

TA-8650

US Model
UK Model
AEP Model
E Model



INTEGRATED STEREO AMPLIFIER

SPECIFICATIONS

GENERAL

System: Power Amplifier Section
Direct-coupling V-FET pure complementary symmetry circuit
Preamplifier Section
Direct-coupling module unit amp

Power requirements: 120V ac, 60 Hz (USA Model)
100, 120, 220 or 240V ac adjustable,
50/60 Hz (AEP, UK, E Model)

Power consumption: 260 watts (USA Model)
800 watts (AEP, E Model)
600 watts (UK Model)

Ac outlets: 2 switched 200 watts, 1 unswitched
400 watts (USA, E Model)

Dimensions: 440 (w) x 170 (h) x 425 (d) mm
17³/₈ (w) x 6³/₄ (h) x 16³/₄ (d) inches

Weight: 20.8 kg (46 lb), net
24.5 kg (54 lb), in shipping carton

POWER AMPLIFIER SECTION

Continuous RMS power output: At 20 Hz – 20 kHz
(less than 0.1 % THD, both channels driven simultaneously)
80 watts per channel (8 ohms)

Power bandwidth: 5 Hz – 50 kHz
(IHF)

Harmonic distortion: Less than 0.05 % at 1 watt output
(20 Hz – 20 kHz)
Less than 0.1 % at rated output

IM distortion: Less than 0.05 % at 1 watt output
(60 Hz : 7 kHz = 4 : 1)
Less than 0.1 % at rated output

Frequency response: 5 Hz – 100 kHz $+0$ / -1.5 dB at 1 watt output
20 Hz – 20 kHz ± 0.1 dB at rated output

Residual noise: Less than 1 μ watt
S/N: More than 100 dB (network A, short-circuited)

Damping factor: More than 200/8 ohms (at 1 kHz, Speaker DIRECT)

Inputs: POWER AMP INPUT; sensitivity 1 volt (for rated output), impedance 50 kohms

Outputs: SPEAKER terminals – A, B, DIRECT; accept 4 ohms or more speakers.
HEADPHONE jack; accepts low and high-impedance stereo headphones

PREAMPLIFIER SECTION

Harmonic distortion: Less than 0.03 % at rated output, 1 kHz

IM distortion: Less than 0.05 % at rated output
(60 Hz : 7 kHz = 4 : 1)

– Continued on page 2 –

SONY[®]

SERVICE MANUAL

Frequency response: PHONO 1, 2 RIAA equalization ± 0.2 dB
 MIC 20 Hz – 20 kHz ± 0.5 dB
 TUNER
 AUX 1, 2, 3
 TAPE 1, 2
 EXT ADPT (INPUT) } 10 Hz – 100 kHz ± 0.5 dB

Tone controls: BASS control
 ± 10 dB at 50 Hz (TURNOVER
 FREQ 250 Hz)
 ± 10 dB at 100 Hz (TURNOVER
 FREQ 500 Hz)
 TREBLE control
 ± 10 dB at 10 kHz (TURNOVER
 FREQ 2.5 kHz)
 ± 10 dB at 20 kHz (TURNOVER
 FREQ 5 kHz)

Filters: LOW 12 dB/octave attenuation below
 10 Hz or 40 Hz
 HIGH 12 dB/octave attenuation above
 9 kHz or 20 kHz

Acoustic compensator: LOW 1 +10 dB at 20 Hz
 +6 dB at 50 Hz
 +3 dB at 100 Hz
 LOW 2 +11 dB at 20 Hz
 +9 dB at 50 Hz
 +6 dB at 100 Hz
 PRESENCE +3 dB at 1 kHz
 LOUDNESS +10 dB at 50 Hz
 +3 dB at 10 kHz

Inputs:

Inputs	Sensitivity*1	Maximum input capability*2	Impedance	S/N (weighting network, input level)
PHONO 1	2.5 mV	175 mV	50 k Ω	70 dB (A, 2.5 mV)
PHONO 2 L			50 k Ω /100 k Ω	75 dB (A, 4.5 mV)
H	4.5 mV	310 mV		
HEAD AMP	0.1 mV	7 mV	30 Ω	55 dB (A, 0.1 mV)
MIC	0.2 mV	2 V	50 k Ω	40 dB (B, 0.2 mV)
TUNER	150 mV	—	100 k Ω	85 dB (A, 150 mV)
AUX 1, 2, 3				
TAPE 1, 2				
EXT ADPT				

*1 The sensitivities of AUX 1, TAPE 1, TAPE 2 and MIC are adjustable.

*2 The maximum input capabilities are measured at a 0.1 % THD.

Outputs:

Outputs	Output voltage	Impedance
REC OUT 1, 2	150 mV (max. 10 V)	600 Ω
PREAMP OUTPUT	1 V (max. 10 V)	
EXT ADPT	150 mV (max. 10 V)	10 k Ω

Voltage amplification (at 1 kHz):

Input \ Output	REC OUT	EXT ADPT	PREAMP OUTPUT
PHONO 1	35 dB		52 dB
PHONO 2 L			47 dB
H	30 dB		
HEAD AMP	63 dB		80 dB
MIC	57.5 dB		74.5 dB
TUNER	0 dB		17 dB
AUX 1, 2, 3			
TAPE 1, 2			
EXT ADPT			

Specification Label:

USA model

SONY®	INTEGRATED STEREO AMPLIFIER		
	MODEL NO. TA-8650		
	AC 120V	60Hz	260W
	SERIAL NO.		MADE IN JAPAN

AEP, E model

SONY®	INTEGRATED STEREO AMPLIFIER		
	MODEL NO. TA - 8650		
	AC 100.120.220.240V 50/60Hz 800W		
	SERIAL NO.		MADE IN JAPAN

UK model

SONY®	INTEGRATED STEREO AMPLIFIER		
	MODEL NO. TA-8650		
	AC 100.120.220.240V 50/60Hz 600W		
	SERIAL NO.		MADE IN JAPAN

SERVICING NOTES

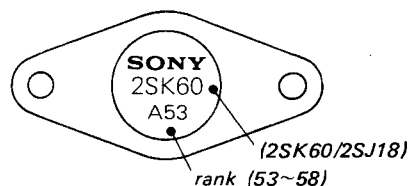
1. Apply the rated ac line voltage to the set directly. Do not increase the voltage gradually by using a variable transformer or other such instrument: this will cause a V-FET failure.

2. Replacing V-FET

TA-8650 uses six V-FETs (2SK60...3 pcs, 2SJ18...3 pcs) in each channel of its power amplifier. Both 2SK60 and 2SJ18 are divided into six ranks according to their V_{gs0} (gate-source voltage) and V_p (cut-off voltage). The bias resistors of the V-FET differ from a rank to a rank, and it is necessary to use the same rank of V-FETs in the same channel.

If you cannot obtain the same rank of V-FET replacement as the one used in the repairing set, replace all six V-FETs. At the same time, replace the bias resistors according to the table given at right.

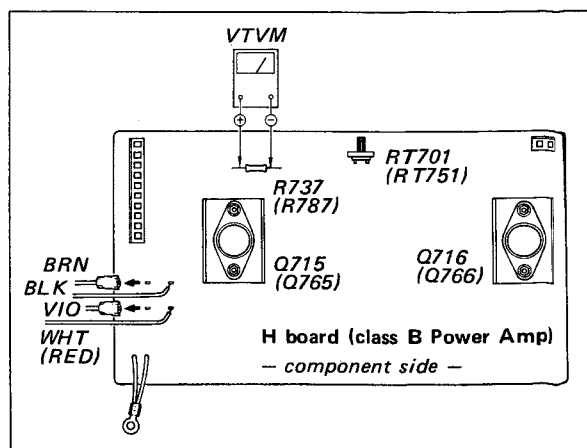
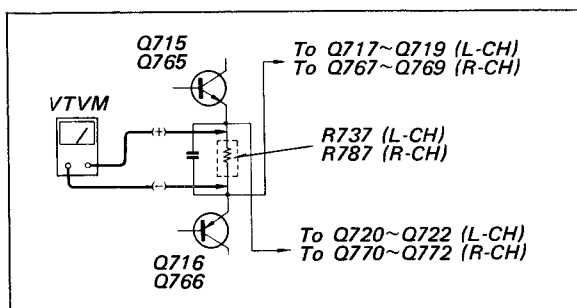
Rank of 2SK60 2SJ18	Bias Resistors	
	R725, R775	R731, R781 R732, R782
53	33 k Ω	1.8 k Ω
54	33 k Ω	1.5 k Ω
55	33 k Ω	1.2 k Ω
56	30 k Ω	1.0 k Ω
57	30 k Ω	1.0 k Ω
58	30 k Ω	820 Ω



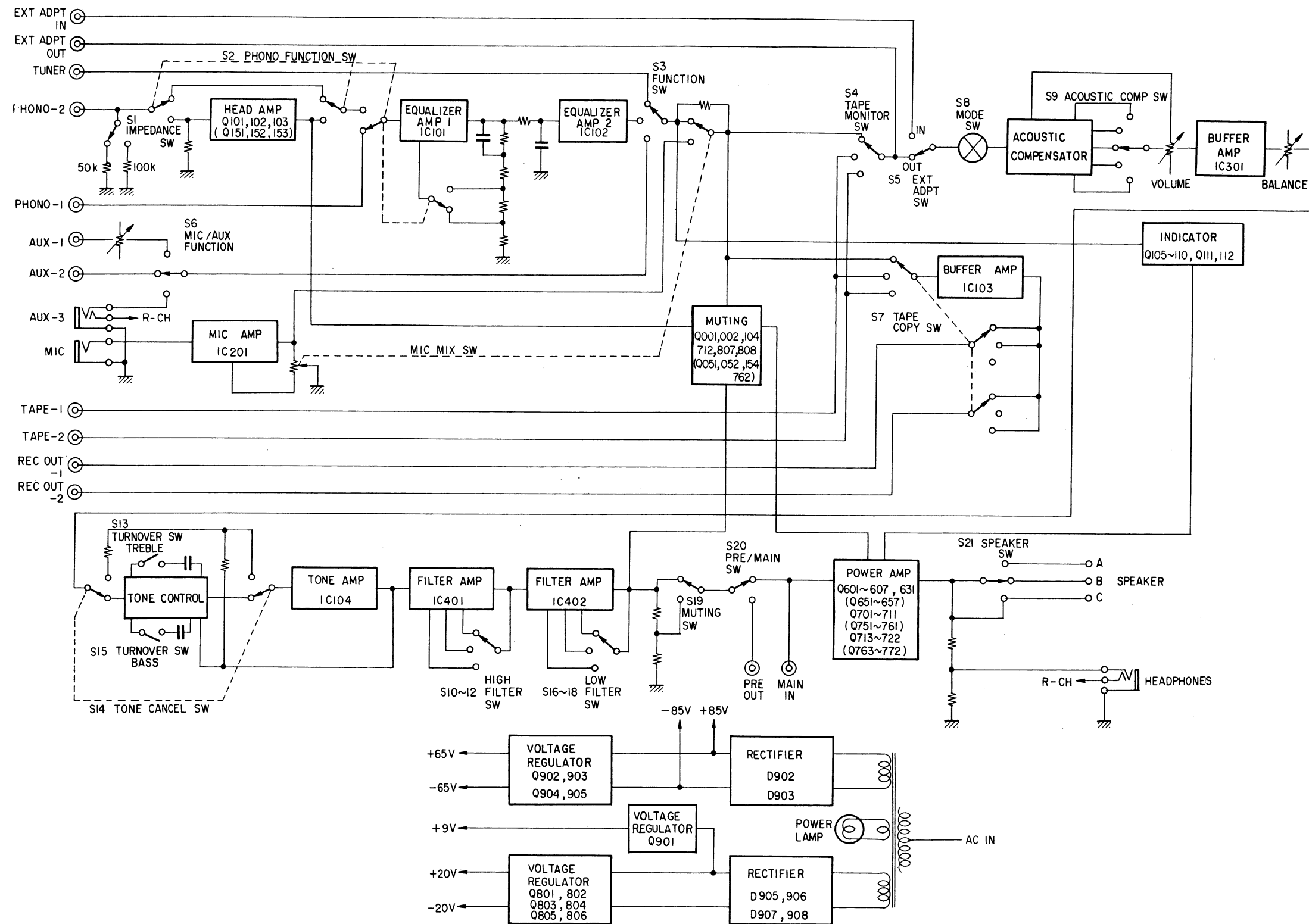
3. After the replacement of V-FET, carry out the following check to avoid further occurrence of V-FET failure.

- 1) Turn off the power of TA-8650.
- 2) Remove the heat sink duct.
- 3) Disconnect the brown and the violet lead wires from the pins on H Board (CLASS B POWER AMP BOARD). See the figure at bottom right.
- 4) Turn on the power and check the voltage across R737 (L-CH)/R787 (R-CH). If the reading does not agree with the value given in the table at right, try adjusting RT701 (L-CH)/RT751 (R-CH).
- 5) If adjusting RT701/RT751 still does not give correct reading, check Q713~Q716 (L-CH)/Q763~Q766 (R-CH). Failure of these transistors will cause V-FET failure.
- 6) After the check, turn off the power of the set and put back the two lead wires mentioned in step 2.

Rank of 2SK60 2SJ18 used in the set	Voltage drop across R737 (L-CH) R787 (R-CH)
53	20.0 V ~ 25.0 V
54	25.0 V ~ 30.0 V
55	30.0 V ~ 35.0 V
56	35.0 V ~ 40.0 V
57	40.0 V ~ 45.0 V
58	45.0 V ~ 50.0 V



SECTION 1 BLOCK DIAGRAM



SECTION 2 DISASSEMBLY AND REPLACEMENT

2-1. CHASSIS LAYOUT

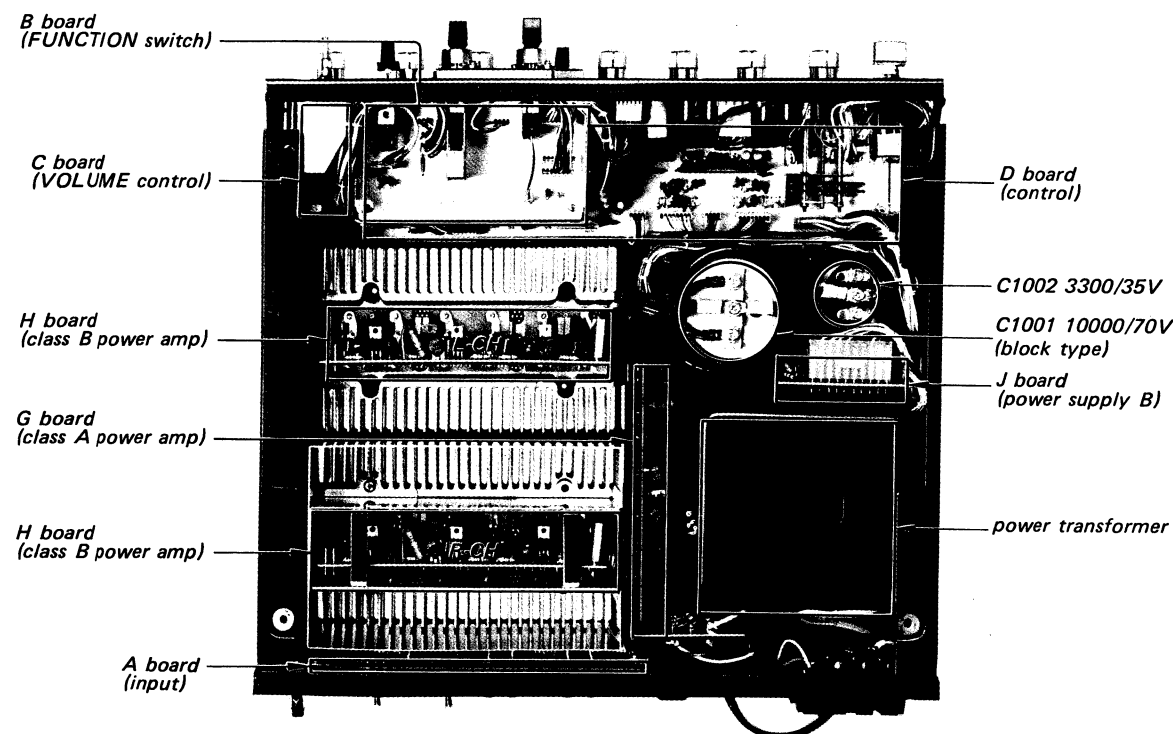


Fig. 2-1. Chassis top view

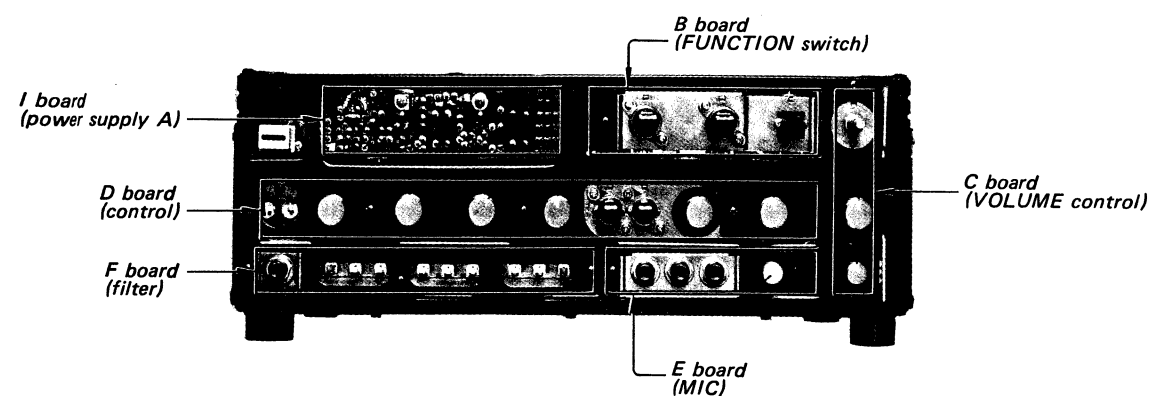


Fig. 2-2. Chassis front view

2-2. PANELS AND KNOBS REMOVAL

Front Panel

Remove ①, ②, ③, ④, and ⑤.

Control Panel

Remove the front panel.

Remove ⑥.

Front Subchassis

Remove the front panel.

Remove ⑦.

Rear Panel

Remove ⑧.

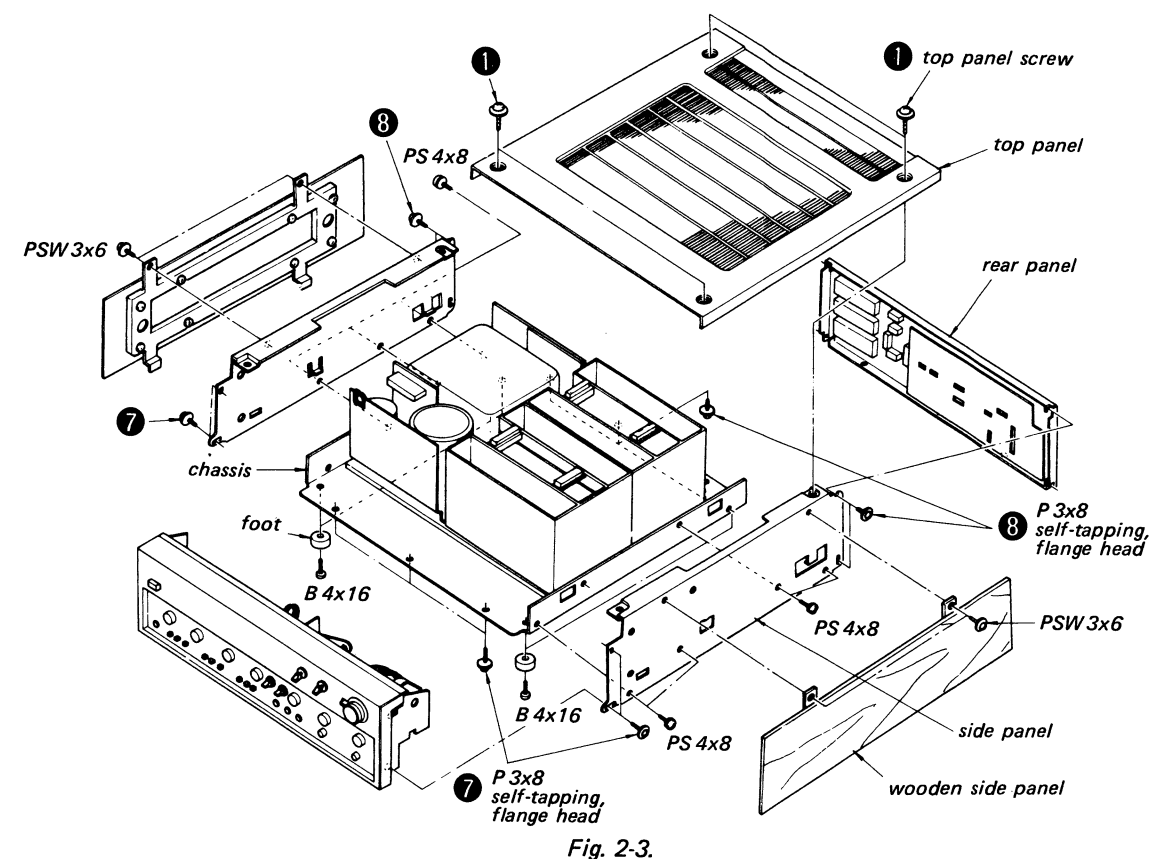


Fig. 2-3.

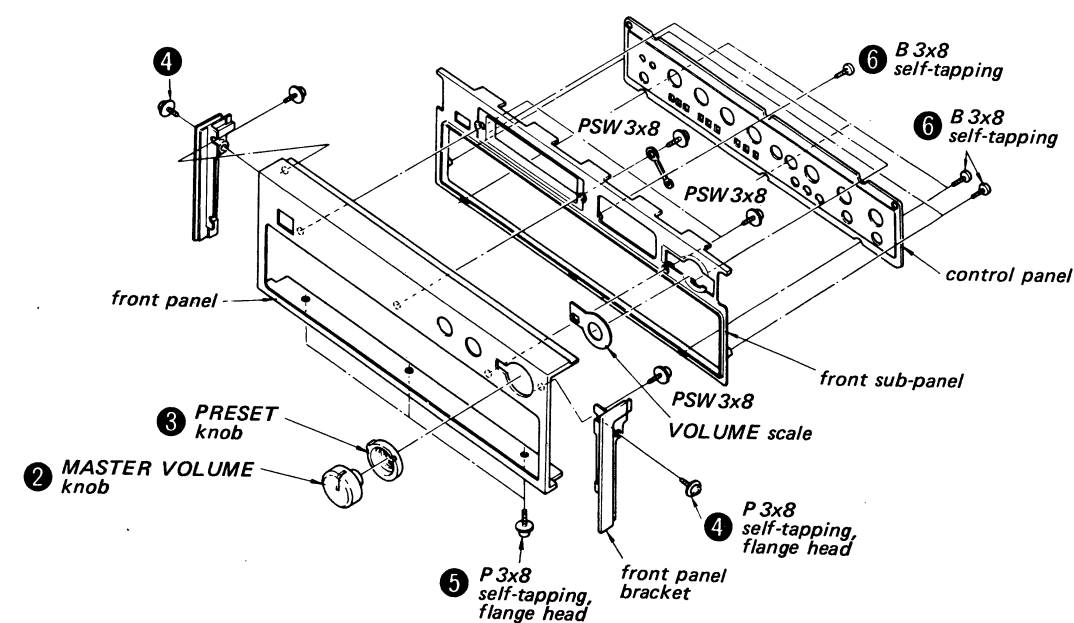


Fig. 2-4.

Knobs Removal

MASTER VOLUME knob } loosen the set screw.
 PRESET knob }
 POWER switch knob remove the front panel and pull out the knob from switch.

Pushbuttons remove the front panel and push out the knobs.
 Other knobs pull out the knobs

2-3. CIRCUIT BOARD REMOVAL AND V-FET REPLACEMENT

Note: Be careful with the position and the direction of the connectors when reinstalling them to the circuit boards. See Fig. 2-5.

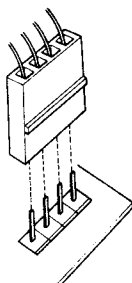


Fig. 2-5.

< G board >

Remove ⑪
 Pull up the board.

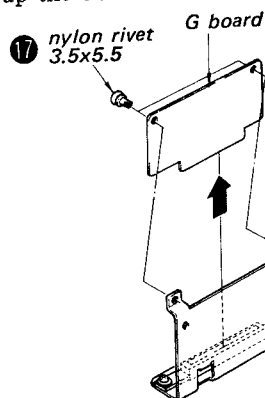


Fig. 2-6.

< A board >

Remove the rear panel.

Remove ⑨, ⑩, and ⑪

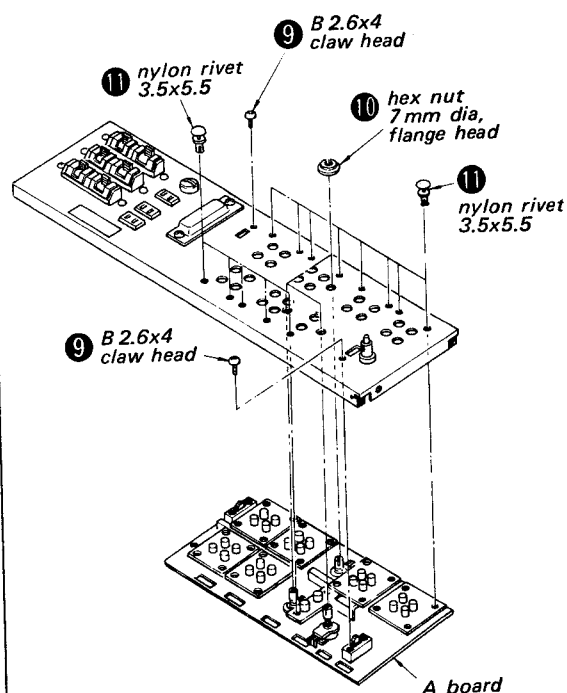


Fig. 2-8.

< B, C, D, E, and F boards >

Remove the front sub-panel.

Remove ⑫ ~ ⑯

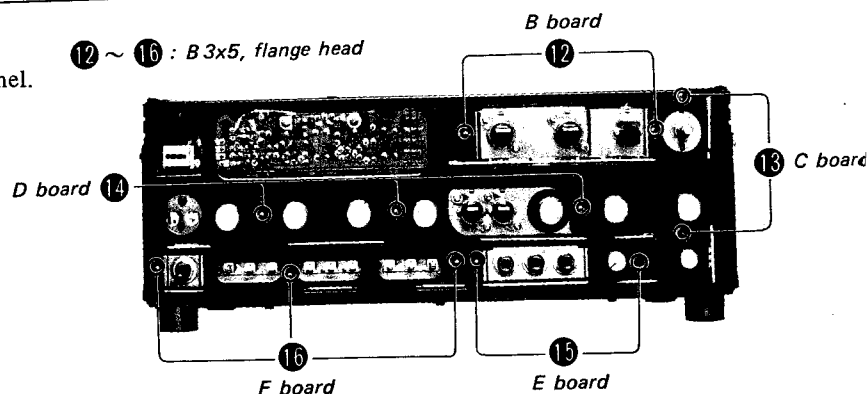


Fig. 2-7.

<H board>

Remove the heat sink duct (remove 18).

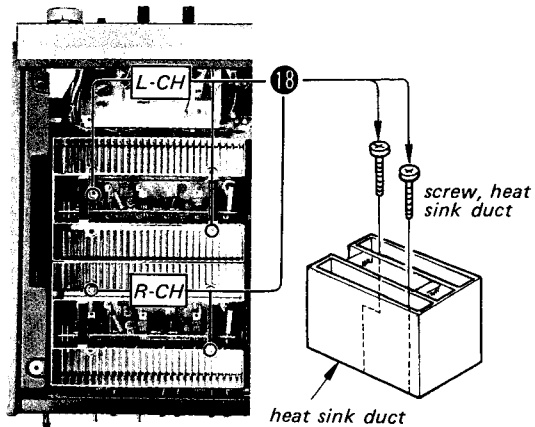


Fig. 2-9.

Remove 19 and take out the heat sink with the circuit board.

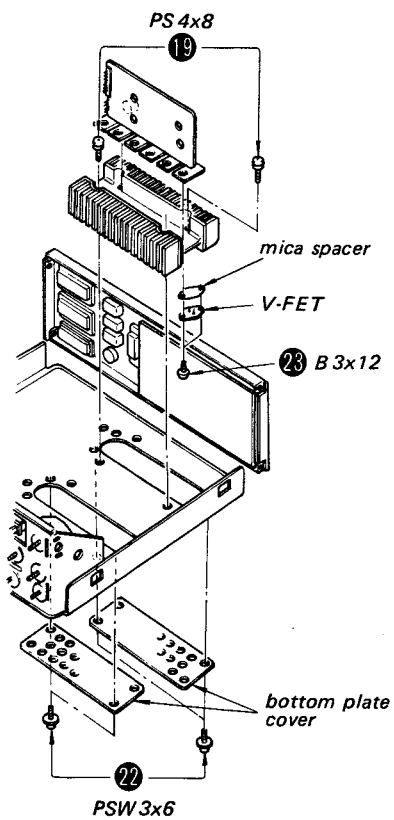


Fig. 2-10.

<I board>

Remove 20

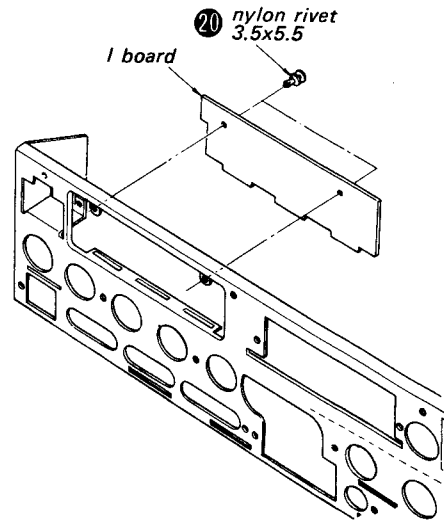


Fig. 2-11.

<J board>

Remove 21

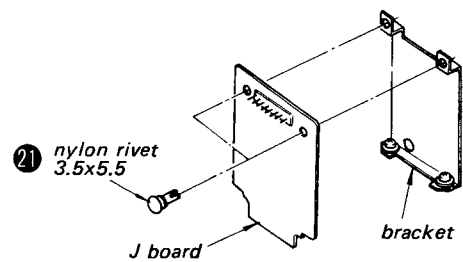


Fig. 2-12.

<V-FET Replacement>

Remove 22 and 23 (Fig. 2-10).

[illegible]

SECTION 3

DC BALANCE AND BIAS ADJUSTMENTS

Note 1. Apply the rated ac line voltage to the set directly. Do not increase the voltage gradually by using a variable transformer or other such instruments: this will cause a V-FET failure.

2. Turn on the power of the set and wait a few minutes for warm-up.

3. Alternately repeat the two adjustments 2~3 times.

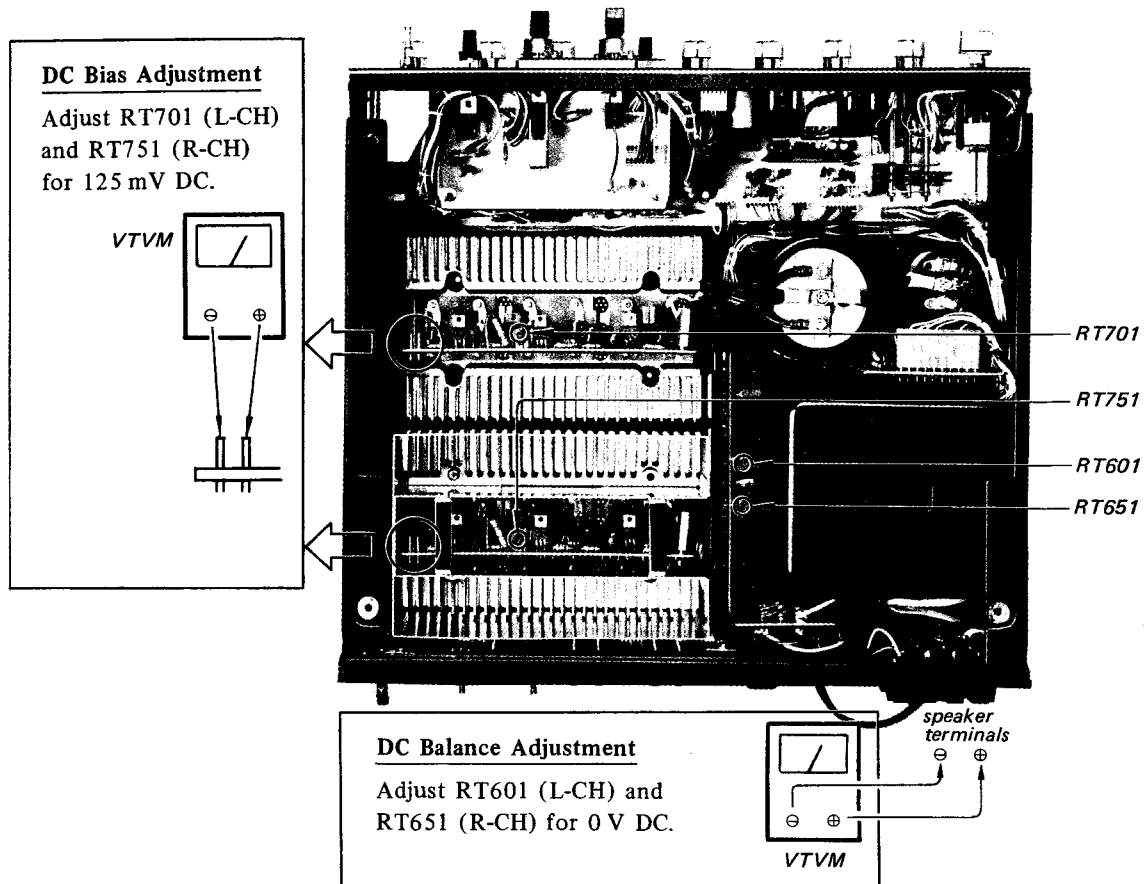
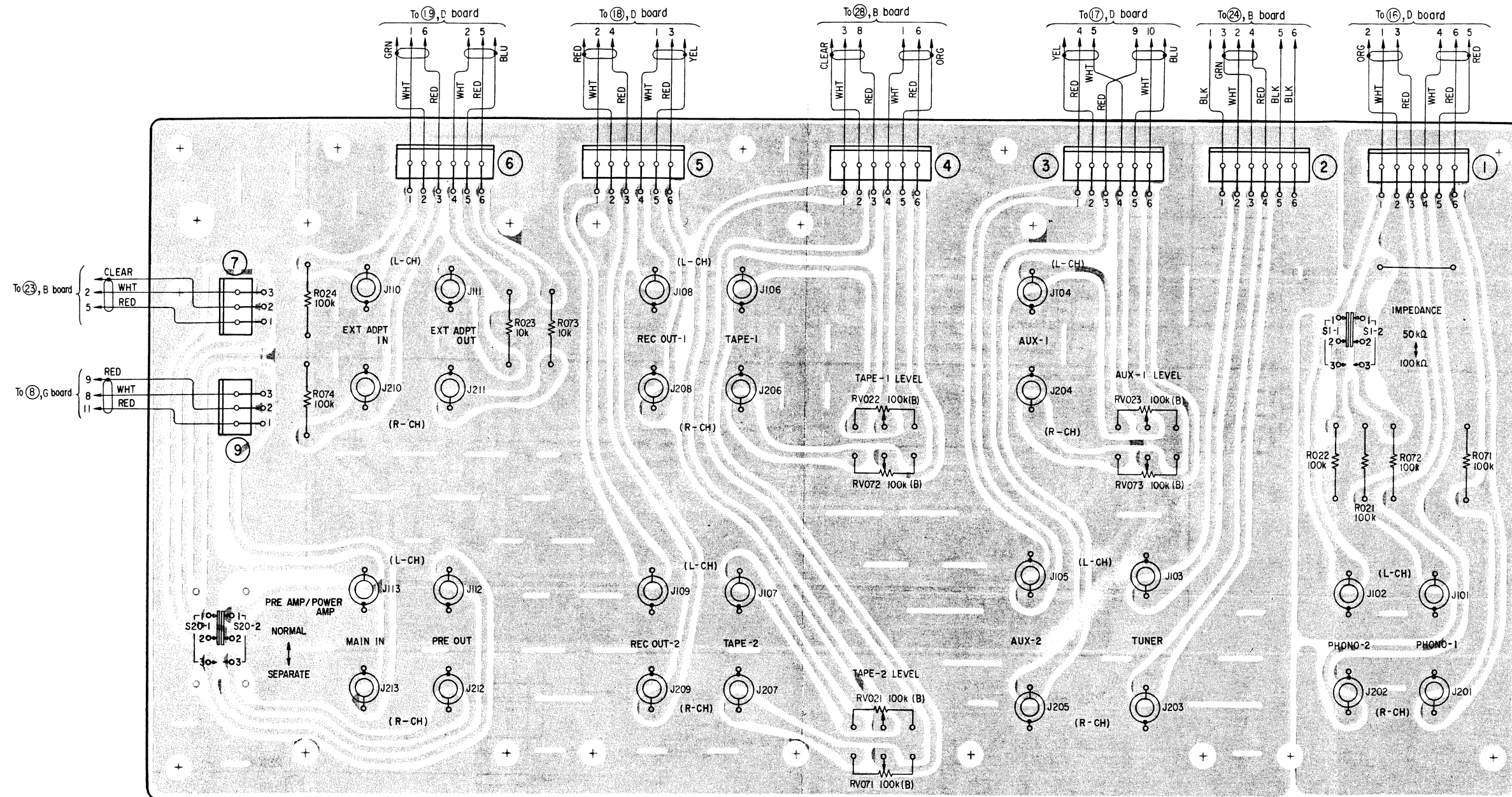


Fig. 3-1.

SECTION 4
DIAGRAMS

4-1. MOUNTING DIAGRAM — A Board INPUT —

— Conductor Side —

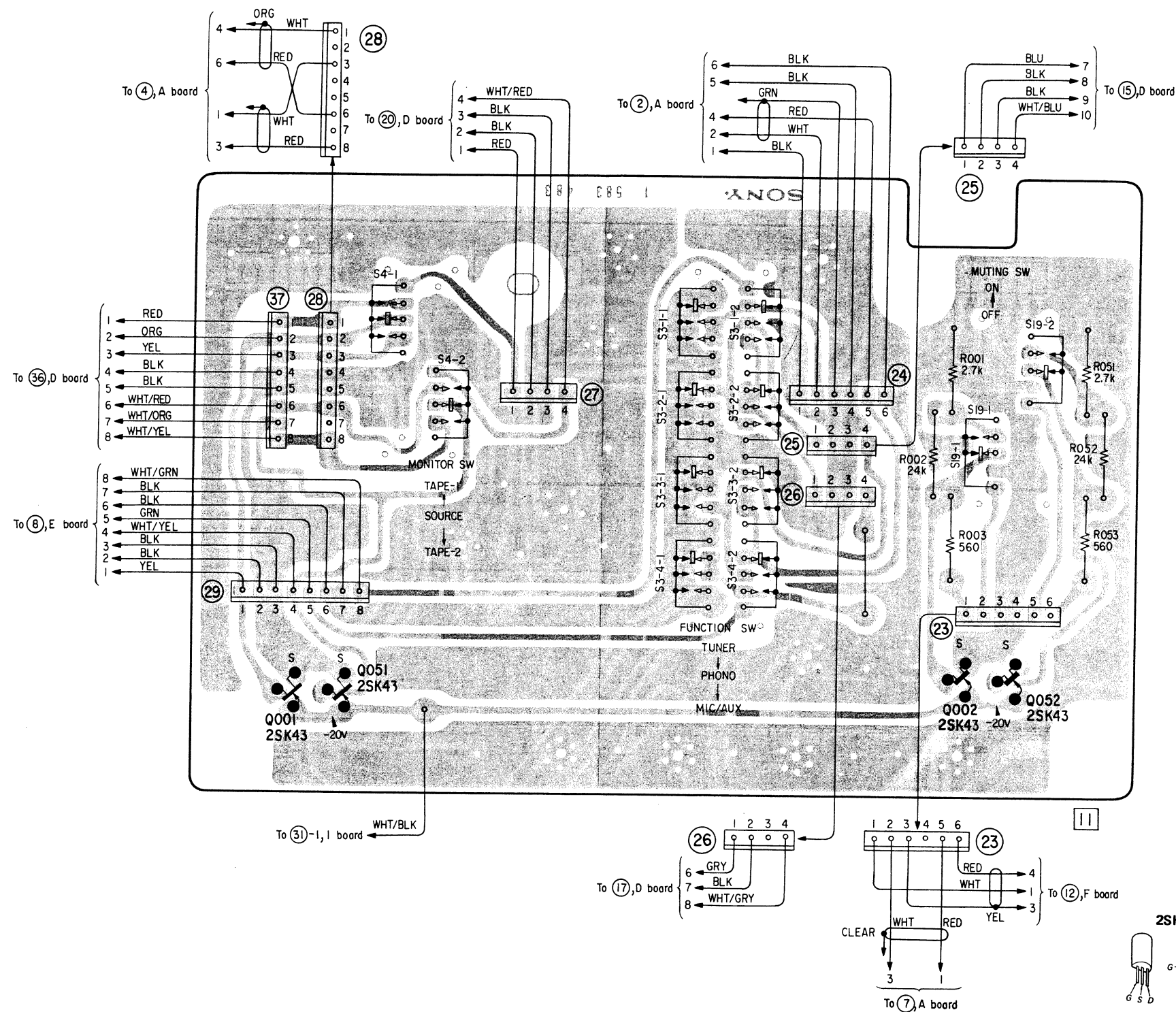


B

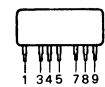
B

4-2. MOUNTING DIAGRAM — B Board FUNCTION SWITCH —

— Conductor Side —

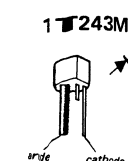
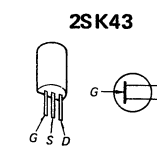
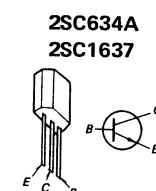
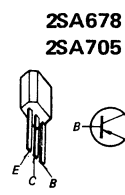
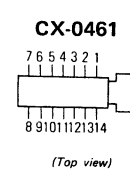
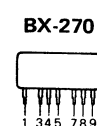
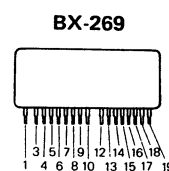
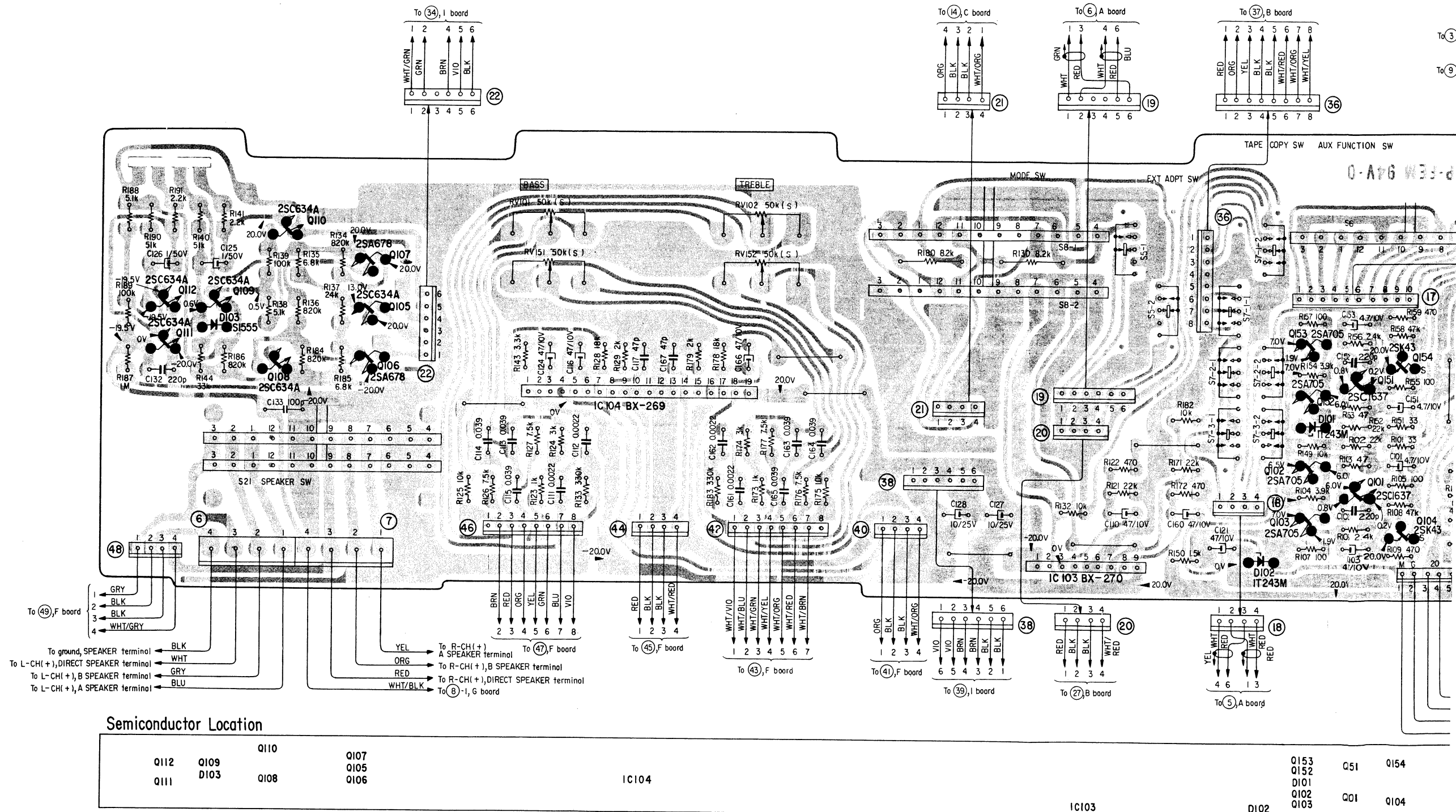


– Conductor Side –



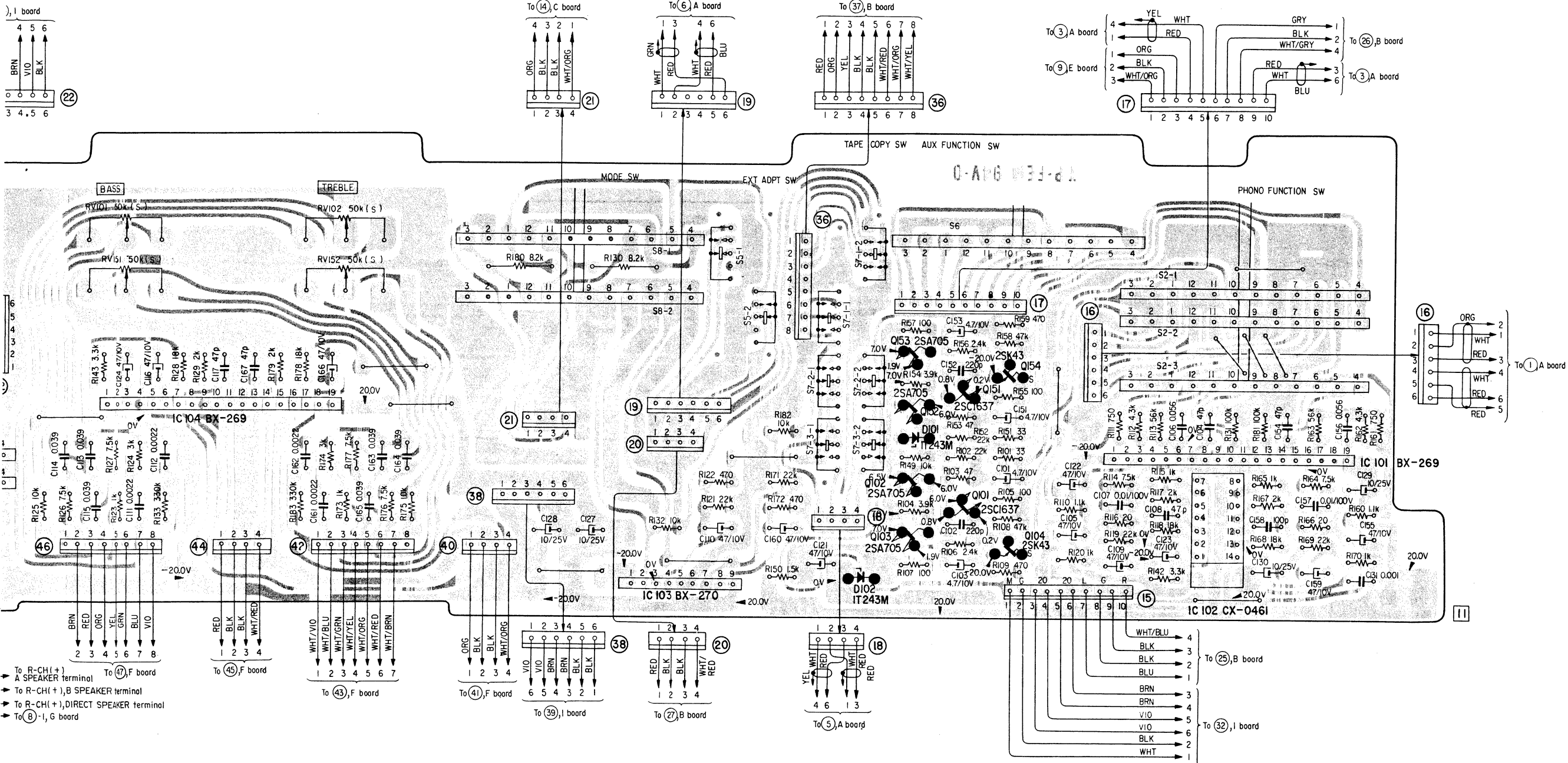
4-5. MOUNTING DIAGRAM — D Board **CONTROL** —

– Conductor Side –



D

D



IC104

IC103

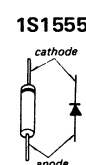
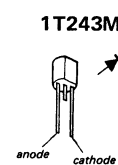
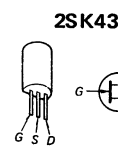
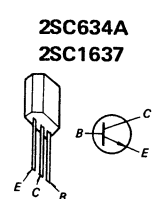
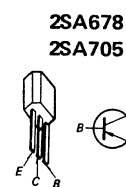
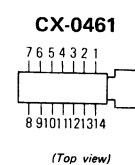
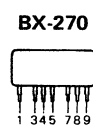
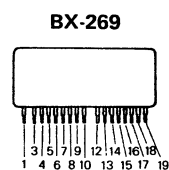
D102

Q153
Q152
D101
Q102
Q103

Q151
Q101
Q104

Q154

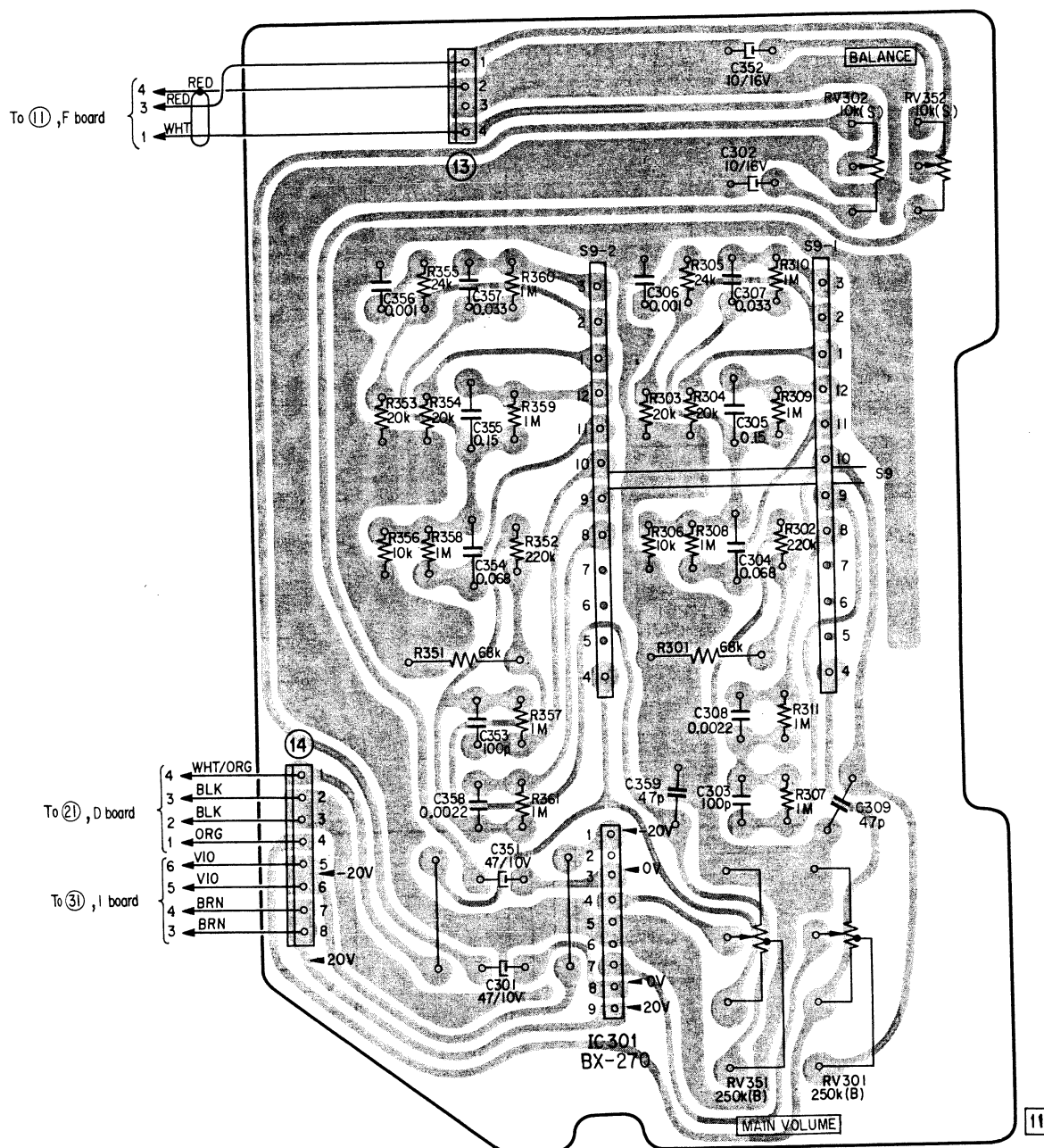
IC101
IC102



* D104 and D105 are mounted on a small printed circuit board which stands on D board at 90°.

4-6. MOUNTING DIAGRAM – C Board **VOLUME CONTROL** –

– Conductor Side –



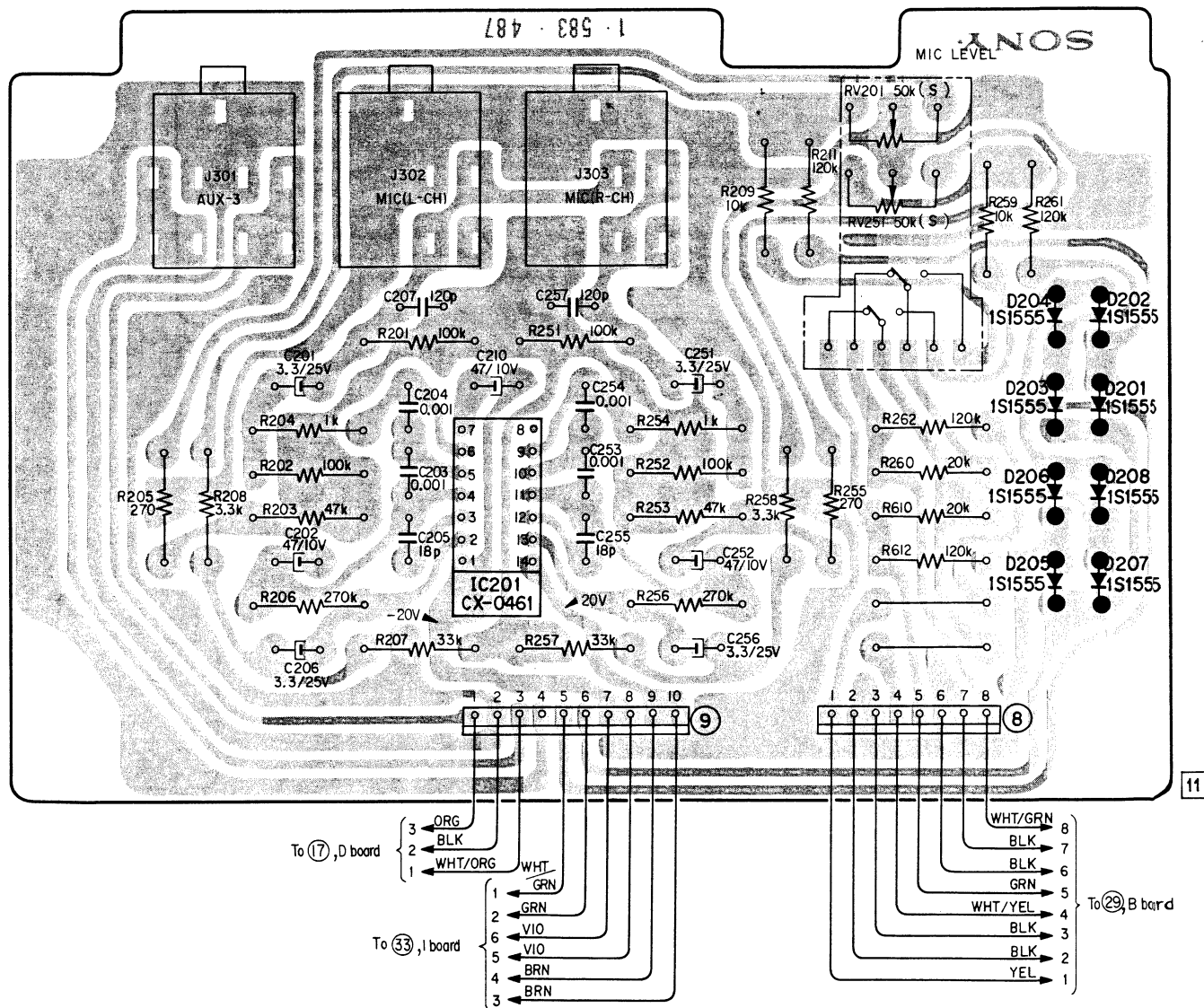
BX-270



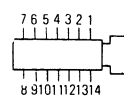
E

4-7. MOUNTING DIAGRAM – E Board **MIC AMP** –

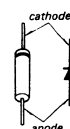
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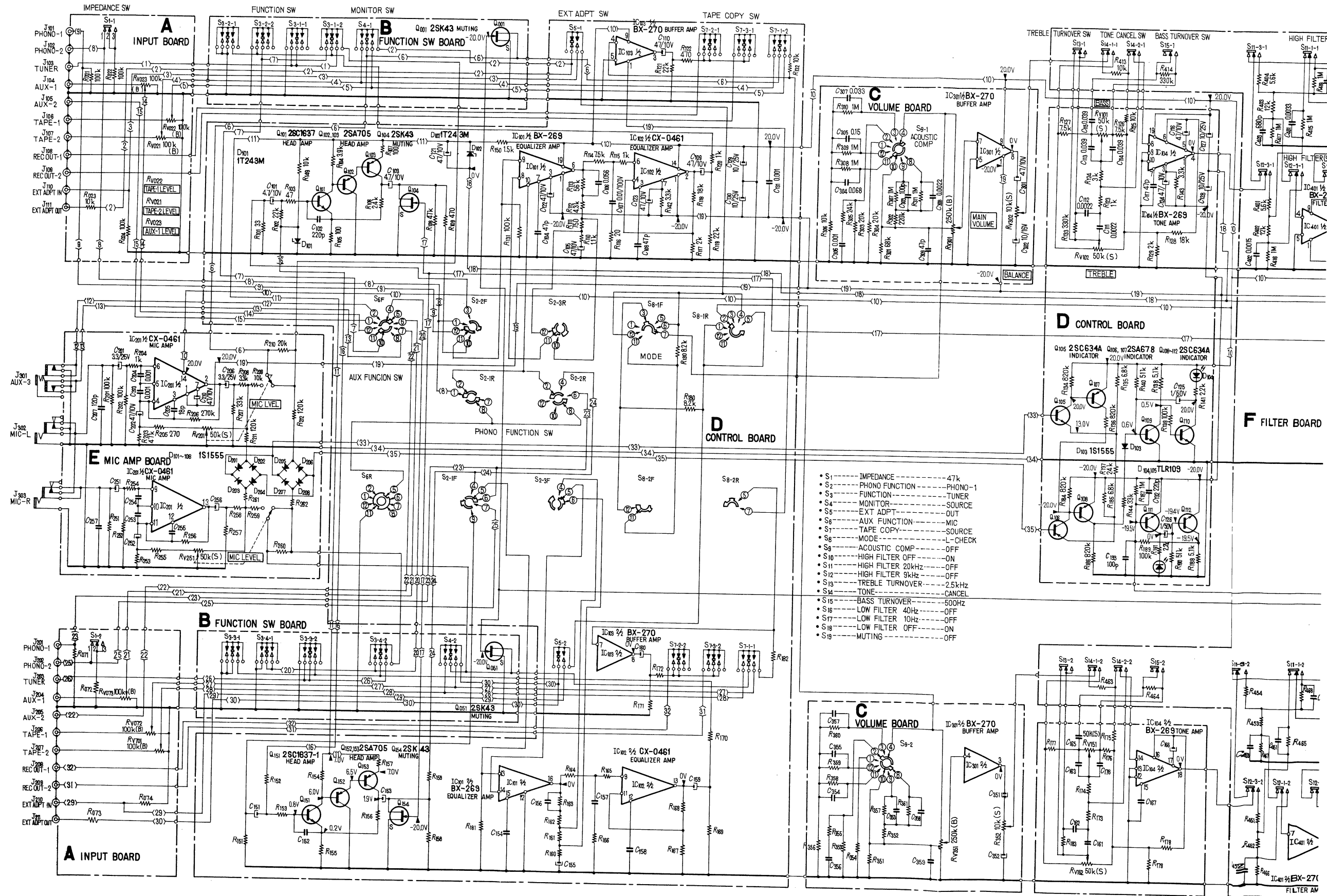
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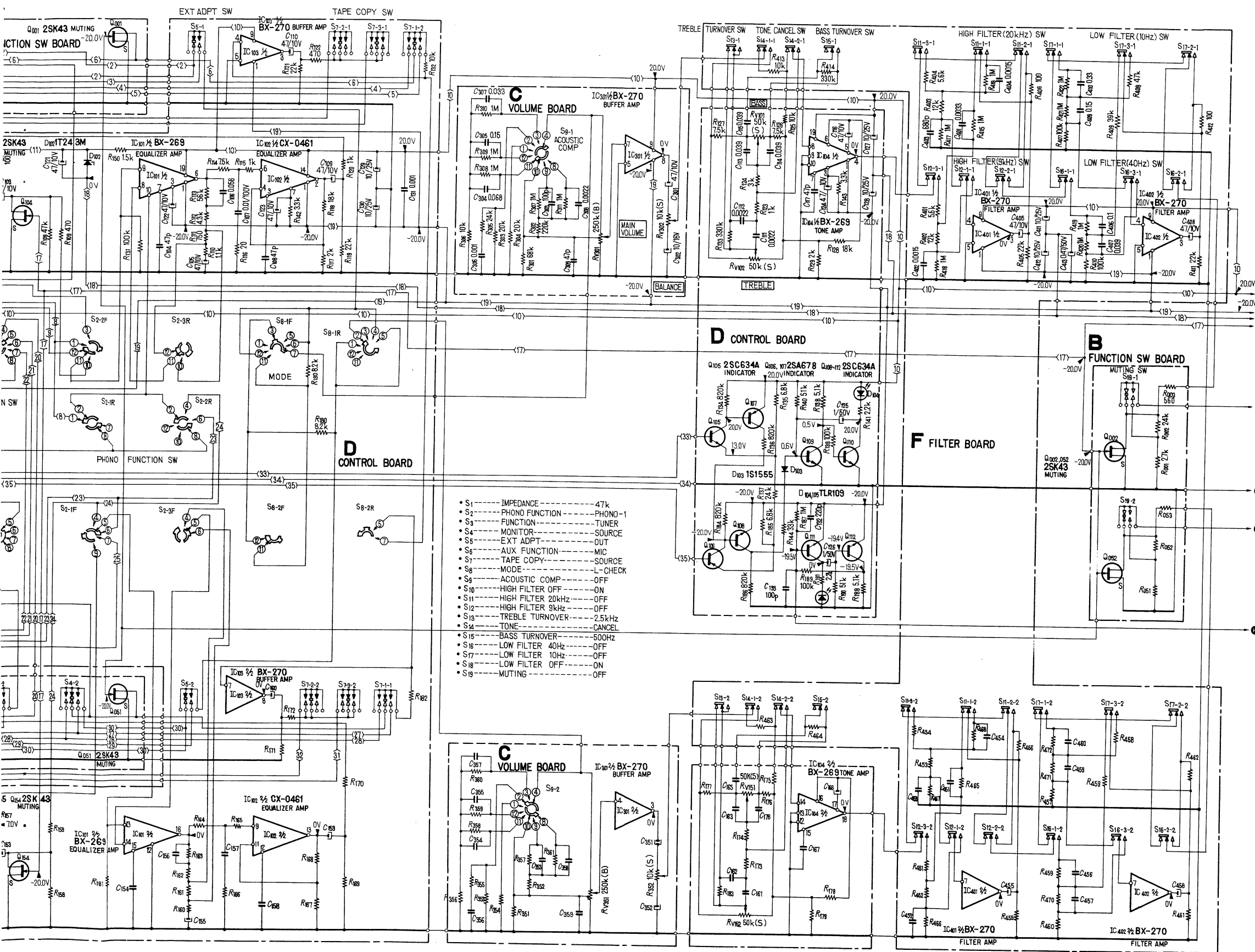


1S1555



4-8. SCHEMATIC DIAGRAM — Preamp Section —





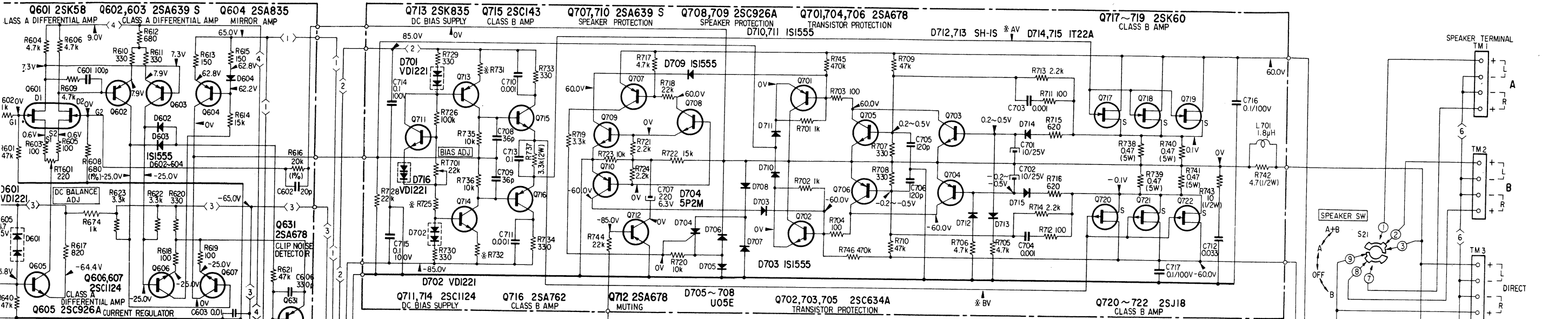
Note:
All resistance values are in ohms. (k = 1,000, M = 1,000k)
All capacitance values are in μF except as indicated with p, which means μF .
All voltages are dc measured with a VOM which has an input impedance of 20 k ohms/volt. No signal in.
Voltage variations may be noted due to normal production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

Q717~719 2SK60	* R725, 775	* R731, 781 R732, 782	* A	* B
-53	33k	1.8k	-9.4V ~ -11.9V	9.4V ~ 11.9V
-54	33k	1.5k	-11.9V ~ -14.4V	11.9V ~ 14.4V
-55	33k	1.2k	-14.4V ~ -16.9V	14.4V ~ 16.9V
-56	30k	1.0k	-16.9V ~ -19.4V	16.9V ~ 19.4V
-57	30k	1.0k	-19.4V ~ -21.9V	19.4V ~ 21.9V
-58	30k	820	-21.9V ~ -24.4V	21.9V ~ 24.4V

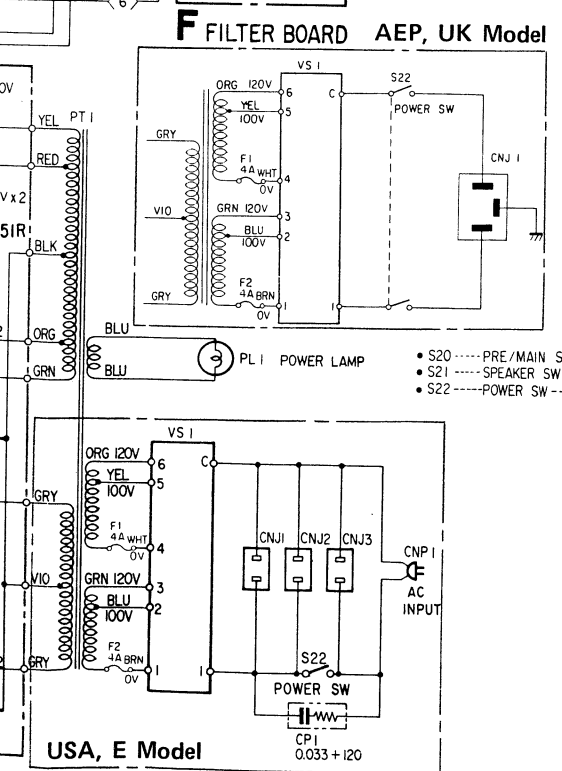
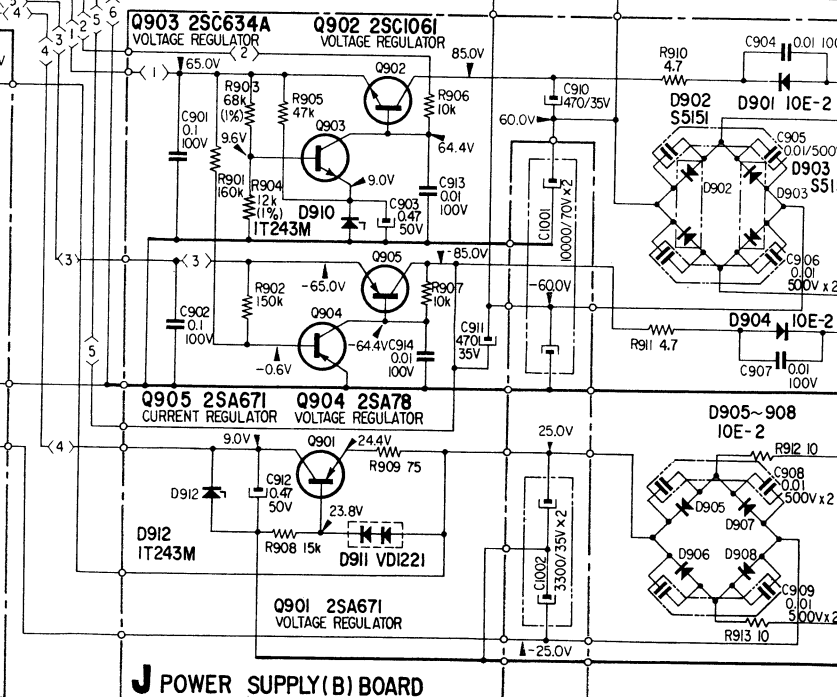
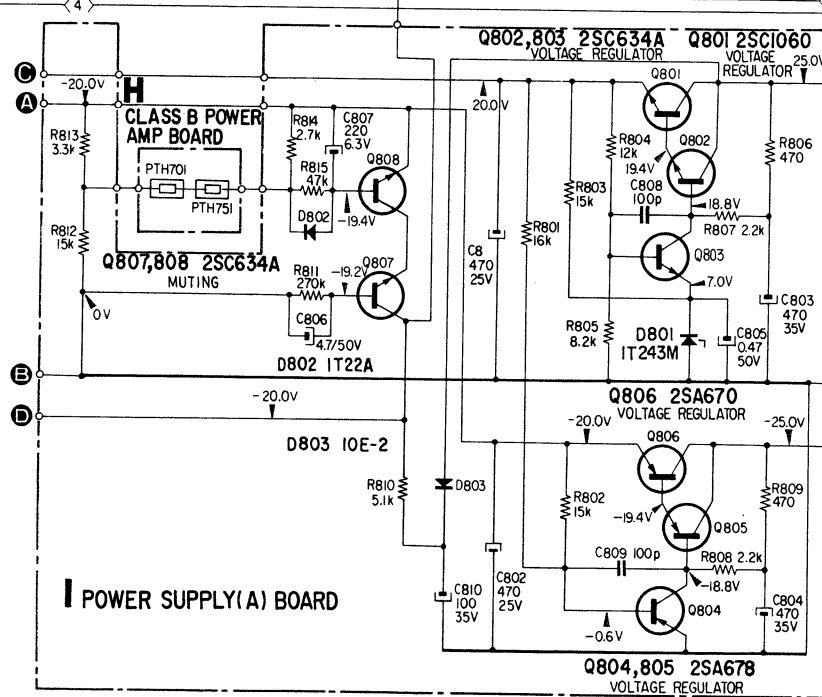
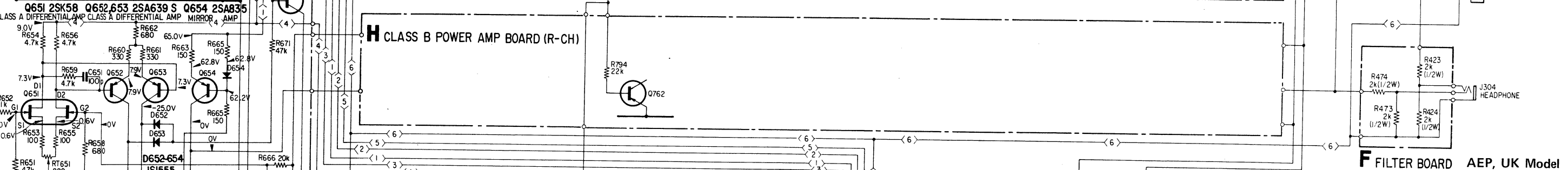
CLASS A POWER AMP BOARD

SA Model: Serial No. 800,141 and later
JK Model: Serial No. 600,001 and later
EP Model: Serial No. 500,001 and later
E Model: Serial No. 400,001 and later

CLASS B POWER AMP BOARD (L-CH)



CLASS B POWER AMP BOARD (R-CH)

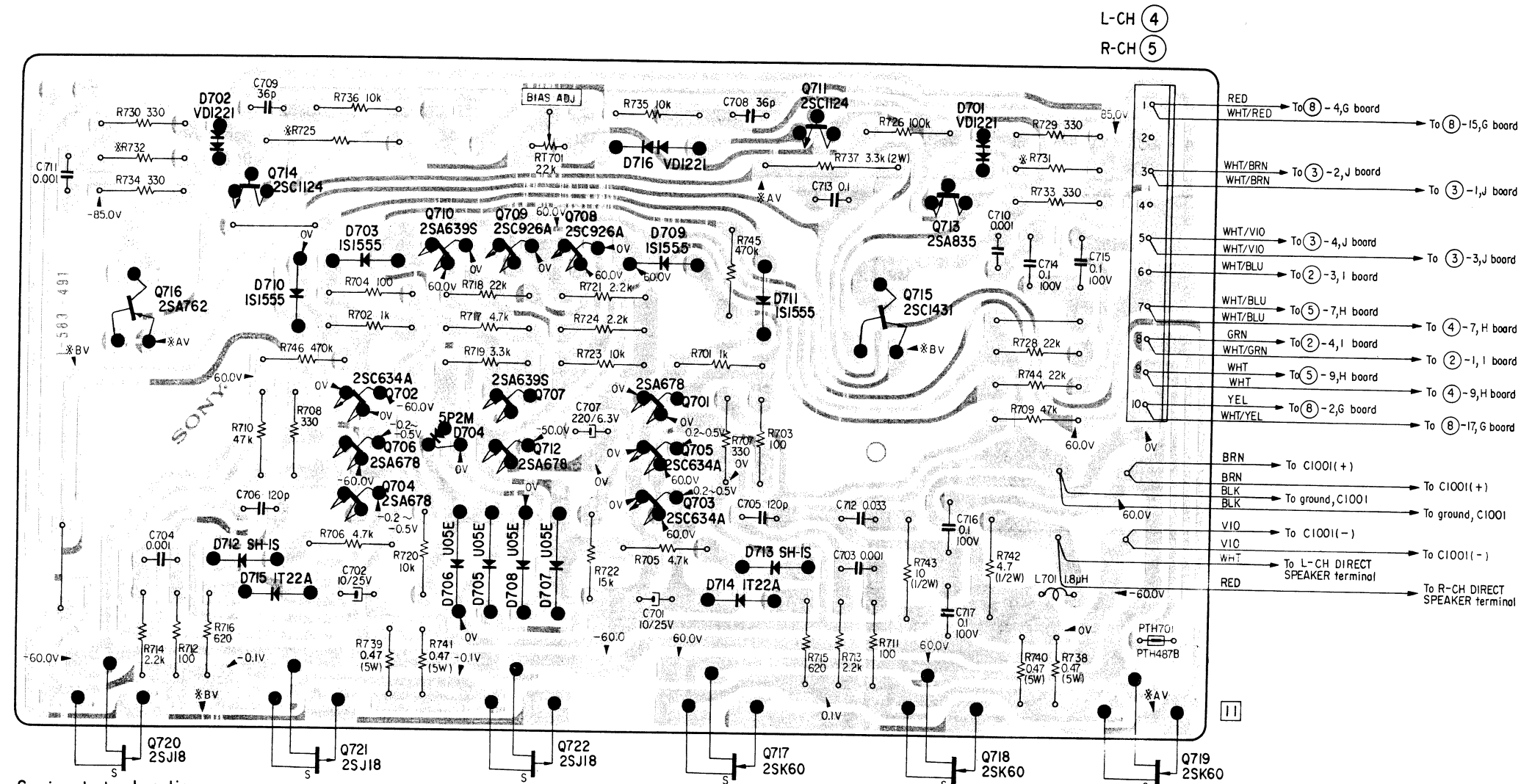


Note:
All resistance values are in ohms. (k = 1,000, M = 1,000 k)
All capacitance values are in μ F except as indicated with p, which means μ F.
All voltages are dc measured with a VOM which has an input impedance of 20k ohms/volt. No signal in.
Voltage variations may be noted due to normal production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



4-10. MOUNTING DIAGRAM — H Board CLASS B POWER AMP —

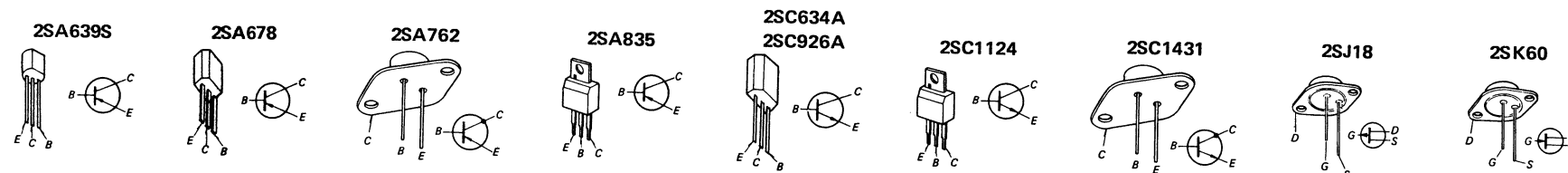
— Conductor Side —



Semiconductor Location

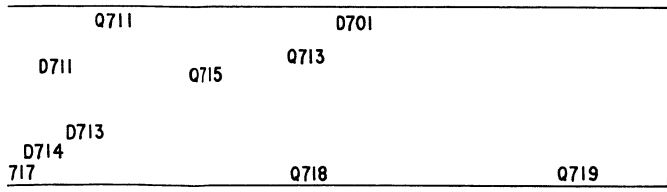
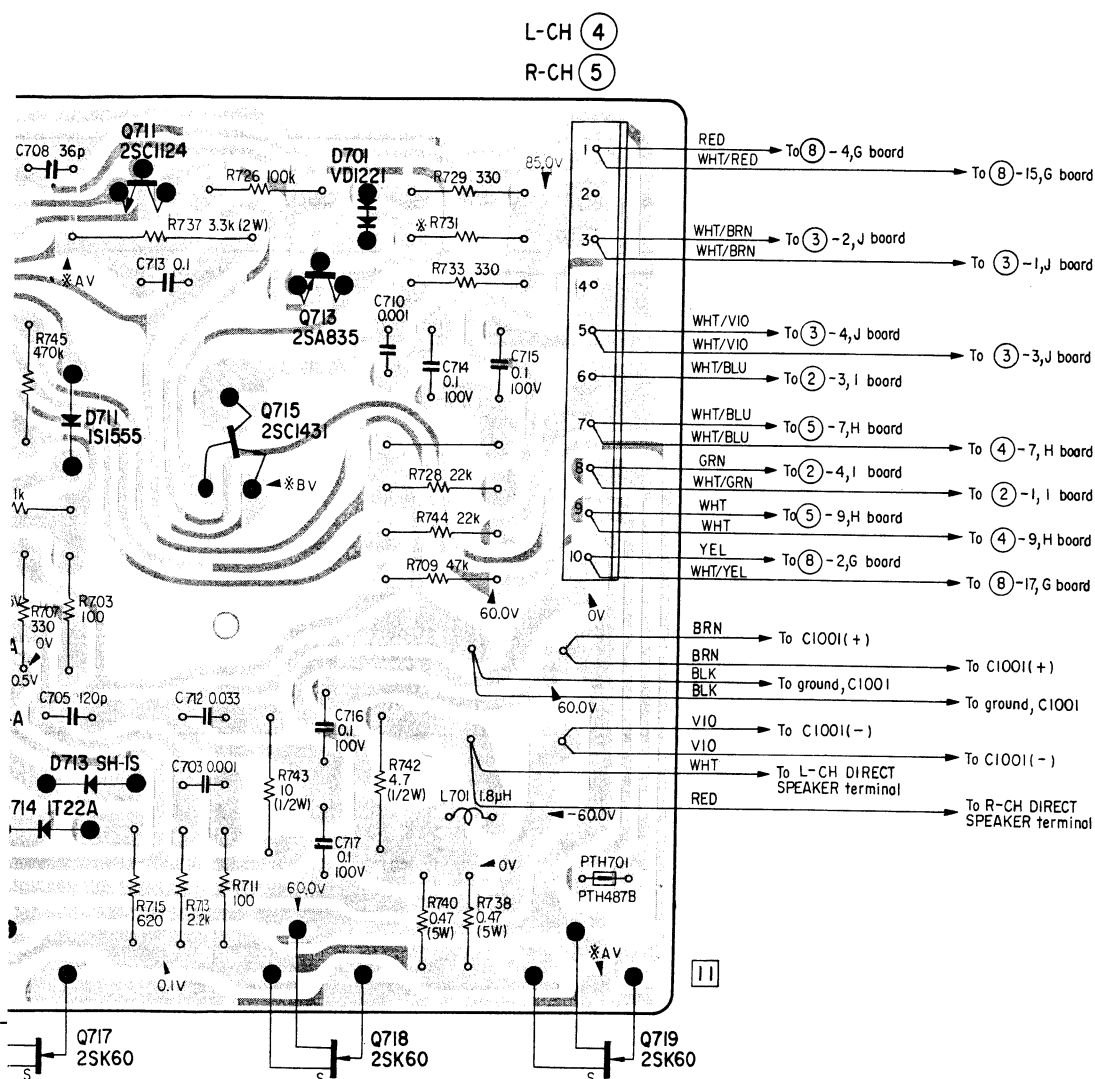
		D702						D716		Q711		D701	
Q716		Q714	D710	D703	Q710	Q709	Q708	D709					
				Q702		Q707				D711	Q715	Q713	
				Q706	D704	Q712		Q701					
		D712		Q704				Q705					
		D715				D706	D705	Q703		D713			
Q720			Q721				D707			D714			
						Q722				Q717		Q718	Q719

Q717~719 Q720~722 2SK601 2SJ18	R725, 775	R731, 781 R732, 782	A	B
-53	33k	1.8k	-9.4V~-11.9V	9.4V~11.9V
-54	33k	1.5k	-11.9V~-14.4V	11.9V~14.4V
-55	33k	1.2k	-14.4V~-16.9V	14.4V~16.9V
-56	30k	1.0k	-16.9V~-19.4V	16.9V~19.4V
-57	30k	1.0k	-19.4V~-21.9V	19.4V~21.9V
-58	30k	820	-21.9V~-24.4V	21.9V~24.4V

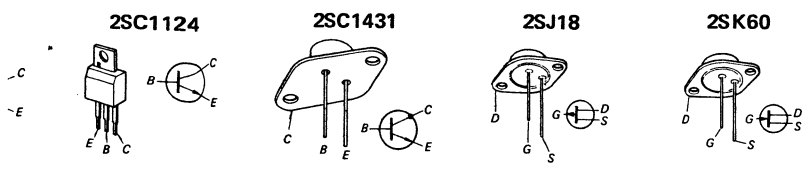




MEMO



※				
Q717~719	R725, 775	R731, 781	A	B
Q720~722		R732, 782		
2SK60 } -53	33k	1.8k	-9.4V~-11.9V	9.4V~11.9V
2SJ18 } -54	33k	1.5k	-11.9V~-14.4V	11.9V~14.4V
-55	33k	1.2k	-14.4V~-16.9V	14.4V~16.9V
-56	30k	1.0k	-16.9V~-19.4V	16.9V~19.4V
-57	30k	1.0k	-19.4V~-21.9V	19.4V~21.9V
-58	30k	820	-21.9V~-24.4V	21.9V~24.4V



G

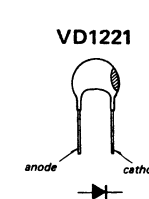
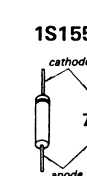
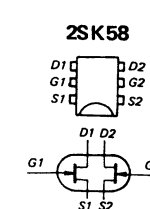
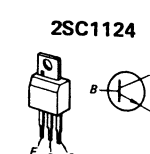
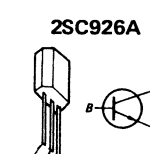
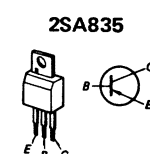
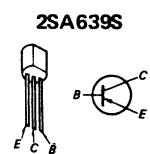
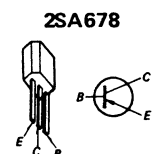
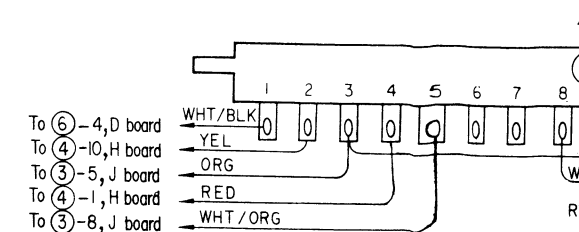
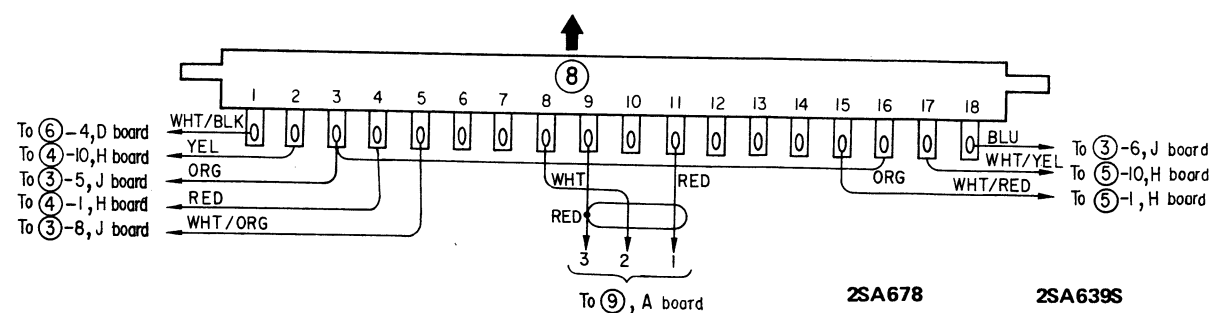
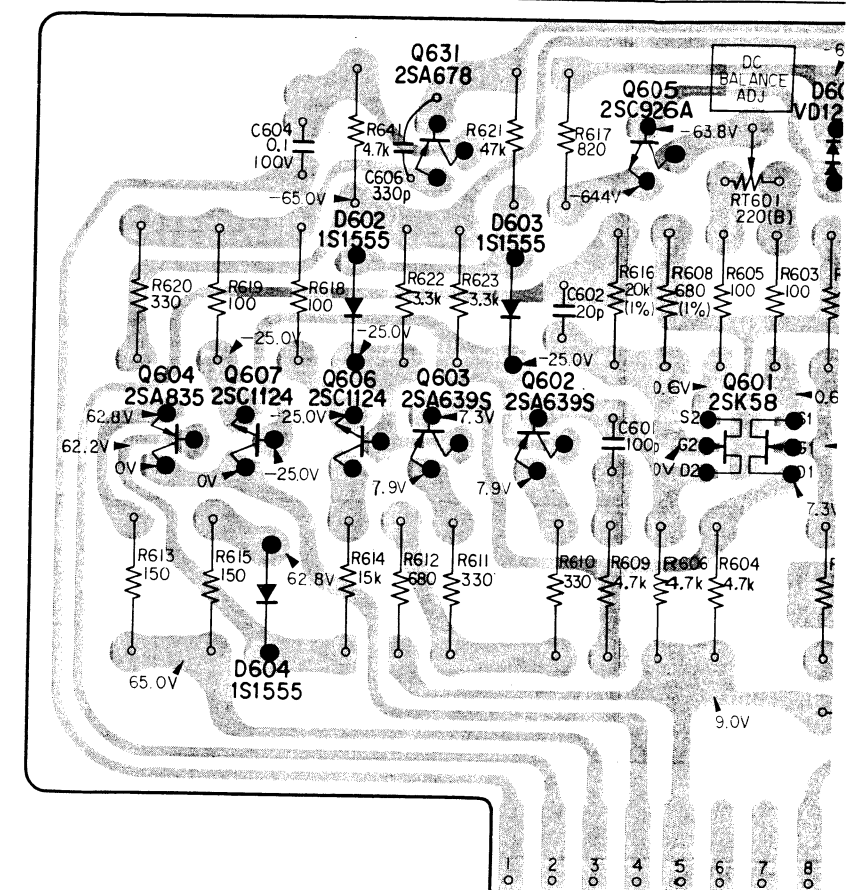
– Conductor Side –

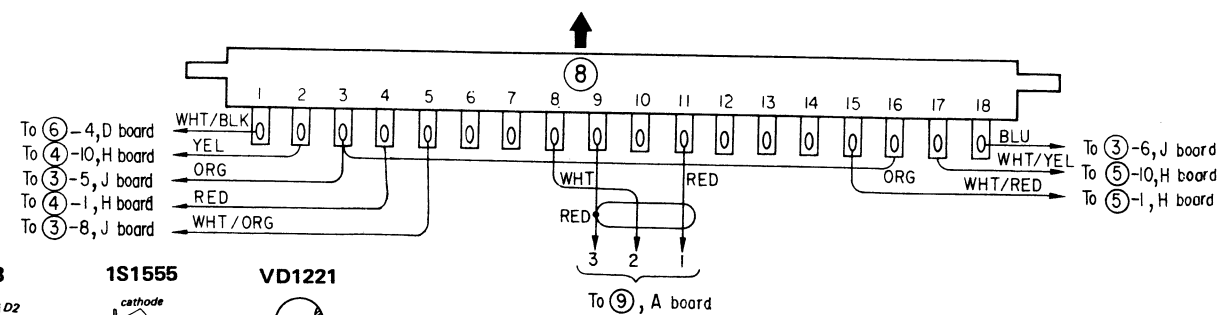
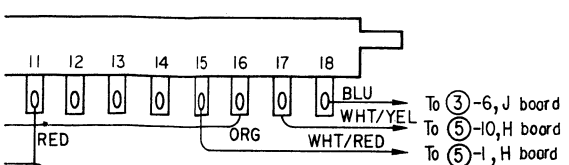
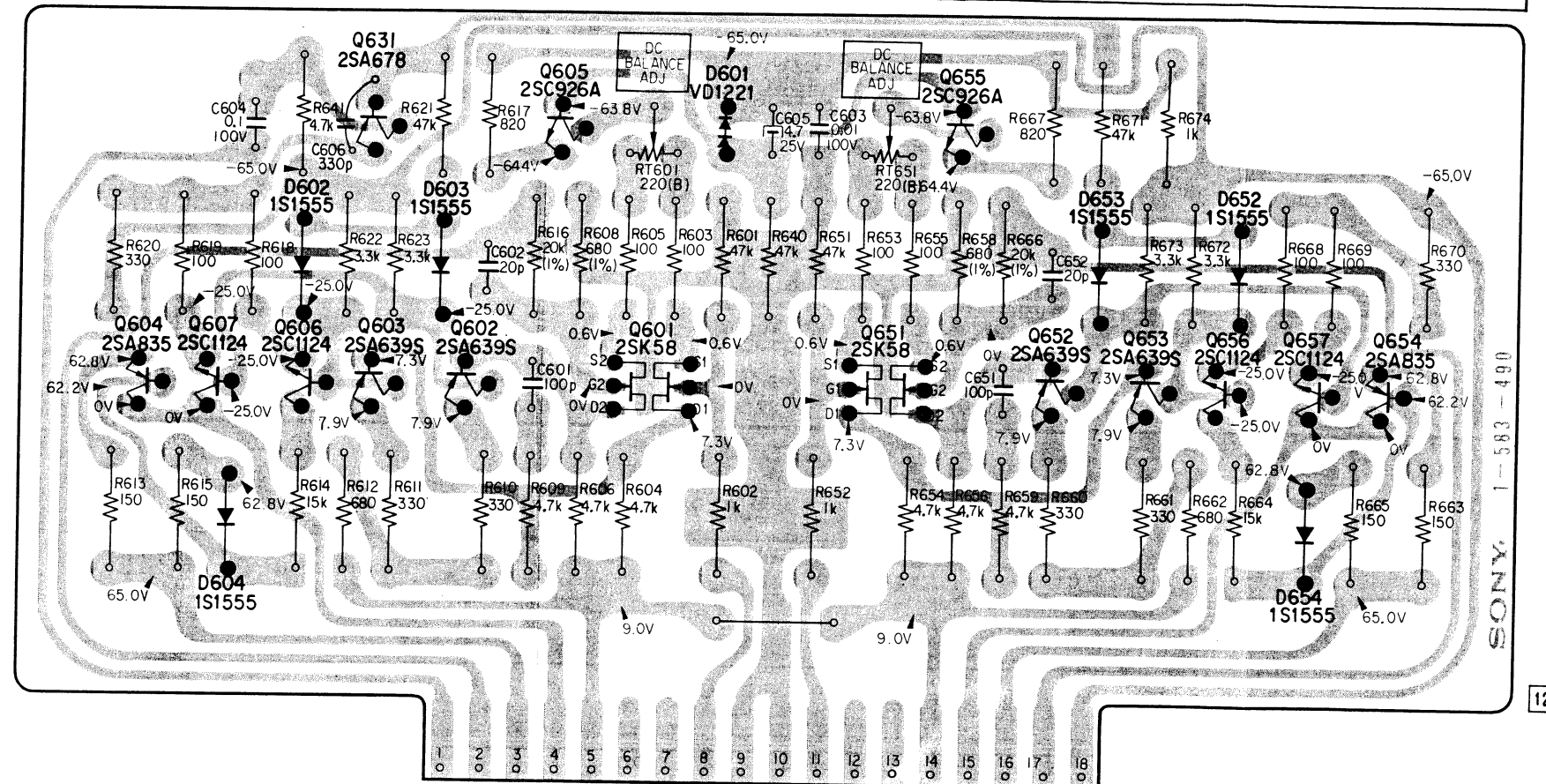
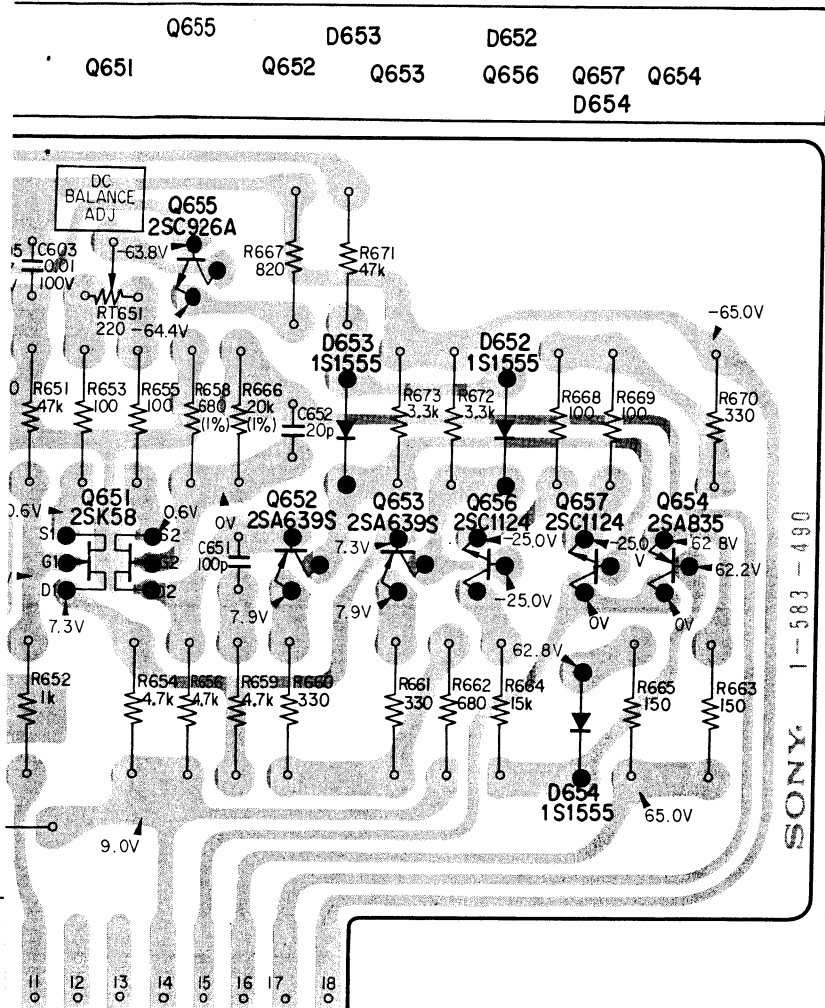
USA Model only: Up to Serial No. 800,140

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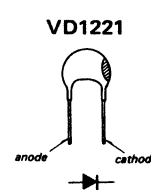
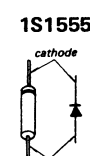
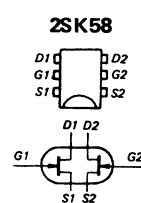
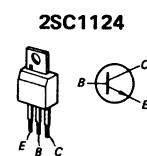
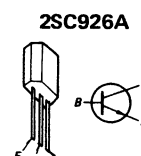
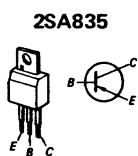
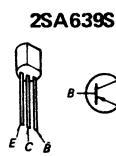
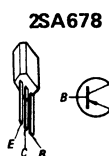
USA Model: Serial No. 800,141 and later
UK Model: Serial No. 600,001 and later
AEP Model: Serial No. 500,001 and later
E Model: Serial No. 400,001 and later

Semiconductor	Location
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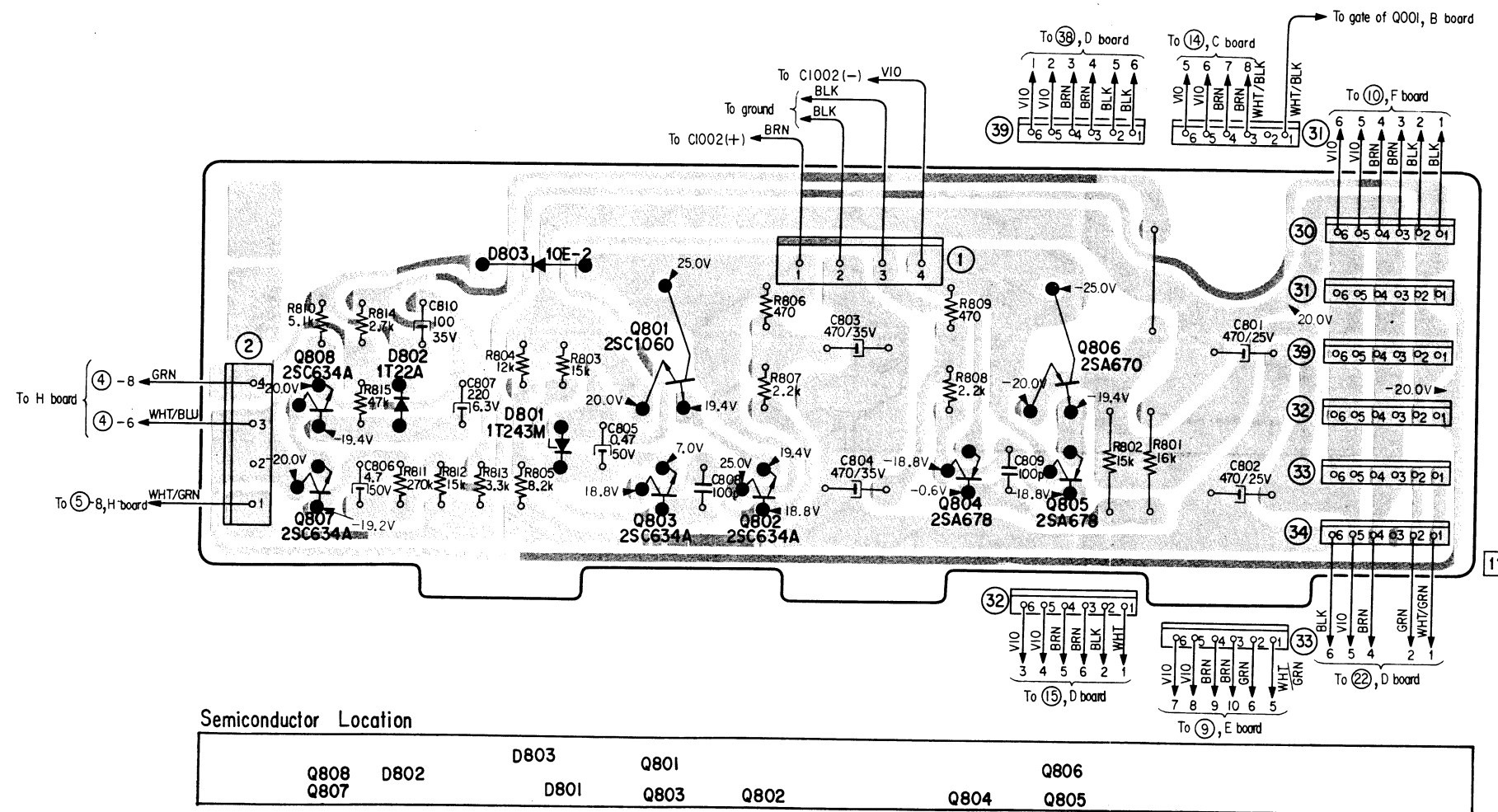
A board



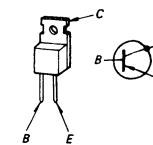


4-12. MOUNTING DIAGRAM — I Board **POWER SUPPLY A** —

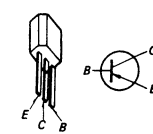
— Conductor Side —



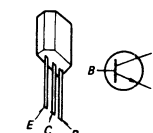
2SA670



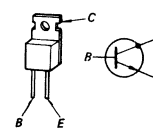
2SA678



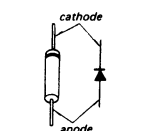
2SC634A



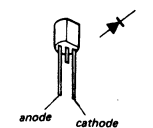
2SC1060



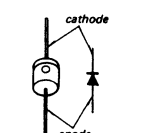
1T22A



1T243M



10E-2



SECTION 5

EXPLODED VIEWS

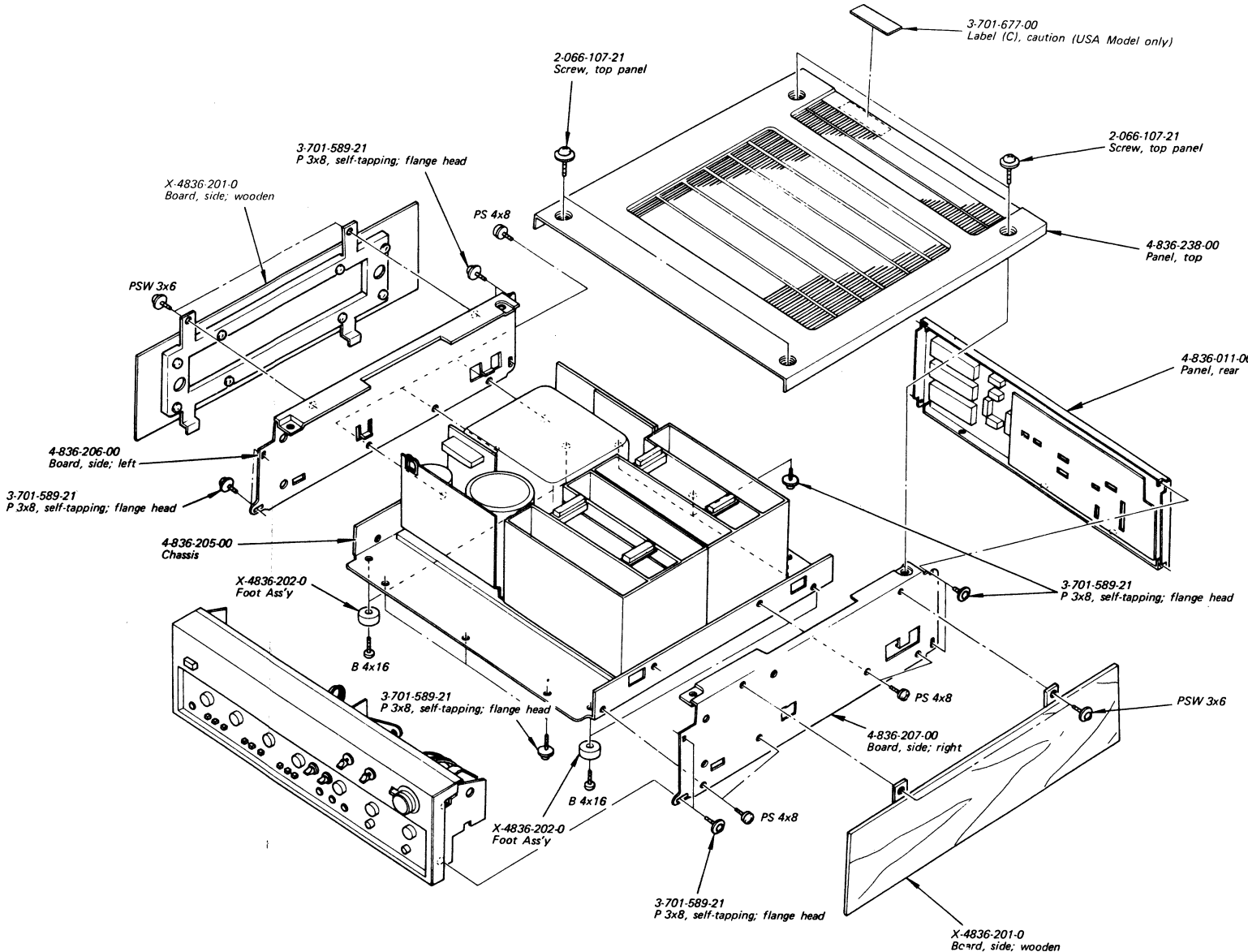
(1)

-Hardware Nomenclature-

P	– Pan Head Screw		
PS	– Pan Head Screw with Spring Washer		
K	– Flat Countersunk Head Screw		
B	– Binding Head Screw		
RK	– Oval Countersunk Head Screw		
T	– Truss Head Screw		
R	– Round Head Screw		
F	– Flat Fillister Head Screw		
SC	– Set Screw		
E	– Retaining Ring (E Washer)		
	W – Washer		
	SW – Spring Washer		
	LW – Lock Washer		
	N – Nut		

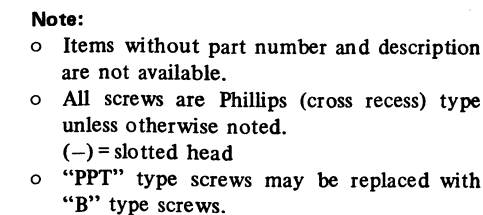
– Example –

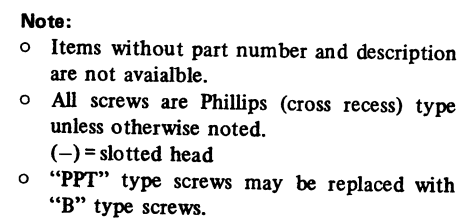
⊕ P 3 × 10
 — Type of Slot
 — Length in mm (L)
 — Diameter in mm (D)
 — Type of Head



Note:

- Items without part number and description are not available.
- All screws are Phillips (cross recess) type unless otherwise noted.
(-) = slotted head
- "PPT" type screws may be replaced with "B" type screws.





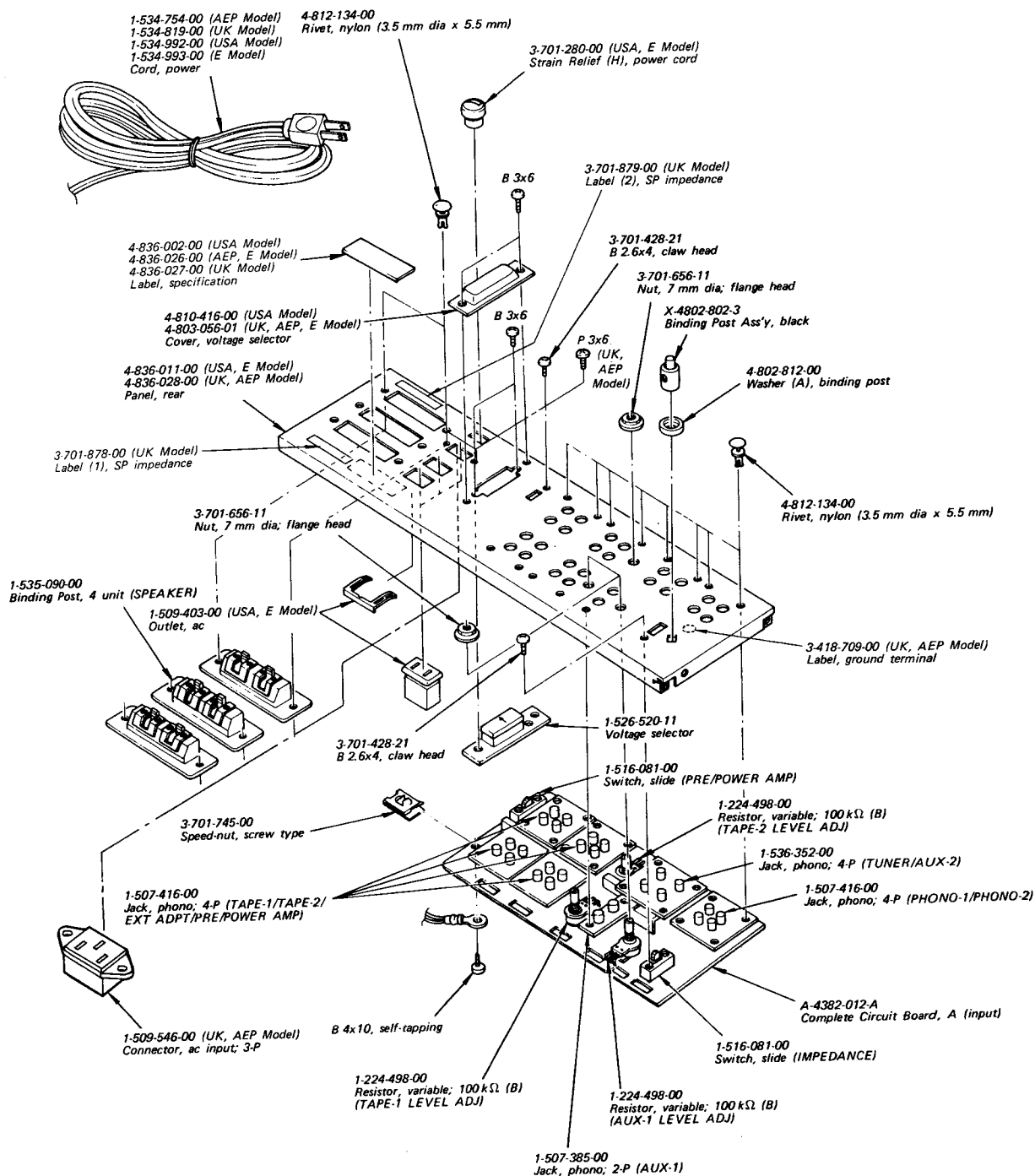
Ref. No.	Part No.	Description
IC401	IC	BX-270
IC402	IC	BX-270
D101	Diode	1T243M
D102	Diode	1T243M
D103	Diode	1S1555
D104	Diode	TLR109
D105	Diode	TLR109
D201~D208	Diode	1S1555
D601	Diode	VD1221
D602~D604 (D652~D654)	Diode	1S1555
D701(D751)	Diode	VD1221
D702(D752)	Diode	VD1221
D703(D753)	Diode	1S1555
D704(D754)	Diode	5P2M
D705~D708 (D755~D758)	Diode	UO-5E
D709~D711 (D759~D761)	Diode	1S1555
D712(D762)	Diode	SH-1S
D713(D763)	Diode	SH-1S
D714(D764)	Diode	1T22A
D715(D765)	Diode	1T22A
D716(D766)	Diode	VD1221
D801	Diode	1T243M
D802	Diode	1T22A
D803	Diode	10D-2
D901	Diode	10D-2
D902	Diode	S5151
D903	Diode	S5151R
D904~D908	Diode	10D-2
D910	Diode	1T243M
D911	Diode	VD1221
D912	Diode	1T243M
Pth701 (Pth751)	1-800-340-21	Posistor

Ref. No.	Part No.	Description
TRANSFORMER AND INDUCTORS		
L701(L751)	1-407-592-00	Microinductor, 1.8 μH
PT1	1-442-337-00	Transformer, power
CAPACITORS		
Capacitors listed here are 50 V mylar type unless otherwise specified and in μF except as indicated with p (p means μμ). elect = electrolytic		
C101(C151)	1-131-192-11	4.7 10 V tantalum
C102(C152)	1-102-978-11	220p 50 V ceramic
C103(C153)	1-131-192-11	4.7 10 V tantalum
C104(C154)	1-101-880-11	47p 50 V ceramic
C105(C155)	1-121-927-11	47 10 V elect
C106(C156)	1-105-522-12	0.056
C107(C157)	1-129-701-11	0.01 100 V film
C108(C158)	1-101-880-11	47p 50 V ceramic
C109(C159)	1-121-927-11	47 10 V elect
C110(C160)	1-121-927-11	47 10 V elect
C111(C161)	1-105-505-12	0.0022
C112(C162)	1-105-505-12	0.0022
C113~C115 (C163~C165)	1-105-520-12	0.039
C116(C166)	1-121-927-11	47 10 V elect
C117(C167)	1-101-880-11	47p 50 V ceramic
C121~C124	1-121-352-11	47 10 V elect
C125	1-121-912-11	1 50 V elect
C126	1-121-912-11	1 50 V elect
C127~C130	1-121-398-11	10 25 V elect
C131	1-105-661-12	0.001
C132	1-102-978-11	220p 50 V ceramic
C133	1-102-973-11	100p 50 V ceramic
C201(C251)	1-121-913-11	3.3 25 V elect
C202(C252)	1-121-927-11	47 10 V elect
C203(C253)	1-105-661-12	0.001
C204(C254)	1-105-661-12	0.001
C205(C255)	1-102-953-11	18p 50 V ceramic
C206(C256)	1-121-913-11	3.3 25 V elect
C207(C257)	1-102-816-11	120p 50 V ceramic
C210	1-121-927-11	47 10 V elect

Ref. No.	Part No.	Description
C301(C351)	1-121-927-11	47 10 V elect
C302(C352)	1-121-916-11	10 16 V elect
C303(C353)	1-102-973-11	100p 50 V ceramic
C304(C354)	1-105-683-12	0.068
C305(C355)	1-105-687-12	0.15
C306(C356)	1-105-661-12	0.001
C307(C357)	1-105-679-12	0.033
C308(C358)	1-105-665-12	0.0022
C309(C359)	1-101-880-11	47p 50 V ceramic
C401(C451)	1-105-667-12	0.0033
C402(C452)	1-105-663-12	0.0015
C403(C453)	1-102-116-11	680p 50 V ceramic
C404(C454)	1-105-663-12	0.0015
C405(C455)	1-121-927-11	47 10 V elect
C406(C456)	1-105-685-12	0.1
C407(C457)	1-105-680-12	0.039
C408(C458)	1-121-927-11	47 10 V elect
C409(C459)	1-105-687-12	0.15
C410(C460)	1-105-691-12	0.33
C411	1-121-398-11	10 25 V elect
C412	1-121-398-11	10 25 V elect
C413	1-121-726-11	0.47 50 V elect
C601(C651)	1-102-973-11	100p 50 V ceramic
C602(C652)	1-102-958-11	20p 50 V ceramic
C603	1-105-713-12	0.01 100 V
C604	1-105-725-12	0.1 100 V
C605	1-121-395-11	4.7 25 V elect
C701(C751)	1-121-398-11	10 25 V elect
C702(C752)		
C703(C753)	1-105-661-12	0.001
C704(C754)		
C705(C755)	1-102-816-11	120p 50 V ceramic
C706(C756)		
C707(C757)	1-121-419-11	220 6.3 V elect
C708(C758)	1-102-964-11	36p 50 V ceramic
C709(C759)		
C710(C760)	1-105-661-12	0.001
C711(C761)		
C712(C762)	1-105-679-12	0.033
C713(C763)	1-105-685-12	0.1

Ref. No.	Part No.	Description
C714(C764)	1-105-725-12	0.1 100 V
C715(C765)		
C716(C766)	1-105-725-12	0.1 100 V
C717(C767)		
C801	1-121-940-11	470 25 V elect
C802	1-121-940-11	470 25 V elect
C803	1-121-941-11	470 35 V elect
C804	1-121-941-11	470 35 V elect
C805	1-121-726-11	0.47 50 V elect
C806	1-121-396-11	4.7 50 V elect
C807	1-121-419-11	220 6.3 V elect
C808	1-102-973-11	100p 50 V ceramic
C809	1-102-973-11	100p 50 V ceramic
C810	1-123-062-11	100 35 V elect
C901	1-105-725-12	0.1 100 V
C902	1-105-725-12	0.1 100 V
C903	1-121-726-11	0.47 50 V elect
C904	1-105-713-12	0.01 100 V
C905	1-102-355-11	0.01/0.01 500 V ceramic
C906	1-102-355-11	0.01/0.01 500 V ceramic
C907	1-105-713-12	0.01 100 V
C908	1-102-355-11	0.01/0.01 500 V ceramic
C909	1-102-355-11	0.01/0.01 500 V ceramic
C910	1-121-941-11	470 35 V elect
C911	1-121-941-11	470 35 V elect
C912	1-121-726-11	0.47 50 V elect
C913	1-105-713-12	0.01 100 V
C914	1-105-713-12	0.01 100 V
C1001	1-123-144-11	10,000/10,000 70 V elect
C1002	1-123-145-11	3,000/3,000 35 V elect
RESISTORS		
All resistors are in Ω. ¼W, ±5%,carbon resistors (except particular type) are omitted. Check schematic diagram for the resistance values. k = 1000, M = 100 k		
R110(R160)	1-212-534-21	1.1 k ±1 % metal-oxide
R111(R161)	1-212-530-21	750 ±1 % metal-oxide

(4)



Note:

- Items without part number and description are not available.
- All screws are Phillips (cross recess) type unless otherwise noted.
- (-) = slotted head
- "PPT" type screws may be replaced with "B" type screws.

SECTION 6

ELECTRICAL PARTS LIST

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>
CIRCUIT BOARDS					
	A-4382-012-A	A (input), complete		Q701(Q751)	Transistor 2SA678
	A-4474-003-A	B (function switch), complete		Q702(Q752)	Transistor 2SA634A
	A-4477-003-A	C (volume), complete		Q703(Q753)	Transistor 2SC634A
	A-4375-034-A	D (control), complete		Q704(Q754)	Transistor 2SA678
	A-4363-010-A	E (mic), complete		Q705(Q755)	Transistor 2SC634A
	A-4375-033-A	F (filter), complete		Q706(Q756)	Transistor 2SA678
	A-4388-037-A	G (power amp (A)), complete		Q707(Q757)	Transistor 2SA639S
	A-4388-038-A	H (power amp (B)), complete		Q708(Q758)	Transistor 2SC926A
	A-4394-047-A	I (power supply (A)), complete		Q709(Q759)	Transistor 2SC926A
	A-4394-048-A	J (power supply (B)), complete		Q710(Q760)	Transistor 2SA639S
	1-583-486-00	Indicator		Q711(Q761)	Transistor 2SC1124
	1-583-488-00	Mic Amp		Q712(Q762)	Transistor 2SA678
SEMICONDUCTORS				Q713(Q763)	Transistor 2SA835
Q001(Q051)	FET	2SK43		Q714(Q764)	Transistor 2SC1124
Q002(Q052)	FET	2SK43		Q715(Q765)	Transistor 2SC1431
Q101	Transistor	2SC1637		Q716(Q766)	Transistor 2SA762
Q102	Transistor	2SA705		Q717~Q719	FET 2SK60
Q103	Transistor	2SA705		(Q767~Q769)	
Q104	FET	2SK43		Q720~Q722	FET 2SJ18
Q105	Transistor	2SC634A		(Q770~Q772)	
Q106	Transistor	2SA678		Q801	Transistor 2SC1060
Q107	Transistor	2SA678		Q802	Transistor 2SC634A
Q108~Q112	Transistor	2SC634A		Q803	Transistor 2SC634A
Q151	Transistor	2SC1637		Q804	Transistor 2SA678
Q152	Transistor	2SA705		Q805	Transistor 2SA678
Q153	Transistor	2SA705		Q806	Transistor 2SA670
Q154	FET	2SK43		Q807	Transistor 2SC634A
Q601(Q651)	FET	2SK58		Q808	Transistor 2SC634A
Q602(Q652)	Transistor	2SA639S		Q901	Transistor 2SA671
Q603(Q653)	Transistor	2SA639S		Q902	Transistor 2SC1061
Q604(Q654)	Transistor	1S1555		Q903	Transistor 2SC634A
Q605(Q655)	Transistor	2SC926A		Q904	Transistor 2SA678
Q606(Q656)	Transistor	2SC1124		Q905	Transistor 2SA671
Q607(Q657)	Transistor	2SC1124		IC101	IC BX-269
Q631	Transistor	2SA678		IC102	IC CX-0461
				IC103	IC BX-270
				IC104	IC BX-269
				IC201	IC CX-0461
				IC301	IC BX-270