SERVICE MANUAL

REFERENCE POWER

AMPLIFIER

REF-2300

interM by INKEL

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Specifications

Rated Output Power/Max Output Power	
at 8ohm, 1KHz (Bridged Mono)	500W/515W
at 8ohm, 1KHz (Stereo for CH)	165W/ 175W
at 4ohm, 1KHz	250W/260W
Frequency Response ($\pm$0.5dB)	20Hz to 50KHz
Total Harmonic Distortion	Less than 0.03%
Input Sensitivity	0.775V (0dBm)
Input Impedance	10Kohms (balanced)
Damping Factor	Greater than 100
Power Consumption	860W
Weight	13.6 kg
Dimensions	482(W) $\times$ 132(H) $\times$ 280(D) mm

NOTE: Specifications and design subject to change without notice for improvement.

The current or wattage consumption of this appliance is to be determined when the amplifier is delivering RATED output power.

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Electrical Parts List

Ref No.	Part No.	Description	Q'ty
AMP B'D (4003193900)			
RLY101, 201	5528009992	RELAY HR702H DC24V	2
L101, 201	2648099940	COIL INDUCTOR 1.2μH	2
	7505299340	HEAT SINK EQ131	8
Q107, 207	2008005999	TR PNP 2SA1546 NEC	2
Q109, 208	2008405999	TR NPN 2SC4001 NEC	2
Q115, 212	2028107984	TR PNP 2SA1659	2
Q114, 213	2028407999	TR NPN 2SC4370	4
D112, 113, 212, D213	2058100110	DIODE DS2010	4
IC101	2118050410	IC TA7317 TOSHIBA	1
IC305	2[illegible]3610800	IC KA7915	1
IC301	2128610900	IC KA7815	1
PO101, 201	2438007994	POSISTOR PTH 59F04 BE471TS	2
PO103, 104	2438009992	POSISTOR P42 T70 330 B04 200MM	2
R150, 250	3039479572-F	RES MO 4.7 2W JN	2
R144	3049478783	RES CE 0.47 5W JT	1
R145, 146, 147, R148, 149, 244, R245, 246, 247, R248, 249	3059478774	RES CE 0.47 5WR	11
R151, 251	3059100772	RES CE 10 5W JN	2
VR101, 201	3248347120	RES SEMI CS 470B	2
C317, 318	3409247161	CAP AF PSA 470μF 35V	2
C316, 314	3419510300	CAP HM 10000μF 80V	2
C102, 202	3678050177	CAP MI DM I C050D5	2
C108, 208	3678220177	CAP MI DM 5C 220J5	2
C109, 209	3688471118	CAP MO SR 22C 471JA	2
C105, 205	3698152198	CAP MPP POLY 152J 2J	2
GND101, 102	4235007210	GND TERMINAL	2
CN101, 201	4428595002	5267-02A/2.5mm/MH5264	2
CN301, 103, 105, CN203	4428595003	5267-03A/2.5mm/MH5264	4
CN102	4428595008	5267-08A/2.5mm/MH5264	1
	4355833403	CON ASS'Y IP YL	2
	4355833603	CON ASS'Y IP RED	1
	4355833503	CON ASS'Y IP BLK	1
CN104, 202	4355923803	JST 3.96 3P	2
CN302	4255923603	JST 3.96 5P	1
D103, 104, 105, D106, 107, 101, D102, 201, 202, D203, 204, 205, D206, 207, 208, D209, 108, 109		DIODE IN 4148	18
D301, 302, 303, D304, 305, 306, D307, 308, 114	2058100996	DIODE IN 4006	9
D110, 111, 210, D211	2058322100	DIODE ISS 142 ROHM	4
R113, 213	3009100973	RES CF 10 1/5W JN	2
R207, 107	3009221973	RES CF 220 1/5W JN	2
R201, 101	3009271973	RES CF 270 1/5W JN	2
R217, 117	3009471973	RES CF 470 1/5W JN	2
R108, 001, 104, R208, 002, 204	3009561973	RES CF 560 1/5W JN	6
R106, 103, 203, R211	3009102973	RES CF 1K 1/5W JN	4
R116, 216	3009182973	RES CF 1.8K 1/5W JN	2

Ref No.	Part No.	Description	Q'ty
R165, 161	3009822973	RES CF 8.2K 1/5W JN	2
R164	3009682973	RES CF 6.8K 1/5W JN	1
R105, 205	3009123973	RES CF 12K 1/5W JN	2
R152, 153, 252, R166, 167	3009223973	RES CF 22K 1/5W JN	6
R163, 102, 202, R155, 156, 158, R159	3009473973	RES CF 47K 1/5W JN	7
R162	3009104973	RES CF 100K 1/5W JN	1
R110, 111, 112, R206, 224, 225, R254, 157, 124, R125, 210	3009683973	RES CF 68K 1/5W JN	12
R154, 160	3009333973	RES CF 33K 1/5W JN	2
R152, 190	3009224973	RES CF 220K 1/5W JN	2
R119, 118, 218, R219	3002220953	RES CF 22K 1/5W FN(1%)	4
R132, 133, 134, R135, 136, 137, R232, 233, 234, R235, 235, 237	3089479275	RES NFR 4.7 1/4W JR	12
R138, 139, 140, R141, 142, 143, R238, 239, 240, R241, 242, 243	3079101275	RES ERD-2FCVG 101T 1/4W R	12
R122, 123, 126, R127, 128, 129, R222, 223, 226, R227, 228, 229	3089221275	RES NFR 220 1/4W JR	12
R130, 131, 230, R231	3089332275	RES NFR 3.3K 1/4W JR	4
R120, 121, 220, R221	3089100275	RES NFR 10K 1/4W JR	4
R114, 115, 214, R215	3089820275	RES NFR 82 1/4W JR	4
C311, 312, 317, C318	3509104530-T	CAP CE 104 100V	4
C301, 302, 303, C304	3509103450-T	CAP CE 103 100V	4
Q110, 210, 205, Q204, 105, 106, 25	2008606108-T	TR 2SC 3200	7
Q104, 111, 206, Q211	2008206104-T	TR 2SC 1268	4
Q102, 103, 202, Q203	2008206106-T	TR 2SA 2400G	4
C316	3619473153	CAP POLY 0.47μF 250V	1
C305, 306	3409222171-T	CAP AF 220μF 50V J	2
F101, 102	4458999110	FUSE HOLDER 5×20	4
C101, 201	3409547031	LAD AF 47μF 16V (MUSE)	2
C112, 113, 212, C213, 103, 104, C203, 204	3609104122-T	CAP MA 0.1μF 100V J	8
C110, 111, 210, C211	3609222120-T	CAP MA 0.0022μF 100V J	4
C114, 106, 107, C206, 207	3409210141-T	CAP AF RSG 100μF 25V	5
C309, 310	3409222071-T	CAP AF RSG 22μF 50V	2
C115, 116	3409247121-T	CAP AF RSG 470μF 10V	2

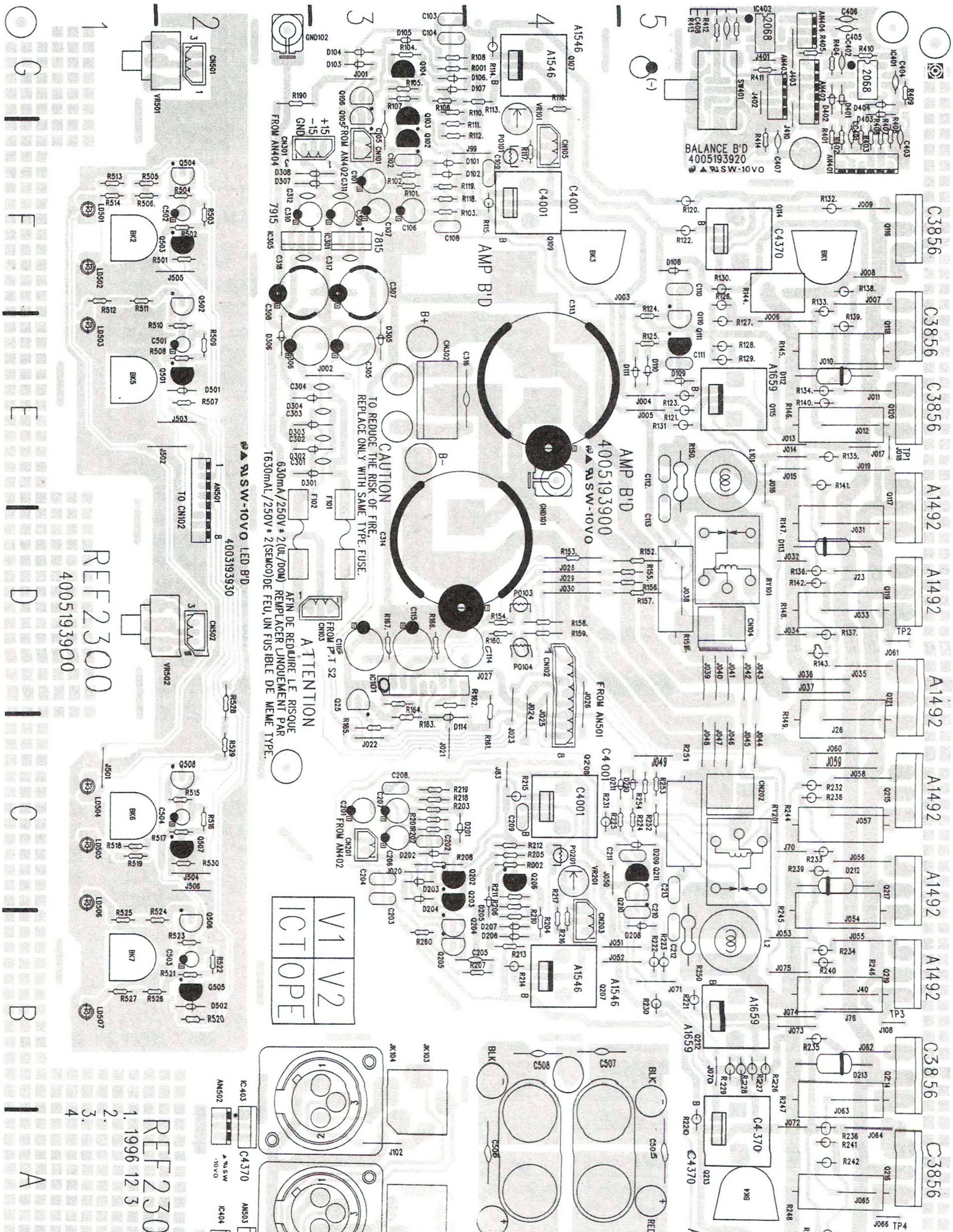
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Ref No.	Part No.	Description	Q'ty
ASS'Y PARTS			
	4355825915	RECEPT CON ASS'Y (472)	1
	4355825816	FUSE CON ASS'Y	2
	4625996610	SW POWER (C1550AT)	1
	2028070600	POWER TRANS 120V	1
	2028070610	POWER TRANS 220V	1
	2028070620	POWER TRANS 230V	1
	2028070630	POWER TRANS 240V	1
	5508411933	FUSE 51T 630mA/250V UL/CSA	1
	5508411934	FUSE 5T 630mAL/250V S/VDE	1
	5508111930	FUSE 51T 630mA/250V KS	1
	2058100103	DIODE KBPC-25-04LUG	1
	4438191710	DC TERMINAL KS, UL/CSA	2
	4438191720	DC TERMINAL SEMCO	2
	4448997410	AC INLET	1
LED B'D (4003193930)			
VR501, 502	3228086110	VR RK1631160 5A2 (RMG 58)	2
Q504, 502, 506, Q508	2008106104-T	TR 2SC3198	4
Q505, 507, 501, Q503	2008206104-T	TR 2SA1268	4
D501, 502	2058304100	DIODE IN4148	2
C501, 502, 503, C504	3409222871-T	CAP AF RSG 0.22μF 50V	4
LD503, 506	2308237262-T	LED RED SLR 34MG25	2
LD501, 502, 504, LD505, 507	2308232222-T	LED REF SLR 34UR 25	5
R501, 530	3009103973	RES CF 10K 1/5W JN	2
R502, 503, 504, R507, 508, 509, R510, 515, 516, R517, 520, 521, R522, 523	3009223973	RES CF 22K 1/5W JN	14
R505, 506, 513, R514, 518, 519, R524, 525, 526, R527, 528, 529, R511, 512	3009223973	RES CF 1.5K 1/5W JN	14
CN501, 502	4428595003	5267-03A/2.5MM/MH5264	2
AN501	4355811211	CON ASS'Y 8P	1
JACK B'D (4005193910)			
JK101, 103	4438195110	XLR JACK	2
JK102, 104	4438193810	PHONE JACK (5P) MOLD	2
CN101	4428594906	5268 06A/2.5MM	1
AMP OUT B'D (4003193940)			
	4355811410	CON ASS'Y 2P	2
BALANCE B'D (4005193920)			
IC401, 402	2118010432	IC NJM2068DD JRC	2
SW401	4618001110	SW SLIDE SSP 322SB 011	1
D401, 402, 403, D404	2058304100	DIODE IN4148	4
R401, 402, 403, R404, 406, 407, R408, 409	3009123973	RES CF 12K 1/5W JN	8

Ref No.	Part No.	Description	Q'ty
R405, 410, 413	3009470973	RES CF 47 1/5W JN	3
R411, 412, 414	3009513973	RES CF 51K 1/5W JN	3
C401, 402, 403, C404	3529560311-A	CAP CE SL 56PF 50V AXIAL	4
C408	3529101311-A	CAP CE SL 100PF 50V AXIAL	1
C405, 406, 407	3529103531-A	CAP CE F10000PF 25V Z	3
AN401	4355811306	CON ASS'Y 6P	1
AN402	4355810910	CON ASS'Y 6P	1
AN403	4355811010	CON ASS'Y 4P	1
AN404	4355811111	CON ASS'Y 3P	1

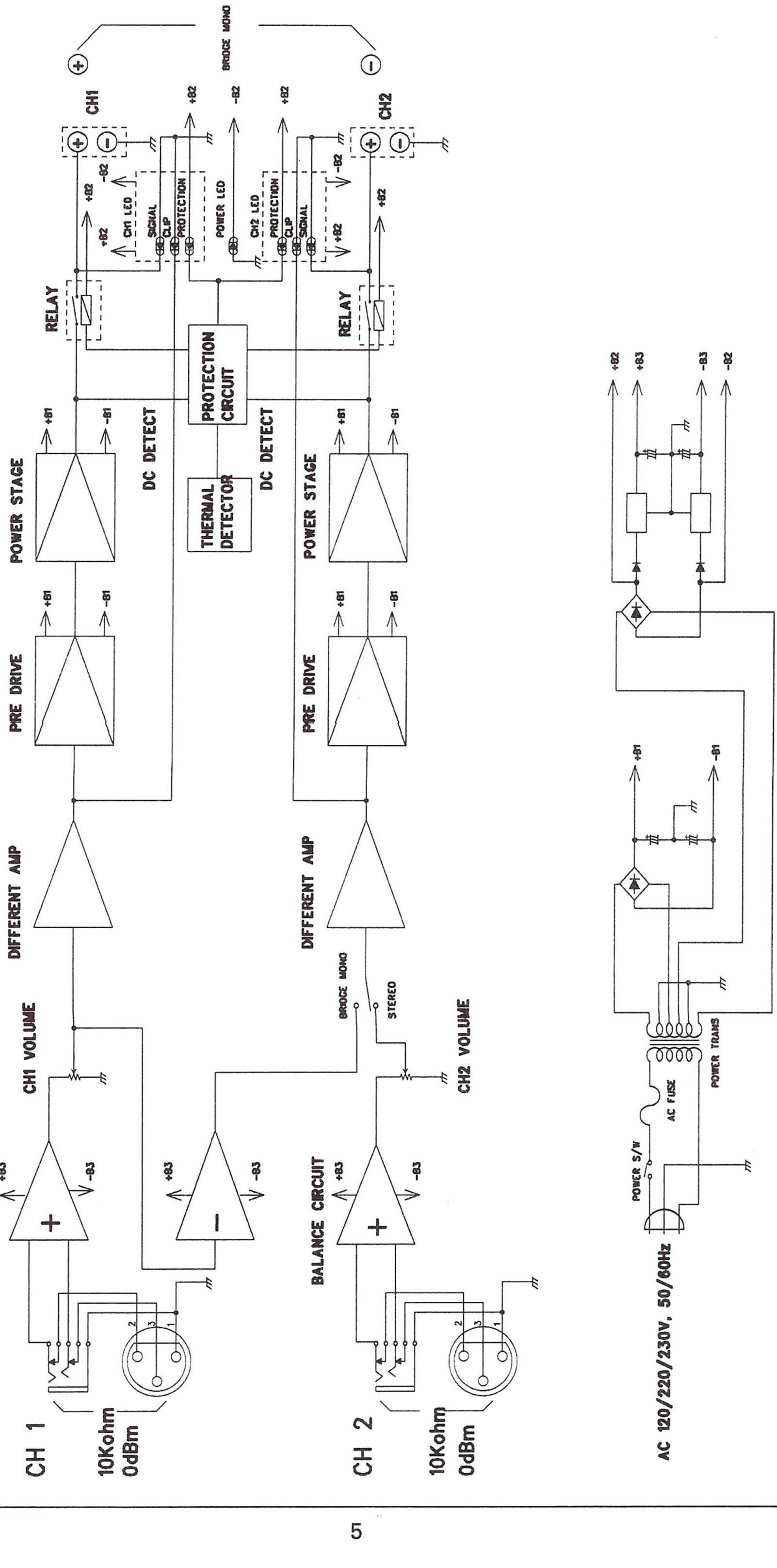
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Top & Bottom View of P.C. Boards



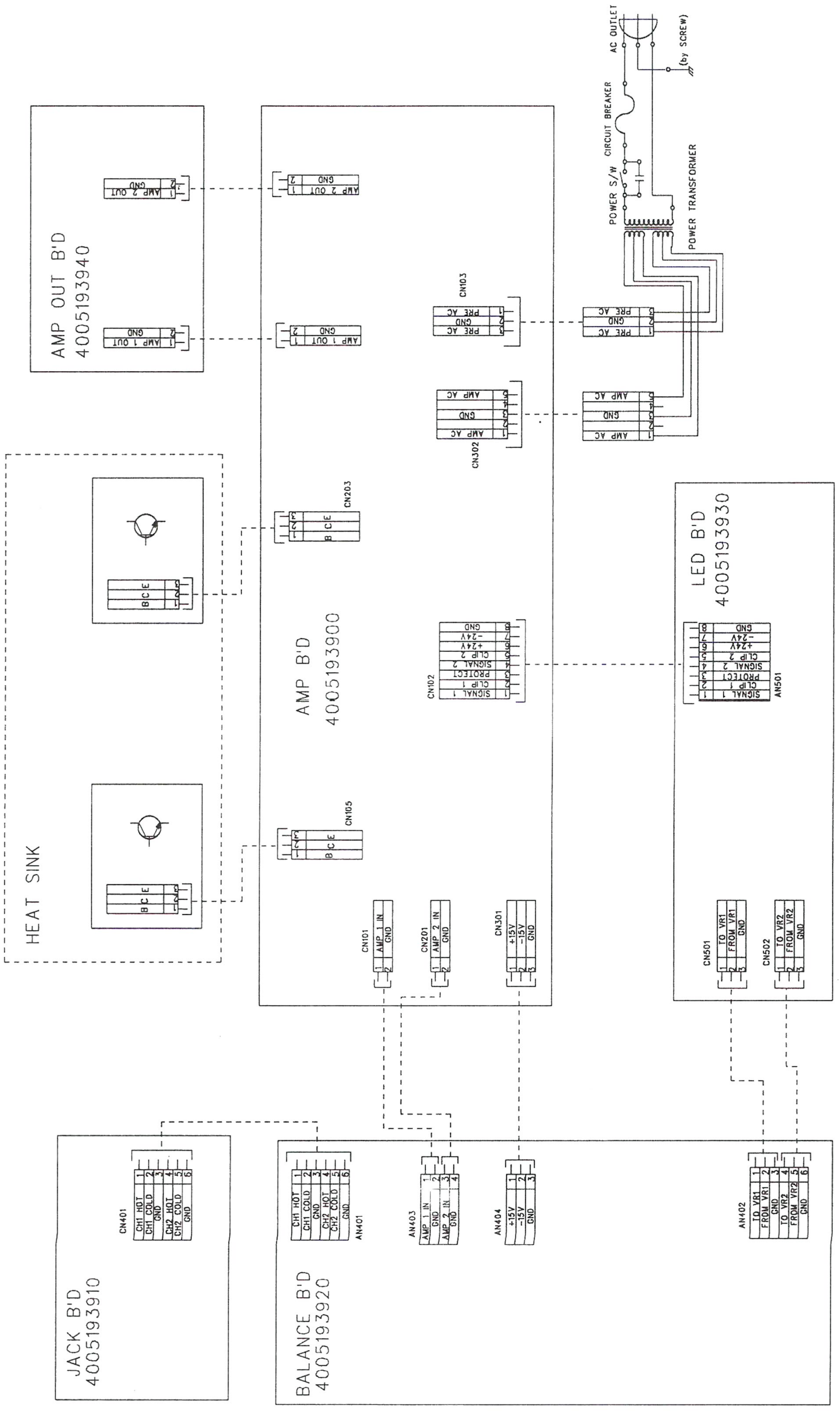
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Block Diagram



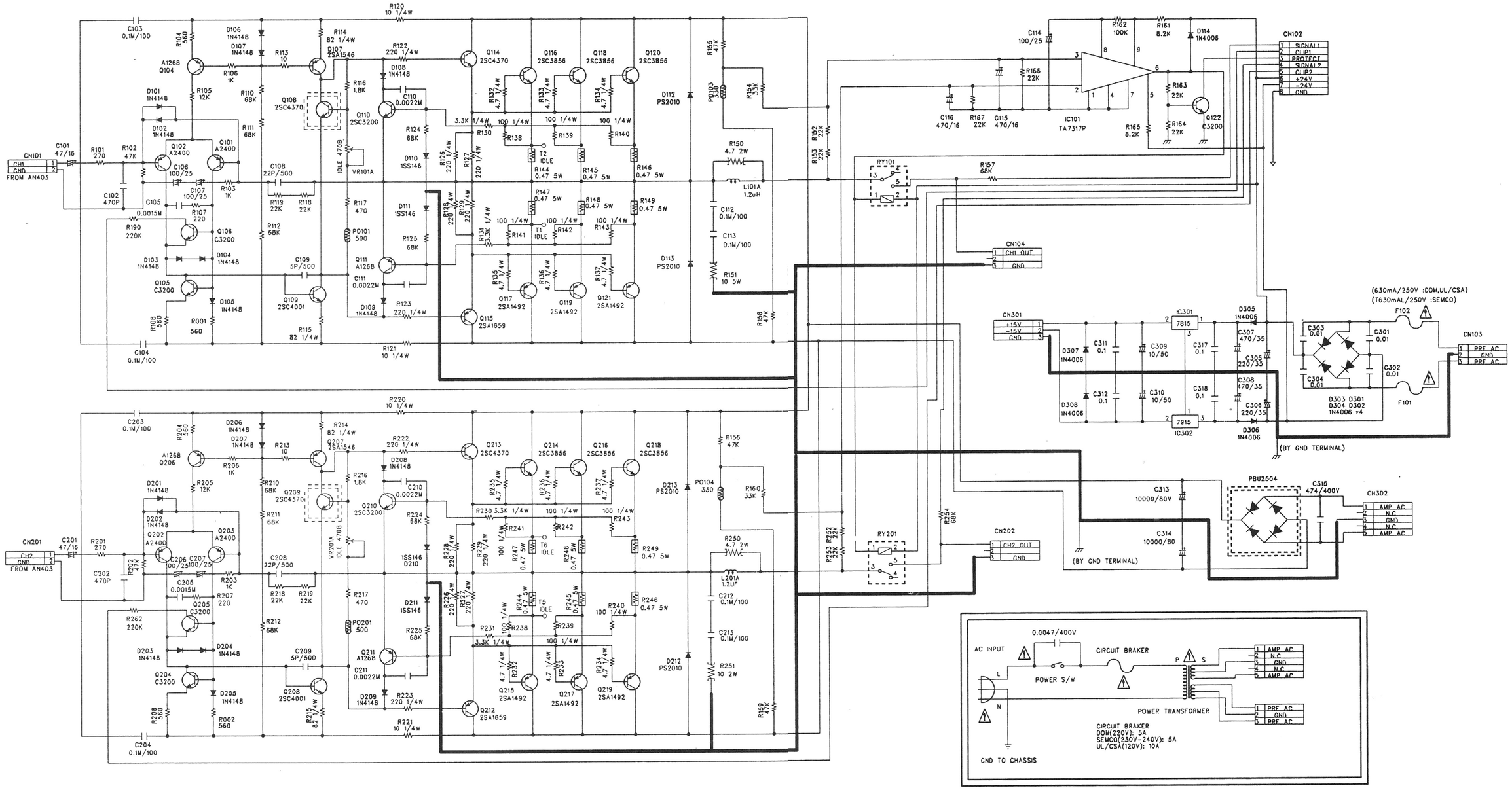
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Wiring Diagram



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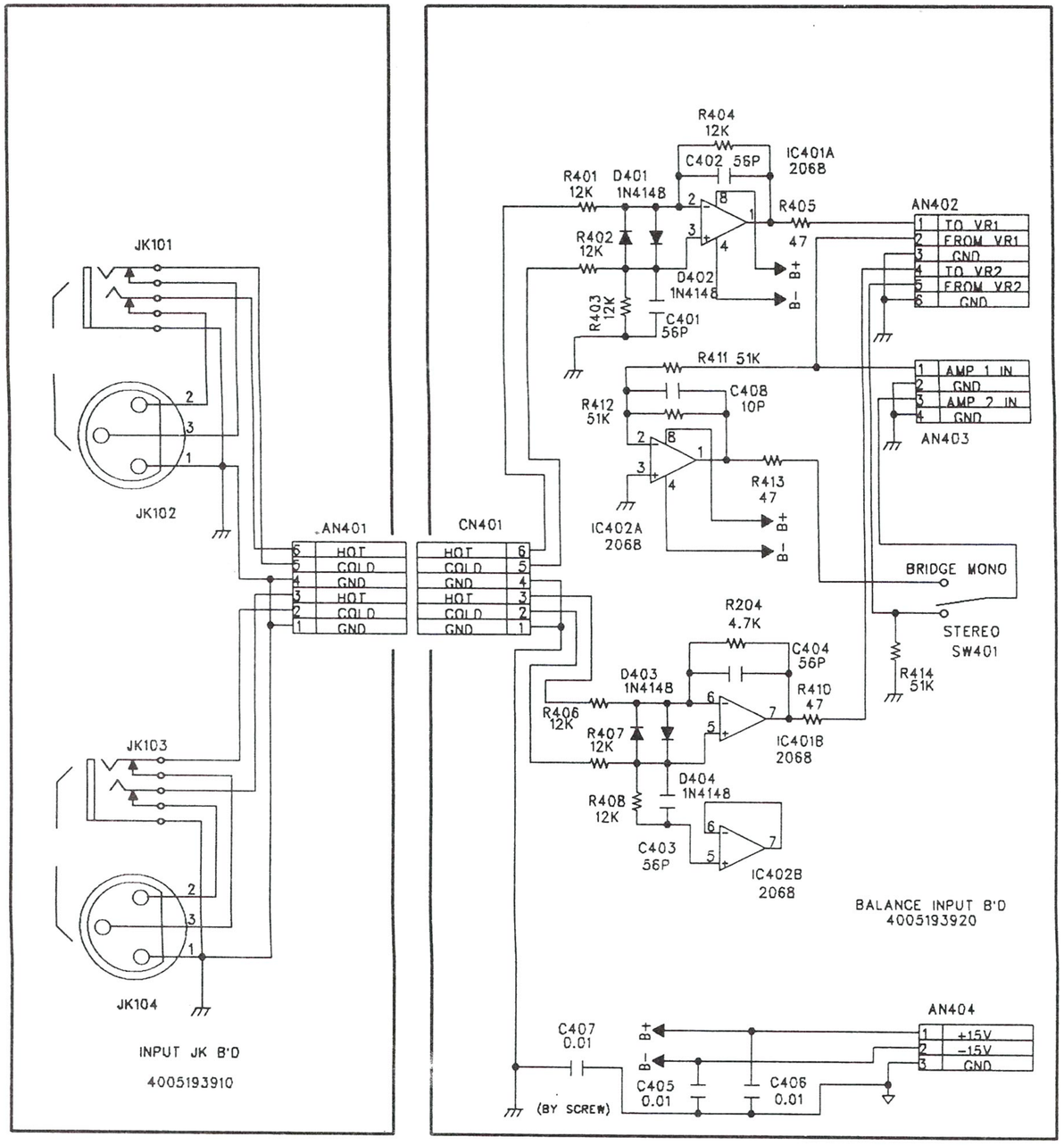
Schematic Diagram

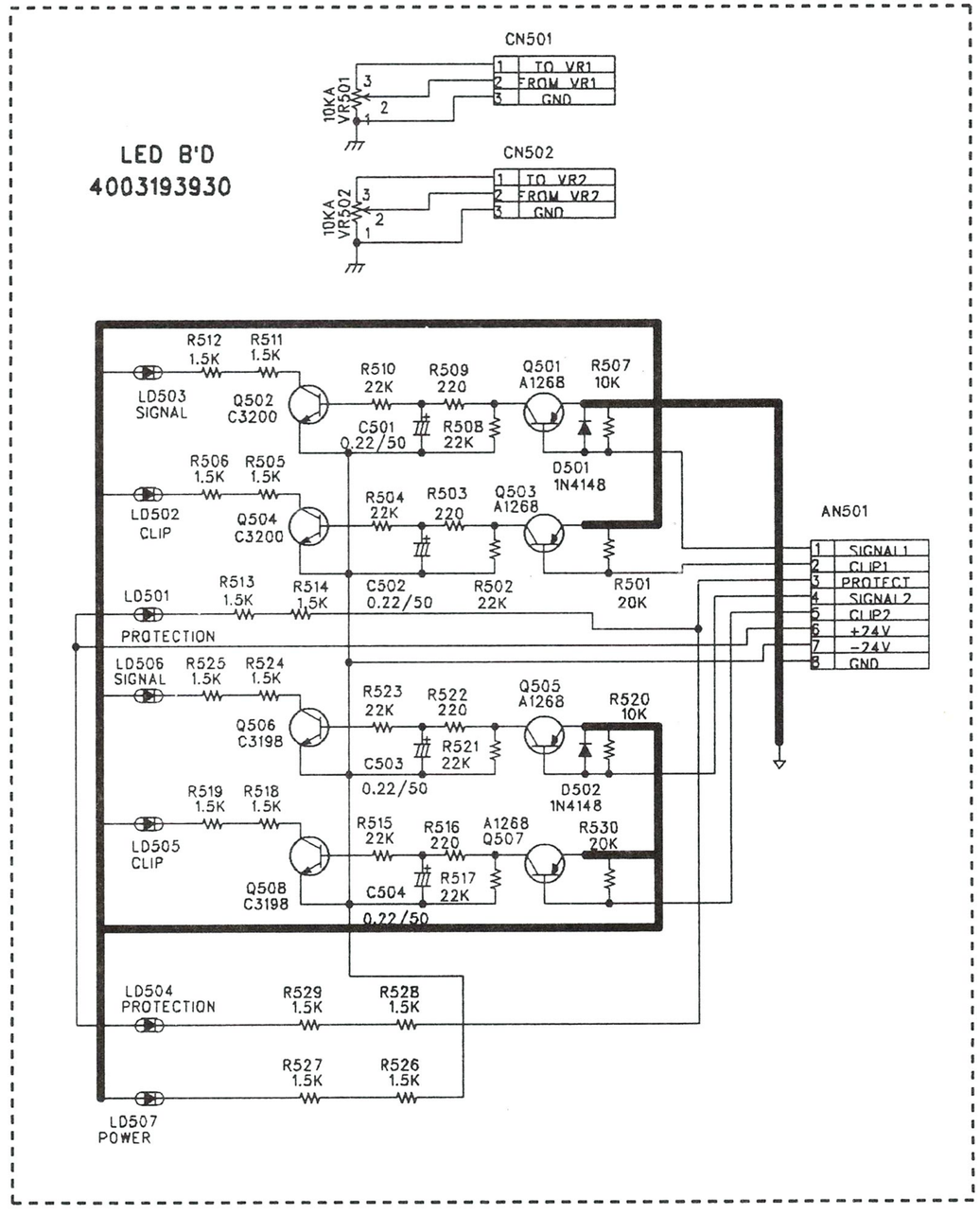


* SERVICE INFORMATION

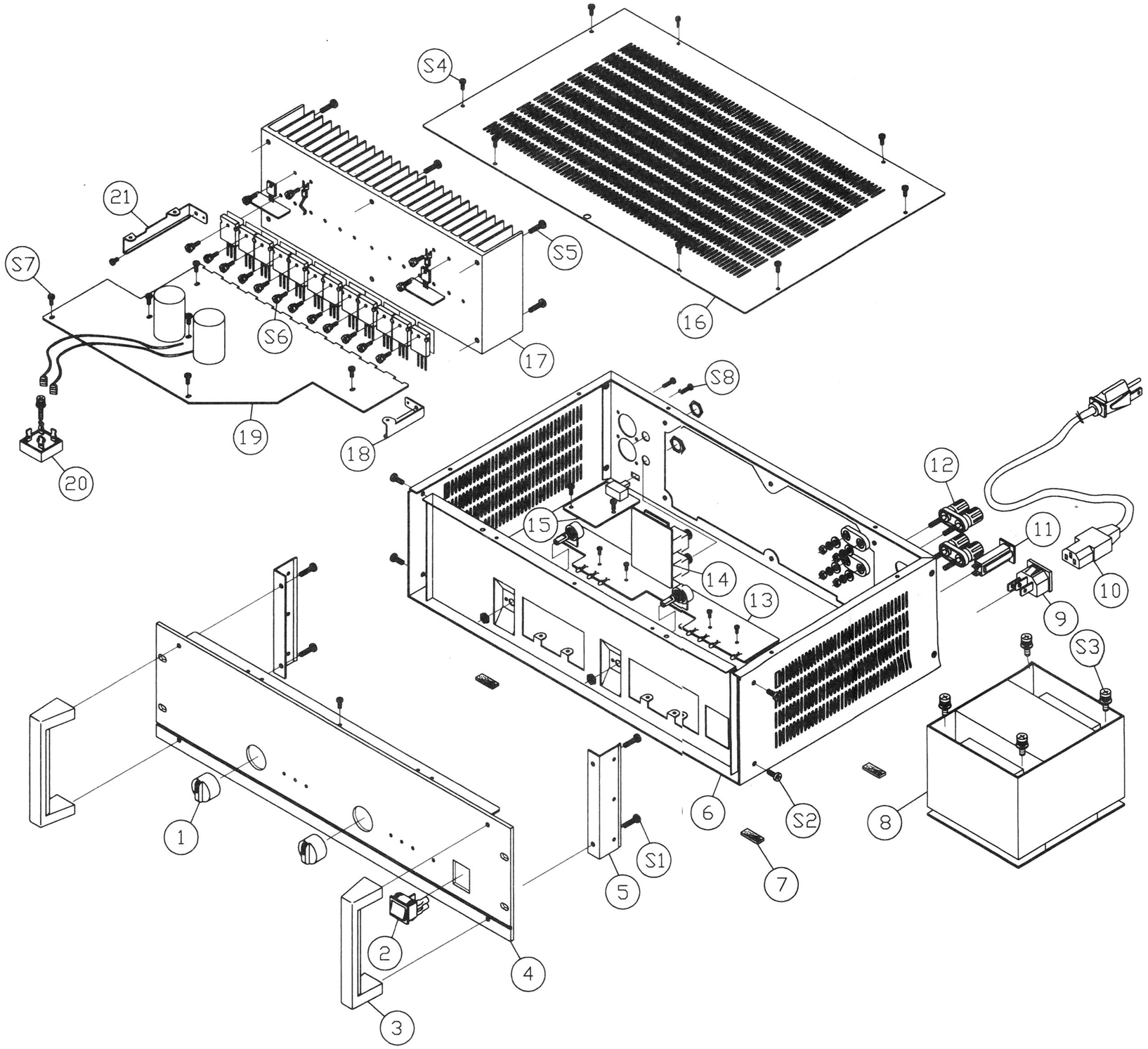
1. RESISTANCE VALUES ARE INDICATED IN OHMS UNLESS OTHERWISE SPECIFIED. (K=1.000, M=1.000.000)
2. CAPACITANCE VALUES ARE SHOWN IN MICROFARADS UNLESS OTHERWISW NOTED. (P=MICRO-MICROFARADS)
3. ALL VOLTAGES ARE REFERED TO GROUND UNDER THE FOLLOWING CONDITIONS.
   DC : NO SIGNAL EXCEPT WHERE INDICATED.
   AC : RMS
4. -PRECAUTION-
   A) ALL COMPONENTS ⚠ MARKED MUST BE REPLACED ONLY WITH ORIGINAL TYPE SPECIFIED BY THE MANUFACTURER. INTER W CORPORATION AND INSTALLED AS THE ORIGINAL SPACE AND POSITIONED AWAY FORM ADJACENT COMPONENTS WHERE APPLICABLE.
   B) ALL SOLDERING MUST BE DONE IN A PROFESSIONAL WANNER USING SOLDER WHITE RESINE CORE ONLY.
   C) ALL COVERS. SHIELD AND INSULATING SPACERS MUST BE REPLACED BEFORE RETURING APPLIANCE TO CUSTOMER.
   D) A DAMAGE POWER SUPPLY CORD MUST BE REPLACED BEFORE RETURING TO CUSTOMER.
   E) DIELECTRIC TEST CONSISTING OF 120V AC 60HZ IS TO BE APPLIED BETWEEN BOTH BALDES OF THE POWER SUPPLY CORD ATTACHMENT PLUG THE EXPOSE CONDUCTIVE SURFACE OF THE APPLIANCE FOR A PERIOD OF NOT LESS THAN ONE SECOND BEFORE RETURING APPLIANCE TO CUSTOMER.
   F) THE ⚠ MARKED RESISTORS ARE MOUNTED THE P.C.B ON SLEEVES.

Schematic Diagram





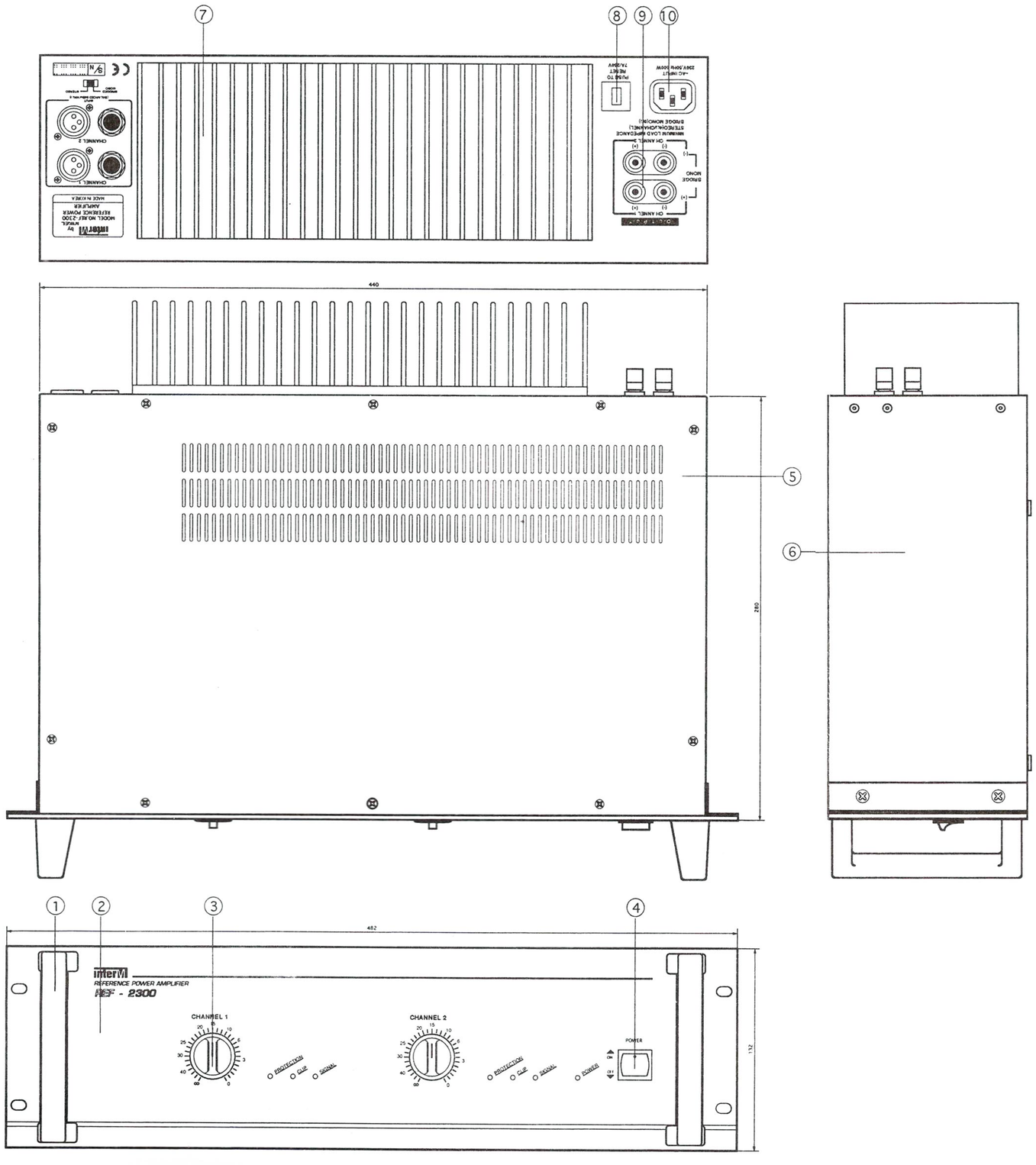
Exploded View of Cabinet & Chassis



S8	SCREW #2BTC 3x10B	81092301013	4	
S7	SCREW BM 3x6B	8009130063	8	
S6	HEX MSPM 3x12Y	8099130121	16	
S5	SCREW BM 4x12B	8009140123	6	
S4	SCREW #2BTC 3x6B	8109230063	12	
S3	A'SSY SCREW PM5x9B	8095995710	4	
S2	SCREW #2BTC 4x8B	8109340083	4	
S1	SCREW BM 4x15B	8009140153	4	
NO	PART NAME	PART NUMBER	Q'TY	DESCRPTION

21	PCB BRACKET	6505958420	1	
20	DIODE	2058100103	1	
19	POWER PCB	4005193900	1	
18	PCB BRACKET	6505949910	1	
17	HEAT SINK	750293810	1	
16	TOP COVER	046123497010	1	
15	SELECTOR S/W	054005193922	1	
14	JACK PCB	054005193910	1	
13	V/R PCB	4005193930	1	
12	BIND POST(2P)	4438191720	2	B
12	BIND POST(2P)	4438191710	2	DOM.UL
11	CIRCURT BRACKER	5568223333	1	
10	AC CORD	4308999310	1	UL
9	AC INLET	4448997810	1	
8	POERT TRANSFOAMER	2828070610	1	
7	RUBBER FOOT	6735991210	4	
6	MAIN CHASSIS	046122483615	1	
5	HANDLE BKT	6503986830	2	
4	FRONT PANEL	048602974811	1	
3	HANDLE	048603995230	2	
2	POERT S/W	4625996610	1	
1	CONTROL KNOB	048523998313	2	
NO	PART NAME	PART NUMBER	Q'TY	DESCRPTION

Exploded View of Cabinet & Chassis



Mechanical Parts List

No.	Part No.	Description	Q'ty
1	048603995230	HANDLE	2
2	048602974811	FRONT PANEL	1
3	048523998313	CONTROL KNOB	2
4	4625996610	POERT S/W	1
5	046123497010	TOP COVER	1
6	046122483615	MAIN CHASSIS	1
7	750293810	HEAT SINK	1
8	5568223333	CIRCUIT BRACKER	1
9	4438191720	BIND POST (2P)	2
10	4448997810	AC CORD	1

No.	Part No.	Description	Q'ty	Remark
1	048523998313	CONTROL KNOB	2	
2	4625996610	POERT S/W	1	
3	048603995230	HANDLE	2	
4	048602974811	FRONT PANEL	1	
5	6503986830	HANDLE BKT	2	
6	046122483615	MAIN CHASSIS	1	
7	6735991210	RUBBER FOOT	4	
8	2828070610	POERT TRANSFORMER	1	
9	4448997810	AC INLET	1	
10	4308999310	AC CORD	1	UL
11	5568223333	CIRCUIT BRACKER	1	
12	4438191710	BIND POST (2P)	2	DOM, UL
	4438191720	BIND POST (2P)	2	B
13	4005193930	V/R PCB	1	
14	054005193910	JACK PCB	1	
15	054005193922	SELECTOR S/W	1	
16	046123497010	TOP COVER	1	
17	750293810	HEAT SINK	1	
18	6505949910	PCB BRACKET	1	
19	4005193900	POWER PCB	1	
20	2058100103	DIODE	1	
21	6505958420	PCB BRACKET	1	
S1	8009140153	SCREW BM 4×15B	4	
S2	8109340083	SCREW #2BTC 4×8B	4	
S3	8095995710	ASS'Y SCREW PM 5×9B	4	
S4	8109230063	SCREW #2BTC 3×6B	12	
S5	8009140123	SCREW BM 4×12B	6	
S6	8099130121	HEX MSPM 3×12Y	16	
S7	8009130063	SCREW BM 3×6B	8	
S8	81092301013	SCREW #2BTC 3×10B	4	

Note

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