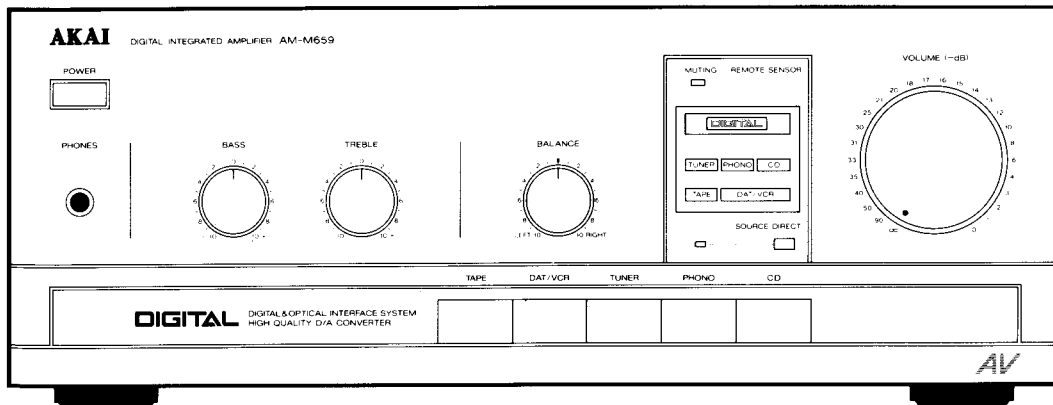
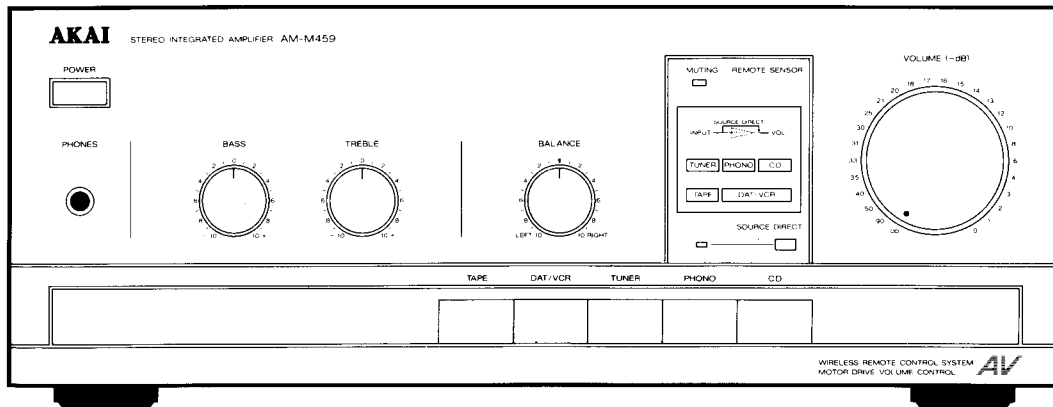


AKAI SERVICE MANUAL



MODEL AM-M659

STEREO INTERGRATED AMPLIFIER
MODEL **AM-M459**

DIGITAL INTERGRATED AMPLIFIER
MODEL **AM-M659**

★ SAFETY INSTRUCTIONS

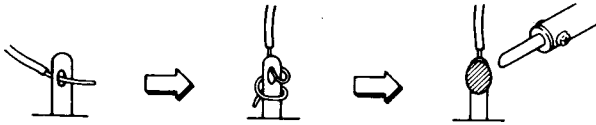
PRECAUTIONS DURING SERVICING

1. Parts identified by the \triangle symbol parts are critical for safety. Replace only with parts number specified.
2. In addition to safety, other parts and assemblies are specified for conformance with such regulations as those applying to spurious radiation.

These must also be replaced only with specified replacements.

Examples: RF converters, tuner units, antenna selector switches, RF cables, noise blocking capacitors, noise blocking filters, etc.

3. Use specified internal wiring. Note especially:
 - 1) Wires covered with PVC tubing
 - 2) Double insulated wires
 - 3) High voltage leads
4. Use specified insulating materials for hazardous live parts. Note, especially:
 - 1) Insulation Tape
 - 2) PVC tubing
 - 3) Spacers (Insulating Barriers)
 - 4) Insulation sheets for transistors
 - 5) Plastic screws for fixing microswitch (especially in turntable)
5. When replacing AC primary side components (transformers, power cords, noise blocking capacitors, etc.), wrap ends of wires securely about the terminals before soldering.



6. Observe that wires do not contact heat producing parts (heatsinks, oxide metal film resistors, fusible resistors, etc.).

7. Check that replaced wires do not contact sharp edged or pointed parts.
8. Also check areas surrounding repaired locations.
9. Use care that foreign objects (screws, solder droplets, etc.) do not remain inside the set.

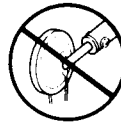
SAFETY CHECK AFTER SERVICING

Confirm the specified insulation resistance between power cord plug prongs and externally exposed parts of the set is greater than 10 M ohms, but for equipment with external antenna terminals (tuner, receiver, etc.) and is intended for [C] or [A], specified insulation resistance should be head-phone jacks, line-in-out jacks, etc. more than 2.2 M ohms (ground terminals, microphone jacks).

PRECAUTIONS FOR LITHIUM BATTERY

The lithium battery may explode when heated excessively. [OBSERVE THE FOLLOWING WHEN REPLACING]

- Replace with the same make and type only.
- Use soldering iron in "recommended way" only.
- Place battery in correct polarity.
- Do not short the terminals.
- Do not recharge battery.
- Do not dispose of battery in fire.



[DANGER]



[RECOMMENDED WAY]

★ INFORMATION

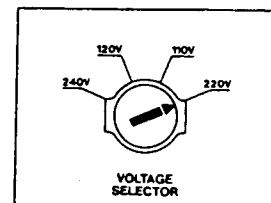
SYMBOLS FOR PRIMARY DESTINATION

Alphabet indicates the destination of the units as listed below.

Symbols	Principal Destinations
[A]	USA
[B]	UK
[C]	Canada
[E]	Europe (except UK)
[J]	Japan
[S]	Australia
[V]	W. Germany only
[U]	Universal Area
[Y*]	Custom version

VOLTAGE CONVERSION ([U] Model only)

Before connecting the power cord, SET the VOLTAGE SELECTOR located on the rear plate with a screw-driver so that the correct voltage is indicated.



I. SPECIFICATIONS

1-1 MODEL AM-M459

Power output by DIN (1kHz, 8 ohms)..... 40W + 40W Music Power 190W Power bandwidth 5Hz ~ 80kHz/0.1% S/N (IHF-A) PHONO MM 72dB TUNER etc 93dB Residual noise 0.5mV Channel separation (1 kHz)..... 60 dB Damping Factor (1 kHz, 8 ohms)..... 35 Required speaker impedance..... 8 ~ 16 ohms Input sensitivity/impedance PHONO MM 2mV/47kohms TUNER etc 150mV/47kohms PHONO max input level (1 kHz)..... 100mV Output level/impedance TAPE 150 mV/1 kohms	Frequency response PHONO..... ±0.5dB (RIAA) TUNER etc..... 10Hz ~ 50kHz (-3dB, at source direct) Tone control Bass ±8.5dB at 100Hz Treble ±8.5dB at 10kHz DC power supply (for PHONO)..... 12V (center-) Power requirements 220V, 50Hz for Europe except UK 240V, 50Hz for UK and Austraria 110V/220V/220V/240V, 50Hz/60Hz Convertible for other countries Power consumption 145W for [U] model Dimensions 350 (W) × 136 (H) × 360 (D) mm Weight 5.6 kg
	Standard accessories Wireless remote control × 1 Dry batteries (R6, DC1.5V)..... × 2

* For improvement purposes, specifications and design are subject to change without notice.

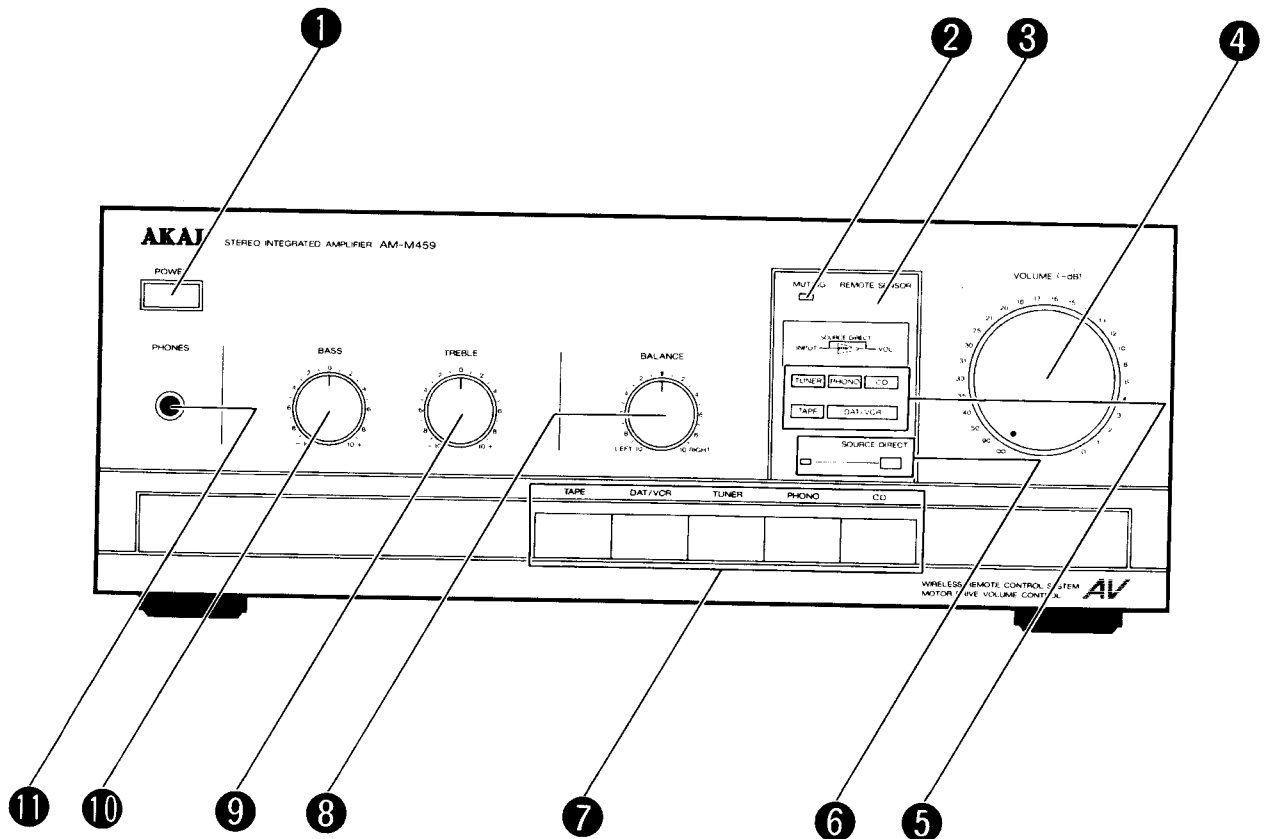
1-2 MODEL AM-M659

Power output by DIN (1kHz, 8 ohms)..... 55W + 55W Music Power 250W Power bandwidth 5Hz ~ 80kHz/0.1% S/N (IHF-A) PHONO MM 72dB TUNER etc 93dB Residual noise 0.5mV Channel separation (1 kHz)..... 60 dB Damping Factor (1 kHz, 8 ohms)..... 35 Required speaker impedance..... 8 ~ 16 ohms Input sensitivity/impedance PHONO MM 2mV/47kohms TUNER etc 150mV/47kohms Digital input level (CD·OPTICAL)..... -22 dBm PHONO max input level (1 kHz)..... 100mV	Output level/impedance TAPE 150 mV/1 kohms Frequency response PHONO..... ±0.5dB (RIAA) TUNER etc..... 10Hz ~ 50kHz (-3dB, at source direct) Tone control Bass ±8.5dB at 100Hz Treble ±8.5dB at 10kHz Power requirements 220V, 50Hz for Europe except UK 240V, 50Hz for UK and Austraria 110V/220V/220V/240V, 50Hz/60Hz Convertible for other countries Power consumption 185W for [U] model Dimensions 350 (W) × 137 (H) × 360 (D) mm Weight 6.6 kg
	Standard accessories Wireless remote control × 1 Dry batteries (R6, DC1.5V)..... × 2

* For improvement purposes, specifications and design are subject to change without notice.

II. CONTROLS

2-1 MODEL AM-M459



1 POWER Button

To turn the power on and off.

2 MUTING Indicator

Lights when the remote control's MUTE button is turned on. The volume is attenuated by -20 dB from the set volume level.

3 REMOTE SENSOR Window

The signals from the remote control are received by this window. Keep this window clean.

4 VOLUME Control and Indicator (Motor driven for remote control operation)

To adjust the volume level.

5 Input Source Indicators (TUNER, PHONO, CD, TAPE, DAT/VCR)

Tells you the amplifier is turned on and which playback source is selected.

6 SOURCE DIRECT Button and Indicator

When engaged, the input signal bypasses the BASS, TREBLE and BALANCE control for optimum sound quality playback.

The indicator lights when the SOURCE DIRECT button is turned on.

7 Input Select Buttons (TAPE, DAT/VCR, TUNER, PHONO, CD)

To select a playback or recording source you wish to listen to.

8 BALANCE Control (LEFT/RIGHT)

To adjust the left and right channel volume balance.

9 TREBLE Tone Control

To adjust the high note (treble) level. When set to 0, the control has no effect.

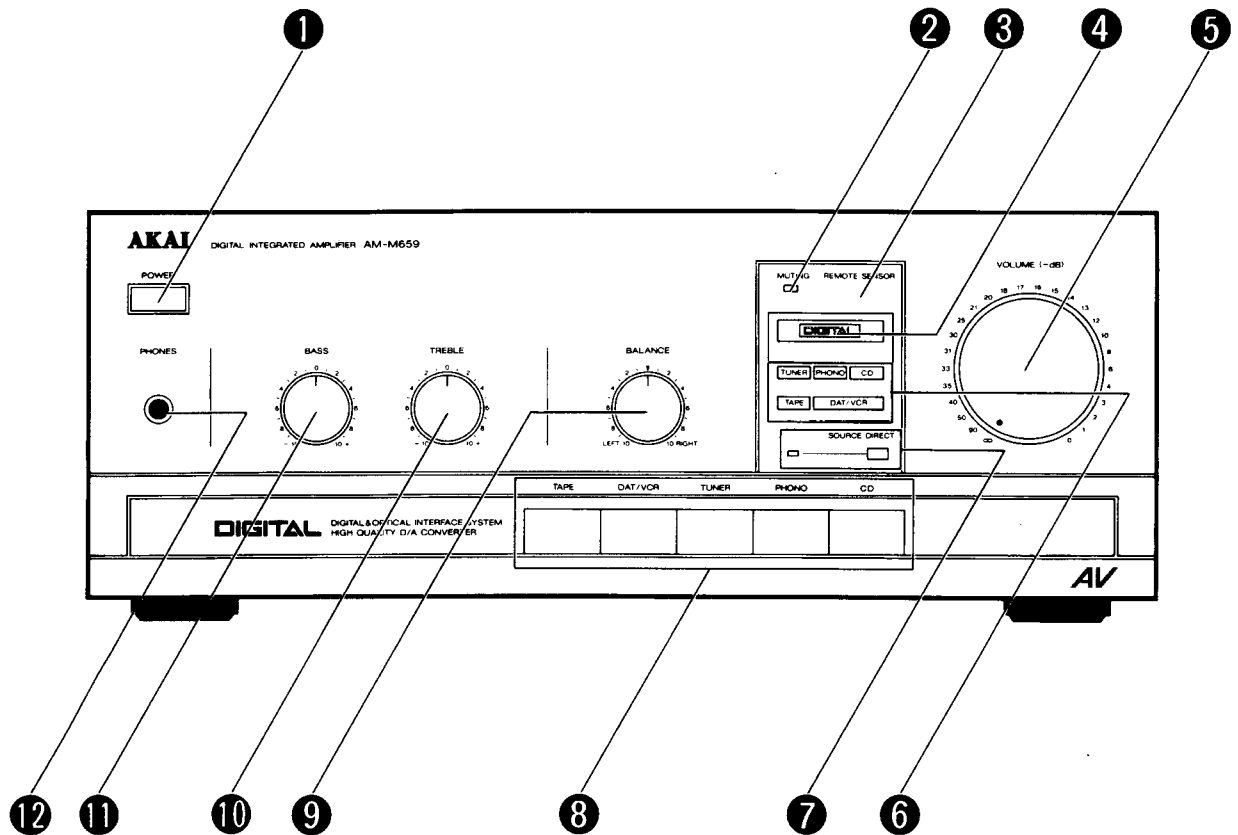
10 BASS Tone Control

To adjust the low note (bass) level. When set to 0, the control has no effect.

11 PHONES Jack

Connect the headphones plug to this jack for private listening. When connecting the plug, the speaker output will be cut automatically.

2-2 MODEL AM-M659

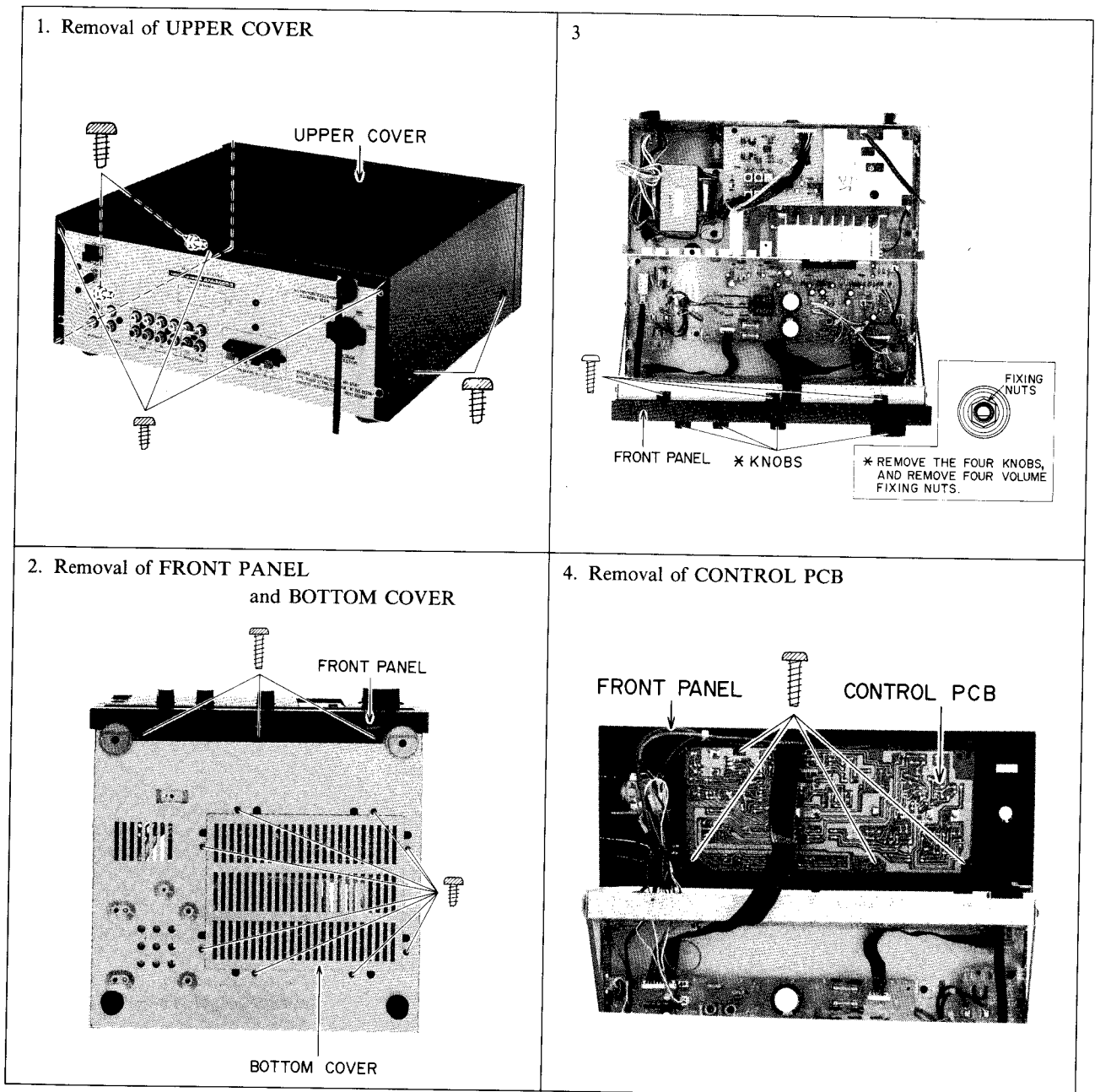


- 1 POWER Button**
To turn the power on and off.
- 2 MUTE Indicator**
Lights when the MUTE button of the remote control unit is turned on. The volume is attenuated by -20 dB (to 1/10).
- 3 Remote Sensor Window**
The signals from the remote control are received by this window. Keep this window clean.
- 4 DIGITAL Indicator**
Tells you the amplifier is in the CD mode. In this case, playback signals are received at the digital input.
- 5 VOLUME Control**
To adjust the volume level.
- 6 Input Source Indicators (TAPE, DAT/VCR, TUNER, CD, PHONO)**
Tells you the amplifier is turned on and which playback source is selected.
- 7 SOURCE DIRECT Button and Indicator**
When engaged, the input signal bypasses the BASS and TREBLE tone controls for optimum sound quality. The indicator lights when the SOURCE DIRECT button is turned on.
- 8 Input Select Buttons (TAPE, DAT/VCR, TUNER, CD, PHONO)**
To select a playback or recording source you wish to listen to.
- 9 BALANCE Control (LEFT/RIGHT)**
To adjust the volume balance of the left and right channels.
- 10 TREBLE Tone Control**
To adjust the high note (treble) level. When set to 0, the control has no effect.
- 11 BASS Tone Control**
To adjust the low note (bass) level. When set to 0, the control has no effect.
- 12 PHONES Jack**
Connect the headphone plug to this jack for private listening. When connecting the plug, the speaker output will be cut automatically.

III. DISASSEMBLY

In case of trouble, etc, necessitating dismantling, please dismantle in the order shown in the photographs. Reassemble in reverse order.

* Photographs employed in this paragraph are model AM-M659



IV. PRINCIPAL PARTS LOCATION

4-1 MODEL AM-M459

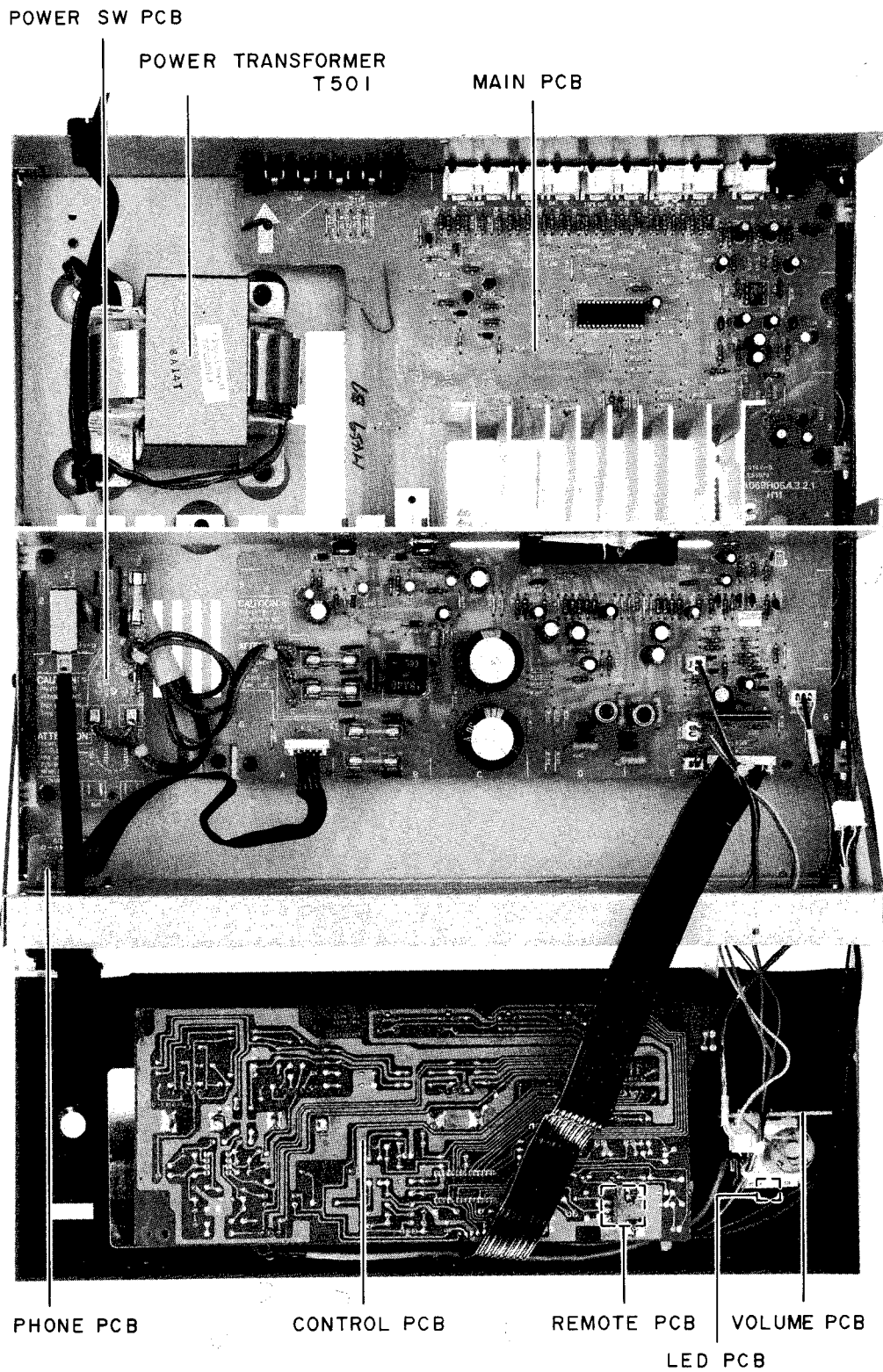


Fig 4-1

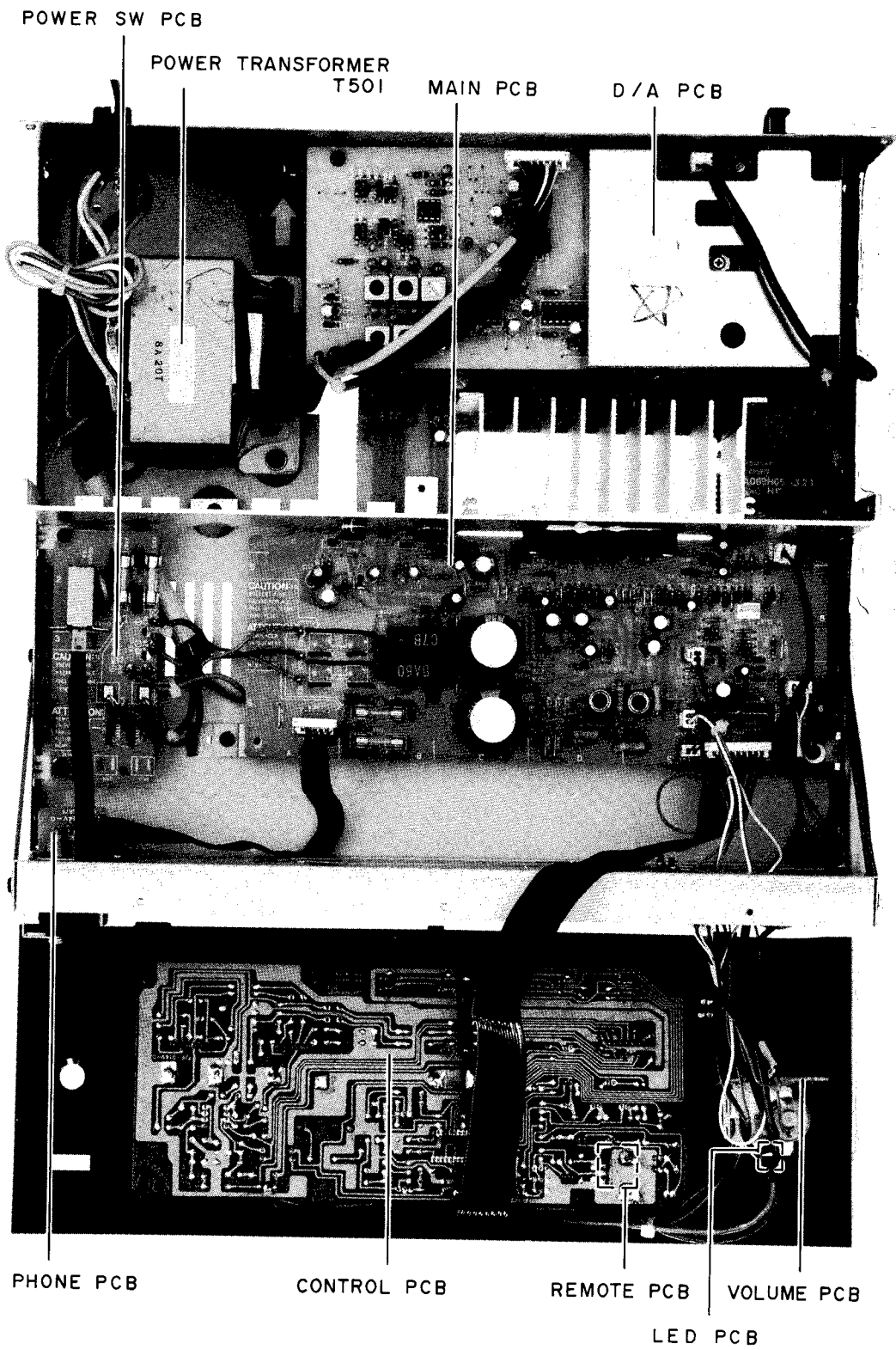


Fig 4-2

V. ADJUSTMENT (Model AM-M659 only)

5-1 ADJUSTMENT OF PLL CIRCUIT

NOTE: When adjusting step 1 (VCO CONTROL VOLTAGE), Remove the Shield cover before adjustment.

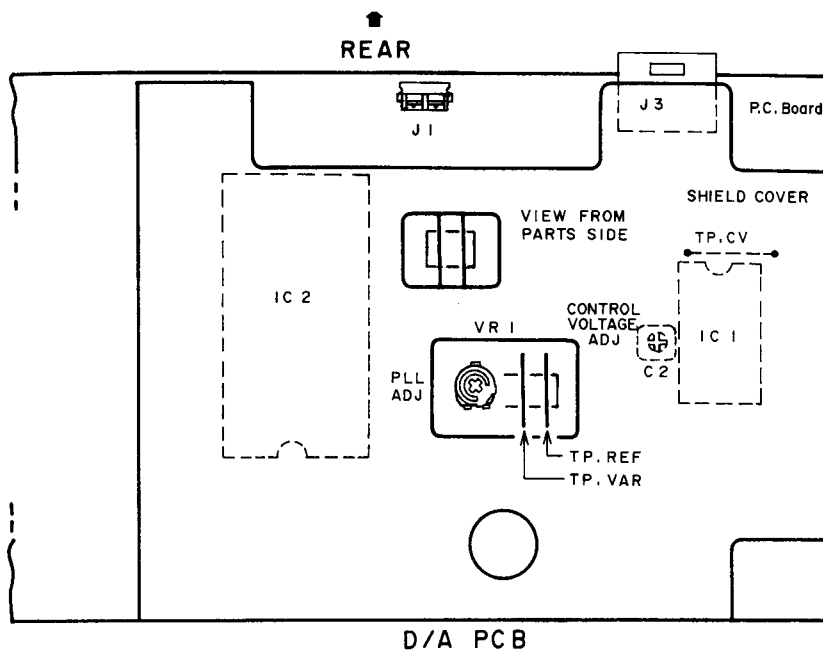


Fig 5-1 Test and adjustment Point

Step	Adjustment Item	Test Point	Adjustment Point	Result and Remarks
1	VCO CONTROL VOLTAGE	TP.CV	C2	<ul style="list-style-type: none"> Connect the CD player (at STOP mode) which has OPTICAL OUTPUT such as CD-M659 to CD OPTICAL INPUT. Connect an oscilloscope to TP.CV and adjust C2 (CONTROL VOLTAGE ADJ) so that the voltage on the oscilloscope is DC2.4 V to 2.5 V as in Fig 5-2 <p style="text-align: center;">Fig. 5-2</p>
2	PLL	TP.VAR	VR1	<ul style="list-style-type: none"> Connect the CD player (at STOP mode) which has OPTICAL OUTPUT such as CD-M659 to CD OPTICAL INPUT. Connect an oscilloscope to TP.VAR and adjust VR1 (PLL ADJ) so that the timing of waveform on the oscilloscope is 50ns as in Fig 5-3. <p style="text-align: center;">Fig. 5-3</p>

VI. PARTS LIST

ATTENTION

1. When placing an order for parts, be sure to list Part No., Model No. and the description of each part. Otherwise, the non-delivery of the part or the delivery of a wrong part may result.
2. Please make sure that Part No. is correct when ordering.
If not, a part different from the one you ordered may be delivered.
3. Since the parts shown in Parts List of Preliminary Service Manual may have been the subject of changes, please use this Parts List for all future reference.

HOW TO USE THIS PARTS LIST

1. This Parts List lists those parts which are considered necessary for repairs. Other common parts, such as resistors and capacitors, are listed in the "Common List for Service Parts" from which these parts should be selected and stocked.
2. The Recommended Spare Parts List shows those parts in the Parts List which are considered particularly important for service.
3. Parts not shown in the Parts List and "Common List for Service Parts" will not in principle be supplied.
4. How to read the Parts List.

a) Mechanism Block

b) PC Board

2. HEAD BASE BLOCK

REF. NO.	PART NO.	DESCRIPTION
2-1x	BH-T2023A320A	HEAD BASE BLOCK
2-2	HP-H2206A010A	HEAD R/P PR4-8FU C
2-3	ZS-477876	PAN20x03STL CMT
2-4	ZS-536488	BID20x08STL CMT
2-5	ZG-402895	SP CS ANGLE ADJUST

SP (Service Parts) Classification

A small "x" indicates that this part is not shown in the Photo or Illustration.

This number corresponds with the individual parts index number in that figure.

This number corresponds with the Figure Number.

6. MAIN PC BOARD

REF. NO.	PART NO.	DESCRIPTION
6-IC1	EI-324536	IC HD14049BP
6-IC2	EI-336801	IC MB8841-564M
6-C1A	EC-338399	C MMY V 223M 250AC [U,E,B,S]
6-C1B	EC-350949	C MMY V 223M 250DC [J]
6-C1C	EC-338397	C MMY V 223M 125AC [C,A]
6-X1	EI-318384	OSC X'TAL NC-18C

Symbols for primary destination

[A]: AAL(U.S.A.) [S]: SAA(Australia)
 [B]: BEAB(England) [U]: U/T(Universal Area)
 [C]: CSA(Canada) [V]: VDE(W. Germany)
 [E]: CEE(Europe) [Y]: Custom Version
 [J]: JPN(Japan)

SP (Service Parts) Classification

These reference symbols correspond with component symbols in the Schematic Diagrams.

The available PC Board Blocks are listed separately.

5. When Part No. is known, Parts Index at end of Parts List can be used to locate where that part is shown in Parts List by its Reference No. listed at right of Part No.

WARNING

△ (*) INDICATES SAFETY CRITICAL COMPONENTS. FOR CONTINUED SAFETY, REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURE'S RECOMMENDED PARTS.

AVERTISSEMENT

△ (*) IL INDIQUE LES COMPOSANTS CRITIQUES DE SÉCURITÉ. POUR MAINTENIR LE DEGRÉ DE SÉCURITÉ DE L'APPAREIL, NE REMPLACER QUE DES PIÈCES RECOMMANDÉES PAR LE FABRICANT.

1. RECOMMENDED SPARE PARTS

Ref. No.	Part No.	Description
1	*BT-725449T	TRANS POW AM-M459(B,S) [B,S] [T501]
2	*BT-725450T	TRANS POW AM-M459(E,V) [E,V] [T501]
3	*BT-725451T	TRANS POW AM-M459(U) [U] [T501]
4	*BT-725472T	TRANS POW AM-M659(B,S) [B,S] [T501]
5	*BT-725473T	TRANS POW AM-M659(E,V) [E,V] [T501]
6	*BT-725474T	TRANS POW AM-M659(U) [U] [T501]
7	ED-725646T	D LED GRN [CD]
8	ED-725448T	D LED RED [MUTING]
9	ED-725460T	D LED SE-2422
10	ED-360409	D PHOTO PN323B
11	*ED-200213	D SILICON DBA40C-K15 200/2.6A [AM-M459]
12	*ED-350748	D SILICON DBA60C-K15 200/6.0A [AM-M659]
13	*ED-357754	D SILICON DS135D 200/1.0A
14	ED-301911	D SILICON H DS448
15	ED-344280	D SILICON H GMA-01-FY2 F05
16	ED-318435	D ZENER H RD13E B2 [AM-M459]
17	*ED-706156	D ZENER H RD16E B3
18	*ED-706116	D ZENER H RD5.1E B2
19	*ED-200967	D ZENER H RD5.6E B2
20	*ED-741184	D ZENER H RD6.8E B3
21	*EF-355226	FUSE BET T 250V 1.00A [B] [AM-M459]
22	*EF-359007	FUSE BET T 250V 1.25A [B] [AM-M659]
23	*EF-364518	FUSE BET T 250V 2.50A [B] [AM-M459]
24	*EF-359225	FUSE BET T 250V 3.15A [B] [AM-M659]
25	*EF-359086	FUSE BET T 250V 4.00A [B] [AM-M659]
26	*EF-623125	FUSE SEMKO T [E,V,S] [AM-M459]
27	*EF-623103	FUSE SEMKO T 250V 1.00A [E,V,S] [AM-M459]
28	*EF-602550	FUSE SEMKO T 250V 1.25A [E,V,S] [AM-M659]
29	*EF-691007	FUSE SEMKO T 250V 3.15A [E,V,S] [AM-M659]
30	*EF-690996	FUSE SEMKO T 250V 4.00A [E,V,S] [AM-M659]
31	*EF-308847	FUSE TSC 125V 1.60A [U] [AM-M459]
32	*EF-306954	FUSE TSC 125V 2.00A [U] [AM-M459]
33	EI-367572	IC BA15218
34	EI-353421	IC BA6229
35	EI-368253	IC CXD1076
36	EI-376354	IC LC6543C-3471 A2054
37	EI-368240	IC LC7822
38	EI-708084	IC NJM4558DX
39	EI-368612	IC PCM56P
40	EI-368254	IC SN74LS624
41	*EI-358554	IC STK4152II [AM-M459]
42	*EI-366695	IC STK4172II [AM-M659]
43	EI-332259	IC TC4052BP
44	EI-360040	IC TC74HCU04P
45	EI-367271	IC UPC1490HA
46	EI-725455T	OSC X'TAL 4MHZ
47	EJ-368258	SOCKET OPTICAL TORX172 [CD OPTICAL]
48	*EO-338409	COIL LF FKOB160MH02 250UH [V]
49	*ES-725467T	SW PUSH

Ref. No.	Part No.	Description
50	*ES-349070	[POWER SW] SW SELECTOR YKS11-0002 02-4 [U] [SW502]
51	ES-725456T	SW TACT [CD]
52	ET-369248	TR DTA114YS
53	ET-360399	TR DTC114TS
54	ET-354365	TR DTC114YS
55	ET-357162	TR FET 2SJ74 GR,BL,V
56	ET-375780	TR FET 2SK381 E F05
57	ET-308472	TR 2SA1115 E,F,G F05
58	*ET-353899	TR 2SA1317 S,T,U
59	*ET-366365	TR 2SB1185 E,F [AM-M459]
60	*ET-373210	TR 2SB1187 E,F [AM-M659]
61	*ET-372112	TR 2SC2060 R F05
62	ET-336869	TR 2SC2999 C,D
63	*ET-360067	TR 2SC3330 T,U F05
64	ET-351872	TR 2SC3383 R,S
65	ET-349592	TR 2SC3400 F05
66	*ET-366677	TR 2SD1761 E,F [AM-M659]
67	*ET-366581	TR 2SD1762 E,F [AM-M459]
68	EV-725592T	VR ROTARY [BASS]
69	EV-725471T	VR ROTARY [BALANCE]
70	EV-383734J	VR SPL RK16Y12MA K104X2 [VOLUME]
71	*EZ-358816	BATTERY LITHIUM BR2032-1HF

2. P.C BOARD BLOCK

Ref. No.	Part No.	Description
1A	BA-725649T	PC MAIN BLK AM-M459(U) [U]
1B	BA-725645T	PC MAIN BLK AM-M459(E,S) [E,S]
1C	BA-725648T	PC MAIN BLK AM-M459(V) [V]
1D	BA-725647T	PC MAIN BLK AM-M459(B) [B]
1E	BA-725595T	PC MAIN BLK AM-M659(U) [U]
1F	BA-725591T	PC MAIN BLK AM-M659(E,S) [E,S]
1G	BA-725594T	PC MAIN BLK AM-M659(V) [V]
1H	BA-725593T	PC MAIN BLK AM-M659(B) [B]
2A	BA-725488T	PC CONTROL BLK AM-M459
2B	BA-725600T	PC CONTROL BLK AM-M659
3	BA-725596T	PC D/A BLK AM-M659 [AM-M659]

3. MAIN P.C BOARD

Ref. No.	Part No.	Description
BD101A	*ED-200213	D SILICON DBA40C-K15 200/2.6A [AM-M459]
BD101B	*ED-350748	D SILICON DBA60C-K15 200/6.0A [AM-M659]
C126A	*EC-358538	C EC V CUT 472M 45.0DC [AM-M459]

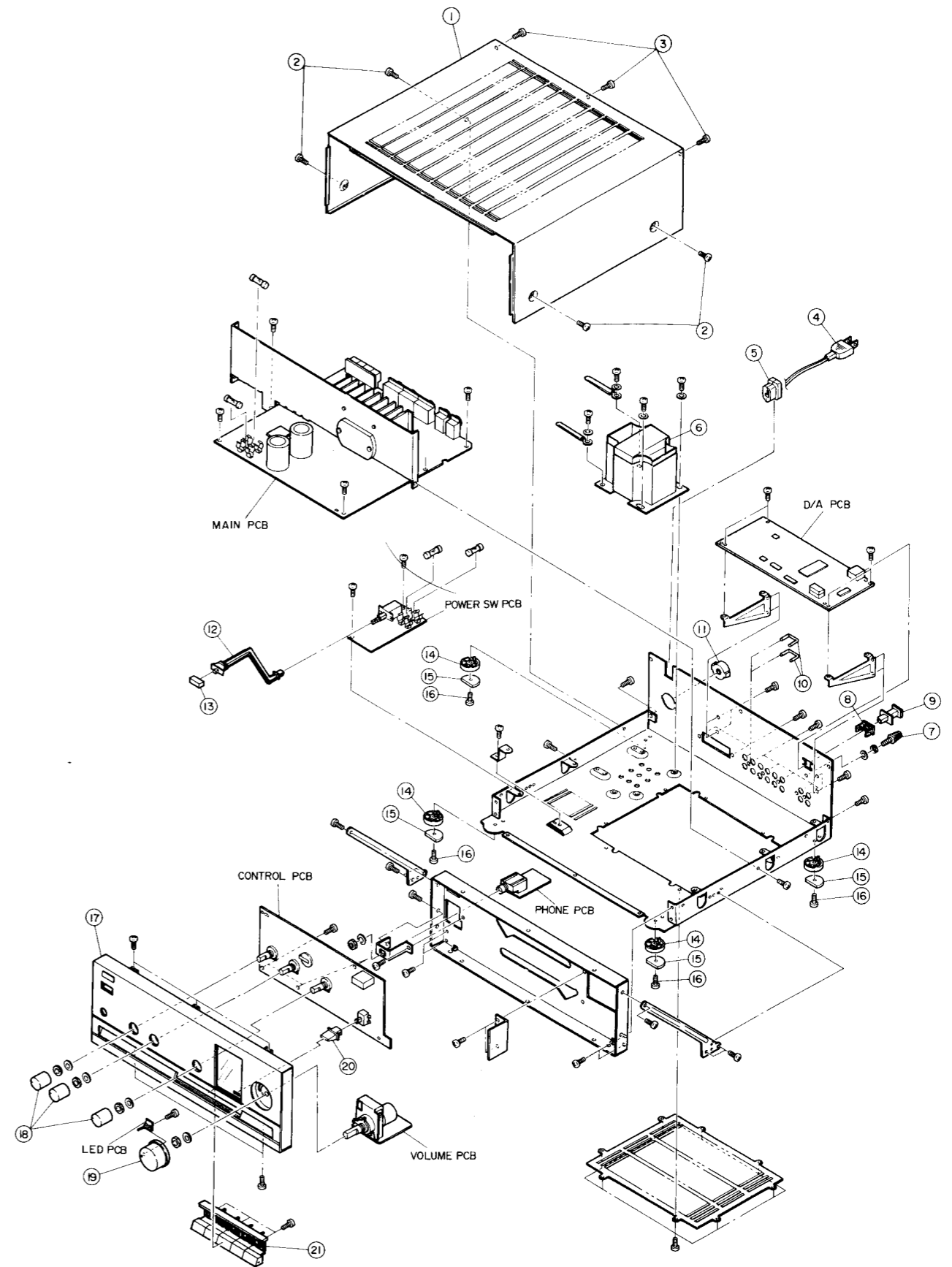
Ref. No.	Part No.	Description
C126B	*EC-361665	C EC V CUT 472M 50.0DC [AM-M659]
C127A	*EC-358538	C EC V CUT 472M 45.0DC [AM-M459]
C127B	*EC-361665	C EC V CUT 472M 50.0DC [AM-M659]
C128	*EC-326583	C MMY V CUT CF921 473K 400DC
D101	*ED-200967	D ZENER H RD5.6E B2
D102	ED-301911	D SILICON H DS448
D103	ED-301911	D SILICON H DS448
D104	ED-301911	D SILICON H DS448
D105	ED-301911	D SILICON H DS448
D106	ED-301911	D SILICON H DS448
D107	*ED-706156	D ZENER H RD16E B3
D108	*ED-706156	D ZENER H RD16E B3
D109	ED-318435	D ZENER H RD13E B2 [AM-M459]
D110	*ED-357754	D SILICON DS135D 200/1.0A
D111	ED-301911	D SILICON H DS448
D112	ED-301911	D SILICON H DS448
D113	ED-301911	D SILICON H DS448 [AM-M659]
D114	*ED-200967	D ZENER H RD5.6E B2 [AM-M659]
D202	ED-301911	D SILICON H DS448
D203	ED-301911	D SILICON H DS448
D211	ED-301911	D SILICON H DS448
D212	ED-301911	D SILICON H DS448
IC101	EI-708084	IC NJM4558DX
IC102	EI-368240	IC LC7822
IC103	EI-353421	IC BA6229
IC104A	*EI-358554	IC STK4152II [AM-M459]
IC104B	*EI-366695	IC STK4172II [AM-M659]
J101	EJ-725461T	PIN J 2P [PHONO]
J102A	EJ-720704	PIN J. 4P [TUNER/CD][AM-M459]
J102B	EJ-725461T	PIN J 2P [TUNER][AM-M659]
J103	EJ-720704	PIN J. 4P [TAPE]
J104	EJ-720704	PIN J. 4P [DAT]
J105	EJ-720704	PIN J. 4P [PROCESSOR]
J106	EJ-725677T	JACK DC SUPPLY [DC OUT][AM-M459]
L101	*EO-337880	COIL FIX 2 202AK-018 2R2K
L102	EO-342936	COIL BALUM [V]
L201	*EO-337880	COIL FIX 2 202AK-018 2R2K
R145	ER-341940	R OMF H S15 FS 1W 100J
R146	ER-341940	R OMF H S15 FS 1W 100J
R151	*ER-724729T	R FUSE 1W 100
R152	*ER-724729T	R FUSE 1W 100
R158	ER-313517	R OMF H S20 FS 2W 222J
R245	ER-341940	R OMF H S15 FS 1W 100J
R246	ER-341940	R OMF H S15 FS 1W 100J
TM101	EJ-725590T	TERMINAL LEVER SP [SPEAKER TERMINAL]
TR101	ET-351872	TR 2SC3383 R,S
TR102	ET-351872	TR 2SC3383 R,S
TR103	ET-369248	TR DTA114YS
TR104	ET-360399	TR DTC114TS
TR105	ET-375780	TR FET 2SK381 E F05
TR106	ET-375780	TR FET 2SK381 E F05
TR107A	*ET-366581	TR 2SD1762 E,F [AM-M459]
TR107B	*ET-366677	TR 2SD1761 E,F [AM-M659]
TR108A	*ET-366365	TR 2SB1185 E,F [AM-M459]
TR108B	*ET-373210	TR 2SB1187 E,F [AM-M659]
TR109	*ET-360067	TR 2SC3330 T,U F05
TR110	*ET-353899	TR 2SA1317 S,T,U
TR111	ET-351872	TR 2SC3383 R,S [AM-M459]

Ref. No.	Part No.	Description
TR112	ET-369248	TR DTA114YS
TR113	ET-369248	TR DTA114YS
TR114	ET-366581	TR 2SD1762 E,F [AM-M659]
TR115	ET-375780	TR FET 2SK381 E F05
TR116	ET-375780	TR FET 2SK381 E F05
TR117	ET-369248	TR DTA114YS
TR205	ET-375780	TR FET 2SK381 E F05
TR206	ET-375780	TR FET 2SK381 E F05
TR215	ET-375780	TR FET 2SK381 E F05
TR216	ET-375780	TR FET 2SK381 E F05
F101A	*EF-306954	FUSE TSC 125V 2.00A [U][AM-M459]
F101B	*EF-623125	FUSE SEMKO T [E.V.S][AM-M459]
F101C	*EF-364518	FUSE BET T 250V 2.50A [B][AM-M459]
F101D	*EF-306954	FUSE TSC 125V 2.00A [U][AM-M659]
F101E	*EF-691007	FUSE SEMKO T 250V 3.15A [E.V.S][AM-M659]
F101F	*EF-359225	FUSE BET T 250V 3.15A [B][AM-M659]
F103A	*EF-691007	FUSE SEMKO T 250V 3.15A [E.V.S][AM-M459]
F103B	*EF-359225	FUSE BET T 250V 3.15A [B][AM-M459]
F103C	*EF-690996	FUSE SEMKO T 250V 4.00A [E.V.S][AM-M659]
F103D	*EF-359086	FUSE BET T 250V 4.00A [B][AM-M659]
F104A	*EF-691007	FUSE SEMKO T 250V 3.15A [E.V.S][AM-M459]
F104B	*EF-359225	FUSE BET T 250V 3.15A [B][AM-M459]
F104C	*EF-690996	FUSE SEMKO T 250V 4.00A [E.V.S][AM-M659]
F104D	*EF-359086	FUSE BET T 250V 4.00A [B][AM-M659]
F201A	*EF-306954	FUSE TSC 125V 2.00A [U][AM-M459]
F201B	*EF-623125	FUSE SEMKO T [E.V.S][AM-M459]
F201C	*EF-364518	FUSE BET T 250V 2.50A [B][AM-M459]
F201D	*EF-306954	FUSE TSC 125V 2.00A [U][AM-M659]
F201E	*EF-691007	FUSE SEMKO T 250V 3.15A [E.V.S][AM-M659]
F201F	*EF-359225	FUSE BET T 250V 3.15A [B][AM-M659]

4. CONTROL P.C BOARD

Ref. No.	Part No.	Description
BT101	*EZ-358816	BATTERY LITHIUM BR2032-1HF
D301	*ED-706116	D ZENER H RD5.1E B2
D302	ED-301911	D SILICON H DS448
D303	ED-301911	D SILICON H DS448
D304	ED-301911	D SILICON H DS448
D305	ED-301911	D SILICON H DS448
D306	*ED-741184	D ZENER H RD6.8E B3
D307	ED-725646T	D LED GRN [CD]
D308	ED-725646T	D LED GRN [PHONO]
D309	ED-725646T	D LED GRN [TUNER]
D310	ED-725646T	D LED GRN [DAT/VCR]
D311	ED-725646T	D LED GRN [TAPE]
D312	ED-725646T	D LED GRN [SOURCE DIRECT]

FINAL ASSEMBLY BLOCK



PARTS LIST

Ref. No.	Part No.	Description
D313	ED-725448T	D LED RED [MUTING]
D314	ED-725646T	D LED GRN [AM-M659]
D315	ED-725646T	D LED GRN [AM-M659]
IC302	EI-376354	IC LC6543C-3471 A2054
IC303	EI-708084	IC NJM4558DX
SW301	ES-725456T	SW TACT [CD]
SW302	ES-725456T	SW TACT [PHONO]
SW303	ES-725456T	SW TACT [TUNER]
SW304	ES-725456T	SW TACT [DAT/VCR]
SW305	ES-725456T	SW TACT [TAPE]
SW306	ES-725457T	SW PUSH [SOURCE DIRECT]
TR301	ET-360067	TR 2SC3330 T,U F05
TR302	ET-360067	TR 2SC3330 T,U F05
TR303	*ET-372112	TR 2SC2060 R F05
TR304	ET-360399	TR DTC114TS
TR305	ET-354365	TR DTC114YS
TR306	ET-360399	TR DTC114TS
TR307	ET-360067	TR 2SC3330 T,U F05 [AM-M659]
TR308	ET-354365	TR DTC114YS [AM-M659]
TR309	ET-360067	TR 2SC3330 T,U F05
VR301	EV-725592T	VR ROTARY [BASS]
VR302	EV-725592T	VR ROTARY [TREBLE]
VR303	EV-725471T	VR ROTARY [BALANCE]
X101	EI-725455T	OSC X'TAL 4MHZ

5. REMOTE P.C BOARD

Ref. No.	Part No.	Description
IC301	EI-367271	IC UPC1490HA
PD301	ED-360409	D PHOTO PN323B

6. POWER SW P.C BOARD

Ref. No.	Part No.	Description
C501A	*EC-320548	C CE V F 103Z 250AC [U]
C501B	*EC-338496	C CE V FZ 472P 400AC [E,V,B,S]
F501A	*EF-308847	FUSE TSC 125V 1.60A [U] [AM-M459]
F501B	*EF-623103	FUSE SEMKO T 250V 1.00A [E,V,S] [AM-M459]
F501C	*EF-355226	FUSE BET T 250V 1.00A [B] [AM-M459]
F501D	*EF-306954	FUSE TSC 125V 2.00A [U] [AM-M659]
F501E	*EF-602550	FUSE SEMKO T 250V 1.25A [E,V,S] [AM-M659]
F501F	*EF-359007	FUSE BET T 250V 1.25A [B] [AM-M659]
F502A	*EF-308847	FUSE TSC 125V 1.60A [U] [AM-M459]
F502B	*EF-306954	FUSE TSC 125V 2.00A [U] [AM-M659]

Ref. No.	Part No.	Description
L501	*EO-338409	COIL LF FKOB160MH02 250UH [V]
SW501	*ES-725467T	SW PUSH [POWER SW]

7. PHONE P.C BOARD

Ref. No.	Part No.	Description
J107	EJ-725469T	PHONE J [PHONES]

8. VOLUME P.C BOARD

Ref. No.	Part No.	Description
VR101	EV-383734J	VR SPL RK16Y12MA K104X2 [VOLUME]

9. LED P.C BOARD

Ref. No.	Part No.	Description
D501	ED-725460T	D LED SE-2422

10. D/A P.C BOARD (AM-M659 ONLY)

Ref. No.	Part No.	Description
D1	ED-344280	D SILICON H GMA-01-FY2 F05
D2	ED-344280	D SILICON H GMA-01-FY2 F05
D3	ED-344280	D SILICON H GMA-01-FY2 F05
D4	ED-301911	D SILICON H DS448
D5	ED-344280	D SILICON H GMA-01-FY2 F05
D6	ED-344280	D SILICON H GMA-01-FY2 F05
IC1	EI-368254	IC SN74LS624
IC2	EI-368253	IC CXD1076
IC3	EI-360040	IC TC74HCU04P
IC4	EI-368612	IC PCM56P
IC5	EI-332259	IC TC4052BP
IC6	EI-367572	IC BA15218
IC7	EI-367572	IC BA15218
J3	EJ-368258	SOCKET OPTICAL TORX172 [CD OPTICAL]
L1	EO-345999	COIL FIX 1 EL0606RA T05 181J
L2	EO-345909	COIL FIX 1 LAL03KH 4R7K
TR1	ET-354365	TR DTC114YS
TR2	ET-336869	TR 2SC2999 C,D
TR3	ET-336869	TR 2SC2999 C,D
TR4	ET-336869	TR 2SC2999 C,D
TR5	ET-357162	TR FET 2SJ74 GR,BL,V
TR6	ET-349592	TR 2SC3400 F05
TR7	ET-308472	TR 2SA1115 E,F,G F05
TR8	ET-349592	TR 2SC3400 F05
TR9	ET-351872	TR 2SC3383 R,S
TR10	ET-351872	TR 2SC3383 R,S
TR11	ET-349592	TR 2SC3400 F05
TR12	ET-308472	TR 2SA1115 E,F,G F05
VL1	EO-362920	COIL VARI 1 25-5430-13 WHITE
VL2	EO-362921	COIL VARI 1 25-5431-13 RED
VL3	EO-362922	COIL VARI 1 25-5432-13 BLACK
VR1	EV-337992	R S-FIX H RVF8P01 0.10W 502

11. FINAL ASSEMBLY BLOCK

Ref. No.	Part No.	Description
1	SP-725658J	COVER UPPER-B (S,P)
2	ZS-322580	ST BID40X08STL BNI
3	ZS-305827	ST BID30X06STL BNI
4A	*EW-374894	AC CORD 2C VM-0129A,VFF U/T [U]
4B	*EW-347897	AC CORD 2 CORES VM0364,LCFL EV [E,V]
4C	*EW-346249	AC CORD 2 CORES LCFL2X0.75 B [B]
4D	*EW-347898	AC CORD 2 CORES VM-0436,LCFL S [S]
5	*EZ-371605	BUSH CORD 2271
6A	*BT-725451T	TRANS POW AM-M459(U) [U] [T501]
6B	*BT-725450T	TRANS POW AM-M459(E,V) [E,V] [T501]
6C	*BT-725449T	TRANS POW AM-M459(B,S) [B,S] [T501]
6D	*BT-725474T	TRANS POW AM-M659(U) [U] [T501]
6E	*BT-725473T	TRANS POW AM-M659(E,V) [E,V] [T501]
6F	*BT-725472T	TRANS POW AM-M659(B,S) [B,S] [T501]
7	EJ-722929T	TERMINAL EARTH [AM-M659]
8	SE-375348	ESCUTCHEON [AM-M659]
9	SZ-725384J	CAP OPTICAL PROTECTOR [AM-M659]
10	EJ-720690	PLUG SHORT PIN
11	*ES-349070	SW SELECTOR YKS11-0002 02-4 [U] [SW502]
12	MZ-725489T	JOINT POWER
13	SK-725482T	KNOB POWER-B
14	SA-725458T	FOOT (ABS)
15	SA-725452T	CUSHION FOOT (GUM)
16	ZS-305827	ST BID30X06STL BNI
17A	BD-725651T	PANEL FRONT BLK AM-M459-B
17B	BD-725597T	PANEL FRONT BLK AM-M659-B
18	SK-725598T	KNOB TONE-B
19	SK-725599T	KNOB VOL-B
20	SK-725476T	KNOB PUSH-B
21	SK-725650T	KNOB SELECTOR-B

NOTE:

Parts will not be supplied if they are not listed in the parts list, even if they appear on the assembling illustrations with reference No.

12. ACCESSARY

Ref. No.	Part No.	Description
1A	AX-725447T	REMOCON UNIT RC-S459 [AM-M459]
1B	AX-725470T	REMOCON UNIT RC-S659 [AM-M659]

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ABBREVIATIONS (AMPLIFIER)

ABBREVIATIONS	EXPLANATION
A	Analog
AC	Alternating Current
AMP	AMPlifier
CD	Compact Disc
COM	COMMon
D	Digital
D/A	Digital to Analog
DAC	Digital to Analog Converter
DAT	Digital Audio Tape recorder
DC	Direct Current
EQ	EQualizer
GND	GrouND
L	Left
L.P.F, LPF	Low Pass Filter
LED	Light Emitting Diode
MC	Moving Coil
MM	Moving Magnet
PCB	Printed Circuit Board
PLL	Phase Locked Loop
R	Right
REC	RECOrd
REG	REGulator
SW	SWitch
TR	TRansistor
V.AMP	Voltage AMPlifier
VCO	Voltage Control Oscillator
VCR	Video Cassette Recorder
V. DISC	Video DISC
VR	Variable Resistance
VTR	Video Tape Recorder

AKAI ELECTRIC CO., LTD.

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MODEL **AM-M459**

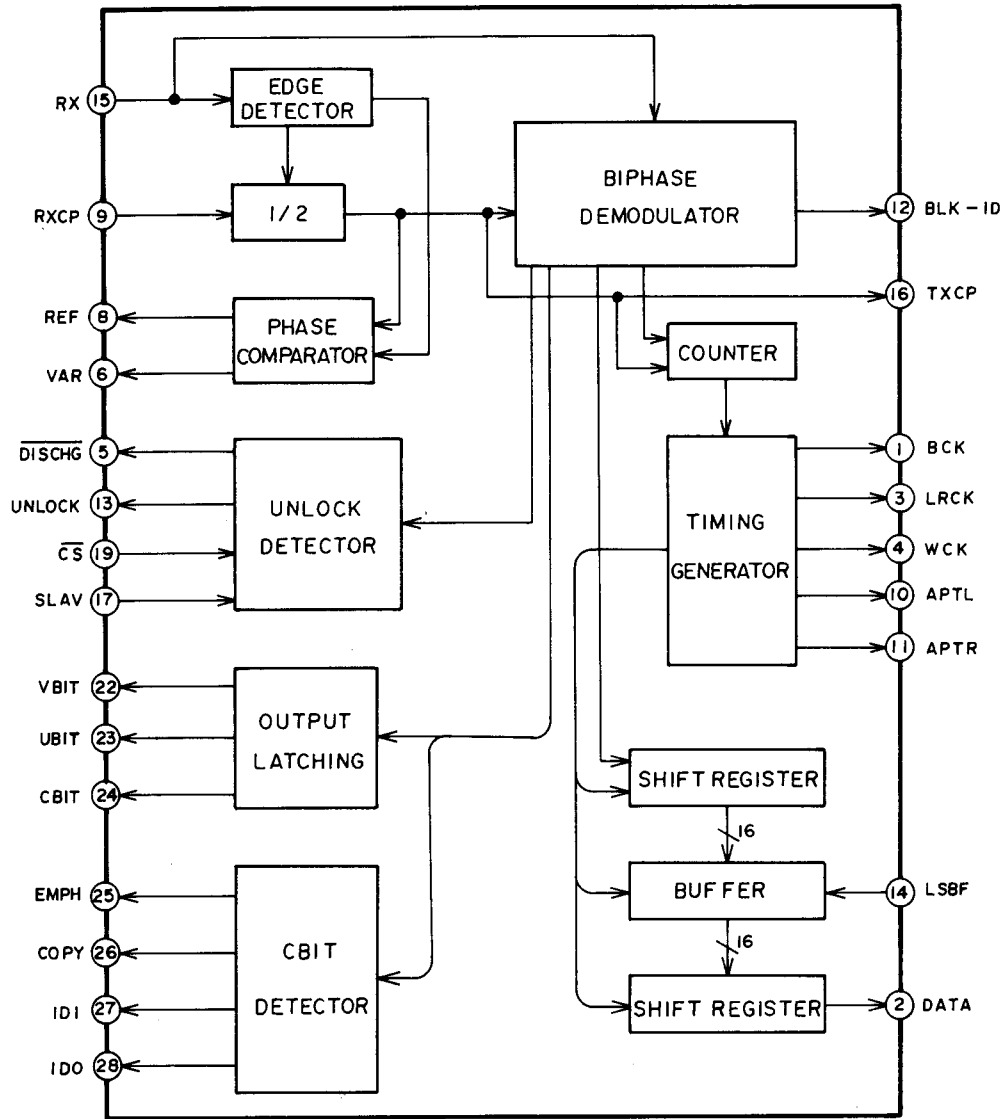
MODEL **AM-M659**

SCHEMATIC DIAGRAM AND PC BOARDS

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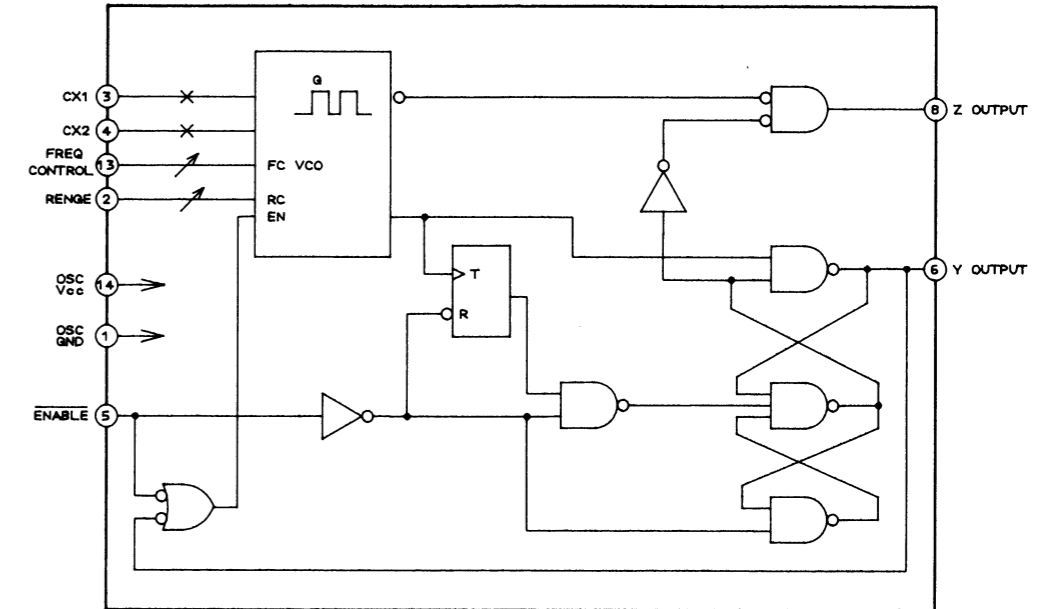
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CXD1076 (Digital I/O Data Receiver & Demodulator)

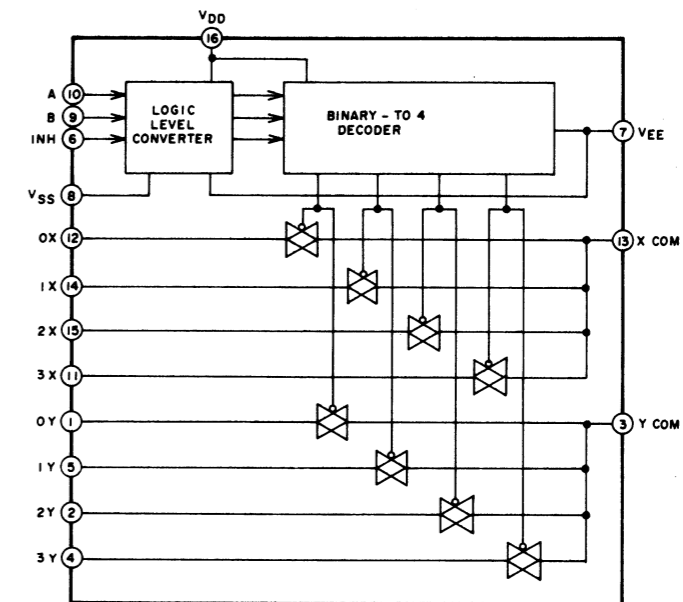


Pin No.	I/O	Name	Explanation of terminal
1	O	BCK	Shift clock output of digital audio data.
2	O	DATA	Serial output of demodulated digital audio data.
3	O	LRCK	Descriminate pulse output of L or R channels.
4	O	WCK	Word clock output.
5	O	$\overline{\text{DISCHG}}$	Lock trigger pulse output when external PLL became unlock condition.
6	O	VAR	Low-Active pulse output to setting the sink current of external PLL.
7	—	V _{SS}	GND
8	O	REF	High-Active pulse output to setting the source current of external PLL.
9	I	RXCP	Clock input which abstracted by PLL. (256fs)
10	O	APTL	Pulse output for aperture correction.
11	O	APTR	Pulse output for aperture correction.
12	O	BLK-ID	Block detection pulse output for synchronizing the C-bit block.
13	O	UNLOCK	Lock detection output of PLL. (L = LOCK)
14	I	LSBF	Audio serial data first select. "H": LSB first. "L": MSB first.
15	I	RX	Digital I/O data input which modulated by digital audio interface format.
16	O	TXCP	Clock (128 fs) output which using the master clock of external instruments.
17	I	SLAV	Control signal ("L" = Normal mode, "H" = Hi-impedance mode)
18	I	TEST	Control signal input of Normal or test modes. ("H" = TEST mode, "L" = NORMAL mode.)
19	I	$\overline{\text{CS}}$	Clock input for mark the $\overline{\text{DISCHG}}$ pulse for PLL.
20	I	$\overline{\text{RCH}}$	Control input for the polarity set of LRCK. ("H" = L ch → High, R ch → Low, "L" = L ch → Low, R ch → High)
21	—	V _{DD}	Power supply
22	O	VBIT	Validity flag (V-bit) output.
23	O	UBIT	User definable data (U-bit) output.
24	O	CBIT	Channel status data (C-bit) output.
25	O	EMPH	Emphasis information output. ("H" = Emphasis ON)
26	O	COPY	Copy inhibit information output. ("L" = Inhibit)
27	O	ID1	ID1 output
28	O	ID2	ID2 output

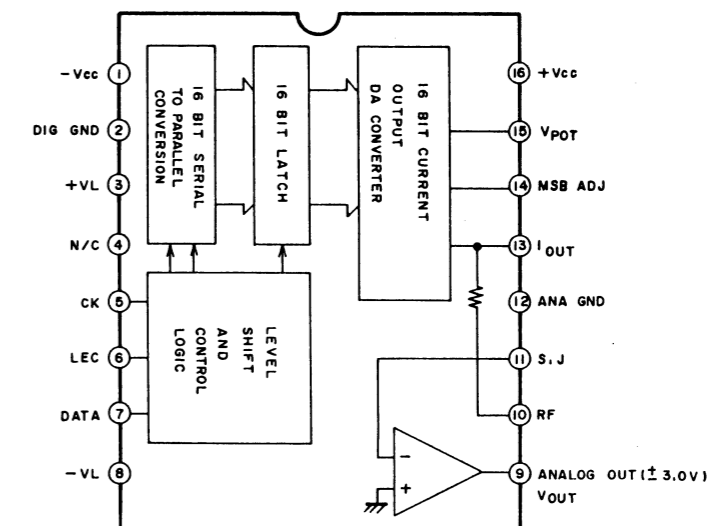
SN74LS624 (VCO)

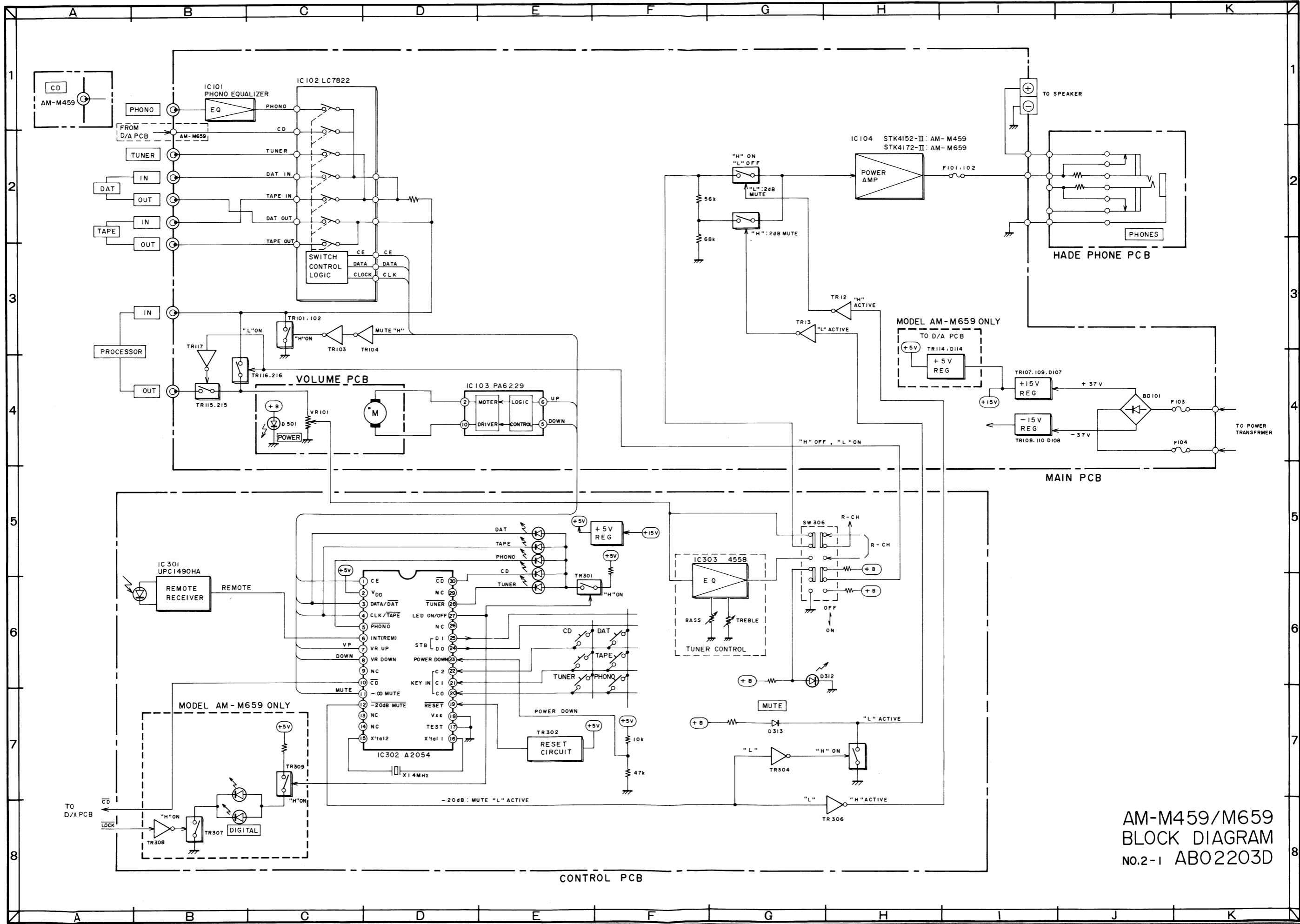


TC4052 (Differential 4 channel Multiplexer/Demultiplexer)

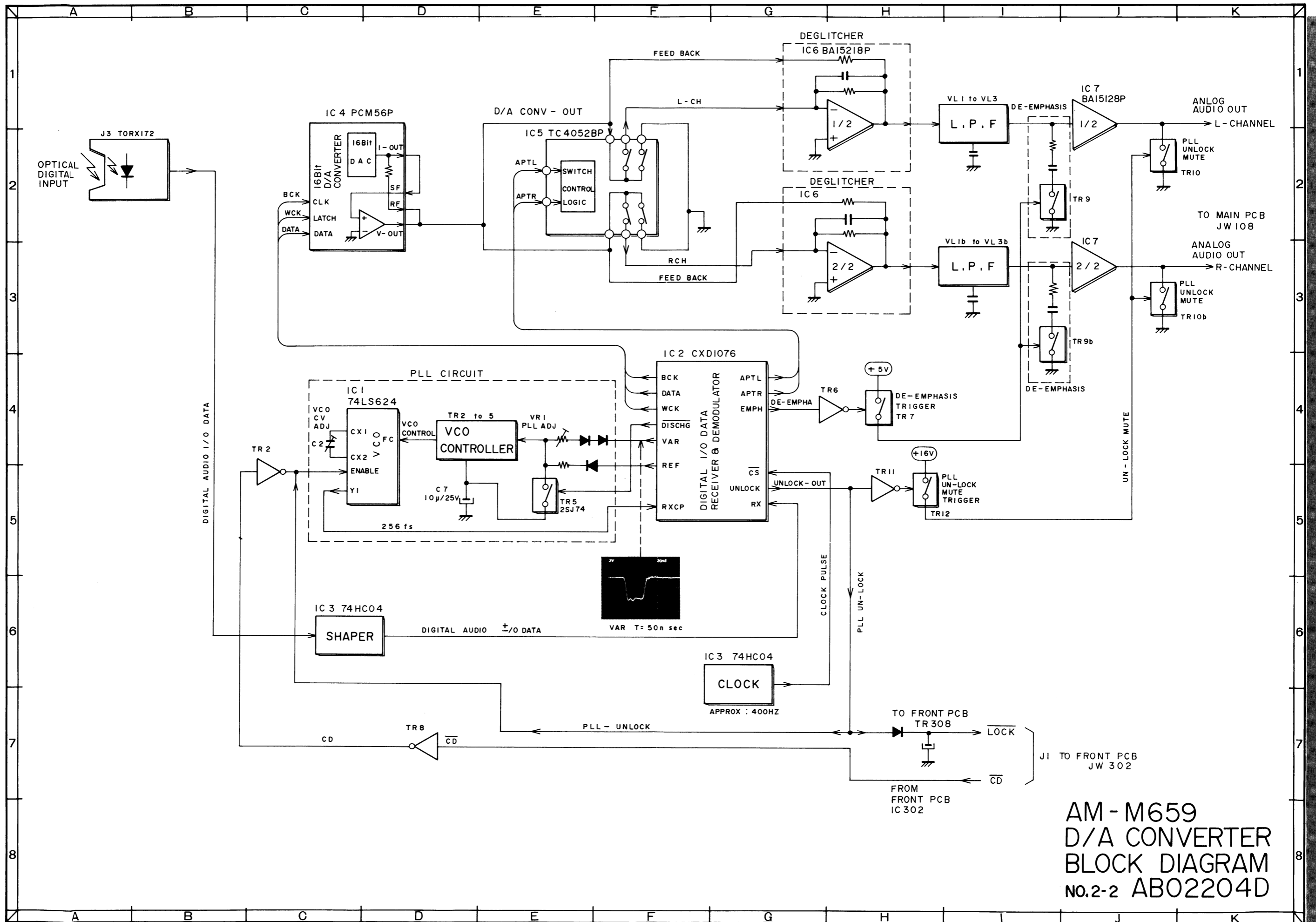


PCM56P (16 Bit D/A Converter)

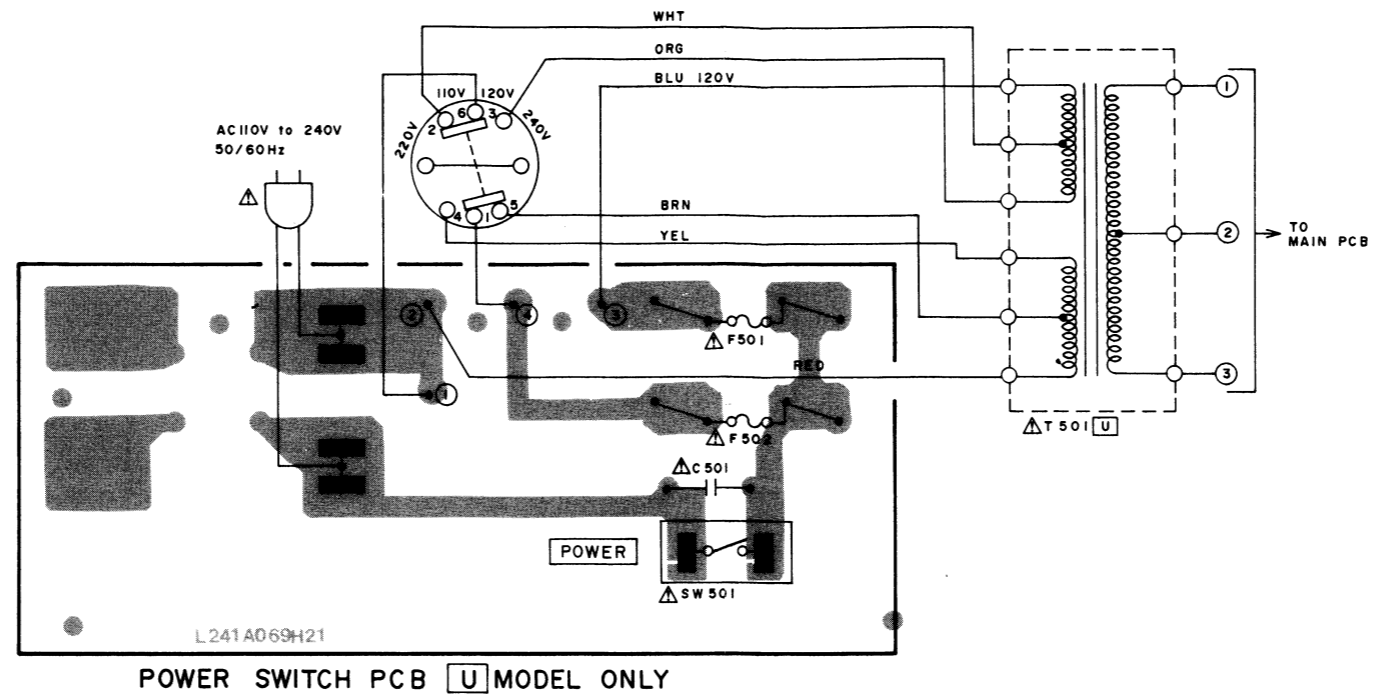




AM-M459/M659
BLOCK DIAGRAM
No.2-1 AB02203D

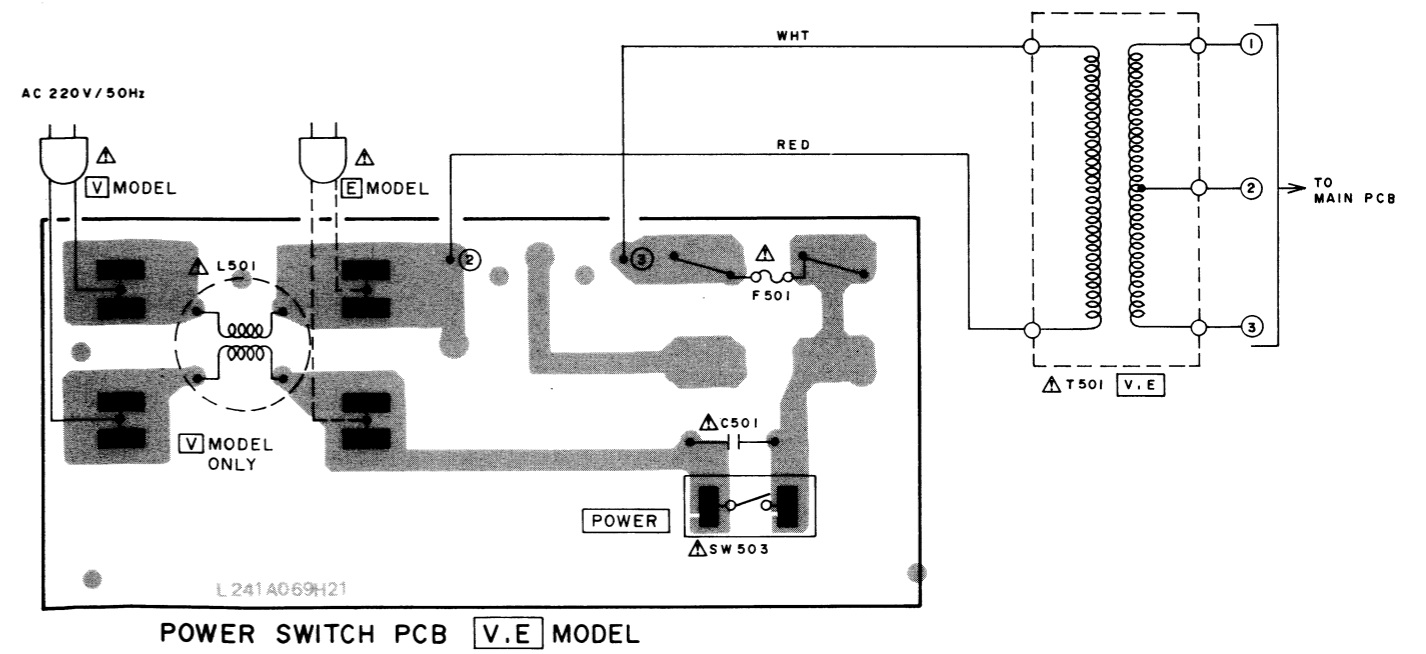
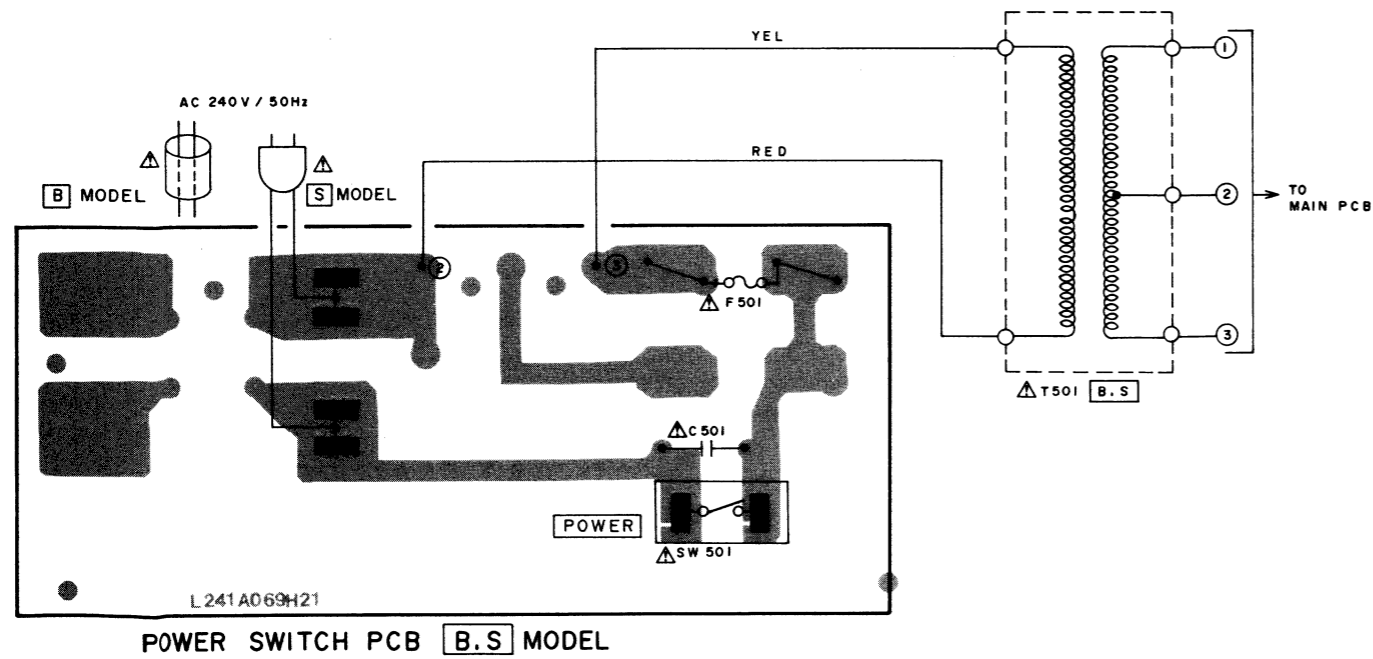


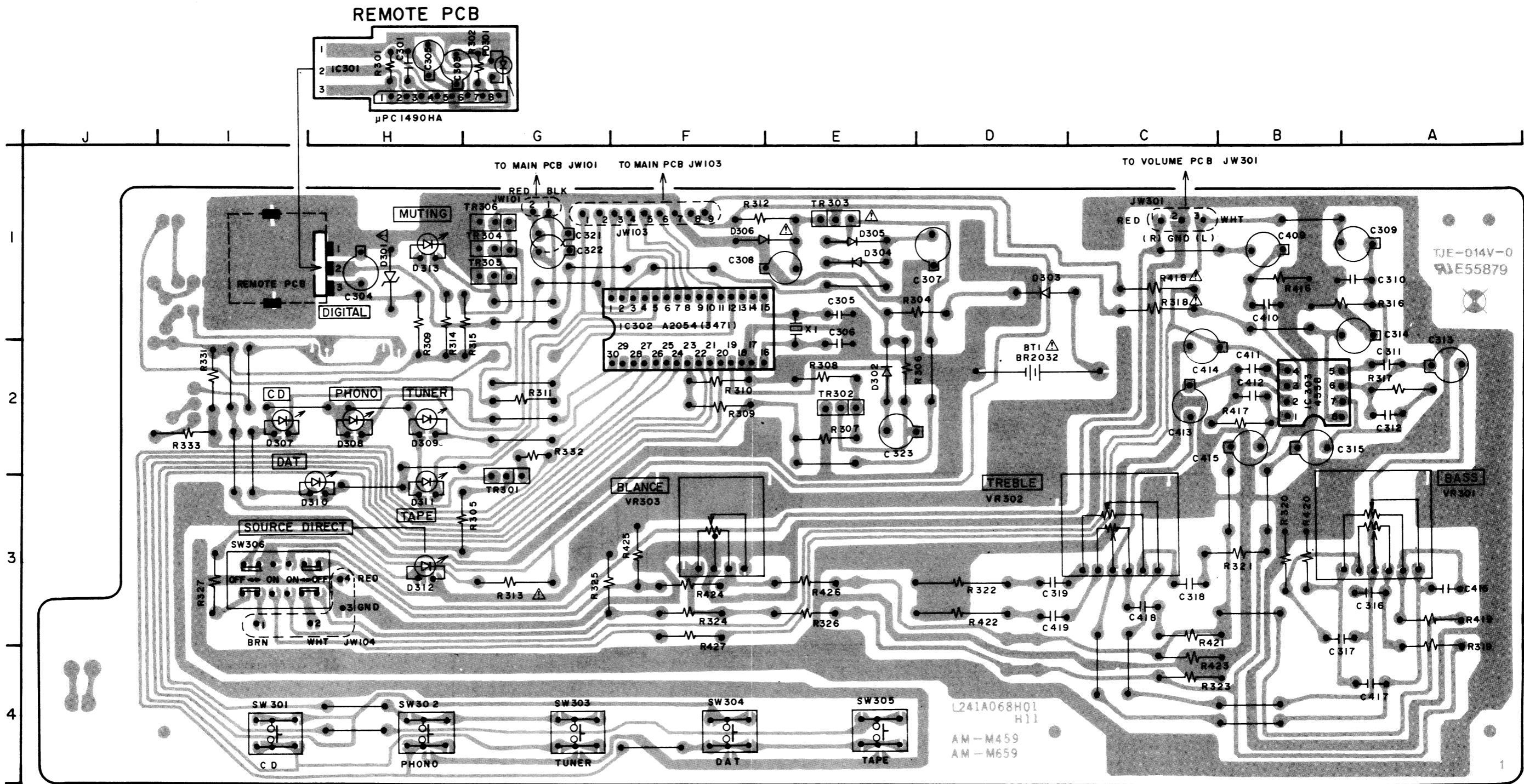
AM - M659
D/A CONVERTER
BLOCK DIAGRAM
No.2-2 ABO2204D



WARNING: Δ INDICATES SAFETY CRITICAL COMPONENTS. FOR CONTINUED SAFETY, REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS.

AVERTISSEMENT: Δ IL INDIQUE LES COMPOSANTS CRITIQUES DE SÉCURITÉ. POUR MAINTENIR LE DEGRÉ DE SÉCURITÉ DE L'APPAREIL, NE REMPLACER QUE DES PIÈCES RECOMMANDÉES PAR LE FABRICANT.

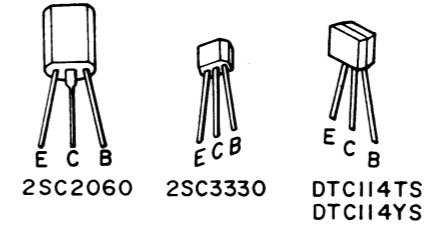




CONTROL PCB

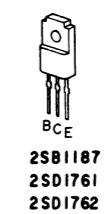
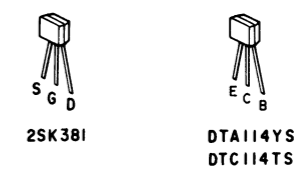
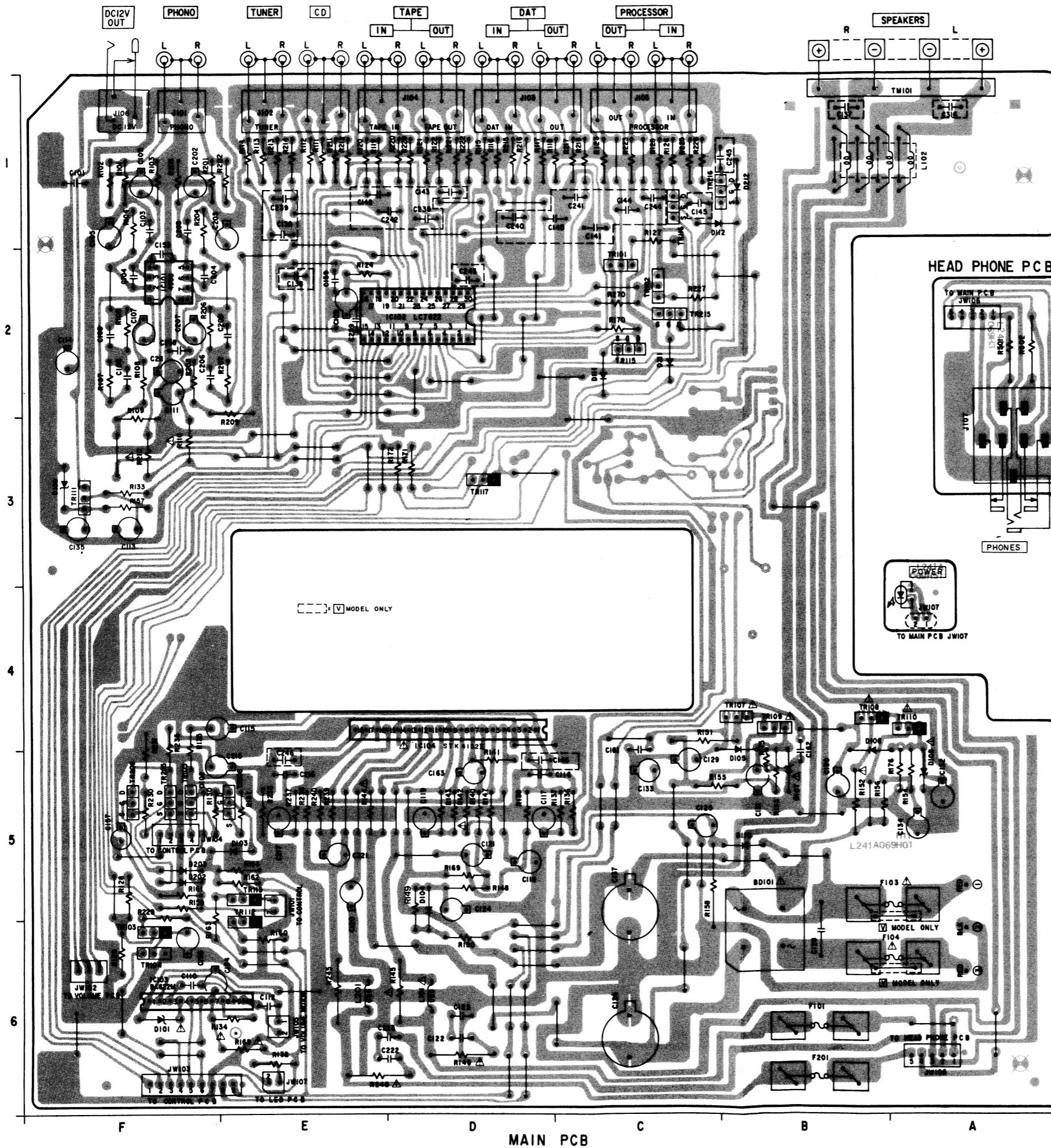
LOCATION OF COMPONENTS

- | | |
|--------------------|------------------|
| IC'S | CONNECTOR'S |
| IC301.....I1 | JW101.....G1 |
| IC302.....F1 | JW103.....F1 |
| IC303.....B2 | JW104.....H1, I1 |
| | JW301.....C1 |
| TRANSISTOR'S | |
| TR301.....G2 | |
| TR302.....E2 | |
| TR303.....E1 | |
| TR304, 305, 306.G1 | |

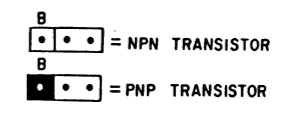


WARNING: Δ INDICATES SAFETY CRITICAL COMPONENTS. FOR CONTINUED SAFETY, REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS.

AVERTISSEMENT: Δ IL INDIQUE LES COMPOSANTS CRITIQUES DE SÉCURITÉ. POUR MAINTENIR LE DEGRÉ DE SÉCURITÉ DE L'APPAREIL, NE REMPLACER QUE DES PIÈCES RECOMMANDÉES PAR LE FABRICANT.

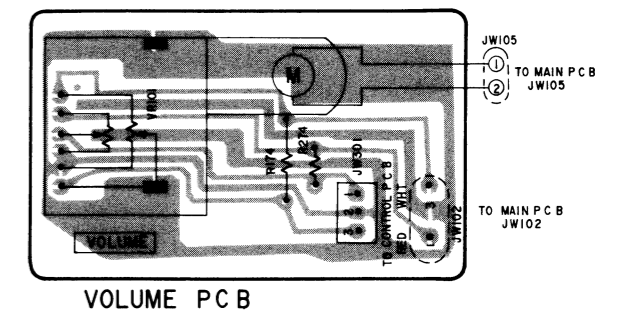


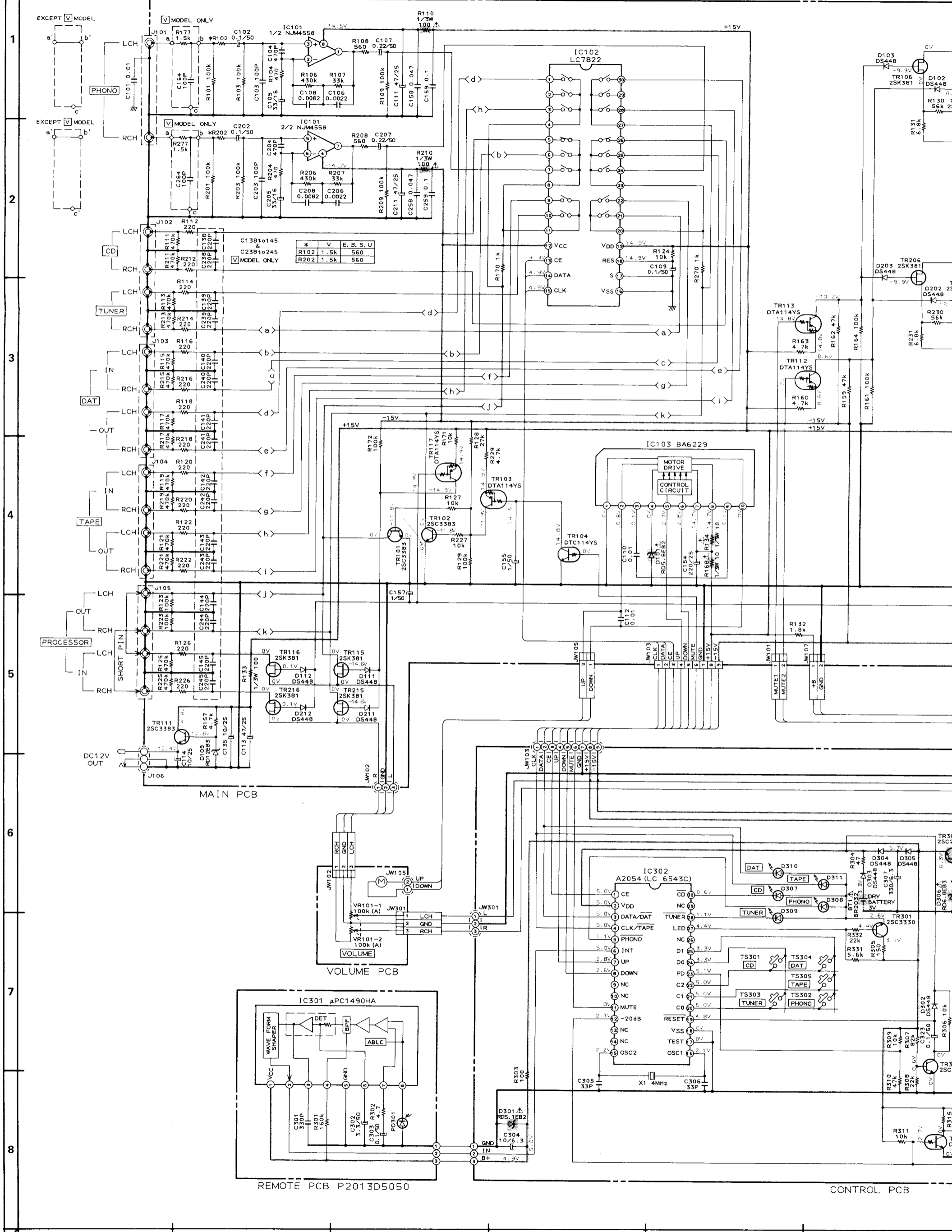
- IC'S
- IC101 F2
 - IC102 D2
 - IC103 F8
 - IC104 D4
- TRANSISTORS
- TR101, 102 C2
 - TR103, 104 F8
 - TR105 F5
 - TR106 E5
 - TR107, 108, 109 B4
 - TR110 A4
 - TR112 E8
 - TR113 E5
 - TR115 C2
 - TR118 C1
 - TR117 D3
 - TR205, 208 F5
 - TR215 C2
 - TR218 B1
- CONNECTORS
- J101 F1
 - J102 E1
 - J103, 104 D1
 - J105 C1
 - J106 F1
- JW101, 104 F5
 JW102, 103 F8
 JW105 E8
 JW106 A6
 JW107 E7

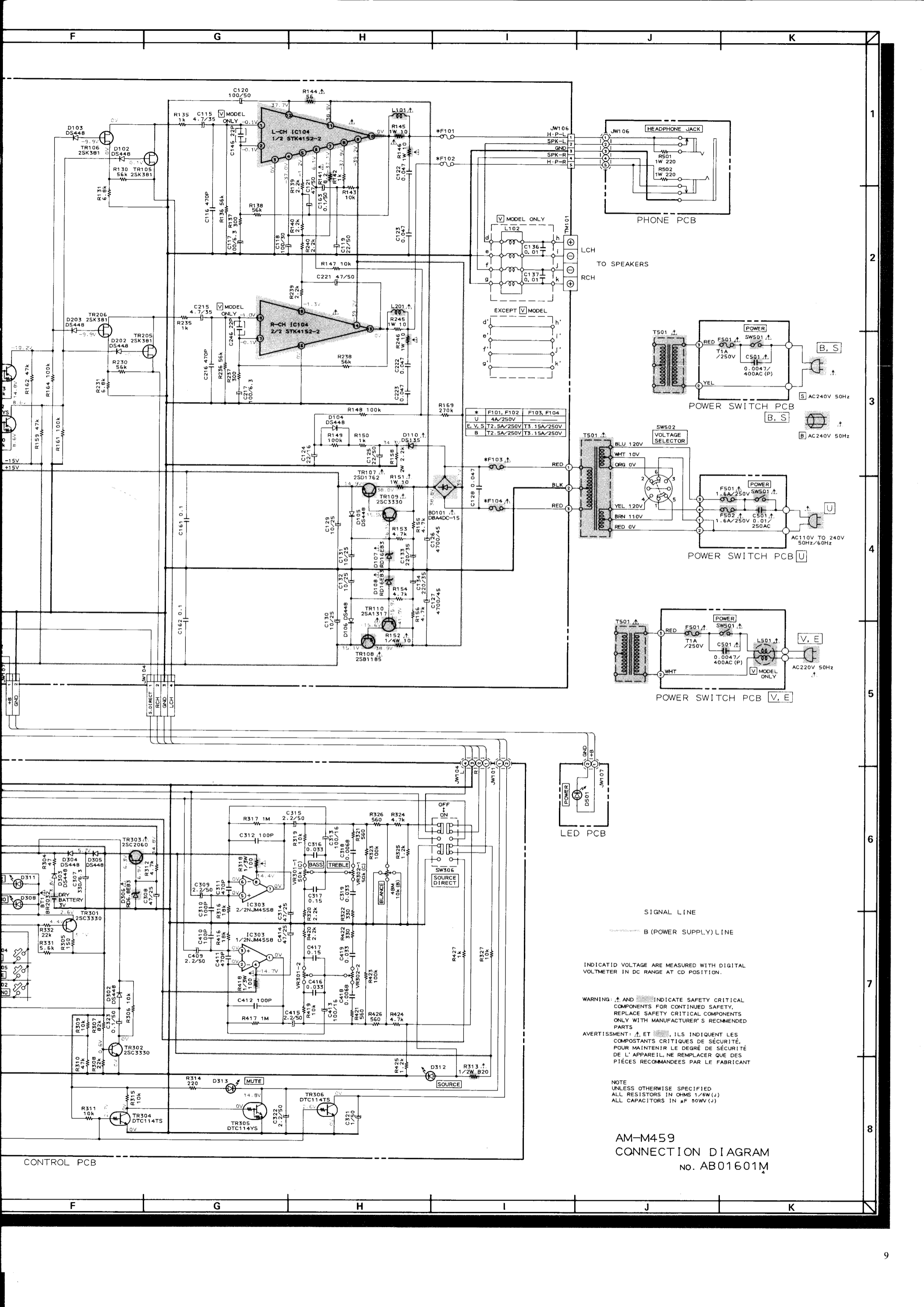


WARNING: Δ INDICATES SAFETY CRITICAL COMPONENTS FOR CONTINUED SAFETY. REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS

AVERTISSEMENT: Δ IL INDIQUE LES COMPOSANTS CRITIQUES DE SÉCURITÉ. POUR MAINTENIR LE DEGRÉ DE SÉCURITÉ DE L'APPAREIL, NE REMPLACER QUE DES PIÈCES RECOMMANDÉES PAR LE FABRICANT







	F101, F102	F103, F104
* U	4A/250V	
E, V, S	T2. 5A/250V	T3. 15A/250V
B	T2. 5A/250V	T3. 15A/250V

INDICATED VOLTAGE ARE MEASURED WITH DIGITAL VOLTMETER IN DC RANGE AT CD POSITION.

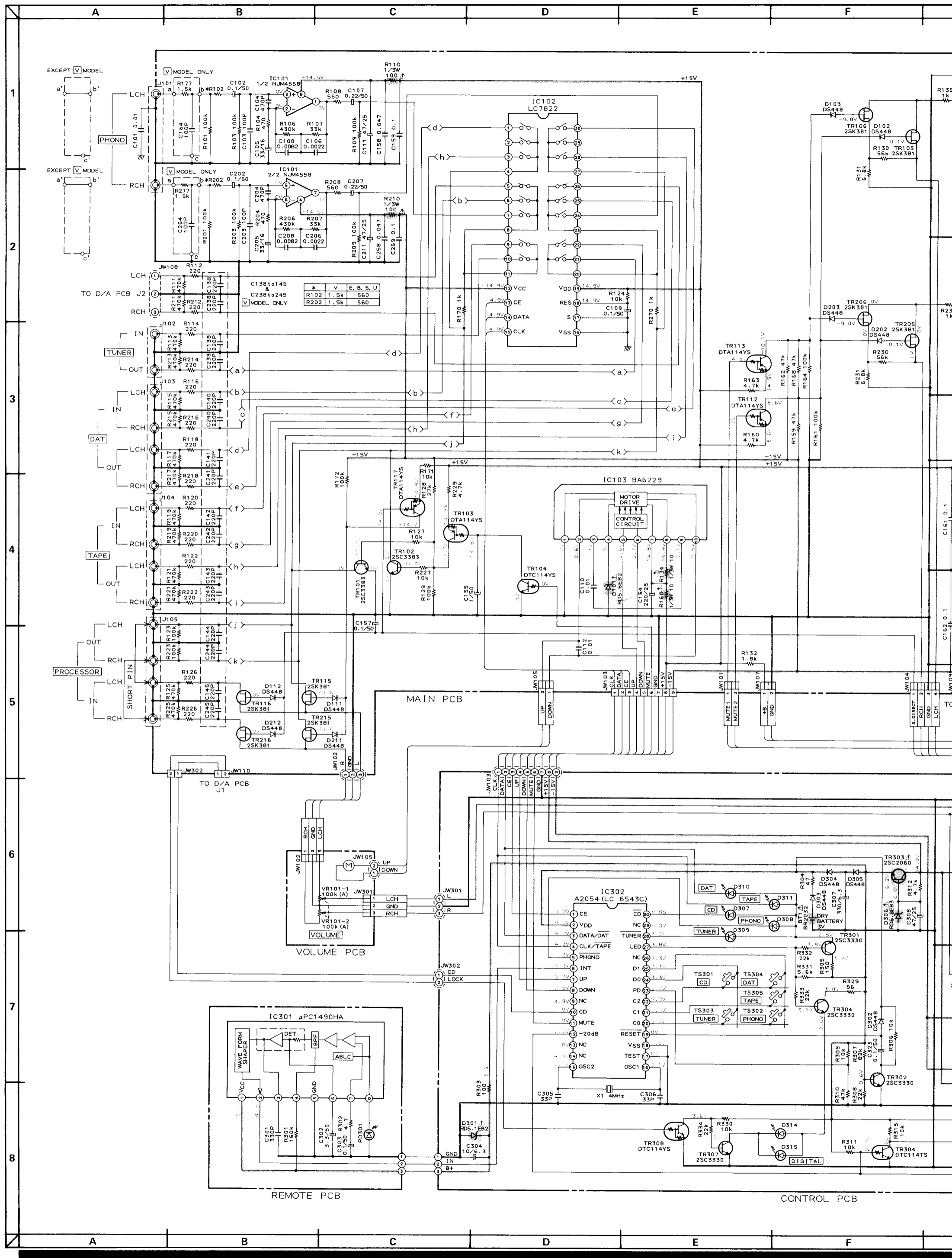
WARNING: ⚠ AND ⚡ INDICATE SAFETY CRITICAL COMPONENTS FOR CONTINUED SAFETY. REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS.

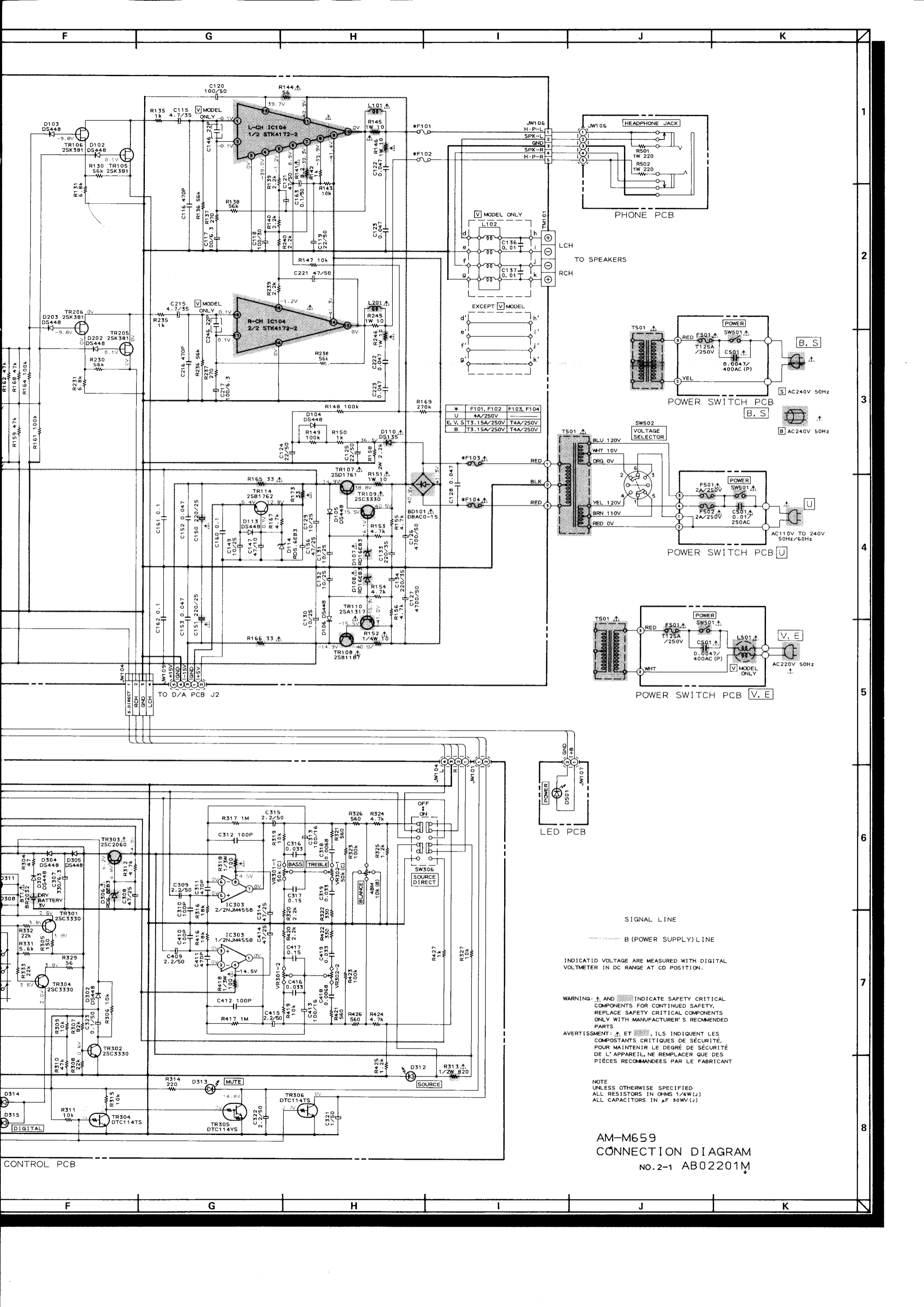
AVERTISSEMENT: ⚠ ET ⚡ ILS INDIQUENT LES COMPOSANTS CRITIQUES DE SÉCURITÉ. POUR MAINTENIR LE DEGRÉ DE SÉCURITÉ DE L'APPAREIL, NE REMPLACER QUE DES PIÈCES RECOMMANDÉES PAR LE FABRICANT.

NOTE
UNLESS OTHERWISE SPECIFIED,
ALL RESISTORS IN OHMS 1/6W(J)
ALL CAPACITORS IN μF 50WV(J)

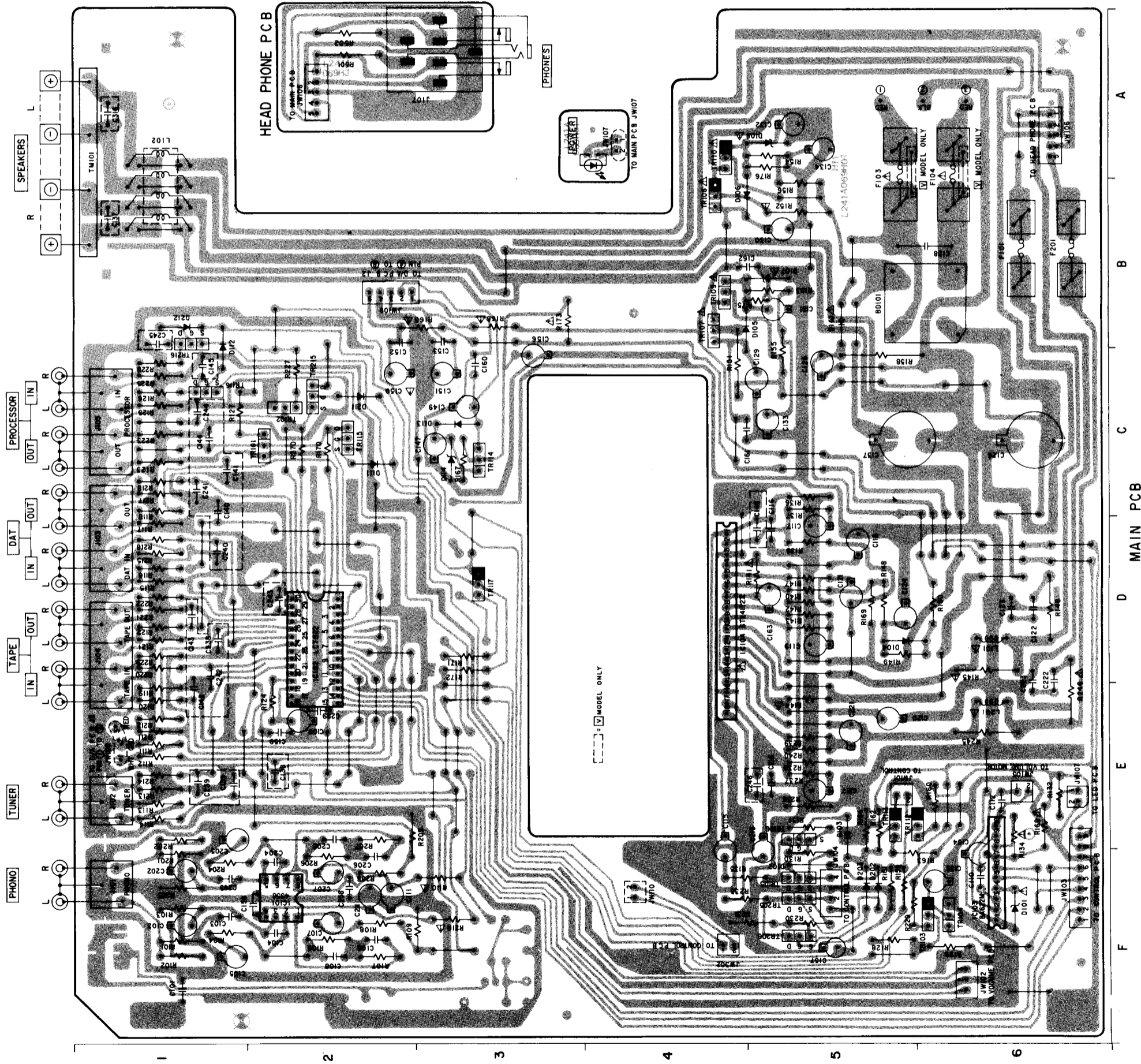
AM-M459
CONNECTION DIAGRAM
No. AB01601M

1
2
3
4
5
6
7
8

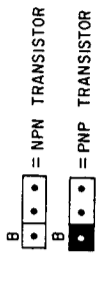
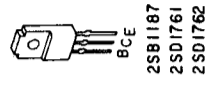
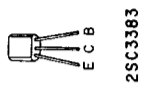
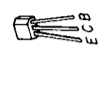
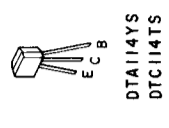




AM-M659
CONNECTION DIAGRAM
NO.2-1 AB02201M

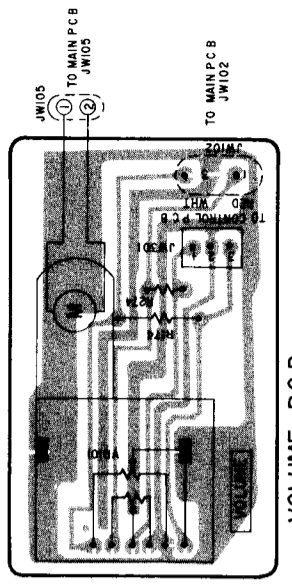


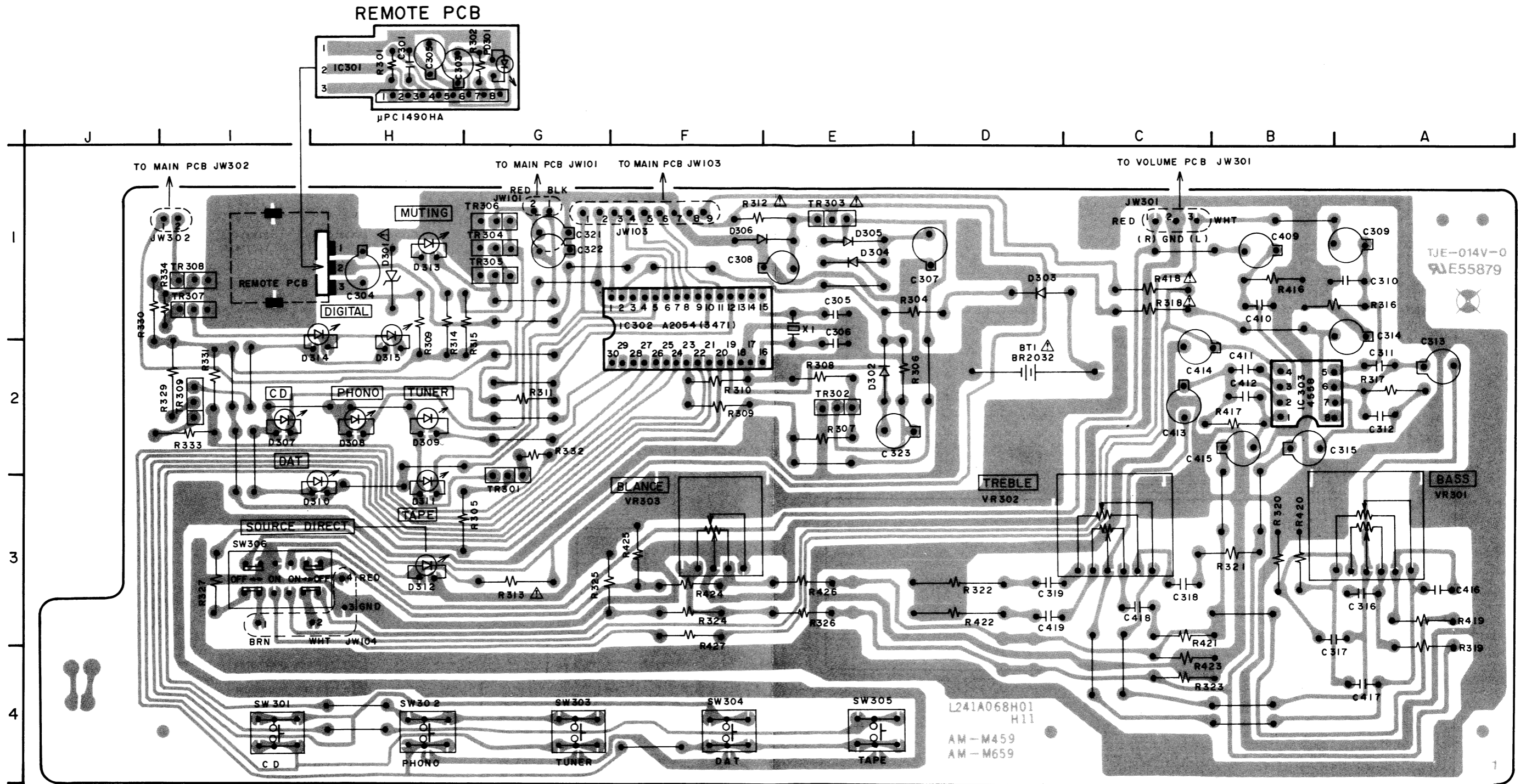
- IC'S
 IC101 F2
 IC102 D2
 IC103 F6
 IC104 D4
- TRANSISTORS
 TR101, 102 C2
 TR103, 104 F6
 TR105 F5
 TR106 E5
 TR107, 108, 109 B4
 TR110 A4
 TR111 E3
 TR112 E6
 TR113 E3
 TR114 C2
 TR115 C2
 TR116 C1
 TR117 D3
 TR205, 206 F5
 TR215 C2
 TR216 B1
- CONNECTORS
 J101 F1
 J102 E1
 J103, 104 D1
 J105 C1
 J106 F1
- JW101, 104 F5
 JW102, 103 F6
 JW105 E6
 JW106 A6
 JW107 E7
 JW108 E1
 JW109 B2
 JW110 F4
 JW302 F4



WARNING: Δ INDICATES SAFETY CRITICAL COMPONENTS FOR CONTINUED SAFETY. REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS.

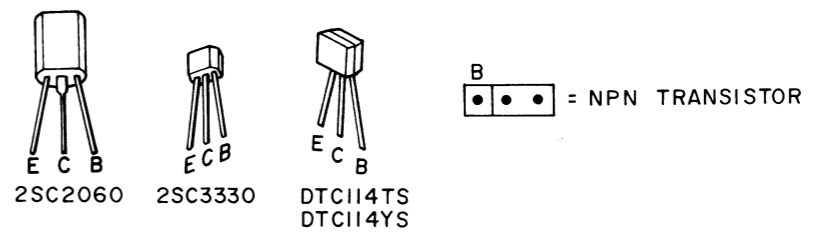
AVERTISSEMENT: Δ IL INDIQUE LES COMPOSANTS CRITIQUES DE SÉCURITÉ. POUR MAINTENIR LE DEGRÉ DE SÉCURITÉ DE L'APPAREIL, NE REMPLACER QUE DES PIÈCES RECOMMANDÉES PAR LE FABRICANT.





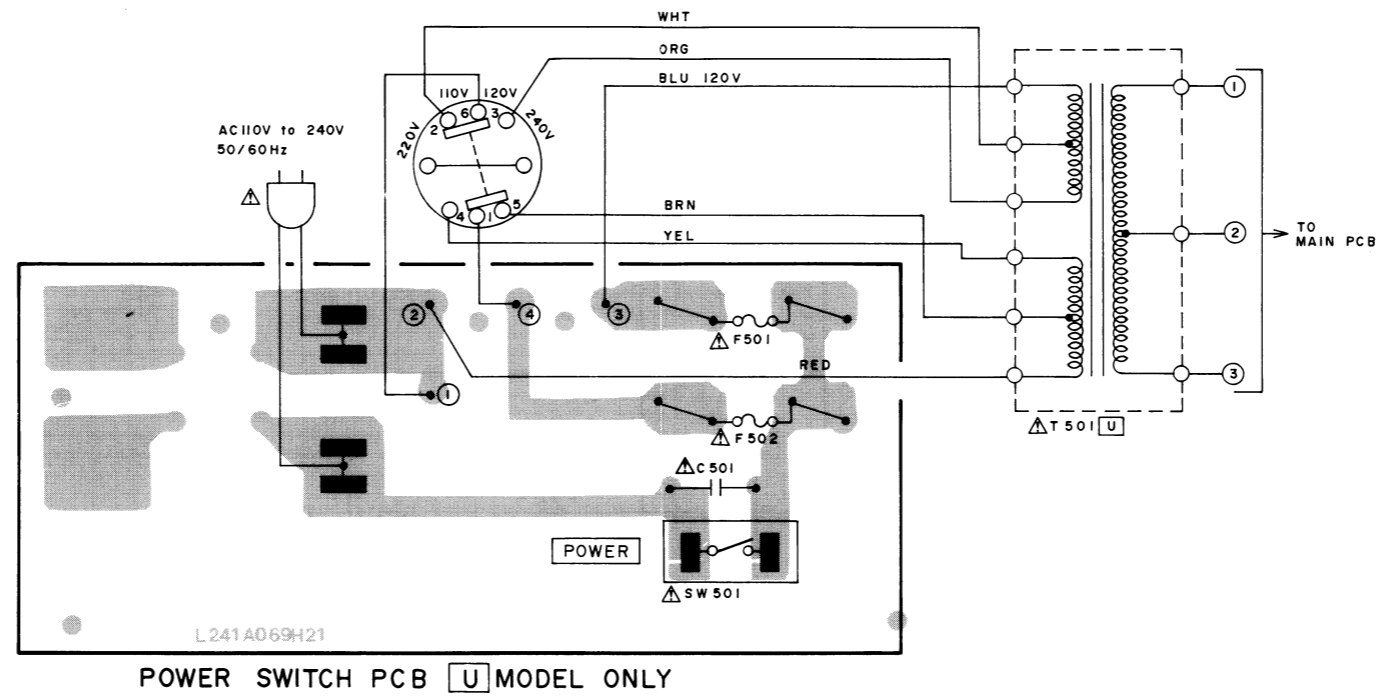
LOCATION OF COMPONENTS

IC'S	CONNECTOR'S
IC301.....I1	JW101.....G1
IC302.....F1	JW103.....F1
IC303.....B2	JW104.....H1, I1
	JW301.....C1
	JW302.....I1
TRANSISTOR'S	
TR301.....G2	
TR302.....E2	
TR303.....E1	
TR304,305,306.G1	
TR307,308.....I1	
TR309.....I2	



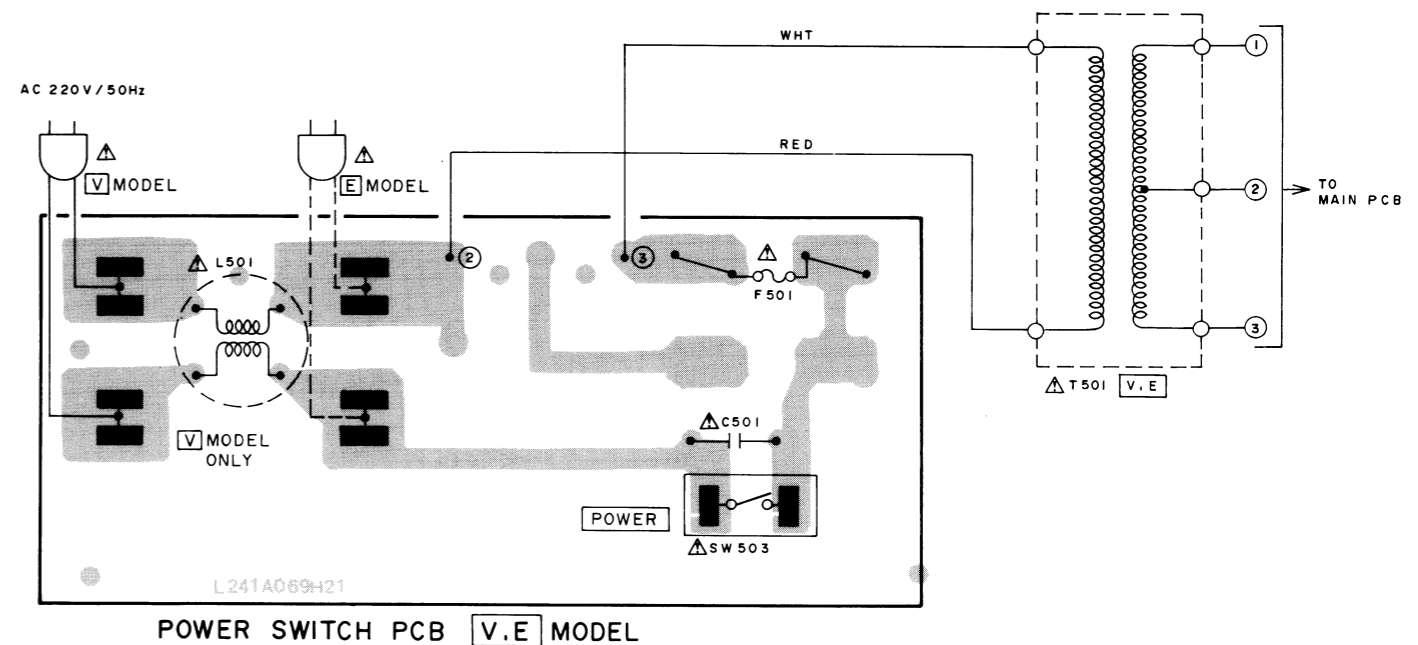
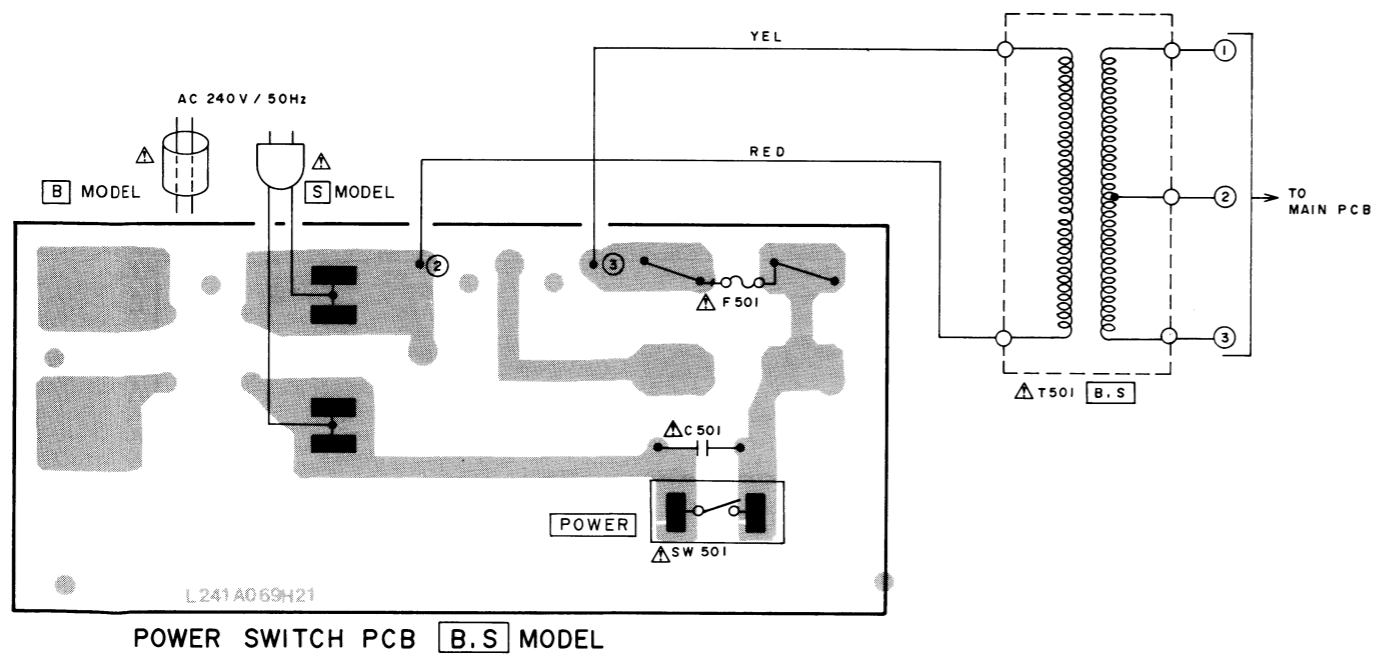
WARNING: Δ INDICATES SAFETY CRITICAL COMPONENTS FOR CONTINUED SAFETY. REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS

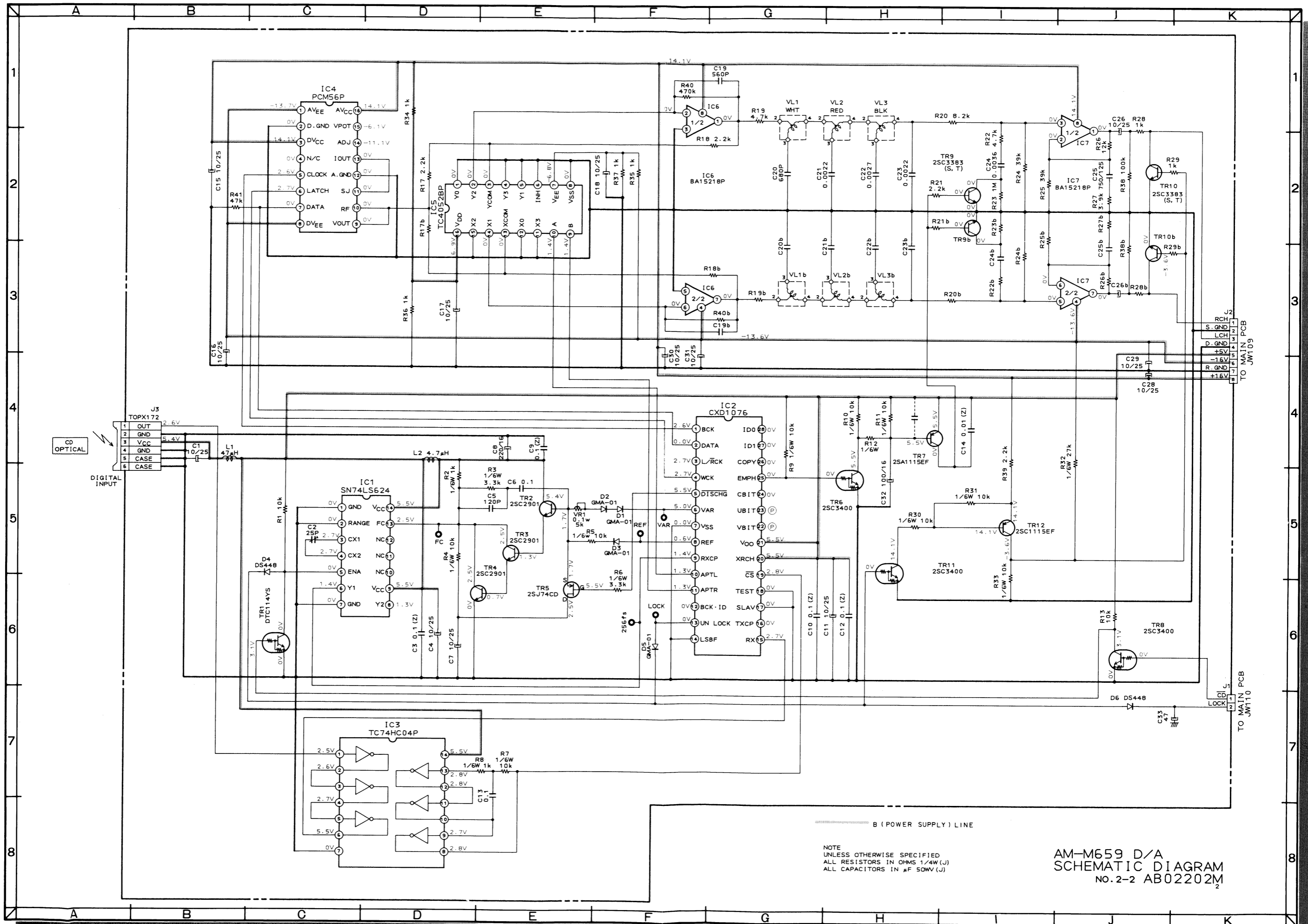
AVERTISSEMENT: Δ IL INDIQUE LES COMPOSANTS CRITIQUES DE SÉCURITÉ. POUR MAINTENIR LE DEGRÉ DE SÉCURITÉ DE L'APPAREIL. NE REMPLACER QUE DES PIÈCES RECOMMANDÉES PAR LE FABRICANT

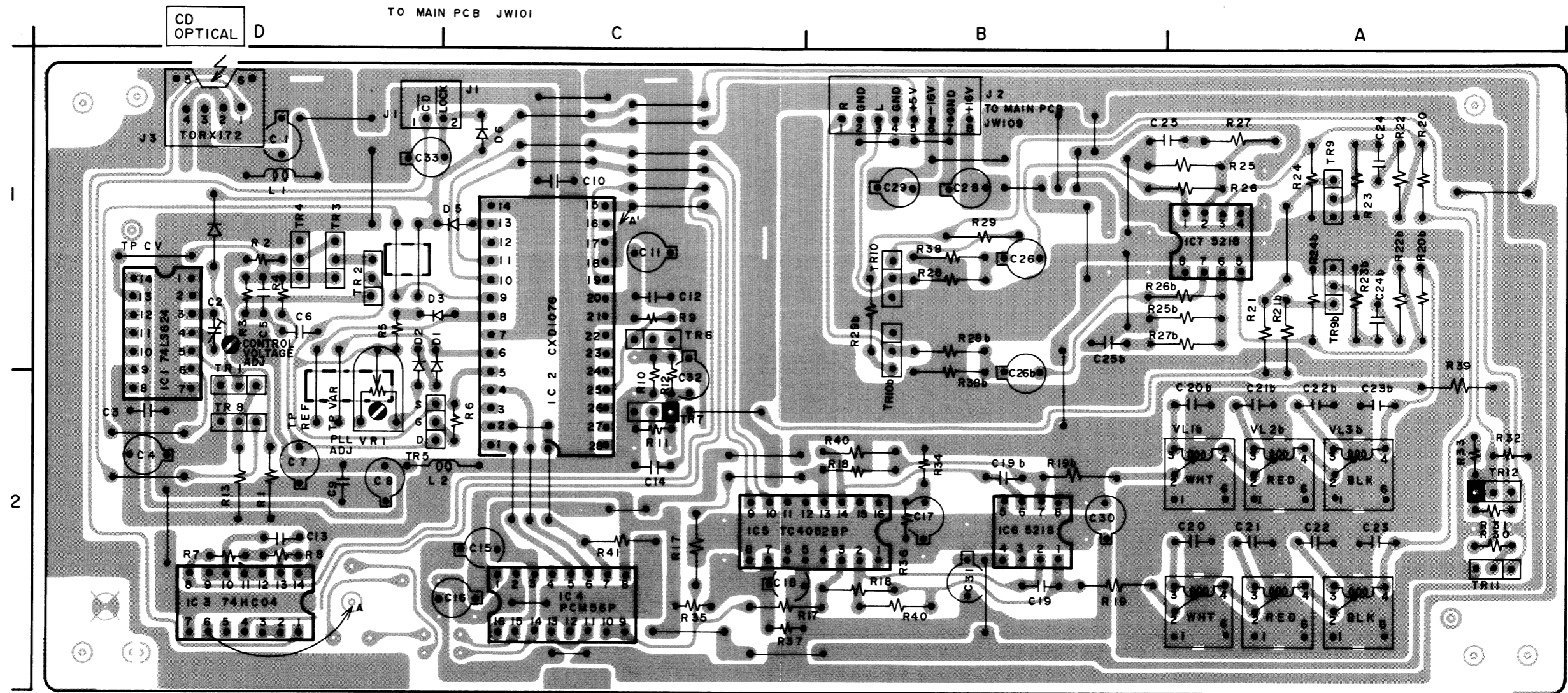


WARNING: ⚠ INDICATES SAFETY CRITICAL COMPONENTS. FOR CONTINUED SAFETY, REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS.

AVERTISSEMENT: ⚠ IL INDIQUE LES COMPOSANTS CRITIQUES DE SÉCURITÉ. POUR MAINTENIR LE DEGRÉ DE SÉCURITÉ DE L'APPAREIL, NE REMPLACER QUE DES PIÈCES RECOMMANDÉES PAR LE FABRICANT.







D/A PCB

LOCATION OF COMPONENTS

IC'S	TRANSISTOR'S
IC1.....D1	TR1.....D2
IC2.....C1	TR2,3,4.....D1
IC3.....D2	TR5.....D2
IC4.....C2	TR6.....C1
IC5.....B,C2	TR7.....C2
IC6.....B2	TR8.....D2
IC7.....A1	TR9,9b.....A1
	TR10,10b....B1
CONNECTOR'S	TR11,12.....A2
J1.....D1	
J2.....B1	
J3.....D1	

