

**The Harman/Kardon  
Model A-401**

---

**Stereophonic Control Amplifier**

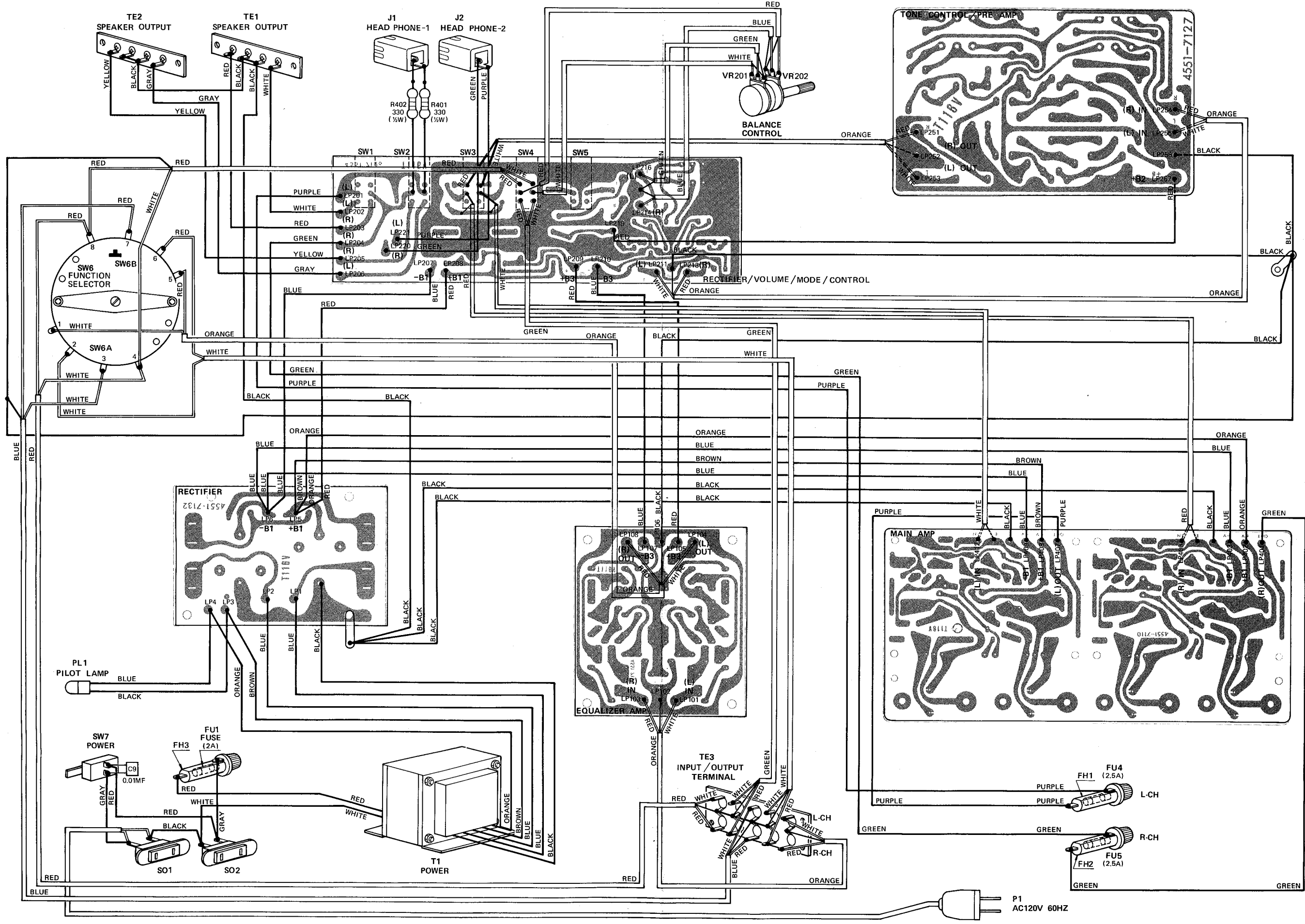
**Technical Manual**

**harman/kardon**

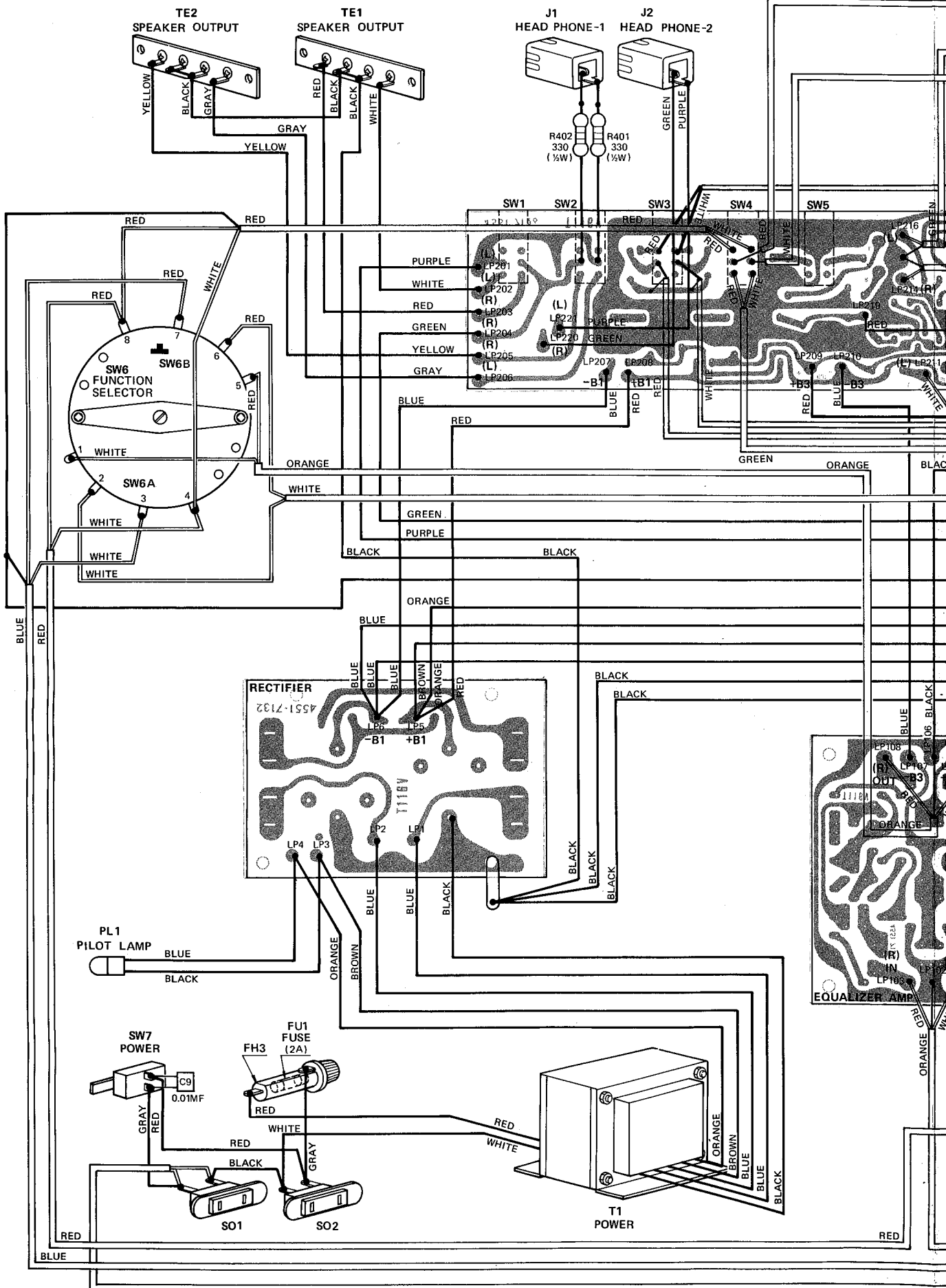
## PRECAUTIONS

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.

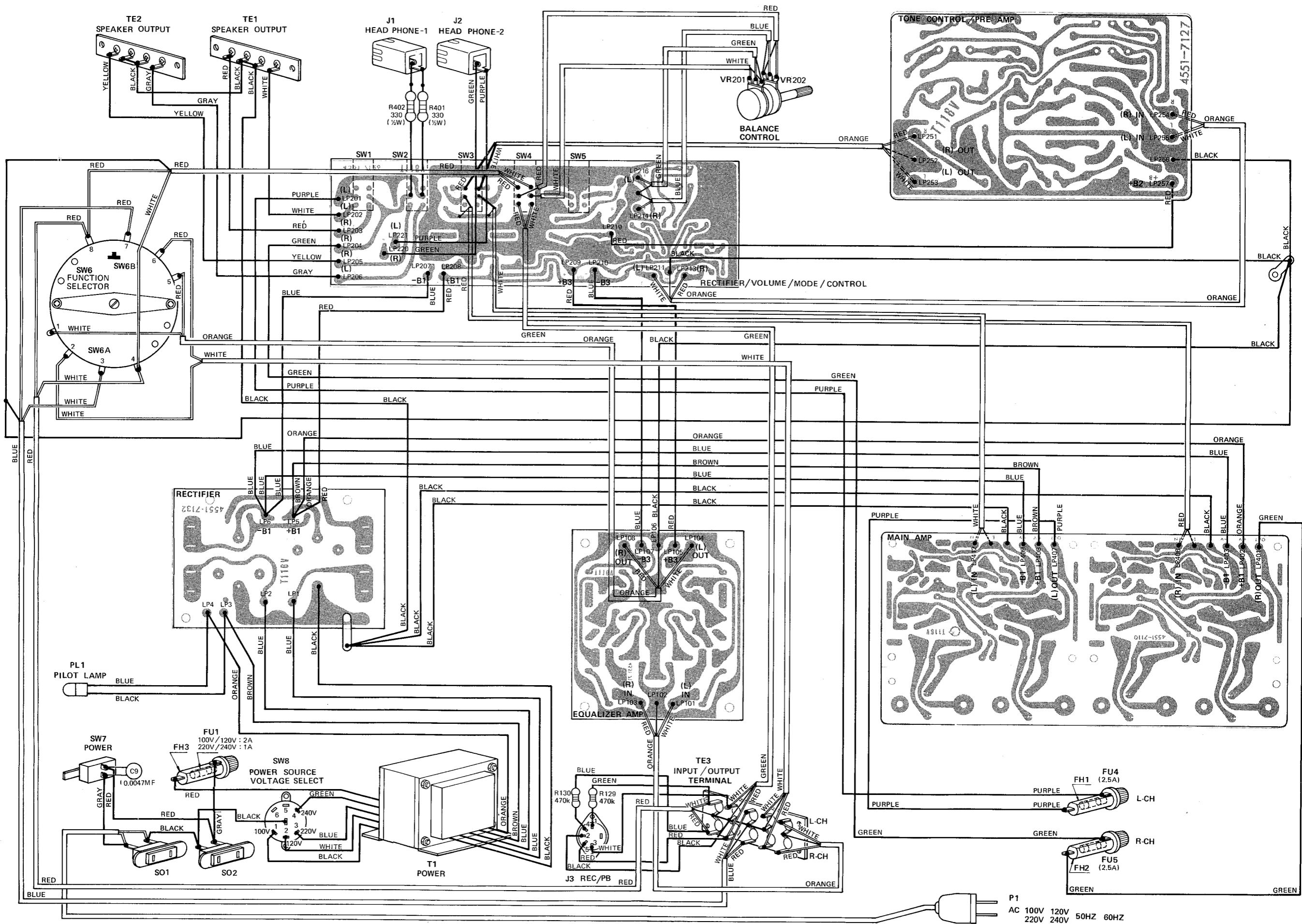
SYSTEM INTERCONNECTION AND WIRING



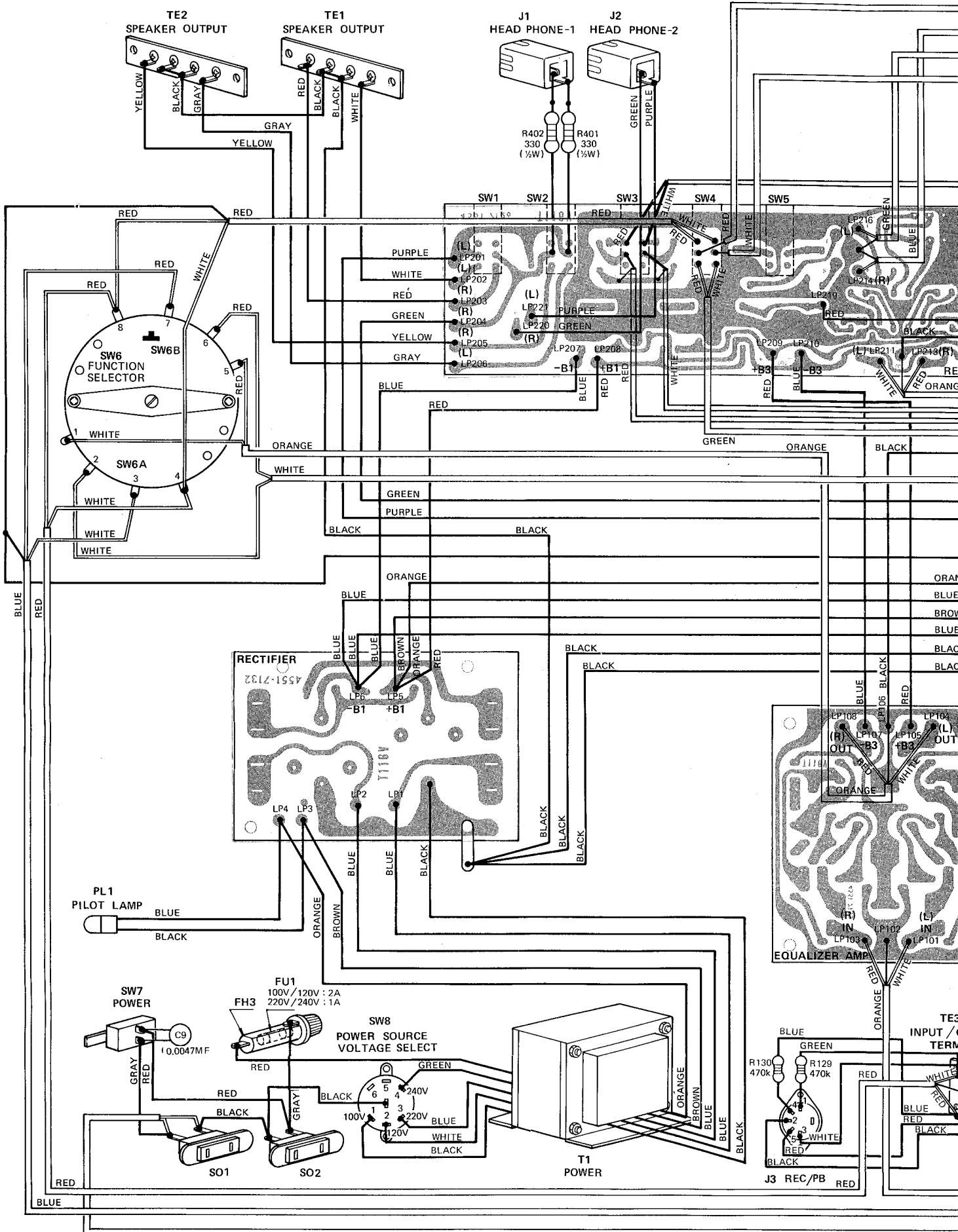
SYSTEM INTERCONNECTION AND WIRING

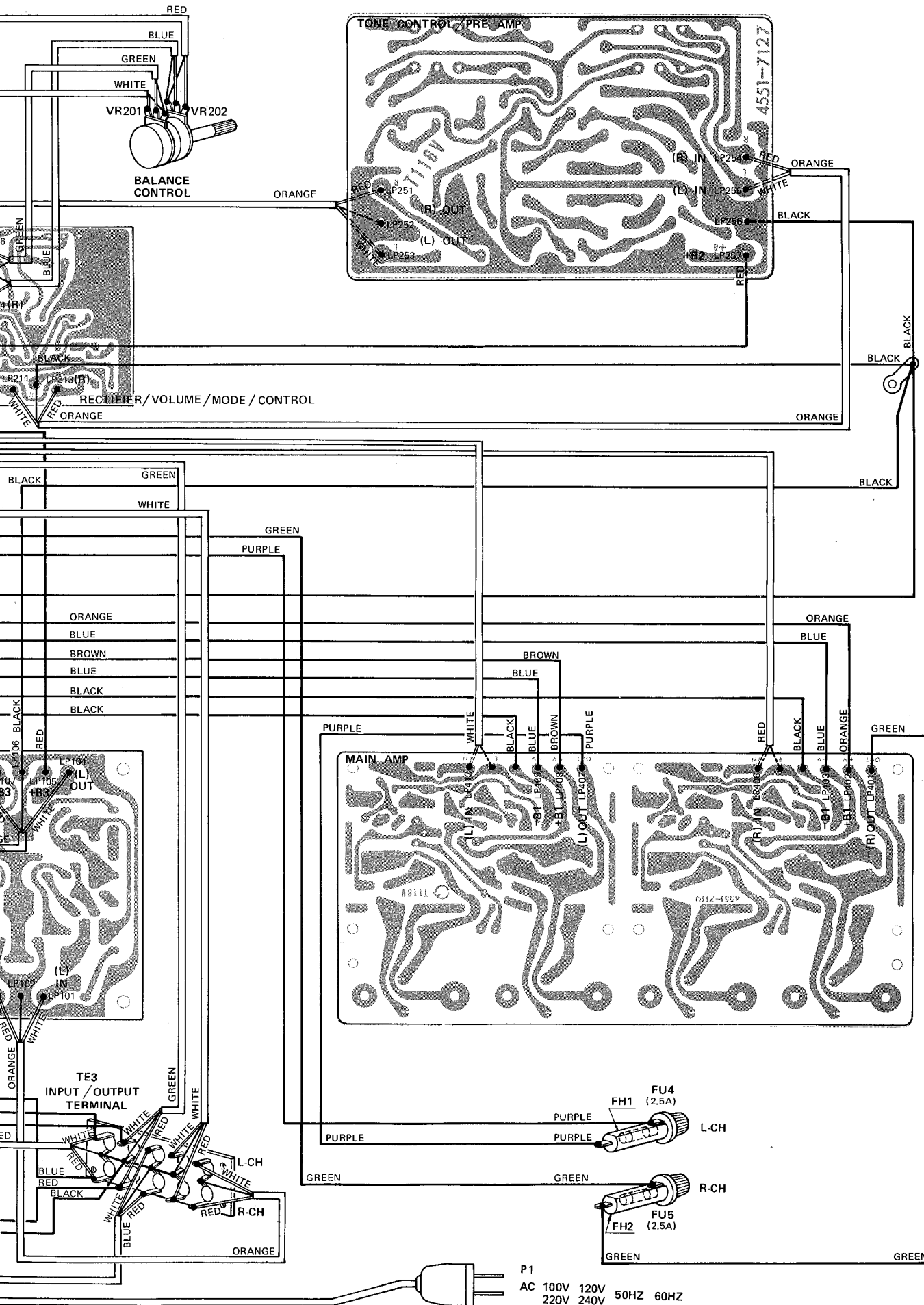






SYSTEM INTERCONNECTION AND WIRING—MULTIVOLTAGE VERSION

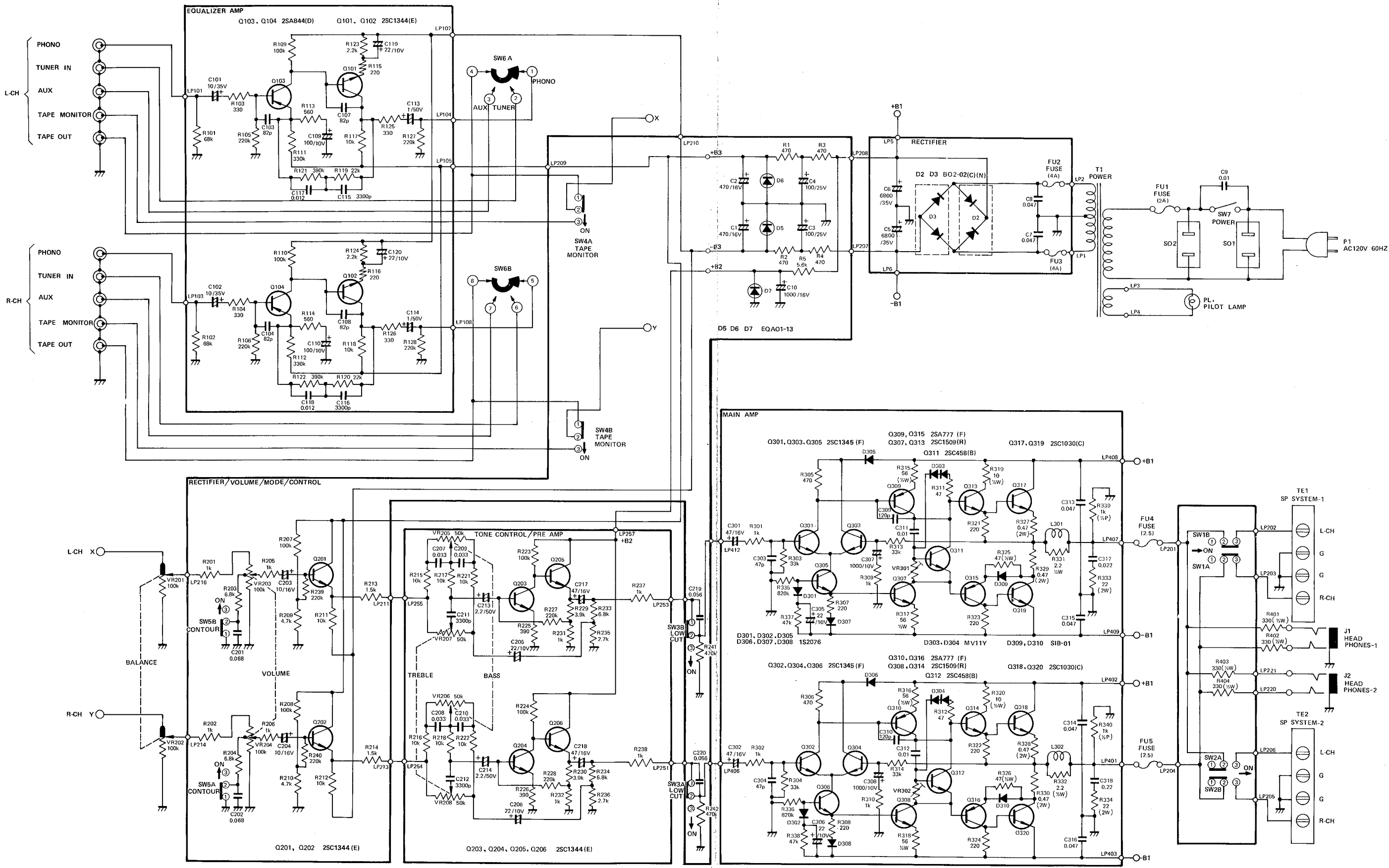




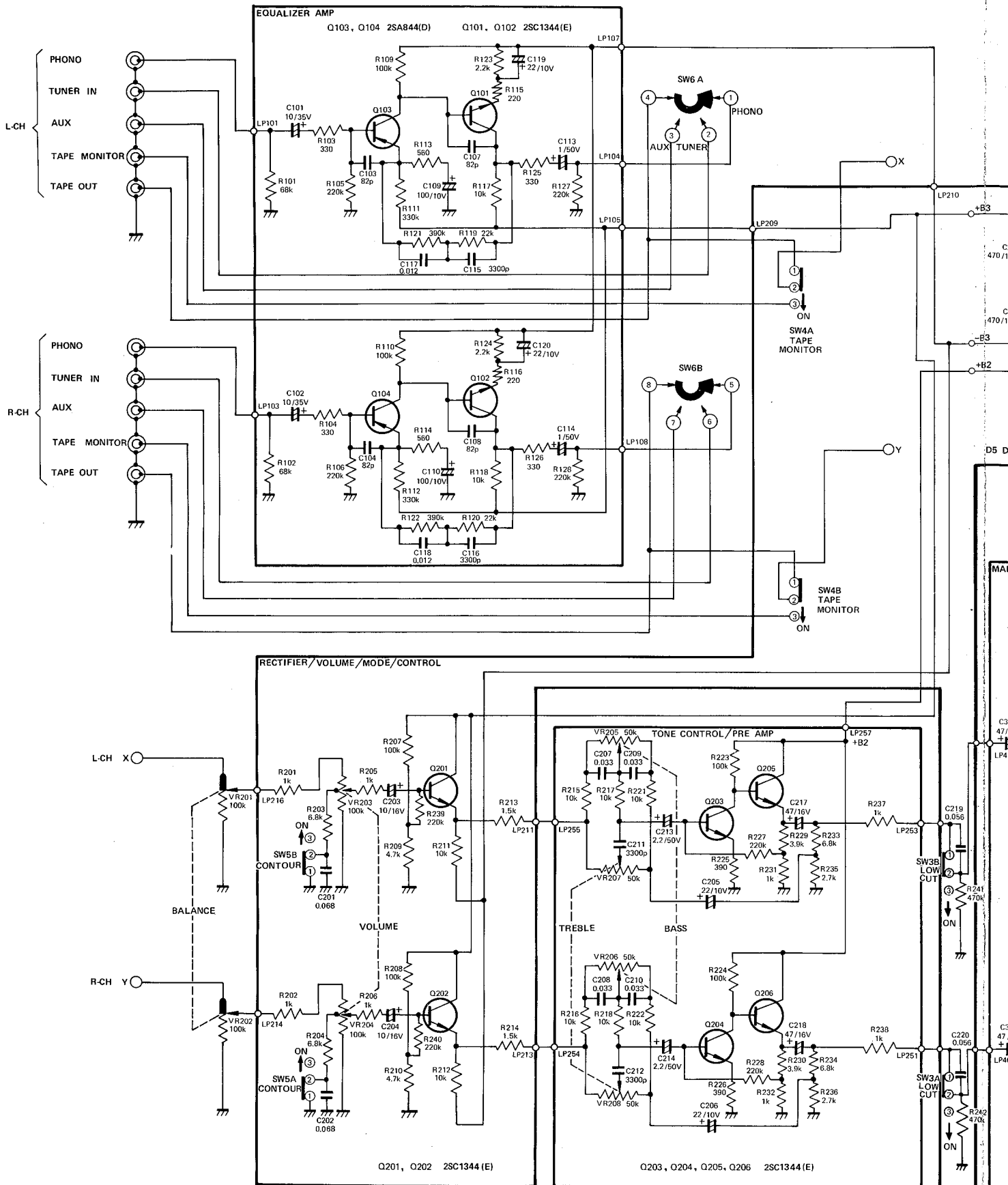
P1  
AC 100V 120V 220V 240V 50HZ 60HZ

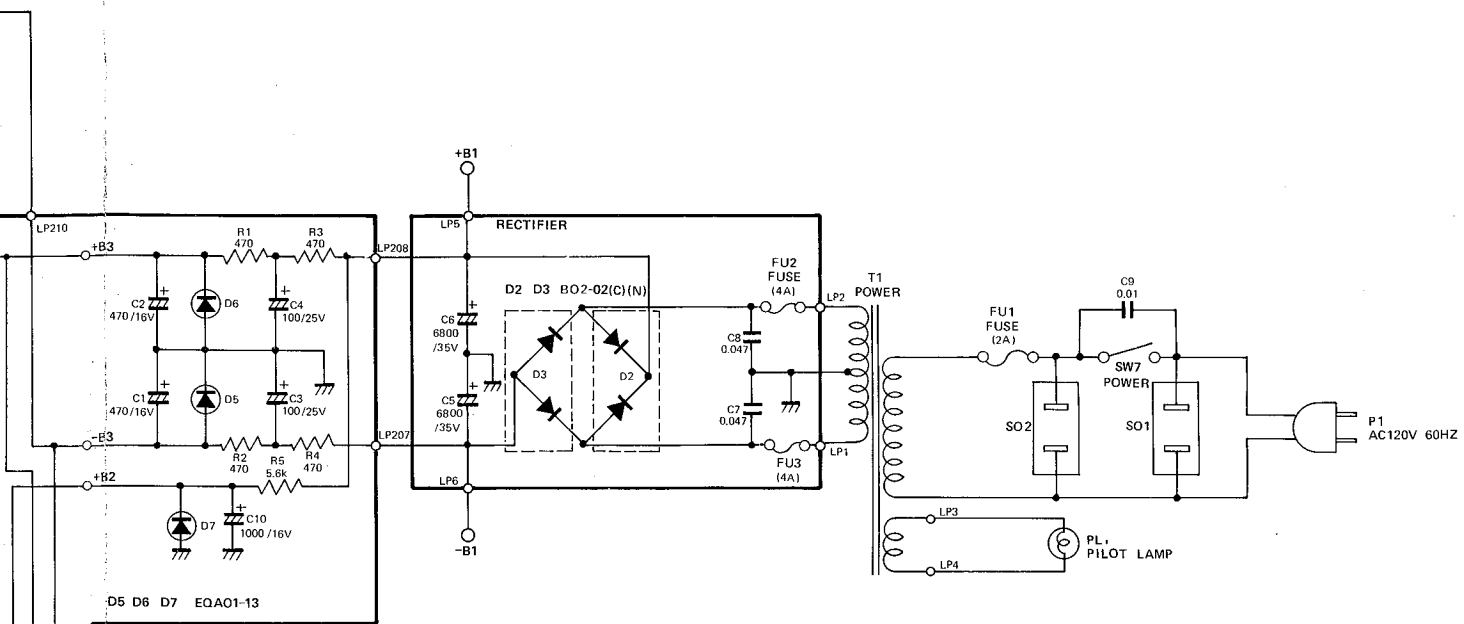


**SYSTEM SCHEMATIC**



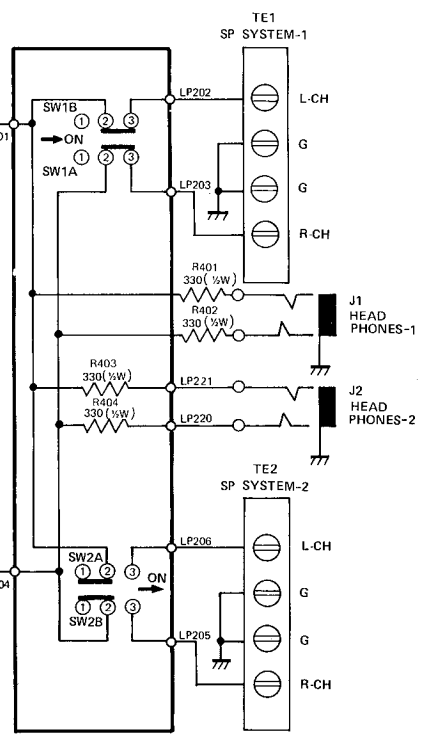
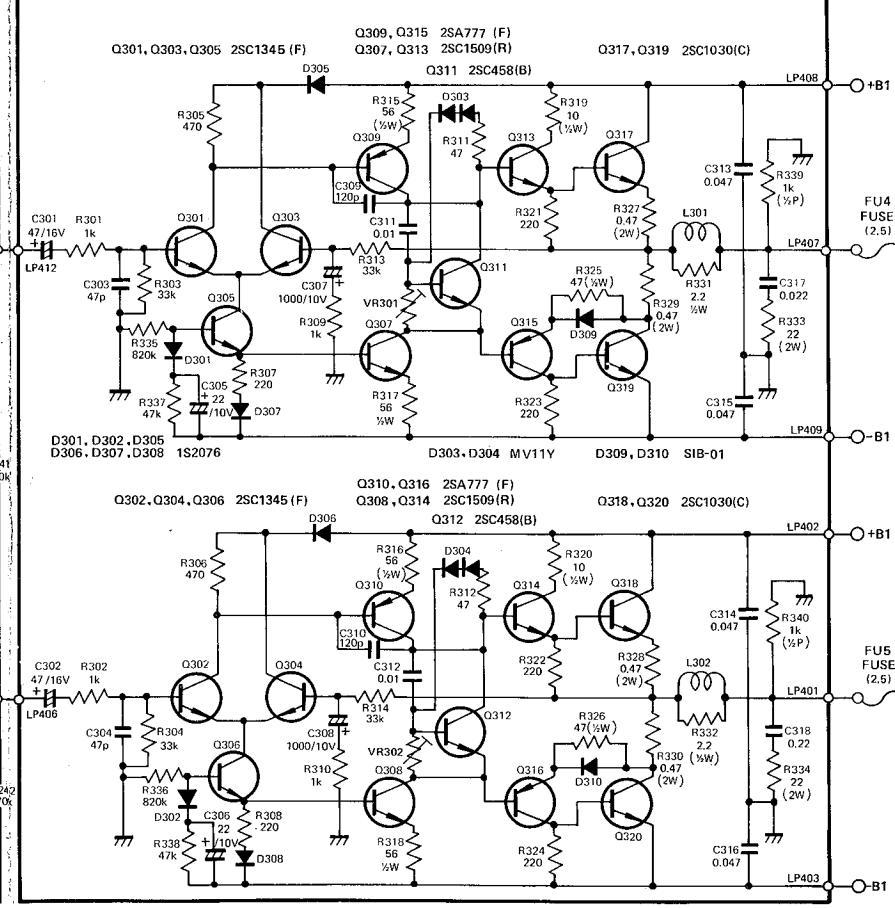
# SYSTEM SCHEMATIC



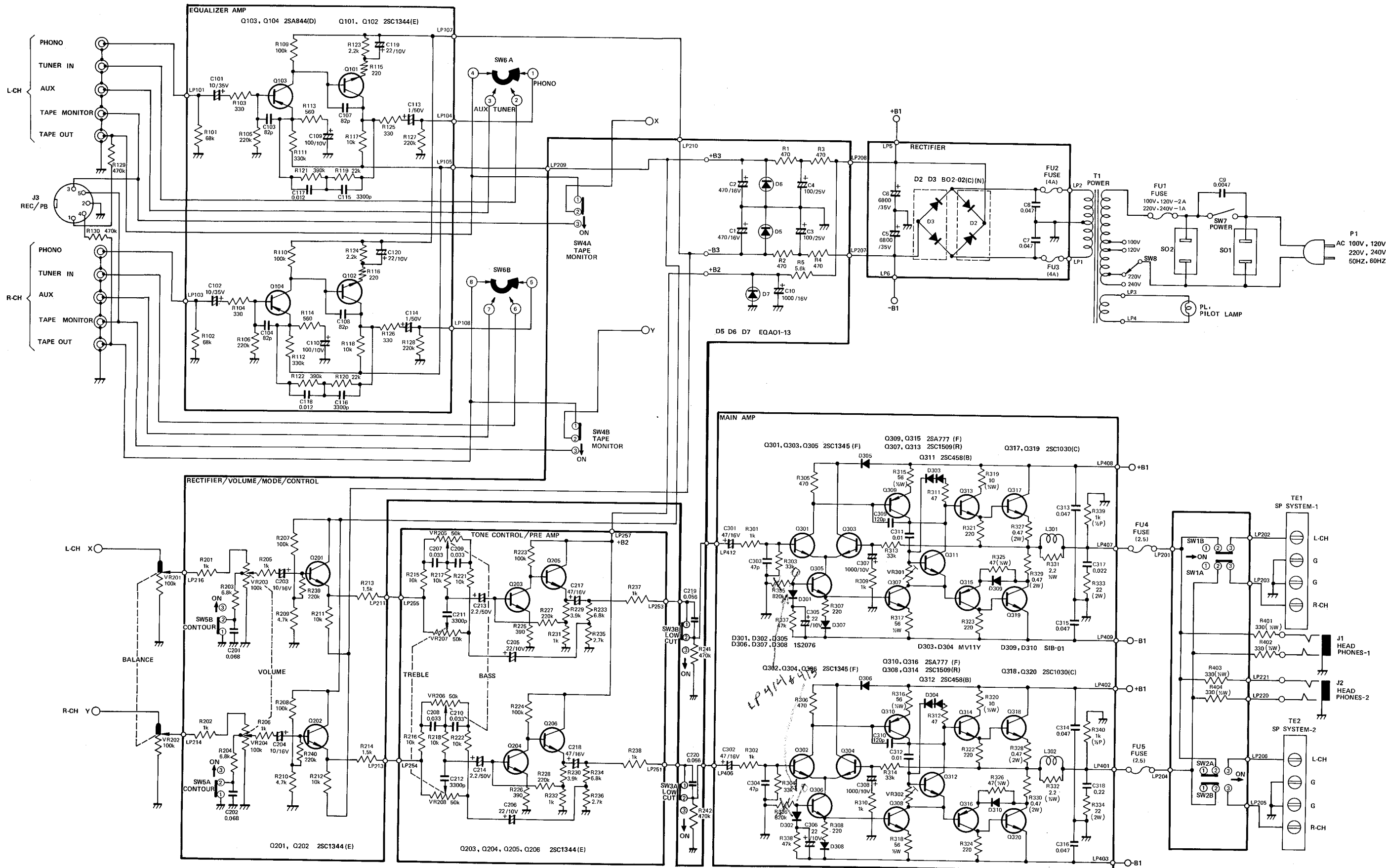


D5 D6 D7 EQA01-13

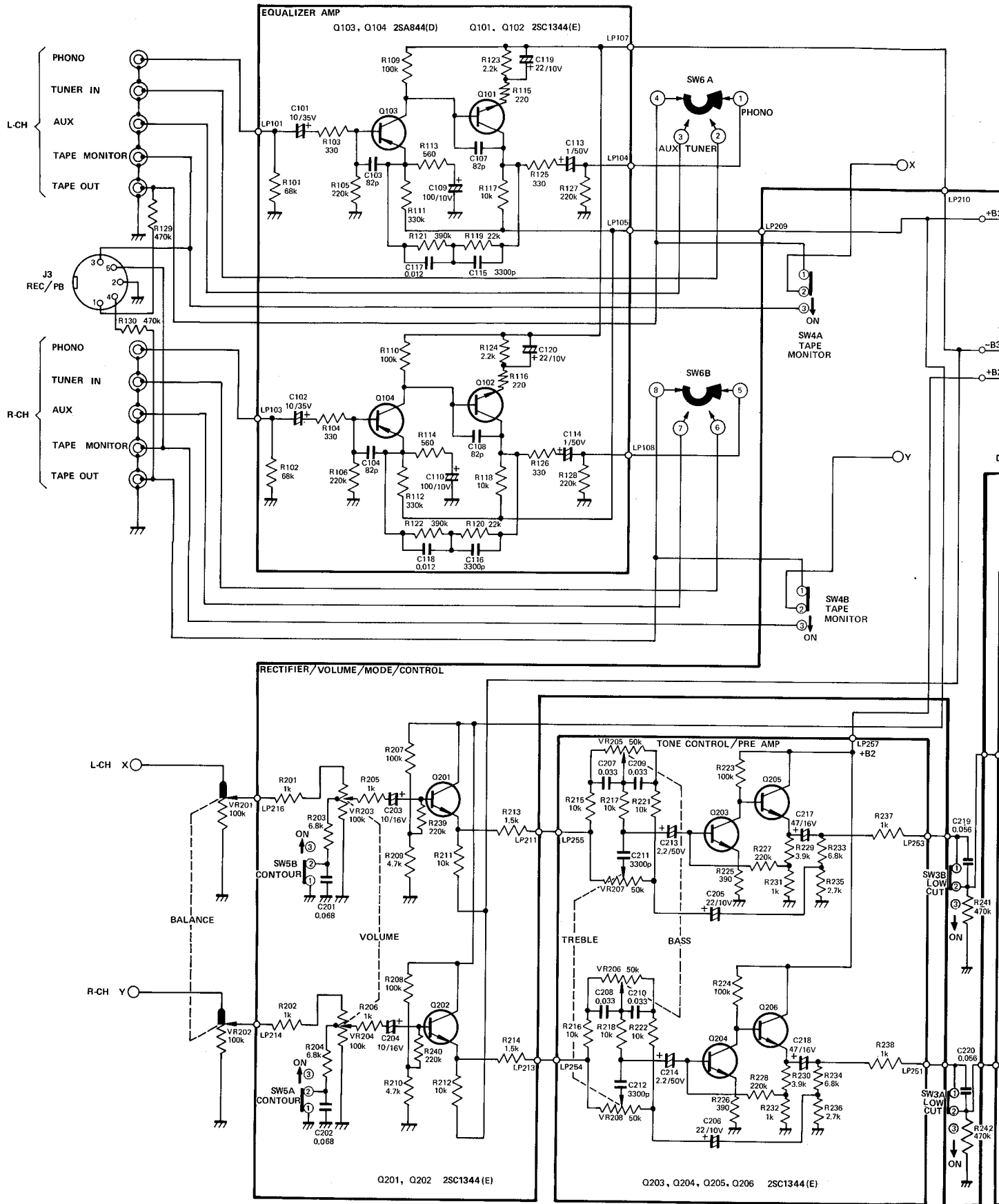
**MAIN AMP**

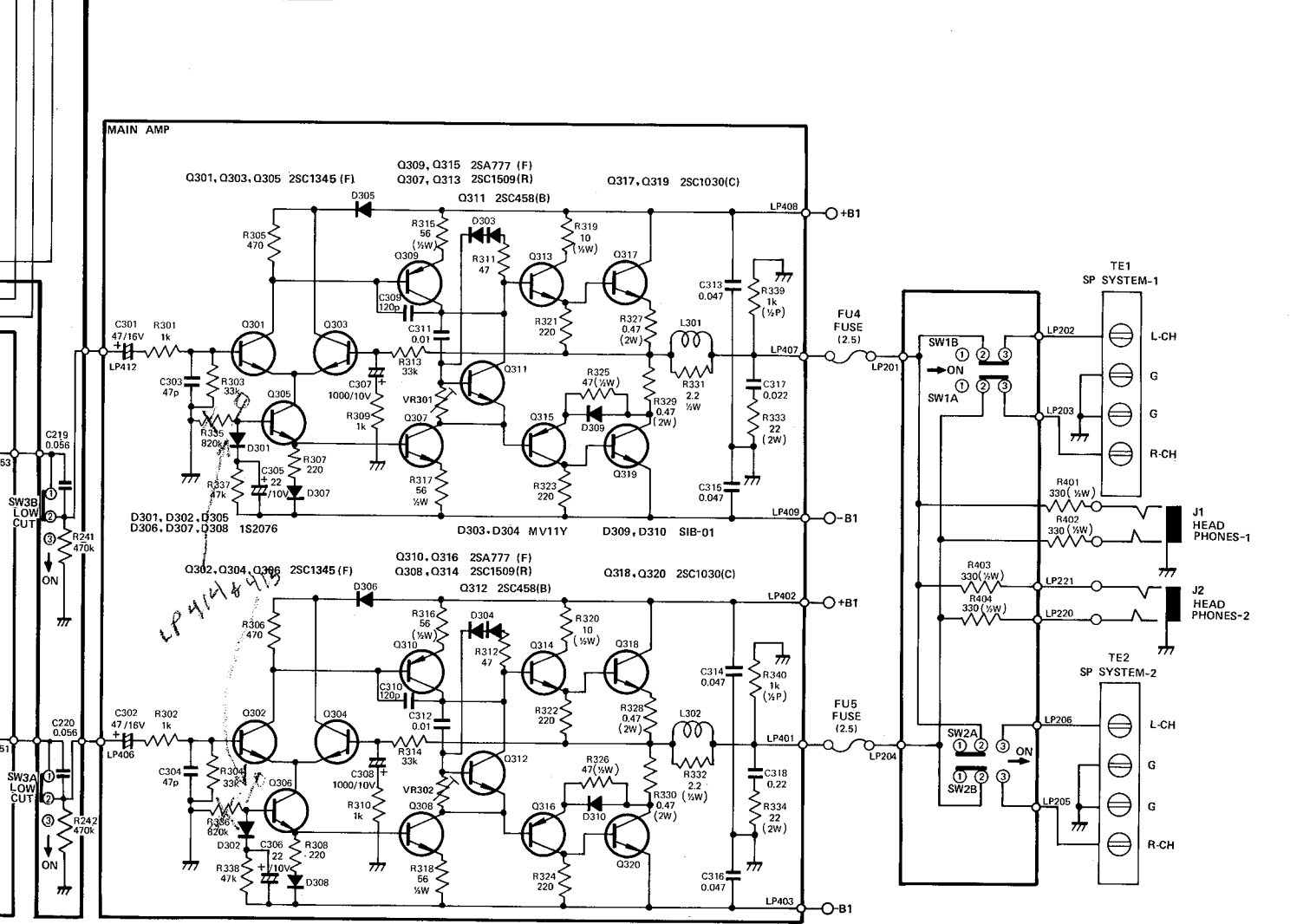
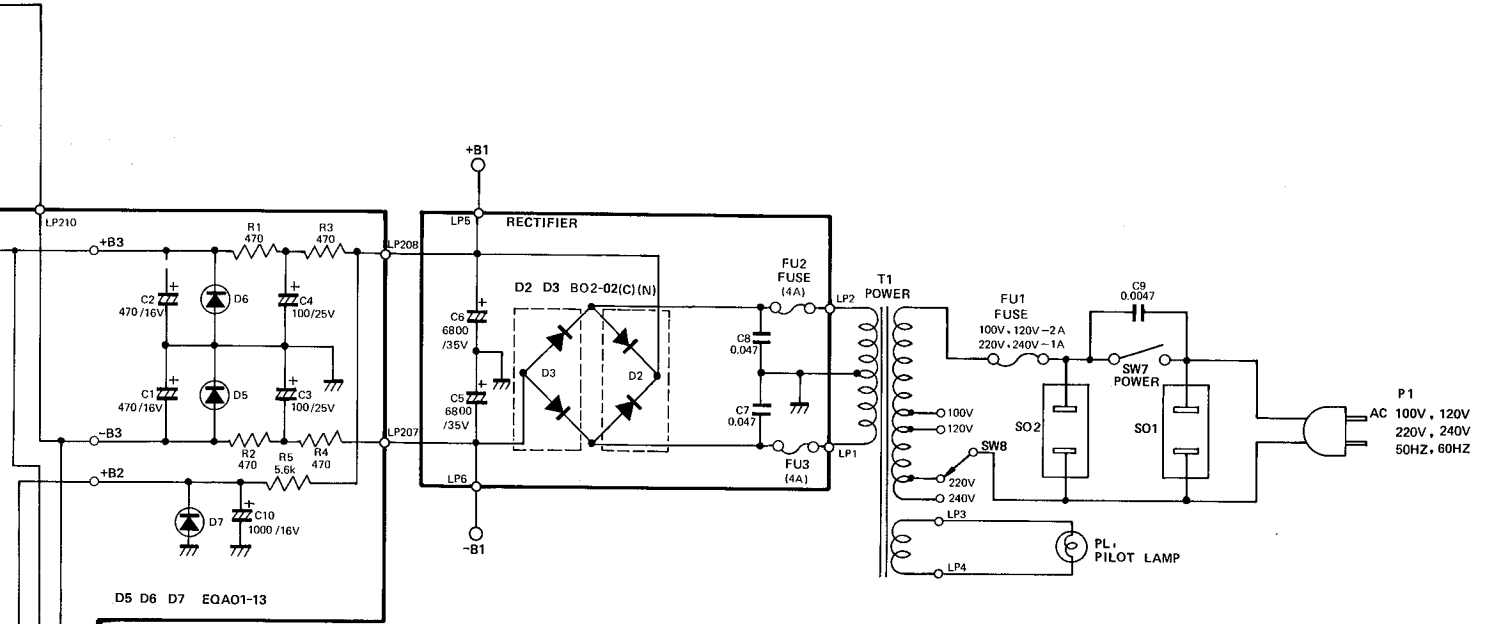


**SYSTEM SCHEMATIC—MULTIVOLTAGE VERSION**



# 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

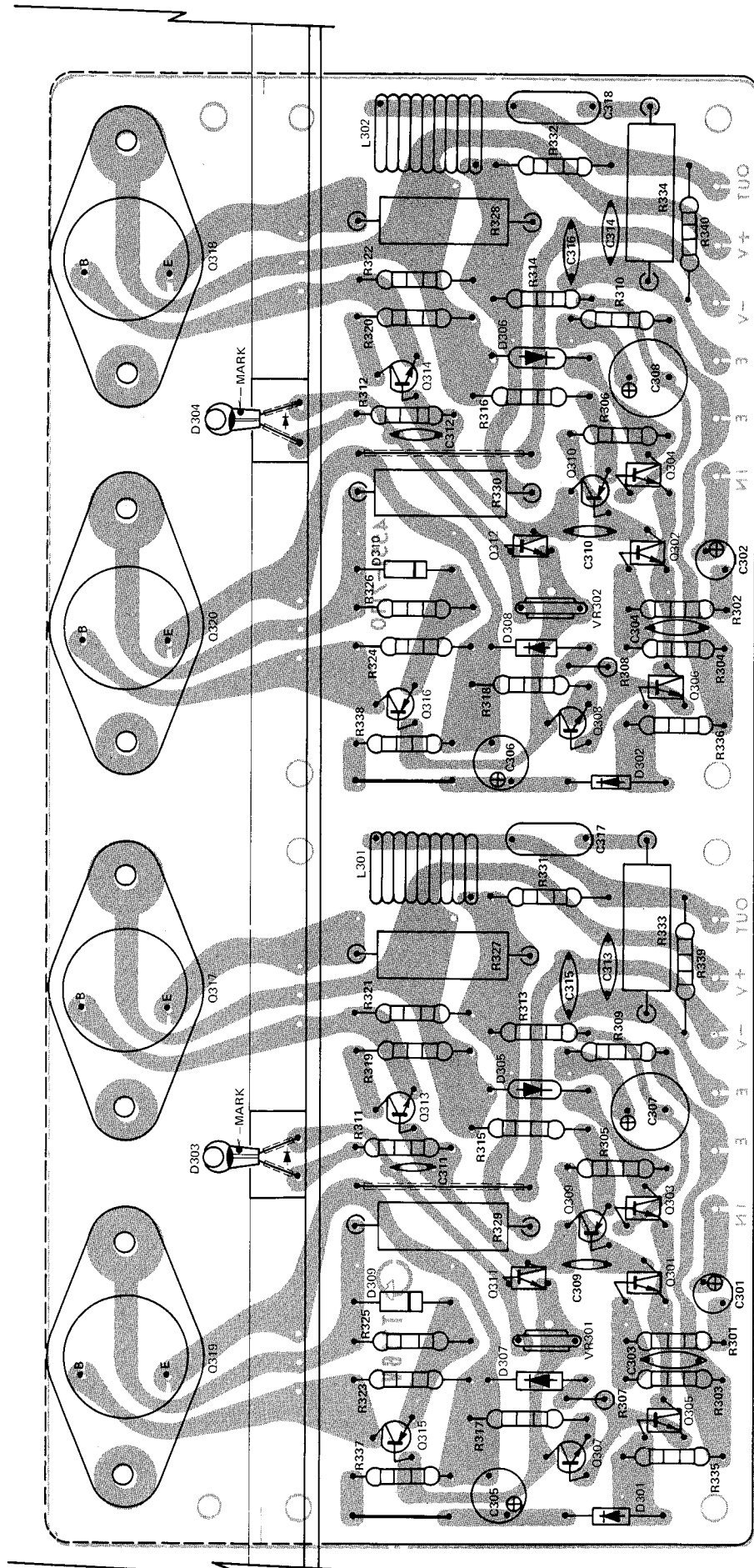
All Values  $\pm 15\%$

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                              |
|-----------------------|-----------|--|
| <b>RESISTORS</b>      |           |  |
| R327-330              | 33514781  | 0.47 ohm, 2w                             |
| R333, 334             | 33512201  | 22 ohm, 2w                               |
| VR301, 302            | 23531300  | 1K ohm variable                          |
| <b>CAPACITORS</b>     |           |  |
| C301, 302             | 31831300  | 47 $\mu$ F +50% -10% 16V electrolytic    |
| C305, 306             | 31831322  | 22 $\mu$ F +50% -10% 10V electrolytic    |
| C307, 308             | 31831465  | 1000 $\mu$ F +50% -10% 10V electrolytic  |
| <b>SEMICONDUCTORS</b> |           |  |
| 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                          |
| <b>COILS</b>          |           |  |
| L301, 302             | 12031304  | RF Choke                                 |
| <b>MISCELLANEOUS</b>  |           |  |
|                       | 60231467  | Heat Sink for Power Transistors          |

## POWER AMP IDLING ADJUSTMENT

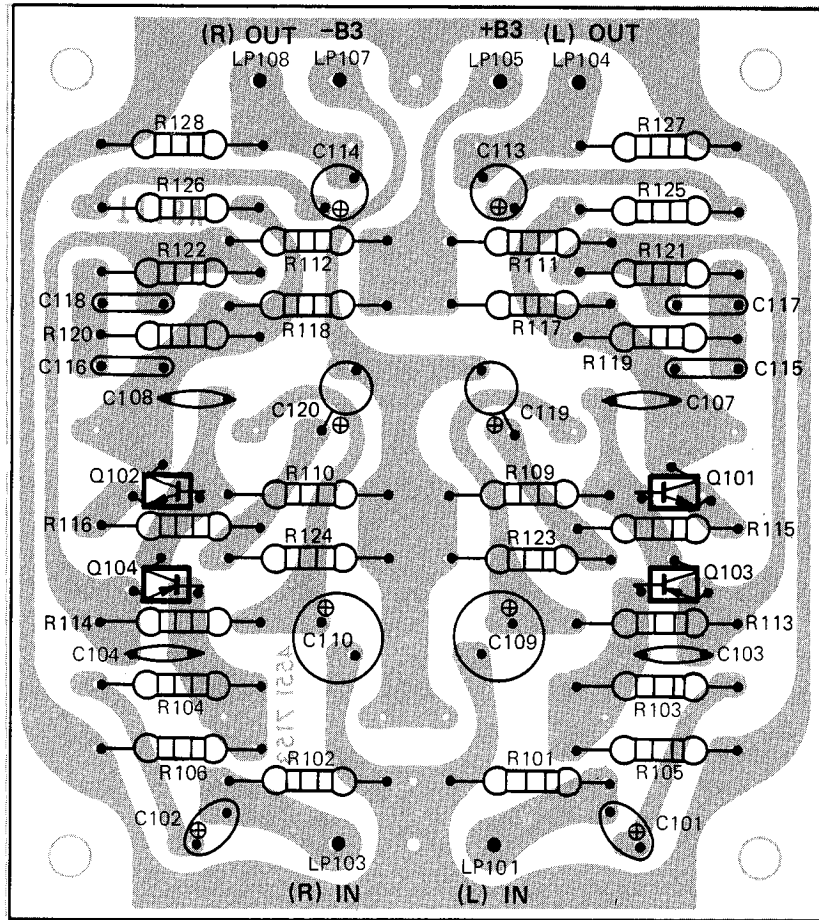
- NOTES: 1. Set up A401 as follows
- |                      |     |
|----------------------|-----|
| FUNCTION .....       | AUX |
| TONE/BALANCE .....   | MID |
| LOW CUT SWITCH ..... | OFF |
| SPEAKER SWITCH ..... | ON  |
2. Connect 8 ohm (50W) resistor across left and right speaker terminals

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 |

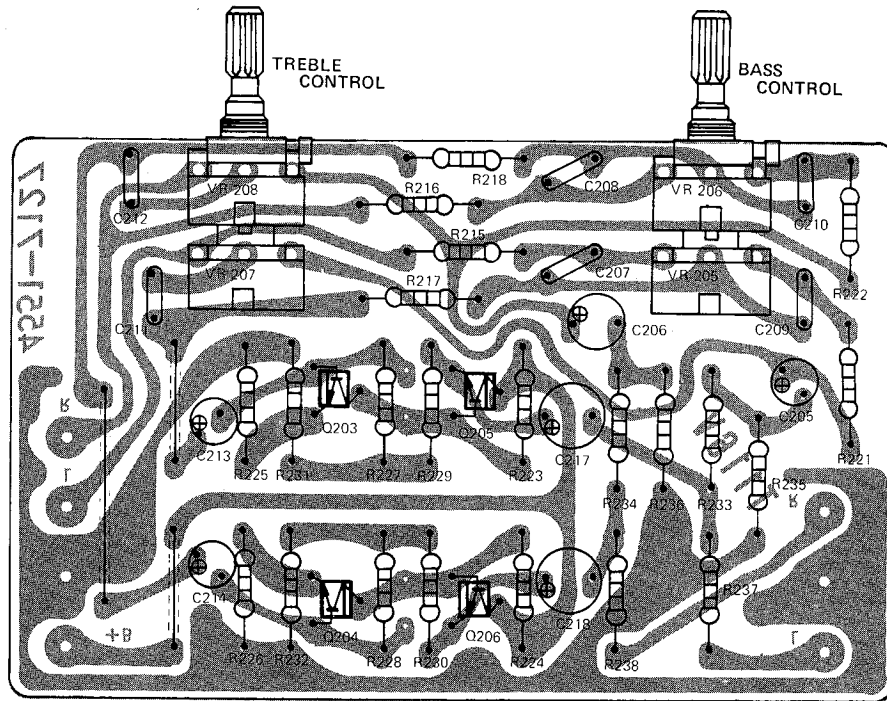
# EQUALIZER AMP



## PART LIST

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

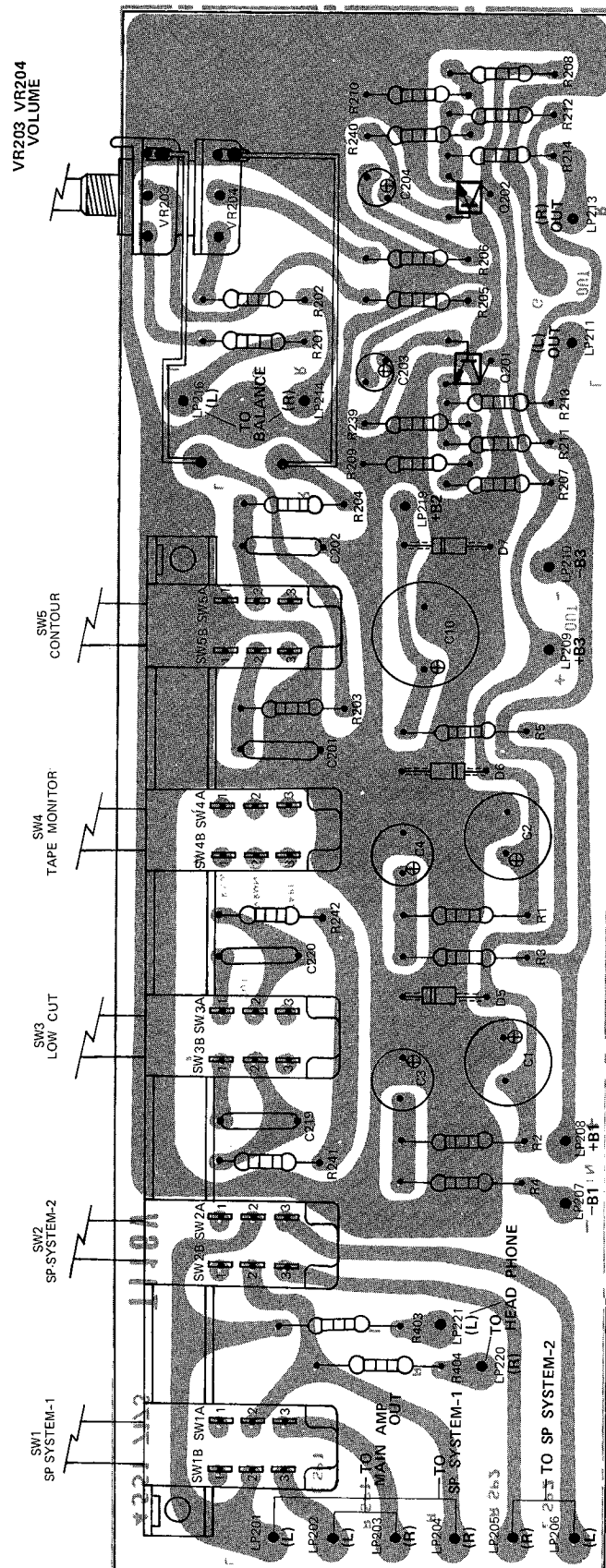
# tone control preamp board



## PARTS LIST

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

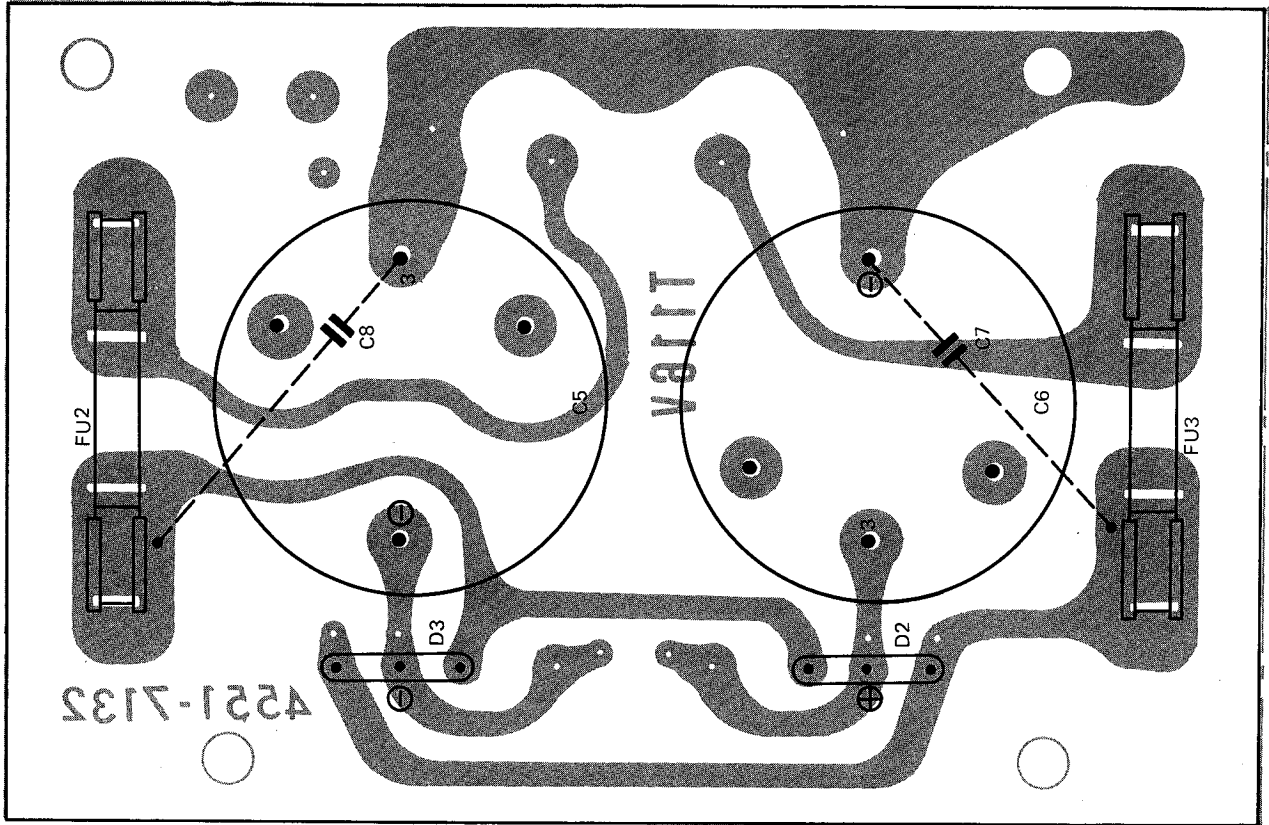
# RECTIFIER/VOLUME/MODE/CONTROL BOARD



## RECTIFIER/VOLUME/MODE/CONTROL PARTS LIST

| REF. NO.              | PART NO.  | DESCRIPTION                             |
|-----------------------|-----------|---|
| <b>RESISTORS</b>      |           |   |
| VR203, 204            | 22030471  | 100K ohm Variable, Volume control       |
| <b>CAPACITORS</b>     |           |   |
| C1, 2                 | 31828611  | 470 $\mu$ F +50% -10% 16V Electrolytic  |
| C3, 4                 | 31831324  | 100 $\mu$ F +50% -10% 25V Electrolytic  |
| C10                   | 31831472  | 1000 $\mu$ F +50% -10% 16V Electrolytic |
| C203, 204             | 31829147  | 10 $\mu$ F +50% -10% 16V Electrolytic   |
| <b>SEMICONDUCTORS</b> |           |   |
| Q201, 202             | 43028535* | Transistor Preamp 2SC1344(E)            |
| D5, 6, 7              | 42029566* | Zener Diode EQA01-13                    |
| <b>MISCELLANEOUS</b>  |           |   |
| 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 $\mu$ 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.

# Service Bulletin

SERVICE BULLETIN # 197

Harman/Kardon Incorporated

JANUARY 1978

55 Ames Court

Plainview, N.Y. 11803

(516) 681-4000

TO: ALL AUTHORIZED WARRANTY STATIONS

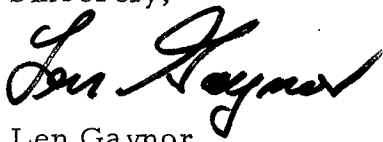
FROM: LEN GAYNOR, NATIONAL SERVICE MANAGER

SUBJECT: A401-New Muting Board

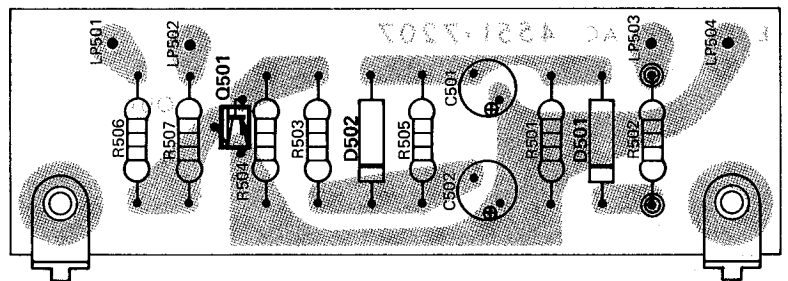
Latest production versions of the Model A401 now incorporate a muting board to eliminate turn-on transients.

Please add this schematic change to your original manual as an addendum.

Sincerely,



Len Gaynor  
National Service Manager



| CKT REF NO. | H/K PART NO. | DESCRIPTION         |
|-------------|--------------|---------------------|
|             | 00134961A    | PC Bd. Assy, Muting |
| Q501        | 43031312*    | Muting 2SA844(E)    |
| D501, 502   | 41631295*    | SIB01-02            |

