

Output
in 300 out 12V_s

The Harman/Kardon Model A-401

Stereophonic Control Amplifier

Technical Manual

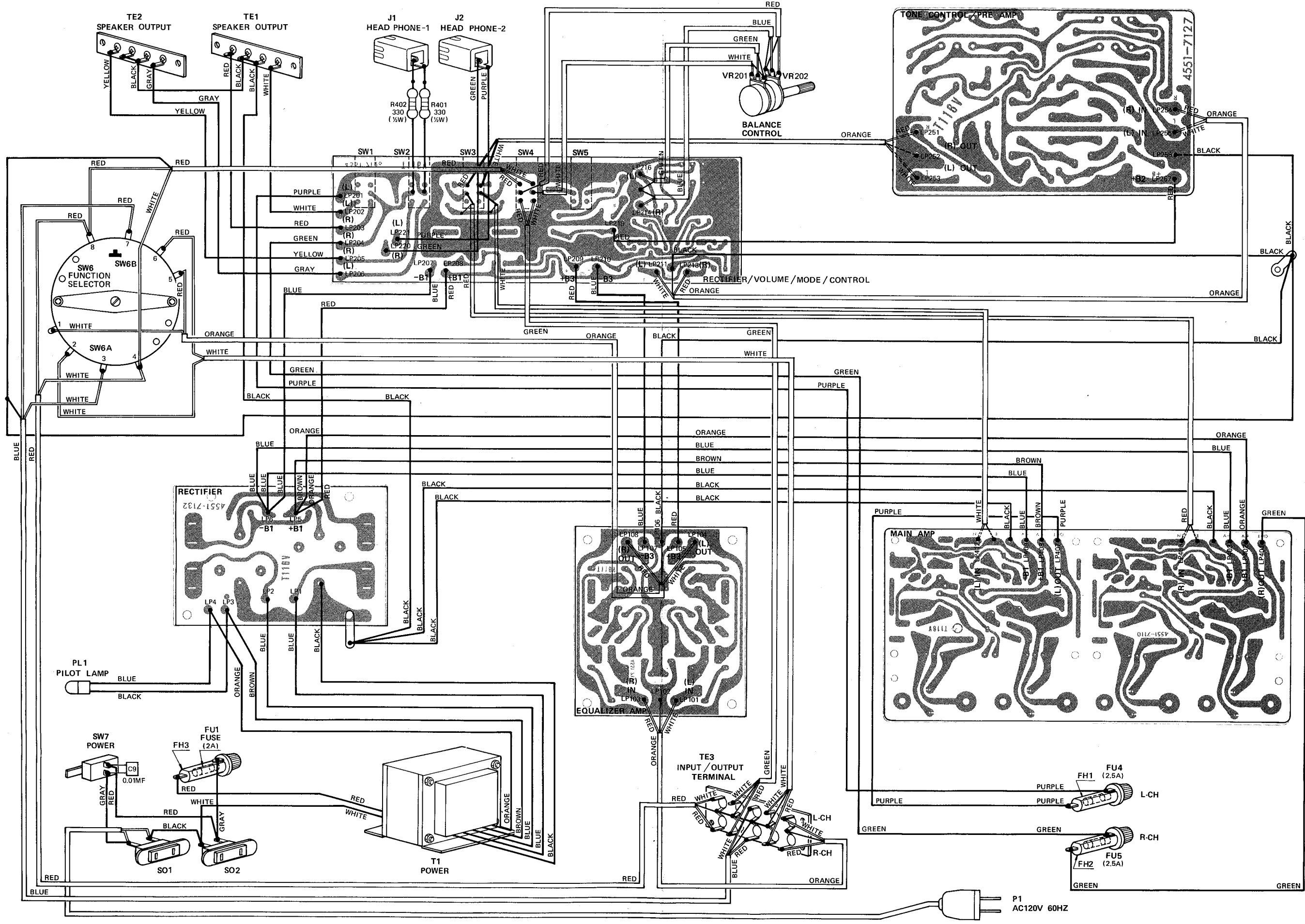
Modifications: Add Logic for AC Fuses Burning Out

harman/kardon

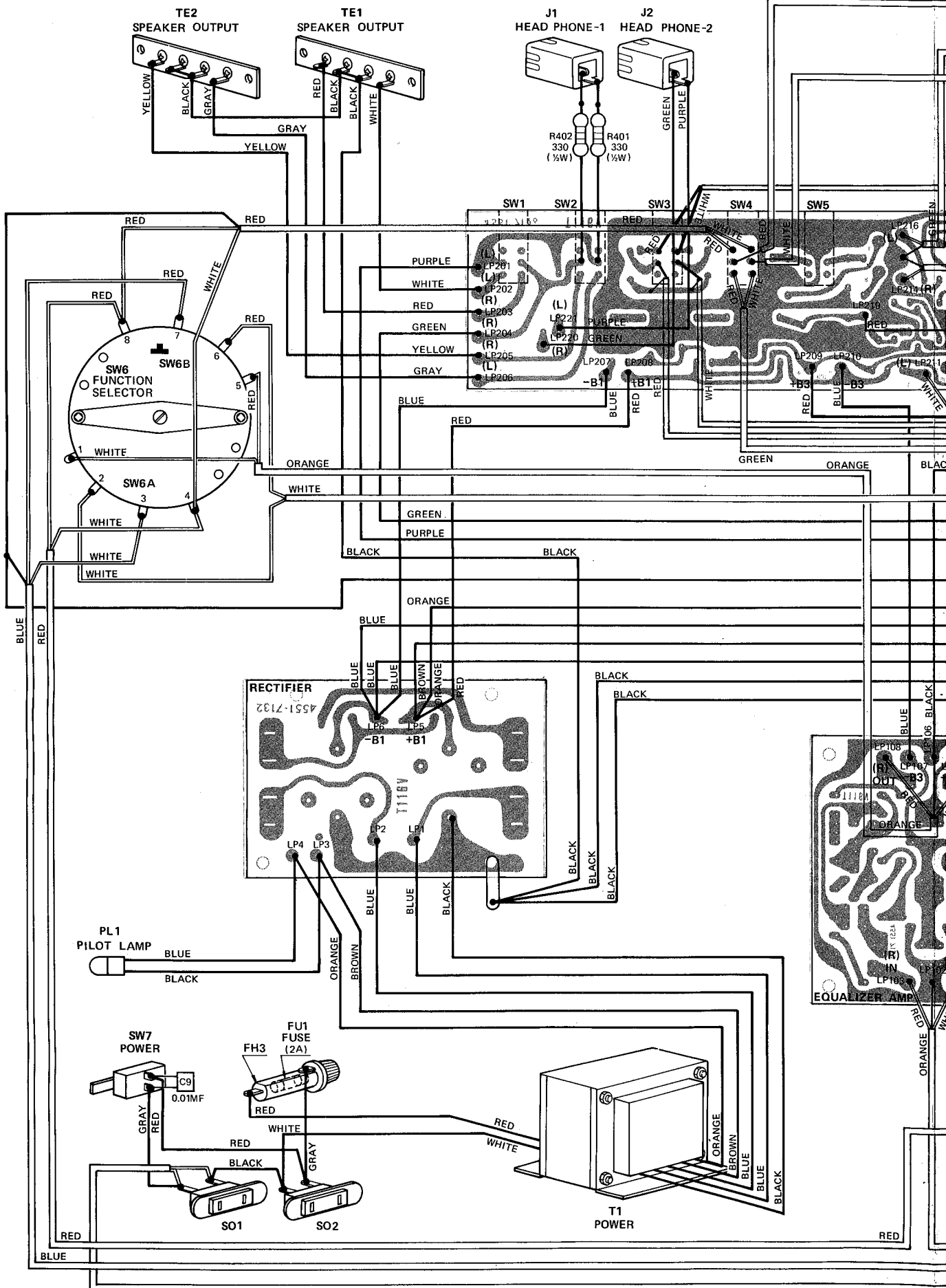
PRECAUTIONS

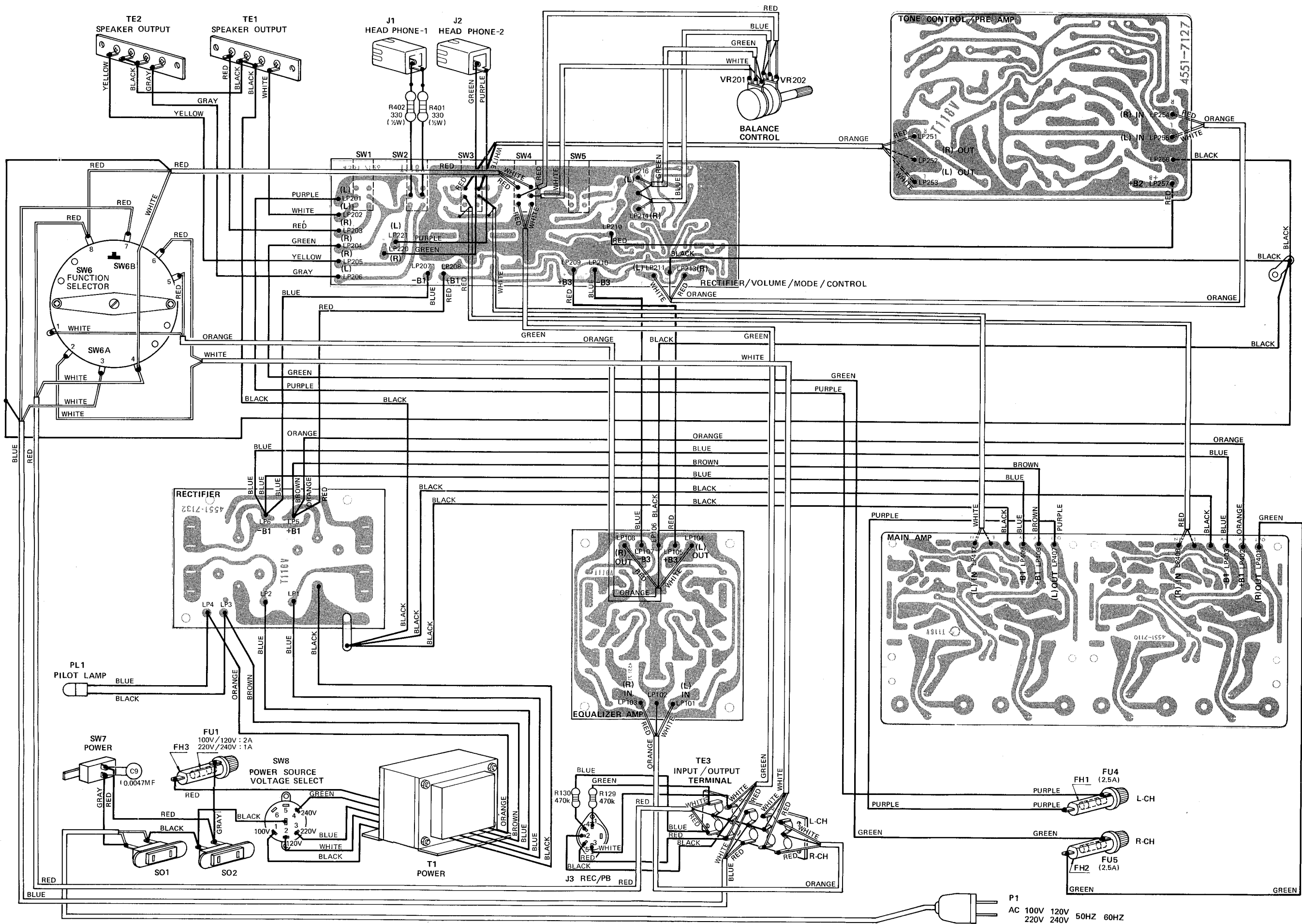
1. Always disconnect the chassis from power line when soldering. Turning the power switch OFF is not enough. Power line leakage passing through the heating element may destroy the transistors.
2. Never attempt to do any work on the transistor amplifiers without first disconnecting the AC line cord and waiting until the power supply filter capacitors have discharged.
3. Replacement for output and driver transistors, if necessary, must be made from the same beta group as the original type.
4. If one output transistor burns out (open or short) always remove all the output transistors in that channel and check the bias adjustment, the control and other parts in the network with an ohmmeter before inserting a new transistor. All transistors in one channel will be destroyed if the base biasing circuit is open on the emitter end.
5. When mounting a replacement power transistor, be sure that the bottom of the flange, the mica insulators and the surface of the heat sink are free of foreign matter, for they may cause transistor failure.
6. Silicon grease must be applied between the transistor and the mica insulator, and between the mica insulator and the heat sink for better heat conduction.
7. Fuses must be replaced with size and type indicated. Use of other types can expose components to destructive current levels.

SYSTEM INTERCONNECTION AND WIRING



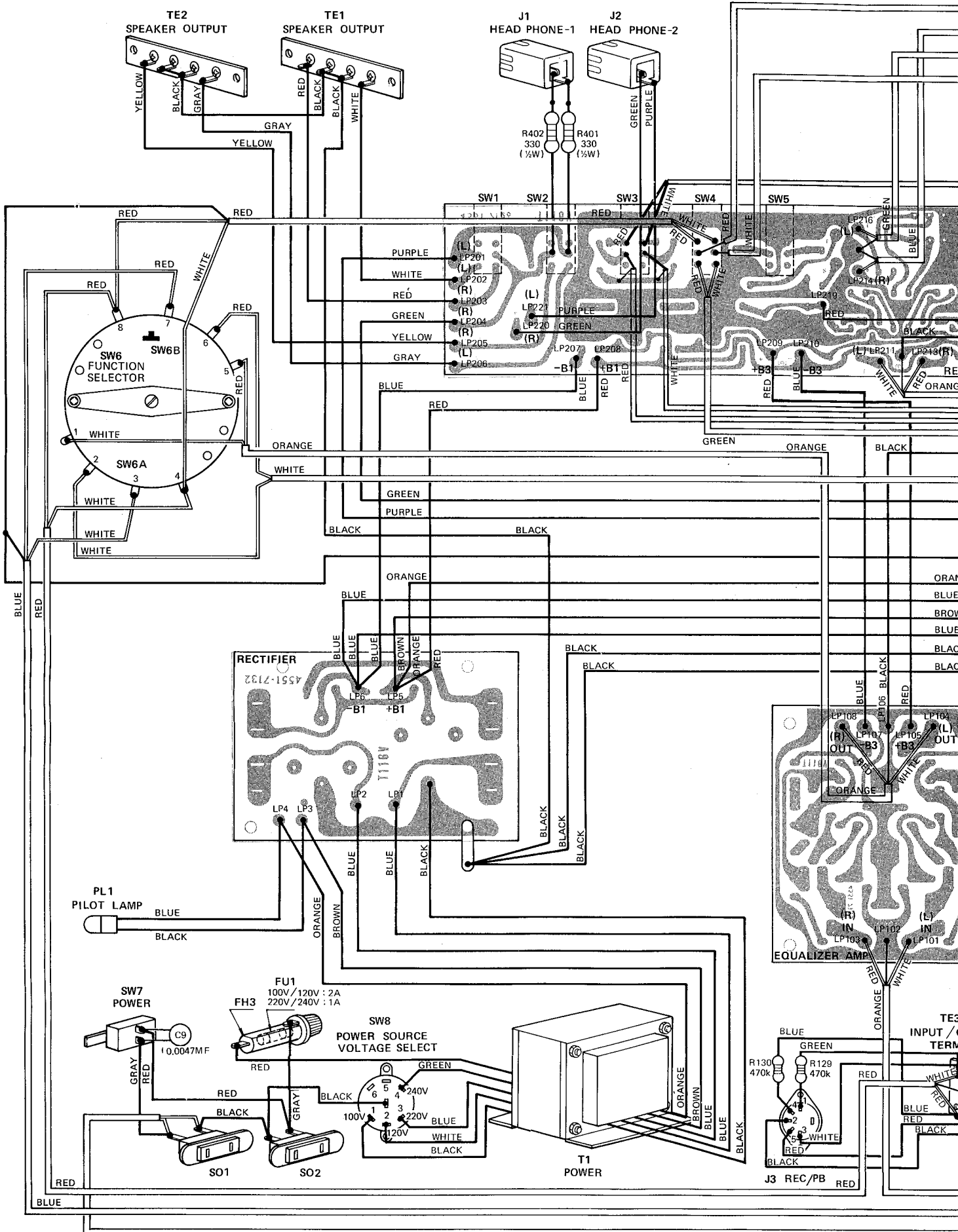
SYSTEM INTERCONNECTION AND WIRING



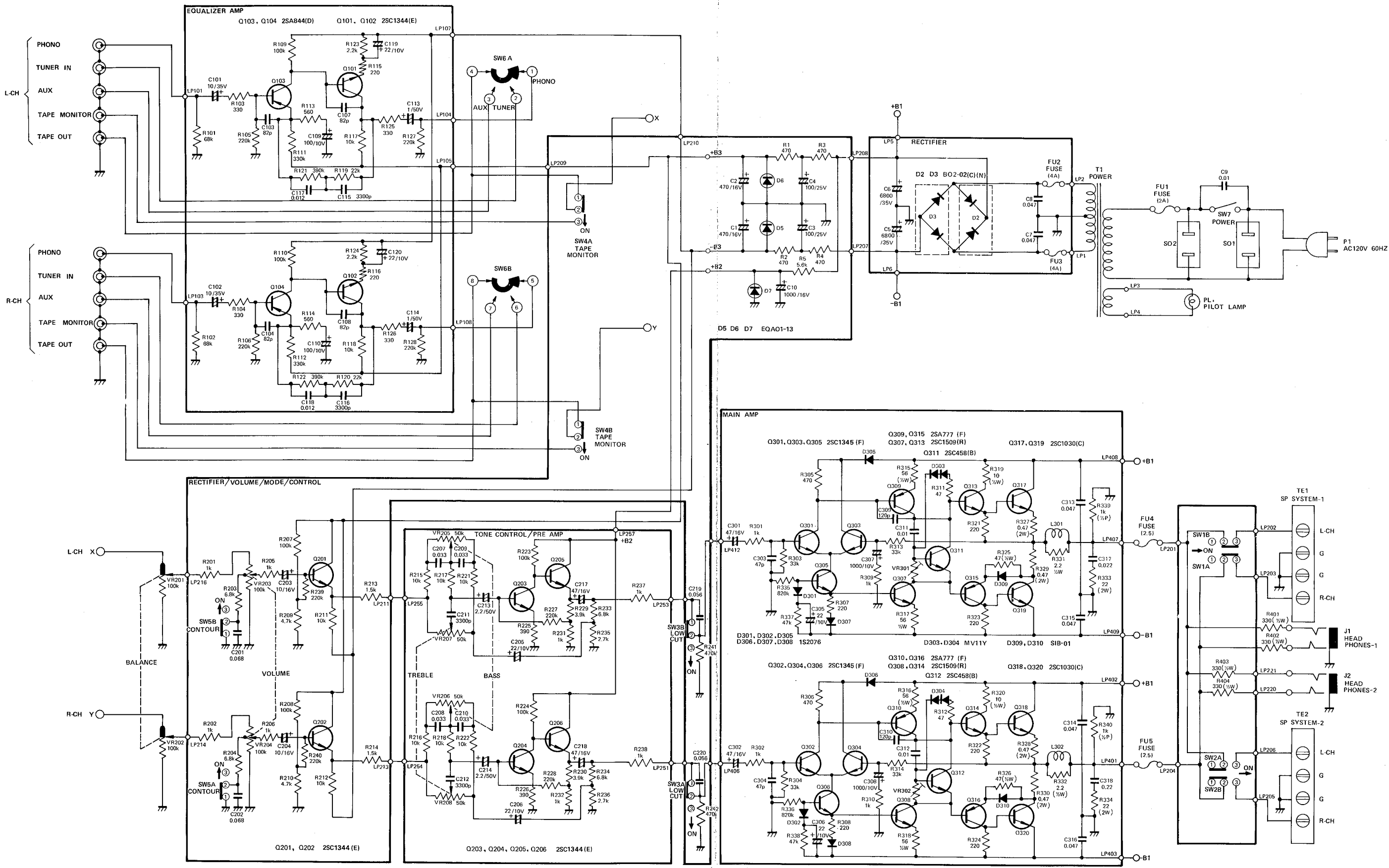


P1
AC 100V 120V 50HZ 60HZ
220V 240V

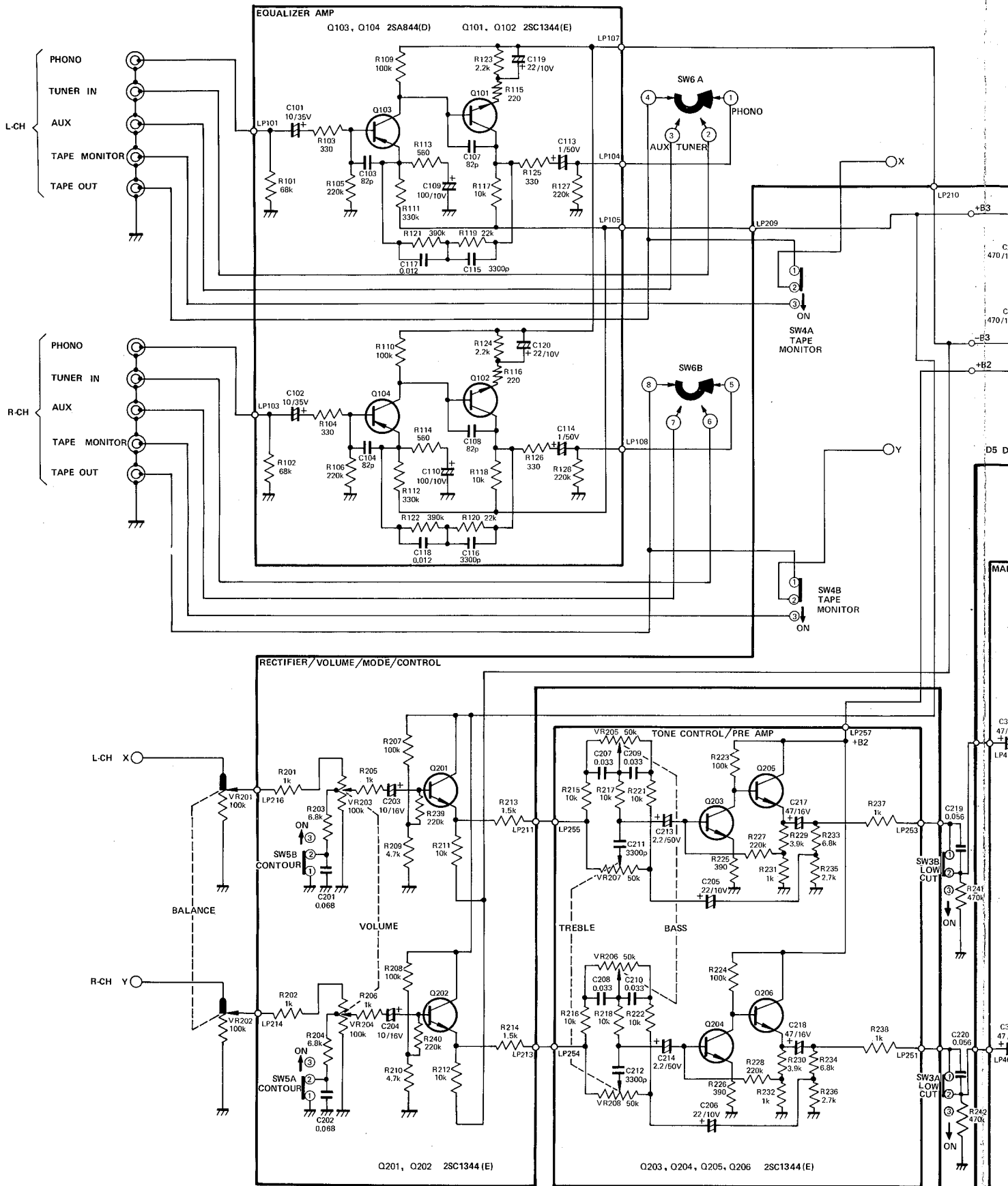
SYSTEM INTERCONNECTION AND WIRING—MULTIVOLTAGE VERSION

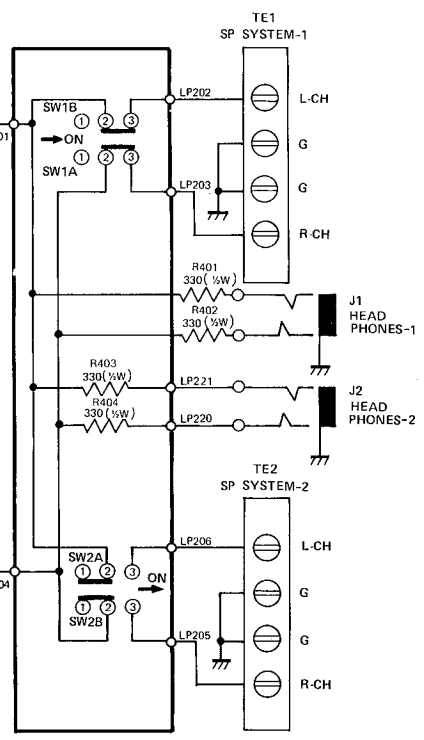
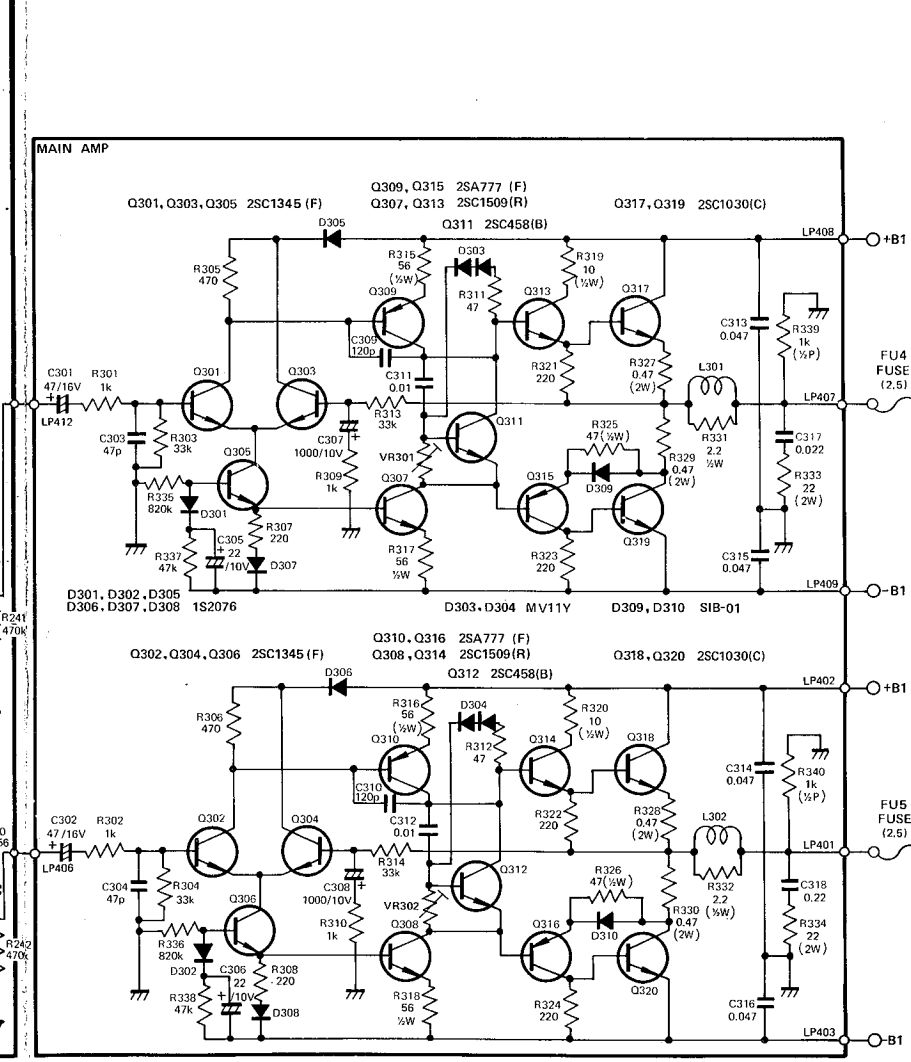
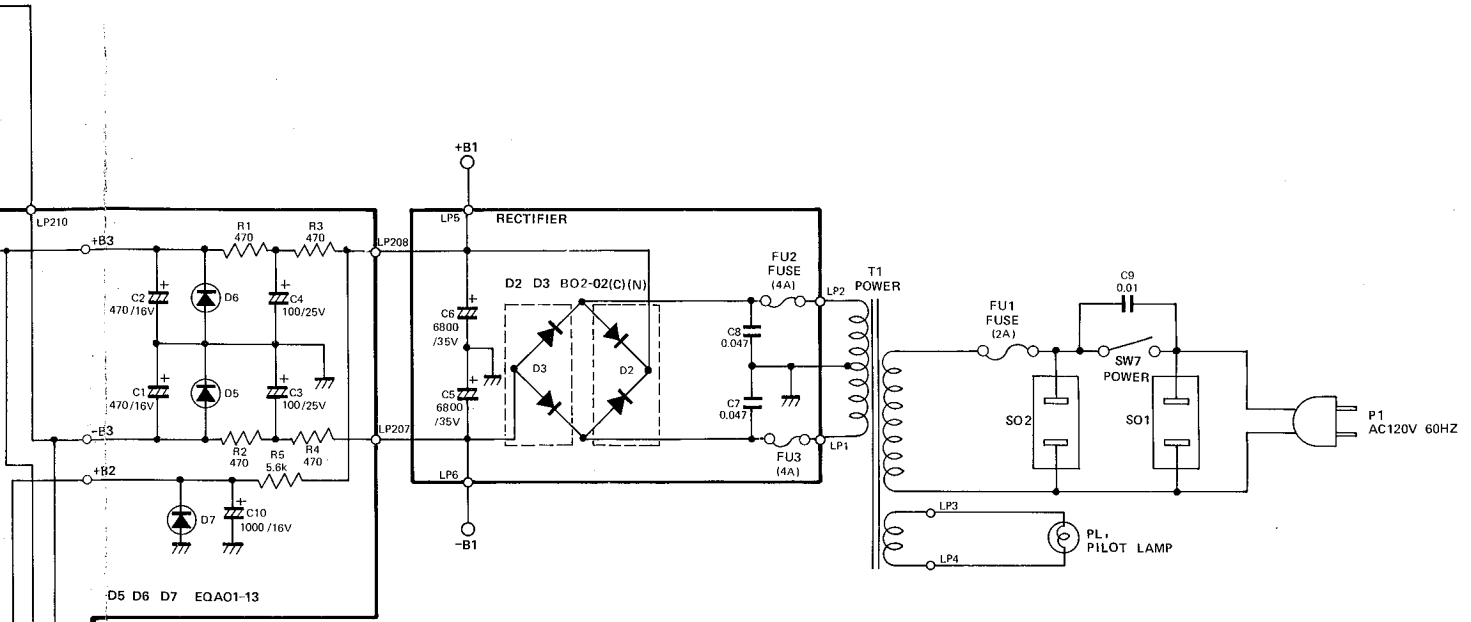


SYSTEM SCHEMATIC

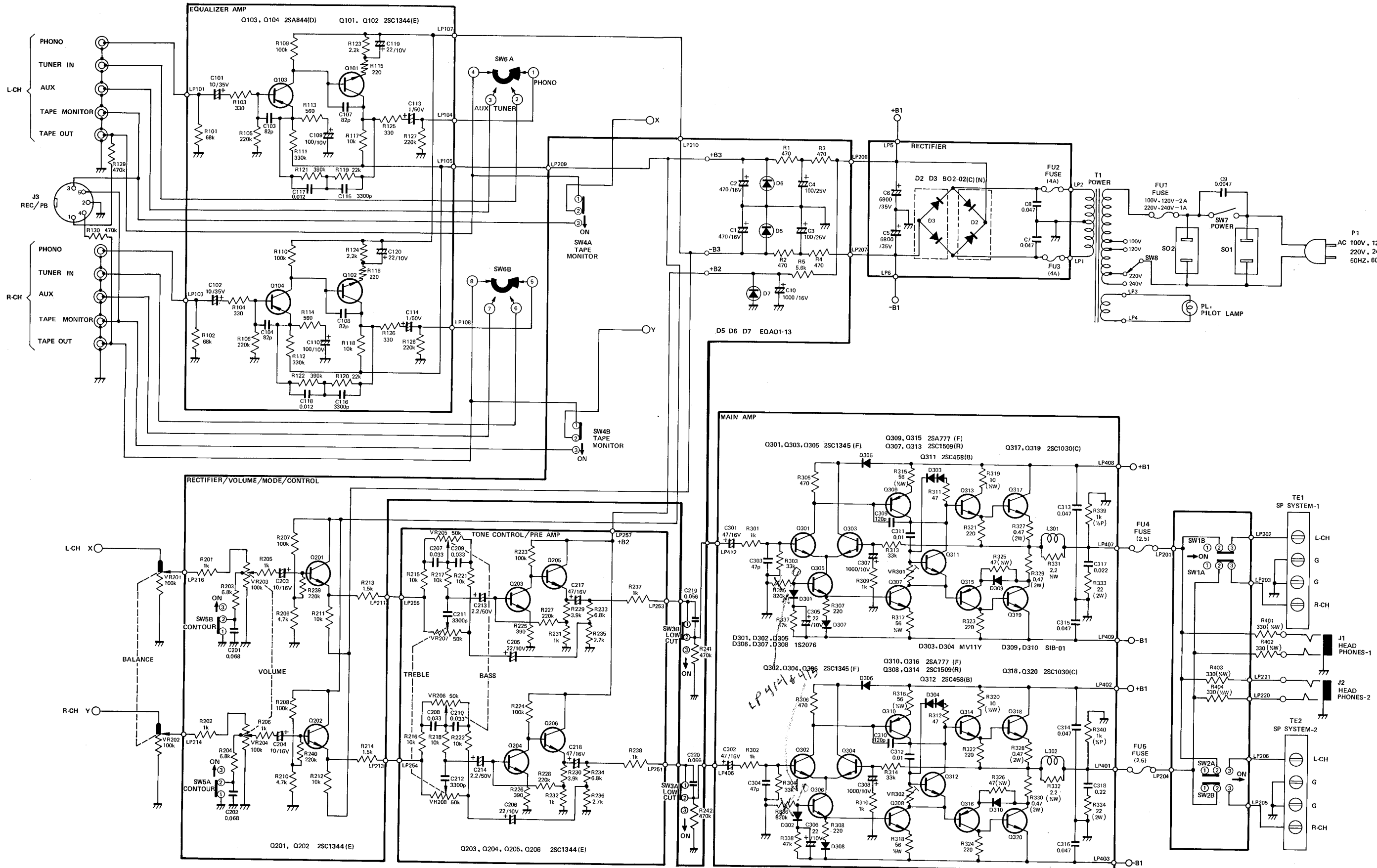


SYSTEM SCHEMATIC

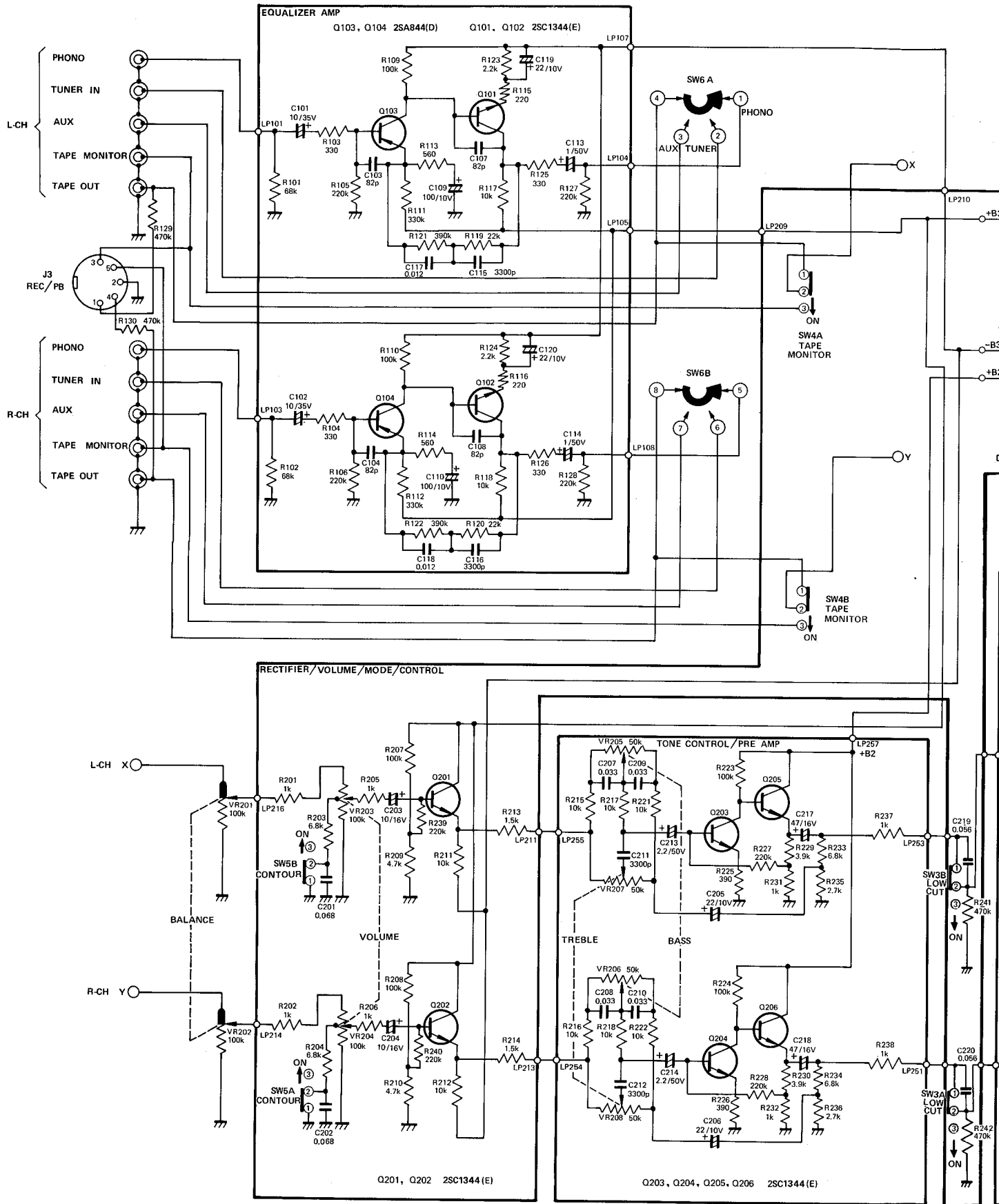


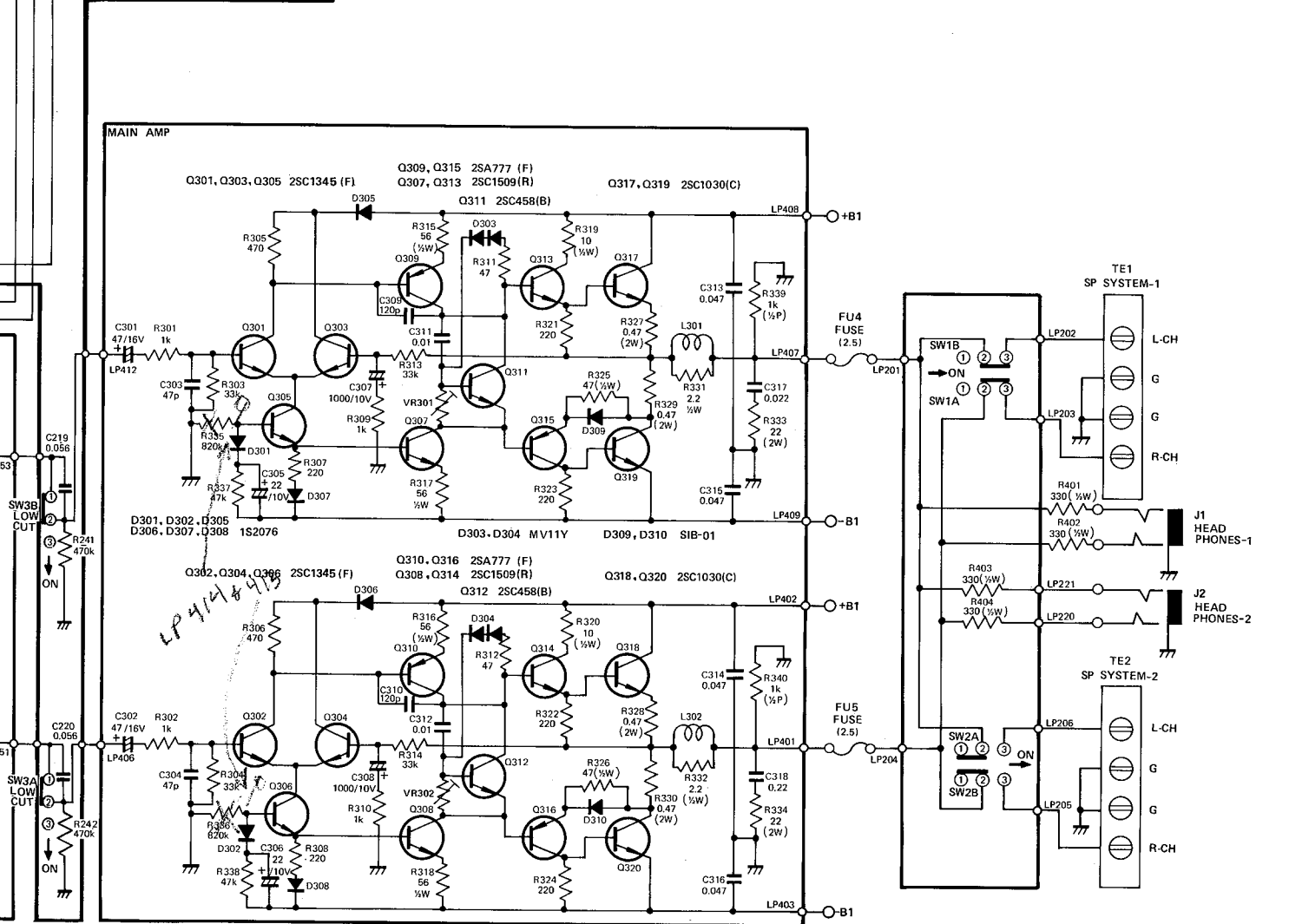
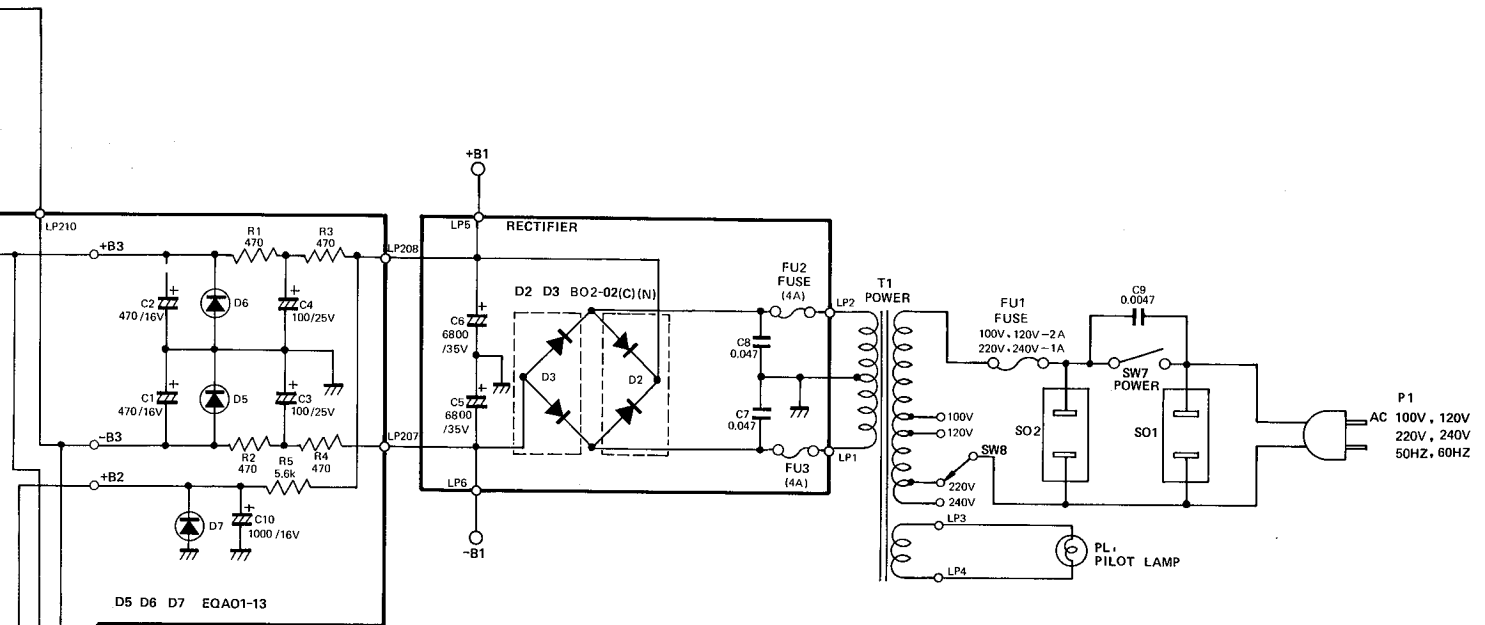


SYSTEM SCHEMATIC—MULTIVOLTAGE VERSION



SYSTEM SCHEMATIC—MULTIVOLTAGE VERSION





SCHEMATIC DIAGRAM NOTES

1. All resistors are 1/4 watt, $\pm 5\%$ unless noted otherwise.
Values are in ohms. K = 1000 M = 1000K
2. All capacitance values are in UF unless noted otherwise. PF = UUF
3. Function selector switch (SW6) is in PHONO position.

VOLTAGE CHART

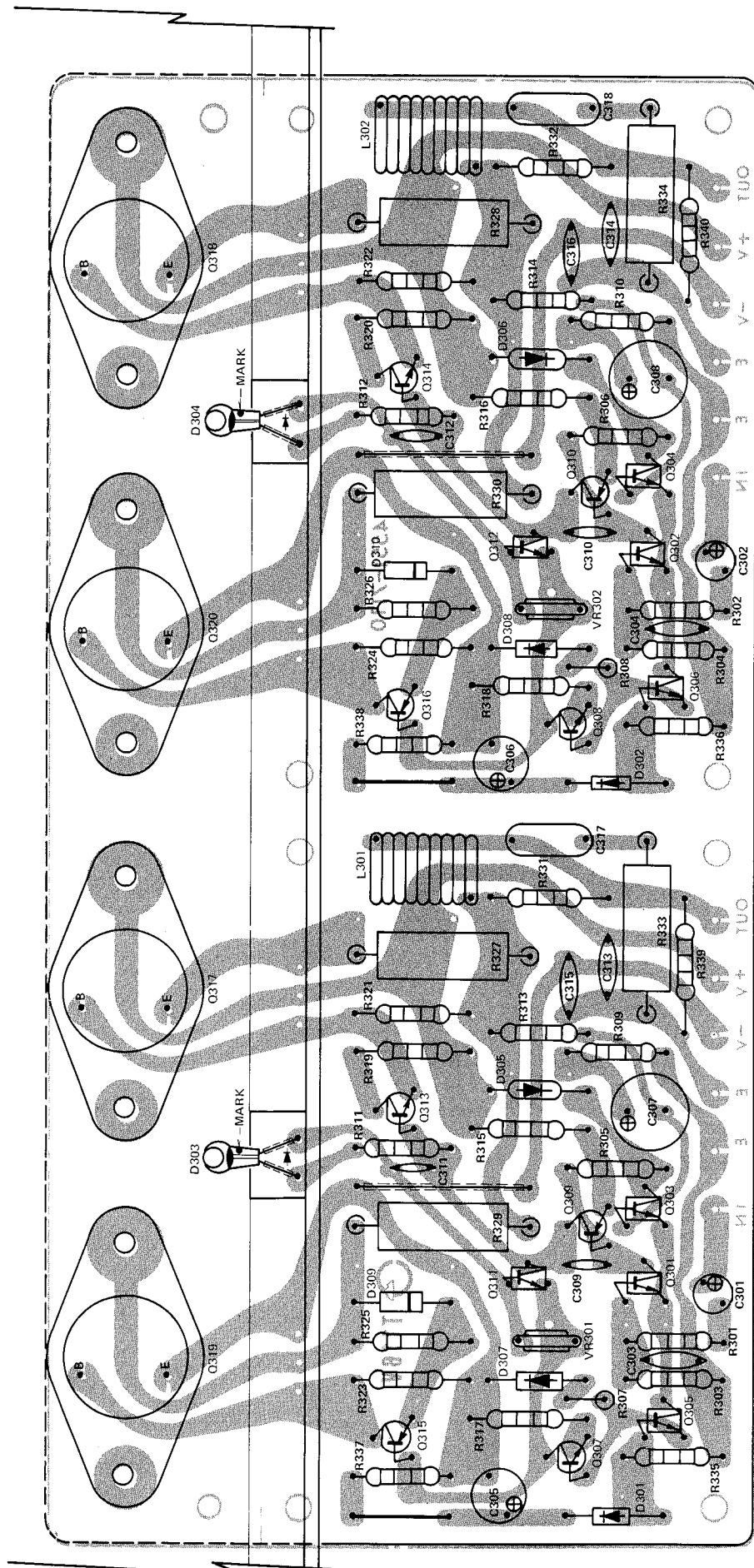
All Values $\pm 15\%$

AC120V, Volume Control at Minimum, Tone Control at Mechanical Center, No Signal,
Chassis Ground, Function Selector to PHONO.

+ B1 +28V
 - B1 -28V
 + B2 +13V
 + B3 +13V
 - B3 -13V

	<u>base</u>	<u>emitter</u>	<u>collector</u>
Q101, 102	-9.4V	-10V	+1V
Q103, 104	+0.02V	+0.6V	-9.4V
Q201, 202	+0.1V	-0.5V	+13V
Q203, 204	+0.6V	+0.035V	+3.8V
Q205, 206	+3.8V	+3.2V	+13V
Q301, 302	0V	-0.6V	+26.8V
Q303, 304	0V	-0.6V	+27.37V
Q305	-26.2V	-26.8V	-0.6V
Q306	-26.8V	-26.8V	-0.6V
Q307, 308	-26.8V	-27.4V	-0.76V
Q309, 310	+27.37V	+27.4V	+1.2V
Q311, 312	-0.06V	-0.76V	+1.2V
Q313, 314	+1.2V	+0.6V	+27.97V
Q315, 316	-0.76V	-0.16V	-27.4V
Q317, 318	+0.6V	+0.025V	+28V
Q319, 320	-27.4V	-28V	-0.025V

MAIN AMP PC BOARD COMPONENT SIDE



MAIN AMP PC BOARD PARTS LIST

REF. NO.	PART NO.	DESCRIPTION
RESISTORS		
R327-330	33514781	0.47 ohm, 2w
R333, 334	33512201	22 ohm, 2w
VR301, 302	23531300	1K ohm variable
CAPACITORS		
C301, 302	31831300	47 μ F +50% -10% 16V electrolytic
C305, 306	31831322	22 μ F +50% -10% 10V electrolytic
C307, 308	31831465	1000 μ F +50% -10% 10V electrolytic
SEMICONDUCTORS		
Q301, 302, 303, 304	43029483*	Transistor, Differential Amp. 2SC1345(F)
Q305, 306	43029483*	Transistor, Current Regulator 2SC1345(F)
Q307, 308	43029484*	Transistor, Current Regulator 2SC1509(R)
Q309, 310	43029485*	Transistor, Driver 2SA777(R)
Q311, 312	43027379*	Transistor, Bias Stabilization 2SC458(B)
Q313, 314	43029484*	Transistor, Complement 2SC1509(R)
Q315, 316	43029485*	Transistor, Complement 2SC777(R)
Q317, 318, 319, 320	43031303*	Transistor, Power Amp. 2SC1030(C)
D301, 302	41030552*	Diode, 1S2076
D303, 304	41631466*	Varistor, MV11Y
D305, 306, 307, 308	41030552*	Diode, 1S2076
D309, 310	41631295*	Diode, SIB01-02
COILS		
L301, 302	12031304	RF Choke
MISCELLANEOUS		
	60231467	Heat Sink for Power Transistors

POWER AMP IDLING ADJUSTMENT

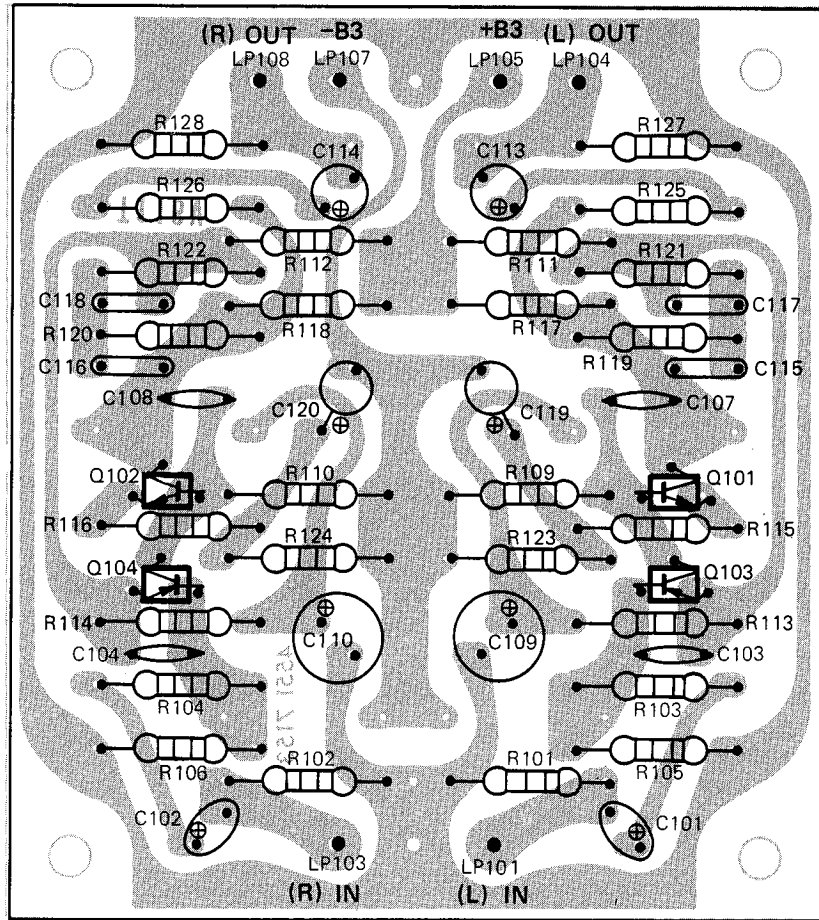
- NOTES: 1. Set up A401 as follows
- | | |
|----------------------|-----|
| FUNCTION | AUX |
| TONE/BALANCE | MID |
| LOW CUT SWITCH | OFF |
| SPEAKER SWITCH | ON |
2. Connect 8 ohm (50W) resistor across left and right speaker terminals

INSTRUMENT: DC Voltmeter

NOTE: Set Volume control to minimum output.

Step	DC VOLTMETER CONNECTION	ADJUST	ADJUST FOR
1	Across R329 resistor	VR301	25mV DC \pm 1mV
2	Across R330 resistor	VR302	25mV DC \pm 1mV

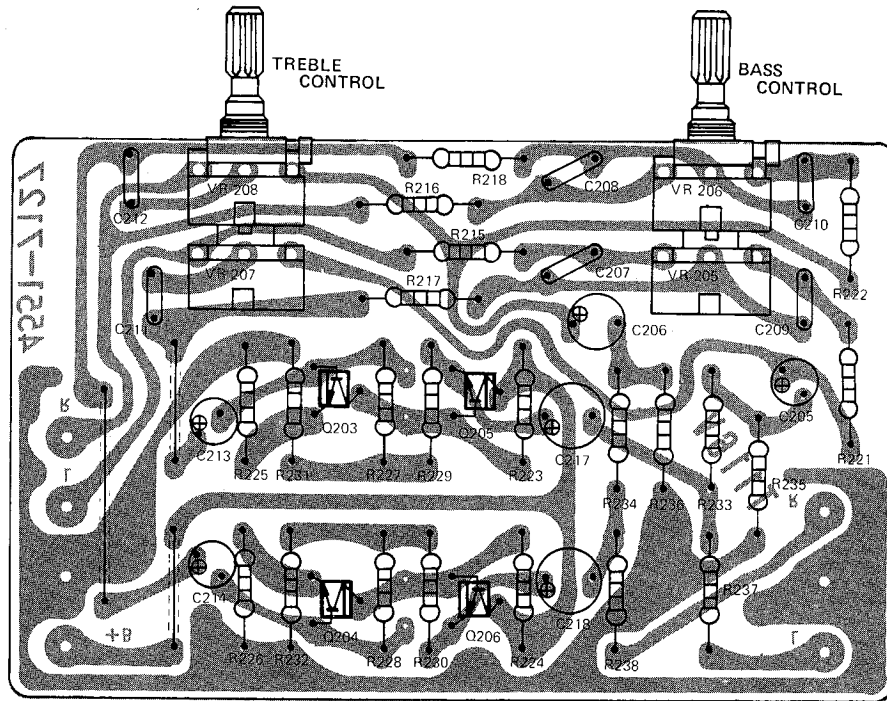
EQUALIZER AMP



PART LIST

REF. NO.	PART NO.	DESCRIPTION
CAPACITORS		
C101, 102	30731468	10 μ F \pm 20% 30V Electrolytic
C109, 110	31818932	100 μ F +50% -10% 10V Electrolytic
C113, 114	31831469	1 μ F +50% -10% 50V Electrolytic
C119, 120	31831322	22 μ F +50% -10% 10V Electrolytic
TRANSISTORS		
Q101, 102	43028535*	Equalizer amp. 2SC1344(E)
Q103, 104	43031312*	Equalizer amp. 2SA844(D)

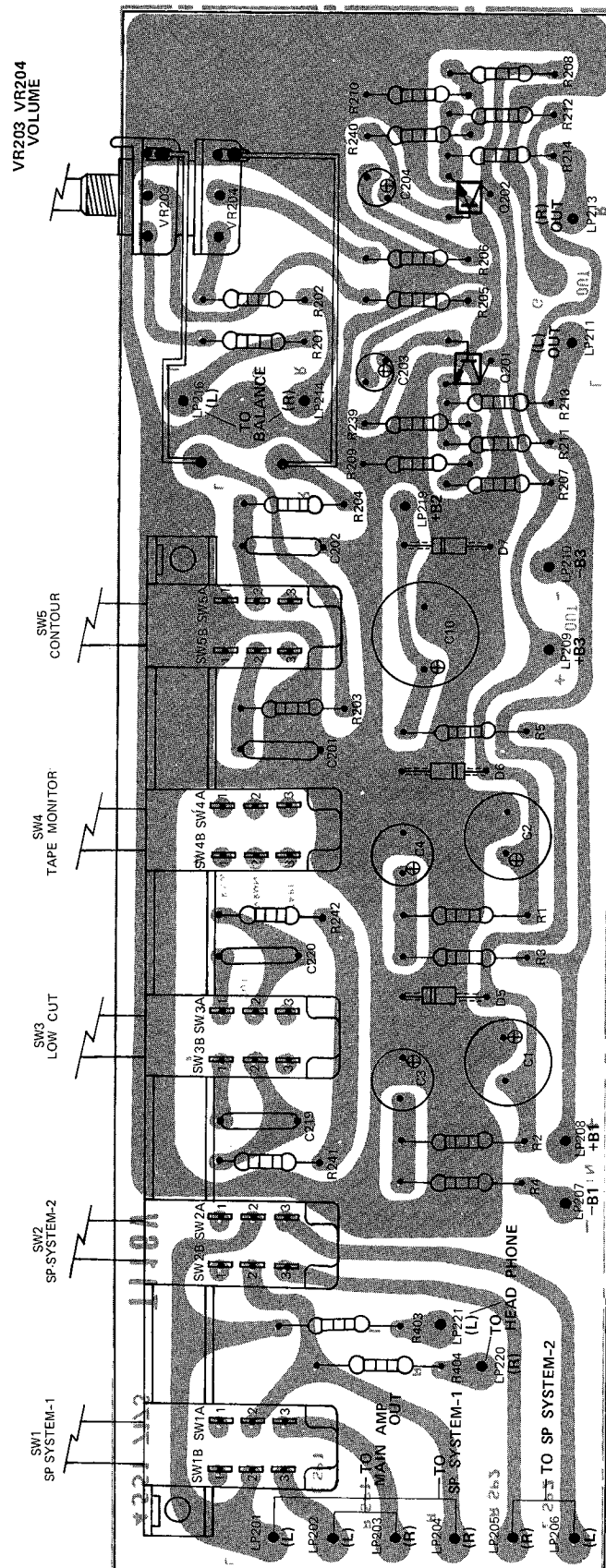
tone control preamp board



PARTS LIST

REF. NO.	PART NO.	DESCRIPTION
RESISTORS		
VR205, 206	22031470	50K ohm variable, bass control
VR207, 208	22031470	50K ohm variable, treble control
CAPACITORS		
C205, 206	31831322	22 μ F +50% -10% 10V Electrolytic
C213, 214	31831323	2.2 μ F +50% -10% 50V Electrolytic
C217, 218	31831301	47 μ F +50% -10% 16V Electrolytic
TRANSISTORS		
Q203-206	43028535*	Preamp. 2SC1344(E)

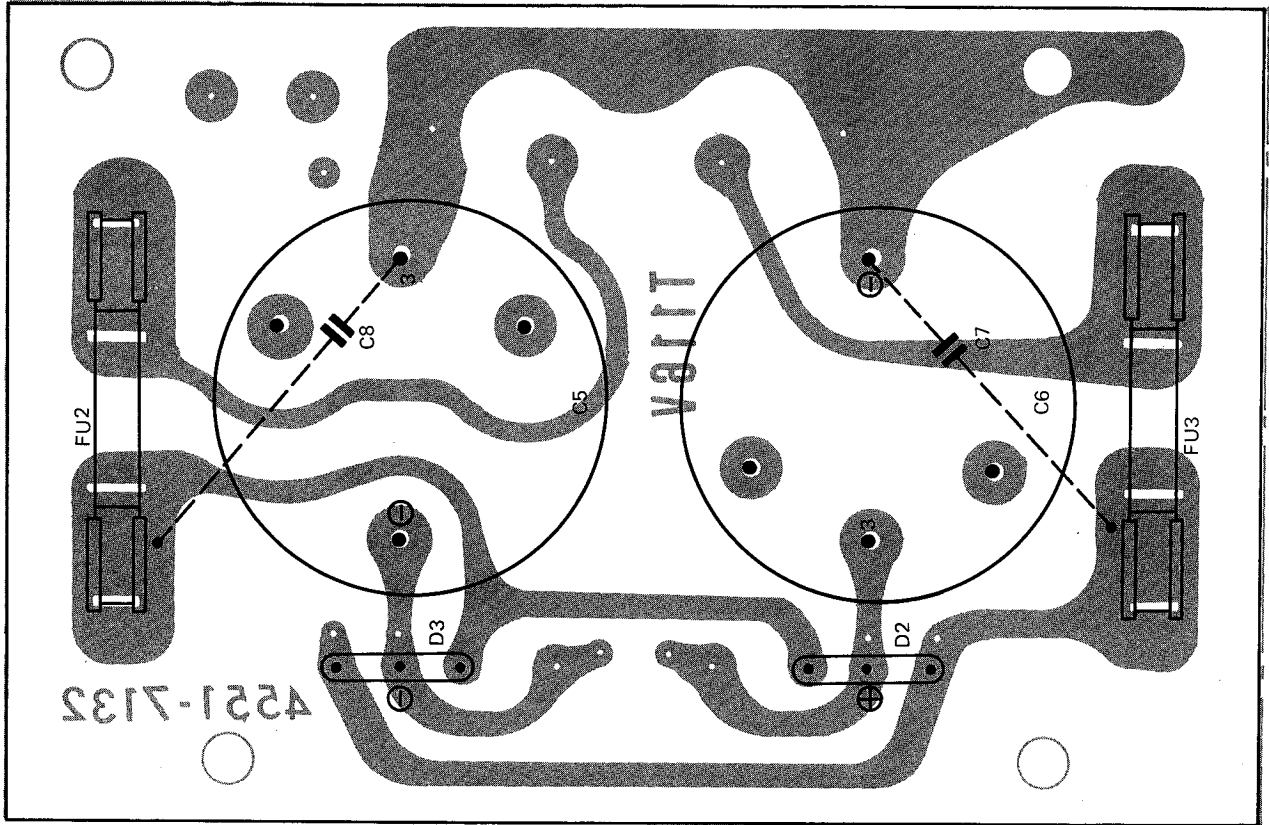
RECTIFIER/VOLUME/MODE/CONTROL BOARD



RECTIFIER/VOLUME/MODE/CONTROL PARTS LIST

REF. NO.	PART NO.	DESCRIPTION
RESISTORS		
VR203, 204	22030471	100K ohm Variable, Volume control
CAPACITORS		
C1, 2	31828611	470 μ F +50% -10% 16V Electrolytic
C3, 4	31831324	100 μ F +50% -10% 25V Electrolytic
C10	31831472	1000 μ F +50% -10% 16V Electrolytic
C203, 204	31829147	10 μ F +50% -10% 16V Electrolytic
SEMICONDUCTORS		
Q201, 202	43028535*	Transistor Preamp 2SC1344(E)
D5, 6, 7	42029566*	Zener Diode EQA01-13
MISCELLANEOUS		
SW1, 2, 3, 4, 5	25031473	Push Switch, Mode/Control

RECTIFIER PC BOARD



REF. NO.	PART NO.	DESCRIPTION
D2	41631298*	Tap Silicon, Rectifier B02-02C
D3	41631299*	Tap Silicon, Rectifier B02-02N
FU2, 3	45031462*	Fuse 4A
C5, 6	31831464	Capacitor 6800 μ F +50% -10% 35V Electrolytic

MISCELLANEOUS PARTS LIST

REF. NO.	PART NO.	DESCRIPTION
	00131474	Equalizer Amp PC Board, complete
	00131475	Rectifier/Volume/Mode Control PC Board, complete
	00131476	Tone Control/Pre. Amp PC Board, complete
	00131477	Main Amp PC Board, complete
	00131478	Rectifier PC Board, complete
SW6, AB	24031479	Rotary Switch, Function Selector
SW7	25029514	Power Switch
T1	10131480	Power Transformer
FH1, 2, 3	65429516	Fuse Holder for FU4, 5, 6
PL1	46531311*	Pilot Lamp 6V 50 ma
J1, 2	65431481	Headphone Jack
TE1, 2	65431366	Speaker Output Terminal
TE3	65431482	Input/Output Terminal
VR201, 202	22031483	Variable Resistor 100K ohm, Balance Control

MULTIVOLTAGE VERSION

T1	10131484	Power Transformer
J3	65431483	Rec/PB Jack (DIN 5 pin)
SW8	24031338	Rotary Switch, Power Source Voltage Selector

CABINET PARTS

60131454	Cabinet Top Cover
60131455	Cabinet Back Cover
60131456	Cabinet Bottom Cover
00231457	Front Panel Assembly
62031458	Leg (4)
63231459	Knob, Volume
63231460	Knob, Function, Bass, Treble, Balance
00231461	Push Button, Power
63231377	Push Button, Control Mode
65431379	Bushing, AC Line Cord
80131381	Nut for Ground Terminal
79031382	Screw for Ground Terminal

NOTE TO WARRANTY STATIONS: Items marked with asterisk (*) are recommended spare parts stock. Printed circuit board assembly numbers are shown for reference only. Harman/Kardon does not normally supply assembled printed circuit boards.

NOTE: To speed handling of your order be sure to include both the model and serial numbers, in addition to the quantity, part number and part description of the items ordered. Orders from independent dealers, independent servicemen, and retail customers will be shipped on a cash in advance basis. Harman/Kardon reserves the right to substitute equivalent parts for those originally installed in this chassis. All parts should be ordered from Harman/Kardon, 55 Ames Court, Plainview, L.I., N.Y. 11803, Att: Parts Department.