

ERIC NELSON

**The Harman Kardon
Model hk 505**

Integrated 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.

ALIGNMENT PROCEDURES

POWER AMPLIFIER IDLING ADJUSTMENT

INSTRUMENT 1. D. C. V. T. V. M.

NOTE 1. Set volume control to minimum position.
2. 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 TP1 (+) and TP2 (-)	VR403	33 mV \pm 1.6 mV
2	D. C. V. T. V. M. to TP3(+) and TP4 (-)	VR404	Same as above

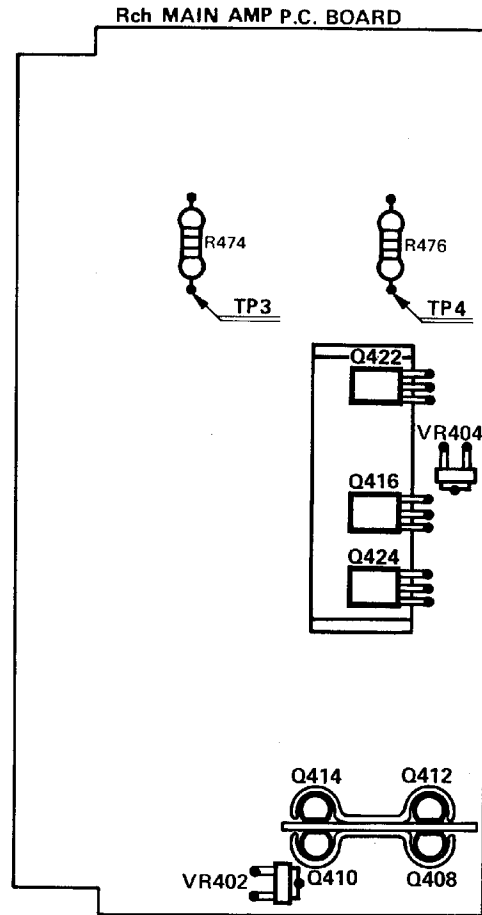
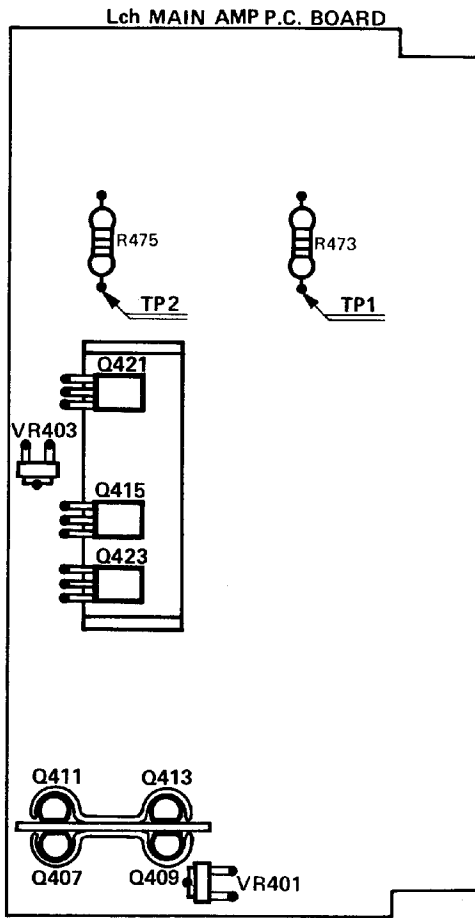
OUTPUT DC VOLTAGE ZERO ADJUSTMENT

INSTRUMENT 1. D. C. V. T. V. M.

NOTE 1. Set volume control to minimum position.
2. 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 L CH terminal of speaker system 1	VR401	0V \pm 20 mV
2	D. C. V. T. V. M. R CH terminal of speaker system 1	VR402	Same as above

ALIGNMENT POINTS



SCHEMATIC NOTES AND DIAGRAMS

1. All resistors are 1/4 watt, $\pm 5\%$, unless otherwise noted. Values are in ohms.
K = 1000 M = 1000 K.
2. All capacitance values are in MF unless noted otherwise. PF = MMF.
3. Function selector switch (SW2) is in PHONO position.

VOLTAGE CHART

AC120V
No Signal
Chassis Ground

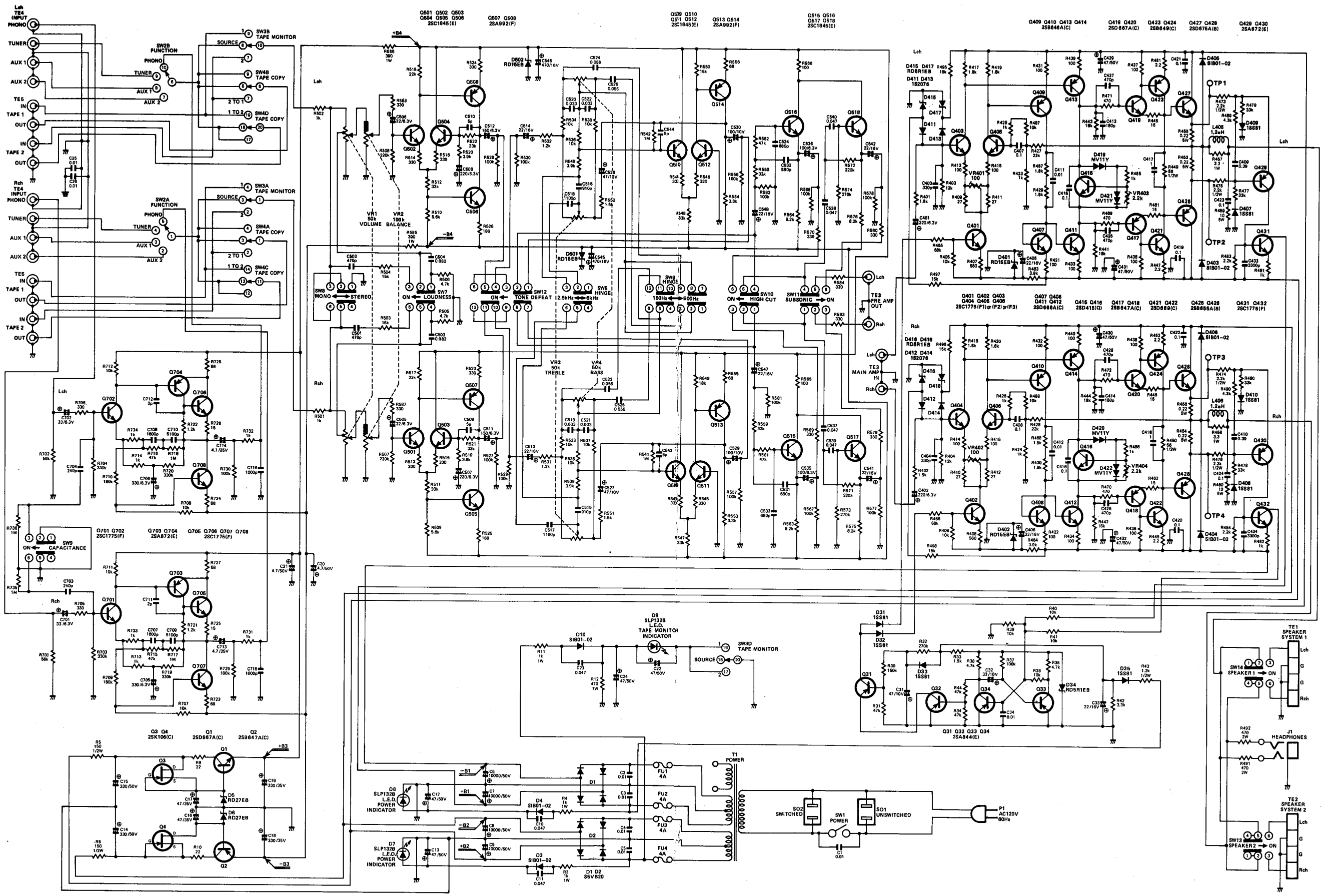
Volume Control at Minimum
Tone Controls at Mechanical Center

+B1 +44.80V	-B1 -44.80V
+B2 +44.80V	-B2 -44.80V
+B3 +27.20V	-B3 -27.20V
+B4 +13.80V	-B4 -13.80V

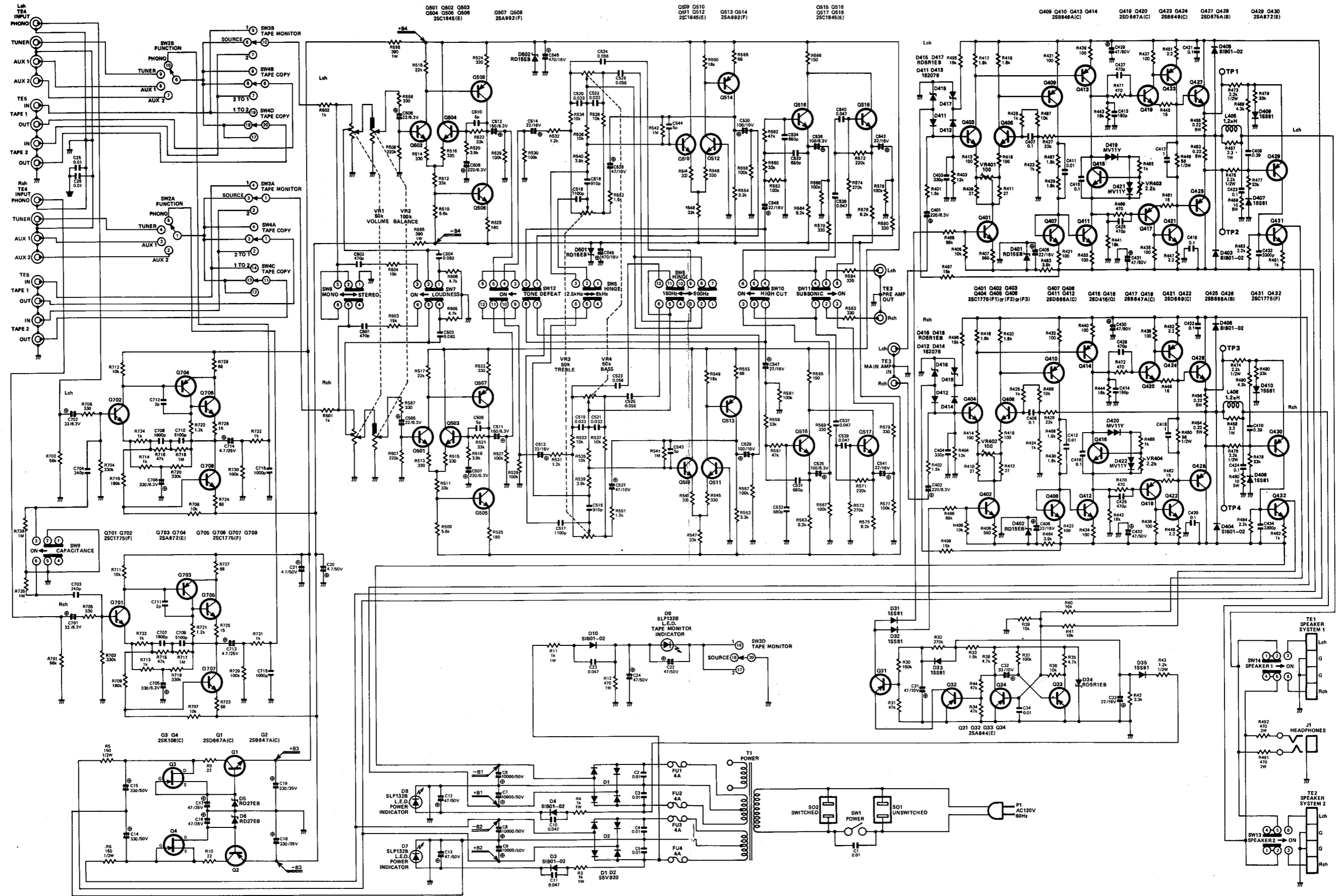
	BASE	EMITTER	COLLECTOR
Q1	+27.90V	+27.20V	+37.00V
Q2	-27.80V	-27.20V	-36.70V
Q31	- 0.67V	- 0.07V	- 0.17V
Q32	- 0.62V	0.0V	- 0.07V
Q33	- 0.55V	0.0V	- 0.07V
Q34	- 0.06V	0.0V	- 0.11V
Q401, 402	-12.38V	-13.01V	- 0.71V
Q403, 404	- 0.01V	- 0.60V	+43.30V
Q405, 406	- 0.01V	- 0.60V	+43.30V
Q407, 408	-43.70V	-44.20V	-43.70V
Q409, 410	+43.30V	+43.80V	-11.50V
Q411, 412	-43.70V	-43.90V	- 1.28V
Q413, 414	+43.30V	+44.00V	+ 1.28V
Q415, 416	- 0.67V	- 1.28V	+ 1.28V
Q417, 418	- 1.26V	- 0.71V	-44.10V
Q419, 420	+ 1.20V	+ 0.69V	+44.10V
Q421, 422	-44.10V	-44.20V	- 0.61V
Q423, 424	+44.10V	+44.20V	+ 0.61V
Q425, 426	- 0.61V	- 0.02V	-44.80V
Q427, 428	+ 0.61V	+ 0.02V	+44.80V
Q429, 430	- 0.01V	+ 0.02V	-44.80V
Q431, 432	-44.80V	-44.80V	- 0.05V
Q501, 502	- 0.06V	- 0.6V	+10.92V
Q503, 504	- 0.04V	- 0.6V	+13.80V
Q505, 506	-12.05V	-12.52V	- 0.03V
Q507, 508	+10.92V	+11.56V	- 0.03V
Q509, 510	+ 0.13V	- 0.43V	+13.80V
Q511, 512	0.0V	- 0.52V	+12.88V
Q513, 514	+12.88V	+13.79V	+ 0.67V
Q515, 516	- 0.44V	- 1.04V	+13.50V
Q517, 518	- 0.65V	- 1.25V	+13.50V
Q701, 702	- 0.05V	- 0.62V	+25.87V
Q703, 704	+25.87V	+26.57V	+ 1.67V
Q705, 706	+ 1.67V	+ 1.13V	+26.57V
Q707, 708	-25.87V	-26.49V	+ 1.13V

	GATE	SOURCE	DRAIN
Q3	+27.90V	+27.90V	+38.10V
Q4	-37.80V	-37.80V	-27.80V

SCHEMATIC DIAGRAM

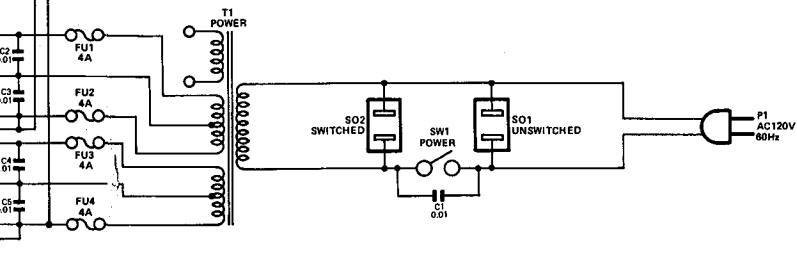
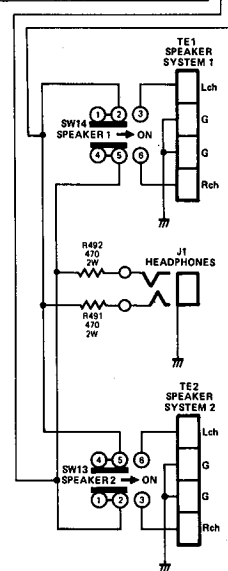
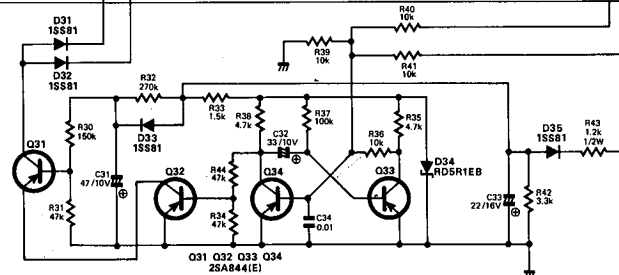
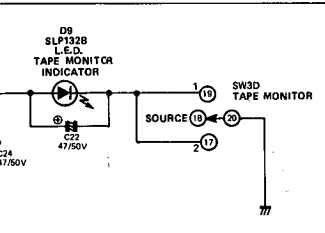
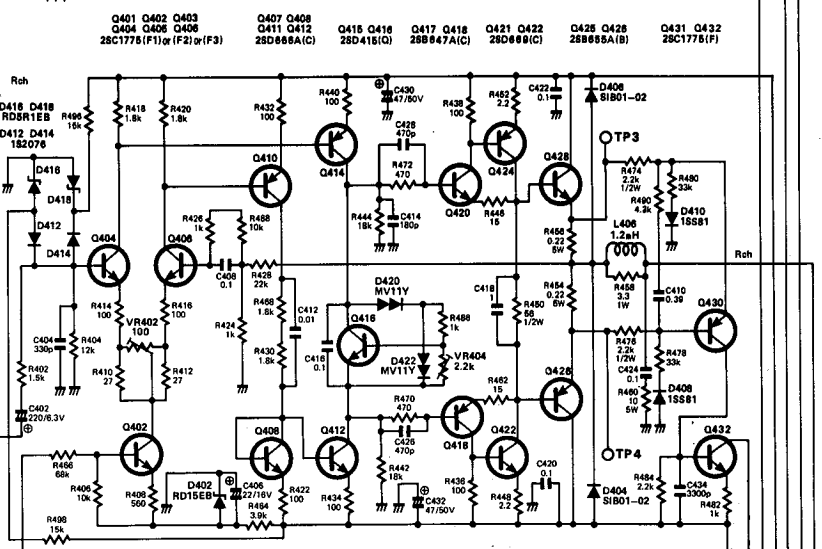
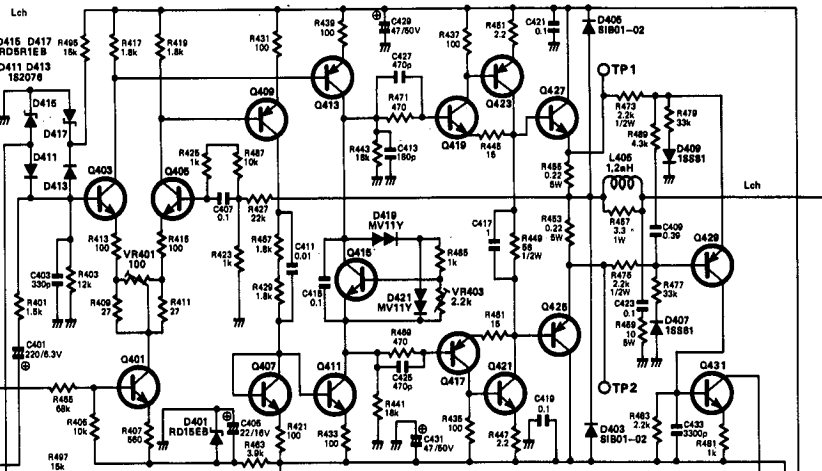
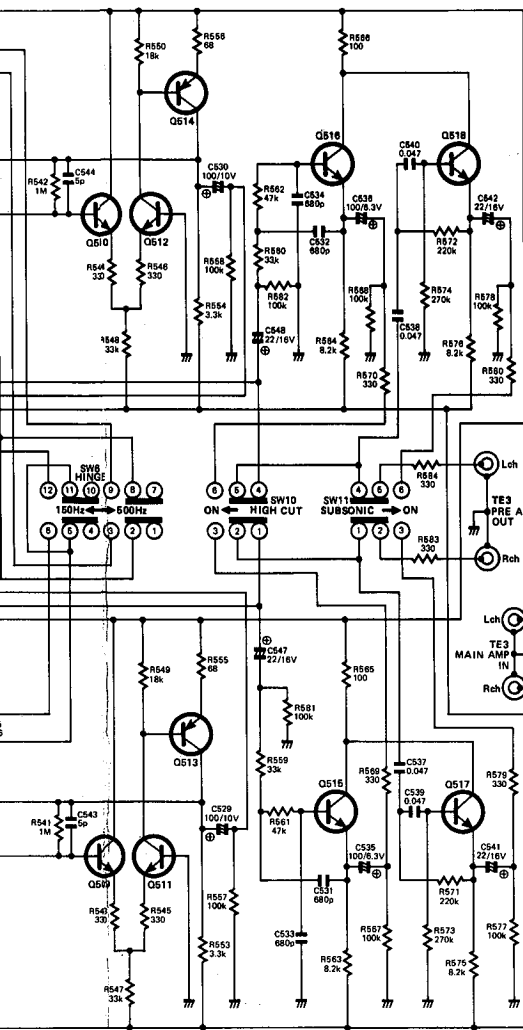


SCHEMATIC DIAGRAM

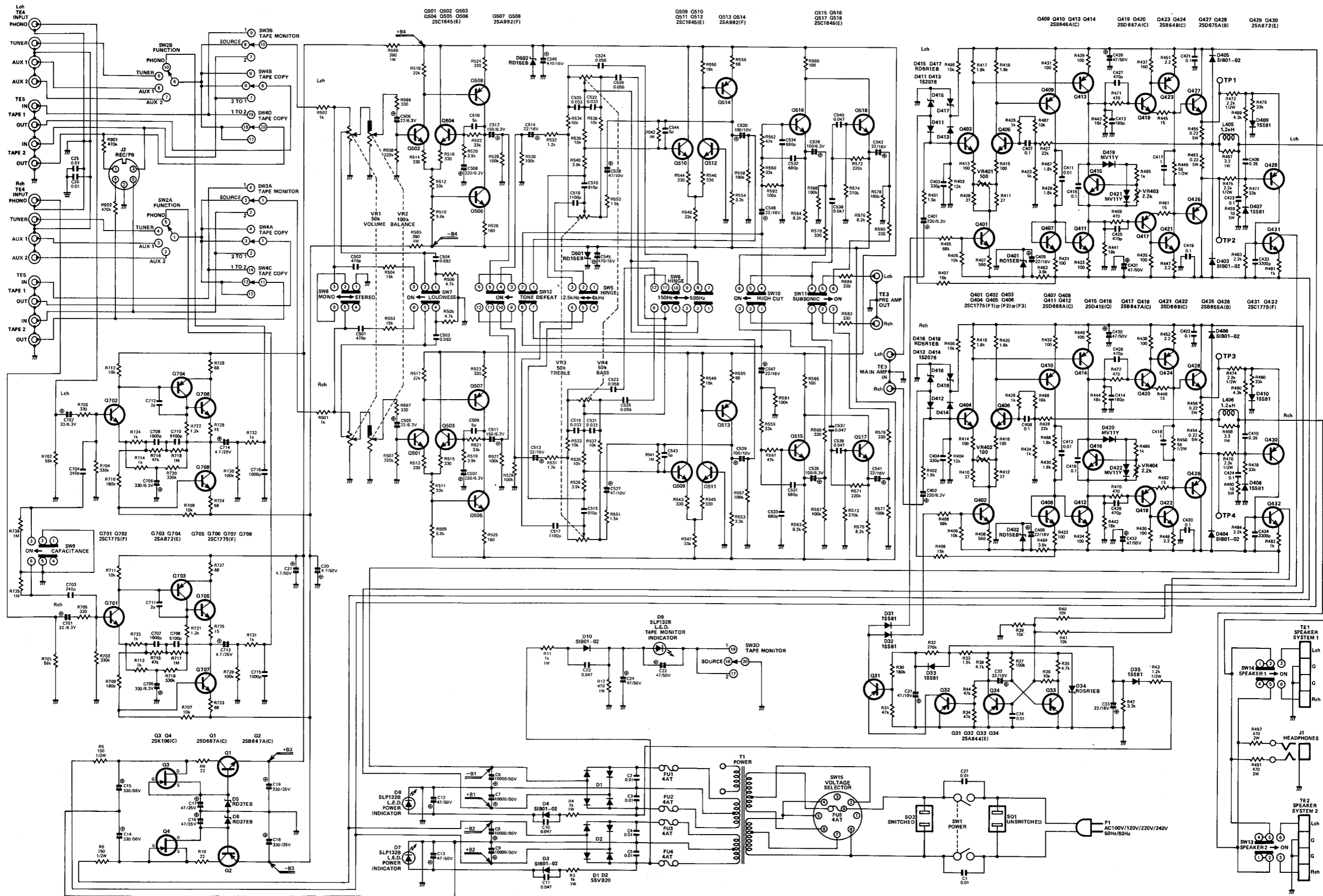


Q509 Q510 Q511 Q512 2S1845(E)
 Q513 Q514 2SA992(F)
 Q515 Q516 Q517 Q518 2SC1845(E)

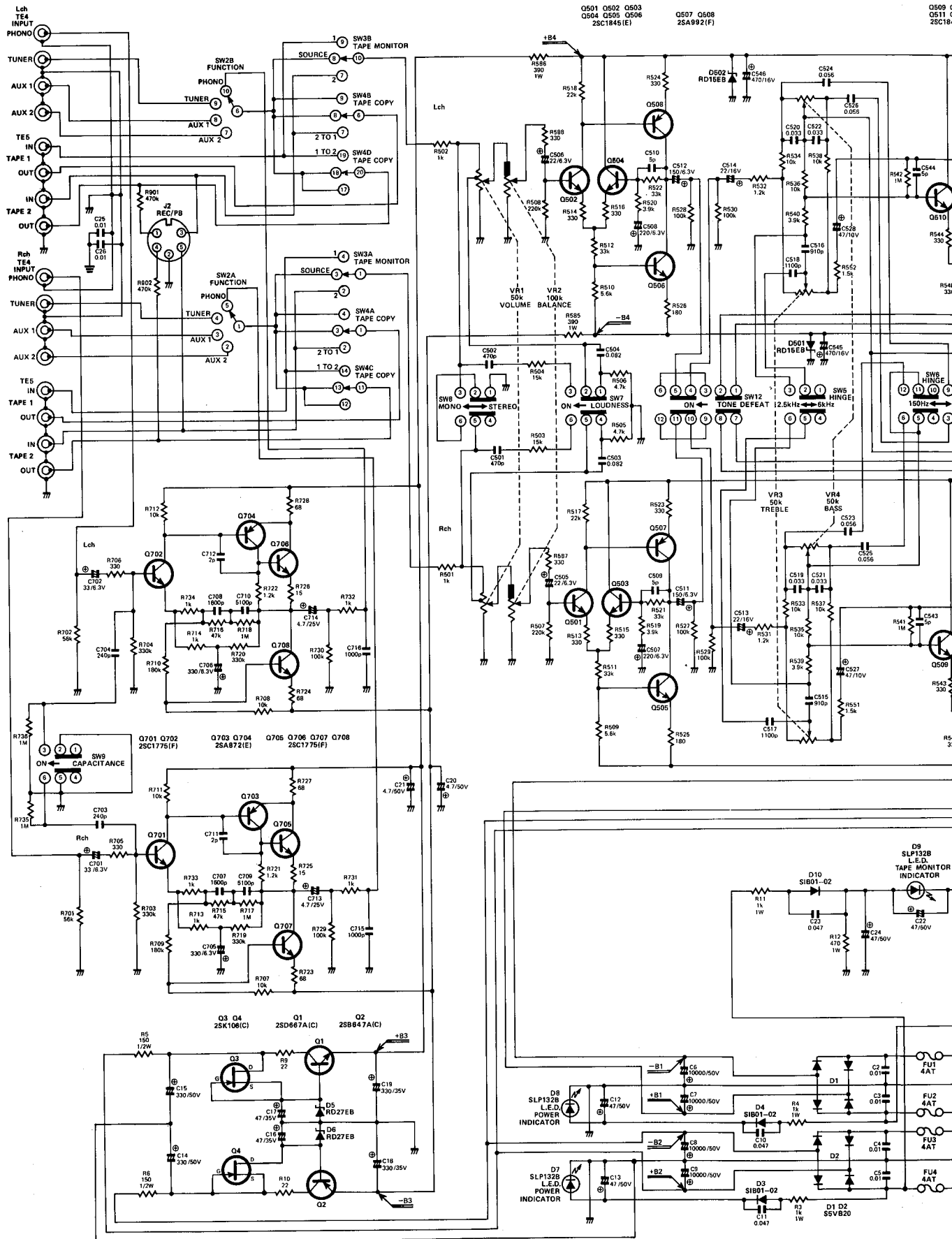
Q409 Q410 Q413 Q414 2SD864A(C)
 Q419 Q420 2SD667(A)
 Q423 Q424 2SD649(C)
 Q427 Q428 2SD675A(B)
 Q429 Q430 2SA872(E)



SCHEMATIC DIAGRAM - MULTI VOLTAGE



SCHEMATIC DIAGRAM – MULTI VOLTAGE



Q509 Q510
Q511 Q512
25C1945(E)

Q513 Q514
25A92(F)

Q515 Q516
Q517 Q518
25C1945(E)

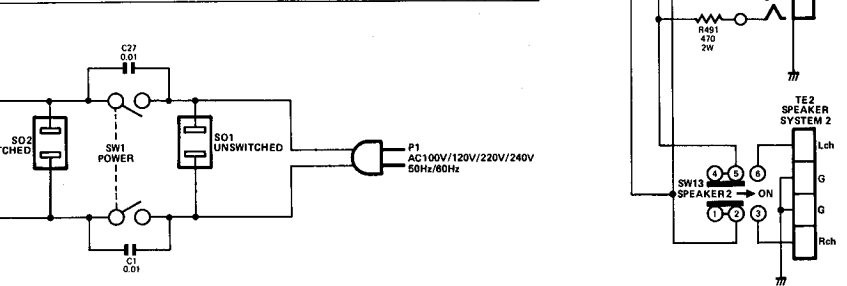
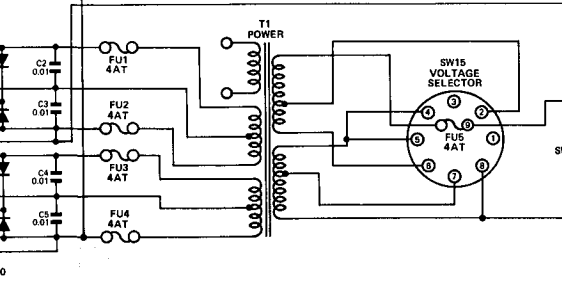
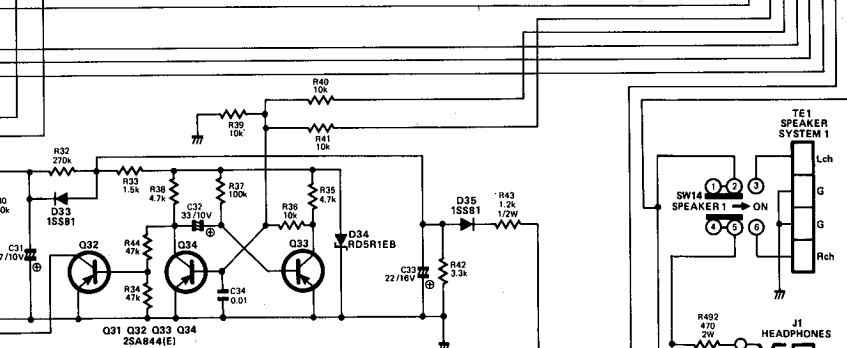
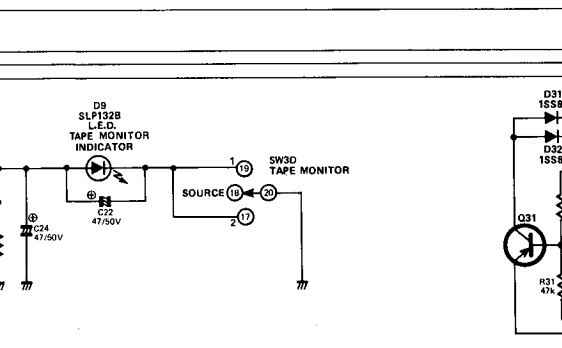
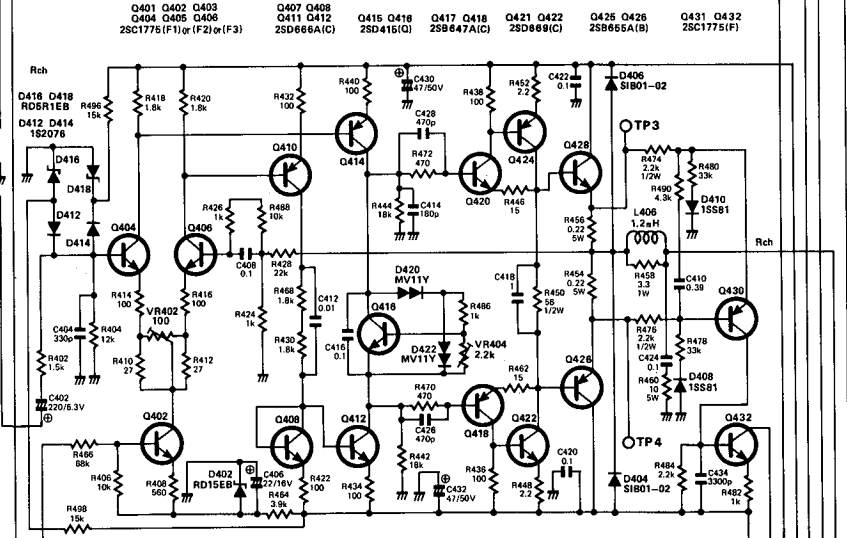
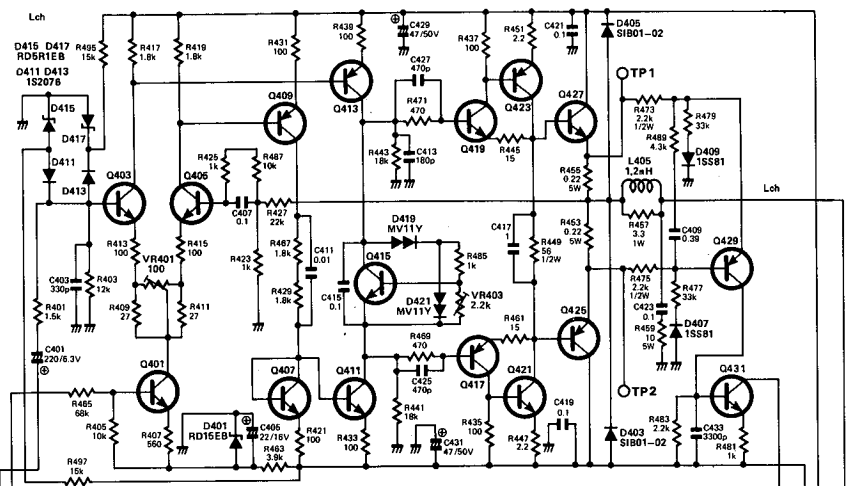
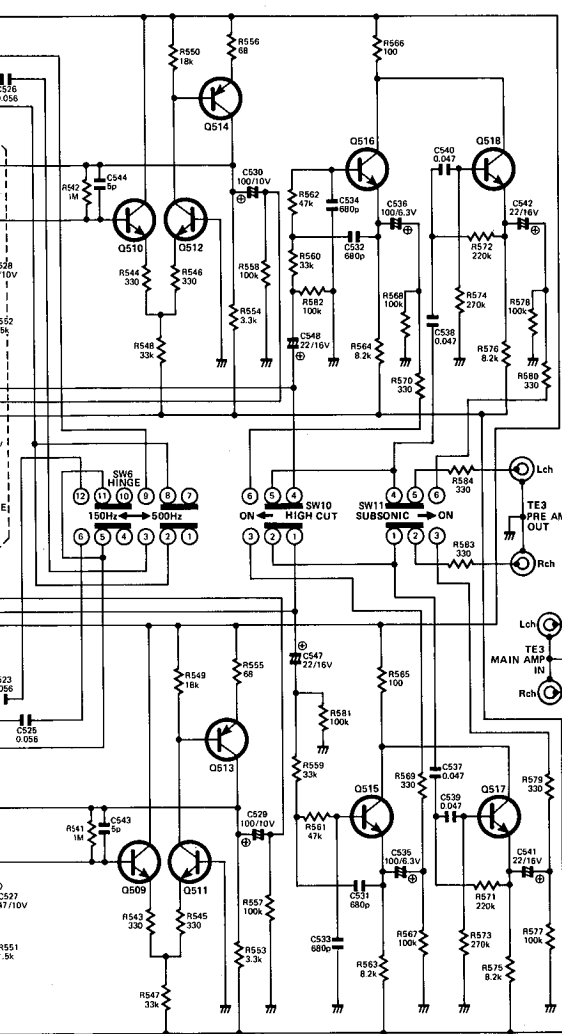
Q409 Q410 Q413 Q414
25B648(A)

Q419 Q420
25D867(A)

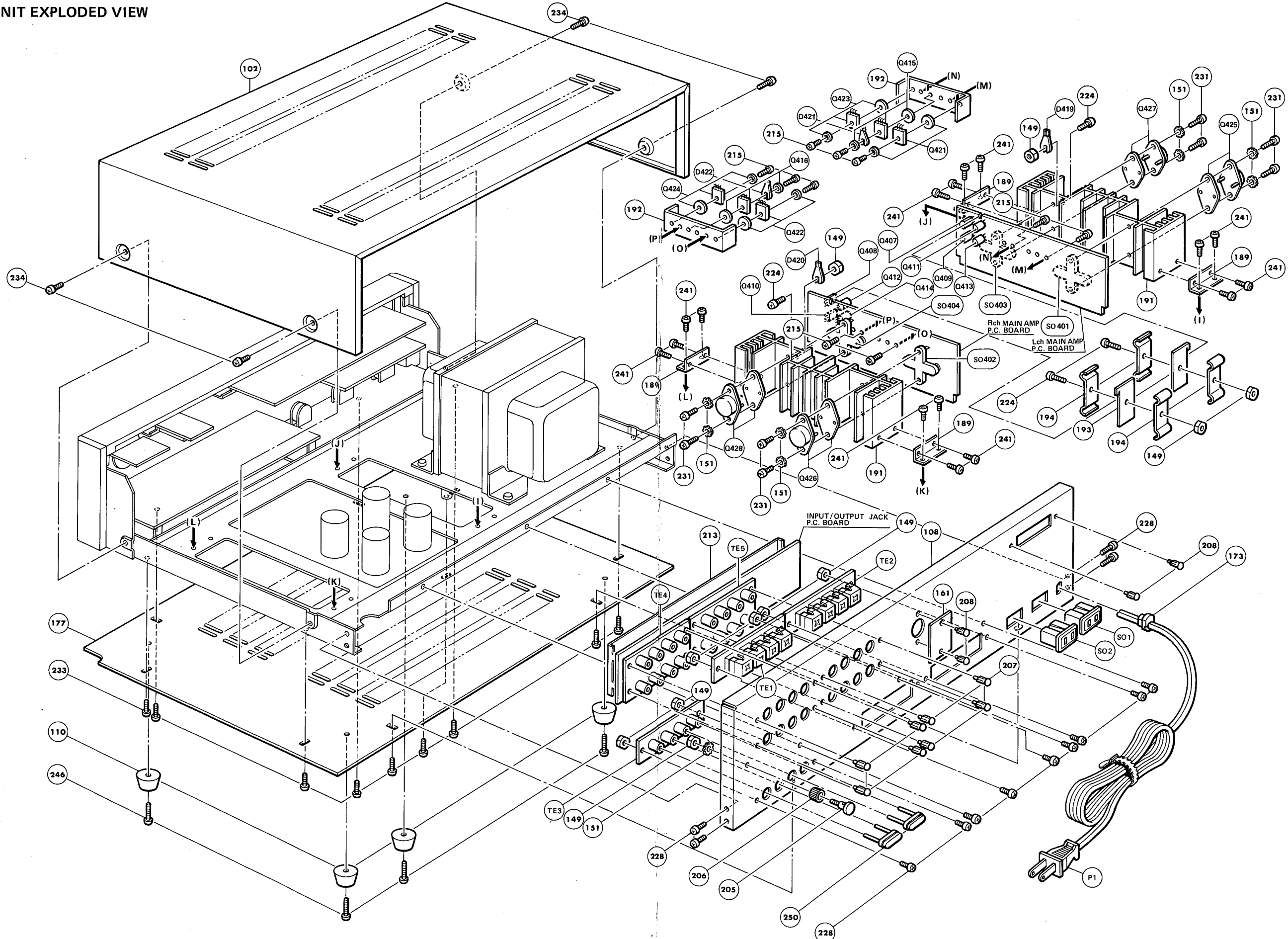
Q423 Q424
25B649(C)

Q427 Q428
25D875(A)

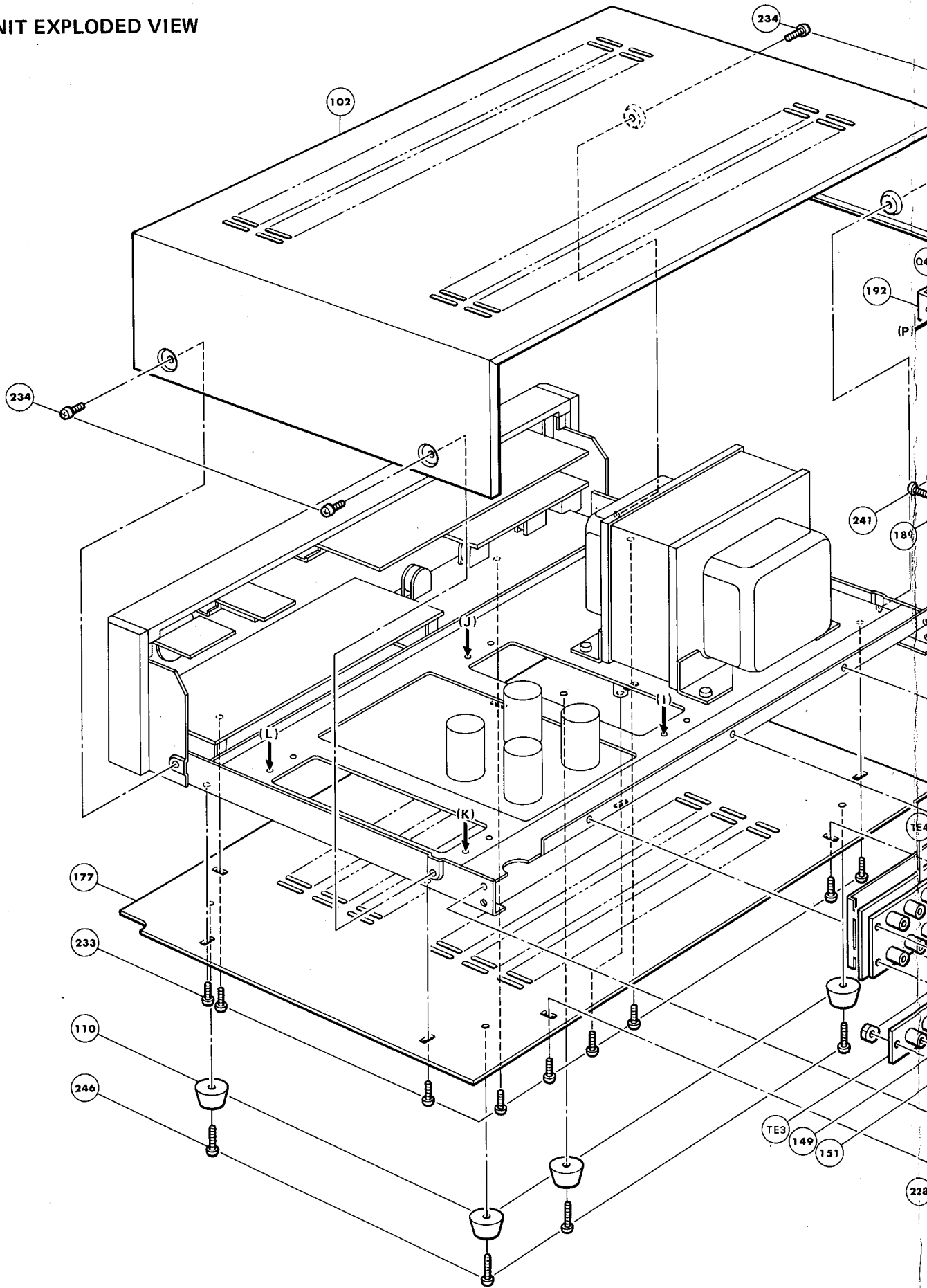
Q429 Q430
25A872(E)

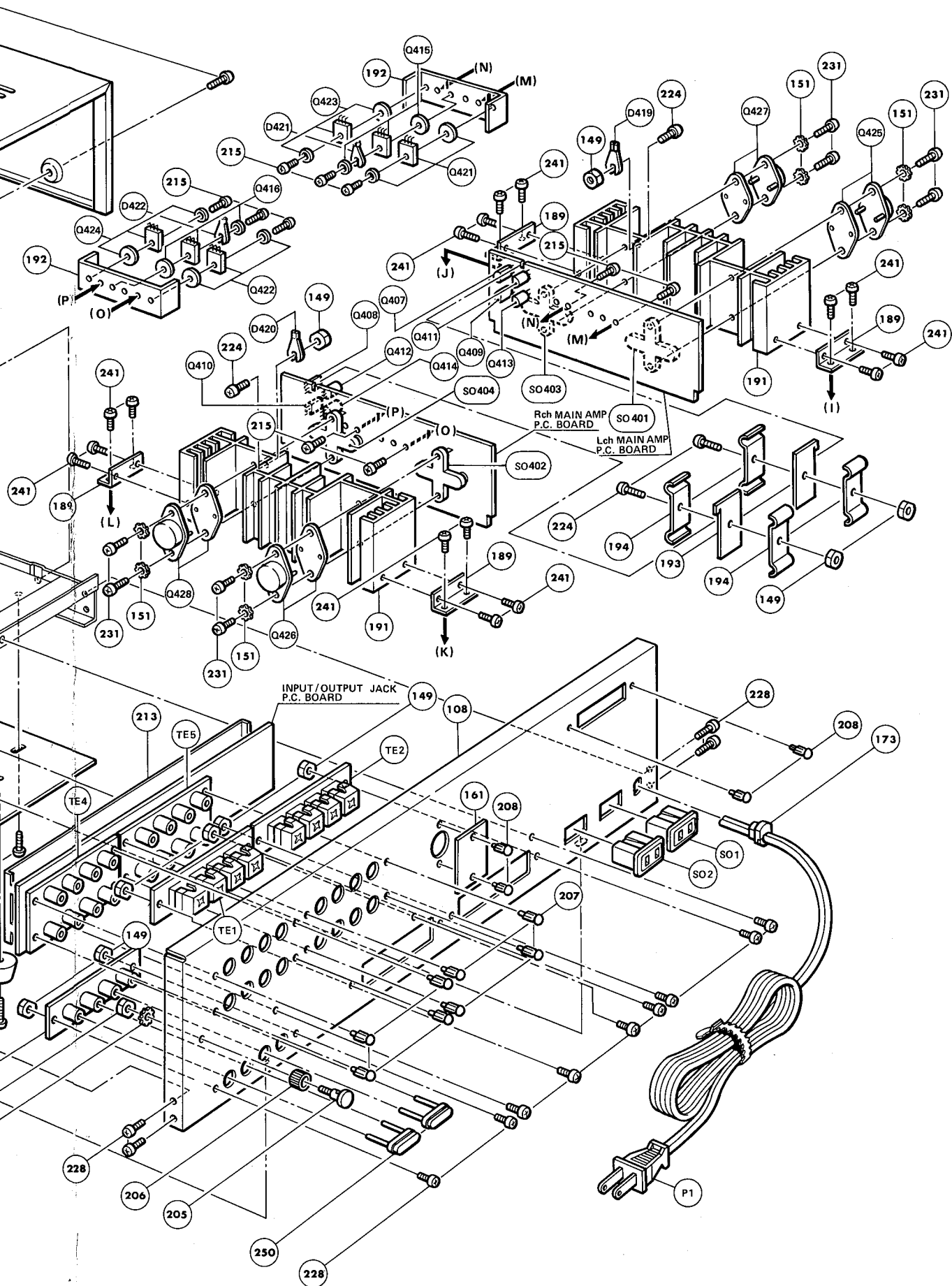


GENERAL UNIT EXPLODED VIEW

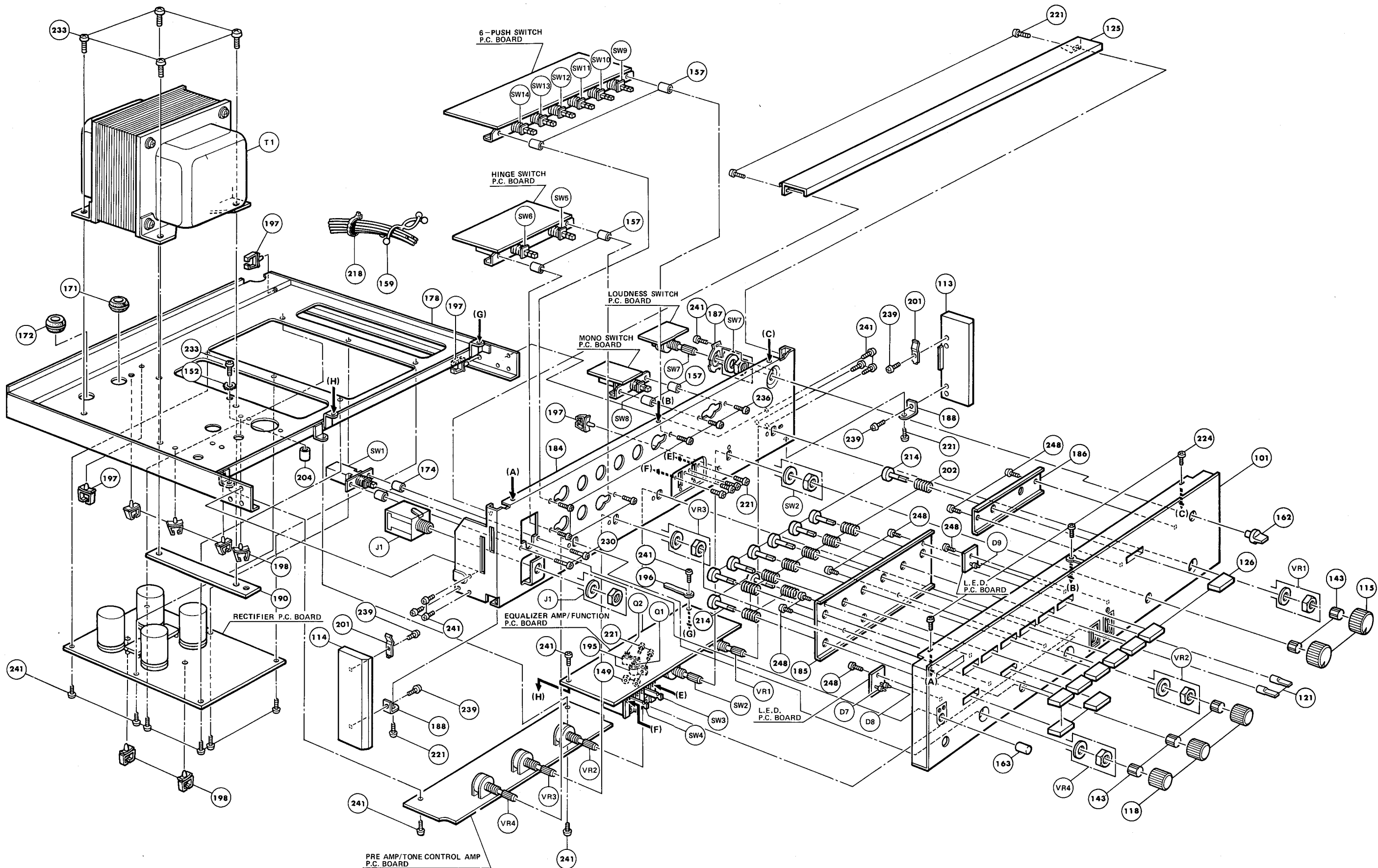


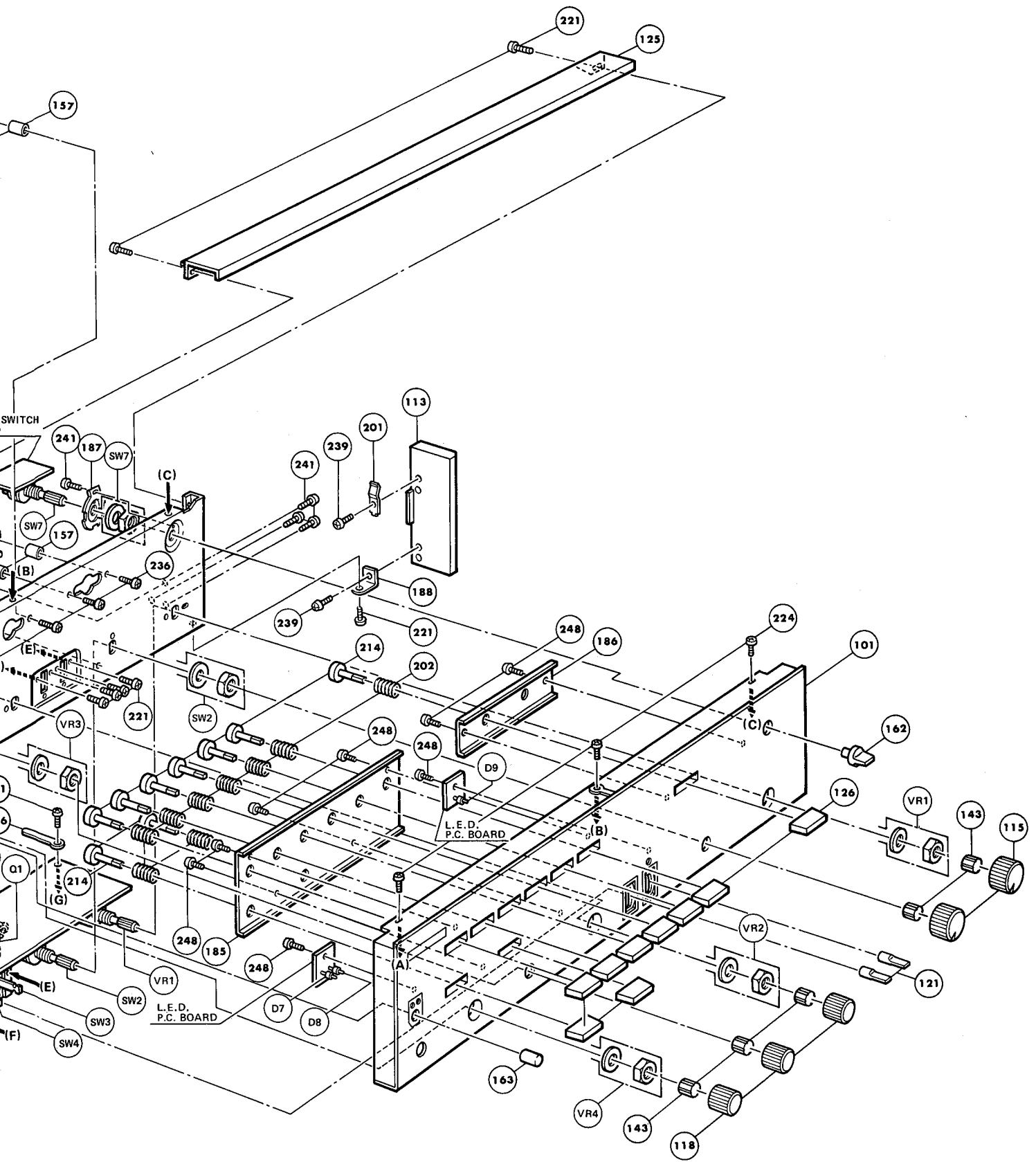
GENERAL UNIT EXPLODED VIEW



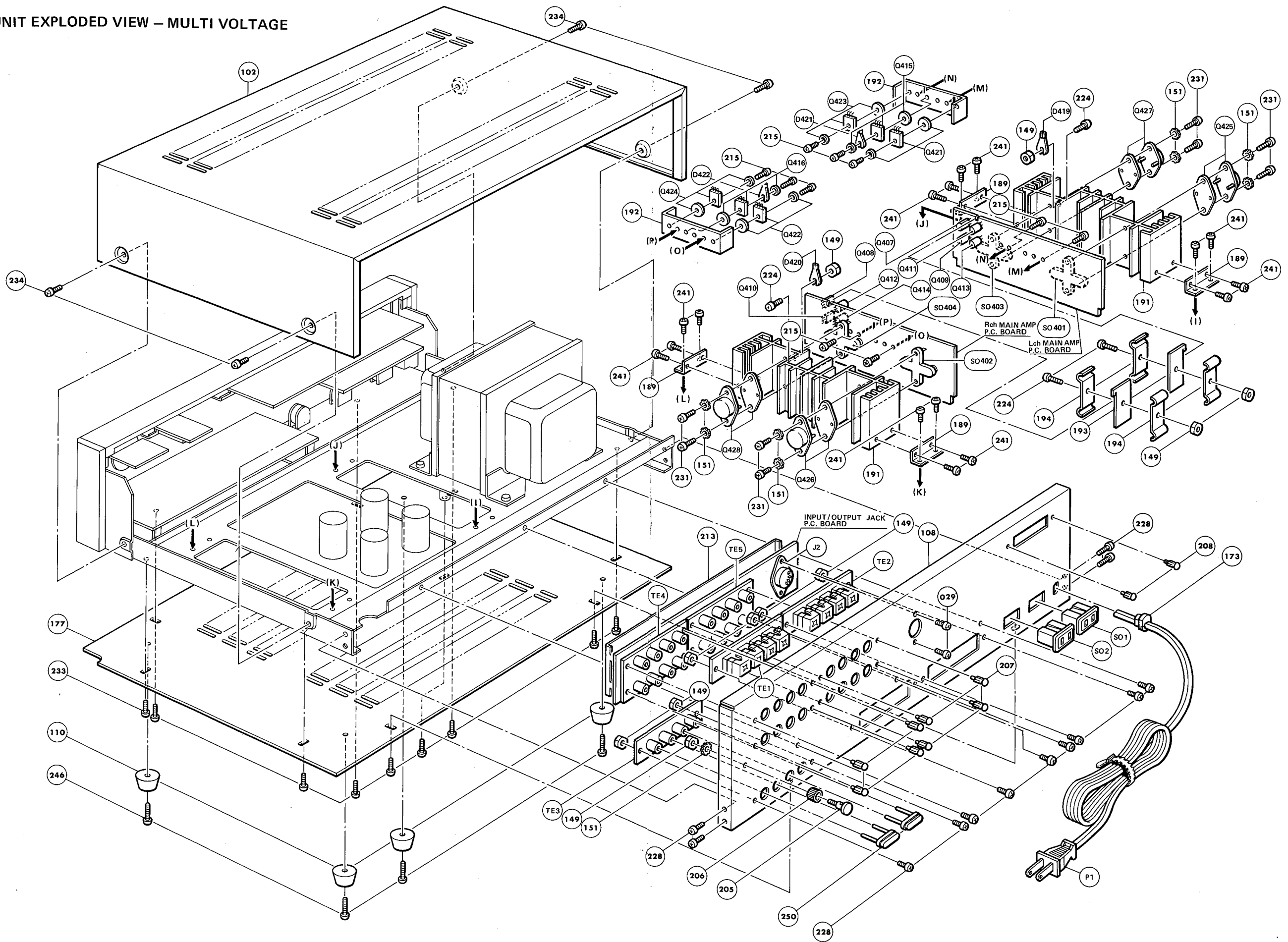


GENERAL UNIT EXPLODED VIEW

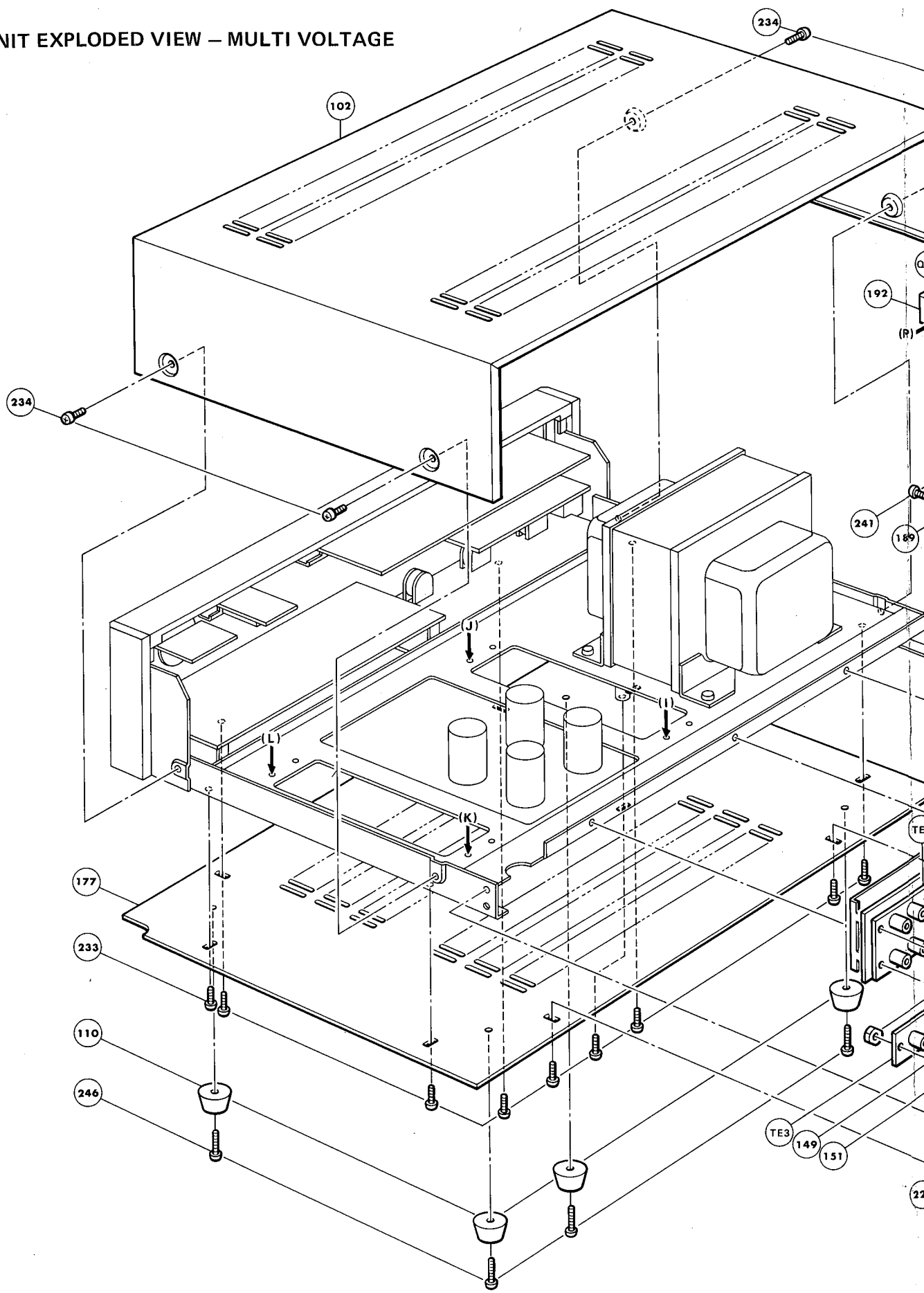


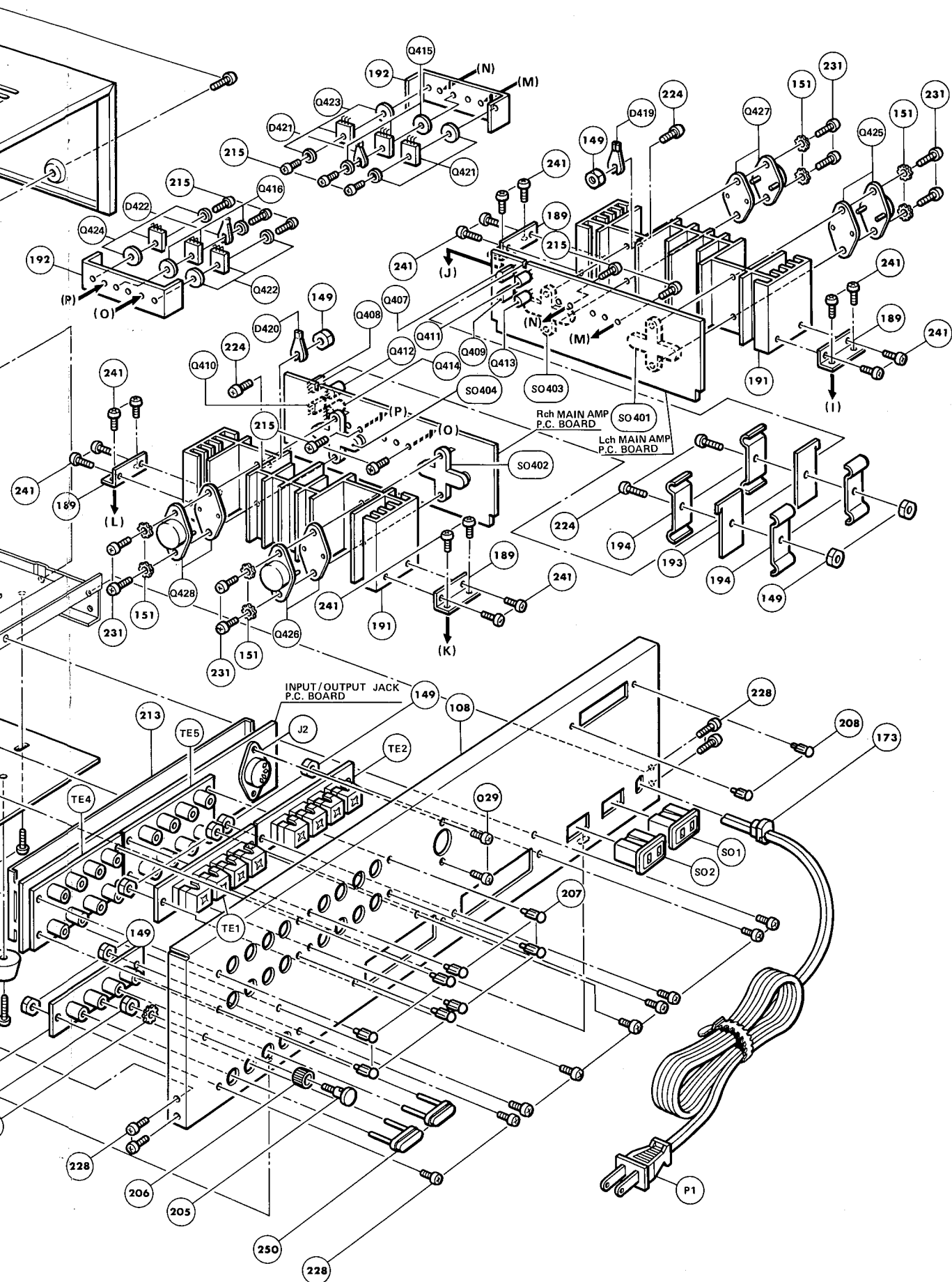


GENERAL UNIT EXPLODED VIEW - MULTI VOLTAGE

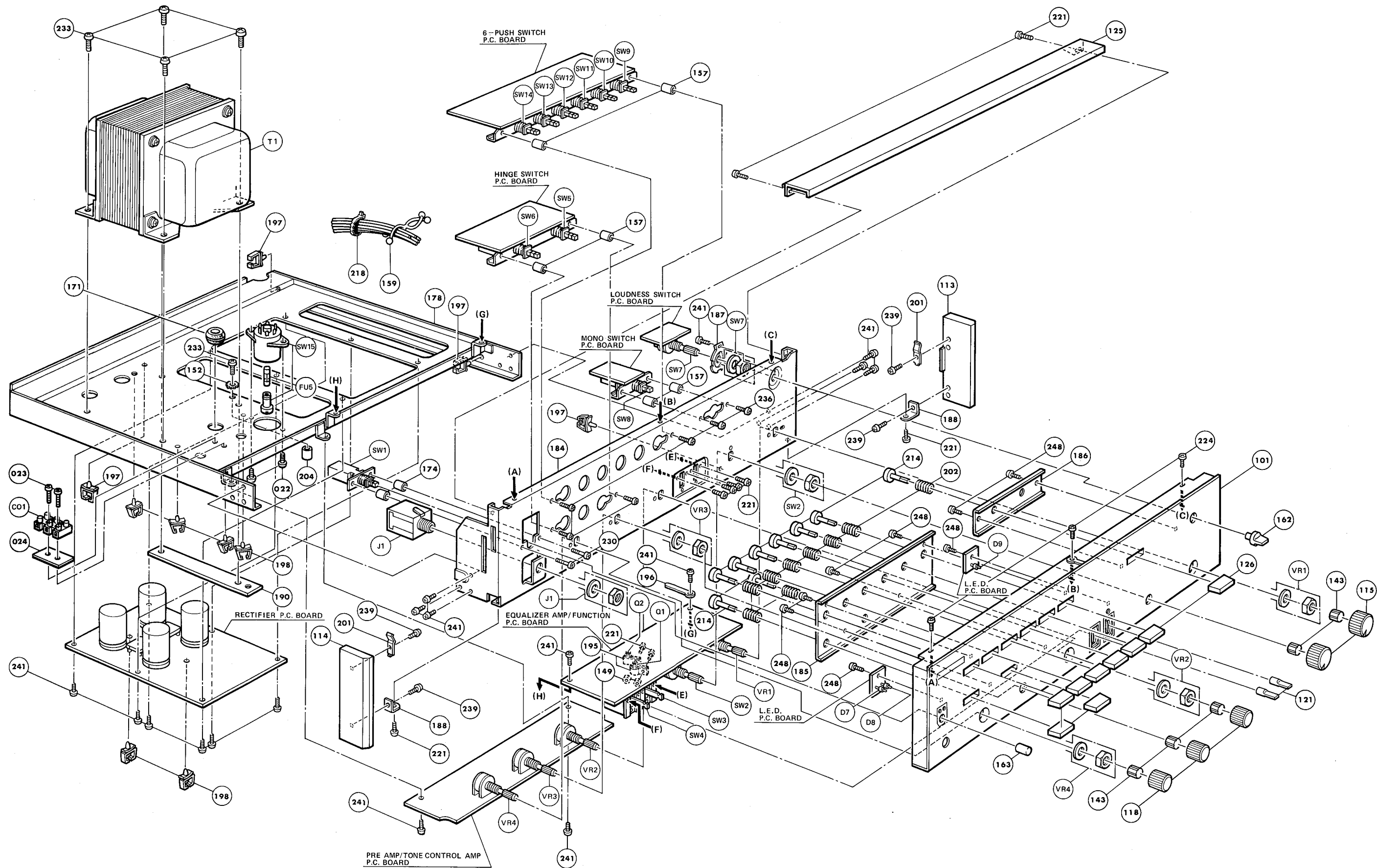


GENERAL UNIT EXPLODED VIEW – MULTI VOLTAGE

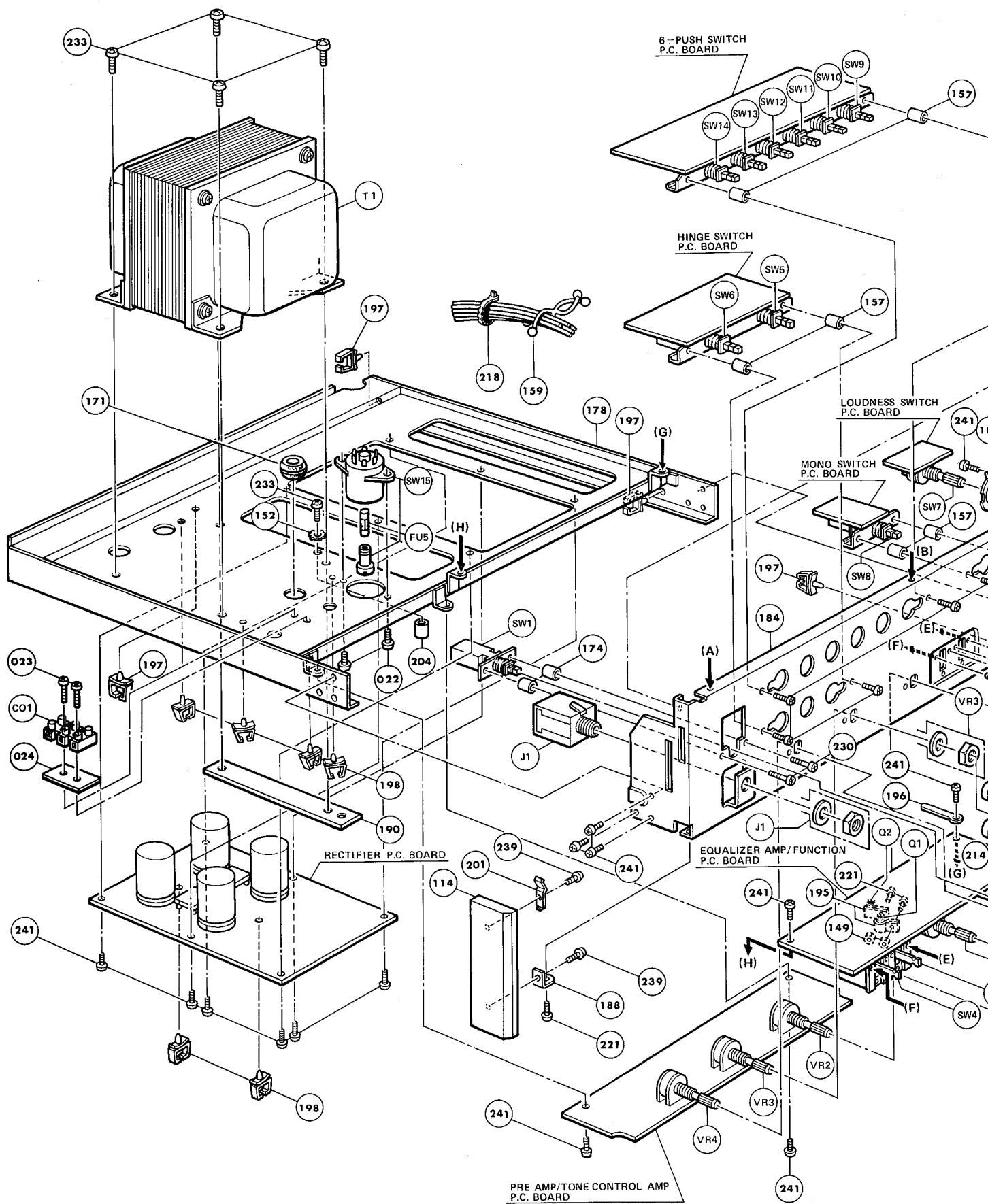


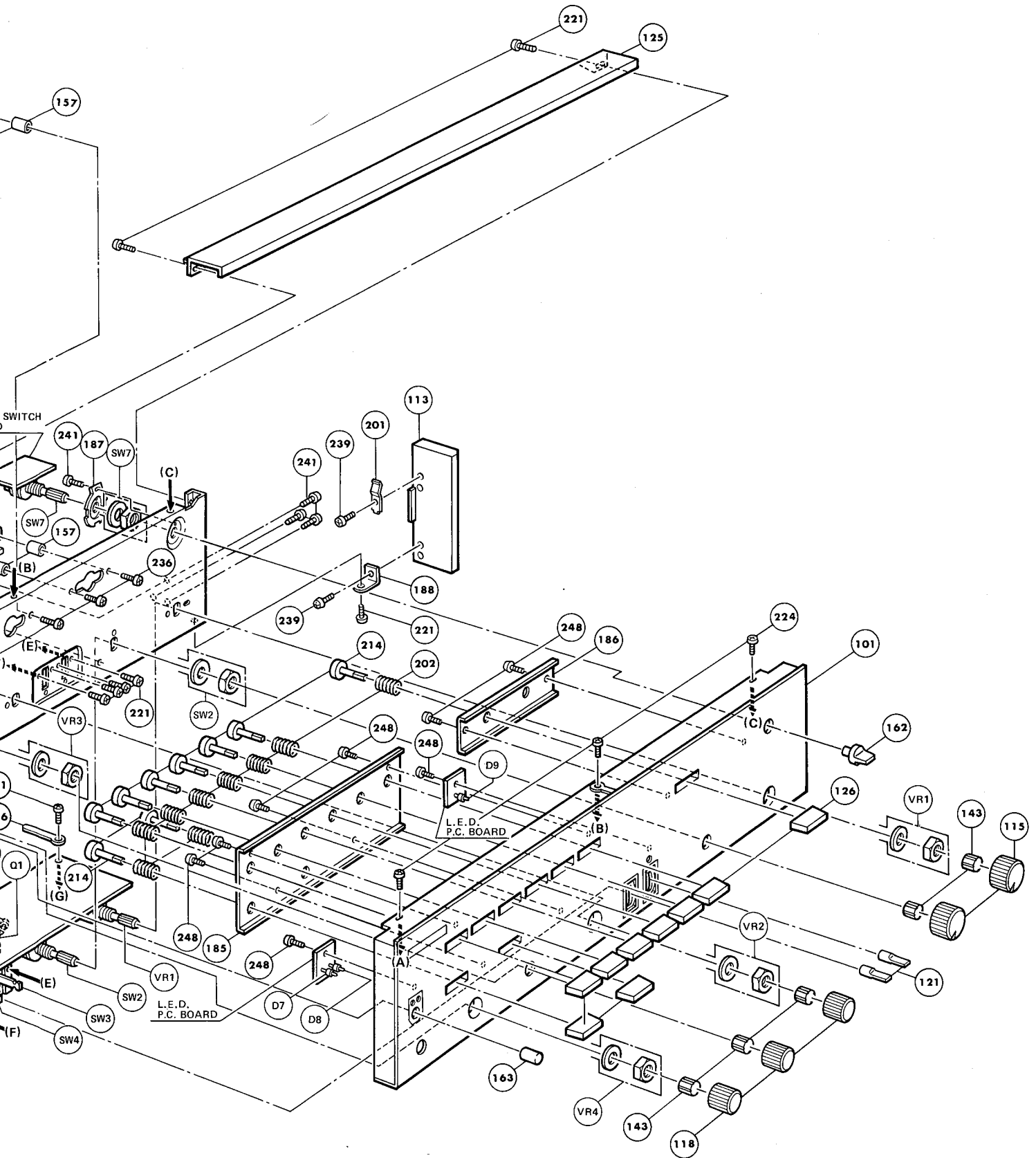


GENERAL UNIT EXPLODED VIEW – MULTI VOLTAGE



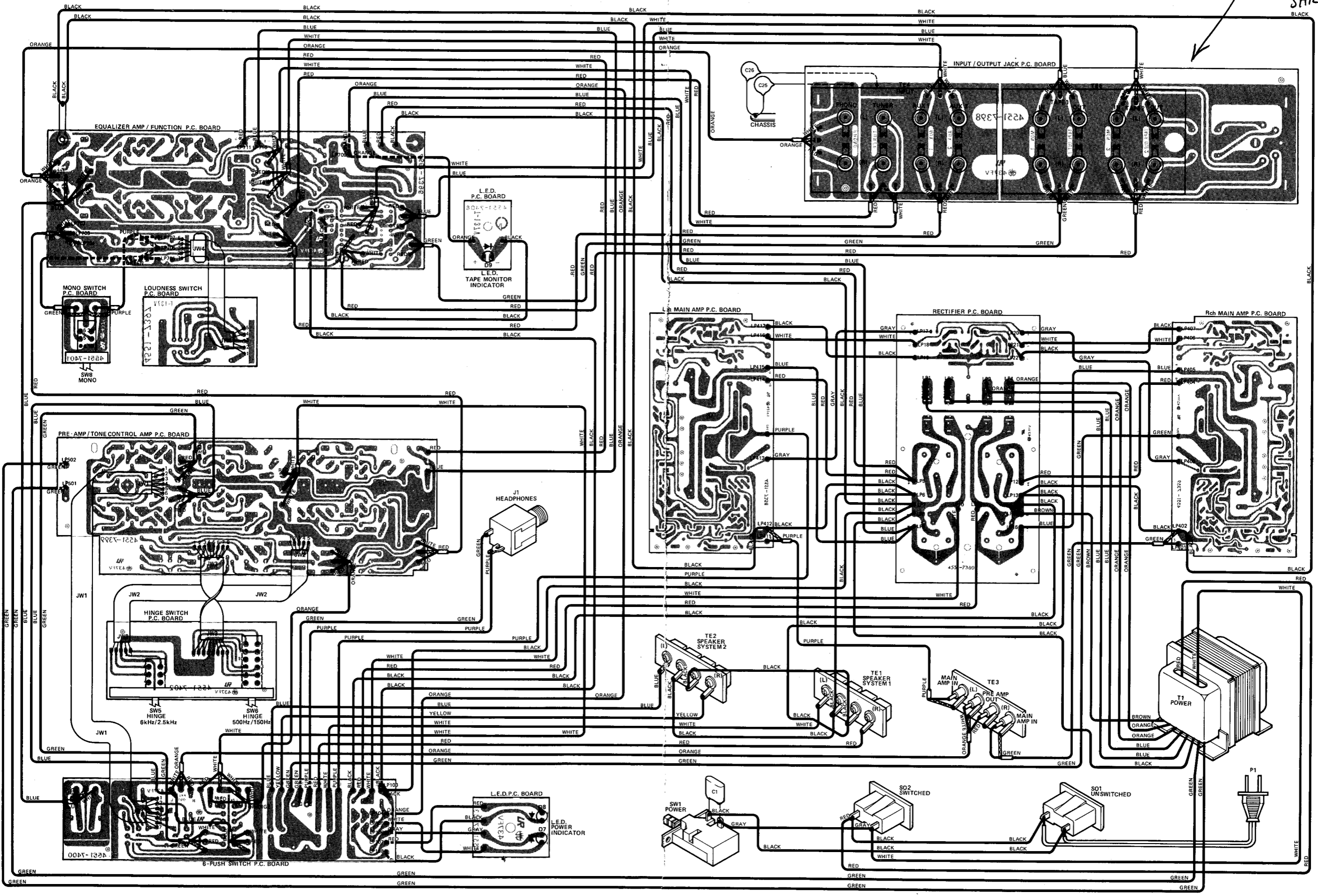
GENERAL UNIT EXPLODED VIEW – MULTI VOLTAGE



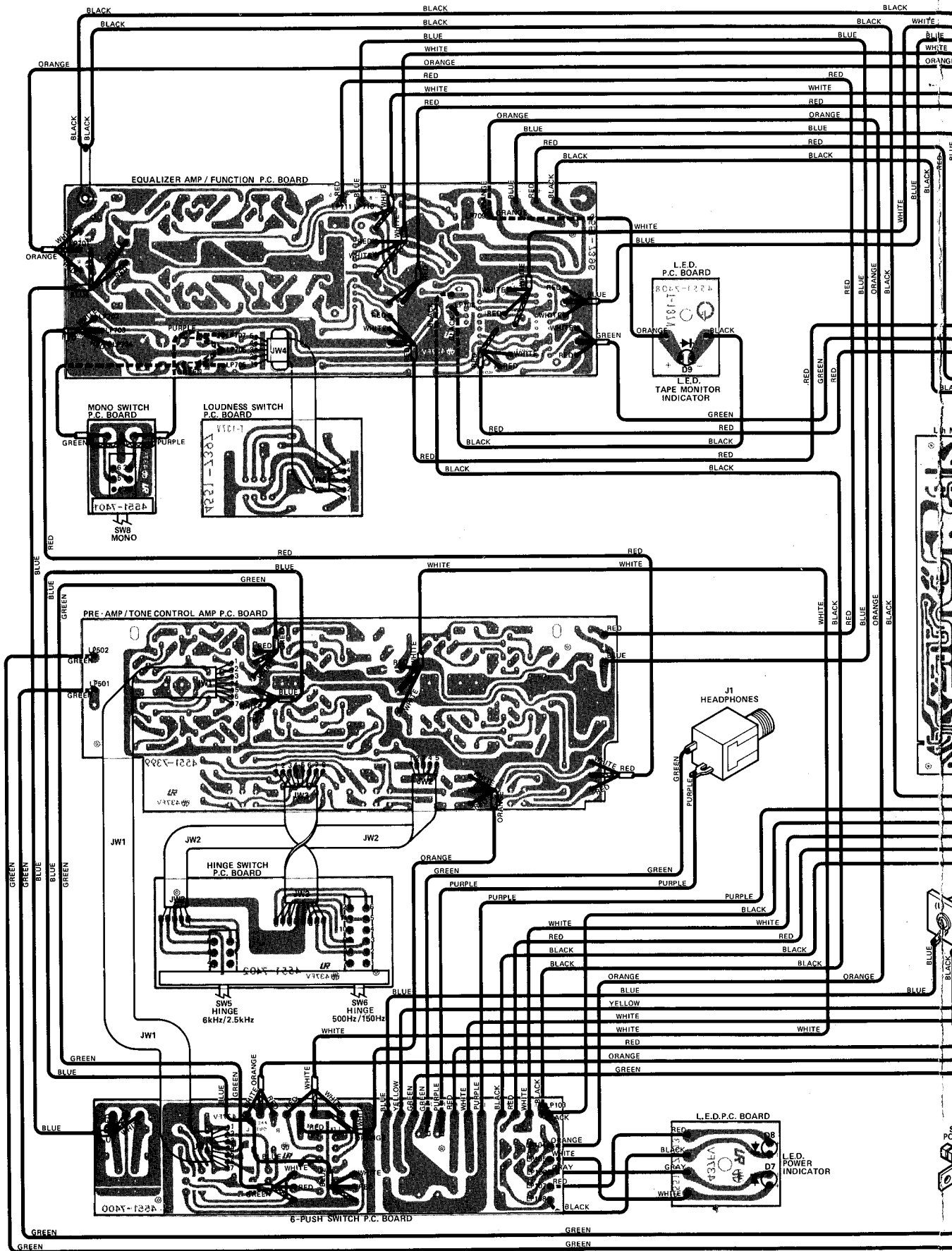


WIRING DIAGRAM

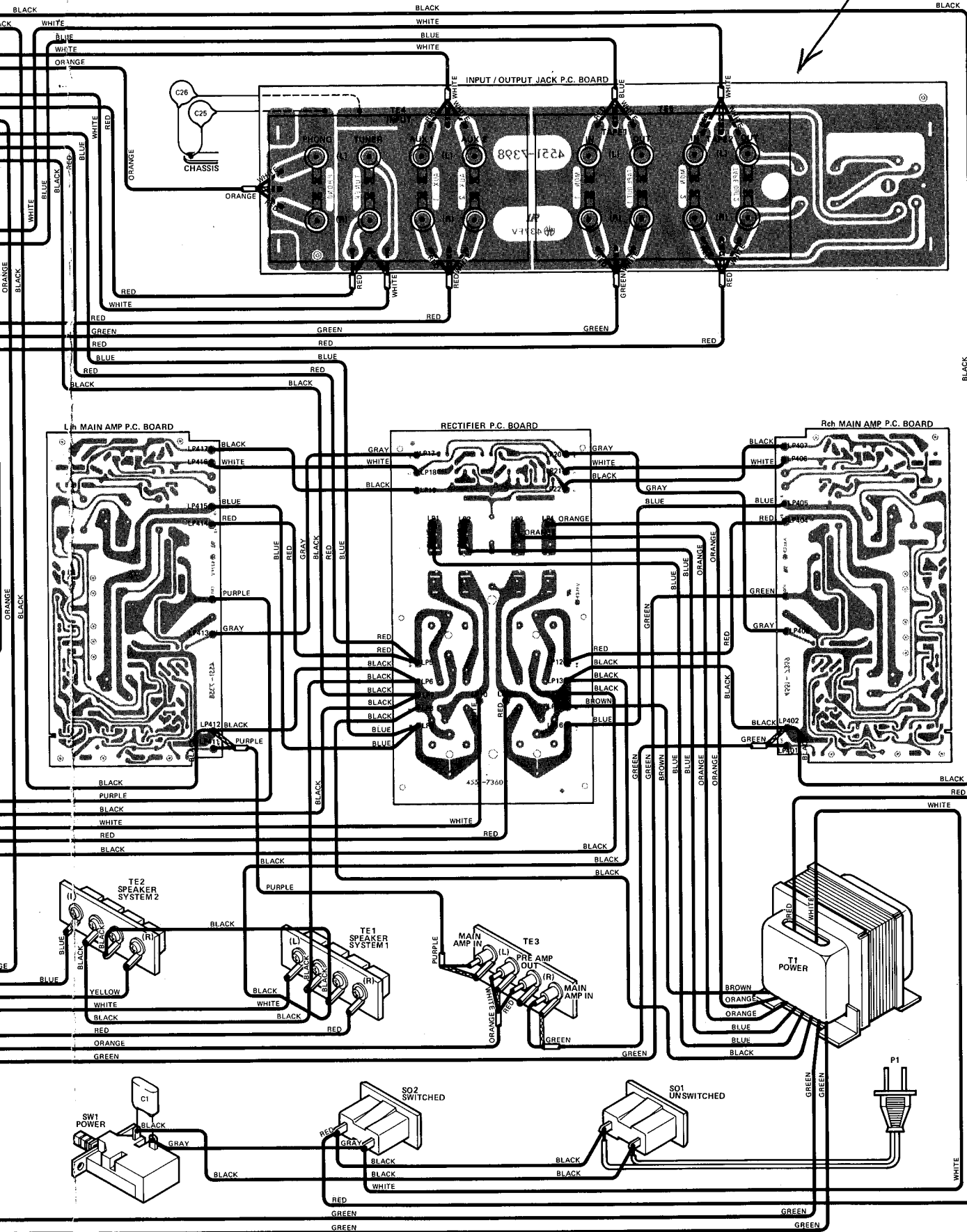
IF UNIT OSCILLATES WHEN FIRST
TURNED ON W/FUNCT. SW. IN
PHONO MODE, ADD .01 ufd diamp
FROM INPUT JACK BRD.
SHIELD TO CHASSIS
GND TAB
NEAR TOP
REAR.



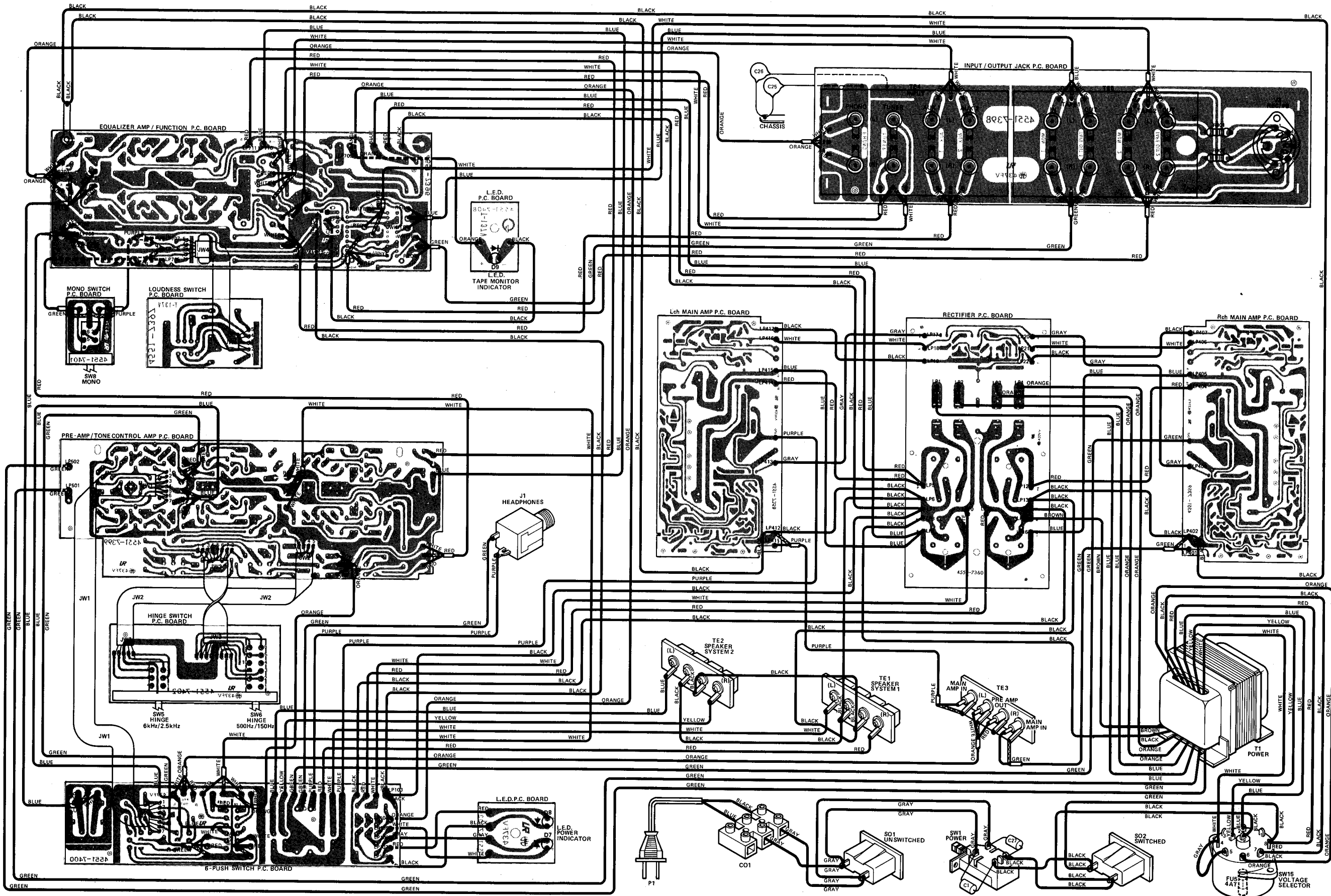
WIRING DIAGRAM



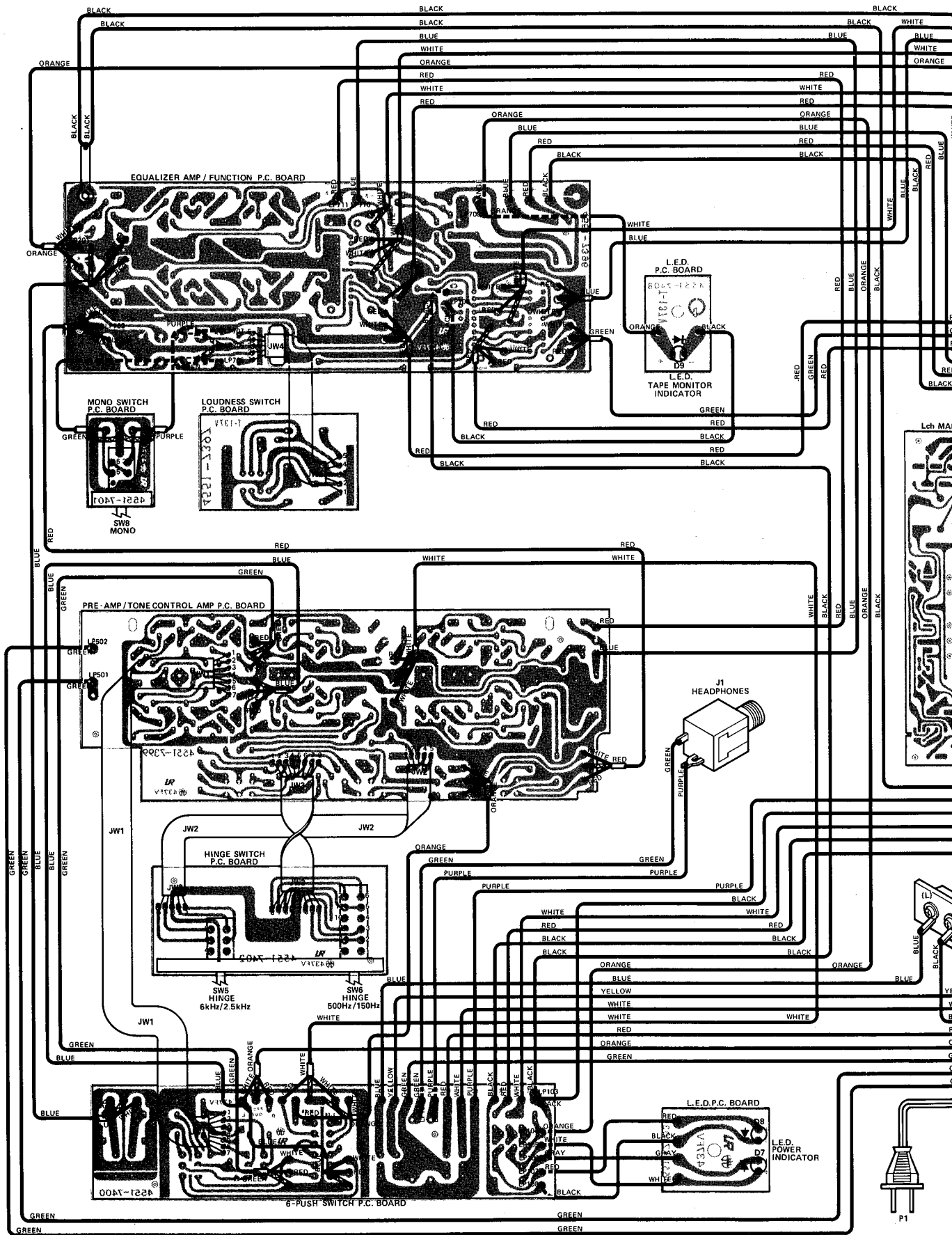
IF UNIT OSCILLATES WHEN FIRST
 TURNED ON W/ FUNCT. SW. IN
 PHONO MODE, ADD .01 ufd *diagram*
 FROM INPUT JACK BRD.
 SHIELD TO CHASSIS
 GND TAB
 NEAR TOP
 REAR.

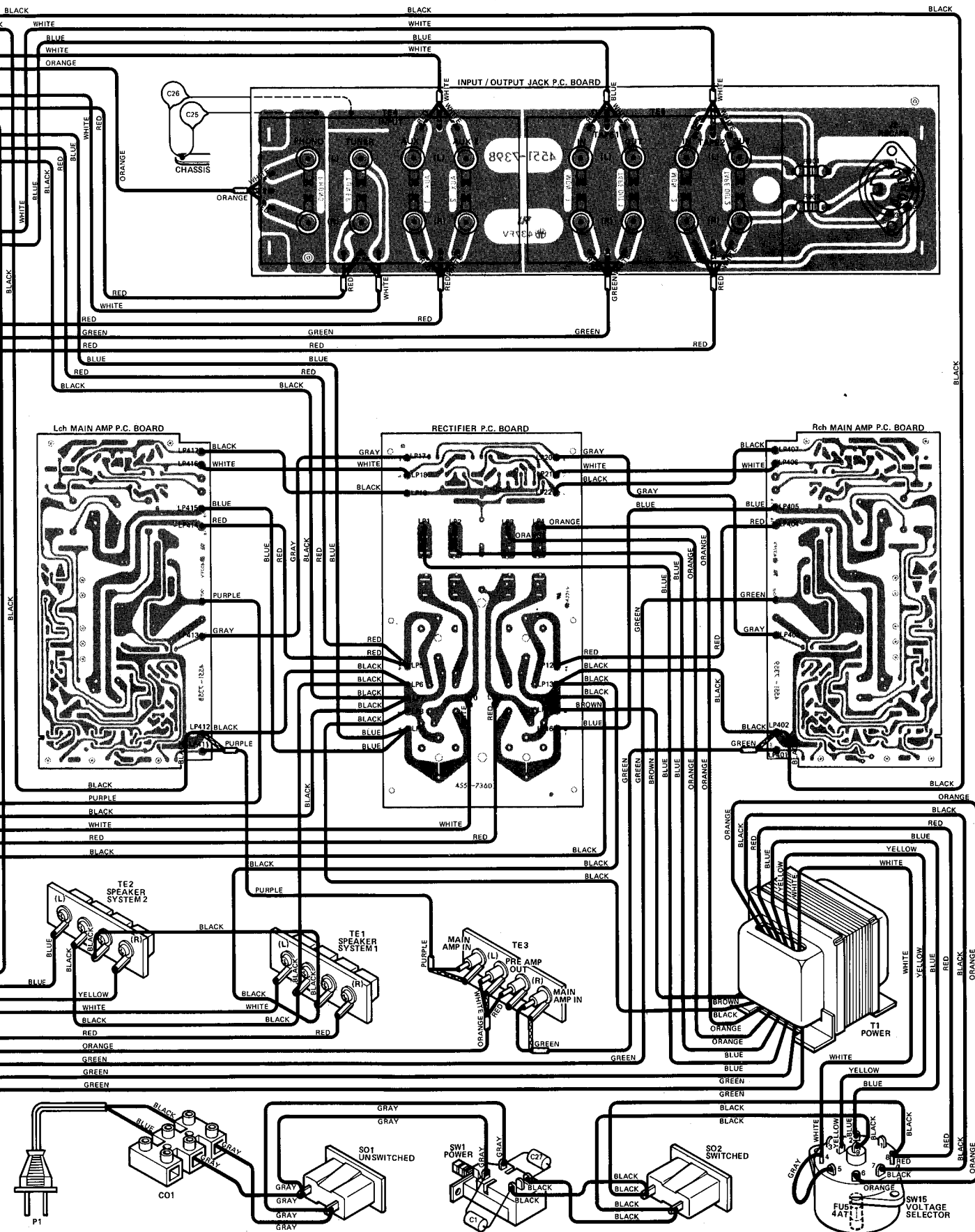


WIRING DIAGRAM – MULTI VOLTAGE



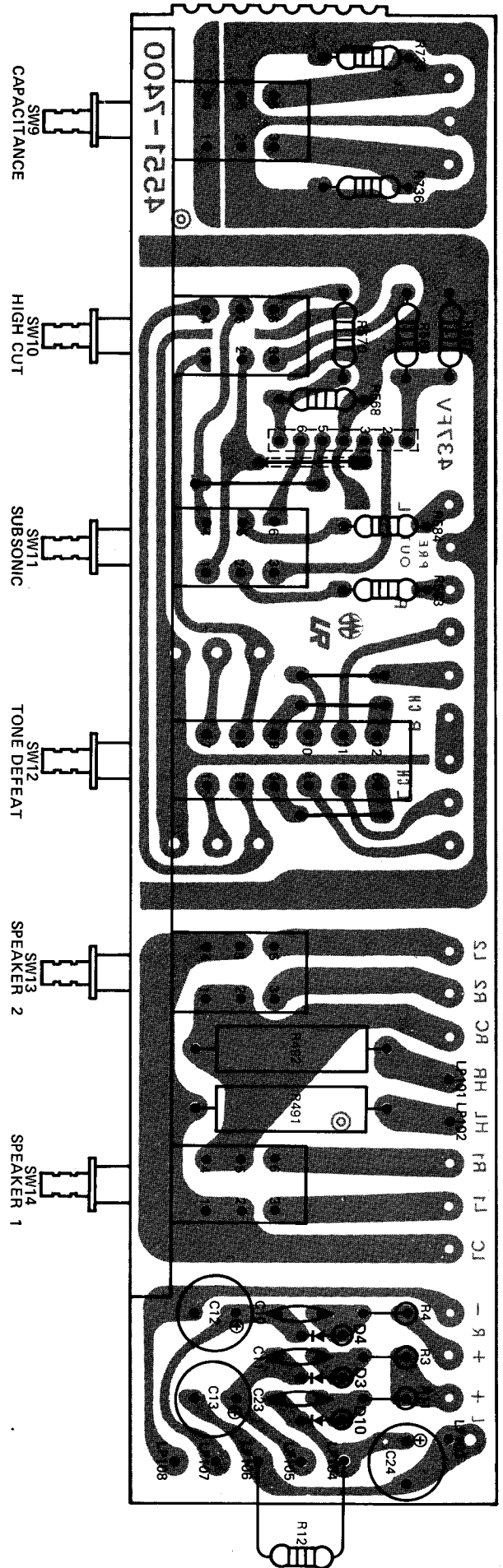
WIRING DIAGRAM – MULTI VOLTAGE



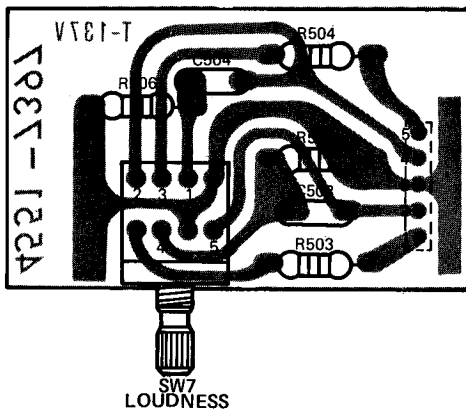


6-PUSH SWITCH PC BOARD

REF NO.	H/K PART NO.	DESCRIPTION
C12, 13, 24	31835985	Capacitor, 47MF +50% -10% 50V
D3, 4, 10	41631295	Diode, SIB01-02
SW9, 10, 11, 12 13, 14	25035986	Push Switch, Capacitance/ High Cut/Subsonic/ Tone Defeat/Speaker 2/ Speaker 1

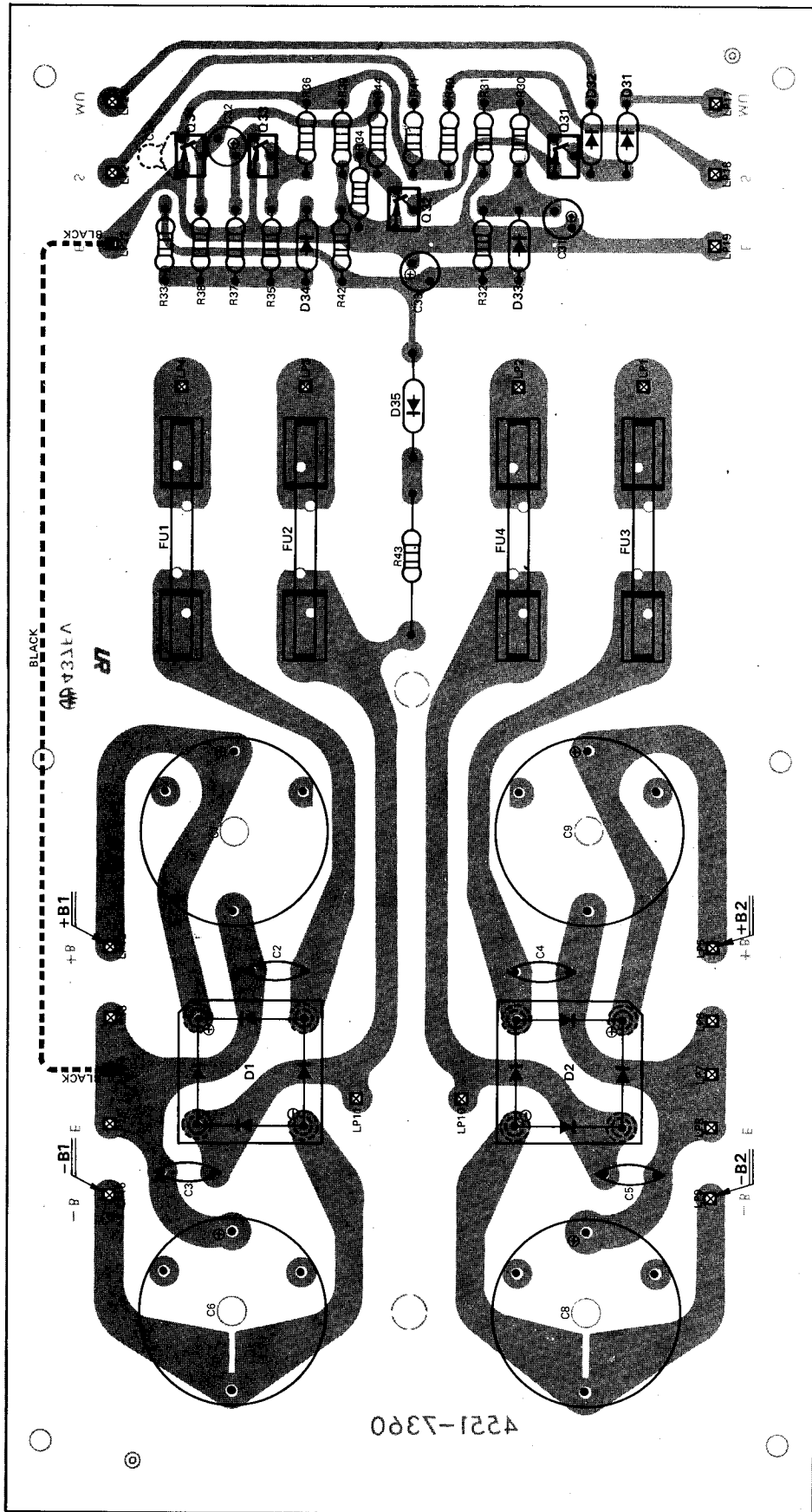


LOUDNESS SWITCH PC BOARD



REF NO.	H/K PART NO.	DESCRIPTION
SW7	24035884	Rotary Switch, Loudness

RECTIFIER PC BOARD



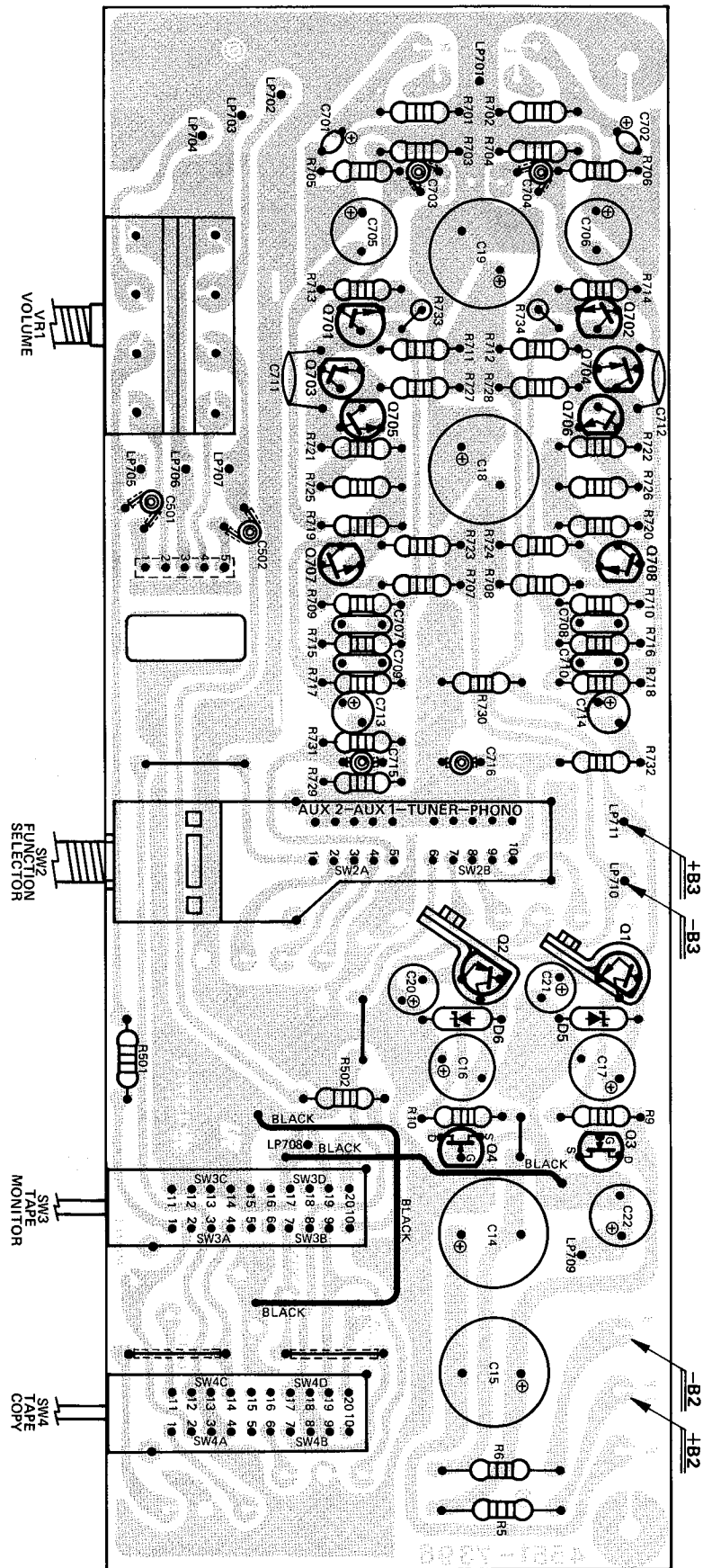
RECTIFIER PC BOARD

REF. NO.	H/K PART NO.	DESCRIPTION
CAPACITORS, ELECTROLYTIC		
C6, 7, 8, 9	31835970	10000MF \pm 20% 50V
C31	31835662	47MF \pm 20% 10V
C32	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
DIODE		
D1, 2	41035971	Bridge Silicon, S5VB20
D31, 32, 33, 35	41035628	1SS81
D34	42035972	Zener Diode, RD5R1EB 5.1V \pm 0.3V
FUSE		
FU1, 2, 3, 4	45035559	4A 125V

EQUALIZER AMP/FUNCTION PC BOARD

REF. NO.	H/K PART NO.	DESCRIPTION
RESISTORS		
VR1	23535871	Variable Resistor, 50 k ohm, Volume Control
CAPACITORS, ELECTROLYTIC		
C14, 15	31835888	330MF +50% -10% 50V
C16, 17	31835973	47MF +50% -10% 35V
C18, 19	31835974	330MF +50% -10% 35V
C20, 21	31835975	4.7MF +50% -10% 50V
C22	31835976	47MF +50% -10% 50V
C701, 702	31835586	33MF ± 20% 6.3V Tantalum
C705, 706	31835587	330MF +50% -10% 6.3V
C713, 714	31835588	4.7MF ± 20% 25V
TRANSISTORS		
Q1	43035624	2SD667A (C) Voltage Regulator
Q2	43035625	2SB647A (C) Voltage Regulator
Q3, 4	43035874	F. E. T., 2SK106 (C) Voltage Regulator
Q701, 702, 705 706, 707, 708	43035592	2SC1775 (F) Equalizer Amp.
Q703, 704	43032151	2SA872 (E) Equalizer Amp.
D5, 6	42035977	Zener Diode, RD27EB 27V ± 1.9V
MISCELLANEOUS		
SW2	24035978	Rotary Slide Switch, Function Selector
SW3, 4	26535669	Lever Switch, Tape Monitor/Tape Copy

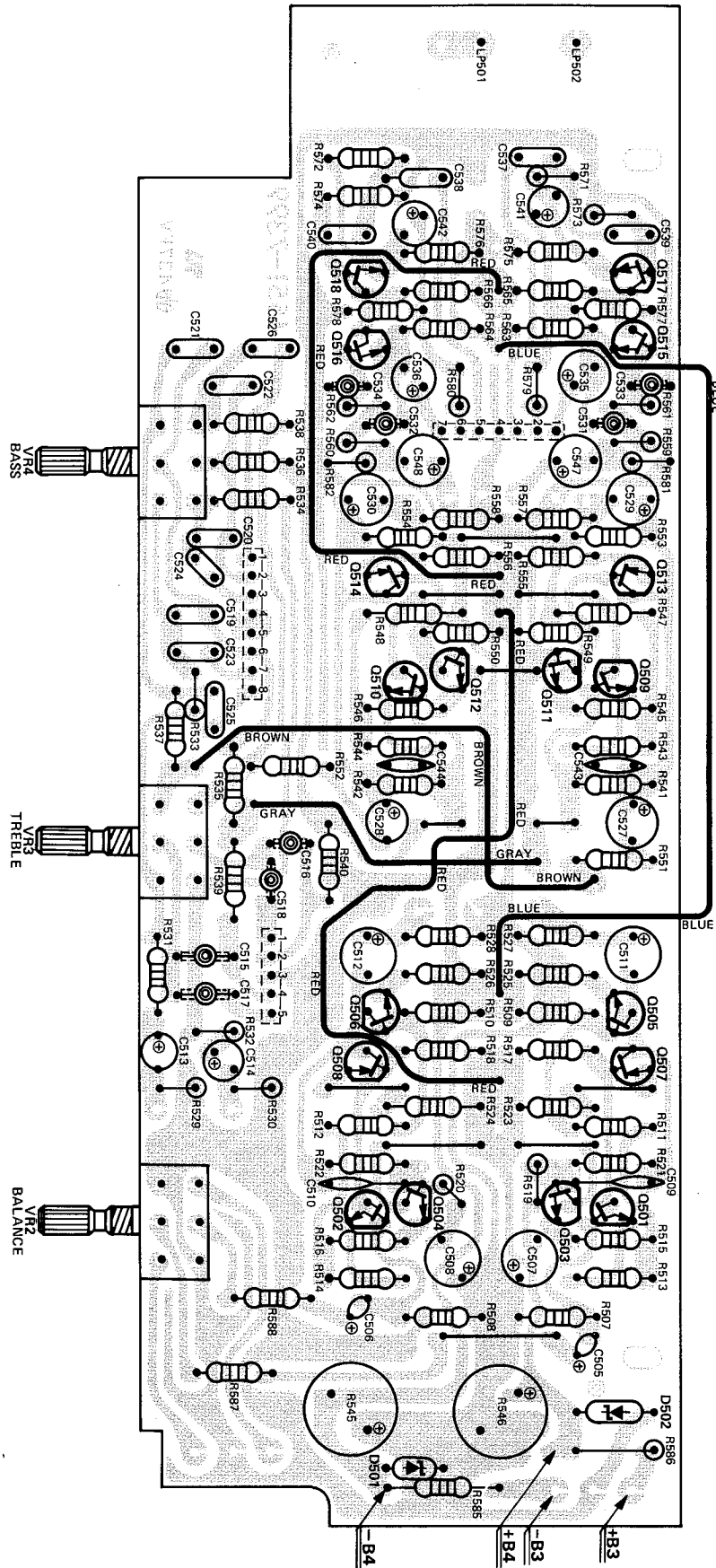
EQUALIZER AMP/FUNCTION PC BOARD



PRE-AMP/TONE CONTROL AMP PC BOARD

REF. NO.	H/K PART NO.	DESCRIPTION
RESISTORS		
VR2	23535979	Variable Resistor, 100 k ohm, Balance Control
VR3, 4	23535980	Variable Resistor, 50 k ohm, Treble and Bass Control
CAPACITORS, ELECTROLYTIC		
C505, 506	30735981	22MF \pm 20% 6.3V Tantalum
C507, 508	31835982	220MF +50% -10% 6.3V
C511, 512	31835984	150MF \pm 20% 6.3V
C513, 514	31835880	22MF \pm 20% 16V
C527, 528	31835662	47MF \pm 20% 10V
C529, 530	31835879	100MF \pm 20% 10V
C535, 536	31835879	100MF \pm 20% 10V
C541, 542, 547 548	31835880	22MF \pm 20% 16V
C545, 546	31835720	470MF +50% -10% 16V
TRANSISTORS		
Q501, 503, 505	43035883	2SC1845 (E) } Pre Amp 2SA992 (F) }
Q507	43035882	
Q502, 504, 506	43035883	2SC1845 (E) } Pre Amp 2SA992 (F) }
Q508	43035882	
Q509, 511	43035883	2SC1845 (E) } Tone Control Amp 2SA992 (F) }
Q513	43035882	
Q510, 512	43035883	2SC1845 (E) } Tone Control Amp 2SA992 (F) }
Q514	43035882	
Q515, 516 517, 518	53035883	2SC1845 (E) High-Cut Filter, Subsonic Filter
D501, 502	42032757	Zener Diode, RD15EB 14.7V \pm 0.9V

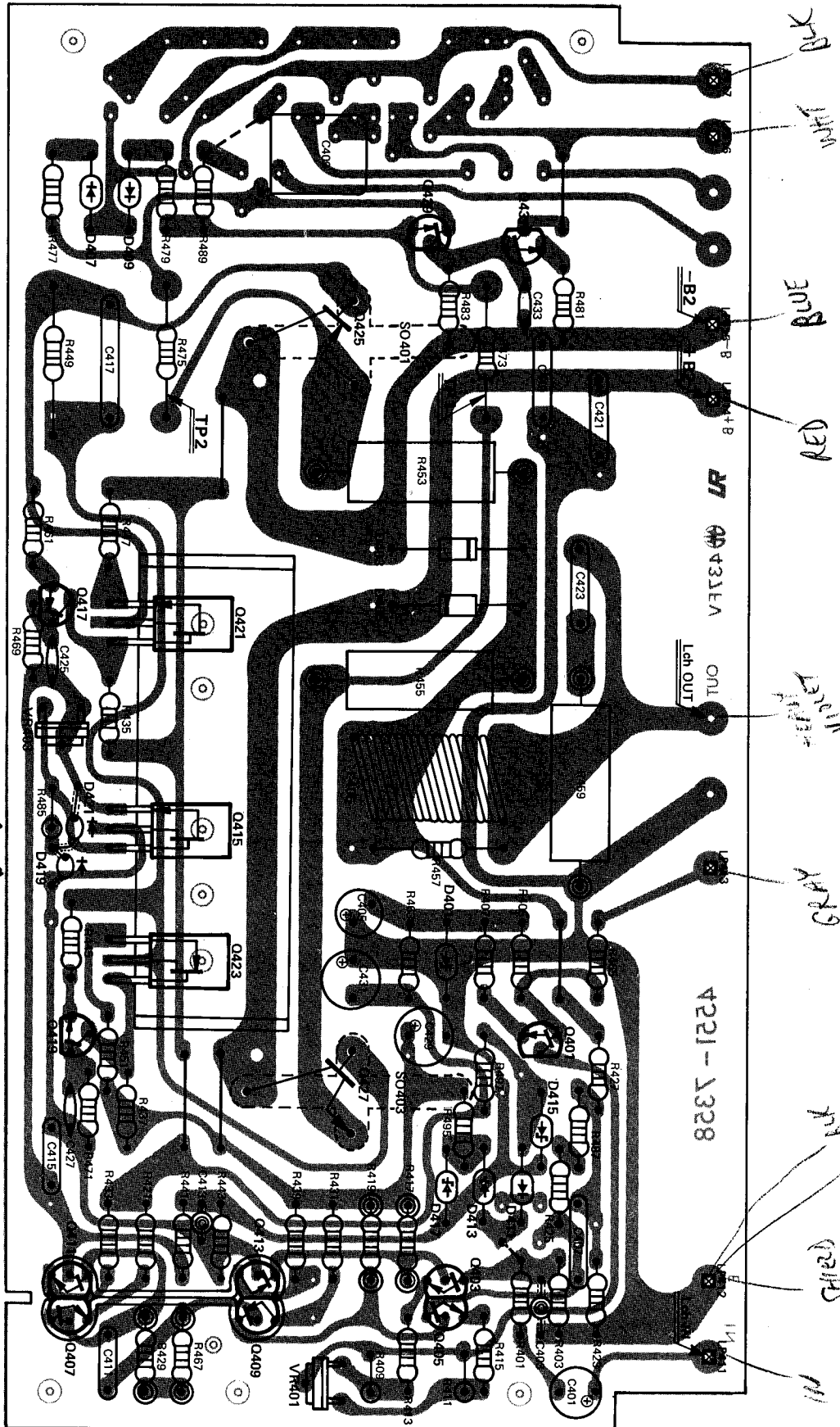
PRE-AMP/TONE CONTROL AMP PC BOARD



L 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
TRANSISTORS		
Q401, 403 405	43035592	2SC1775 (F1) or (F2) or (F3) Current Regulator, Differential Amp.
Q407, 411	43035989	2SD666A (C) } Pre-Driver
Q409, 413	43035990	2SB646A (C) }
Q415	43035991	2SD415 (Q) Bias Stabilization
Q417	43035625	2SB647A (C) } Driver
Q421	43035992	2SD669 (C) }
Q419	43035624	2SD667 (C) } Driver
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
DIODE		
D401	42032757	Zener, RD15EB 14.7V ± 0.9V
D403, 405	41631295	SIB01-02
D407, 409	41035628	1SS81
D411, 413	41028593	1S2076
D415, 417	42035972	Zener, RD5R1EB 5.1V ± 0.3V
D419, 421	41631466	Varistor, MV11Y
COIL		
L405	12035996	RF Choke

L CH MAIN AMP PC BOARD



VARISTOR
POLARITY
IN-CORRECTLY
MARKED ON
P.C.B.
CORRECT POLARITY
ON THIS
RECTORIAL



BLACK

BLUE
RED

GRAY

GRAY

4221-1328

TP1
TP2

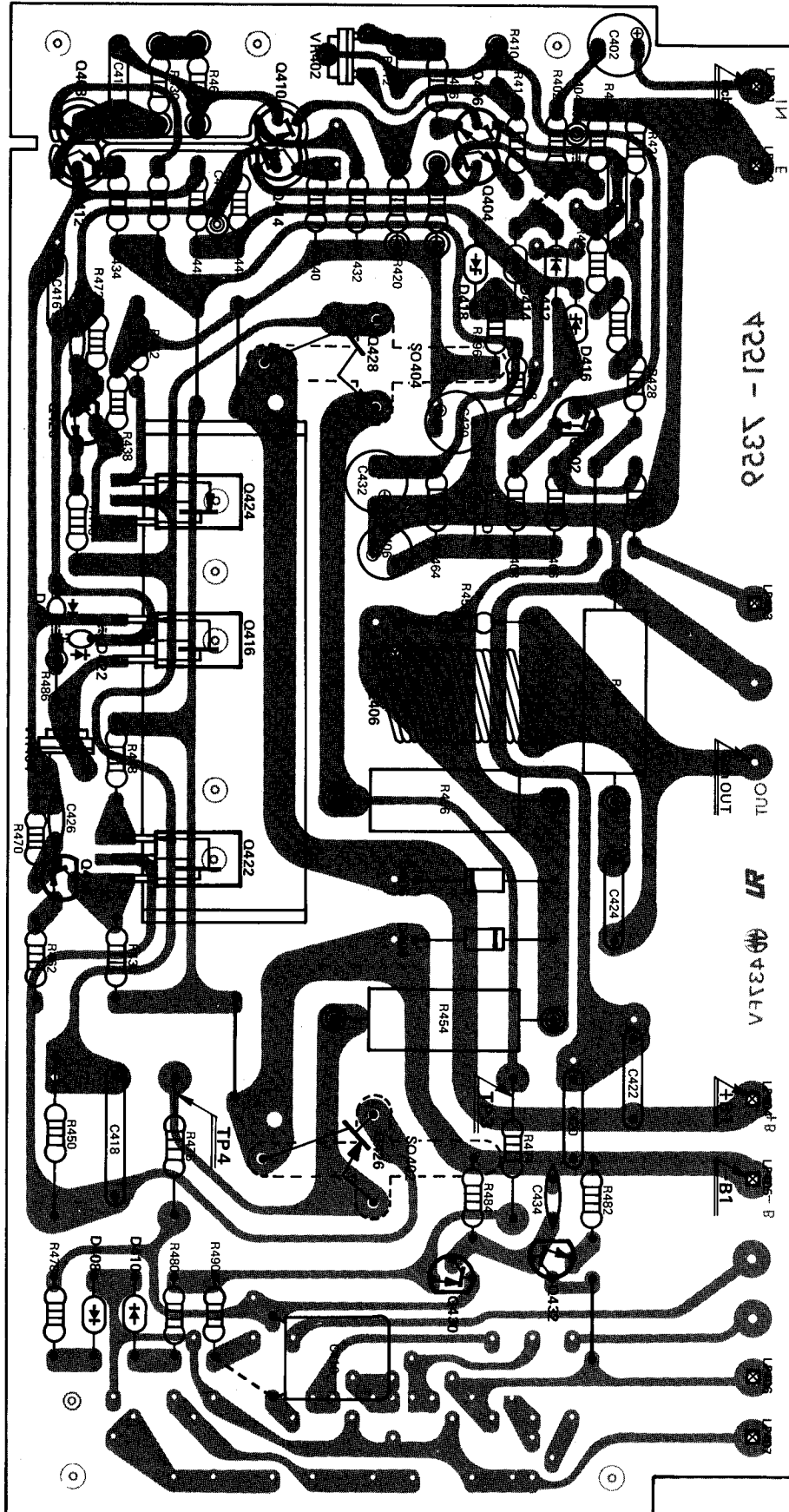
SHIELD

11000

R 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 (F1) or (F2) or (F3) Current Regulator, Differential Amp.
Q408, 412	43035989	2SD666A (C) } Pre-Driver
Q410, 414	43035990	2SB646A (C) }
Q416	43035991	2SD415 (Q) Bias Stabilization
Q418	43035625	2SB647A (C) } Driver
Q422	43035992	2SD669 (C) }
Q420	43035624	2SD667A (C) } Driver
Q424	43035993	2SB649 (C) }
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
DIODE		
D402	42032757	Zener, RD15EB 14.7V ± 0.9V
D404, 406	41631295	SIB01-02
D408, 410	41035628	1SS81
D412, 411	41028593	1S2076
D416, 418	42035972	Zener, RD5R1EB 5.1V ± 0.3V
D420, 422	41631466	Varistor, MV11Y
COIL		
L406	12035996	RF Choke

R CH MAIN AMP PC BOARD



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- IN GND.

(JUMP TO GND.
FOR TEST)

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CHASSIS PARTS LIST

REF. NO.	H/K PART NO.	DESCRIPTION
GENERAL UNIT		
101	00235856	Front Panel Assembly
102	60135865	Cabinet Top Assembly
108	60135866	Cabinet Back
110	62035544	Feet, Cabinet Bottom (X4)
113	60135756	Bracket, Front Right Side
114	60135757	Bracket, Front Left Side
115	60135758	Knob, Volume/Function (X2)
118	60135760	Knob, Balance/Treble/Bass (X3)
121	60135552	Knob, Tape Monitor/Tape Copy (X2)
125	00235861	Bracket, Front Top
126	63235933	Push Button, Speaker 1, 2/Tone Defeat/ Subsonic/High Cut/Capacitance/Hinge/ Mono (X9)
143	63235932	Knob Base, Volume/Balance/Treble/Bass/ Function (X5)
162	63235863	Knob, Loudness
163	63233663	Push Button, Power
ELECTRICAL		
T1	10135867	Power Transformer
SW1	25035554	Push Switch, Power
SW5, 6	25035868	Push Switch, Hinge 6kHz/2.5kHz, 500Hz/150Hz
SW8	25035869	Push Switch, Mono/Stereo
J1	65432119	Headphones Jack
SO1, 2	65435870	External AC Socket, Unswitched, Switched
TE1, 2	65434823A	Speaker Output Terminal
TE3	65435872	4-Pin Jack, Pre-Amp. Output/Main Amp. Input
TE4, 5	65435873	8-Pin Jack, Phono/Tuner/AUX 1/AUX 2 Input, Tape 1 and Tape 2 Input/Output
D7, 8	46735560	Light Emitting Diode, SLP132B Power Indicator
D9	46735560	Light Emitting Diode, SLP132B Tape Monitor Indicator
	51032067	
MULTI VOLTAGE AMPLIFIER		
T1	10135997	Power Transformer
SW1	25035635	Push Switch, Power
FU1, 2, 3, 4	45035637	Fuse, 4AT 250V
SW15	24035639	Power Source Voltage Selector
FU5	45035637	Fuse, 4AT 250V
J2	65432127	5-Pin DIN Jack, REC/PB

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.