

JVC

SERVICE MANUAL

STEREO INTEGRATED AMPLIFIER

MODEL **A-X500VB**



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Safety Precautions

1. The design of this product contains special hardware, many circuits and components specially for safety purposes.

For continued protection, no changes should be made to the original design unless authorized in writing by the manufacturer. Replacement parts must be identical to those used in the original circuits. Service should be performed by qualified personnel only.

2. Alterations of the design or circuitry of the product should not be made. Any design alterations or additions will void the manufacturer's warranty and will further relieve the manufacturer of responsibility for personal injury or property damage resulting therefrom.
3. Many electrical and mechanical parts in the product have special safety-related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in the parts list of Service manual. Electrical components having such features are identified by shading on the schematics and by (Δ) on the parts list in Service manual. The use of a substitute replacement which does not have the same safety characteristics as the recommended replacement part shown in the parts list in Service manual may create shock, fire, or other hazards.
4. The leads in the products are routed and dressed with ties, clamps, tubings, barriers and/or the like to be separated from live parts, high temperature parts, moving parts and/or sharp edges for the prevention of electric shock and fire hazard.

When service is required, the original lead routing and dress should be observed, and they should be confirmed to be returned to normal, after reassembling.

5. Leakage current check

(Safety for electrical shock hazard)

After reassembling the product, always perform an isolation check on the exposed metal parts of the Products (antenna terminals, knobs, metal cabinet, screw heads, headphone jack, control shafts, etc.) to be sure the product is safe to operate without danger of electrical shock.

Do not use a line isolation transformer during this check.

- Plug the AC line cord directly into the AC outlet. Using a "Leakage Current Tester", measure the leakage current from each exposed metal part of the cabinet, particularly any exposed metal part having a return path to the chassis, to a known good earth ground. Any leakage current must not exceed 0.5 mA AC (r.m.s.).

- Alternate check method.

Plug the AC line cord directly into the AC outlet. Use an AC voltmeter having 1,000 ohms per volt or more sensitivity in the following manner. Connect a 1500 Ω 10W resistor paralleled by a 0.15 μ F AC-type capacitor between an exposed metal part and a known good earth ground.

Measure the AC voltage across the resistor with the AC voltmeter.

Move the resistor connection to each exposed metal part, particularly any exposed metal part having a return path to the chassis, and measure the AC voltage across the resistor. Now, reverse the plug in the AC outlet and repeat each measurement. Any voltage measured must not exceed 0.75 V AC (r.m.s.).

This corresponds to 0.5 mA AC (r.m.s.).

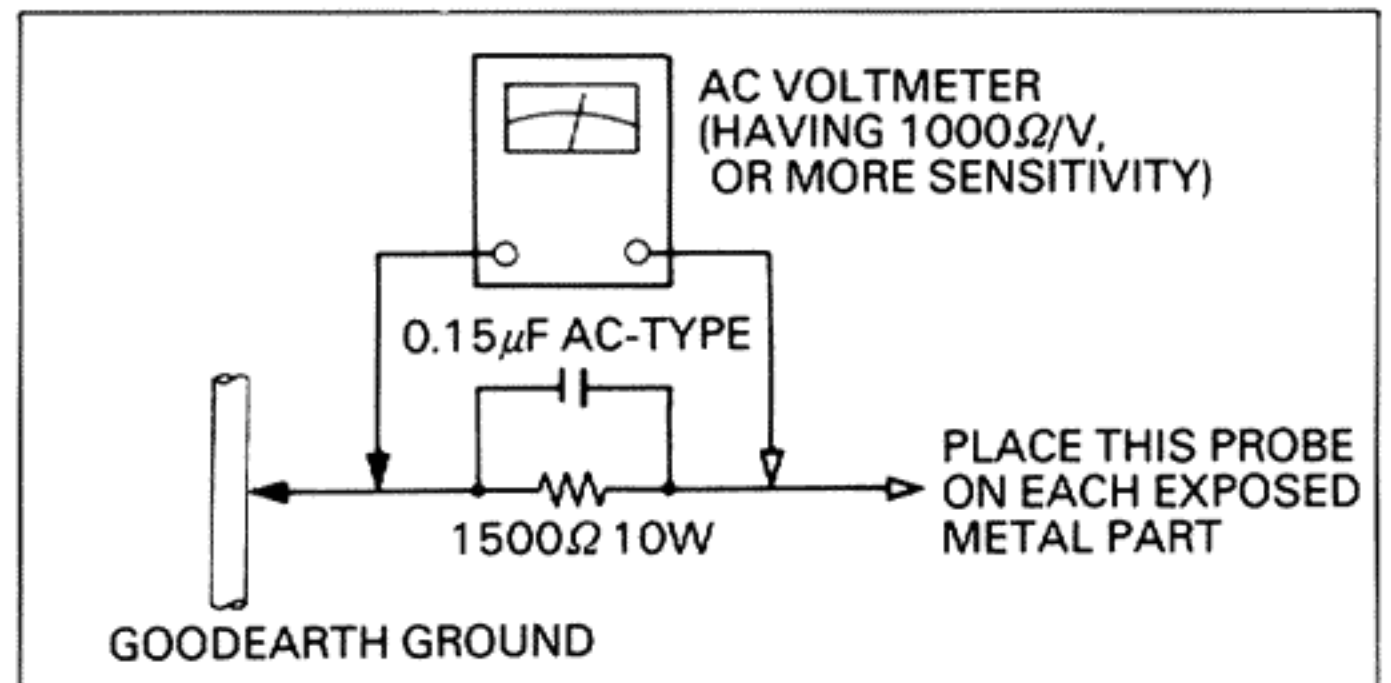


Fig. 1

Service Precautions

1. Before repairing, be sure to discharge electric capacitors across a resistor of about 100 ohms/1 watt.
2. When the display microprocessor (IC951) is replaced, apply silicone grease (G746 Shin-Etsu Chemical Co., Ltd.) to the pins to prevent malfunction due to rapid temperature change.

If the silicone grease is not available, consult your nearest JVC dealer.

1. Specifications

CIRCUITRY

Preamplifier : ICL, high gain phono equalizer for MM/MC cartridge
 Power Amplifier : "Dynamic Super-A high-gain" power amplifier

OVERALL CHARACTERISTICS

Output power : **100 watts per channel, min. RMS, both channels driven, into 8 ohms from 20 Hz to 20 kHz, with no more than 0.007% total harmonic distortion.**

105 watts per channel, min. RMS, both channels driven, into 8 ohms at 1 kHz with no more than 0.002% total harmonic distortion. (measured by JVC Audio Analyzer System)
 110 watts per channel into 8 ohms at 1 kHz, 0.7% total harmonic distortion.

Total harmonic distortion : 0.007% (20 Hz – 20kHz, 8 ohms) at 100 watts

PHONO IN → SP. OUT : 0.01% (20 Hz – 20 kHz, 8 ohms) at 100 watts

Intermodulation distortion : 0.005 % (60 Hz: 7 kHz = 4: 1,8 ohms) at 100 watts

Power band width : 5 Hz – 40 kHz (IHF, 0.05 %, 8 ohms both channels driven)

Frequency response : 3 Hz – 100 kHz +0, –3 dB (8 ohms)

Damping factor : 75 (1 kHz, 8 ohms)

Input terminals

Input sensitivity/ impedance (1 kHz)

PHONO (MM) : 2.5 mV/47 kohms

PHONO (MC) : 200 μ V/100 ohms

DAD/TUNER/ : 200 mV/40 kohms

VIDEO-1,2/VTR/

TAPE-1,2

Signal-to-noise ratio '66 IHF DIN
 PHONO (MM) : 85 dB 66 dB
 PHONO (MC) : 65 dB 66 dB
 DAD/TUNER/ : 100 dB 67 dB

VIDEO-1,2/VTR/
 TAPE-1,2 ('66 IHF)
 PHONO (MM) : 83 dB (Rec out)
 PHONO (MC) : 75 dB (Rec out)
 DAD/TUNER/ : 77 dB (Speaker out)
 VIDEO-1,2/VTR/
 TAPE-1,2 ('78 IHF)

Tone controls : S.E.A. center frequencies 63, 160, 400, 1 k, 2.5 k, 6.3 k, 16 kHz S.E.A. control range \pm 12 dB

Loudness control at : 100 Hz: +6 dB,
 volume –30 dB 10 kHz: +4 dB,

EQUALIZER

PHONO overload capacity

PHONO (MM) : 120 mV (0.03 % THD)

PHONO (MC) : 10 mV (0.03 % THD)

PHONO RIAA deviation

PHONO (MM) : \pm 0.3 dB (20 Hz – 20 kHz)

PHONO (MC) : \pm 0.5 dB (20 Hz – 20 kHz)

Recording output

Output level/impedance

TAPE REC-1,2 : 200 mV/660 ohms (PHONO)

VIDEO

Signal Allowable : 1.2 Vp-p

Input (VIDEO-1/
 VIDEO-2/VTR IN)

Output Signal level : 1 Vp-p (at 1 Vp-p input)
 (MONITOR OUT) VTR

REC

Impedance : 75 ohms unbalanced

S/N : 45 dB

Crosstalk : 45 dB (3.58 MHz)

GENERAL

Dimensions : 435 (W) \times 117 (H) \times 380 (D)
 mm (17-1/8" \times 4-5/8" \times 15")

Weight : 8.5 kg (18.7 lbs.)

POWER SPECIFICATIONS

Countries	Line Voltage & Frequency	Power Consumption
U. S. A. Canada	AC 120 V \sim , 60 Hz	400 watts/520 VA
Continental Europe	AC 220 V \sim , 50 Hz	250 watts
U. K. Australia	AC 240 V \sim , 50 Hz	250 watts
Other Areas	AC 110/120/220/240 V \sim Selectable, 50/60 Hz	250 watts

2. Removal and Reassembly Procedures

2-(1) Metal Cover Section

1. Remove 6 screws securing the metal cover. (4 on each side of the cover and 2 on the rear).
2. Pull out the metal cover backwards.

2-(2) Front Panel Section

1. Pull out the plastic rivet bushes by pressing it from the bottom plate.
2. Remove 3 screws from the bottom plate.

2-(3) FL Escutcheon Section

1. Remove screw (1) from the switch P.C. Board.
2. Remove the P.C. board by sliding it in the direction of the arrow.
3. Disengage 2 claws located at the bottom of the escutcheon from the front bracket.

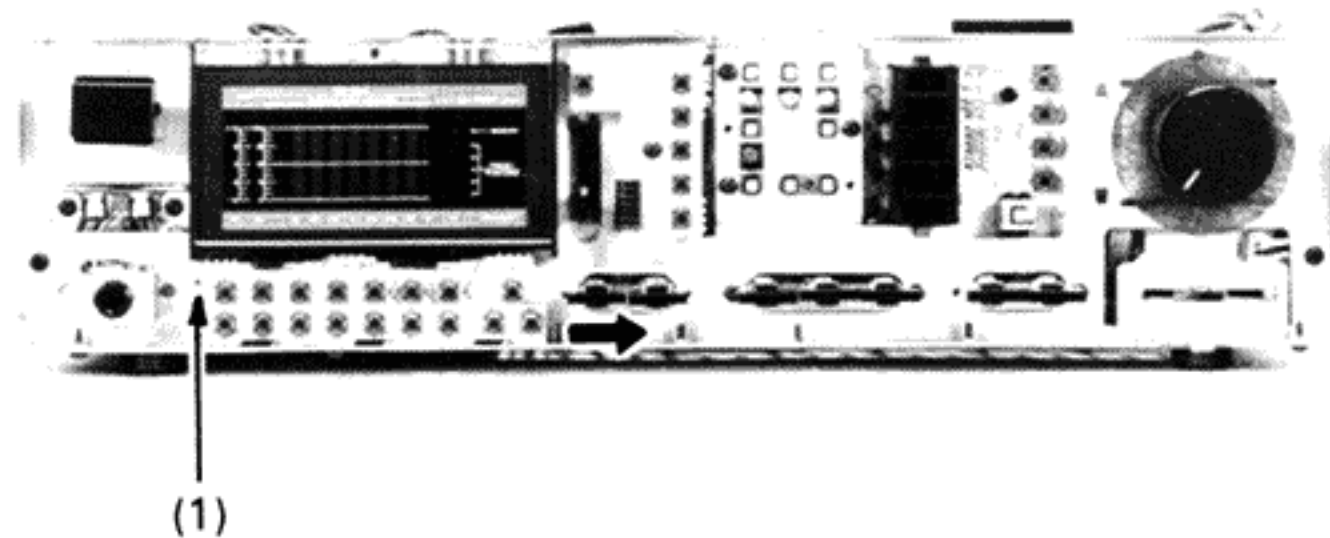


Fig. 2

4. Disengage 2 claws located at the top of the escutcheon and remove the escutcheon.

Note: To protect lamp ass'y, remove the ass'y before these procedures.

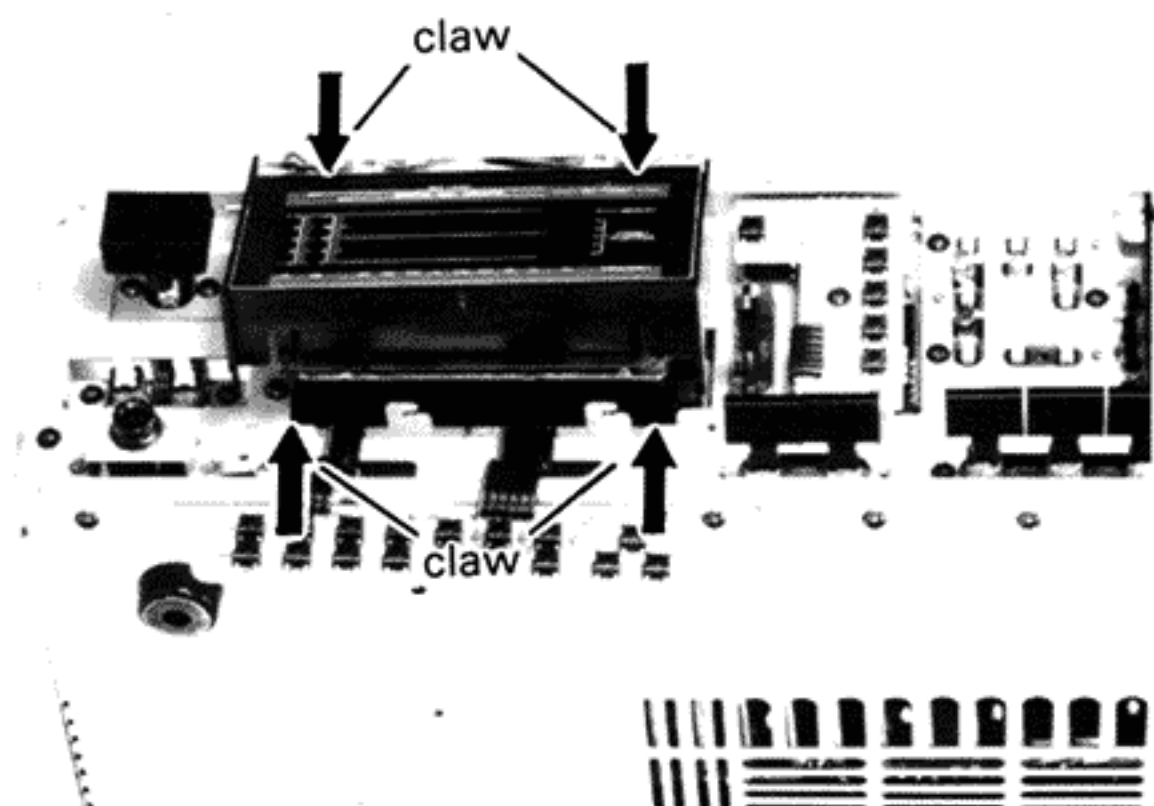


Fig. 3

2-(4) Display P.C. Board Ass'y

1. Remove 3 screws, as shown in Fig. 4.
2. Remove 2 retaining screws (A) from the slide variable resistor.

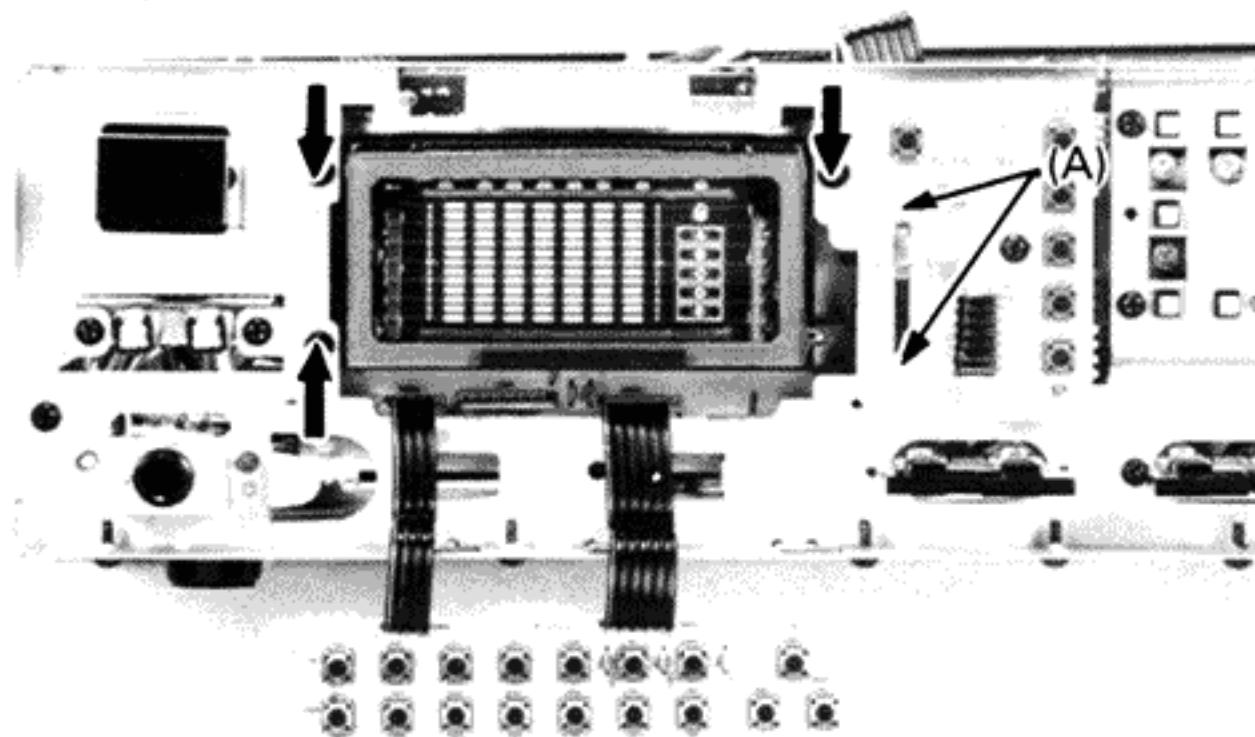


Fig. 4

3. Pull out the slide knob.
4. Pull out the display P.C. board ass'y upward while shifting it inward, as shown in Fig. 5.

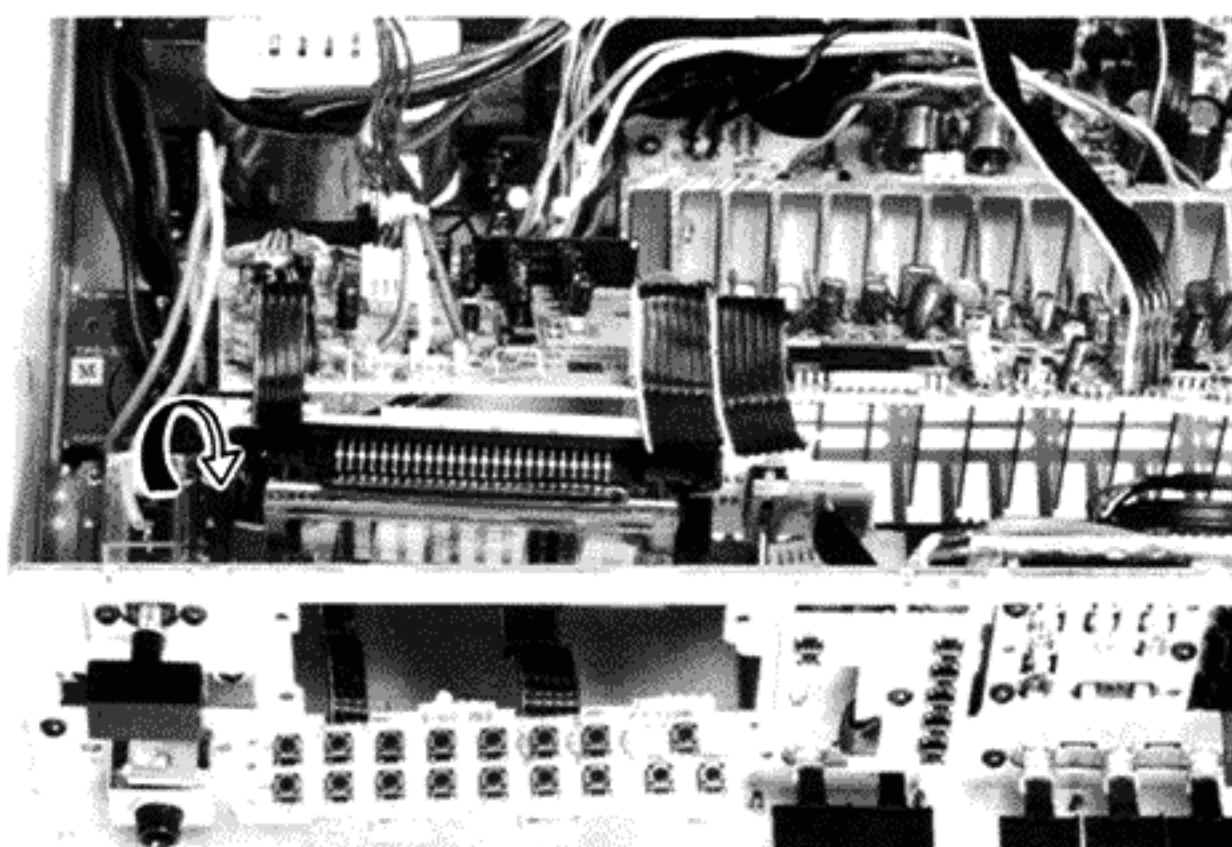


Fig. 5

2-(5) Power Transistor Section

1. Remove the metal cover. (It is not necessary to remove the front panel.)
2. Remove 4 screws from each power amp. P.C. board bracket.
3. Pull out the power amp P.C. board in the direction of the arrow while shifting it to the front panel, as shown in Fig. 6.

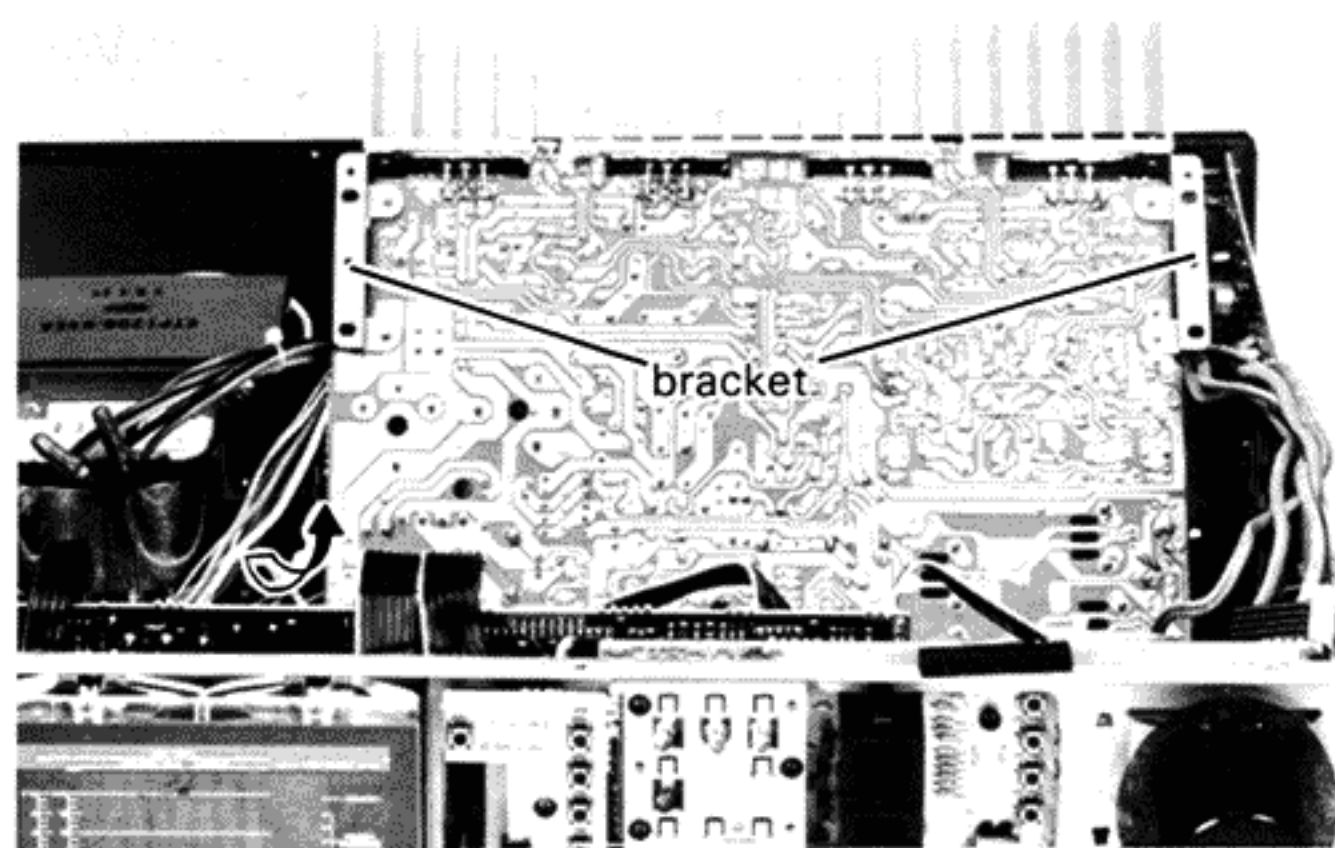
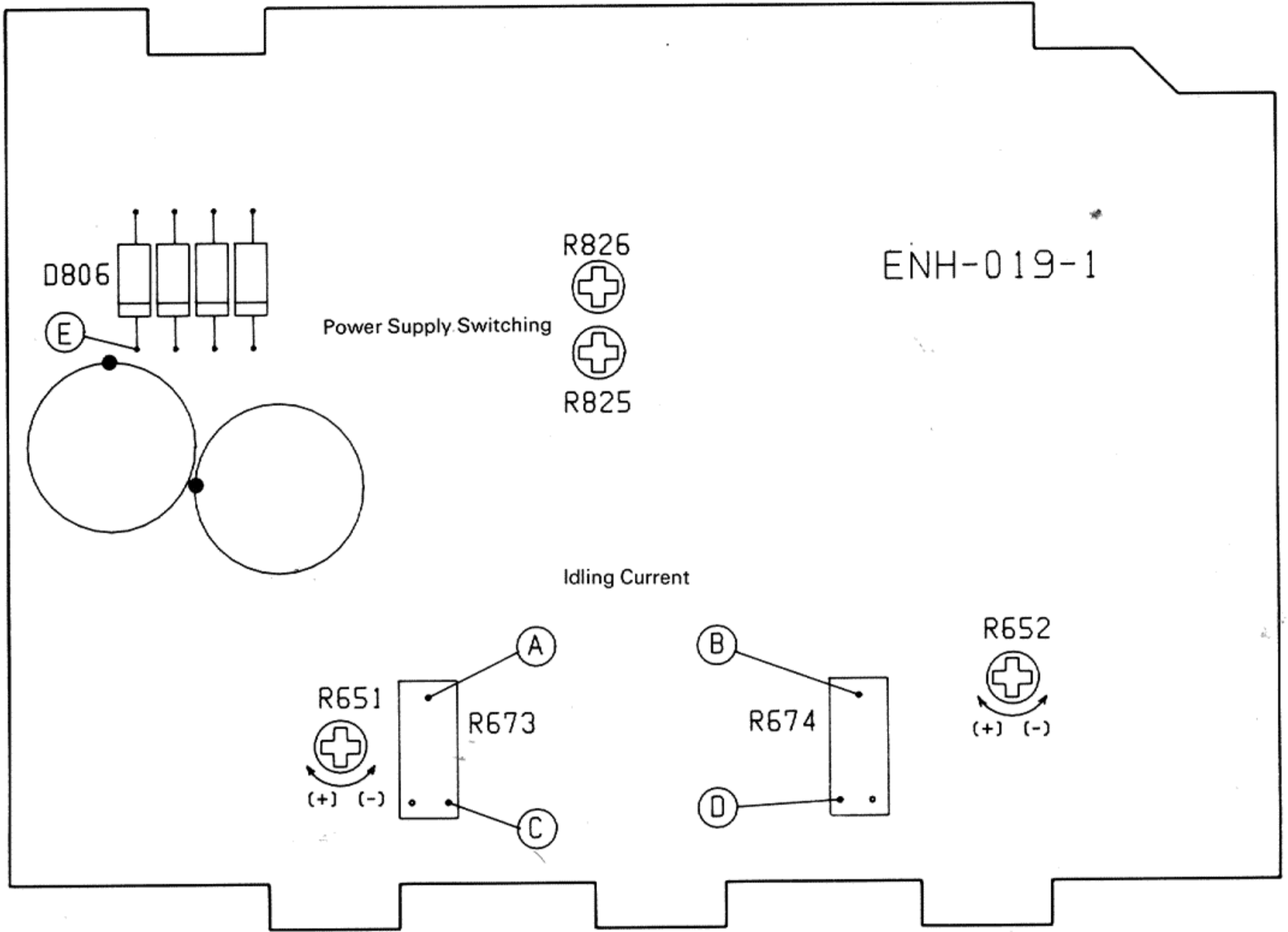


Fig. 6

3. Adjustment Procedures



■ Idling current adjustment

1. Before turning the power ON, turn the semi-fixed resistors (R651 for Left channel and R652 for Right channel) of the power amplifier circuit board fully counterclockwise.
2. Turn the power ON and then adjust the semi-fixed resistors (R651 and R652) so that the voltage at the following test points of the power amplifier circuit board is within a range of the 9 mV ~ 13 mV.
 "L" channel: measure the voltage between test point R673 (A) and test point R673 (C) (ground).
 "R" channel: measure the voltage between test point R674 (B) and test point R674 (D) (ground).
3. Readjust resistors R651 and R652 about 5 minutes after the power is turned on (the heat-sink temperature must be sufficiently high) so that the voltage at the test points becomes 11 mV. Confirm that the voltage does not vary when the heat-sink temperature increase further.

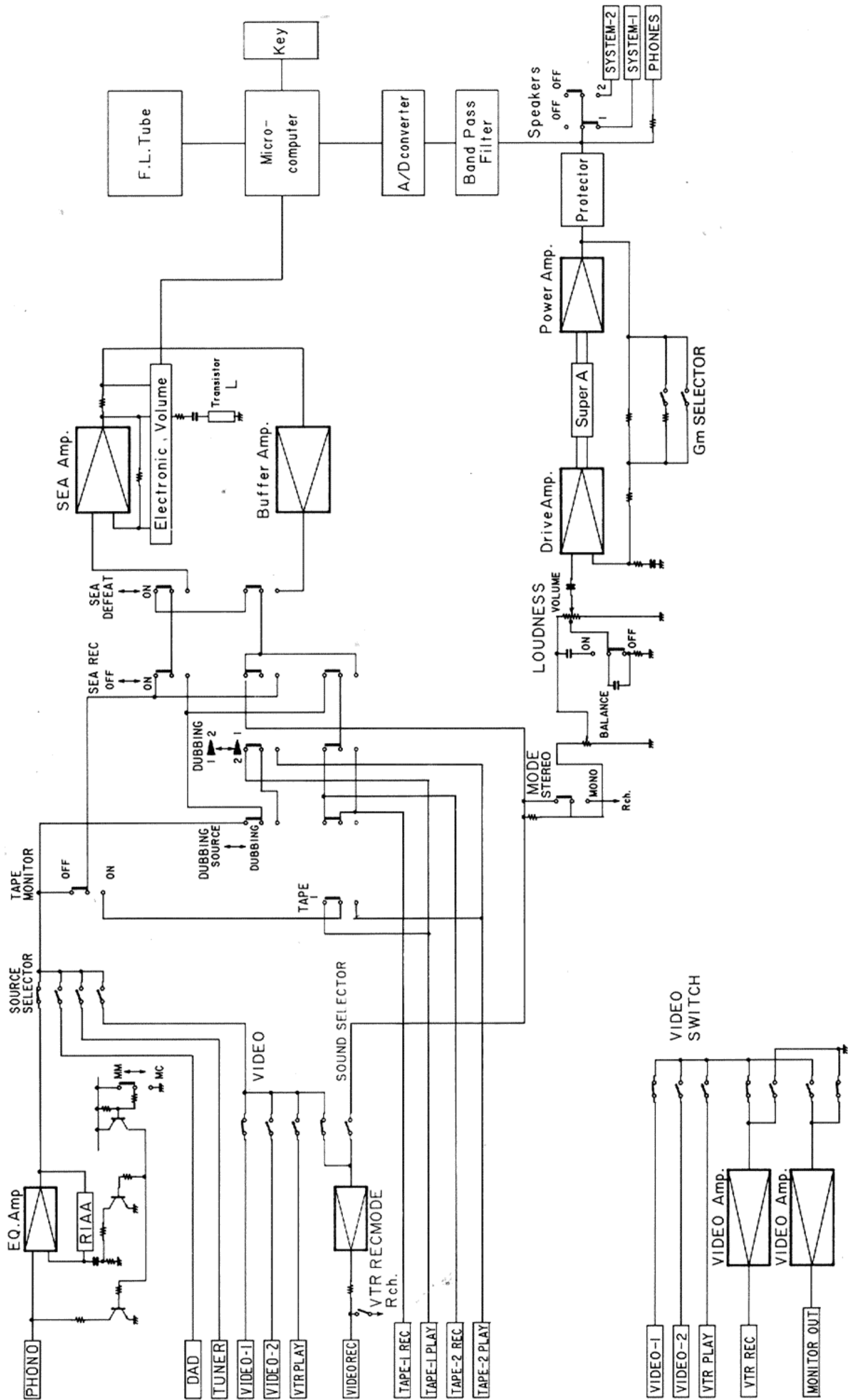
Note: Be sure to perform the measurement with the probes and cabinet of the measuring equipment separated from the grounding terminals of A-X500VB or of other measuring equipment.

■ Power supply switching circuit adjustment

1. Before turning the power ON, turn the semi-fixed resistors (R825 for Left channel and R826 for Right channel) of the amplifier circuit board fully counterclockwise.
2. Turn the power ON and input a 20 Hz sine wave to the Left channel (or the Right channel) of the DAD. Then, connect a 7 Ω dummy load to the speaker terminal, adjust either the amplifier's volume or the oscillator's volume to obtain 29V output.
3. Measure voltage on the D806 cathode (E) and confirm that the range of "50V \pm 3V" exists. Next, slowly rotate clockwise the semi-fixed resistors (R825/L or R826/R) and set voltage at the D806 cathode (E) to the level of 38V \pm 3V.
4. Shift the dummy load from 7 ohms to 8 ohms and confirm that voltage at the D806 cathode (E) is 50V \pm 3V. When this voltage is out of the range (50V \pm 3V), readjust the semi-fixed resistors.

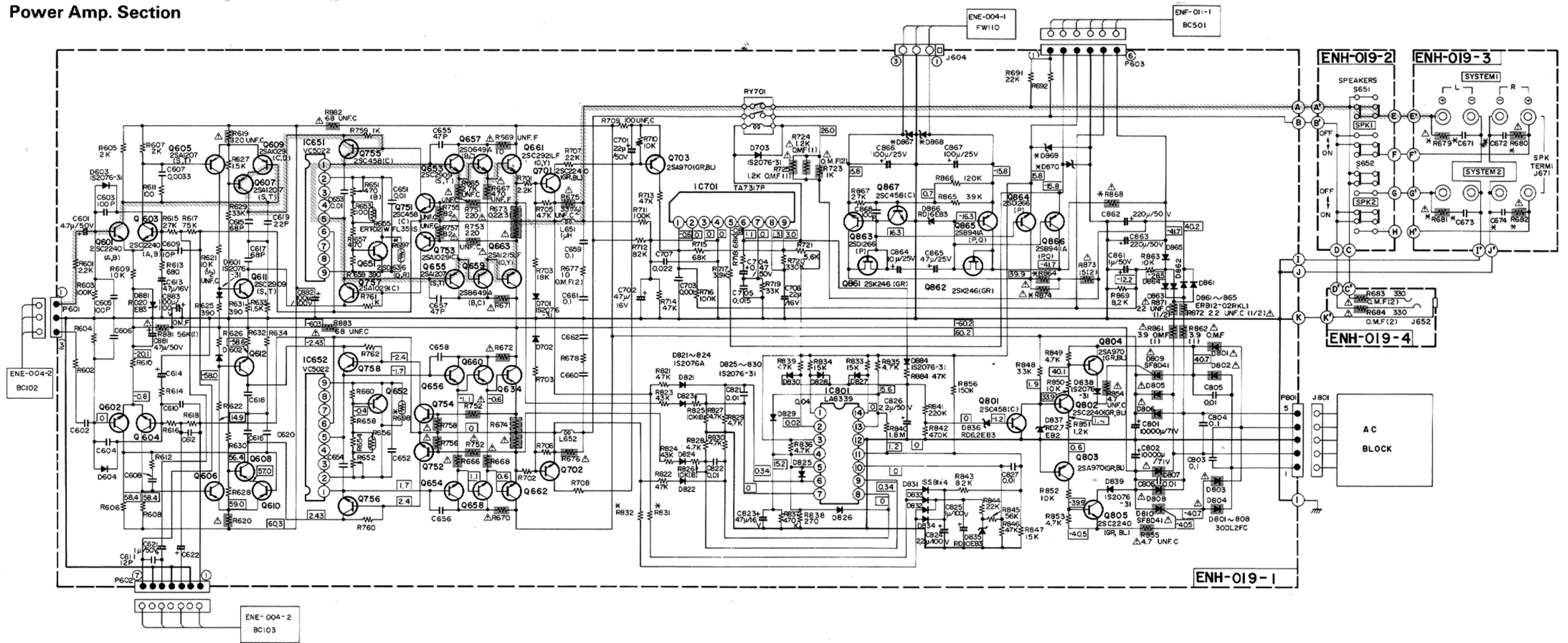
Note: Adjust on one channel at a time, either on the "L" channel or the "R" channel.
 When you need dummy (7 ohms/8 ohms), consult with JVC.

4. Block Diagram



5. A-X500VB Schematic Diagram

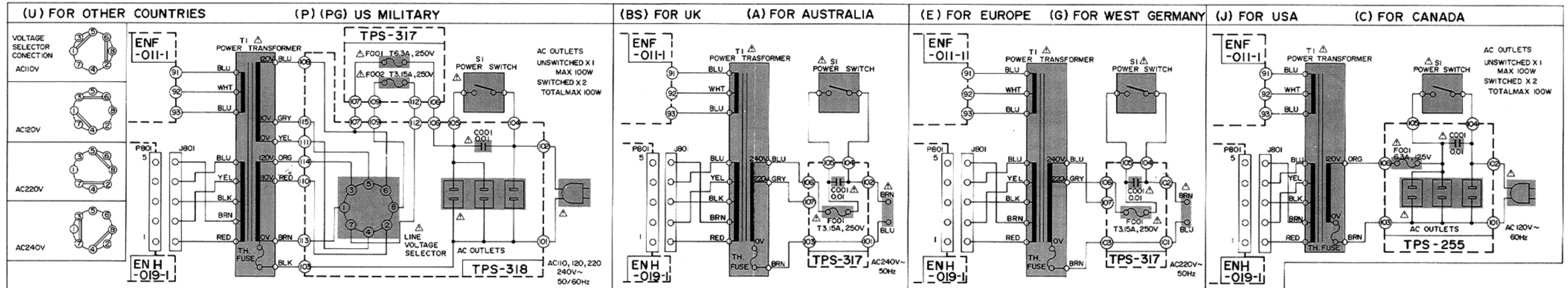
5-(1) Power Amp. Section



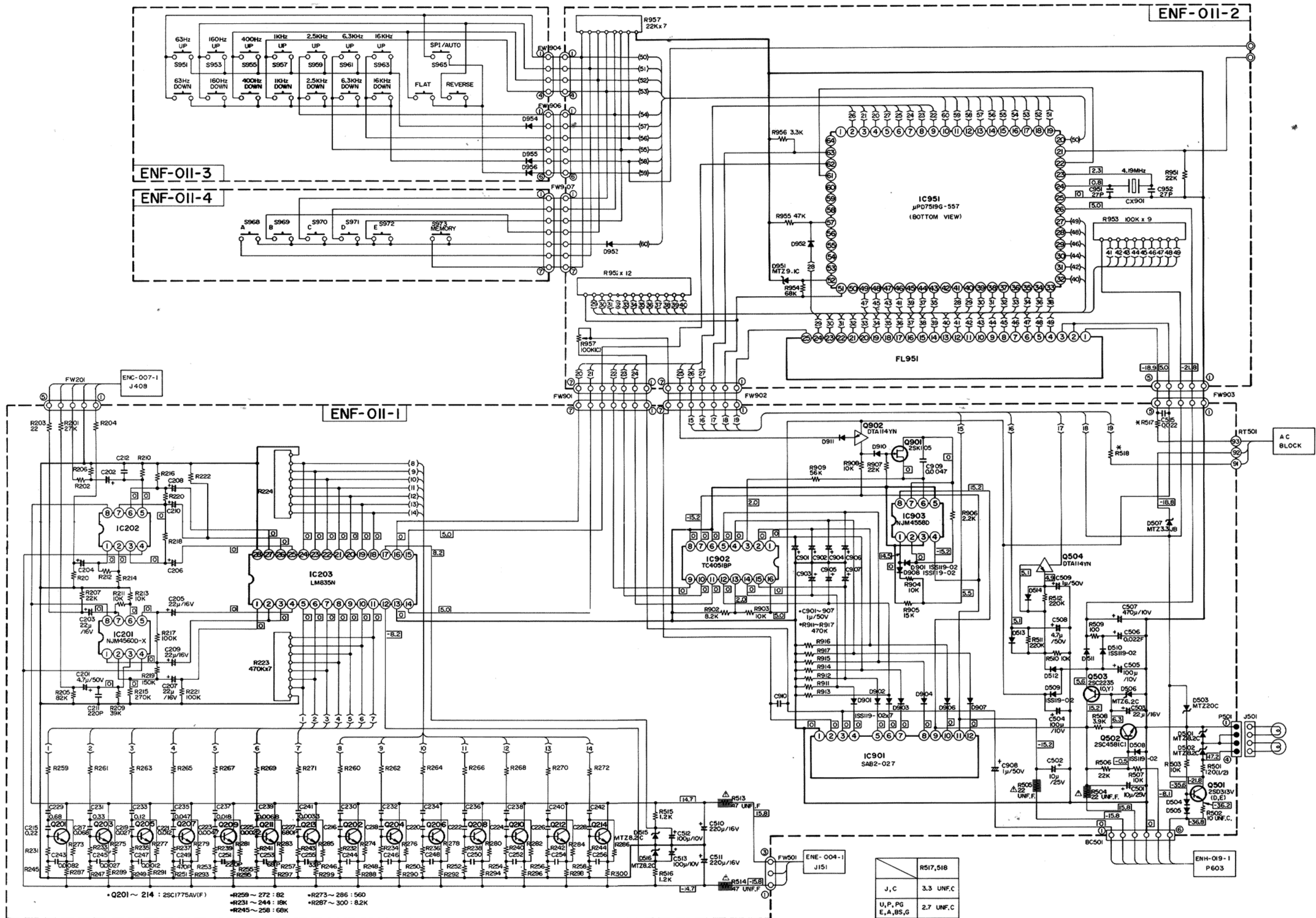
	POWER AMP ASS'Y	SEA & FL ASS'Y	SWITCH ASS'Y	EQ. & IN/OUT ASS'Y	PRIMARY ASS'Y
J . C	ENH - 019A	ENF - 011A	ENC - 007B	ENE - 004A	TPS - 255H
U , P , PG	ENH - 019C	ENF - 011B		ENE - 004B	TPS - 317A & TPS - 318B
E . A	ENH - 019B			ENE - 004C	TPS - 317L
BS				TPS - 317MBS	
G	ENH - 019B			ENE - 004C	TPS - 317L

COUNTRY	R678 ~682	C671 ~674	R664	R674	R668	D667 ~670	R697 696	R631 832
J . C	NONE	NONE	3.3 UNF.C	NONE	15 UNF.C	NONE	NONE	330 UNF.C
U , P , PG E . A , G , BS	NONE	NONE	12 UNF.F	12 UNF.F	5 UNF.F	RD18B3	ERT-Q2WHL 2025	3.3K
G	10 UNF.C	0.01	12 UNF.F	12 UNF.F	15 UNF.F	RD18B3		330 UNF.C

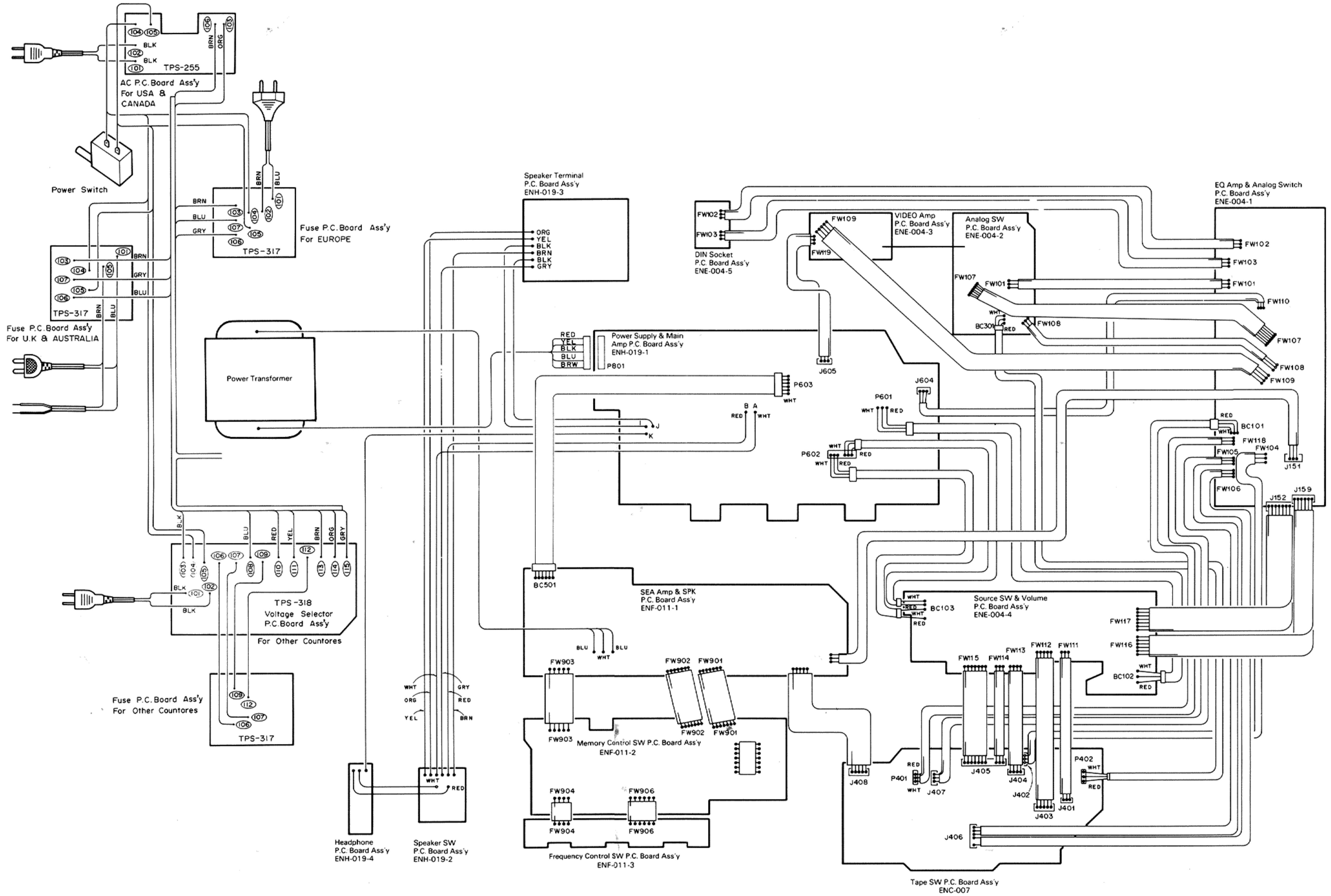
1. indicates signal path.
2. When replacing the parts in the darkened area and those marked with Δ , be sure to use the designated parts to ensure safety.
3. This is the standard circuit diagram.
The design and contents are subject to change without notice.

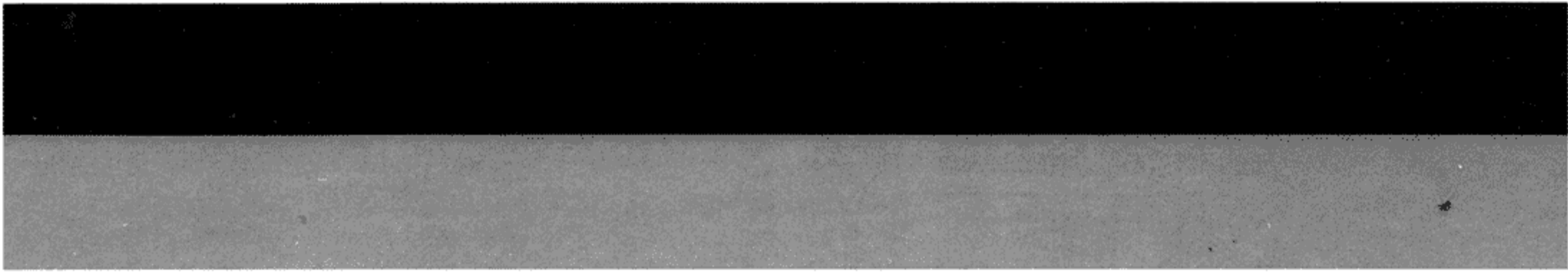


5-(3) S.E.A. & Display Section



6. Wiring Diagram





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STEREO DIVISION, YAMATO PLANT, 1644, SHIMOTSURUMA, YAMATO-SHI, KANAGAWA-KEN, 242, JAPAN