

TA-4650

USA Model
(former and new types)

E Model
AEP Model



INTEGRATED STEREO AMPLIFIER

SPECIFICATIONS

GENERAL

System: Power amplifier section:
direct-coupled pure complementary
symmetry circuitry
Preamplifier:
direct-coupled two-stage phono,
flat and negative feed-back control
circuitry

Power Requirements: 120 V ac, 60 Hz (USA model)
110, 127, 220 or 240 V ac, 50/60 Hz,
adjustable (AEP model)
100, 120, 220 or 240 V ac, 50/60 Hz,
adjustable (E model)

Power Consumption: 270W (by IEC Standard)

Dimensions: approx.
460(w) x 168(h) x 323(d) mm,
18 $\frac{1}{8}$ x 6 $\frac{5}{8}$ x 12 $\frac{3}{4}$ inches (AEP model)
430(w) x 168(h) x 323(d) mm,
16 $\frac{7}{8}$ x 6 $\frac{5}{8}$ x 12 $\frac{3}{4}$ inches (E, USA model)
including projecting parts and controls

Weight: approx.
12.4 kg, 27 lb 5 oz (AEP model) in net
11.5 kg, 25 lb 6 oz (E, USA model)
15.2 kg, 33 lb 8 oz with shipping carton
(AEP model)
13.6 kg, 30 lb (E, USA model)

POWER AMPLIFIER SECTION

Continuous RMS

Power Output:
(less than 0.1% THD,
both channels driven
simultaneously)
at 1 kHz
35 + 35 W (8 Ω)
30 + 30 W (4 Ω)
at 20 – 20,000 Hz
30 + 30 W (8 Ω)
according to DIN 45500
35 + 35 W

Dynamic Power Output: 100W (8 Ω)
(IHF constant power
supply method)
90W (4 Ω)

Power Bandwidth
(IHF): 5 Hz – 70 kHz

Harmonic Distortion: less than 0.1% at rated output
less than 0.05% at 1W output
Distortion: less than 0.1% at rated output
less than 0.05% at 1W output
(60 Hz: 7 kHz=4:1)

Frequency Response: 2 Hz – 100 kHz ± 0.2 dB
(at 1W output)

S/N ratio: greater than 110 dB, short-circuited
input

Residual Noise: less than 0.005 μ W (8 Ω)

Damping Factor: 45 (8 Ω , at 1 kHz)

Inputs: POWER INPUT
sensitivity 1V RMS (for rated output)
impedance 50 k Ω

Outputs: SPEAKER terminals A, B
accept speakers of 4 Ω or more
HEADPHONE jack
accepts low- and high-impedance stereo
headphones

(Continued on next page.)

SONY

SERVICE MANUAL

PREAMPLIFIER SECTION

Harmonic Distortion:	less than 0.05 % at rated output
Intermodulation (IM) Distortion:	less than 0.05 % at rated output
(60 Hz: 7 kHz = 4:1)	
Frequency response:	PHONO 1, 2 RIAA equalization ± 0.5 dB
	TUNER
	AUX 1, 2
	TAPE 1, 2
	REC/PB (input)
	EXT ADPT 1, 2
	(input)
	} 10 Hz - 100 kHz ± 0 dB
Tone Controls:	BASS:
	± 10 dB at 50 Hz (TURNOVER 250 Hz)
	± 10 dB at 100 Hz (TURNOVER 500 Hz)
	TREBLE:
	± 10 dB at 10 kHz (TURNOVER 2.5 kHz)
	± 10 dB at 20 kHz (TURNOVER 5 kHz)
Filters:	LOW:
	6 dB/octave attenuation below 35 Hz
	HIGH:
	6 dB/octave attenuation above 6 kHz
Loudness Switch:	+10 dB at 50 Hz
(att. 30 dB)	+3 dB at 10 kHz

Inputs

	Sensitivity	Impedance	Maximum input capability*	S/N (weighting network)
PHONO 1, 2	2.5 mV	50 k Ω	300 mV	greater than 70 dB (B)
AUX 1, 2 TAPE 1, 2 REC/PB (input) EXT ADPT 1, 2 (input)	150 mV	100 k Ω		greater than 90 dB (A)

* The maximum input capability is measured at a 0.05 % harmonic distortion.

Outputs

	Output voltage	Impedance
REC OUT 1, 2	150 mV	4.7 k Ω
PRE OUTPUT	1 V	3 k Ω
REC/PB	17 mV	82 k Ω
EXT ADPT 1, 2	150 mV	4.7 k Ω

Specification Label:

USA model

SONY [®]	INTEGRATED STEREO AMPLIFIER		
	MODEL NO. TA-4650		
	AC 120V	60Hz	130W
	SERIAL NO. _____		
MADE IN JAPAN			

AEP model

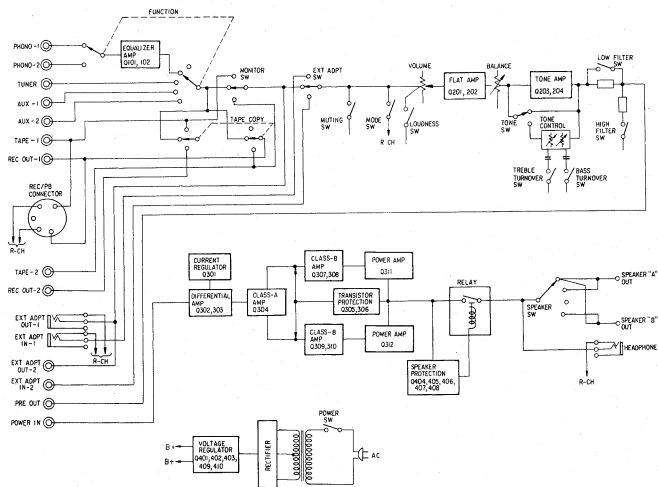
SONY [®]	INTEGRATED STEREO AMPLIFIER		
	MODEL NO. TA-4650		
	AC 110, 127, 220, 240V ~ 50/60Hz 270W		
	SERIAL NO. _____		
MADE IN JAPAN			

E model

SONY [®]	INTEGRATED STEREO AMPLIFIER		
	MODEL NO. TA-4650		
	AC 100, 120, 220, 240V 50/60Hz 270W		
	SERIAL NO. _____		
MADE IN JAPAN			

SECTION 1
OUTLINE

1-1. BLOCK DIAGRAM



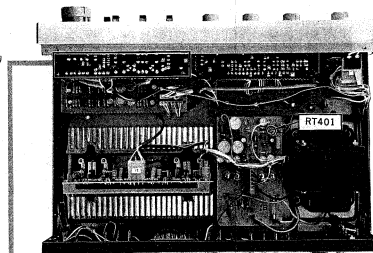
SECTION 2
ADJUSTMENTS

Note: Turn POWER on and allow about three minutes for warm-up.

2-1. POWER SUPPLY VOLTAGE ADJUSTMENT

See Fig. 2-1 and 2-2.

B (volume control) board



Adjust RT401 for 20 V reading on the meter with no signal input.

Fig. 2-1.

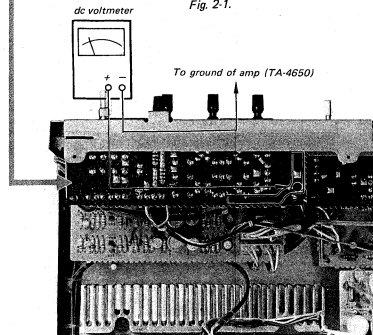


Fig. 2-2.

2.2. DC BIAS ADJUSTMENT

Adjust RT301 and RT351 for 75 mV reading on the meter with no signal input.

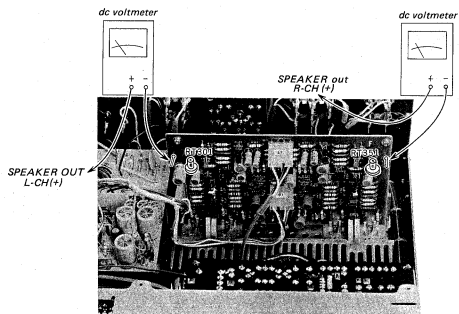
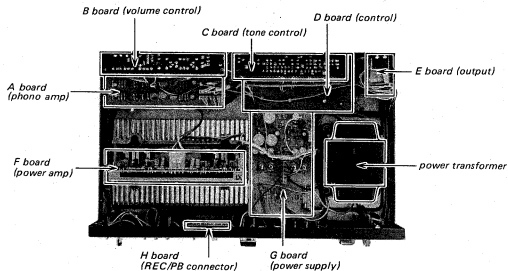


Fig. 2.3.

2.3. CHASSIS LAYOUT

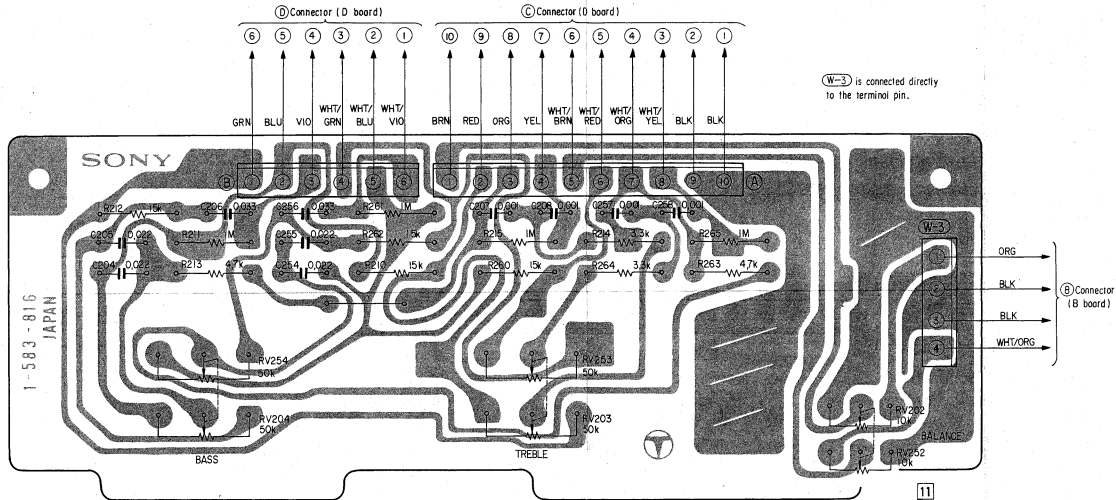


MEMO

A series of horizontal dotted lines for taking notes.

SECTION 3
DIAGRAMS

3-1. MOUNTING DIAGRAM - C Board (tone control) -

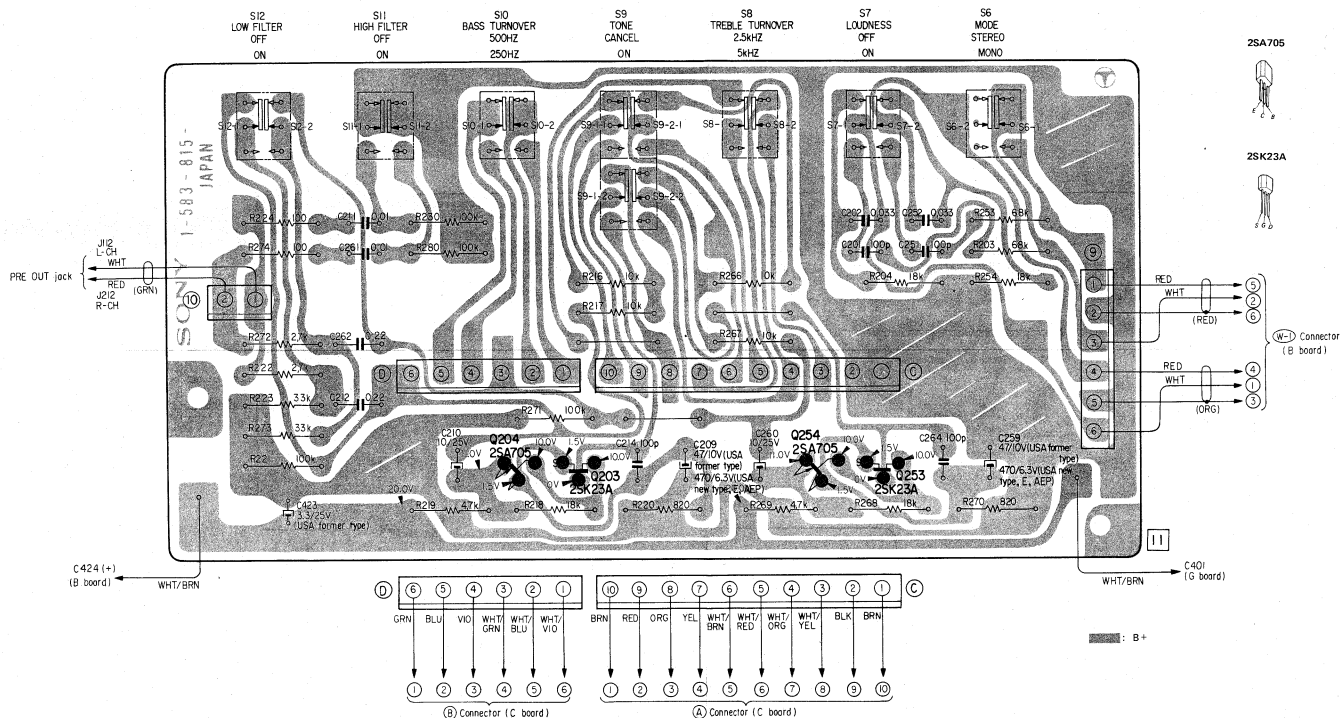


W-3 is connected directly to the terminal pin.

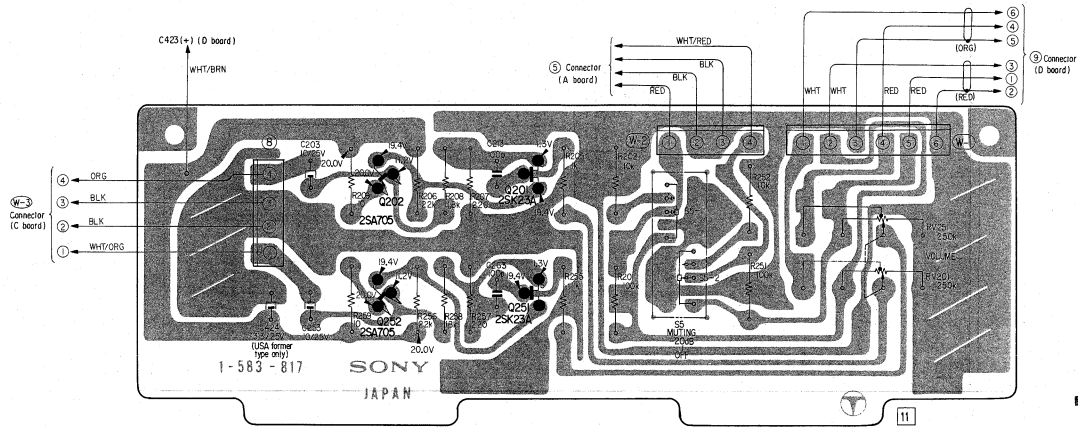
Note: The lead wires of connector W-3 should wire-wrap the terminal pins of connector 8 on B board.

3-2. MOUNTING DIAGRAM - D Board (control) -

- Conductor Side -



3-3. MOUNTING DIAGRAM - B Board (volume control) -
- Conductor Side -



2SA705



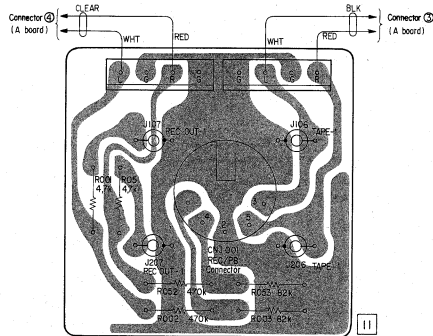
2SK23A



■ B+

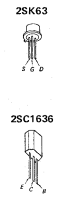
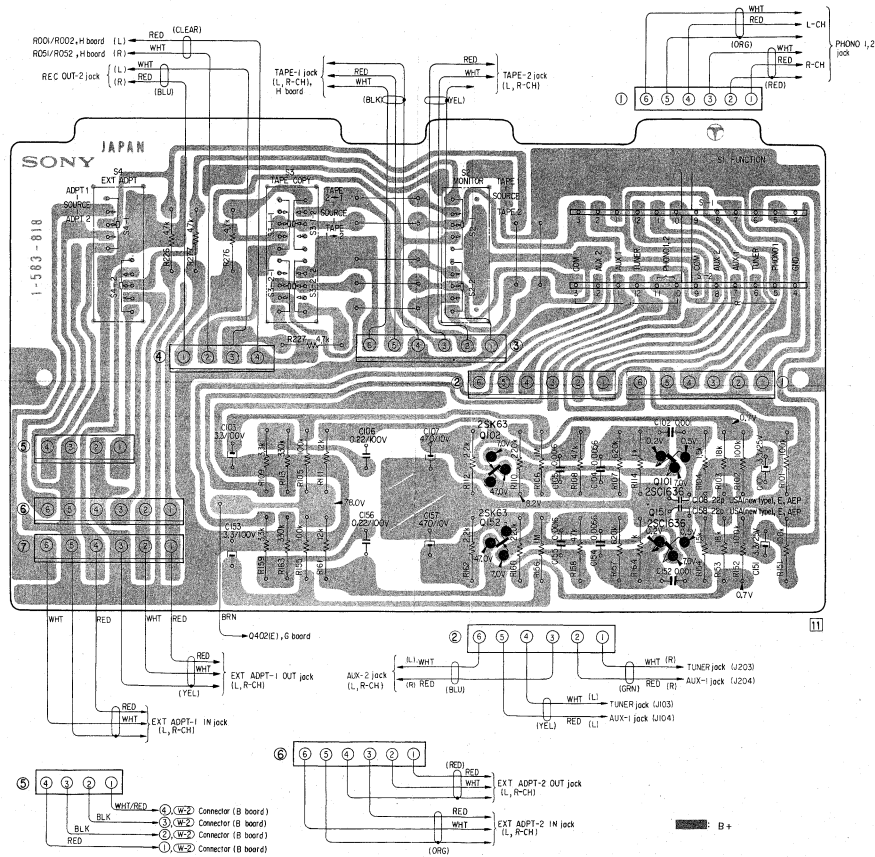
Note: The lead wires of connectors W1 - W3 should wire-wrap the terminal pins of connectors 3 (A board) and 4 (D board), respectively.

3-4. MOUNTING DIAGRAM - H Board (REC/PB connector)
- Conductor Side -

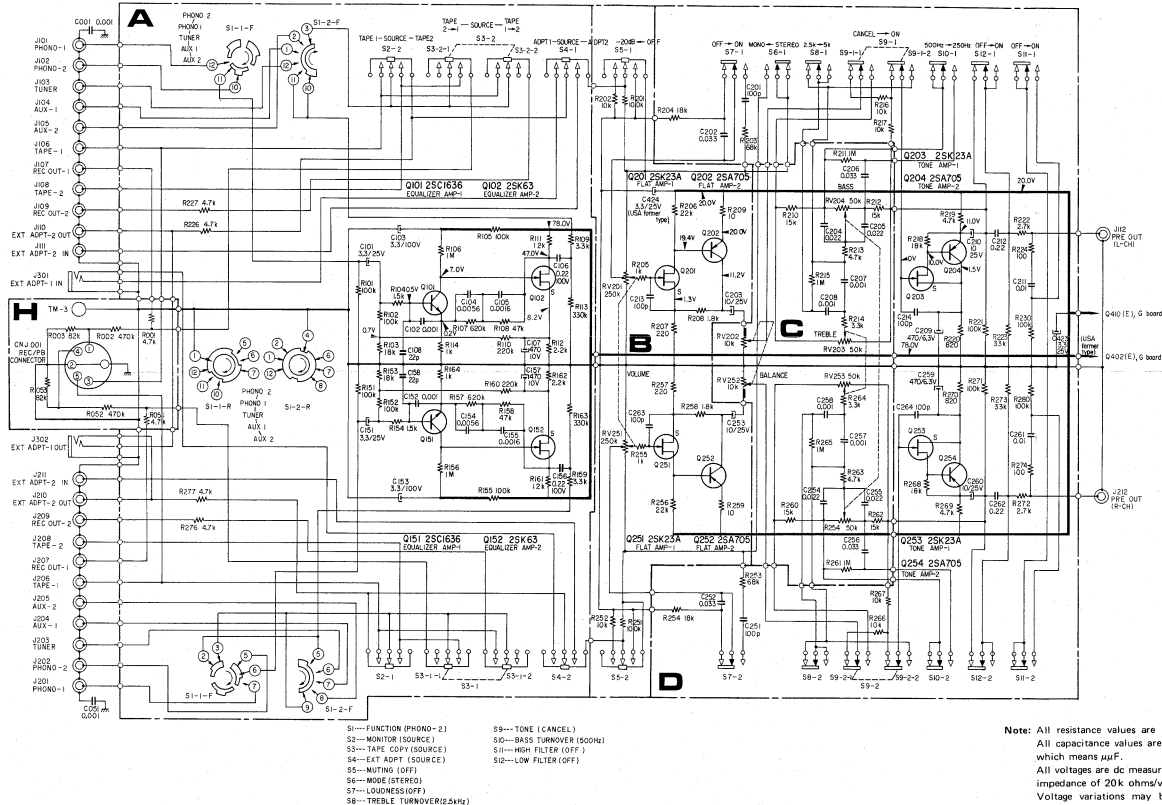


TA-4650 TA-4650

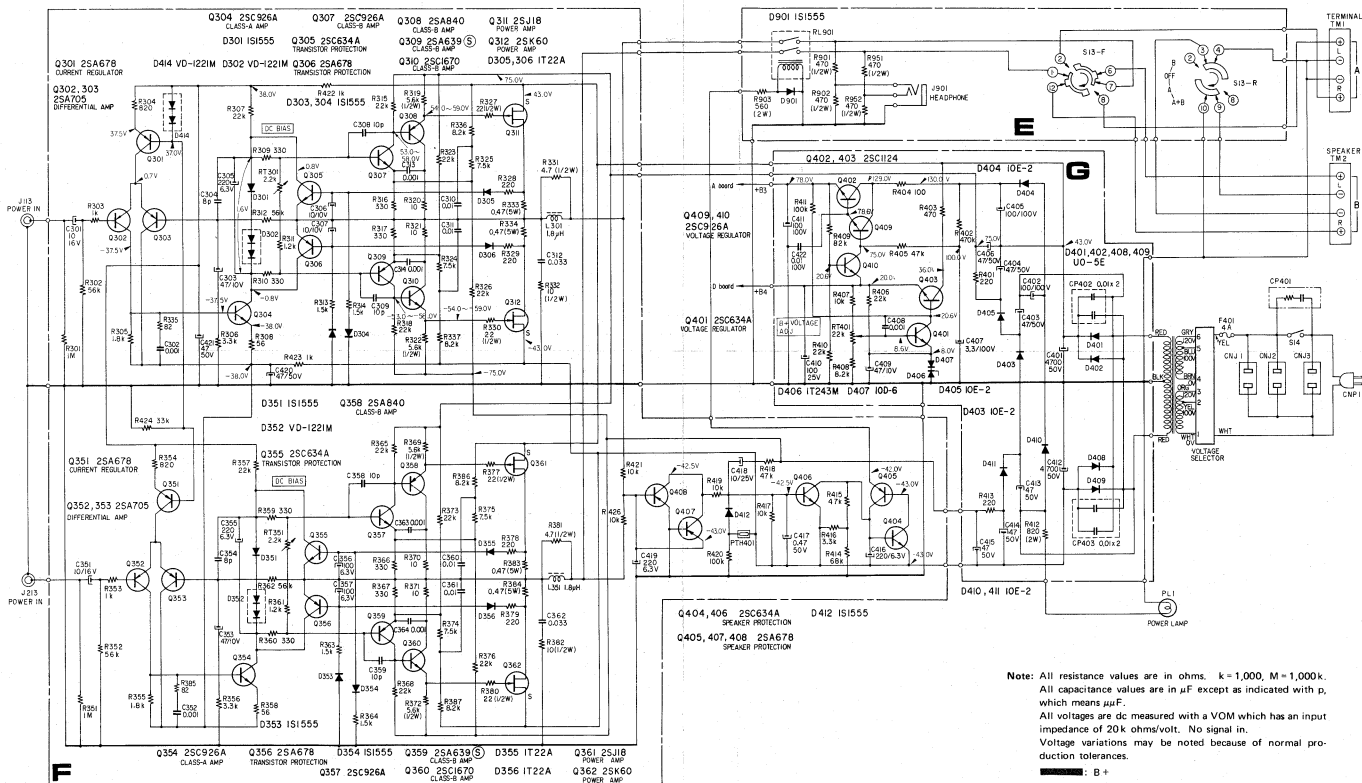
3-5. MOUNTING DIAGRAM — A Board (phono amp) —
 — Conductor Side —



3.6. SCHEMATIC DIAGRAM - Preamplifier Section -

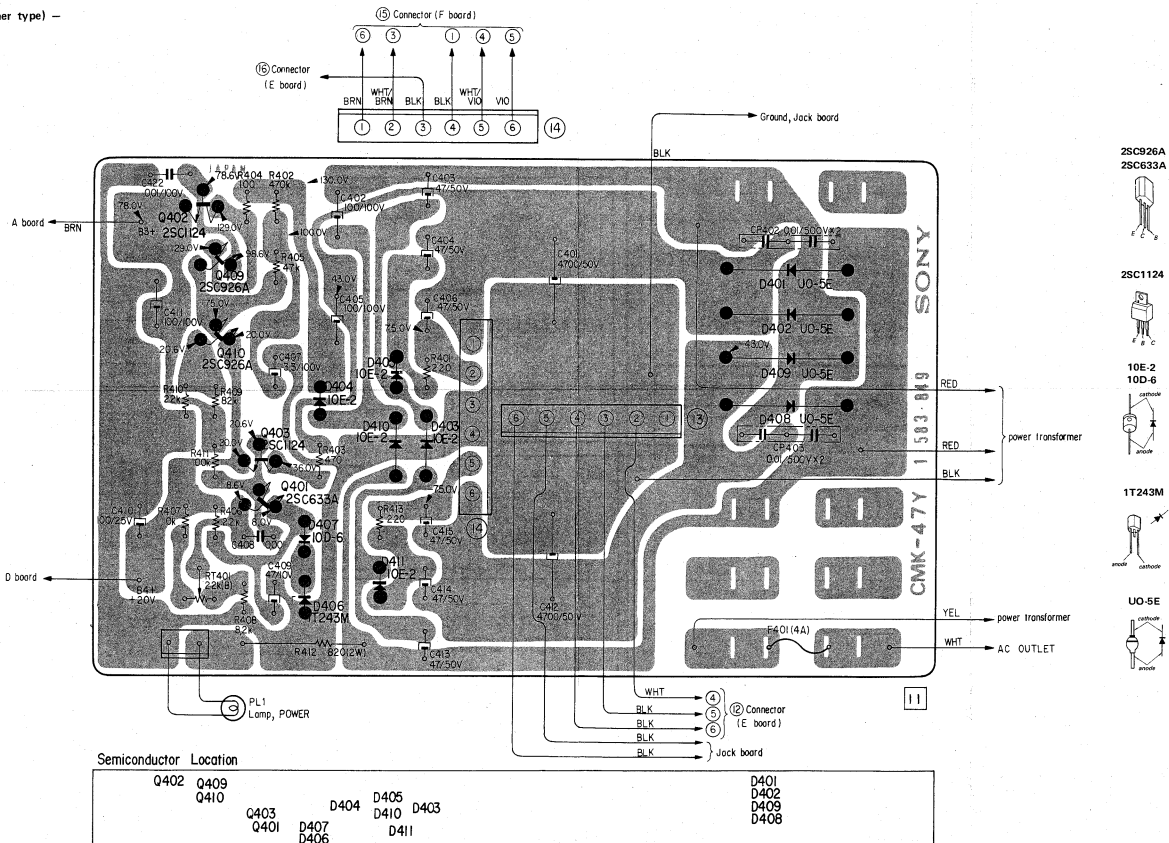


3-7. SCHEMATIC DIAGRAM — Power Amplifier Section —
— USA model (former type) —



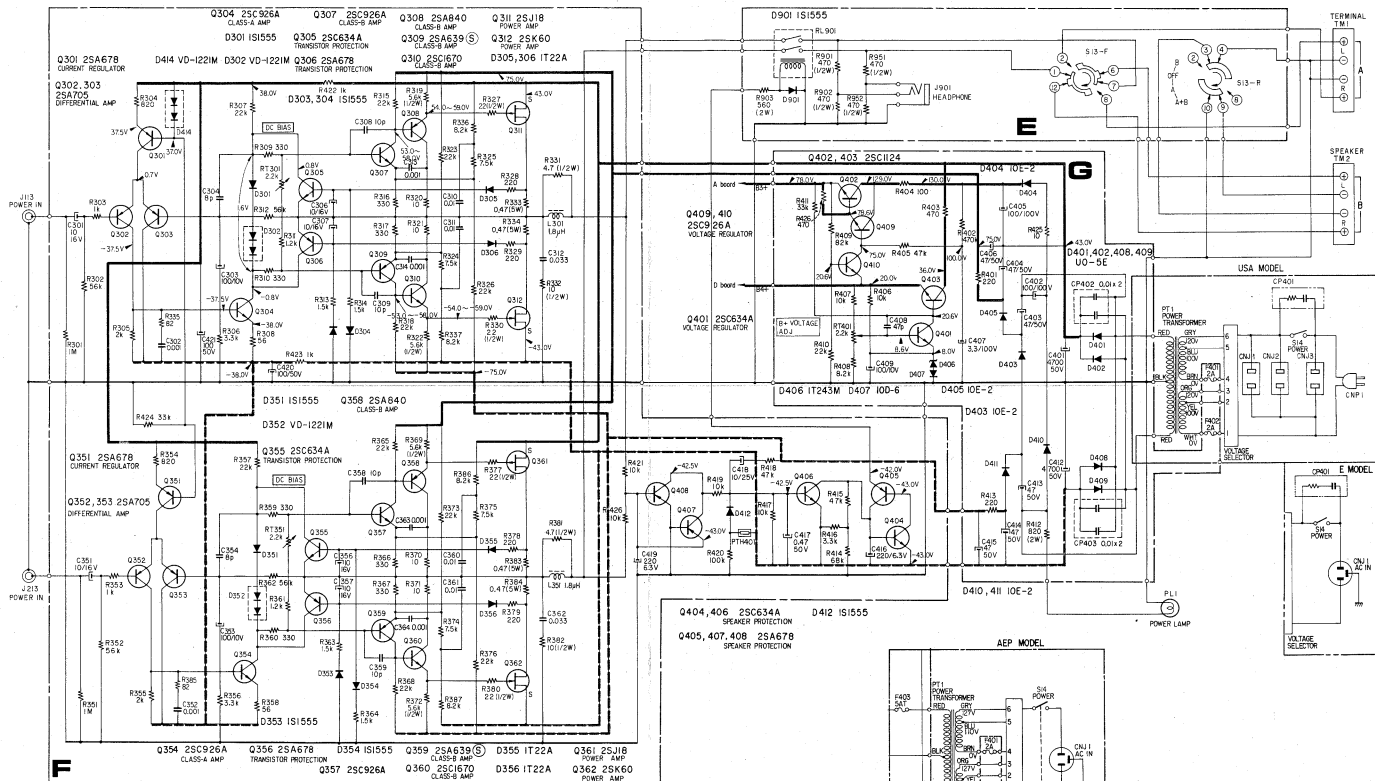
3-8. MOUNTING DIAGRAM - G Board (power supply) -

- Conductor Side -
- USA model (former type) -



TA-4650 TA-4650

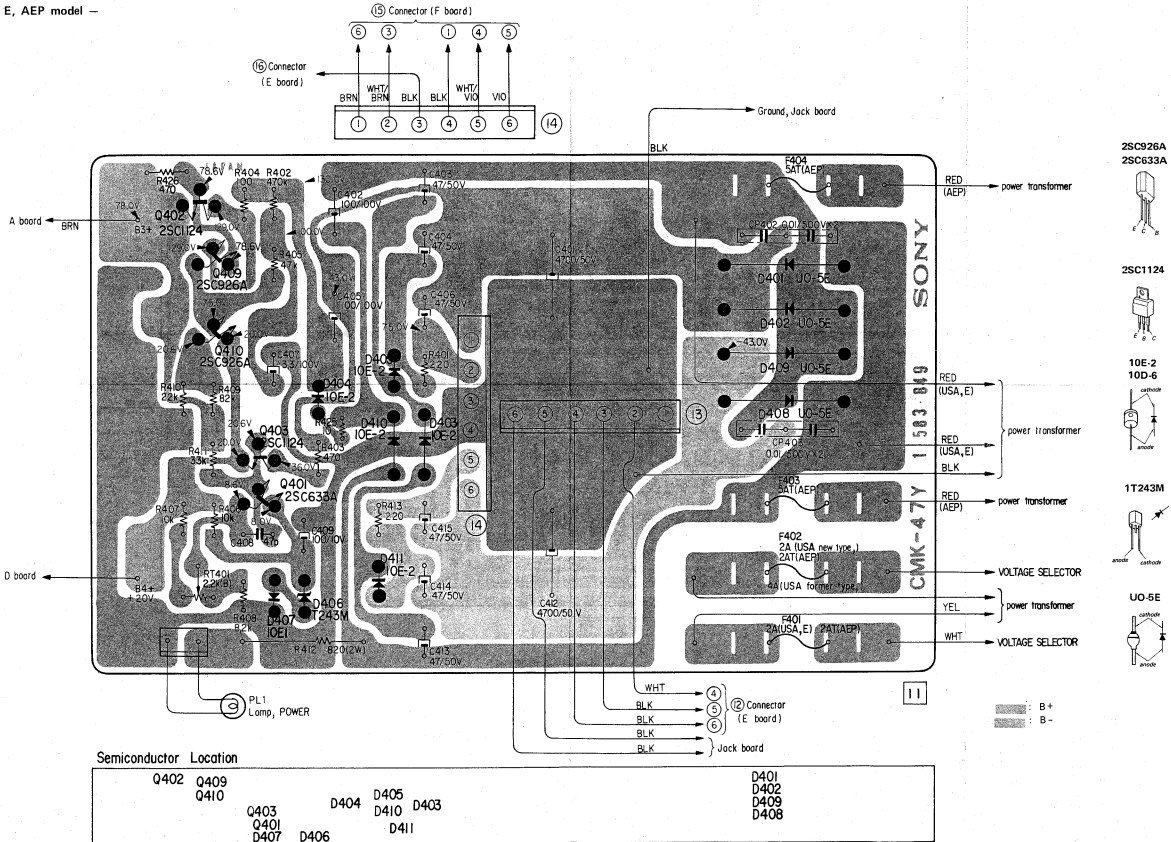
3.9. SCHEMATIC DIAGRAM — Power Amplifier Section —
— USA (new type), E, AEP model —



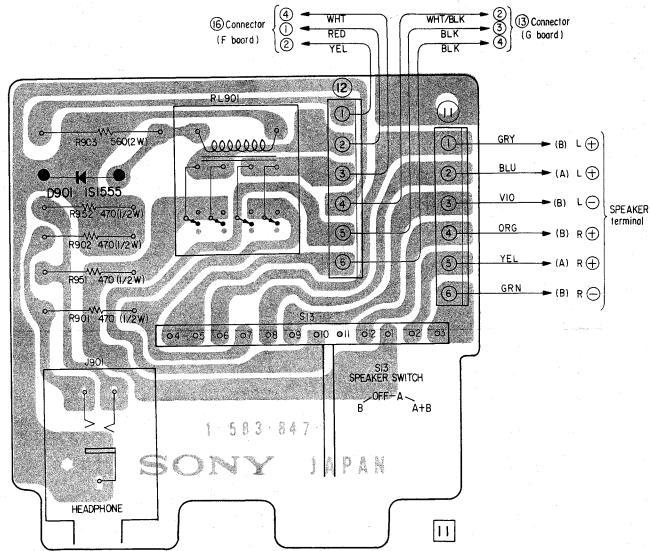
Note: All resistance values are in ohms. k=1,000, M=1,000,000.
All capacitance values are in μF except as indicated with p, which means μF .
All voltages are dc measured with a VOM which has an input impedance of 20k ohms/volt. No signal in.
Voltage variations may be noted because of normal production tolerances.

3-10. MOUNTING DIAGRAM - G Board (power supply) -

Conductor Side -
 - USA (new type), E, AEP model -



3-12. MOUNTING DIAGRAM - E Board (output) -
- Conductor Side -

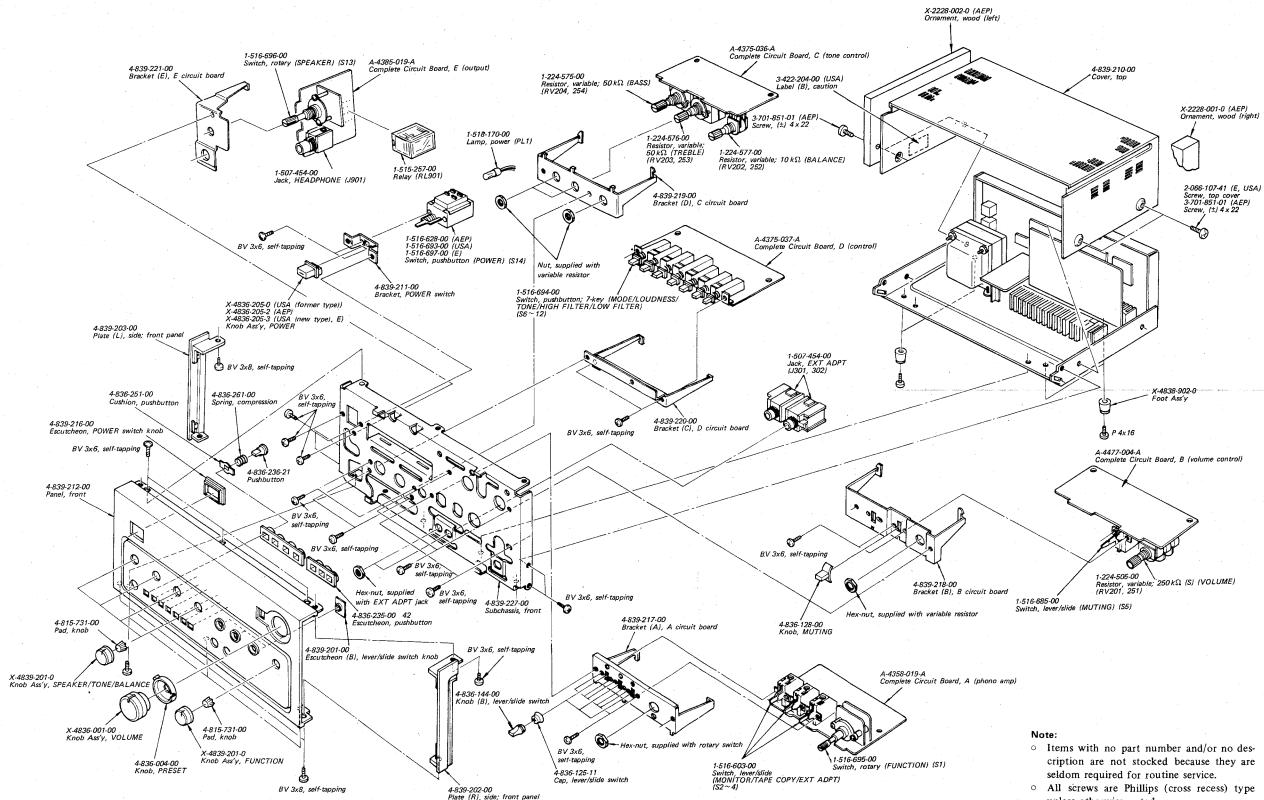


MEMO

A series of horizontal dashed lines for taking notes.

SECTION 4
EXPLODED VIEWS

41.



Note:

- Items with no part number and/or no description are not stocked because they are seldom required for routine service.
- All screws are Phillips (cross recess) type unless otherwise noted.
- (-) = slotted head

<i>Ref. No.</i>	<i>Part No.</i>	<i>Description</i>
RT401	1-224-250-00	2.2k, adjustable (power voltage adj.)
RV201 (RV251)	1-224-505-00	250 k(S), variable (VOLUME)
RV202 (RV252)	1-224-577-00	10k, variable (BALANCE)
RV203 (RV253)	1-224-576-00	50k, variable (TREBLE)
RV204 (RV254)	1-224-575-00	50k, variable (BASS)

SWITCHES

S1	1-516-695-00	Rotary (FUNCTION)
S2-S4	1-516-603-00	Lever/Slide (MONITOR, TAPE COPY, EXT ADPT)
S5	1-516-685-00	Lever/Slide (MUTING)
S6-S12	1-516-694-00	Pushbutton, 7-key (MODE, LOUDNESS, TONE, HIGH FILTER, LOW FILTER)
S13	1-516-696-00	Rotary (SPEAKER)
S14	1-516-628-00	Pushbutton (POWER) (AEP model)
	1-516-693-00	Pushbutton (POWER) (USA model)
	1-516-697-00	Pushbutton (POWER) (E model)

JACKS

J101, J102 (J201, J202)	1-507-470-00	Phono, 4-P
J103~J105 (J203~J205)	1-507-430-00	Phono, 6-P
J106, J107 (J206, J207)	1-507-471-00	Phono, 4-P
J108, J109 (J208, J209)	1-507-470-00	Phono, 4-P
J110~J113 (J210~J213)	1-507-429-00	Phono, 8-P
J301, J302	1-507-454-00	EXT ADPT
J901	1-507-454-00	HEADPHONE

MISCELLANEOUS

CNJ001	1-509-549-00	Connector, REC/PB
CNJ1	1-509-546-00	Connector, 3-P; AC INPUT (E, AEP model)

<i>Ref. No.</i>	<i>Part No.</i>	<i>Description</i>
CNJ1~CNJ3	1-526-528-00	Outlet, ac (USA model)
CNP1	1-534-754-00	Cord, power (E model)
	1-534-992-00	Cord, power (USA model)
CP401	1-231-057-31	Encapsulated Component (USA, E model)
CP402 CP403	1-102-355-11	Capacitor, ceramic 0.01 μ F 500 V
F401, F402	1-532-203-00	Fuse, 2AT (AEP model)
	1-532-268-00	Fuse, 2A (USA model (new type))
	1-532-363-00	Fuse, 2A (E model)
F401	1-532-312-00	Fuse, 4A (USA model (former type))
F403, F404	1-532-299-00	Fuse, 5AT (AEP model)
PL1	1-518-170-00	Lamp, power
Pth401	1-800-340-00	Thermistor (positive)
RL901	1-515-257-00	Relay
TM1, TM2	1-535-057-21	Terminal Strip, 4-P (SPEAKER (E, AEP model)
	1-536-446-00	Terminal Strip, 4-P (SPEAKER (USA model)
	1-506-370-00	Plug, PRE/POWER selector
	1-508-690-00	Plug, voltage selector (USA model)
	1-509-667-00	Socket, transistor
	1-536-354-00	Pin, terminal

ACCESSORIES AND PACKING MATERIALS

<i>Part No.</i>	<i>Description</i>
X-3701-029-0	Card Ass'y, warranty
1-506-113-00	Plug, shorting
3-429-126-00	Bag, polyethylene; unit
3-701-020-00	Bag, polyethylene; instruction manual
3-701-730-00	Bag, polyethylene; IBM card
3-701-742-00	Card, IBM
3-780-508-21	Manual, instruction (USA model)
3-780-508-11	Manual, instruction (AEP model)
	Manual, instruction (E model)
3-793-807-11	Schematic Diagram
4-839-225-00	Carton
4-839-226-00	Cushion