

# The Harman Kardon

## Model PA2200

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### STEREO POWER AMPLIFIER

Manual A

# Technical Manual



**The following marks found in the parts list of this manual identify the models as follows:**

- Ⓚ : North America area model Black version**
- Ⓜ : World model Black version**
- Ⓡ : International model Black version**

**harman/kardon**

Service and Parts Department  
240 Crossways Park West, Woodbury, N. Y. 11797  
1112-PA2200-A P9401 1200 Printed in USA

## SPECIFICATIONS

### Continuous Average Power

Per Channel (FTC), from 20 Hz to 20kHz, both Channels Driven

Bridged (FTC), from 20 Hz to 20kHz, Mono

Dynamic Power (IHF, 1kHz tone burst)

High Voltage/High Current Mode:

High Current Mode:

High Instantaneous Current Capability (HCC):

Negative Feedback:

Power Bandwidth @ half-rated output, 8 Ohms

Frequency Response @ 1 Watt (+0/-3dB):

Slew Rate\*:

Rise Time:

Transient Intermodulation Distortion (TIM):

Damping Factor:

Signal-to-Noise Ratio (ref rated power, A-Wtd):

Input Sensitivity/Impedance

Dimensions (W x H x D);

### PA2200

8 Ohms 100 Watts @ < 0.08% THD

4 Ohms 100 Watts @ < 0.08% THD

8 Ohms 200 Watts @ < 0.08% THD

8 Ohms 120 Watts

4 Ohms 190 Watts

2 Ohms 290 Watts

4 Ohms 120 Watts

2 Ohms 190 Watts

±80 Amperes

12dB

< 10Hz - 100kHz

0.1Hz - 250kHz

140 Volts/Sec

1.2 Sec 1.2 Sec

unmeasurable

100

118dB

0.8 volts/22kOhms

inches: 17<sup>3</sup>/<sub>8</sub> x 5<sup>3</sup>/<sub>8</sub> x 14<sup>5</sup>/<sub>8</sub>

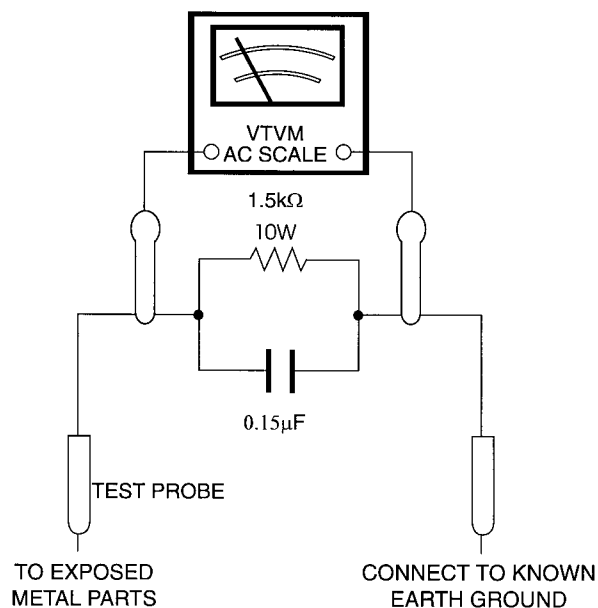
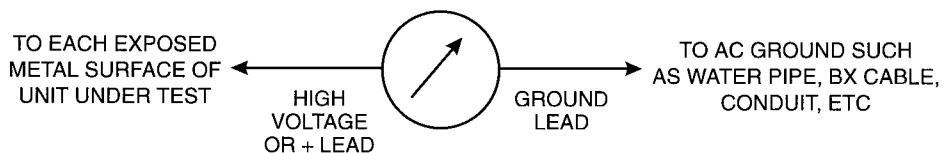
mm: 443 x 137 x 372

## LEAKAGE TEST (FOR SERVICE ENGINEERS IN THE U.S.A.)

Before returning the unit to the user, perform the following safety checks:

1. Inspect all lead dress to make certain that leads are not pinched or that hardware is not lodged between the chassis and other metal parts in the unit.
2. Be sure that any protective devices such as nonmetallic control knobs, insulating fishpapers, cabinet backs, adjustment and compartment covers or shields, isolation resistor-capacity networks, mechanical insulators, etc. which were removed for servicing are properly reinstalled.
3. Be sure that no shock hazard exists; check for leakage current using Simpson Model 229 Leakage Tester, standard equipment item No. 21641, RCA Model WT540A or use alternate method as follows: Plug the power cord directly into a 120-volt AC receptacle (do not use an Isolation Transformer for this test). Using two clip leads, connect a 1500 Ohm, 10-watt resistor paralleled by a 0.15  $\mu$ F capacitor, in series with all exposed metal cabinet parts and a known earth ground, such as a water pipe or conduit. Use a VTVM or VOM with 1000 Ohms per volt, or higher sensitivity to measure the AC voltage drop across the resistor (see diagram). Move the resistor connection to each exposed metal part having a return path to the chassis (antenna, metal, cabinet, screw heads, knobs and control shafts, escutcheon, etc.) and measure the AC voltage drop across the resistor. (This test should be performed with the power switch in both the On and Off positions.)

SIMPSON MODEL 229 ETC. FOR LEAKAGE TEST



A reading of 0.35 volt RMS or more is excessive and indicates a potential shock hazard which must be corrected before returning the unit to the owner.

## DISASSEMBLY PROCEDURES

### [1] CABINET TOP (131) REMOVAL

Remove 8 screws (A) and then remove the Cabinet Top (131).

### [2] FRONT PANEL ASSEMBLY (AA)REMOVAL

1. Remove the Cabinet Top (131), referring to the previous step [1].
2. Remove 5 screws (B) and then remove the Front Panel Assembly (AA).

### [3] CABINET BOTTOM (AC)REMOVAL

Remove 11 screws (C) and 2 washers (203), then remove the Cabinet Bottom (AC).

### [4] MAIN P. C. BOARD (PCB-1) REMOVAL

1. Remove the Cabinet Top (131), referring to the previous step [1].
2. Remove 6 screws (G), then remove the Auto On/Off P.C.Board from the chassis.
3. Open the lid of connector (CN202) on the Auto On/Off P.C.Board (PCB-6), then disconnect lead wires (W202 and W203) from Main P.C. Board (PCB-1). Also open the lid of connector (CN403) on the Power Supply P.C. Board (PCB-2), then disconnect lead wires (JL403) from the Main P.C. Board (PCB-1).
4. Unsolder the lead wires (JL511, JL512, JL513 and JL514) from reference points (LCN511, LCN512, LCN513 and LCN514) on the Speaker P. C. Board (PCB-3).
5. Unsolder the lead wires (JL515, JL516, JL518, JL519 and JL527) from reference points (LCN515, LCN516, LCN518, LCN519 and LCN527) on the Power Supply P. C. Board (PCB-2). Also unsolder the lead wires (W201) from reference points (TM101, TM102 and TM103) on the Main P. C. Board (PCB-1).
6. Remove 1 screw (H), then remove Posistor (PT1) from HeatSink (181).
7. Remove 7 screws (D) and 2 spacers (198), then remove the Main P. C. Board (PCB-1) with HeatSink (181) from the chassis.

### [5] POWER SUPPLY P.C. BOARD (PCB-2) REMOVAL

1. Remove 6 screws (G), then remove the Auto On/Off P.C.Board from the chassis.
2. Disconnect the connector with lead wire (CW221) from connector (CN221) on Auto On/Off P.C.Board (PCB-6).
3. Open the lid of connector (CN403) on the Power Supply P.C. Board (PCB-2), then disconnect lead wires (JL403) from the Main P.C. Board (PCB-1).
4. Disconnect the connector with lead wire (CW220) from connector (CN220) on the Led P.C Board (PCB-7).
5. Unsolder the lead wires (JL515, JL516, JL518, JL519, JL524, JL525 and JL527) from reference points (LCN515, LCN516, LCN518, LCN519, LCN524, LCN525 and LCN527) on the Power Supply P. C. Board (PCB-2). Also unsolder the lead wires (JL522 and JL523) from reference points (TM104).

6. Remove 1 screw (H), then remove Posistor (PT1) from HeatSink (181).
7. Remove 5 screws (E), then remove the Power Supply P. C. Board (PCB-2) from the chassis.

### [6] AUTO ON/OFF P.C BOARD (PCB-6) REMOVAL

1. Remove the Cabinet Top (131), referring to the previous step [1].
2. Remove 6 screws (G), then remove the Auto On/Off P.C.Board from the chassis.
3. Open the lid of connector (CN202) on the Auto On/Off P. C. Board (PCB-6), then disconnect lead wires (W202 and W203) from Main P. C. Board (PCB-1).
4. Unsolder the lead wires (W201) from reference points (TM101, TM102 and TM103) on the Main P. C. Board (PCB-1).
5. Disconnect the connector with lead wire (CW205) from connector (CN205) on Led P. C. Board (PCB-7).
6. Disconnect the connector with lead wire (CW221) from connector (CN221) on Auto On/Off P. C. Board (PCB-6).

### [7] LED P.C BOARD (PCB-7) REMOVAL

1. Disconnect the connector with lead wire (CW205, CW206 AND CW220) from connector (CN205, CN206 and CN220) on Led P. C. Board (PCB-7).
2. Remove 2 screws (I), then remove the Led P. C. Board (PCB-7) from the chassis.

## PROTECTION CIRCUIT

When the power switch is turned on, there will be no sound for about 8 seconds. This is the normal operation of the "Turn-on muting protection circuit" which protects the speaker systems from turn-on transients. After about 8 seconds, the amplifier will operate. It is suggested that the preamplifier volume control be set to a low level during the turn-on period. It is also advisable to turn on all other high fidelity components in the system before turning on the power amplifier. When a short circuit or a load of less than 2 ohms is placed across the speaker terminals for more than 4 milliseconds (4/1000 of a second), the protection circuit will activate and the amplifier will be muted for about 8 seconds. The muting will turn off and the amplifier will begin operating again after 8 seconds.

When the temperature of the internal heatsink rises too high, the protection circuit will activate and the amplifier will be muted. When the unit cools off, the amplifier will automatically become operational. However, unlike the turn-on and short circuit protection, the temperature protections may not restore operation in only 8 seconds because of the time required for the unit to cool off.

While you are connecting your power amplifier to the rest of you high fidelity system, please unplug the power cords of not only the power amplifier but all the components from the AC outlet.

## AUTO-STANDBY FEATURE OPERATION

The PA2200 has a unique ability to sense when it is not receiving a music signal and it can automatically switch into a "Standby" mode. When this happens, the power amplifier circuitry completely shuts off and the front panel power indicator color changes from green (for "On") to amber (for "Standby"). When the amplifier again receives a music signal, it will return to the "On" state. The Auto-Standby feature instantly switches the amplifier "On", and switches it to "Standby" approximately 2 minutes after the incoming music signal stops. The 2 minute time before switching to "Standby" is to prevent the amplifier from unnecessarily switching between modes during use, or while the user is changing inputs or selecting software. This feature allows leaving the amplifier power switch in the "On" position when the amplifier is not in use. This can be a benefit in many systems and installations where the amplifier is not located within reach or is in another room. The "Auto-Standby" feature is also defeatable, for those customers that prefer the amplifier to behave in a conventional way. The "Auto-Standby" defeat switch is set in the "Off" position at the factory.

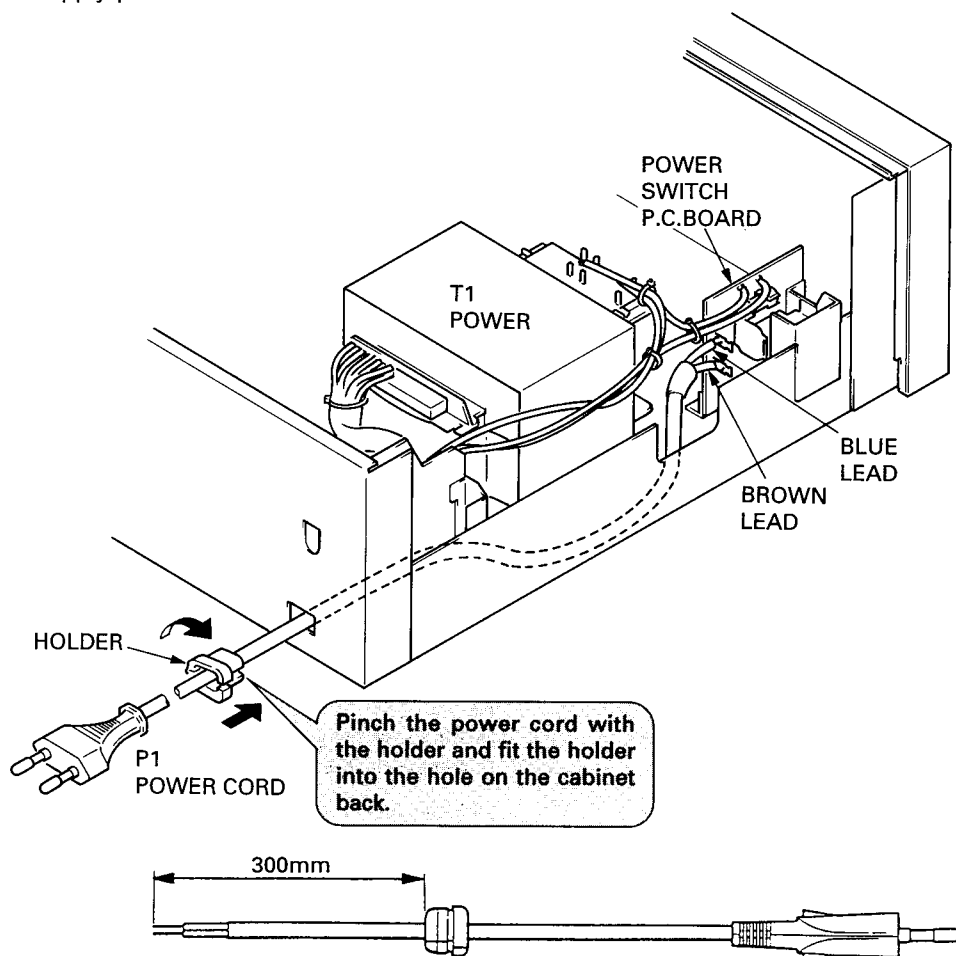
## BRIDGED MONO OPERATION

This feature permits both amplifier channels to drive one 8Ω loudspeaker. To operate the amplifier in this way, set the 8Ω/4Ω switch in the 4Ω position, set the "Bridged Mono" switch in the "On" position and connect the amplifier's Left (Mono +) speaker terminal to the loudspeaker's "+" wire and the amplifier's Right (Mono -) speaker terminal to the loudspeaker's "-" wire.

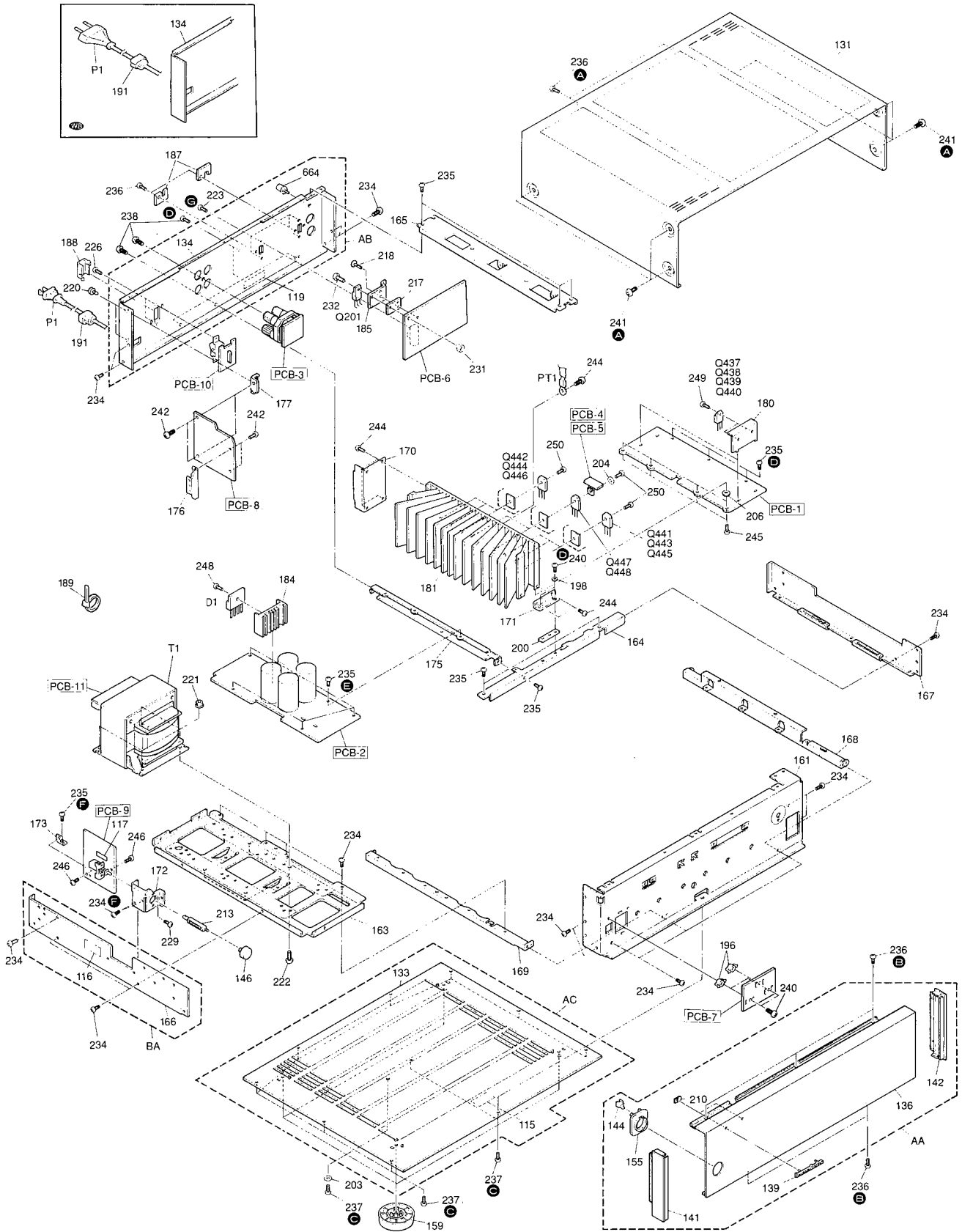
**Please note:** The amplifier is not designed to drive a 4Ω speaker in the Bridged Mono mode.

## POWER CORD REPLACEMENT (FOR SERVICE ENGINEERS OTHER THAN NORTH AMERICA)

In order to prevent fire or shock hazard when replacing the power cord, follow the procedure below to replace the parts with the standard supply parts.



GENERAL UNIT EXPLODED VIEW



**GENERAL PARTS LIST**

			Ref.No.	t No.	Description
AA	A443-PA2200B	FRONT PANEL ASSEMBLY <b>EK WB</b>	177	2. J-8350	METAL FITTING AC CORD PCB REAR (X2)
AA	A443-PA2200C	FRONT PANEL ASSEMBLY <b>WB</b>			HEAT SINK, DRIVER (X2)
AB	A424-PA2200A	CABINET BACK ASSEMBLY <b>EK</b>	180	2222-7179	HEAT SINK, MAIN
AB	A424-PA2200B	CABINET BACK ASSEMBLY <b>WB</b>	181	2222-7312	HEAT SINK, D1
AC	A423-PA2200A	CABINET BOTTOM ASSEMBLY <b>EK</b>	184	2222-7269	HEAT SINK, AUTO ON/OFF PCB
AC	A423-PA2200B	CABINET BOTTOM ASSEMBLY <b>WB</b>	185	2222-7229	HOLDER, BRIDGE SW (X2)
BA	B219-PA2200A	METAL FITTING ASSEMBLY <b>EK</b>	187	2240-7395	HOLDER, 4/8 SWITCH
BA	B219-PA2200B	METAL FITTING ASSEMBLY <b>WB</b>	188	2240-7359	HOLDER, WIRING (X20)
115	1751-01018	LABEL, BOTTOM (UL) <b>EK</b>	189	2240-R0101	HOLDER, AC CORD
116	1756-11301	LABEL, FUSE CAUTION <b>EK</b>	191	2240-364	SPECIAL BOSS, LED PCB (X3)
117	1756-R011N632	LABEL, 6.3A 125V <b>EK</b>	196	2360-7026	SPACER, HEAT SINK METAL (X2)
119	1756-CSA	LABEL, CSA LABEL <b>EK</b>	198	2132-7136	INSULATOR, HEAT SINK METAL
131	1414-10401	CABINET TOP	200	2224-70900	METAL WASHER, BOTTOM
133	1423-03101	CABINET BOTTOM	203	2401-0373	METAL WASHER, BIAS PCB (X2)
134	1424-36601	CABINET BACK <b>EK</b>	204	2401-7373	PLASTIC WASHER, HEAT SINK (X4)
134	1424-36603	CABINET BACK <b>WB</b>	206	2402-0374	FASTENER, BADGE (X2)
136	1443-14702	FRONT PANEL	210	2431-0151	LEVER, POWER SWITCH SHAFT
139	1714-02602	NAME PLATE, BADGE	213	2672-7018	INSULATOR, AUTO ON/OFF PCB
141	1562-08202	FRAME, L	217	224-7120	PLASTIC RIVET, AUTO ON/OFF PCB
142	1562-08702	FRAME, R	218	2459-3005511	PLASTIC RIVET, AC CORD PCB (X2)
144	1732-08801	INDICATOR, POWER LED	220	2459-3003511	SPECIAL NUT, TRANS (X4)
146	1662-66902	PUSH BUTTON, POWER	221	2440-60	SCREW, BND+ (4X10 mm) (X4)
154	1568-00301	FRAME, METAL (X2)	222	2347-R0140102	SCREW, BND+ (2.6X4 mm) (X4)
155	1742-08302	ORNAMENT, POWER	223	2327-R0126044	SCREW, BND+ (3X6 mm) (X2)
159	1319-03901	LEG, BOTTOM (X4)	226	2327-R0130064	SCREW, BND+ (3X6 mm)(X2)
161	2211-7324	CHASSIS, FRONT	229	2327-RO130062	NUT, SPECIAL
163	2219-8007	METAL FITTING, TRANS	231	2440-7016	SCREW, BND+ (3X10 mm)
164	2219-8364	METAL FITTING, BOTTOM CENTER	232	2347-R0130102	SCREW, BND T+ (3X6 mm) (X20)
165	2219-8009	METAL FITTING, RIGHT SIDE TOP	234	2347-RO130062	SCREW, BND T+ (3X6 mm) (X15)
166	2219-8010	METAL FITTING, TRANS SIDE	235	2347-RO130062	SCREW, BND T+ (3X6 mm) (X9)
167	2219-8011	METAL FITTING, RIGHT SIDE	236	2347-RO130064	SCREW, BND T+ (3X8 mm) (X11)
168	2219-8012	METAL FITTING, RIGHT INSIDE	237	2347-R0130082	SCREW, BND T+ (3X8 mm) (X10)
169	2219-8013	METAL FITTING, TRANS CENTER	238	2347-RO130084	SCREW, BND T+ (3X10 mm) (X4)
170	2219-8366	METAL FITTING, MAIN HEAT SINK	240	2347-RO130102	SCREW, BND T+ (4X6 mm) (X6)
171	2219-8367	METAL FITTING, MAIN HEAT SINK	241	2347-RO140064	SCREW, BND T+ (3X6 mm) (X4)
172	2219-8016	METAL FITTING, POWER SWITCH	242	2347-R0130062	SCREW, BND T+ (3X6 mm) (X7)
173	2219-8019	METAL FITTING, POWER SWITCH PCB	244	2347-RO130062	SCREW, BND T+ (3X10 mm) (X4)
175	2219-8365	METAL FITTING, POWER SUPPLY PCB	245	2347-R0130102	SCREW, BND T+ (3X6 mm) (X2)
176	2219-8349	METAL FITTING, AC CORD PCB SIDE	246	2347-R0130062	SCREW, B SPW+ (3X8 mm)
			248	2557-300829	SCREW, B SPW+ (3X8 mm) (X4)
			249	2557-301429	SCREW, B SPW+ (3X14 mm) (X8)
			250		

**ALIGNMENT PROCEDURES**

**Conditions:**

Make the adjustment at a room temperature of 77F (25C).

**DC BALANCE ADJUSTMENT**

Step	Connection Equipments	Adjustment	For
1	Connect the Digital Volt Meter to TP405 and TP407.	VR401	0 ±10 mV
2	Connect the Digital Volt Meter to TP406 and TP407.	VR402	0 ±10 mV

**IDLING CURRENT ADJUSTMENT**

Step	Connection Equipments	Adjustment	For
1	Connect the Digital Volt Meter to TP401 and TP403.	VR401	33 mV
2	Connect the Digital Volt Meter to TP402 and TP404.	VR402	33 mV

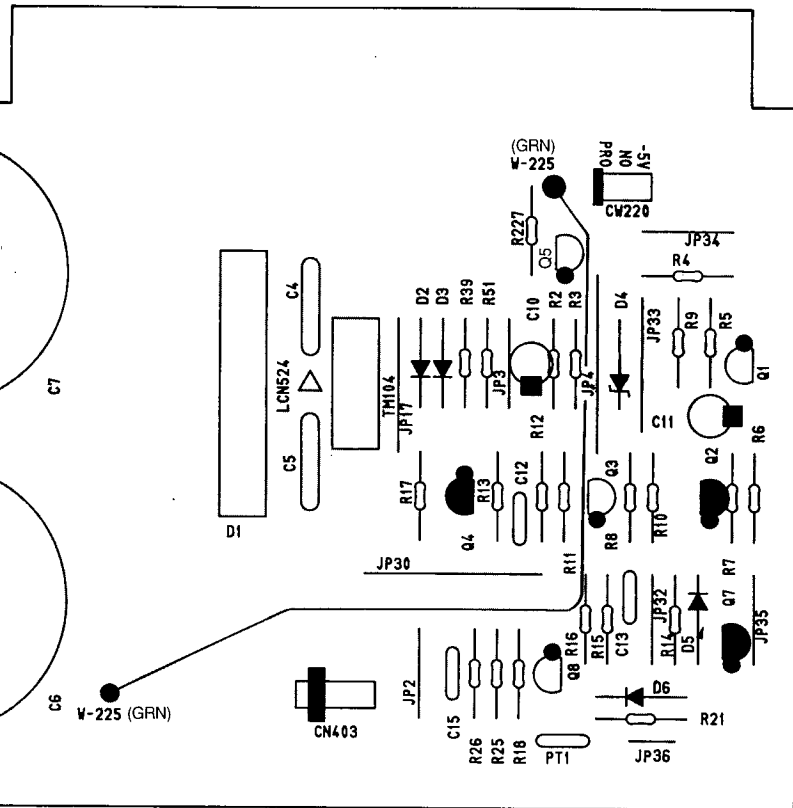
**DC BALANCE CONFIRMATION**

Set the Speaker Operating Mode switch to the "4Ω" position.

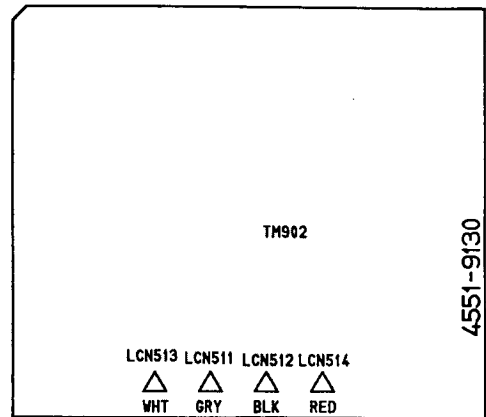
Step	Connection Equipments	For
1	Connect the Digital Volt Meter to TP405 and TP407.	0 ±60 mV
2	Connect the Digital Volt Meter to TP406 and TP407.	0 ±60 mV

**After the above adjustment, leave the unit with its power on for longer than 15 minutes and then repeat the same adjustment.**

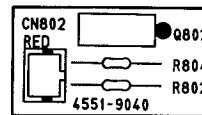




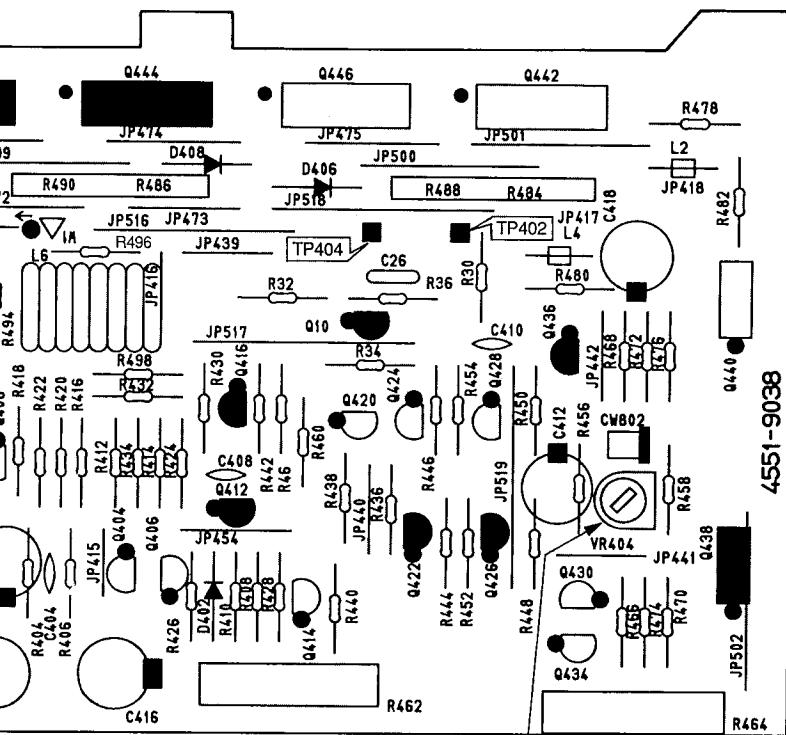
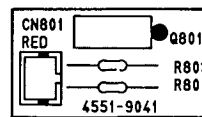
PCB-3 Speaker P.C.Board



PCB-4 Bias L P.C.Board



PCB-5 Bias R P.C.Board

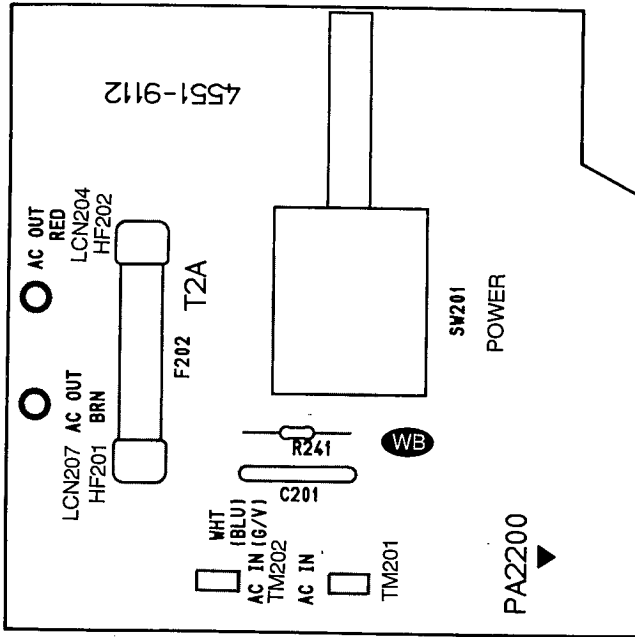


IDLING  
CURRENT  
ADJ. (Lch)

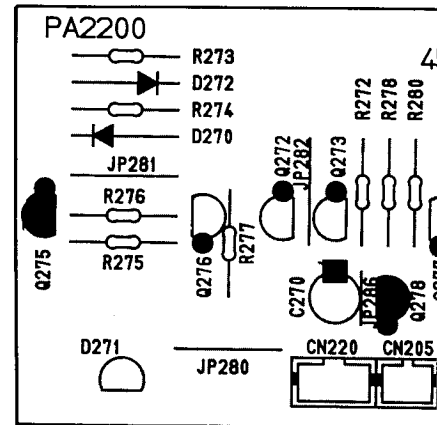


P.C. BOARDS (2)

PCB-9 Power Switch P.C.Board



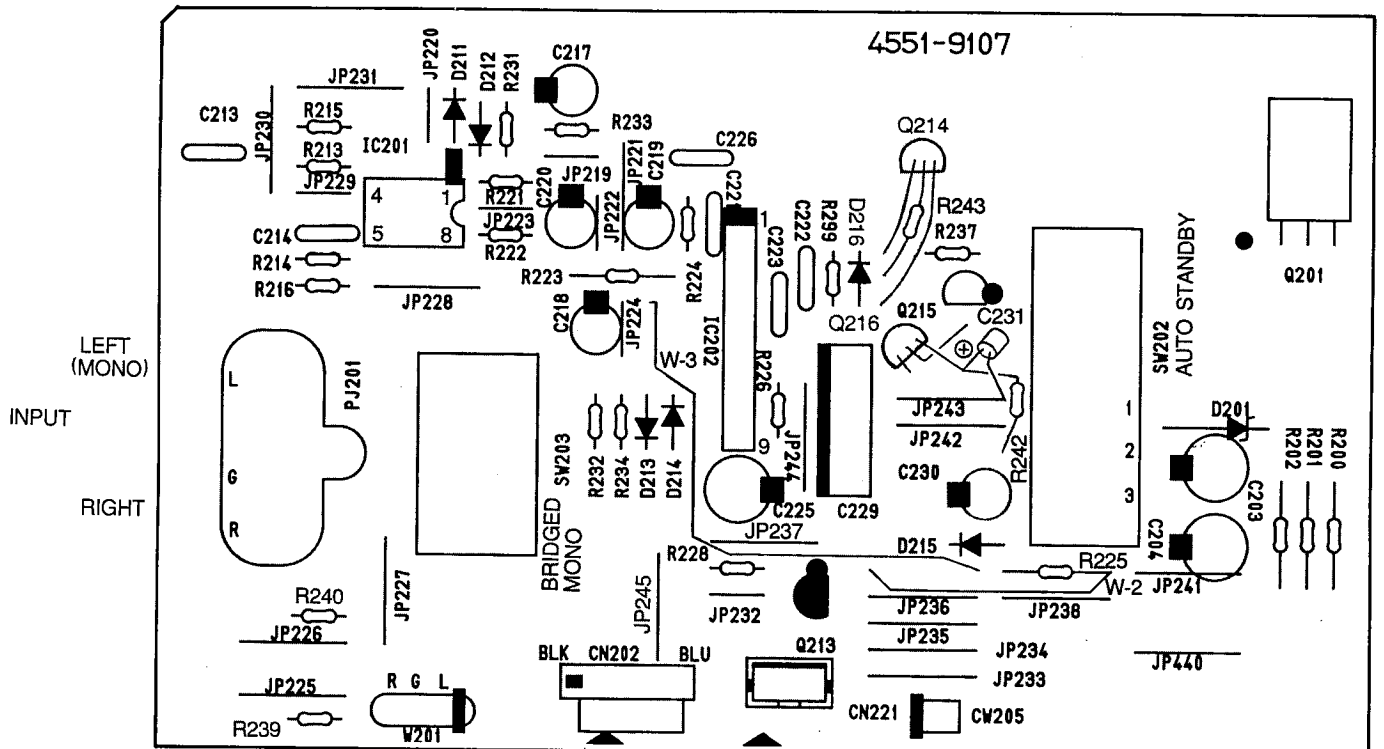
PCB-7 LED P.C.Board



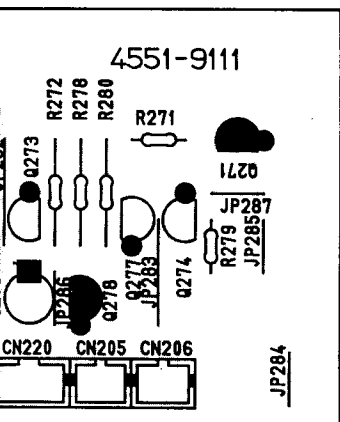
PCB-1

51-9115

PCB-6 Auto On/Off P.C.Board

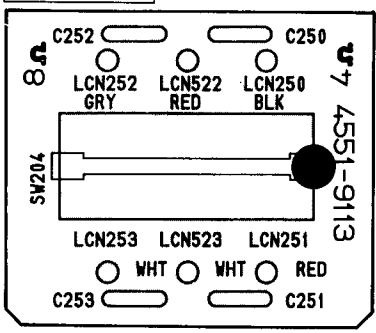


Board

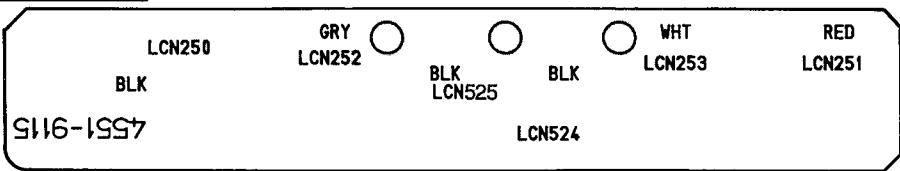


PCB-10 4/8 Switch P.C.Board

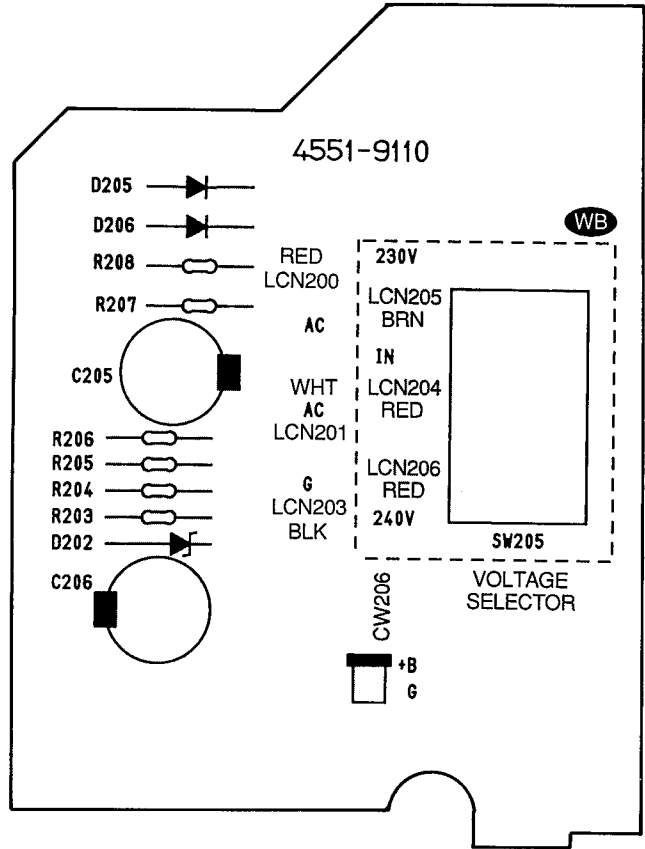
SPEAKER  
OPERATING  
MODE



PCB-11 Trans P.C.Board



PCB-8 Sub Power Supply P.C.Board



**ELECTRICAL PARTS LIST**

**Ser. No. Ref. No. Part No. Description**

**PCB-1 MAIN PC BOARD**

**CAPACITORS**

615	C25	5354-683J1HM	CAP, MYL .068μ
615	C26	5354-683J1HM	CAP, MYL .068μ
541	C401	5345-S19BM107	CAP, MINI ELE 100μ/10V
541	C402	5345-S19BM107	CAP, MINI ELE 100μ/10V
550	C403	5353-680534	CAP, MCA 68P
550	C404	5353-680534	CAP, MCA 68P
543	C405	5345-476D041	CAP, MINI ELE 47μ/25V
543	C406	5345-476D041	CAP, MINI ELE 47μ/25V
549	C407	5353-070934	CAP, MCA 7P
549	C407	5353-070934	CAP, MCA 7P
548	C409	5353-101534	CAP, MCA 100P
548	C410	5353-101534	CAP, MCA 100P
542	C411	5345-S19FM106	CAP, MINI ELE 10μ/50V
542	C412	5345-S19FM106	CAP, MINI ELE 10μ/50V
544	△ C413	5345-337G0962	CAP, MINI ELE 330μ/63V
544	△ C414	5345-337G0962	CAP, MINI ELE 330μ/63V
544	△ C415	5345-337G0962	CAP, MINI ELE 330μ/63V
544	△ C416	5345-337G0962	CAP, MINI ELE 330μ/63V
542	C417	5345-S19FM106	CAP, MINI ELE 10μ/50V
542	C418	5345-S19FM106	CAP, MINI ELE 10μ/50V
547	C419	5354-104593	CAP, MYL .1μ
547	C420	5354-104593	CAP, MYL .1μ
547	C421	5354-104593	CAP, MYL .1μ
547	C422	5354-104593	CAP, MYL .1μ

**RESISTORS**

630	R27	5130-R030J472	RES, CBN 1/2P 4.7K
630	R28	5130-R030J472	RES, CBN 1/2P 4.7K
629	R29	5130-R030J472	RES, CBN 1/2P 4.7K
629	R30	5130-R030J472	RES, CBN 1/2P 4.7K
629	R31	5130-R030J472	RES, CBN 1/2P 4.7K
629	R32	5130-R030J472	RES, CBN 1/2P 4.7K
578	R33	5130-R030J223	RES, CBN 1/2P 22K
578	R34	5130-R030J223	RES, CBN 1/2P 22K
617	R35	5130-R030J152	RES, CBN 1/2P 1.5K
617	R36	5130-R030J152	RES, CBN 1/2P 1.5K
619	R37	5130-R030J105	RES, CBN 1/2P 1M
619	R38	5130-R030J105	RES, CBN 1/2P 1M
578	R41	5130-R030J223	RES, CBN 1/2P 22K
578	R42	5130-R030J223	RES, CBN 1/2P 22K
578	R45	5130-R030J223	RES, CBN 1/2P 22K
578	R46	5130-R030J223	RES, CBN 1/2P 22K
594	R401	5130-R030J102	RES, CBN 1/2P 1K
594	R402	5130-R030J102	RES, CBN 1/2P 1K
579	R403	5130-R030J223	RES, CBN 1/2P 22K
579	R404	5130-R030J223	RES, CBN 1/2P 22K
580	R405	5130-R030J683	RES, CBN 1/2P 68K
580	R406	5130-R030J683	RES, CBN 1/2P 68K
581	R407	5130-R030J122	RES, CBN 1/2P 1.2K
581	R408	5130-R030J122	RES, CBN 1/2P 1.2K
581	R409	5130-R030J122	RES, CBN 1/2P 1.2K
581	R410	5130-R030J122	RES, CBN 1/2P 1.2K
582	R411	5130-R030J181	RES, CBN 1/2P 180
582	R412	5130-R030J181	RES, CBN 1/2P 180
582	R413	5130-R030J181	RES, CBN 1/2P 180
582	R414	5130-R030J181	RES, CBN 1/2P 180
583	R415	5130-R030J562	RES, CBN 1/2P 5.6K
583	R416	5130-R030J562	RES, CBN 1/2P 5.6K
584	R417	5130-R030J331	RES, CBN 1/2P 330
584	R418	5130-R030J331	RES, CBN 1/2P 330
585	R419	5130-R030J393	RES, CBN 1/2P 39K
585	R420	5130-R030J393	RES, CBN 1/2P 39K
586	R421	5130-R030J473	RES, CBN 1/2P 47K
586	R422	5130-R030J473	RES, CBN 1/2P 47K
572	R423	5174-391381	RES, MTL 1/4P390
572	R424	5174-391381	RES, MTL 1/4P390
571	R425	5174-220381	RES, MTL 1/4P 22
571	R426	5174-220381	RES, MTL 1/4P 22
567	△ R427	5102-5615116	RES, FUSE 560
567	△ R428	5102-5615116	RES, FUSE 560
567	△ R429	5102-5615116	RES, FUSE 560

567	△ R430	5102-5615116	RES, FUSE 560
583	R431	5130-R030J562	RES, CBN 1/2P 5.6K
583	R432	5130-R030J562	RES, CBN 1/2P 5.6K
573	R433	5174-203381	RES, MTL 1/4P 20K
573	R434	5174-203381	RES, MTL 1/4P 20K
588	R435	5130-R030J123	RES, CBN 1/2P 12K
588	R436	5130-R030J123	RES, CBN 1/2P 12K
588	R437	5130-R030J123	RES, CBN 1/2P 12K
588	R438	5130-R030J123	RES, CBN 1/2P 12K
587	R439	5130-R030K222	RES, CBN 1/2P 2.2K
587	R440	5130-R030K222	RES, CBN 1/2P 2.2K
587	R441	5130-R030K222	RES, CBN 1/2P 2.2K
587	R442	5130-R030K222	RES, CBN 1/2P 2.2K
565	△ R443	5102-1815116	RES, FUSE 180
565	△ R444	5102-1815116	RES, FUSE 180
565	△ R445	5102-1815116	RES, FUSE 180
565	△ R446	5102-1815116	RES, FUSE 180
574	R447	5174-123381	RES, MTL 1/4P 12K
574	R448	5174-123381	RES, MTL 1/4P 12K
574	R449	5174-123381	RES, MTL 1/4P 12K
574	R450	5174-123381	RES, MTL 1/4P 12K
565	△ R451	5102-1815116	RES, FUSE 180
565	△ R452	5102-1815116	RES, FUSE 180
565	△ R453	5102-1815116	RES, FUSE 180
565	△ R454	5102-1815116	RES, FUSE 180
589	R455	5130-R030J151	RES, CBN 1/2P 150
589	R456	5130-R030J151	RES, CBN 1/2P 150
590	R457	5130-R030J391	RES, CBN 1/2P 390
590	R458	5130-R030J391	RES, CBN 1/2P 390
577	R459	5130-R030J131	RES, CBN 1/2P 130
577	R460	5130-R030J131	RES, CBN 1/2P 130
564	△ R461	5102-2205711	RES, FUSE 22
564	△ R462	5102-2205711	RES, FUSE 22
564	△ R463	5102-2205711	RES, FUSE 22
564	△ R464	5102-2205711	RES, FUSE 22
566	△ R465	5102-1015116	RES, FUSE 100
566	△ R466	5102-1015116	RES, FUSE 100
566	△ R467	5102-1015116	RES, FUSE 100
566	△ R468	5102-1015116	RES, FUSE 100
568	△ R469	5102-2R25116	RES, FUSE 2.2
568	△ R470	5102-2R25116	RES, FUSE 2.2
568	△ R471	5102-2R25116	RES, FUSE 2.2
568	△ R472	5102-2R25116	RES, FUSE 2.2
591	△ R473	5102-1505116	RES, FUSE 15
591	△ R474	5102-1505116	RES, FUSE 15
591	△ R475	5102-1505116	RES, FUSE 15
591	△ R476	5102-1505116	RES, FUSE 15
592	R477	5130-R030J100	RES, CBN 1/2P 10
592	R478	5130-R030J100	RES, CBN 1/2P 10
592	R479	5130-R030J100	RES, CBN 1/2P 10
592	R480	5130-R030J100	RES, CBN 1/2P 10
593	△ R481	5102-6805116	RES, FUSE 68
593	△ R482	5102-6805116	RES, FUSE 68
557	R483	5275-S040JR27	RES, CEM 5P .27
557	R484	5275-S040JR27	RES, CEM 5P .27
557	R485	5275-S040JR27	RES, CEM 5P .27
557	R486	5275-S040JR27	RES, CEM 5P .27
557	R487	5275-S040JR27	RES, CEM 5P .27
557	R488	5275-S040JR27	RES, CEM 5P .27
557	R489	5275-S040JR27	RES, CEM 5P .27
557	R490	5275-S040JR27	RES, CEM 5P .27
558	R491	5173-150571	RES, MTL 2P 15
558	R492	5173-150571	RES, MTL 2P 15
559	R493	5171-1R0572	RES, MTL 1P 1
559	R494	5171-1R0572	RES, MTL 1P 1
595	R495	5130-R030J153	RES, CBN 1/2P 15K
595	R496	5130-R030J153	RES, CBN 1/2P 15K
576	R497	5130-R030J223	RES, CBN 1/2P 22K
576	R498	5130-R030J223	RES, CBN 1/2P 22K
508	R499	5130-R030J181	RES, CBN 1/2P 180

(also see **EB** addendum page 17)

Ser. No.	Ref. No.	Part No.	Description	Ser. No.	Ref. No.	Part No.	Description
<b>TRANSISTORS</b>							
604	Q9	5611-970(BL)	XISTOR, PNP R	538	L3	5597-35502	CORE, BEADS
604	Q10	5611-970(BL)	XISTOR, PNP R	538	L4	5597-35502	CORE, BEADS
605	Q401	5616-2SK364(V)	FET, N-CH	598	LCN511	5163-0130026	CONNECTOR W/W
605	Q402	5616-2SK364(V)	FET, N-CH	596	LCN512	4163-0130024	CONNECTOR W/W
511	Q403	5613-2240(BL)	XISTOR, NPN R	599	LCN513	4163-0130027	CONNECTOR W/W
511	Q404	5613-2240(BL)	XISTOR, NPN R	597	LCN514	4163-0130025	CONNECTOR W/W
511	Q405	5613-2240(BL)	XISTOR, NPN R	673	LCN515	4163-0120024	CONNECTOR W/W
511	Q406	5613-2240(BL)	XISTOR, NPN R	671	LCN516	4163-0120025	CONNECTOR W/W
515	Q407	5613-2320L(F)	XISTOR, NPN R	672	LCN518	4163-0120027	CONNECTOR W/W
515	Q408	5613-2320L(F)	XISTOR, NPN R	672	LCN519	4163-0120027	CONNECTOR W/W
515	Q409	5613-2320L(F)	XISTOR, NPN R	671	LCN527	4163-0120025	CONNECTOR W/W
515	Q410	5613-2320L(F)	XISTOR, NPN R	683	TM5	4214-11013	TERMINAL
517	Q411	5611-1145(Y)	XISTOR, PNP R	683	TM101	4214-11013	TERMINAL
517	Q412	5611-1145(Y)	XISTOR, PNP R	683	TM102	4214-11013	TERMINAL
514	Q413	5613-2240(BL)	XISTOR, NPN R	675	TM103	4214-11021	TERMINAL
514	Q414	5613-2240(BL)	XISTOR, NPN R	610	TP401	4214-132	TERMINAL
512	Q415	5611-970(BL)	XISTOR, PNP R	610	TP402	4214-132	TERMINAL
512	Q416	5611-970(BL)	XISTOR, PNP R	610	TP403	4214-132	TERMINAL
513	Q417	5611-992(E)	XISTOR, PNP R	610	TP404	4214-132	TERMINAL
513	Q418	5611-992(E)	XISTOR, PNP R	686		2240-Z032	HOLDER, JL403
514	Q419	5613-2240(BL)	XISTOR, NPN R	<b>PCB-2 POWER SUPPLY PC BOARD</b>			
514	Q420	5613-2240(BL)	XISTOR, NPN R	<b>CAPACITORS</b>			
535	Q421	5611-1285(F)	XISTOR, PNP R	634	C4	5352-1041957	CAP, MTL .1μ
535	Q422	5611-1285(F)	XISTOR, PNP R	634	C5	5352-1041957	CAP, MTL .1μ
516	Q423	5613-3245(F)	XISTOR, NPN R	640	△ C6	5341-002GM828	CAP, ELE
516	Q424	5613-3245(F)	XISTOR, NPN R	640	△ C7	5341-002GM828	CAP, ELE
535	Q425	5611-1285(F)	XISTOR, PNP R	640	△ C8	5341-002GM828	CAP, ELE
535	Q426	5611-1285(F)	XISTOR, PNP R	640	△ C9	5341-002GM828	CAP, ELE
516	Q427	5613-3245(F)	XISTOR, NPN R	611	C10	5345-S19FM475	CAP, MINI ELE 4.7μ/50V
516	Q428	5613-3245(F)	XISTOR, NPN R	612	C11	5345-S19CM336	CAP, MINI ELE 33μ/16V
520	Q429	5613-945(P)	XISTOR, NPN R	613	C12	5345-334593	CAP, MYL .33μ
520	Q430	5613-945(P)	XISTOR, NPN R	613	C13	5345-334593	CAP, MYL .33μ
518	Q433	5613-2235(Y)	XISTOR, NPN R	616	C15	5359-3325851	CAP, PPP 3300P
518	Q434	5613-2235(Y)	XISTOR, NPN R	<b>RESISTORS</b>			
519	Q435	5611-965(Y)	XISTOR, PNP R	621	R2	5130-R030J103	RES, CBN 1/2P 10K
519	Q436	5611-965(Y)	XISTOR, PNP R	628	R3	5130-R030J472	RES, CBN 1/2P 4.7K
524	Q437	5611-1306(Y)	XISTOR, PNP R	625	R4	5130-R030J473	RES, CBN 1/2P 47K
524	Q438	5611-1306(Y)	XISTOR, PNP R	624	R5	5130-R030J334	RES, CBN 1/2P 330K
521	Q439	5613-3298(Y)	XISTOR, NPN R	622	R6	5130-R030J684	RES, CBN 1/2P 680K
521	Q440	5613-3298(Y)	XISTOR, NPN R	627	R7	5130-R030J184	RES, CBN 1/2P 180K
527	Q441	5613-3907(O)	XISTOR, NPN R	623	R8	5130-R030J225	RES, CBN 1/2P 2.2M
527	Q442	5613-3907(O)	XISTOR, NPN R	620	R9	5130-R030J104	RES, CBN 1/2P 100K
529	Q443	5611-1516(O)	XISTOR, PNP R	620	R10	5130-R030J104	RES, CBN 1/2P 100K
529	Q444	5611-1516(O)	XISTOR, PNP R	621	R11	5130-R030J103	RES, CBN 1/2P 10K
527	Q445	5613-3907(O)	XISTOR, NPN R	620	R12	5130-R030J104	RES, CBN 1/2P 100K
527	Q446	5613-3907(O)	XISTOR, NPN R	625	R13	5130-R030J473	RES, CBN 1/2P 47K
529	Q447	5611-1516(O)	XISTOR, PNP R	626	R14	5130-R030J223	RES, CBN 1/2P 22K
529	Q448	5611-1516(O)	XISTOR, PNP R	626	R15	5130-R030J223	RES, CBN 1/2P 22K
512	Q449	5611-970(BL)	XISTOR, PNP R	625	R16	5130-R030J473	RES, CBN 1/2P 47K
512	Q450	5611-970(BL)	XISTOR, PNP R	621	R17	5130-R030J103	RES, CBN 1/2P 10K
<b>DIODES</b>							
532	D401	5631-1S2473	DIODE, DET	626	R18	5130-R030J223	RES, CBN 1/2P 22K
532	D402	5631-1S2473	DIODE, DET	632	R21	5130-R030J822	RES, CBN 1/2P 8.2K
533	D403	5635-HZ15-1L	DIODE, ZENER	614	R25	5130-R030J152	RES, CBN 1/2P 1.5K
533	D404	5635-HZ15-1L	DIODE, ZENER	625	R26	5130-R030J473	RES, CBN 1/2P 47K
534	D405	5632-10DF2	DIODE, RECT	618	R39	5130-R030J332	RES, CBN 1/2P 3.3K
534	D406	5632-10DF2	DIODE, RECT	618	R51	5130-R030J332	RES, CBN 1/2P 3.3K
534	D407	5632-10DF2	DIODE, RECT	633	R227	5130-R030J104	RES, CBN 1/2P 100K
534	D408	5632-10DF2	DIODE, RECT	<b>TRANSISTORS</b>			
<b>COILS</b>							
537	L5	5991-7125	SPRING COIL	601	Q1	5613-1740S(S)	XISTOR, NPN R
537	L6	5991-7125	SPRING COIL	602	Q2	5611-933S(S)	XISTOR, PNP R
<b>CONTROLS</b>							
561	VR401	5101-S0801104	RES, SEMI FIX 100K, DC BALANCE	601	Q3	5613-1740S(S)	XISTOR, NPN R
561	VR402	5101-S0801104	RES, SEMI FIX 100K, DC BALANCE	602	Q4	5611-933S(S)	XISTOR, PNP R
562	VR403	5101-S0801102	RES, SEMI FIX 1K, IDLING CURRENT	637	Q5	5613-1740S(S)	XISTOR, NPN R
<b>MISCELLANEOUS</b>							
751	CW205	4163-S0202751	CONNECTOR W/W	602	Q7	5611-933S(S)	XISTOR, PNP R
545	CW801	4163-S0202151	CONNECTOR W/W	603	Q8	5613-1845(E)	XISTOR, NPN R
545	CW802	4163-S0202151	CONNECTOR W/W	639	△ D1	5685-D5SB40	SILICON, BRIG
691	JL403	4242-R0503201	JUMPER LEAD	608	△ D2	5636-1S2471	DIODE, SWITCH
538	L1	5597-35502	CORE, BEADS	608	△ D3	5636-1S2471	DIODE, SWITCH
538	L2	5597-35502	CORE, BEADS	607	D4	5635-HZ6A2L	DIODE, ZENER
				609	D5	5631-1S2473	DIODE, DET
				641	D6	5631-1S2473	DIODE, DET

Ser. No.	Ref. No.	Part No.	Description	Ser. No.	Ref. No.	Part No.	Description
<b>MISCELLANEOUS</b>							
681	CN403	4443-030185	CONNECTOR	728	△ R230	5102-1014713	RES, FUSE 100
769	CW220	4163-S0203501	CONNECTOR W/W	719	R231	5130-R010J683	RES, CBN 1/6P 68K
795	CW221	4163-S0203401	CONNECTOR W/W	719	R232	5130-R010J683	RES, CBN 1/6P 68K
694	LCN524	4163-0117020	CONNECTOR W/W	726	R233	5130-R010J102	RES, CBN 1/6P 1K
695	LCN525	4163-0125020	CONNECTOR W/W	725	R234	5130-R010J102	RES, CBN 1/6P 1K
606	PT1	5192-010BD222	POSISTOR	726	R237	5130-R010J102	RES, CBN 1/6P 1K
667	TM104	4214-11023	TERMINAL	732	R239	5130-R010J474	RES, CBN 1/6P 470K
<b>PCB-3 SPEAKER PC BOARD</b>							
<b>MISCELLANEOUS</b>							
663	△ TM902	4214-241	TERMINAL, SPEAKERS	732	R240	5130-R010J474	RES, CBN 1/6P 470K
<b>PCB-4 BIAS L PC BOARD</b>							
<b>MISCELLANEOUS</b>							
552	R802	5130-R030J222	RES, CBN 1/2P 2.2K	711	IC201	5652-TA75072P	IC, MONO
554	R804	5130-R030J122	RES, CBN 1/2P 1.2K	712	IC202	5653-BA335	IC, LINEAR
<b>RESISTORS</b>							
556	Q802	5613-2682(Q)	XISTOR, NPN R	788	Q201	5614-1266(Q)	XISTOR, NPN A
<b>TRANSISTOR</b>							
540	CN802	4443-0201140	CONNECTOR	715	Q213	5611-933S(S)	XISTOR, PNP R
<b>MISCELLANEOUS</b>							
551	R801	5130-R030J222	RES, CBN 1/2P 2.2K	714	Q214	5613-1740S(S)	XISTOR, NPN R
553	R803	5130-R030J122	RES, CBN 1/2P 1.2K	713	Q215	5613-C144ES	XISTOR, NPN R
<b>TRANSISTOR</b>							
555	Q801	5613-2682(Q)	XISTOR, NPN R	714	Q216	5613-1740S(S)	XISTOR, NPN R
<b>MISCELLANEOUS</b>							
539	CN801	4443-0201140	CONNECTOR	737	D201	5635-HZ151L	DIODE, ZENER
669		2240-Z031	HOLDER	716	D211	5631-1SS133	DIODE, DET
<b>PCB-5 BIAS R PC BOARD</b>							
<b>RESISTORS</b>							
551	R801	5130-R030J222	RES, CBN 1/2P 2.2K	716	D212	5631-1SS133	DIODE, DET
553	R803	5130-R030J122	RES, CBN 1/2P 1.2K	716	D213	5631-1SS133	DIODE, DET
<b>TRANSISTOR</b>							
555	Q801	5613-2682(Q)	XISTOR, NPN R	716	D214	5631-1SS133	DIODE, DET
<b>MISCELLANEOUS</b>							
539	CN801	4443-0201140	CONNECTOR	716	D215	5631-1SS133	DIODE, DET
669		2240-Z031	HOLDER	716	D216	5631-1SS133	DIODE, DET
<b>PCB-6 AUTO ON/OFF PC BOARD</b>							
<b>CAPACITORS</b>							
746	C203	5345-106D0961	CAP, MINI ELE 10μ/25V	740	CN202	4443-030185	CONNECTOR
745	C204	5345-476C0961	CAP, MINI ELE 47μ/16V	796	CN221	4443-0301140	CONNECTOR
718	C213	5359-S010J123	CAP, PPP .012μ	739	HL201	2240-Z031	HOLDER
718	C214	5359-S010J123	CAP, PPP .012μ	755	PJ201	4482-7128	2 PIN JACK, INPUT
747	C217	5345-475F0961	CAP, MINI ELE 4.7μ/50V	757	SW202	4421-02601042	SLIDE SWITCH, AUTO STANDBY
747	C218	5345-475F0961	CAP, MINI ELE 4.7μ/50V	758	SW203	4421-02602022	SLIDE SWITCH, BRIDGED MONO
744	C219	5345-226C0961	CAP, MINI ELE 22μ/16V				
745	C220	5345-476C0961	CAP, MINI ELE 47μ/16V				
718	C221	5359-S010J123	CAP, PPP .012μ				
742	C222	5354-104593	CAP, MYL .1μ				
748	C223	5354-394593	CAP, MYL .39μ				
745	C225	5345-476C0961	CAP, MINI ELE 47μ/16V				
718	C226	5359-S010J123	CAP, PPP .012μ				
717	C229	5345-337C041	CAP, MINI ELE 330μ/16V				
745	C230	5345-476C0961	CAP, MINI ELE 47μ/16V				
745	C231	5345-105F0961	CAP, MINI ELE 1μ/50V				
<b>RESISTORS</b>							
734	△ R200	5102-4704715	RES, FUS 47	767	C270	5345-106C041	CAP, MINI ELE 10μ/16V
734	△ R201	5102-4704715	RES, FUS 47	771	R271	5130-R010J102	RES, CBN 1/6P 1K
735	R202	5130-R030J822	RES, CBN 1/2P 8.2K	772	R272	5130-R030J681	RES, CBN 1/2P 680
727	R213	5130-R010J105	RES, CBN 1/6P 1M	773	R273	5130-R030J104	RES, CBN 1/2P 100K
727	R214	5130-R010J105	RES, CBN 1/6P 1M	773	R274	5130-R030J104	RES, CBN 1/2P 100K
727	R215	5130-R010J105	RES, CBN 1/6P 1M	775	R275	5130-R030J473	RES, CBN 1/2P 47K
727	R216	5130-R010J105	RES, CBN 1/6P 1M	775	R276	5130-R030J473	RES, CBN 1/2P 47K
726	R221	5130-R010J102	RES, CBN 1/6P 1K	776	R277	5130-R030J273	RES, CBN 1/2P 27K
726	R222	5130-R010J102	RES, CBN 1/6P 1K	775	R278	5130-R030J473	RES, CBN 1/2P 47K
733	R223	5130-R030J104	RES, CBN 1/2P 100K	778	R279	5130-R010J104	RES, CBN 1/6P 100K
724	R224	5130-R010J104	RES, CBN 1/6P 100K	774	R280	5130-R030J154	RES, CBN 1/2P 150K
729	△ R225	5102-1014713	RES, FUSE 100				
721	R226	5130-R010J473	RES, CBN 1/6P 47K	762	Q271	5611-A124ES	XISTOR, PNP R
720	R228	5130-R010J224	RES, CBN 1/6P 220K	761	Q272	5613-C144ES	XISTOR, NPN R
723	R229	5130-R010J224	RES, CBN 1/6P 220K	760	Q273	5613-1740S(S)	XISTOR, NPN R
<b>PCB-7 LED PC BOARD</b>							
<b>CAPACITOR</b>							
746	C203	5345-106D0961	CAP, MINI ELE 10μ/25V	761	Q274	5613-C144ES	XISTOR, NPN R
745	C204	5345-476C0961	CAP, MINI ELE 47μ/16V	763	Q275	5611-933S(S)	XISTOR, PNP R
718	C213	5359-S010J123	CAP, PPP .012μ	760	Q273	5613-1740S(S)	XISTOR, NPN R
718	C214	5359-S010J123	CAP, PPP .012μ	761	Q274	5613-C144ES	XISTOR, NPN R
747	C217	5345-475F0961	CAP, MINI ELE 4.7μ/50V	763	Q275	5611-933S(S)	XISTOR, PNP R
747	C218	5345-475F0961	CAP, MINI ELE 4.7μ/50V	760	Q273	5613-1740S(S)	XISTOR, NPN R
744	C219	5345-226C0961	CAP, MINI ELE 22μ/16V	761	Q277	5613-C144ES	XISTOR, NPN R
745	C220	5345-476C0961	CAP, MINI ELE 47μ/16V	762	Q278	5611-A124ES	XISTOR, PNP R
718	C221	5359-S010J123	CAP, PPP .012μ				
742	C222	5354-104593	CAP, MYL .1μ				
748	C223	5354-394593	CAP, MYL .39μ				
745	C225	5345-476C0961	CAP, MINI ELE 47μ/16V				
718	C226	5359-S010J123	CAP, PPP .012μ				
717	C229	5345-337C041	CAP, MINI ELE 330μ/16V				
745	C230	5345-476C0961	CAP, MINI ELE 47μ/16V				
745	C231	5345-105F0961	CAP, MINI ELE 1μ/50V				
<b>RESISTORS</b>							
734	△ R200	5102-4704715	RES, FUS 47	765	D270	5631-1S2473	DIODE, DET
734	△ R201	5102-4704715	RES, FUS 47	764	D271	5637-GL3ED8	LED, POWER
735	R202	5130-R030J822	RES, CBN 1/2P 8.2K	765	D272	5631-1S2473	DIODE, DET
727	R213	5130-R010J105	RES, CBN 1/6P 1M	766	D273	5631-1SS133	DIODE, DET
727	R214	5130-R010J105	RES, CBN 1/6P 1M				
727	R215	5130-R010J105	RES, CBN 1/6P 1M				
727	R216	5130-R010J105	RES, CBN 1/6P 1M				
726	R221	5130-R010J102	RES, CBN 1/6P 1K				
726	R222	5130-R010J102	RES, CBN 1/6P 1K				
733	R223	5130-R030J104	RES, CBN 1/2P 100K				
724	R224	5130-R010J104	RES, CBN 1/6P 100K				
729	△ R225	5102-1014713	RES, FUSE 100				
721	R226	5130-R010J473	RES, CBN 1/6P 47K				
720	R228	5130-R010J224	RES, CBN 1/6P 220K				
723	R229	5130-R010J224	RES, CBN 1/6P 220K				
<b>INTEGRATED CIRCUITS</b>							
663	△ TM902	4214-241	TERMINAL, SPEAKERS	711	IC201	5652-TA75072P	IC, MONO
<b>TRANSISTORS</b>							
552	R802	5130-R030J222	RES, CBN 1/2P 2.2K	788	Q201	5614-1266(Q)	XISTOR, NPN A
554	R804	5130-R030J122	RES, CBN 1/2P 1.2K	715	Q213	5611-933S(S)	XISTOR, PNP R
<b>DIODES</b>							
556	Q802	5613-2682(Q)	XISTOR, NPN R	714	Q214	5613-1740S(S)	XISTOR, NPN R
<b>MISCELLANEOUS</b>							
540	CN802	4443-0201140	CONNECTOR	713	Q215	5613-C144ES	XISTOR, NPN R
<b>PCB-5 BIAS R PC BOARD</b>							
<b>RESISTORS</b>							
551	R801	5130-R030J222	RES, CBN 1/2P 2.2K	714	Q216	5613-1740S(S)	XISTOR, NPN R
553	R803	5130-R030J122	RES, CBN 1/2P 1.2K				
<b>TRANSISTOR</b>							
555	Q801	5613-2682(Q)	XISTOR, NPN R				
<b>MISCELLANEOUS</b>							
539	CN801	4443-0201140	CONNECTOR				
669		2240-Z031	HOLDER				

Ser. No.	Ref. No.	Part No.	Description
<b>PCB-8 LED PC BOARD</b>			
<b>CAPACITORS</b>			
783	C205	5345-107F041	CAP, MINI ELE 100μ/50V
784	C206	5345-476C041	CAP, MINI ELE 47μ/16V
<b>RESISTORS</b>			
787	R203	5130-R030J332	RES, CBN 1/2P 3.3K
787	R204	5130-R030J332	RES, CBN 1/2P 3.3K
787	R205	5130-R030J332	RES, CBN 1/2P 3.3K
787	R206	5130-R030J332	RES, CBN 1/2P 3.3K
786	△ R207	5102-2205116	RES, FUSE 22
786	△ R207	5102-2205116	RES, FUSE 22

Ser. No.	Ref. No.	Part No.	Description
<b>DIODES</b>			
782	D202	5635-HZ12-2L	DIODE, ZENER
781	△ D205	5632-10DF2	DIODE, RECT
781	△ D206	5632-10DF2	DIODE, RECT
<b>MISCELLANEOUS</b>			
785	CW206	4163-S0202401	CONNECTOR W/W
702	LCN200	4163-0114025	CONNECTOR W/W
703	LCN201	4163-0114027	CONNECTOR W/W
704	LCN203	4163-0114024	CONNECTOR W/W
811	△ LCN204	4163-S5001130	CONNECTOR W/W <b>Ⓚ</b>
811B	△ LCN204	4163-S5201300	CONNECTOR W/W <b>Ⓜ</b>
024B	LCN205	4163-S4901300	CONNECTOR W/W <b>Ⓜ</b>
023B	LCN206	4163-S5001300	CONNECTOR W/W <b>Ⓜ</b>
812	△ LCN207	4163-S4901130	CONNECTOR W/W <b>Ⓚ</b>
041B	△ SW205	4411-00501102	ROTARY SWITCH, VOLTAGE SELECTOR <b>Ⓜ</b>

**PCB-9 POWER SWITCH PC BOARD**

Ser. No.	Ref. No.	Part No.	Description
<b>CAPACITORS</b>			
813	△ C201	5352-S010M103	CAP, MTL .01μ <b>Ⓚ</b>
813B	△ C201	5352-1030958	CAP, MTL .01μ <b>Ⓜ</b>
<b>RESISTORS</b>			
042B	△ R241	5130-R030J335	RES, CBN 1/2P 3.3M <b>Ⓜ</b>
<b>MISCELLANEOUS</b>			
812B	△ CN207	4163-S4901300	CONNECTOR W/W <b>Ⓜ</b>
636	△ F202	5732-632031	FUSE, 6.3A 125V <b>Ⓚ</b>
636B	△ F202	5732-01601312	FUSE, T3.15A 250V <b>Ⓜ</b>
804	△ HF201	4472-04501	FUSE HOLDER, F202
804	△ HF202	4472-04501	FUSE HOLDER, F202
651	△ SW201	4433-00401	SWITCH, PU-PW, POWER
779	△ TM201	4214-122	TERMINAL
779	△ TM202	4214-122	TERMINAL

**PCB-10 4/8 SWITCH PC BOARD**

Ser. No.	Ref. No.	Part No.	Description
<b>CAPACITORS</b>			
635	C250	5354-104593	CAP, MYL .1μ
635	C251	5354-104593	CAP, MYL .1μ
635	C252	5354-104593	CAP, MYL .1μ
635	C253	5354-104593	CAP, MYL .1μ
<b>MISCELLANEOUS</b>			
696	LCN250	4163-0114020	CONNECTOR W/W
697	LCN251	4163-0114021	CONNECTOR W/W
698	LCN252	4163-0114022	CONNECTOR W/W
699	LCN253	4163-0114023	CONNECTOR W/W
693	LCN522	4163-0125021	CONNECTOR W/W
700	LCN523	4163-0125023	CONNECTOR W/W

Ser. No.	Ref. No.	Part No.	Description
653	△ SW204	4464-00102022	SEESW SWITCH, SPEAKER OPERATING MODE

**CHASSIS MISCELLANEOUS**

Ser. No.	Ref. No.	Part No.	Description
<b>MISCELLANEOUS</b>			
666	△ P1	4161-71151	CORD W/PLUG <b>Ⓚ</b>
666B	△ P1	4161-7256	CORD W/PLUG <b>Ⓜ</b>
827	△ PCB-11	4551-9115	PC BOARD, TRANS
631	△ T1	5584-T0801	XFORMER, POWER <b>Ⓚ</b>
631B	△ T1	5584-T0803	XFORMER, POWER <b>Ⓜ</b>

**PACKAGE PARTS LIST**

Ser. No.	Ref. No.	Part No.	Description
021		1756-06304	LABEL, 230V/50Hz <b>Ⓜ</b>
022		1756-03101	LABEL, (W)LABEL (X2) <b>Ⓜ</b>
027		1111-0370J152	OWNER GUIDE, VOLTAGE SELECTOR ADDENDUM <b>Ⓜ</b>
107		1111-0670J152	OWNER GUIDE, IB
108		1113-02501	OWNER CARD, REPLY CARD <b>Ⓚ</b>
109		1116-03801	GUARANT CARD, WARRANTY <b>Ⓚ</b>
110		1119-04501	ATTACH SHEET, SERVICE GUIDE <b>Ⓚ</b>
111		1119-01201	ATTACH SHEET, UL <b>Ⓚ</b>
121		1241-R0123351	POLYETHY BAG, IB
122		1241-R0165751	POLYETHY BAG, SET
125		1221-897143	CARTON BOX
126		1222-7225	CUSHION, R
127		1222-7226	CUSHION, L
128		1223-R0420055	SOFT SHEET

**ABBREVIATIONS IN PARTS LIST**

Abbreviation	Description
<b>CAPACITORS</b>	
CAP, MINI ELE	: Electrolytic
CAP, CER	: Ceramic
CAP, PPP	: Polypropylene
CAP, MYL	: Mylar
CAP, MCA	: Mica
CAP, MINI BP	: Bipolar
CAP, ELE BP	: Electrolytic Bipolar
CAP, STY	: Polystyrene Film
CAP, SPE	: Special
CAP, TAN	: Tantalum
	470μ
	6800p
	.047μ
	: 470μF
	: 6800pF
	: 0.047μF

Abbreviation	Description
<b>RESISTORS</b>	
RES, CBN 1/6P	: Carbon 1/6 W
RES, FUSE	: Fuse
RES, CEM 5P	: Cement 5W
RES, MTL 1P	: Metal 1W
	2.2K
	220
	: 2.2KΩ
	: 220Ω

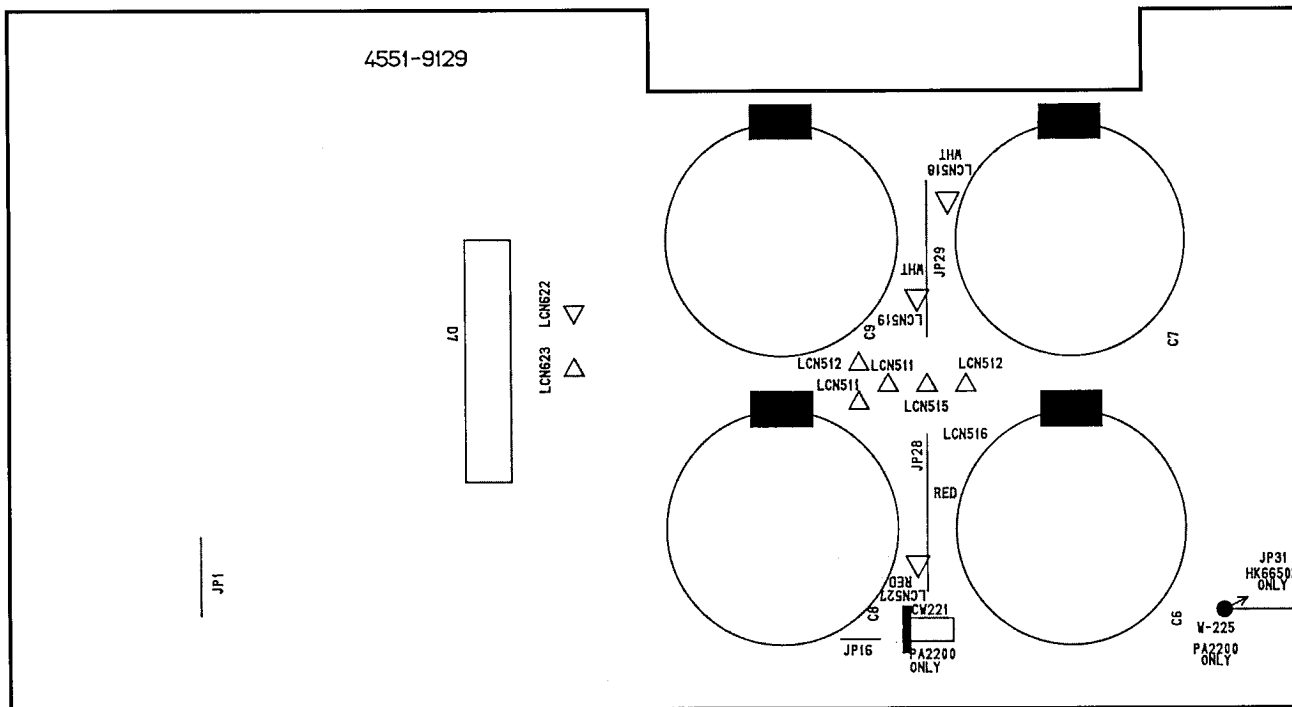
Abbreviation	Description
<b>TRANSISTORS</b>	
XISTOR	: Transistors
FET	: Field Effect Transistor

Abbreviation	Description
<b>CONTROLS</b>	
RES, V CBN	: Variable Carbon Resistor
RES, SEMI FIX	: Semi-fixed Resistor

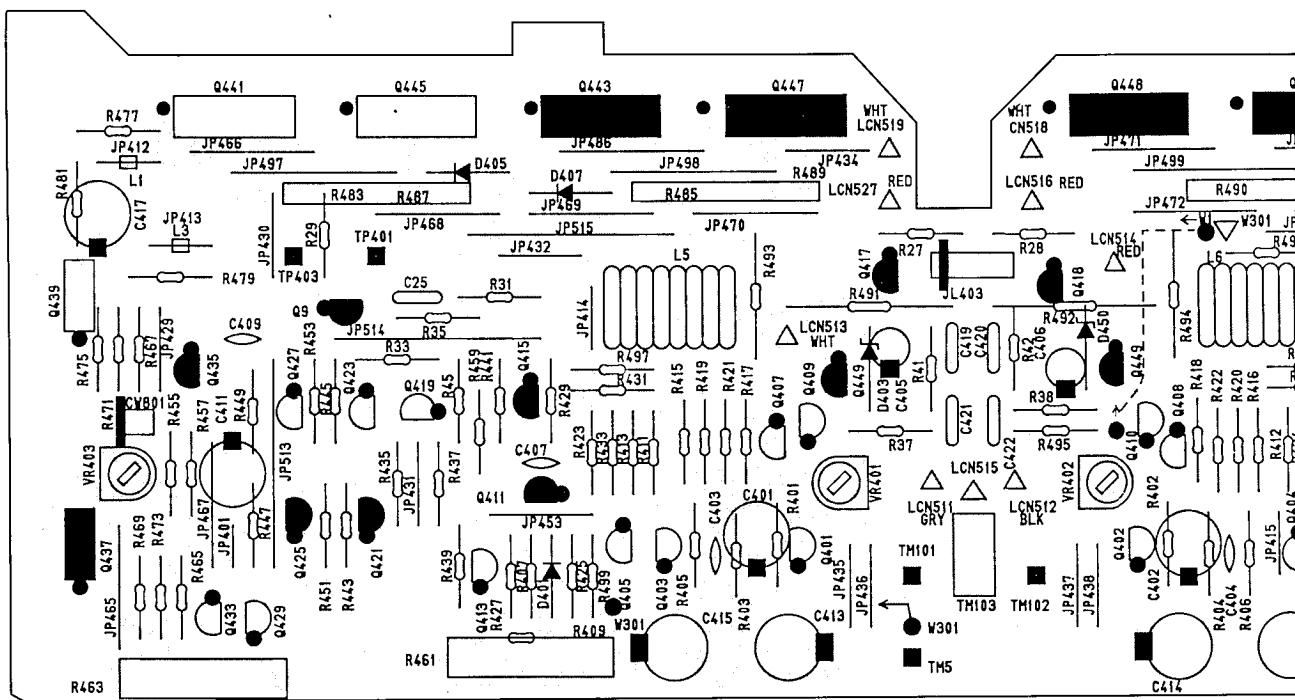
**NOTE**  
△ SAFETY-RELATED COMPONENT. USE ONLY EXACT REPLACEMENT PART AS SPECIFIED.

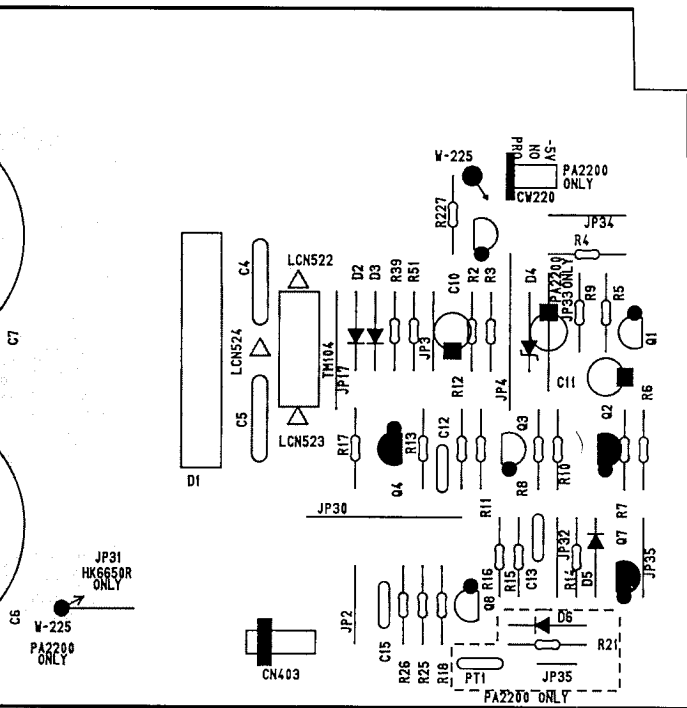
P.C. BOARDS (1)

PCB-2 Power Supply P.C. Board

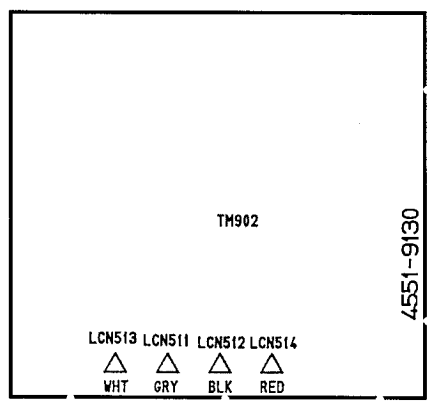


PCB-1 Main P.C. Board

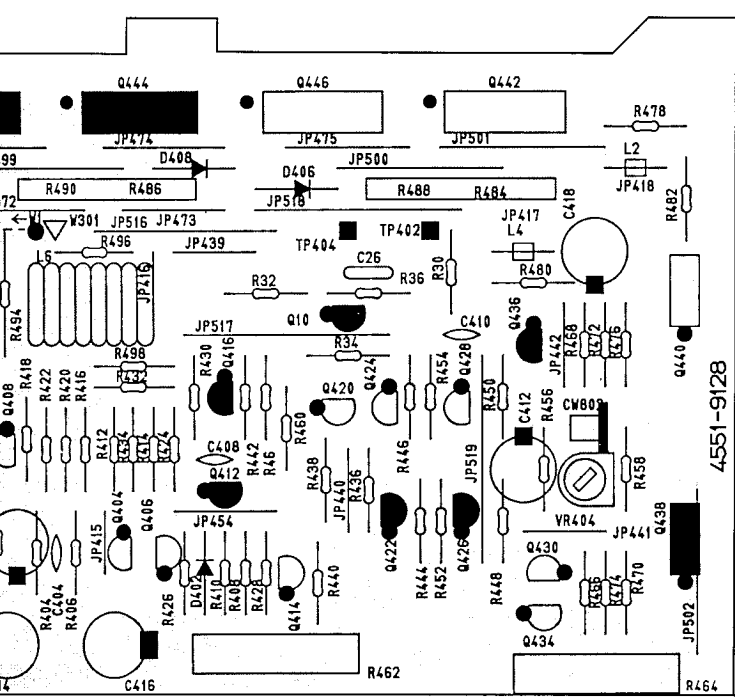
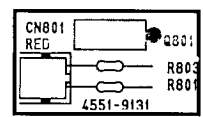




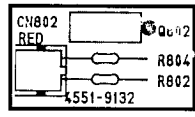
PCB-3 Speaker P.C. Board



PCB-4 Bias L P.C. Board



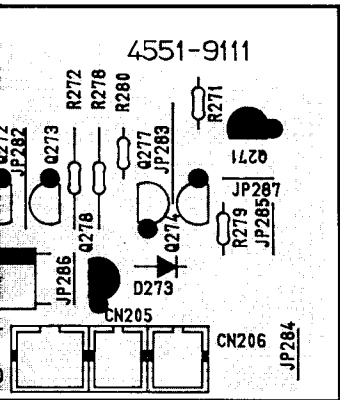
PCB-5 Bias R P.C. Board



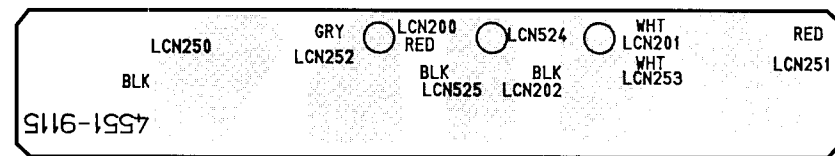
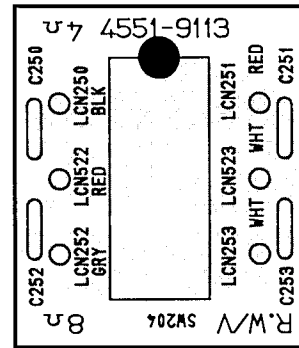




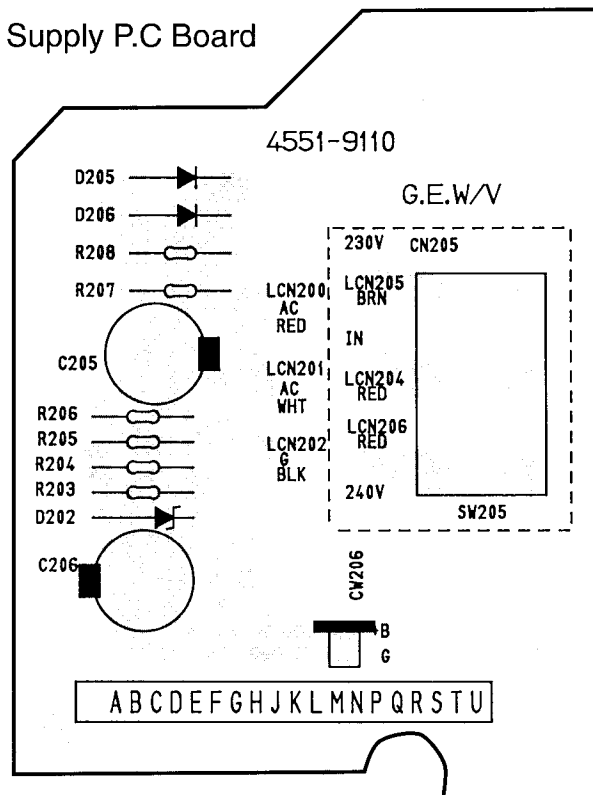
P.C. Board



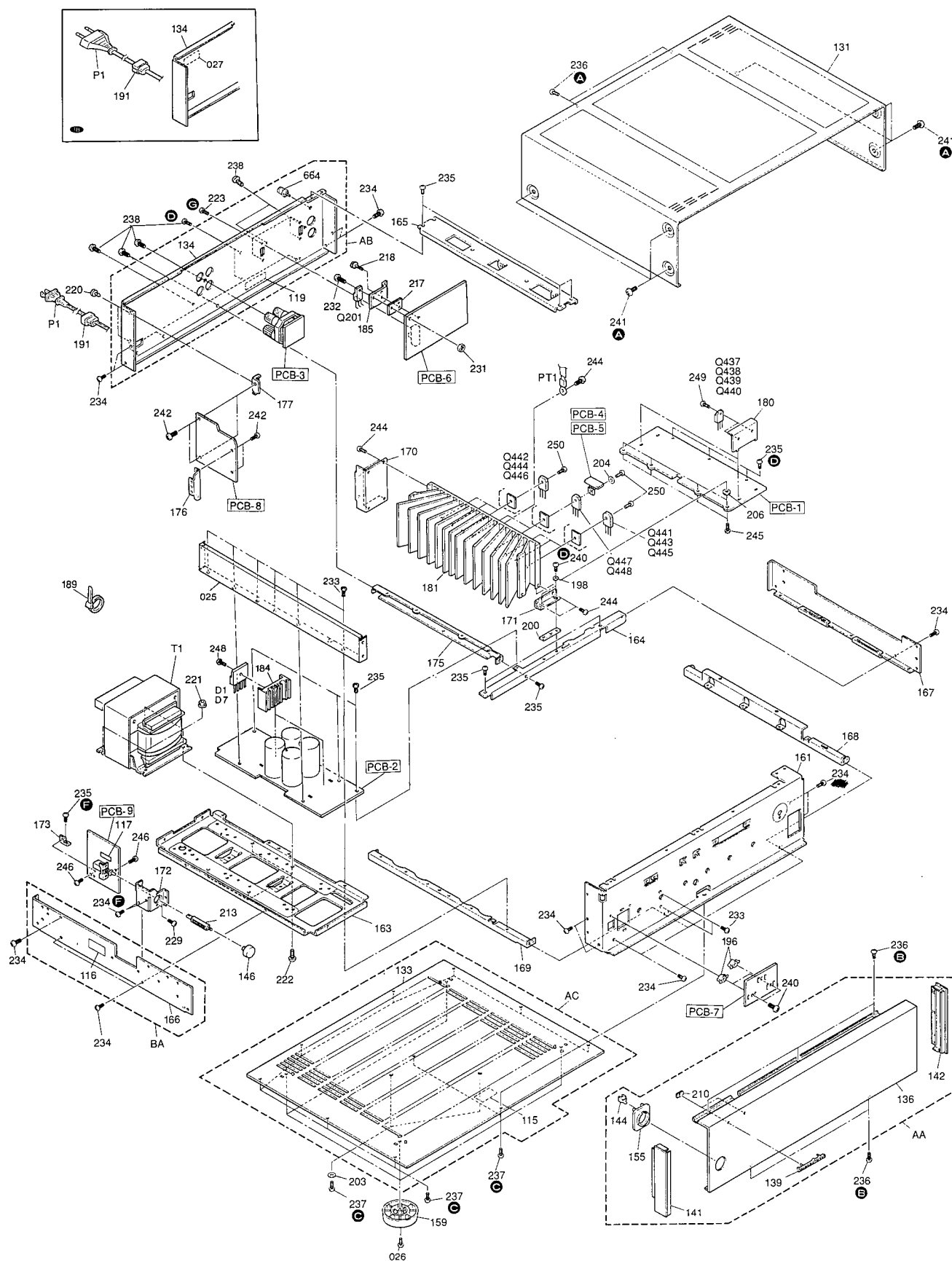
PCB-10 4/8 Switch P.C. Board



PCB-8 Sub Power Supply P.C Board



GENERAL UNIT EXPLODED VIEW IB



**GENERAL UNIT PARTS LIST**

Ref.No.	Part No.	Description
AA	A443-PA2200D	FRONT PANEL ASSEMBLY
AB	A424-PA2200C	CABINET BACK ASSEMBLY
AC	A423-PA2200C	CABINET BOTTOM ASSEMBLY
BA	B219-PA2200C	METAL FITTG ASSEMBLY
025	2219-8393	METAL FITTG
026	2347-R0140082	SCREW, BND T+ (4x8mm)(X4)
027	1756-21908	LABEL, DBP NO.
117	1756-R01TS312	LABEL, T3. 15A 250V
134	1424-36602	CABINET BACK
136	1443-14703	FRONT PANEL
159	1319-02301	LEG, BOTTOM (X4)
184	2222-7269	HEAT SINK, D1, D7 (X2)
203	2401-0473	METAL WASHER, BOTTOM (X2)
233	2347-R0130082	SCREW, BND T+ (3X8mm) (X8)
236	2347-R0130064	SCREW, BND T+ (3X6mm) (X7)
237	2347-R0130082	SCREW, BND T+ (3X8mm) (X12)
238	2347-R0130084	SCREW, BND T+ (3X8mm) (X11)
248	2347-R0130082	SCREW, BND T+ (3X8mm) (X2)
249	2347-R0130082	SCREW, BND T+ (3X8mm)

**ELECTRICAL PARTS LIST**

**PCB-1 MAIN PC BOARD**

Ser. No.	Ref. No.	Part No.	Description
<b>CAPACITORS</b>			
548	C409	5353-470534	CAP, MCA 47P
548	C410	5353-470534	CAP, MCA 47P
560	C431	5354-104593	CAP, MYL .1μ
560	C432	5354-104593	CAP, MYL .1μ
<b>RESISTORS</b>			
594C	R401	5130-R030J561	RES, CBN 1/2P 560
594C	R402	5130-R030J561	RES, CBN 1/2P 560
579	R403	5130-R030J333	RES, CBN 1/2P 33K
579	R404	5130-R030J333	RES, CBN 1/2P 33K
585	R419	5130-R030J183	RES, CBN 1/2P 18K
585	R420	5130-R030J183	RES, CBN 1/2P 18K
572C	R423	5174-511381	RES, MTL 1/4P 510
572C	R424	5171-511381	RES, MTL 1/4P 510
588	R435	5130-R030J153	RES, CBN 1/2P 15K
588	R436	5130-R030J153	RES, CBN 1/2P 15K
588	R437	5130-R030J153	RES, CBN 1/2P 15K
588	R438	5130-R030J153	RES, CBN 1/2P 15K
574	R447	5174-153381	RES, MTL 1/4P 15K
574	R448	5174-153381	RES, MTL 1/4P 15K
574	R449	5174-153381	RES, MTL 1/4P 15K
574	R450	5174-153381	RES, MTL 1/4P 15K
595	R496	5130-R030J101	RES, CBN 1/2P 100
508	R499	5174-163381	RES, MTL 1/4P 16K

**TRANSISTORS**

605	Q401	5616-2SK366(V)	FET, N-CH
605	Q402	5616-2SK366(V)	FET, N-CH

**MISCELLANEOUS**

599C	LCN513	4163-0140027	CONNECTOR W/W
597C	LCN514	4163-0140025	CONNECTOR W/W

**PCB-2 POWER SUPPLY PC BOARD**

**CAPACITORS**

640C	C6	5341-S33GM109	CAP, ELE 10000μ/63V
640C	C7	5341-S33GM109	CAP, ELE 10000μ/63V
640C	C8	5341-S33GM109	CAP, ELE 10000μ/63V
640C	C9	5341-S33GM109	CAP, ELE 10000μ/63V

**DIODE**

639C	△ D7	5685-D5SB40	SILICON, BRIG
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Ser. No. Ref. No. Part No. Description

**MISCELLANEOUS**

598C	LCN511	4163-0122026	CONNECTOR W/W
596C	LCN512	4163-0122024	CONNECTOR W/W
693C	LCN522	4163-0135021	CONNECTOR W/W
700C	LCN523	4163-0135023	CONNECTOR W/W
695C	LCN524	4163-0125020	CONNECTOR W/W
045C	LCN622	4163-0130022	CONNECTOR W/W
046C	LCN623	4163-0130020	CONNECTOR W/W

**PCB-3 SPEAKER PC BOARD**

**MISCELLANEOUS**

663C	△ TM902	4214-242	TERMINAL, SPEAKERS
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**PCB-6 AUTO ON/OFF PC BOARD**

**CAPACITORS**

748	C223	5352-S110J394	CAP, MTL .39μ
047C	C425	5359-S010K151	CAP, PPP 150P
047C	C426	5359-S010K151	CAP, PPP 150P

**RESISTORS**

048C	R217	5130-R030J561	RES, CBN 1/2P 560
048C	R218	5130-R030J561	RES, CBN 1/2P 560
043C	R238	5130-R010J101	RES, CBN 1/6P 100

**MISCELLANEOUS**

755	△ PJ201	4489-00103002	PIN JACK, MLT, INPUT
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**PCB-8 SUB POWER SUPPLY PC BOARD**

**MISCELLANEOUS**

702C	LCN200	4163-0115021	CONNECTOR W/W
703C	LCN201	4163-0115023	CONNECTOR W/W
704C	LCN203	4163-0115020	CONNECTOR W/W
024C	LCN205	4163-S4901300	CONNECTOR W/W
023C	LCN206	4163-S5001300	CONNECTOR W/W
041C	△ SW205	4411-00501102	ROTARY SWITCH, VOLTAGE SELECTOR

**PCB-9 POWER SWITCH PC BOARD**

**CAPACITOR**

813C	△ C201	5352-1030958	CAP, MTL .01μ
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**RESISTORS**

042C	△ R241	5130-R030J335	RES, CBN 1/2P 3.3M
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**MISCELLANEOUS**

636C	△ F202	5732-01601312	FUSE, T3.15A 250V
811C	△ LCN204	4163-S5201350	CONNECTOR W/W
812C	△ LCN207	4163-S4901160	CONNECTOR W/W

**CHASSIS MISCELLANEOUS**

**MISCELLANEOUS**

666C	△ P1	4161-09801192	CORD W/PLUG
631C	△ T1	5584-T0804	XFORMER, POWER
049C	C4	5352-1041957	CAP, MTL .1μ
049C	C5	5352-1041957	CAP, MTL .1μ

**PACKAGE PARTS LIST**

022	1756-03108	LABEL, (I) LABEL (X2)
107C	1111-0680J152	OWNER GUIDE, <b>IB</b>

**ALIGNMENT PROCEDURES****■ Conditions:**

Make the adjustment at a room temperature of 77F (25C).

**■ DC BALANCE ADJUSTMENT**

Step	Connection Equipments	Adjustment	For
1	Connect the Digital Volt Meter to TP405 and TP407.	VR401	-60 ±10 mV
2	Connect the Digital Volt Meter to TP406 and TP407.	VR402	-60 ±10 mV

**■ IDLING CURRENT ADJUSTMENT**

Step	Connection Equipments	Adjustment	For
1	Connect the Digital Volt Meter to TP401 and TP403.	VR403	40 mV
2	Connect the Digital Volt Meter to TP402 and TP404.	VR404	40 mV

**■ DC BALANCE CONFIRMATION**

Set the Speaker Operating Mode switch to the "4Ω" position.

Step	Connection Equipments	For
1	Connect the Digital Volt Meter to TP405 and TP407.	0 ±60 mV
2	Connect the Digital Volt Meter to TP406 and TP407.	0 ±60 mV

- After the above adjustment, leave the unit with its power on for longer than 15 minutes and then repeat the same adjustment.**

A B C D E

SCHEMATIC DIAGRAM (1)

1

2

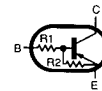
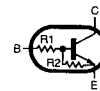
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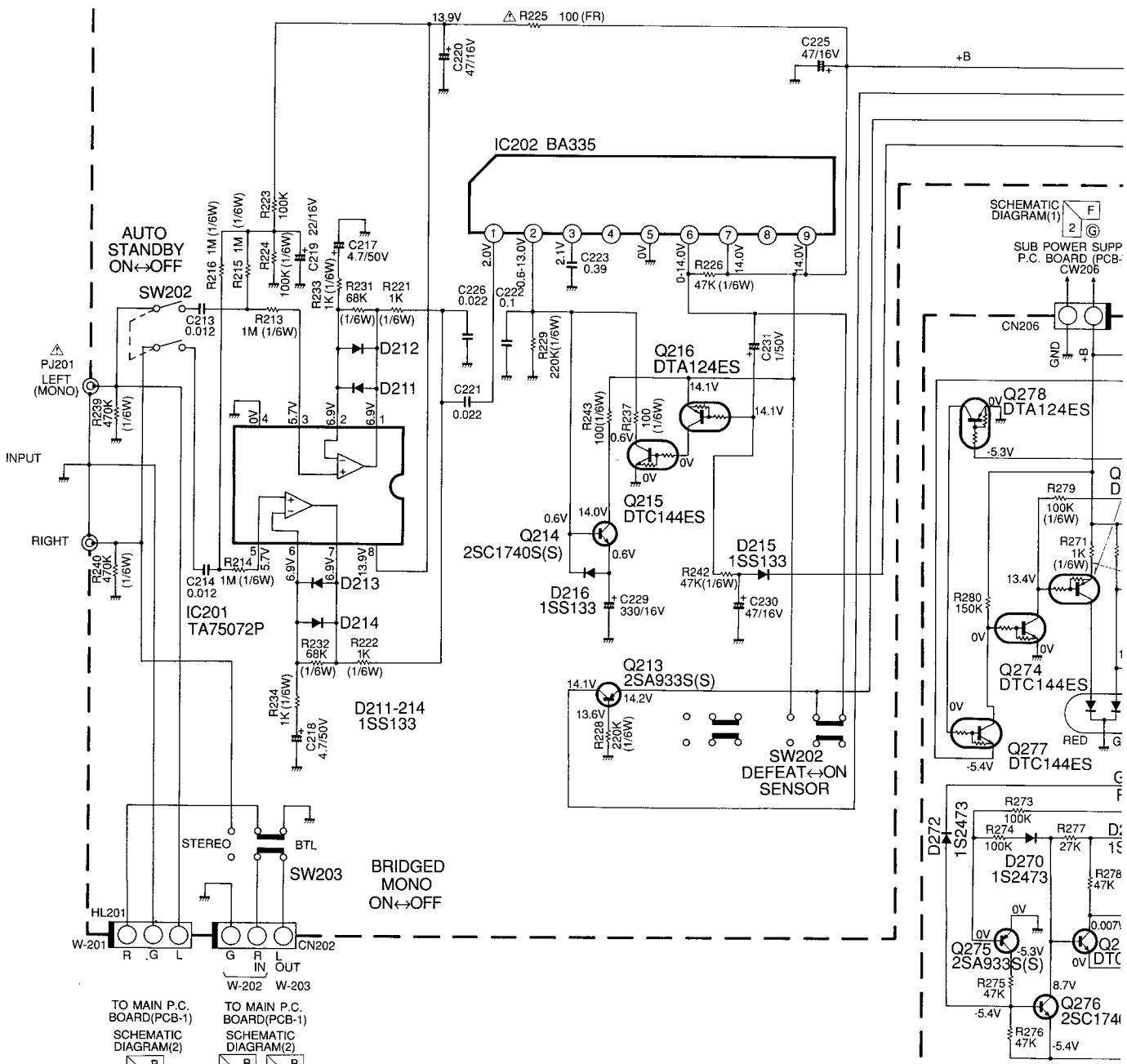
6

PCB-6 AUTO ON/OFF P.C.BOARD



Type	R1	R2
DTC144ES	47K	47K

Type	R1	R2
DTA124ES	22K	22K



SCHEMATIC DIAGRAM(1)  
SUB POWER SUPP  
P.C. BOARD (PCB-  
CW206

PCB-7 LED P.C.BOARD

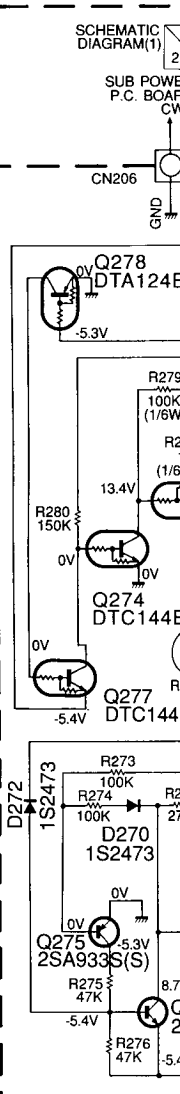
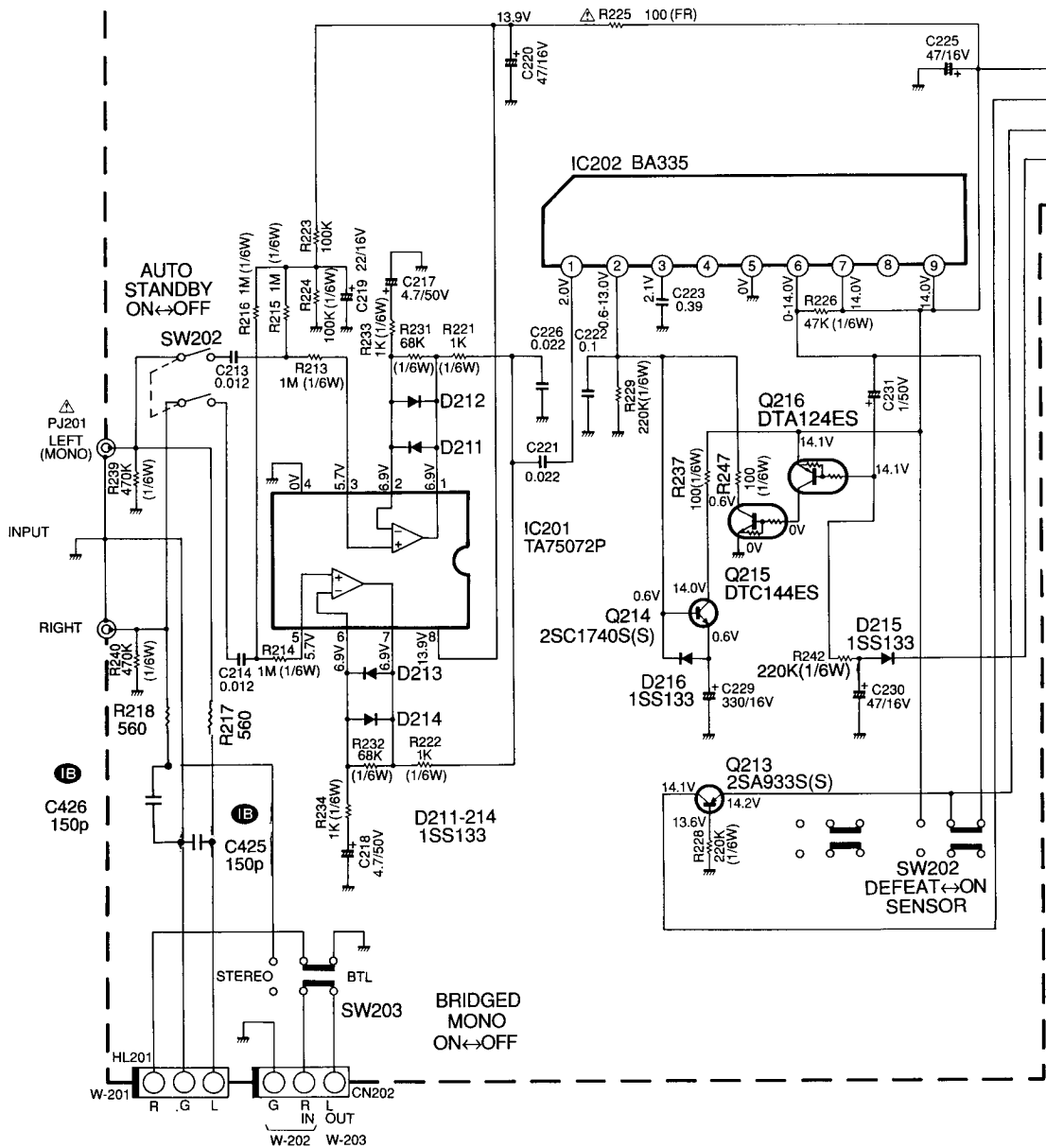


**SCHEMATIC DIAGRAM (1)**

**PCB-6 AUTO ON/OFF P.C. BOARD**

Type	R1	R2
DTC144ES	47K	47K

Type	R1	R2
DTA124ES	22K	22K



**PCB-7 LED P.C. BOARD**

TO MAIN P.C. BOARD(PCB-1) SCHEMATIC DIAGRAM(2) 5 (C)

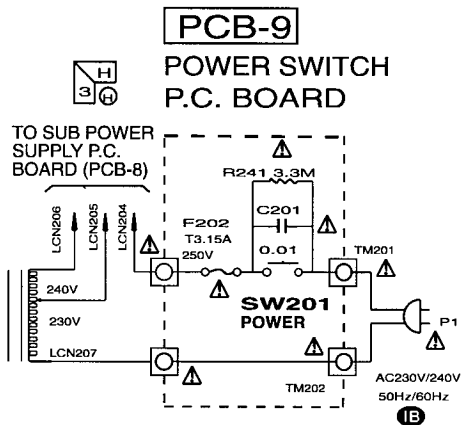
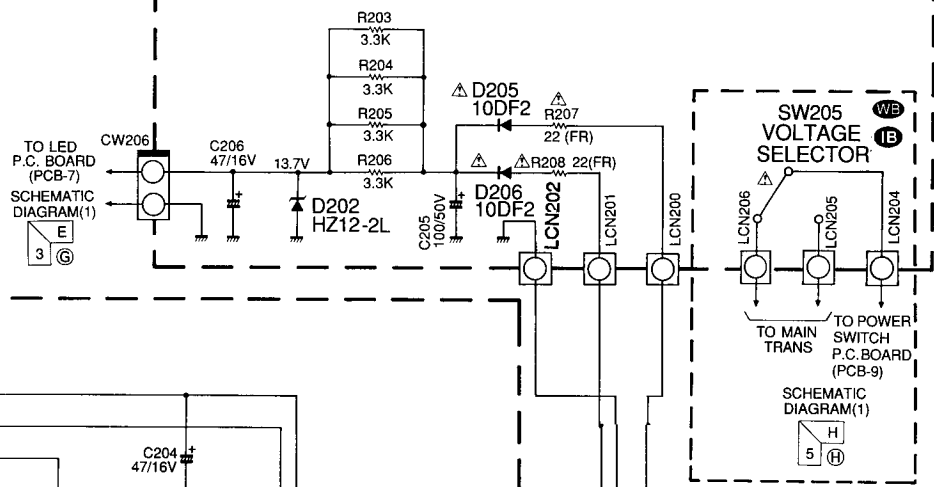
TO MAIN P.C. BOARD(PCB-1) SCHEMATIC DIAGRAM(2) 4 (B) 3 (A)

1  
2  
3  
4  
5  
6  
7

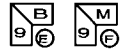


F G H I J

**PCB-8**  
**SUB POWER SUPPLY P.C. BOARD**



TO POWER SUPPLY P.C. BOARD (PCB-2)  
SCHEMATIC DIAGRAM (2)



- NOTE:
1. ALL RESISTANCES VALUES ARE IN  $\Omega$ .  
KB=1000 $\Omega$ , MA=100K $\Omega$ .
  2. THE WATTAGE OF RESISTORS IS 1/2W UNLESS OTHERWISE NOTED.
  3. ALL CAPACITANCES VALUES ARE IN  $\mu$ F UNLESS OTHERWISE NOTED. P=MMF.
  4. ... V:DC VOLTAGE AT NO SIGNAL UNLESS OTHERWISE NOTED.
  5. SAFETY REQUIREMENTS COMPONENTS IN ACCORDANCE WITH PRESENT SAFETY REGULATIONS. THESE COMPONENTS MUST ONLY BE REPLACED BY ORIGINAL PARTS.

A B C D E F G

SCHEMATIC DIAGRAM (2)

PCB-1

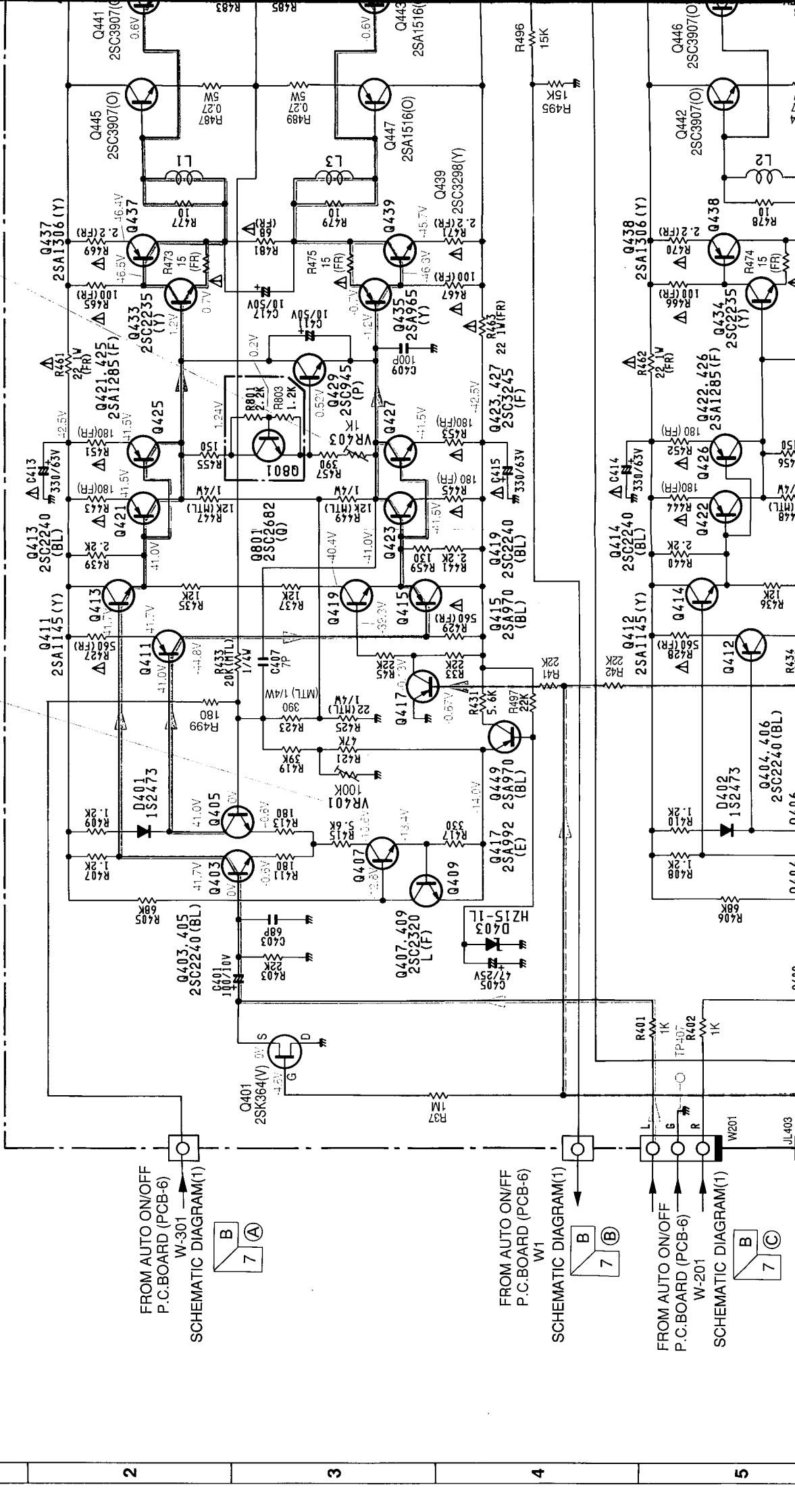
MAIN P.C. BOARD

DC BALANCE ADJ. (Rch)

BIAS R P.C. BOARD

IDLING CURRENT ADJ. (Rch)

PCB-5



FROM AUTO ON/OFF  
P.C. BOARD (PCB-6)  
W-301



SCHEMATIC DIAGRAM(1)

FROM AUTO ON/OFF  
P.C. BOARD (PCB-6)  
W-201



SCHEMATIC DIAGRAM(1)

FROM AUTO ON/OFF  
P.C. BOARD (PCB-6)  
W-201

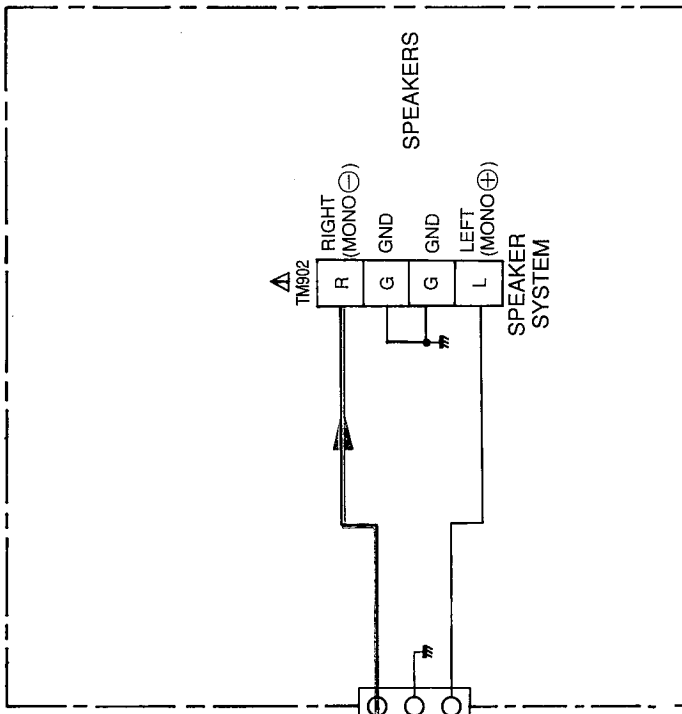


SCHEMATIC DIAGRAM(1)

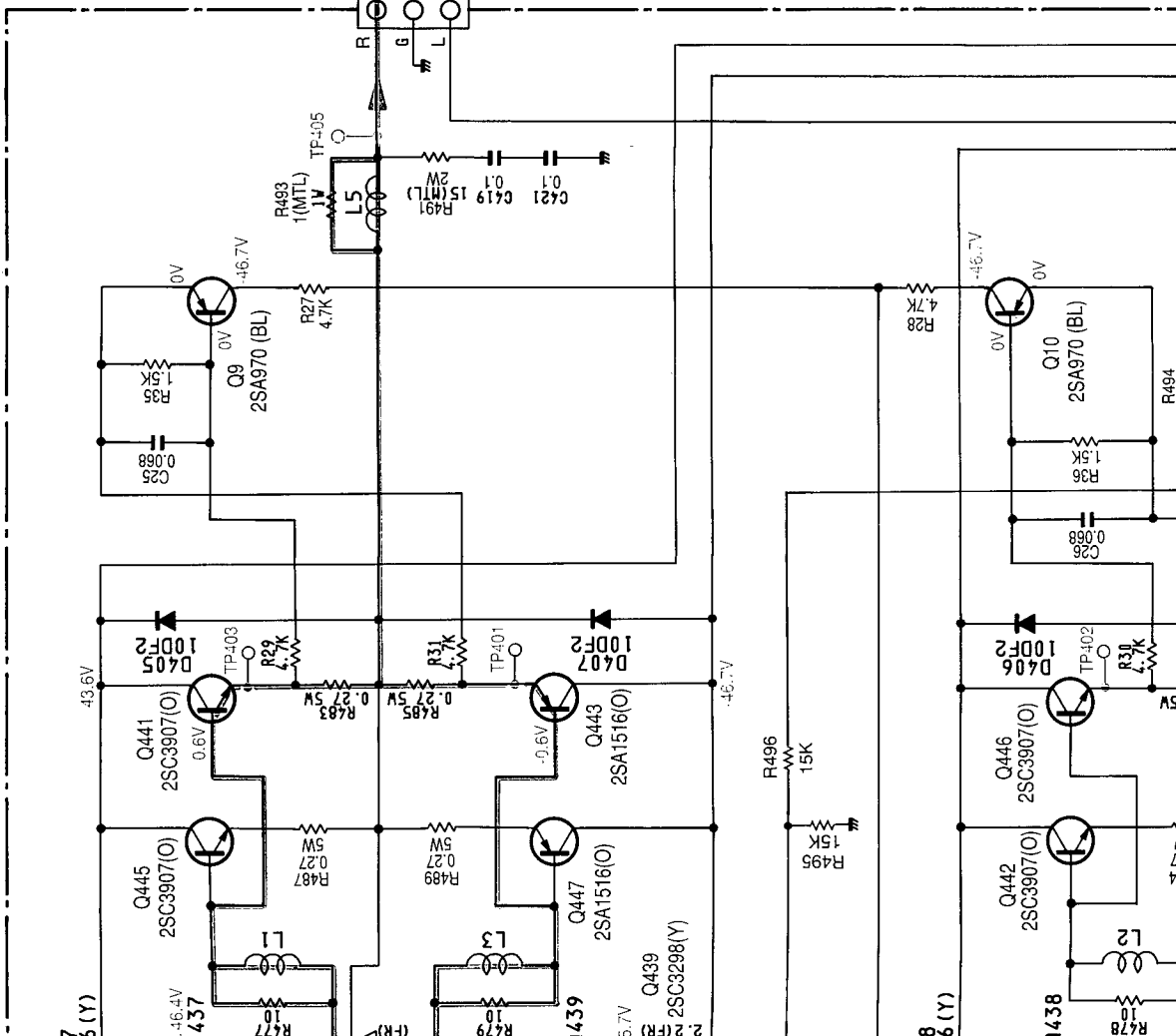
1 2 3 4 5

N M L K J I H G

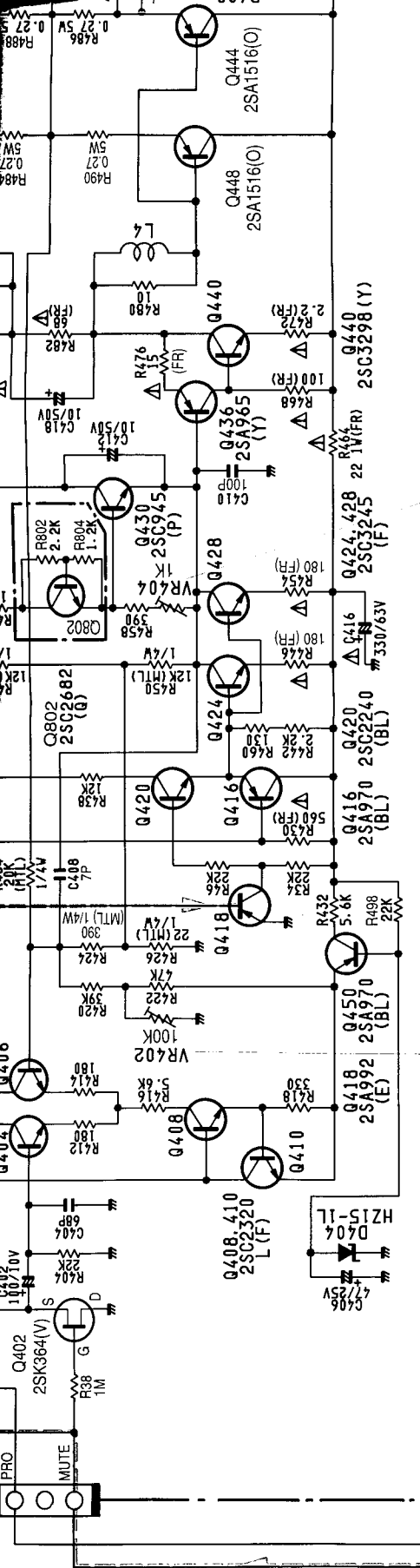
PCB-3  
SPEAKER P.C. BOARD



ENT ADJ. (Rch)



- NOTE:
1. ALL RESISTANCE VALUES ARE IN  $\Omega$ .
  2. THE WATTAGE OF RESISTORS IS 1/2W UNLESS OTHERWISE NOTED.
  3. ALL CAPACITANCE VALUES ARE IN  $\mu F$  UNLESS OTHERWISE NOTED.
  4. ... V-DC VOLTAGE AT NO SIGNAL UNLESS OTHERWISE NOTED.
  5. ... SAFETY REQUIREMENTS COMPONENTS IN ACCORDANCE WITH PRESENT

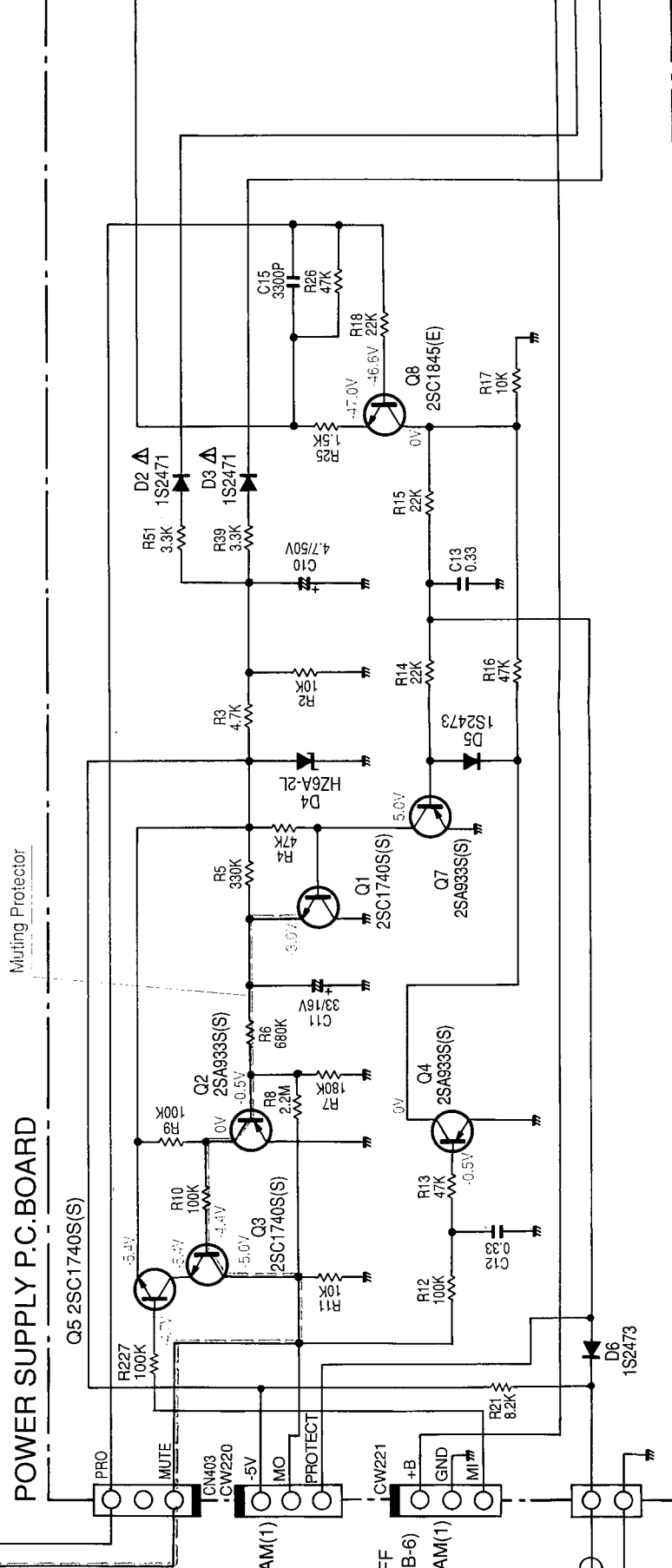


DC BALANCE ADJ. (Lch)

PCB-4

IDLING CURRENT ADJ. (Lch)

BIAS L.P.C. BOARD



POWER SUPPLY P.C. BOARD

TO LED P.C. BOARD (PCB-7)

SCHEMATIC DIAGRAM(1)



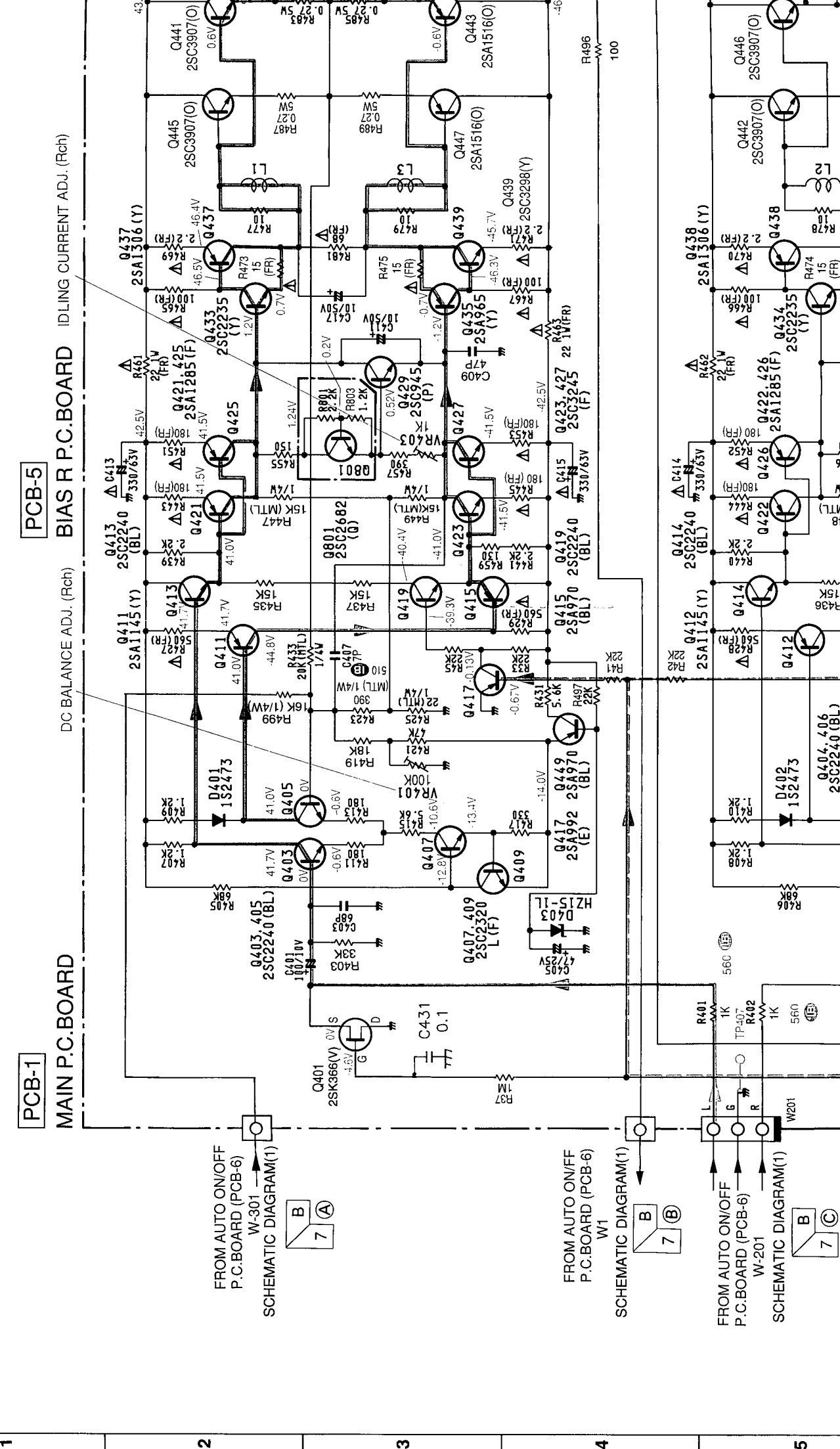
TO AUTO ON/OFF P.C. BOARD (PCB-6)

SCHEMATIC DIAGRAM(1)





SCHEMATIC DIAGRAM (2)

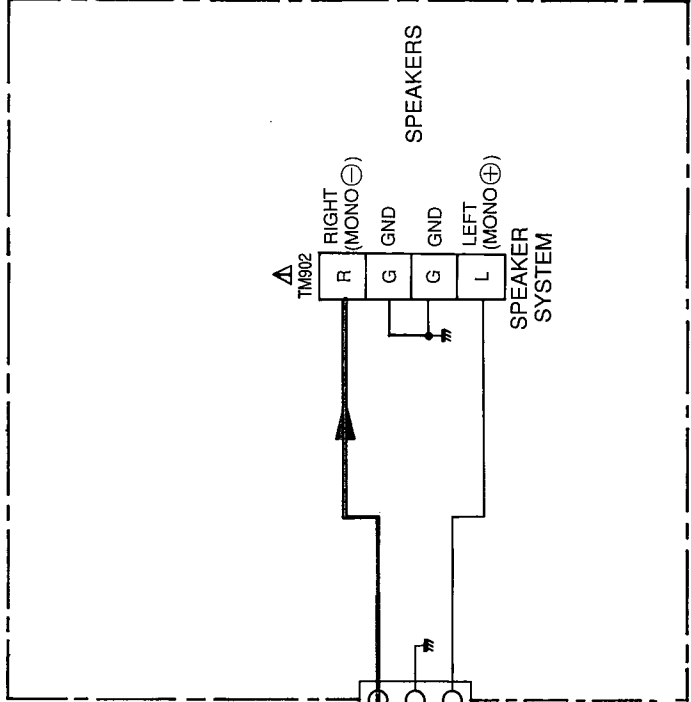


A B C D E F G

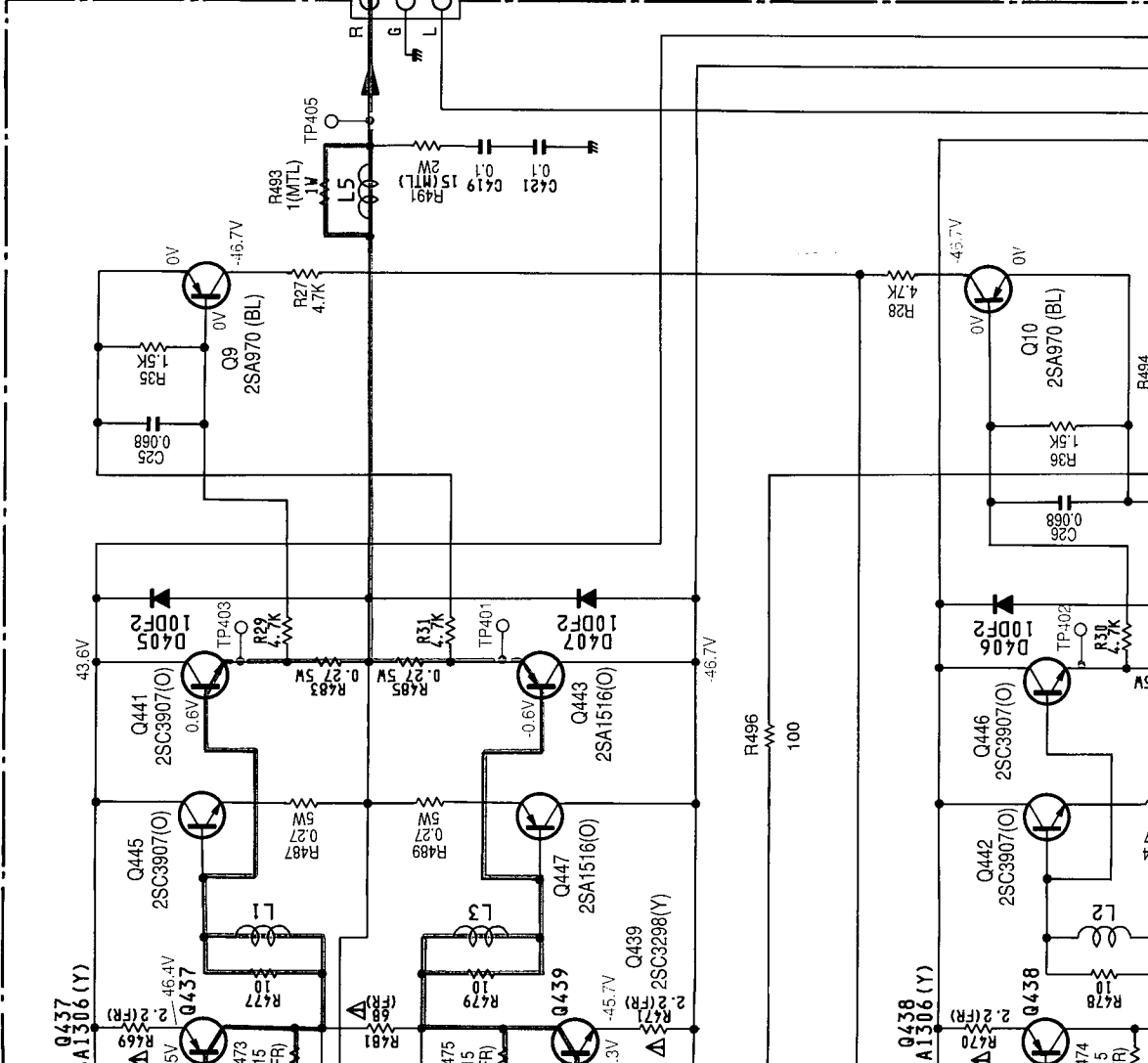
1 2 3 4 5

PCB-3

SPEAKER P.C. BOARD

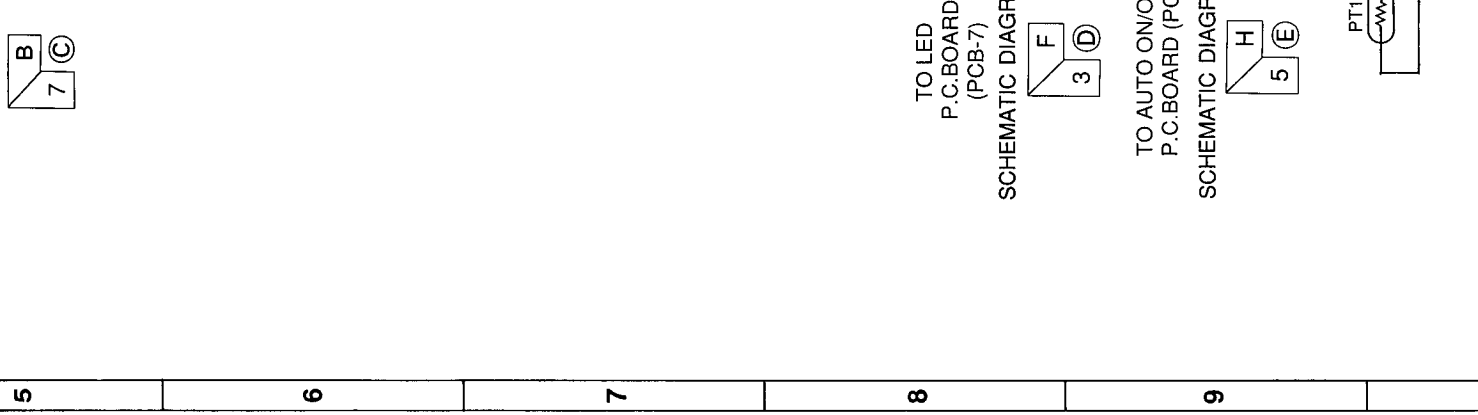
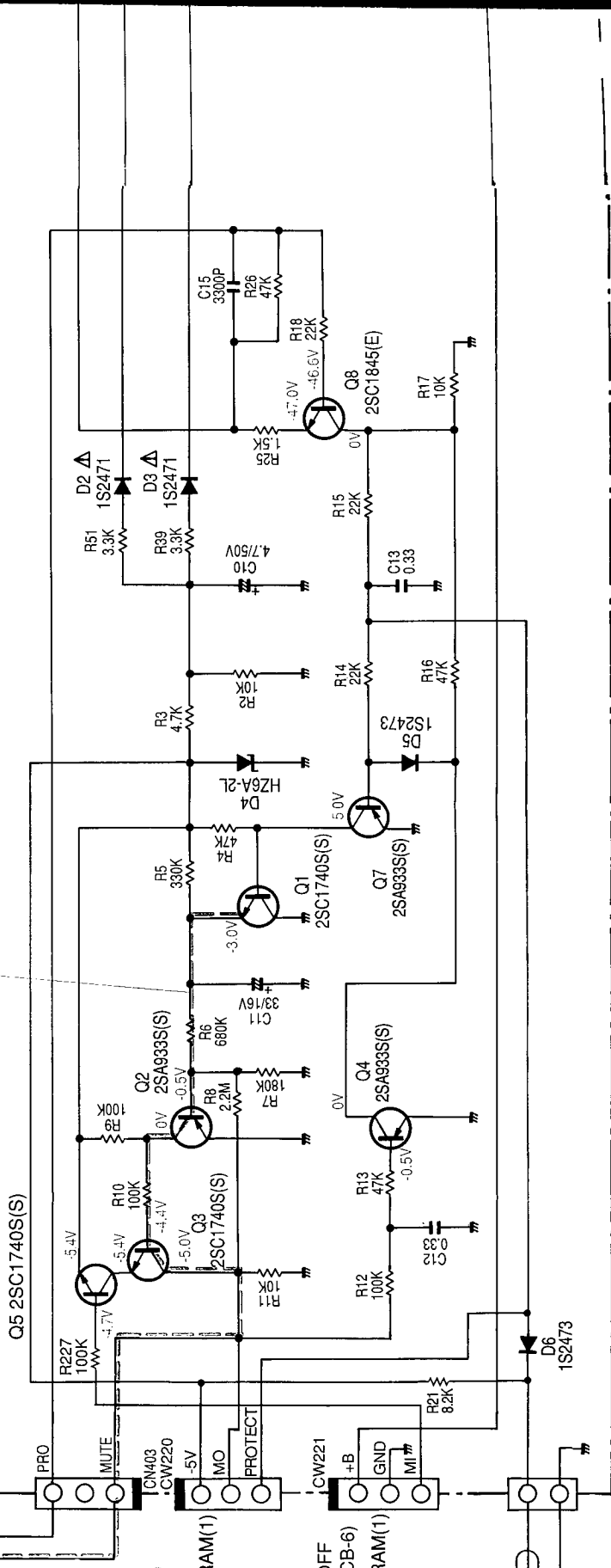
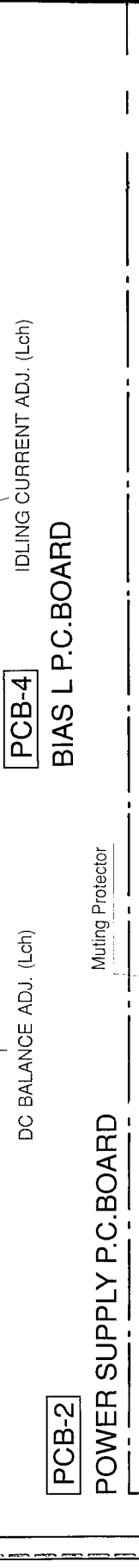
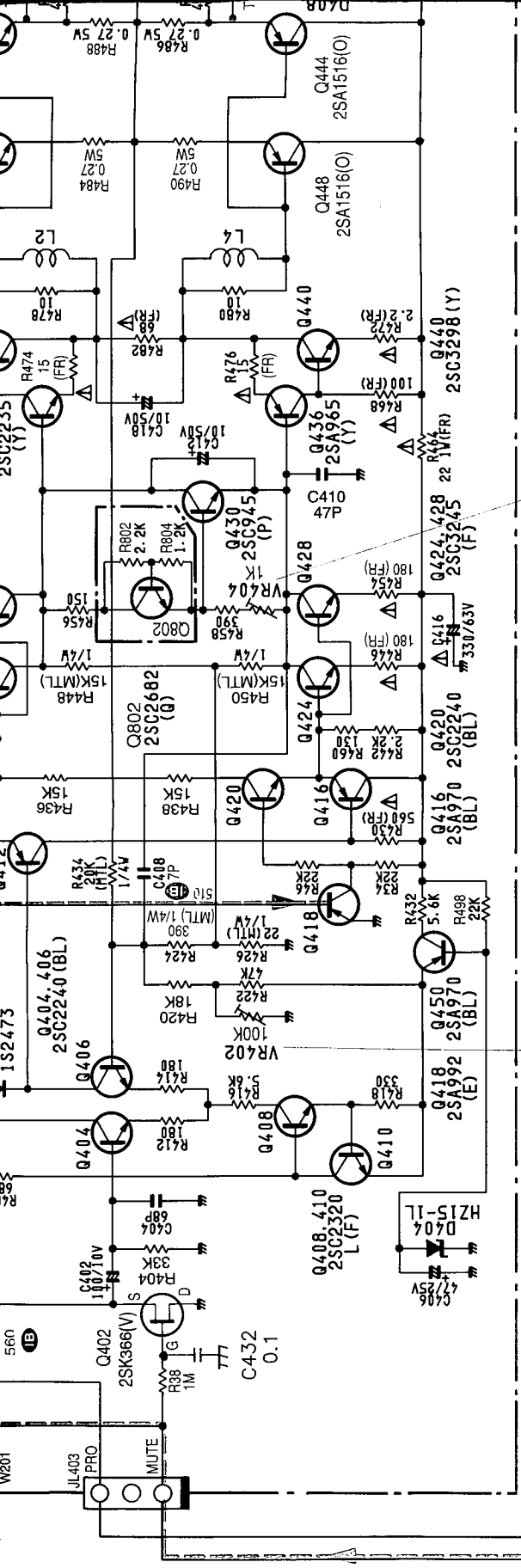


CURRENT ADJ. (Rch)



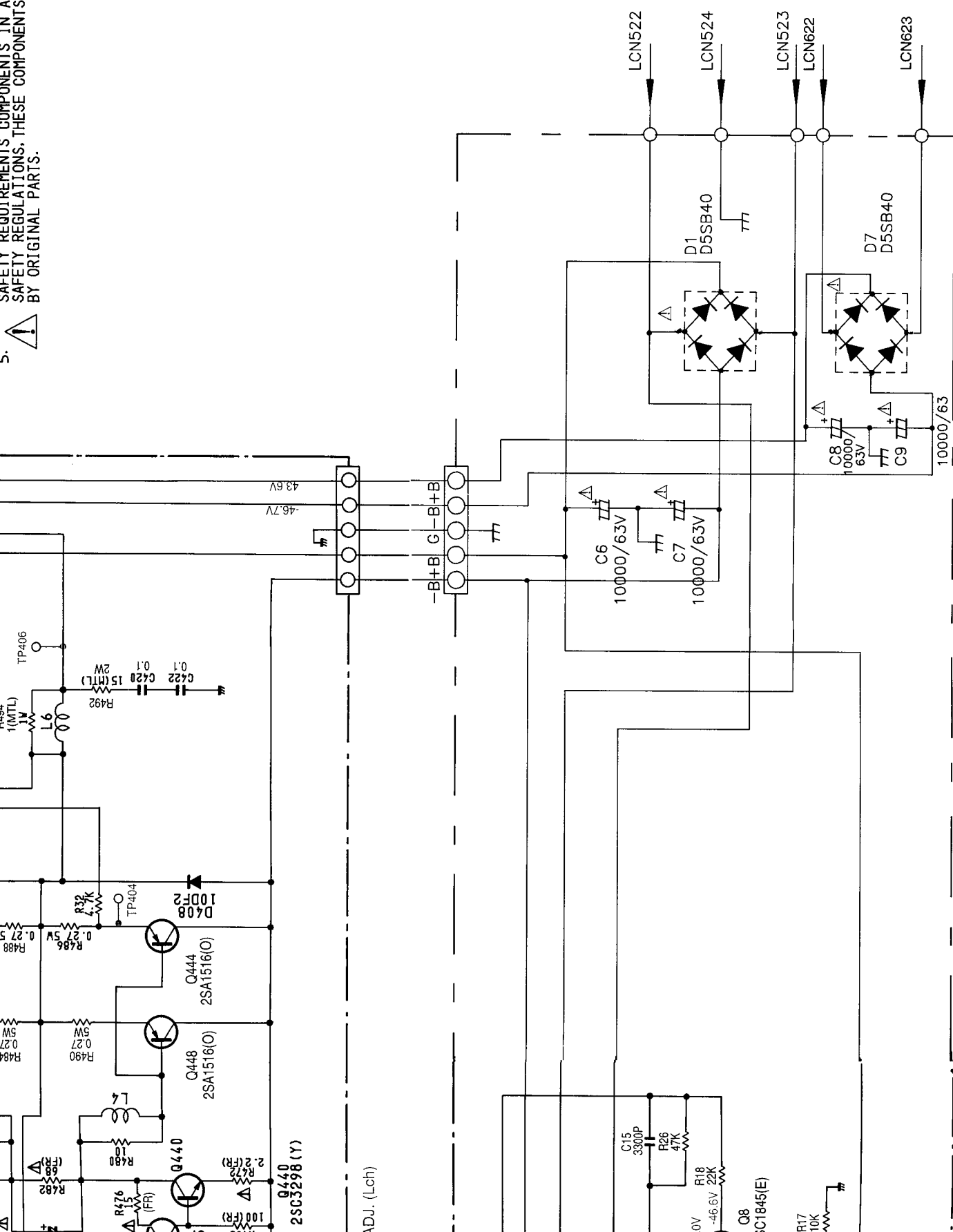
NOTE:

1. ALL RESISTANCE VALUES ARE IN  $\Omega$ .
2. THE WATTAGE OF RESISTORS IS 1/2W UNLESS OTHERWISE NOTED.
3. ALL CAPACITANCE VALUES ARE IN  $\mu$ F UNLESS OTHERWISE NOTED. P=44F.
4. ... V:DC VOLTAGE AT NO SIGNAL UNLESS OTHERWISE NOTED.
5. ... SAFETY REQUIREMENTS COMPONENTS IN ACCORDANCE WITH PRESENT

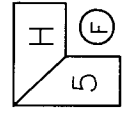




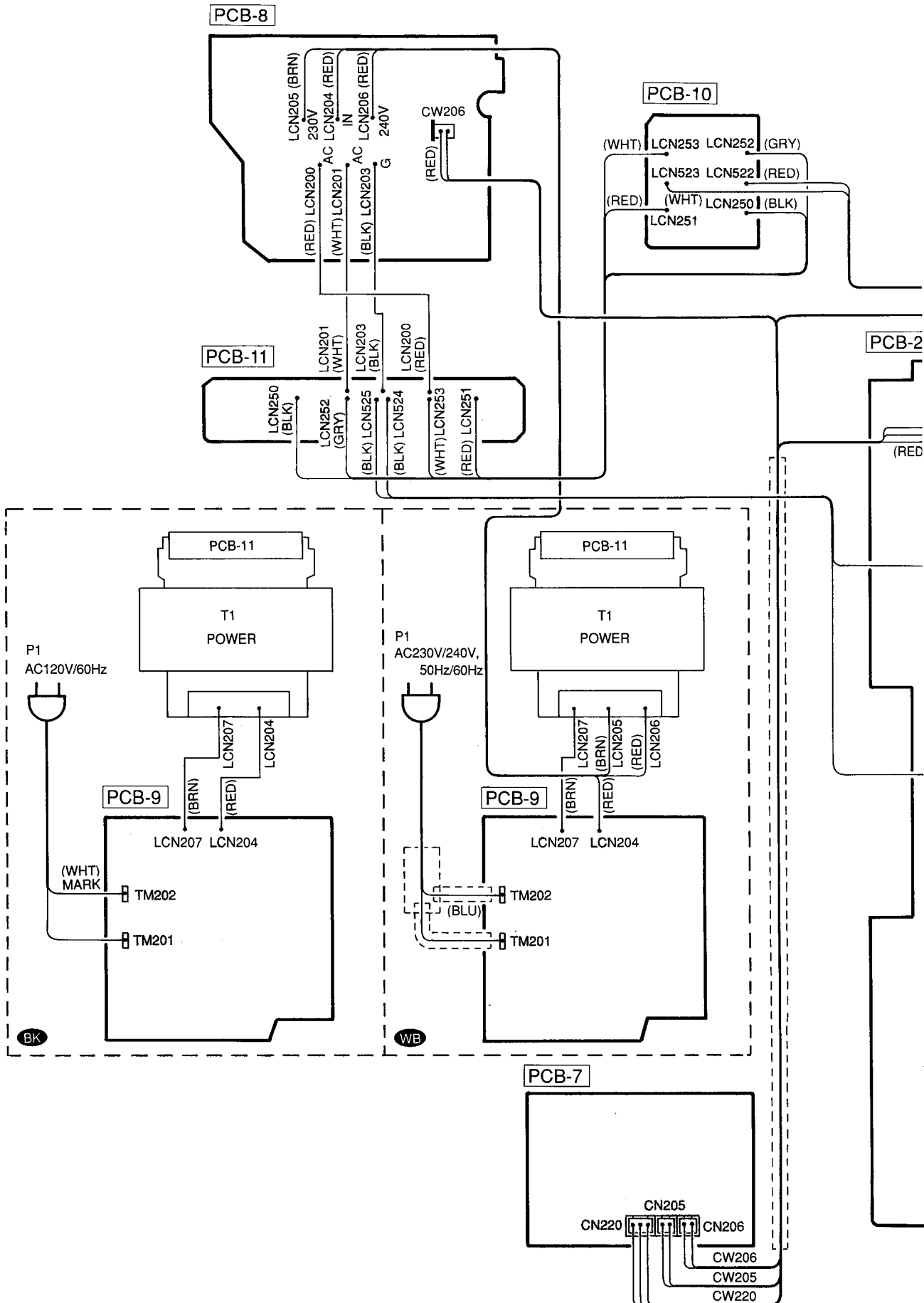
5. SAFETY REQUIREMENTS COMPONENTS IN ACCORDANCE WITH PRESENT SAFETY REGULATIONS. THESE COMPONENTS MUST ONLY BE REPLACED BY ORIGINAL PARTS.

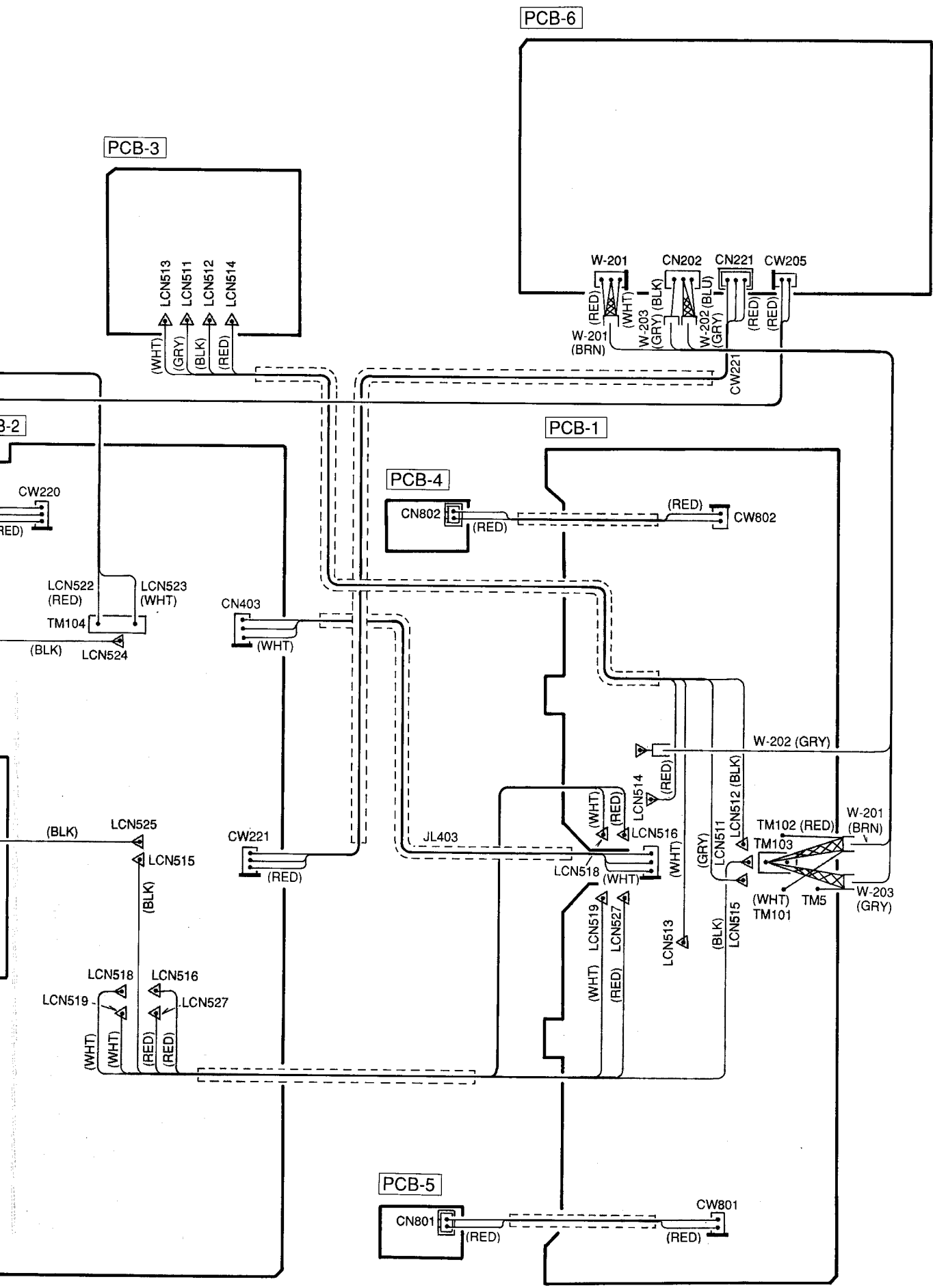


COMING FROM SCHEMATIC DIAGRAM (1)



# WIRING DIAGRAM





# WIRING DIAGRAM

