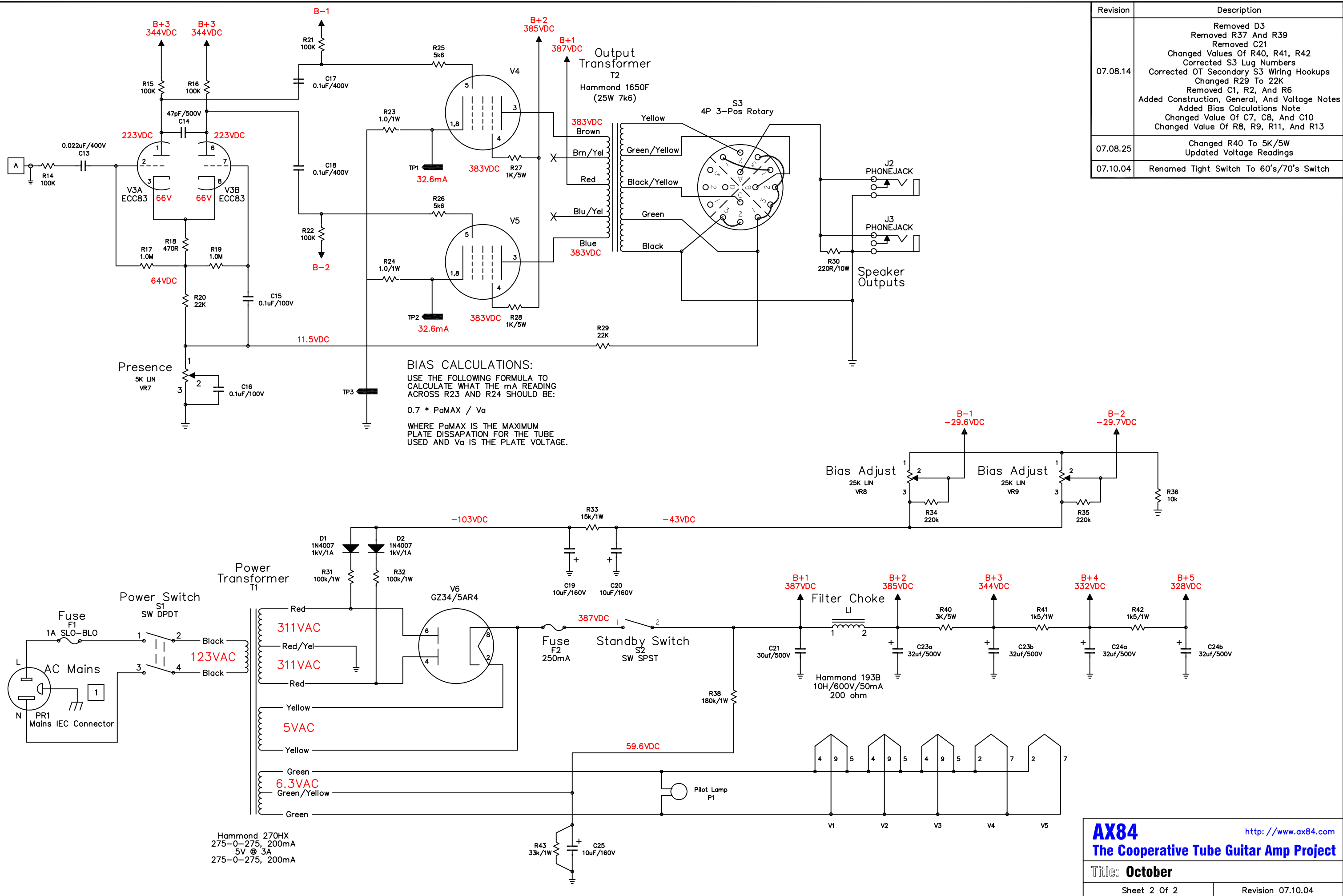


Revision	Description
07.08.14	Removed D3 Removed R37 And R39 Removed C21 Changed Values Of R40, R41, R42 Corrected S3 Lug Numbers Corrected OT Secondary S3 Wiring Hookups Changed R29 To 22K Removed C1, R2, And R6 Added Construction, General, And Voltage Notes Added Bias Calculations Note Changed Value Of C7, C8, And C10 Changed Value Of R8, R9, R11, And R13
07.08.25	Changed R40 To 5K/5W Updated Voltage Readings
07.10.04	Renamed Tight Switch To 60's/70's Switch



BIAS CALCULATIONS:
 USE THE FOLLOWING FORMULA TO CALCULATE WHAT THE mA READING ACROSS R23 AND R24 SHOULD BE:
 $0.7 * PaMAX / Va$
 WHERE PaMAX IS THE MAXIMUM PLATE DISSIPATION FOR THE TUBE USED AND Va IS THE PLATE VOLTAGE.

General Notes:

- All voltages shown on the schematic are those that were actually measured. With a different line voltage your readings may vary. All voltage measurements were taken with S4 in the "ali" position, all three volume controls at 0, all tone controls set to 50%, and the presence control at 0.
- All resistors 1/2W minimum unless otherwise noted.
- All coupling capacitors must be rated 400V or greater unless otherwise noted. Coupling capacitors are shown as being rated at 630V on the schematic and BOM as 630V Mallory 150's are more often kept in stock by suppliers than the 400V types.
- C1 is a ceramic capacitor
- All 100V and 630V capacitors are Mallory 150's.
- All 500V capacitors are CDE Silver Mica Capacitors.
- All 160V and C22 capacitors are Sprague Atoms
- The turret board layout shows capacitors the size of 630V Mallory 150's. If you use something other than those, you will have to verify that they fit in the space allowed.
- The turret board is 14" long. In order to print it full size for a drilling plan you will have to print it on 11" x 17" paper.
- The chassis size used is 16" x 8" x 3".
- The chassis layout is looking into the inside of the chassis. Three of these amps have been built (with the parts indicated on the BOM) as shown on the chassis layout. While the layout can certainly be improved upon, the three test amps are extremely quiet and free from major lead dress problems.
- The drilling plan has been "flipped" or "mirrored" from the chassis layout so that it can be taped to the outside of the chassis for drilling. In order to print the drilling plan you will need to have access to a large format printer that can print 18" x 24" minimum. Most reprographics shops now have these types of printer/plotters. Just give them the drawing and have them plot all of the lines black and a thin width (Most shops will have a chart showing the line widths choices.).
- No provisions have been made for mounting holes or brackets. How this is done is up to the user and will vary according to the cabinet to be used. You are encouraged to plan out how you will mount the chassis and drill the needed holes BEFORE you start installing components inside the chassis.
- All of the hole locations and sizes indicated on the drilling plan are correct for the parts listed in the BOM. Any part substitutions for those listed on the BOM may require adjustments to the drilling plan.
- The potentiometers used were Clarostat and Ohmite brands. These pots have a different size shaft hole (3/8" D.) than the Alpha/Xicon 24mm pots (11/32" D.). The keyhole offset distance from the center of the shaft hole is also slightly different for the Clarostat/Ohmite pots (17/32") vs. the Alpha/Xicon pots (0.472"). What this all means is that if you are going to use Alpha/Xicon pots you need to drill the shaft holes 11/32" D. instead of 3/8" D. as shown on the drilling

plan and you will need to drill the anti-rotation tab holes slightly closer to the shaft hole than indicated or adjust them with a dremel to fit.

October Revision 2 Notes:

1. Added switch S4 to change between the “plexi” and “ali” preamp configurations.
2. Changed R11 from 820 to 470 in order to get V2A's plate voltage (155.7 VDC) to one half of B+4 voltages (309.4 VDC). Here are the measured plate voltages with different cathode resistor values:
 - 820 ohm = 177 VDC at the plate
 - 680 ohm = 169 VDC at the plate
 - 470 ohm = 155 VDC at the plate
3. A master volume has been added after the tone stack.
4. The phase inverter components have been revised to drive octal power tubes.
5. Added C14 to help tame the high end of the Hammond transformer as suggested by James Peters. It does seem to help reduce the Hi-Fi quality of the OT, but this might be dependent on the speaker you use so YMMV.
6. The NFB resistor value has been increased.
7. Pins 1 and 8 are jumpered on the octal sockets to allow the use of EL34 power tubes.
8. Incorporated Winnie Thomas's Hammond Rotary Impedance Switch.
9. Incorporated Paul Ruby's “Gee, I forgot to plug in the speaker” safety resistor.
10. Revised the bias network and added bias posts and test jacks to allow each output tube to be individually adjusted.
11. Added R/C network (R36/C20) to reduce rectifier noise when a SS plug-in rectifier is used in place of a GZ34.
12. Increased the voltage rating of the bleeder resistor (R38) from 350V to 500V.

October Revision 3 Notes:

1. A 100k resistor has been added between the master volume control (VR6) and C13 to minimize the amps tonal variations throughout the sweep of the master volume.

October Revision 4 Notes:

1. Minor changes to the Title block layout.

October Revision 05.09.28 Notes:

1. Changed the Revision Number Format To Date.

October Revision 07.03.23 Notes:

1. Removed D3.
2. Removed R37.
3. Changed C21 to 30uF
4. Corrected S3-D lug numbers.
5. Corrected OT secondary S3 wiring hookups.

6. Changed R29 to 22K.
7. Removed C1, R2, and R6.
8. Added Construction, General, and Voltage notes.
9. Added bias calculation note.

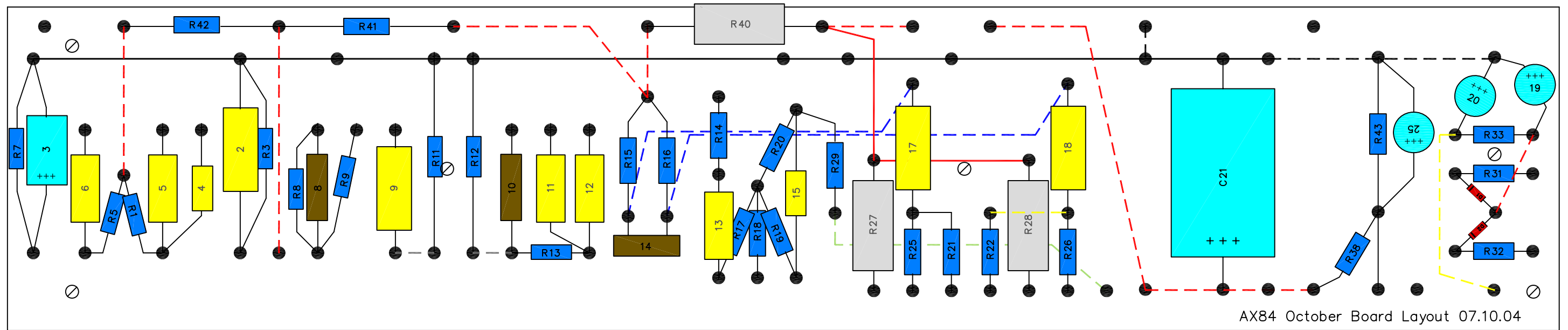
Sheet1

Item	Reference	Part
1	C1	Not Used
2	C2, 9	0.68uF/100V Electrolytic Capacitor
3	C3	330uF/25V Electrolytic Capacitor
4	C4, 6, 11, 12, 13	0.022uF/400V Capacitor
5	C5	0.0022uF/400V Capacitor
6	C7	150pF/500V Capacitor
7	C8, 10	270pF/500V Capacitor
7	C14	47pF
8	C15, 16	0.1uF/100v
	C17, 18	0.1uF/400V
9	C19, 20, 25	10uF/160V Electrolytic Capacitor
10	C21	Not Used
11	C22	30uF/500V
12	C23, 24	32uF x 32uF/500V Can Capacitor Pn: CA-LC-32UF-500V
13	CLMP21, 22 clamps	CA-LC-CLAMP1
14	R1, 5, 10, 12, 14, 16	100k
15	R2, R6	Not Used
16	R3	2.7k
17	R4, 17, 19	1.0M
18	R7, 11	820R
19	R8, 9	270K
20	R18	470
21	R13	56K
22	R15	82.5k
23	R20, 29	22K
24	R15, 16, 21, 22	100K
25	R23, 24	1.0/1W
26	R25, 26	5k6
27	R27, 28	1.1k/5W
28	R29	22k
29	R30	8.2/10W
30	R31, 32	100k/1W
31	R33	15k/1w
	R34, 35	220K
32	R36	10K
	R37	Not Used
33	R38	180k/1W
34	R39	Not Used
35	R40	2K/2W
36	R41, 42	1k5/1W
38	R43	33k/1W
39	J1, 2, 3	RCA 1/4" Jack
40	J1, 2, 3	Shoulder Washer
41	J1, 2, 3	Fiber Insulating Washer
42	VR1, 2, 4, 6	1M Log Pot
43	VR3	250k Lin Pot
44	VR5	25k Lin Pot
45	VR7	5k Lin Pot
46	VR8, 9	25k RV4 Locking Lin Pot

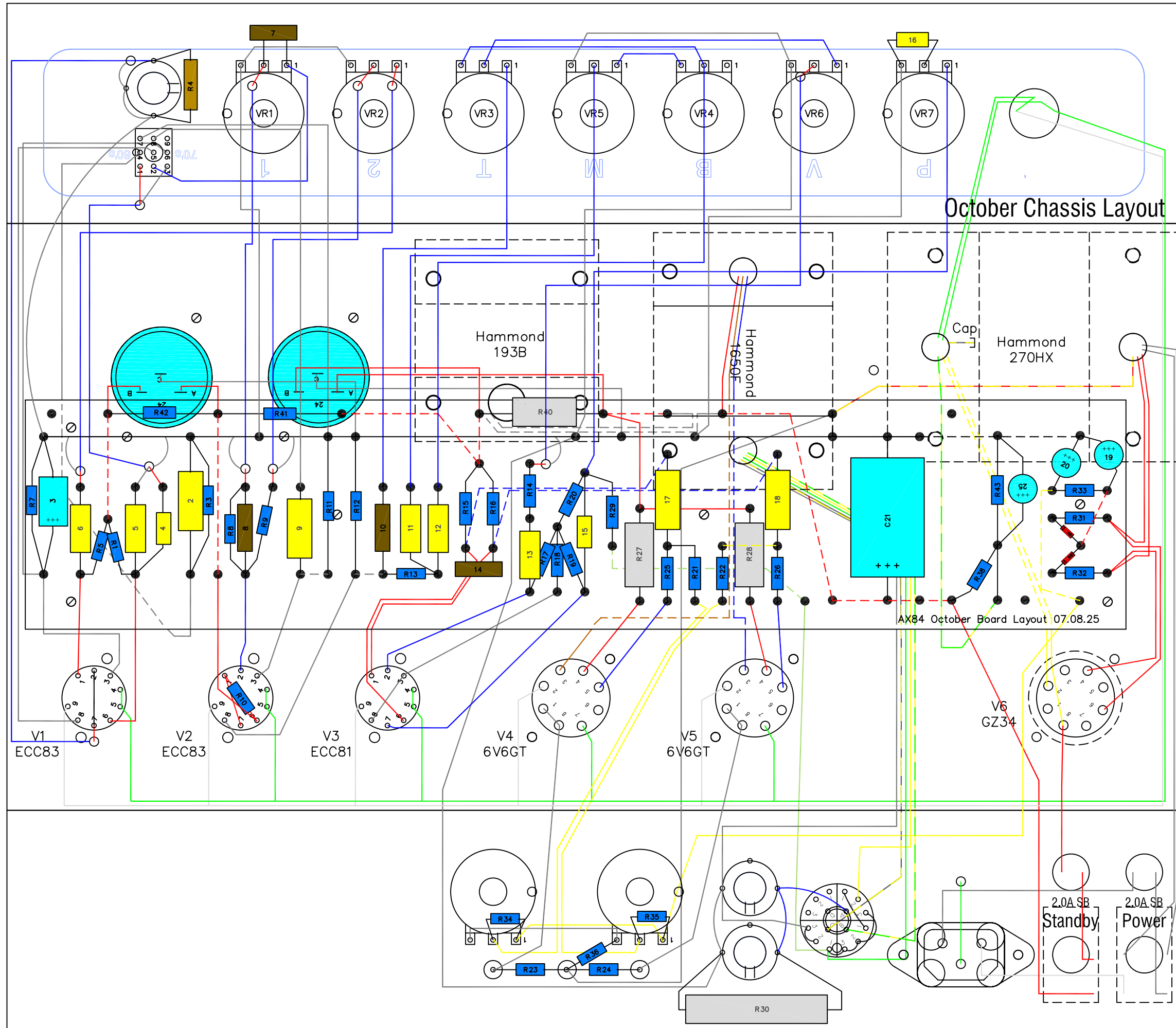
Sheet1

47	TP1, 2	Red Tip Jack
48	TP3	Black Tip Jack
49	D1, 2	1N4007 Rectifier
51	S1	DPDT Switch
52	S2	SPST Switch
53	S3	4-Pol 3-Pos Rotary Switch
54	S4	3PDT Switch
55	PS1	Pilot Lamp Socket
56	PB1	Pilot Lamp Bulb
57	PL1	Amber Pilot Lamp Lens
58	FH1, 2	Fuse Holder
59	F1	1.0A SLO-BLO
60	F2	250mA
60	PR1	IEC Mains Connector with RFI/EMI Filter
61	TS1, 2, 3	9-Pin Tube Socket
62	TS4, 5, 6	8-Pin Tube Socket
63	V1, 2, 3	ECC83
64	V4, 5	6V6GT (Matched Pair)
65	V6	5AR4/GZ34
66	Chassis	16" x 8" x 3"
67	Knob	Black Plastic Pointer
68	L1	193B Choke
69	T1	270HX Power Transformer
70	T2	1650F Output Transformer

Total



AX84 October Board Layout 07.10.04



October Chassis Layout

AX84 October Board Layout 07.08.25

AX84 October Chassis Drill Plan 07.03.23 - Top

