

The Harman Kardon Model hk 670

**AM/FM/Stereo FM
Solid State Receiver**

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.

ALIGNMENT PROCEDURES

POWER AMPLIFIER IDLING ADJUSTMENT

INSTRUMENTS 1. D. C. V. T. V. M.

NOTE

1. Set function selector switch to AUX position.
2. Set volume control to minimum position.
3. Connect 8 ohm (50W) resistors to left and ground, right and ground speaker terminals.

STEP	CONNECT OUTPUT METER TO	ADJUST	ADJUST FOR
1	D. C. V. T. V. M. to TP6 (+) and TP7 (—)	VR403	33mV $\pm$ 4mV
2	D. C. V. T. V. M. to TP8 (+) and TP9 (—)	VR404	Same as above

OUTPUT DC VOLTAGE ZERO ADJUSTMENT

INSTRUMENTS 1. D. C. V. T. V. M.

NOTE

1. Set function selector switch to AUX position.
2. Set volume control to minimum position.
3. Press in speaker 1 push button to ON (button in) position.

STEP	CONNECT OUTPUT METER TO	ADJUST	ADJUST FOR
1	D. C. V. T. V. M. to R CH terminal of speaker system 1	VR401	0V $\pm$ 20mV
2	D. C. V. T. V. M. L CH terminal of speaker system 1	VR402	Same as above
3	Confirm the value of idling current once again.		

ALIGNMENT PROCEDURES

IN-TUNE INDICATOR LAMP AND MUTING SENSITIVITY BAND WIDTH ADJUSTMENT

INSTRUMENTS

1. FM Signal Generator modulated with 1000Hz at 100% (75kHz).
2. Oscilloscope.
3. V. T. V. M.

NOTE

1. Set function selector switch to FM position.
2. Set FM muting switch to ON position.
3. Connect signal source to FM antenna terminals.
4. Turn VR5 (at cabinet back) to full clockwise position.

STEP	SIGNAL SOURCE	CONNECT OUTPUT METER TO	DIAL SETTING	ADJUST	ADJUST FOR
1	98mHz 47dBf $\pm$ 3dB (125 μ V) of FM signal generator	V. T. V. M. to tape out jack	Tune for signal	VR353	Slowly counter clockwise from its extreme clockwise position until signal appears in full
2	65dBf (1.95 mV) of FM signal generator	In-Tune indicator	Tune for signal	FM Signal generator	Turn frequency dial to clockwise till in-tune indicator lamp goes out and note the frequency of FM signal generator reading
3	Same as above	Same as above	Same as above	Same as above	Turn frequency dial to counter clockwise till in-tune indicator lamp goes out and note the frequency of FM signal generator reading
4				VR202	Repeat steps 2 and 3 and adjust until the difference of frequency from step 2 and 3 becomes 125kHz $\pm$ 20kHz

FM STEREO INDICATOR LAMP ADJUSTMENT

INSTRUMENTS

1. FM Stereo Signal Generator modulated with 1000Hz at 100% (75kHz).

NOTE

1. Set function selector switch to FM STEREO position.
2. Connect signal source to FM antenna terminals.
3. Set main signal ON and Pilot signal (10%) ON of FM Stereo signal generator.

SIGNAL SOURCE	CONNECT OUTPUT METER TO	DIAL SETTING	ADJUST	ADJUST FOR
98mHz 31dBf (20 μ V) of FM stereo signal generator	FM stereo indicator lamp	Tune for signal	VR352	Light ON

ALIGNMENT PROCEDURES

AM ALIGNMENT PROCEDURES

- INSTRUMENTS**
1. AM Signal Generator modulated with 400 Hz at 30%.
 2. AM IF Generator.
 3. Oscilloscope.
 4. V. T. V. M.

- NOTE**
1. Set function selector switch to AM position.
 2. Connect signal source to a loop placed to radiate signals into AM antenna loop stick (L251).

STEP	SIGNAL SOURCE	CONNECT OUTPUT METER TO	DIAL SETTING	ADJUST	ADJUST FOR
1	455kHz of AM IF generator	V. T. V. M. and oscilloscope to TP1 (+) and TP2 (—)	Quiet point on band	T251	Maximum and undistorted pattern on oscilloscope.
2	1400kHz of AM signal generator	V. T. V. M. to tape out jack	1400kHz	TC104	Maximum Output
3	600kHz of AM signal generator	Same as above	600kHz	L252	Same as above
4	Repeat steps 2 and 3 for best dial accuracy.				
5	1400kHz of AM signal generator	V. T. V. M. to tape out jack	Tune for signal	TC105	Maximum Output
6	600kHz of AM signal generator	Same as above	Same as above	L251	Same as above
7	Repeat steps 5 and 6 for best sensitivity.				

MPX ADJUSTMENT

- INSTRUMENTS**
1. Frequency Counter.
 2. FM Signal Generator.

- NOTE**
1. Set function selector switch to FM STEREO position.
 2. Connect signal source to FM antenna terminals.
 3. Use coaxial cable to connect frequency counter to test points.

SIGNAL SOURCE	CONNECT OUTPUT METER TO	DIAL SETTING	ADJUST	ADJUST FOR
98mHz 65dBf (970 μ V) of FM signal generator (unmodulation)	Frequency Counter to TP5 and TP2	Tune for signal	VR301	75.9kHz $\pm$ 100Hz

ALIGNMENT PROCEDURES

FM ALIGNMENT PROCEDURES

- INSTRUMENTS**
1. FM Signal Generator modulated with 1000Hz at 100% (75kHz).
 2. Center Zero Meter.
 3. Distortion Meter.
 4. V. T. V. M.

- NOTE**
1. Set function selector switch to FM position.
 2. Set FM muting switch to OFF position.
 3. Connect signal source to FM antenna terminals.
 4. Set signal weak to obtain an exact tuning point when turning.

STEP	SIGNAL SOURCE	CONNECT OUTPUT METER TO	DIAL SETTING	ADJUST	ADJUST FOR
1		V. T. V. M. to tape out jack	Quiet point on band	T101	Maximum noise
2		Center zero meter to TP3 and TP4	Same as above	T201	Indicating zero on center zero meter
3		V. T. V. M. to tape out jack	Same as above	T202	Minimum noise
4	106mHz 6 dBf (1 μ V)	Same as above	106mHz	TC101	Maximum Output
5	90mHz 6 dBf (1 μ V)	Same as above	90mHz	L104	Same as above
6	Repeat steps 4 and 5 until no further improvement is noticed.				
7	106mHz 6 dBf (1 μ V)	Same as above	Tune for signal	TC102, 103, 104	Same as above
8	90mHz 6 dBf (1 μ V)	Same as above	Same as above	L101, 102, 103	Same as above
9	Repeat steps 7 and 8 until no further improvement is noticed.				
10	98mHz 65 dBf (970 μ V)	Distortion meter to tape out jack	Tune for zero indication on center zero meter	T202	Minimum reading on distortion meter
11	Repeat steps 2 and 10 until no further improvement is noticed.				

ALIGNMENT PROCEDURES

SEPARATION ADJUSTMENT

- INSTRUMENTS**
1. FM Stereo Signal Generator modulated with 1000kHz at 100% (75kHz).
 2. $(L + R = 45\% \text{ } L - R = 45\% \text{ } 19\text{kHz} = 9\%.)$
 3. V. T. V. M.

- NOTE**
1. Set function selector switch to FM STEREO position.
 2. Connect signal source to FM antenna terminals.
 3. Set signal weak to obtain an exact tuning point when tuning.

STEP	SIGNAL SOURCE	CONNECT OUTPUT METER TO	DIAL SETTING	ADJUST	ADJUST FOR
1	Set L CH signal ON at FM stereo signal generator				
2	98mHz 65 dBf (970 μ V) of FM stereo signal generator	V. T. V. M. to R CH tape out jack	Tune for signal	VR302, 303	Minimum Output
3	Set R CH signal ON at FM stereo signal generator.				
4	98mHz 65 dBf (970 μ V) of FM stereo signal generator	V. T. V. M. to L CH tape out jack	Tune for signal	VR302, 303	Minimum Output

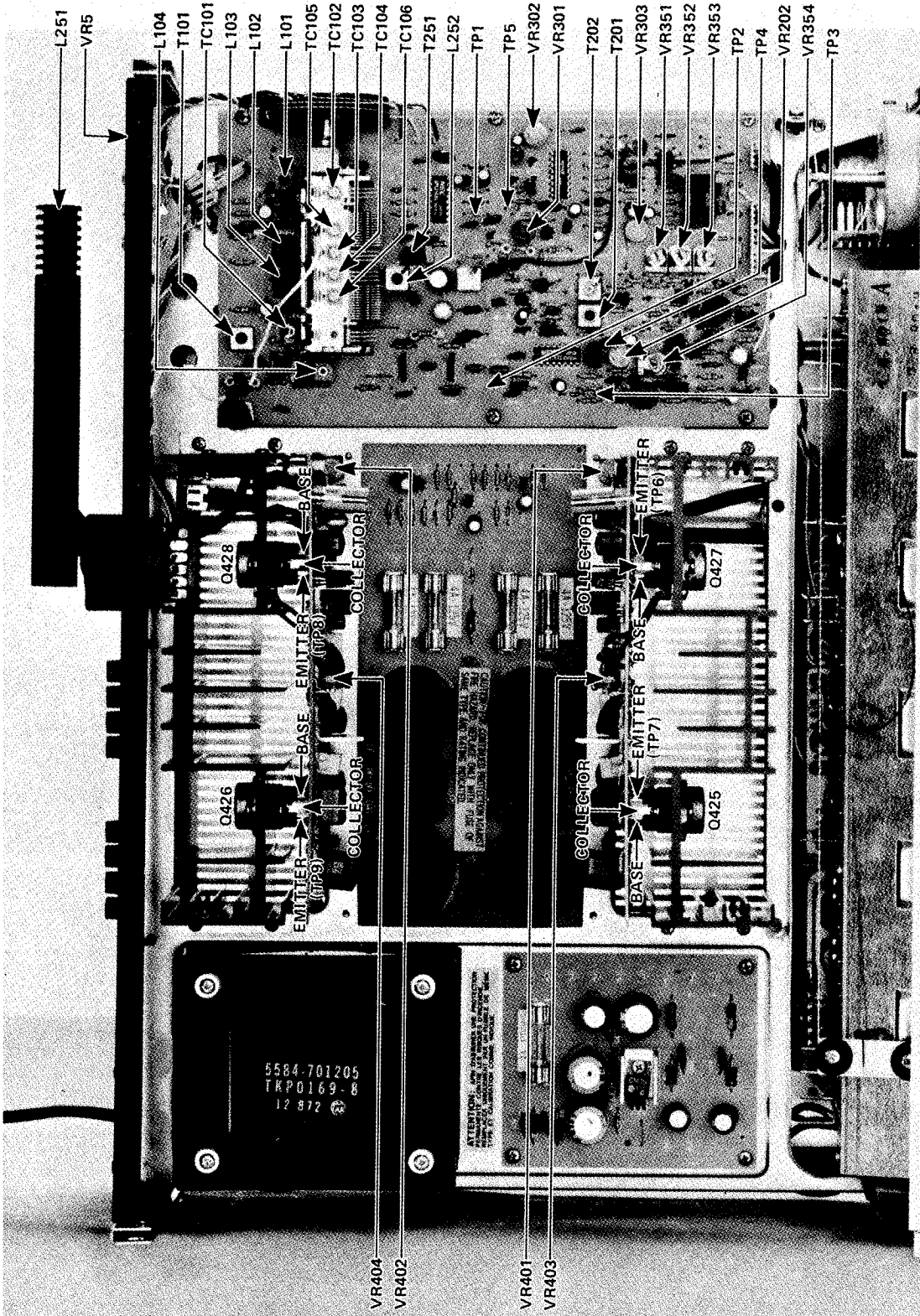
QUIETING METER ADJUSTMENT

- INSTRUMENT**
1. FM Signal Generator modulated with 1000Hz at 100% (75kHz).

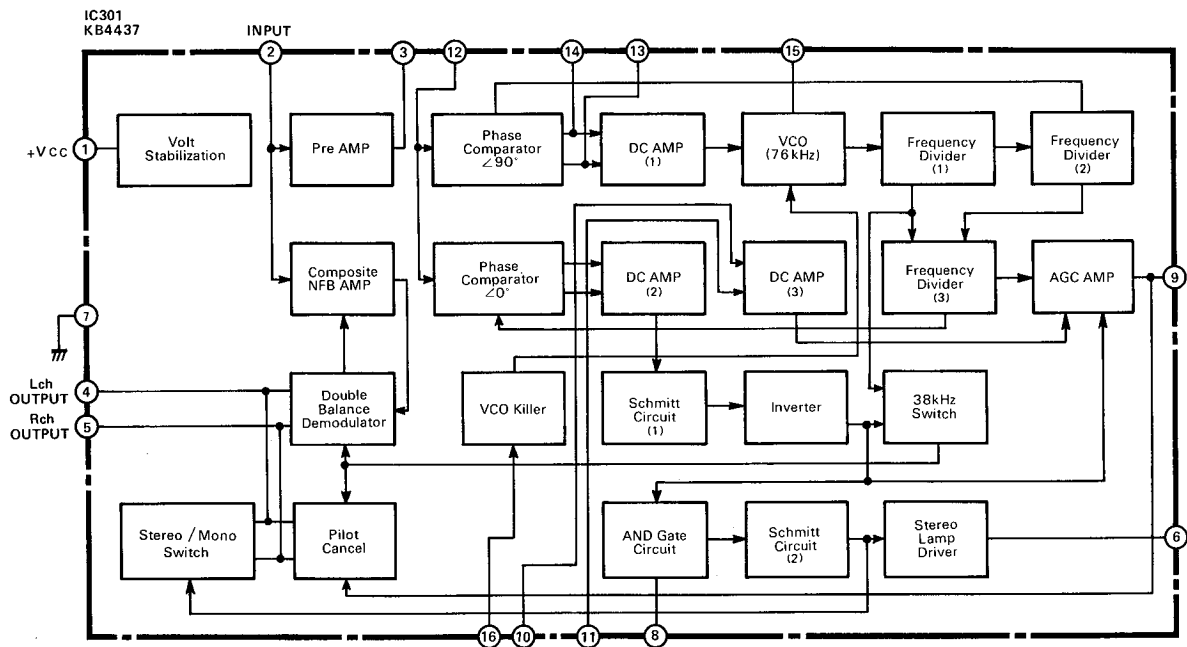
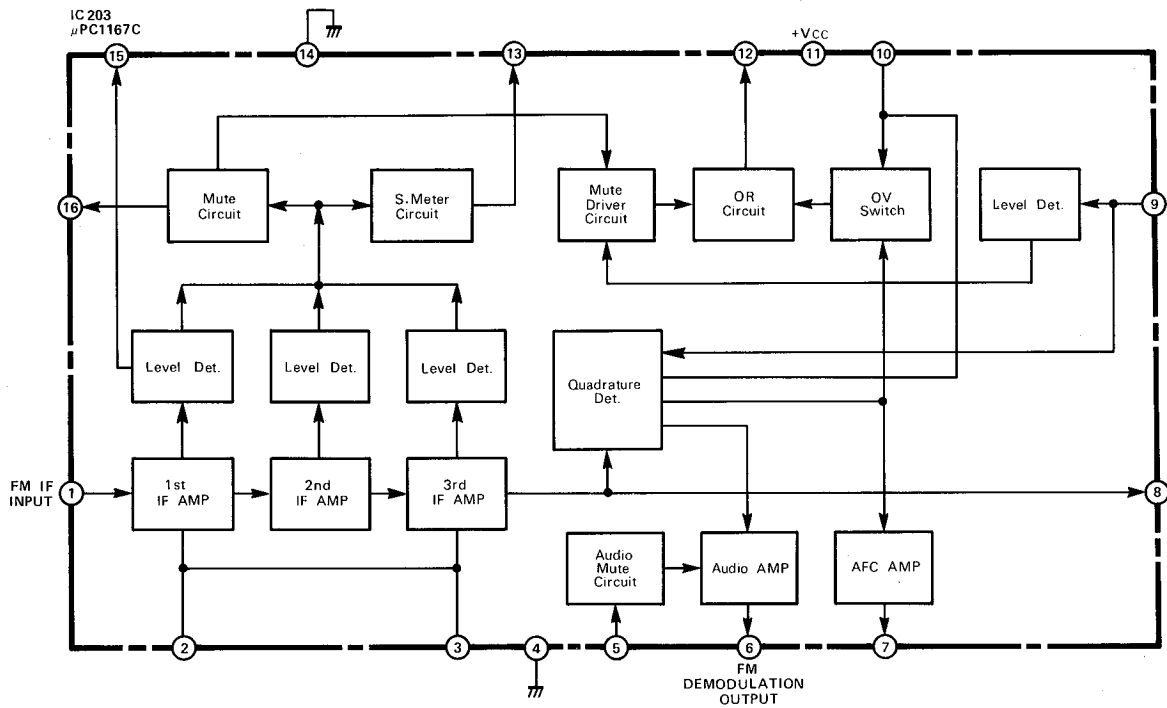
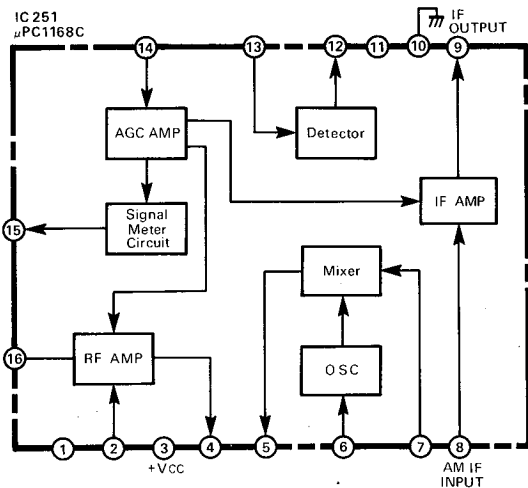
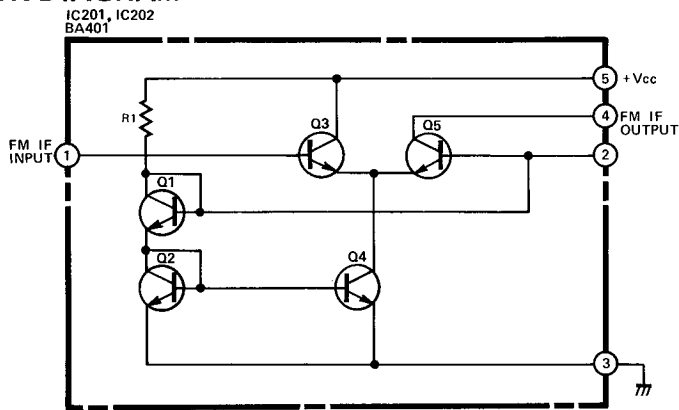
- NOTE**
1. Set function selector switch to FM position.
 2. Connect signal source to FM antenna terminals.
 3. Set signal weak to obtain an exact tuning point when tuning.

STEP	SIGNAL SOURCE	DIAL SETTING	ADJUST	ADJUST FOR
1	98mHz 51dBf (200 μ V) of FM signal generator	Tune for signal	VR351	Indicating 9.0 on signal strength meter
2	98mHz 33dBf (25 μ V)	Same as above	VR354	Indicating 5 on signal strength meter
3	Repeat steps 1 and 2 until above 2 steps are satisfied.			

ALIGNMENT POINTS



IC BLOCK DIAGRAM



SCHEMATIC NOTES AND DIAGRAMS

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 MF unless noted otherwise. RF = MMF.
3. Function selector switch (SW2) is in PHONO position.

VOLTAGE CHART

AC120V
No Signal
Chassis Ground

Volume Control at Minimum
Tone Controls at Mechanical Center

+B1 +43V	+B4 +14.2V	-B2 -43V
+B2 +43V	B5 +13V	-B3 -26.4V
+B3 +26.4V	-B1 -43V	-B4 -14.2V

FM POSITION

	BASE	EMITTER	COLLECTOR
Q1	+13.6V	+13.0V	+19.4V
Q2	+27.0V	+26.4V	+33.5V
Q3	-27.0V	-26.4V	-32.4V
Q31	- 0.7V	- 0.1V	- 0.2V
Q32	- 0.6V	0.0V	- 0.1V
Q33	- 0.6V	0.0V	- 4.3V
Q34	- 0.6V	0.0V	- 0.1V
Q103	+ 3.5V	+ 4.9V	+ 9.5V
Q201	+ 3.6V	+ 3.3V	+12.4V
Q202	+12.4V	+13.0V	+ 4.2V
Q203	0.0V	0.0V	+ 0.03V
Q204	+ 0.03V	0.0V	+10.6V
Q301, 302	+ 8.4V	+ 9.0V	-24.0V
Q303, 304	-24.0V	-24.7V	+ 4.7V
Q305, 306	- 2.4V	0.0V	0.0V
Q351	+ 0.6V	0.0V	+ 1.0V
Q352	+ 1.0V	+ 0.6V	+ 7.3V
Q353	+ 0.6V	0.0V	+ 1.5V
Q354	+ 1.5V	+ 0.9V	+13.0V
Q355	+ 4.7V	+ 4.7V	+13.0V
Q356	+ 1.2V	+ 0.6V	+12.3V
Q357	+11.8V	+12.3V	+ 0.1V
Q358	+ 0.7V	+ 0.03V	+ 0.05V
Q359	0.0V	+ 0.1V	+ 0.03V
	+ 0.6V	0.0V	+ 0.8V (FM Muting ON)
Q360	+ 0.03V	+ 0.1V	+ 0.2V
	+ 0.8V	0.0V	+10.6V (FM Muting ON)
Q361	+ 0.14V	- 0.45V	+13.0V
	+10.6V	+ 9.9V	+13.0V (FM Muting ON)
Q362	+ 0.7V	0.0V	0.0V
Q363	+ 0.05V	+ 0.04V	+10.5V
Q401, 402	-12.1V	-12.7V	- 0.7V
Q403, 404	- 0.02V	- 0.6V	+40.8V
Q405, 406	- 0.02V	- 0.6V	+40.8V
Q407, 408	-40.7V	-41.4V	-40.7V
Q409, 410	+40.8V	+41.4V	- 4.2V
Q411, 412	-40.7V	-41.4V	- 1.2V

SCHEMATIC NOTES AND DIAGRAMS

	BASE	EMITTER	COLLECTOR
Q413, 414	+40.8V	+41.5V	+ 1.2V
Q415, 416	+ 1.3V	- 1.2V	+ 1.2V
Q417, 418	- 1.3V	- 0.7V	-42.0V
Q419, 420	- 0.01V	+ 0.8V	+42.2V
Q421, 422	-42.0V	-42.6V	- 0.6V
Q423, 424	+42.2V	+42.6V	+ 0.7V
Q425, 426	- 0.6V	+ 0.03V	-43.0V
Q427, 428	+ 0.7V	+ 0.09V	+43.0V
Q429, 430	+ 0.03V	+ 0.08V	-42.2V
Q431, 432	-42.2V	-42.8V	- 0.07V
Q501, 502	- 0.05V	- 0.6V	+10.7V
Q503, 504	- 0.05V	- 0.6V	+10.8V
Q505, 506	-12.7V	-13.4V	- 0.03V
Q507, 508	+10.7V	+11.4V	- 0.03V
Q509, 510	- 0.2V	- 0.8V	+13.8V
Q511, 512	- 0.6V	- 1.2V	+13.8V
Q701, 702	- 0.06V	- 0.6V	+25.2V
Q703, 704	+25.2V	+25.7V	+ 3.3V
Q705, 706	+ 3.3V	+ 2.7V	+25.7V
Q707, 708	-25.2V	-25.8V	+ 2.7V

	DRAIN	SOURCE	GATE 1	GATE 2
Q4	+33.5V	+27.0V	+27.0V	
Q5	-27.0V	-32.4V	-32.4V	
Q6	+19.4V	+13.7V	+13.7V	
Q101	+ 8.0V	+ 1.5V	+ 1.0V	+3.6V
Q102	+10.2V	+ 0.4V	0.0V	0.0V

IC201

1. + 1.4V
2. + 1.4V
3. 0.0V
4. +10.5V
5. +11.4V

IC202

1. + 1.4V
2. + 1.4V
3. 0.0V
4. +11.1V
5. +12.2V

IC203

1. + 2.2V
2. + 2.2V
3. + 2.2V
4. 0.0V
5. + 0.1V
6. + 5.3V
7. + 5.3V
8. + 5.1V
9. + 5.1V
10. + 5.1V
11. +13.0V
12. + 1.1V
13. + 0.7V
14. 0.0V
15. + 5.2V
16. + 6.0V

IC301

1. +13.0V
2. + 3.2V
3. + 5.7V
4. + 8.4V
5. + 8.4V
6. + 9.4V
7. 0.0V
8. + 9.9V
9. + 0.8V
10. + 2.5V
11. + 2.5V
12. + 2.6V
13. + 2.6V
14. + 2.6V
15. + 3.6V
16. + 0.05V

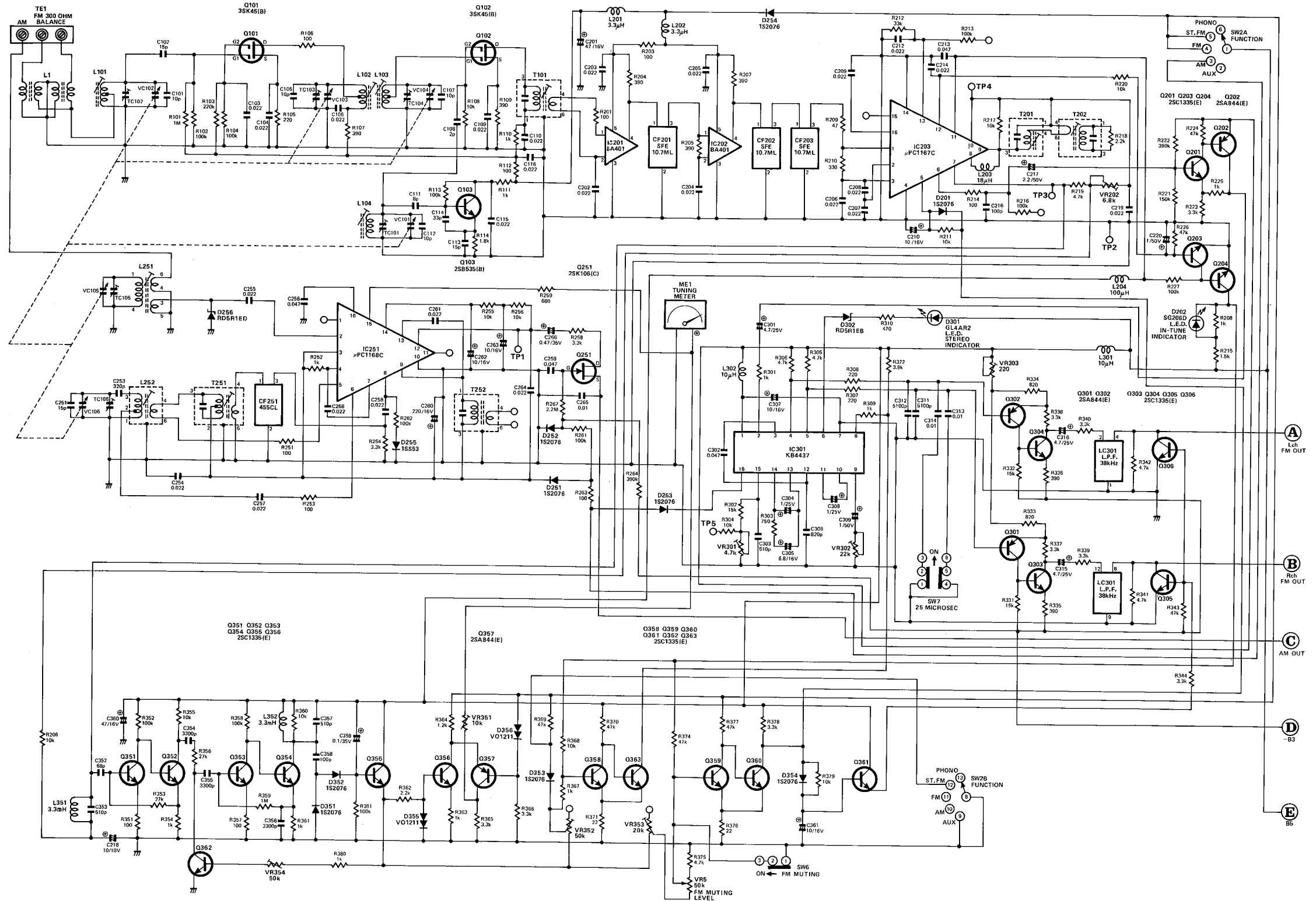
AM POSITION

	DRAIN	SOURCE	GATE
Q251	0V	0V	+0.3V

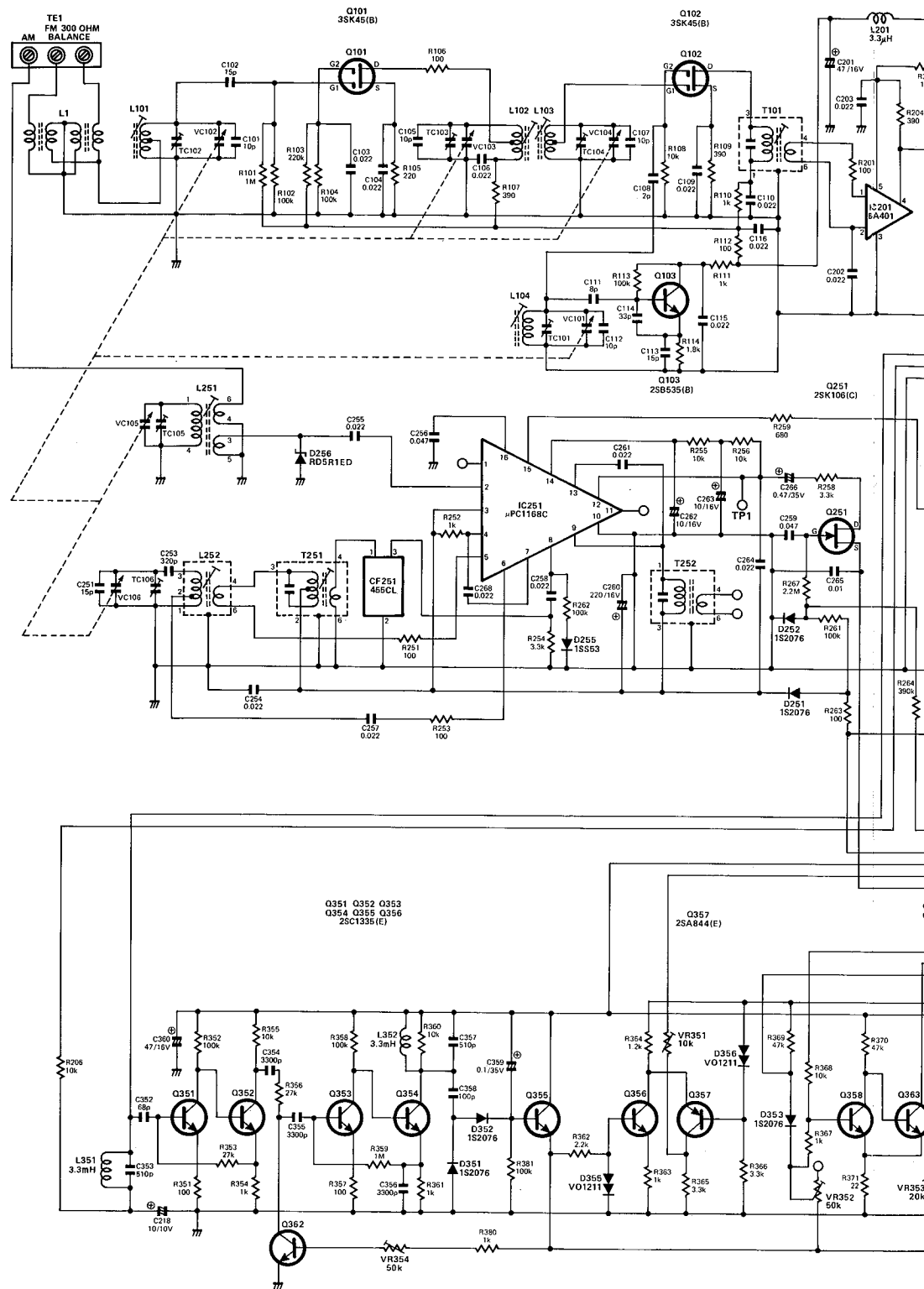
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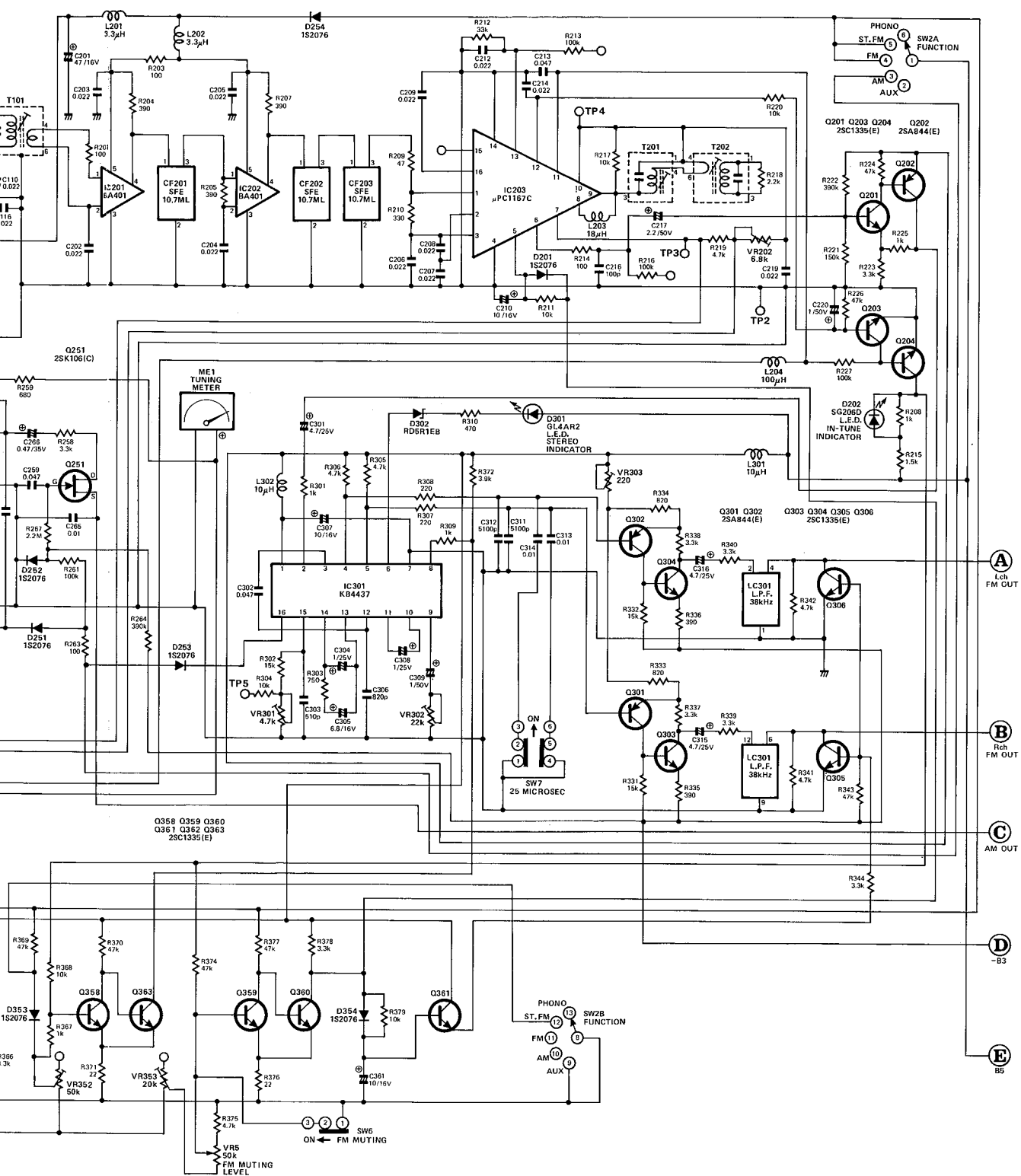
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|-----------|-----------|------------|------------|
| 1. 0.0V | 5. +10.8V | 9. +10.9V | 13. + 2.7V |
| 2. + 2.7V | 6. + 2.8V | 10. 0.0V | 14. + 2.0V |
| 3. +10.9V | 7. + 1.3V | 11. 0.0V | 15. 0.0V |
| 4. + 8.7V | 8. + 0.7V | 12. + 2.1V | 16. + 1.3V |

SCHEMATIC DIAGRAM

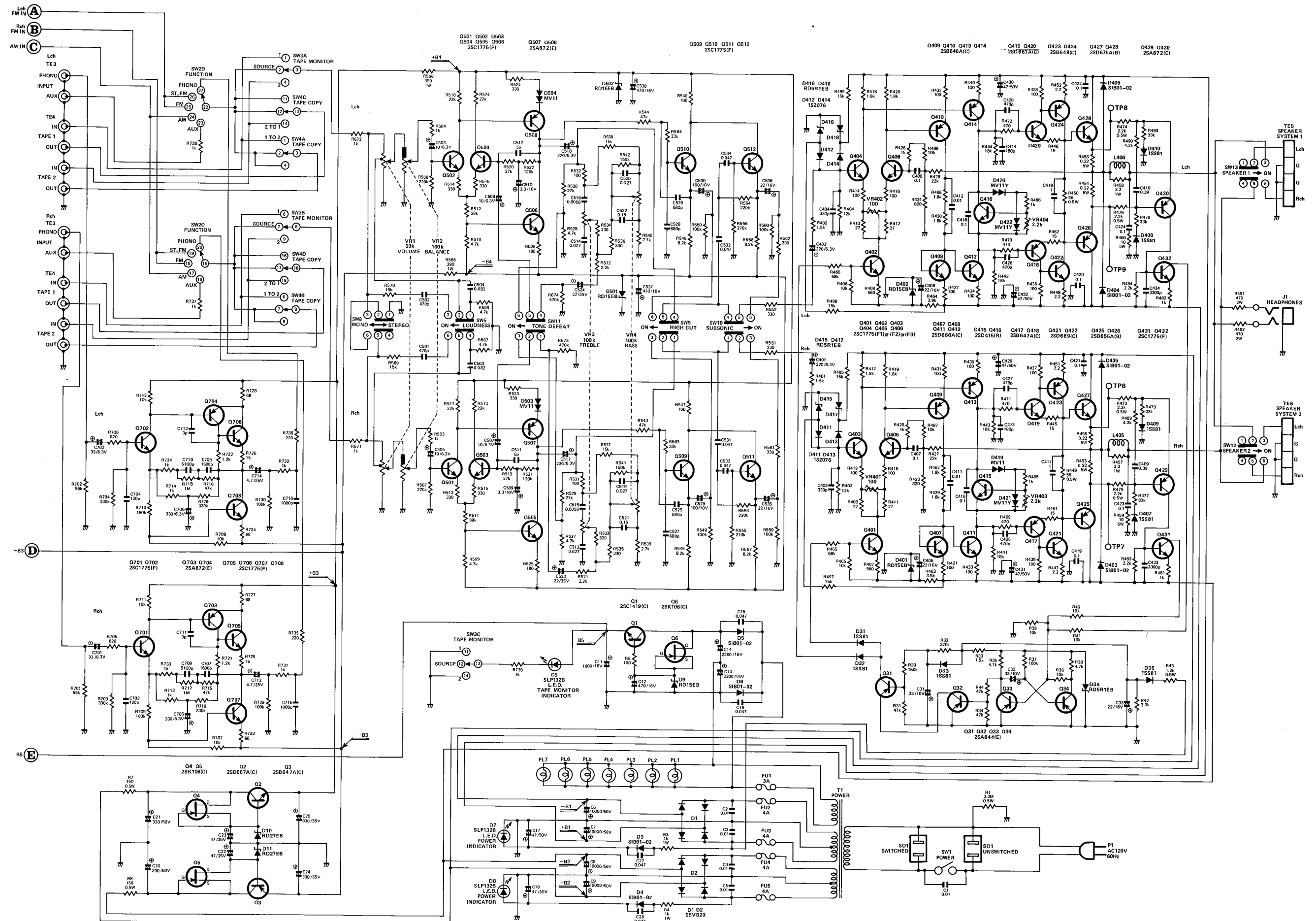


SCHEMATIC DIAGRAM

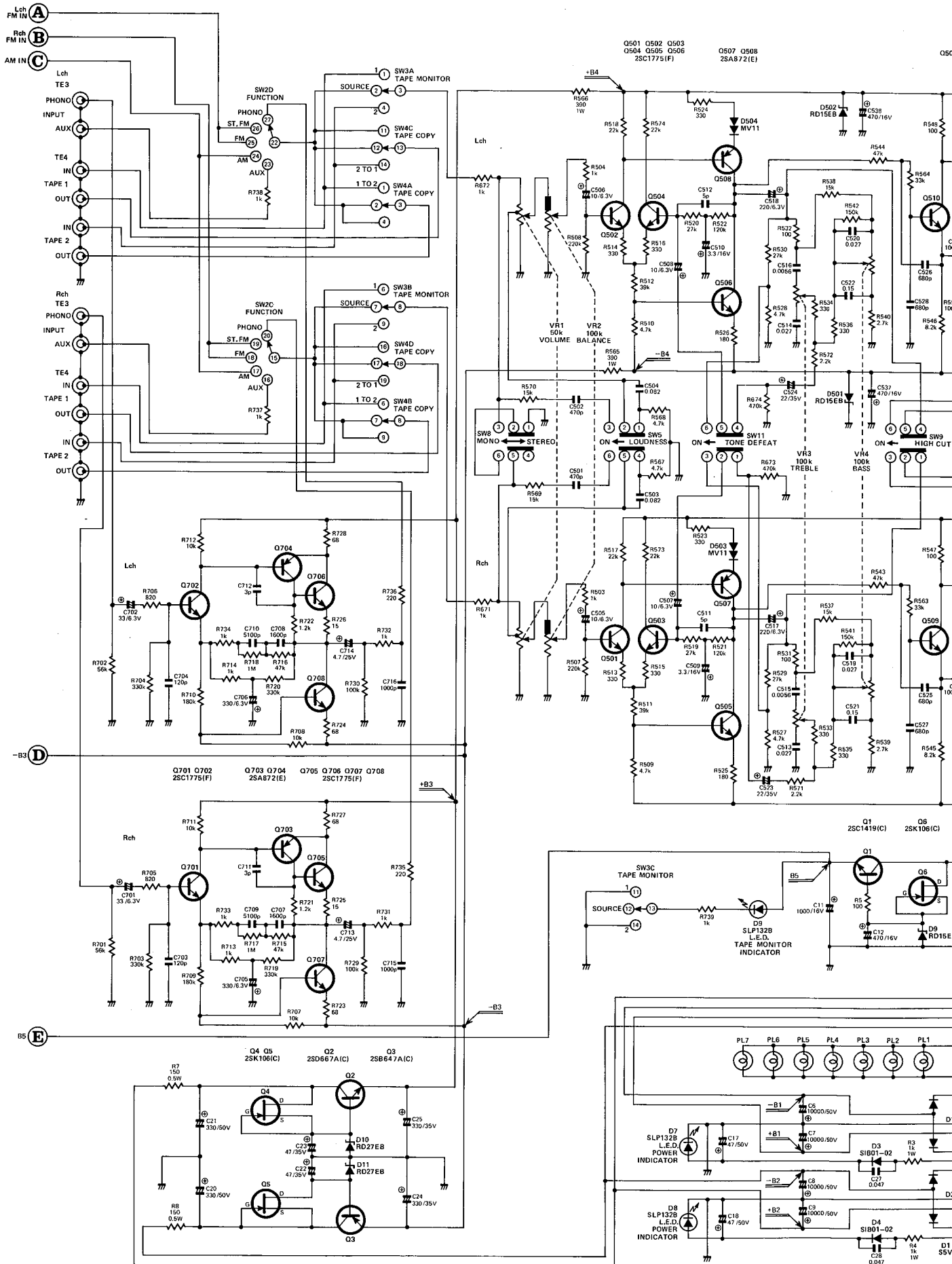




SCHEMATIC DIAGRAM



SCHEMATIC DIAGRAM



Q509 Q510 Q511 Q512
2SC1775(F)

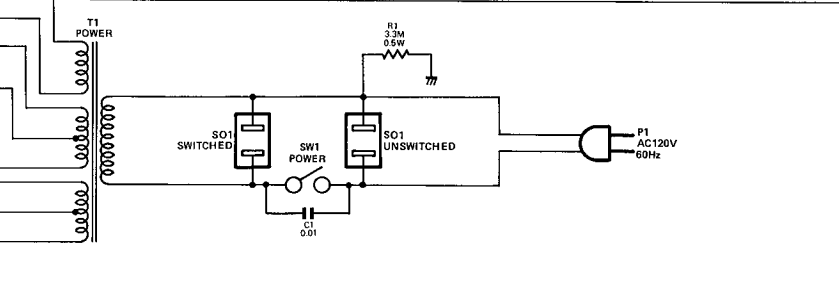
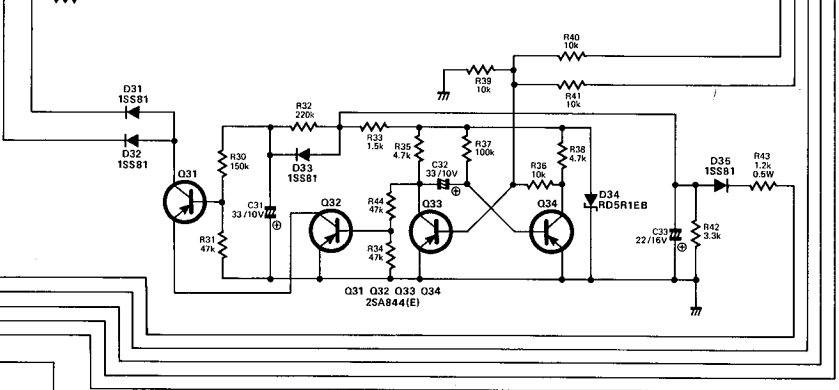
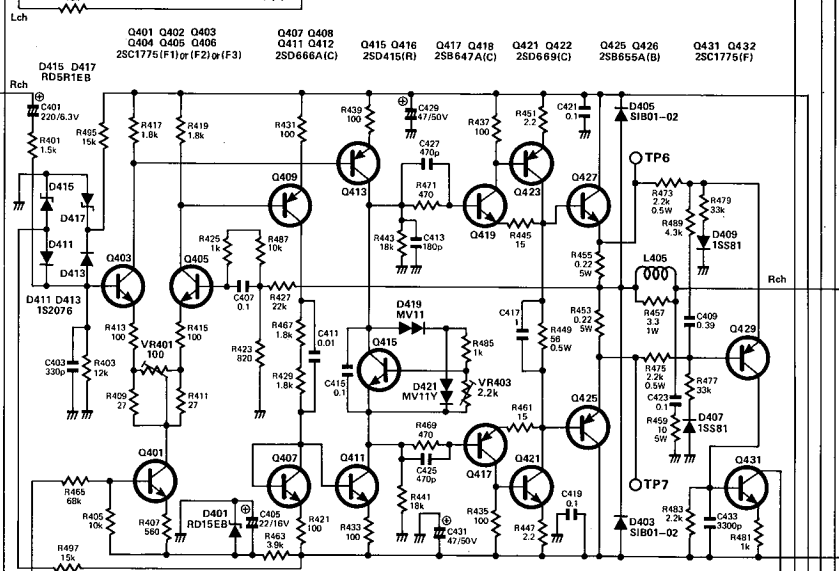
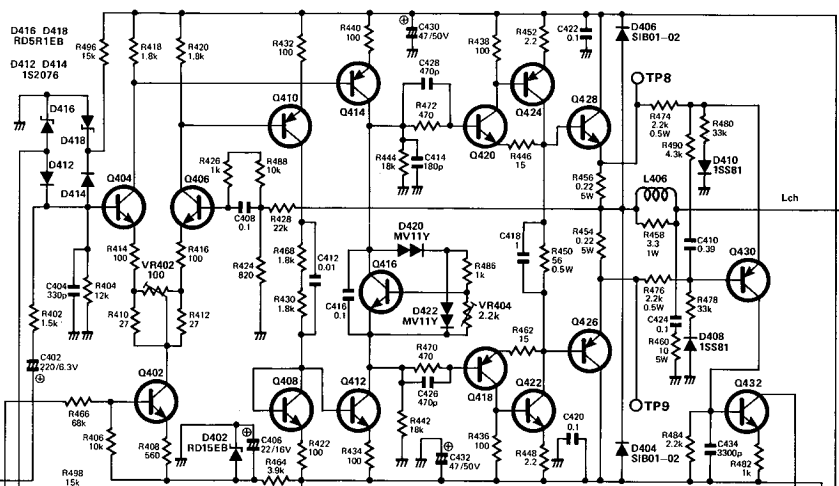
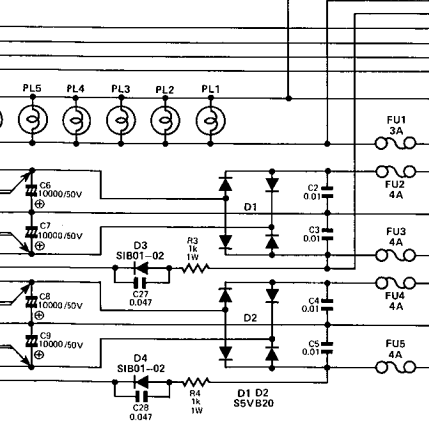
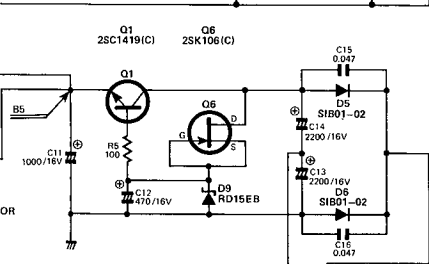
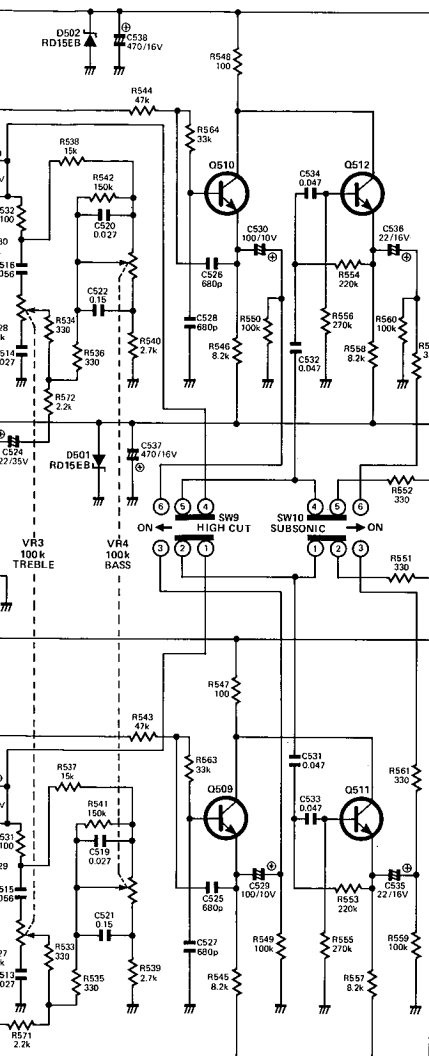
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2SB846A(C)

Q419 Q420
2SD667A(C)

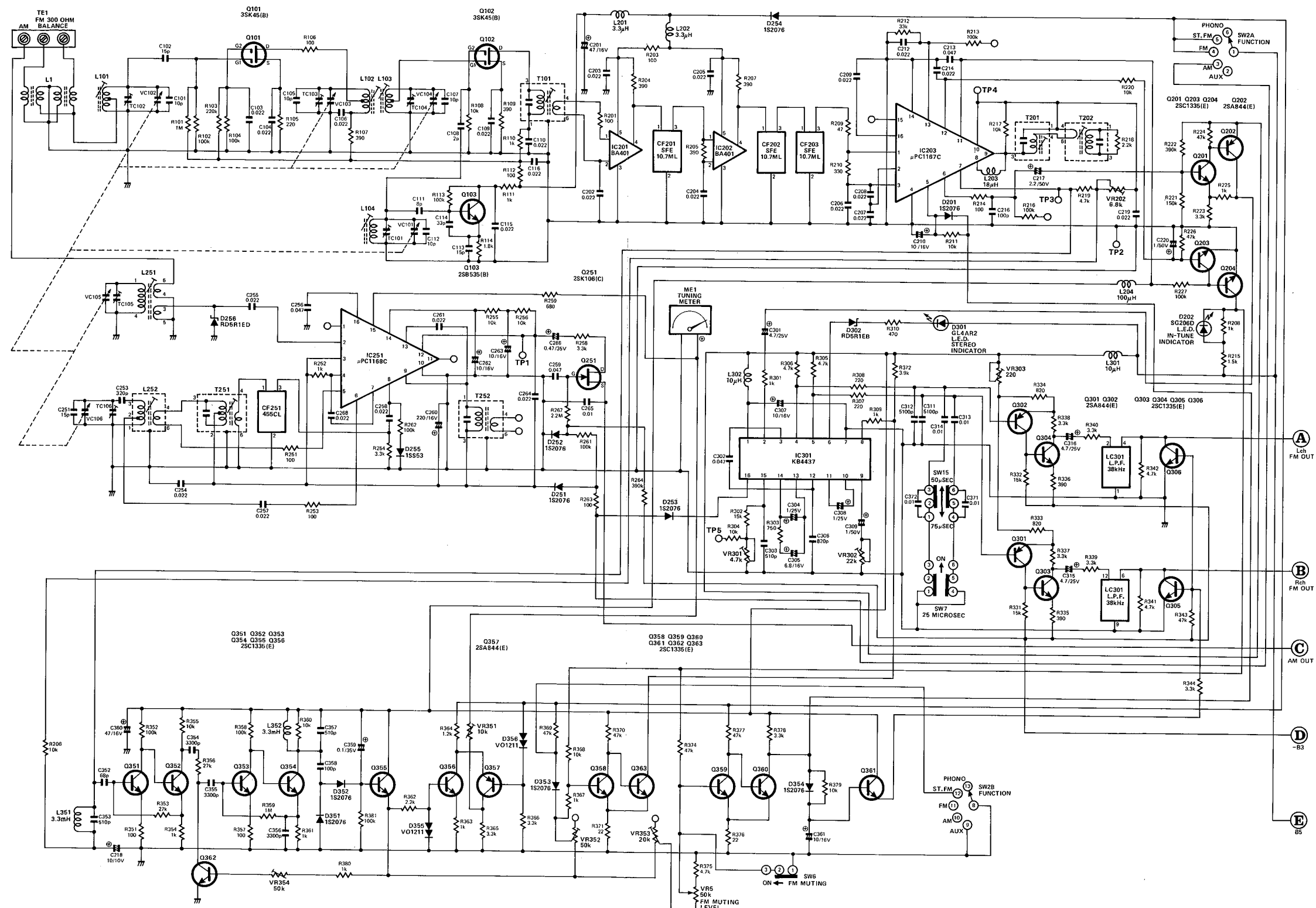
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2SD675A(B)

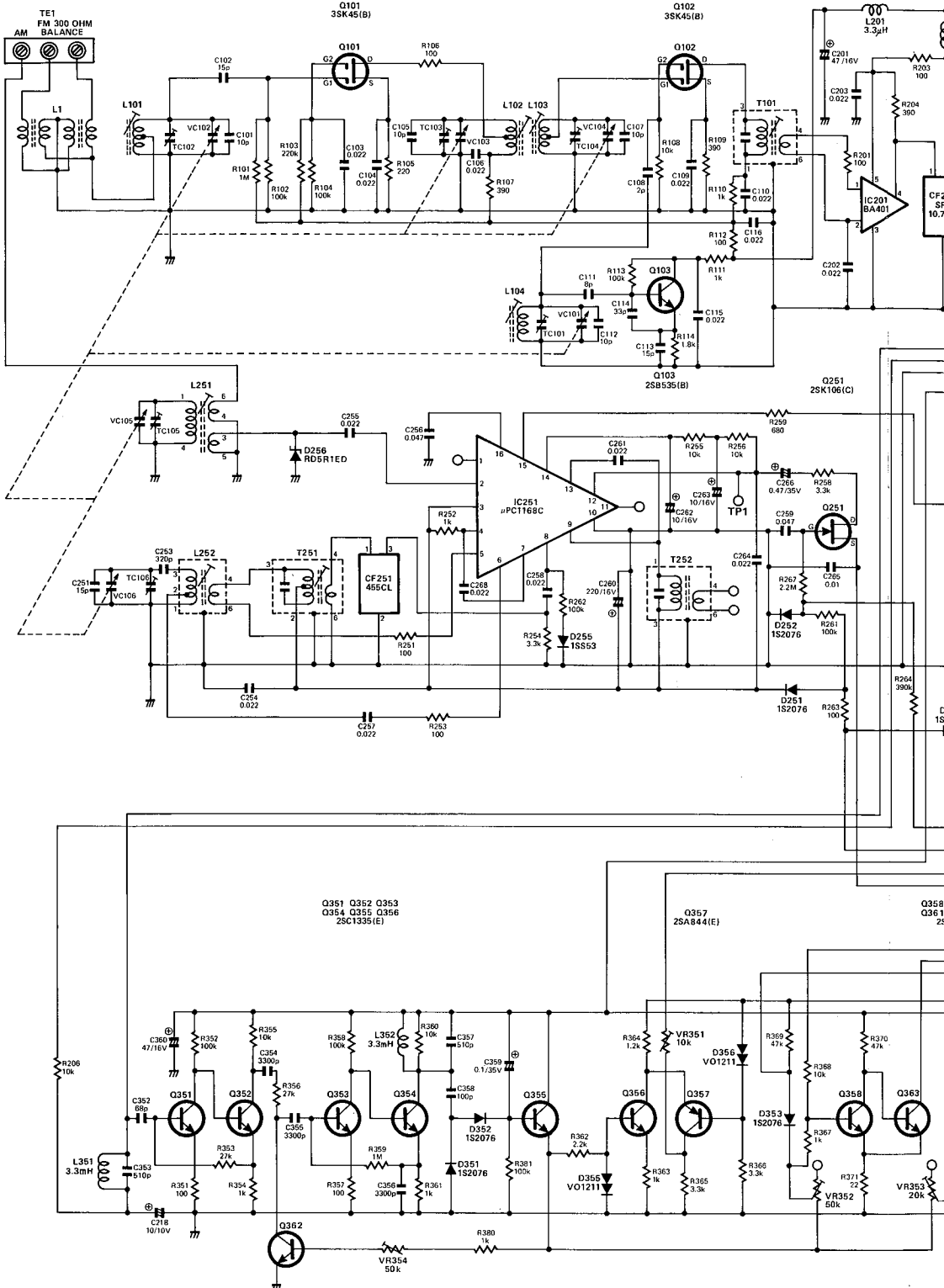
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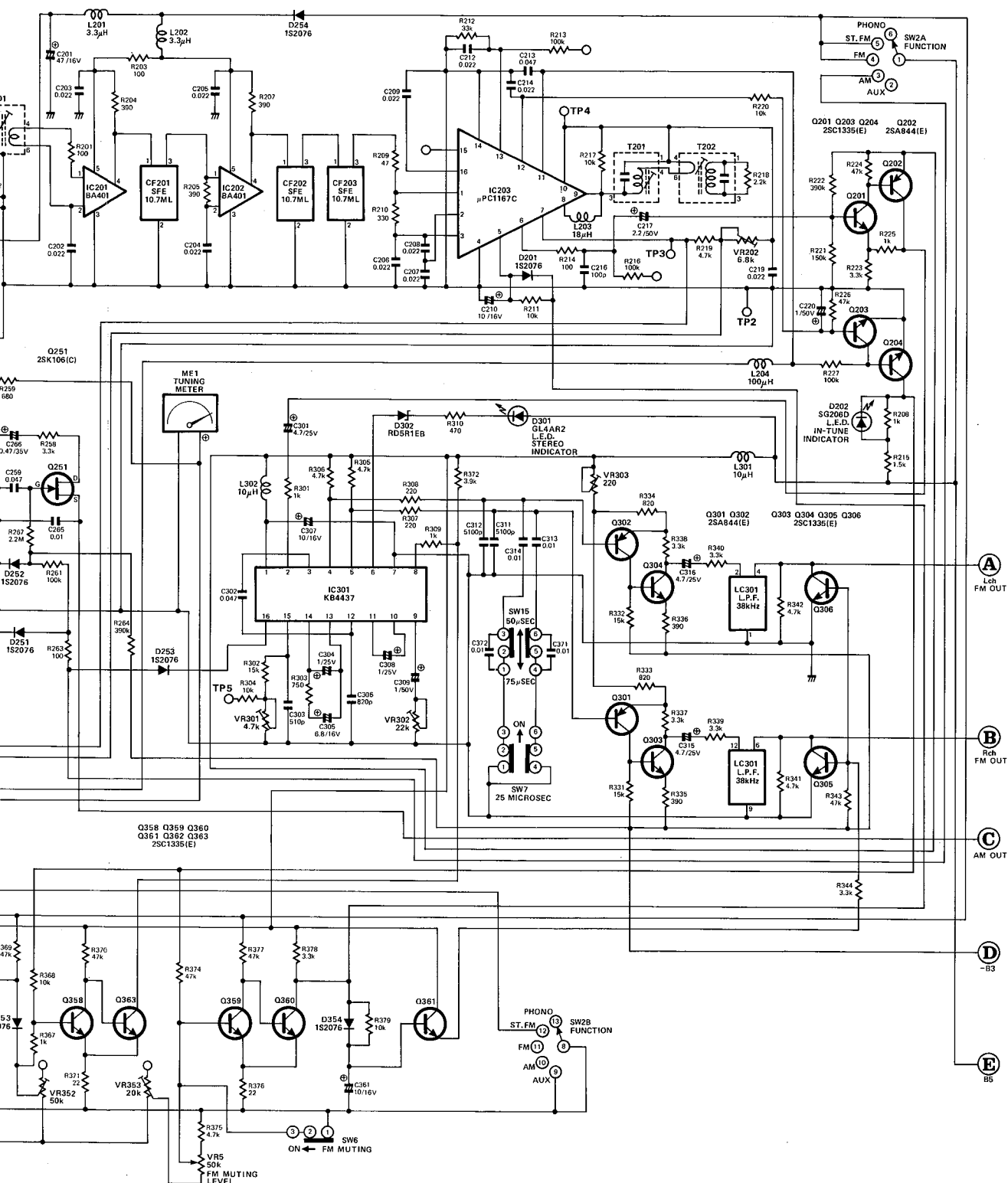


SCHEMATIC DIAGRAM – MULTI VOLTAGE

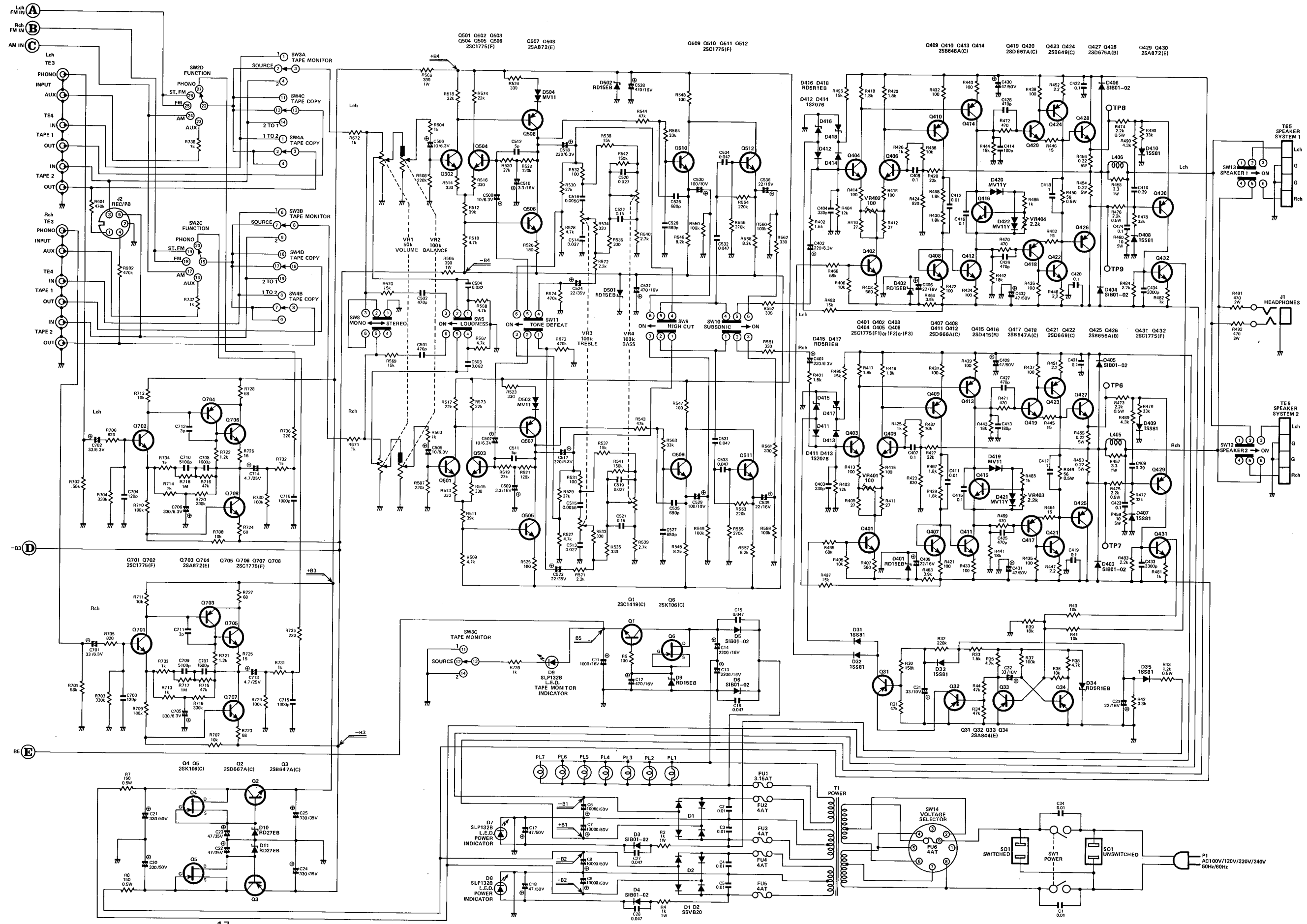


SCHEMATIC DIAGRAM – MULTI VOLTAGE

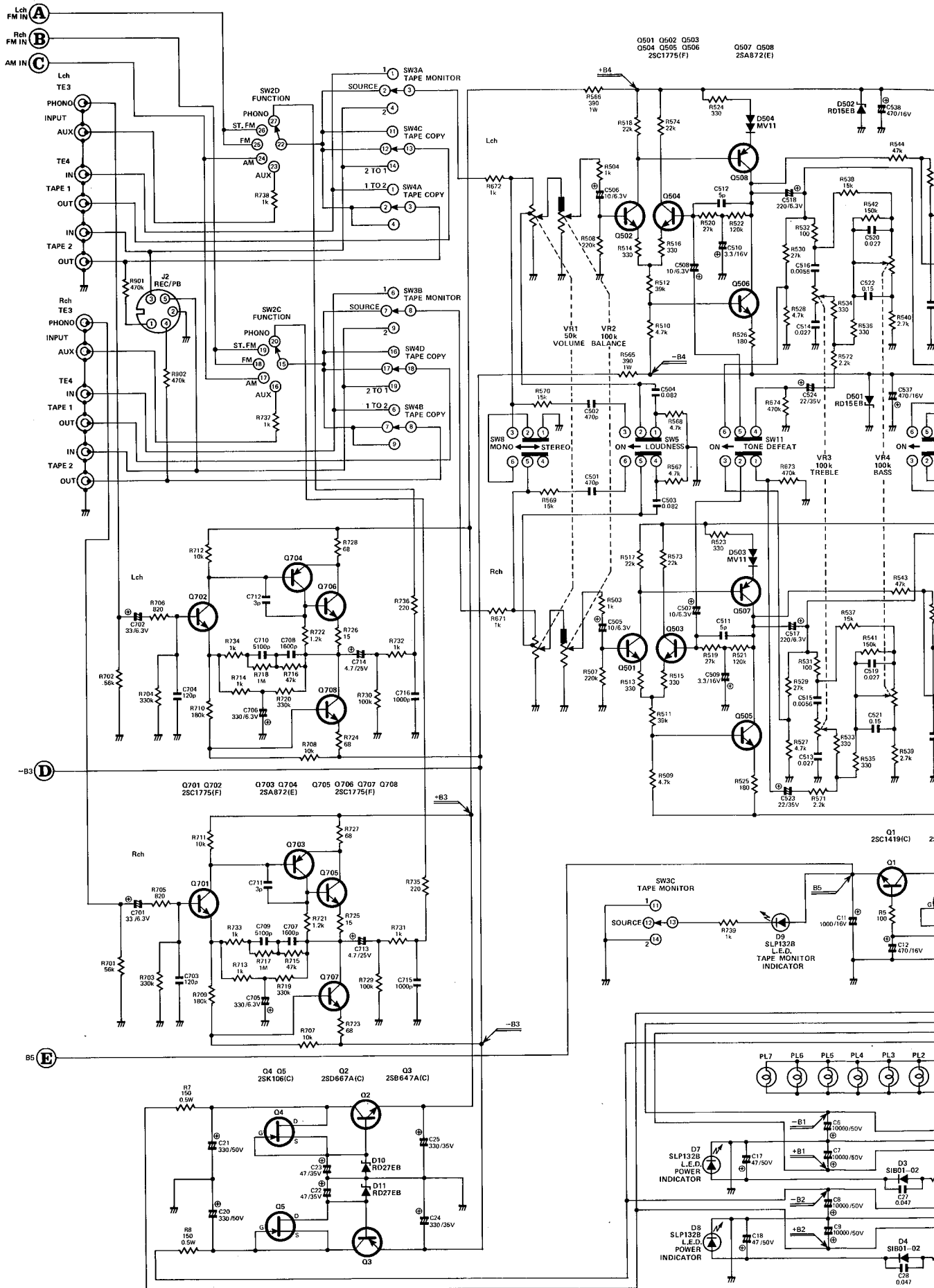




SCHEMATIC DIAGRAM - MULTI VOLTAGE



SCHEMATIC DIAGRAM – MULTI VOLTAGE



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2SC1775(F)

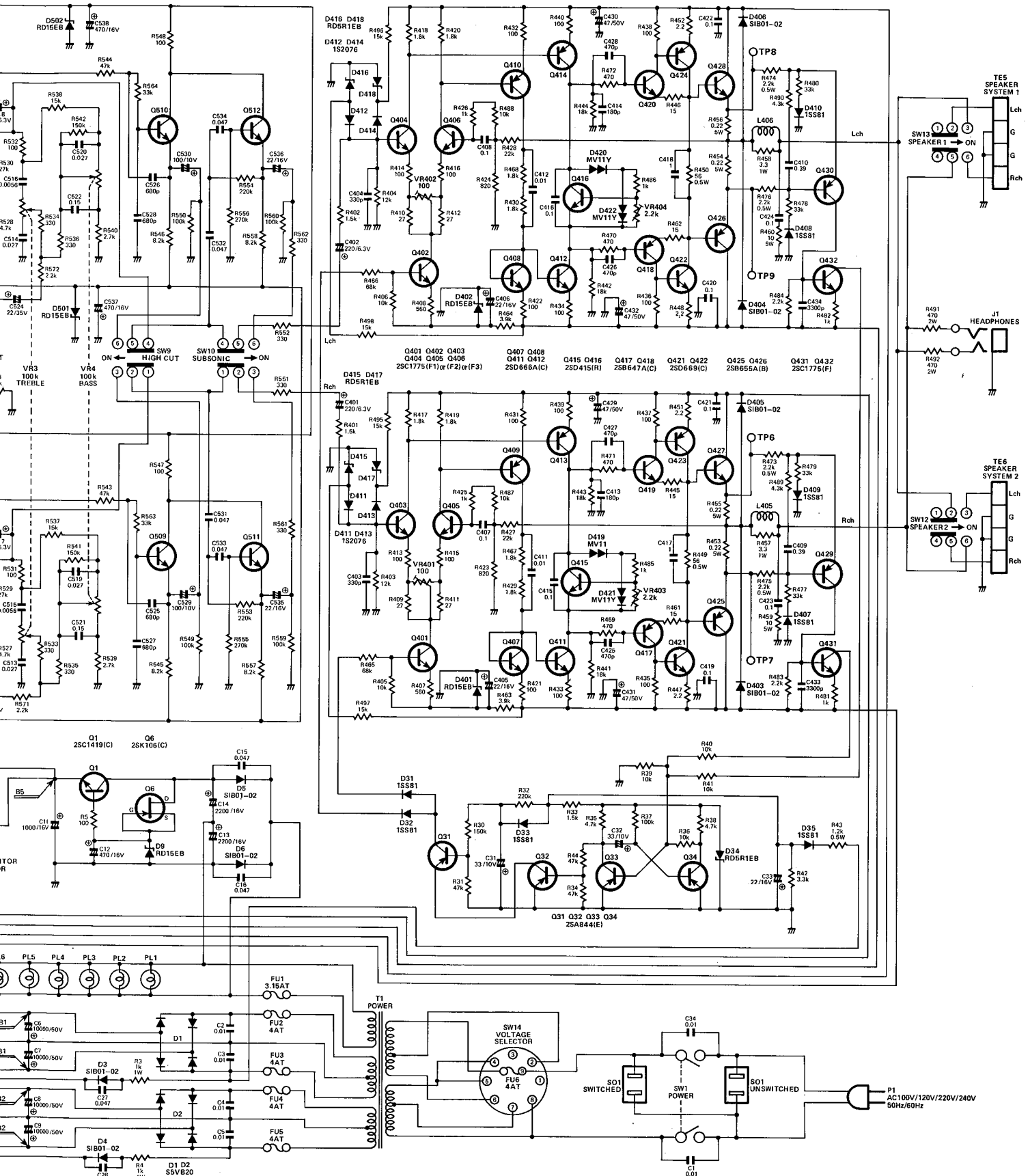
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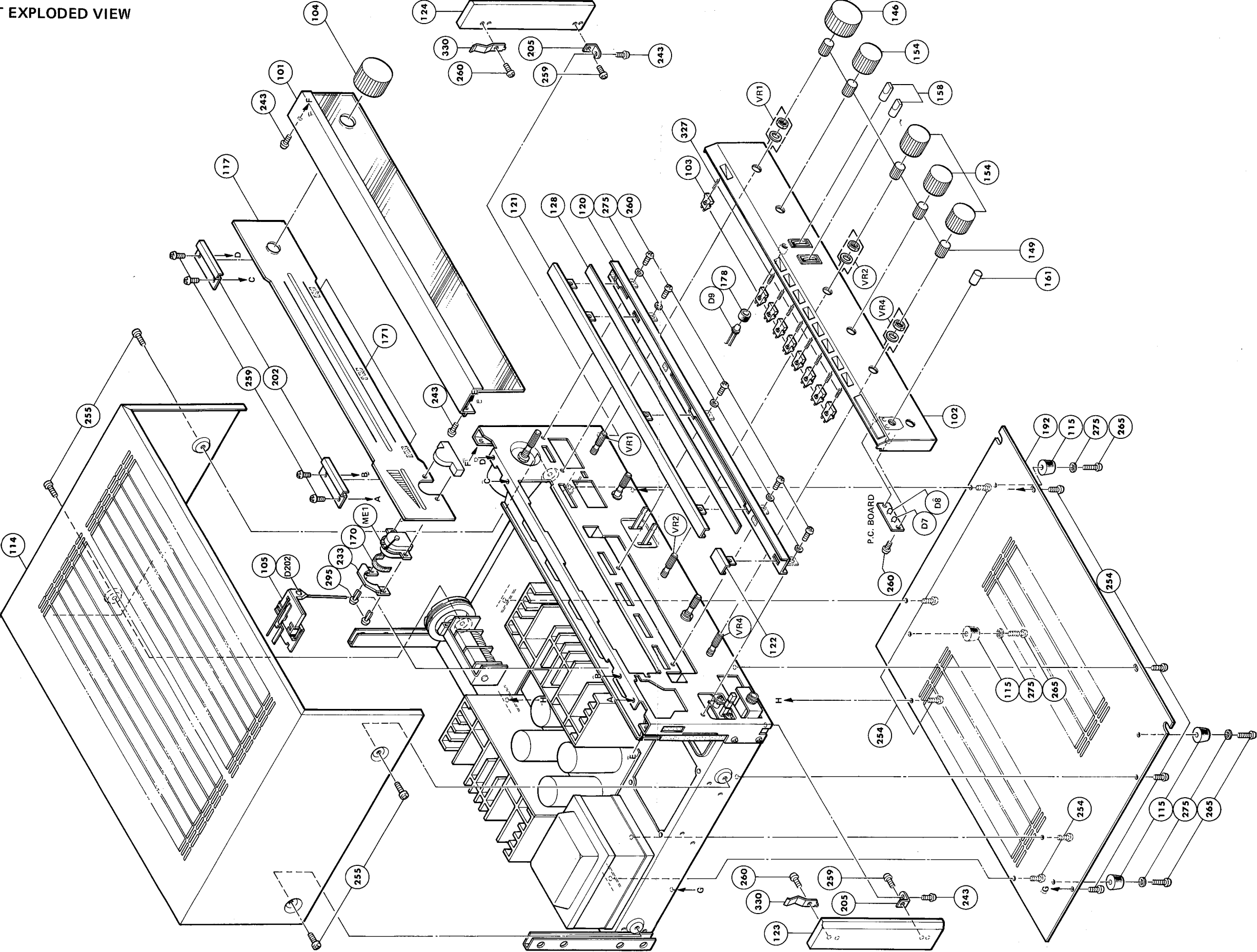
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Q427 Q428
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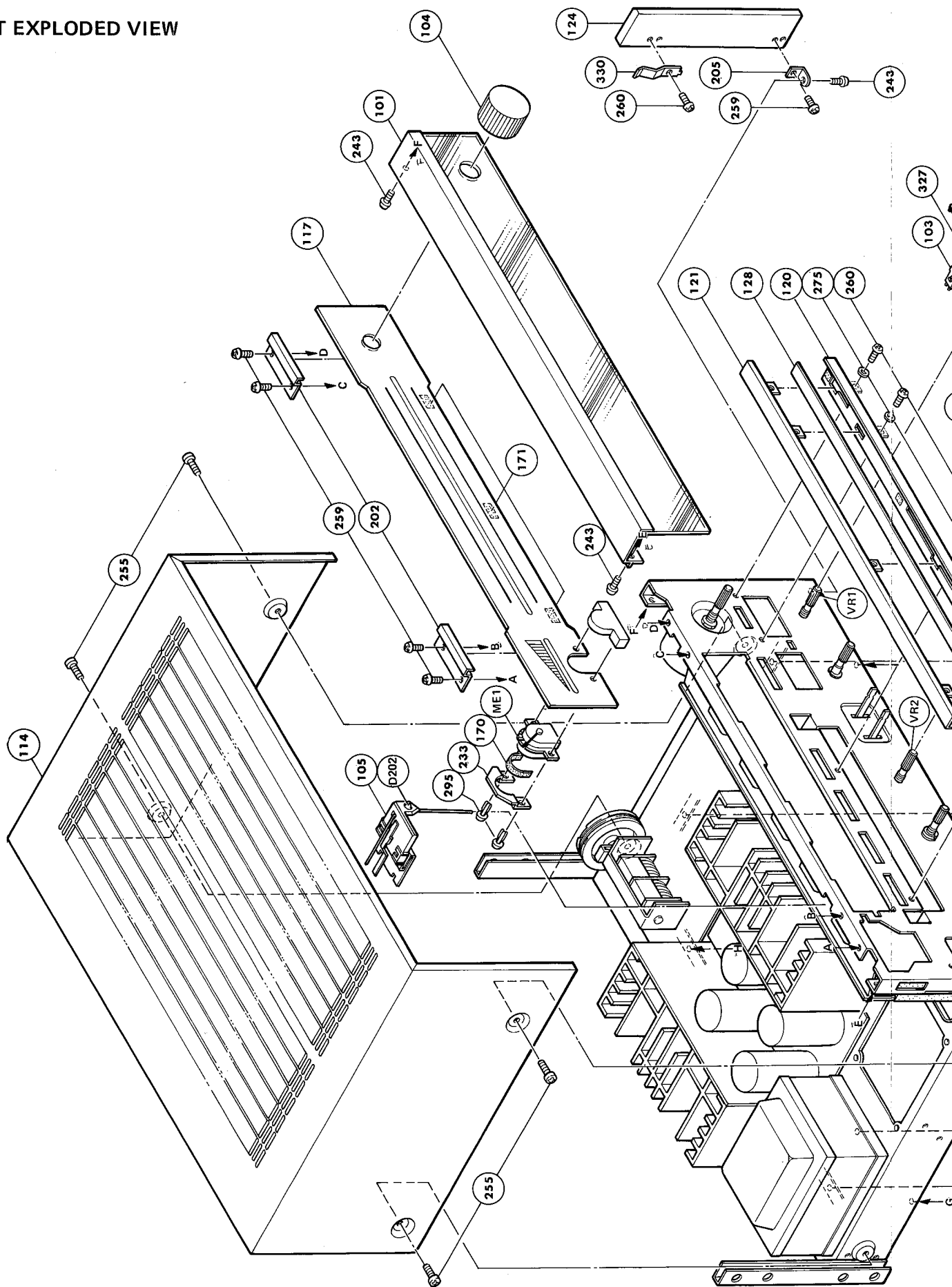
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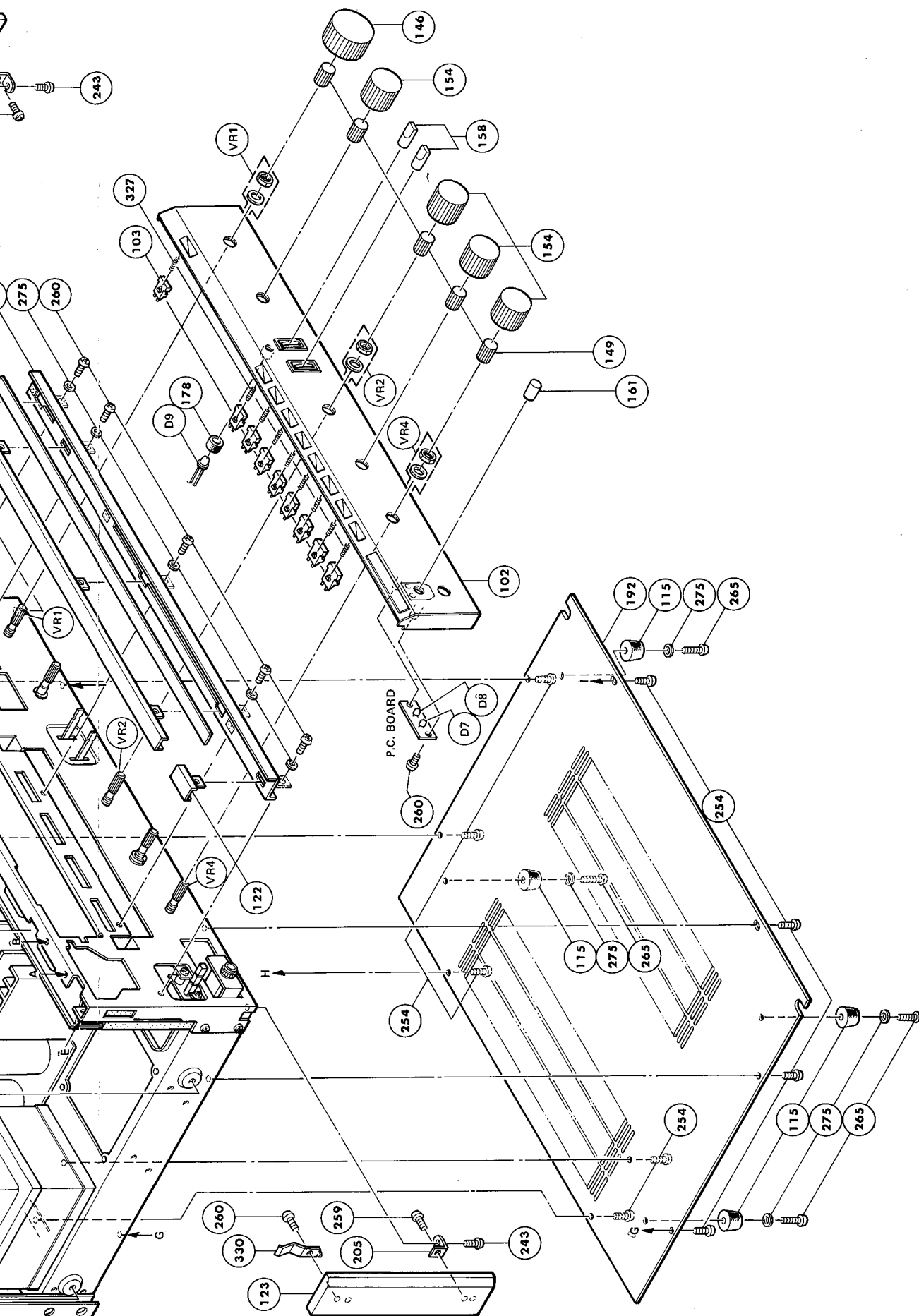


GENERAL UNIT EXPLODED VIEW

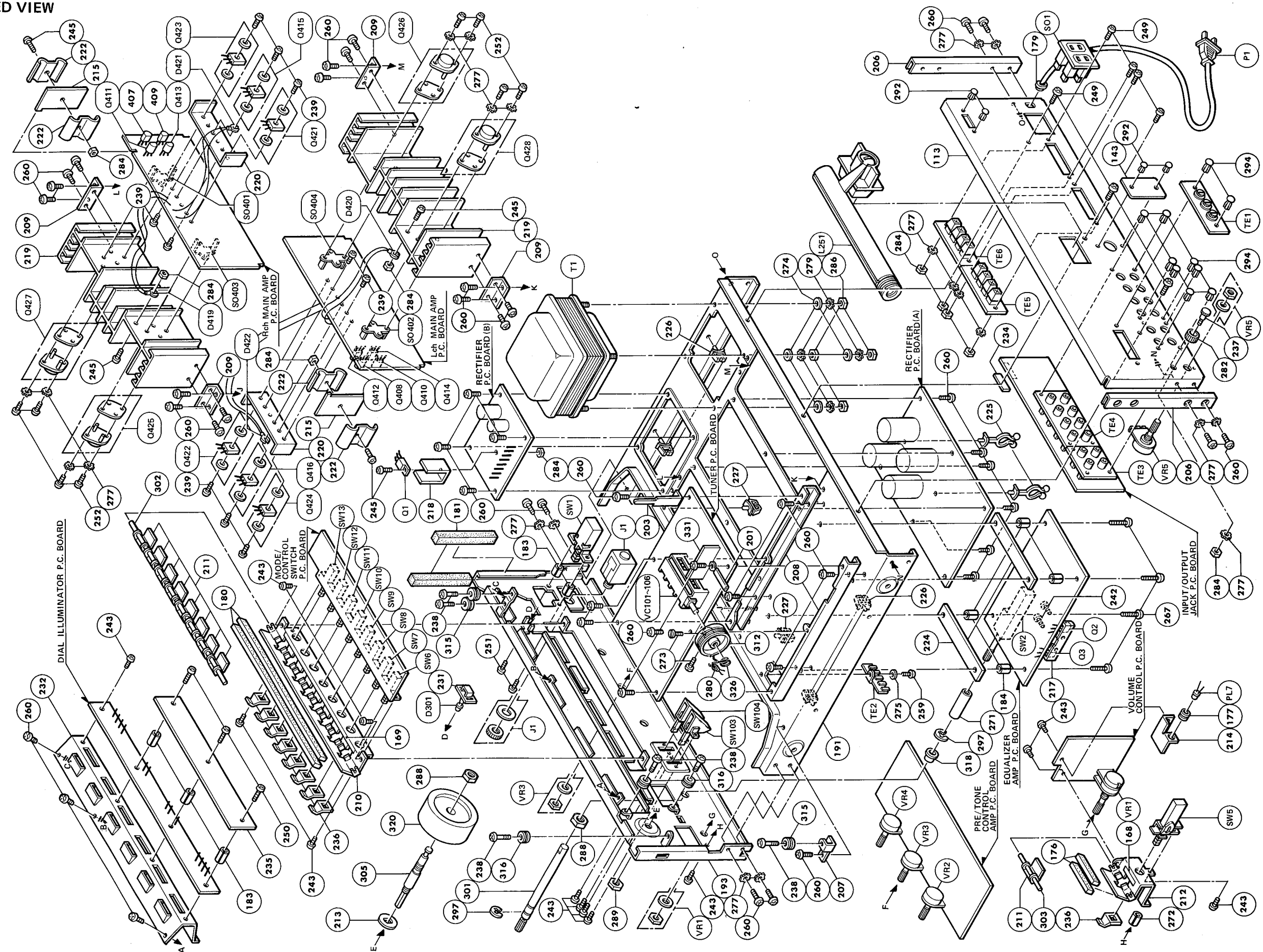


GENERAL UNIT EXPLODED VIEW





GENERAL UNIT EXPLODED VIEW



REAR VIEW

DIAL ILLUMINATOR P.C. BOARD

MODE/CONTROL SWITCH P.C. BOARD

Rich MAIN AMP P.C. BOARD

Lch MAIN AMP P.C. BOARD

RECTIFIER P.C. BOARD (B)

T1

SW1

SW2

SW3

SW4

SW5

SW6

SW7

SW8

SW9

SW10

SW11

SW12

SW13

SW14

SW15

SW16

SW17

SW18

SW19

SW20

SW21

SW22

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SW123

SW124

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SW396

SW397

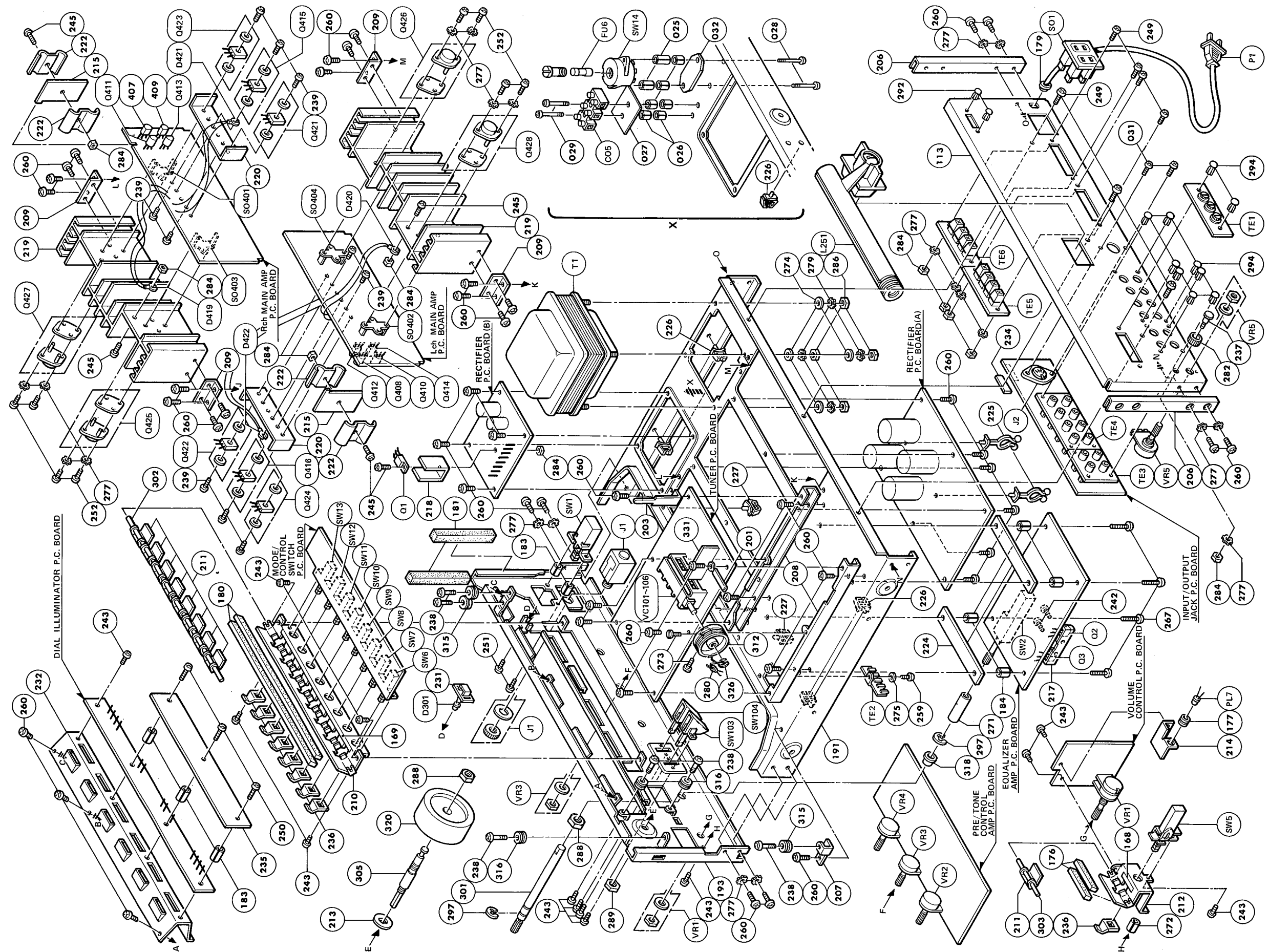
SW398

SW399

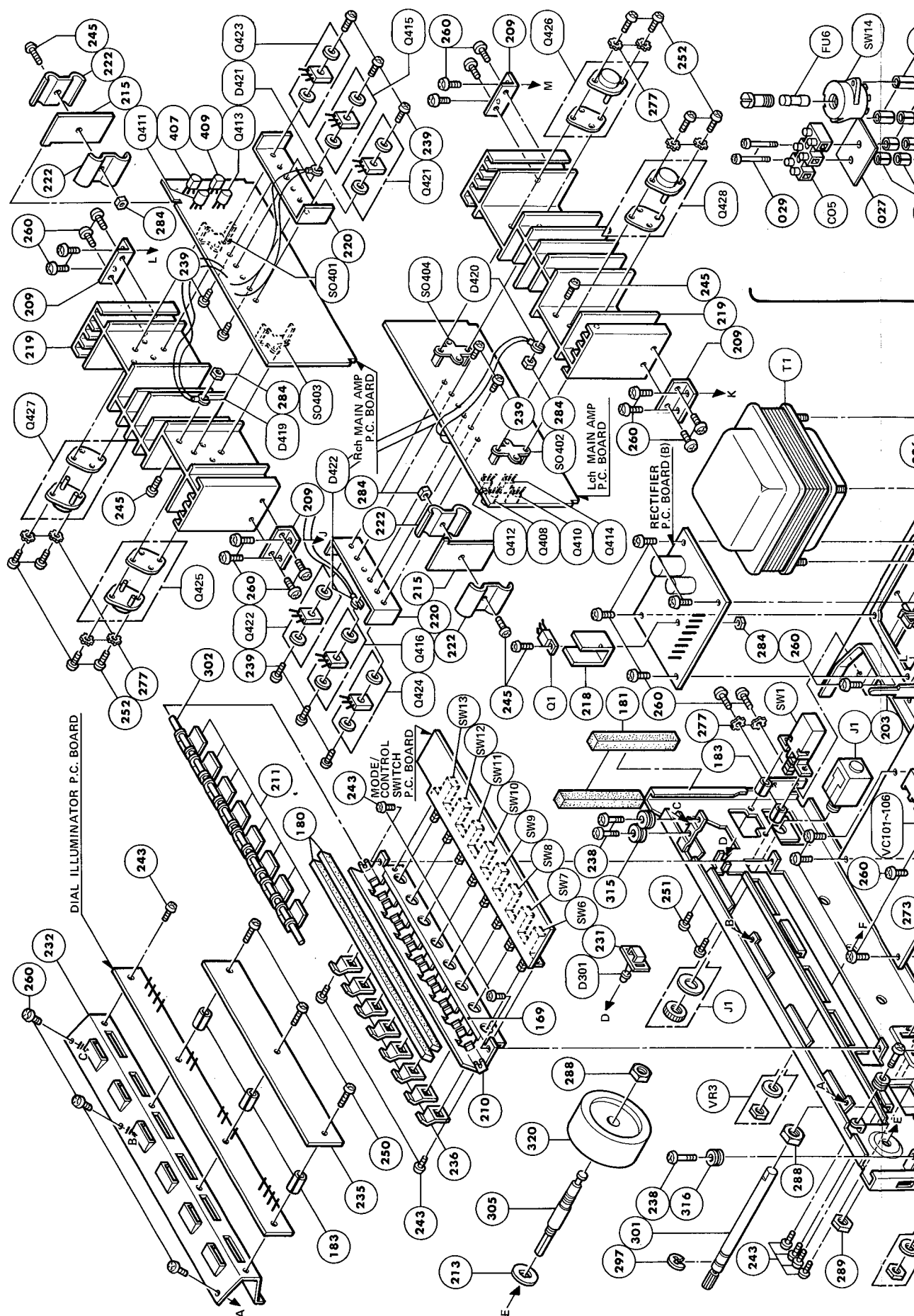
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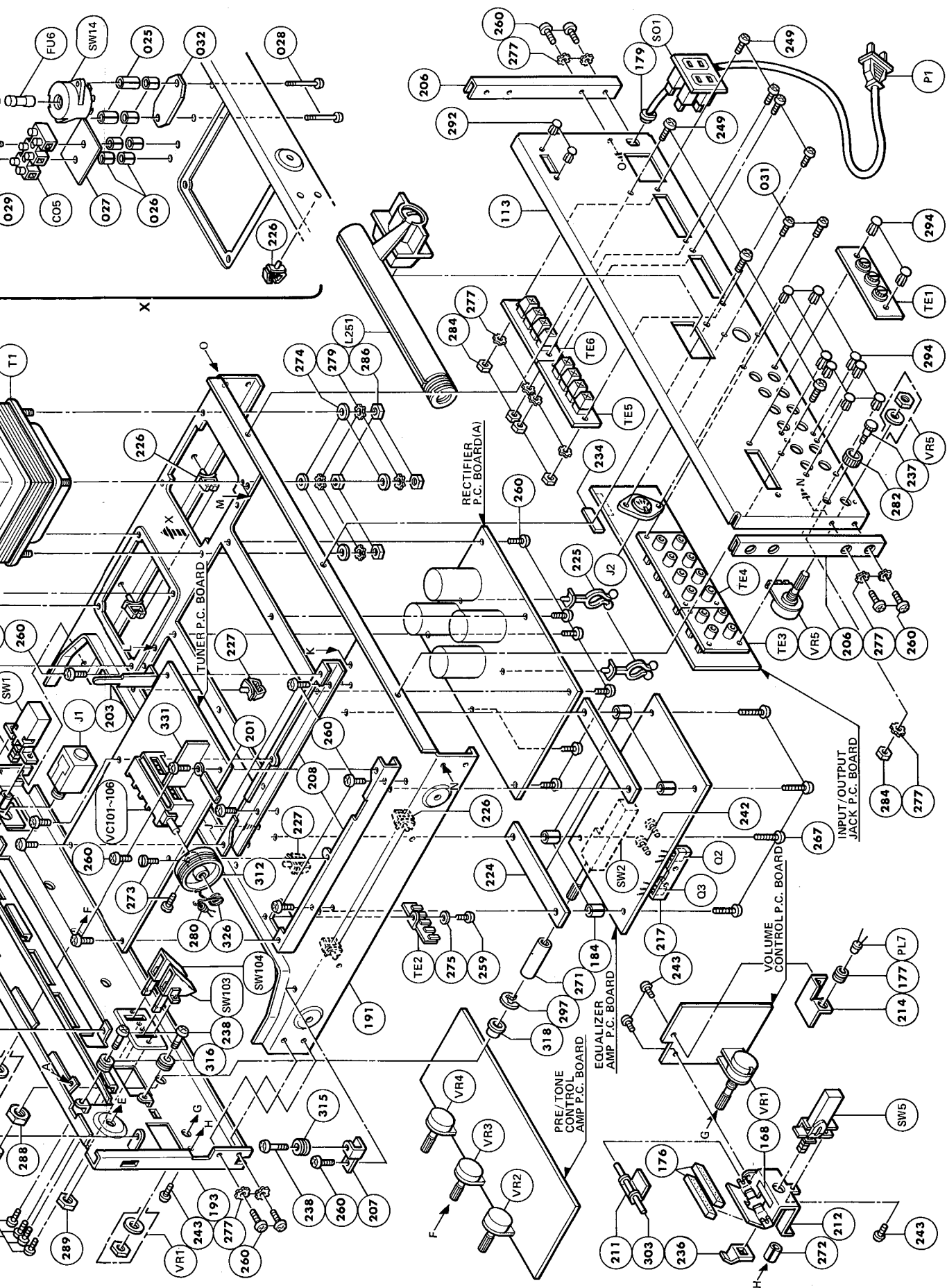
SW401

GENERAL UNIT EXPLODED VIEW - MULTI VOLTAGE

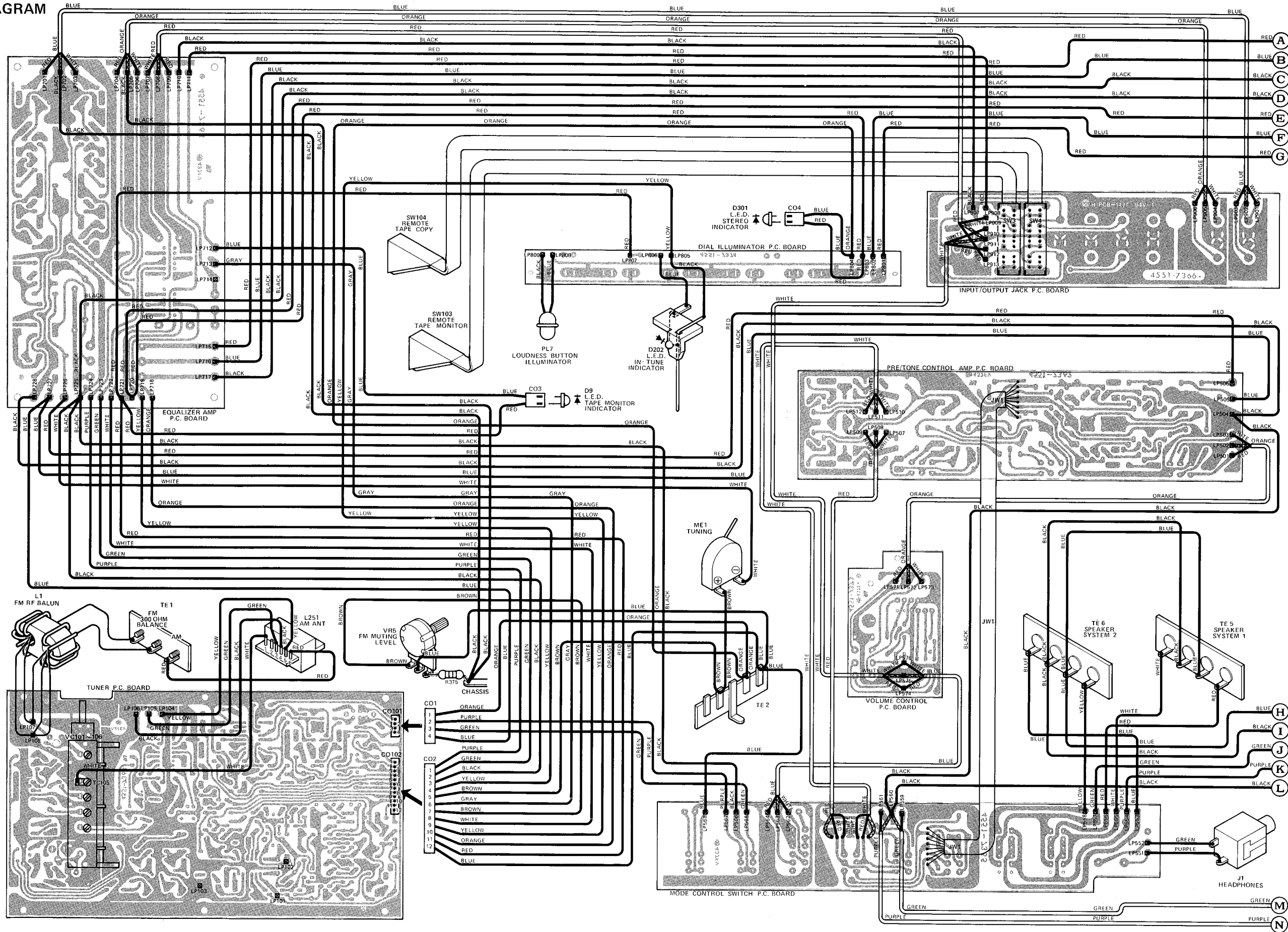


GENERAL UNIT EXPLODED VIEW – MULTI VOLTAGE

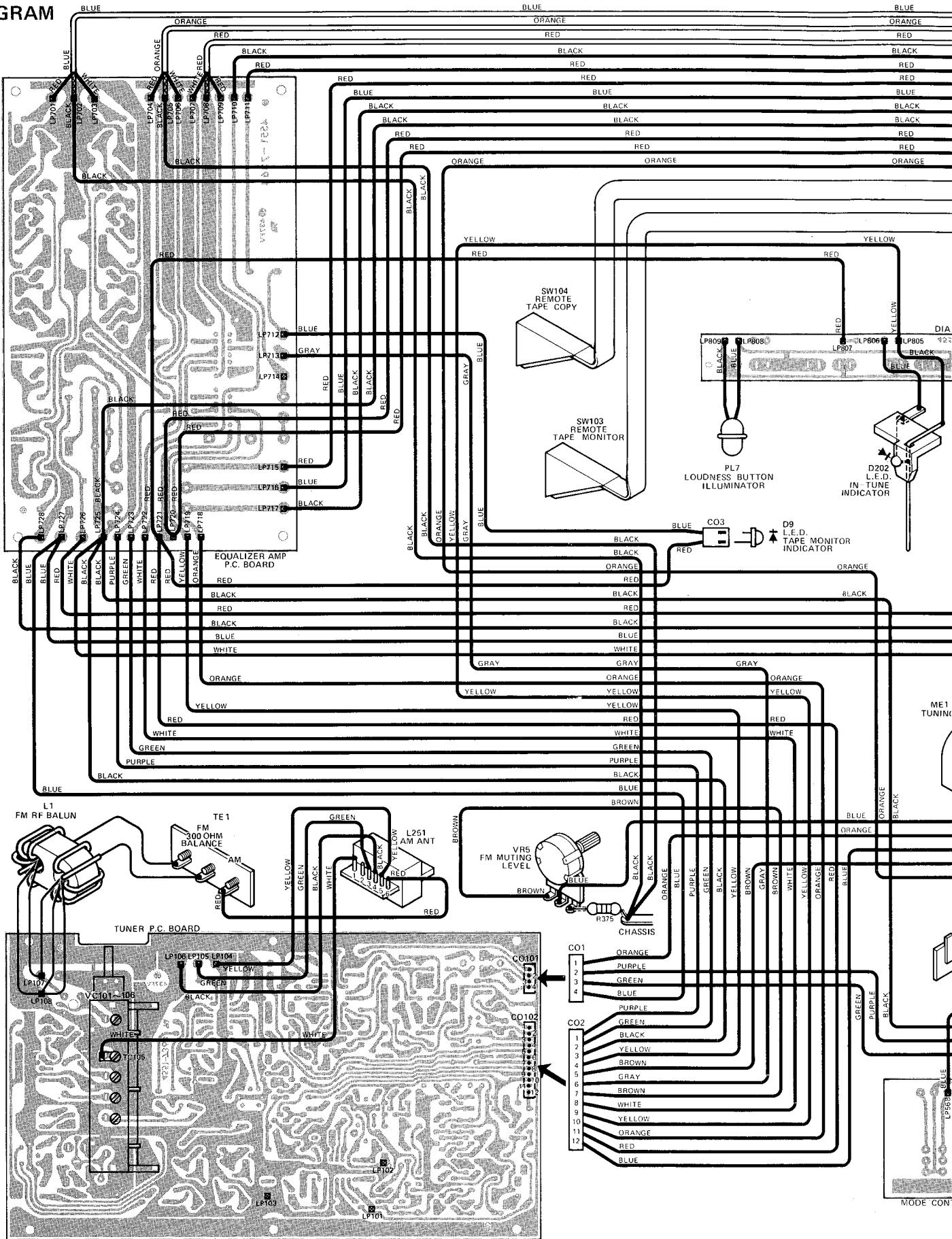




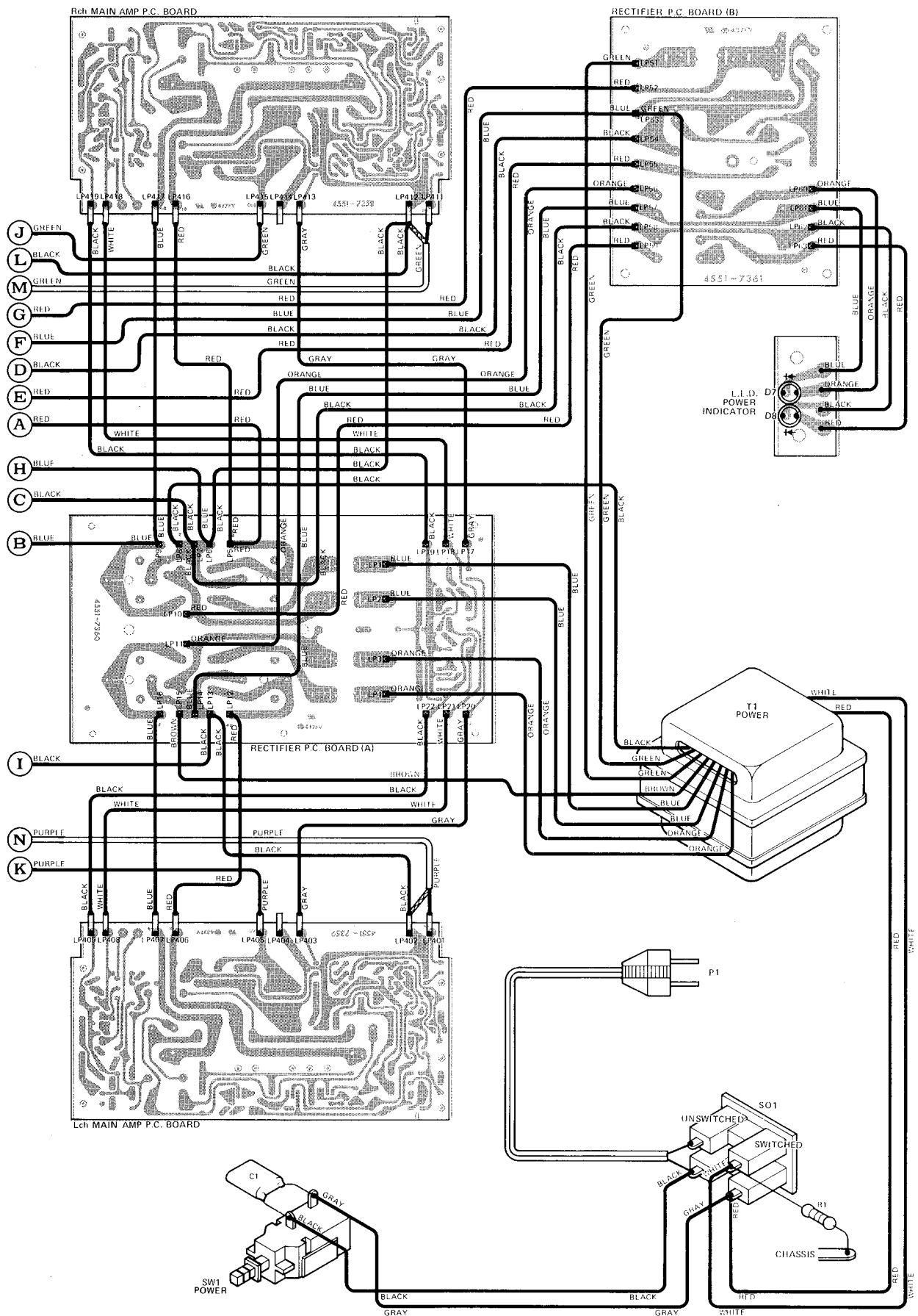
WIRING DIAGRAM



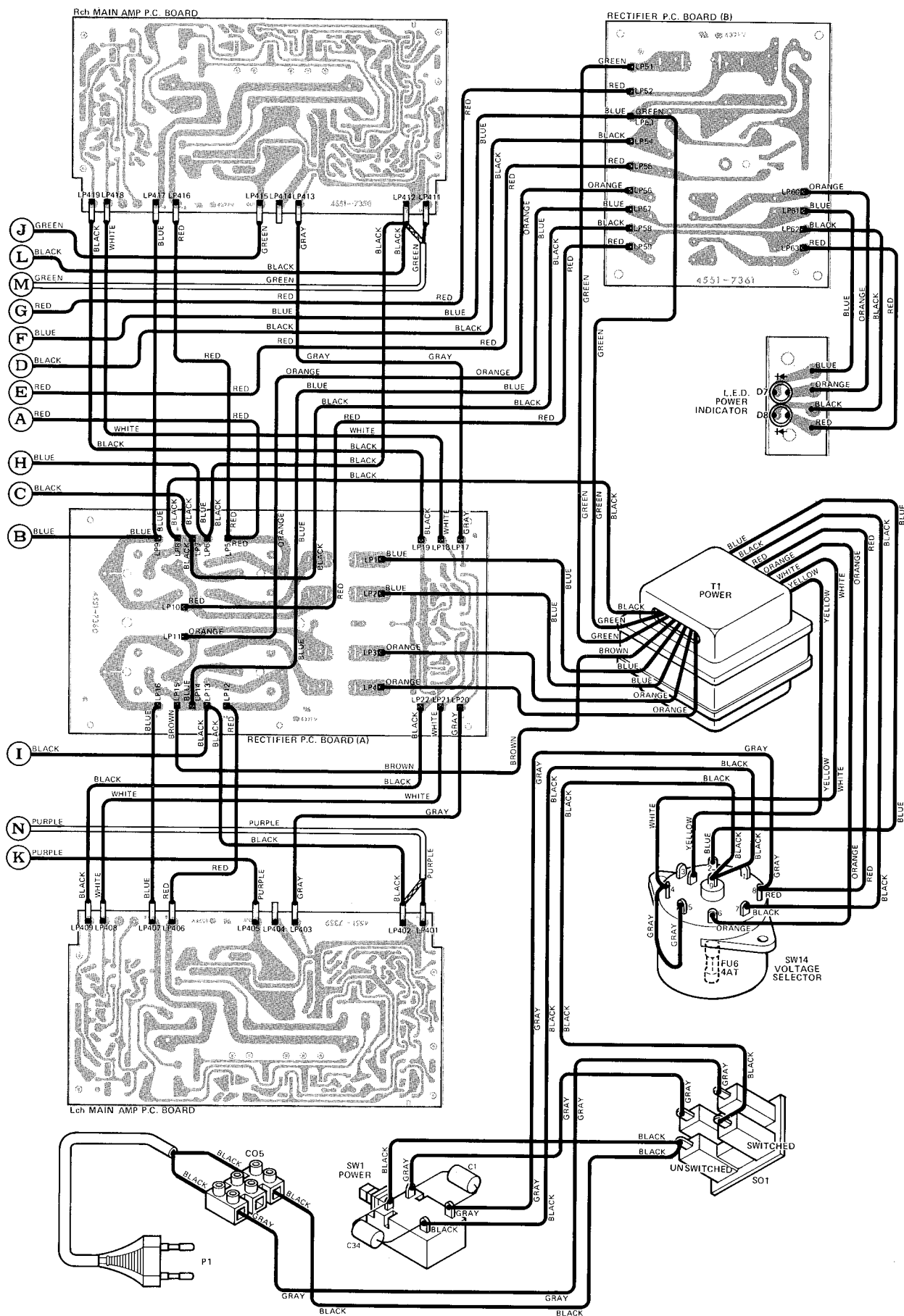
WIRING DIAGRAM



WIRING DIAGRAM



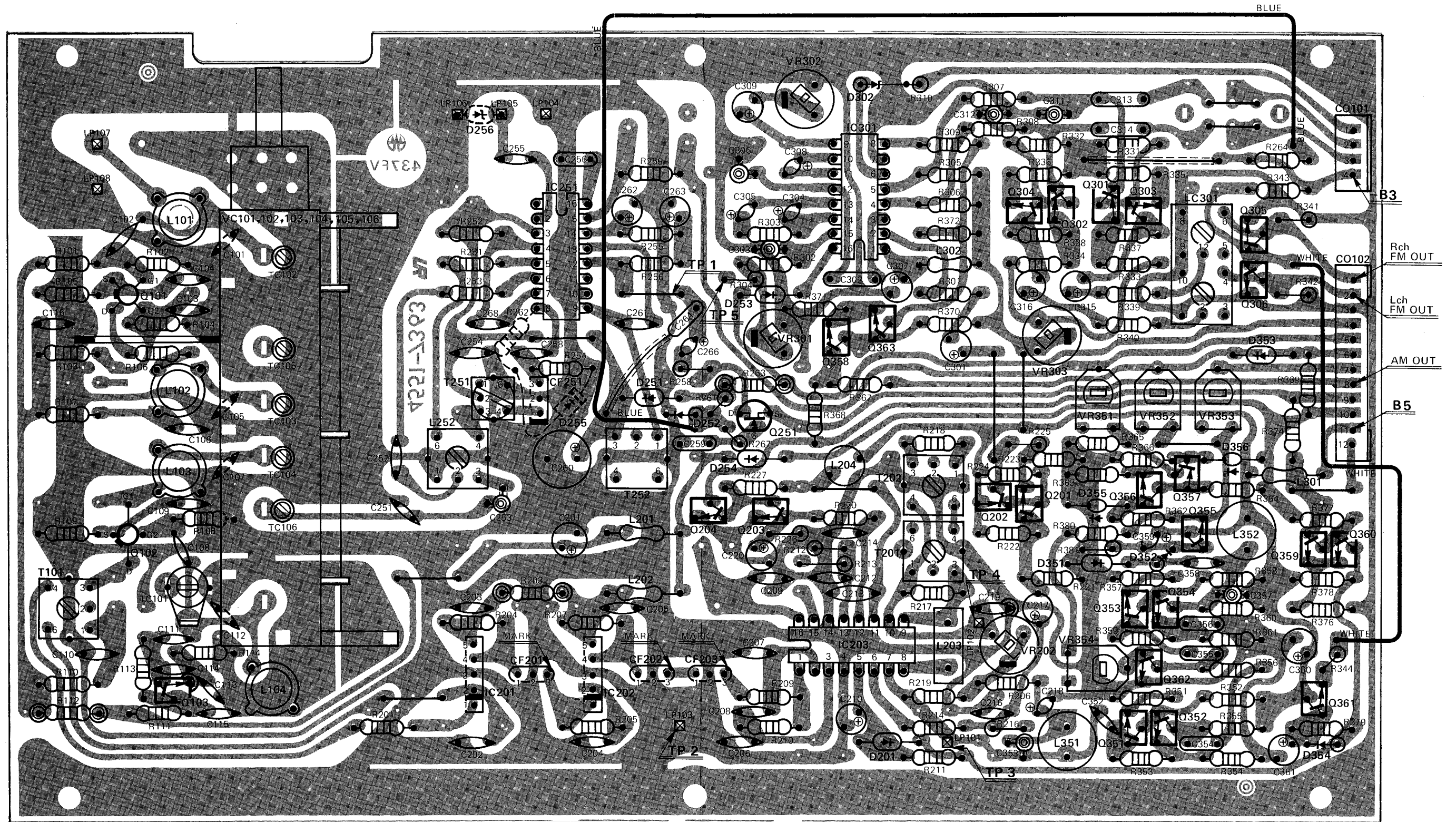
WIRING DIAGRAM – MULTI VOLTAGE



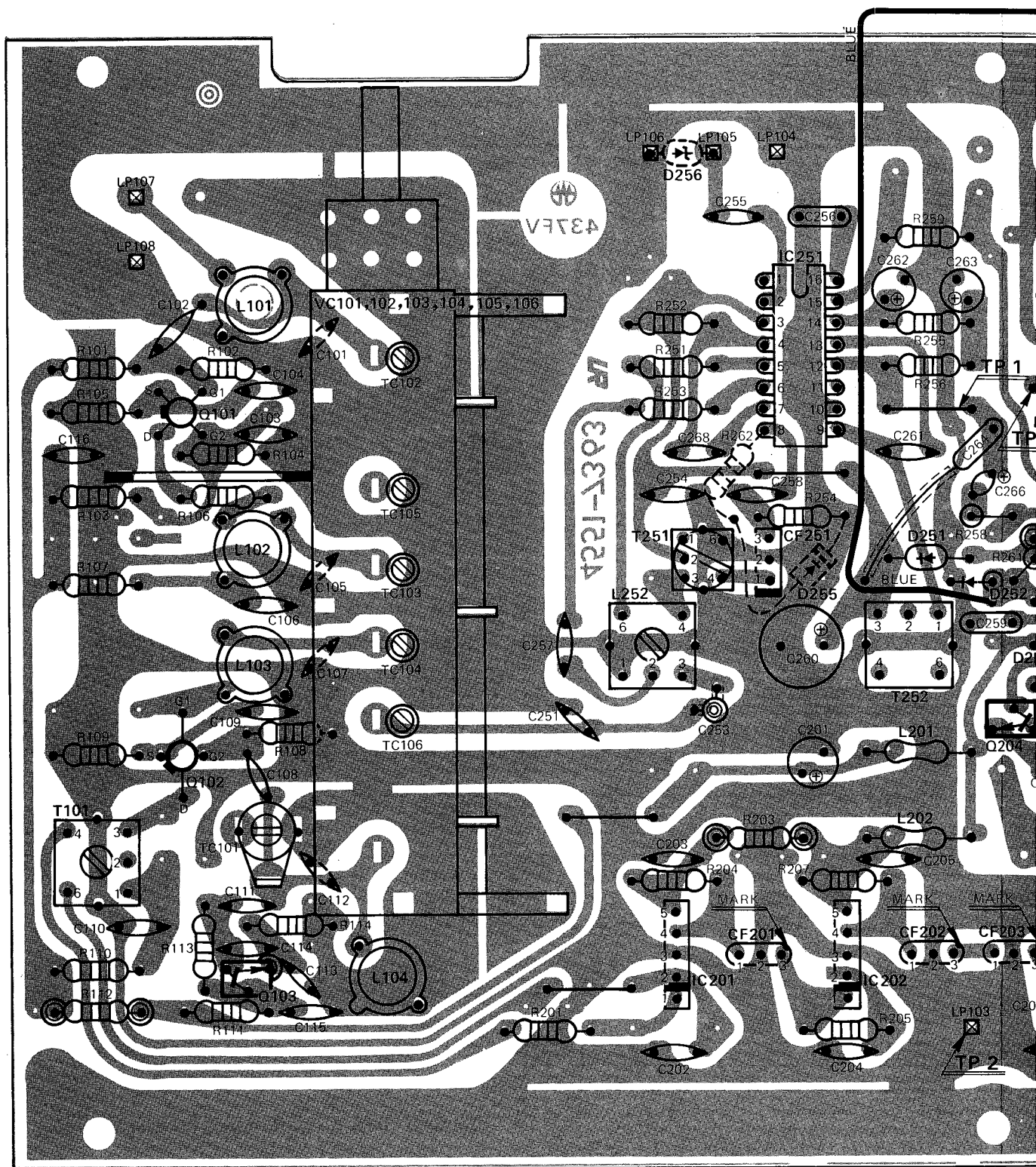
TUNER PC BOARD

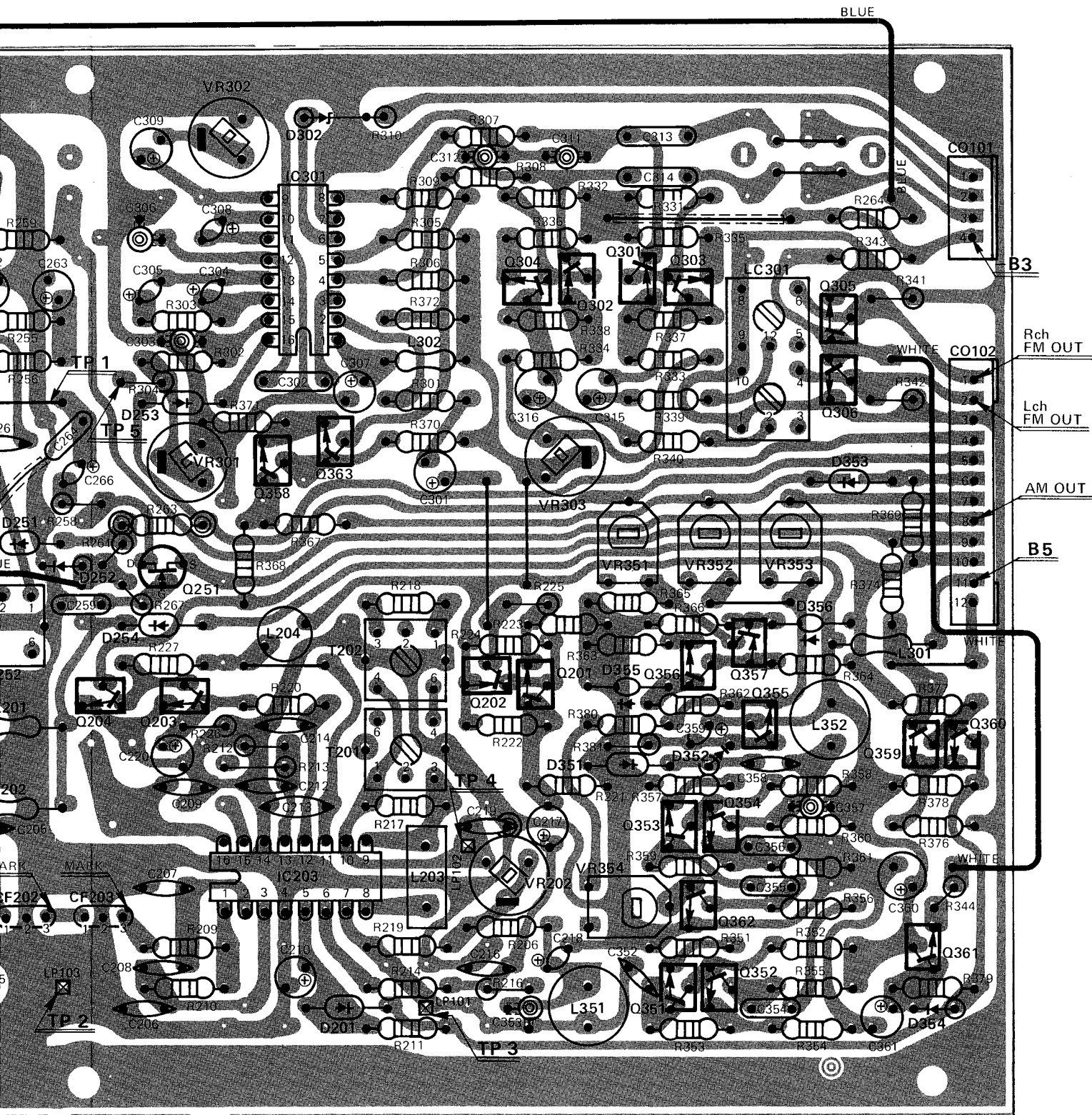
REF. NO.	H/K PART NO.	DESCRIPTION
RESISTORS		
VR202	23536016	Variable Resistor, 6.8 k ohm
VR301	23530554	Variable Resistor, 4.7 k ohm
VR302	23531305	Variable Resistor, 22 k ohm
VR303	23532130	Variable Resistor, 220 ohm
VR351	23536017	Variable Resistor, 10 k ohm
VR352, 354	23536018	Variable Resistor, 50 k ohm
VR353	23536019	Variable Resistor, 20 k ohm
CAPACITORS, ELECTROLYTIC		
C201	31835582	47MF +50% -10% 16V
C210	31835573	10MF +50% -10% 16V
C217	31835657	2.2MF $\pm$ 20% 50V
C218	30736020	10MF $\pm$ 20% 10V Tantalum
C220	31835574	1MF +75% -10% 50V
C260	31835577	220MF +50% -10% 16V
C262, 263	31835573	10MF +50% -10% 16V
C266	30731309	0.47MF $\pm$ 20% 35V Tantalum
C301, 315, 316	31835588	47MF $\pm$ 20% 25V
C304, 308	30736021	1MF $\pm$ 20% 25V Tantalum
C305	30736022	6.8MF $\pm$ 20% 16V Tantalum
C306	31836023	820PF $\pm$ 5% 50V
C307	31835573	10MF +50% -10% 16V
C309	31832149	1MF $\pm$ 20% 50V
C359	30731310	0.1MF $\pm$ 20% 35V
C360	31835582	47MF +50% -10% 16V
C361	31835573	10MF +50% -10% 16V
VC101, 102, 103 104, 105, 106	30336024	Variable Capacitor (w/Trimmers TC102, 103, 104, 105, 106)
TRANSISTORS		
Q101, 102	43035590	F. E. T., 3SK45(B) FM RF Amp., FM Mixer
Q103	43034834A	2SC535(B) FM Osc.
Q201	43028536	2SC1335(E) FM Demodulation Signal Amp.
Q202	43031312	2SA844(E) FM Demodulation Signal Amp.
Q203, 204	43028536	2SC1335(E) In-Tune Indicator Drive
Q251	43035874	F. E. T., 2SK106(C) Delay Switch
Q301, 302	43031312	2SA844(E) MPX Output Amp.
Q303, 304, 305, 306	43028536	2SC1335(E) MPX Output Amp., FM Muting Switching
Q351, 352, 353, 354	43028536	2SC1335(E) 100 kHz Amp.
Q355	43028536	2SC1335(E) Buffer Amp.
Q356	43028536	2SC1335(E) Meter Driver
Q357	43031312	2SA844(E) Meter Driver
Q358, 363	43028536	2SC1335(E) Schmitt Circuit (Stereo Muting)
Q359, 360	43028536	2SC1335(E) Schmitt Circuit (FM Muting)
Q361	43028536	2SC1335(E) FM Muting Switching Driver
Q362	43028536	2SC1335(E) AGC
IC201, 202	43131313	Integrated Circuit, BA401 FM IF Amp.
IC203	43136025	Integrated Circuit, UPC1167C FM IF Amp./ FM Det.
IC251	43136026	Integrated Circuit, UPC1168C AM IF Amp./ AM Det.
IC301	43135778	Integrated Circuit, KB4437 FM Multiplex

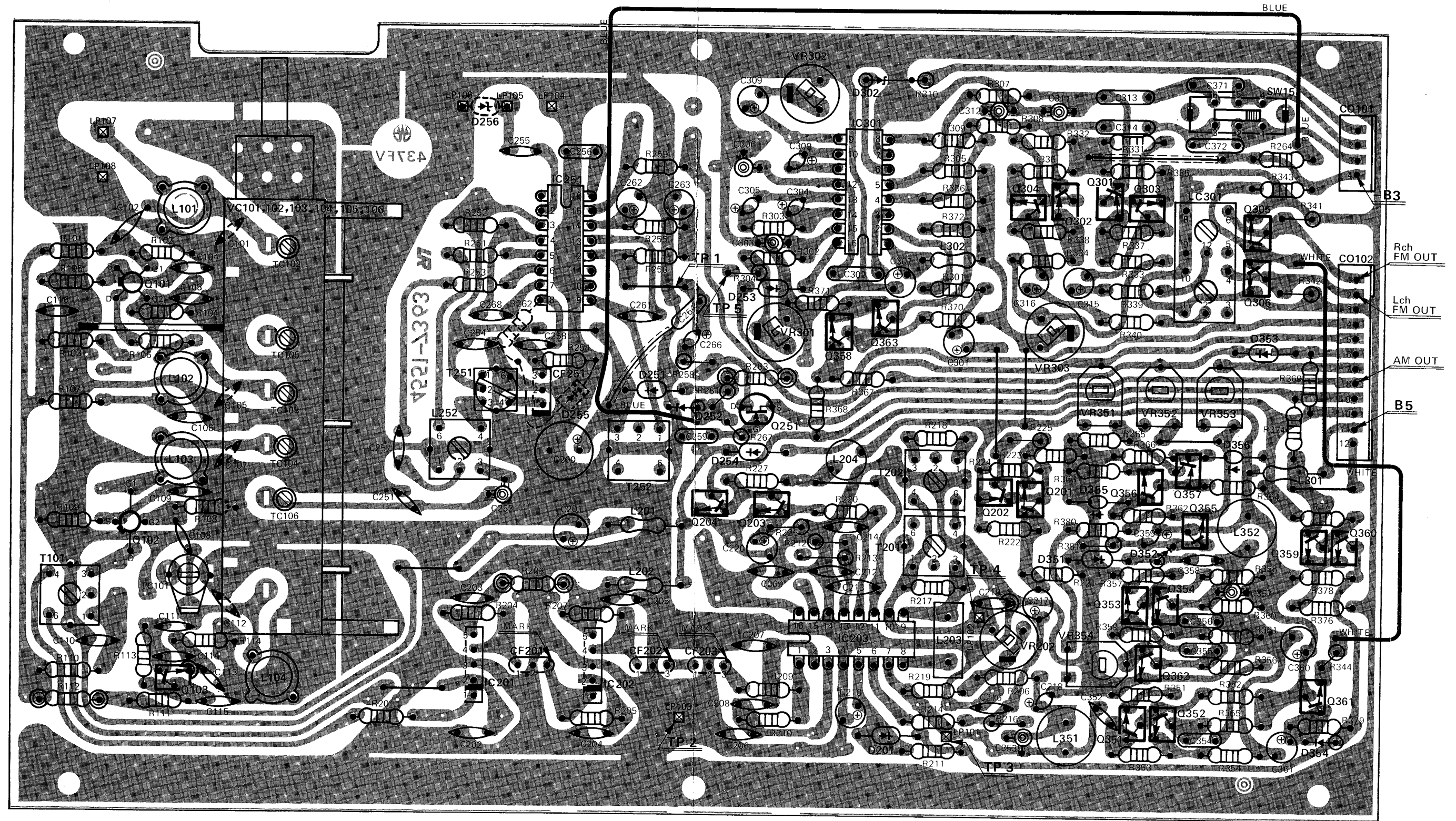
REF. NO.	H/K PART NO.	DESCRIPTION
TRANSISTOR (Continued)		
D201, 254	41028593	Diode, 1S2076
D251, 252	41028593	Diode, 1S2076
D253	41028593	Diode, 1S2076
D255	41036027	Diode, 1SS53
D256	42035972	Zener Diode, 5.1V $\pm$ 0.3V
D302	42035972	Zener Diode, 5.1V $\pm$ 0.3V
D351, 352, 353 354	41028593	Diode, 1S2076
COILS		
L101	12035597	FM RF
L102, 103	12036029	FM RF
L104	12036030	FM Osc.
L201, 202	12036031	RF Choke
L203	12036032	Phase Sifter
L204	12032108	RF Choke
L252	12036033	AM Osc.
L301, 302	12035603	RF Choke
L351, 352	12032144	100 kHz Band Pass Filter
TRANSFORMERS		
T101	11035604	FM IF
T201	11035605	Quadrature Det.
T202	11035606	Quadrature Det.
T251	11035607	AM IF
T252	11034843A	AM IF
MISCELLANEOUS		
CF201, 202, 203	12036034	Ceramic Filter, FM IF
CF251	12035610	Ceramic Filter, AM IF
LC301	12035611	L. C. Component, Low Pass Filter

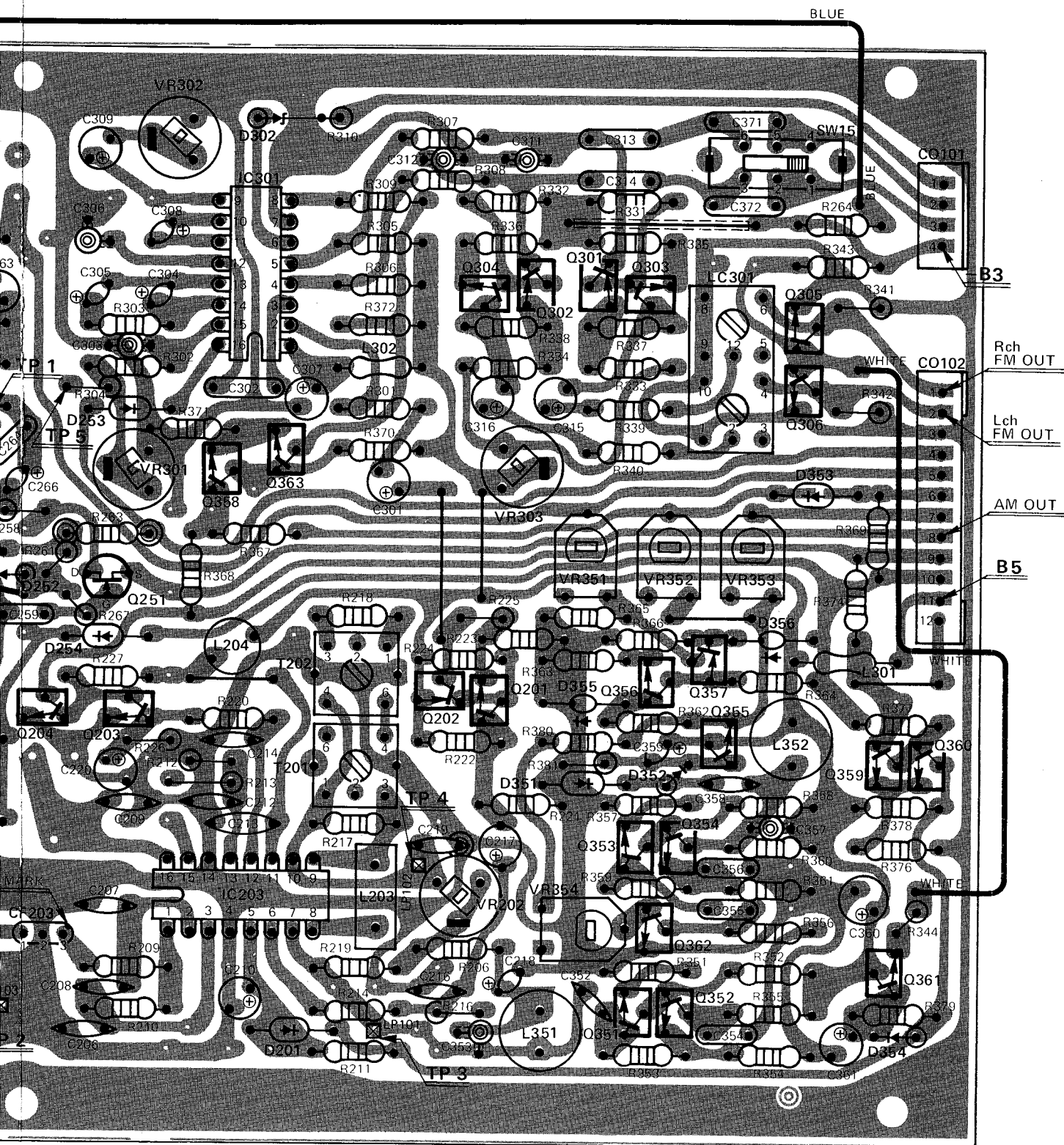


TUNER PC BOARD

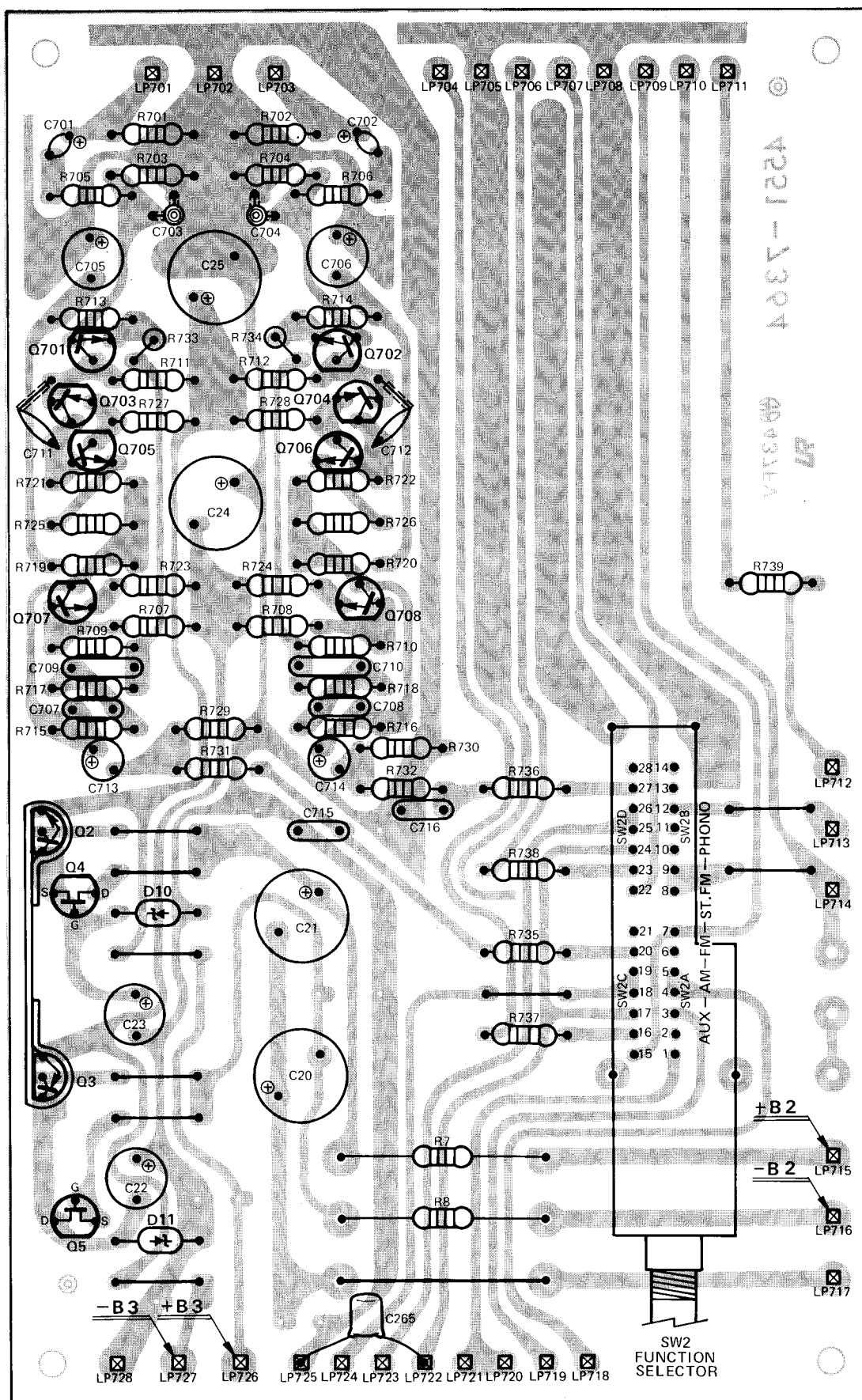








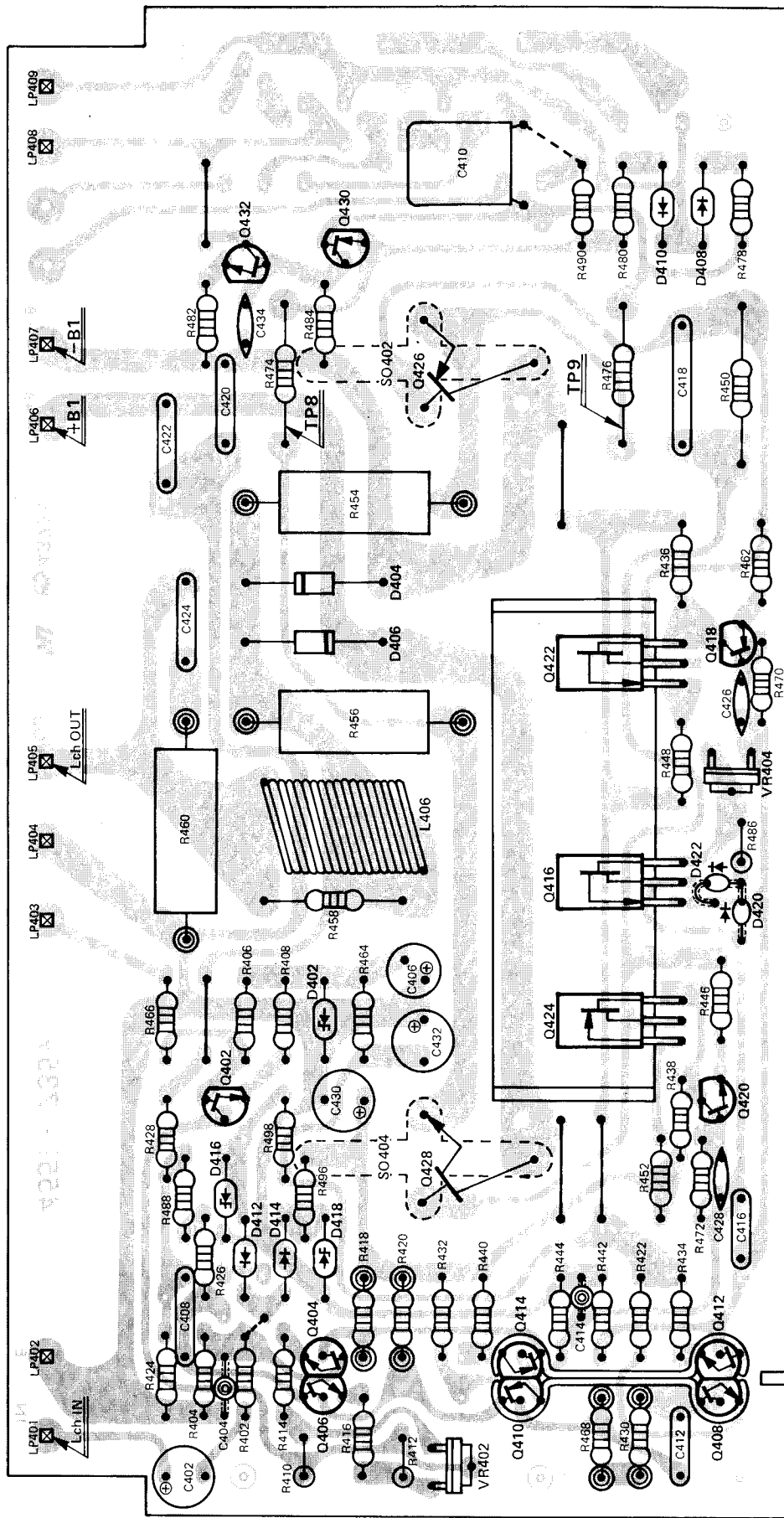
EQUALIZER AMP PC BOARD



EQUALIZER AMP PC BOARD

REF. NO.	H/K PART NO.	DESCRIPTION
CAPACITORS, ELECTROLYTIC		
C20, 21	31835888	330MF +50% -10% 50V
C22, 23	31835973	47MF +50% -10% 35V
C24, 25	31835974	330MF +50% -10% 35V
C701, 702	31835586	33MF $\pm$ 20% 6.3V Tantalum
C705, 706	31835587	330MF +50% -10% 6.3V
C713, 714	31835588	1000PF $\pm$ 5% 50V Mylar
TRANSISTORS		
Q2	43035624	2SD667A(C) Voltage Regulator
Q3	43035625	2SB647A(C) Voltage Regulator
Q4, 5	43035874	F. E. T., 2SK106(C) Current Regulator
Q701, 702, 705 706, 707, 708	43035592	2SC1775(F) Equalizer Amp.
Q703, 704	43032151	2SA872(E) Equalizer Amp
D10, 11	42035977	Zener Diode, RD27EB 27V $\pm$ 1.9V
MISCELLANEOUS		
SW2	24036035	Rotary Slide Switch, Function Selector

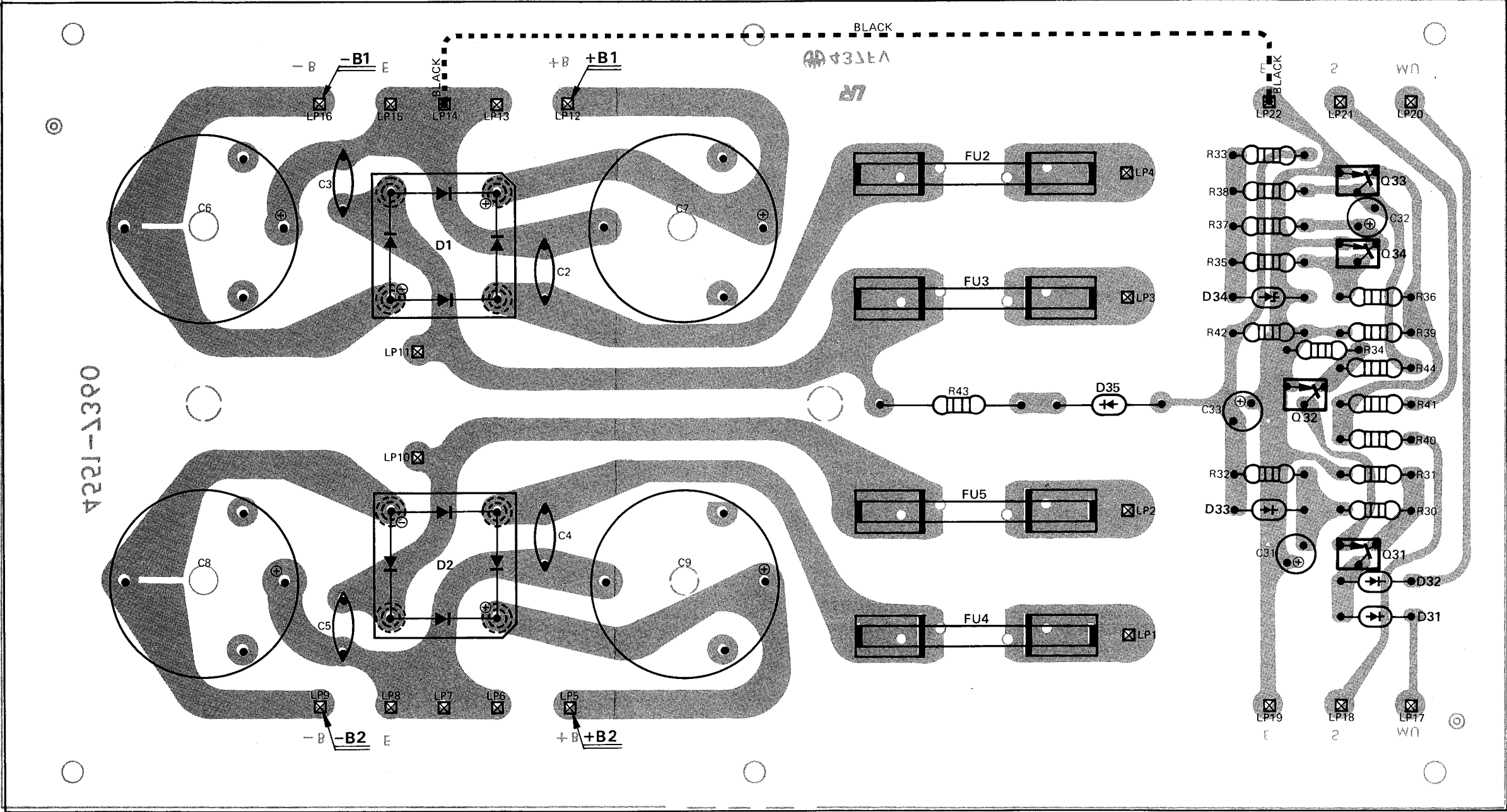
L CH MAIN AMP PC BOARD



L CH MAIN AMP PC BOARD

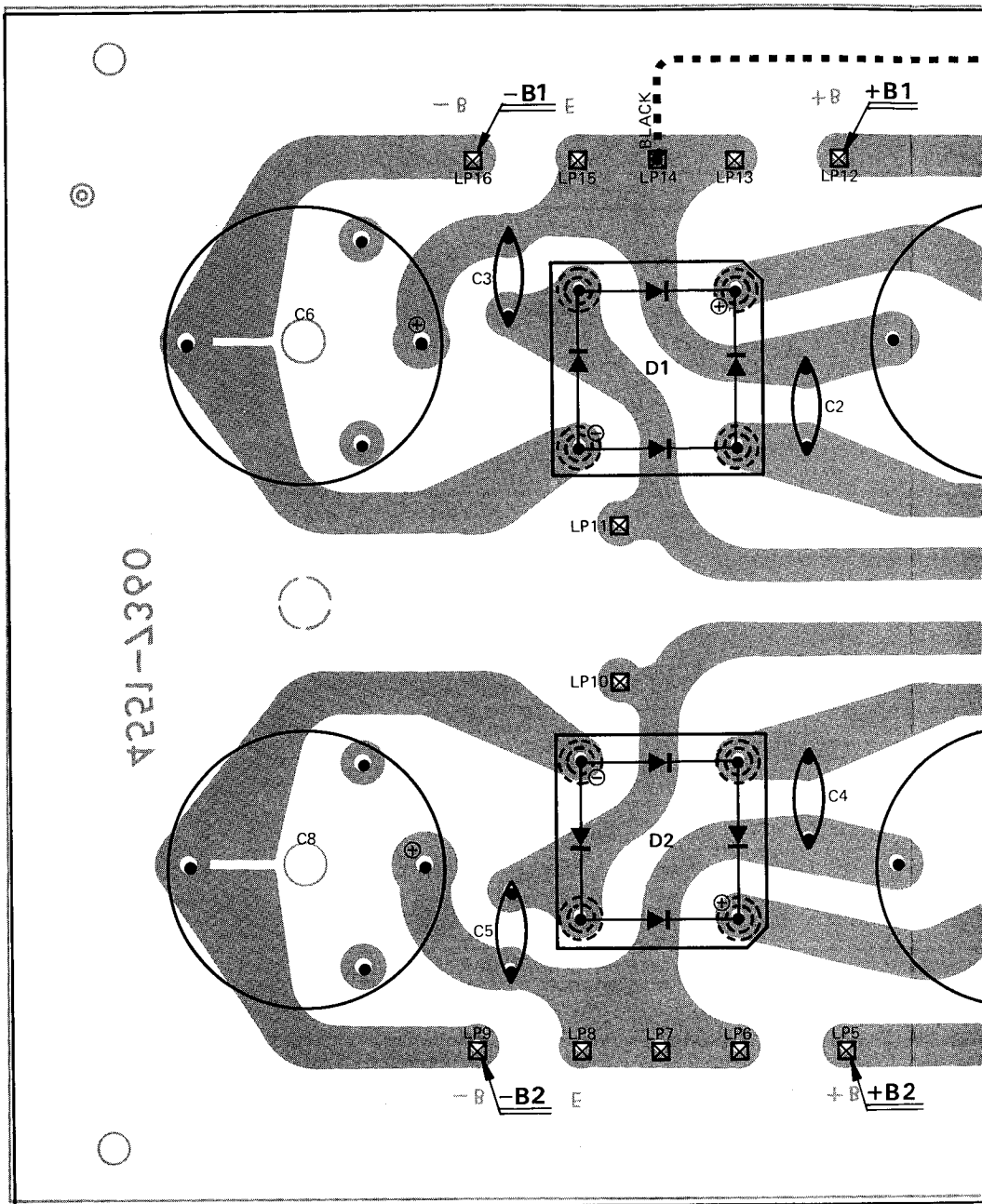
REF. NO.	H/K PART NO.	DESCRIPTION
RESISTORS		
VR402	23535987	Variable Resistor, 100 ohm
VR404	23535988	Variable Resistor, 2.2 k ohm
CAPACITORS, ELECTROLYTIC		
C402	31835982	220MF +50% -10% 6.3V
C406	31835572	22MF +50% -10% 16V
C430, 432	31835985	47MF +50% -10% 50V
TRANSISTORS		
Q402, 404, 406	43035592	2SC1775(F) Current Regulator, Differential Amp.
Q408, 412	43035989	2SD666A(C) } Pre-Driver
Q410, 414	43035990	
Q416	43035991	2SD415(Q) Bias Stabilization
Q418	43035625	2SB647A(C) } Driver
Q422	43035992	
Q420	43035624	2SD667A(C) } Driver
Q424	43035993	
Q426	43035994	2SB655A(B) Power Output
Q428	43035995	2SD675A(B) Power Output
Q430	43032151	2SA872(E) Overload Protection Circuit
Q432	43035592	2SC1775(F) Overload Protection Circuit
D402	42032757	Zener Diode, RD15EB 14.7 $\pm$ 0.9V
D404, 406	41631295	Diode, S1B01-02
D408, 410	41035628	Diode, 1SS81
D412, 414	41028593	Diode, 1S2076
D416, 418	42035972	Zener Diode, RD5R1EB 5.1V $\pm$ 0.3V
D420, 422	41631466	Variable, MV11Y
COIL		
L406	12035996	RF Choke

RECTIFIER PC BOARD (A)



REF. NO.	H/K PART NO.	DESCRIPTION
CAPACITORS, ELECTROLYTIC		
C6, 7, 8, 9	31835970	10000MF $\pm$ 20% 50V
C31, 32	31835941	33MF +50% -10% 10V
C33	31835572	22MF +50% -10% 16V
TRANSISTORS		
Q31	43031312	2SA844(E) Audio Muting
Q32, 33, 34	43031312	2SA844(E) Overload Protection Circuit
D1, 2	41035971	Bridge Silicon Diode, S5VB20
D31, 32, 33, 35	41035628	Diode, 1SS81
D34	42035972	Zener Diode, RD5R1EB 5.1V $\pm$ 0.3V
FUSE		
FU2, 3, 4, 5	45035559	4A 125V

RECTIFIER PC BOARD (A)



REF. NO.

H/K PART NO.

CAPACITORS, ELECTROLYTIC

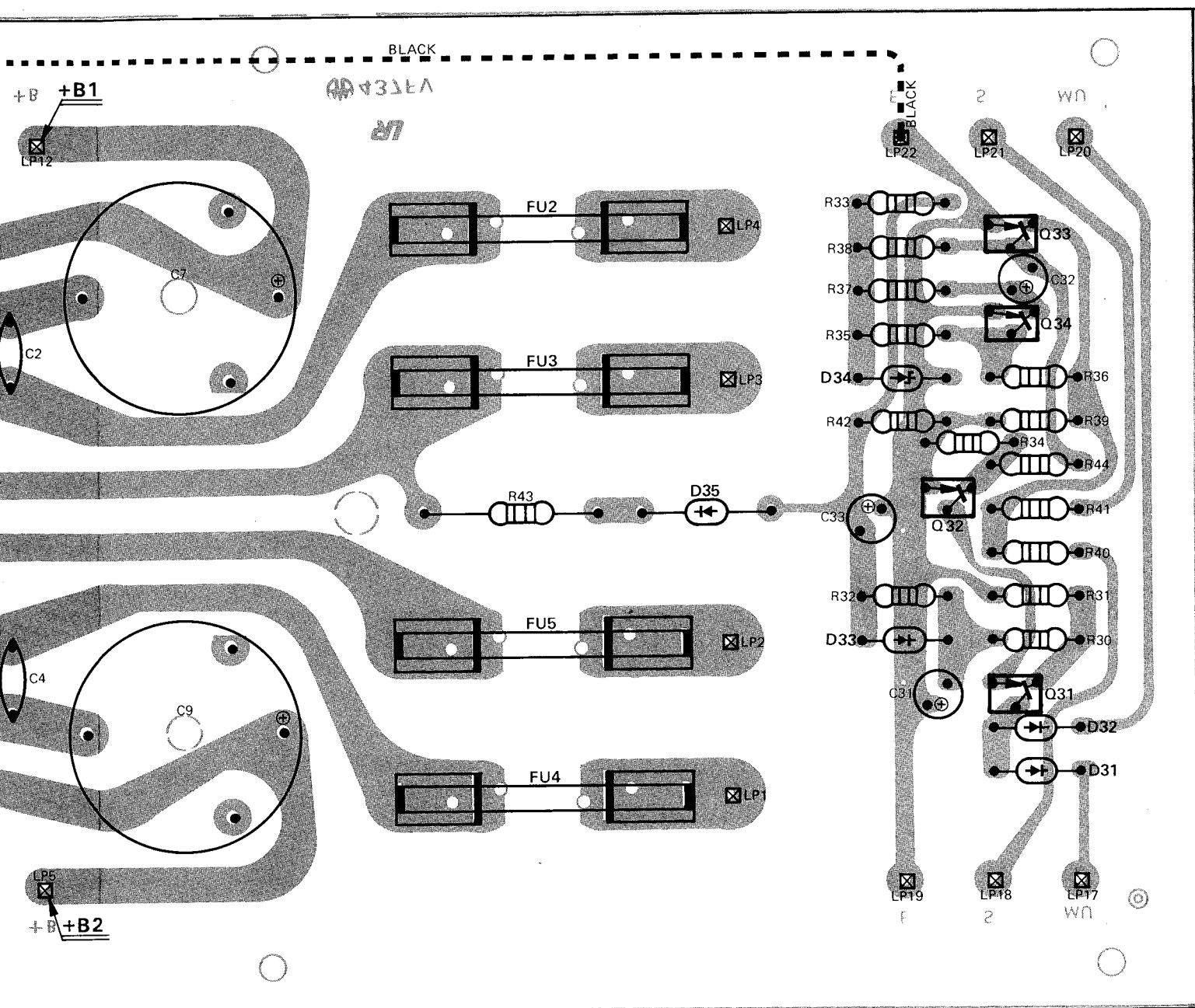
C6, 7, 8, 9	31835970
C31, 32	31835941
C33	31835572

TRANSISTORS

Q31	43031312
Q32, 33, 34	43031312
D1, 2	41035971
D31, 32, 33, 35	41035628
D34	42035972

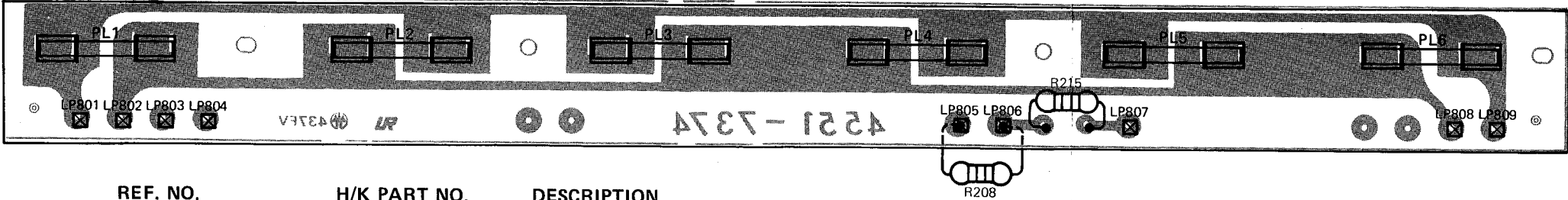
FUSE

FU2, 3, 4, 5	45035559
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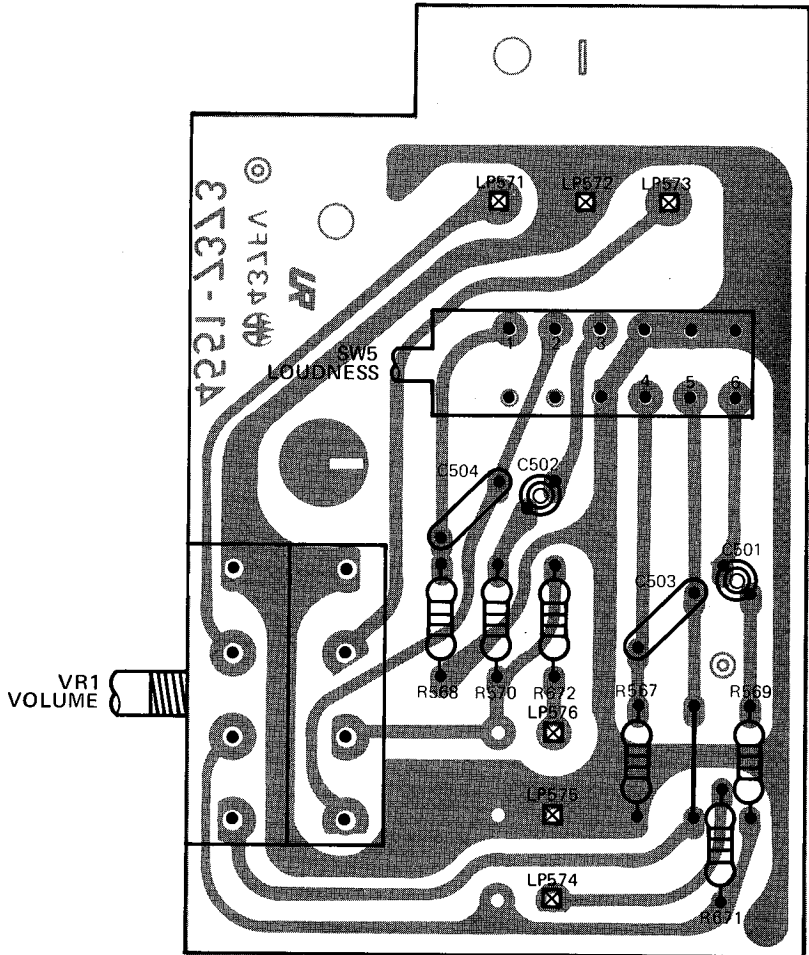
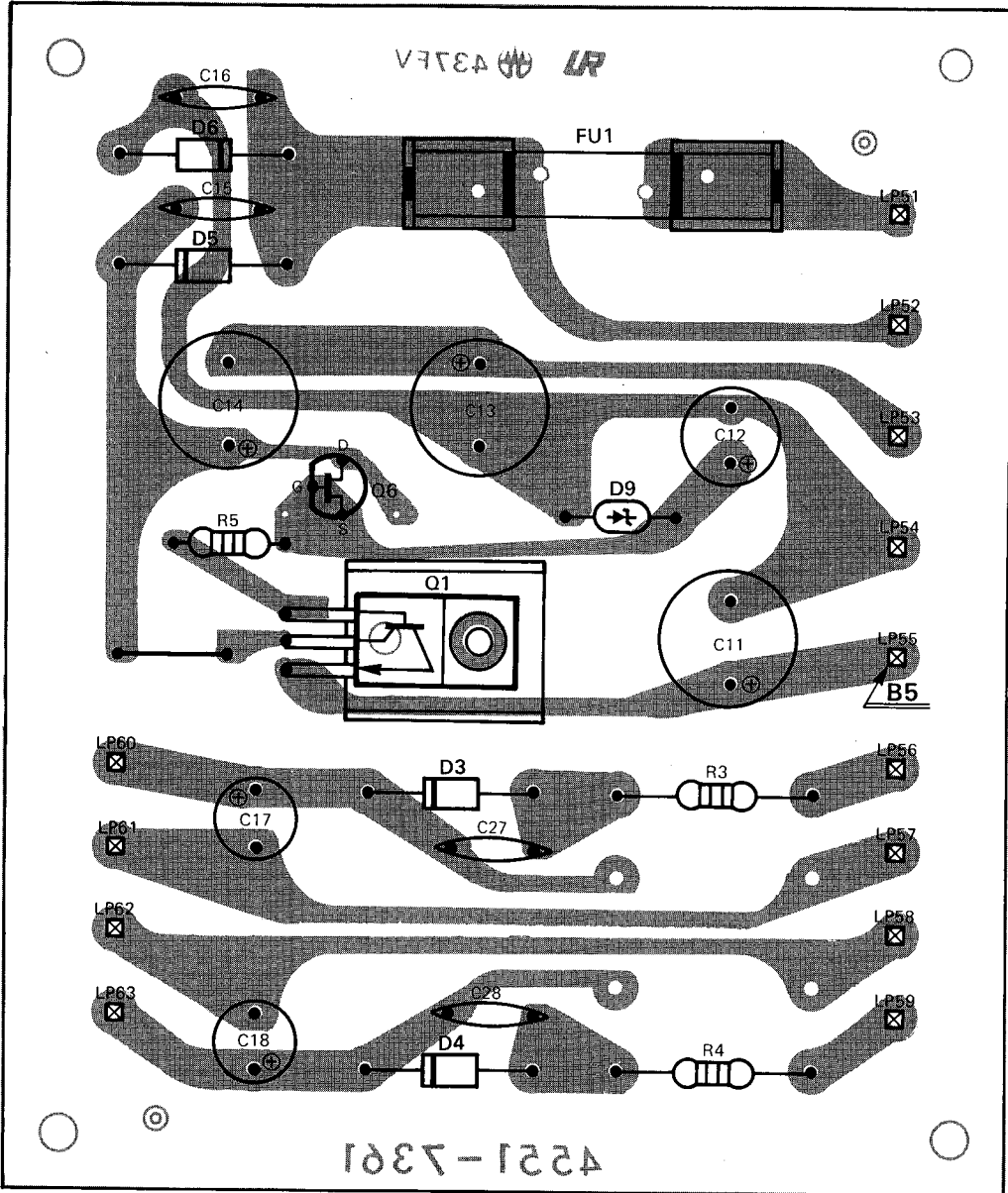
K PART NO.	DESCRIPTION
835970	10000MF $\pm$ 20% 50V
835941	33MF +50% -10% 10V
835572	22MF +50% -10% 16V
031312	2SA844(E) Audio Muting
031312	2SA844(E) Overload Protection Circuit
035971	Bridge Silicon Diode, S5VB20
035628	Diode, 1SS81
035972	Zener Diode, RD5R1EB 5.1V $\pm$ 0.3V
035559	4A 125V

DIAL ILLUMINATOR PC BOARD



REF. NO.	H/K PART NO.	DESCRIPTION
PL1, 2, 3, 4 5, 6	46529502	Dial Illuminator Lamp, 8V 300mA

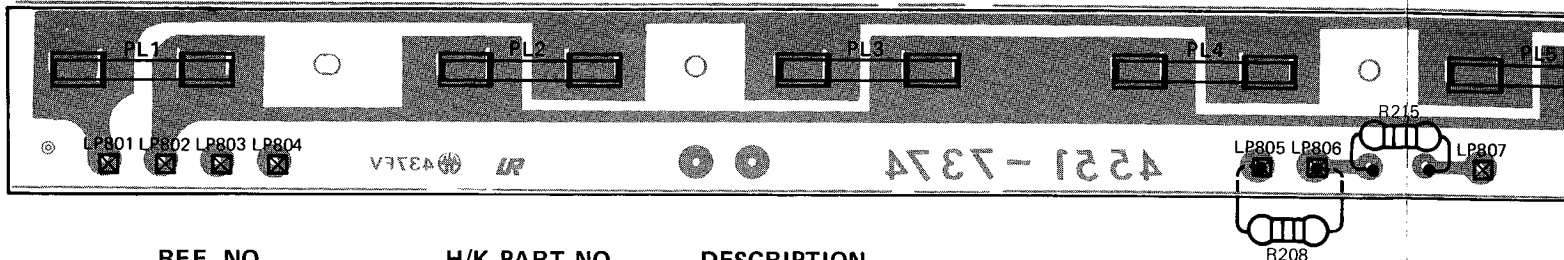
RECTIFIER PC BOARD (B)



REF. NO.	H/K PART NO.	DESCRIPTION
VR1	23536036	Variable Resistor, 50 k ohm, Volume Control
SW5	25036037	Push Switch, Loudness

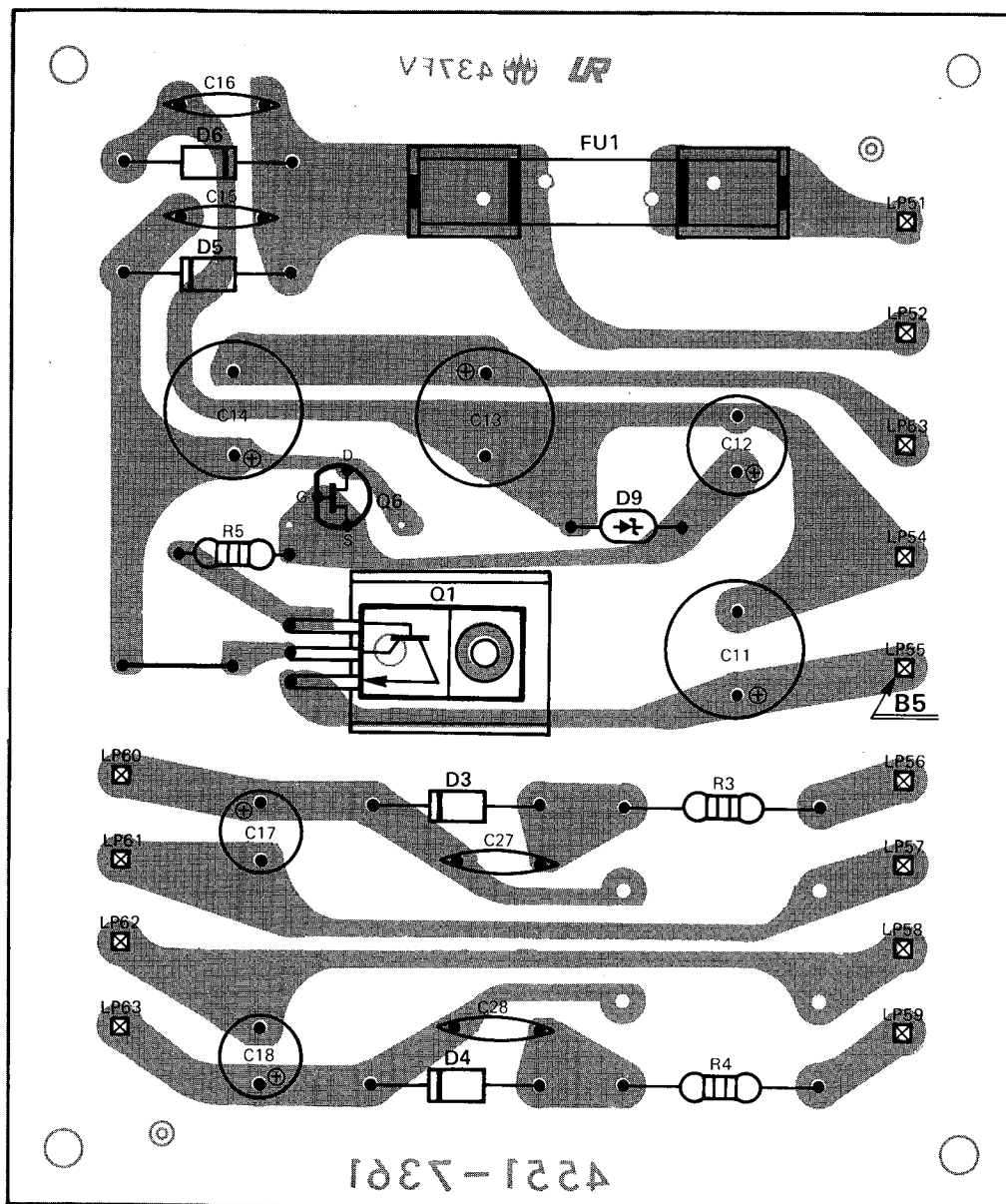
REF. NO.	H/K PART NO.	DESCRIPTION
CAPACITORS, ELECTROLYTIC		
C11	31835618	1000MF +50% -10% 16V
C12	31835720	470MF +50% -10% 16V
C13, 14	31836015	2200MF +50% -10% 16V
C17, 18	31835985	47MF +50% -10% 50V
TRANSISTOR		
Q1	43035961	2SC1419(C) Voltage Regulator
Q6	43035874	F. E. T., 2SK106(C) Current Regulator
D3, 4, 5, 6	41631295	Diode, SIB01-02
D9	42032757	Zener Diode, RD15EB 14.7V ± 0.9V
FUSE		
FU1	45035558	3A 125V

DIAL ILLUMINATOR PC BOARD



REF. NO.	H/K PART NO.	DESCRIPTION
PL1, 2, 3, 4 5, 6	46529502	Dial Illuminator Lamp, 8V 300mA

RECTIFIER PC BOARD (B)



REF.

CAPA

C11

C12

C13, 1

C17, 1

TRAN

Q1

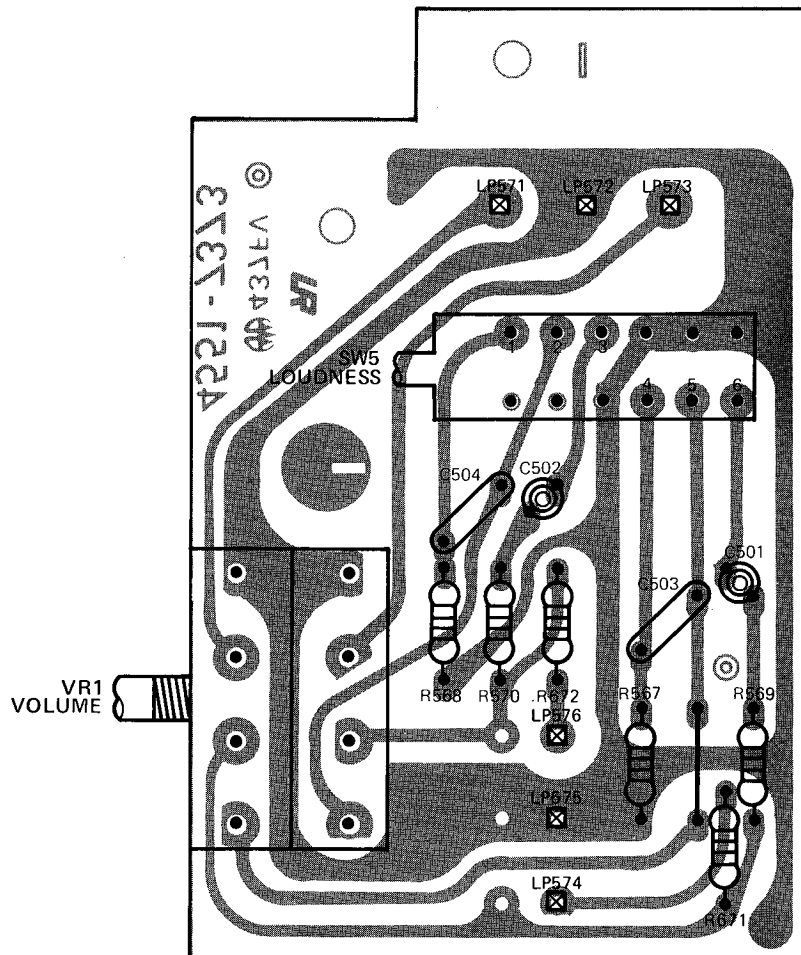
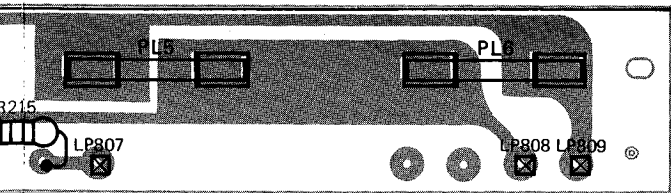
Q6

D3, 4,

D9

FUSE

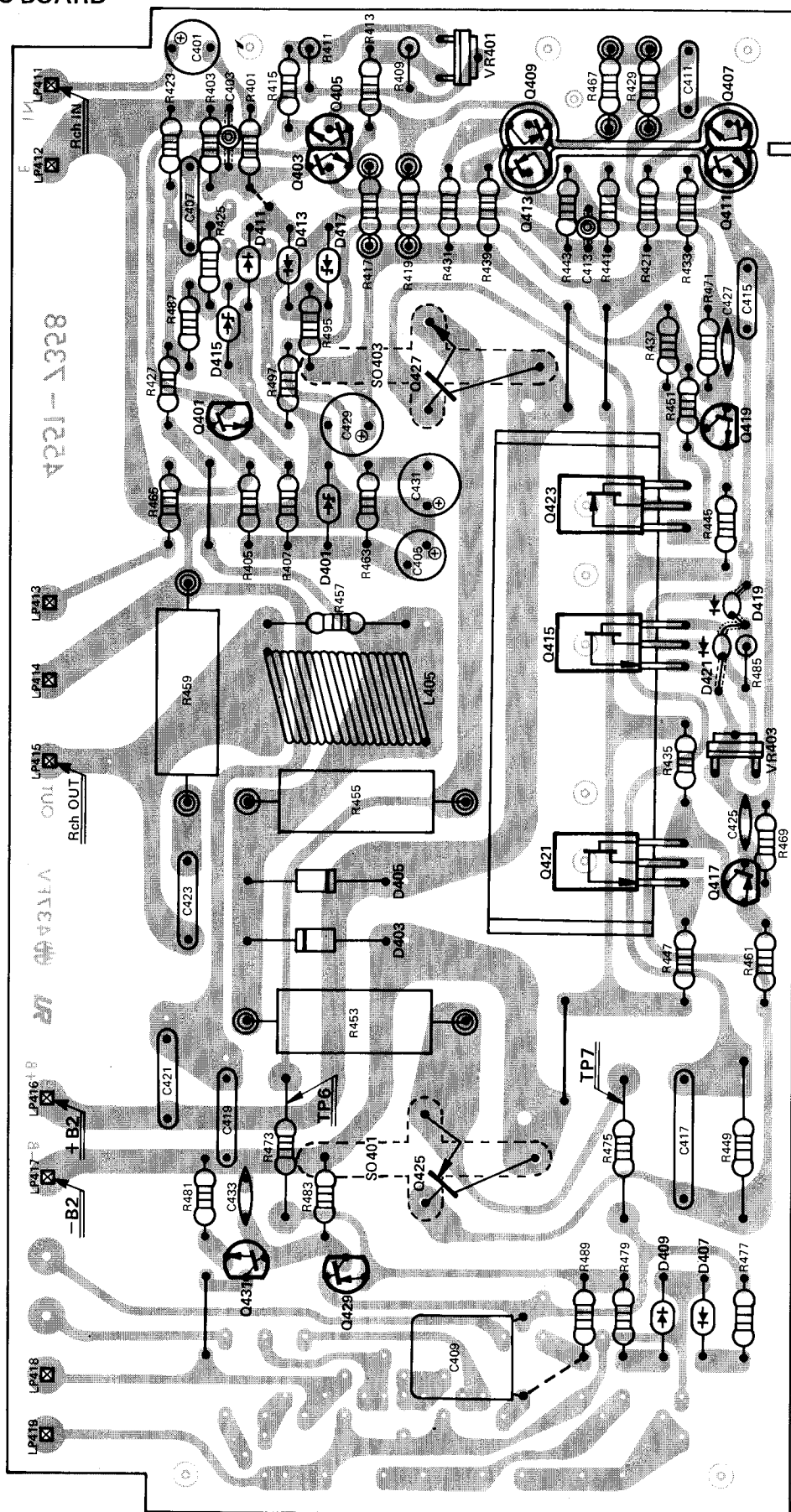
FU1



REF. NO.	H/K PART NO.	DESCRIPTION
RESISTORS		
VR1	23536036	Variable Resistor, 50 k ohm, Volume Control
MISCELLANEOUS		
SW5	25036037	Push Switch, Loudness

REF. NO.	H/K PART NO.	DESCRIPTION
CAPACITORS, ELECTROLYTIC		
C11	31835618	1000MF +50% -10% 16V
C12	31835720	470MF +50% -10% 16V
C13, 14	31836015	2200MF +50% -10% 16V
C17, 18	31835985	47MF +50% -10% 50V
TRANSISTOR		
Q1	43035961	2SC1419(C) Voltage Regulator
Q6	43035874	F. E. T., 2SK106(C) Current Regulator
D3, 4, 5, 6	41631295	Diode, SIB01-02
D9	42032757	Zener Diode, RD15EB 14.7V $\pm$ 0.9V
FUSE		
FU1	45035558	3A 125V

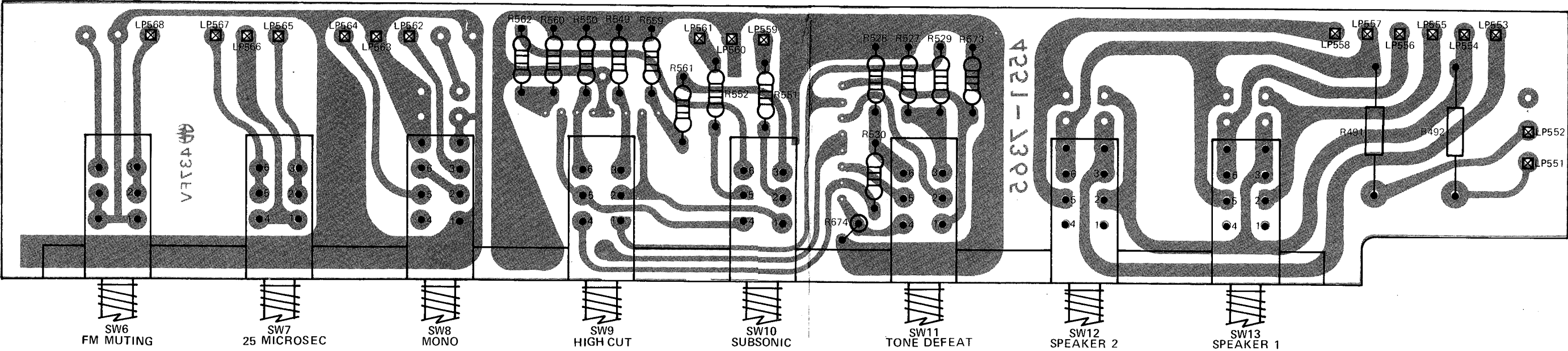
R CH MAIN AMP PC BOARD



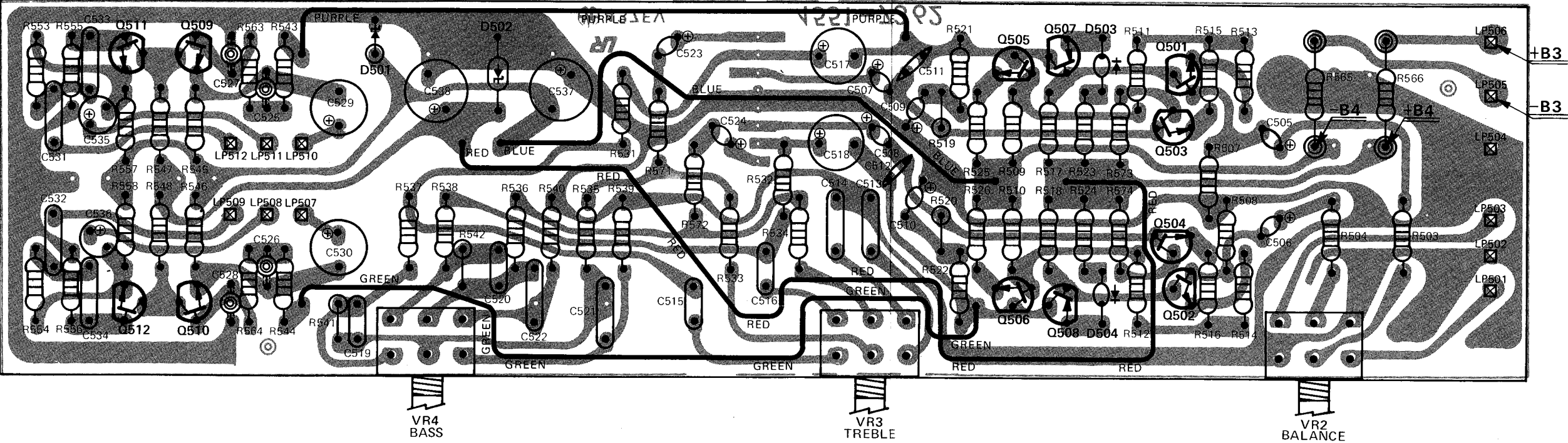
R CH MAIN AMP PC BOARD

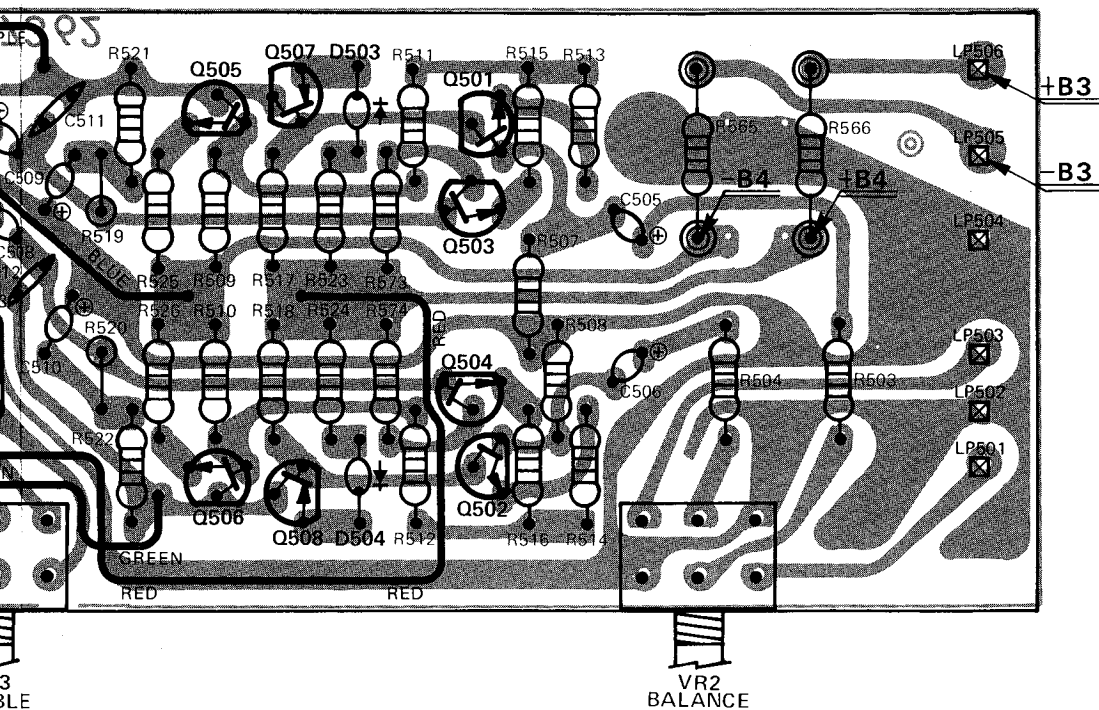
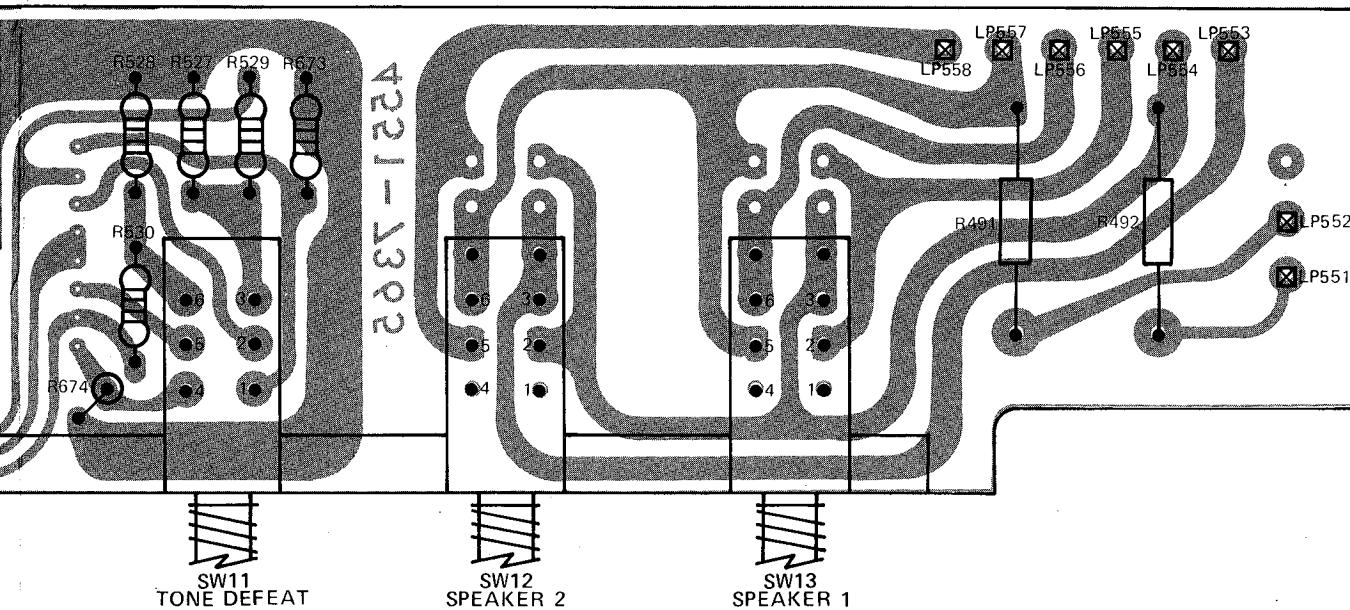
REF. NO.	H/K PART NO.	DESCRIPTION
RESISTORS		
VR401	23535987	Variable Resistor, 100 ohm
VR403	23535988	Variable Resistor, 2.2 k ohm
CAPACITORS, ELECTROLYTIC		
C401	31835982	220MF +50% -10% 6.3V
C405	31835572	22MF +50% -10% 16V
C429, 431	31835985	47MF +50% -10% 50V
TRANSISTOR		
Q401, 403, 405	43035592	2SC1775(F) Current Regulator, Differential Amp.
Q407, 411	43035989	2SD666A(C)
Q409, 413	43035990	2SB646A(C)
Q415	43035991	2SD415(Q) Bias Stabilization
Q417	43035625	2SB647A(C)
Q421	43035992	2SD669(C)
Q419	43035624	2SD667A(C)
Q423	43035993	2SB649(C)
Q425	43035994	2SB655A(B) Power Output
Q427	43035995	2SD675A(B) Power Output
Q429	43032151	2SA872(E) Overload Protection Circuit
Q431	43035592	2SC1775(F) Overload Protection Circuit
D401	42032757	Zener Diode, RD15EB 14.7V $\pm$ 0.9V
D403, 405	41631295	Diode, SIB01-02
D407, 409	41035628	Diode, 1SS81
D411, 413	41028593	Diode, 1S2076
D415, 417	42035972	Zener Diode, RD5R1EB 5.1V $\pm$ 0.3V
D419, 421	41631466	Variable MV11Y
COIL		
L405	12035996	RF Choke

MODE/CONTROL SWITCH PC BOARD



PRE/TONE CONTROL AMP PC BOARD





MODE/CONTROL SWITCH PC BOARD

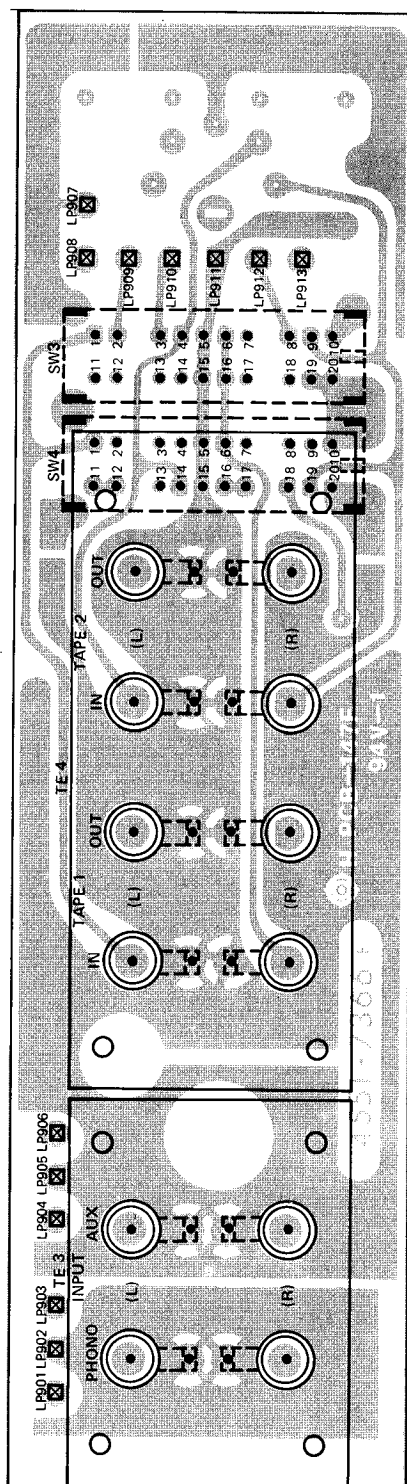
REF. NO.	H/K PART NO.	DESCRIPTION
MISCELLANEOUS		
SW6, 7, 8, 9, 10 11, 12, 13	25036038	Push Switch, FM Muting/25 Microsec/ Mono-Stereo/High Cut/Subsonic/Tone Defeat/ Speaker 2/Speaker 1

PRE/TONE CONTROL AMP PC BOARD

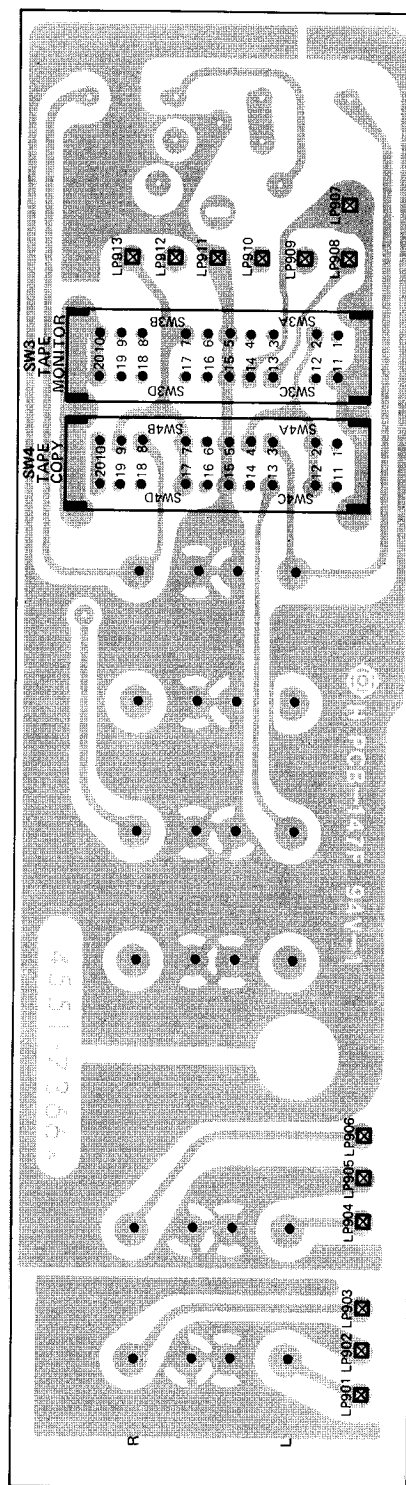
REF. NO.	H/K PART NO.	DESCRIPTION
RESISTORS		
VR2	23535979	Variable Resistor, 100 k ohm, Balance Control
VR3, 4	22035653	Variable Resistor, 100 k ohm, Treble and Bass Control
CAPACITORS, ELECTROLYTIC		
C505, 506, 507 508	31835583	10MF $\pm$ 20% 6.3V Tantalum
C509, 510	30736039	3.3MF $\pm$ 20% 16V Tantalum
C517, 518	31835982	220MF +50% -10% 6.3V
C523, 524	31835667	2.2MF $\pm$ 20% 16V Tantalum
C529, 530	31835619	100MF +50% -10% 10V
C535, 536	31835572	22MF +50% -10% 16V
C537, 538	31835720	470MF +50% -10% 16V
TRANSISTORS		
Q501, 503, 505	43035592	2SC1775(F) } Pre/Tone Control Amp. 2SA872(E) }
Q507	43032151	
Q502, 504, 506	43035592	2SC1775(F) } Pre/Tone Control Amp. 2SA872(E) }
Q508	43032151	
Q509, 510, 511 512	43035592	2SC1775(F) High-Cut Filter, Subsonic Filter
D501, 502	43032757	Zener Diode, RD15EB 14.7V $\pm$ 0.9V
D503, 504	38128541	Varistor, MV11

INPUT/OUTPUT JACK PC BOARD

SIDE B



SIDE A



REF. NO.

H/K PART NO.

DESCRIPTION

TE3

65435670

4-Pin Jack, Phono./Aux. Input

TE4

65433652

8-Pin Jack, Tape 1 and Tape 2 Input/
Output

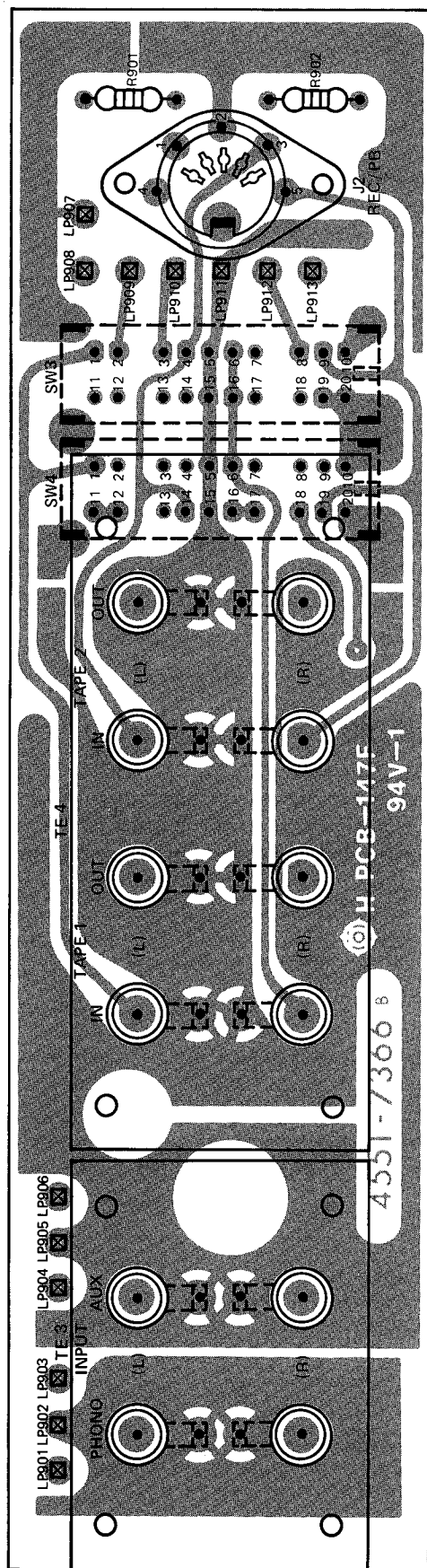
SW3, 4

26536040

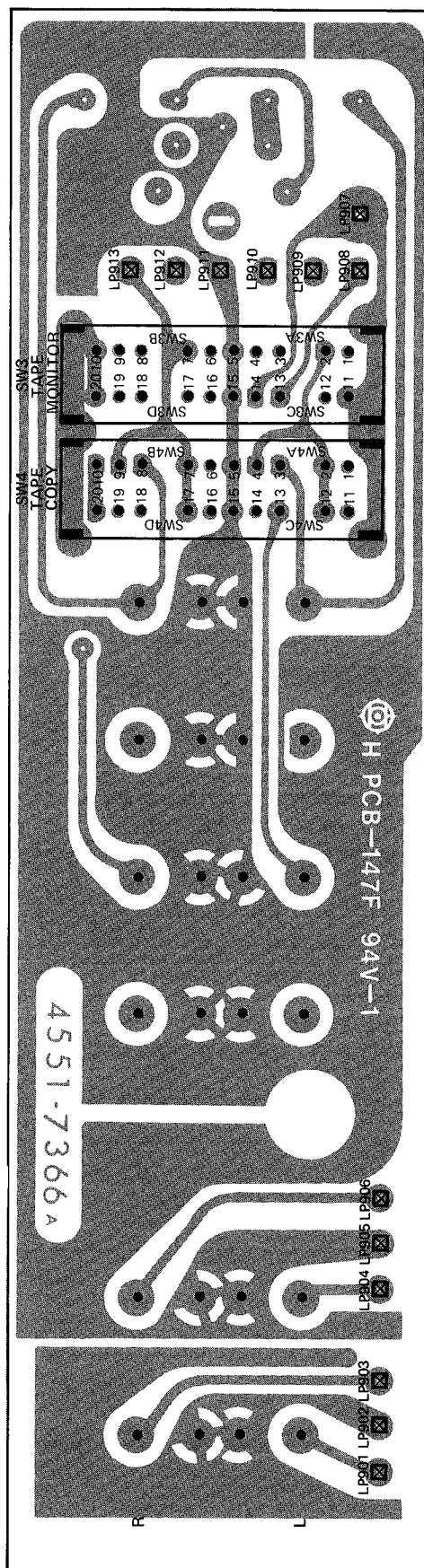
Remote Slide Switch, Tape Monitor/Tape
Copy

INPUT/OUTPUT JACK PC BOARD – MULTI VOLTAGE

SIDE B



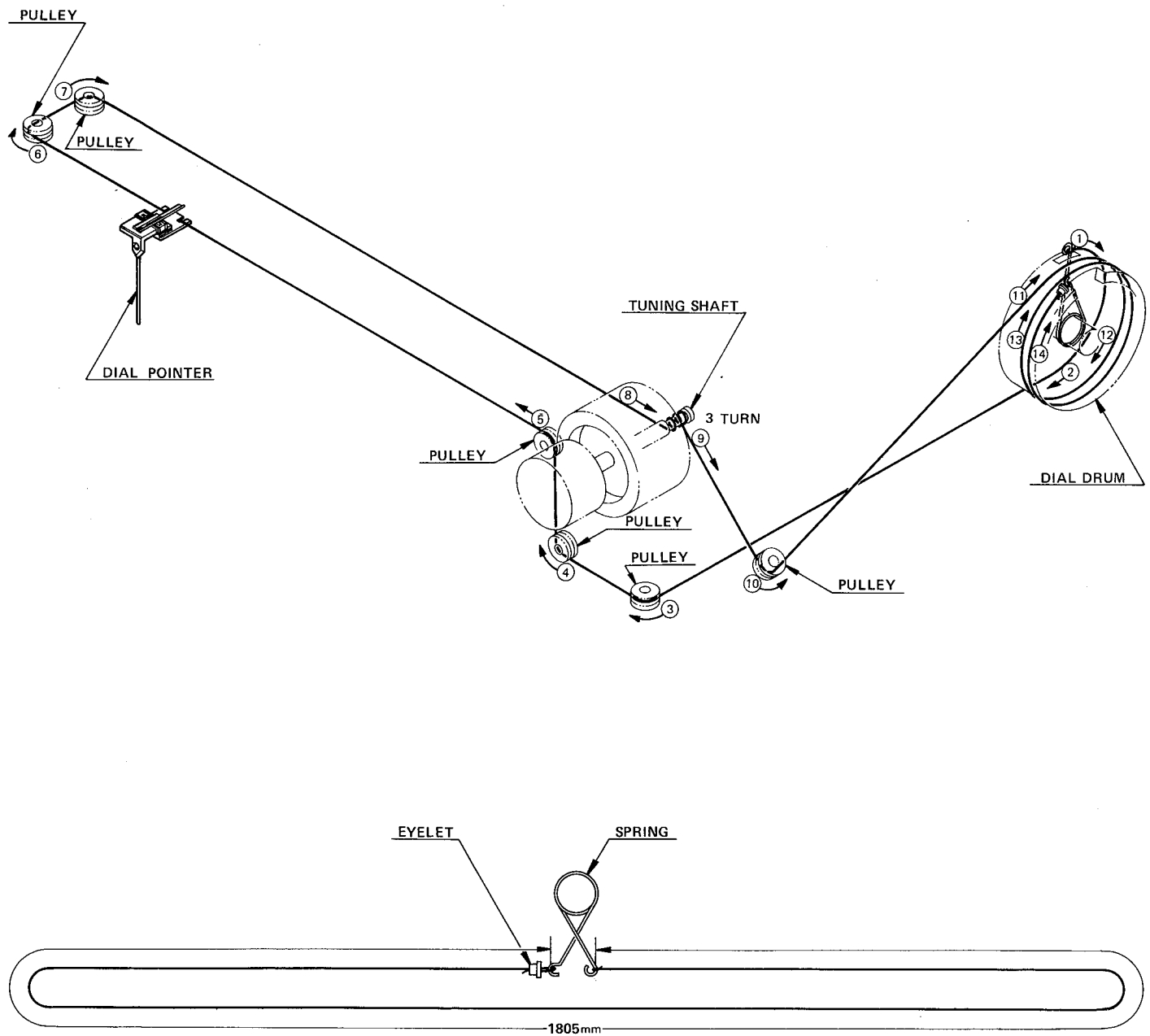
SIDE A



CHASSIS PARTS LIST

REF. NO.	H/K PART NO.	DESCRIPTION
GENERAL UNIT		
101	00235998	Clear Panel Assembly
102	00235999	Front Panel Assembly
104	00236000	Knob Assembly, Tuning
105	00236001	Dial Pointer Assembly (includes: In-Tune Indicator (D202))
113	60136002	Cabinet Back
114	60136003	Cabinet Top
115	62035544	Feet, Cabinet Bottom (X4)
117	61036004	Dial Panel
120	64236005	Bracket, Front Center Rail
121	64336006	Bracket, Slit Cover for Center Rail
122	64336007	Bracket, Slit Cover for Center Rail
123	64336008	Bracket, Front Left Side
124	64336009	Bracket, Front Right Side
146	63235758	Knob, Volume
154	63235760	Knob, Balance/Treble/Bass/Function (X4)
158	63235552	Knob, Tape Monitor/Tape Copy (X2)
161	63233663	Push Button, Power
305	60435762	Tuning Shaft
312	60936010	Dial Drum
ELECTRICAL		
T1	10136011	Power Transformer
SW1	25035554	Push Switch, Power
SW103, 104	26536012	Remote Switch, Tape Monitor/Tape Copy
J1	65432119	Headphones Jack
ME1	12535555	Tuning Meter
SO1	65436013	External AC Socket, Unswitched/Switched
TE1	65129518	FM/AM External Antenna Terminal
TE2	65436014	Lug Terminal
TE5, 6	65434823A	Speaker Output Terminal
PL7	46532121	Lamp, Loudness Button Illuminator 8V 60mA
VR5	21531367	Variable Resistor, 50 k ohm, FM Muting Level Control
D7, 8	46735560	Light Emitting Diode, SLP132B Power Indicator
D9	46735560	Light Emitting Diode, SLP132B Tape Monitor Indicator
D202	46735650	Light Emitting Diode, SG206D In-Tune Indicator
D301	46735561	Light Emitting Diode, GL4AR2 Stereo Indicator
L1	12032107	Coil, FM RF Balun
L251	20535562	AM Ferrite Bar Antenna
MULTI VOLTAGE RECEIVER		
T1	10136041	Power Transformer
SW1	25035635	Push Switch, Power
FU1	45036042	Fuse, 3.15AT 250V
FU2, 3, 4, 5	45036043	Fuse, 4AT 250V
SW14	24035639	Power Source Voltage Selector
SW15	24531335	Slide Switch, Emphasis
FU6	45036043	Fuse, 4AT 250V
J2	65432127	5-Pin DIN Jack, REC/PB

DIAL CORD STRINGING



START STRINGING WITH VARIABLE CAPACITOR IN CLOSED POSITION.

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.