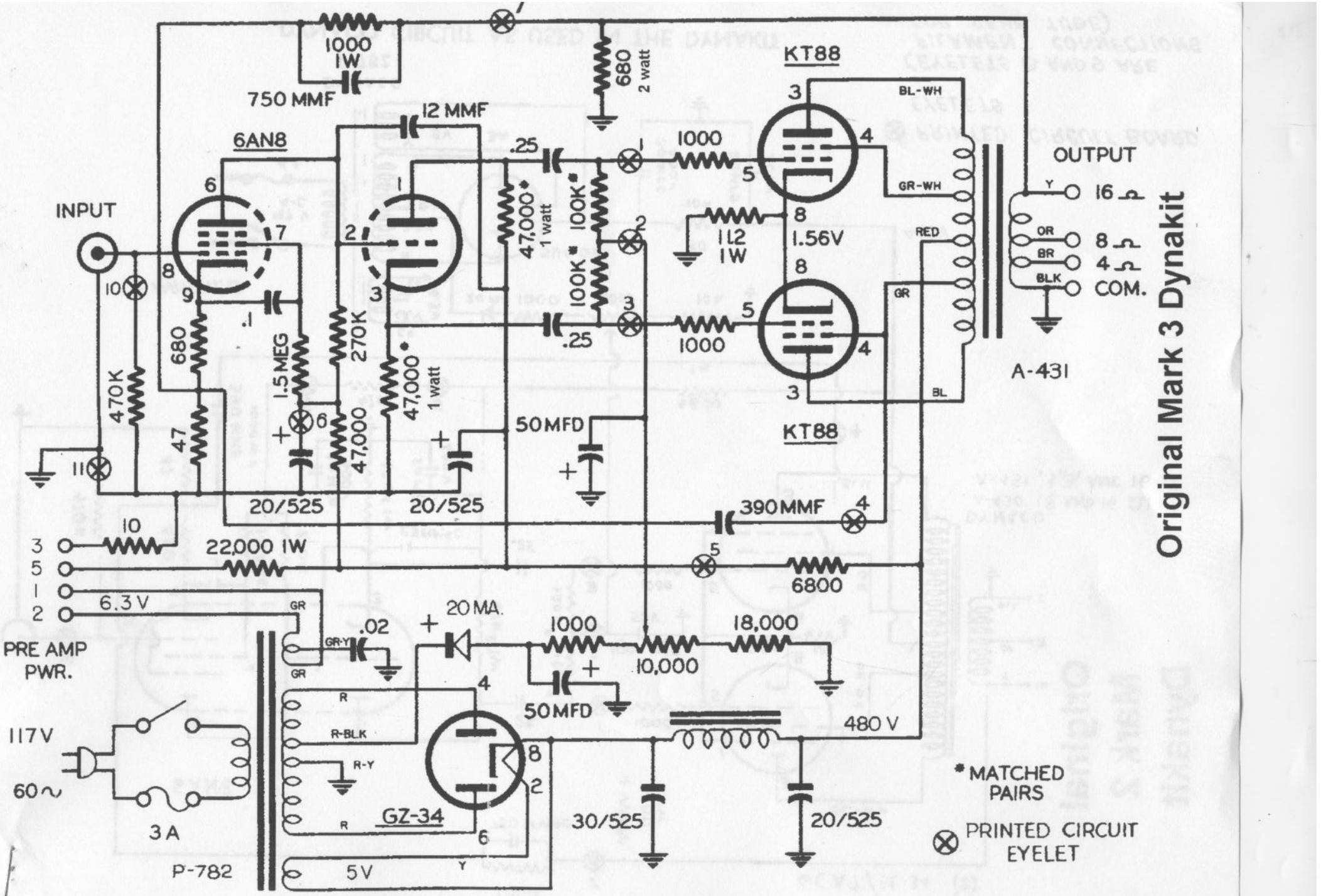


Figure 4

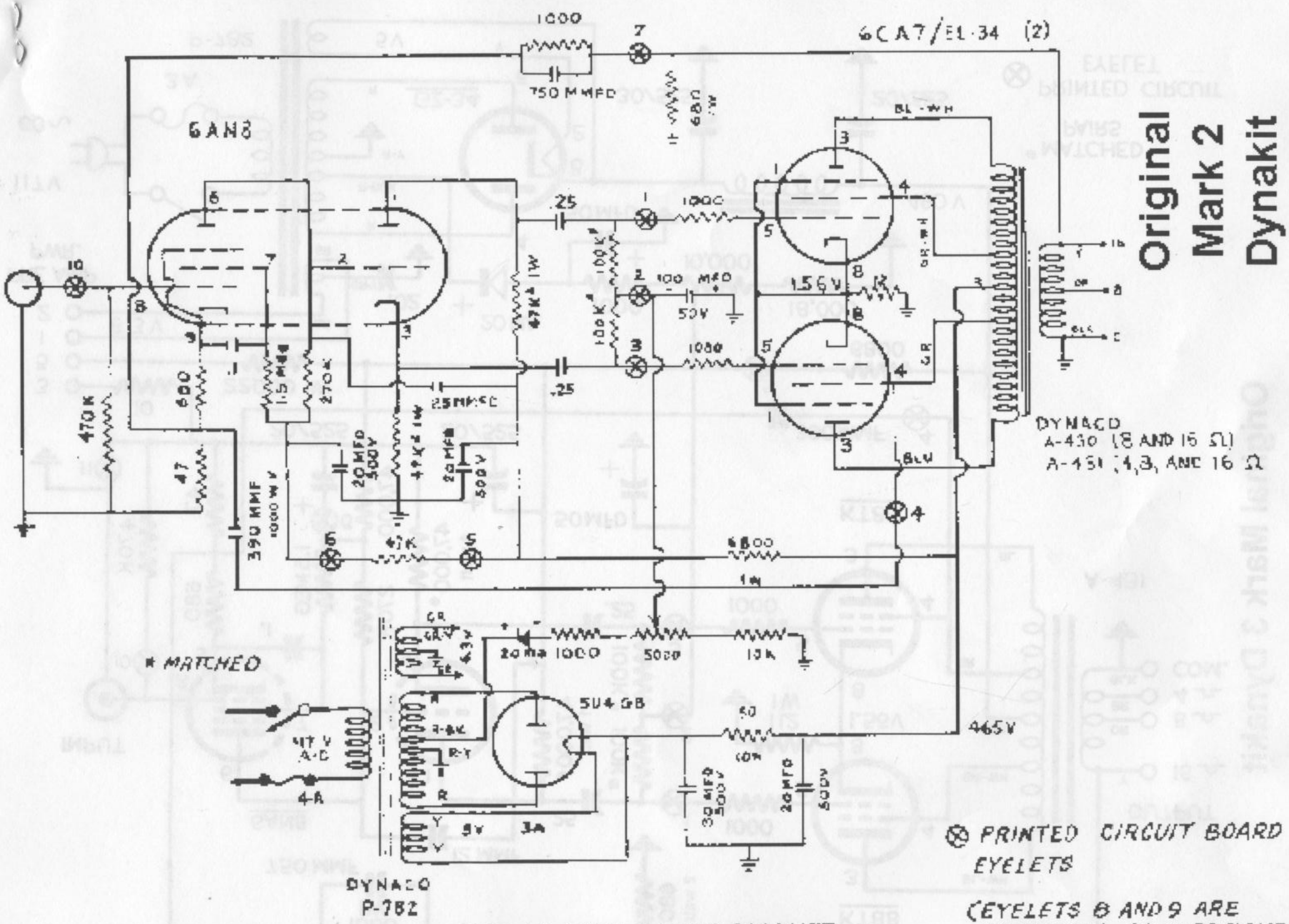






DYNAKIT MARK III 60 WATT POWER AMPLIFIER

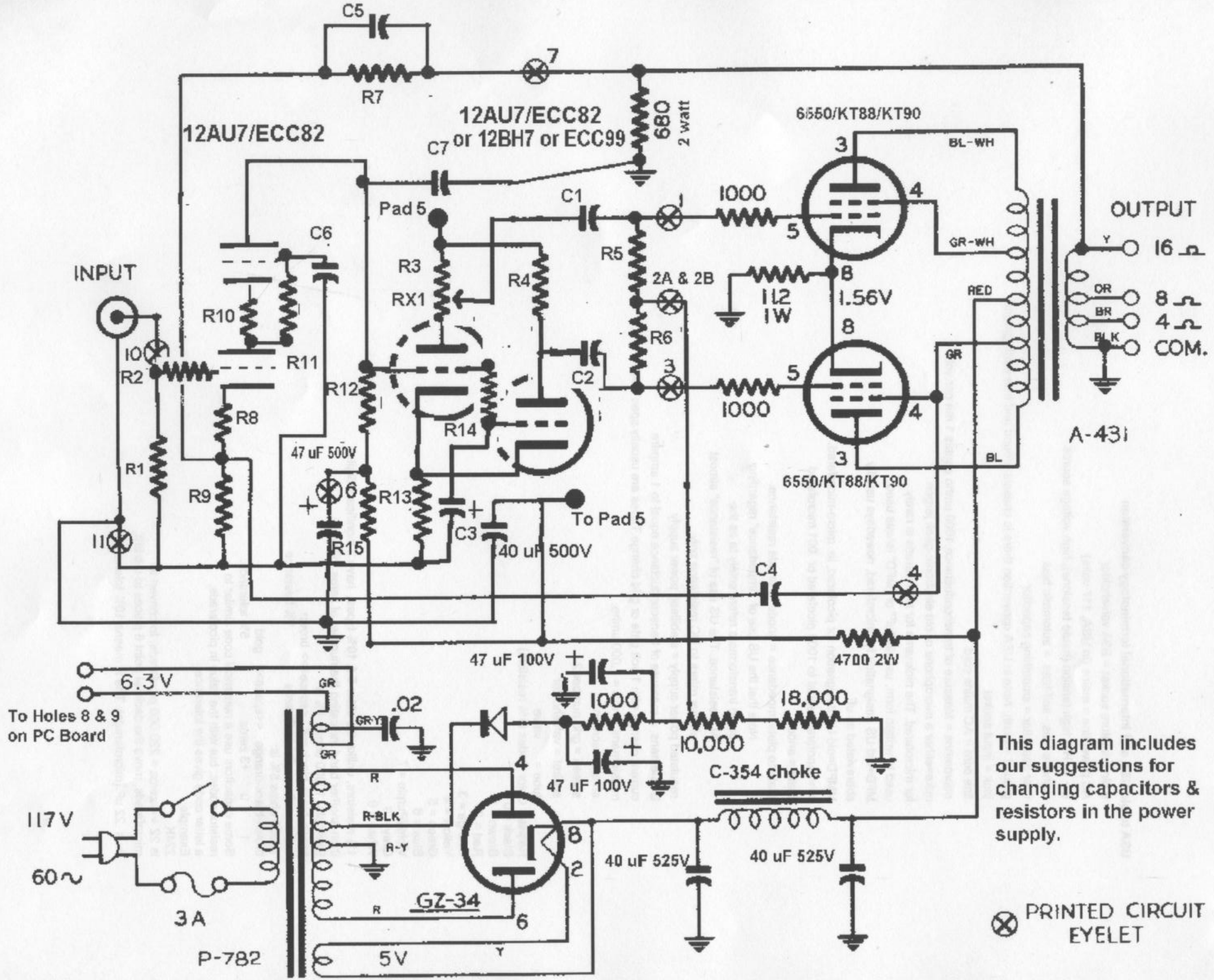
Original Mark 2 Dynakit



DYNACO CIRCUIT AS USED IN THE DYNAKIT

⊗ PRINTED CIRCUIT BOARD EYELETS

(EYELETS 8 AND 9 ARE FILAMENT CONNECTIONS FOR 6AN8 TUBE)


C5
R7
7
12AU7/ECC82
12AU7/ECC82
or 12BH7 or ECC99
C7
680
2 watt
6550/KT88/KT90
3
BL-WH
4
C1
1000
1
5
OUTPUT
Pad 5
C6
GR-WH
Y
16 Ω
R3
R5
2A & 2B
112
1W
8
1.56V
INPUT
R4
RX1
R10
RED
OR
8 Ω
BR
4 Ω
BLK
COM.
10
R2
R11
R6
GR
R12
C2
3
1000
R14
R8
A-431
47 uF 500V
R1
6
R9
R13
6550/KT88/KT90
+
C3
To Pad 5
11
R15
40 uF 500V
C4
4
4700 2W
47 uF 100V
6.3 V
GR
.02
GRY
To Holes 8 & 9
on PC Board
1000
18,000
10,000
This diagram includes
our suggestions for
changing capacitors &
resistors in the power
supply.
47 uF 100V
C-354 choke
R
R-BLK
117V
R-Y
60~
40 uF 525V
40 uF 525V
2
GZ-34
3A
PRINTED CIRCUIT
EYELET
P-782
5V

Addendum

Prior to attempting any of the modifications mentioned in the manual, please install the board in its stock form as supplied FIRST. This makes it much easier to verify that everything is working properly and is wired correctly.

1. When triode connecting output tubes, the screen lead (green) of the output transformers which originally had a connection to the 390 pF capacitors should be connected to eyelet 4 to complete the connection from the former screen lead to the capacitor. Do not connect pin 3 of either of the 6550/KT88/EL34's to pad 4 on the PC board.
2. The Dyna output transformers are not intended for use with large amounts of unbalanced DC, thus really aren't suitable for use in a "single-ended" (as opposed to "push-pull") arrangement. That doesn't absolutely mean it can't be done, but the transformers weren't designed for it.
3. 10 ohm 1% resistors, resistors for the 6550/KT88/EL34 sockets (1K 1/2W) and some 100 ohm 1W resistors for converting to triode mode are included if you want to use these. These extra items do not go on the board and can be used elsewhere or disopsed of if you do not need them
4. When checking filament voltages (Pins 2 & 7 of the 6550/KT88/EL34 sockets, Pads 8 & 9 on the board), check between the two pads or pins, not between the pads/pins and ground, using the AC scale. Otherwise you will get false readings.
5. I may be possible to use tubes with 9AJ pinout (such as 6CG7), but this requires jumping & cutting filament traces on the PC board (refer to 9A and 9AJ pinout diagrams) and we have not tried this at the time this was written (April 2000), so you are on your own if you want to try this.

Alternative Power Supply Strategies

First, let's note that in the case of 5AR4/GZ34 rectifier tubes, one should not attach a capacitor larger than 60 uF directly to a the cathode (pin 8). There are can capacitors made that have sections as large as 80 uF, if you choose to use those, use the 80 uf as the second section, after the choke.

Please refer to the Alternate Power Supply diagrams.

Fig 1. Our Mark 3 power supply kit. This works assuming the power supply voltage is not excessive. It's very easy to install as it does not require any additional terminal lugs/strips.
We reduce the value of the resistors in the power supply, which will still allow adequate decoupling because the value of the capacitors is increased by 100% on 3 of the sections. This puts more voltage to the board, which allows it to swing more voltage before clipping, giving more headroom and lower distortion at normal levels.
The first three sections are in the 40-40-40 uF 525V Aero-M can capacitor, the last section is an axial lead, 47 uF 500V capacitor.
Install the 40-40-40 can cap same as if you were going to replace the original can. Desolder the wires & leads, break or straighten the locking tabs around the rim and the old capacitor will drop out. One lug goes to the wire from the 5AR4, the second goes to the wires from the choke and output transformer. A 4700 ohm 2 watt resistor goes between the second and third lug. A wire goes from the third lug to pad 5 on the circuit board. Between pad 5 and 6, install the 22K, 2 watt resistor. Between pad 6 and the nearest convienient ground lug (ie. connected to chassis) usually one of the ground lugs on the bracket of one of the output tube sockets, install the 47 uF 500V capacitor. **Remember, the negative lead (the end the arrow points to) goes to the chassis end!**
See the photograph of the Mk3 undercarriage to see how the 47 uF cap is installed.

Fig 2. The Very Low Input Capacitor Strategy. If the B+ voltage is excessive for use with the 525V can capacitor, it's possible to lower the voltage by using a very low value of input capacitor connected to the 5AR4, between .47 to 5 uF
This can be very convienient as low values (such as .47 up to 2.0 uF) can be had as 600V rated film capacitors,which can be connected directly between pin 8 of the rectifier tube socket and the chassis. This leaves the other 3 sections of the 40-40-40 uF can capacitor free for the last 3 sections, thus it won't be necessary to hang the separate 47 uF 500V cap in for the last section.
After replacing the 40-40-40 uF 525V cap as noted in the previous section, don't hook up the wire from the 5AR4,to the cap, instead, remove the wire, and hook the small value capacitor between pin 8 of the 5AR4 and one of the ground lugs (connected to the chassis) of the can capacitor. (I suggest starting with 1.0 uF 600V) Also, one of the choke leads should be connected to pin 8 of the 5AR4. Hook the other lead of the choke and the output xfmr wire to one of the can lugs, then the 4700 ohm resistor to the next section. From that section, run a wire to Pad 5 on the PC board, and the 22K 2 watt to the third section. Run a wire from the third section to pad 6 on the PC board.
Film capacitors,by the way, do not have polarity as electrolytics do, you can install them in either direction.
Turn the amp on and after the output tubes are warmed up, reset the bias then check then check the voltage on pin 8 of the 5AR4 tube.
If the voltage is too low, then increase the value of the capacitor hooked to the 5AR4 until it reaches the desired level. Remember to reset the bias after each change.

Fig 3. The Double-Up Strategy. This is a bit more work as it means installing terminal strips and wiring 300-350V axial lead capacitors in series underneath the chassis. For the second and third sections, you can use the same 40-40-40 uF 525V capacitor as shown above, you'll have one section spatre which you can hook to the section that goes to pin 5 on the PC board. You can use the 50-50 uF LCR clamp mount capacitor we sell (saves you $20) instead, you'll have to drill holes for the mounting bracket.

Fig 4. The 600V Cap Strategy. This means installing 2 20 uF 600V capacitors on terminal strips under the chassis. The last two sections can be wired as on Fig. 3.

IMPORTANT NOTE:

We have added jumpers to this latest run of boards to allow tubes with 9AJ and 9LP pinouts (6CG7,6FQ7,6GU7,6N1-P) to be used as well as the original 12AU7/12BH7/ECC99 tubes. 6CG7/6FQ7,6GU7 and 6N1-P can be used for the driver tube with no changes other than the jumper. There are many other tubes with 9AJ pinout that could potentially be used, but these usually will need resistor changes on the board as well, at press time (4/4/2001) we hadn't had time to try any of the numerous possible combinations