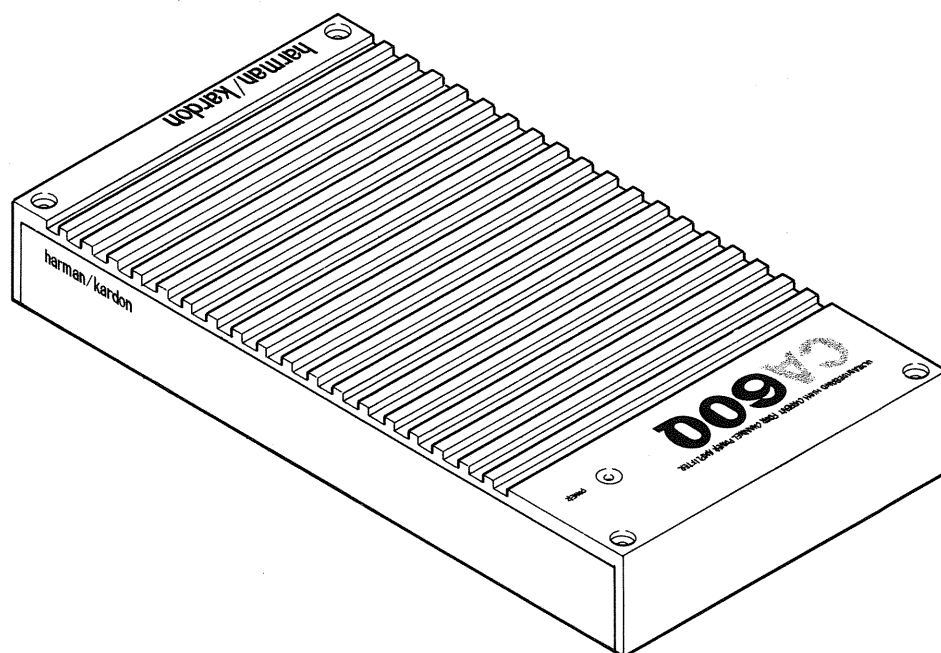


The Harman Kardon Model CA60Q HIGH FIDELITY CAR AMPLIFIER

Manual 173A

Technical Manual



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

- UA: North America Area model
- I: International model
- N: Japan model

harman/kardon

Parts and Service Office
240 Crossways Park West, Woodbury, N.Y. 11797
1112-3152173A6 P-089105 1200 Printed in Japan

SPECIFICATIONS

Power Output, RMS : 15 watts x4
 4 Ohms, 20 — 20,000Hz
 HCC (High instantaneous Current Capability) : ±10A
 THD : No more than 0.2%
 (4 Ohms)
 Negative Feedback : 25dB
 Power Bandwidth : 10Hz to 100,000Hz
 Frequency Response : 10Hz to 100,000Hz
 (+0, -3dB)
 Signal-to Noise Ratio : 100dB
 Input Sensitivity/Impedance : 250mV/22k Ohms (variable)

Power Supply : DC +14.4V (11 — 16V usable),
 negative ground
 Typical Input Current Requirements
 At Idle : 0.6A
 Full Power Music Signal : 2.4A (4 Ohms/ch.)
 Full Power Sine Wave : 7.2A (4 Ohms/ch.)
 Dimensions (W x H x D) : 12-3/5" x 1-9/10" x 6-9/13"
 (320 x 48.5 x 170 mm)
 Weight : 5 lbs. 8 oz (2.5 kg)

Specifications and components subject to change without notice.
 Overall performance will be maintained or improved.

DISASSEMBLY PROCEDURES (REFER TO PAGES 4 AND 12)

1 CABINET BOTTOM ASS'Y (AA) REMOVAL

Remove 7 screws (A) and then remove the Cabinet Bottom Ass'y (AA) with spacers.

2 FRONT PANEL (133) REMOVAL

1. Remove the Cabinet Bottom Ass'y (AA), referring to the previous step 1.
2. Remove 3 screws (B) and then remove the Front Panel (133).

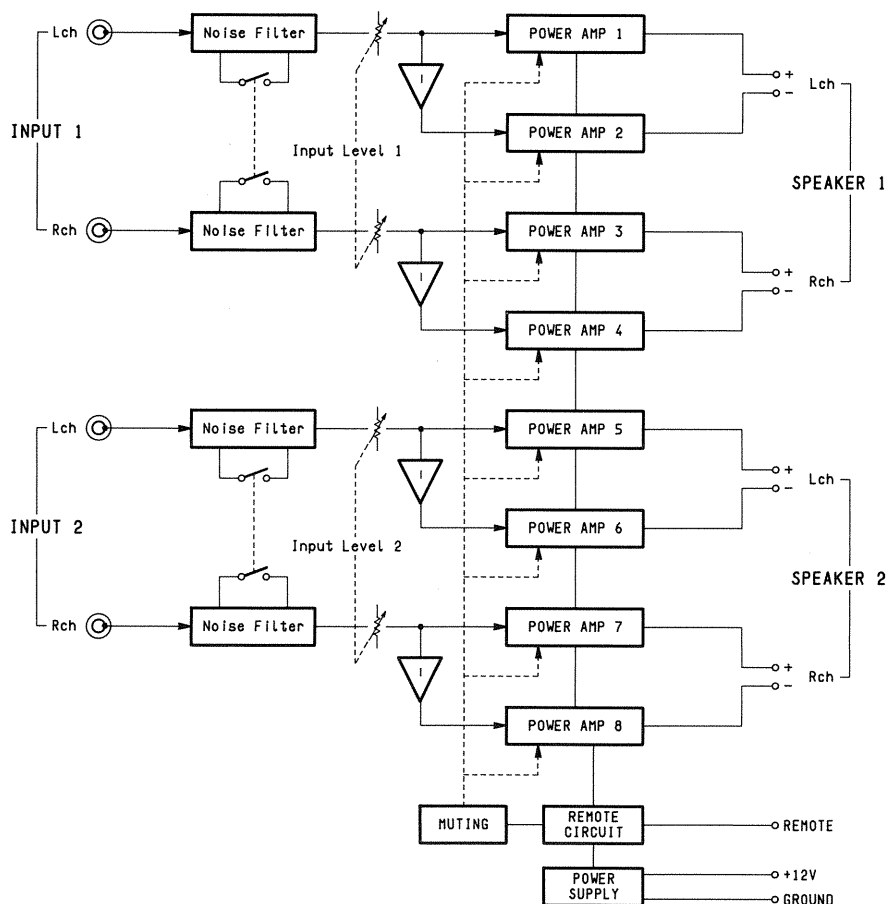
3 REAR PANEL (134) REMOVAL

1. Remove the Cabinet Bottom Ass'y (AA), referring to the previous step 1.
2. Remove 11 screws (C) and 2 fuses (D).
3. Depress 4 projections of the fuse holders and then remove the Rear Panel (134).

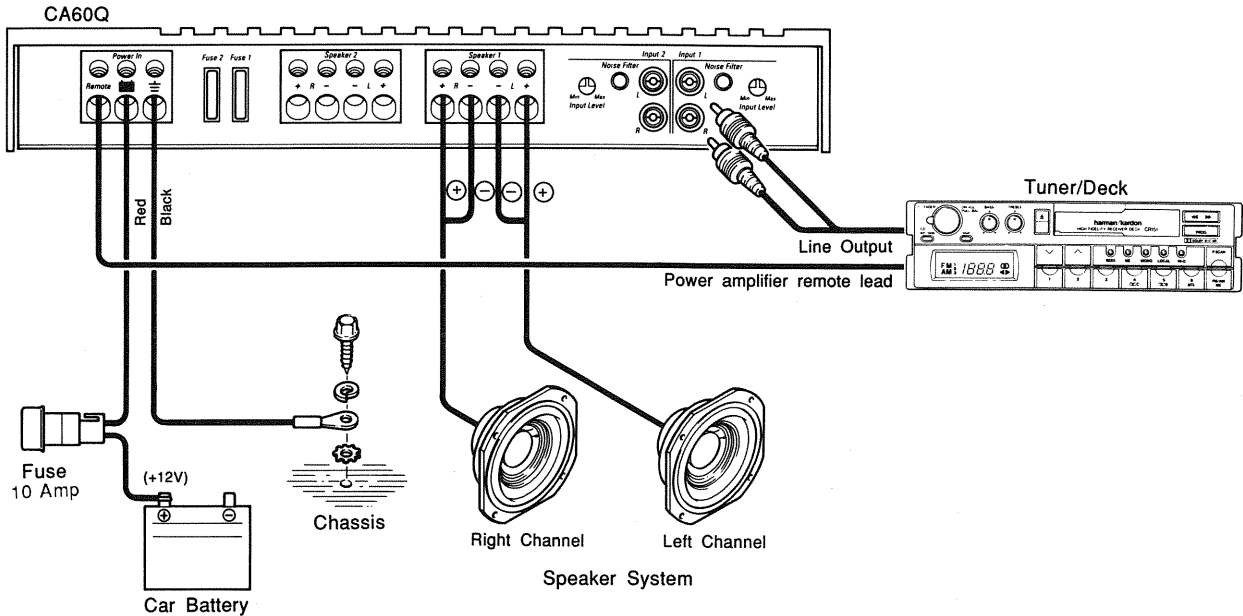
4 MAIN P.C. BOARD (PCB-1) REMOVAL

1. Remove the Cabinet Bottom Ass'y (AA), referring to the previous step 1.
2. Remove the Front Panel (133), referring to the previous step 2.
3. Remove the Rear Panel (134), referring to the previous step 3.
4. Remove 14 screws (E) and then remove the Main P.C. Board (PCB-1) with Power and Fuse P.C. Board (PCB-2 and PCB-3).
5. Disconnect the connector with lead wire from connector on the LED P.C. Board (PCB-4).

BLOCK DIAGRAM



CONNECTIONS



Before beginning to make connections, make certain that the ignition key switch is OFF. Be careful to install the amplifier so that it cannot become caught in the sliding seat, or contact the car chassis with its terminals or wiring.

REMOTE terminal

This terminal enables the power switch of the tuner/deck to also turn on the amplifier. Connect it to appropriate wire (power amplifier remote) on the tuner/deck.

If a specific wire for this purpose is not provided on the tuner/deck, use the wire for controlling the power antenna. If that wire is already connected to the power antenna, the amplifier can be connected in addition.

Should no power antenna wire be provided, connect the wires from the REMOTE terminal to the ACC circuit of the car, so that the car ignition switch will turn the amplifier ON and OFF.

+B terminal (+12V)

The +B terminal is the positive power input terminal. It should be connected directly to the car battery. Use the accessory battery cable with its fuse located near the battery.

Ground terminal (⊖)

This is the negative power input terminal. It should be connected directly to the car chassis using the accessory black cord. It is not necessary to connect this terminal to the negative battery terminal.

SPEAKER SYSTEM terminals

Connect the speaker systems to these terminals. Be careful to connect the positive speaker terminals to the positive terminals of the amplifier. Do not connect the negative speaker terminals to the car chassis.

NOTE: Some cars are provided with speaker wires which often include a negative wire common to both left and right channels. This wire should not be used. Be sure to connect the negative speaker wires from left and right speakers to their respective terminals on the amplifier.

INPUT jacks

These input jacks are for connection to the line (preamplifier) output jacks on the tuner/deck. It is recommended that high quality shielded coaxial cables with tight-fitting RCA plugs be used for this connection.

INPUT LEVEL control

This control matches the input sensitivity of the amplifier to the output level of the head unit. In its "Max" (Full clockwise) position, the amplifier requires 250mV input voltage in order to provide its rated output power. If the head unit output level is much greater than 250mV, turn this control to a lower setting.

Noise filter

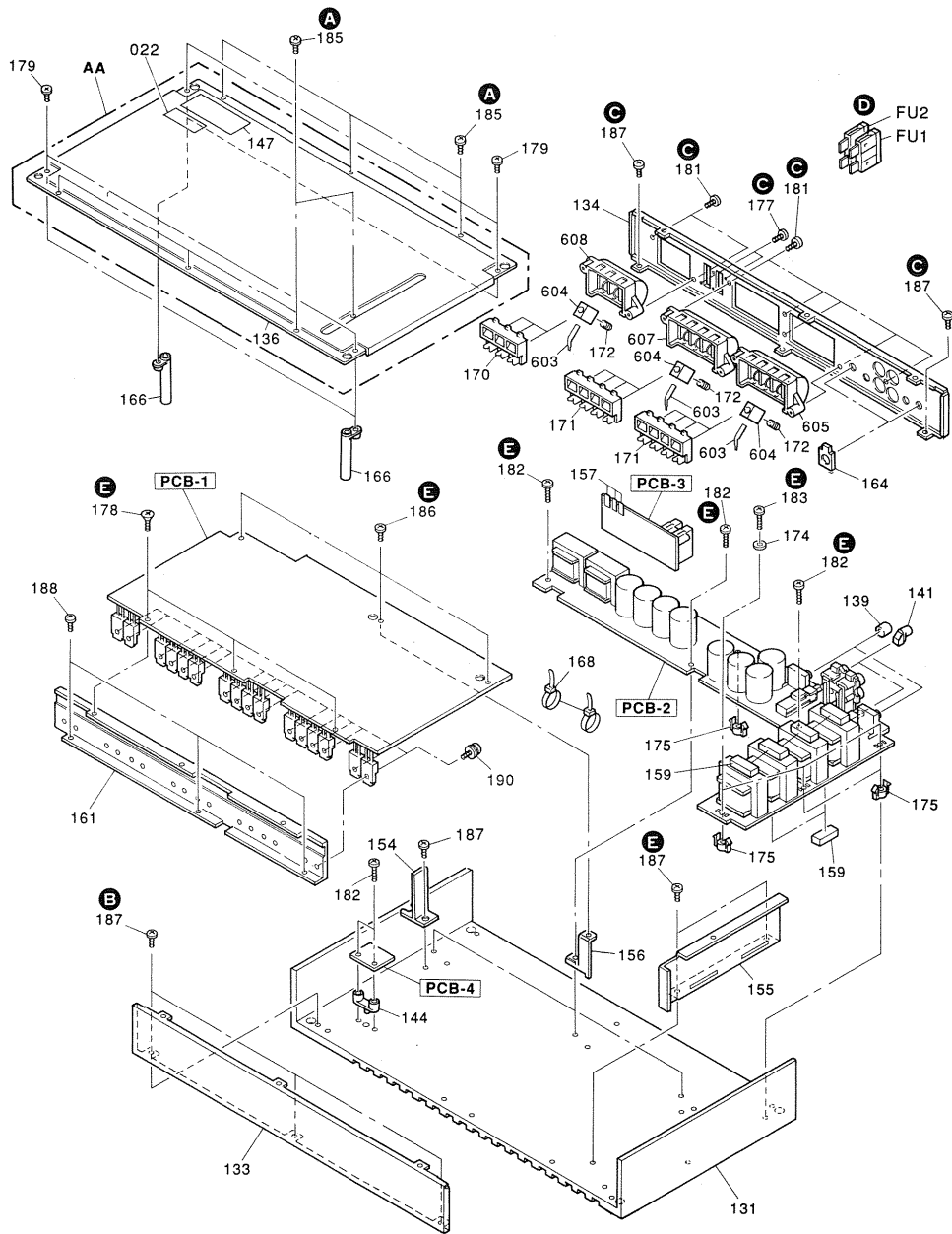
This is a unique feature that can eliminate engine noise due to grounding and wiring problems. It isolates the input signal from the amplifier chassis ground. We recommend listening to the total car audio system, while the engine is running, and switching the noise filter on and off to determine which setting results in the best overall sound quality.

NOTE: This filter does not replace the need for a power line filter! This is an input signal isolator!

The CA60Q is a 4 channel amplifier that is divided into 2 stereo amplifiers. Input 1 and input 2 each have their own left and right input jacks, input level controls, noise filters, and speaker terminals.

Also, CA60Q has two additional fuses mounted in the chassis. These fuses offer additional protection over the battery cable fuse. Be sure that all 3 fuses are used, and that their values are correct. Fuse 1 and fuse 2 are each rated 5 amperes, while the battery cable fuse is rated 10 amperes.

GENERAL UNIT
EXPLODED VIEW



GENERAL PARTS LIST

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
AA	A424-HC392AA	CABINET BOTTOM ASSEMBLY	171	2240-7389	HOLDER, 4P TERMINAL (x2)
022	1756-19314	LABEL, FTZ	172	2310-7039	SCREW, SPE (x11)
131	1413-00201	CABINET, MAIN HEAT SINK	174	2402-0374	WASHER, PLSTC (x3)
133	1444-05601	PANEL, FRONT	175	2360-7026	BOSS, SPE (x4)
134	1444-06101	PANEL, REAR	177	2342-200541	SCREW, PAN T+ (x2)
136	1424-34701	CABINET BOTTOM	178	2343-300826	SCREW, CSK T+ (x3)
139	1632-21201	ROTARY KNOB, INPUT VOLUME (x2)	179	2347-R0126054	SCREW, BND T+ (x4)
141	1662-66101	PUSH BUTTON, FILTER (x2)	181	2347-R0130084	SCREW, BND T+ (x7)
144	1732-08401	INDICATOR	182	2347-R0130102	SCREW, BND T+ (x5)
147	1751-10015	LABEL, SET BOTTOM	183	2347-R0130122	SCREW, BND T+ (x3)
154	2219-8335	METAL FITTG	185	2347-260547	SCREW, BND T+ (x7)
155	2219-8329	METAL FITTG, TRANS SHIELD	186	2347-300627	SCREW, BND T+ (x3)
156	2219-8330	METAL FITTG, PCB (x3)	187	2347-300526	SCREW, BND T+ (x8)
157	2219-8332	METAL FITTG, PCB (x3)	188	2347-R0130062	SCREW, BND T+ (x3)
159	2112-11802	SPONGE (x6)	190	2557-300829	SCREW, B SPW+ (x16)
161	2222-7288	HEAT SINK, SUB	603	4214-236	TERMINAL (x11)
164	2240-7390	HOLDER, REAR PANEL (x2)	604	4214-237	TERMINAL (x11)
166	2132-7170	SPACER, SCREW (x4)	605	4215-09703	TERMINAL BRD, SPEAKER 1
168	2240-R0101	HOLDER, WIRING (x6)	607	4215-09704	TERMINAL BRD, SPEAKER 2
170	2240-7388	HOLDER, 3P TERMINAL	608	4215-09802	TERMINAL BRD, POWER IN

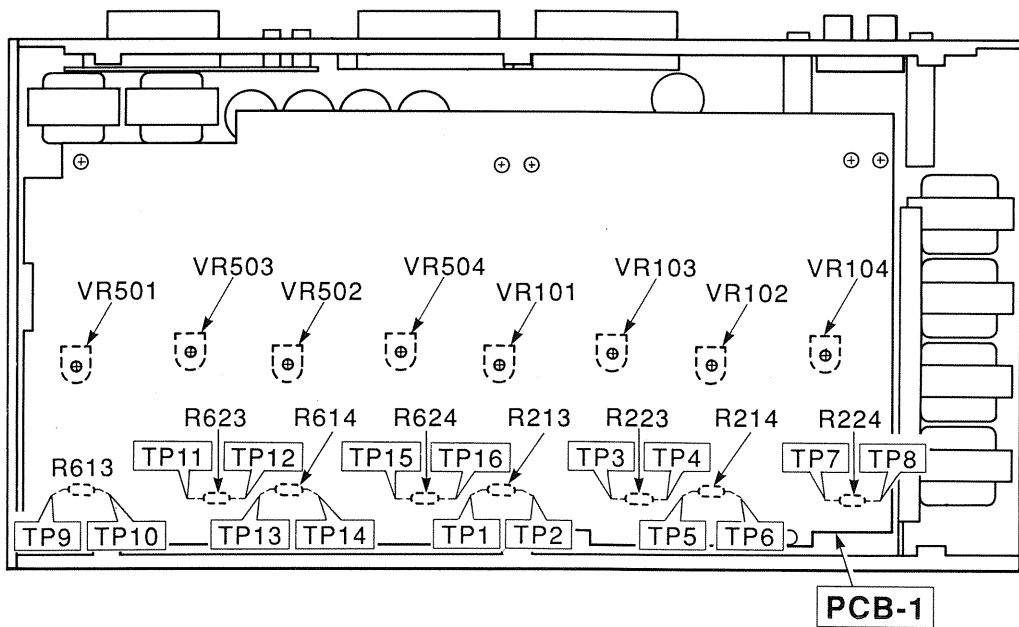
ALIGNMENT PROCEDURES (REFER TO PAGE 11 AND 12)

■ IDLING CURRENT ADJUSTMENT

Conditions:

- Connect a 13.8V power supply to the 12V BATTERY POWER IN terminal.
- After the power on, wait for 5 minutes before measuring to be sure of the most stable operation.

Step	Connections Equipments	Adjustment	For
1	Connect the Digital Voltmeter to TP1 and TP2 (across the terminals of R213)	VR101 (Input 1, L ch +)	9mV to 11mV (DC)
2	Connect the Digital Voltmeter to TP3 and TP4 (across the terminals of R223)	VR103 (Input 1, L ch -)	9mV to 11mV (DC)
3	Connect the Digital Voltmeter to TP5 and TP6 (across the terminals of R214)	VR102 (Input 1, R ch +)	9mV to 11mV (DC)
4	Connect the Digital Voltmeter to TP7 and TP8 (across the terminals of R224)	VR104 (Input 1, R ch -)	9mV to 11mV (DC)
5	Connect the Digital Voltmeter to TP9 and TP10 (across the terminals of R613)	VR501 (Input 2, L ch +)	9mV to 11mV (DC)
6	Connect the Digital Voltmeter to TP11 and TP12 (across the terminals of R623)	VR503 (Input 2, L ch -)	9mV to 11mV (DC)
7	Connect the Digital Voltmeter to TP13 and TP14 (across the terminals of R614)	VR502 (Input 2, R ch +)	9mV to 11mV (DC)
8	Connect the Digital Voltmeter to TP15 and TP16 (across the terminals of R624)	VR504 (Input 2, R ch -)	9mV to 11mV (DC)
9	Repeat steps 1 through 4 after again for 10 minutes.		



ELECTRICAL PARTS LIST

Ser.No	Ref. No.	Part No.	Description	Ser.No	Ref. No.	Part No.	Description
PCB-1 MAIN P.C. BOARD							
CAPACITORS							
548	C20	5354-104593	CAP, MYL .1μ	535	C527	5345-477C045	CAP, MINI ELE 470μ/16V
043A	C81	5359-2215851	CAP, PPP 220p	535	C528	5345-477C045	CAP, MINI ELE 470μ/16V
044A	C82	5359-S010J223	CAP, PPP .022μ	535	C529	5345-477C045	CAP, MINI ELE 470μ/16V
044A	C83	5359-S010J223	CAP, PPP .022μ	535	C530	5345-477C045	CAP, MINI ELE 470μ/16V
044A	C84	5359-S010J223	CAP, PPP .022μ	543	C535	5354-823593	CAP, MYL .082μ
044A	C85	5359-S010J223	CAP, PPP .022μ	543	C536	5354-823593	CAP, MYL .082μ
046A	C86	5359-5615851	CAP, PPP 560P	543	C537	5354-823593	CAP, MYL .082μ
046A	C87	5359-5615851	CAP, PPP 560P	543	C538	5354-823593	CAP, MYL .082μ
046A	C88	5359-5615851	CAP, PPP 560P	536	C539	5345-106C0951	CAP, MINI ELE 10μ/16V
046A	C89	5359-5615851	CAP, PPP 560P	536	C540	5345-106C0951	CAP, MINI ELE 10μ/16V
046A	C90	5359-5615851	CAP, PPP 560P	536	C541	5345-106C0951	CAP, MINI ELE 10μ/16V
046A	C91	5359-5615851	CAP, PPP 560P	536	C542	5345-106C0951	CAP, MINI ELE 10μ/16V
046A	C92	5359-5615851	CAP, PPP 560P	540	C543	5353-020934	CAP, MCA 2p
046A	C93	5359-5615851	CAP, PPP 560P	540	C544	5353-020934	CAP, MCA 2p
045A	C94	5361-223ZF	CAP, CER .022μ	540	C545	5353-020934	CAP, MCA 2p
531	C101	5345-226B0951	CAP, MINI ELE 22μ/10V	540	C546	5353-020934	CAP, MCA 2p
531	C102	5345-226B0951	CAP, MINI ELE 22μ/10V	532	C551	5345-226C041	CAP, MINI ELE 22μ/16V
531	C103	5345-226B0951	CAP, MINI ELE 22μ/10V	532	C552	5345-226C041	CAP, MINI ELE 22μ/16V
531	C104	5345-226B0951	CAP, MINI ELE 22μ/10V	RESISTORS			
531	C105	5345-226B0951	CAP, MINI ELE 22μ/10V	561	R101	5135-331522	RES, CBN 1/2P 330
531	C106	5345-226B0951	CAP, MINI ELE 22μ/10V	561	R102	5135-331522	RES, CBN 1/2P 330
539	C109	5353-680534	CAP, MCA 68p	561	R103	5135-331522	RES, CBN 1/2P 330
539	C110	5353-680534	CAP, MCA 68p	561	R104	5135-331522	RES, CBN 1/2P 330
539	C113	5353-680534	CAP, MCA 68p	562	R105	5135-104522	RES, CBN 1/2P 100K
539	C114	5353-680534	CAP, MCA 68p	562	R106	5135-104522	RES, CBN 1/2P 100K
533	C115	5345-S19CM476	CAP, MINI ELE 47μ/16V	562	R107	5135-104522	RES, CBN 1/2P 100K
533	C116	5345-S19CM476	CAP, MINI ELE 47μ/16V	562	R108	5135-104522	RES, CBN 1/2P 100K
533	C117	5345-S19CM476	CAP, MINI ELE 47μ/16V	556	R109	5232-154J16P	RES, CBN 1/6P 150K
533	C118	5345-S19CM476	CAP, MINI ELE 47μ/16V	556	R110	5232-154J16P	RES, CBN 1/6P 150K
545	C119	5359-1015851	CAP, PPP 100p	562	R111	5135-104522	RES, CBN 1/2P 100K
545	C120	5359-1015851	CAP, PPP 100p	562	R112	5135-104522	RES, CBN 1/2P 100K
545	C121	5359-1015851	CAP, PPP 100p	561	R113	5135-331522	RES, CBN 1/2P 330
545	C122	5359-1015851	CAP, PPP 100p	561	R114	5135-331522	RES, CBN 1/2P 330
534	C123	5345-477C045	CAP, MINI ELE 470μ/16V	564	R115	5135-103522	RES, CBN 1/2P 10K
534	C124	5345-477C045	CAP, MINI ELE 470μ/16V	564	R116	5135-103522	RES, CBN 1/2P 10K
534	C125	5345-477C045	CAP, MINI ELE 470μ/16V	563	R119	5135-182522	RES, CBN 1/2P 1.8K
534	C126	5345-477C045	CAP, MINI ELE 470μ/16V	563	R120	5135-182522	RES, CBN 1/2P 1.8K
535	C127	5345-477C045	CAP, MINI ELE 470μ/16V	566	R121	5135-122522	RES, CBN 1/2P 1.2K
535	C128	5345-477C045	CAP, MINI ELE 470μ/16V	566	R122	5135-122522	RES, CBN 1/2P 1.2K
535	C129	5345-477C045	CAP, MINI ELE 470μ/16V	566	R123	5135-122522	RES, CBN 1/2P 1.2K
535	C130	5345-477C045	CAP, MINI ELE 470μ/16V	566	R124	5135-122522	RES, CBN 1/2P 1.2K
543	C135	5354-823593	CAP, MYL .082μ	566	R125	5135-122522	RES, CBN 1/2P 1.2K
543	C136	5354-823593	CAP, MYL .082μ	566	R126	5135-122522	RES, CBN 1/2P 1.2K
543	C137	5354-823593	CAP, MYL .082μ	566	R127	5135-122522	RES, CBN 1/2P 1.2K
543	C138	5354-823593	CAP, MYL .082μ	566	R128	5135-122522	RES, CBN 1/2P 1.2K
536	C139	5345-106C0951	CAP, MINI ELE 10μ/16V	567	R129	5135-221522	RES, CBN 1/2P 220
536	C140	5345-106C0951	CAP, MINI ELE 10μ/16V	567	R130	5135-221522	RES, CBN 1/2P 220
536	C141	5345-106C0951	CAP, MINI ELE 10μ/16V	567	R131	5135-221522	RES, CBN 1/2P 220
536	C142	5345-106C0951	CAP, MINI ELE 10μ/16V	567	R132	5135-221522	RES, CBN 1/2P 220
540	C143	5353-020934	CAP, MCA 2p	567	R133	5135-221522	RES, CBN 1/2P 220
540	C144	5353-020934	CAP, MCA 2p	567	R134	5135-221522	RES, CBN 1/2P 220
540	C145	5353-020934	CAP, MCA 2p	567	R135	5135-221522	RES, CBN 1/2P 220
540	C146	5353-020934	CAP, MCA 2p	567	R136	5135-221522	RES, CBN 1/2P 220
532	C151	5345-226C041	CAP, MINI ELE 22μ/16V	567	R137	5135-181522	RES, CBN 1/2P 180
532	C152	5345-226C041	CAP, MINI ELE 22μ/16V	568	R138	5135-181522	RES, CBN 1/2P 180
531	C501	5345-226B0951	CAP, MINI ELE 22μ/10V	568	R139	5135-181522	RES, CBN 1/2P 180
531	C502	5345-226B0951	CAP, MINI ELE 22μ/10V	568	R140	5135-181522	RES, CBN 1/2P 180
531	C503	5345-226B0951	CAP, MINI ELE 22μ/10V	569	R141	5135-202522	RES, CBN 1/2P 2K
531	C504	5345-226B0951	CAP, MINI ELE 22μ/10V	569	R142	5135-202522	RES, CBN 1/2P 2K
531	C505	5345-226B0951	CAP, MINI ELE 22μ/10V	569	R143	5135-202522	RES, CBN 1/2P 2K
531	C506	5345-226B0951	CAP, MINI ELE 22μ/10V	569	R144	5135-202522	RES, CBN 1/2P 2K
539	C509	5353-680534	CAP, MCA 68p	570	R145	5135-273522	RES, CBN 1/2P 27K
539	C510	5353-680534	CAP, MCA 68p	570	R146	5135-273522	RES, CBN 1/2P 27K
539	C513	5353-680534	CAP, MCA 68p	570	R147	5135-273522	RES, CBN 1/2P 27K
539	C514	5353-680534	CAP, MCA 68p	570	R148	5135-273522	RES, CBN 1/2P 27K
533	C515	5345-S19CM476	CAP, MINI ELE 47μ/16V	572	R149	5135-561522	RES, CBN 1/2P 560
533	C516	5345-S19CM476	CAP, MINI ELE 47μ/16V	572	R150	5135-561522	RES, CBN 1/2P 560
533	C517	5345-S19CM476	CAP, MINI ELE 47μ/16V	572	R151	5135-561522	RES, CBN 1/2P 560
533	C518	5345-S19CM476	CAP, MINI ELE 47μ/16V	572	R152	5135-561522	RES, CBN 1/2P 560
545	C519	5359-1015851	CAP, PPP 100p	572	R153	5135-561522	RES, CBN 1/2P 560
545	C520	5359-1015851	CAP, PPP 100p	572	R154	5135-561522	RES, CBN 1/2P 560
545	C521	5359-1015851	CAP, PPP 100p	572	R155	5135-561522	RES, CBN 1/2P 560
545	C522	5359-1015851	CAP, PPP 100p	572	R156	5135-561522	RES, CBN 1/2P 560
534	C523	5345-477C045	CAP, MINI ELE 470μ/16V	572	R157	5135-561522	RES, CBN 1/2P 560
534	C524	5345-477C045	CAP, MINI ELE 470μ/16V	572	R158	5135-561522	RES, CBN 1/2P 560
534	C525	5345-477C045	CAP, MINI ELE 470μ/16V	572	R159	5135-561522	RES, CBN 1/2P 560
534	C526	5345-477C045	CAP, MINI ELE 470μ/16V	572	R160	5135-561522	RES, CBN 1/2P 560
534	C526	5345-477C045	CAP, MINI ELE 470μ/16V	572	R161	5135-561522	RES, CBN 1/2P 560
534	C526	5345-477C045	CAP, MINI ELE 470μ/16V	572	R162	5135-561522	RES, CBN 1/2P 560
534	C526	5345-477C045	CAP, MINI ELE 470μ/16V	572	R163	5135-561522	RES, CBN 1/2P 560

Ser.No	Ref. No.	Part No.	Description	Ser.No	Ref. No.	Part No.	Description
572	R164	5135-561522	RES, CBN 1/2P 560	562	R508	5135-104522	RES, CBN 1/2P 100K
573	R165	5135-560522	RES, CBN 1/2P 56	556	R509	5232-154J16P	RES, CBN 1/6P 150K
573	R166	5135-560522	RES, CBN 1/2P 56	556	R510	5232-154J16P	RES, CBN 1/6P 150K
573	R167	5135-560522	RES, CBN 1/2P 56	562	R511	5135-104522	RES, CBN 1/2P 100K
573	R168	5135-560522	RES, CBN 1/2P 56	562	R512	5135-104522	RES, CBN 1/2P 100K
573	R169	5135-560522	RES, CBN 1/2P 56	561	R513	5135-331522	RES, CBN 1/2P 330
573	R170	5135-560522	RES, CBN 1/2P 56	561	R514	5135-331522	RES, CBN 1/2P 330
573	R171	5135-560522	RES, CBN 1/2P 56	564	R515	5135-103522	RES, CBN 1/2P 10K
573	R172	5135-560522	RES, CBN 1/2P 56	564	R516	5135-103522	RES, CBN 1/2P 10K
565	R173	5135-102522	RES, CBN 1/2P 1K	563	R519	5135-182522	RES, CBN 1/2P 1.8K
565	R174	5135-102522	RES, CBN 1/2P 1K	563	R520	5135-182522	RES, CBN 1/2P 1.8K
565	R175	5135-102522	RES, CBN 1/2P 1K	566	R521	5135-122522	RES, CBN 1/2P 1.2K
565	R176	5135-102522	RES, CBN 1/2P 1K	566	R522	5135-122522	RES, CBN 1/2P 1.2K
574	R177	5135-821522	RES, CBN 1/2P 820	566	R523	5135-122522	RES, CBN 1/2P 1.2K
574	R178	5135-821522	RES, CBN 1/2P 820	566	R524	5135-122522	RES, CBN 1/2P 1.2K
574	R179	5135-821522	RES, CBN 1/2P 820	566	R525	5135-122522	RES, CBN 1/2P 1.2K
574	R180	5135-821522	RES, CBN 1/2P 820	566	R526	5135-122522	RES, CBN 1/2P 1.2K
580	R185	5135-273522	RES, CBN 1/2P 27K	566	R527	5135-122522	RES, CBN 1/2P 1.2K
580	R186	5135-273522	RES, CBN 1/2P 27K	566	R528	5135-122522	RES, CBN 1/2P 1.2K
580	R187	5135-273522	RES, CBN 1/2P 27K	567	R529	5135-221522	RES, CBN 1/2P 220
580	R188	5135-273522	RES, CBN 1/2P 27K	567	R530	5135-221522	RES, CBN 1/2P 220
580	R197	5135-273522	RES, CBN 1/2P 27K	567	R531	5135-221522	RES, CBN 1/2P 220
580	R198	5135-273522	RES, CBN 1/2P 27K	567	R532	5135-221522	RES, CBN 1/2P 220
580	R199	5135-273522	RES, CBN 1/2P 27K	567	R533	5135-221522	RES, CBN 1/2P 220
580	R200	5135-273522	RES, CBN 1/2P 27K	567	R534	5135-221522	RES, CBN 1/2P 220
575	R201	5135-121522	RES, CBN 1/2P 120	567	R535	5135-221522	RES, CBN 1/2P 220
575	R202	5135-121522	RES, CBN 1/2P 120	567	R536	5135-221522	RES, CBN 1/2P 220
575	R203	5135-121522	RES, CBN 1/2P 120	568	R537	5135-181522	RES, CBN 1/2P 180
575	R204	5135-121522	RES, CBN 1/2P 120	568	R538	5135-181522	RES, CBN 1/2P 180
577	R205	5135-270522	RES, CBN 1/2P 27	568	R539	5135-181522	RES, CBN 1/2P 180
577	R206	5135-270522	RES, CBN 1/2P 27	568	R540	5135-181522	RES, CBN 1/2P 180
577	R207	5135-270522	RES, CBN 1/2P 27	569	R541	5135-202522	RES, CBN 1/2P 2K
577	R208	5135-270522	RES, CBN 1/2P 27	569	R542	5135-202522	RES, CBN 1/2P 2K
576	R209	5135-470522	RES, CBN 1/2P 47	569	R543	5135-202522	RES, CBN 1/2P 2K
576	R210	5135-470522	RES, CBN 1/2P 47	569	R544	5135-202522	RES, CBN 1/2P 2K
576	R211	5135-470522	RES, CBN 1/2P 47	570	R545	5135-273522	RES, CBN 1/2P 27K
576	R212	5135-470522	RES, CBN 1/2P 47	570	R546	5135-273522	RES, CBN 1/2P 27K
583	R213	5171-R22593	RES, MTL 1 .22	570	R547	5135-273522	RES, CBN 1/2P 27K
583	R214	5171-R22593	RES, MTL 1 .22	570	R548	5135-273522	RES, CBN 1/2P 27K
583	R215	5171-R22593	RES, MTL 1 .22	572	R549	5135-561522	RES, CBN 1/2P 560
583	R216	5171-R22593	RES, MTL 1 .22	572	R550	5135-561522	RES, CBN 1/2P 560
576	R217	5135-470522	RES, CBN 1/2P 47	572	R551	5135-561522	RES, CBN 1/2P 560
576	R218	5135-470522	RES, CBN 1/2P 47	572	R552	5135-561522	RES, CBN 1/2P 560
576	R219	5135-470522	RES, CBN 1/2P 47	572	R553	5135-561522	RES, CBN 1/2P 560
576	R220	5135-470522	RES, CBN 1/2P 47	572	R554	5135-561522	RES, CBN 1/2P 560
583	R221	5171-R22593	RES, MTL 1 .22	572	R555	5135-561522	RES, CBN 1/2P 560
583	R222	5171-R22593	RES, MTL 1 .22	572	R556	5135-561522	RES, CBN 1/2P 560
583	R223	5171-R22593	RES, MTL 1 .22	572	R557	5135-561522	RES, CBN 1/2P 560
583	R224	5171-R22593	RES, MTL 1 .22	572	R558	5135-561522	RES, CBN 1/2P 560
577	R225	5135-270522	RES, CBN 1/2P 27	572	R559	5135-561522	RES, CBN 1/2P 560
577	R226	5135-270522	RES, CBN 1/2P 27	572	R560	5135-561522	RES, CBN 1/2P 560
577	R227	5135-270522	RES, CBN 1/2P 27	572	R561	5135-561522	RES, CBN 1/2P 560
577	R228	5135-270522	RES, CBN 1/2P 27	572	R562	5135-561522	RES, CBN 1/2P 560
575	R229	5135-121522	RES, CBN 1/2P 120	572	R563	5135-561522	RES, CBN 1/2P 560
575	R230	5135-121522	RES, CBN 1/2P 120	572	R564	5135-561522	RES, CBN 1/2P 560
575	R231	5135-121522	RES, CBN 1/2P 120	579	R565	5135-560522	RES, CBN 1/2P 56
575	R232	5135-121522	RES, CBN 1/2P 120	579	R566	5135-560522	RES, CBN 1/2P 56
577	R245	5135-270522	RES, CBN 1/2P 27	579	R567	5135-560522	RES, CBN 1/2P 56
577	R246	5135-270522	RES, CBN 1/2P 27	579	R568	5135-560522	RES, CBN 1/2P 56
577	R247	5135-270522	RES, CBN 1/2P 27	579	R569	5135-560522	RES, CBN 1/2P 56
577	R248	5135-270522	RES, CBN 1/2P 27	579	R570	5135-560522	RES, CBN 1/2P 56
578	R249	5135-5R6522	RES, CBN 1/2P 5.6	579	R571	5135-560522	RES, CBN 1/2P 56
578	R250	5135-5R6522	RES, CBN 1/2P 5.6	579	R572	5135-560522	RES, CBN 1/2P 56
578	R251	5135-5R6522	RES, CBN 1/2P 5.6	565	R573	5135-102522	RES, CBN 1/2P 1K
578	R252	5135-5R6522	RES, CBN 1/2P 5.6	565	R574	5135-102522	RES, CBN 1/2P 1K
559	R263	5232-823J16P	RES, CBN 1/6P 82K	565	R575	5135-102522	RES, CBN 1/2P 1K
559	R264	5232-823J16P	RES, CBN 1/6P 82K	565	R576	5135-102522	RES, CBN 1/2P 1K
559	R265	5232-823J16P	RES, CBN 1/6P 82K	574	R577	5135-821522	RES, CBN 1/2P 820
559	R266	5232-823J16P	RES, CBN 1/6P 82K	574	R578	5135-821522	RES, CBN 1/2P 820
581	R269	5135-103522	RES, CBN 1/2P 10K	574	R579	5135-821522	RES, CBN 1/2P 820
581	R270	5135-103522	RES, CBN 1/2P 10K	574	R580	5135-821522	RES, CBN 1/2P 820
581	R271	5135-103522	RES, CBN 1/2P 10K	580	R585	5135-273522	RES, CBN 1/2P 27K
581	R272	5135-103522	RES, CBN 1/2P 10K	580	R586	5135-273522	RES, CBN 1/2P 27K
561	R501	5135-331522	RES, CBN 1/2P 330	580	R587	5135-273522	RES, CBN 1/2P 27K
561	R502	5135-331522	RES, CBN 1/2P 330	580	R588	5135-273522	RES, CBN 1/2P 27K
561	R503	5135-331522	RES, CBN 1/2P 330	580	R597	5135-273522	RES, CBN 1/2P 27K
561	R504	5135-331522	RES, CBN 1/2P 330	580	R598	5135-273522	RES, CBN 1/2P 27K
562	R505	5135-104522	RES, CBN 1/2P 100K	580	R599	5135-273522	RES, CBN 1/2P 27K
562	R506	5135-104522	RES, CBN 1/2P 100K	580	R600	5135-273522	RES, CBN 1/2P 27K
562	R507	5135-104522	RES, CBN 1/2P 100K	575	R601	5135-121522	RES, CBN 1/2P 120

Ser.No	Ref. No.	Part No.	Description
COILS			
591	L101	5991-7165	SPRING COIL
591	L102	5991-7165	SPRING COIL
591	L103	5991-7165	SPRING COIL
591	L104	5991-7165	SPRING COIL
591	L501	5991-7165	SPRING COIL
591	L502	5991-7165	SPRING COIL
591	L503	5991-7165	SPRING COIL
591	L504	5991-7165	SPRING COIL

Ser.No	Ref. No.	Part No.	Description
CONTROLS			
599	VR101	5101-50101930	RES, SEMI FIX 500
599	VR102	5101-50101930	RES, SEMI FIX 500
599	VR103	5101-50101930	RES, SEMI FIX 500
599	VR104	5101-50101930	RES, SEMI FIX 500
599	VR501	5101-50101930	RES, SEMI FIX 500
599	VR502	5101-50101930	RES, SEMI FIX 500
599	VR503	5101-50101930	RES, SEMI FIX 500
599	VR504	5101-50101930	RES, SEMI FIX 500

Ser.No	Ref. No.	Part No.	Description
MISCELLANEOUS			
602	CW100	4163-S0202231	CONNECTOR W/W
609	CW101	4163-S0202800	CONNECTOR W/W
615	CW102	4163-0110039	CONNECTOR W/W
615	CW502	4163-0110039	CONNECTOR W/W
606	JL201	4242-042005	JUMPER LEAD
606	JL501	4242-042005	JUMPER LEAD

PCB-2 POWER P.C. BOARD

Ser.No	Ref. No.	Part No.	Description
CAPACITORS			
551	C1	5345-477C045	CAP, MINI ELE 470μ/16V
553	C2	5345-226C041	CAP, MINI ELE 22μ/16V
552	C3	5345-107B041	CAP, MINI ELE 100μ/10V
554	C5	5345-S18CM338	CAP, MINI ELE 3300μ/16V
554	C6	5345-S18CM338	CAP, MINI ELE 3300μ/16V
554	C7	5345-S18CM338	CAP, MINI ELE 3300μ/16V
554	C8	5345-S18CM338	CAP, MINI ELE 3300μ/16V
551	C9	5345-477C045	CAP, MINI ELE 470μ/16V
555	C18	5345-226C041	CAP, MINI ELE 22μ/16V
554	C55	5345-S18CM338	CAP, MINI ELE 3300μ/16V
554	C56	5345-S18CM338	CAP, MINI ELE 3300μ/16V
554	C57	5345-S18CM338	CAP, MINI ELE 3300μ/16V
554	C58	5345-S18CM338	CAP, MINI ELE 3300μ/16V
546	C161	5359-1525851	CAP, PPP 1500p
546	C162	5359-1525851	CAP, PPP 1500p
546	C561	5359-1525851	CAP, PPP 1500p
546	C562	5359-1525851	CAP, PPP 1500p

Ser.No	Ref. No.	Part No.	Description
RESISTORS			
585	R1	5135-221522	RES, CBN 1/2P 220
588	R2	5232-473J16P	RES, CBN 1/6P 47K
586	R3	5232-124J16P	RES, CBN 1/6P 120K
587	R5	5232-103J16P	RES, CBN 1/6P 10K
524	R6	5232-273J16P	RES, CBN 1/6P 27K
585	R7	5135-221522	RES, CBN 1/2P 220
557	R9	5232-222J16P	RES, CBN 1/6P 2.2K
597	R10	5135-473522	RES, CBN 1/2P 47K
584	R91	5135-470522	RES, CBN 1/2P 47
584	R92	5135-470522	RES, CBN 1/2P 47
584	R93	5135-470522	RES, CBN 1/2P 47
584	R94	5135-470522	RES, CBN 1/2P 47
582	R233	5232-104J16P	RES, CBN 1/6P 100K
582	R234	5232-104J16P	RES, CBN 1/6P 100K
582	R235	5232-104J16P	RES, CBN 1/6P 100K
582	R236	5232-104J16P	RES, CBN 1/6P 100K
582	R237	5232-104J16P	RES, CBN 1/6P 100K
582	R238	5232-104J16P	RES, CBN 1/6P 100K
582	R239	5232-104J16P	RES, CBN 1/6P 100K
582	R240	5232-104J16P	RES, CBN 1/6P 100K
590	R281	5135-561522	RES, CBN 1/2P 560
590	R282	5135-561522	RES, CBN 1/2P 560
582	R633	5232-104J16P	RES, CBN 1/6P 100K
582	R634	5232-104J16P	RES, CBN 1/6P 100K
582	R635	5232-104J16P	RES, CBN 1/6P 100K
582	R636	5232-104J16P	RES, CBN 1/6P 100K
582	R637	5232-104J16P	RES, CBN 1/6P 100K
582	R638	5232-104J16P	RES, CBN 1/6P 100K
582	R639	5232-104J16P	RES, CBN 1/6P 100K
582	R640	5232-104J16P	RES, CBN 1/6P 100K
590	R681	5135-561522	RES, CBN 1/2P 560
590	R682	5135-561522	RES, CBN 1/2P 560

Ser.No	Ref. No.	Part No.	Description
TRANSISTORS			
517	Q1	5611-A124ES	XISTOR, PNP R
518	Q2	5613-C144ES	XISTOR, NPN R
519	Q3	5613-C143ES	XISTOR, NPN R
517	Q4	5611-A124ES	XISTOR, PNP R
517	Q5	5611-A124ES	XISTOR, PNP R
518	Q6	5613-C144ES	XISTOR, NPN R

Ser.No	Ref. No.	Part No.	Description
DIODES			
521	D1	5631-1SS133	DIODE, DET
522	D2	5632-S5566B	DIODE, RECT
520	D4	5635-HZ6A2L	DIODE, ZENER
521	D5	5631-1SS133	DIODE, DET
521	D6	5631-1SS133	DIODE, DET
523	D7	5635-RD8R2EB3	DIODE, ZENER
522	D52	5632-S5566B	DIODE, RECT

Ser.No	Ref. No.	Part No.	Description
COILS AND TRANSFORMERS			
592	L1	5583-51101	COIL, AF CH
592	L51	5583-51101	COIL, AF CH
594	T101	5581-17601	XFORMER, IPT
594	T102	5581-17601	XFORMER, IPT
594	T501	5581-17601	XFORMER, IPT
594	T502	5581-17601	XFORMER, IPT

Ser.No	Ref. No.	Part No.	Description
CONTROLS			
598	VR105/106	5109-S0306303	RES, V CBN 30K, INPUT LEVEL
598	VR505/506	5109-S0306303	RES, V CBN 30K, INPUT LEVEL

Ser.No	Ref. No.	Part No.	Description
MISCELLANEOUS			
610	CN101	4443-0201140	CONNECTOR
600	J1	4484-50	PIN JACK, 4P
596	S101/102	4431-S0612106	SWITCH, PUSH, NOISE FILTER
596	S501/502	4431-S0612106	SWITCH, PUSH, NOISE FILTER

PCB-3 FUSE P.C. BOARD


Ser.No	Ref. No.	Part No.	Description
MISCELLANEOUS			
617	△ F1	5732-01401502	FUSE, 5A
617	△ F51	5732-01401502	FUSE, 5A
618	△ FH1	4472-04801	HOLDER, FUSE (F1)
618	△ FH51	4472-04801	HOLDER, FUSE (F51)

PCB-4 LED P.C. BOARD

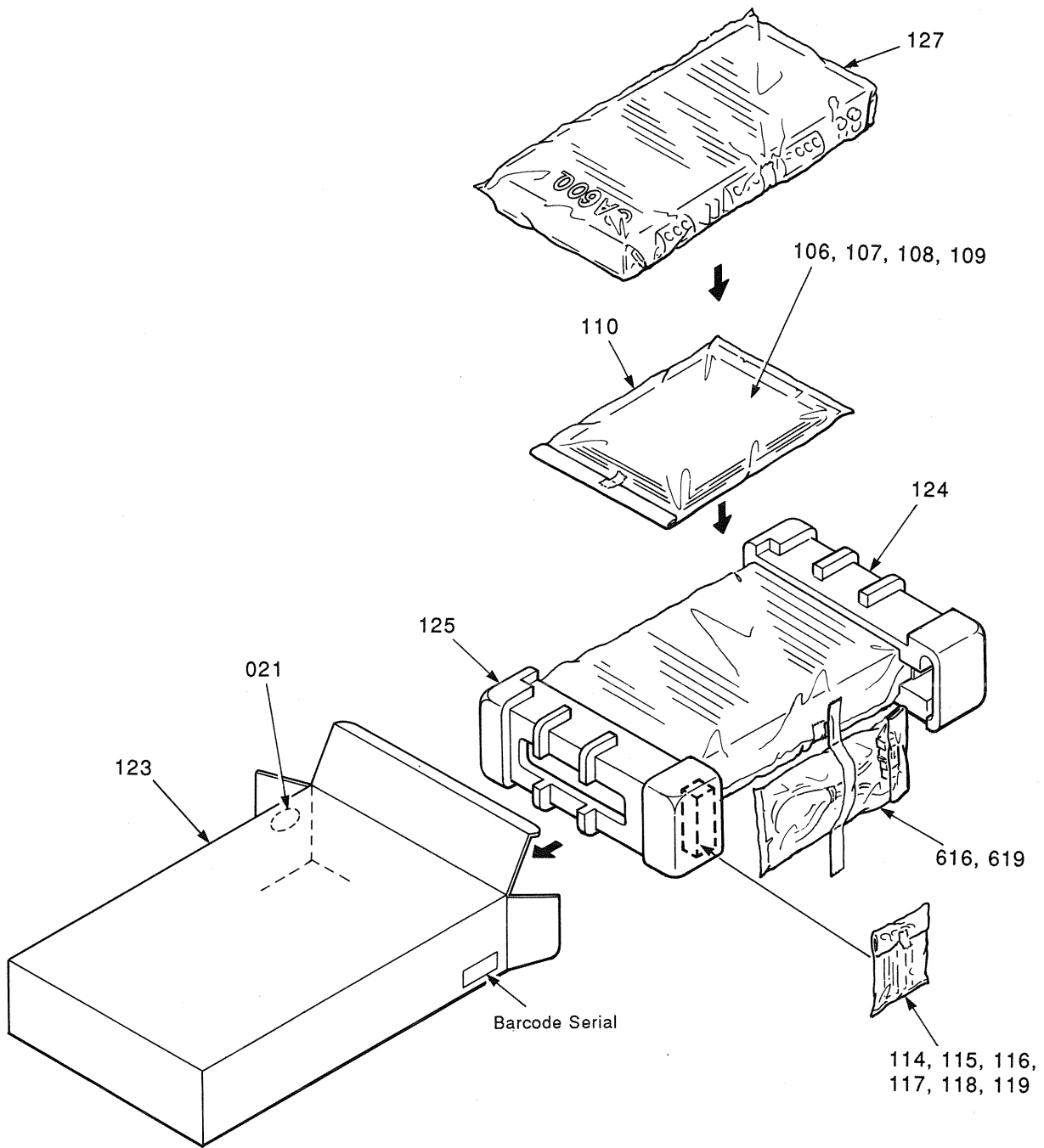
Ser.No	Ref. No.	Part No.	Description
RESISTOR			
589	R8	5135-821522	RES, CBN 1/2P 820
DIODE			
527	D3	5637-SLR33MC3	LED, POWER
MISCELLANEOUS			
601	CN100	4443-0201141	CONNECTOR

ABBREVIATIONS IN PARTS LIST

Abbreviation	Meaning	Abbreviation	Meaning
CAP, MINI ELE	: Electrolytic	RES, CBN 1/6P	: Carbon 1/6W
CAP, CER	: Ceramic	RES, FUSE	: Fuse
CAP, PPP	: Polypropylene	RES, CEM 5P	: Cement 5W
CAP, MYL	: Mylar	RES, MTL 1P	: Metal 1W
CAP, MCA	: Mica	2.2K	: 2.2KΩ
CAP, MINI BP	: Bipolar	220	: 220Ω
CAP, ELE BP	: Electrolytic Bipolar	TRANSISTORS	
CAP, STY	: Polystyrene Film	XISTOR	: Transistor
CAP, SPE	: Special	FET	: Field Effect Transistor
CAP, TAN	: Tantalum	CONTROLS	
470μ	: 470μF	RES, V CBN	: Variable Carbon Resistor
6800p	: 6800pF	RES, SEMI FIX	: Semi-fixed Resistor
.047μ	: 0.047μF		

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

PACKAGE



PACKING PARTS LIST

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>
021	1756-03108	LABEL (I)	115	2342-506041	SCREW, PAN T+ (x4)
021	1756-03113	LABEL (N)	116	2346-501221	SCREW, HEX T+
106	1111-J30347	OWNER GUIDE (UA)	117	2412-5022	WASHER, SPRG
106	1111-J30348	OWNER GUIDE (I)	118	2414-502	WASHER, 0T
106	1111-J2056	OWNER GUIDE (N)	119	2310-7039	SCREW, SPE
107	1113-717004	OWNER CARD, REPLY (UA)	123	1221-29501	CARTON BOX
107	1113-OC	OWNER CARD, REPLY (N)	124	1222-7372	CUSHION
108	1116-03901	GUARANTY CARD, WARRANTY (UA)	125	1222-7373	CUSHION
108	1116-GC	GUARANTY CARD, WARRANTY (N)	127	1241-R0140300	POLYETHY BAG
109	1119-04401	ATTACH SHEET, SERVICE GUIDE (UA)	616	4171-01001	WIRING KIT
110	1241-R0118250	POLYETHY BAG	619	4472-7536	FUSE HOLDER (W/FUSE 10A, P/N: 5732-01401103)
114	2310-7040	SCREW, SPE			

A B C D E F G H I J

WIRING DIAGRAM

1

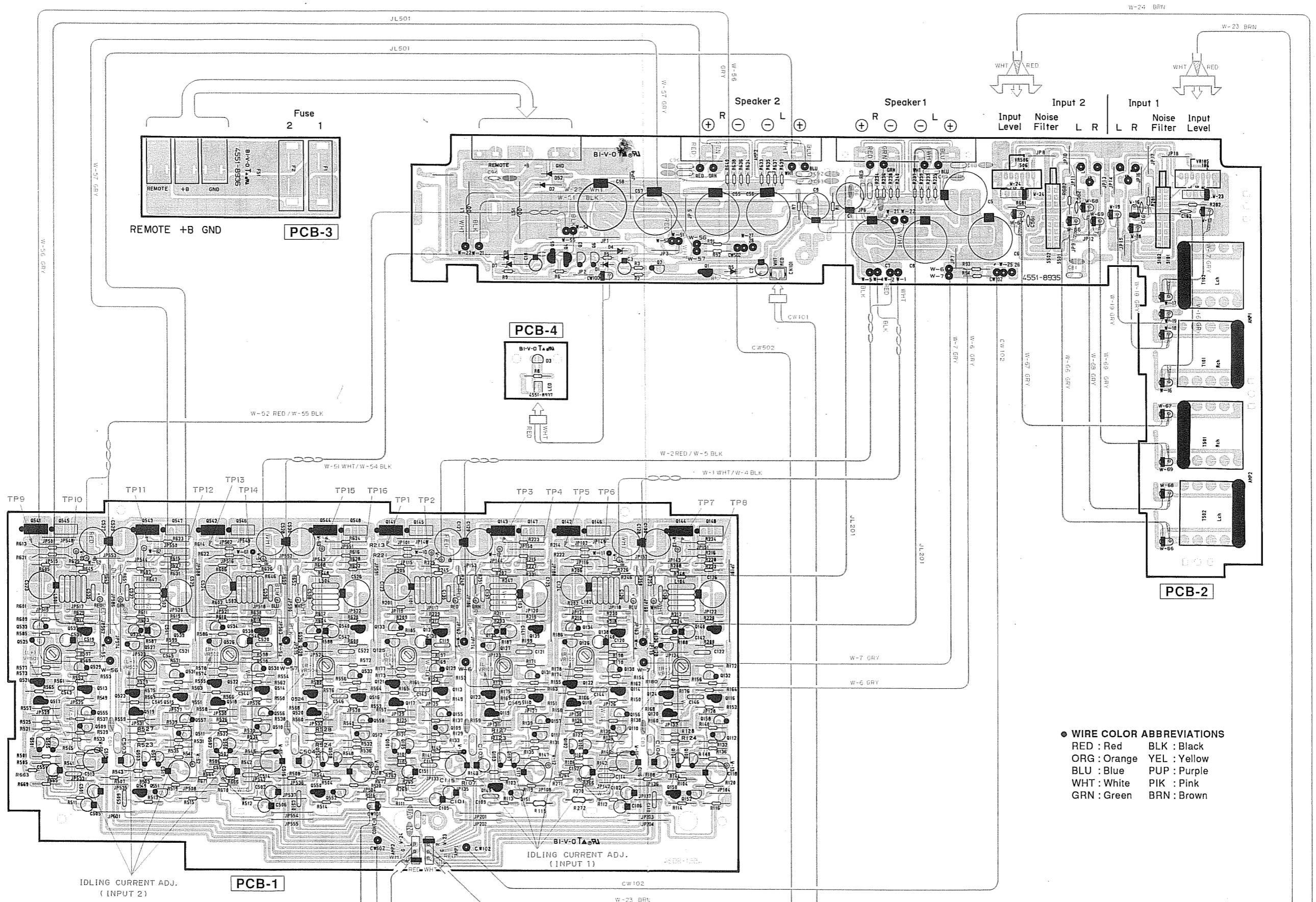
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6



- WIRE COLOR ABBREVIATIONS
- RED : Red BLK : Black
- ORG : Orange YEL : Yellow
- BLU : Blue PUP : Purple
- WHT : White PIK : Pink
- GRN : Green BRN : Brown

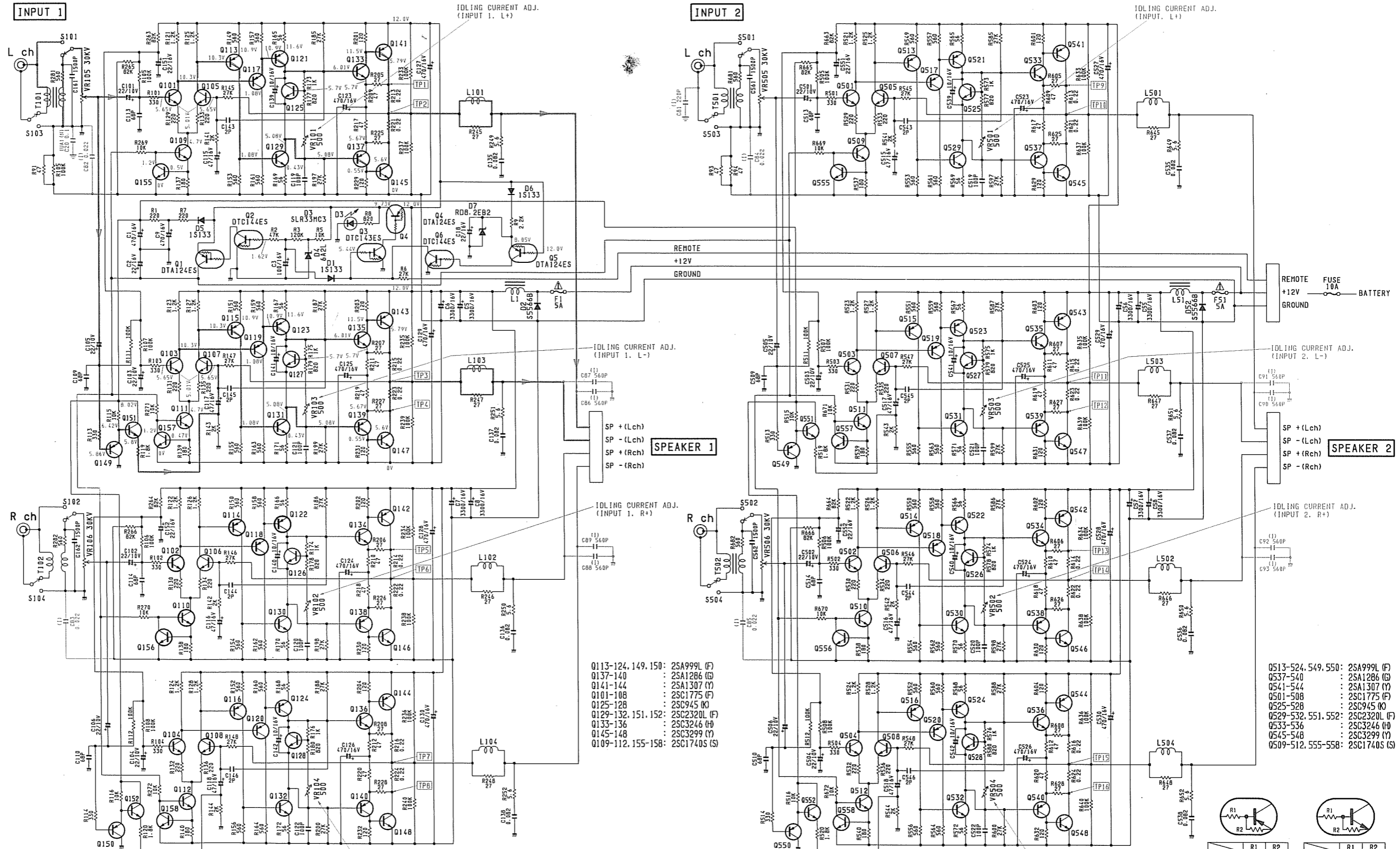
SCHEMATIC DIAGRAM

NOTE:

- 1. ALL RESISTANCE VALUES ARE IN Ω .
K Ω =1000 Ω , M Ω =1000K Ω .
- 2. THE WATTAGE OF RESISTORS IS 1/6W UNLESS OTHERWISE NOTED.
- 3. ALL CAPACITANCE VALUES ARE IN μ F UNLESS OTHERWISE NOTED. P= μ MF.
- 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.

(UA) : North America Area model
(I) : International model
(N) : Japan model

⎓ SIGNAL GROUND
⎓ CHASSIS GROUND



- Q113-124, 149, 150: 2SA999L (F)
- Q137-140 : 2SA1286 (G)
- Q141-144 : 2SA1307 (Y)
- Q101-108 : 2SC1775 (F)
- Q125-128 : 2SC945 (K)
- Q129-132, 151, 152: 2SC2320L (F)
- Q133-136 : 2SC3246 (H)
- Q145-148 : 2SC3299 (Y)
- Q109-112, 155-158: 2SC1740S (S)

- Q513-524, 549, 550: 2SA999L (F)
- Q537-540 : 2SA1286 (G)
- Q541-544 : 2SA1307 (Y)
- Q501-508 : 2SC1775 (F)
- Q525-528 : 2SC945 (K)
- Q529-532, 551, 552: 2SC2320L (F)
- Q533-536 : 2SC3246 (H)
- Q545-548 : 2SC3299 (Y)
- Q509-512, 555-558: 2SC1740S (S)

