

TA-V11/V11W

SERVICE MANUAL



Photo: TA-V11

TA-V11 and TA-V11W are an integrated stereo amplifiers in LBT-V11 and LBT-V11W, respectively.

TA-V11:
 US Model
 Canadian Model
 AEP Model
 UK Model
 E Model
 TA-V11W:
 AEP Model
 UK Model

SPECIFICATIONS

AUDIO POWER SPECIFICATIONS (US model)

POWER OUTPUT AND TOTAL HARMONIC DISTORTION:

With 6 ohm loads, both channels driven, from 40 – 20,000 Hz; rated 25 watts per channel minimum RMS power, with no more than 0.5% total harmonic distortion from 250 milliwatts to rated output.

Continuous RMS power output

Canadian, AEP, G-AEP, UK model: 25 + 25 watts

E model: 30 + 30 watts

(6 ohms, at 1 kHz, 0.5 % THD)

Canadian, AEP, G-AEP, UK model: 20 + 20 watts

E model: 25 + 25 watts

(6 ohms, 40 Hz – 20 kHz, 0.5 % THD)

Music power output 120 W (6 ohms, 5% THD) (E model)

Inputs	Sensitivity	Impedance
PHONO (phono jacks)	2 mV	50 kilohms
CD/AUX (phono jacks)	150 mV	50 kilohms
MIC (phone jack)	2 mV	20 kilohms

Outputs

HEADPHONES (stereo phone jack)	Accepts headphones of 8 ohms or more
SPEAKER	Accepts speakers of 6 to 16 ohms

Frequency response PHONO: RIAA curve ± 0.5 dB
 CD/AUX: 15 Hz – 50 kHz $+0$ dB -3 dB
 MIC: 100 Hz – 10 kHz $+0$ dB -6 dB
 Dimensions Approx. 355 x 77 x 250 mm (w/h/d)
 (14 x 3 $\frac{1}{8}$ x 9 $\frac{7}{8}$ inches)
 incl. projecting parts and controls
 Weight Approx. 4.8 kg (10 lb 10 oz) net

— Continued on page 2 —

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY SHADING AND MARK \triangle ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFIÉS PAR UNE TRAME ET UNE MARQUE \triangle SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.



INTEGRATED STEREO AMPLIFIER

SONY®

AUD

General

Power requirements

US, Canadian model:	120 V ac, 60 Hz
AEP, G-AEP model:	220 V ac, 50 Hz (240 V ac adjustable by authorized Sony personnel)
UK model:	240 V ac, 50 Hz (220 V ac adjustable by authorized Sony personnel)
E model:	120, 220 or 240 V ac adjustable, 50/60 Hz

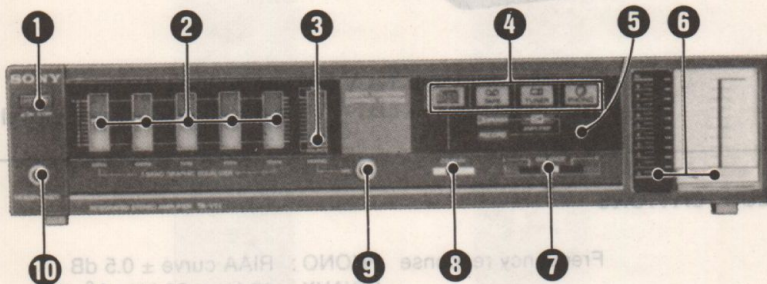
Power consumption

US model:	80 watts
Canadian model:	120 watts
AEP, G-AEP, UK model:	90 watts (TA-V11), 100 watts (TA-V11W)
E model:	100 watts

AC outlet 1 switched, 100 watts max. (for E model)

Note:

There are two types (E2 and E3) for E model. Turntable system is supplied for E2 model and not supplied for E3 model.

FUNCTION OF CONTROLS**1 POWER switch**

Depress this switch (ON) to turn on the power of the stereo system. To turn it off, press the switch again (OFF).

2 Graphic equalizer controls

Normally set all the graphic equalizer controls to the center positions to obtain the original tone quality. To equalize the listening or recording sound, slide each control upwards to increase the level of the frequency band, and downwards to decrease the level.

100 Hz: Use to boost or cut the bass.

400 Hz: Use to adjust the middle frequency range.

1 kHz: Use to provide more presence of vocals.

4 kHz: Use to adjust the brightness of sound.

12 kHz: This control effects general treble. Slide downwards to reduce high frequency noise, such as tape hiss.

3 MIXING control

Adjusts the balance between the volume of the microphone and the program source. Slide the control towards MIC to increase microphone volume, and towards SOURCE to increase source volume.

When not in use for microphone mixing, slide this control fully to SOURCE.

4 Function indicators

The indicator lights to show the input source in use. When the power is turned on, the TUNER indicator lights.

AUX: When the CD/AUX button is pressed.

TAPE: When the \triangleright key of the cassette deck is pressed.

TUNER: When the BAND, TUNING or PRESET key of the tuner is pressed.

PHONO: When the START/STOP key of the turntable is pressed. (For E3 model, when the PHONO button is pressed.)

5 PHONO button (E3 model only)

Press to listen to or record record programs connected to the PHONO inputs.

6 VOLUME control and indicator

Slide the control upwards to increase the overall sound level, and downwards to decrease it.

7 BALANCE control

Adjusts the balance of the left and right channel output levels.

8 CD/AUX (compact disc/auxiliary input) button

Press this button to listen to or record programs connected to the CD/AUX inputs.

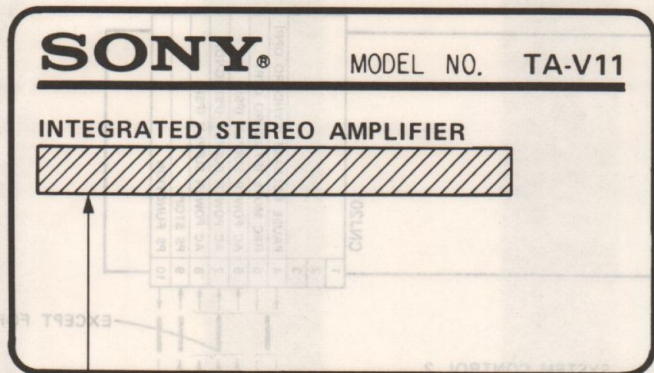
9 MIC (microphone) jack (phone jack)

Connect a microphone for microphone mixing.

10 HEADPHONES jack (stereo phone jack)

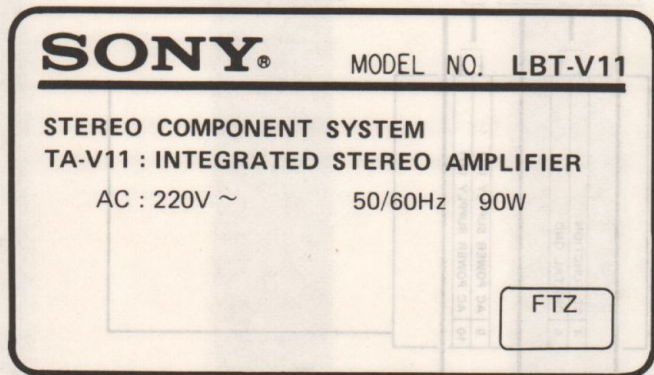
MODEL IDENTIFICATION

TA-V11:

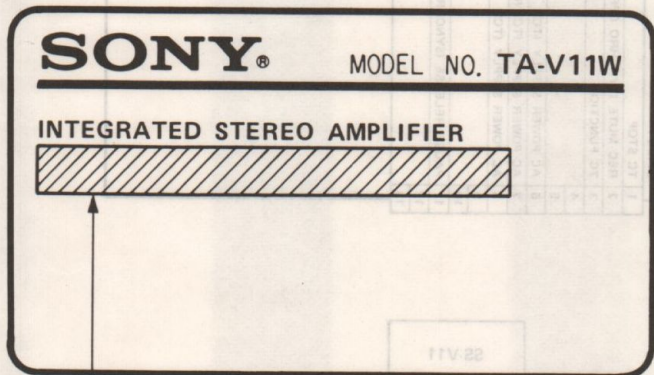


US model: AC : 120V 60Hz 80W
 Canadian model: AC : 120V 60Hz 120W
 AEP model: AC : 220V ~ 50/60Hz 90W
 UK model: AC : 240V ~ 50/60Hz 90W
 E model: AC : 120/220/240V ~ 50/60Hz 100W

TA-V11 (G-AEP model):



TA-V11W:



AEP model: AC : 220V ~ 50/60Hz 100W
 UK model: AC : 240V ~ 50/60Hz 100W

SAFETY CHECK-OUT (US Model)

After correcting the original service problem, perform the following safety check before releasing the set to the customer:

Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microampers). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2V AC range are suitable. (See Fig. A)

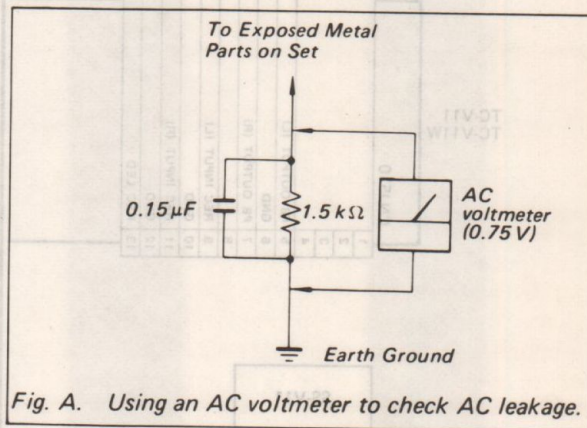


Fig. A. Using an AC voltmeter to check AC leakage.

CONNECTIONS BETWEEN EACH SET

After connecting the original service problem, perform the following safety check before releasing the set to the customer:
 Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

PS-LX330P

LEAKAGE TEST

The AC leakage test is performed on the exposed metal part to earth ground. The AC leakage meter is suitable for measuring the voltage drop across a resistor by means of a VOM or a specially designed AC voltmeter. The voltage scale must be set to the low range (0.5V and 50 and 500V) and the VOM must be expanded to the 500V range. The meter must be set to the AC range and the meter must be set to the 500V range. The meter must be set to the 500V range.

Meaning the voltage drop across a resistor by means of a VOM or a specially designed AC voltmeter. The voltage scale must be set to the low range (0.5V and 50 and 500V) and the VOM must be expanded to the 500V range. The meter must be set to the AC range and the meter must be set to the 500V range.

Fig. A Using an AC voltmeter to check AC leakage. Earth Ground

Fig. A Using an AC voltmeter to check AC leakage. Earth Ground

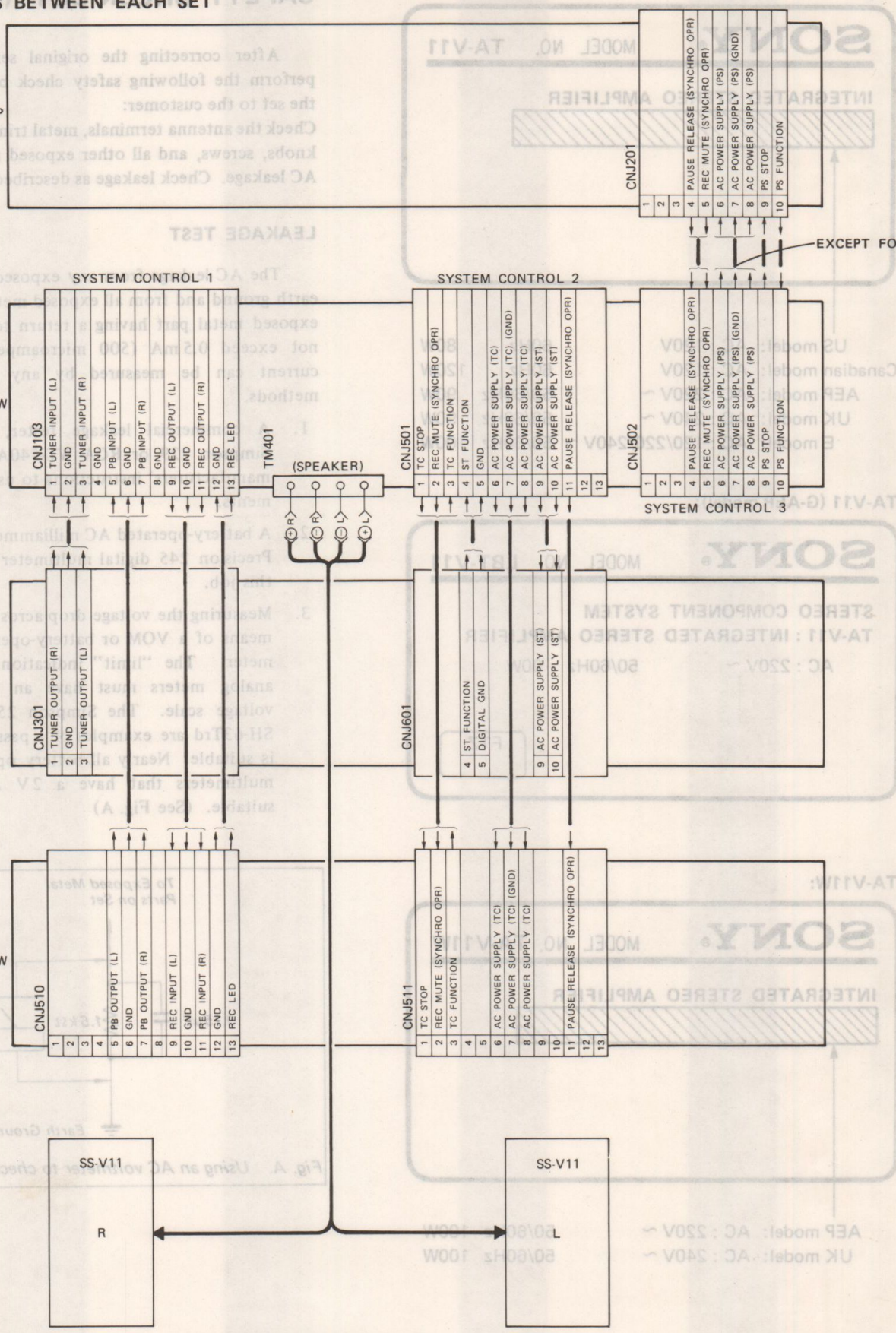
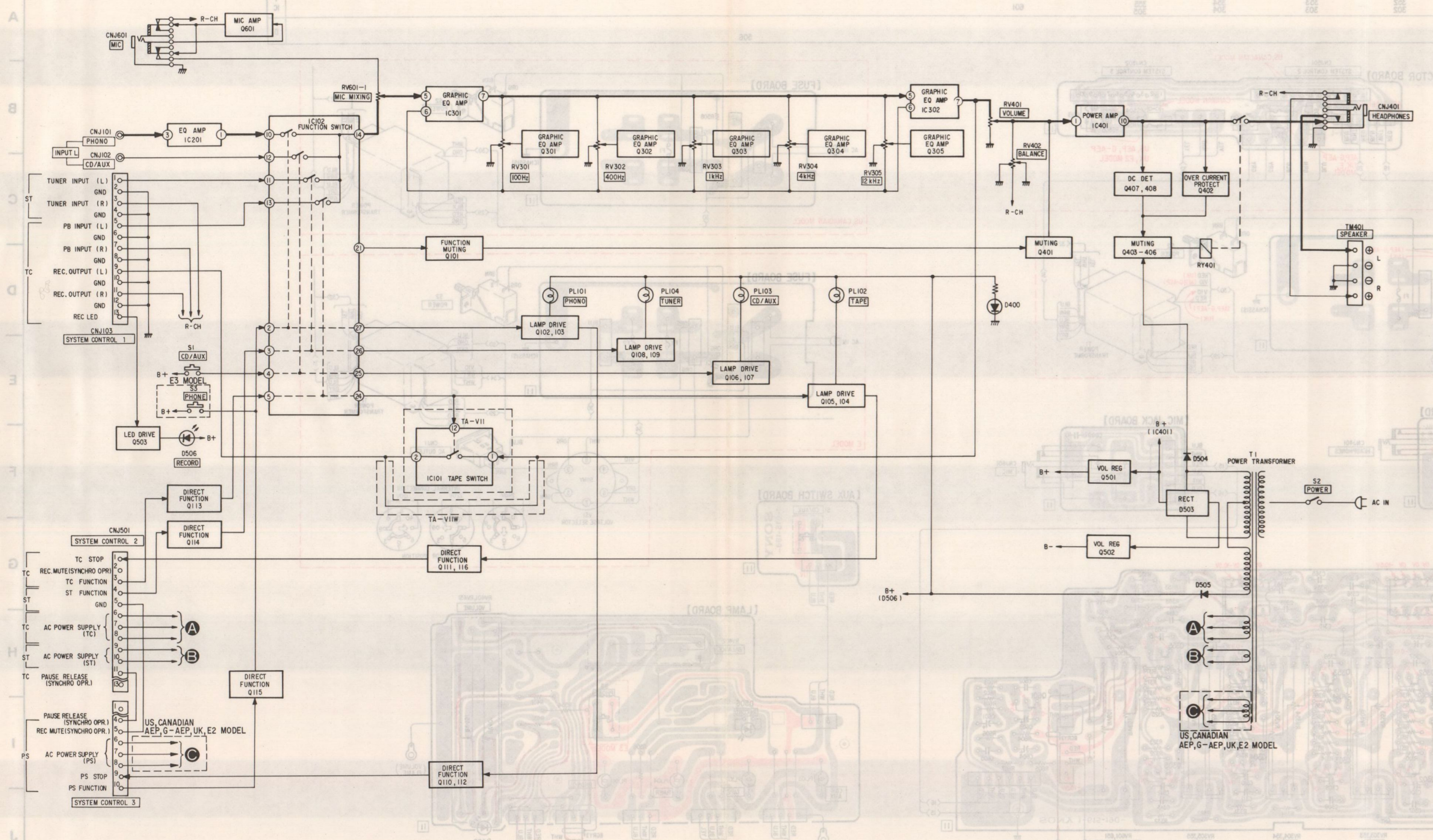


Figure is shown from the rear side.

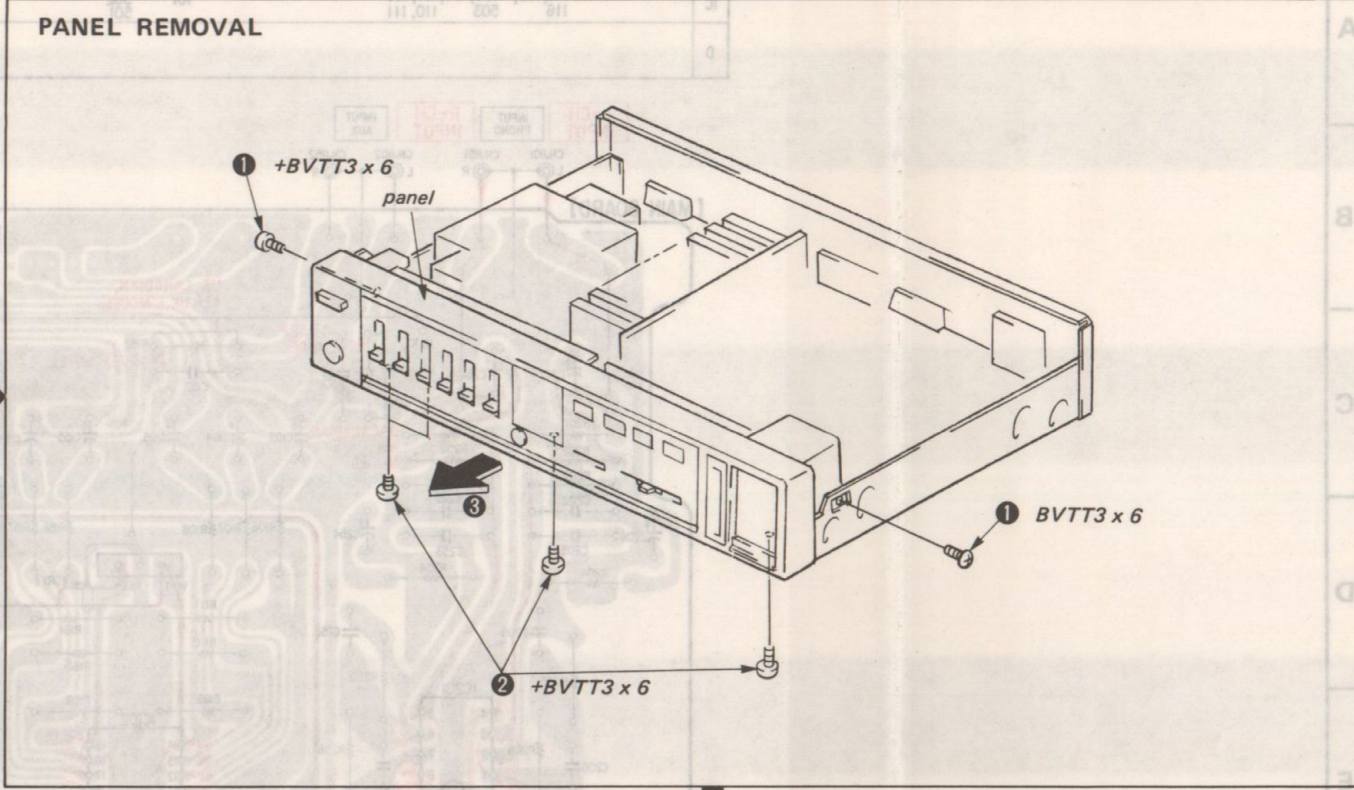
SECTION 1
BLOCK DIAGRAM

SECTION 2
DISASSEMBLY

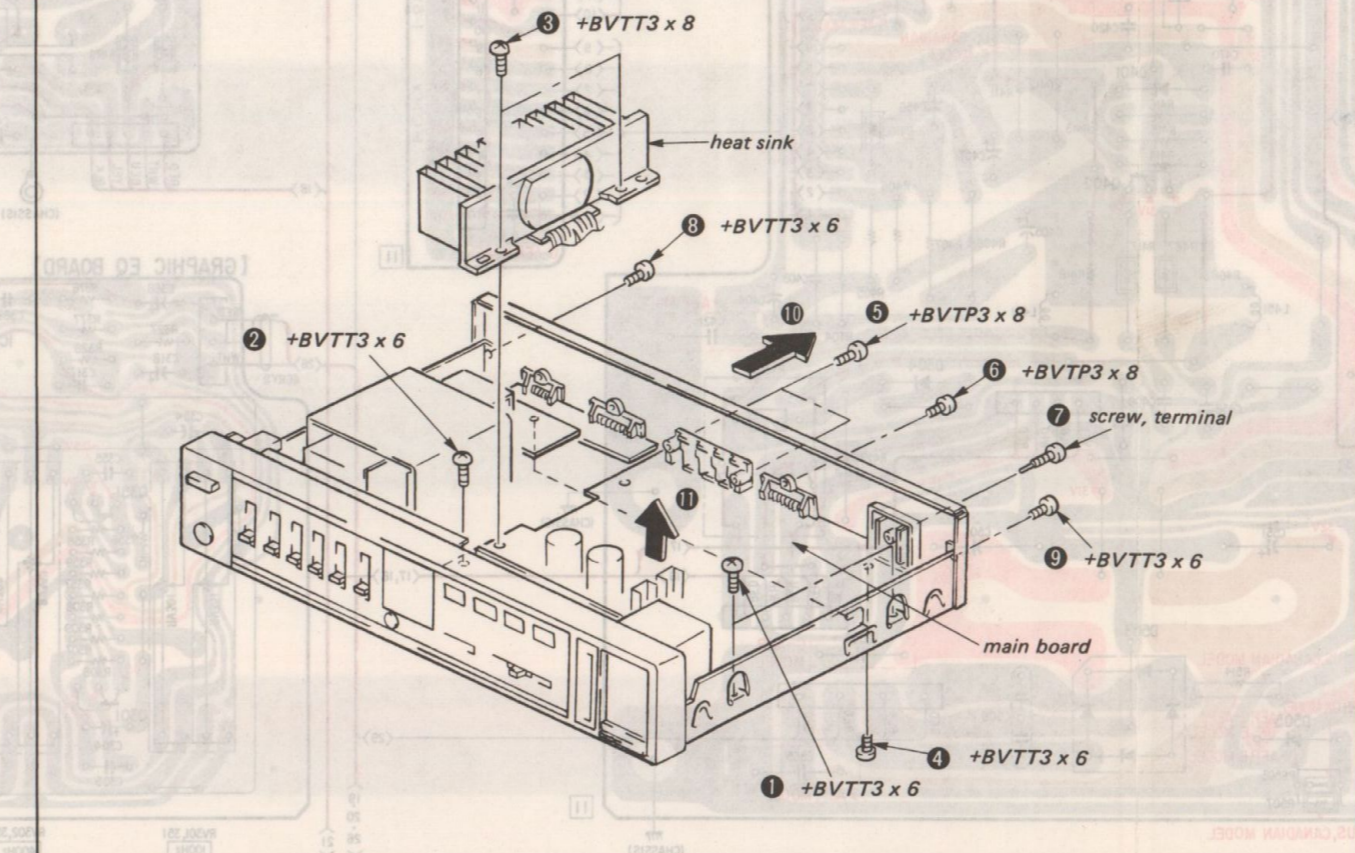


Note: Follow the disassembly procedure in the numerical order given.

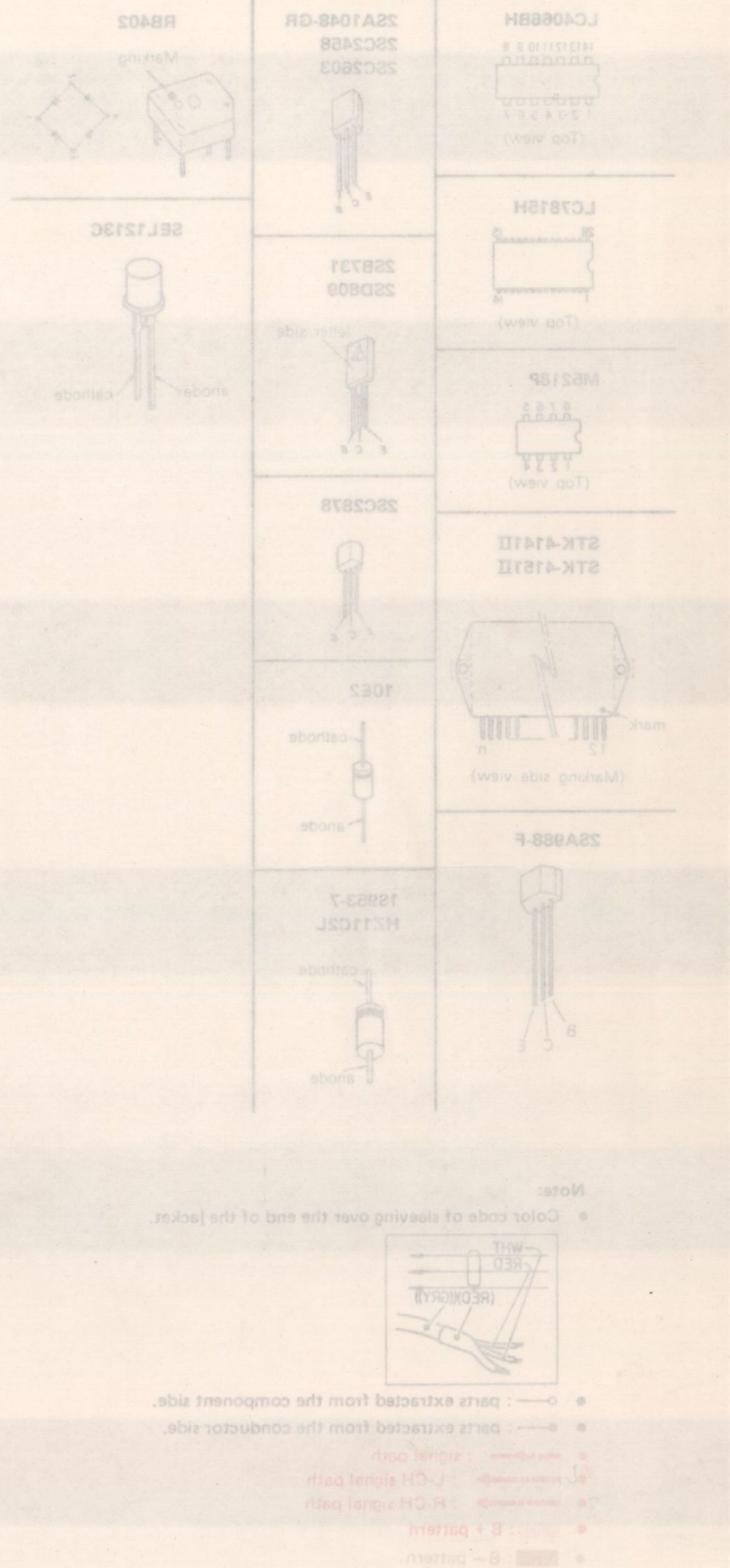
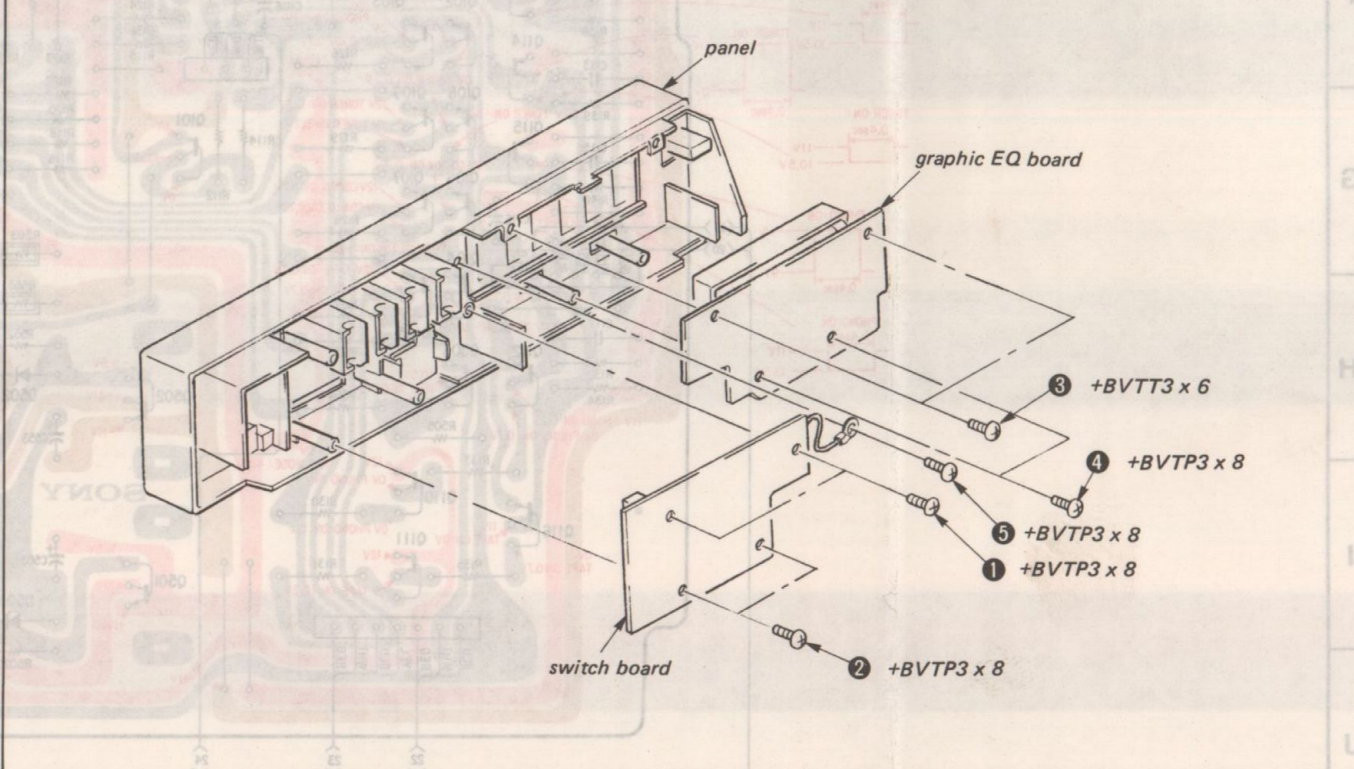
CASE REMOVAL
Remove case by taking out four screws.



MAIN BOARD REMOVAL



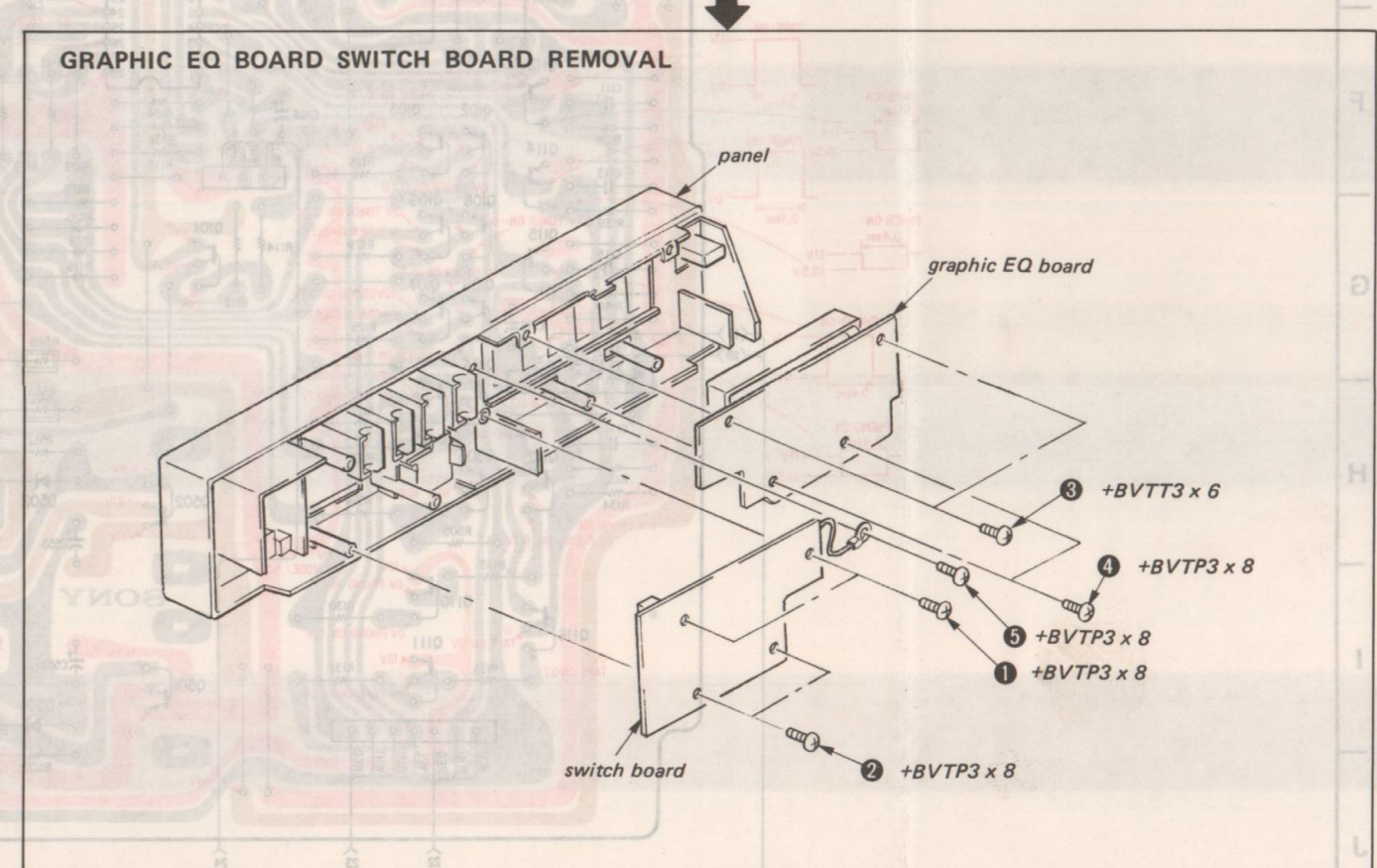
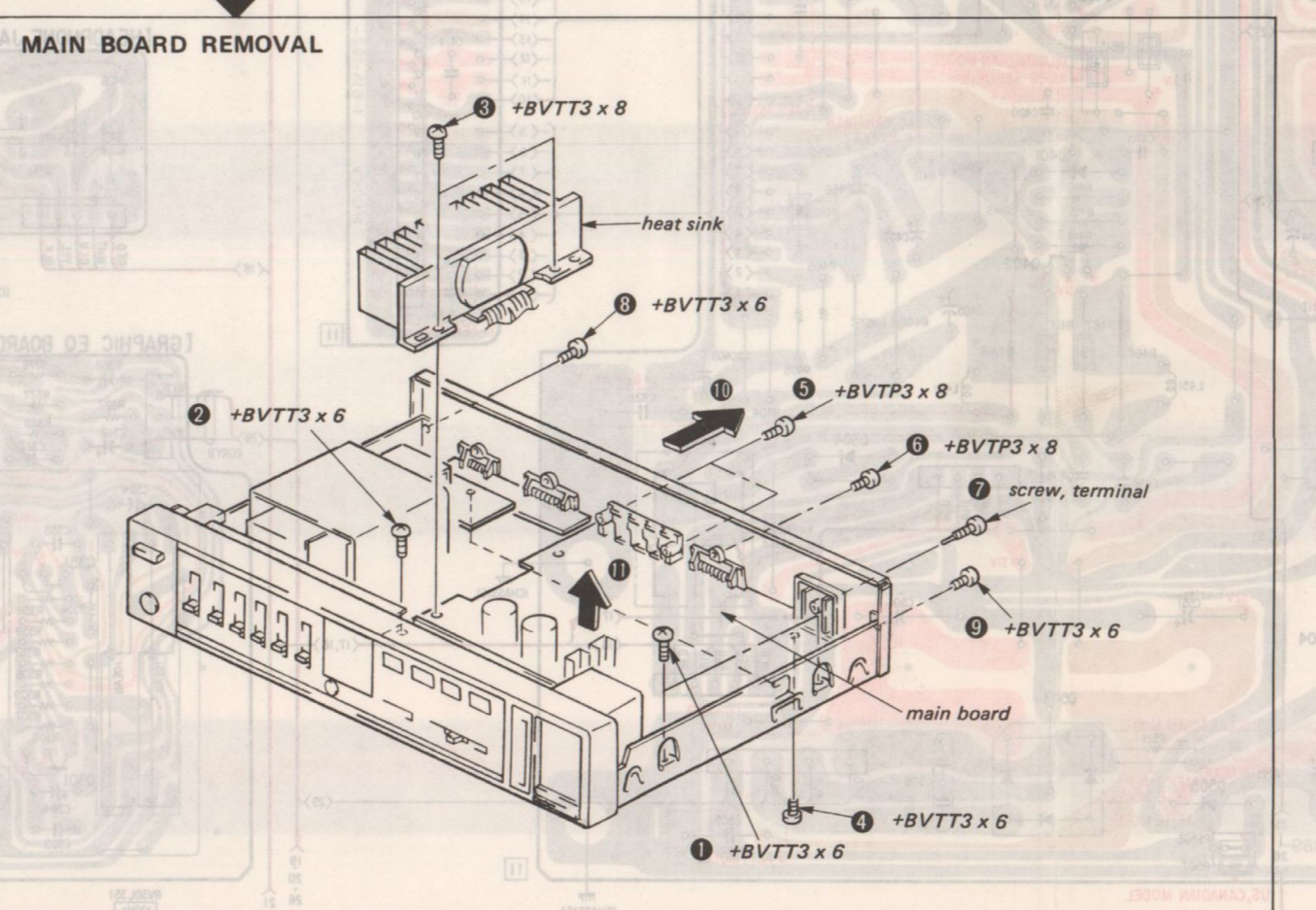
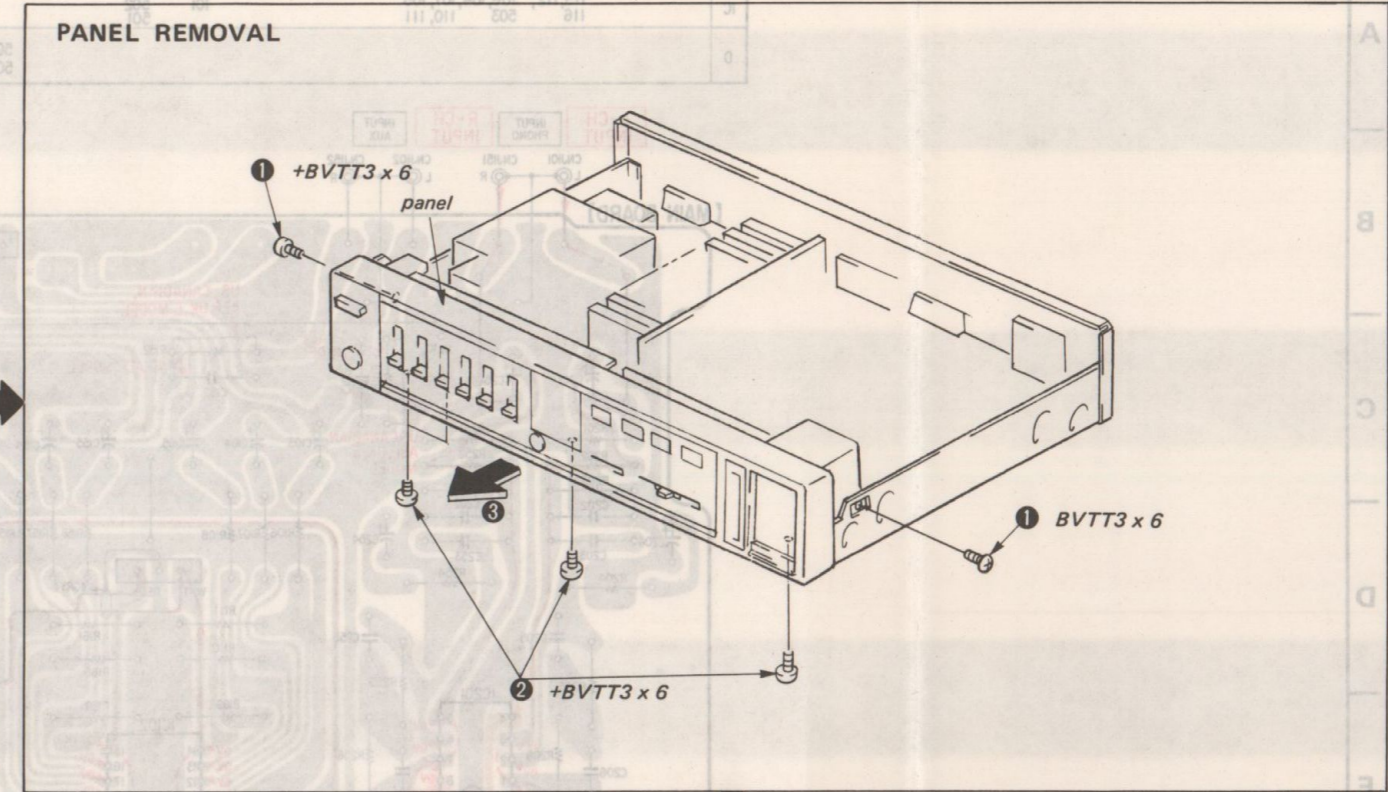
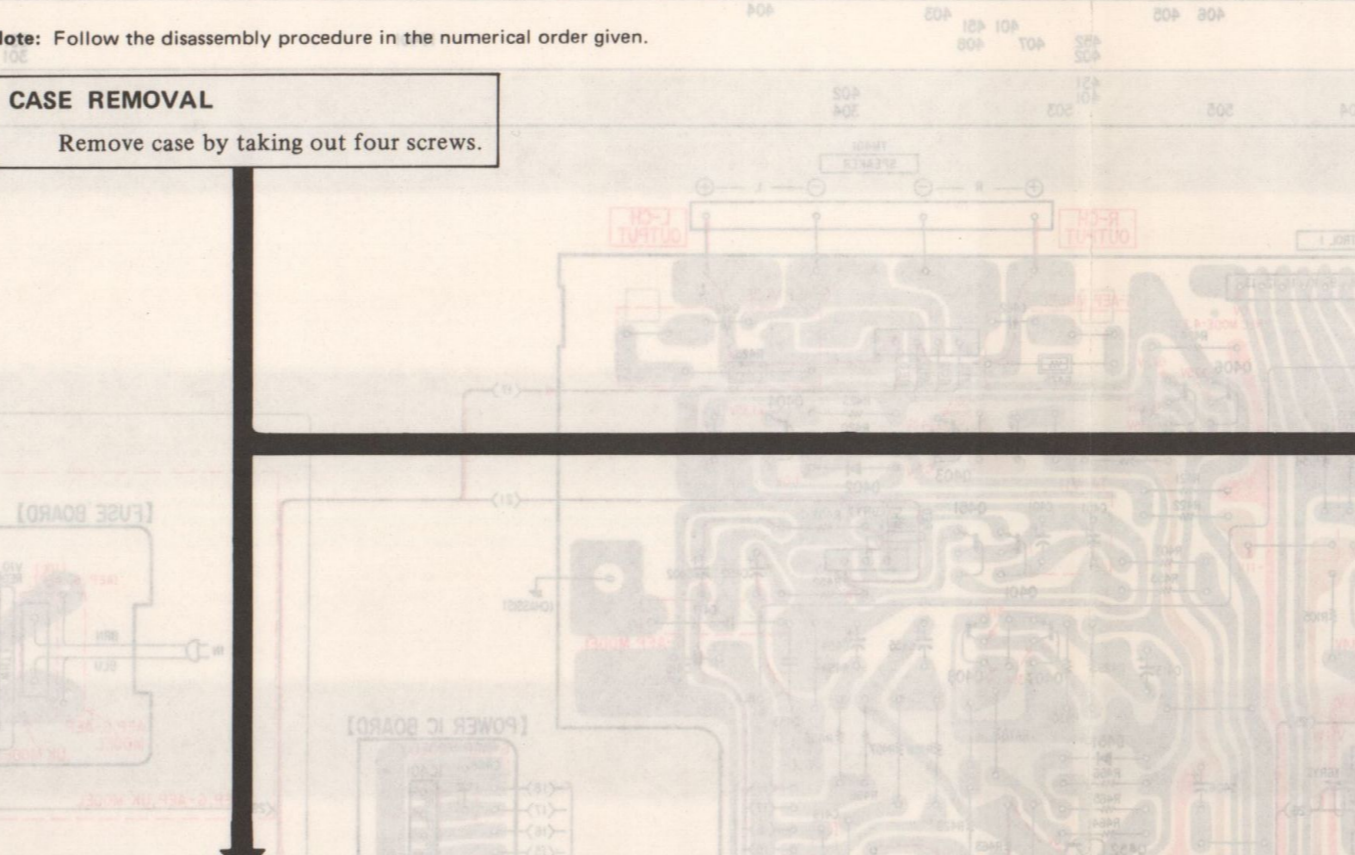
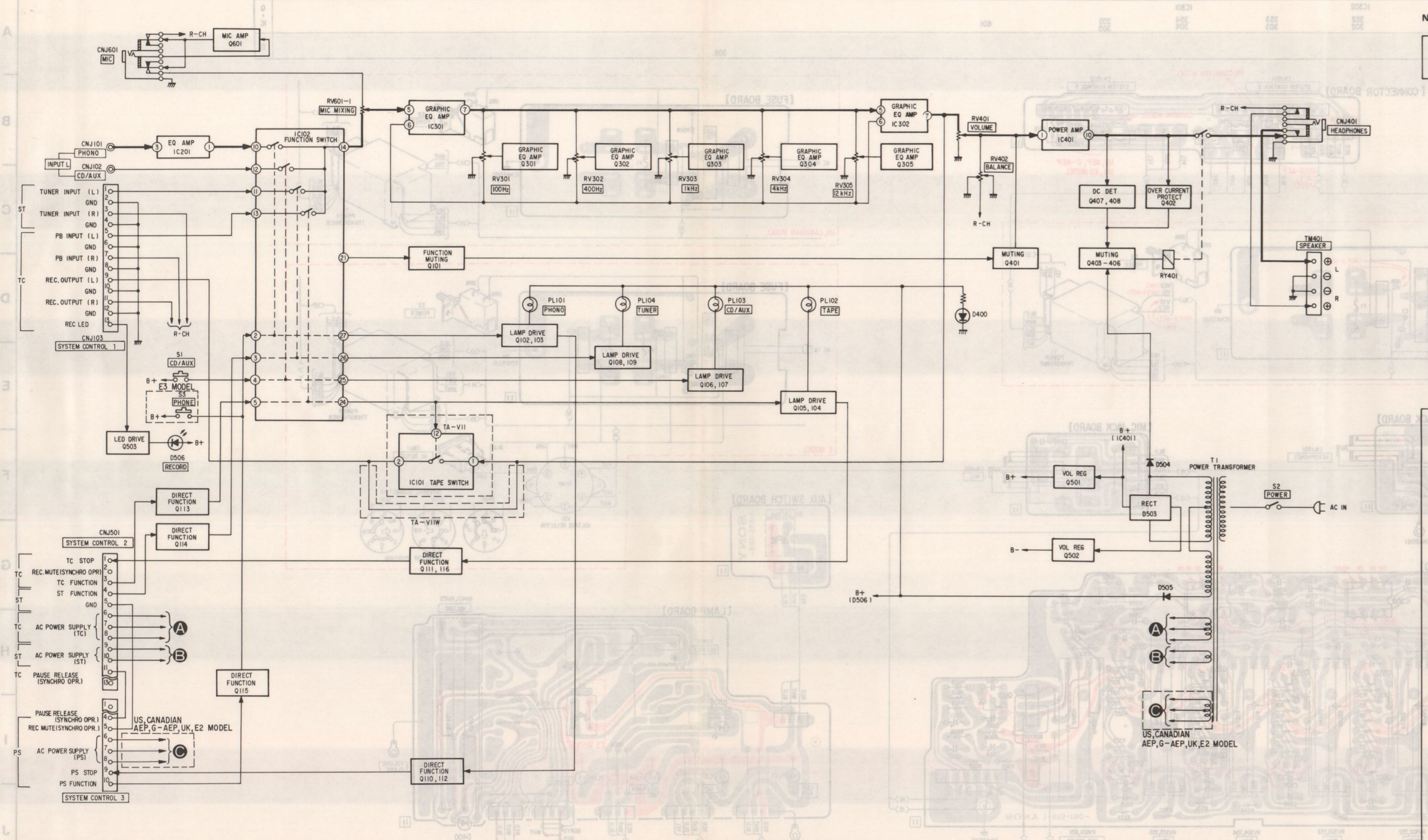
GRAPHIC EQ BOARD SWITCH BOARD REMOVAL



SECTION 1
BLOCK DIAGRAM

SECTION 2
DISASSEMBLY

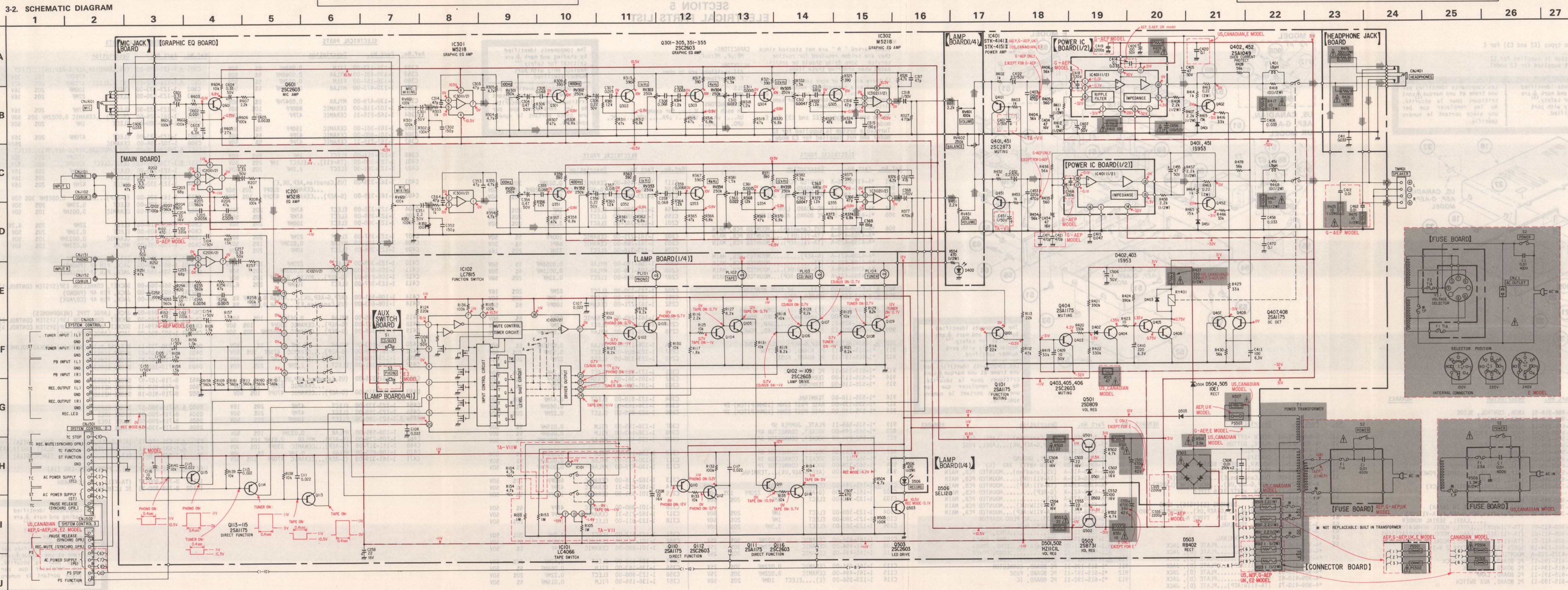
SECTION 3
MOUNTING DIAGRAMS



• Semiconductor Lead Layouts

Note:
• Color code of leaving over the end of the lead.

- Part extracted from the component side.
- Part extracted from the conductor side.
- Part extracted from the component side.
- Part extracted from the conductor side.
- Part extracted from the component side.
- Part extracted from the conductor side.



SECTION 4 EXPLODED VIEW

Note:

- There are two types (E2 and E3) for E model. Turntable system is supplied for E2 model and not supplied for E3 model.
- All capacitors are in μF unless otherwise noted. $\text{pF} = \mu\text{F} \times 10^{-6}$, 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and $1/4 \text{ W}$ or less unless otherwise specified.
- ⊠ : signal path.
- ⊠ : nonflammable resistor.
- ⊠ : fusible resistor.
- ⊠ : B + bus.
- ⊠ : B + bus.
- Voltagages are dc with respect to ground unless otherwise noted.
- Readings are taken under no-signal conditions with a VOM (50k Ω /V).

Note: Voltages are measured with a VOM (50k Ω /V).

Note: The components identified by shading and mark Δ are critical for safety. Replace only with part number specified.

Note: Les composants identifiés par une trame et une marque Δ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

SECTION 4 EXPLODED VIEWS

NOTE: The mechanical parts with no reference number in the exploded views are not supplied. Items marked * are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

The construction parts of an assembled part are indicated with a collation number on the remark column.

There are two types (E2 and E3) for E model. Turntable system is supplied for E2 model and not supplied for E3 model.

The components identified by shading and mark A are critical for safety. Replace only with part number specified.

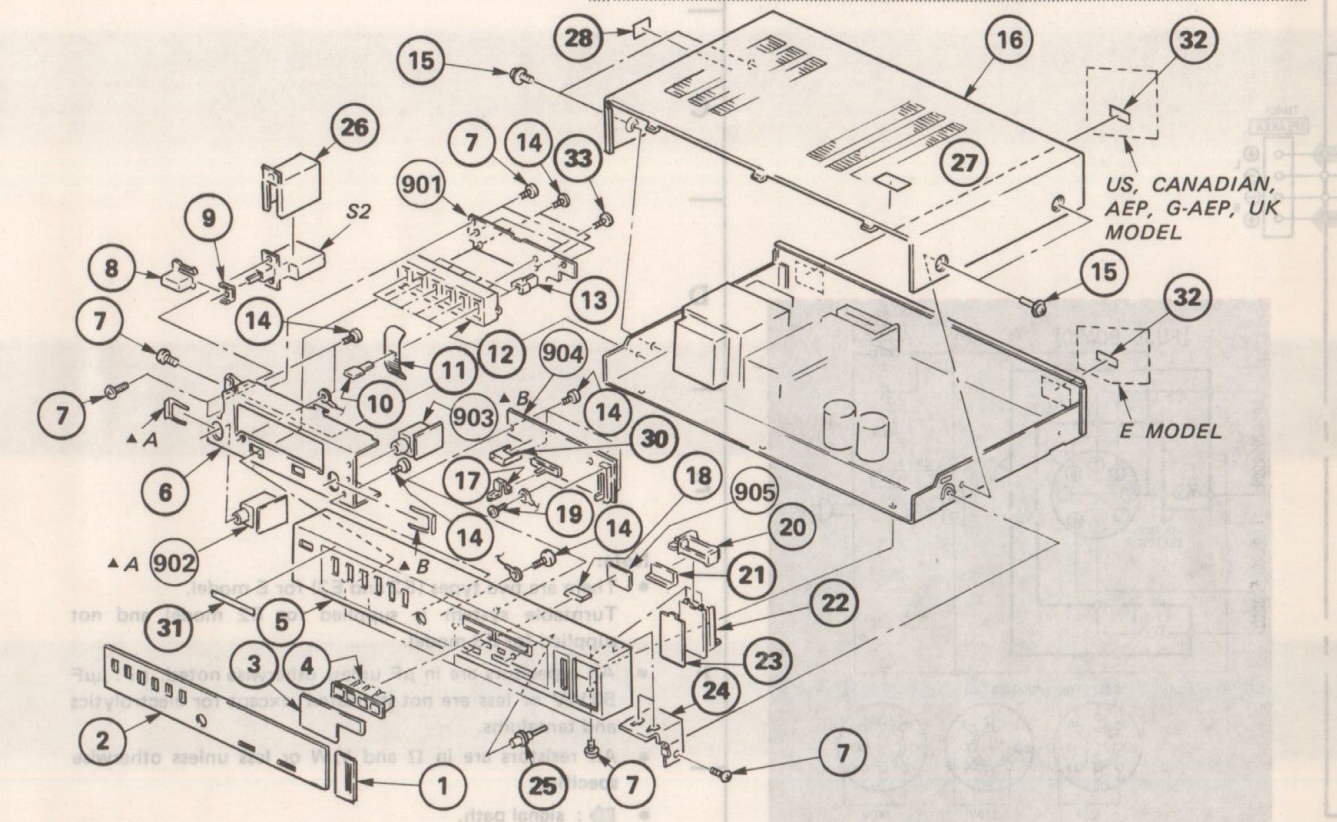
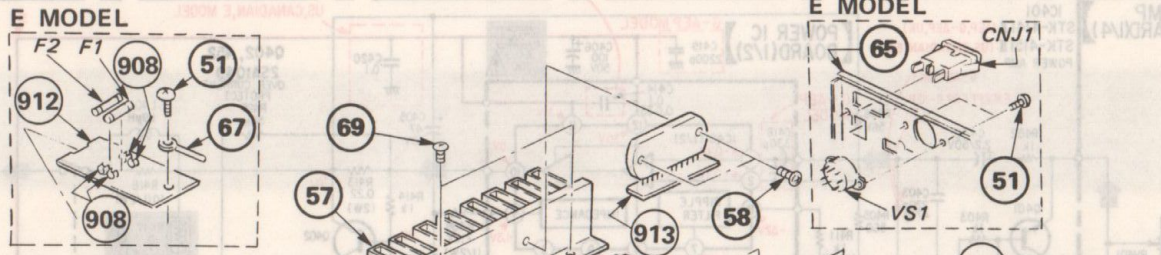
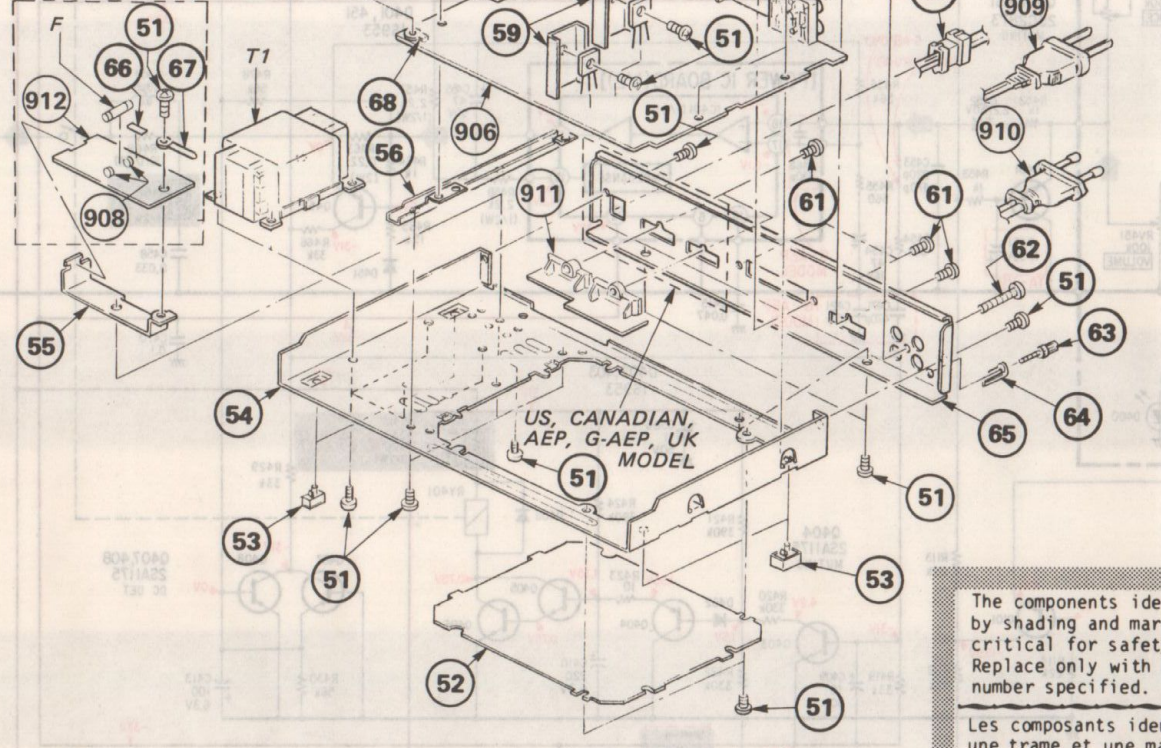


Table with 3 columns: No., Part No., Description. Lists various mechanical parts such as control panels, knobs, screws, and chassis components.

SECTION 5 ELECTRICAL PARTS LIST



US, CANADIAN, AEP, G-AEP, UK MODEL



The components identified by shading and mark A are critical for safety. Replace only with part number specified.

Table with 3 columns: No., Part No., Description. Lists electrical components such as PCBs, capacitors, resistors, and connectors.

NOTE: Items marked * are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

There are two types (E2 and E3) for E model. Turntable system is supplied for E2 model and not supplied for E3 model.

ELECTRICAL PARTS

Table with 3 columns: Ref.No., Part No., Description. Lists electrical parts including capacitors, resistors, semiconductors, and various electronic components.

The components identified by shading and mark A are critical for safety. Replace only with part number specified.

ELECTRICAL PARTS

Table with 3 columns: Ref.No., Part No., Description. Lists electrical parts including capacitors, resistors, and various electronic components.


The components identified by shading and mark A are critical for safety. Replace only with part number specified.


ELECTRICAL PARTS


Ref.No.	Part No.	Description
IC201	8-759-601-02	IC M5218P
IC301	8-759-601-02	IC M5218P
IC302	8-759-601-02	IC M5218P
IC401	8-749-941-41	(AEP,G-AEP,UK)...IC STK-41411I
IC401	8-749-941-51	(US,Canadian,E)...IC STK-41511I
L401	*1-420-872-00	COIL, AIR CORE
L451	*1-420-872-00	COIL, AIR CORE
PL101	1-518-511-71	LAMP, PILOT
PL102	1-518-511-71	LAMP, PILOT
PL103	1-518-511-71	LAMP, PILOT
PL104	1-518-511-71	LAMP, PILOT
PS501	1-532-686-00	(AEP,G-AEP,UK,E)...LINK, IC
PS502	1-532-686-00	(AEP,G-AEP,UK,E)...LINK, IC
PS503	1-532-675-00	(AEP,UK)...LINK, IC
PS504	1-532-637-11	(Canadian)...LINK, IC
PS505	1-532-637-11	(Canadian)...LINK, IC
Q101	8-729-204-83	TRANSISTOR 2SA1048-GR
Q102	8-729-245-83	TRANSISTOR 2SC2458
Q103	8-729-245-83	TRANSISTOR 2SC2458
Q104	8-729-245-83	TRANSISTOR 2SC2458
Q105	8-729-245-83	TRANSISTOR 2SC2458
Q106	8-729-245-83	TRANSISTOR 2SC2458
Q107	8-729-245-83	TRANSISTOR 2SC2458
Q108	8-729-245-83	TRANSISTOR 2SC2458
Q109	8-729-245-83	TRANSISTOR 2SC2458
Q110	8-729-204-83	TRANSISTOR 2SA1048-GR
Q111	8-729-204-83	TRANSISTOR 2SA1048-GR
Q112	8-729-606-32	TRANSISTOR 2SC2603
Q113	8-729-204-83	TRANSISTOR 2SA1048-GR
Q114	8-729-204-83	TRANSISTOR 2SA1048-GR
Q115	8-729-204-83	TRANSISTOR 2SA1048-GR
Q116	8-729-606-32	TRANSISTOR 2SC2603
Q301	8-729-245-83	TRANSISTOR 2SC2458
Q302	8-729-245-83	TRANSISTOR 2SC2458
Q303	8-729-245-83	TRANSISTOR 2SC2458
Q304	8-729-245-83	TRANSISTOR 2SC2458
Q305	8-729-245-83	TRANSISTOR 2SC2458
Q351	8-729-245-83	TRANSISTOR 2SC2458
Q352	8-729-245-83	TRANSISTOR 2SC2458
Q353	8-729-245-83	TRANSISTOR 2SC2458
Q354	8-729-245-83	TRANSISTOR 2SC2458
Q355	8-729-245-83	TRANSISTOR 2SC2458
Q401	8-729-201-04	TRANSISTOR 2SC2878
Q402	8-729-108-14	TRANSISTOR 2SA988-FA
Q403	8-729-606-32	TRANSISTOR 2SC2603
Q404	8-729-204-83	TRANSISTOR 2SA1048-GR
Q405	8-729-606-32	TRANSISTOR 2SC2603


ELECTRICAL PARTS

Ref.No.	Part No.	Description
Q406	8-729-606-32	TRANSISTOR 2SC2603
Q407	8-729-204-83	TRANSISTOR 2SA1048-GR
Q408	8-729-204-83	TRANSISTOR 2SA1048-GR
Q451	8-729-201-04	TRANSISTOR 2SC2878
Q452	8-729-108-14	TRANSISTOR 2SA988-FA
Q501	8-729-180-93	TRANSISTOR 2SD809
Q502	8-729-173-13	TRANSISTOR 2SB731
Q503	8-729-606-32	TRANSISTOR 2SC2603
Q601	8-729-245-83	TRANSISTOR 2SC2458
R102	1-247-123-00	(G-AEP)...CARBON 470 5% 1/4W
R103	1-246-545-00	(TA-V11)...CARBON 1M 5% 1/4W
R104	1-247-147-00	CARBON 4.7K 5% 1/4W
R105	1-246-545-00	(TA-V11)...CARBON 1M 5% 1/4W
R106	1-247-135-00	CARBON 1.5K 5% 1/4W
R107	1-247-135-00	CARBON 1.5K 5% 1/4W
R108	1-247-135-00	CARBON 1.5K 5% 1/4W
R109	1-246-539-00	CARBON 560K 5% 1/4W
R110	1-246-539-00	CARBON 560K 5% 1/4W
R111	1-246-539-00	CARBON 560K 5% 1/4W
R112	1-247-171-00	CARBON 47K 5% 1/4W
R113	1-247-163-00	CARBON 22K 5% 1/4W
R114	1-247-163-00	CARBON 22K 5% 1/4W
R115	1-247-179-00	CARBON 100K 5% 1/4W
R116	1-247-139-00	CARBON 2.2K 5% 1/4W
R117	1-247-137-00	CARBON 1.8K 5% 1/4W
R118	1-247-155-00	CARBON 10K 5% 1/4W
R119	1-247-153-00	CARBON 8.2K 5% 1/4W
R120	1-247-155-00	CARBON 10K 5% 1/4W
R121	1-247-153-00	CARBON 8.2K 5% 1/4W
R122	1-247-155-00	CARBON 10K 5% 1/4W
R123	1-247-153-00	CARBON 8.2K 5% 1/4W
R124	1-246-529-00	CARBON 220K 5% 1/4W
R125	1-247-155-00	CARBON 10K 5% 1/4W
R126	1-247-153-00	CARBON 8.2K 5% 1/4W
R127	1-247-153-00	CARBON 8.2K 5% 1/4W
R128	1-247-153-00	CARBON 8.2K 5% 1/4W
R129	1-247-153-00	CARBON 8.2K 5% 1/4W
R130	1-247-155-00	CARBON 10K 5% 1/4W
R131	1-247-155-00	CARBON 10K 5% 1/4W
R132	1-247-179-00	CARBON 100K 5% 1/4W
R133	1-247-155-00	CARBON 10K 5% 1/4W
R134	1-247-155-00	CARBON 10K 5% 1/4W
R135	1-247-155-00	CARBON 10K 5% 1/4W
R136	1-247-179-00	CARBON 100K 5% 1/4W
R138	1-247-155-00	CARBON 10K 5% 1/4W
R139	1-247-155-00	CARBON 10K 5% 1/4W
R140	1-247-155-00	CARBON 10K 5% 1/4W

The components identified by shading and mark  are critical for safety. Replace only with part number specified.

Les composants identifiés par une trame et une marque  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

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ELECTRICAL PARTS

Ref.No.	Part No.	Description	Ref.No.	Part No.	Description
R152	1-247-123-00	(G-AEP)...CARBON	470	5%	1/4W
R153	1-246-545-00	(TA-V11)...CARBON	1M	5%	1/4W
R154	1-247-147-00	CARBON	4.7K	5%	1/4W
R156	1-247-135-00	CARBON	1.5K	5%	1/4W
R157	1-247-135-00	CARBON	1.5K	5%	1/4W
R158	1-247-135-00	CARBON	1.5K	5%	1/4W
R159	1-246-539-00	CARBON	560K	5%	1/4W
R160	1-246-539-00	CARBON	560K	5%	1/4W
R161	1-246-539-00	CARBON	560K	5%	1/4W
R201	1-247-171-00	CARBON	47K	5%	1/4W
R202	1-247-131-00	CARBON	1K	5%	1/4W
R203	1-246-539-00	CARBON	560K	5%	1/4W
R204	1-247-129-00	CARBON	820	5%	1/4W
R205	1-246-539-00	CARBON	560K	5%	1/4W
R206	1-247-171-00	CARBON	47K	5%	1/4W
R207	1-247-131-00	CARBON	1K	5%	1/4W
R208	1-247-179-00	CARBON	100K	5%	1/4W
R251	1-247-171-00	CARBON	47K	5%	1/4W
R252	1-247-131-00	CARBON	1K	5%	1/4W
R253	1-246-539-00	CARBON	560K	5%	1/4W
R254	1-247-129-00	CARBON	820	5%	1/4W
R255	1-246-539-00	CARBON	560K	5%	1/4W
R256	1-247-171-00	CARBON	47K	5%	1/4W
R257	1-247-131-00	CARBON	1K	5%	1/4W
R258	1-247-179-00	CARBON	100K	5%	1/4W
R301	1-247-879-00	CARBON	100K	5%	1/6W
R302	1-247-879-00	CARBON	100K	5%	1/6W
R303	1-247-831-00	CARBON	1K	5%	1/6W
R304	1-247-847-00	CARBON	4.7K	5%	1/6W
R305	1-247-847-00	CARBON	4.7K	5%	1/6W
R306	1-247-833-00	CARBON	1.2K	5%	1/6W
R307	1-247-871-00	CARBON	47K	5%	1/6W
R308	1-247-851-00	CARBON	6.8K	5%	1/6W
R309	1-247-821-00	CARBON	390	5%	1/6W
R310	1-247-833-00	CARBON	1.2K	5%	1/6W
R311	1-247-871-00	CARBON	47K	5%	1/6W
R312	1-247-851-00	CARBON	6.8K	5%	1/6W
R313	1-247-821-00	CARBON	390	5%	1/6W
R314	1-247-833-00	CARBON	1.2K	5%	1/6W
R315	1-247-871-00	CARBON	47K	5%	1/6W
R316	1-247-851-00	CARBON	6.8K	5%	1/6W
R317	1-247-821-00	CARBON	390	5%	1/6W
R318	1-247-833-00	CARBON	1.2K	5%	1/6W
R319	1-247-871-00	CARBON	47K	5%	1/6W
R320	1-247-851-00	CARBON	6.8K	5%	1/6W
R321	1-247-821-00	CARBON	390	5%	1/6W
R322	1-247-833-00	CARBON	1.2K	5%	1/6W

ELECTRICAL PARTS

Ref.No.	Part No.	Description	Ref.No.	Part No.	Description
R323	1-247-871-00	CARBON	47K	5%	1/6W
R324	1-247-851-00	CARBON	6.8K	5%	1/6W
R325	1-247-821-00	CARBON	390	5%	1/6W
R326	1-247-847-00	CARBON	4.7K	5%	1/6W
R327	1-247-895-00	CARBON	470K	5%	1/6W
R331	1-247-835-00	CARBON	1.5K	5%	1/6W
R332	1-247-835-00	CARBON	1.5K	5%	1/6W
R351	1-247-879-00	CARBON	100K	5%	1/6W
R352	1-247-879-00	CARBON	100K	5%	1/6W
R353	1-247-831-00	CARBON	1K	5%	1/6W
R354	1-247-847-00	CARBON	4.7K	5%	1/6W
R355	1-247-847-00	CARBON	4.7K	5%	1/6W
R356	1-247-833-00	CARBON	1.2K	5%	1/6W
R357	1-247-871-00	CARBON	47K	5%	1/6W
R358	1-247-851-00	CARBON	6.8K	5%	1/6W
R359	1-247-821-00	CARBON	390	5%	1/6W
R360	1-247-833-00	CARBON	1.2K	5%	1/6W
R361	1-247-871-00	CARBON	47K	5%	1/6W
R362	1-247-851-00	CARBON	6.8K	5%	1/6W
R363	1-247-821-00	CARBON	390	5%	1/6W
R364	1-247-833-00	CARBON	1.2K	5%	1/6W
R365	1-247-871-00	CARBON	47K	5%	1/6W
R366	1-247-851-00	CARBON	6.8K	5%	1/6W
R367	1-247-821-00	CARBON	390	5%	1/6W
R368	1-247-833-00	CARBON	1.2K	5%	1/6W
R369	1-247-871-00	CARBON	47K	5%	1/6W
R370	1-247-851-00	CARBON	6.8K	5%	1/6W
R371	1-247-821-00	CARBON	390	5%	1/6W
R372	1-247-833-00	CARBON	1.2K	5%	1/6W
R373	1-247-871-00	CARBON	47K	5%	1/6W
R374	1-247-851-00	CARBON	6.8K	5%	1/6W
R375	1-247-821-00	CARBON	390	5%	1/6W
R376	1-247-847-00	CARBON	4.7K	5%	1/6W
R377	1-247-895-00	CARBON	470K	5%	1/6W
R381	1-247-835-00	CARBON	1.5K	5%	1/6W
R382	1-247-835-00	CARBON	1.5K	5%	1/6W
R401	1-247-139-00	CARBON	2.2K	5%	1/4W
R402	1-247-131-00	CARBON	1K	5%	1/4W
R403	1-247-131-00	CARBON	1K	5%	1/4W
R404	1-247-173-00	CARBON	56K	5%	1/4W
R405	1-247-125-00	CARBON	560	5%	1/4W
R406	1-247-173-00	CARBON	56K	5%	1/4W
R407	1-247-248-00	CARBON	2.2K	5%	1/2W
R408	1-247-248-00	CARBON	2.2K	5%	1/2W
R409	△.1-247-107-00	CARBON	100	5%	1/4W F
R410	△.1-247-107-00	CARBON	100	5%	1/4W F

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The components identified by shading and mark Δ are critical for safety. Replace only with part number specified.

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ELECTRICAL PARTS

Ref.No.	Part No.	Description			
R411	1-247-240-00	CARBON	1K	5%	1/2W
R412	1-247-240-00	CARBON	1K	5%	1/2W
R413	1-217-151-00	RES, METAL PLATE	0.22		
R414	1-247-131-00	CARBON	1K	5%	1/4W
R415	1-247-159-00	CARBON	15K	5%	1/4W
R416	1-247-167-00	CARBON	33K	5%	1/4W
R417	△.1-247-192-00	CARBON	10	5%	1/2W F
R418	1-247-192-00	CARBON	10	5%	1/2W
R419	1-247-167-00	CARBON	33K	5%	1/4W
R420	1-246-533-00	CARBON	330K	5%	1/4W
R421	1-246-535-00	CARBON	390K	5%	1/4W
R422	1-246-533-00	CARBON	330K	5%	1/4W
R423	1-247-083-00	CARBON	10	5%	1/4W
R424	1-246-535-00	CARBON	390K	5%	1/4W
R425	△.1-247-192-00	(G-AEP)...CARBON	10	5%	1/2W F
R426	△.1-247-228-00	CARBON	330	5%	1/2W F
R427	△.1-247-224-00	(AEP,G-AEP,UK)...CARBON	220	5%	1/2W F
R427	△.1-247-228-00	(US,Canadian)...CARBON	330	5%	1/2W F
R428	1-247-173-00	CARBON	56K	5%	1/4W
R429	1-247-167-00	CARBON	33K	5%	1/4W
R430	1-247-173-00	CARBON	56K	5%	1/4W
R451	1-247-139-00	CARBON	2.2K	5%	1/4W
R452	1-247-131-00	CARBON	1K	5%	1/4W
R453	1-247-131-00	CARBON	1K	5%	1/4W
R454	1-247-173-00	CARBON	56K	5%	1/4W
R455	1-247-125-00	CARBON	560	5%	1/4W
R456	1-247-173-00	CARBON	56K	5%	1/4W
R457	1-247-248-00	CARBON	2.2K	5%	1/2W
R458	1-247-248-00	CARBON	2.2K	5%	1/2W
R463	1-217-151-00	RES, METAL PLATE	0.22		
R464	1-247-131-00	CARBON	1K	5%	1/4W
R465	1-247-159-00	CARBON	15K	5%	1/4W
R466	1-247-167-00	CARBON	33K	5%	1/4W
R467	△.1-247-192-00	CARBON	10	5%	1/2W F
R468	1-247-192-00	CARBON	10	5%	1/2W
R475	△.1-247-192-00	(G-AEP)...CARBON	10	5%	1/2W F
R476	△.1-247-228-00	CARBON	330	5%	1/2W F
R478	1-247-173-00	CARBON	56K	5%	1/4W
R501	△.1-247-083-00	CARBON	10	5%	1/4W F
R502	1-247-147-00	CARBON	4.7K	5%	1/4W
R503	△.1-247-091-00	CARBON	22	5%	1/4W F
R504	1-247-147-00	CARBON	4.7K	5%	1/4W
R505	1-247-179-00	CARBON	100K	5%	1/4W
R506	1-247-232-00	CARBON	470	5%	1/2W
R507	△.1-247-071-00	(US,Canadian)...CARBON	1	5%	1/4W F
R508	△.1-202-725-00	(US,Canadian)...SOLID	3.3M	10%	1/2W

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
R509	△.1-217-473-00	(US,Canadian)...FUSIBLE	1	2.2	5% 1W F
R510	△.1-217-473-00	(US,Canadian)...FUSIBLE	1	2.2	5% 1W F
R511	△.1-217-426-00	FUSIBLE	2.2	5%	1/2W F
R512	△.1-212-934-00	(US,Canadian,AEP,G-AEP,UK,E2)...FUSIBLE	1	5%	1/2W F
R513	△.1-212-934-00	(US,Canadian,AEP,G-AEP,UK,E2)...FUSIBLE	1	5%	1/2W F
R514	△.1-247-145-00	(US,Canadian)...CARBON	3.9K	5%	1/4W
R515	△.1-247-099-00	(US,Canadian)...CARBON	47	5%	1/4W F
R551	△.1-247-083-00	CARBON	10	5%	1/4W F
R552	1-247-147-00	CARBON	4.7K	5%	1/4W
R553	△.1-247-091-00	CARBON	22	5%	1/4W F
R554	1-247-232-00	CARBON	470	5%	1/2W
R601	1-247-879-00	CARBON	100K	5%	1/6W
R602	1-247-879-00	CARBON	100K	5%	1/6W
R603	1-247-831-00	CARBON	1K	5%	1/6W
R604	1-247-855-00	CARBON	10K	5%	1/6W
R605	1-247-865-00	CARBON	27K	5%	1/6W
R606	1-247-879-00	CARBON	100K	5%	1/6W
R607	1-247-839-00	CARBON	2.2K	5%	1/6W
RV301	1-230-362-11	RES, VAR, SLIDE	250K/250K		(100Hz)
RV302	1-230-362-11	RES, VAR, SLIDE	250K/250K		(400Hz)
RV303	1-230-362-11	RES, VAR, SLIDE	250K/250K		(1kHz)
RV304	1-230-362-11	RES, VAR, SLIDE	250K/250K		(4kHz)
RV305	1-230-362-11	RES, VAR, SLIDE	250K/250K		(12kHz)
RV351	1-230-362-11	RES, VAR, SLIDE	250K/250K		(100Hz)
RV352	1-230-362-11	RES, VAR, SLIDE	250K/250K		(400Hz)
RV353	1-230-362-11	RES, VAR, SLIDE	250K/250K		(1kHz)
RV354	1-230-362-11	RES, VAR, SLIDE	250K/250K		(4kHz)
RV355	1-230-362-11	RES, VAR, SLIDE	250K/250K		(12kHz)
RV401	1-230-733-11	RES, VAR, SLIDE (WITH LED)	100KX2		(VOLUME)
RV402	1-230-346-11	RES, VAR, SLIDE	250K		(BALANCE)
RV451	1-230-733-11	RES, VAR, SLIDE (WITH LED)	100KX2		(VOLUME)
RV601	1-230-732-11	RES, VAR, SLIDE	100K/100K		(MIC MIXING)
RV651	1-230-732-11	RES, VAR, SLIDE	100K/100K		(MIC MIXING)
RY401	1-515-503-00	RELAY			
S1	1-553-997-00	SWITCH, KEY BOARD(CD/AUX)			
S2	△.1-553-318-00	SWITCH, PUSH (AC POWER)(1 KEY)			
S3	1-553-997-00	(E3).....SWITCH, KEY BOARD(PHONO)			
T1	△.1-448-088-11	(US,Canadian)...TRANSFORMER, POWER			
T1	△.1-448-089-11	(AEP,G-AEP,UK)...TRANSFORMER, POWER			
T1	△.1-448-090-11	(E).....TRANSFORMER, POWER			
TM401	1-536-705-00	TERMINAL BOARD (SP)(SPEAKER)			
VS1	△.1-526-576-51	(E).....SELECTOR, POWER VOLTAGE			

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