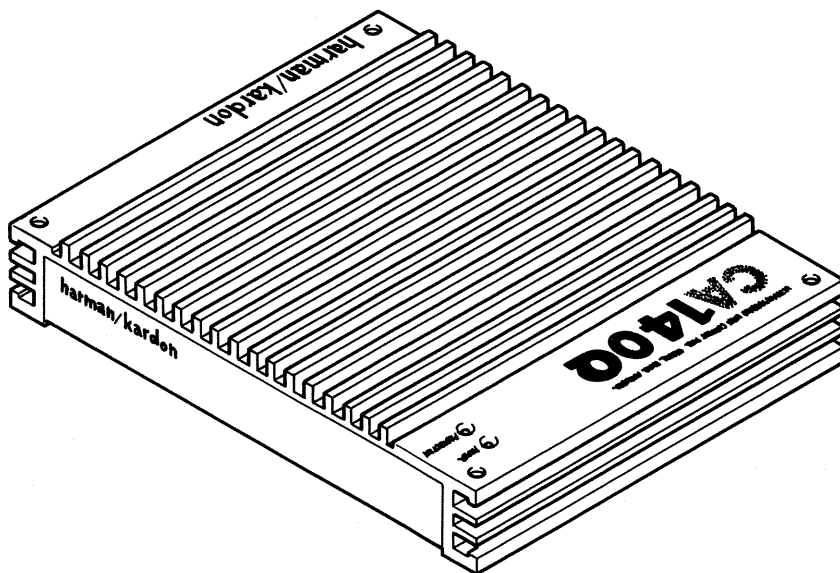


The Harman Kardon Model CA140Q HIGH FIDELITY CAR AMPLIFIER

Manual 175A

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

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1112-3152175A8 P-079106 1200 Printed in Japan

CA140Q

SPECIFICATIONS

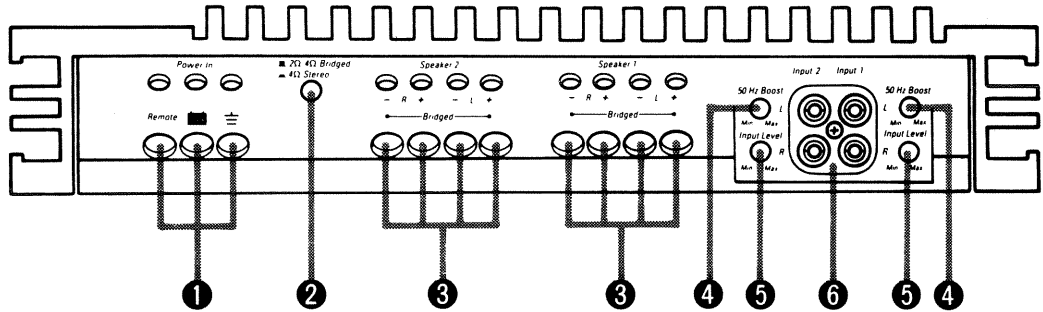
Number of Channels	: 4
Continuous Average Power per Channel, All Channels Driven from 20Hz — 20kHz	: 35 Watts @ <0.1% THD into 4 Ohms 35 Watts @ <0.3% THD into 2 Ohms 70 Watts @ <0.3% THD bridged into 4 Ohms
HCC	: ± 30 Amps
Frequency Response	: 5Hz—100kHz (+0, -3dB)
Signal-to-Noise Ratio	: 100dB

Input Sensitivity/Impedance	: 250mV/22k Ω (variable)
Power Supply	: DC+14.4V (11—16V usable), negative ground
Dimensions (H x W x D)	: 2.25" x 12.6" x 9.4" (57 x 320 x 240 mm)
Weight	: 9 lbs. 1 oz (4.1 kg)

All specifications and features subject to change without notice.

JACKS, TERMINALS AND CONTROLS

- ① Power input terminals
- ② 2 Ω /4 Ω switch
- ③ Speaker terminals
- ④ 50 Hz boost control
- ⑤ Input level control
- ⑥ Input jacks



CONNECTIONS

General

- Caution 1:** The ignition key switch should be turned off before any connections are made to the car electrical system.
- Caution 2:** Use a flat-bladed screwdriver with a blade width of less than 5 mm to connect the cables. Using a screwdriver with a blade width of more than 5 mm can damage the screw slot.
- Caution 3:** The last connection to be made should be to the positive terminal of the car battery.
- Caution 4:** Do not connect any of the CA140Q speaker terminals to the car chassis or to a common ground. Also, do not connect the speaker terminals of the CA140Q to the input terminals of another amplifier or signal processor.

Connect the CA140Q to the car electrical system and to the other components in the audio system as per the following instructions:

Remote

This terminal enables the power switch of the car turner/CD or turner/deck to also turn on the CA140Q. Connect one end of the accessory yellow cord to the appropriate lead (power amplifier remote) on the car turner/CD or turner/deck and the other end to the remote terminal on the CA140Q.

If a specific wire for this purpose is not provided on the turner/deck, use the wire for controlling the power antenna. If that wire is already connected to the power antenna, the CA140Q can be connected in addition.

+B

The +B terminal is the positive power input terminal. It should be connected to the positive (+) terminal of the car battery using the accessory red cord. The cord should be installed such that the attached fuse holder is located near the car battery.

GND

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.

Input Jacks

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

If the car in-dash unit has a built-in power amplifier and does not have line (preamplifier) output jacks, connect the speaker wires to these input jacks. Male phono plugs (not provided) are required. If the built-in amplifier is the "High Power" type (rated 12 watts per channel or more), a power-line adaptor (not provided) must be used.

Adjusting Input Level and 50 Hz Boost Controls

Input level — This continuously variable control allows the amplifier's sensitivity to be matched to the output level of the in-dash unit. Initially, set this control to a low position. Turn on the car audio system and attempt to play it at a comfortable listening level. If the volume control on the in-dash unit cannot increase the level sufficiently, increase the input level control setting accordingly.

50 Hz boost — This continuously variable control can add up to 12 dB of boost to low frequencies in the 50 Hz range. This can be used to compensate for the poor low frequency response from some car speaker systems. Set the bass and treble controls on the in-dash unit to their center positions. Defeat or bypass an equalizer, if used. While the car audio system is playing at a comfortable listening level, increase the setting of the 50 Hz boost control until the desired low frequency effect is achieved.

DISASSEMBLY PROCEDURES (REFER TO PAGES 3 AND 10)

1 CABINET BOTTOM ASS'Y (AA) REMOVAL

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

2 FRONT PANEL (134) 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 (134).

3 REAR PANEL (133) REMOVAL

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

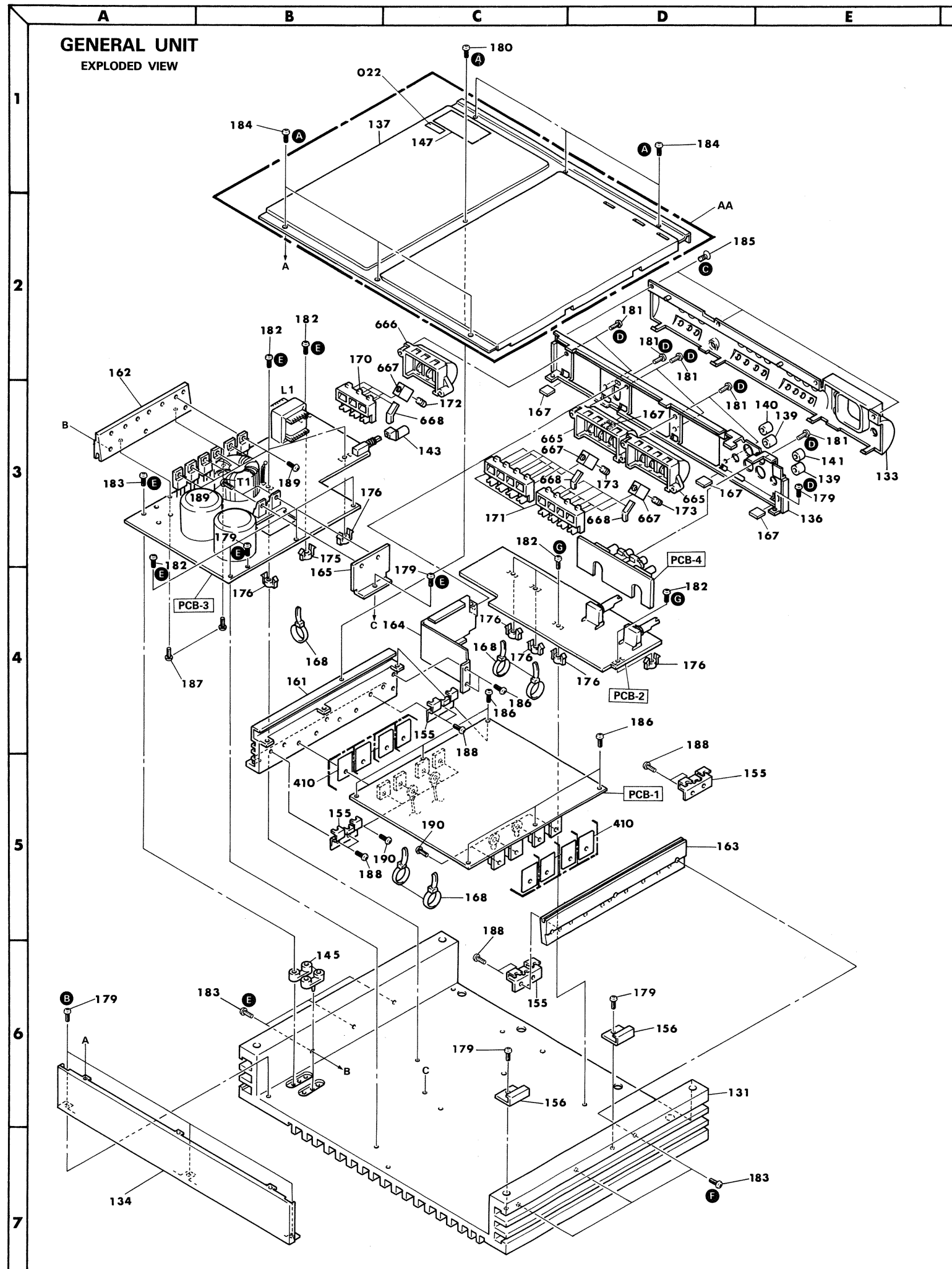
4 P.C. BOARDS REMOVAL

1. Remove the Cabinet Bottom Ass'y (AA), referring to the previous step 1.
2. Remove the Rear Panel (133), referring to the previous step 3.
3. Remove 9 screws (D) and then remove the cabinet back (136).
4. Remove 12 screws (E) and then remove the Power P.C. Board (PCB-3).
5. Remove 3 screws (F) and then remove the Main P.C. Board (PCB-1).
6. Remove 4 screws (G) and then remove the Input P.C. Board (PCB-2).

GENERAL UNIT PARTS LIST

Ref. No.	Part No.	Description
AA	A424-HC395A	CABINET BOTTOM ASSEMBLY
022	1756-19318	LABEL, DBP No. 1
131	1413-00401	CABINET
133	1442-27101	PANEL, REAR
134	1444-05801	PANEL, FRONT
136	1424-35001	CABI BACK, REAR
137	1424-35101	CABI BACK, BOTTOM
139	1632-21201	ROTARY KNOB, BASS BOOST
140	1632-21101	ROTARY KNOB, INPUT Rch
141	1632-21301	ROTARY KNOB, INPUT Lch
143	1662-66101	PUSH BUTTON, 2/4 OHM
145	1732-08401	INDICATOR (x2)
147	1751-10017	LABEL, SET
155	2219-8333	METAL FITTG (x4)
156	2219-8334	METAL FITTG (x2)
161	2222-7293	HEAT SINK
162	2222-7294	HEAT SINK
163	2222-7295	HEAT SINK
164	2222-7300	HEAT SINK
165	2222-7296	HEAT SINK
167	2112-11804	SPONGE (x4)
168	2240-R0101	HOLDER (x5)
170	2240-7388	HOLDER, TERMINAL

Ref. No.	Part No.	Description
171	2240-7389	HOLDER TERMINAL (x2)
172	2310-7039	SCREW, SPE (x3)
173	2310-7039	SCREW, SPE (x8)
175	2360-7025	BOSS, SPE
176	2360-7026	BOSS, SPE (x6)
179	2347-R0130062	SCREW, BND T (+) (3x6mm) (x6)
180	2347-R0126054	SCREW, BND T (+) (2.6x5mm)
181	2347-R0130084	SCREW, BND T (+) (3x8mm) (x8)
182	2347-R0130102	SCREW, BND T (+) (3x10mm) (x10)
183	2347-R0130124	SCREW, BND T (+) (3x12mm) (x7)
184	2347-260547	SCREW, BND T (+) (2.6x5mm) (x6)
185	2343-260527	SCREW, CSK T (+) (2.6x5mm) (x3)
186	2347-R0130062	SCREW, BND T (+) (3x6mm) (x8)
187	2347-R0130062	SCREW, BND T (+) (3x6mm) (x2)
188	2557-300629	SCREW, B SPW (+) (3x6mm) (x8)
189	2557-300829	SCREW, B SPW (+) (3x8mm) (x8)
190	2557-301029	SCREW, B SPW (+) (3x10mm) (x8)
410	2224-7134	INSULATOR
665	4215-09701	TERMINAL BRD, SPEAKER (x2)
666	4215-09801	TERMINAL BRD, POWER
667	4214-237	TERMINAL (x11)
668	4214-236	TERMINAL (x11)



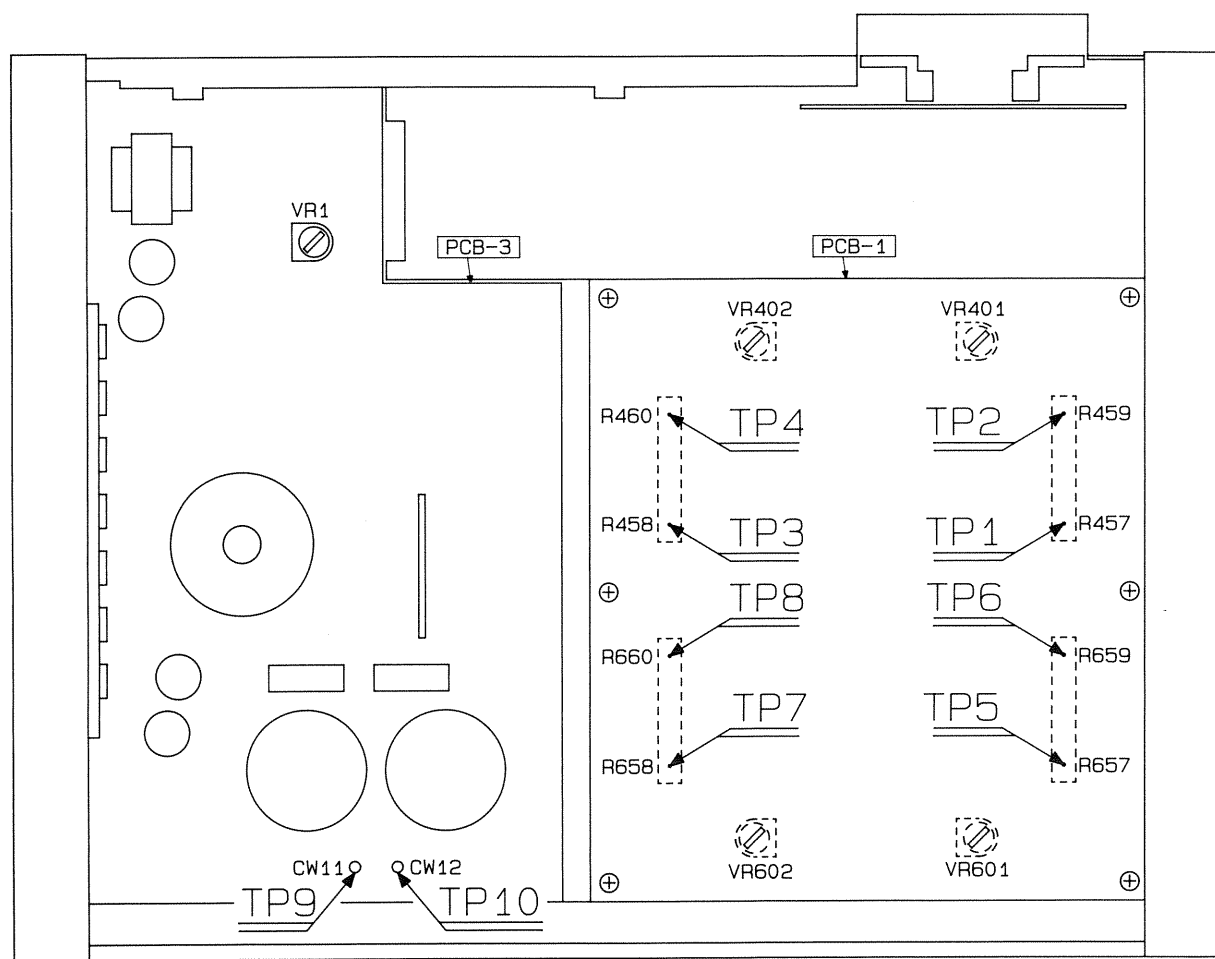
ALIGNMENT PROCEDURES (REFER TO PAGES 7, 8 AND 9)

■ IDLING CURRENT ADJUSTMENT

Conditions:

- Connect a 14.4V power supply to the 12V BATTERY POWER IN terminal.
- After the power on, wait for 10 minutes before measuring to be sure of the most stable operation.
- Set the Speaker Operating Mode Switch to "4Ω Stereo" position.
- Set the Boost and Input Level Volume to minimum position.

Step	Terminal to be Connected	Adjustment	For
1	Connect the Digital Voltmeter to TP1 and TP2 (across the terminals of R457/459)	VR401 (Input 1, L ch)	22mV
2	Connect the Digital Voltmeter to TP3 and TP4 (across the terminals of R458/460)	VR402 (Input 1, R ch)	22mV
3	Connect the Digital Voltmeter to TP5 and TP6 (across the terminals of R657/659)	VR601 (Input 2, L ch)	22mV
4	Connect the Digital Voltmeter to TP7 and TP8 (across the terminals of R658/660)	VR602 (Input 2, R ch)	22mV



■ VOLTAGE REGULATOR ADJUSTMENT

Conditions:

- Set the Boost Volume to minimum position.
- Set the Input Level Volume to maximum position.
- Set the Speaker Operating Mode Switch to "2Ω" position.

Step	Terminal to be Connected	Adjustment	For
1	Connect the Digital Volt Meter to TP9 and TP10.	VR1	35.5V

ELECTRICAL PARTS LIST

Ser. No.	Ref. No.	Part No.	Description	Ser. No.	Ref. No.	Part No.	Description
PCB-1 MAIN P.C. BOARD							
CAPACITORS							
469	C2	5345-226C0951	CAP, MINI ELE 22 μ/16V	475	R17	5232-473J16P	RES, CBN 1/6P 47K
470	C3	5354-334593	CAP, MYL .33 μ	487	R18	5135-472522	RES, CBN 1/2P 4.7K
471	C4	5354-683593	CAP, MYL .068 μ	487	R19	5135-472522	RES, CBN 1/2P 4.7K
471	C5	5354-683593	CAP, MYL .068 μ	487	R20	5135-472522	RES, CBN 1/2P 4.7K
472	C6	5354-332J1HM	CAP, MYL 3300p	487	R21	5135-472522	RES, CBN 1/2P 4.7K
471	C27	5354-683593	CAP, MYL .068 μ	483	R22	5232-152J16P	RES, CBN 1/6P 1.5K
471	C28	5354-683593	CAP, MYL .068 μ	483	R23	5232-152J16P	RES, CBN 1/6P 1.5K
418	C401	5345-476B0951	CAP, MINI ELE 47 μ/10V	482	R24	5232-472J16P	RES, CBN 1/6P 4.7K
418	C402	5345-476B0951	CAP, MINI ELE 47 μ/10V	482	R25	5232-472J16P	RES, CBN 1/6P 4.7K
421	C403	5353-680534	CAP, MCA 68p	489	R26	5232-474J16P	RES, CBN 1/6P 470K
416	C405	5345-S19CM476	CAP, MINI ELE 47 μ/16V	482	R73	5232-472J16P	RES, CBN 1/6P 4.7K
416	C406	5345-S19CM476	CAP, MINI ELE 47 μ/16V	482	R74	5232-472J16P	RES, CBN 1/6P 4.7K
420	C407	5353-050934	CAP, MCA 5p	483	R75	5232-152J16P	RES, CBN 1/6P 1.5K
420	C408	5353-050934	CAP, MCA 5p	483	R76	5232-152J16P	RES, CBN 1/6P 1.5K
419	C409	5359-1015851	CAP, PPP 100p	485	R77	5135-223522	RES, CBN 1/2P 22K
419	C410	5359-1015851	CAP, PPP 100p	485	R78	5135-223522	RES, CBN 1/2P 22K
417	C411	5345-476E041	CAP, MINI ELE 47 μ/35V	486	R79	5135-473522	RES, CBN 1/2P 47K
417	C412	5345-476E041	CAP, MINI ELE 47 μ/35V	486	R80	5135-473522	RES, CBN 1/2P 47K
417	C413	5345-476E041	CAP, MINI ELE 47 μ/35V	487	R81	5135-472522	RES, CBN 1/2P 4.7K
417	C414	5345-476E041	CAP, MINI ELE 47 μ/35V	487	R82	5135-472522	RES, CBN 1/2P 4.7K
415	C415	5345-106C0951	CAP, MINI ELE 10 μ/16V	487	R83	5135-472522	RES, CBN 1/2P 4.7K
415	C416	5345-106C0951	CAP, MINI ELE 10 μ/16V	487	R84	5135-472522	RES, CBN 1/2P 4.7K
415	C417	5345-106C0951	CAP, MINI ELE 10 μ/16V	488	R89	5232-104J16P	RES, CBN 1/6P 100K
415	C418	5345-106C0951	CAP, MINI ELE 10 μ/16V	451	R401	5135-331522	RES, CBN 1/2P 330
422	C419	5354-104593	CAP, MYL .1 μ	451	R402	5135-331522	RES, CBN 1/2P 330
422	C420	5354-104593	CAP, MYL .1 μ	432	R403	5135-333522	RES, CBN 1/2P 33K
422	C421	5354-104593	CAP, MYL .1 μ	432	R404	5135-333522	RES, CBN 1/2P 33K
422	C422	5354-104593	CAP, MYL .1 μ	431	R405	5135-104522	RES, CBN 1/2P 100K
423	C429	5345-477E045	CAP, MINI ELE 470 μ/35V	431	R406	5135-104522	RES, CBN 1/2P 100K
423	C430	5345-477E045	CAP, MINI ELE 470 μ/35V	434	R407	5135-271522	RES, CBN 1/2P 270
423	C431	5345-477E045	CAP, MINI ELE 470 μ/35V	434	R408	5135-271522	RES, CBN 1/2P 270
423	C432	5345-477E045	CAP, MINI ELE 470 μ/35V	435	R409	5135-271522	RES, CBN 1/2P 270
418	C601	5345-476B0951	CAP, MINI ELE 47 μ/10V	435	R410	5135-271522	RES, CBN 1/2P 270
418	C602	5345-476B0951	CAP, MINI ELE 47 μ/10V	435	R411	5135-271522	RES, CBN 1/2P 270
421	C603	5353-680534	CAP, MCA 68p	435	R412	5135-271522	RES, CBN 1/2P 270
416	C605	5345-S19CM476	CAP, MINI ELE 47 μ/16V	436	R413	5135-152522	RES, CBN 1/2P 1.5K
420	C606	5345-S19CM476	CAP, MINI ELE 47 μ/16V	436	R414	5135-152522	RES, CBN 1/2P 1.5K
420	C607	5353-050934	CAP, MCA 5p	436	R415	5135-152522	RES, CBN 1/2P 1.5K
419	C608	5353-050934	CAP, MCA 5p	436	R416	5135-152522	RES, CBN 1/2P 1.5K
419	C609	5359-1015851	CAP, PPP 100p	443	R417	5174-S010F13K	RES, MTL 1/4P 13K
417	C610	5359-1015851	CAP, PPP 100p	433	R418	5135-103522	RES, CBN 1/2P 10K
417	C611	5345-476E041	CAP, MINI ELE 47 μ/35V	437	R419	5135-561522	RES, CBN 1/2P 560
417	C612	5345-476E041	CAP, MINI ELE 47 μ/35V	437	R420	5135-561522	RES, CBN 1/2P 560
417	C613	5345-476E041	CAP, MINI ELE 47 μ/35V	437	R421	5135-561522	RES, CBN 1/2P 560
417	C614	5345-476E041	CAP, MINI ELE 47 μ/35V	437	R422	5135-561522	RES, CBN 1/2P 560
415	C615	5345-106C0951	CAP, MINI ELE 10 μ/16V	447	R425	5135-681522	RES, CBN 1/2P 680
415	C616	5345-106C0951	CAP, MINI ELE 10 μ/16V	447	R426	5135-681522	RES, CBN 1/2P 680
415	C617	5345-106C0951	CAP, MINI ELE 10 μ/16V	437	R427	5135-561522	RES, CBN 1/2P 560
415	C618	5345-106C0951	CAP, MINI ELE 10 μ/16V	437	R428	5135-561522	RES, CBN 1/2P 560
422	C619	5354-104593	CAP, MYL .1 μ	447	R431	5135-681522	RES, CBN 1/2P 680
422	C620	5354-104593	CAP, MYL .1 μ	447	R432	5135-681522	RES, CBN 1/2P 680
422	C621	5354-104593	CAP, MYL .1 μ	445	△R433	5102-5605116	RES, FUSE 56
422	C622	5354-104593	CAP, MYL .1 μ	445	△R434	5102-5605116	RES, FUSE 56
423	C629	5345-477E045	CAP, MINI ELE 470 μ/35V	445	△R435	5102-5605116	RES, FUSE 56
423	C630	5345-477E045	CAP, MINI ELE 470 μ/35V	445	△R436	5102-5605116	RES, FUSE 56
423	C631	5345-477E045	CAP, MINI ELE 470 μ/35V	439	R437	5135-223522	RES, CBN 1/2P 22K
423	C632	5345-477E045	CAP, MINI ELE 470 μ/35V	439	R438	5135-223522	RES, CBN 1/2P 22K
RESISTORS							
475	R3	5232-473J16P	RES, CBN 1/6P 47K	439	R439	5135-223522	RES, CBN 1/2P 22K
475	R4	5232-473J16P	RES, CBN 1/6P 47K	439	R440	5135-223522	RES, CBN 1/2P 22K
476	R5	5232-334J16P	RES, CBN 1/6P 330K	436	R441	5135-152522	RES, CBN 1/2P 1.5K
477	R6	5232-564J16P	RES, CBN 1/6P 560K	436	R442	5135-152522	RES, CBN 1/2P 1.5K
478	R7	5232-104J16P	RES, CBN 1/6P 100K	434	R443	5135-271522	RES, CBN 1/2P 270
479	R8	5232-184J16P	RES, CBN 1/6P 180K	434	R444	5135-271522	RES, CBN 1/2P 270
480	R9	5232-103J16P	RES, CBN 1/6P 10K	446	△R445	5102-8205116	RES, FUSE 82
485	R10	5135-223522	RES, CBN 1/2P 22K	446	△R446	5102-8205116	RES, FUSE 82
485	R11	5135-223522	RES, CBN 1/2P 22K	446	△R447	5102-8205116	RES, FUSE 82
486	R12	5135-473522	RES, CBN 1/2P 47K	446	△R448	5102-8205116	RES, FUSE 82
486	R13	5135-473522	RES, CBN 1/2P 47K	438	R449	5135-820522	RES, CBN 1/2P 82
490	R14	5232-225J16P	RES, CBN 1/6P 2.2M	438	R450	5135-820522	RES, CBN 1/2P 82
481	R15	5232-223J16P	RES, CBN 1/6P 22K	440	R451	5135-100522	RES, CBN 1/2P 10
481	R16	5232-223J16P	RES, CBN 1/6P 22K	440	R452	5135-100522	RES, CBN 1/2P 10
				453	R453	5171-100571	RES, MTL 1P 10
				453	R454	5171-100571	RES, MTL 1P 10
				441	R455	5174-S010F393	RES, MTL 1/4P 39K
				442	R456	5135-473522	RES, CBN 1/2P 47K
				450	R457/	5275-S040JR22	RES, CEM 5P .22
							459

Ser. No.	Ref. No.	Part No.	Description	Ser. No.	Ref. No.	Part No.	Description	Ser. No.	Ref. No.	Part No.	Description	Ser. No.	Ref. No.	Part No.	Description
450	R458/460	5275-S040JR22	RES, CEM 5P .22	466	Q6	5611-970(BL)	XISTOR, PNP R	562	CW6	4163-0130027	CONNECTOR W/W	504	R532	5232-331J16P	RES, CBN 1/6P 330
448	R461	5135-392522	RES, CBN 1/2P 3.9K	464	Q7	5613-2320(F)	XISTOR, NPN R	563	CW7	4163-0130024	CONNECTOR W/W	504	R533	5232-331J16P	RES, CBN 1/6P 330
448	R462	5135-392522	RES, CBN 1/2P 3.9K	464	Q8	5613-2320(F)	XISTOR, NPN R	564	CW8	4163-0130025	CONNECTOR W/W	504	R534	5232-331J16P	RES, CBN 1/6P 330
448	R463	5135-392522	RES, CBN 1/2P 3.9K	461	Q31	5611-933S(S)	XISTOR, PNP R	PCB-2 INPUT P.C. BOARD							
448	R464	5135-392522	RES, CBN 1/2P 3.9K	464	Q32	5613-2320(F)	XISTOR, NPN R								
444	R465	5174-S010F102	RES, MTL 1/4P 1K	464	Q33	5613-2320(F)	XISTOR, NPN R	CAPACITORS							
452	R466	5135-334522	RES, CBN 1/2P 330K	466	Q34	5611-970(BL)	XISTOR, PNP R								
451	R601	5135-331522	RES, CBN 1/2P 330	466	Q35	5611-970(BL)	XISTOR, PNP R	527	C101	5345-227D045	CAP, MINI ELE 220 μ /25V	507	R707	5232-823J16P	RES, CBN 1/6P 82K
451	R602	5135-331522	RES, CBN 1/2P 330	401	Q401	5611-999(F)	XISTOR, PNP R	527	C102	5345-227D045	CAP, MINI ELE 220 μ /25V	507	R708	5232-823J16P	RES, CBN 1/6P 82K
432	R603	5135-333522	RES, CBN 1/2P 33K	401	Q402	5611-999(F)	XISTOR, PNP R	528	C103	5345-108C045	CAP, MINI ELE 1000 μ /16V	503	R709	5232-102J16P	RES, CBN 1/6P 1K
432	R604	5135-333522	RES, CBN 1/2P 33K	401	Q403	5611-999(F)	XISTOR, PNP R	528	C104	5345-108C045	CAP, MINI ELE 1000 μ /16V	503	R710	5232-102J16P	RES, CBN 1/6P 1K
431	R605	5135-104522	RES, CBN 1/2P 100K	401	Q404	5611-999(F)	XISTOR, PNP R	527	C105	5345-227D045	CAP, MINI ELE 220 μ /25V	506	R711	5232-682J16P	RES, CBN 1/6P 6.8K
431	R606	5135-104522	RES, CBN 1/2P 100K	402	Q405	5611-970(BL)	XISTOR, PNP R	527	C106	5345-227D045	CAP, MINI ELE 220 μ /25V	506	R712	5232-682J16P	RES, CBN 1/6P 6.8K
434	R607	5135-271522	RES, CBN 1/2P 270	402	Q406	5611-970(BL)	XISTOR, PNP R	495	C503	5345-106C0951	CAP, MINI ELE 10 μ /16V	505	R713	5232-101J16P	RES, CBN 1/6P 100
434	R608	5135-271522	RES, CBN 1/2P 270	402	Q407	5611-970(BL)	XISTOR, PNP R	495	C504	5345-106C0951	CAP, MINI ELE 10 μ /16V	505	R714	5232-101J16P	RES, CBN 1/6P 100
435	R609	5135-271522	RES, CBN 1/2P 270	402	Q408	5611-970(BL)	XISTOR, PNP R	499	C505	5353-050934	CAP, MCA 5p	508	R715	5232-103J16P	RES, CBN 1/6P 10K
435	R610	5135-271522	RES, CBN 1/2P 270	403	Q409	5613-2240(BL)	XISTOR, NPN R	499	C506	5353-050934	CAP, MCA 5p	508	R716	5232-103J16P	RES, CBN 1/6P 10K
435	R611	5135-271522	RES, CBN 1/2P 270	403	Q410	5613-2240(BL)	XISTOR, NPN R	497	C507	5345-106C0951	CAP, MINI ELE 10 μ /16V	509	R717	5232-322J16P	RES, CBN 1/6P 3.3K
435	R612	5135-271522	RES, CBN 1/2P 270	403	Q411	5613-2240(BL)	XISTOR, NPN R	497	C508	5345-106C0951	CAP, MINI ELE 10 μ /16V	509	R718	5232-332J16P	RES, CBN 1/6P 3.3K
436	R613	5135-152522	RES, CBN 1/2P 1.5K	403	Q412	5613-2240(BL)	XISTOR, NPN R	496	C509	5345-105F0951	CAP, MINI ELE 1 μ /50V	510	R719	5232-122J16P	RES, CBN 1/6P 1.2K
436	R614	5135-152522	RES, CBN 1/2P 1.5K	404	Q413	5612-646A(C)	XISTOR, PNP A	496	C510	5345-105F0951	CAP, MINI ELE 1 μ /50V	510	R720	5232-122J16P	RES, CBN 1/6P 1.2K
436	R615	5135-152522	RES, CBN 1/2P 1.5K	404	Q414	5612-646A(C)	XISTOR, PNP A	498	C511	5354-334593	CAP, MYL .33 μ	513	R721	5232-681J16P	RES, CBN 1/6P 680
436	R616	5135-152522	RES, CBN 1/2P 1.5K	405	Q415	5614-666A(C)	XISTOR, NPN A	498	C512	5354-334593	CAP, MYL .33 μ	513	R722	5232-681J16P	RES, CBN 1/6P 680
443	R617	5174-S010F133	RES, MTL 1/4P 13K	405	Q416	5614-666A(C)	XISTOR, NPN A	502	C513	5345-106E041	CAP, MINI ELE 10 μ /35V	511	R723	5232-473J16P	RES, CBN 1/6P 47K
433	R618	5135-103522	RES, CBN 1/2P 10K	406	Q417	5613-945(K)	XISTOR, NPN R	502	C514	5345-106E041	CAP, MINI ELE 10 μ /35V	511	R724	5232-473J16P	RES, CBN 1/6P 47K
437	R619	5135-561522	RES, CBN 1/2P 560	406	Q418	5613-945(K)	XISTOR, NPN R	502	C515	5345-106E041	CAP, MINI ELE 10 μ /35V	512	R725	5232-222J16P	RES, CBN 1/6P 2.2K
437	R620	5135-561522	RES, CBN 1/2P 560	407	Q419	5613-3247(H)	XISTOR, NPN R	502	C516	5345-106E041	CAP, MINI ELE 10 μ /35V	503	R726	5232-102J16P	RES, CBN 1/6P 1K
437	R621	5135-561522	RES, CBN 1/2P 560	407	Q420	5613-3247(H)	XISTOR, NPN R	502	C517	5345-106E041	CAP, MINI ELE 10 μ /35V	515	R727	5232-184J16P	RES, CBN 1/6P 180K
437	R622	5135-561522	RES, CBN 1/2P 560	408	Q421	5611-1287(G)	XISTOR, PNP R	502	C518	5345-106E041	CAP, MINI ELE 10 μ /35V	504	R731	5232-331J16P	RES, CBN 1/6P 330
447	R625	5135-681522	RES, CBN 1/2P 680	408	Q422	5611-1287(G)	XISTOR, PNP R	495	C703	5345-106C0951	CAP, MINI ELE 10 μ /16V	504	R732	5232-331J16P	RES, CBN 1/6P 330
447	R626	5135-681522	RES, CBN 1/2P 680	409	Q423	5613-3181(O)	XISTOR, NPN R	495	C704	5345-106C0951	CAP, MINI ELE 10 μ /16V	504	R733	5232-331J16P	RES, CBN 1/6P 330
437	R627	5135-561522	RES, CBN 1/2P 560	409	Q424	5613-3181(O)	XISTOR, NPN R	499	C705	5353-050934	CAP, MCA 5p	504	R734	5232-331J16P	RES, CBN 1/6P 330
437	R628	5135-561522	RES, CBN 1/2P 560	411	Q425	5611-1264(O)	XISTOR, PNP R	499	C706	5353-050934	CAP, MCA 5p	516	R736	5232-102J16P	RES, CBN 1/6P 1K
447	R631	5135-681522	RES, CBN 1/2P 680	411	Q426	5611-1264(O)	XISTOR, PNP R	497	C707	5345-106C0951	CAP, MINI ELE 10 μ /16V	518	R737	5232-331J16P	RES, CBN 1/6P 330
447	R632	5135-681522	RES, CBN 1/2P 680	401	Q601	5611-999(F)	XISTOR, PNP R	497	C708	5345-106C0951	CAP, MINI ELE 10 μ /16V	INTEGRATED CIRCUITS			
445	Δ R633	5102-5605116	RES, FUSE 56	401	Q602	5611-999(F)	XISTOR, PNP R	496	C709	5345-105F0951	CAP, MINI ELE 1 μ /50V	517	IC501	5652-M5218L	IC, MONO
445	Δ R634	5102-5605116	RES, FUSE 56	401	Q603	5611-999(F)	XISTOR, PNP R	496	C710	5345-105F0951	CAP, MINI ELE 1 μ /50V	517	IC701	5652-M5218L	IC, MONO
445	Δ R635	5102-5605116	RES, FUSE 56	402	Q604	5611-999(F)	XISTOR, PNP R	498	C711	5354-334593	CAP, MYL .33 μ	TRANSISTORS			
445	Δ R636	5102-5605116	RES, FUSE 56	402	Q605	5611-970(BL)	XISTOR, PNP R	498	C712	5354-334593	CAP, MYL .33 μ	521	Q101	5614-1266(P)	XISTOR, NPN A
439	R637	5135-223522	RES, CBN 1/2P 22K	402	Q606	5611-970(BL)	XISTOR, PNP R	502	C713	5345-106E041	CAP, MINI ELE 10 μ /35V	522	Q102	5612-941(P)	XISTOR, PNP A
439	R638	5135-223522	RES, CBN 1/2P 22K	402	Q607	5611-970(BL)	XISTOR, PNP R	502	C714	5345-106E041	CAP, MINI ELE 10 μ /35V	491	Q501	5613-2240(BL)	XISTOR, NPN R
439	R639	5135-223522	RES, CBN 1/2P 22K	402	Q608	5611-970(BL)	XISTOR, PNP R	502	C715	5345-106E041	CAP, MINI ELE 10 μ /35V	491	Q502	5613-2240(BL)	XISTOR, NPN R
439	R640	5135-223522	RES, CBN 1/2P 22K	403	Q609	5613-2240(BL)	XISTOR, NPN R	502	C716	5345-106E041	CAP, MINI ELE 10 μ /35V	491	Q503	5613-2240(BL)	XISTOR, NPN R
436	R641	5135-152522	RES, CBN 1/2P 1.5K	403	Q610	5613-2240(BL)	XISTOR, NPN R	502	C717	5345-106E041	CAP, MINI ELE 10 μ /35V	491	Q504	5613-2240(BL)	XISTOR, NPN R
436	R642	5135-152522	RES, CBN 1/2P 1.5K	403	Q611	5613-2240(BL)	XISTOR, NPN R	502	C718	5345-106E041	CAP, MINI ELE 10 μ /35V	492	Q505	5611-970(BL)	XISTOR, PNP R
434	R643	5135-271522	RES, CBN 1/2P 270	403	Q612	5613-2240(BL)	XISTOR, NPN R	RESISTORS							
434	R644	5135-271522	RES, CBN 1/2P 270	404	Q613	5612-646A(C)	XISTOR, PNP A								
446	Δ R645	5102-8205116	RES, FUSE 82	404	Q614	5612-646A(C)	XISTOR, PNP A	533	Δ R101	5102-6805116	RES, FUSE 68	492	Q506	5611-970(BL)	XISTOR, PNP R
446	Δ R646	5102-8205116	RES, FUSE 82	405	Q615	5614-666A(C)	XISTOR, NPN A	533	Δ R102	5102-6805116	RES, FUSE 68	493	Q507	5611-999(F)	XISTOR, PNP R
446	Δ R647	5102-8205116	RES, FUSE 82	405	Q616	5614-666A(C)	XISTOR, NPN A	531	R103	5135-472522	RES, CBN 1/2P 4.7K	491	Q701	5613-2240(BL)	XISTOR, NPN R
446	Δ R648	5102-8205116	RES, FUSE 82	406	Q617	5613-945(K)	XISTOR, NPN R	531	R104	5135-472522	RES, CBN 1/2P 4.7K	491	Q702	5613-2240(BL)	XISTOR, NPN R
438	R649	5135-820522	RES, CBN 1/2P 82	406	Q618	5613-945(K)	XISTOR, NPN R	535	R105	5135-470522	RES, CBN 1/2P 47	491	Q703	5613-2240(BL)	XISTOR, NPN R
438	R650	5135-820522	RES, CBN 1/2P 82	407	Q619	5613-3247(H)	XISTOR, NPN R	535	R106	5135-470522	RES, CBN 1/2P 47	491	Q704	5613-2240(BL)	XISTOR, NPN R
440	R651	5135-100522	RES, CBN 1/2P 10	407	Q620	5613-3247(H)	XISTOR, NPN R	505	R505	5232-101J16P	RES, CBN 1/6P 100	492	Q705	5611-970(BL)	XISTOR, PNP R
440	R652	5135-100522	RES, CBN 1/2P 10	408	Q621	5611-1287(G)	XISTOR, PNP R	505	R506	5232-101J16P	RES, CBN 1/6P 100	492	Q706	5611-970(BL)	XISTOR, PNP R
453	R653	5171-100571	RES, MTL 1P 10	408	Q622	5611-1287(G)	XISTOR, PNP R	507	R507	5232-823J16P	RES, CBN 1/6P 82K	493	Q707	5611-999(F)	XISTOR, PNP R
453	R654	5171-100571	RES, MTL 1P 10	409	Q623	5613-3181(O)	XISTOR, NPN R	507	R508	5232-823J16P	RES, CBN 1/6P 82K	DIODES			
441	R655	5174-S010F393	RES, MTL 1/4P 39K	409	Q624	5613-3181(O)	XISTOR, NPN R	503	R509	5232-102J16P	RES, CBN 1/6P 1K	525	D101	5635-HZ15-2L	DIODE, ZENER
442	R656	5135-473522	RES, CBN 1/2P 47K	411	Q625	5611-1264(O)	XISTOR, PNP R	503	R510	5232-102J16P	RES, CBN 1/6P 1K	525	D102	5635-HZ15-2L	DIODE, ZENER
450	R657/659	5275-S040JR22	RES, CEM 5P .22	41											

Ser. No.	Ref. No.	Part No.	Description
PCB-3 POWER P.C. BOARD			
CAPACITORS			
641	C1	5345-104F0951	CAP, MINI ELE .1 μ /50V
642	C7	5345-S14DM226	CAP, MINI ELE 22 μ /25V
643	C9	5359-S010J103	CAP, PPP .01 μ
653	C10	5345-106C0951	CAP, MINI ELE 10 μ /16V
644	C11	5345-S15CM108	CAP, MINI ELE 1000 μ /16V
644	C12	5345-S15CM108	CAP, MINI ELE 1000 μ /16V
645	C13	5361-102ZF	CAP, CER 1000p
646	C14	5345-S14FM475	CAP, MINI ELE 4.7 μ /50V
647	C15	5359-S010J102	CAP, PPP 1000p
648	C16	5345-S14CM337	CAP, MINI ELE 330 μ /16V
649	C17	5345-S14CM107	CAP, MINI ELE 100 μ /16V
650	C18	5359-S010J223	CAP, PPP .022 μ
650	C19	5359-S010J223	CAP, PPP .022 μ
651	C20	5359-S010J332	CAP, PPP 3300p
651	C21	5359-S010J332	CAP, PPP 3300p
652	C22	5341-S22EM109	CAP, ELE 10000 μ /35V
652	C23	5341-S22EM109	CAP, ELE 10000 μ /35V
644	C25	5345-S15CM108	CAP, MINI ELE 1000 μ /16V
644	C26	5345-S15CM108	CAP, MINI ELE 1000 μ /16V
RESISTORS			
615	R1	5135-332522	RES, CBN 1/2P 3.3K
616	R2	5232-472J16P	RES, CBN 1/6P 4.7K
619	R27	5232-333J16P	RES, CBN 1/6P 33K
616	R28	5232-472J16P	RES, CBN 1/6P 4.7K
620	R29	5232-103J16P	RES, CBN 1/6P 10K
621	R30	5232-332J16P	RES, CBN 1/6P 3.3K
620	R31	5232-103J16P	RES, CBN 1/6P 10K
620	R32	5232-103J16P	RES, CBN 1/6P 10K
620	R33	5232-103J16P	RES, CBN 1/6P 10K
619	R34	5232-333J16P	RES, CBN 1/6P 33K
619	R35	5232-333J16P	RES, CBN 1/6P 33K
619	R36	5232-333J16P	RES, CBN 1/6P 33K
616	R37	5232-472J16P	RES, CBN 1/6P 4.7K
616	R38	5232-472J16P	RES, CBN 1/6P 4.7K
634	R39	5232-122J16P	RES, CBN 1/6P 1.2K
620	R40	5232-103J16P	RES, CBN 1/6P 10K
618	R41	5232-102J16P	RES, CBN 1/6P 1K
618	R42	5232-102J16P	RES, CBN 1/6P 1K
616	R43	5232-472J16P	RES, CBN 1/6P 4.7K
616	R44	5232-472J16P	RES, CBN 1/6P 4.7K
623	R45	5232-682J16P	RES, CBN 1/6P 6.8K
624	R46	5232-183J16P	RES, CBN 1/6P 18K
625	R47	5232-271J16P	RES, CBN 1/6P 270
620	R48	5232-103J16P	RES, CBN 1/6P 10K
618	R49	5232-102J16P	RES, CBN 1/6P 1K
626	R50	5232-822J16P	RES, CBN 1/6P 8.2K
623	R51	5232-682J16P	RES, CBN 1/6P 6.8K
632	R52	5135-331522	RES, CBN 1/2P 330
632	R53	5135-331522	RES, CBN 1/2P 330
627	R54	5232-105J16P	RES, CBN 1/6P 1M
628	R55	5232-821J16P	RES, CBN 1/6P 820
615	R56	5135-332522	RES, CBN 1/2P 3.3K
629	R57	5171-4R7571	RES, MTL 1P 4.7
629	R58	5171-4R7571	RES, MTL 1P 4.7
633	R59	5135-220522	RES, CBN 1/2P 22
635	R60	5232-274J16P	RES, CBN 1/6P 270K
631	Δ R61	5102-2205116	RES, FUSE 22
631	Δ R62	5102-2205116	RES, FUSE 22
631	Δ R63	5102-2205116	RES, FUSE 22
631	Δ R64	5102-2205116	RES, FUSE 22
631	Δ R65	5102-2205116	RES, FUSE 22
631	Δ R66	5102-2205116	RES, FUSE 22
622	R67	5232-471J16P	RES, CBN 1/6P 470
617	R71	5135-152522	RES, CBN 1/2P 1.5K
618	R72	5232-102J16P	RES, CBN 1/6P 1K
INTEGRATED CIRCUITS			
661	IC1	5653-UPC494C	IC, LINEAR
662	IC2	5654-TC4069UB	IC, DIGITAL
TRANSISTORS			
581	Q9	5613-C124ES	XISTOR, NPN R
582	Q10	5611-1359(Y)	XISTOR, PNP R
583	Q11	5613-1740S(S)	XISTOR, NPN R

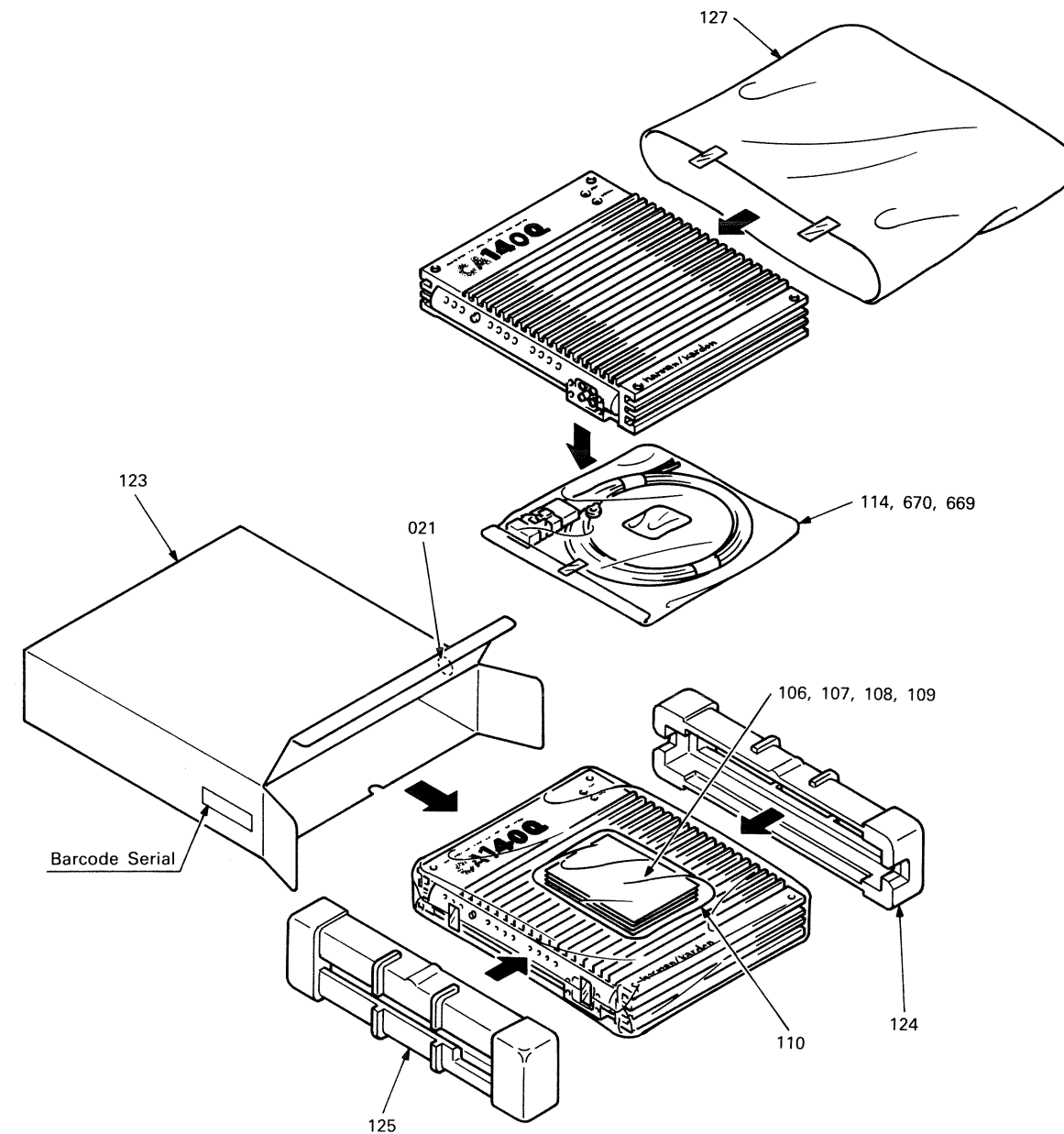
Ser. No.	Ref. No.	Part No.	Description
584	Q12	5611-A124ES	XISTOR, PNP R
584	Q13	5611-A124ES	XISTOR, PNP R
581	Q14	5613-C124ES	XISTOR, NPN R
581	Q15	5613-C124ES	XISTOR, NPN R
584	Q16	5611-A124ES	XISTOR, PNP R
583	Q17	5613-1740S(S)	XISTOR, NPN R
585	Q18	5613-2655(Y)	XISTOR, NPN R
585	Q19	5613-2655(Y)	XISTOR, NPN R
586	Q20	5611-1020(Y)	XISTOR, PNP R
586	Q21	5611-1020(Y)	XISTOR, PNP R
587	Q22	5616-2SK943	FET, N-CH
587	Q23	5616-2SK943	FET, N-CH
587	Q24	5616-2SK943	FET, N-CH
587	Q25	5616-2SK943	FET, N-CH
587	Q26	5616-2SK943	FET, N-CH
587	Q27	5616-2SK943	FET, N-CH
DIODES			
590	D1	5631-1S2473	DIODE, DET
591	D2	5635-HZ6A-2L	DIODE, ZENER
592	D3	5635-HZ12B2L	DIODE, ZENER
593	D4	5637-SLR33VC	LED
594	D5	5637-SLR33YC	LED
595	D6	5637-SLR33MC	LED
596	D7	5636-1S2471	DIODE, SWITCH
597	D8	5632-RM4AM	DIODE, RECT
598	D9	5631-1SS133	DIODE, DET
598	D10	5631-1SS133	DIODE, DET
599	D11	5632-F10P20F	DIODE, RECT
600	D12	5632-F10P20FR	DIODE, RECT
601	D13	5635-HZ22P-B	DIODE, ZENER
COILS AND TRANSFORMER			
604	L1	5583-51201	COIL, AF CH
607	L2	5995-S220M450	COIL W/CORE
607	L3	5995-S220M450	COIL W/CORE
606	T1	5591-00201	CORE, RND
CONTROL			
613	VR1	5101-10201930	RES, SEMI FIX 1K
MISCELLANEOUS			
640	LCN1	4163-02902003	CONNECTOR W/W
663	PH1	5624-TLP531	PHOTO COUPLR
657	PT1	5192-00701	POSISTOR
657	PT2	5192-00701	POSISTOR
657	PT3	5192-00701	POSISTOR
657	PT4	5192-00701	POSISTOR
658	PT5	5192-00601	POSISTOR
611	SW1	4431-S0601102	SWITCH, PUSH
664	TM1	4214-5021	TERMINAL

PCB-4 JACK P.C. BOARD

Ser. No.	Ref. No.	Part No.	Description
CAPACITORS			
500	C501	5353-680534	CAP, MCA 68p
500	C502	5353-680534	CAP, MCA 68p
500	C701	5353-680534	CAP, MCA 68p
500	C702	5353-680534	CAP, MCA 68p
RESISTORS			
514	R501	5232-821J16P	RES, CBN 1/6P 820
514	R502	5232-821J16P	RES, CBN 1/6P 820
514	R701	5232-821J16P	RES, CBN 1/6P 820
514	R702	5232-821J16P	RES, CBN 1/6P 820
MISCELLANEOUS			
551	J101	4489-00201004	PIN JACK, MLT

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

PACKAGE

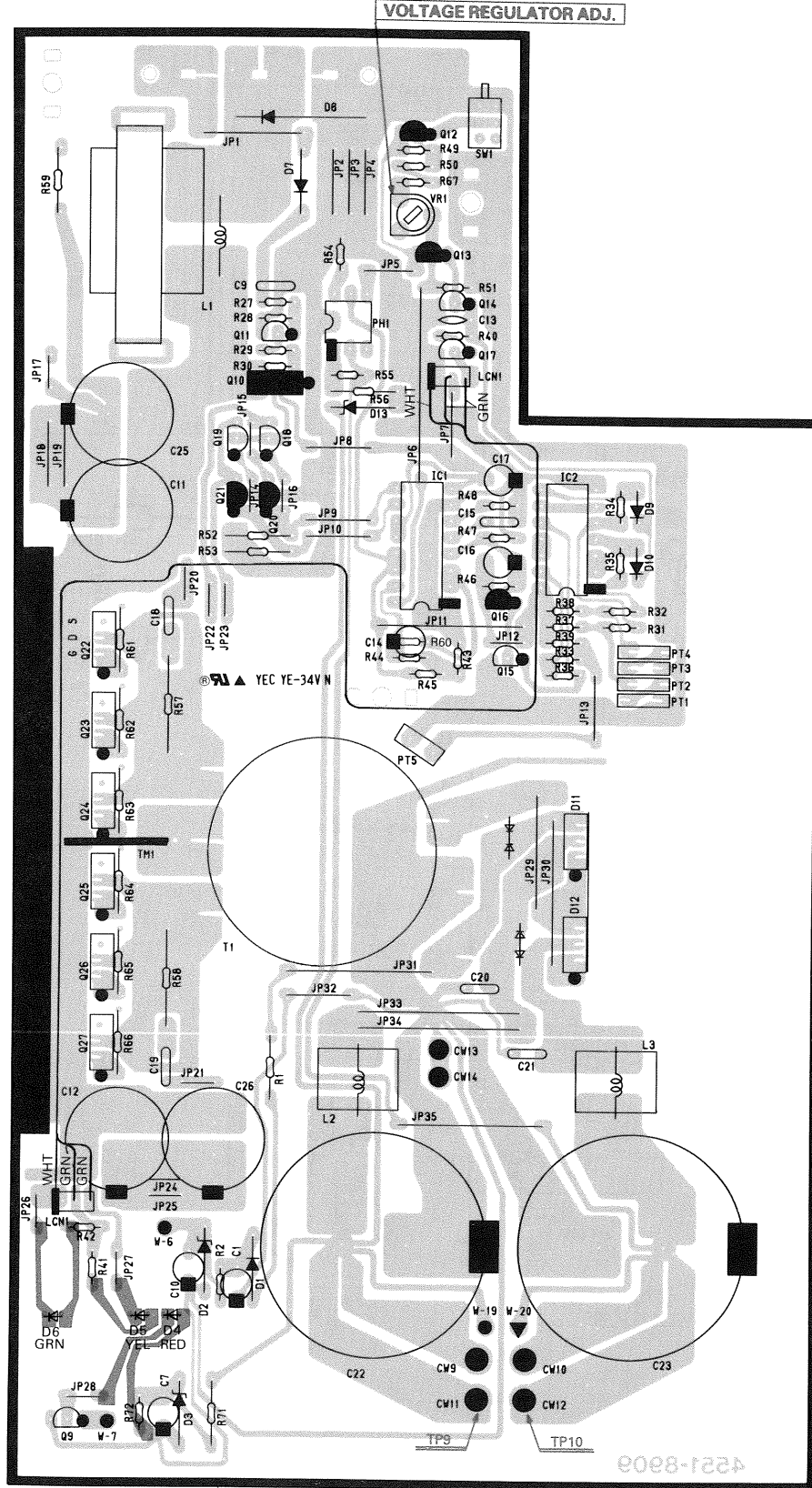


PACKING PARTS LIST

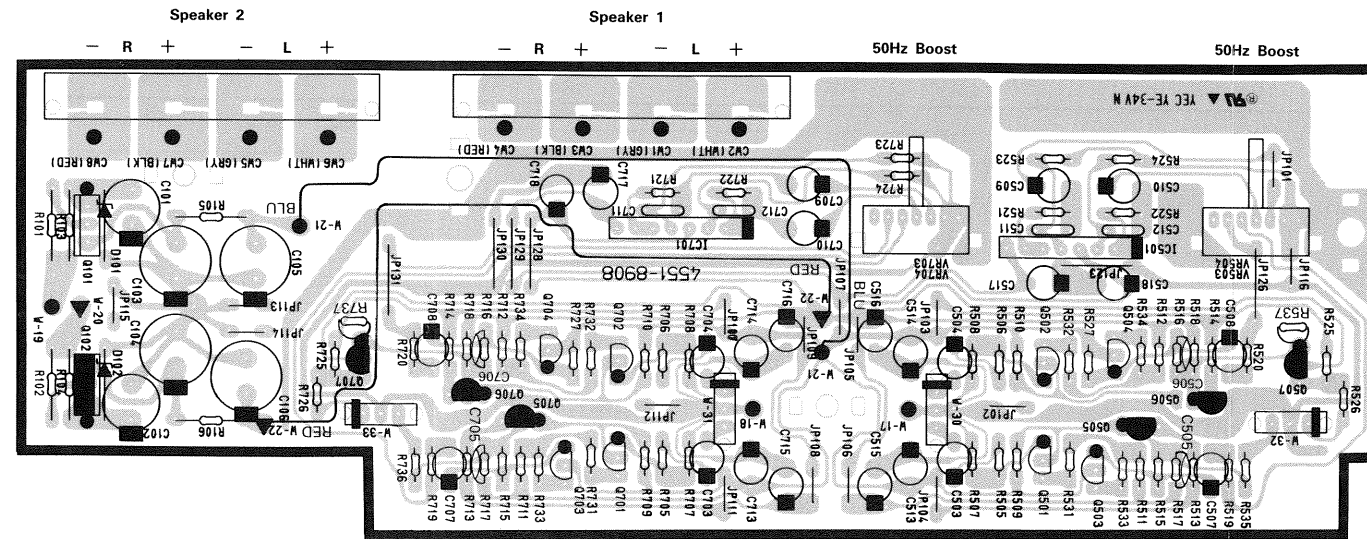
Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
021	1756-03108	LABEL I	109	1119-04401	ATTACH SHEET UA
021	1756-03113	LABEL N	110	1241-R0118250	POLYETHY BAG
106	1111-J30349	OWNER GUIDE UA	114	2310-7041	SCREW, SPE
106	1111-J30350	OWNER GUIDE I	123	1221-29701	CARTON BOX
106	1111-J2057	OWNER GUIDE N	124	1222-7376	CUSHION
107	1113-717004	OWNER CARD UA	125	1222-7377	CUSHION
107	1113-OC	OWNER CARD N	127	1241-R0140350	POLYETHY BAG
108	1116-03901	GUARANT CARD UA	Δ 669	4472-7936	HOLDER, FUSE (W/FUSE P/N: 5732-01401303)
108	1116-GC	GUARANT CARD N	670	4171-01301	WIRING KIT

P.C. BOARDS

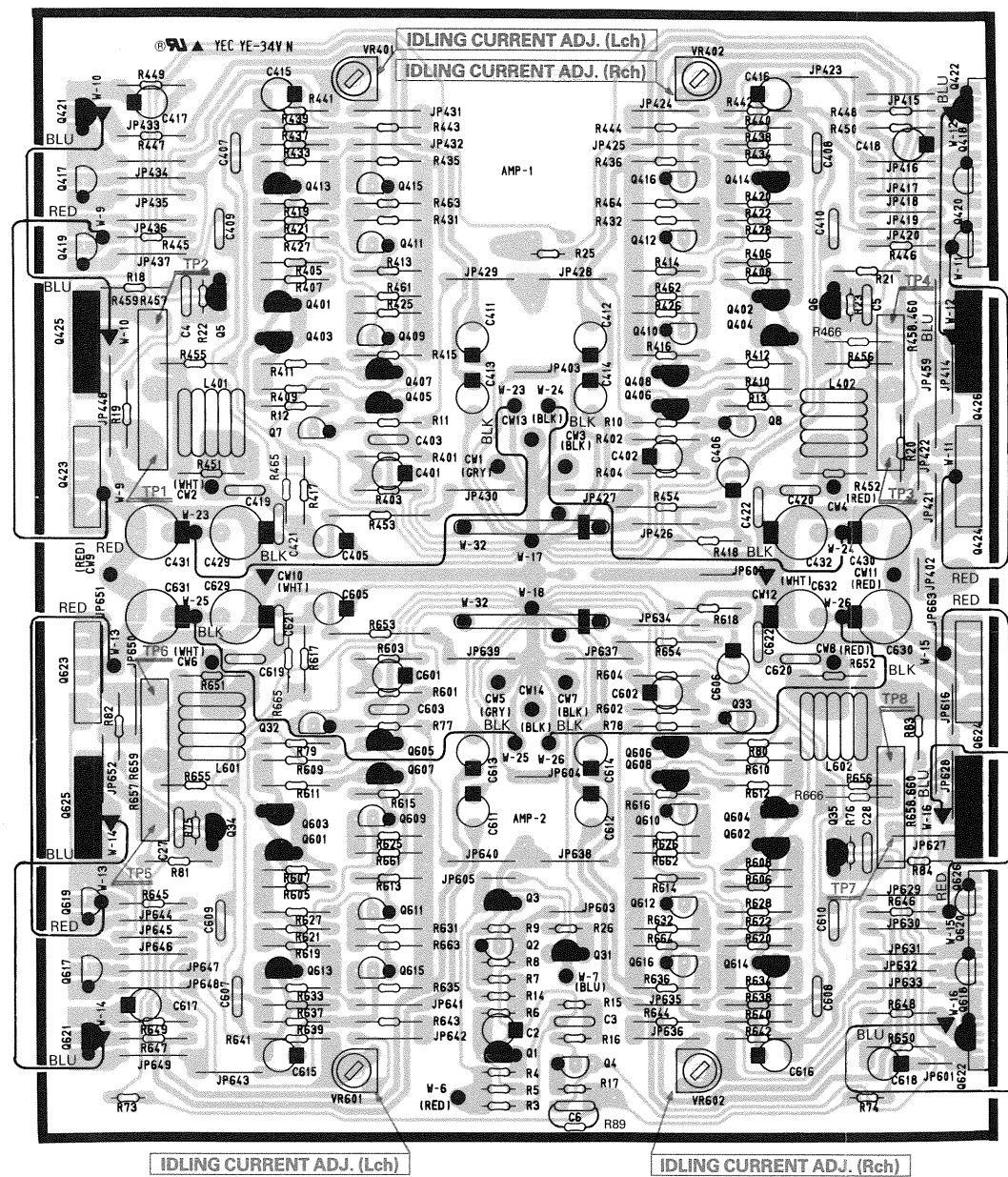
PCB-3 Power P.C. BOARD



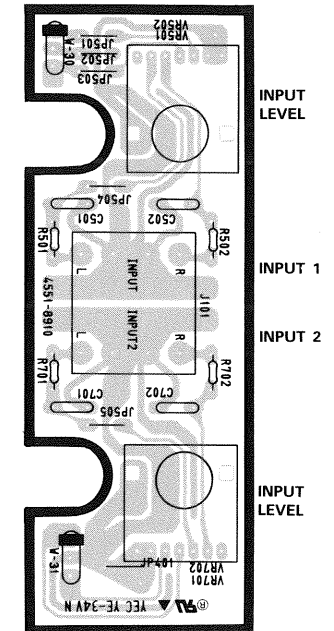
PCB-2 Input P.C. BOARD



PCB-1 Main P.C. BOARD



PCB-4 Jack P.C. BOARD



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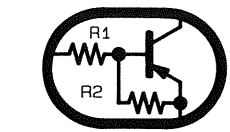
SCHEMATIC DIAGRAM

PCB-3 POWER P.C. BOARD

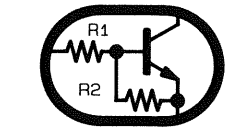
- SCHEMATIC DIAGRAM NOTES:**
1. ALL RESISTANCES VALUES ARE IN Ω .
K=1000 Ω , M=1000K Ω .
 2. THE WATTAGE OF RESISTORS IS 1/2W UNLESS OTHERWISE NOTED.
 3. ALL CAPACITANCES VALUES ARE IN μ F UNLESS OTHERWISE NOTED. P=PPF.
 4. ... V: DC VOLTAGE AT NO SIGNAL UNLESS OTHERWISE NOTED.
 5. SAFETY REQUIREMENTS COMPONENTS IN ACCORDANCE WITH PRESENT SAFETY REGULATIONS. THESE COMPONENTS MUST ONLY BE REPLACED BY ORIGINAL PARTS.

⏏ Chassis Ground
⏏ Signal Ground

NOTE: 4 μ /2 μ position



	R1	R2
DTA124ES	22K	22K



	R1	R2
DTC124ES	22K	22K

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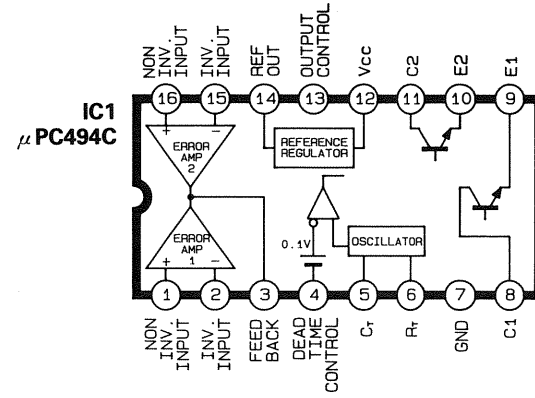
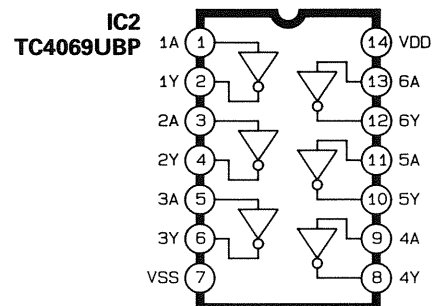
1

IC2

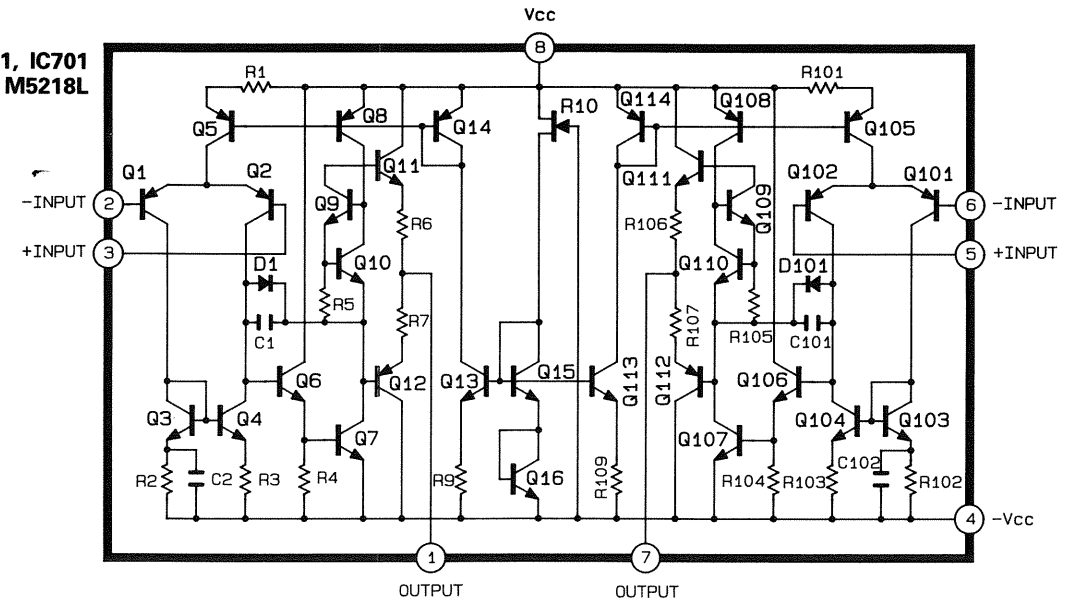
PIN NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
VOLT.	0V	5V	5V	0V	0V	5V	0V	0V	5V	0V	5V	5V	0V	5V

IC1

PIN NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
VOLT.	0V	0.2V	0.2V	0V	1.7V	3.7V	0V	14.3V	5.8V	5.8V	14.3V	14.3V	5.0V	5.0V	2.1V	2.1V



IC501, IC701 M5218L



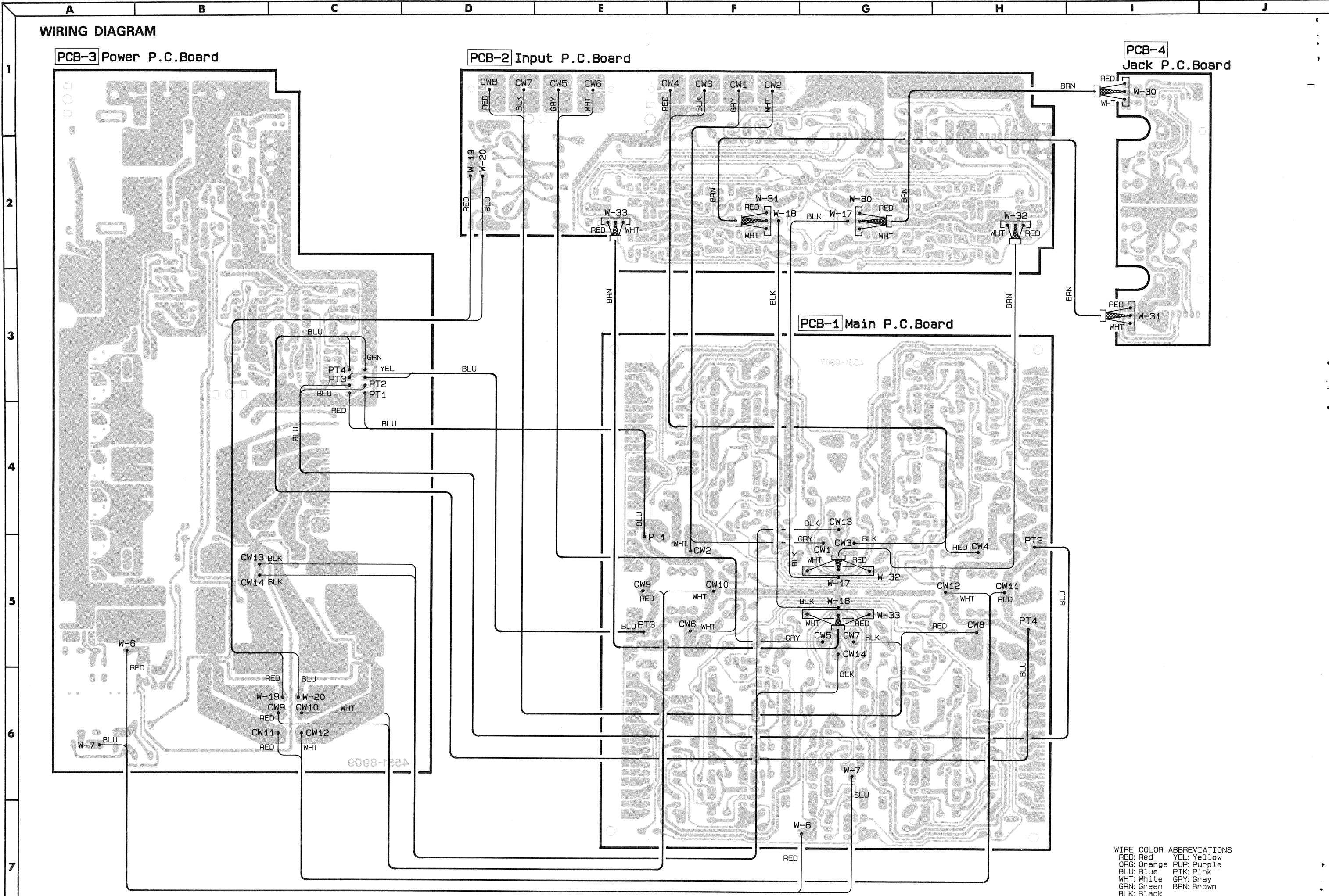
WIRING DIAGRAM

PCB-3 Power P.C.Board

PCB-2 Input P.C.Board

PCB-4 Jack P.C.Board

PCB-1 Main P.C.Board



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