

Service Manual

Nakamichi PA-7, PA-7E

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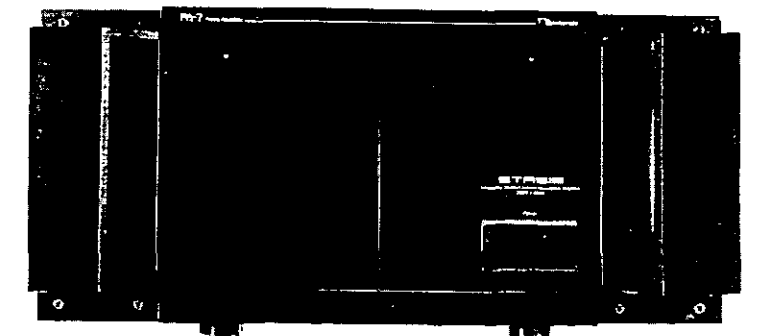
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Service Manual

Nakamichi PA-7 PA-7E

Power Amplifier



CONTENTS

1. General	1
2. Parts Location for Electrical Adjustment	2
3. Electrical Adjustments	2
3. 1. Preparation for Adjustment	2
3. 2. DC Balance Adjustment	2
3. 3. Idling Current Adjustment	3
4. Mechanism Ass'y and Parts List	4
4. 1. Synthesis	4
4. 2. Handle L Ass'y (A01)	4
4. 3. Handle R Ass'y (A02)	4
4. 4. Front Panel Ass'y (A03)	5
4. 5. Rear Panel Ass'y (A04)	5
5. Mounting Diagrams and Parts List	5
5. 1. Clipping LED P.C.B. Ass'y	5
5. 2. Power LED P.C.B. Ass'y	5
5. 3. Limiter P.C.B. Ass'y	6
5. 4. Amp. L P.C.B. Ass'y	7
5. 5. Amp. R P.C.B. Ass'y	7
5. 6. Protector L P.C.B. Ass'y	7
5. 7. Protector R P.C.B. Ass'y	8
6. Schematic Diagram	9
7. Wiring Diagram	9
8. Block Diagram	9
9. Specifications	10

1. GENERAL

1.1. Voltage Selector
Voltage selector is installed on the rear panel for Other version of the Nakamichi PA-7.
This voltage selector can select 110 V, 120 V, 220 V or 240 V at customer's disposal.

1.2. Packing Materials, Owner's Manual and Power Cord

Part No.	Description	Q'ty
0F03875B	Outer Carton PA-7	1
0F03876C	Outer Carton PA-7E	1
0F03869B	Inner Carton PA-7	1
0F03870B	Inner Carton PA-7E	1
0F03877B	Packing	2
0D04531A	Owner's Manual English	1
0D04530A	Owner's Manual English/German/French	1
0B90137A	Power Cord PA-7 (U.S.A. & Others)	1
0B90139A	Power Cord PA-7 (Australia)	1
0B90138A	Power Cord PA-7E (220V Class 2)	1
0B90154A	Power Cord PA-7E (Switzerland)	1
0B90140A	Power Cord PA-7E (UK)	1
0F03887A	Power Cord Band	1

9. SPECIFICATIONS

Continuous Average Power 200 W x 2 (8 ohms, both channels driven, 20—20,000 Hz, 0.1% THD)
Output (NEW IHF)
Dynamic Power per Channel . . . 300 W (8 ohms)
Dynamic Head Room 1.7 dB (8 ohms)
(New IHF)
Power Bandwidth (Half 5 Hz — 50 kHz
Rated Power, 0.1% THD)
Damping Factor (NEW IHF) . . . Greater than 60/60/60
20 Hz/1 kHz/20 kHz
Input Sensitivity/Impedance . . . 2.0 V/75 k ohms (rated power)
(New IHF) 140 mV (1 W output)
Frequency Response 20—20,000 Hz +0, —0.5 dB
(1 W, NEW IHF) 7—150,000 Hz +0, —3 dB
Signal to Noise Ratio Better than 120 dB
(Input Shorted, Rated Power, IHF-A-WTD)
Residual Noise Level Less than 25 μ V
(IHF-A-WTD)
Total Harmonic Distortion . . . Less than 0.1%
(Rated Power, 20—20,000 Hz)
Intermodulation Distortion . . . Less than 0.1%
(Rated Power, 60 Hz: 7 kHz, 4:1)
Stereo Separation 110/100/80 dB
(Input Shorted)
100 Hz/1 kHz/10 kHz
Output Complement 16 transistors per channel
Output Current Capability 14 A continuous, 50 A peak (per channel)
Power Supply 700 W toroidal transformer,
132,000 μ F total filter capacitance
Power Source 120,220, 240, 110-120/220-240 V AC; 50/60 Hz
(According to country of sale)
Power Consumption 700 W max.
Dimensions 435 (W) x 200 (H) x 421 (D) mm
17-1/8 (W) x 7-7/8 (H) x 16-9/16 (D) inches
Approximate Weight 27 kg; 59 lbs., 8 oz.

- Specifications and design are subject to change for further improvement without notice.
- STASIS manufactured under license from Threshold Corporation.
- STASIS is a trademark of Threshold Corporation.

4.1. Synthesis

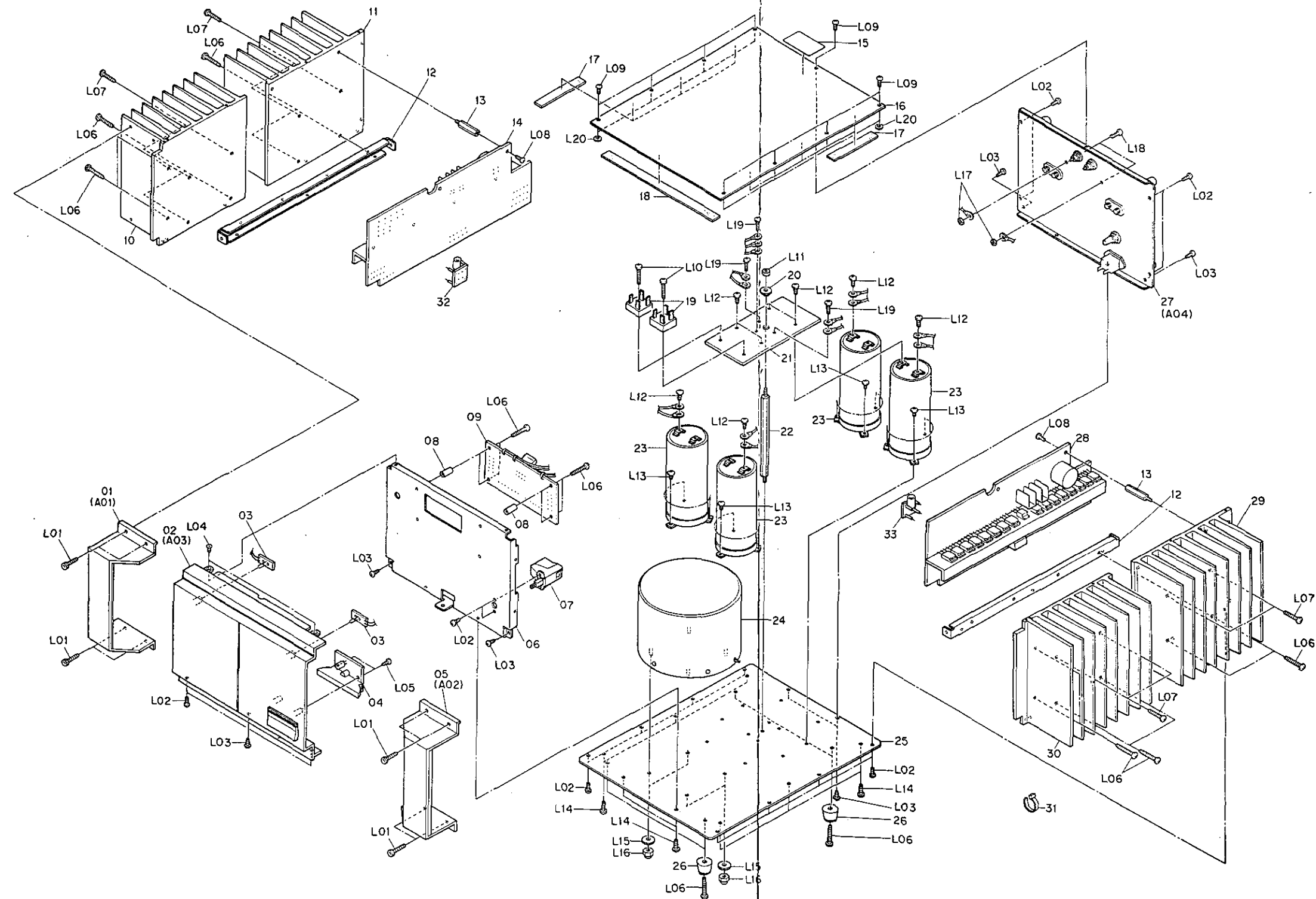


Fig. 4.1

4.2. Handle L Ass'y (A01)

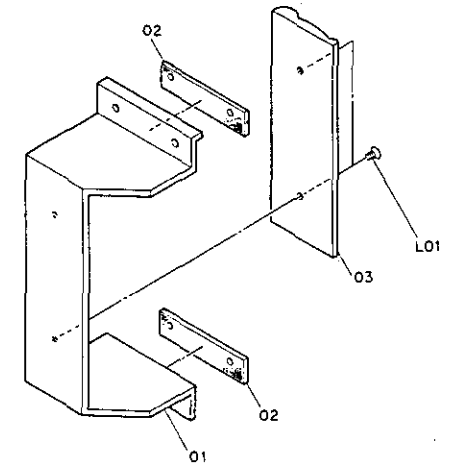


Fig. 4.2

4.3. Handle R Ass'y (A02)

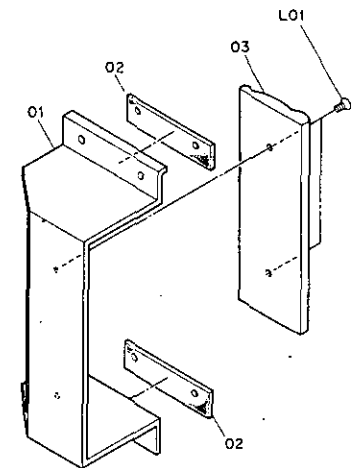


Fig. 4.3

4.4. Front Panel Ass'y (A03)

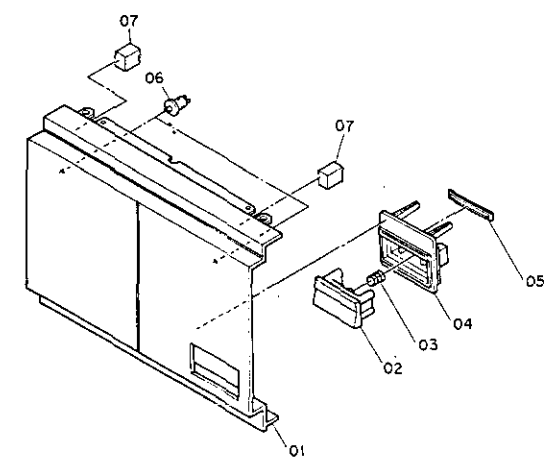


Fig. 4.4

4.5. Rear Panel Ass'y (A04)

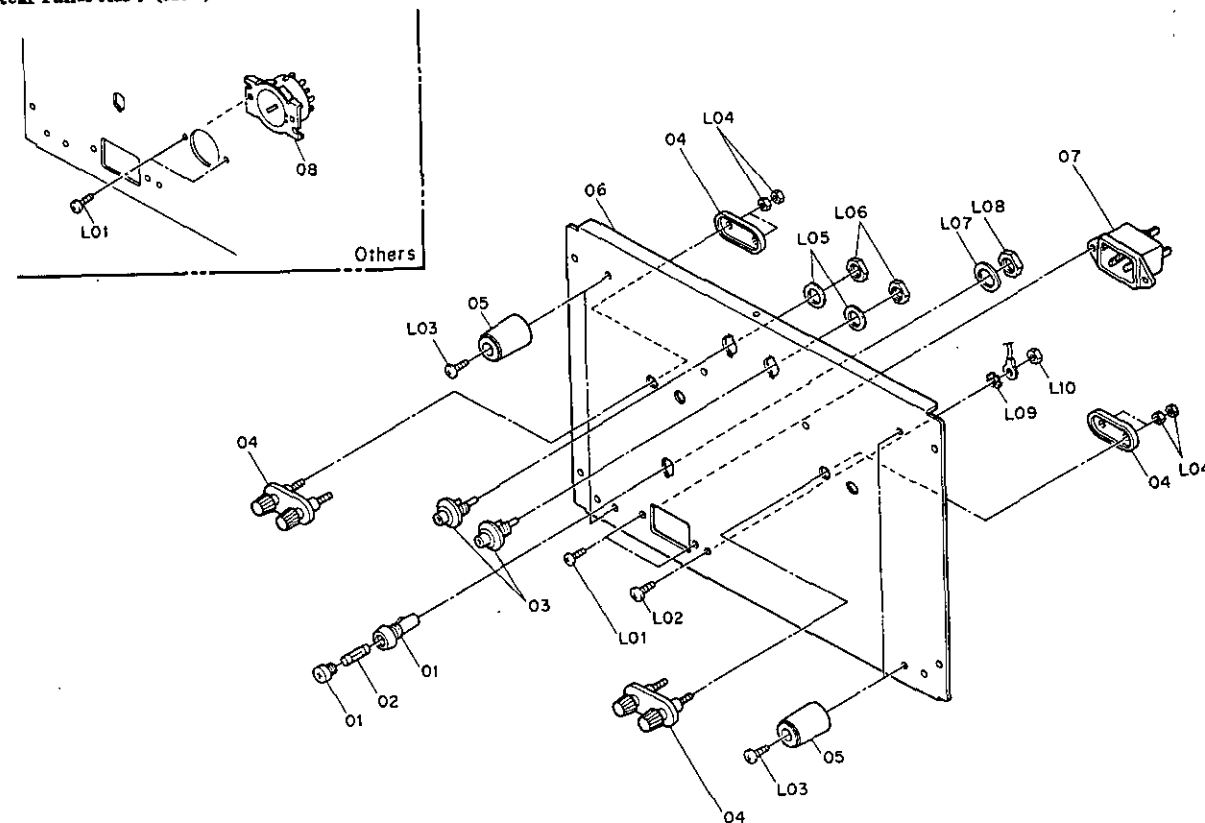


Fig. 4.5

Schematic Ref. No.	Part No.	Description	Qty
A04	HA04845A	Rear Panel Ass'y PA-7 (U.S.A.)	1
	HA04843A	Rear Panel Ass'y PA-7 (Australia)	1
	HA04842A	Rear Panel Ass'y PA-7 (Others)	1
	HA04844A	Rear Panel Ass'y PA-7E Serial No.: B20601001 -	1
01	OB90093A	Fuse Holder PA-7 (U.S.A. & Others)	1
	OB90094A	Fuse Holder PA-7 (Australia) & PA-7E	1
02	OB90118A	Fuse 10A PA-7 (U.S.A. & Others)	1
	OB90120A	Fuse T5A PA-7 (Australia) & PA-7E	1
03	OB81364A	Pin Jack	2
04	OB81365A	Speaker Terminal	2
05	OJ05029A	Leg T-A	4
06	OH04624D	Rear Panel PA-7 (U.S.A. & Australia)	1
	OH04660D	Rear Panel PA-7 (Others)	1
	OH04625D	Rear Panel PA-7E	1
	OB90092A	AC Inlet PA-7 (U.S.A.)	1
07	OB90087A	AC Inlet PA-7 (Australia & Others) & PA-7E	1
	OB70049A	Voltage Selector PA-7 (Others)	1
L01	OE00818A	M3x8 Binding (Black Chromate)	2
L02	OE03058A	M4x8 Binding (Black Chromate)	1
L03	OE03313A	BT 4x8 Pan (Black Chromate)	4
L04	—	Speaker Terminal Nut	8
L05	—	Pin Jack Washer	2
L06	—	Pin Jack Nut	2
L07	—	Fuse Holder Washer	1
L08	—	Fuse Holder Nut	1
L09	OE00078A	Washer 4mm Toothed Lock	1
L10	OE00506A	Nut Hex. M4	1

5. MOUNTING DIAGRAMS AND PARTS LIST

- Notes: 1. Mounting diagram shows a dip side view of the printed circuit board.
2. Diode is 1SS53, 1S1555, or 1SS176 unless otherwise specified.
3. Abbreviation for part name:
TR — Transistor, SiD — Silicon Diode, ZD — Zener Diode
RK — Carbon Resistor, RM — Metal Film Resistor, RF — Fail Safe Type Resistor, RC — Cement Resistor
CE — Electrolytic Capacitor, CM — Mylar Capacitor, CC — Ceramic Capacitor, CP — PP Capacitor,
CT — Tantalum Capacitor, CF — Film Capacitor, C — Mica Capacitor

5.1. Clipping LED P.C.B. Ass'y

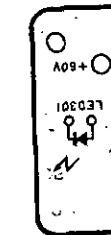


Fig. 5.1

5.2. Power LED P.C.B. Ass'y

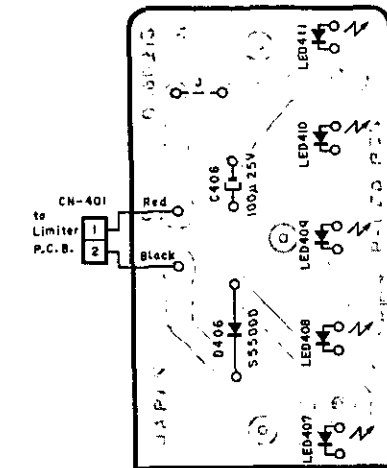


Fig. 5.2

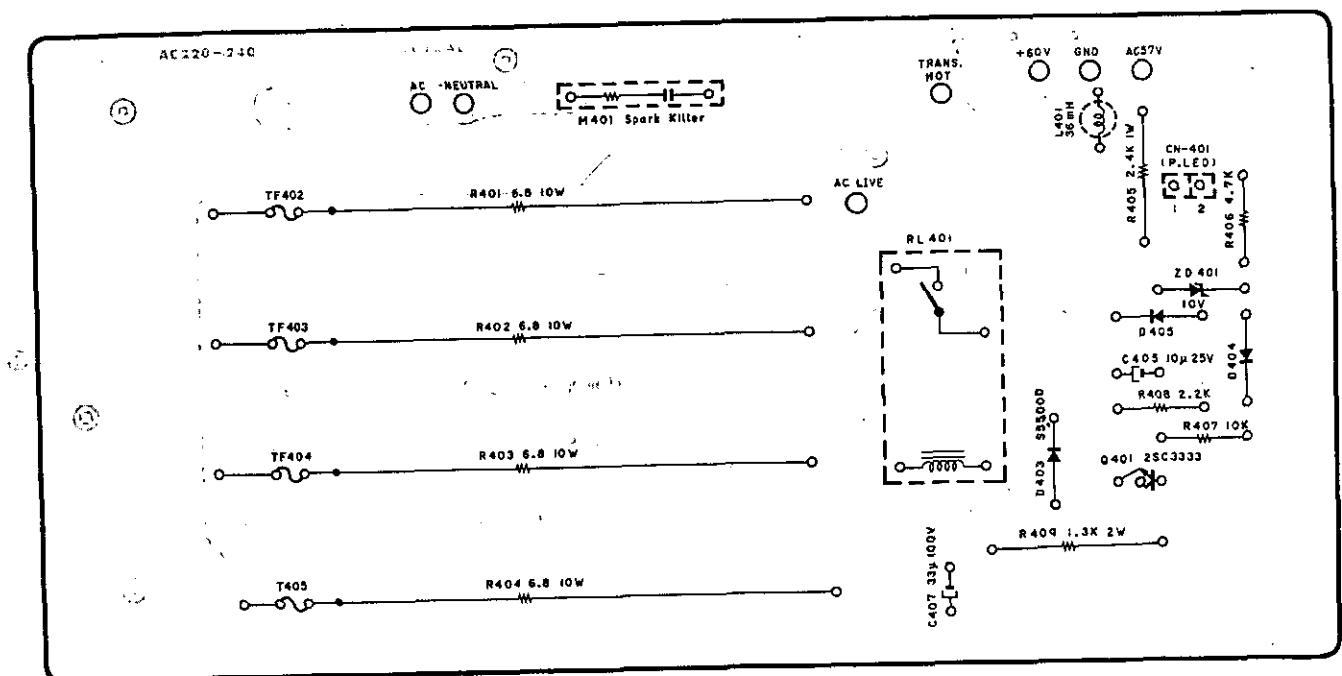


Fig. 5.3

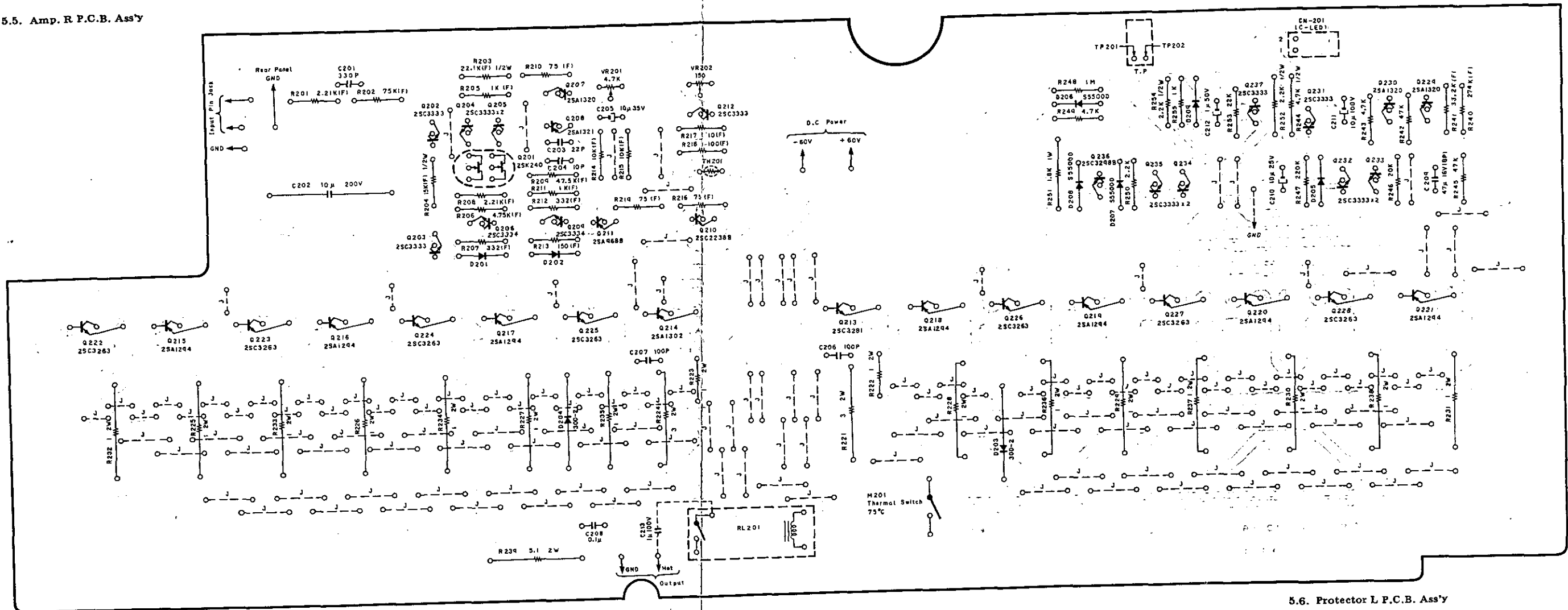


Fig. 5.5

Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description
Q201	BA05685B	Amp. R.P.C.B. Ass'y	R205,211	OB09491A	RM 1K 1/4W F	C203	OB41539A	C 22P 50V J		BA05980A	Protector L.P.C.B. Ass'y
Q202-205	OB60216A	Amp. R.P.C.B.	R206	OB09424A	RM 4.75K 1/4W F	C204	OB41538A	C 10P 50V J		OB60308A	Protector L.P.C.B.
212,231	OB06257A	FET 2SK240	R207,212	OB09760A	RM 332 1/4W F	C205	OB40336A	CE 10μ 35V	Q138,139	OB10102A	TR 2SA1320
232,233	OB10103A	TR 2SC3333 (11)	R209	OB22638A	RM 47.5K 1/4W F	C206,207	OB41540A	C 100P 100V J	D110	OB06181A	SID 1SS53
234,235			R210,216	OB22632A	RM 75 1/4W F	C208	OB41537A	CM 0.1μ 100V J	R156	OB05615A	RK 22K 1/4W J
237			219			C209	OB01674A	CE 47μ 16V (BP)	R157	OB01887A	RK 5.6K 1/4W J
Q206,209	OB10143A	TR 2SC3334	R213	OB22633A	RM 150 1/4W F	C210	OB40331A	CE 10μ 25V	R158	OB05621A	RK 120K 1/4W J
Q207,229	OB10102A	TR 2SA1320	R214,215	OB09203A	RM 10K 1/4W F	C211	OB40330A	CE 10μ 100V	R159	OB05508A	RK 56K 1/4W J
230			R217	OB22666A	RM 10 1/4W F	C212	OB01405A	CE 1μ 50V	R160,161	OB05641A	RK 47K 1/4W J
Q208	OB10142A	TR 2SC1321	R218	OB22567A	RM 100 1/4W F	C213	OB19003A	CE 1μ 100V	C114	OB40371A	CE 10μ 100V (BP)
Q210	OB10101A	TR 2SC2238B	R221,224	OB24058A	RF 3 2W J	TH201	OB90084A	Thermistor 102F		BA05981A	Protector R.P.C.B. Ass'y
Q211	OB10100A	TR 2SA968B	R222,223	OB24064A	RC 1 2W	M201	OB90083A	Thermal Switch 75°C		OB60309A	Protector R.P.C.B.
Q213	OB10130A	TR 2SC3281	R225-238	OB24057A	RF 1 2W J	RL201	OB81366A	Relay 10A 250V AC	Q238,239	OB10102A	TR 2SA1320
Q214	OB10129A	TR 2SA1302					OB82412C	2P-S Post (2)	D210	OB06181A	SID 1SS53
Q215-221	OB10098A	TR 2SA1294 (7)	R239	OB24059A	RF 5.1 2W J		OB82413C	DC Cord (R) (1)	R256	OB05615A	RK 22K 1/4W J
Q222-228	OB10099A	TR 2SC3263 (7)	R240	OB09752A	RM 274K 1/4W F		OB82414A	DC Cord (BL) (1)	R257	OB01887A	RK 5.6K 1/4W J
Q236	OB10145A	TR 2SC3298B	R241	OB09446A	RM 33.2K 1/4W F		OB82415C	G-Prot. Cord (1)	R258	OB05621A	RK 120K 1/4W J
D201,202	OB06181A	SID 1SS53	R242,245	OB05641A	RK 47K 1/4W J		OB82419C	G-Input Cord (1)	R259	OB05508A	RK 56K 1/4W J
205,209			R243,249	OB01846A	RK 4.7K 1/4W J		OB82420D	SP Out R Cord (1)	R260,261	OB05641A	RK 47K 1/4W J
D203,204	OB06458A	SID 30D-2	R244	OB24062A	RF 4.7K 1/2W J		OB82480B	SP Out B Cord (1)	C214	OB40371A	CE 10μ 100V (BP)
D206,207	OB12252A	SID S5500D	R246	OB09509A	RK 20K 1/4W J		OE00754A	Input Cord (1)			
208			R247	OB05625A	RK 220K 1/4W J		M3x8 @ Pan (20)	M3x8 @ Binding (2)			
VR201	OB32043A	Semi-fixed VR 4.7K	R248	OB05776A	RK 1M 1/4W J		OE00966A	Heat Sink A (2)			
VR202	OB32052A	Semi-fixed VR 150	R250	OB05622A	RK 2.2K 1/4W J		OB08680B	Nut Hex. M3 (2)			
R201,208	OB09547A	RM 2.21K 1/4W F	R251	OB24060A	RF 1.8K 1W J		OE00972A	TR Mica (2)			
R202	OB09562A	RM 75K 1/4W F	R252	OB24073A	RF 2.2K 1/2W J		OB90082A	P.C.B. Stand (1)			
R203	OB22672A	RM 22.1K 1/2W F	R253	OB05615A	RK 22K 1/4W J		OB90075B				
R204	OB22671A	RM 15K 1/2W F	R254	OB24073A	RF 2.2K 1/2W J						
			R255	OB01857A	RK 1K 1/4W J						
			C201	OB41541A	C 330P 100V J						
			C202	OB41536A	CM 10μ 200V K						

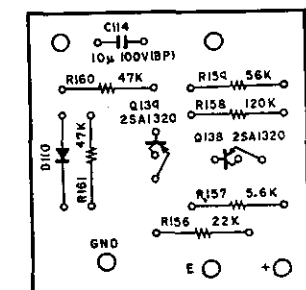
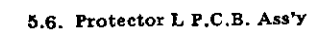


Fig. 5.6

5.7. Protector R P.C.B. Ass'y

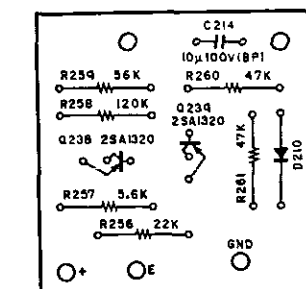


Fig. 5.7

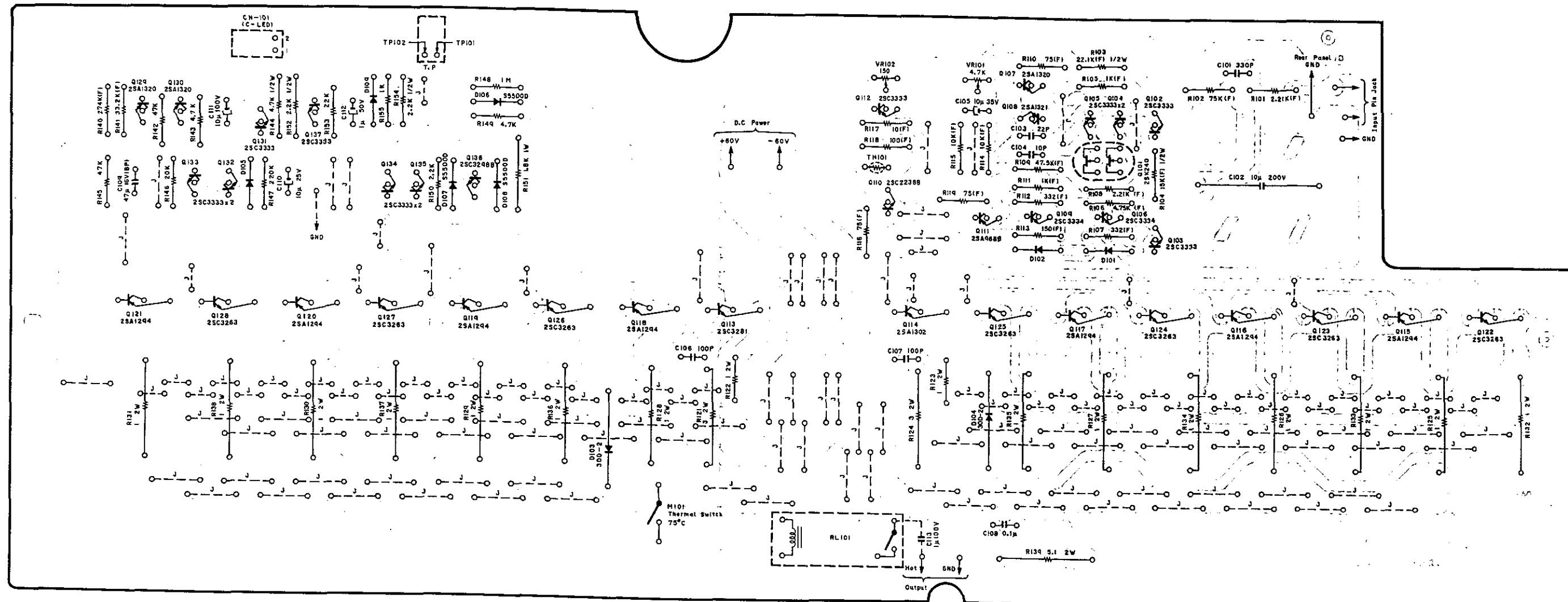


Fig. 5.4

Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description	
LED301	BA05688A	Clipping LED P.C.B. Ass'y	Q401	BA05754B	Limiter P.C.B. Ass'y PA-7 (U.S.A. & Canada)	Q101	BA05684B	Amp. L P.C.B. Ass'y	R105,111	OB09491A	RM 1K 1/4W F	C103	OB41539A	C 22P 50V J	
	OB60214A	Clipping LED P.C.B. LED Red		BA05755B	Limiter P.C.B. Ass'y PA-7 (Australia & Others) & PA-7E		Q102-105	OB60215A	Amp. L P.C.B. FET 2SK240	R106	OB09424A	RM 4.75K 1/4W F	C104	OB41538A	C 10P 50V J
	OB12260B	LED Cord		Q106,109	OB06257A		TR 2SC3333 (11)	R107,112	OB09760A	RM 332 1/4W F	C105	OB09760A	RM 332 1/4W F	C106,107	OB40336A
LED407 408,409 410,411 D406 C406	BA05687A	Power LED P.C.B. Ass'y	R401-404	OB60217A	Limiter P.C.B. TR 2SC3333	Q107,129	OB10143A	TR 2SC3334	R109	OB22638A	RM 47.5K 1/4W F	C108	OB41540A	C 100P 100V J	
	OB60213A	Power LED P.C.B. LED Green		OB10103A	ZD 10V RD10EB3		Q108	OB10102A	TR 2SA1320	R110,116	OB22632A	RM 75 1/4W F	C109	OB41537A	CM 0.1μ 100V J
	OB12251A	LED Green		OB12252A	SID S5500D		Q110	OB10142A	TR 2SC1321	R113	OB22633A	RM 150 1/4W F	C110	OB40331A	CE 47μ 16V (BP)
	OB12252A	SiD S5500D		OB06181A	SID 1SS53		Q111	OB10101A	TR 2SC2238B	R114,115	OB09203A	RM 10K 1/4W F	C111	OB01674A	CE 10μ 25V
	OB01272A	CE 100μ 25V		OB03919C	Inductor 36mH		Q112	OB10100A	TR 2SA968B	R117	OB22666A	RM 10 1/4W F	C112	OB40330A	CE 10μ 100V
	OB82493A	P-LED Cord		OB24065A	RF 6.8 10W		Q113	OB10130A	TR 2SC3281	R118	OB22567A	RM 100 1/4W F	C113	OB01405A	CE 1μ 50V
	OE00857A	BT 3x6 @ Binding		OB24074A	RF 2.4K 1W J		Q114	OB10129A	TR 2SA1302	R121,124	OB24058A	RF 3 2W J	TH101	OB41619A	CE 1μ 100V
	OJ04998A	Power Reflector (1)		OB01846A	RK 4.7K 1/4W J		Q115-121	OB10098A	TR 2SA1294 (7)	R122,123	OB24064A	RC 1 2W	M101	OB19003A	Thermistor 102F
	OJ05010C	Sheet (1)		OB05622A	RK 2.2K 1/4W J		Q122-128	OB10099A	TR 2SC3263 (7)	R125-138	OB24057A	RF 1 2W J	RL101	OB90084A	Thermal Switch 75°C
					OB24072A		RF 1.3K 2W J	Q136	OB10145A	TR 2SC3298B	R139	OB24059A	RF 5.1 2W J		OB90083A
			OB01674A	CE 10μ 25V	D101,102	OB06181A	SID 1SS53	R140	OB09752A	RM 274K 1/4W F		OB81366A	2P-S Post (2)		
			OB40341A	CE 33μ 100V	D103,104			R141	OB09446A	RM 33.2K 1/4W F		OB82412C	DC Cord (R) (1)		
			OB90088A	Limiter Relay (1)	D106,107			R142,145	OB05641A	RK 47K 1/4W J		OB82413C	DC Cord (BL) (1)		
			OB08342A	Spark Killer PA-7 (U.S.A. & Canada)	108			R143,149	OB01846A	RK 4.7K 1/4W J		OB82414A	G-Prot. Cord (1)		
					VR101			R144	OB24062A	RF 4.7K 1/2W J		OB82415C	G-Input Cord (1)		
					VR102			R146	OB09509A	RK 20K 1/4W J		OB82419C	SP Out R Cord (1)		
					R101,108			R147	OB05625A	RK 220K 1/4W J		OB82420D	SP Out B Cord (1)		
					R102			R148	OB05776A	RK 1M 1/4W J		OB82480B	Input Cord (1)		
					R103			R150	OB05622A	RK 2.2K 1/4W J		OE00754A	M3x8 @Pan (20)		
					R104			R151	OB24060A	RF 1.8K 1W J		OE00966A	M3x5 @Binding (2)		
								R152	OB24073A	RF 2.2K 1/2W J		OB08680B	Heat Sink A (2)		
								R153	OB05615A	RK 22K 1/4W J		OE00972A	Nut Hex. M3 (2)		
								R154	OB24073A	RF 2.2K 1/2W J		OB90082A	TR Mica (2)		
								R155	OB01857A	RK 1K 1/4W J		OB90075B	P.C.B. Stand (1)		
								C101	OB41541A	C 330P 100V J					
								C102	OB41536A	CM 10μ 200V K					

Service Information

Model Nakamichi PA-7/7E
(Power Amplifier)
Serial No. from -
Subject Troubleshooting



Nakamichi

No. 00D-SI-3080 (1/3)
Date 29 August 1985

1. Note

- (1) Troubles indicated in this troubleshooting guide may not happen actually.
- (2) Check to insure that the outputs +60 V and -60 V of the Power Supply are correct.
- (3) Check that the Fuse F1 is not blown.
- (4) Check that R401, R402, R403, R404, TF402, TF403, TF404 and/or TF405 on the Limiter P.C.B. Ass'y are not broken.
- (5) Defect (cut or short) of lead wire(s) includes defective soldering (cold soldering or bridging).

2. Troubleshooting

2.1. No output appears at Speaker Output Terminals:

- (1) Defective Input Jack(s).
- (2) Defective Q101 (Q201) on Amp. L (R) P.C.B. Ass'y.
- (3) Defective Q102 (Q202) on Amp. L (R) P.C.B. Ass'y.
- (4) Defective Q103 (Q203) on Amp. L (R) P.C.B. Ass'y.
- (5) Defective Q104 (Q204) on Amp. L (R) P.C.B. Ass'y.
- (6) Defective Q105 (Q205) on Amp. L (R) P.C.B. Ass'y.
- (7) Defective Q106 (Q206) on Amp. L (R) P.C.B. Ass'y.
- (8) Defective Q107 (Q207) on Amp. L (R) P.C.B. Ass'y.
- (9) Defective Q108 (Q208) on Amp. L (R) P.C.B. Ass'y.
- (10) Defective Q109 (Q209) on Amp. L (R) P.C.B. Ass'y.
- (11) Defective Q110 (Q210) on Amp. L (R) P.C.B. Ass'y.
- (12) Defective Q111 (Q211) on Amp. L (R) P.C.B. Ass'y.
- (13) Defective Q112 (Q212) on Amp. L (R) P.C.B. Ass'y.
- (14) Defective Q113 (Q213) on Amp. L (R) P.C.B. Ass'y.
- (15) Defective Q114 (Q214) on Amp. L (R) P.C.B. Ass'y.
- (16) Defective Q115 (Q215) on Amp. L (R) P.C.B. Ass'y.
- (17) Defective Q116 (Q216) on Amp. L (R) P.C.B. Ass'y.
- (18) Defective Q117 (Q217) on Amp. L (R) P.C.B. Ass'y.
- (19) Defective Q118 (Q218) on Amp. L (R) P.C.B. Ass'y.
- (20) Defective Q119 (Q219) on Amp. L (R) P.C.B. Ass'y.
- (21) Defective Q120 (Q220) on Amp. L (R) P.C.B. Ass'y.
- (22) Defective Q121 (Q221) on Amp. L (R) P.C.B. Ass'y.
- (23) Defective Q122 (Q222) on Amp. L (R) P.C.B. Ass'y.
- (24) Defective Q123 (Q223) on Amp. L (R) P.C.B. Ass'y.
- (25) Defective Q124 (Q224) on Amp. L (R) P.C.B. Ass'y.
- (26) Defective Q125 (Q225) on Amp. L (R) P.C.B. Ass'y.
- (27) Defective Q126 (Q226) on Amp. L (R) P.C.B. Ass'y.
- (28) Defective Q127 (Q227) on Amp. L (R) P.C.B. Ass'y.
- (29) Defective Q128 (Q228) on Amp. L (R) P.C.B. Ass'y.
- (30) Defective D101 (D201) on Amp. L (R) P.C.B. Ass'y.
- (31) Defective D102 (D202) on Amp. L (R) P.C.B. Ass'y.
- (32) Protector circuit always functions.
- (33) Defective Speaker Output Terminal(s).
- (34) Lead wire(s) is (are) cut or shorted.

2.2. Clipping Indicator does not light:

- (1) Defective Q129 (Q229) on Amp. L (R) P.C.B. Ass'y.
- (2) Defective Q130 (Q230) on Amp. L (R) P.C.B. Ass'y.
- (3) Defective Q131 (Q231) on Amp. L (R) P.C.B. Ass'y.
- (4) Defective LED301 on Clipping LED P.C.B. Ass'y.
- (5) Inaccurate contact of connector(s) CN-101 on Amp. L P.C.B. Ass'y and/or CN-201 on Amp. R P.C.B. Ass'y.
- (6) Lead wire(s) is (are) cut or shorted.

2.3. Protector does not work:

- (1) Defective Q132 (Q232) on Amp. L (R) P.C.B. Ass'y.
- (2) Defective Q133 (Q233) on Amp. L (R) P.C.B. Ass'y.
- (3) Defective Q137 (Q237) on Amp. L (R) P.C.B. Ass'y.
- (4) Defective Q135 (Q235) on Amp. L (R) P.C.B. Ass'y.
- (5) Defective Q134 (Q234) on Amp. L (R) P.C.B. Ass'y.
- (6) Defective Q136 (Q236) on Amp. L (R) P.C.B. Ass'y.
- (7) Defective M101 (M201) on Amp. L (R) P.C.B. Ass'y.
- (8) Defective RL101 (RL201) on Amp. L (R) P.C.B. Ass'y.
- (9) Defective Q138 (Q238) on Protector L (R) P.C.B. Ass'y.
- (10) Defective Q139 (Q239) on Protector L (R) P.C.B. Ass'y.
- (11) Lead wire(s) is (are) cut or shorted.

2.4. Power Indicator does not light:

- (1) Defective D406 on Power LED P.C.B. Ass'y.
- (2) Defective LED407 on Power LED P.C.B. Ass'y.
- (3) Defective LED408 on Power LED P.C.B. Ass'y.
- (4) Defective LED409 on Power LED P.C.B. Ass'y.
- (5) Defective LED410 on Power LED P.C.B. Ass'y.
- (6) Defective LED411 on Power LED P.C.B. Ass'y.
- (7) Defective L401 on Limiter P.C.B. Ass'y.
- (8) Inaccurate contact of connector CN-401 on Limiter P.C.B. Ass'y.
- (9) Lead wire(s) is (are) cut or shorted.

2.5. Power Limiter circuit does not work:

- (1) Defective Q401 on Limiter P.C.B. Ass'y.
- (2) Defective RL401 on Limiter P.C.B. Ass'y.
- (3) Defective L401 on Limiter P.C.B. Ass'y.
- (4) Lead wire(s) is (are) cut or shorted.

2.6. Output DC component is not detected:

- (1) Defective Q132 (Q232) on Amp. L (R) P.C.B. Ass'y.
- (2) Defective Q133 (Q233) on Amp. L (R) P.C.B. Ass'y.
- (3) Lead wire(s) is (are) cut or shorted.

2.7. Overcurrent is not detected:

- (1) Defective Q126 (Q226) on Amp. L (R) P.C.B. Ass'y.
- (2) Defective R136 (R236) on Amp. L (R) P.C.B. Ass'y.
- (3) Defective Q137 (Q237) on Amp. L (R) P.C.B. Ass'y.
- (4) Defective Q138 (Q238) on Protector L (R) P.C.B. Ass'y.
- (5) Defective Q139 (Q239) on Protector L (R) P.C.B. Ass'y.
- (6) Lead wire(s) is (are) cut or shorted.

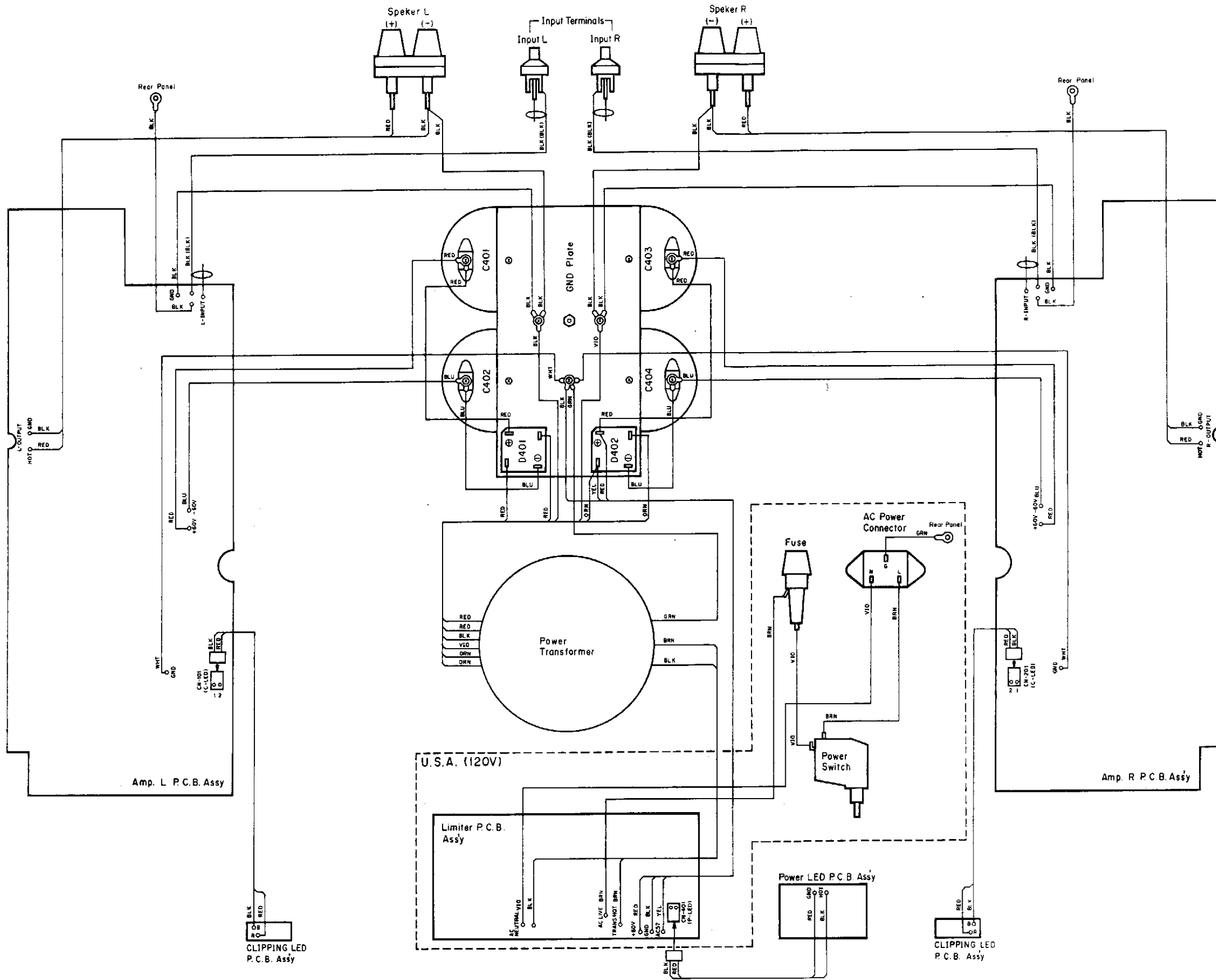
2.8. Temperature detection is not made:

- (1) Defective M101 (M201) on Amp. L (R) P.C.B. Ass'y.
- (2) Lead wire(s) is (are) cut or shorted.

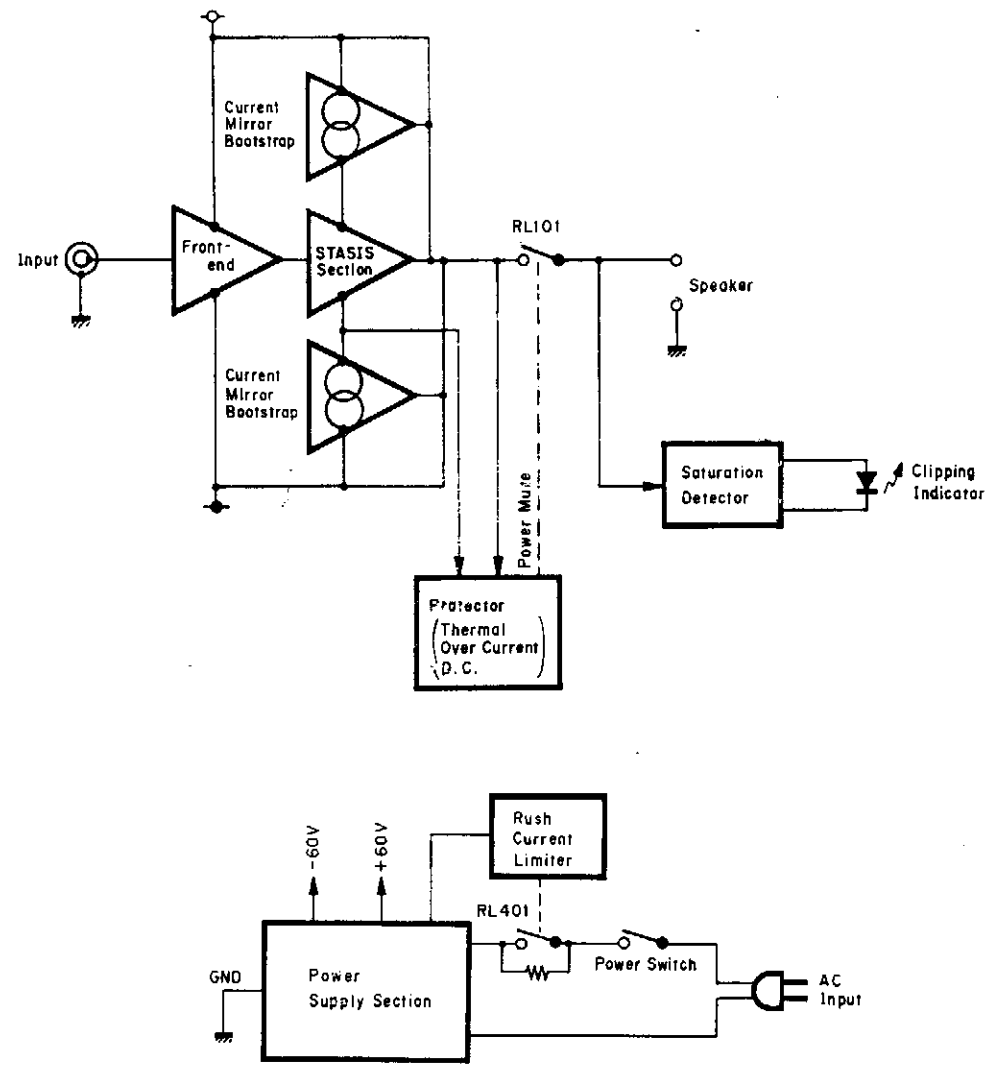
2.9. Sound is distorted:

- (1) Defective Q101 (Q201) on Amp. L (R) P.C.B. Ass'y.
- (2) Defective Q102 (Q202) on Amp. L (R) P.C.B. Ass'y.
- (3) Defective Q103 (Q203) on Amp. L (R) P.C.B. Ass'y.
- (4) Defective Q104 (Q204) on Amp. L (R) P.C.B. Ass'y.
- (5) Defective Q105 (Q205) on Amp. L (R) P.C.B. Ass'y.
- (6) Defective Q106 (Q206) on Amp. L (R) P.C.B. Ass'y.
- (7) Defective Q107 (Q207) on Amp. L (R) P.C.B. Ass'y.
- (8) Defective Q108 (Q208) on Amp. L (R) P.C.B. Ass'y.
- (9) Defective Q109 (Q209) on Amp. L (R) P.C.B. Ass'y.
- (10) Defective Q110 (Q210) on Amp. L (R) P.C.B. Ass'y.
- (11) Defective Q111 (Q211) on Amp. L (R) P.C.B. Ass'y.
- (12) Defective Q112 (Q212) on Amp. L (R) P.C.B. Ass'y.
- (13) Defective Q113 (Q213) on Amp. L (R) P.C.B. Ass'y.
- (14) Defective Q114 (Q214) on Amp. L (R) P.C.B. Ass'y.
- (15) Inaccurate adjustment of VR101 (VR201) on Amp. L (R) P.C.B. Ass'y.
- (16) Inaccurate adjustment of VR102 (VR202) on Amp. L (R) P.C.B. Ass'y.
- (17) Lead wire(s) is (are) cut or shorted.

7. WIRING DIAGRAM

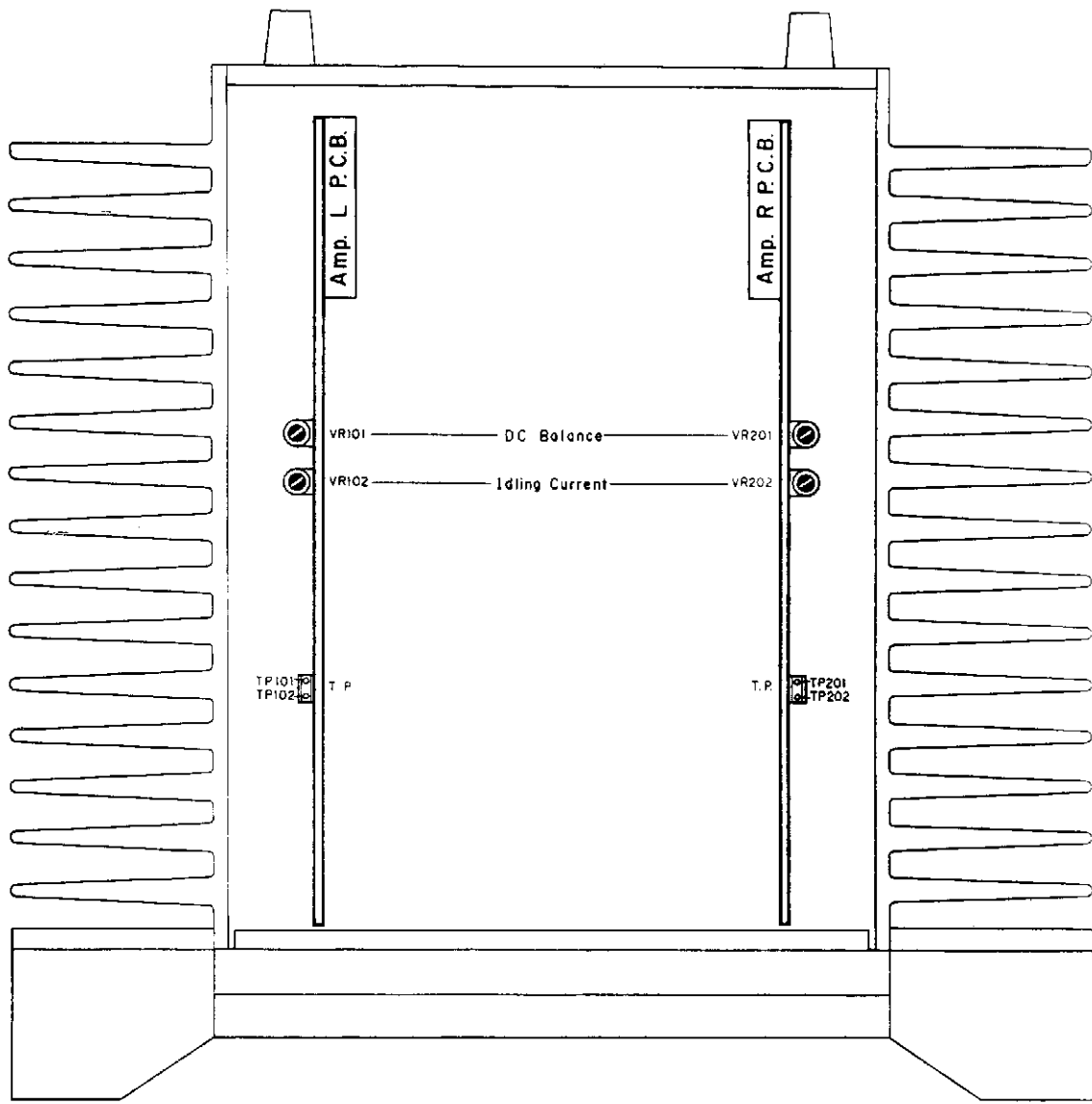


8. BLOCK DIAGRAM



- Notes: 1. Table of wire colors
 BRN - Brown BLU - Blue
 RED - Red VIO - Violet
 ORN - Orange GRY - Gray
 YEL - Yellow WHT - White
 GRN - Green BLK - Black
2. Component side view of the P.C.B. is illustrated unless otherwise specified.
3. Wire tube color is shown in ().

2. PARTS LOCATION FOR ELECTRICAL ADJUSTMENT



3. ELECTRICAL ADJUSTMENTS

3.1. Preparation for Adjustment

- (1) Insert shorting pins into the Input Jacks.
- (2) Remove loads of the speaker terminals.
- (3) Before starting adjustment, allow twenty minutes or more after the power is turned ON.

3.2. DC Balance Adjustment

- (1) Connect a DC voltmeter to the L (R) channel speaker terminal.
- (2) Adjust VR101 (VR201) to obtain 0 $\pm$ 100 mV on the DC voltmeter.

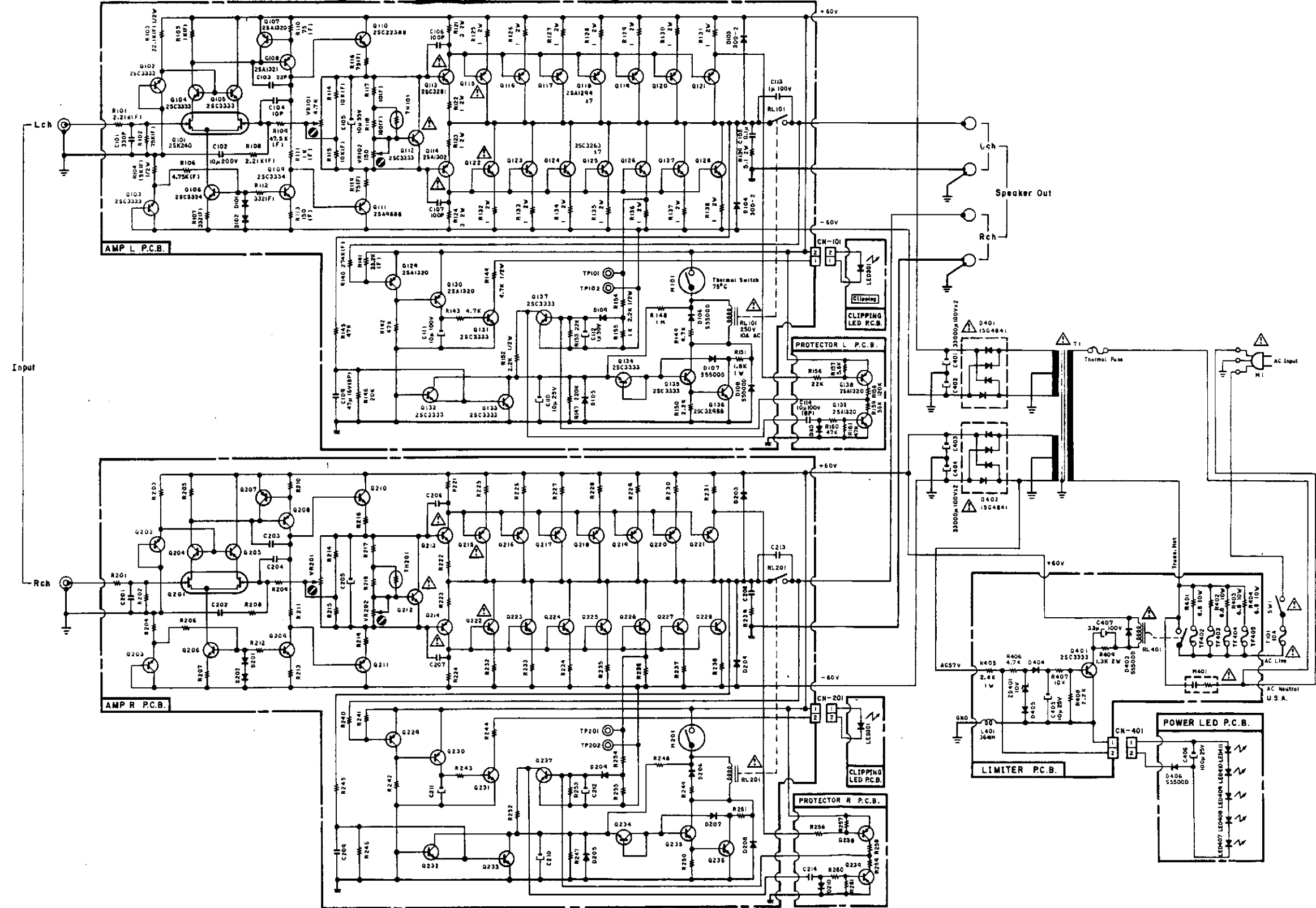
3.3. Idling Current Adjustment

- (1) Connect a DC voltmeter between TP101 and TP102 (TP201 and TP202) on the Amp. L (R) P.C.B. Ass'y.
- (2) Adjust VR102 (VR202) to obtain 40 mV on the DC voltmeter (idling current: 40 mA).
- (3) Repeat 3.2 and 3.3 one or two times.
- (4) Remove shorting pins from the Input Jacks.

4. MECHANISM ASSY AND PARTS LIST

Schematic Ref. No.	Part No.	Description	Qty	Schematic Ref. No.	Part No.	Description	Qty
		Synthesis Serial No.: B20601001 —		A01	HA04832A	Handle L Assy Serial No.: B20601001 —	1
01	HA04832A	Handle L Assy	1	01	OH04631A	Handle L	1
02	HA04846A	Front Panel Assy PA-7	1	02	OJ05006A	Vinyl Chloride Plate A	2
03	HA04847A	Front Panel Assy PA-7E	1	03	OH04655A	Vinyl Chloride Plate B	1
04	BA05688A	Clipping LED P.C.B. Assy	2	L01	OE03310A	M4x6 @ Binding (Black Chromate)	2
05	BA05687A	Power LED P.C.B. Assy	1				
06	HA04833A	Handle R Assy	1	A02	HA04833A	Handle R Assy Serial No.: B20601001 —	1
07	OJ04989B	Front Chassis	1	01	OH04632A	Handle R	1
08	OJ05003A	Power Switch	1	02	OJ05006A	Vinyl Chloride Plate A	2
09	OJ05048A	P.C.B. Spacer	4	03	OH04655A	Vinyl Chloride Plate B	1
	BA05754B	Limiting P.C.B. Assy PA-7 (U.S.A.)	1	L01	OE03310A	M4x6 @ Binding (Black Chromate)	2
	BA05755B	Limiting P.C.B. Assy PA-7 (Australia & Others) & PA-7E	1				
10	OH04643D	Heat Sink B	1	A03	HA04846A	Front Panel Assy PA-7	1
11	OH04633D	Heat Sink A	1		HA04847A	Front Panel Assy PA-7E Serial No.: B20601001 —	1
12	OJ04990A	Side Chassis	2				
13	OJ05025A	Stud	2	01	OH04618B	Front Panel PA-7	1
14	BA05684B	Amp. L P.C.B. Assy	1	02	OH04619B	Front Panel PA-7E	1
15	OH04377B	Caution Label	1	03	HA04849A	Power Switch Button Assy	1
16	OH04629B	Top Cover	1	04	OJ05000B	Spring	1
17	OJ05011A	Cushion A	6	05	OH04652B	Guide	1
18	OJ05056A	Cushion B	1	06	OH04653B	Illuminator	1
19	OJ05053A	Diode Bridge 15G4B41	2	07	OH04651A	Lens	2
20	OJ05047B	Ground Plate Collar	1		OJ05005A	P.C.B. Cushion	2
21	OJ04992C	Ground Plate	1				
22	OJ05003A	Center Stud	1				
23	OB40328A	Electrolytic Capacitor 3300µF 100V	4				
24	OB50046B	Power Transformer 120V PA-7 (U.S.A.)	1				
	OB50048B	Power Transformer 220/240V PA-7 (Australia) & PA-7E	1				
	OB50049A	Power Transformer 120/220-240V PA-7 (Others)	1				
25	OH04650A	Bottom Chassis	1				
26	OJ05009A	Leg T-D	4				
27	HA04845A	Rear Panel Assy PA-7 (U.S.A.)	1				
	HA04843A	Rear Panel Assy PA-7 (Australia)	1				
	HA04842A	Rear Panel Assy PA-7 (Others)	1				
28	HA04844A	Rear Panel Assy PA-7E	1				
29	BA05685B	Amp. R P.C.B. Assy	1				
30	OH04671C	Heat Sink D	1				
31	OH04635D	Heat Sink C	1				
32	OB08155A	Insu-Lock	20				
	BA05980A	Protector L P.C.B. Assy	1				
	BA05981A	Protector R P.C.B. Assy	1				
L01	OE00745A	Bolt M4x10 Hex. Socket Head (Black Chromate)	8				
L02	OE00985A	M3x6 @ Binding (Black Chromate)	16				
L03	OE03283A	ST 3x6 @ Binding (Black Chromate)	7				
L04	OE03220A	ST 3x5 @ Countersunk	2				
L05	OE00837A	BT 3x6 @ Binding	2				
L06	OE03298A	ST 4x14 @ Binding (Black Chromate)	18				
L07	OE03289A	M4x12 @ Binding (Bronze)	8				
L08	OE03030A	M3x6 @ Binding (Nickel)	2				
L09	OE00713A	M3x6 @ Truss (Bronze)	9				
L10	OE03290A	M4x15 @ Binding (Bronze)	2				
L11	OE03299A	Nut Hex. M4	1				
L12	OE03287A	M4x6 @ Binding (Gold)	1				
L13	OE03286A	M4x4 @ Binding (Black Chromate)	12				
L14	OE00907A	ST 4x8 @ Binding (Black Chromate)	8				
L15	OE03286B	Washer 6mm (Black Chromate)	4				
L16	OE03291A	Nut Hex. M6 (Black Chromate)	4				
L17	OE00972A	Nut Hex. M3 (Nickel)	2				
L18	OE00594A	M3x8 @ Binding (Bronze)	2				
L19	OE03034A	M4x8 @ Binding (Nickel)	3				
L20	OJ05063A	Fiber Washer 0.5T	8				

6. SCHEMATIC DIAGRAM



Note: Diode is 1SS53, 1S1555, or 1SS176 unless otherwise specified.

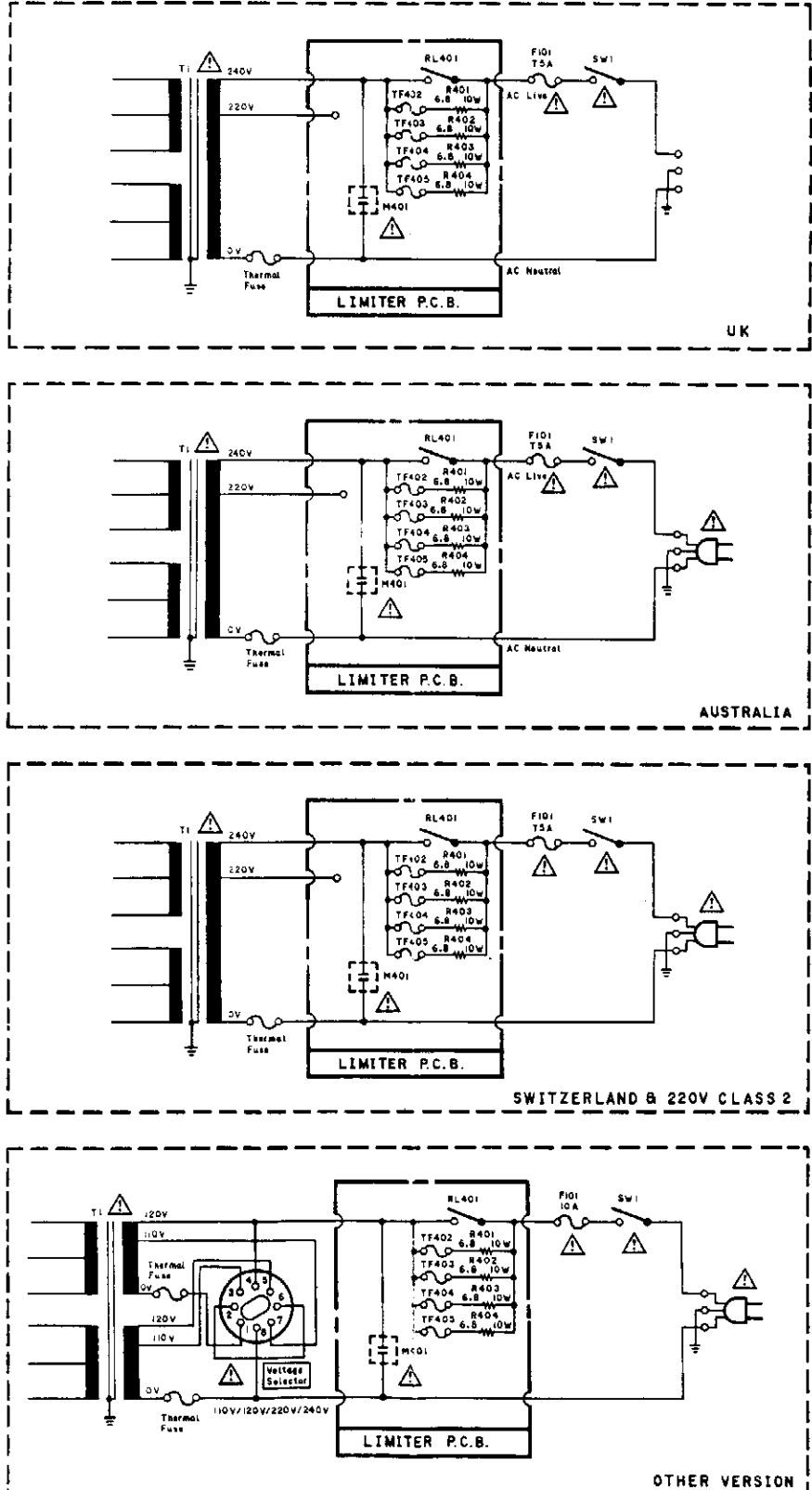


Fig. 6

WARNING:
Parts marked with the symbol  have critical characteristics.
Use **ONLY** replacement parts recommended by the manufacturer.
It is recommended that the unit be operated from a suitable DC supply or batteries during initial check-out procedures.

CAUTION:
Before returning the unit to the customer, make sure you make either (1) a leakage current check or (2) a line to chassis resistance check. If the leakage current exceeds 0.5 milliamp, or if the resistance from chassis to either side of the power cord is less than 240 k ohms, the unit is defective.
WARNING — DO NOT return the unit to the customer until the problem is located and corrected.