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# ELECTRONICS SERVICE MANUAL

## A-03 Amplifier

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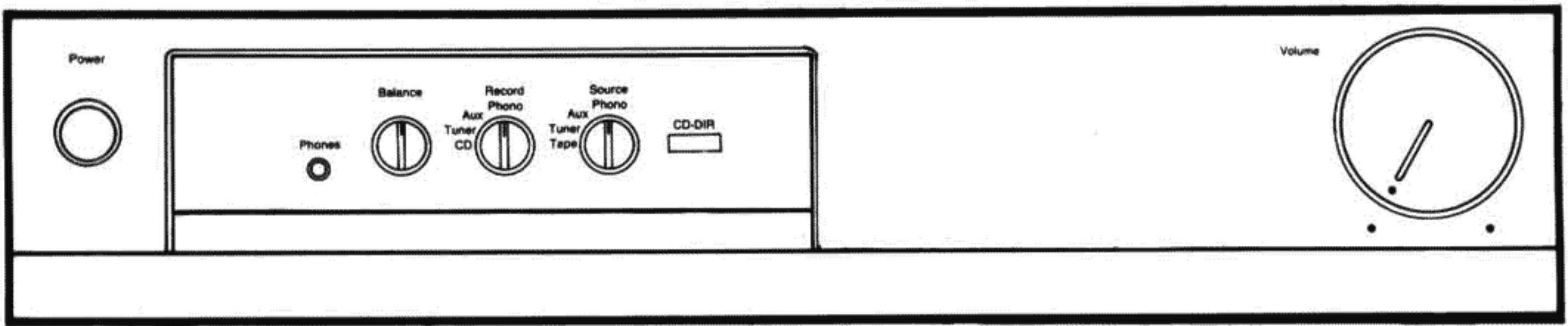
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**AR**  
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## Specification

Rated Continuous Power Output 20Hz-20kHz  
 8 ohms.....30W  
 4 ohms.....40W  
 Maximum Continuous Power Output:  
 8 ohms.....35W  
 4 ohms.....45W  
 IHF Dynamic Power Output:  
 8 ohms.....50W  
 4 ohms.....70W  
 Maximum Output Current:.....12A  
 THD 20Hz-20kHz rated power:  
 8 ohms.....0.07%  
 IMD rated power:  
 8 ohms.....0.05%  
 Damping factory:  
 1kHz.....120  
 Input sensitivities for rated output 8 ohms 1kHz:  
 CD, Tuner, Aux, Tape .....150mV  
 Phono MM.....2.5mV  
 Input Impedance:  
 CD, Tuner, Aux, Tape (minimum).....10k ohms  
 Phono MM .....47k ohms/100pf  
 Signal-to-noise ratio IHF A  
 Weighted, (referred input)  
 CD, Aux, Tape .....96dB

Signal-to-noise ratio A weighted:  
 Phono MM (ref 5mV).....80dB  
 Frequency response 15Hz-20kHz.....0 to - 0.3dB  
 Phono RIAA error 20Hz-20kHz.....- 0.3dB  
 Maximum input 1kHz:  
 CD, Tuner, Aux, Tape.....> 30V  
 Phono MM.....160mV  
 Crosstalk between sources  
 CD, Tuner, Aux, Tape.....75dB  
 Separation 1kHz:  
 Tuner, Aux, Tape.....75dB  
 CD.....85dB  
 Power Requirement.....120V/60Hz, 220, 240V/  
 50Hz or 120, 220, 240V/  
 50-60Hz (depending on  
 destination  
 Power Consumption.....150W  
 Dimensions (overall).....430W x 93H x 354D  
 16<sup>15/16</sup>" x 3<sup>13/16</sup>" x 13<sup>15/16</sup>"  
 Weight (net).....6.6 kg/14.52 lbs

• Specifications and design subject to possible modification without notice.

## Bias Adjustment

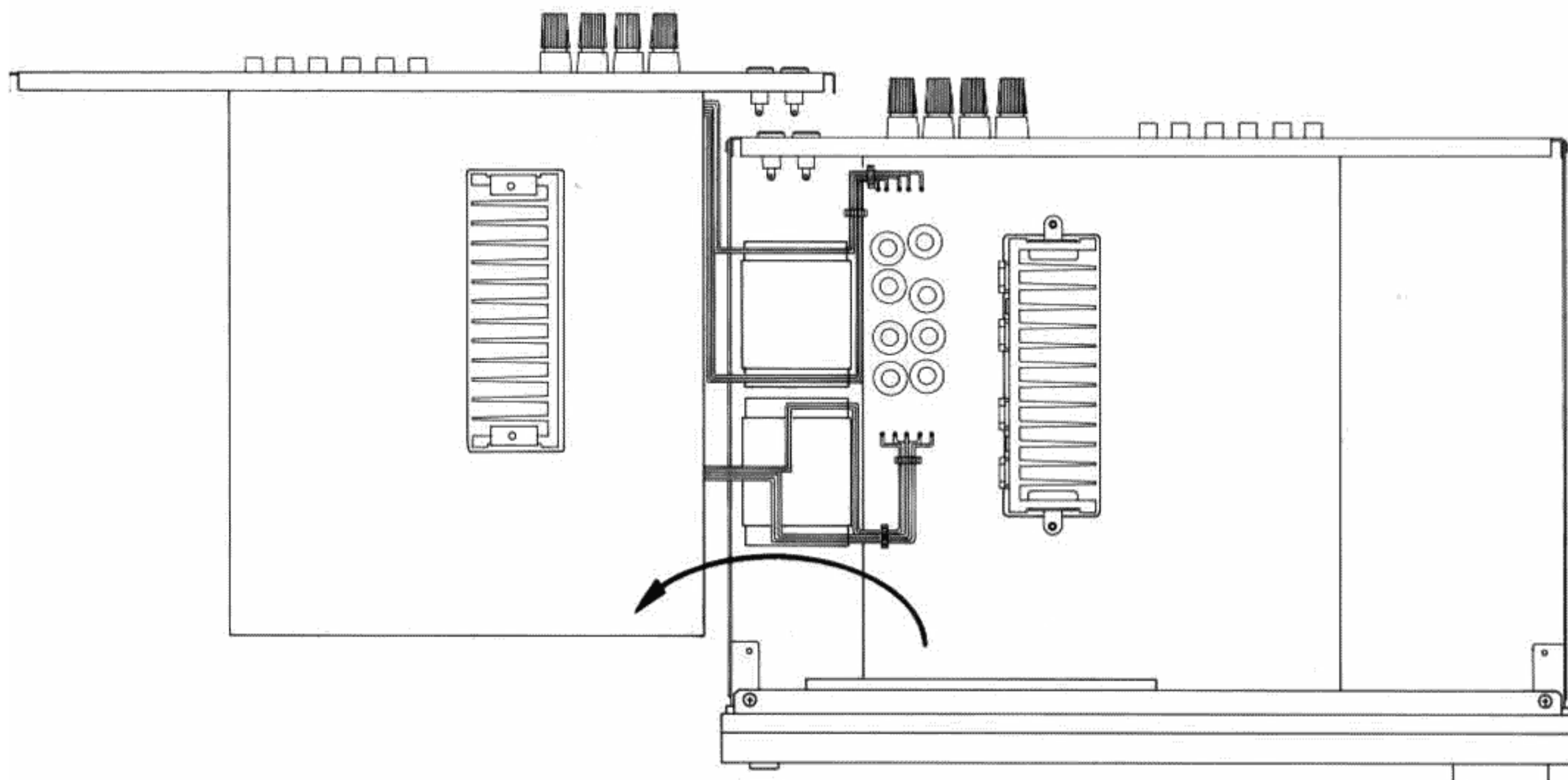
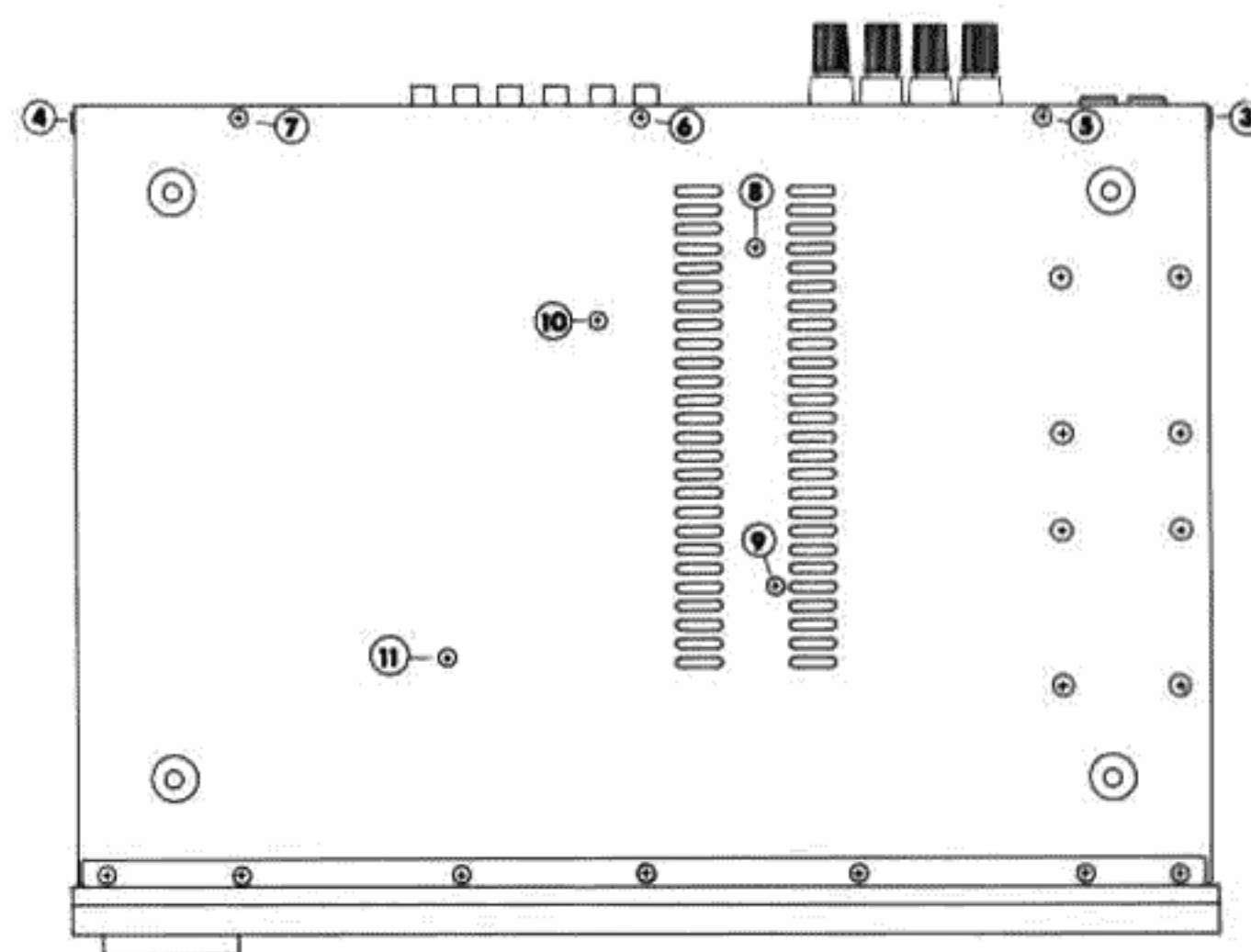
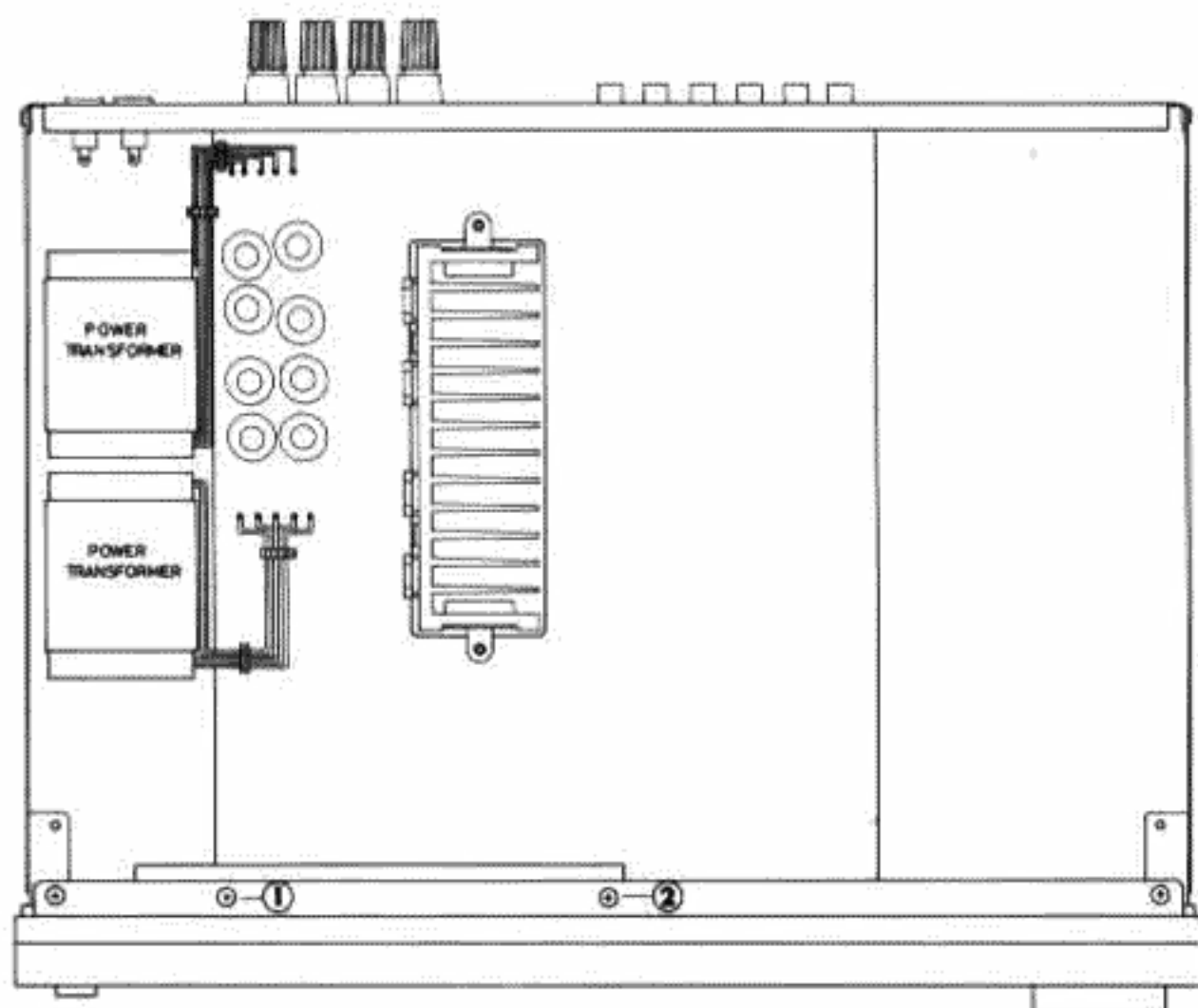
**Instruments:** DC milli-voltmeter

**Notes:** Prior to Bias Adjustment, run about 5 minutes with rated output (8 ohm) and warm up Power Transistor and Heat Sink.  
 Set Volume Control to Minimum.

Step	Coupling		Adjust	Adjust for
	Plus Lead	Minus Lead		
1	TP1	TP3	VR601	DC milli-voltmeter reads 4 mV
2	TP2	TP4	VR602	

## HINTS FOR REMOVING THE PC BOARD

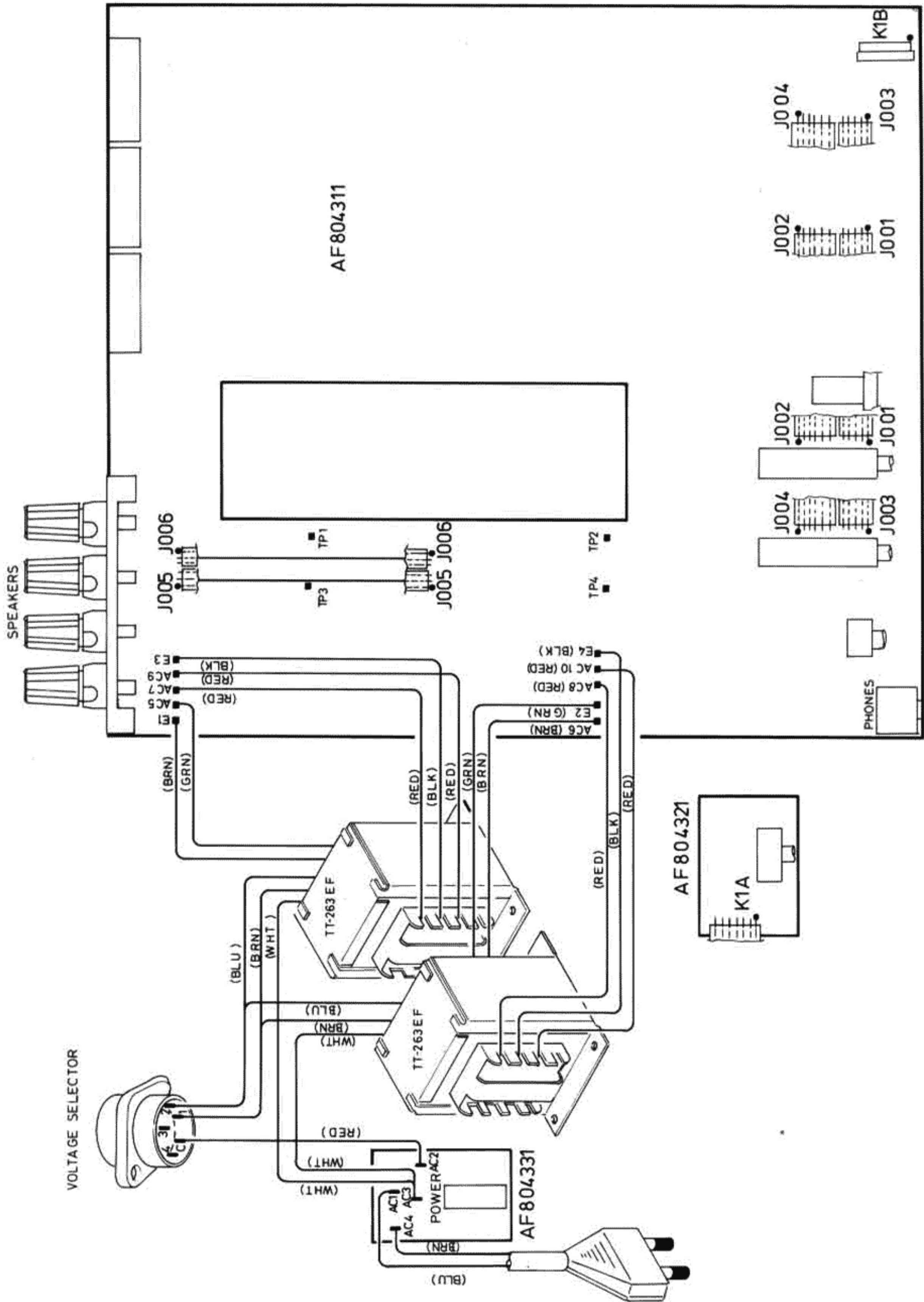
1. To remove the main PC board, first remove screws ① and ②.
2. Then turn the unit upside down, remove screws from ③ to ⑪.
3. Pull the back plate and the PC board assembly toward the back, then lift and flip the PC board to the Transformer side would allow one to reach the soldering side of the PC board.  
(Note: When removing the PC board, do not separate the Heatsink from PC board).





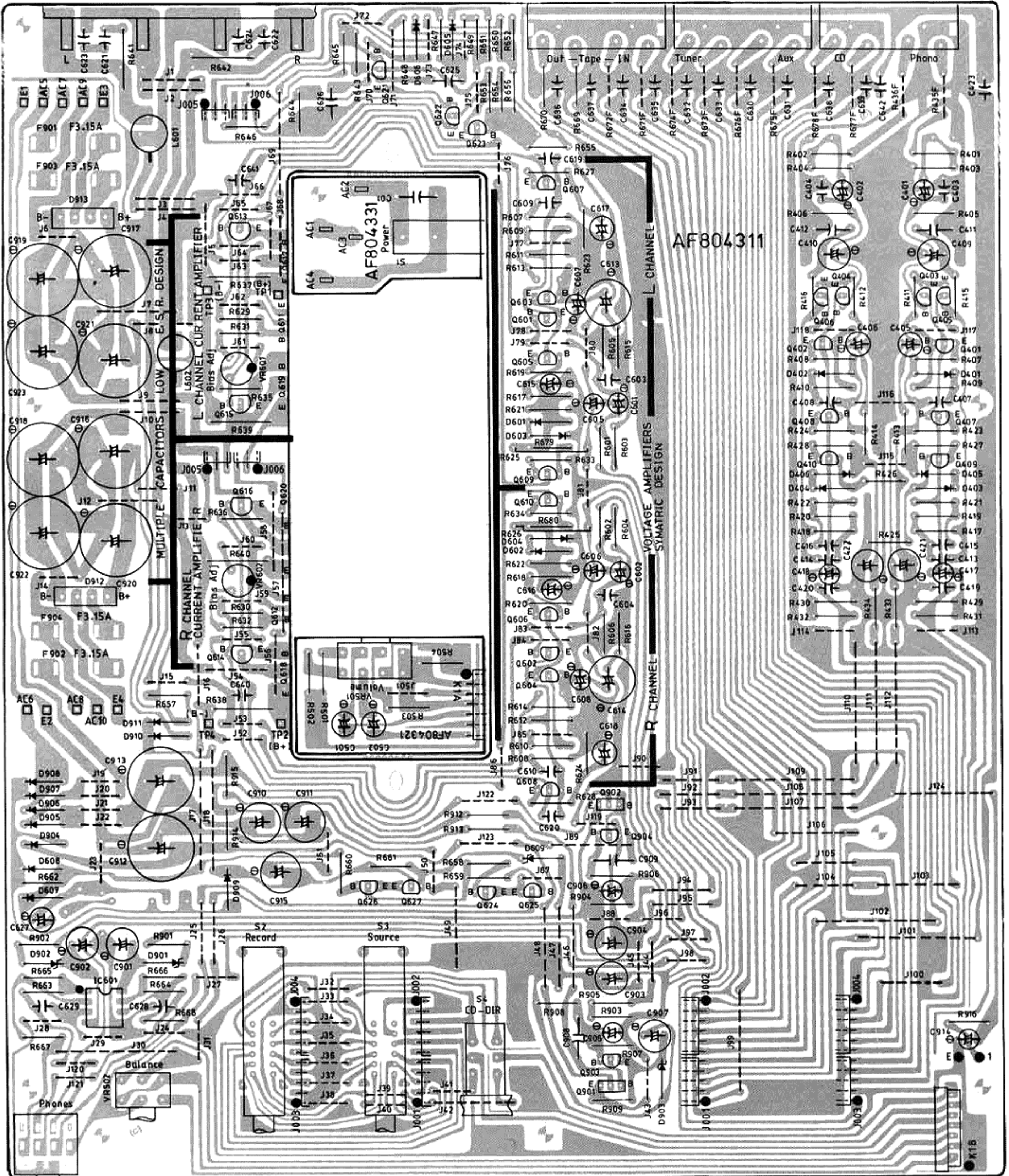


# Wiring Diagram



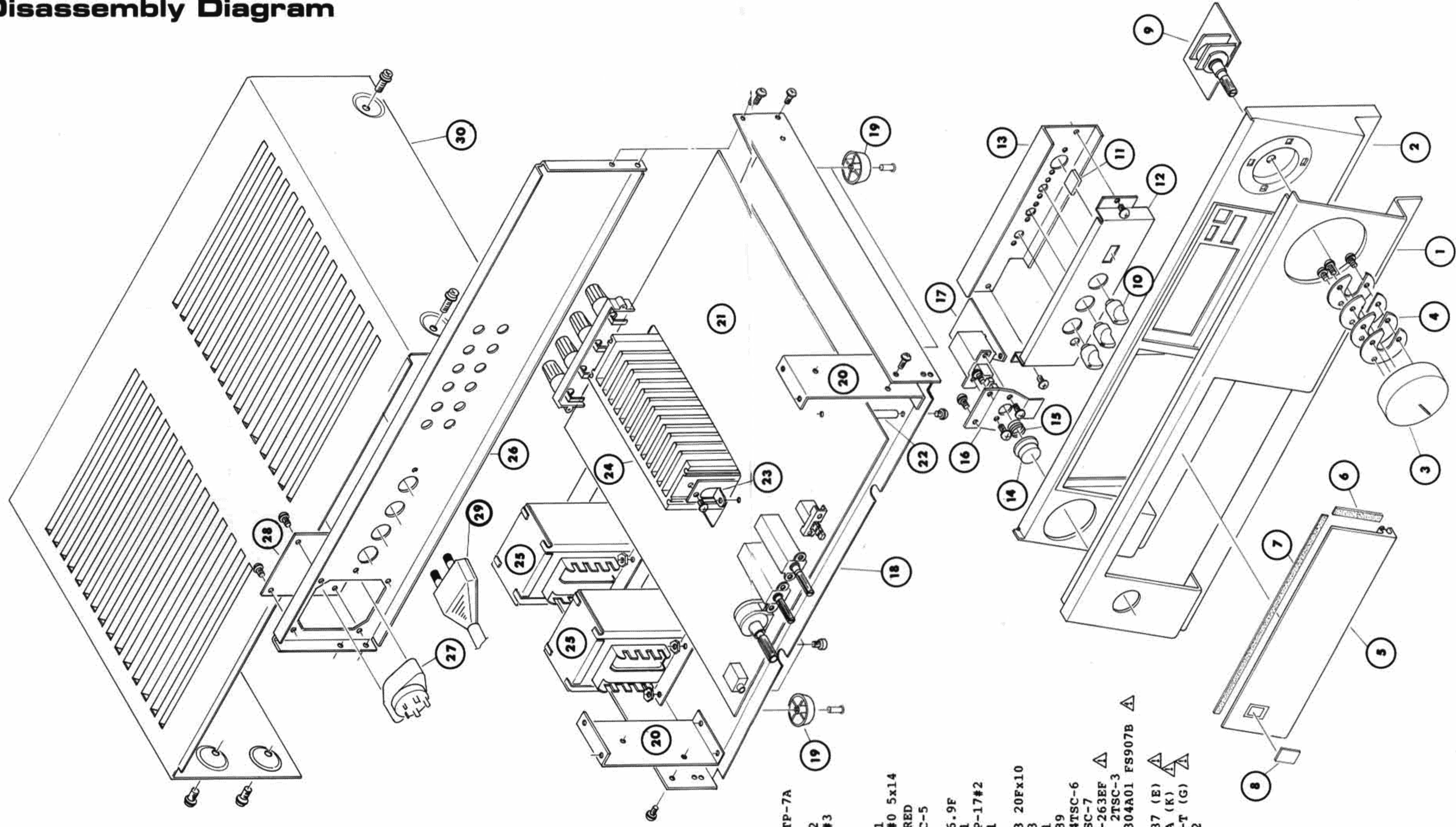


# PRINTED CIRCUIT BOARDS





# Disassembly Diagram



SYMBOL	PART NO.	DESCRIPTION
1	AA80001254	FRONT PANEL 2TSC-1A
2	AA80001102	PLAS. FRONT PANEL 2TTP-7A
3	KB10001620	KNOB 4TTX-14 50F
4	SR00000985	KNOB SPACER 4TQU-65#2
5	OM10000759	ALUMINUM DOOR 4TTX-8#3
6	SG00000742	SPONGE 4TSC-8
7	SG00000717	DOOR SPONGE 4TTX-21
8	OM00002224	AR BADGE C-4347A01
9	-----	P.C.B. ASS'Y AF804321
10	KB20002140	PUSH BUTTON 4TR-1515#0 5x14
11	KB10000961	KNOB C-3187#2-T 13F RED
12	OM10000747	ORNAMENTAL PLATE 4TSC-5
13	AF80000408	FRONT CHASSIS 4TSC-2
14	KB20001652	PUSH BUTTON 4TUQ-4 16.9F
15	SN00000271	BUTTON SPRING 4TTP-21
16	SP10005656	POWER SW SUPPORT 4TTP-17#2
17	-----	P.C.B. ASS'Y AF804331
18	AM00001665	CHASSIS BODY 2TSC-4A
19	FT00000175	PLASTIC FOOT 4TR-2593 20F x10
20	SP10005528	PANEL SUPPORT 4TTY-13
21	-----	P.C.B. ASS'Y AF804311
22	BC00000192	CYLINDER BUSH 4TR-1989
23	SP10005772	HEAT SINKER SUPPORT 4TSC-6
24	AH20000631	HEAT SINKER BOARD 4TSC-7
25	PT26305101	POWER TRANSFORMER TT-263EF
26	AR80000958	PRINTED REAR CHASSIS 2TSC-3
27	VC00000048	VOLTAGE SELECTOR C-4304A01 FS907B
28	SP10005309	V.S MASK 4TTP-24
29	CD00000048	AC POWER CORD 4TR-1037 (E)
	CD00000085	AC POWER CORD C-2504A (K)
	CD00000115	AC POWER CORD C-3763-T (G)
30	AU000000889	UPPER COVER 2TTP-6A#2



# Parts List

NOTE: THE COMPONENTS INDENTIFIED BY  $\Delta$  MARK ARE FOR SAFETY. REPLACE ONLY WITH ORIGINAL PARTS. DO NOT SUBSTITUTE.

SYMBOL	PARTS NO.	DESCRIPTION
AF804311 PCB ASSEMBLY		
R401,402	RM52212811	R,METAL 22.1 F 1/4W
R403,404	RM59092811	R,METAL 90.9K F 1/4W
R405,406	RM51003813	R,METAL 100K F 1/4W
R407-410	RM52210814	R,METAL 221 F 1/4W
R411,412	RM52212811	R,METAL 22.1K F 1/4W
R413,414	RD53301822	R,CARBON 3.3K J 1/4W
R415,416	RM52210814	R,METAL 221 F 1/4W
R417,418	RM51002810	R,METAL 10K F 1/4W
R419,420	RM51213819	R,METAL 121K F 1/4W
R421,422	RM21820810	R,METAL 182 F 1/4W
R423,424	RD52200827	R,CARBON 220 J 1/4W
R425,426	RD52202824	R,CARBON 22K J 1/4W
R427,428	RD28209826	R,CARBON 82 J 1/4W
R429,430	RD51003820	R,CARBON 100K J 1/4W
R431,432	RD53300829	R,CARBON 330 J 1/4W
C401,402	CT04707840	CAP,TANTALUM 4.7uF 10V
C403,404	CS42211420	CAP,STYROL 220P 50V
C405,406	CE01006500	CAP,ELEC 10uF 50V
C407,408	CM02210428	CAP,MYLAR 222 J 50V
C409,410	CE02205103	CAP,ELEC 220uF 10V
C411,412	CP11008330	CAP,M.P. 0.1uF 100V
C413,414	CM08210426	CAP,MYLAR 822 J 50V
C415,416	CM02709423	CAP,MYLAR 273 J 50V
C417,418	CE01006251	CAP,ELEC 10uF 25V
C419,420	CS43310428	CAP,STYROL 3300P 50V
C421,422	CE04706351	CAP,ELEC 47uF 35V
C423	CC05009457	CAP,CERAMIC 0.047 50V
D401-406	DD80000021	DIODE 1N4148-86
Q401,402	TR10000126	TRANSISTOR 2SA608K
Q403-406	TR30000467	TRANSISTOR 2SC2602G
Q407,408	TR10000126	TRANSISTOR 2SA608K
Q409,410	TR30000327	TRANSISTOR 2SC536
VR502	RV10001231	R,VARIABLE 4TR-2537 100KMN
R601,602	RD51000820	R,CARBON 100 J 1/4W
R603,604	RD52203828	R,CARBON 220K J 1/4W
R605,606	RD54702824	R,CARBON 47K J 1/4W
R607,608	RD51500827	R,CARBON 150 J 1/4W
R609-612	RD51801827	R,CARBON 1.8K J 1/4W
R613,614	RM25112813	R,METAL 51.1K F 1/4W
R615,616	RM54750812	R,METAL 475 F 1/4W
R617,618	RD51001823	R,CARBON 1K J 1/4W
R619,620	RD53300829	R,CARBON 330 J 1/4W
R621,622	RD51002827	R,CARBON 10K J 1/4W
R623,624	RM21500815	R,METAL 150 F 1/4W
R625,626	RM15601128	R,METAL 5.6K J 1W
R627,628	RD52209820	R,CARBON 22 J 1/4W
R629,630	RD58201829	R,CARBON 8.2K J 1/4W
R631,632	RD53301822	R,CARBON 3.3K J 1/4W
R633,634	RM28259811	R,METAL 82.5 F 1/4W
R635,636	RM91000926	R,METAL 100 J 1/2W
R637-640	RM10228226	R,METAL 0.22 2W
R641,642	RM11009120	R,METAL 10 J 1W
R643,644	RD51001823	R,CARBON 1K J 1/4W
R645,646	RD53901825	R,CARBON 3.9K J 1/4W
R647,648	RD53903822	R,CARBON 390K J 1/4W
R649,650	RD54702824	R,CARBON 47K J 1/4W
R651,652	RD51501820	R,CARBON 1.5K J 1/4W
R653,654	RD51002827	R,CARBON 10K J 1/4W
R655	RD53301822	R,CARBON 3.3K J 1/4W
R656	RD54703828	R,CARBON 470K J 1/4W
R657	RD51501820	R,CARBON 1.5K J 1/4W
R658,659	RD51002827	R,CARBON 10K J 1/4W
R660	RD51003820	R,CARBON 100K J 1/4W
R661	RD51002827	R,CARBON 10K J 1/4W
R662	RD21004822	R,CARBON 1M J 1/4W
R663,664	RD21500825	R,CARBON 150 J 1/4W
R665,666	RD26803824	R,CARBON 680K J 1/4W
R667,668	RD26802820	R,CARBON 68K J 1/4W

SYMBOL	PARTS NO.	DESCRIPTION
R669,670	RM51001816	R,METAL 1K F 1/4W
C601,602	CE04706259	CAP,ELEC 47uF 25V
C603,604	CS41011422	CAP,STYROL 100P 50V
C605-608	CE01007504	CAP,ELEC 1uF 50V
C609,610	CC33310466	CAP,CERAMIC 0.0033uF 50V
C613,614	CE01004163	CAP,ELEC 1000uF 16V
C615,616	CE01006251	CAP,ELEC 10uF 25V
C617,618	CE01005106	CAP,ELEC 100uF 10V
C619,620	CC32212436	CAP,CERAMIC 22P 50V
C621-624	CM01008423	CAP,MYLAR 104 J 50V
C625	CM02208422	CAP,MYLAR 224 J 50V
C627	CE01006500	CAP,ELEC 10uF 50V
C628,629	CM01009427	CAP,MYLAR 103 J 50V
C630-639	CC33311434	CAP,CERAMIC 330P 50V
C640,641	CC31011435	CAP,CERAMIC 100P 50V
C642	CC05009457	CAP,CERAMIC 0.047 50V
C643	CC31009465	CAP,CERAMIC 0.01 50V
D601-608	DD80000021	DIODE 1N4148
D609	DD20000090	DIODE RD-15E
Q601-606	TR30000327	TRANSISTOR 2SC536
Q607,608	TR10000023	TRANSISTOR 2SA1016
Q609,610	TR30000212	TRANSISTOR 2SC2362
Q611,612	TR40000069	TRANSISTOR 2SD600K
Q613,614	TR30000080	TRANSISTOR 2SD863
Q615,616	TR10000059	TRANSISTOR 2SB764
Q617,618	TR40000045	TRANSISTOR 2SD1047 $\Delta$
Q619,620	TR20000040	TRANSISTOR 2SB817 $\Delta$
Q621,622	TR10000126	TRANSISTOR 2SA608K
Q623-625	TR30000327	TRANSISTOR 2SC536
Q626	TR10000126	TRANSISTOR 2SA608K
Q627	TR30000327	TRANSISTOR 2SC536
IC601	IC00001474	IC NJM4556D
L601,602	LC03550007	ANTI-PARASITIC TRL-355
VR601,602	RV40000022	R,SEMI-FIXED 2.2K
R901,902	RD23900820	R,CARBON 390 J 1/4W
R903,904	RD51502824	R,CARBON 15K J 1/4W
R905,906	RD51001823	R,CARBON 1K J 1/4W
R907	RD52702821	R,CARBON 27K J 1/4W
R908	RD56801829	R,CARBON 6.8K J 1/4W
R909	RD55601821	R,CARBON 5.6K J 1/4W
R912,913	RD51001823	R,CARBON 1K J 1/4W
R914,915	RD52201820	R,CARBON 2.2K J 1/4W
R916	RD55601821	R,CARBON 5.6K J 1/4W
C901-904	CE04706351	CAP,ELEC 47uF 35V
C905,906	CE01007504	CAP,ELEC 1uF 50V
C907	CE02205164	CAP,ELEC 220uF 16V
C908,909	CC01008458	CAP,CERAMIC 0.1uF 50V
C910,911	CE02205358	CAP,ELEC 220uF 35V
C912,913	CE01004503	CAP,ELEC 1000uF 50V $\Delta$
C915	CE02205358	CAP,ELEC 220uF 35V
C916-923	CE02204354	CAP,ELEC 2200uF 35V $\Delta$
D901,902	DD20000090	DIODE RD-15E
D903	DD20000181	DIODE RD-6.2E
D904-911	DD80000010	DIODE 1N4003
D912,913	DD10000019	DIODE KBPC02 $\Delta$
Q901	TR40000069	TRANSISTOR 2SD600K
Q902	TR10000047	TRANSISTOR 2SB631
Q903	TR30000327	TRANSISTOR 2SC536
Q904	TR10000126	TRANSISTOR 2SA608K
F901-904	FU23000049	FUSE 250V 4A S $\Delta$
S2,S3	SH30000390	FUNCTION SW 4TR-2398
S4	SH11000306	1 KEY PUSH SUL 4TR-2601
AF804321 PCB ASSEMBLU		
R501,502	RD22203826	R,CARBON 220K J 1/4W
C503,504	CE04706259	CAP,ELEC 47uF 25V
VR501	RV10001383	R,VARIABLE 4TR-2650 20Kx2

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AF804331 PCB ASSEMBLY

S1 SH40000155 POWER SW C-4176A01  $\Delta$   
 C01 CK00000035 SPARK KILLER DE7150F472M  $\Delta$