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ROTEL®

Technical Manual

STEREO POWER AMPLIFIER

RB-5000

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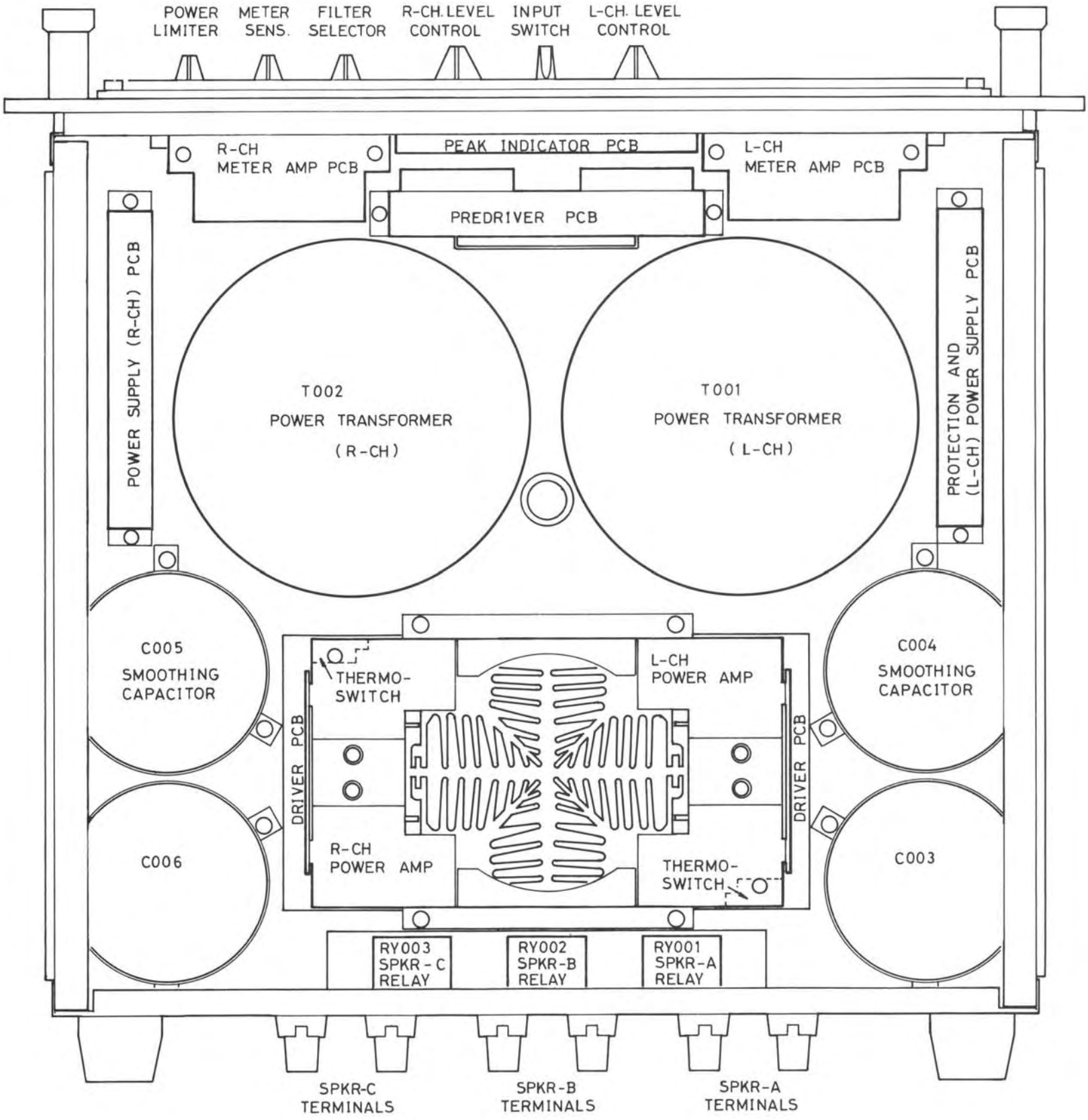
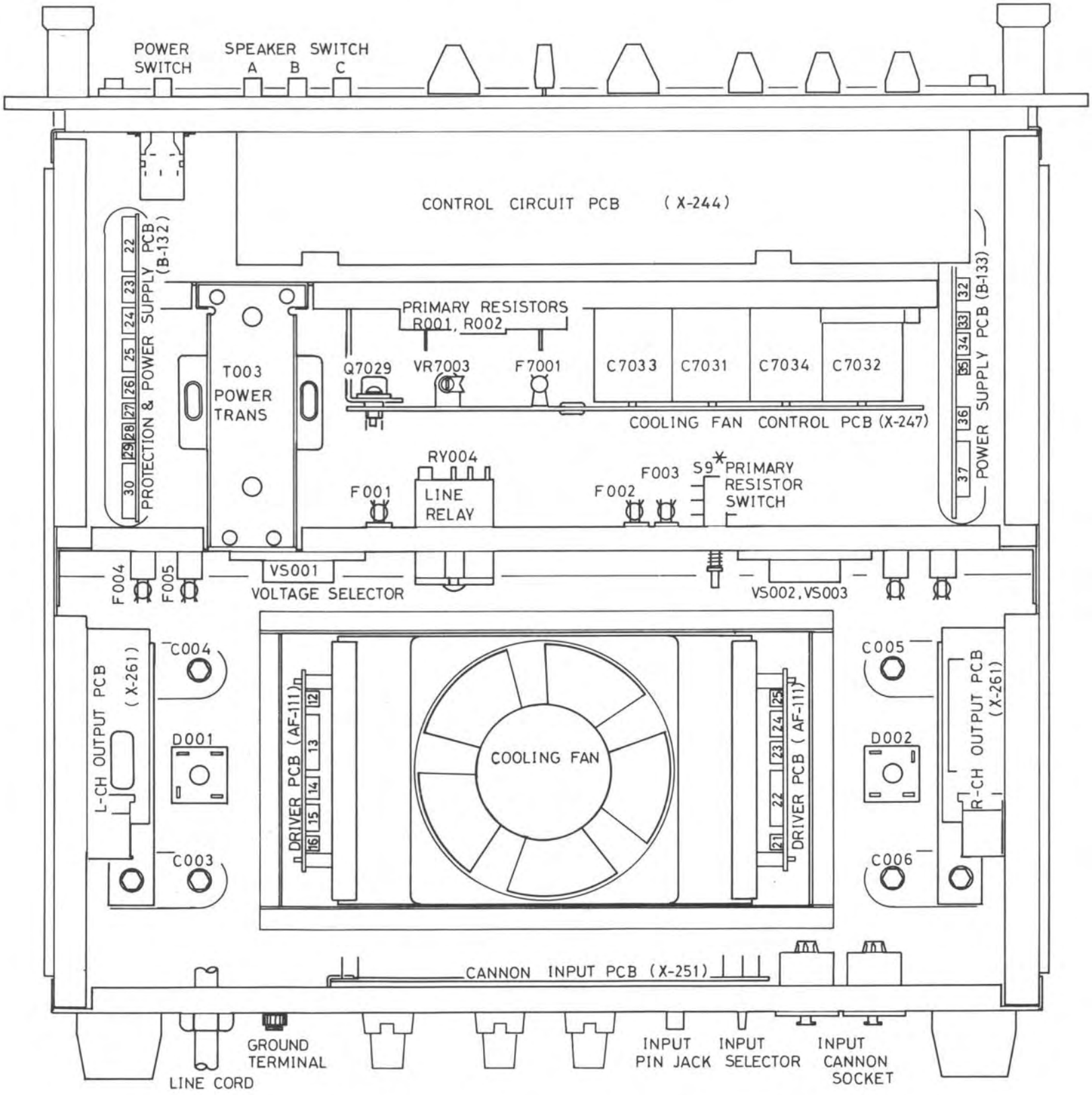
Chassis Layout (Top View)



Chassis Layout (Bottom View)



Chassis Disassembly

A. Top Cover:

Remove screws 1 through 12 as shown in Fig. A.

B. Bottom Cover:

Remove screws 1 through 15 as shown in Fig. B.

C. Front Panel:

1) Remove handles on both sides and their bases by loosening screws 1 through 4 as shown in Fig. C.
2) Remove knobs A through F, Fig. C, by loosening their screws.
3) Remove screws 5 through 10 as shown in Fig. C.

D. Power Amplifier Section:

1) Remove all connecting plugs, except #13 plug (#20 for R-CH) from the Driver PC board in Power Amplifier Section. (See Fig. D-1)
2) Remove connecting plug A and B from the Output PC board.
3) Disconnect wiring of ORN, thick GRN, thin GRN and YLW connected to the Driver PC board, by loosening terminal screws on Smoothing Capacitors.
4) In the same way, disconnect wiring of GRY, RED, and BRN from the Driver PC board to the chassis grounding terminals.
5) Disconnect two WHTs of Cooling Fan terminal wiring.
6) Detach the Power Amplifier Section from the top of the unit, by removing screws 1 through 4 as shown in Fig. D-2 and pulling the section upward.
7) To remove the Driver PC board (see Fig. D-3), remove screw 1 only (which secures the Driver PC board), then detach the PC board from its holder. Remove connecting plug #13 for L-CH (#20 for R-CH).
8) To remove the Power Amplifier PC board unit:
   a) After completing process 7, remove the screw 1 that secures the heat-sink to sub-chassis.
   b) Next, loosen screw 3 to remove fixing plate 4.
   c) Pull the Power Amplifier unit upward to detach from the body assembly.

   Note:

   In reassembling, be sure to fit the unit with #13 connector plug to L-CH, and the unit with #20 plug to R-CH. (Plugs are not shown in figures.)
9) To detach the Cooling Fan, remove screw 9 as shown in Fig. D-3.

   Note:

   When reassembling the Cooling Fan, be sure the Fan motor terminals face toward the right channel side as shown in Fig. D-3, otherwise terminal wiring is impossible.

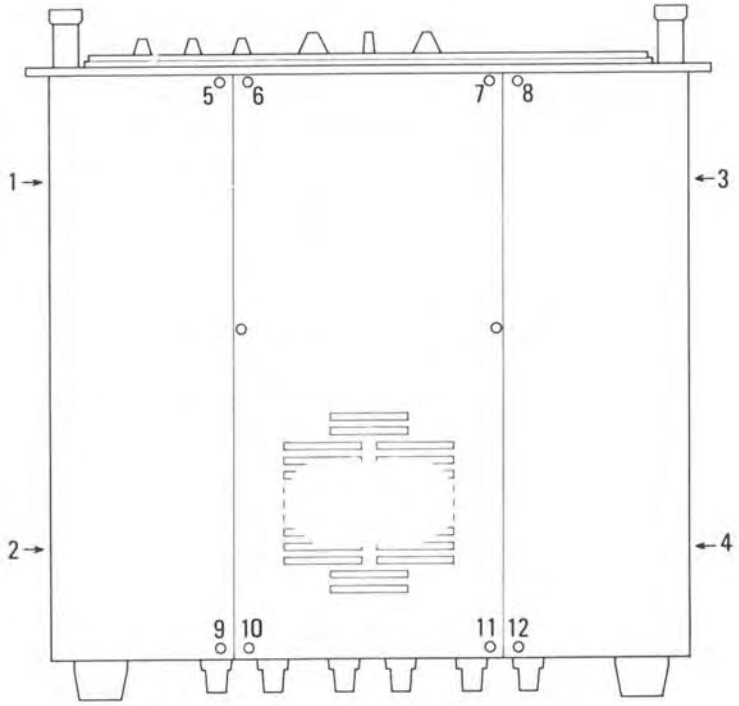


Fig. A. Chassis Disassembly (Top View)

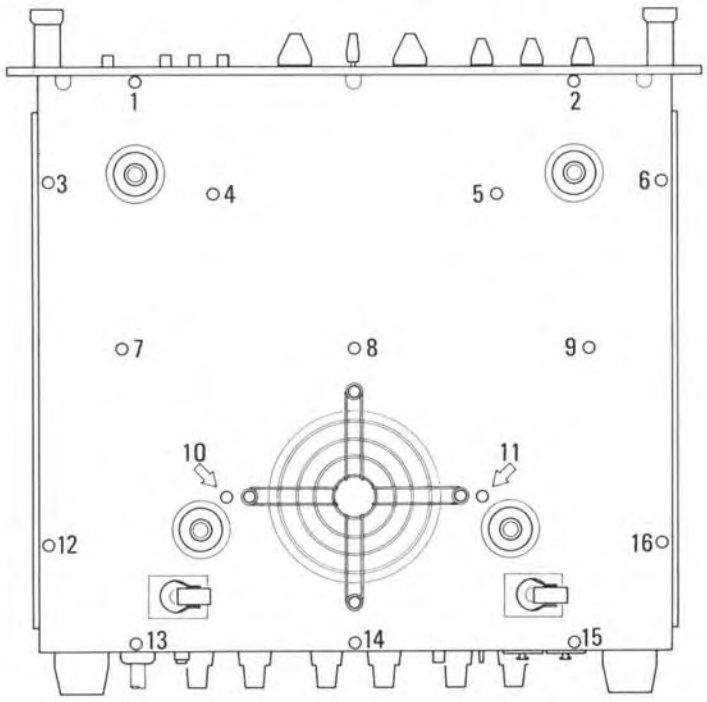


Fig. B. Chassis Disassembly (Bottom View)

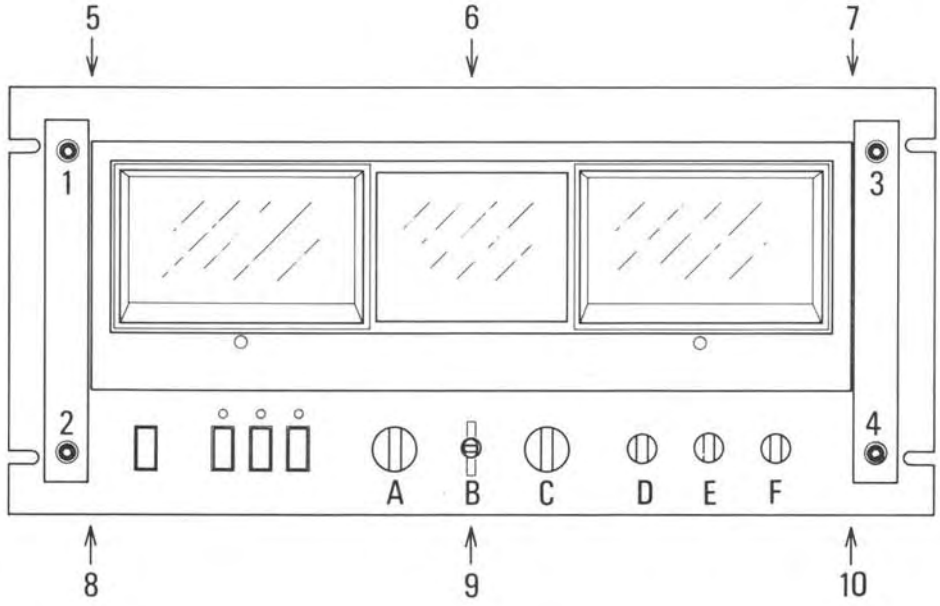


Fig. C. Chassis Disassembly (Front View)

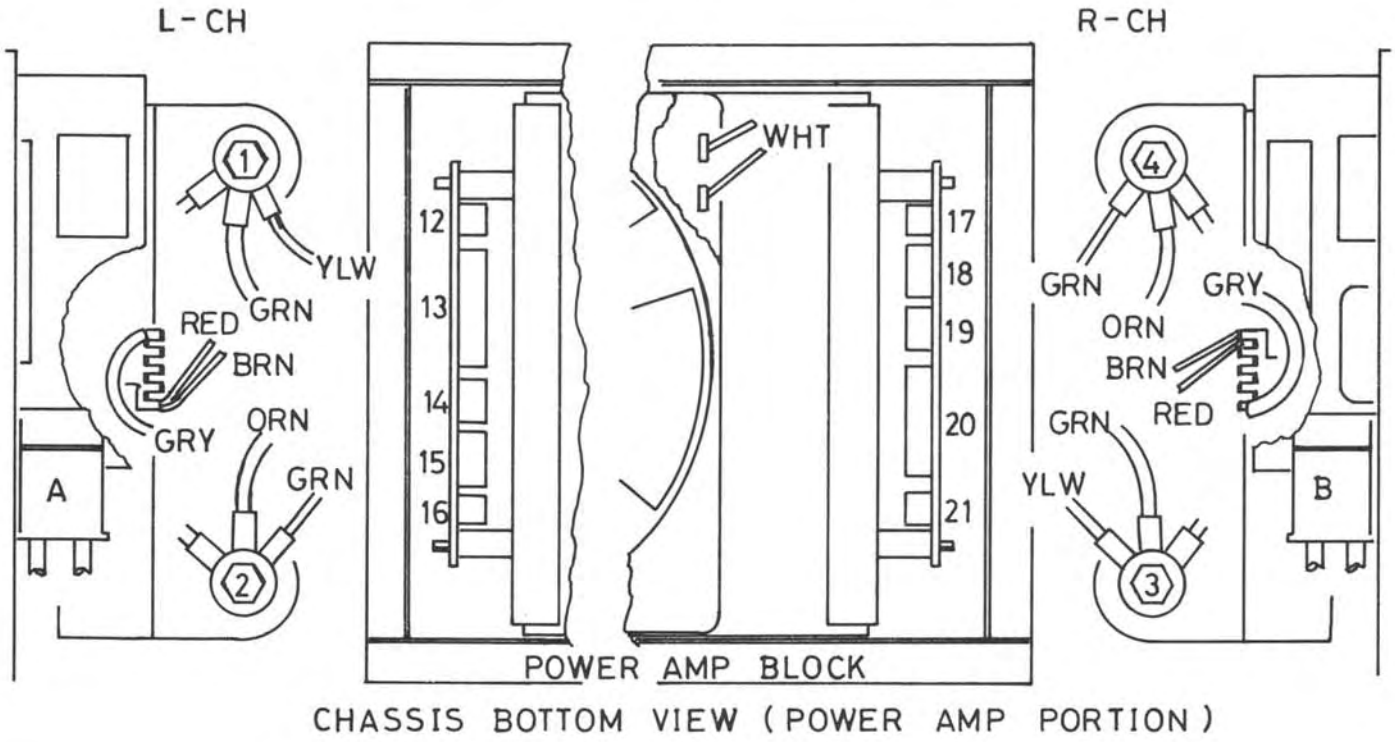


Fig. D-1. Power Amp Section Disassembly

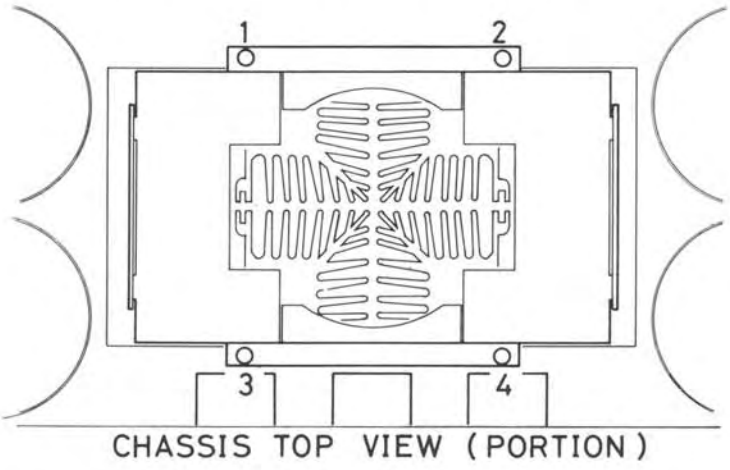
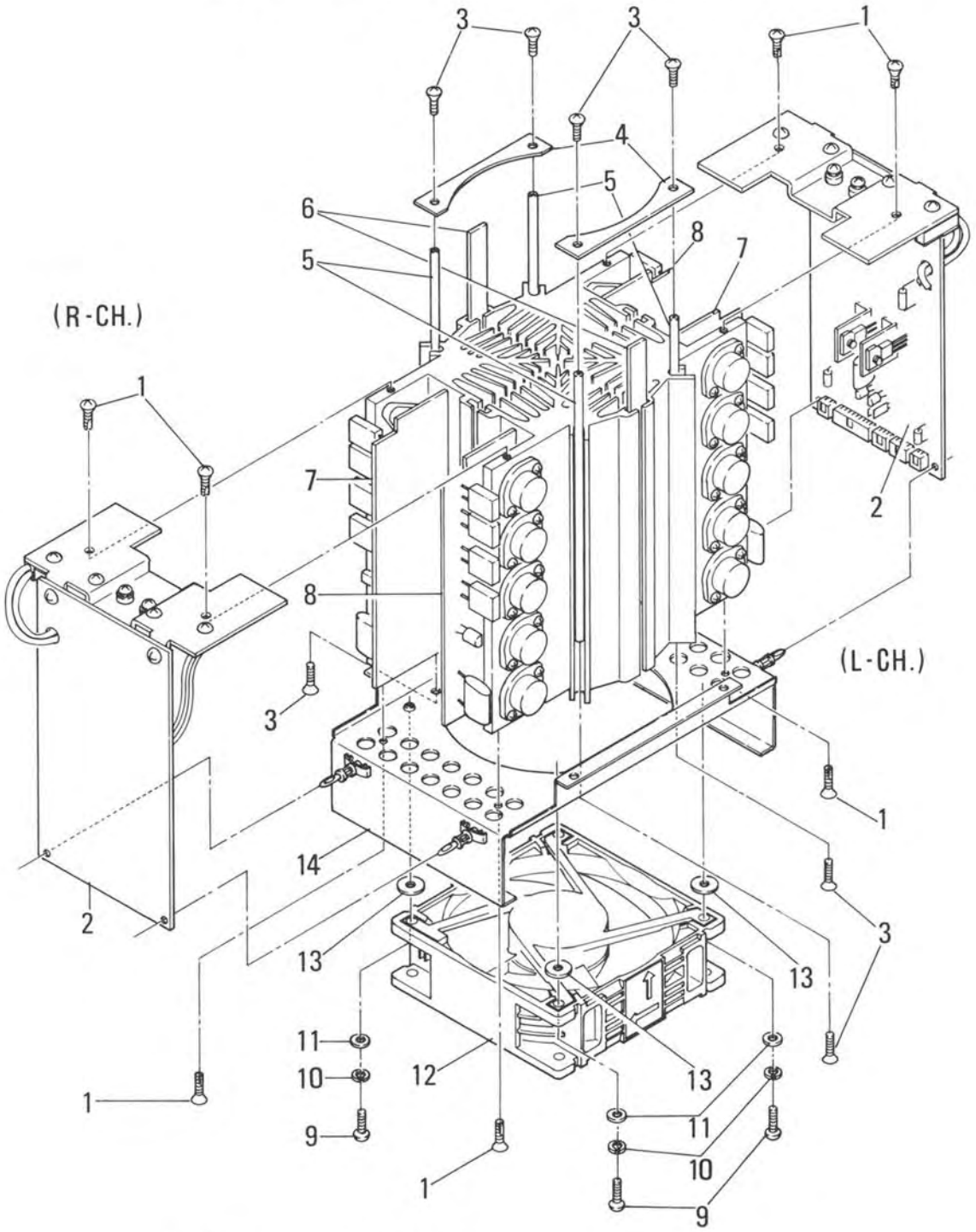


Fig. D-2. Power Amp Section (Portion)

Fig. D-3. Power Amp Section (Exploded View)



Key No.	Description
1.	Screw, ⊕ 3 x 8mm, Tapping, Oval Countersunk Head
2.	Driver Circuit Assembly
3.	Screw, ⊕ 3 x 8mm, Tap-tight, Oval Countersunk Head
4.	Metal Fittings, Heat Sink Mtg
5.	Support, Heat Sink Mtg
6.	Spacer, Heat Sink Mtg
7.	Power Amp (lower half cycle) Unit
8.	Power Amp (upper half cycle) Unit
9.	Screw, ⊕ 3 x 15mm, Binding Head
10.	Spring Washer, ϕ3
11.	Plain Washer, ϕ3
12.	Cooling Fan
13.	Rubber Cushion, Fan Mtg
14.	Power Amp Sub-chassis

Alignment

Instruments: Line Voltage Regulator (5kVA or over), Audio Generator, Oscilloscope, HD Analyzer, VTVM, AC Voltmeter, Thermometer and Load Resistors <non-inductive type, 8-ohm & 4-ohm (500W or over)>.

A. DC BALANCE ADJUSTMENT (FOR EACH CHANNEL)

1. Connect VTVM to SPEAKER A terminals. (VTVM should be set in DC 5V range, and used as a center meter, by positioning point zero at the center of the scale.) Set Speaker Switch A to ON and Input Switch to OFF.
2. Set Power Switch to ON with no signal input. (Be sure Line Voltage is at specified value.) Adjust Potentiometer VR6001 (VR6002 for R-CH) on the Predriver PC board to obtain "0" reading (mid-position on the meter scale) on VTVM.

Note: Prior to this adjustment, allow the unit to run for about 10 to 20 minutes to warm it up, with no signal input.

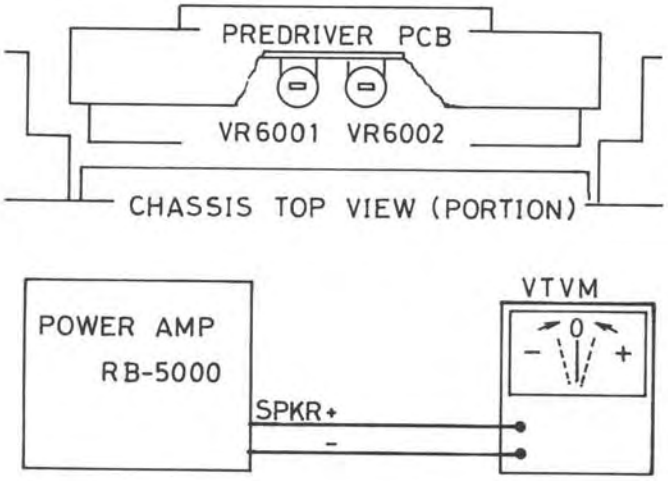


Fig. 1 DC Balance Adjustment

B. WATTS METER CALIBRATION

1. Connect an 8-ohm Load Resistor to SPEAKER terminals. Connect AC Voltmeter and Oscilloscope in parallel with the Load Resistor.
2. Connect Audio Generator to Input terminal, and feed in 1,000Hz (sine wave) signal. Set Meter Sensitivity Switch at 1/10.
3. Adjust the input level to obtain 20V (50W/8-ohm) reading on the AC Voltmeter. At this stage, adjust Potentiometer VR7001 (on Meter Amp PC board) to obtain 0dB reading on Watts Meter.
4. Follow the same procedures for the other channel.

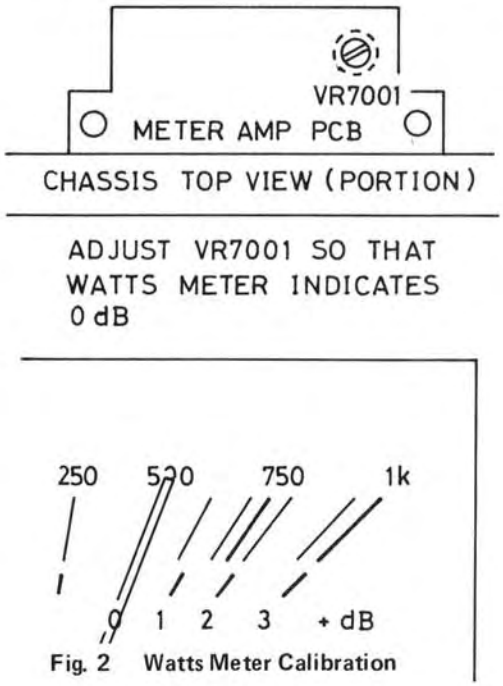


Fig. 2 Watts Meter Calibration

C. PROTECTION LEVEL ADJUSTMENT

Note: This adjustment must be made by one channel operation.

1. Connect a 4-ohm Load Resistor to SPEAKER terminals, and connect Oscilloscope and HD Analyzer in parallel with the resistor.
2. Feed 1,000Hz (sine wave) signal to Input Terminal from Audio Generator, and adjust the input level to obtain an output signal of 20% distortion on speaker terminals. At this state, adjust Potentiometer VR6003 (on the Driver PC board) to activate the Protection Circuit and turn off the Speaker Relay (output wave on the oscilloscope disappears).
3. Set Power Switch to OFF and the input signal level to "0" to release the Protection Circuit temporarily. Set the Power Switch to ON again, and raise the input level gradually, until the distortion factor of output signal reaches 10% or over. Check to see that the Protection Circuit works.
4. Follow the same procedures for the other channel.

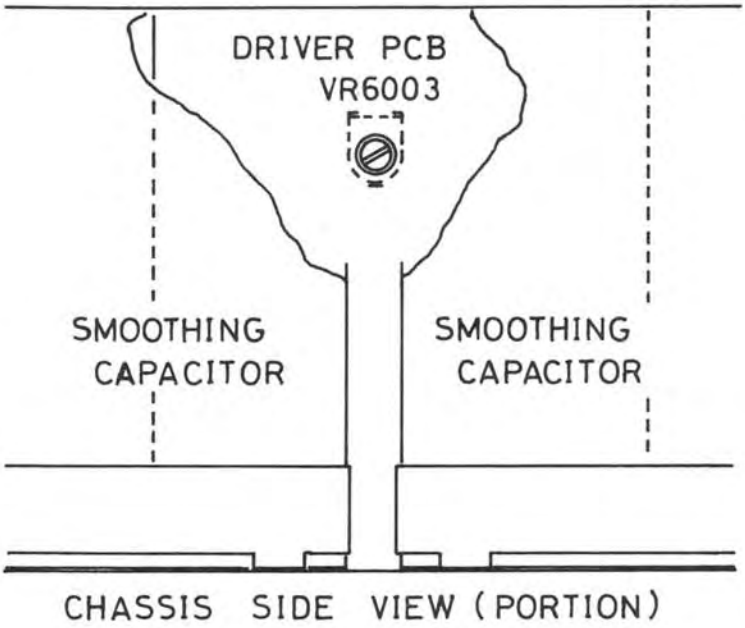


Fig. 3 Protection Level Adjustment

D. COOLING FAN REVOLUTION ADJUSTMENT

1. Connect Load Resistor to the amplifier, and feed in input signal. Place a thermometer on the temperature measuring section (to which the thermo-switch is attached), which is on top of the heat-sink of Power Amplifier. Measure the increase of temperature of the heat-sink.

   At this stage, the Power Amplifier should be horizontal as in normal operation.
2. After the temperature of the heat-sink is stabilized at around 65°C to 70°C, connect AC Voltmeter to FAN terminal, and adjust Potentiometer VR7003 (on Fan Control PC board) to get 90V terminal voltage.

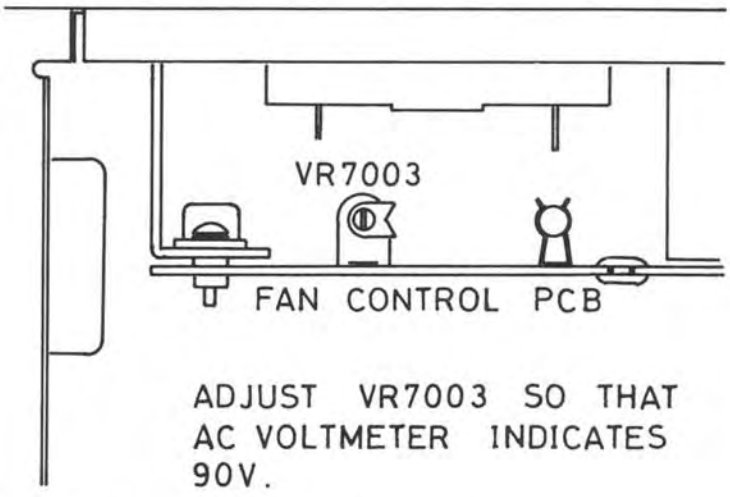


Fig. 4 Fan Revolution Adjustment

Checking of Operation

1. **Line Relay**

   Line Relay should begin operating within 3 seconds upon setting Power Switch to ON.

2. **Speaker Relay**

   Set one of Speaker Switches A, B, or C to ON, then set the Power Switch to ON. After the Line Relay is activated, the Speaker Relay should operate the moment the Stand-by Indicator goes off. This sequence should take 7 to 10 seconds after the Power Switch is turned on. Speaker Switches may also be used in combinations, as in; (A + B), (B + C), (A + C).

Note: When A, B and C switches are all set to ON simultaneously, switch C circuit is opened, and the relay of speaker C (RY003) will not work.

3. **Input Sensitivity**

a) The input level should be 1V ±0.5dB when 1,000Hz signal (sine wave) is fed to Pin Jack Input terminal, to obtain 44.7V (250W/8-ohm) output at Speaker terminal.

b) The input level should be 0.775V ±0.5dB, when 1,000Hz signal (sine wave) is fed to CANNON Jack input terminal, to obtain 44.7V (250W/8-ohm) output at Speaker terminal.

4. **Power Limiter**

   The Power Limiter allows you to select the maximum output level in three modes: FULL, 1/2 and 1/4. These modes are based on 8-ohm load impedance. The output level will rise higher than the above figure when the Power Limiter is activated, enabling a specified distortion factor to enter the respective output range.

   a) Connect a 3-ohm Load Resistor (or 8-ohm and 4-ohm in parallel: consequently about 2.7 ohms), Oscilloscope and AC Voltmeter to speaker terminals. Set the Limiter Switch at FULL and feed 1,000Hz signal (sine wave) into Input terminal from the Audio Generator. As the input level is gradually raised, the Limiter should be activated to limit the upper and lower peaks to a certain predetermined maximum value simultaneously. (In this case, the Limiter should work at an output voltage of around 25V or over.) In the similar manner, the Limiter should work for both upper and lower peaks at the same time at 1/2 and 1/4 positions of the Limiter Switch as well.

5. **Protection**

   When 2W (with 8-ohm load) is applied at the speaker terminal, if the speaker terminals are shorted, the Protection Circuit should start to work (Speaker Relay turns off). The Protection Lamp should light up at the same time.

6. **Overload**

   Operate the amplifier at high output with the ventilation holes blocked (or with the fan off). When the temperature of the upper portion of the heat-sink rises to around 85°C, the Overload Protection Circuit should be activated to turn off the Speaker Relay and light up the Overload Lamp simultaneously. Remove the block from the ventilation holes (or turn on the fan). When the temperature of the heat-sink falls to a certain level, the Thermo-switch should return automatically to the former position, to turn off the Overload Lamp and set Speaker Relay to ON.

Troubleshooting Guide

I. UNIT INOPERATIVE.

Check to see if any fuse on either of the power supply circuits (from F9001 to F9008 on Power Supply PC board; from F001 to F007 on chassis) is blown.

A. When all fuses are normal.

1. If Line Relay (RY004) does not run when Power Switch is ON, check Base and Collector Voltage of Line Relay driving transistor Q7079 on Control Circuit PC board.
   a) Excessively high minus voltage is applied at Collector.
      1) Base Bias may be wrong. — Check Bias Circuit.
      2) Q7079 may be faulty.
   b) Base Bias Voltage is normal, and yet no voltage is applied to the Collector.
      1) Relay Power Supply Circuit may be faulty (including faulty wiring connections).
      2) Relay may be faulty.
2. Line Relay operates normally, but Stand-by Lamp remains on.
   a) Speaker Relay Control Circuit may be faulty.
3. Stand-by Lamp operates normally* (turns off the moment Line Relay is activated), but the Protection Lamp lights up immediately.
   a) Power Amplifier Bias may be wrong. Driver on Power Amplifier Circuit may be faulty.
   b) Output circuit may be shorted.
   c) Protection circuit may be faulty. This can be distinguished from the above two cases a) and b), because Watts Meter and Peak Indicator show the level proportionate with the level of input signal.

   * Normally, the Stand-by Lamp stays lighted for about three seconds from the moment Power Switch is turned on until Line Relay is activated.
4. If steps 1, 2 and 3 above are found normal, and yet no signal comes, then check the output of the Control Amplifier.
   If no signal comes out, check B voltage at connector #3 of the Control Amplifier to see if it reaches normal voltage of ±33.5V.

B. If 8A fuse (F004 and 005, or F006 and F007) is blown, remove Driver PC board input connector plug #15 (or #18 for R-CH) from the Driver PC board, and short connector pin 2 with 4. Ground connector pin 1, and connect Oscilloscope between 2 and 1. Then feed signal into the Predriver input.
   If a signal is fed to output, there is no abnormality in the circuits up to the Predriver, and if there is no signal,
   1. Check the voltage of Power Supply PC board. If the voltage is normal, the Predriver Circuit may be faulty.
   2. If the Predriver is found normal, connect the Audio Generator between connector pins 4 and 1 of the Driver PC board connector socket #15 (or #18). Ground pin 1, and feed in signal. In this case, place a resistor as low as 20kΩ ~ 30kΩ between pins 4 and 1.
      Connect Oscilloscope and AC Voltmeter between 1 and 2 on the Output PC board, and check the output voltage by attaching and removing the load resistor of 8-ohm or 4-ohm.
      a) If there is an output produced when the load resistor is removed. — Power Amplifier may be faulty.
      b) If there is no output produced when the load resistor is removed. — Both the Driver and Power Amplifier Transistor may be faulty.
         1) When Q7030 (or 7041) is shorted, Driver Transistor is faulty.
         2) If any faulty is found among Q7031 to Q7034 (or Q7037 to Q7040), replace both Base and Emitter resistors of the faulty Power Transistor.

Note 1: When checking item B-1, the dead 8A fuse may either be left as it is or removed, because the Driver and Power Amplifier should not be operated.

Note 2: When checking item B-2, the dead fuse should be replaced, or connect the B-circuit of the Power Amplifier section to other power supply with a rating of ±50V, 1A or over.

II. If the Overload Indicator lights up soon after switching on, check the temperature of the heat-sink of the Power Amplifier, and make sure the cooling fan is revolving normally.

A. If the fan is idle, check fuse F7001 on the Fan Control PC board.
   1. If Fuse F7001 is blown,
      a) Cooling fan may be faulty. (Shorting of inner coil, etc.)
      b) Rectifier circuit for Fan Control may be faulty.
   2. If the fuse is normal,
      a) Cooling fan may be faulty. (Broken inner coil)
      b) Bad contact in the wiring of the cooling fan power supply.

B. Fan does not revolve fast enough, even though the heat-sink is hot.
   1. Fan Control Circuit may be faulty.
   2. Cooling fan may be faulty. (Fan motor has deteriorated.)

C. Fan revolves at normal speed.**
   1. If the temperature of the heat-sink is below 85°C,***
      a) The temperature detecting circuit may be faulty.
   2. If the temperature of the heat-sink is above 85°C,
      a) The Driver or Power Amplifier Circuit may be faulty.
      b) Operation is performed under excessive load.
         1) Over-input and over-output caused by feeding signal continuously.
         2) Over-output caused by using low impedance load.

**Cooling fan normally revolves slowly at a terminal voltage of around 50VAC. As the temperature of the heat-sink of the power amplifier rises, the fan revolution increases gradually. When the temperature of the heat-sink reaches 70°C, the fan revolves at maximum speed, at a terminal voltage of around 90V. (See Alignment Procedures.)

***Thermo-switch used in the RB-5000 is designed to cut off the power at a temperature of 85°C ±5°C. The thermo-switch will automatically return to its former position (ON) when the temperature falls by 7 or more degrees from 85°C ±5°C.

Note: When operating the Power Amplifier at maximum output, incomplete contact of the power cord plug, or use of inadequately rated extension cord will result in inadequate voltage in the primary winding of the power transformer, causing symptom similar to II-B. In such cases, the cooling fan begins to revolve at full speed and voltage increases the moment the load is disconnected.

Repair Parts List

TRANSISTORS, DIODES AND IC'S

Schematic Location	Part No.	Description
Q6001, 6002, 6007, 6008, 6009, 6010, 9015, 9016, 9028, 9029	301201164	2SC1885
Q6003, 6004, 6005, 6006, 6011, 6012, 9012, 9017, 9019, 9025, 9030, 9032	301001142	2SA912
Q6013, 6014	301201182	2SC1583
Q6015, 6016	301001150	2SA798
Q6017, 6018, 6021, 6022, 6025, 6026, 6029, 6030	301001151	2SA914
Q6019, 6020, 6023, 6024, 6027, 6028, 6031, 6032	301201183	2SC1953
Q6033, 6034, 6035	301101125	2SB628
Q6036, 6037, 6038	301301135	2SD608
Q6039, 7035, 7076, 7077, 7078	301201162	2SC1384
Q6040, 7027, 7028, 7041, 7079	301001140	2SA684
Q6041, 9001, 9005, 9006, 9007, 9009, 9010, 9011	301201134	2SC1327
Q7005, 7006, 7007, 7008	302001113	2SK68A
Q7009, 7010, 7011, 7012, 7017, 7018, 9002, 9004, 9008	301001145	2SA921
Q7013, 7014, 7015, 7016, 7019, 7020, 7021, 7022, 9013, 9026	301201171	2SC1980
Q7023, 7024, 7042 ~ 7075	301201156	2SC1222
Q7025, 7026	301001134	2SA750
Q7029	301201178	2SC1504
Q7030 ~ 7034	301201179	2SC1586A
Q7036 ~ 7040	301001147	2SA909A
Q7081, 7083	302001116	2SK127
Q7082, 7084	302001117	2SJ43
Q9003	301301127	2SD389A
Q9014, 9027	301201184	2SC2168
Q9018, 9031	301001152	2SA958
Q9020, 9033	301201181	2SC2167
Q9021, 9034	301001148	2SA957
Q9022, 9024	301001143	2SA913
Q9023	301201164	2SC1913
D6001 ~ 6008	300111014	1S2473F
D6009 ~ 6012 6015 ~ 6018, 7001, 7002, 7007 ~ 7014, 7022 ~ 7025, 7027 ~ 7031, 7048 ~ 7051, 7056 ~ 7059, 9005, 9008, 9010	300111010	1S2472
D6013, 6014, 7015 ~ 7020, 9001 ~ 9004, 9012 ~ 9015, 9021 ~	300919025	SR1K-08
D9026, 9030, 9035 ~ 9038		
D6019	300212010	SV-04FS
D7003 ~ 7006, 7026	300313031	WZ-056
D7021, 9027, 9031, 9032	300313006	BZ-270
D7032 ~ 7047, 7052 ~ 7054, 7060 ~ 7062	300414014	SEL-105RC
D9006, 9011	300515001	2SF656
D9007	300212004	KB269
D9009	300111008	1K188
D9016, 9017 9039, 9041	300212002	KB-265
D9028, 9029	300313014	WZ-090
D9033, 9034	300313004	BZ-120
D9018, 9042	300313030	CZ-117
D9043, 9044	300313015	BZ-340
D001, 002	300919029	S-15VB-40
IC7001, 7002	303452152	NJM-4558DF, Meter Amp, etc.

VARIABLE RESISTORS

VR6001, 6002	510502169	1KB, DC Balance Adj
VR6003	510502153	10KB
VR7001	510502170	1KB VU Meter Cal
VR7003	510502147	10KB
VR7005, 7006	515321122	100K, Level Control

OTHERS

S1	614010107	Power Switch
S2	613000026	Input Selector
S3	615212260	Thermostat, (85°C)
S5	611001228	Input Switch
S6	601011325	Filter Switch
S7, 8	601011324	Meter Sensitivity Selector and Power Limiter Switch
S9	614010107	Primary Resistor Switch (* Not used for European Type)
S10, 11, 12 (1Set)	614030817	Speakers Switch
RY001, 002, 003	240111234	Speaker Relay
RY004	240111235	Line Relay
T001, 002	205001432	Power Transformer
T003	205001433	Power Transformer for Control Amp
L7001	228641140	Anti-parasitic Coil
VS001, 002, 003	648211194	Line Voltage Selector
C001	470101118	Noise Canceller for STD Type
C001, 002	470101125	Noise Canceller for European Type
C003, 004, 005 006	407000103	Capacitor, 22,000 mfd, 140V
	650901114	FAN, Power Amp Cooler
C7031, 7033, 7034	407000102	Capacitor, 470 mfd, 160V, without Band
C7032	407000101	Capacitor, 470 mfd, 160V
TH7001, 7002, 7003	511001111	Thermistor, TD5-A125
	395101116	Lamp, 6.3V, 0.25A, Meter Light
F9001, 9002, 9003, 9004, 9007, 9008	341221100	Fuse, 1A-3AG, Secondary AC

Schematic Location	Part no.	Description
F7001, 9005, 9006	341221050	Fuse, 0.5A-3AG, Secondary AC
F001	341221500	Fuse, 5A-3AG, for Line Voltage 100V ~120V Area
	341221300	Fuse, 3A-3AG, for Line Voltage 220V ~240V Area
F002, 003	340121115	Fuse, 15A-3AG, for Line Voltage 100V ~120V Area
	341221750	Fuse, 7.5A-3AG, for Line Voltage 220V ~240V Area
F004, 005, 006, 007	341221800	Fuse, 8A-3AG, Secondary AC for Power Amp Circuit
M001, 002	231310081	Watts Meter
	628111122	Receptacle, Cannon Connector, F Type
	624201202	Pin Jack, 2P
	661111116	Speaker Terminal (RED)
	661111115	Speaker Terminal (BLK)
	770911119	GND Terminal
	673402015	Foot
	141810783	Level Indicator Circuit Board Ass'y
	141810777	Protection and L-ch Power Supply Circuit Board Ass'y
	141810778	Power Supply Circuit Board Ass'y
	141810779	Control Circuit Board Ass'y
	141810787	Cannon Input Circuit Board Ass'y
	141810785	L-ch, Meter Amp Circuit Board Ass'y
	141810786	R-ch, Meter Amp Circuit Board Ass'y
	141610313	Predriver Circuit Board Ass'y
	141610314	Driver Circuit Board Ass'y
	141810782	FAN Control Circuit Board Ass'y
	141810780	Upper Half Cycles Power Amp Circuit Board Ass'y†
	141810781	Lower Half Cycles Power Amp Circuit Board Ass'y†
	141810788	Output Circuit Board Ass'y
	141810784	Speaker Ind Circuit Board Ass'y
	648211194	Bracket, Fuse, Primary AC
	648211179	Fuse Clip, pcb Mtg.
	657201118	Cord Stopper
	657201115	Cord Stopper, for European Type
	796301141	Line Cord for 120V Area
	796301130	Line Cord, for UK
	796301145	Line Cord, for West Germany
	796301125	Line Cord, for Australia
	628111124	F Type No. 2 Plug Ass'y
	628111125	F Type No. 12 Plug Ass'y
	628111126	F Type No. 21 Plug Ass'y
	628111136	F Type No. 31 Plug Ass'y
	628111139	F Type No. 30 Plug Ass'y
	628111140	F Type No. 22 Plug Ass'y
	628111138	F Type No. 37 Plug Ass'y
	628111141	F Type No. 13 Plug Ass'y
	628111142	F Type No. 20 Plug Ass'y
	628111123	F Type 3P Plug Ass'y for Output Circuit
	628111131	F Type No. 26 Plug Ass'y
	628111132	F Type No. 32 Plug Ass'y
	628111155	F Type No. 9 Plug Ass'y
	628111153	F Type No. 40 Receptacle Ass'y
	628111130	F Type No. 38 Plug Ass'y
	628111133	F Type No. 34 Plug Ass'y

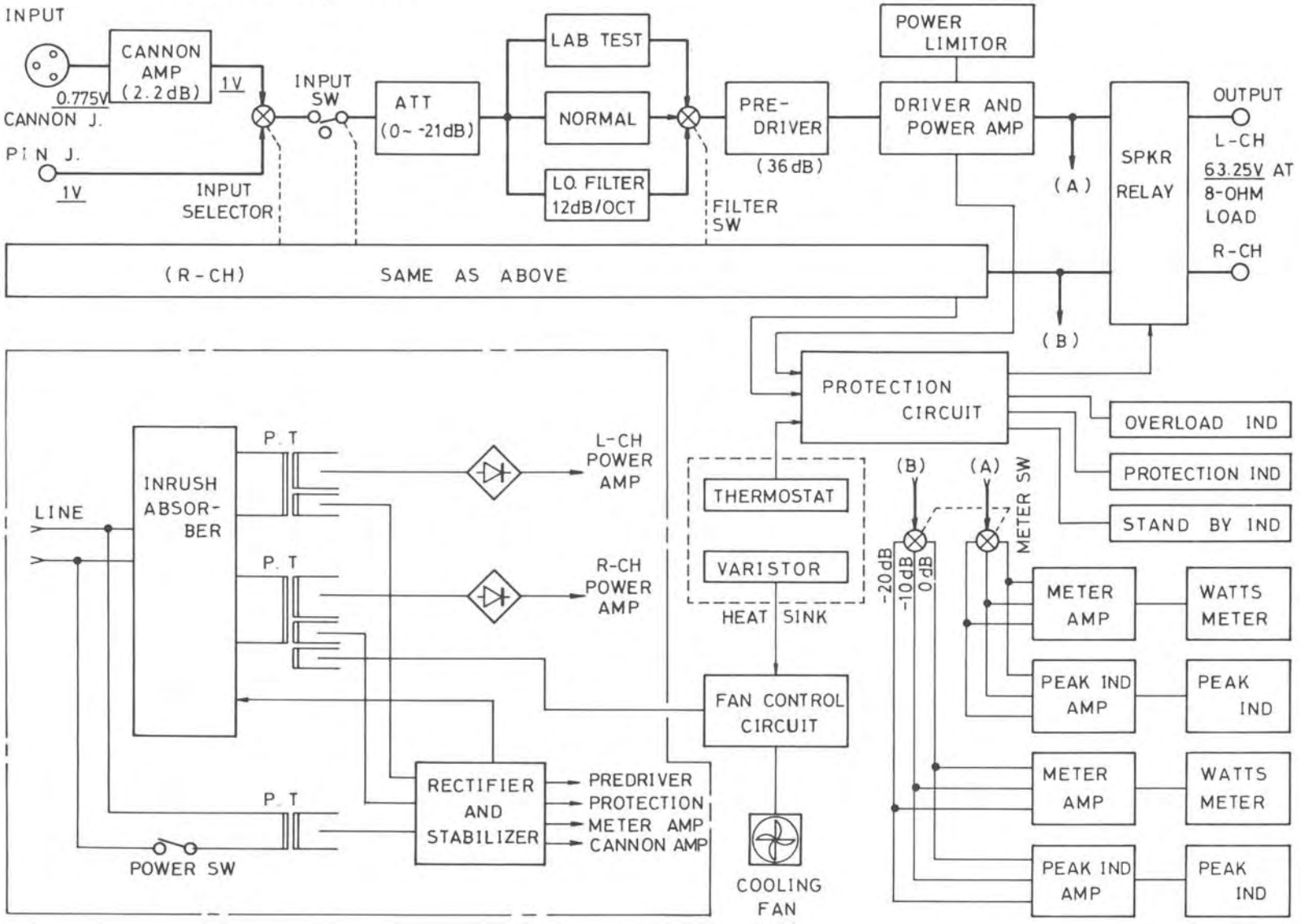
Note: †without Power Transistors and Heat Sink

Schematic Location	Part No.	Description
	628111135	F Type No. 39 Plug Ass'y
	628111134	F Type No. 6 Plug Ass'y
	628111143	F Type Nos. 29, 33 Connector Ass'y
	628111144	F Type Nos. 10, 36 Connector Ass'y
	628111145	F Type Nos. 5, 19 Connector Ass'y
	628111146	F Type Nos. 4, 14 Connector Ass'y
	628111148	F Type Nos. 11, 18 Connector Ass'y
	628111149	F Type Nos. 9, 15 Connector Ass'y
	628111150	F Type Nos. 24, 16, 17 Connector Ass'y
	628111147	F Type Nos. 8, 23 Connector Ass'y
	628111154	F Type Nos. 25, 41 Connector Ass'y
	648211196	M Type 3P Socket (Straight Pin)
	648211197	M Type 4P Socket (Straight Pin)
	628111151	M Type No. 40 Plug Ass'y
	628111152	M Type No. 41 Plug Ass'y
	648211200	M Type 2P Socket (Angle)
	648211201	M Type 3P Socket, (Angle)
	648211204	M Type 6P Socket, (Angle)
	648211205	M Type 9P Socket, (Angle)
	648211202	M Type 4P Socket, (Angle)
	648211203	M Type 5P Socket, (Angle)
	648211195	M Type 2P Socket, (Straight Pin)
	648211198	M Type 6P Socket (Straight Pin)
	648211199	M Type 12P Socket (Straight Pin)
	648211163	Socket, Power Amp Transistor
	111911386	Front Panel Ass'y (without Handles)
	670101113	Handle (GOLD)
	770911189	Collar, Handle Mtg (GOLD)
	770911209	Screw, 6 x 40mm, Handle Mtg
	116210030	Button, Push Switch (GOLD)
	116310212	Knob, Lever Switch (GOLD)
	116310211	Knob, Level Control (GOLD)
	116310217	Knob, Filter, etc. (GOLD)
	673901111	Caster
	120012623	Finger Guard
	991001152	Diffuser, Watts Meter Mtg
	990201233	Cushion, Cooling Fan Mtg
	127012186	Heat Sink for Power Amp
	124011290	Bottom Cover (without Finger Guard, Feet and Casters)
	138011292	Side Cover
	120012613	Top Cover
	760213006	Screw, ⊕ M3 x 6mm, Tap-tight, Round Head (Ni)
	760223008	Screw, ⊕ M3 x 8mm, Tap-tight, Round Head, (BLK)
	760213010	Screw, ⊕ M3 x 10mm, Tap-tight, Round Head (Ni)
	760213012	Screw, ⊕ M3 x 12mm, Tap-tight, Round Head (Ni)
	760223012	Screw, ⊕ M3 x 12mm, Tap-tight, Round Head (BLK)
	760213015	Screw, ⊕ M3 x 15mm, Tap-tight, Round Head (Ni)
	760213020	Screw, ⊕ M3 x 20mm, Tap-tight, Round Head (Ni)

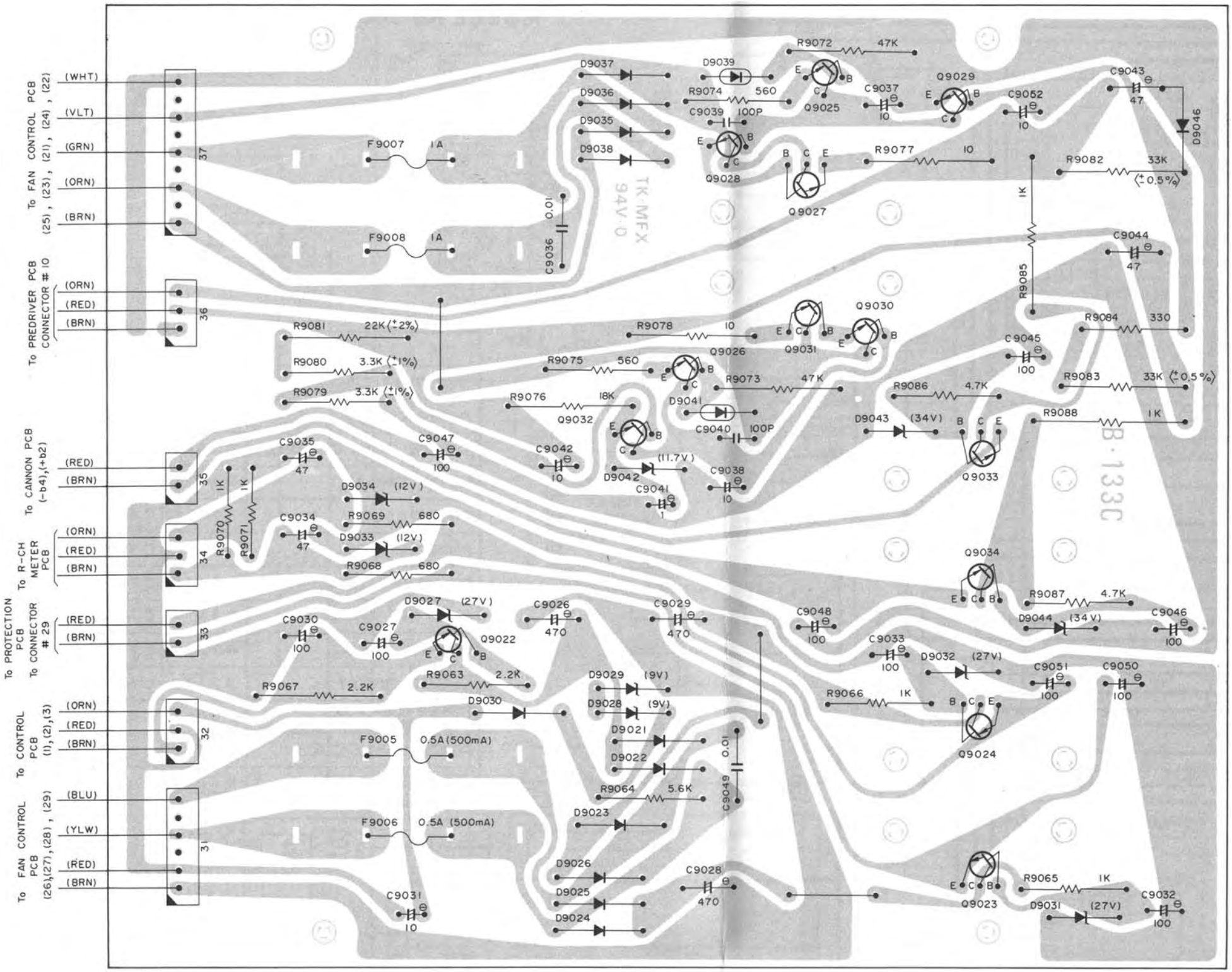
Schematic Location	Part No.	Description
	761213006	Screw, ⊕ M3 x 6mm, Tap-tight, Oval Countersunk Head, (Ni)
	765214008	Screw, ⊕ M4 x 8mm, Tap-tight, Binding Head (Ni)
	765224008	Screw, ⊕ M4 x 8mm, Tap-tight, Binding Head, (BLK)
	765224015	Screw, ⊕ M4 x 15mm, Tap-tight, Binding Head, (BLK)
	765224020	Screw, ⊕ M4 x 20mm, Tap-tight, Binding Head, (BLK)
	725223008	Screw, ⊕ M3 x 8mm, Tapping, Binding Head (BLK)
	721223008	Screw, ⊕ M3 x 8mm, Tap-ping, Countersunk Head (BLK)
	705222604	Screw, ⊕ M2.6 x 4mm, Binding Head, (BLK)
	702223008	Screw, ⊕ M3 x 8mm, Oval Countersunk Head (BLK)
	770402201	Nut, Hex, M3
	770402202	Nut, Hex, M4

Schematic Location	Part No.	Description
	770402204	Nut, Hex, M6
	770402205	Nut, Hex, M7
	770402206	Nut, Hex, M8
	770402207	Nut, Hex, M9
	770911144	Nut, Square, M3, Transistor Mtg
	770500001	Washer, Plain, ϕ3, (Ni)
	770500002	Washer, Plain, ϕ4, (BLK)
	770500005	Washer, Plain, ϕ6
	770500006	Washer, Plain, ϕ7
	770500007	Washer, Plain, ϕ8
	770500008	Washer, Plain, ϕ9
	770500010	Washer, Spring, ϕ3
	770500011	Washer, Spring, ϕ4
	770500012	Washer, Spring, ϕ6
	770500014	Teethed Washer, ϕ3
	770500015	Teethed Washer, ϕ4
	770500017	Teethed Washer, ϕ7
	770500018	Teethed Washer, ϕ8
	770500019	Teethed Washer, ϕ9
	992001111	Isolating Washer, ϕ3, Transistor Mtg, etc.

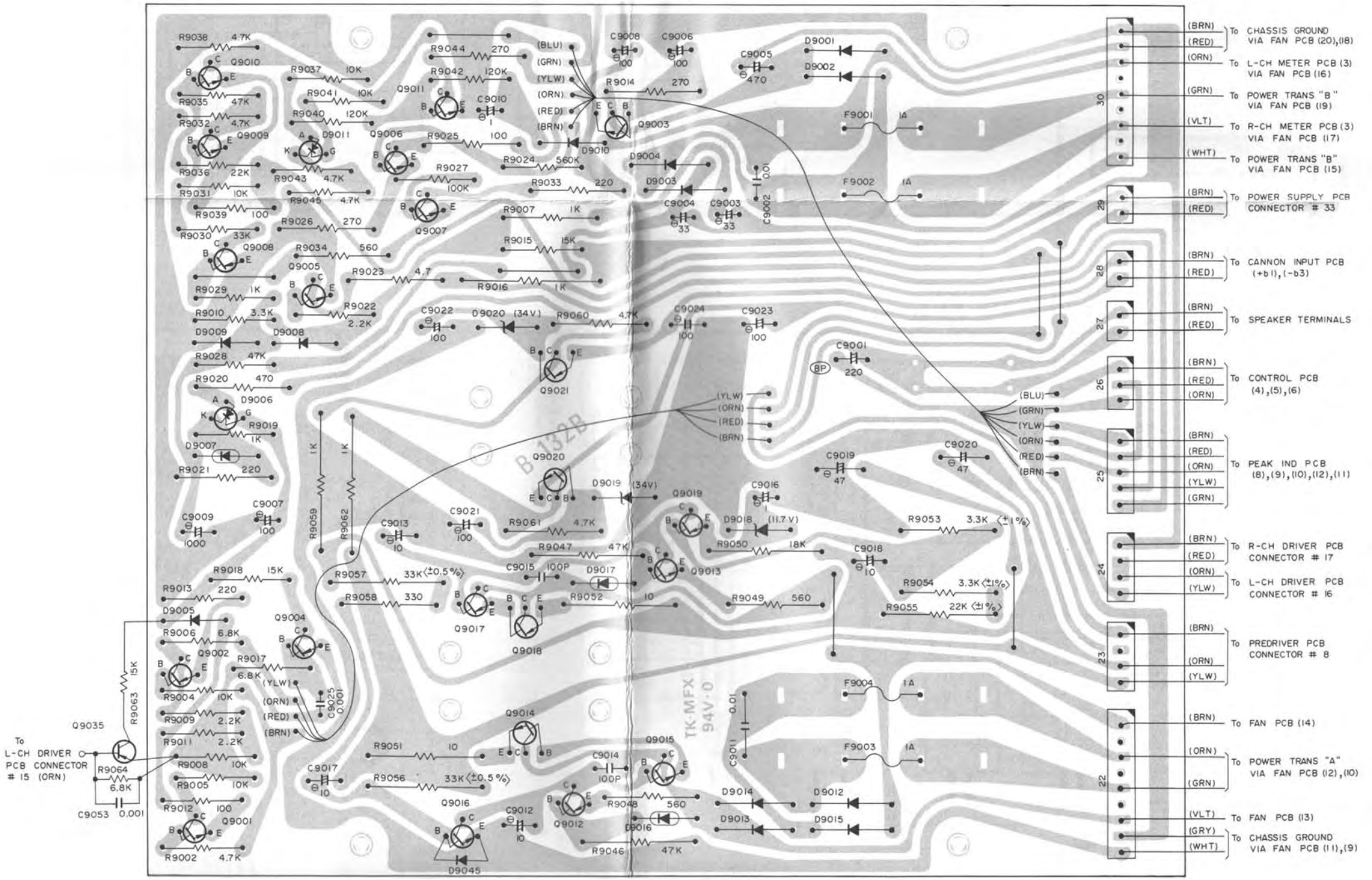
Block Diagram



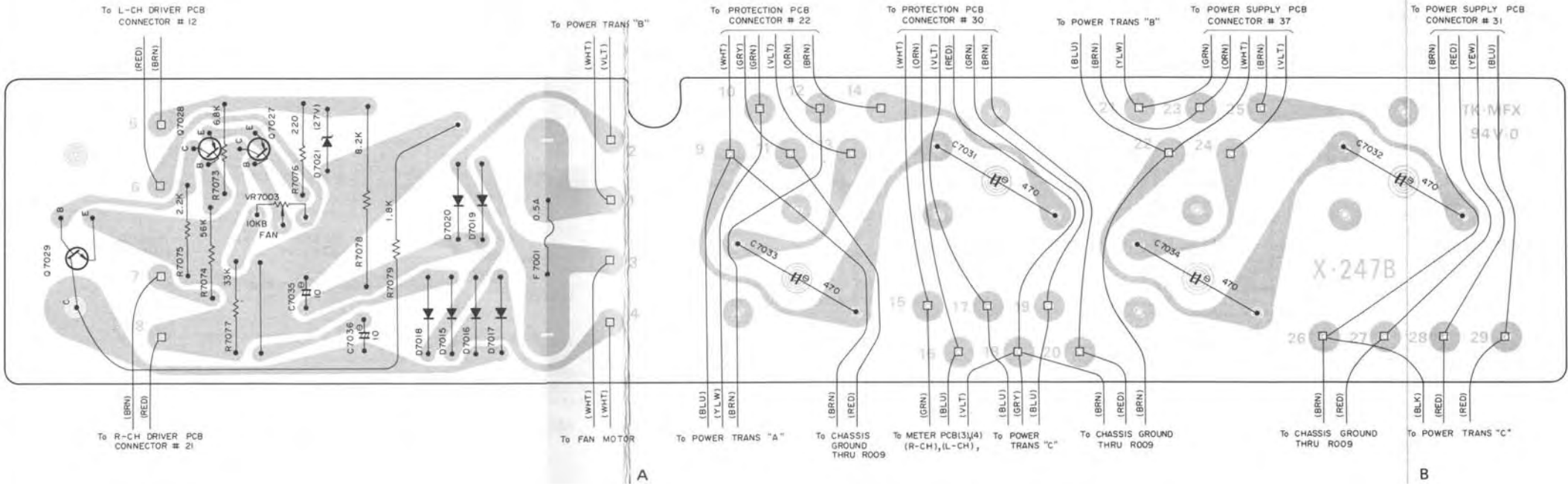
Power Supply Circuit Board Diagram



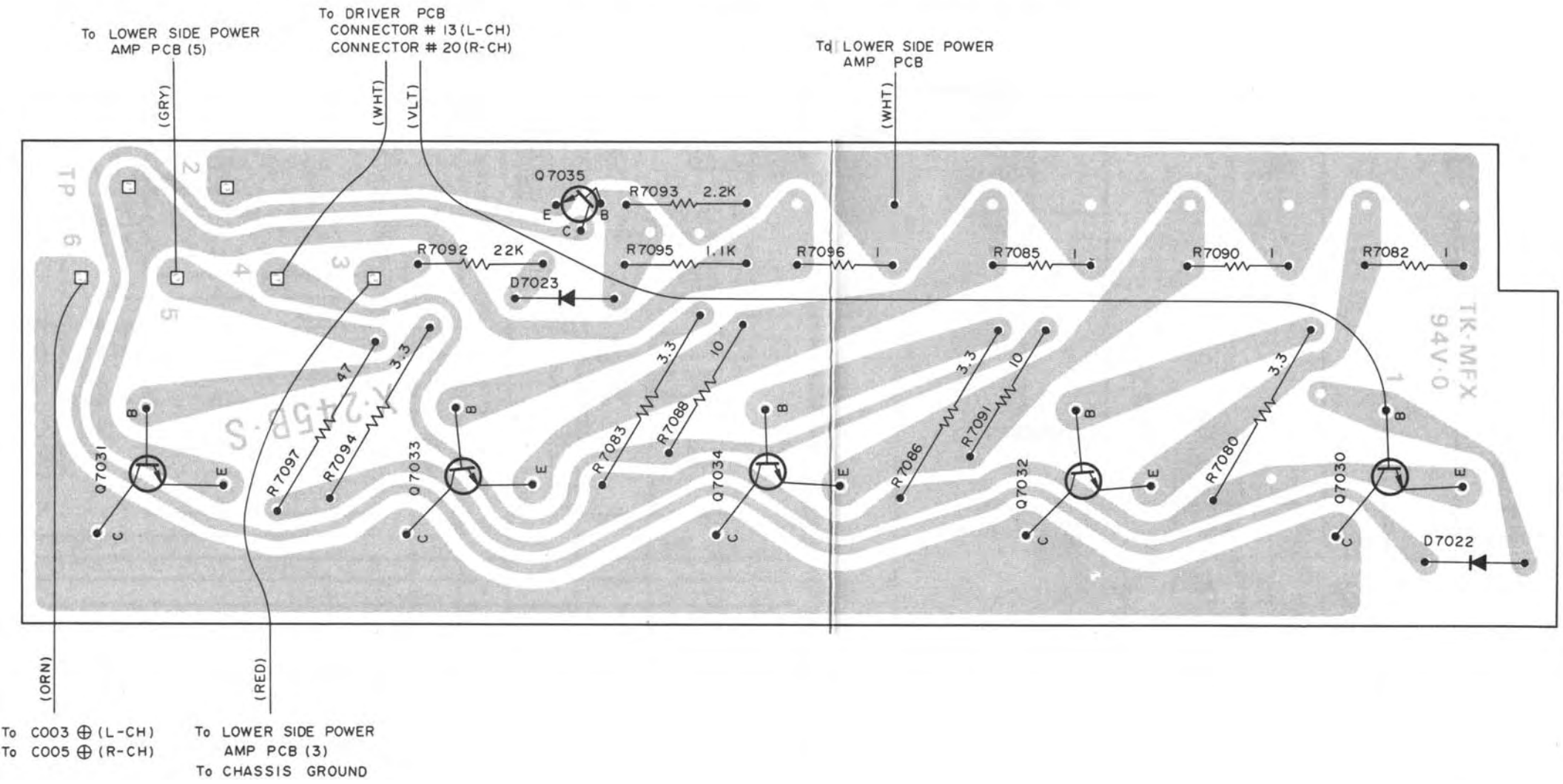
Protection and Power Supply (L-ch) Circuit Board Diagram



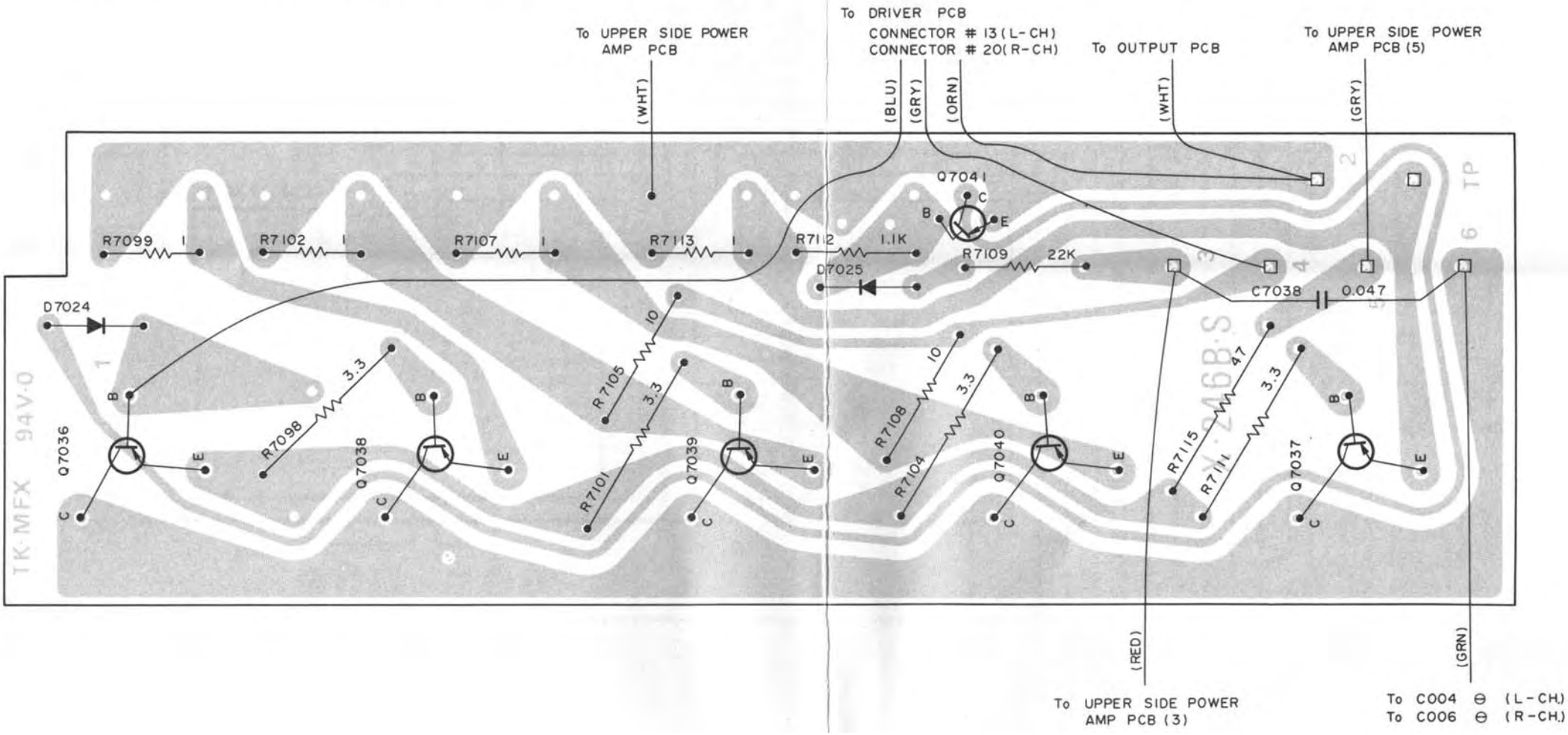
Fan Control Circuit Board Diagram



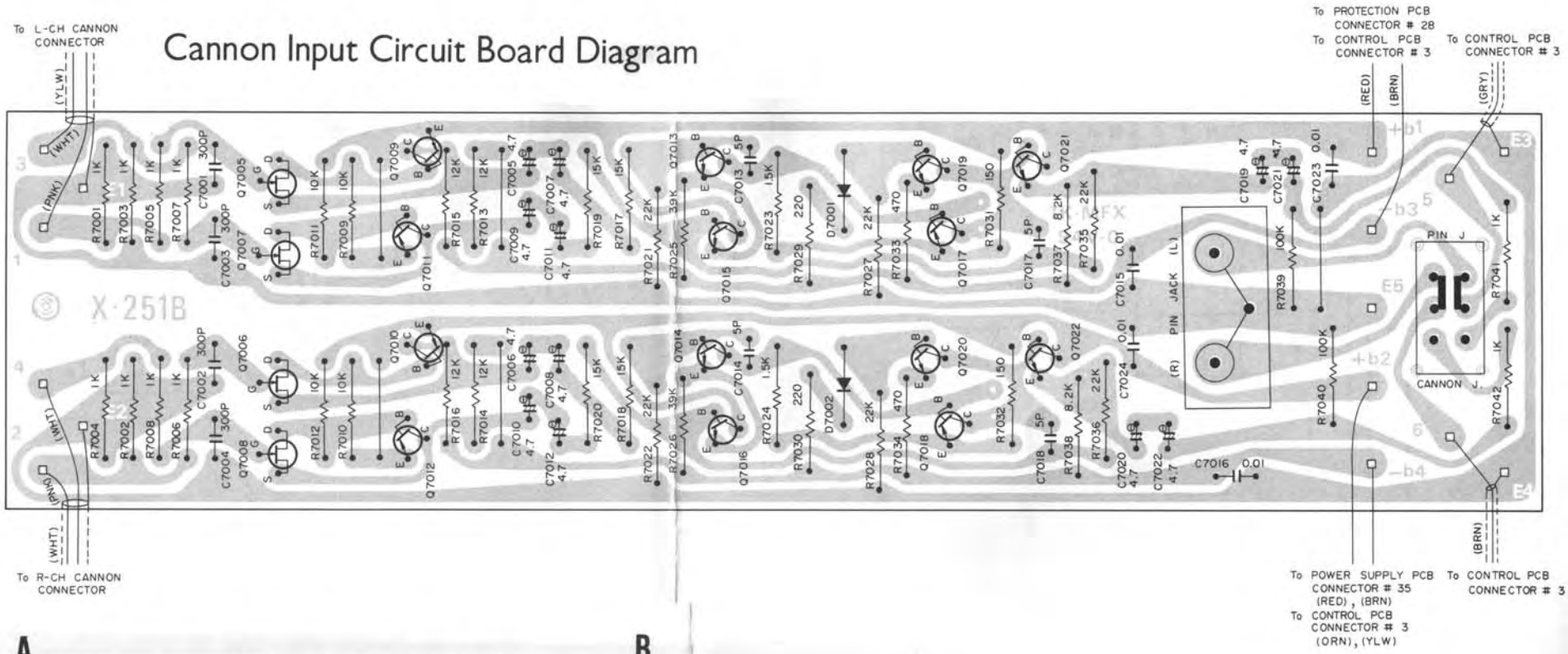
Power Amp (Upper Half Cycles) Circuit Board Diagram



Power Amp (Lower Half Cycles) Circuit Board Diagram



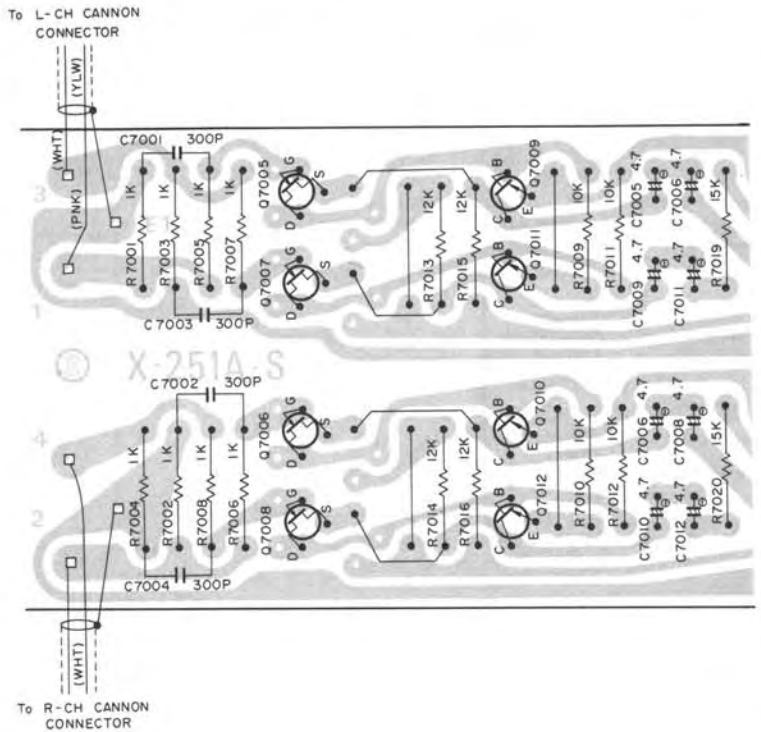
Cannon Input Circuit Board Diagram



A

Portion between A and B has been modified in the units with the Serial No. NB49071 or over.

B

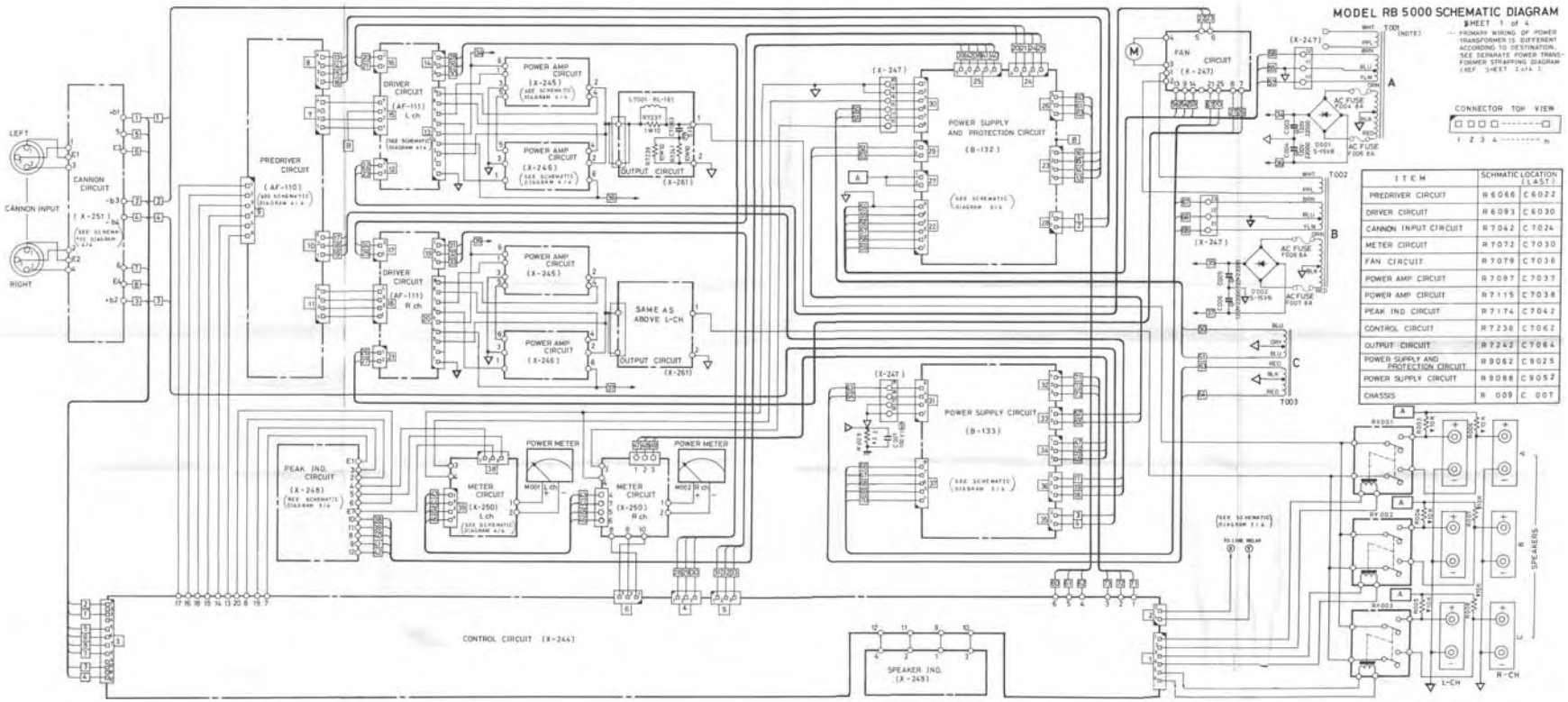


Note:

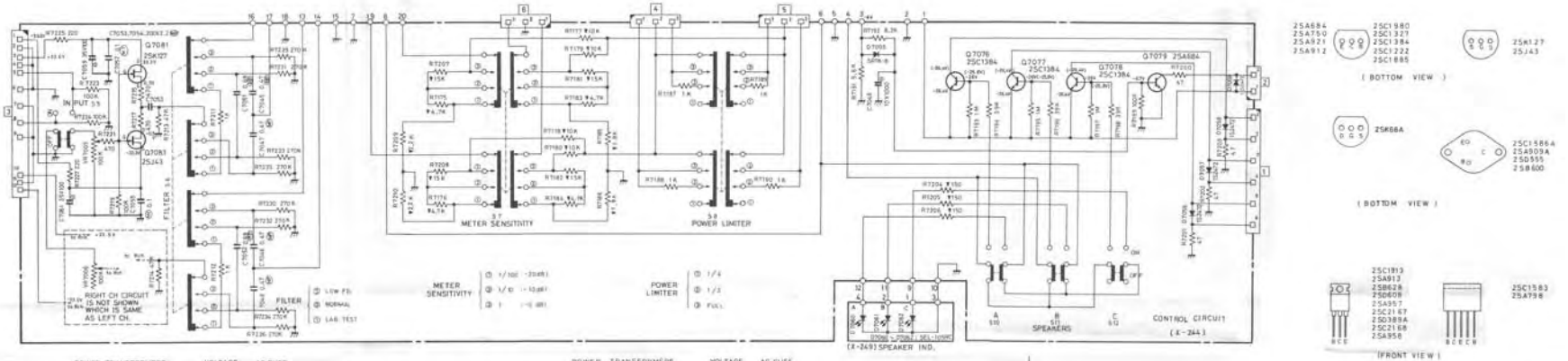
The following PC board assemblies used in the units with Serial No. up to NB 49070 differ partially from the PC board diagrams in this manual.

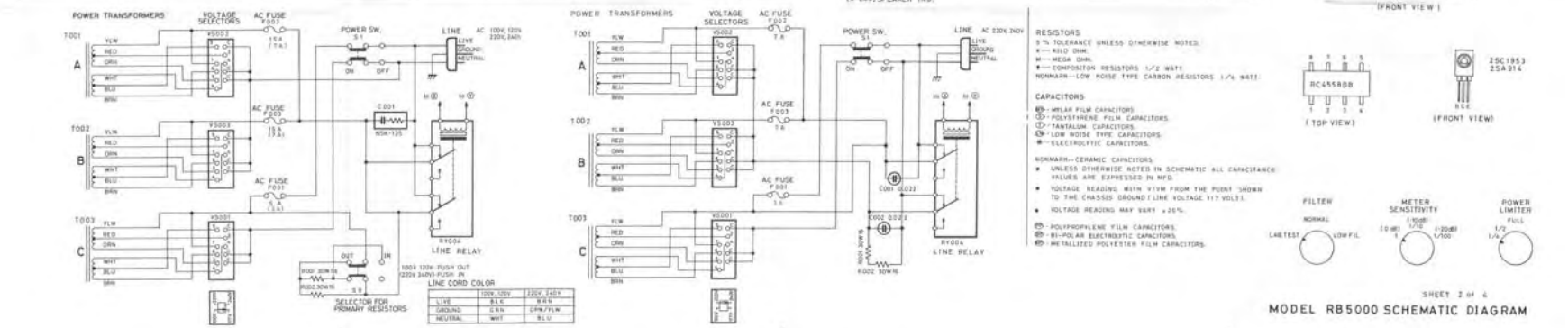
1. Part of Cannon Input Circuit
2. Part of Control Circuit
3. Predriver Circuit

The actual electrical circuits of these PC boards, however, have not been changed. Therefore, to replace the above PC board assemblies, those utilized in the units with Serial No. NB 49071 or over can be attached.

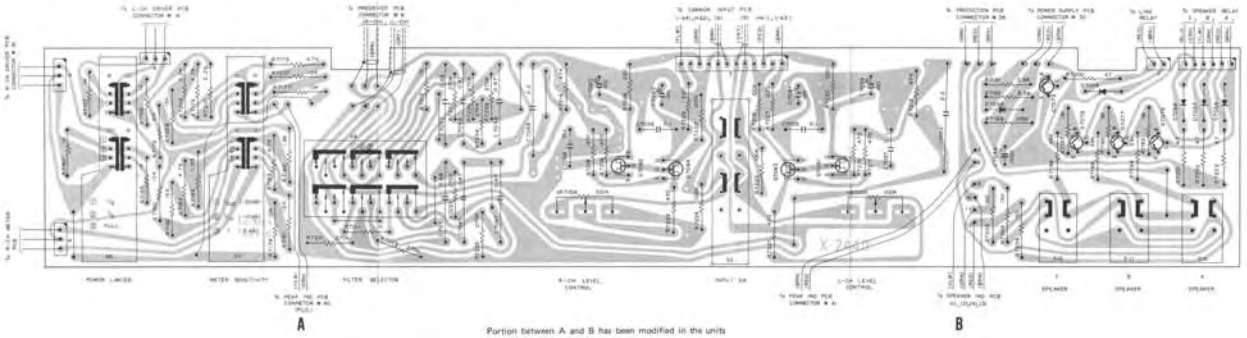


ITEM	SCHMATIC LOCATION (LAST)	
PREDRIVER CIRCUIT	R 6066	C 6022
DRIVER CIRCUIT	R 6093	C 6030
CANNON INPUT CIRCUIT	R 7042	C 7024
METER CIRCUIT	R 7072	C 7030
FAN CIRCUIT	R 7079	C 7038
POWER AMP CIRCUIT	R 7097	C 7037
POWER AMP CIRCUIT	R 7115	C 7038
PEAK IND CIRCUIT	R 7174	C 7042
CONTROL CIRCUIT	R 7238	C 7062
OUTPUT CIRCUIT	R 7243	C 7064
POWER SUPPLY AND PROTECTION CIRCUIT	R 9062	C 9025
POWER SUPPLY CIRCUIT	R 9088	C 9057
CHASSIS	R 009	C 007





Control Circuit Board Diagram

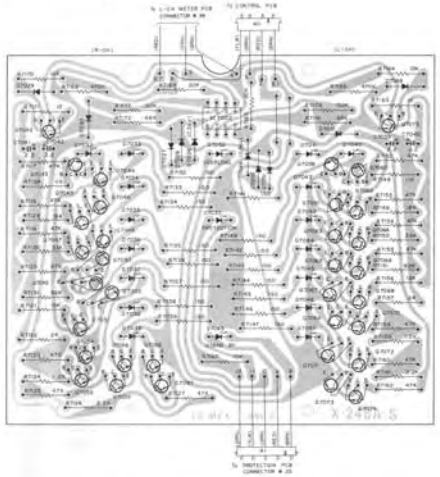


A

Portion between A and B has been modified in the units with the Serial No. NB 49071 or over.

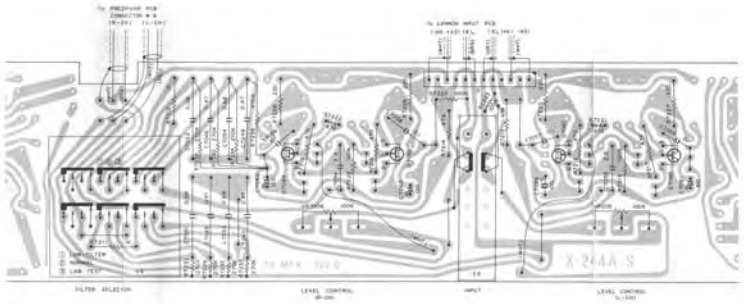
B

Peak Indicator Circuit Board Diagram

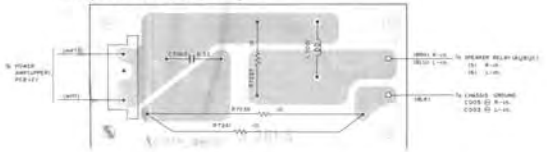


Note:
The following PC board assemblies used in the units with Serial No. up to NB 49070 differ partially from the PC board diagrams in this manual.
1. Part of Cannon Input Circuit
2. Part of Control Circuit
3. Predriver Circuit

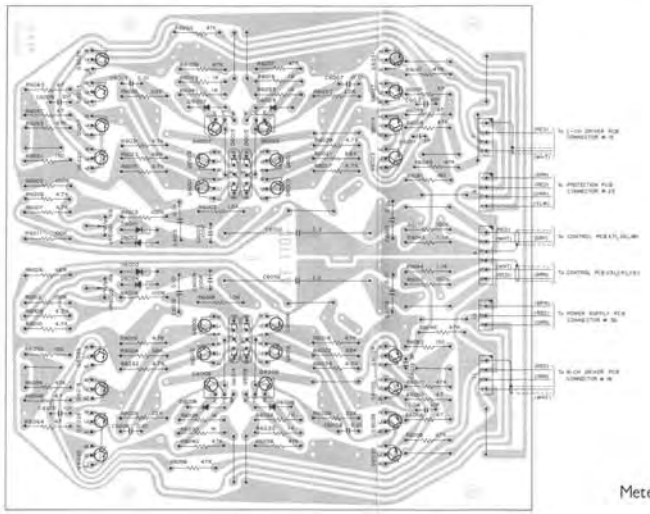
The actual electrical circuits of these PC boards, however, have not been changed. Therefore, to replace the above PC board assemblies, those utilized in the units with Serial No. NB 49071 or over can be attached.



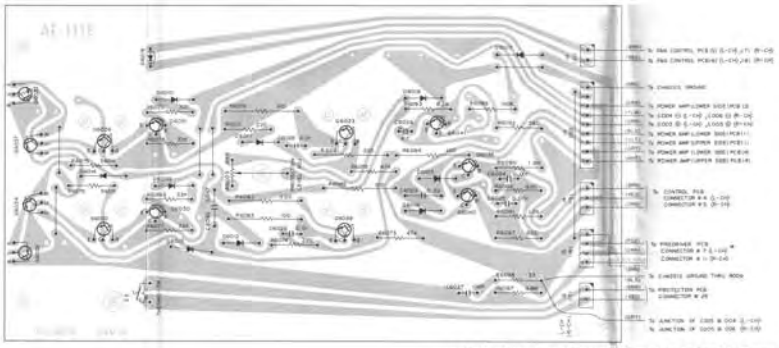
Output Circuit Board Diagram



Predriver Circuit Board Diagram

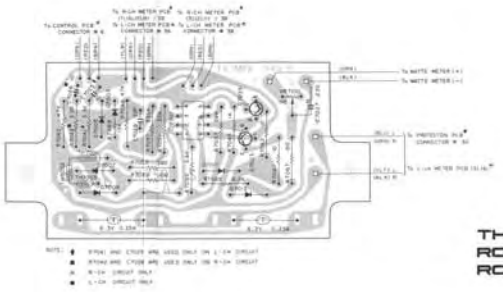


Driver Circuit Board Diagram

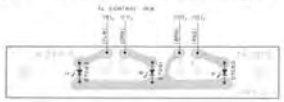


* For L-ch, ORN from No. 15 connector is connected to the Protection PC board.

Meter Amp Circuit Board Diagram



Speaker Indicators Circuit Board Diagram



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ROTEL OF AMERICA, INC.

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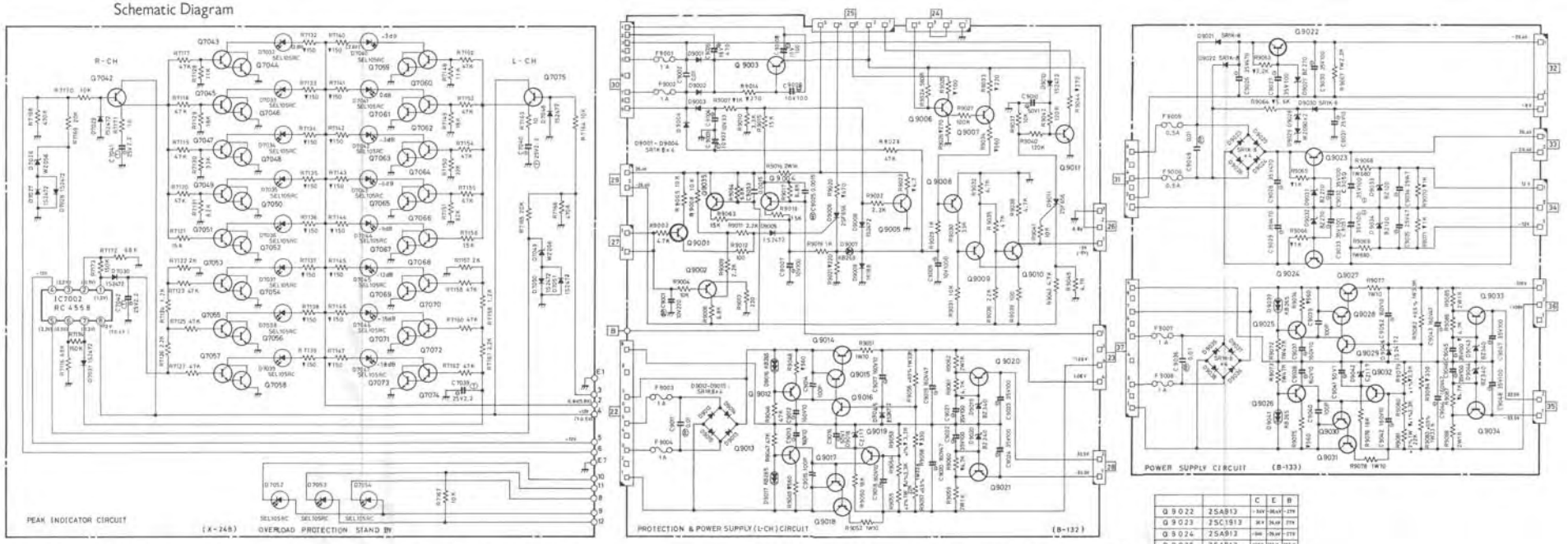
Schematic Diagram



		C	E	B
Q 7042	2SC1222			
Q 7043	"			
Q 7044	"			
Q 7045	"			
Q 7046	"			
Q 7047	"			
Q 7048	"			
Q 7049	"			

		C	E	B
Q 7050	2SC1222			
Q 7051	"			
Q 7052	"			
Q 7053	"			
Q 7054	"			
Q 7055	"			
Q 7056	"			
Q 7057	"			
Q 7058	"			

		C	E	B
Q 7059	2SC1222			
Q 7060	"			
Q 7061	"			
Q 7062	"			
Q 7063	"			
Q 7064	"			
Q 7065	"			
Q 7066	"			
Q 7067	"			

		C	E	B
Q 7068	2SC1222			
Q 7069	"			
Q 7070	"			
Q 7071	"			
Q 7072	"			
Q 7073	"			
Q 7074	"			
Q 7075	"			

		C	E	B
Q 9001	2SC1327			
Q 9002	2SA921			
Q 9003	2SD389A			
Q 9004	2SA921			
Q 9005	2SC1327			
Q 9006	"			
Q 9007	"			

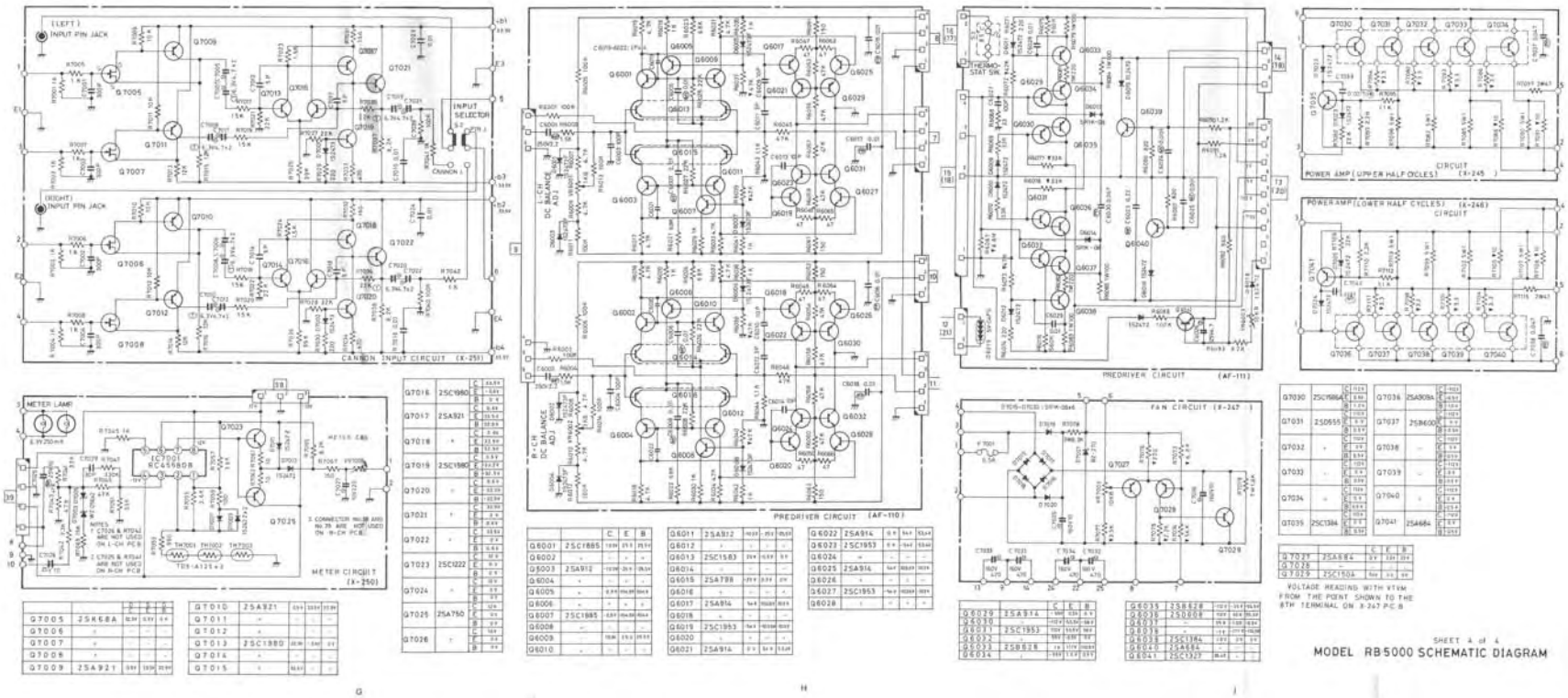
		C	E	B
Q 9008	2SA921			
Q 9009	2SC1327			
Q 9010	"			
Q 9011	"			
Q 9012	2SA932			
Q 9013	2SC1980			
Q 9014	2SC2168			
Q 9015	2SC1685			

		C	E	B
Q 9016	2SC1885			
Q 9017	2SA812			
Q 9018	2SA858			
Q 9019	2SA912			
Q 9020	2SC2167			
Q 9021	2SA957			

		C	E	B
Q 9022	2SA813			
Q 9023	2SC1913			
Q 9024	2SA913			
Q 9025	2SA812			
Q 9026	2SC1980			
Q 9027	2SC2168			
Q 9028	2SC1885			
Q 9029	"			
Q 9030	2SA912			
Q 9031	2SA958			
Q 9032	2SA912			
Q 9033	2SC2167			
Q 9034	2SA957			
Q 9035	2SA921			

— SHEET 3 of 4 —

MODEL RB-5000 SCHEMATIC DIAGRAM



		C	E	B
Q 7005	2SK68A			
Q 7006	"			
Q 7007	"			
Q 7008	"			
Q 7009	2SA921			

		C	E	B
Q 7010	2SA921			
Q 7011	"			
Q 7012	"			
Q 7013	2SC1980			
Q 7014	"			
Q 7015	"			

		C	E	B
Q 7016	2SC1980			
Q 7017	2SA921			
Q 7018	"			
Q 7019	2SC1980			
Q 7020	"			
Q 7021	"			
Q 7022	"			
Q 7023	2SC1222			
Q 7024	"			
Q 7025	2SA750			
Q 7026	"			

		C	E	B
G 6001	2SC1885			
G 6002	"			
G 6003	2SA912			
G 6004	"			
G 6005	"			
G 6006	"			
G 6007	2SC1885			
G 6008	"			
G 6009	"			
G 6010	"			

		C	E	B
G 6011	2SA912			
G 6012	"			
G 6013	2SC1583			
G 6014	"			
G 6015	2SA798			
G 6016	"			
G 6017	2SA814			
G 6018	"			
G 6019	2SC1953			
G 6020	"			
G 6021	2SA914			

		C	E	B
G 6022	2SA914			
G 6023	2SC1953			
G 6024	"			
G 6025	2SA914			
G 6026	"			
G 6027	2SC1953			
G 6028	"			

		C	E	B
G 6029	2SA914			
G 6030	"			
G 6031	2SC1953			
G 6032	"			
G 6033	2SB828			
G 6034	"			

		C	E	B
G 6035	2SB828			
G 6036	2SD608			
G 6037	"			
G 6038	"			
G 6039	2SC1384			
G 6040	2SA684			
G 6041	2SC1923			

		C	E	B
Q 7030	2SC1984			
Q 7031	2SD555			
Q 7032	"			
Q 7033	"			
Q 7034	"			
Q 7035	2SC1384			

		C	E	B
Q 7036	2SA1084			
Q 7037	2SB600			
Q 7038	"			
Q 7039	"			
Q 7040	"			
Q 7041	2SA684			

		C	E	B
Q 7027	2SA684			
Q 7028	"			
Q 7029	2SC1504			

VOLTAGE READING WITH VTVM FROM THE POINT SHOWN TO THE 8TH TERMINAL ON X-247 P.C.B.

— SHEET 4 of 4 —

MODEL RB-5000 SCHEMATIC DIAGRAM