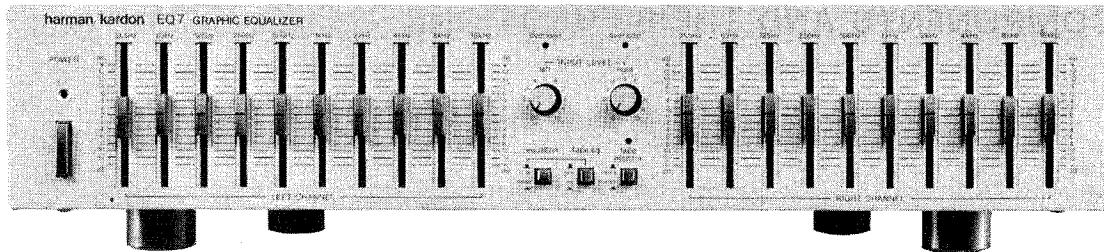


The Harman Kardon Model EQ7

Manual No. 23A

GRAPHIC EQUALIZER

Technical Manual



EQ7

harman/kardon

240 CROSSWAYS PARK WEST, WOODBURY, N.Y. 11797
PRINTED IN JAPAN 1112-H15223A9 P-07819

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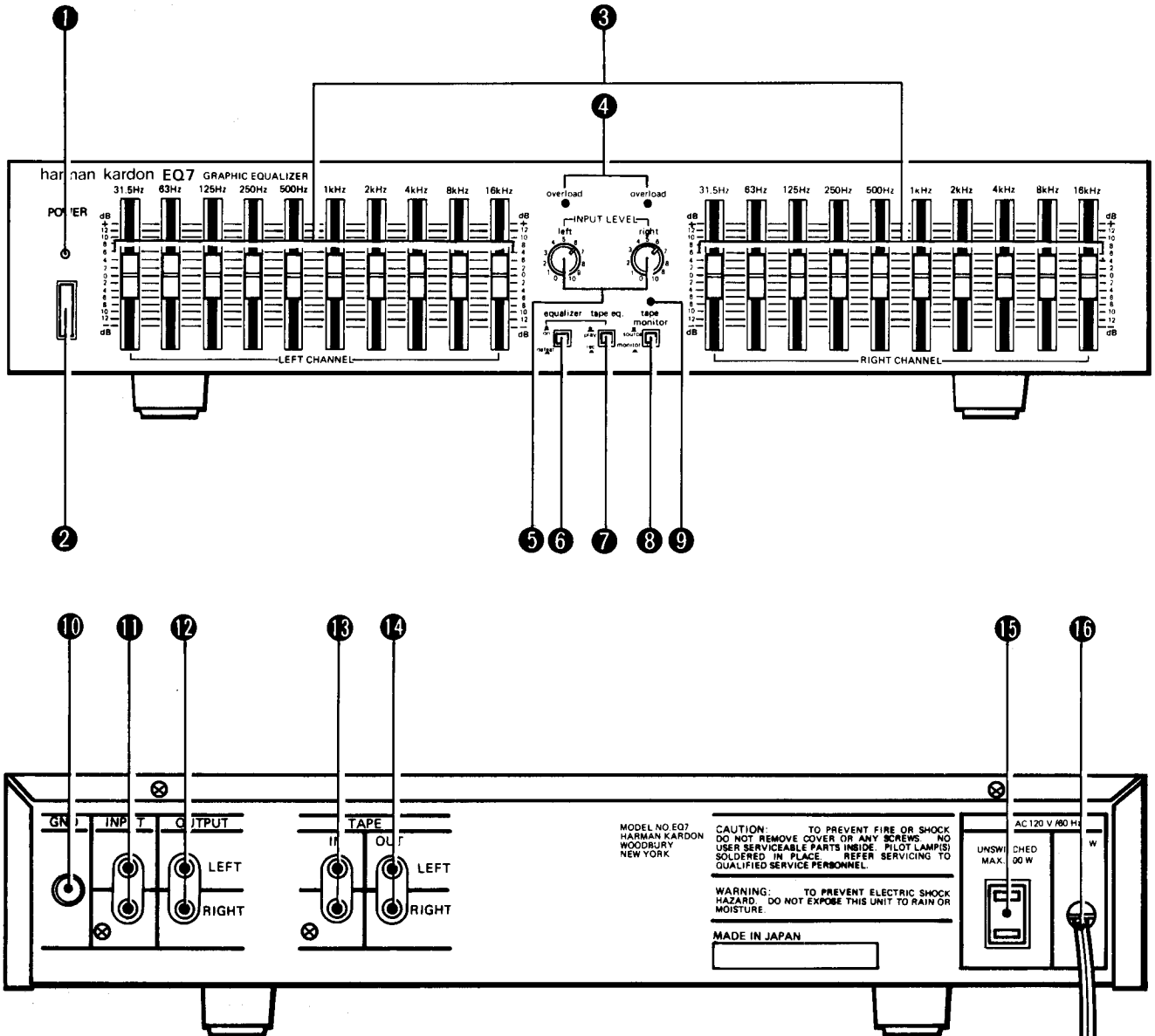
SPECIFICATIONS

Frequency Bands 31.5Hz, 63Hz, 125Hz, 250Hz,
 500Hz, 1kHz, 2kHz, 4kHz,
 8kHz, 16kHz
 Frequency Response 10Hz~120kHz
 Total Harmonic Distortion 0.01%
 Signal-to-Noise Ratio 95dB
 Semiconductors 9 Transistors, 12 ICs, 2 FETs,
 4 LEDs, 4 Diodes, 4 Zener
 Diodes, 1 Bridge Silicon Diode

Power Supply AC 120V, 60Hz
 Power Consumption 5W
 Dimensions 385(W) x 90(H) x 320 (D) mm
 (15-3/16" x 3-9/16" x 12-5/8")
 Weight 3.5kg. (7lbs. 11oz.)

Specifications and components subject to change without notice.
 Overall performance will be maintained or improved.

COMPONENTS AND THEIR FUNCTIONS



1 POWER INDICATOR**2 POWER SWITCH (POWER)**

For power turning on and off.

When this switch is pressed after AC cord connection to an outlet, the POWER indicator illuminates. Press this switch again to turn the power off.

**3 EQUALIZER LEVEL CONTROLS
(LEFT CHANNEL, RIGHT CHANNEL)**

For boosting or cutting of desired frequency subbands. The audio frequency band is divided into 10 subbands from 31.5 Hz to 16 kHz. The adjusting range is ± 12 dB for each subband. Independent control for the left and right channels is possible. The sounds of particular musical instruments can be stressed or suppressed to obtain the best performance in a given room.

4 OVERLOAD INDICATORS**5 INPUT LEVEL CONTROLS (INPUT LEVEL)**

For equalizer input level adjustment.

Independent control for the left and right channel is possible. When the input level in the left or right channel exceeds the allowable limit, the corresponding OVERLOAD indicator illuminates, so turn the control knob counterclockwise until the indicator extinguishes.

6 EQUALIZER SWITCH (equalizer)**ON position:**

Validates the equalizer. The frequency characteristic can be changed as desired by the EQUALIZER LEVEL controls.

DEFEAT position:

The signals bypass the equalizer to give flat frequency characteristic. At this position, the input signals to this unit bypass the internal circuit even if the POWER switch of this unit is turned off, so the connection between the tape deck and the amplifier is not cut off.

7 TAPE EQUALIZER SWITCH (tape eq.)

Always use this switch with the EQUALIZER switch at its ON position.

PLAY position:

The signals from the tape deck connected to this unit are equalized when the TAPE MONITOR switch is at its MONITOR position.

RECORD position:

The signals to the tape deck connected to this unit are equalized to enable recording with the desired frequency characteristic.

8 TAPE MONITOR SWITCH (tape monitor)**MONITOR position:**

The sound reproduced or recorded at the tape deck connected to this unit can be monitored. The MONITOR indicator illuminates.

SOURCE position:

The sound of the source connected to the INPUT jacks of this unit can be enjoyed.

9 TAPE MONITOR INDICATOR**10 GROUND TERMINAL (GND)**

If noise is generated, connect this terminal to the ground terminal of your preamplifier or pre-mainamplifier.

11 INPUT JACKS (INPUT)

Connect these jacks to the tape output jacks of your preamplifier or pre-mainamplifier.

12 OUTPUT JACKS (OUTPUT)

Connect these jacks to the tape input jacks of your preamplifier or pre-mainamplifier.

13 TAPE INPUT JACKS (TAPE IN)

Connect these jacks to the output jacks of your tape deck.

14 TAPE OUTPUT JACKS (TAPE OUT)

Connect these jacks to the input jacks of your tape deck.

15 AC OUTLET (UNSWITCHED)

This is the service outlet for your tape deck, player or tuner. The mains voltage is always supplied to this outlet irrespective of the POWER switch of this unit. Interlocked switching is impossible. The maximum power capacity is 200W.

16 AC POWER CORD

Connect this cord to the AC convenience outlet of other component or mains outlet.

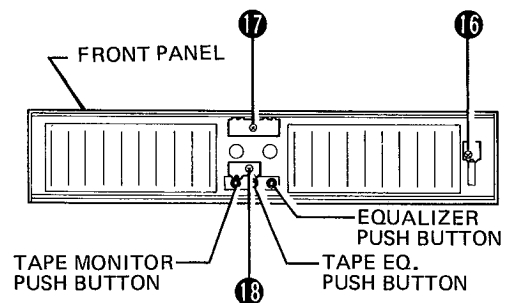
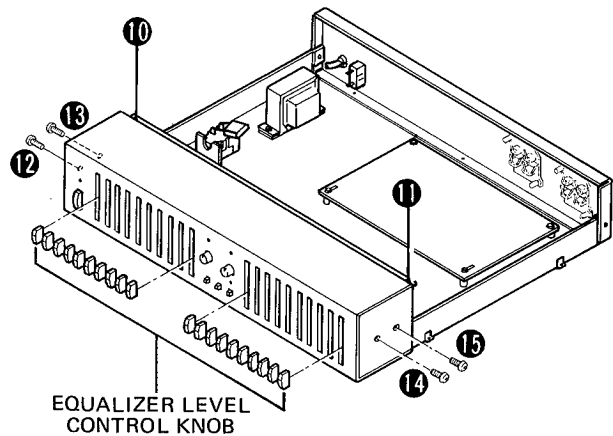
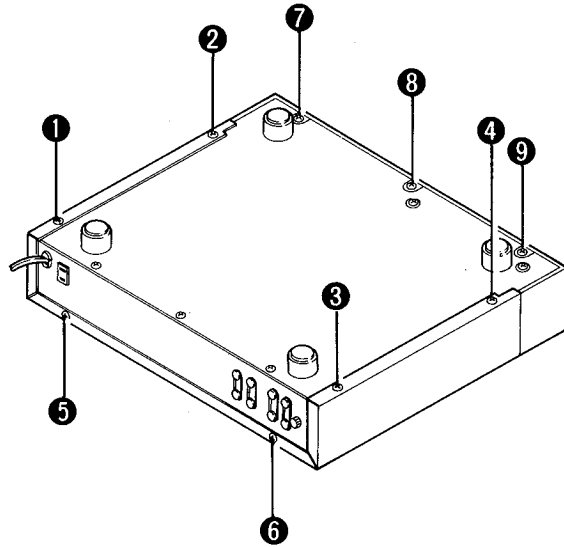
DISASSEMBLY PROCEDURES

CABINET TOP REMOVAL

1. Remove 6 screws ① to ⑥ fixing cabinet top.
2. Slide the cabinet top backward gradually to remove.

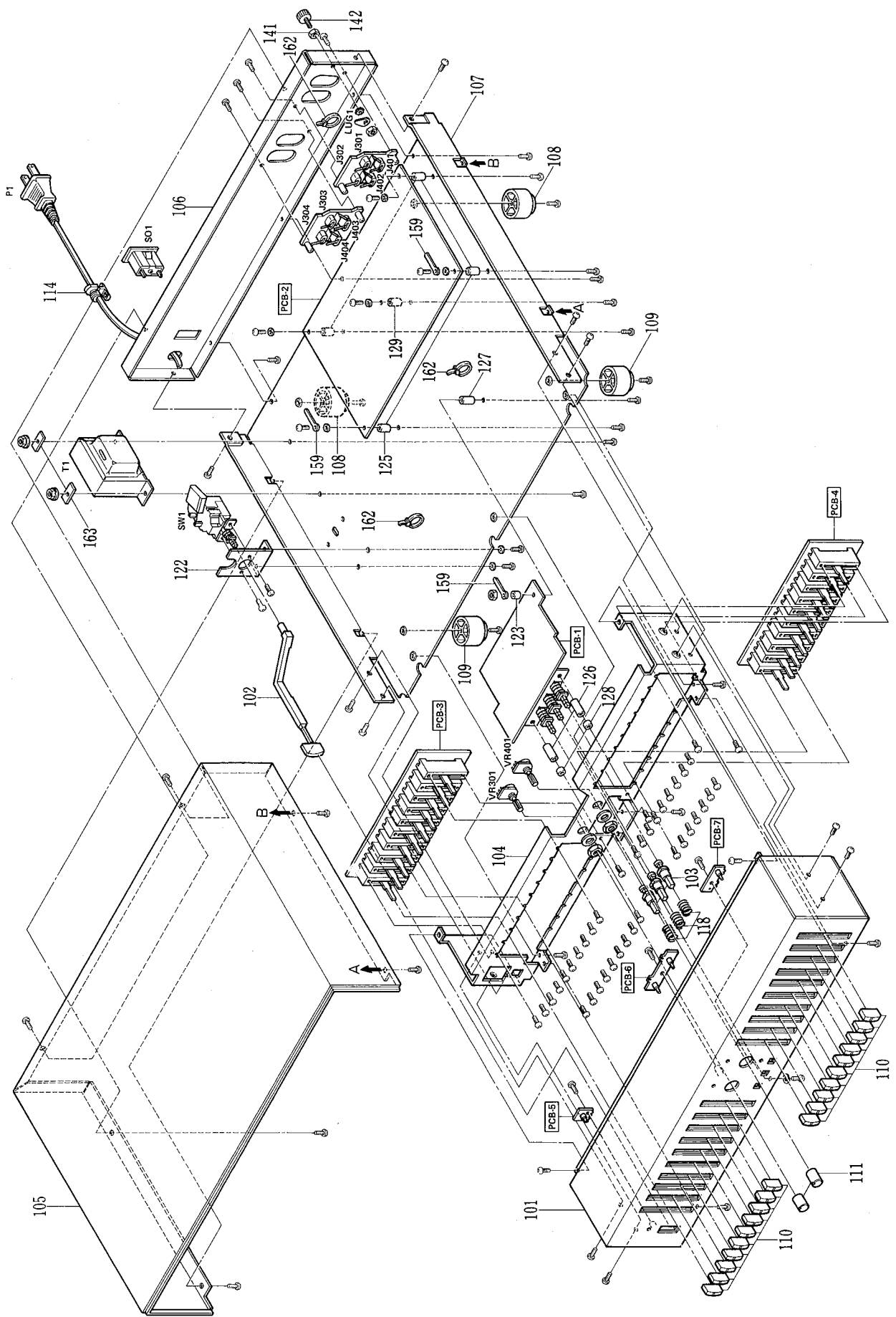
FRONT PANEL ASSEMBLY REMOVAL

3. Complete steps 1 and 2.
4. Pull out 20 Equalizer Level control knobs.
5. Remove 5 screws ⑦ to ⑯ fixing front panel assembly.
6. Pull the front panel assembly toward you gently to remove. If necessary, unsolder the lead wires.
7. Remove 1 screw ⑰ fixing power indicator P.C. board and remove it.
8. Remove 1 screw ⑱ fixing overload indicator P.C. board and remove it.
9. Remove 1 screw ⑲ fixing tape monitor indicator P.C. board and remove it.
10. Remove 3 push buttons and 3 springs; Equalizer, Tape Eq. and Tape monitor.



A B C D E F

GENERAL UNIT EXPLODED VIEW



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GENERAL UNIT PARTS LIST

Ref. No.	Part No.	Description
101	AT-005	Front Panel Assembly
102	AT-007	Push Button Assembly, Power
103	AT-008	Push Button Assembly, Equalizer, Tape Eq., Tape Monitor
104	2211-7220A	Chassis, Front
105	1414-00302	Cabinet Top
106	1424-06702	Cabinet Back
107	FE-060	Cabinet Bottom
108	1319-7230	Foot, Rear
109	1319-7330	Foot, Front
110	1642-03201VN	Knob, Equalizer Level
111	1634-02701	Knob, Input Level
114	SR-4N-4	Bushing, AC Line Cord
118	2651-210186	Spring, Push Button
122	2219-7550	Bracket, Power Switch
123	HF0-003	Spacer, Push Switches P.C. Board
125	CV-078	Spacer, Main P.C. Board
126	2132-01403	Spacer, Push Switches P.C. Board
127	2132-01402	Spacer, Push Switches P.C. Board
128	2132-01405	Spacer, Push Switches P.C. Board
129	EQ-161	Spacer, Main P.C. Board
141	2440-7001	Spacial Nut, GND
142	2310-7002	Spacial Screw, GND
159	2218-7001	Holding Bracket, Lead Wires
162	PLF-1M	Holder, Lead Wires
163	2219-7093	Bracket, Power Transformer

ELECTRICAL PARTS LIST

CHASSIS MISCELLANEOUS

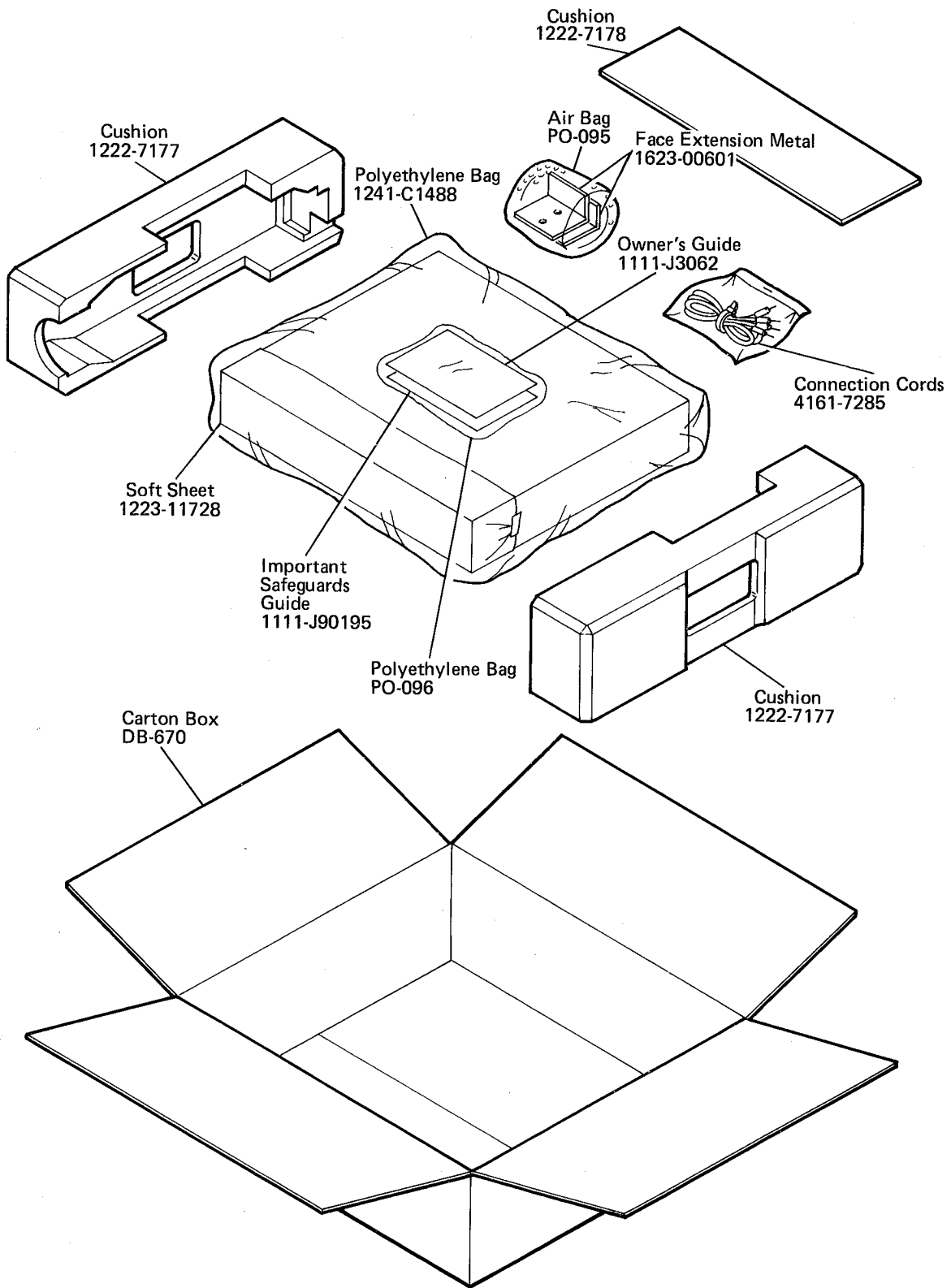
VR301,401	BB0-0015-00	Variable Resistor, 50k Ω (B), Input Level Control
C1	0.01UF125VAC	0.01 μ F, AC125V, Film
P1	LW-180-01	AC Line Cord
SO1	S2-723B-50	AC Outlet, Unswitched
SW1	BF0-0021-00	Push Switch, Power
T1	BD0-0023-00	Power Transformer
JM1,2,3,4	LW-178-025	Jumper Lead, 5-Wire
J301,302,303,304, 401,402,403,404	TM-150	4-Pin Jack, Input, Output, Tape In, Tape Out
LUG1	TM-152	Lug Terminal, GND

PCB-1 PUSH SWITCHES P.C. BOARD

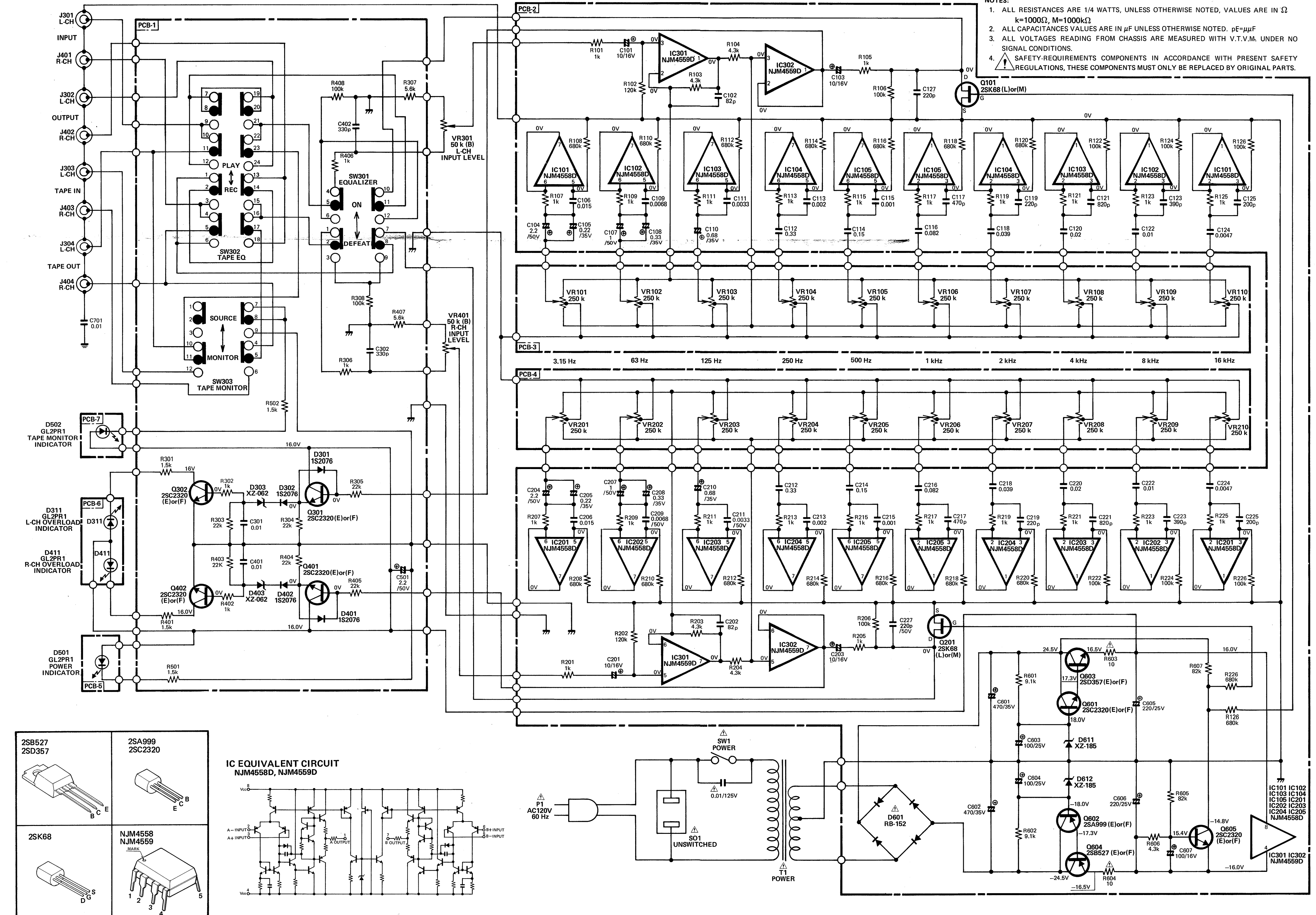
CAPACITORS		
C501	CE 2.2UF 50V	2.2 μ F, 50V, Electrolytic
TRANSISTORS		
Q301,302,401,402	2SC2320(E,F)	2SC2320(E) or (F), Overload Indicator Sensor, Overload Indicator Driver
DIODES		
D301,302,401,402	1S2076	1S2076
D303,403	XZ-062	Zener, XZ-062
MISCELLANEOUS		
SW301,302,303	BF0-0022-00	Push Switch, Equalizer, Tape Eq., Tape Monitor

Ref. No.	Part No.	Description
PCB-2 MAIN P.C. BOARD		
RESISTORS		
R603,604	RD 1/4S 10 Ω	10 Ω , 1/4W, Fuse
CAPACITORS		
C101,103,201,203	CE 10UF 16V	10 μ F, 16V, Electrolytic
C104,204	CE 2.2UF 50V	2.2 μ F, 50V, Electrolytic
C105,205	CS 0.22UF 35V	0.22 μ F, 35V, Tantalum Electrolytic
C107,207	CE 1UF 50V	1 μ F, 50V, Electrolytic
C108,208	CS 0.33UF 35V	0.33 μ F, 35V, Tantalum Electrolytic
C110,210	CS 0.68UF 35V	0.68 μ F, 35V, Tantalum Electrolytic
C117,217	CM 470PF J50V	470pF, 50V, Mica
C119,127,219,227	CM 220PF J50V	220pF, 50V, Mica
C123,223	CM 390PF J50V	390pF, 50V, Mica
C125,225	CM 220PF J50V	200pF, 50V, Mica
C601,602	CE 470UF 35V	470 μ F, 35V, Electrolytic
C603,604	CE 100UF 25V	100 μ F, 25V, Electrolytic
C605,606	CE 220UF 25V	220 μ F, 25V, Electrolytic
C607	CE 100UF 16V	100 μ F, 16V, Electrolytic
INTEGRATED CIRCUITS		
IC101,102,103,104, 105,201,202,203, 204,205	NJM4558D	NJM4558D, Equalizer Amp.
IC301,302	NJM4559D	NJM4559D, Line Output Amp.
TRANSISTORS		
Q101,201	2SK68(L,M)	F.E.T., 2SK68(L) or 2SK68(M), Muting
Q601,605	2SC2320(E,F)	2SC2320(E) or 2SC2320(F), Voltage Regulator, Muting
Q602	2SA999(E,F)	2SA999(E) or 2SA999(F), Voltage Regulator
Q603	2SD357(E,F)	2SD357(E) or 2SD357(F), Voltage Regulator
Q604	2SB527(E,F)	2SB527(E) or 2SB527(F), Voltage Regulator
DIODES		
D601	RB-152	Bridge Silicon, RB-152
D611,612	XZ-185	Zener, XZ-185
PCB-3 L-CH. EQUALIZER LEVEL CONTROL P.C. BOARD		
VR101,102,103,104, 105,106,107,108, 109,110	BB0-0013-00	Variable Resistor, 250k Ω (B), Equalizer Level Control
PCB-4 R-CH. EQUALIZER LEVEL CONTROL P.C. BOARD		
VR201,202,203,204, 205,206,207,208, 209,210	BB0-0013-00	Variable Resistor, 250k Ω (B), Equalizer Level Control
PCB-5 POWER INDICATOR P.C. BOARD		
D501	GL2PR1	Light Emitting Diode, GL2PR1, Power Indicator
PCB-6 OVERLOAD INDICATOR P.C. BOARD		
D311,411	GL2PR1	Light Emitting Diode, GL2PR1, Overload Indicator
PCB-7 TAPE MONITOR INDICATOR P.C. BOARD		
D502	GL2PR1	Light Emitting Diode, GL2PR1, Tape Monitor Indicator

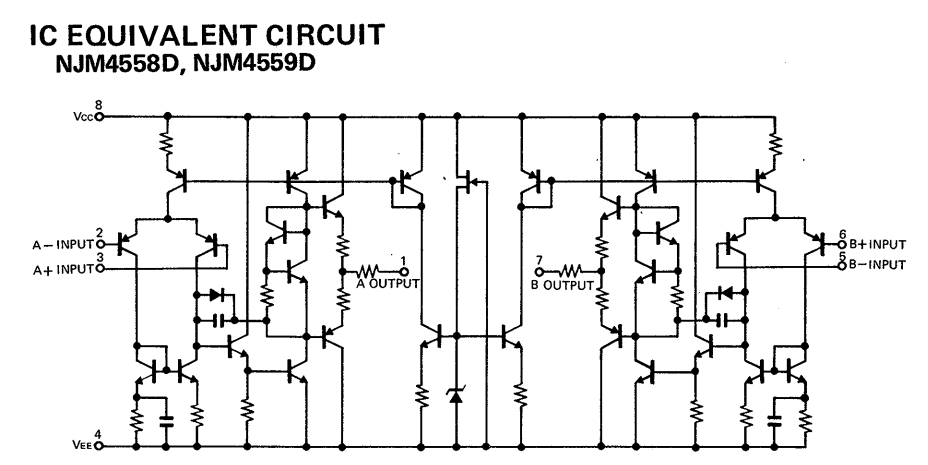
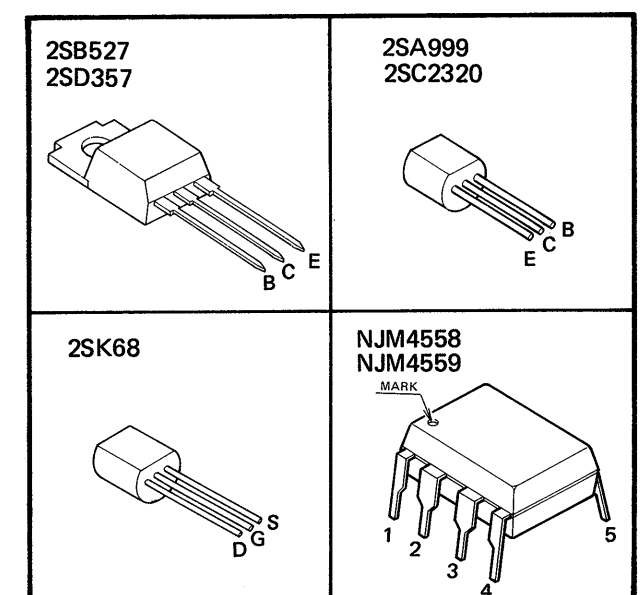
PACKAGE



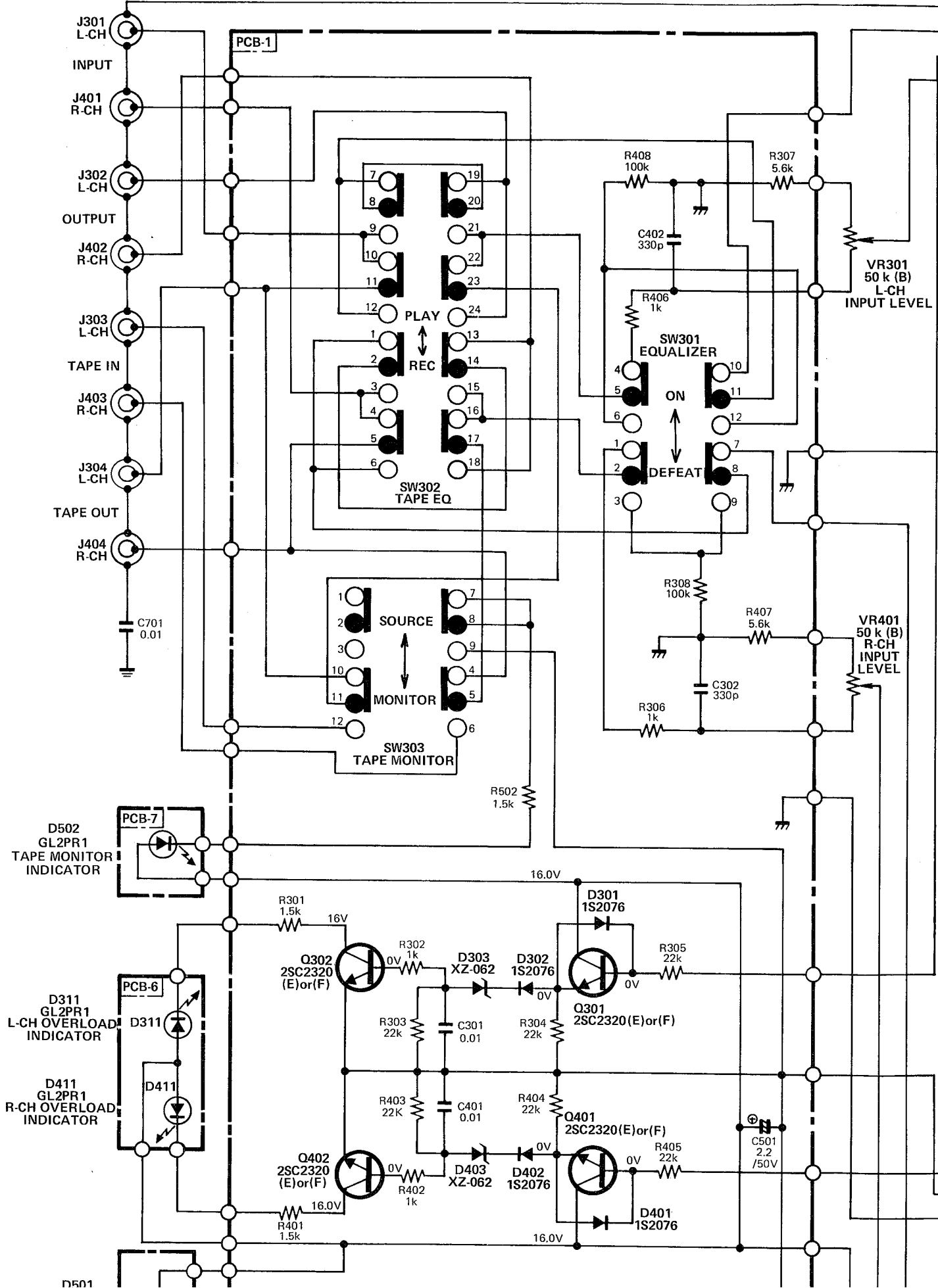
SCHEMATIC DIAGRAM



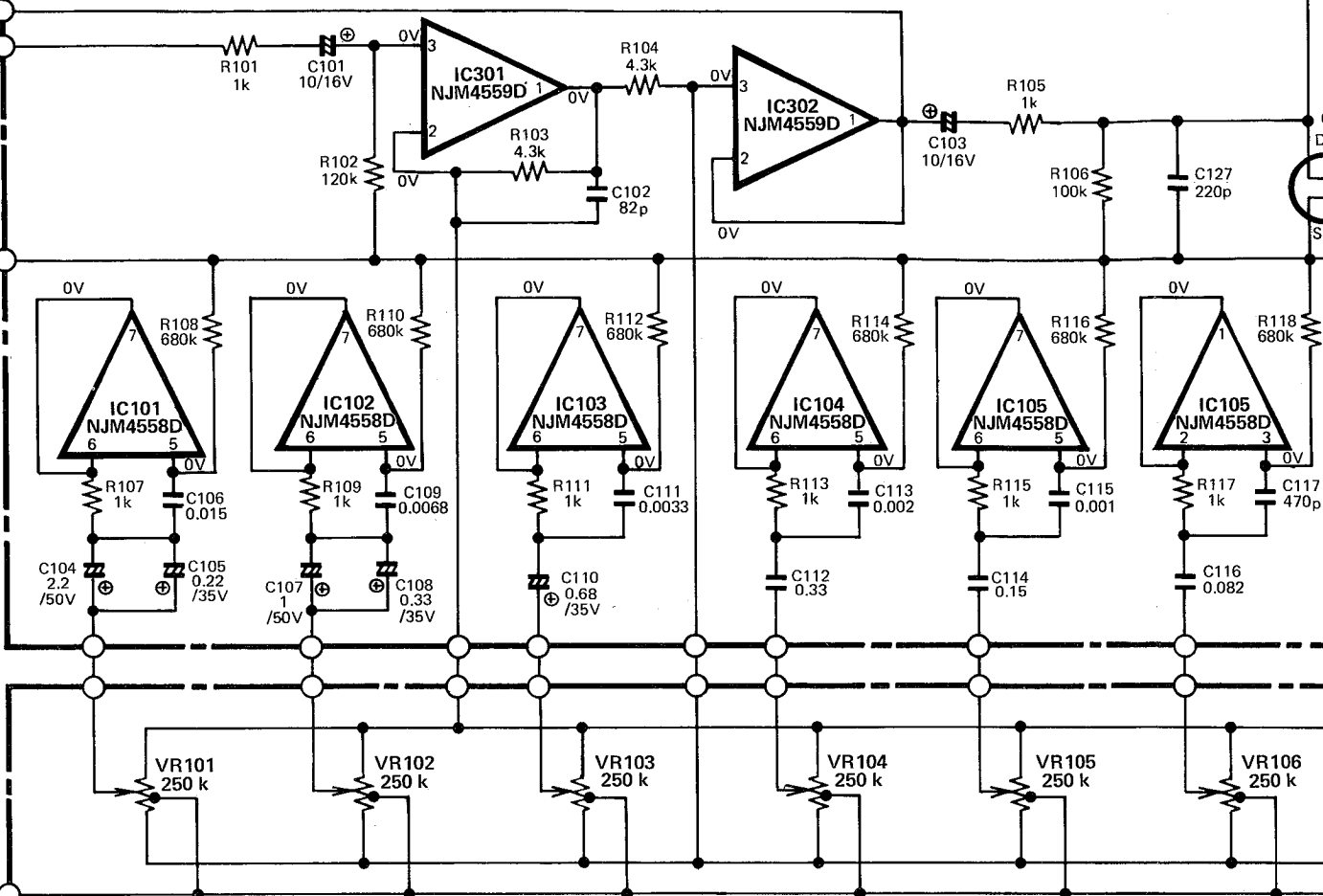
- NOTES:
1. ALL RESISTANCES ARE 1/4 WATTS, UNLESS OTHERWISE NOTED, VALUES ARE IN Ω
k=1000 Ω , M=1000k Ω
 2. ALL CAPACITANCES VALUES ARE IN μ F UNLESS OTHERWISE NOTED. pF= μ F
 3. ALL VOLTAGES READING FROM CHASSIS ARE MEASURED WITH V.T.V.M. UNDER NO SIGNAL CONDITIONS.
 4. SAFETY REQUIREMENTS COMPONENTS IN ACCORDANCE WITH PRESENT SAFETY REGULATIONS, THESE COMPONENTS MUST ONLY BE REPLACED BY ORIGINAL PARTS.



SCHEMATIC DIAGRAM



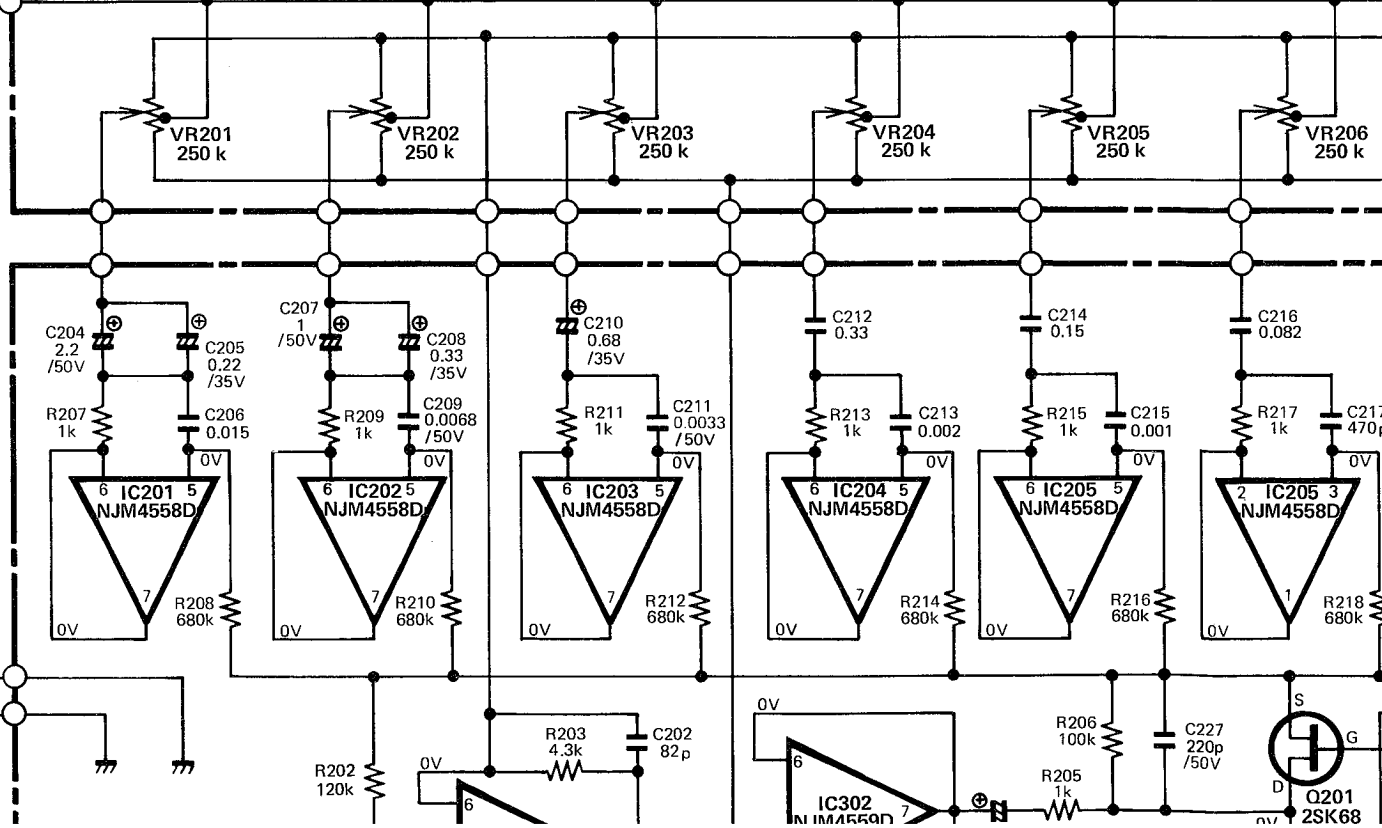
PCB-2




PCB-3

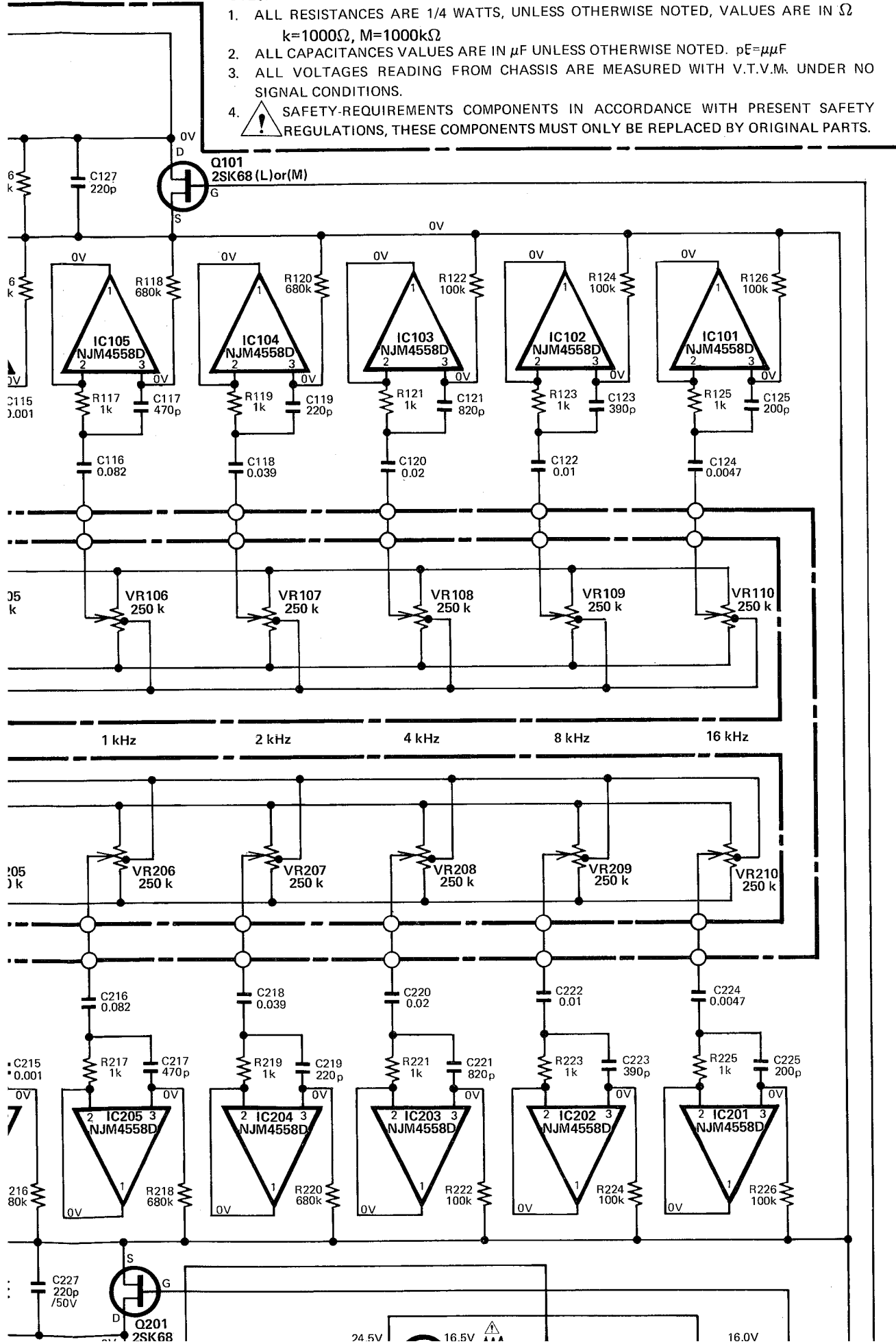
3.15 Hz 63 Hz 125 Hz 250 Hz 500 Hz 1 kHz

PCB-4

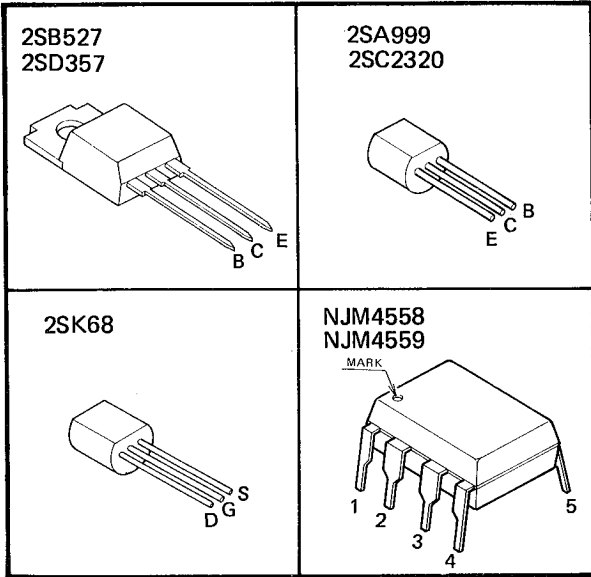
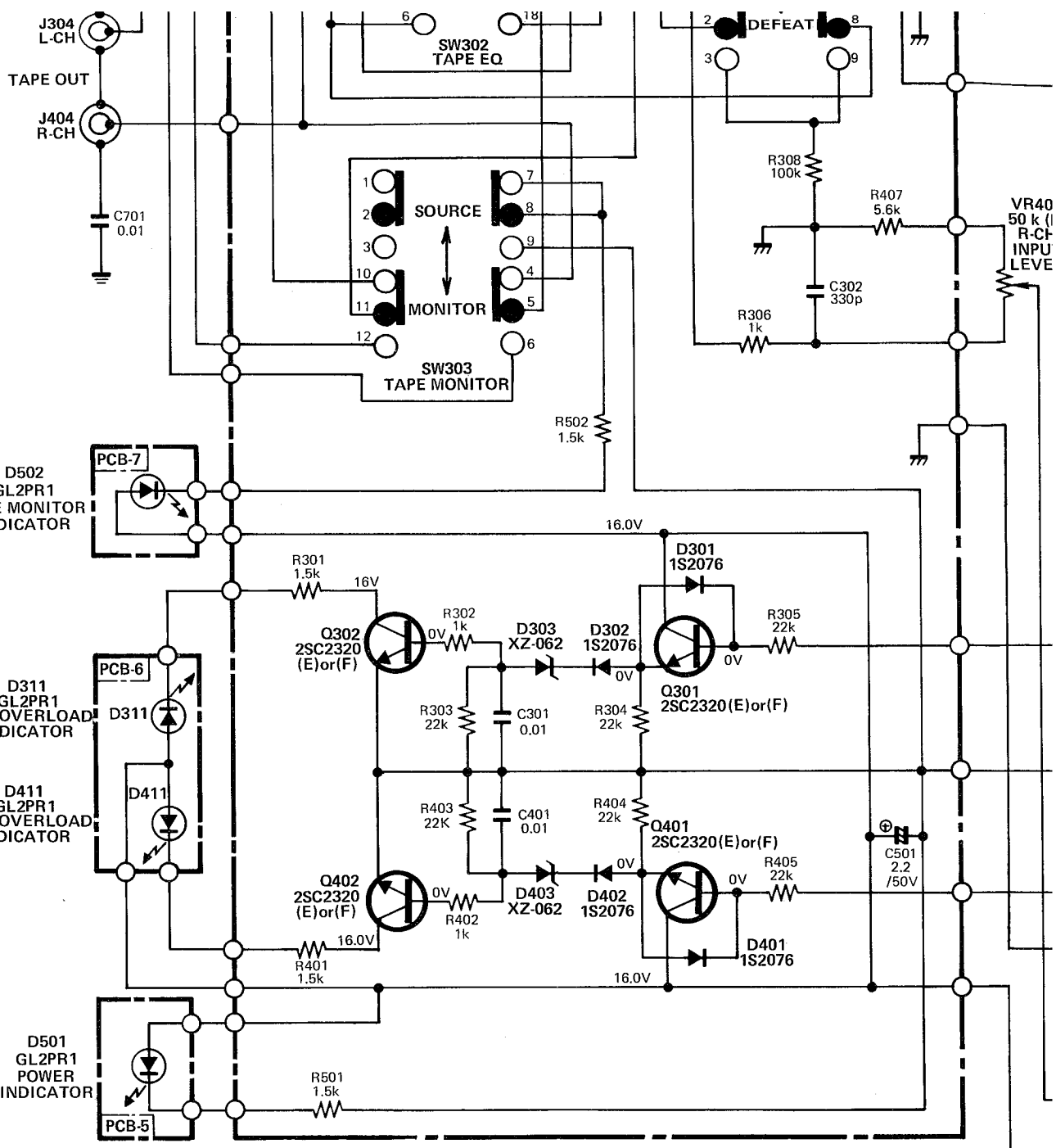


NOTES:

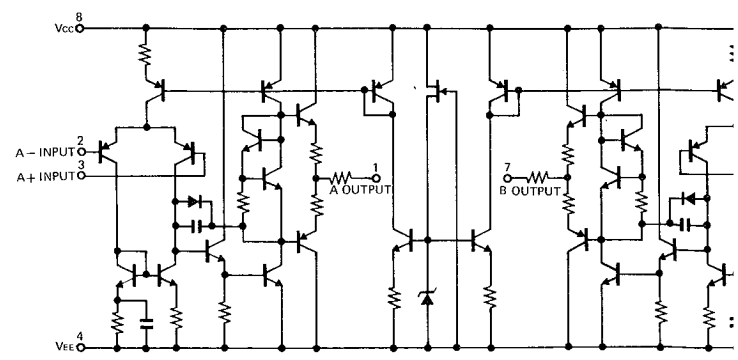
1. ALL RESISTANCES ARE 1/4 WATTS, UNLESS OTHERWISE NOTED, VALUES ARE IN Ω
 $k=1000\Omega$, $M=1000k\Omega$
2. ALL CAPACITANCES VALUES ARE IN μF UNLESS OTHERWISE NOTED. $pF=\mu\mu F$
3. ALL VOLTAGES READING FROM CHASSIS ARE MEASURED WITH V.T.V.M. UNDER NO SIGNAL CONDITIONS.
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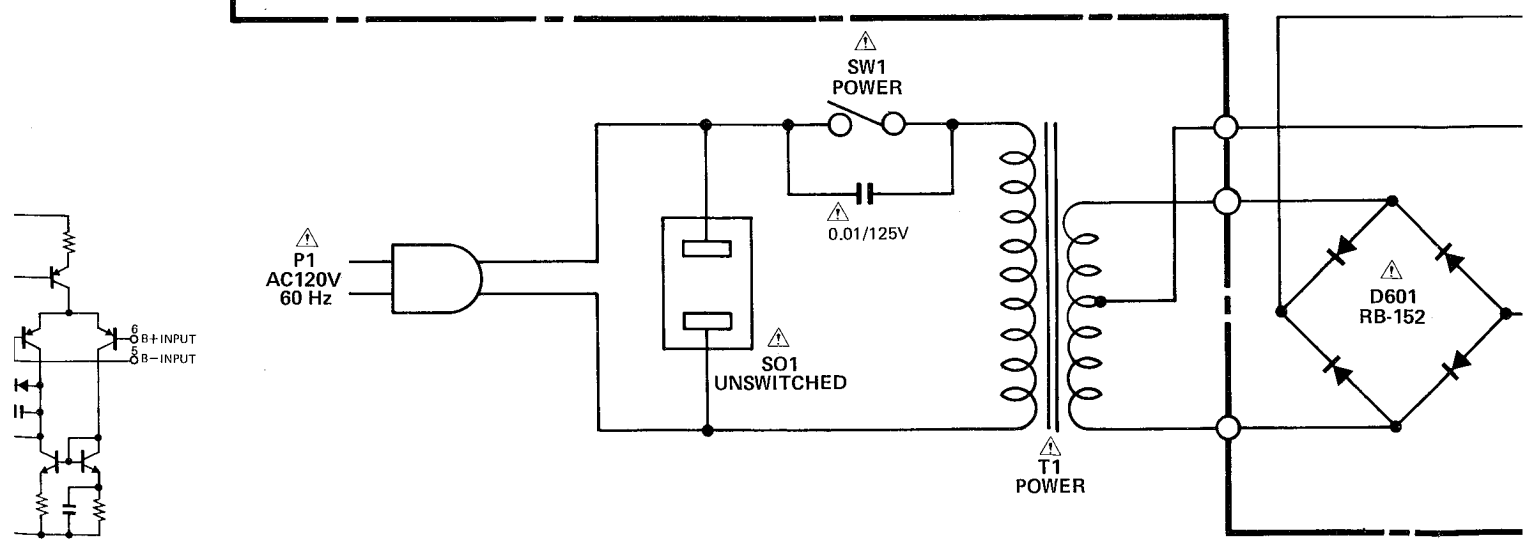
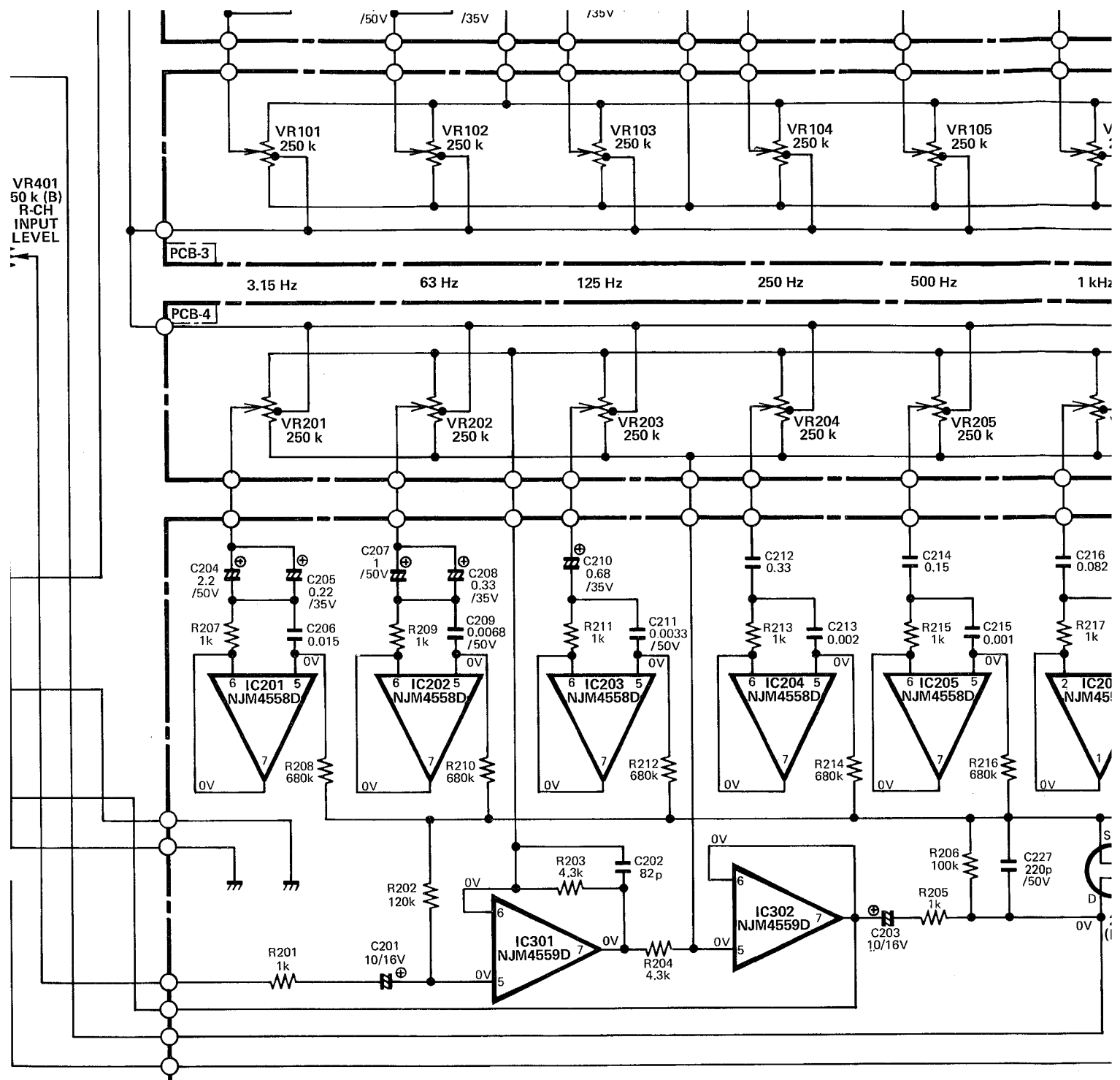


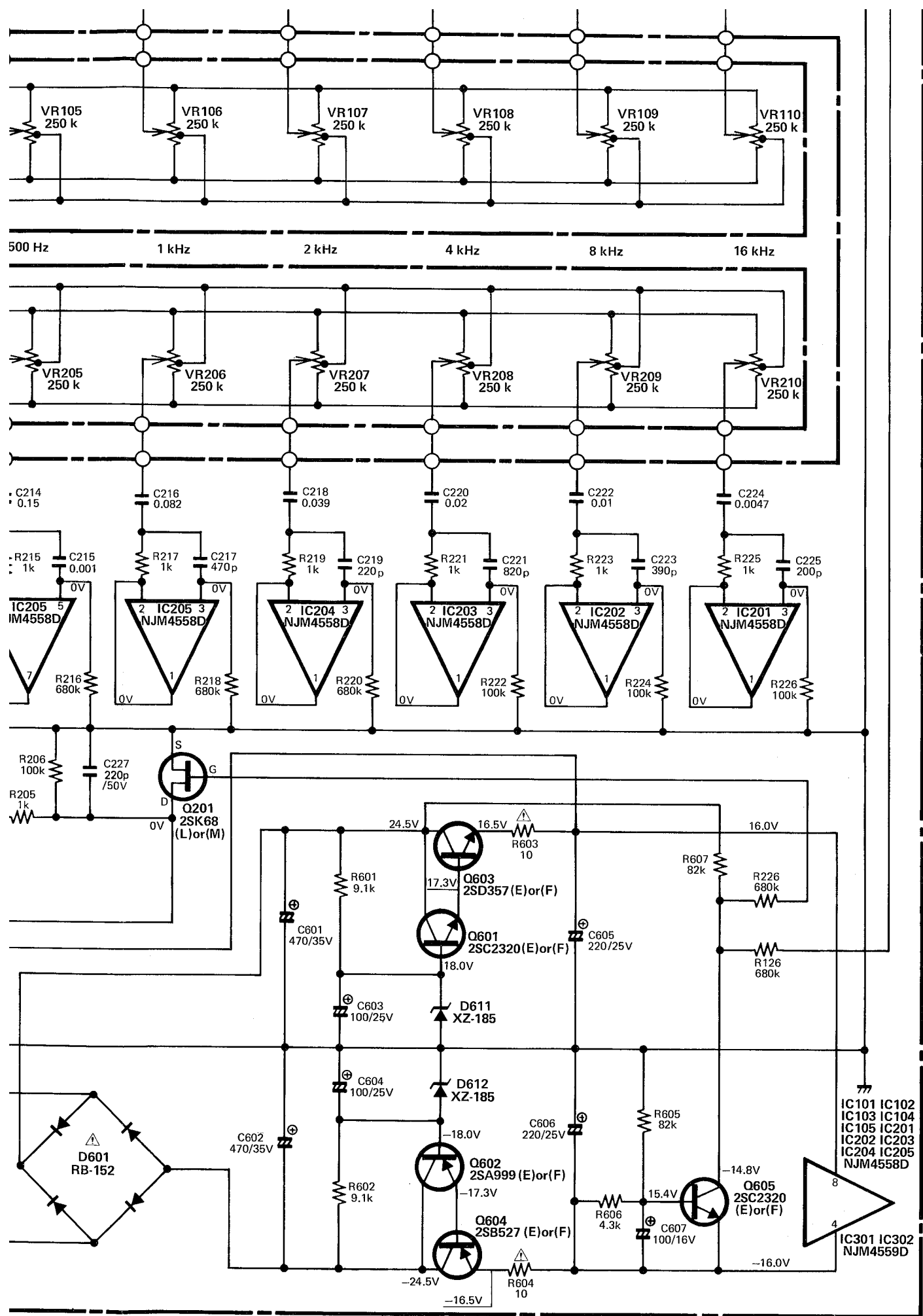
C
D
E
F



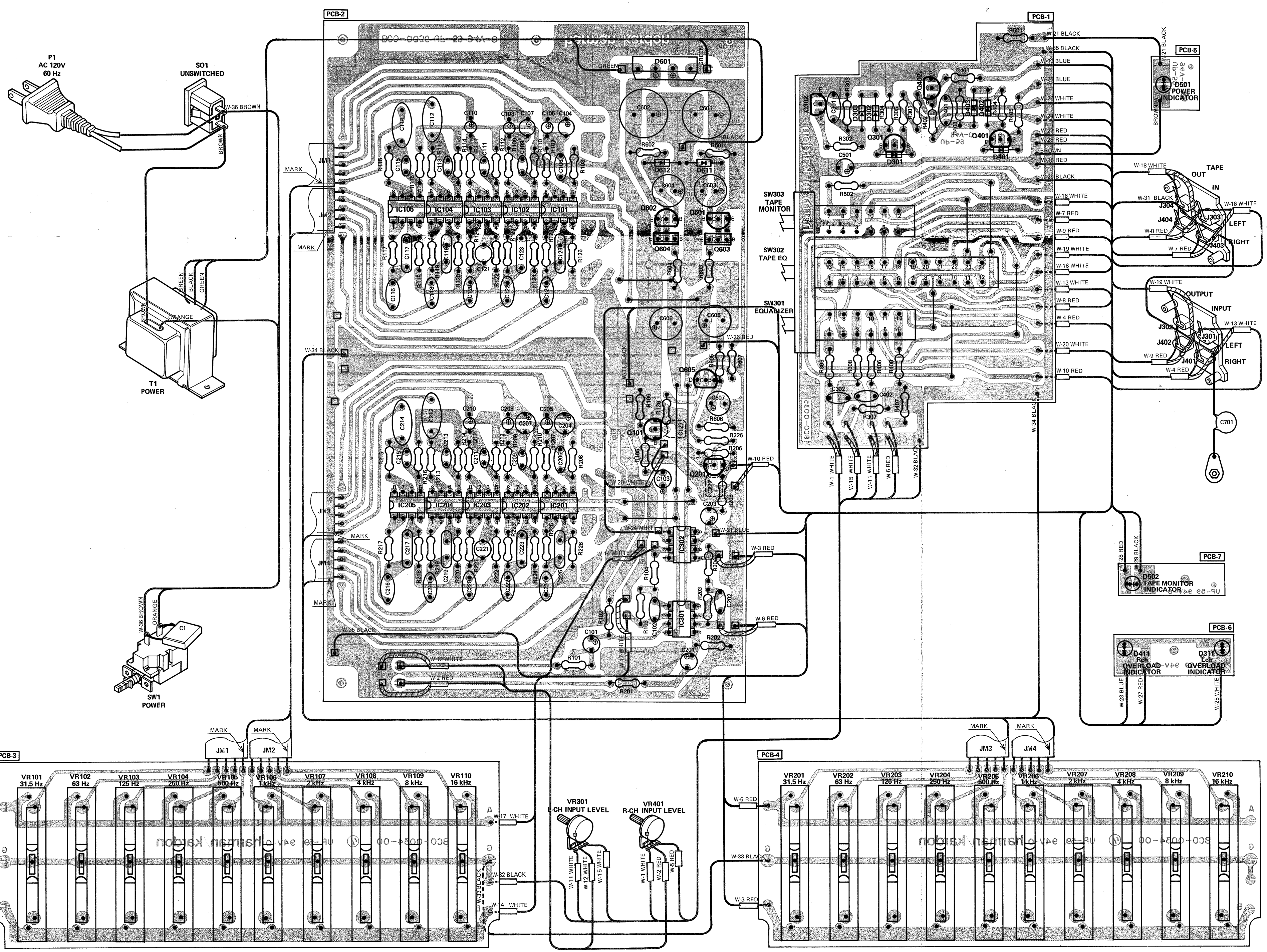
**IC EQUIVALENT CIRCUIT
NJM4558D, NJM4559D**



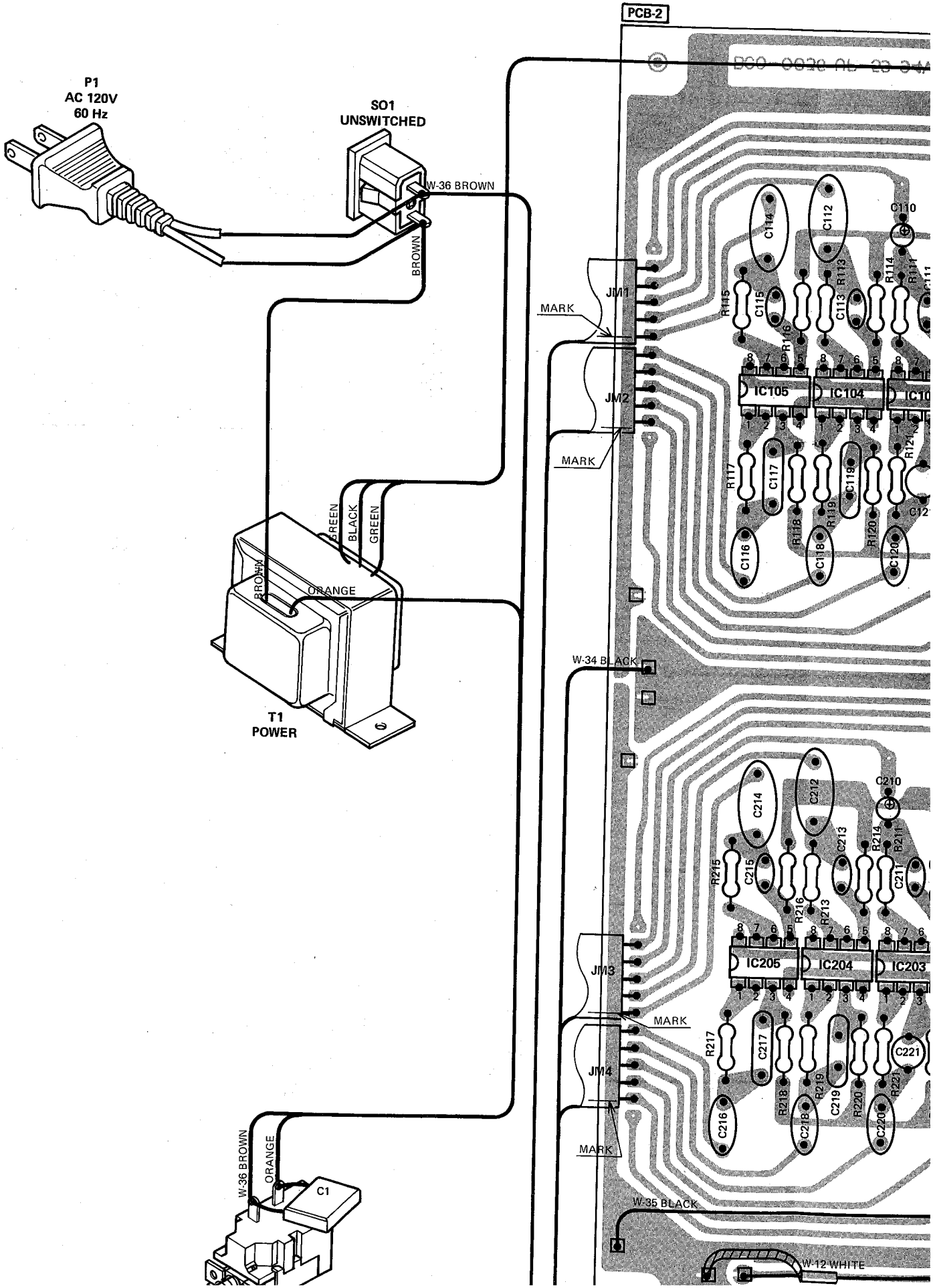


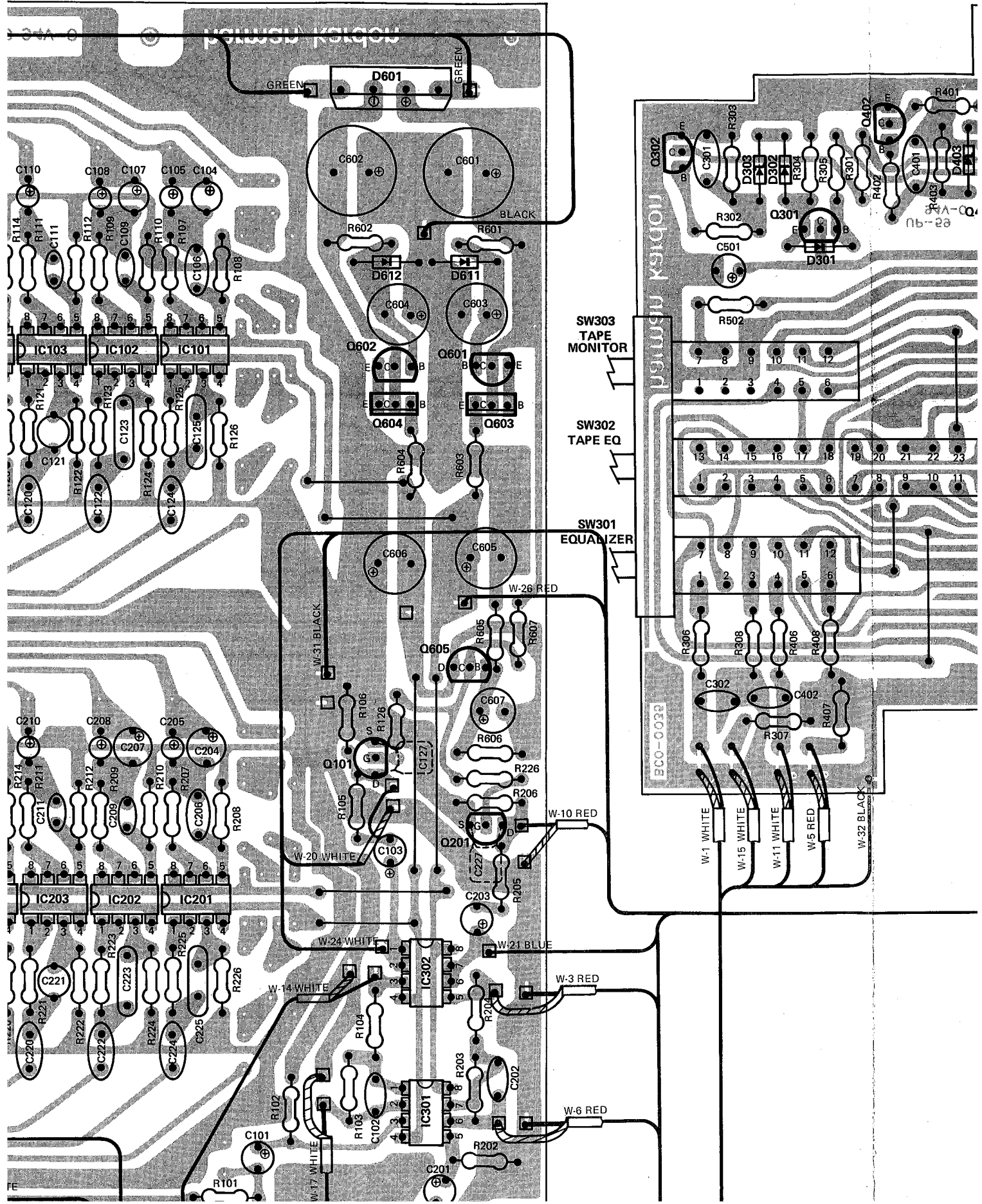


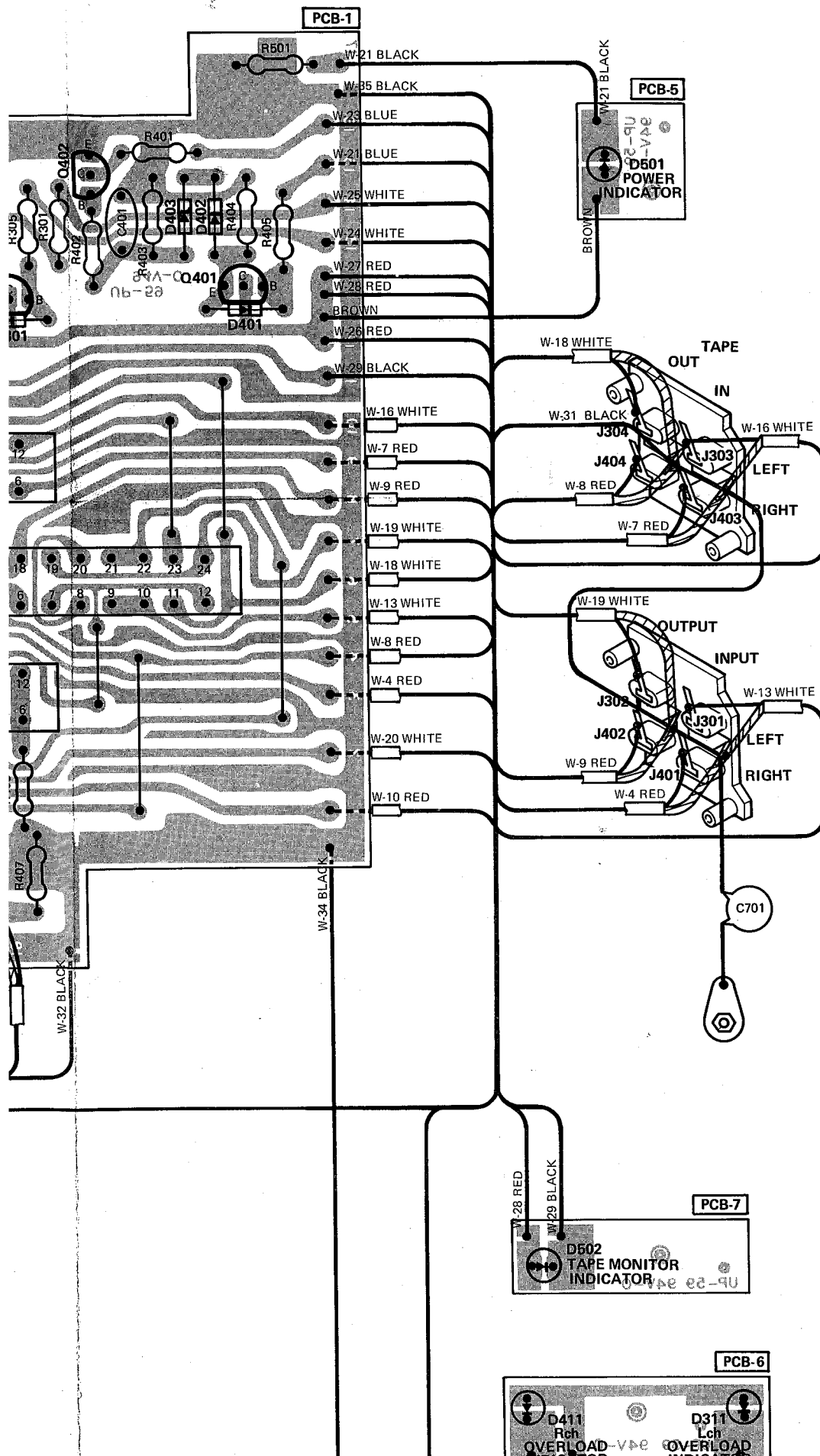
WIRING DIAGRAM



WIRING DIAGRAM







C
D
E
F

