

TA-5650

UK Model
AEP Model



INTEGRATED STEREO AMPLIFIER

SPECIFICATIONS

POWER AMPLIFIER SECTION

Continuous RMS power output: (less than 0.1 % THD, both channels driven simultaneously)	At 1 kHz 60 + 60 watts (8 ohms) 50 + 50 watts (4 ohms) At 20 Hz–20 kHz 50 + 50 watts (8 ohms) according to DIN 45500 55 + 55 watts (8 ohms)
Dynamic power output: (IHF constant power supply method)	160 watts (8 ohms) 140 watts (4 ohms)
Power bandwidth (IHF):	5 Hz–40 kHz
Harmonic distortion:	Less than 0.1 % at rated output Less than 0.08 % at 1 W output
Intermodulation (IM) distortion: (60 Hz: 7 kHz = 4:1)	Less than 0.1 % at rated output Less than 0.08 % at 1 W output
Frequency response (at 1 W output):	20 Hz–20 kHz ± 2 dB
Signal-to-noise ratio:	Greater than 110 dB, short-circuited input
Residual noise:	Less than 0.02 μ W (8 ohms)
Damping factor:	50 (8 ohms, at 1 kHz)

Inputs:	POWER INPUT Sensitivity 1 V RMS (for rated output), impedance 50 k ohms
Outputs:	SPEAKER terminals A, B Accept speakers of 4 ohms or more HEADPHONES jack Accepts low-and high-impedance stereo headphones

PREAMPLIFIER SECTION

Harmonic distortion:	Less than 0.05 % at rated output
Intermodulation (IM) distortion: (60 Hz: 7 kHz = 4:1)	Less than 0.05 % at rated output
Frequency response:	PHONO 1, 2 RIAA equalization ± 0.5 dB TUNER AUX 1, 2, 3 TAPE 1, 2 REC/PB (input) EXT ADPT 1, 2 (input)
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)

SONY
SERVICE MANUAL

Filters: LOW:
12 dB/octave attenuation below 30 Hz
HIGH:
12 dB/octave attenuation above 9 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 ohms	300 mV	greater than 70 dB
AUX 1, 2, 3 TAPE 1, 2 REC/PB (input) EXT ADPT 1, 2(input)	150 mV	250 k ohms	—	greater than 90 dB

* 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 ohms
PRE OUTPUT	1 V	1 k ohm
REC/PB	17 mV	82 k ohms
EXT ADPT 1, 2	150 mV	4.7 k ohms

GENERAL

System: Power amplifier section: direct-coupling
pure complementary symmetry circuitry
Preamplifier section: direct-coupling
two-stage phono, flat and negative
feedback control circuitry, FET active
filter circuitry

Power requirements: 110, 127, 220 or 240 V AC,
50/60 Hz, adjustable

Power consumption: 440 watts

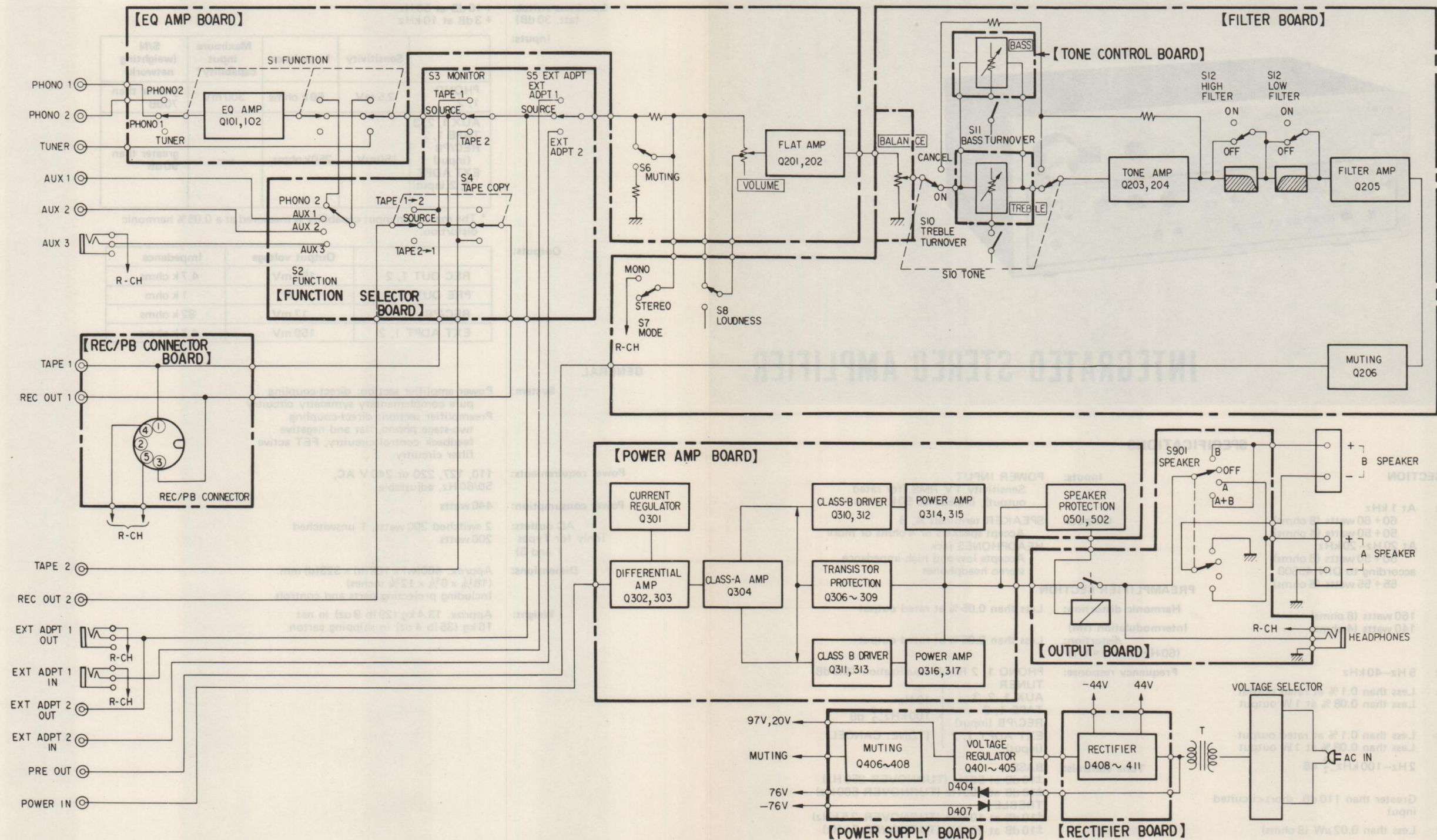
AC outlets: 2 switched 200 watts, 1 unswitched
(only for Types 1 and 3) 200 watts

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)
Including projecting parts and controls

Weight: Approx. 13.4 kg (29 lb 9 oz) in net
16 kg (35 lb 4 oz) in shipping carton

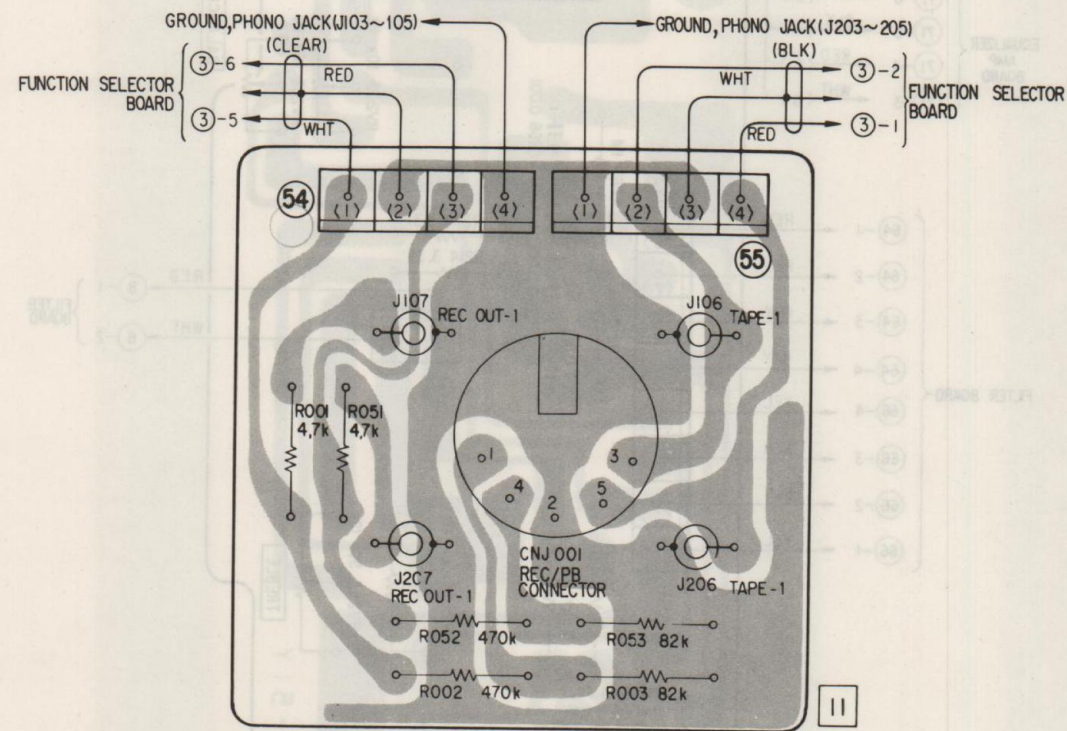
SECTION 1
DIAGRAMS

1-1. BLOCK DIAGRAM



1-2. MOUNTING DIAGRAM — REC/PB CONNECTOR BOARD —

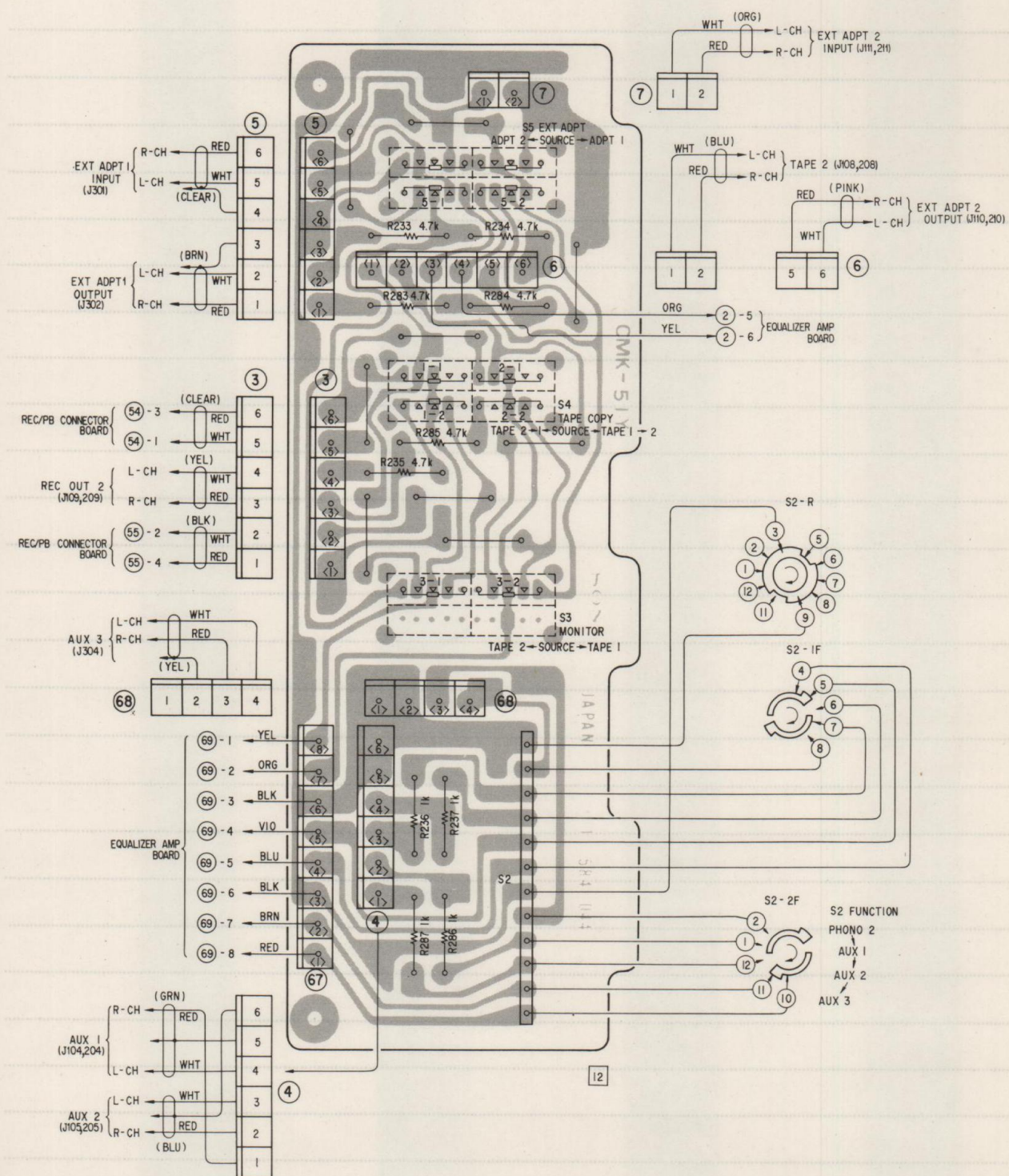
— Conductor Side —



MEMO

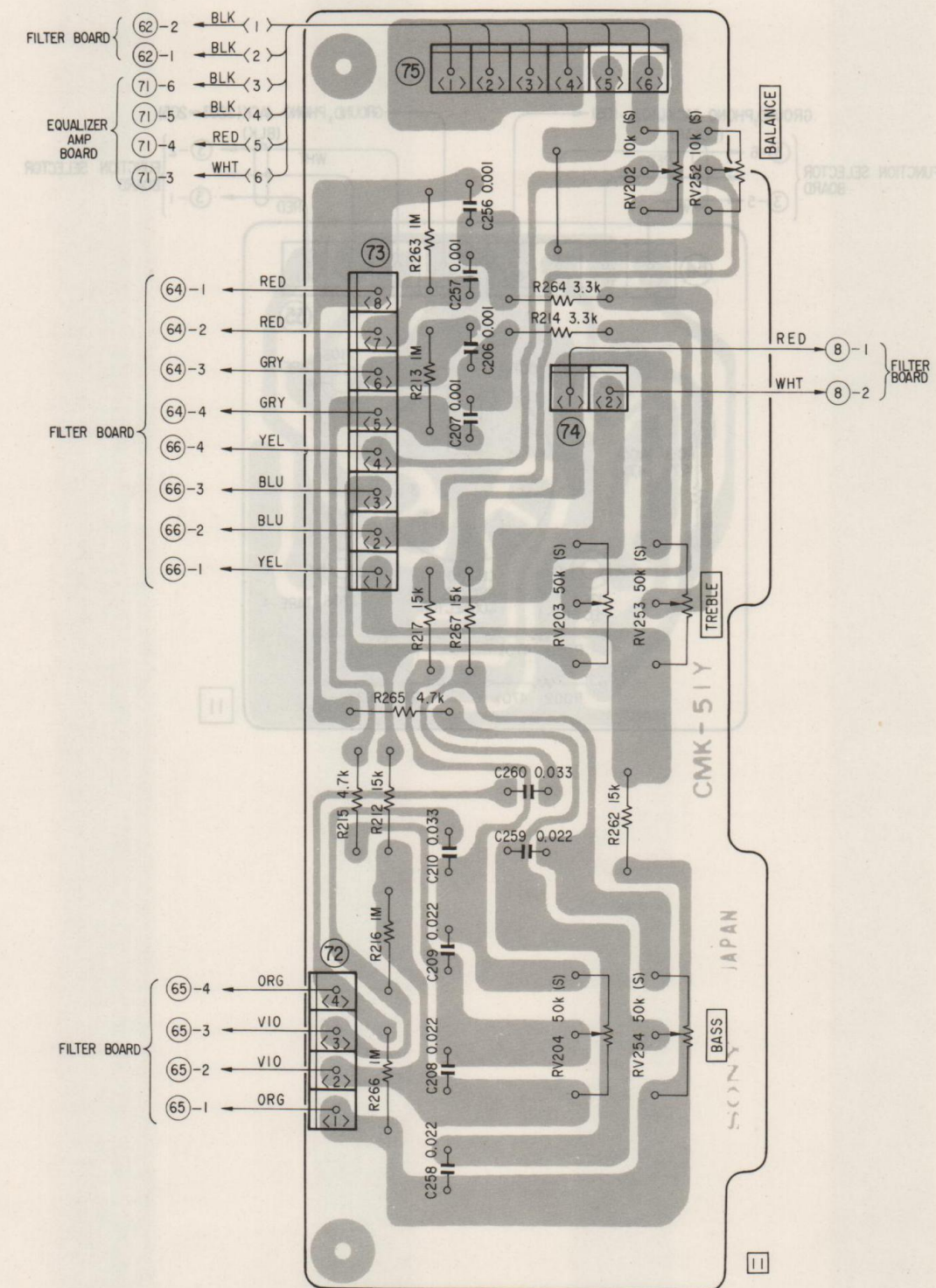
1-3. MOUNTING DIAGRAM — FUNCTION SELECTOR BOARD —

— Conductor Side —



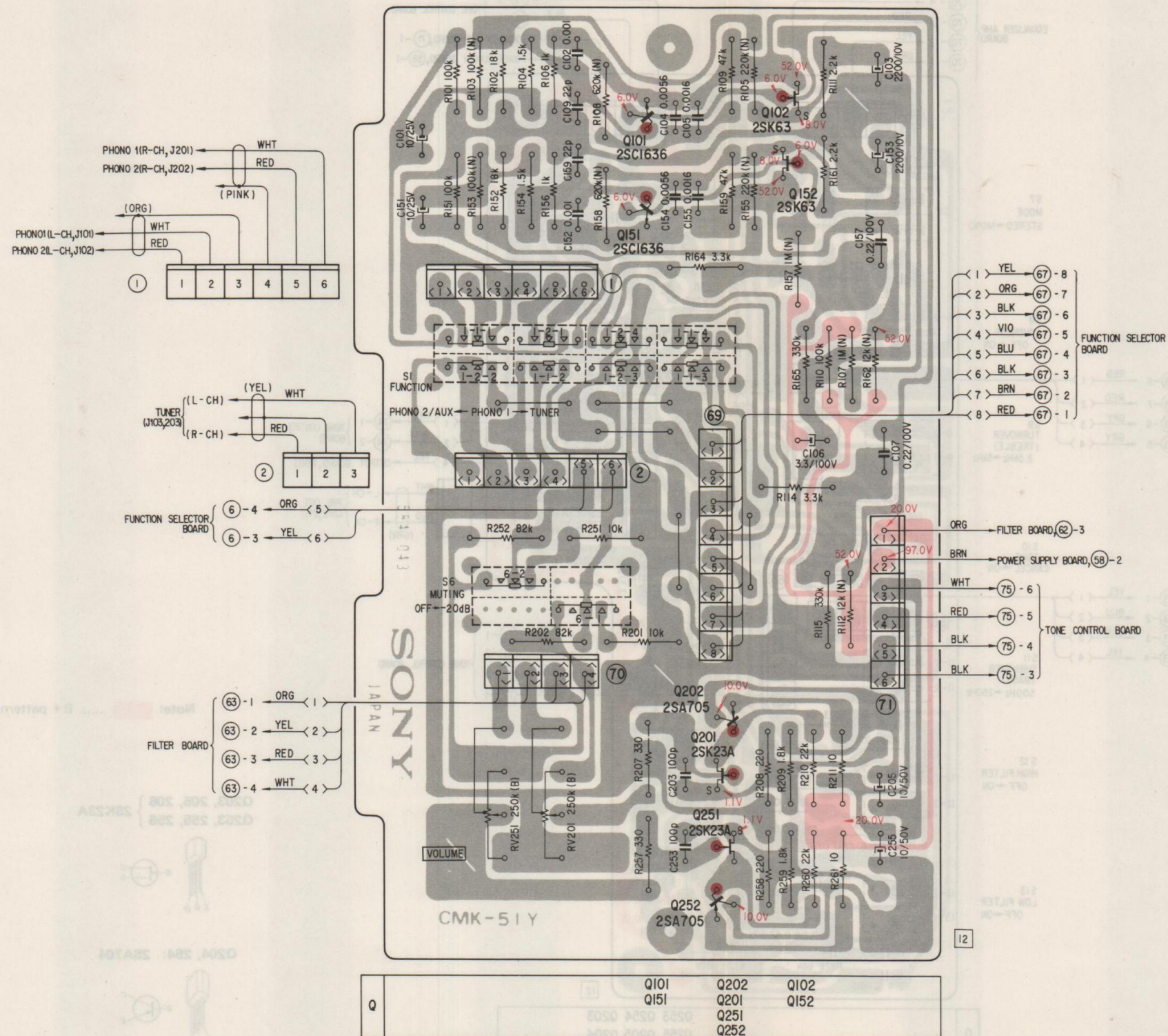
1-4. MOUNTING DIAGRAM — TONE CONTROL BOARD —

— Conductor Side —

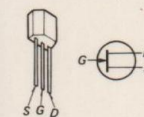


1-5. MOUNTING DIAGRAM — EQUALIZER AMP BOARD —

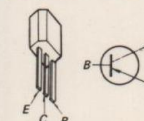
— Conductor Side —



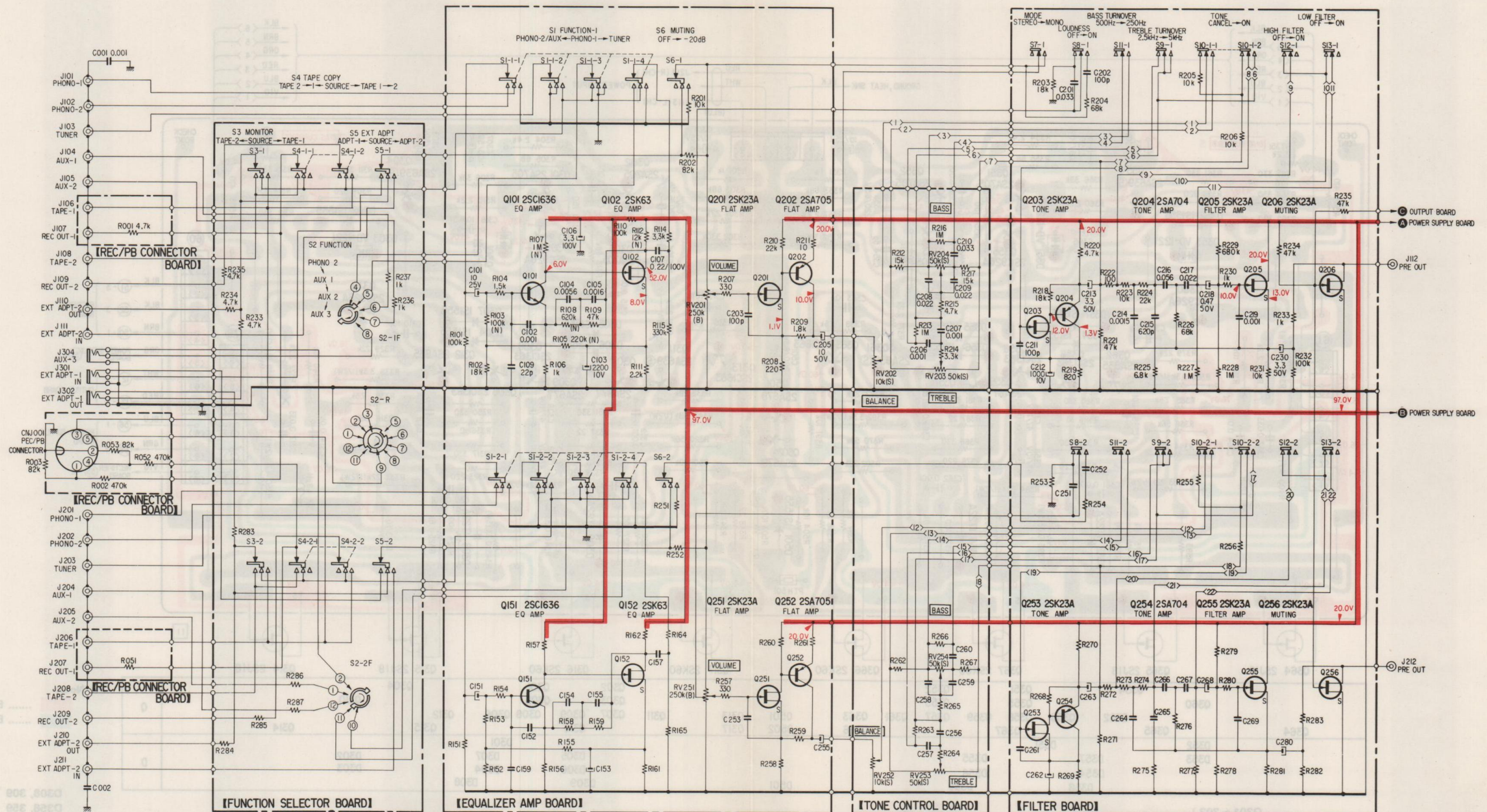
Q203, 205, 206 } 2SK23A
Q253, 255, 256 }



Q204, 254: 2SA704

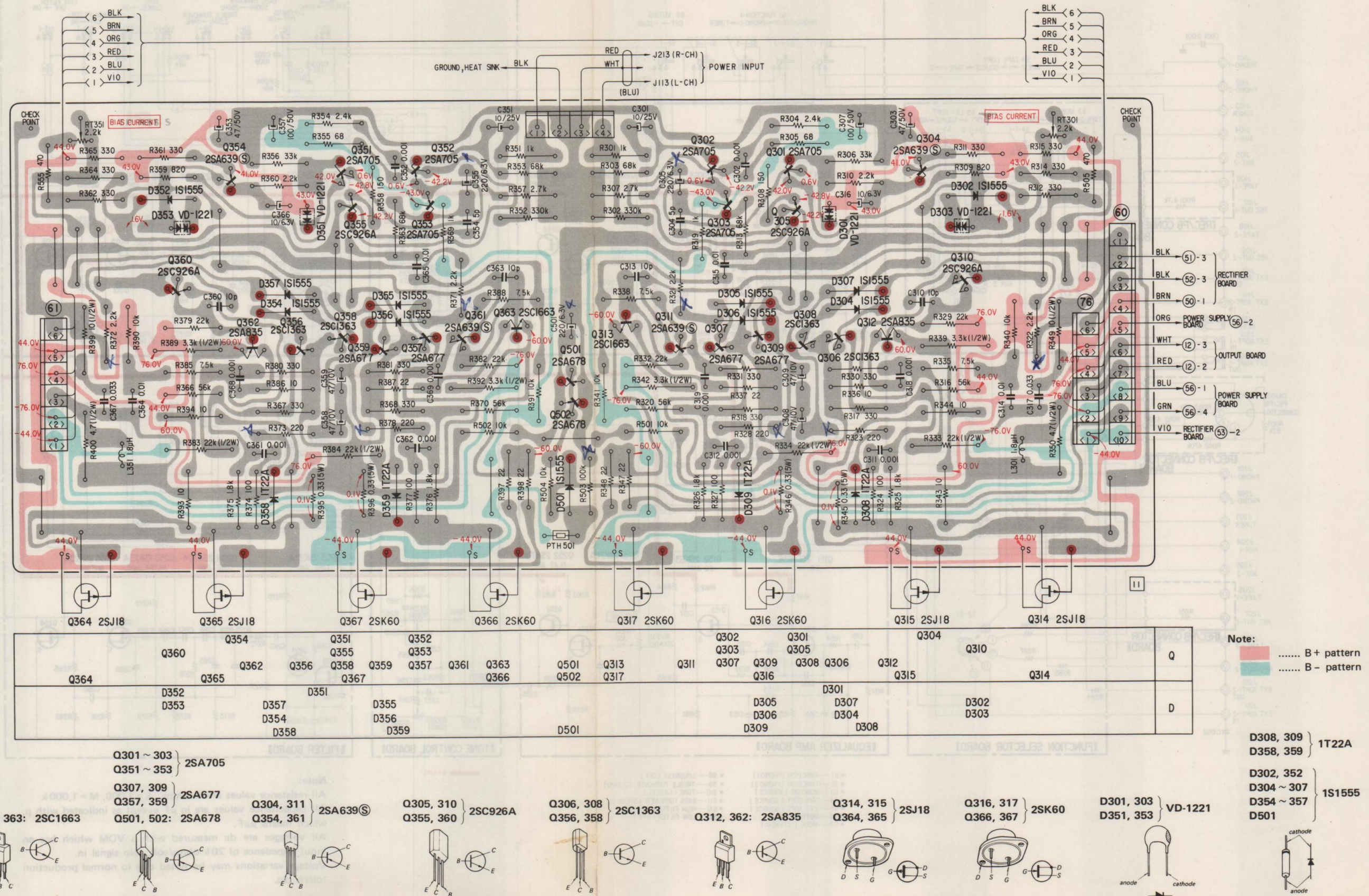


1-7. SCHEMATIC DIAGRAM — PREAMPLIFIER SECTION —



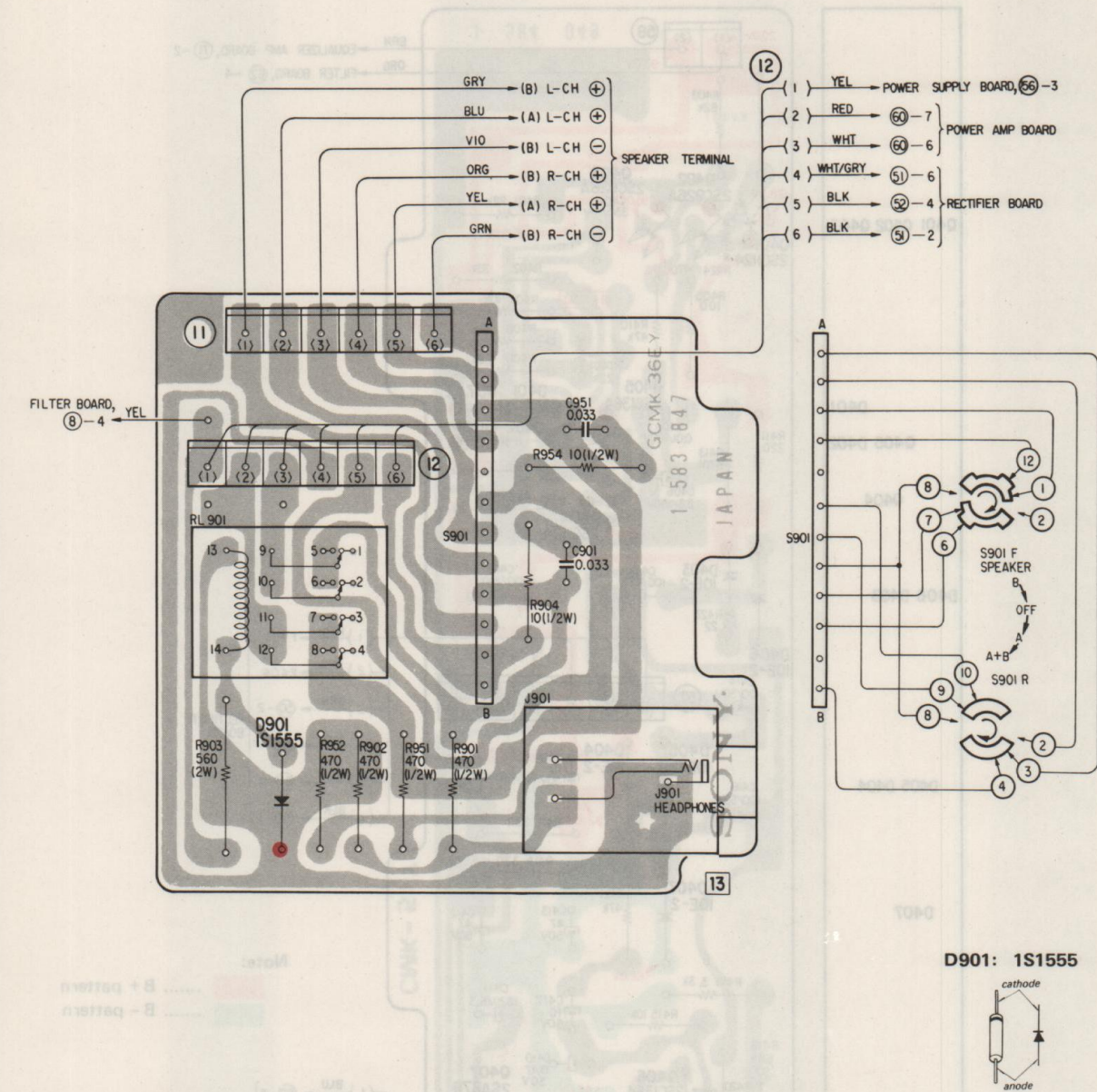
1-8. MOUNTING DIAGRAM — POWER AMPLIFIER BOARD —

— Conductor Side —



1-9. MOUNTING DIAGRAM – OUTPUT BOARD –

– Conductor Side –

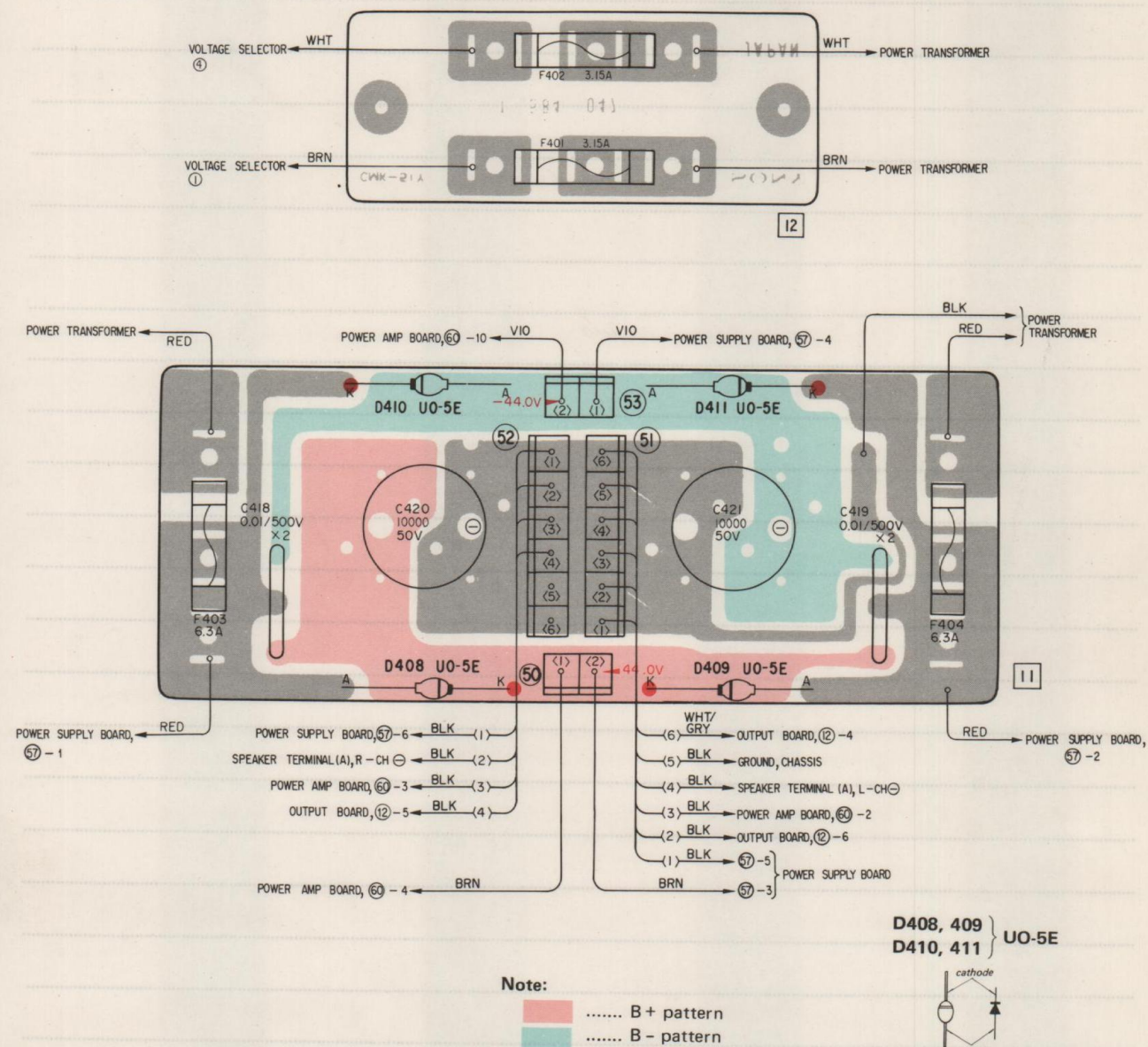


MEMO

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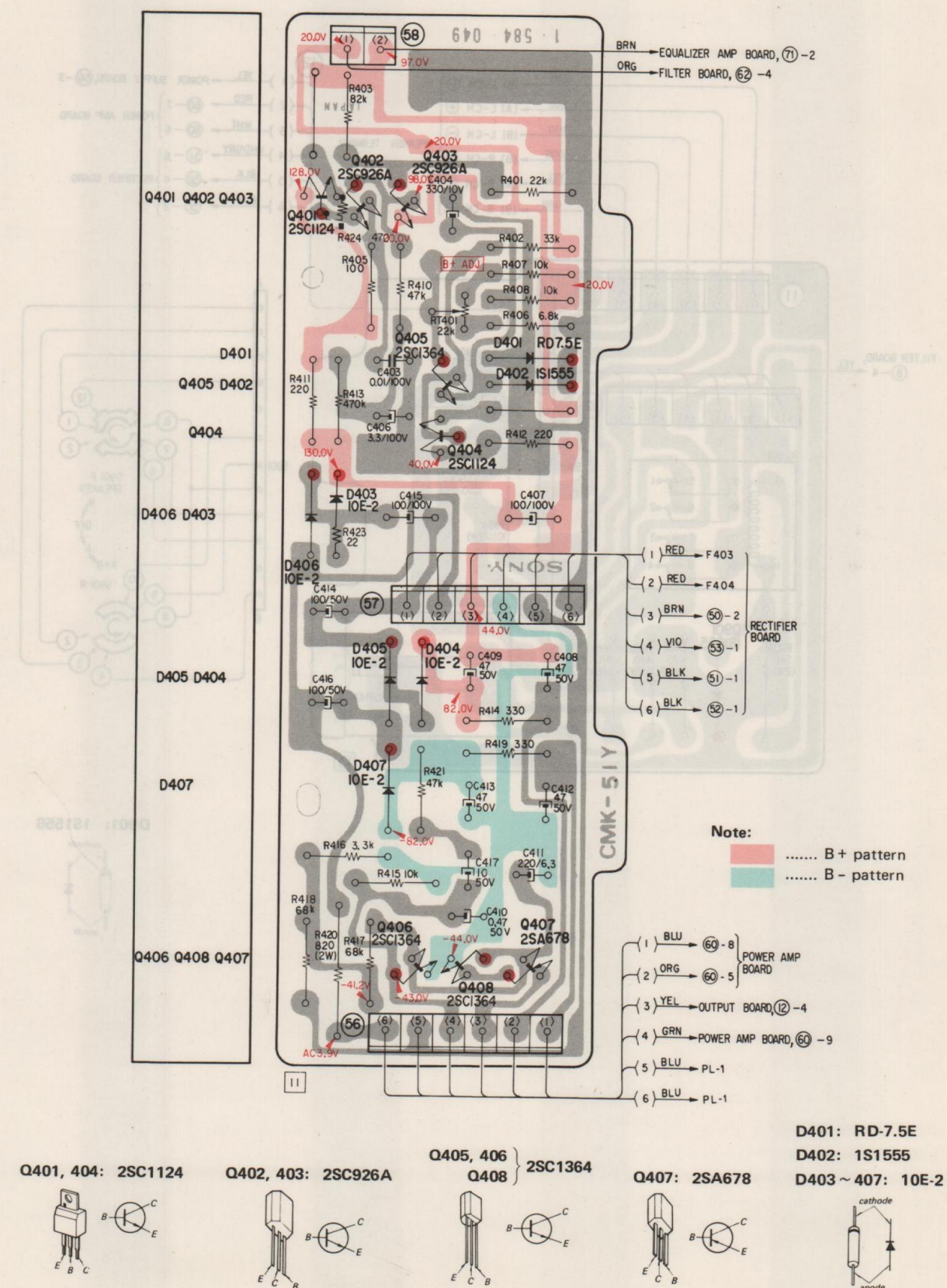
1-10. MOUNTING DIAGRAM – RECTIFIER/FUSE BOARDS –

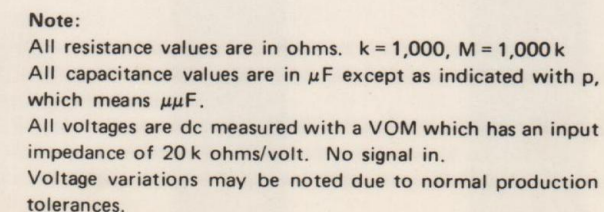
— Conductor Side —



1-11. MOUNTING DIAGRAM – POWER SUPPLY BOARD –

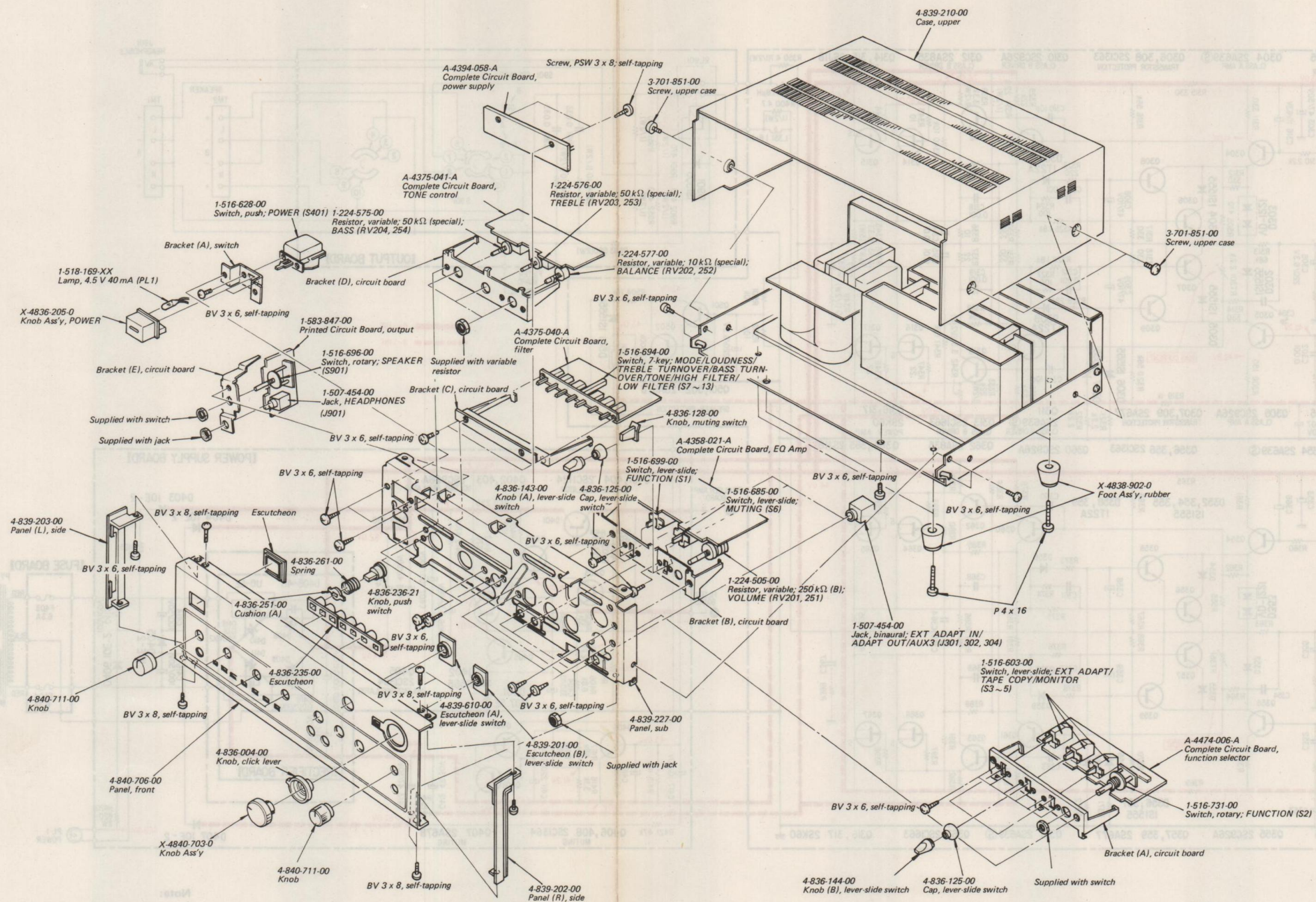
— Conductor Side —





SECTION 2 EXPLODED VIEWS

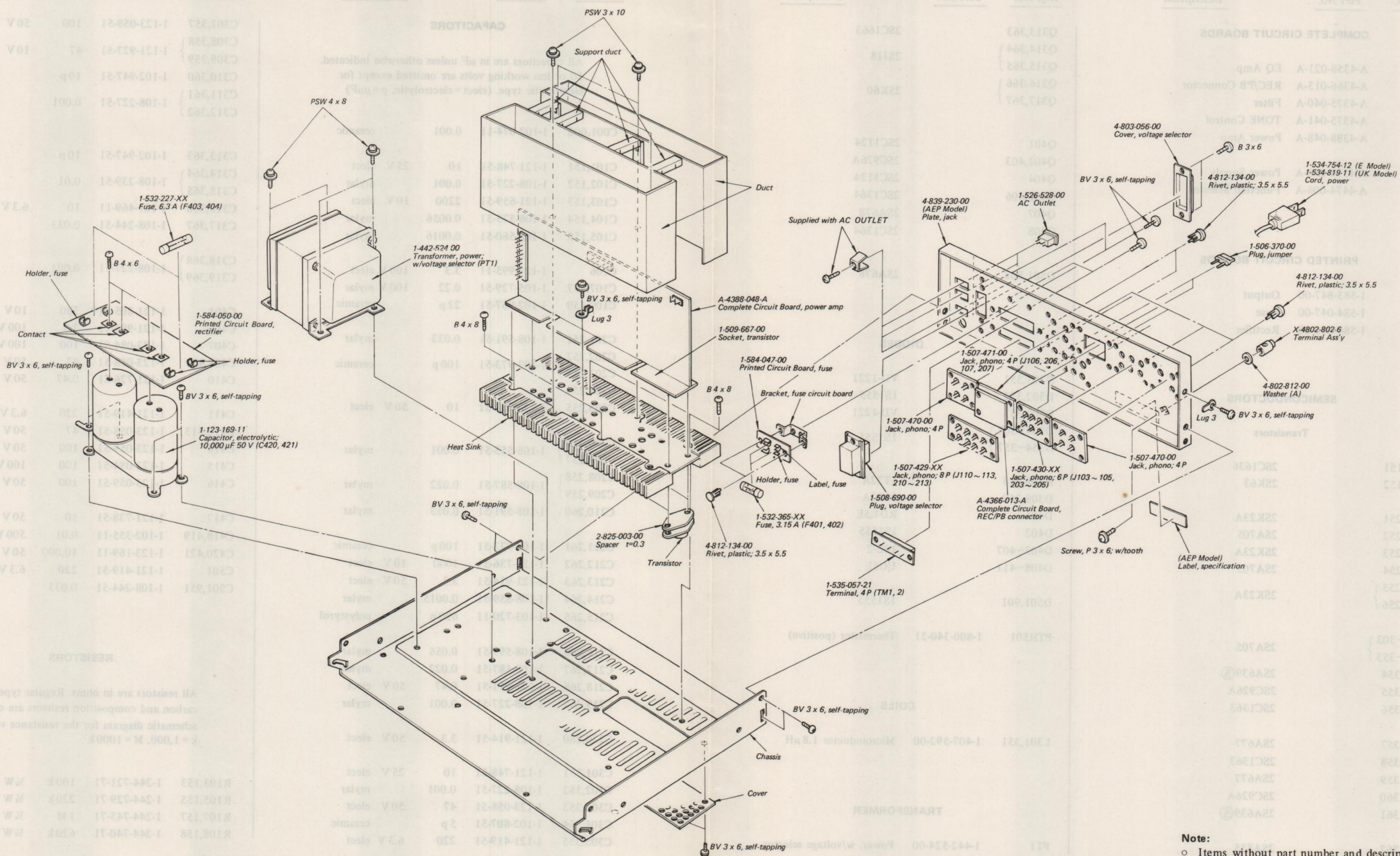
(1)



Note:

- Items without part number and description are not available.
- All screws are Phillips (cross recess) type unless otherwise noted.
- (-) = slotted head

(2)

**Note:**

- Items without part number and description are not available.
- All screws are Phillips (cross recess) type unless otherwise noted.
- (-) = slotted head

SECTION 3

ELECTRICAL PARTS LIST

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description	Ref. No.	Part No.	Description	Ref. No.	Part No.	Description				
COMPLETE CIRCUIT BOARDS			Q313,363	2SC1663	CAPACITORS	All capacitors are in μF unless otherwise indicated. 50 or less working volts are omitted except for electrolytic type. (elect = electrolytic, p = μF)					C307,357	1-123-059-51	100	50 V	elect
A-4358-021-A	EQ Amp	Q314,364	2SJ18	C308,358							1-121-927-51	47	10 V	elect	
A-4366-013-A	REC/PB Connector	Q315,365		C309,359											
A-4375-040-A	Filter	Q316,366		C310,360											1-102-947-51
A-4375-041-A	TONE Control	Q317,367	2SK60	C311,361							1-108-227-51	0.001	mylar		
A-4388-048-A	Power Amp	Q401	2SC1124	C312,362											
A-4394-058-A	Power Supply	Q402,403	2SC926A	C001,002	1-102-074-11	0.001	ceramic	C313,363	1-102-947-51	10 p	ceramic				
A-4474-006-A	Function Selector	Q404	2SC1124	C101,151	1-121-748-51	10	25 V	elect	C314,364	1-108-239-51	0.01	mylar			
		Q405,406	2SC1364	C102,152	1-108-227-51	0.001	mylar	C315,365							
		Q407	2SA678	C103,153	1-121-659-51	2200	10 V	elect	C316,366				1-121-469-11	10	6.3 V
		Q408	2SC1364	C104,154	1-108-573-51	0.0056	mylar	C317,367	1-108-244-51	0.033	mylar				
				C105,155	1-108-560-51	0.0016	mylar								
PRINTED CIRCUIT BOARDS			Q501,502	2SA678	C106	1-121-995-11	3.3	100 V	elect	C318,368	1-108-227-51	0.001	mylar		
1-583-847-00	Output			C107,157	1-105-729-51	0.22	100 V	mylar	C319,369						
1-584-047-00	Fuse			C109,159	1-102-967-51	22 p	ceramic								
1-584-050-00	Rectifier			C201,251	1-108-591-51	0.033	mylar	C404	1-121-805-51	330	10 V	elect			
SEMICONDUCTORS			DIODES			C202,252	1-102-973-51	100 p	ceramic	C406	1-121-995-11	3.3	100 V	elect	
		D301,351	VD-1221	C203,253	C407	1-123-084-51				100	100 V	elect			
		D302,352	1S1555	C204,254	C408,409	1-123-058-51				47	50 V	elect			
		D303,353	VD-1221	C205,255	1-123-051-51	10	50 V	elect	C410	1-121-726-51	0.47	50 V	elect		
		D304~307	1S1555	C206,256	1-108-555-51	0.001	mylar	C411	1-121-419-51	220	6.3 V	elect			
		D354~357		C207,257				C412,413	1-123-058-51	47	50 V	elect			
Q101,151	2SC1636	D308,358	1T22A	C208,258				1-108-587-51	0.022	mylar	C414	1-123-059-51	100	50 V	elect
Q102,152	2SK63	D309,359	1T22A	C209,259	C415	1-123-084-51	100				100 V	elect			
Q201,251	2SK23A	D401	RD7.5E	C210,260	1-108-591-51	0.033	mylar	C416	1-123-059-51	100	50 V	elect			
Q202,252	2SA705	D402	1S1555	C211,261	1-102-973-51	100 p	ceramic	C417	1-121-738-51	10	50 V	elect			
Q203,253	2SK23A	D403~407	10E-2	C212,262	1-121-736-51	1000	10 V	elect	C418,419	1-102-355-11	0.01	500 V	ceramic		
Q204,254	2SA705	D408~411	UOSE	C213,263	1-121-914-51	3.3	50 V	elect	C420,421	1-123-169-11	10,000	50 V	elect		
Q205,255	2SK23A	D501,901	1S1555	C214,264	1-108-559-51	0.0015	mylar	C501	1-121-419-51	220	6.3 V	elect			
Q206,256					C215,265	1-103-720-11	620 p	polystyrol	C901,951	1-108-244-51	0.033	mylar			
Q301~303	2SA705	PTH501	1-800-340-21	Thermistor (positive)	C216,266	1-108-597-51	0.056	mylar	RESISTORS All resistors are in ohms. Regular type $\pm 5\%$ $\frac{1}{4}$ W carbon and composition resistors are omitted. Check schematic diagram for the resistance values. k = 1,000, M = 1000 k						
Q351~353					C217,267	1-108-587-51	0.022	mylar							
Q304,354		2SA639(S)			C218,268	1-121-911-51	0.47	50 V						elect	
Q305,355	2SC926A			C219,269	1-108-227-51	0.001	mylar								
Q306,356	2SC1363			C230,280	1-121-914-51	3.3	50 V	elect							
Q307,357	2SA677	L301,351	1-407-592-00	Microinductor 1.8 μH	C301,351	1-121-748-51	10	25 V	elect	R103,153	1-244-721-71	100 k	$\frac{1}{4}$ W	low noise	
Q308,358	2SC1363				C302,352	1-108-227-51	0.001	mylar	R105,155	1-244-729-71	220 k	$\frac{1}{4}$ W	low noise		
Q309,359	2SA677				C303,353	1-123-058-51	47	50 V	elect	R107,157	1-244-745-71	1 M	$\frac{1}{4}$ W	low noise	
Q310,360	2SC926A				C304,354	1-102-807-51	5 p	ceramic	R108,158	1-244-740-71	620 k	$\frac{1}{4}$ W	low noise		
Q311,361	2SA639(S)				C305,355	1-121-419-51	220	6.3 V	elect						
Q312,362	2SA835	PT1	1-442-524-00	Power, w/voltage selector											
			TRANSFORMER												

SECTION 4
HARDWARE

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>
R112,162	1-244-699-71	12k ¼ W low noise
R333,383	1-244-905-11	22k ½ W carbon
R334,384		
R339,389	1-211-650-11	3.3 k ½ W carbon
R342,392		
R345,395	1-217-157-00	0.33 5 W wire-wound
R346,396		
R349,399	1-202-525-35	10 ½ W solid
R350,450	1-202-517-35	4.7 ½ W solid
R420	1-206-662-00	820 2 W metalized paper
R901,951	1-202-565-35	470 ½ W solid
R902,952		
R903	1-206-658-51	560 2 W metalized paper
R904,954	1-202-525-35	10 ½ W solid
RT301,351	1-224-489-00	2.2 k adjustable, metalized paper
RT401	1-224-250-00	2.2 k adjustable, metalized paper

RV201,251	1-224-505-00	250 k (B), variable; VOLUME
RV202,252	1-224-577-00	10 k (special), variable; BALANCE
RV203,253	1-224-576-00	50 k (special), variable; TREBLE
RV204,254	1-224-575-00	50 k (special), variable; BASS

SWITCHES

S1	1-516-699-00	Lever-slide, FUNCTION
S2	1-516-731-00	Rotary, FUNCTION
S3~5	1-516-603-00	Lever-slide, EXT ADAPT/TAPE COPY/MONITOR
S6	1-516-685-00	Lever-slide, MUTING
S7~13	1-516-694-00	Push, 7-key; MODE/LOUDNESS/TREBLE TURNOVER/BASS TURNOVER/TONE/HIGH FILTER/LOW FILTER

S401	1-516-628-00	Push, POWER
S901	1-516-696-00	Rotary, SPEAKER

Jacks

CNJ001	1-509-549-00	Connector, REC/PB
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<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>
CNJ1~3	1-526-528-00	AC Outlet
J101,201	1-507-470-00	Phono, 4P; PHONO 1, 2
J102,202		
J103~105	1-507-430-00	Phono, 6P; TUNER/AUX 1, 2
J203~205		
J106,206	1-507-471-00	Phono, 4P; TAPE 1/REC/PB/REC OUT 1
J107,207		
J108,208	1-507-470-00	Phono, 4P; TAPE 2/REC OUT 2
J109,209		
J110~113	1-507-429-00	Phono, 8P; EXT ADPT 2/PRE/POWER
J210~213		
J301,302,304	1-507-454-00	EXT ADAPT IN/ADAPT OUT/AUX3
J901	1-507-454-00	Binaural; HEADPHONES

MISCELLANEOUS

F401,402	1-532-365-XX	Fuse 3.15 A
F403,404	1-532-227-XX	Fuse 6.3 A
PL1	1-518-169-XX	Lamp, 4.5 V 40 mA
PL901	1-515-257-00	Relay
TM1,2	1-535-057-21	Terminal, 4 P
	1-506-370-00	Plug, jumper
	1-508-690-00	Plug, voltage selector
	1-509-667-00	Socket, transistor
	1-517-072-00	Holder, lamp
	1-534-754-12	Cord, power (E Model)
	1-534-819-11	Cord, power (UK Model)

ACCESSORIES

1-506-113-00	Plug, short
3-701-020-00	Bag, plastic
3-780-566-11	Manual, instruction (AEP/UK Model)
3-793-520-82	Card, guaranty (UK Model)

SECTION 4 HARDWARE

Part No.

Description

Screws

All screws are Philips (cross recess type) unless otherwise indicated.

7-682-165-01	P 4 × 16
7-682-547-05	B 3 × 6
7-682-549-13	B 3 × 10
7-682-560-14	B 4 × 6
7-682-561-01	B 4 × 8
7-682-947-01	PSW 3 × 6
7-682-949-01	PSW 3 × 10
7-682-961-01	PSW 4 × 8
	BV 3 × 6, self-tapping
	BV 3 × 8, self-tapping

7-623-508-01	Lug, 3 mm dia
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