



BU2

Powered Subwoofer

Technical Manual



INFINITY SYSTEMS INC.
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Woodbury, New York 11797

H A Harman International Company

Part No.: 1112-BU2 11/98

**THIS MANUAL IS FOR THE BU2 REVISION WITHOUT AN EXTERNAL POWER SWITCH
(120v Only - 230v version has a power switch)**

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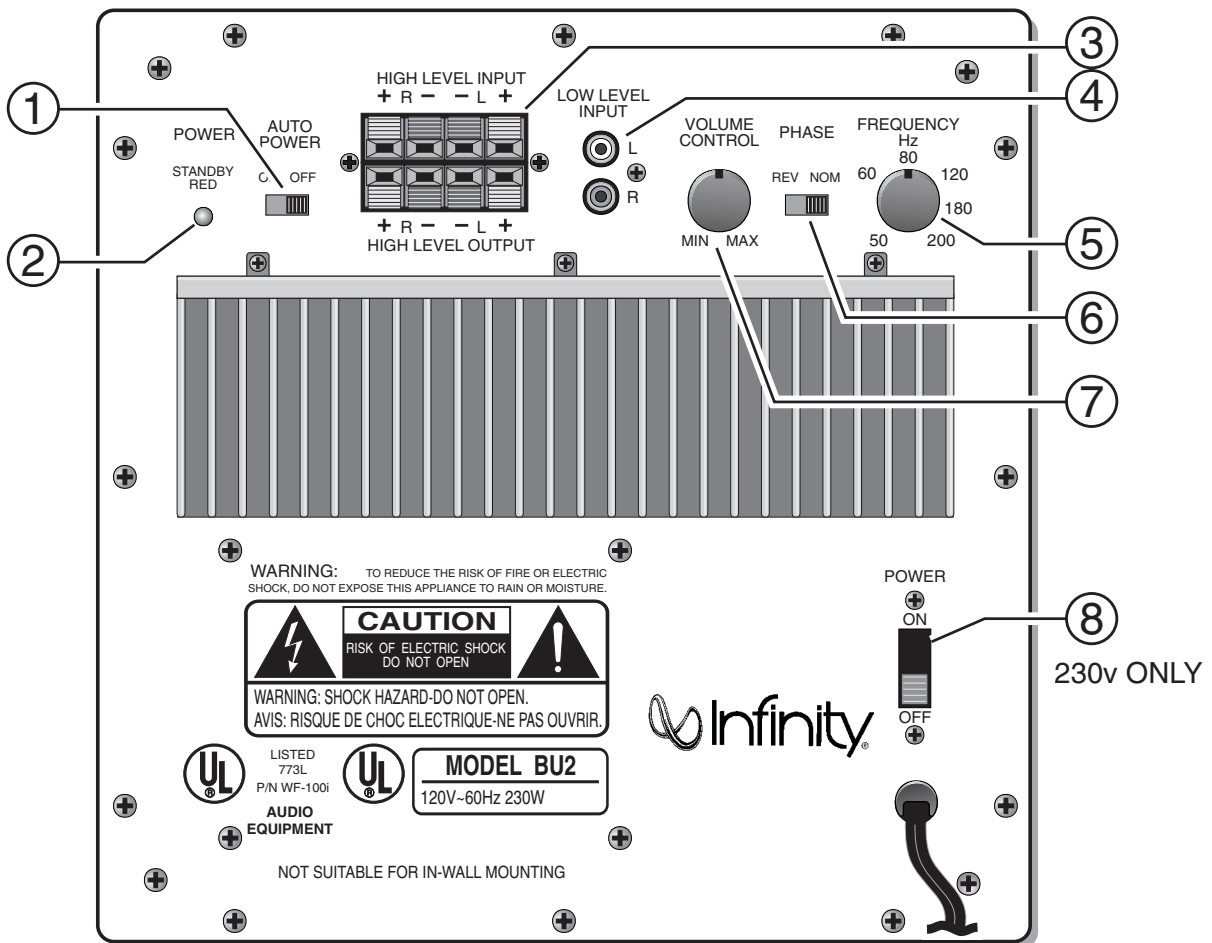
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BU2 SPECIFICATIONS

Driver	12" Woofer
Nominal Impedance	4 Ω
Enclosure Design.	Tuned Port
Amplifier Power	100 watts RMS
Frequency Response	30Hz - 150Hz (± 3dB)
Crossover Frequency	50 to 200 Hz Continuously Variable
Inputs	
Line Level	RCA jacks
High Level	(Speaker) Input terminals
Outputs.	Full range Speaker
Sensitivity	
Low Level	70mV
High level	1.7V
Input Impedance	
Low Level	12KΩ
High level	4.7KΩ
Auto-Off Delay	8 minutes
Dimensions	
Inches	14½ x 14½ x 14½"
Metric	36.8 x 36.8 x 36.8cm plus 1¼" (32mm) for feet
Shipping Weight	43 lbs/19.5 Kg.

Occasional refinements may be made to existing products without notice, but will always meet or exceed original specifications unless otherwise stated.

BU2 CONTROLS AND THEIR FUNCTION



1. **Auto Power** - This Auto On/Off switch controls whether the BU2's Automatic turn-on circuit is active. When this switch is ON, the BU2 will turn itself on, indicated by a green LED, when it is plugged in and receiving a signal. When the BU2 has not received a signal for 8 - 10 minutes, the unit will revert to the STANDBY mode, indicated by a red LED. When this switch is OFF, the unit switches to the STANDBY mode and will stay OFF, regardless of input signal. THIS IS NOT A TRUE AC POWER SWITCH AS IT DOES NOT DISCONNECT THE AMPLIFIER FROM THE AC LINE.
2. **Standby LED** - The LED will light green when the unit is plugged in and is receiving signal. When in standby mode (when the Auto mode is active but the subwoofer is receiving no signal) the LED is red.
3. **High Level Inputs** - These High Level Inputs are for receivers that do not have line-level "pre-amp out" or "subwoofer out" jacks. When a pair of main or satellite speakers are attached to the OUTPUT

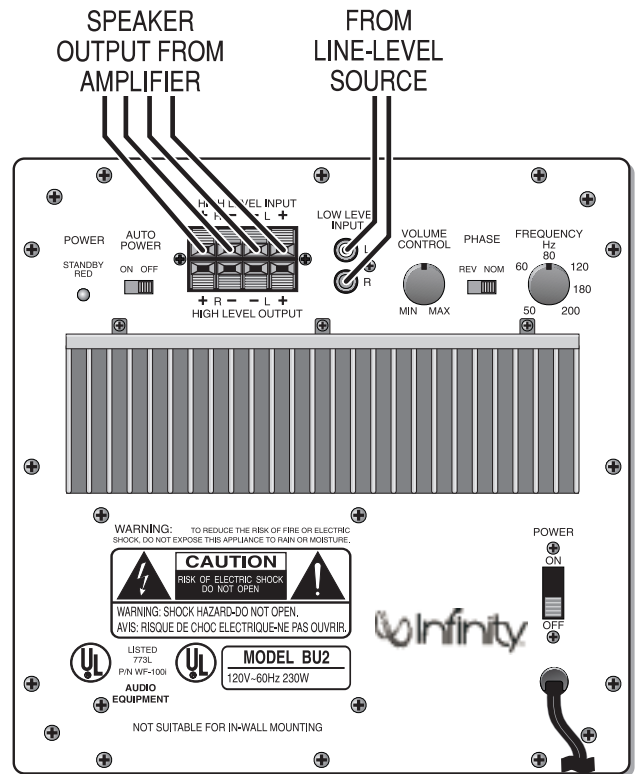
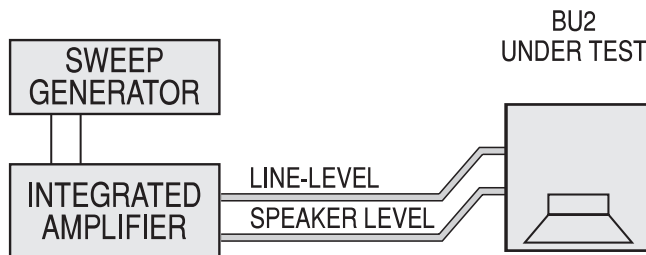
terminals, they are driven the full range of frequencies as generated by the music source (receiver, amplifier, etc.)

4. **Low Level Input** - These left and right Line Level Inputs are normally used when the receiver/processor has line-level "pre-amp out" or "subwoofer out" jacks. If a single cable mono or subwoofer source is connected to the BU2, a Y-cable must be connected to the subwoofer for full output.
5. **Frequency** - The Frequency adjustment determines the upper corner roll-off point for the BU2.
6. **Phase** - This controls the switch from the reverse to normal in audio signal polarity.
7. **Volume Control** - This controls the volume level of the subwoofer.
8. **AC Power** - This switch, present on the 230v version only, connects the AC line voltage to the BU2; normally it is left in the ON position.

BU2 TEST PROCEDURE

EQUIPMENT

- Function generator/signal generator/sweep generator
- Integrated Amplifier
- Multimeter
- Cables - line level (RCA) and speaker cables



TEST PROCEDURE

Equipment needed:

- Function/signal generator/sweep generator
- Integrated Amplifier
- Multimeter
- Cables - line level (RCA) and speaker cables

General Function UUT = Unit Under Test

1. Connect both right and left line level inputs (RCA) to signal generator and UUT. Use Y-cable if necessary from mono source. VOLUME control should be full counterclockwise.
2. Turn on generator, adjust to **50mV, 50 Hz**.
3. Plug in UUT; red LED should be ON. Turn VOLUME control full clockwise.
4. LED should turn Green; immediate bass response should be heard and felt from port tube opening.
5. Turn off generator, turn VOLUME control fully counterclockwise, disconnect RCA cables.
6. Connect one pair of speaker cables to either high level input terminal on UUT. Cables should be connected to an integrated amplifier fed by the signal generator.

7. Turn on generator and adjust so that speaker level output is **2.0V, 50 Hz**. Turn VOLUME control full clockwise.

8. Green LED should light, immediate bass response should be heard and felt from port tube opening.

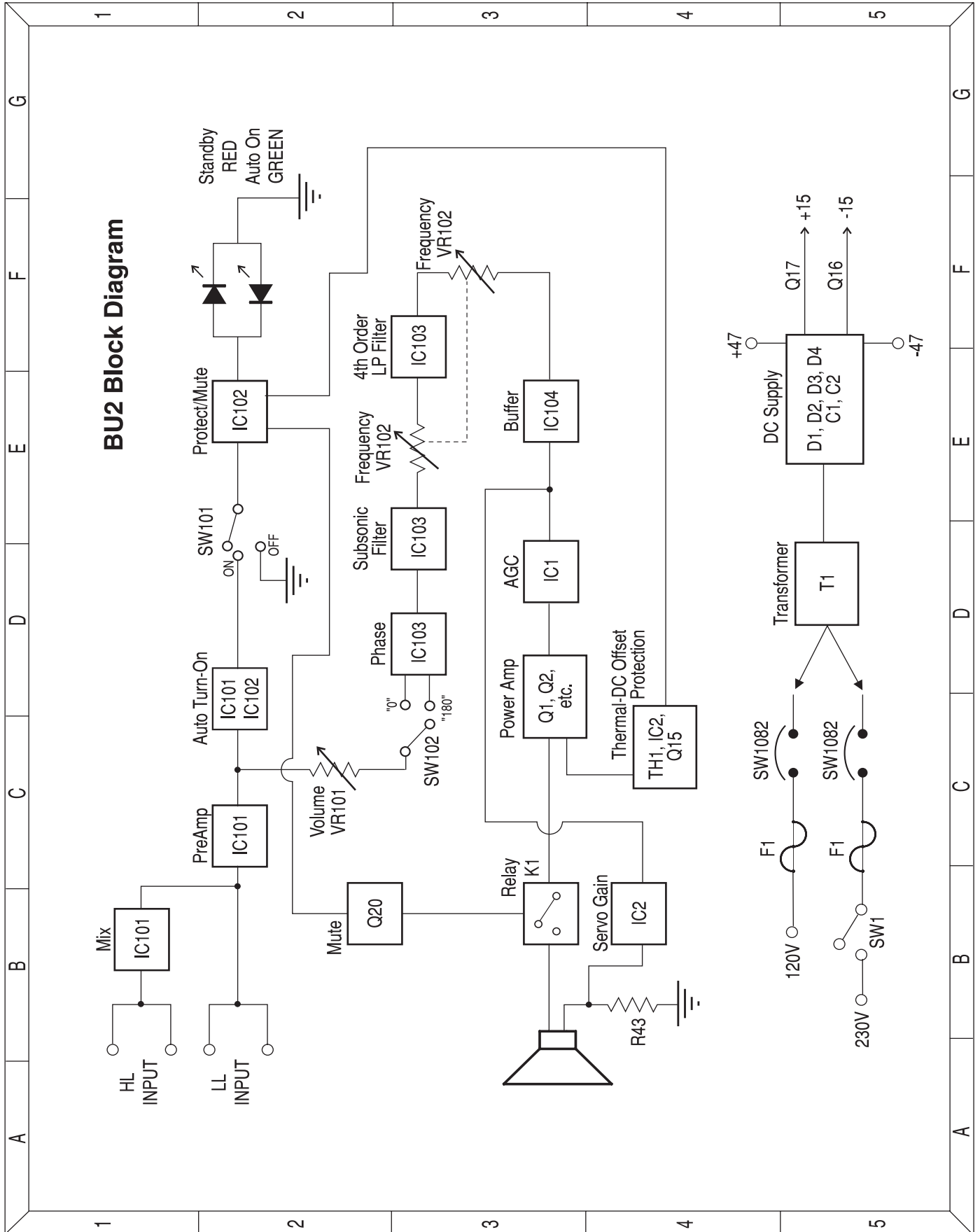
Sweep Function

1. Follow steps 1 - 4 above, using a sweep generator as a signal source.
2. Sweep generator from **20Hz to 300Hz**. Listen to the cabinet and drivers for any rattles, clicks, buzzes or any other noises. If any unusual noises are heard, remove driver and test.

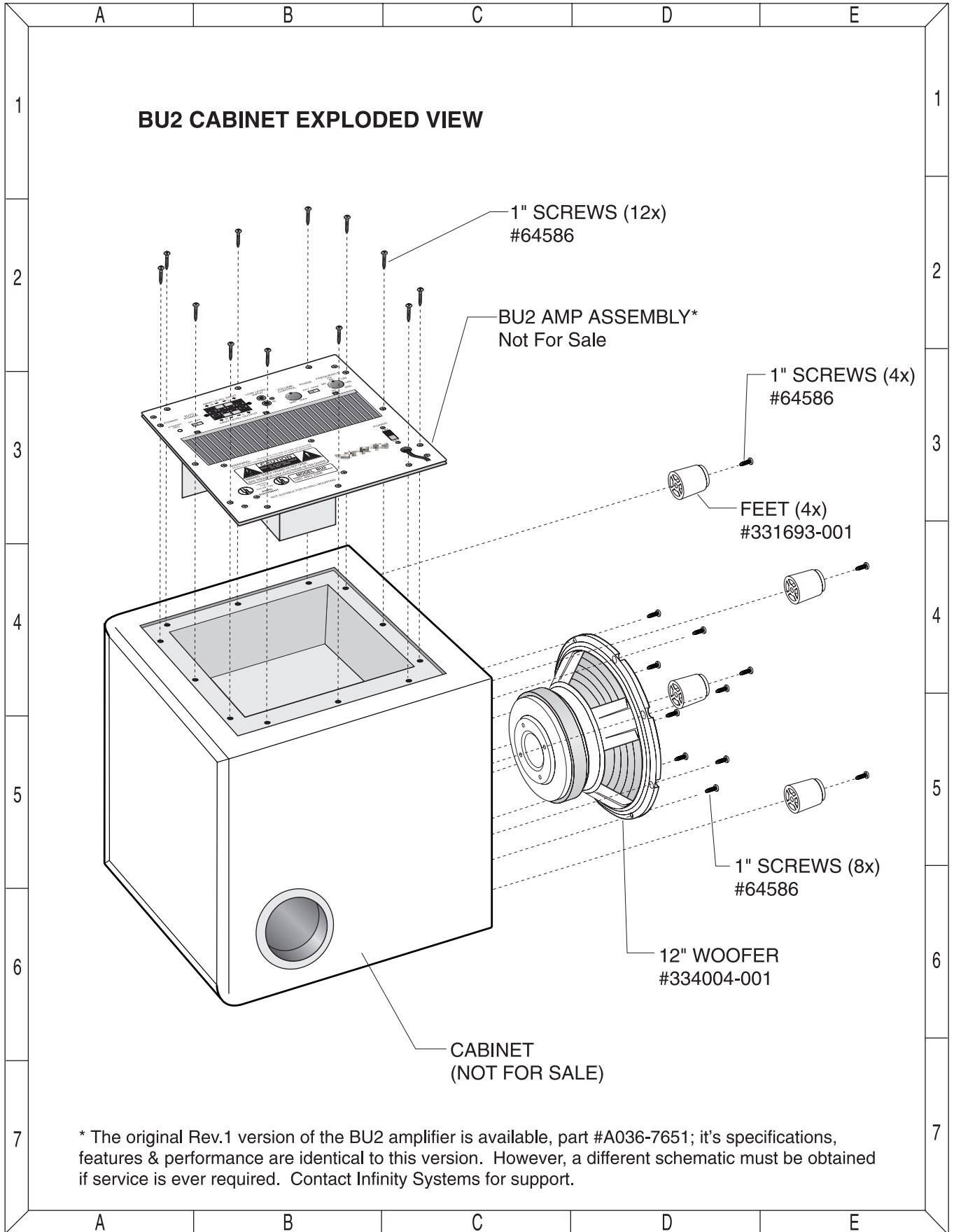
Driver Function

1. Remove driver from cabinet; detach + and - wire clips.
2. Check DC resistance of driver; it should be **3.3 ohms**.
3. Connect a pair of speaker cables to driver terminals. Cables should be connected to an integrated amplifier fed by a signal generator. Turn on generator and adjust so that speaker level output is **5.0V**.
4. Sweep generator from **20Hz to 1kHz**. Listen to driver for any rubbing, buzzing, or other unusual noises.

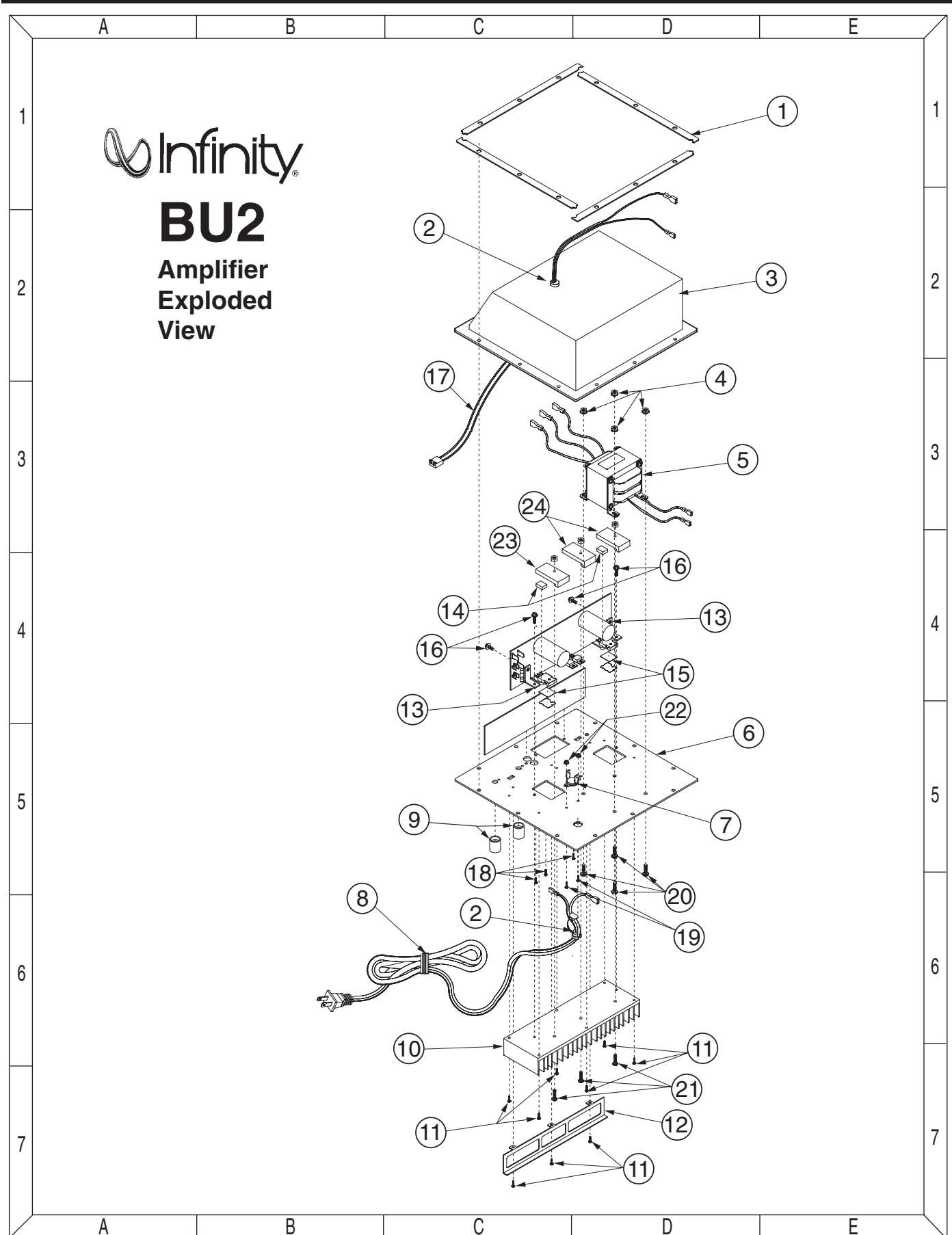
BU2 BLOCK DIAGRAM (for 120v & 230v versions)



BU2 CABINET EXPLODED VIEW



AMPLIFIER EXPLODED VIEW



BU2 MECHANICAL PARTS LISTS

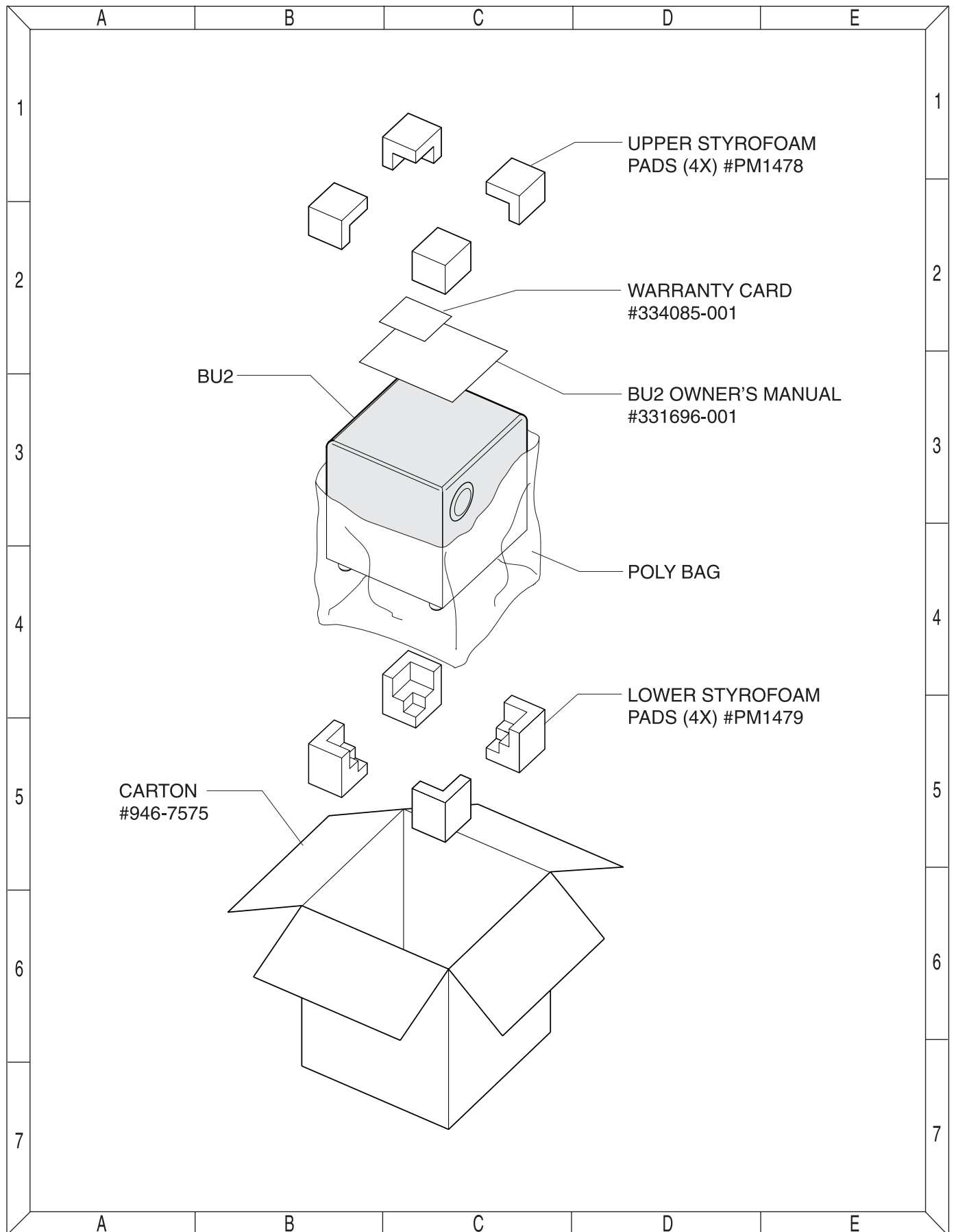
Ref.#	Part #	Description	Qty	Ref.#	Part #	Description	Qty
1	XX1342	GASKET 1 OF 4	4	18	SC1215	Screw M3x1.25x10 Plas-Thr Pan-Phi (SPKR CONNECTOR, RCA CONNECTOR)	3
2	XX1250	Strain Relief SPT-1 Black	2	19	SC1253	Screw 4-40x3/8 Pan Phillips Hd Mc (THERMOSWITCH)	2
3	XX1275	Plastic Cover For Inf. Bu-1(2)	1	20	SC1214	Screw 8-32x1/2 Mach-Thr Pan-Phil (XFORMER)	4
4	NU1049	Nut 8-32 x 1/4 Hex Keps Sink F (XFORMER)	4	21	SC1285	Screw 6-32X3/4 MACH-THR PAN PHI HEAD, BLACK ZINC FSH (XTOR BAR)	3
5	MI1211	POWER TRANSFORMER BU-2	1	22	NU1059	Nut 4-40Keps-Thr, Hexag. Znk Fs (THERMOSWITCH)	2
6	BR1538	FRONT PLATE BU-2	1	23	BR1567	FIN-XTOR BAR TO-218 FOR BU2	2
7	SW1082	THERMOSWITCH 60 DEG C PANEL MOUNTED FASTON TERM (FRONT PLATE)	1	24	BR1568	FIN-XTOR BAR TO 220 FOR BU2	1
8	HA1132	HARNESS AC CORD BU-1/BU-2 (FRONT PLATE)	1		SP1072	Sil Pad TO-220 0.750" x 0.500" (TO-220 TRANSISTOR)	2
9	XX1343	KNOB BLACK W-POSITION INDICATOR (CUSTOM) (POT.)	2		XX1370	GASKET PWR XMER 3.20" x 3.20" x 1/16" (FRONT PLATE [XMER]) (NOT SHOWN)	1
10	HS1171	HEATSINK BU-2 (FRONT PLATE)	1				
11	SC1284	Screw 4-40X 3/8 TATTITE, PAN PHIL HEAD, BLACK ZINC FIN (HEATSINK-FRONT PLATE)	9				
12	BR1544	BRACKET FOR HEATSINK BU-2	1				
13	BR1395	Bracket Pwr Support Bass550	2				
14	SP1082	SPONGE W/ADHESIVE L=1/4" W=1/4" T=3/16" (TO-92)	2				
15	SP1073	Sil Pad TO-3P 1.0" x 0.750" (POWER XTORS TO-218 [1X], TO-220 [2X])	3				
16	SC1194	Screw 6-32x3/8 Tapt-Thr Hex Washr (PC BOARD BRACKET)	2				
17	HA1218	SPK HARNESS AWG 18 MOLEX TO FASTON .187 AND .250 (PLASTIC COVER)	1				

BU2 ELECTRICAL PARTS LISTS

Ref.#	Part #	Description	Qty	Ref.#	Part #	Description	Qty
Capacitors				Diodes			
C1, 2	CP1584	CAP A.E. 6800uF,20%,63V	2	D1, 2, 3, 4	DI1005	Rectifier Diode 3A/200V 1N5401	4
C3, 4, 5, 11	CP1552	SMD Cap .1uF 20% 100v Z5U 1210	4	D5, 6, 7, 8, 9, 10, 11, 16, 17, 101, 102	DI1132	SMD Diode Swch LL-34 Pkg T/R RLS4148	11
C6, 7, 15, 16, 21, 22, 25, 38, 39, 110, 111, 115, 116, 117, 126, 127, 134, 135	CP1426	SMD CAP 0.1uF 20% 50V Z5U 1206 T/R	18	D12	DI1010	Diode Fast Rect. 1A/100v Axial IN4002	1
C8, 9	CP1475	SMD Cap 33pF 5% 50v NPO 1206	2	Z1, 2	DI1150	SMD Zener 15v 5% CP Pkg. T/R	2
C10, 23, 24, 40, 41, 102, 104, 109, 133	CP1496	SMD CAP 100pF 10% 50V X7R 1206	9	Integrated Circuits			
C12	CP1563	SMD Cap 150pF 5% 50v NPO 1206	1	IC1, 2, 102, 103, 104	IC1041	IC SMD DUAL J-FET-INPUT OP AMP T/R TLO72	5
C13, 31	CP1412	Cap Alum El. 47uF 20% 16v Rad.	2	IC101	IC1162	IC SMD Quad-J Fet Input OP Amp TLO74	1
C14	CP1436	SMD CAP 0.022uF 20% 50V Z5U 1206 PKG.	1	Transistors			
C17	CP1562	Cap Alum El. 330uF 20% 16v T/R	1	Q1	TR1245	TIP35E TO-3P	1
C18, 34, 35, 36, 37	CP1645	Cap Al El 22uF 20% 63V 85 Deg	5	Q2	TR1246	TIP36E TO-3P	1
C19	CP1177	Cap Poly Film 0.22uF 5% 63V TR	1	Q3	TR1247	TIP32E TO-220	1
C20	CP1539	Cap. Poly Fil .047uF 5% 63V TR	1	Q4	TR1248	TIP31E TO-220	1
C26, 27	CP1844	SMD CAP CERAMIC 0.01uF 10% 200V X7R 1206 T/R	2	Q5	TR1043	MPS2222A TO-92 Bulk	1
C29	CP1808	Cap Poly Fil 0.01uF Class X2	1	Q6, 9, 15, 20	TR1166	2N5401 TO-92 T/R	4
C28, 120, 121, 122	CP1679	Cap. Poly Fil .068uF 5% 63V	4	Q7, 8	TR1167	2N5551 TO-92 T/R	2
C30	CP1479	SMD CAP 3300pF 10% 100V X7R	1	Q10, 12, 14	TR1131	DTC114TK	3
C33, 125	CP1495	Cap Poly Film 0.1uF 5% 63v T/R	2	Q11	TR1108	2SC2412K	1
C101, 103	CP1646	SMD Cap 220pF 5% 50V X7R 1206	2	Q13	TR1125	2SA1037K	1
C107, 112	CP1417	Cap Alum El. 22uF 20% 16v T/R	2	Q16	TR1184	TIP32C	1
C113	CP1415	Cap Alum El. 2.2uF 20% 50v T/R	1	Q17	TR1183	TIP31C	1
C114	CP1411	Cap Alum El. 100uF 20% 16v T/R	1	Resistors			
C118, 119	CP1409	CAP ALUM EI 0.33uF 20% 50V T/R LS=0.100"	2	J1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113	RS1779	SMD RES ZERO ohm 5% 1/8W 1206	27
C123	CP1917	CAP POLY FILM 0.12uF 5% 50V LS=5mm H=16.5mm T/R	1	R1, 2, 43	RS1868	RES CER 0.1 ohm 5% 5W RADIAL BULK	3
C124	CP1916	CAP POLY FILM .068uF 5% 50V LS=5mm H=16.5mm T/R	1	R3, 4	RS1916	RES C/F 5.1 ohm 5% 1/4W T/R	2
C128	CP1915	CAP POLY FILM 8200pF 5% 50V LS=5mm H=16.5mm T/R	1	R5	RS1994	RES C/F 100 ohms 5% 1/4W T/R	1
C129	CP1918	CAP POLY FILM 0.27uF 5% 50V LS=5mm H=16.5mm T/R	1	R6, 20, 21, 34, 111	RS1831	SMD RES 7.5Kohm 5% 1/8W 1206	5
C130, 131	CP1914	CAP POLY FILM 0.039uF 5% 50V LS=5mm H=16.5mm T/R	2	R7	RS1871	SMD RES 5.1Kohm 5% 1/8W 1206	1
C132	CP1678	CAP POLY FILM 5600pF 5% 50V LS=5mm H=16.5mm T/R	1	R8	RS1878	SMD RES 10 ohm 5% 1/8W 1206	1

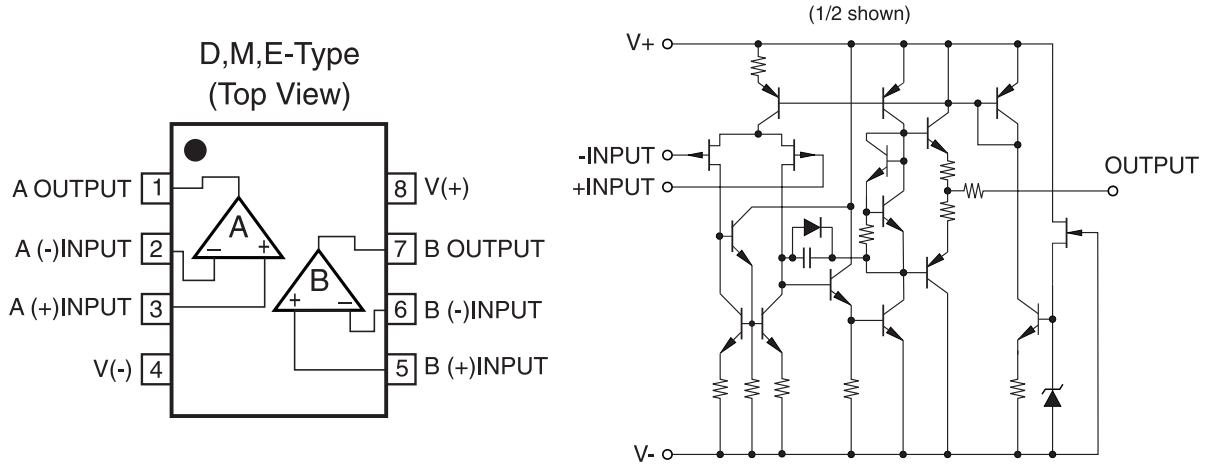
Ref.#	Part #	Description	Qty	Ref.#	Part #	Description	Qty
R9, 10, 35, 44, 46, 52, 59, 67, 113, 121, 123, 127, 130	RS1701	SMD RES 10Kohm 5% 1/8W 1206	13	R124	RS1767	SMD RES 1Mohm 5% 1/8W 1206	1
R11, 12, 15, 17	RS1717	SMD RES 100 ohm 5% 1/8W 1206	4	R131	RS1992	SMD RES 390Kohm 5% 1/8W 1206	1
R13, 14, 40, 57	RS1722	SMD RES 470 ohm 5% 1/8W 1206	4	R132, 133, 134, 135	RS1724	SMD RES 6.8Kohm 5% 1/8W 1206	4
R16, 23, 26, 50, 61	RS1706	SMD RES 47Kohm 5% 1/8W 1206	5	R136, 137	RS2479	SMD RES 14Kohm 1% 1/8W 1206 T/R	1
R18, 24, 119	RS1703	SMD RES 2.2Kohm 5% 1/8W 1206	3	Miscellaneous			
R19, 22	RS1725	SMD RES 15Kohm 5% 1/8W 1206	2	AC1, 2, CT, TI(AC-H1)	TE1185	Terminal male type quick-fit 0.187 TAB	4
R25, 125	RS1883	SMD RES 1.5Kohm 5% 1/8W 1206	2	CONN101	HA1186	HARNES 7-POSITION 0.1" CENTER-CENTER L=4"	1
R27, 28, 29, 49, 56	RS1898	SMD RES 10Kohm 1% 1/8W 1206	5	CONN102	CO1334	JACK SPEAKER OCTAL PC MOUNT RIGHT ANGLE	1
R30	RS2160	SMD RES 11Kohm 1% 1/8W 1206	1	F1	FS1067	Fuse Slo-Blo 2A/250v 5x20 120v GMC Fuse Slo-Blo 1.6A/250v 5x20 230v GMC	1 1
R31	RS2468	SMD RES 1Mohm 1% 1/8W 1206	1	F1 (CLIP)	XX1297	Fuse Clip 5x20 PC Mount	2
R32, 54, 55	RS2448	SMD RES 47.5Kohms 1% 1/8W 1206	3	K1	RE1019	Relay,12A,48VDC	1
R33	RS1877	SMD RES 4.3Kohm 5% 1/8W 1206	1	L1	MI1100	Inductor Air Core 0.38uH	1
R36, 37	RS2180	RES M/O F/P 470 ohm 5% 1W T/R	2	LED101	LE1032	Led Bicolor Red/Green 5mm	1
R38, 39, 53, 58	RS1705	SMD RES 4.7Kohm 5% 1/8W 1206	4	TH1	TH1006	NTC THERMISTOR 10Kohm @ 25DegC	1
R41, 42	RS1715	SMD RES 5.6Kohm 5% 1/8W 1206	2	RCA101	CO1407	CONNECTOR RCA DUAL VERT. PC MOUNT WHT/RED R/A GOLD	1
R45, 126, 128, 129	RS1704	SMD RES 22Kohm 5% 1/8W 1206	4	SPKOUT	CO1343	Strght Sq Hdr 0.156"Center	1
R47	RS1700	SMD RES 1Kohm 5% 1/8W 1206	1	SW1	507-8046	AC Power Switch 230v version only	1
R48	RS1782	SMD RES 1.8Kohm 5% 1/8W 1206	1	SW101, 102	SW1084	Auto On, Phase, slide switch DPDT	2
R51	RS2422	RES M/O F/P 100 ohm 5% 1W T/R	1	T1	MI1211 MI1216	Power Transformer 120v BU2 Power Transformer 230v BU2	1 1
R60, 102, 103, 104, 105, 116, 122	RS1702	SMD RES 100Kohm 5% 1/8W 1206	7	T2(XFORMER), T3(AC LO)	TE1175	Trmnl Male Tab .032"x.250"PC M	2
R62	RS2449	SMD RES 182Kohms 1% 1/8W 1206	1	T4	HA1175	HARNES, POCKET TERMINAL TO FASTON .250, 5",#18 GRE	1
R63	RS1943	SMD RES 22.1Kohm 1% 1/8W 1206	1	TP1, 2	TE1213	TERMINAL TURRET	2
R64	RS1957	SMD RES 4.99Kohm 1% 1/8W 1206	1	VR101	RS2426	POT 20K DUAL 16mm B-TAPER SHAFT "F" PC MOUNT R/A VOLUME	1
R65	RS2446	SMD RES 1.18Kohms 1% 1/8W 1206	1	VR102	RS2427	POT 20K QUAD 16mm B-TAPER SHAFT "F" PC MOUNT R/A FREQUENCY	1
R66	RS2450	SMD RES 2.21Kohm 1% 1/8W 1206	1				
R68	RS1958	SMD RES 18.7Kohms 1% 1/8W 1206	1				
R69	RS2447	SMD RES 3.65Kohms 1% 1/8W 1206	1				
R101, 108	RS1998	RES C/F 4.7ohm 5% 1/4W T/R	1				
R109, 110	RS1790	SMD RES 2.7Kohm 5% 1/8W 1206	2				
R112, 115	RS1713	SMD RES 56Kohm 5% 1/8W 1206	2				
R114	RS1793	SMD RES 470Kohm 5% 1/8W 1206	1				
R117	RS1968	SMD RES 2.2Mohm 5% 1/8W 1206	1				
R118	RS1710	SMD RES 3.3Kohm 5% 1/8W 1206	1				
R120	RS1892	SMD RES 10Mohm 5% 1/8W 1206	1				

BU2 PACKAGING EXPLODED VIEW

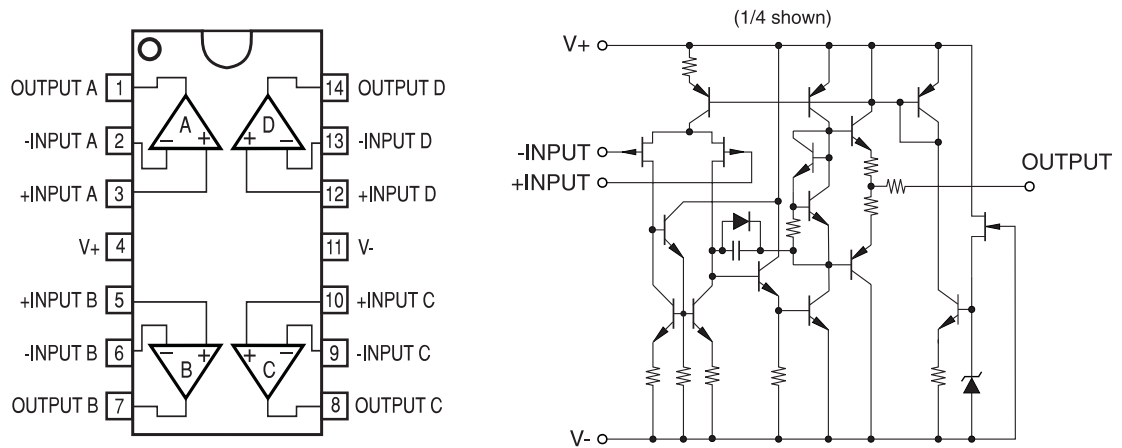


INTEGRATED CIRCUIT DIAGRAMS

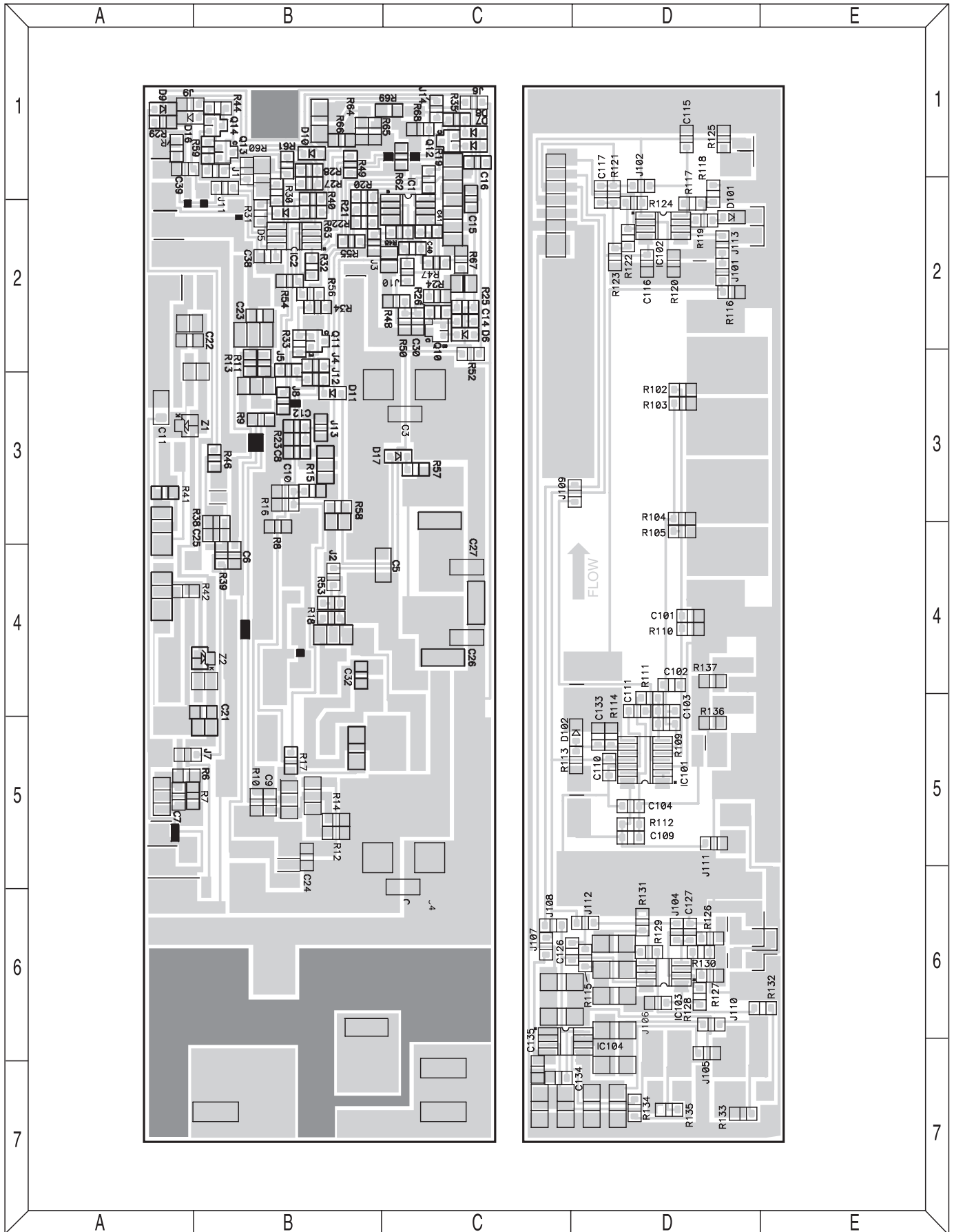
IC1, 2, 102, 103, 104 - TLO72, Dual J-FET Input Op-Amp



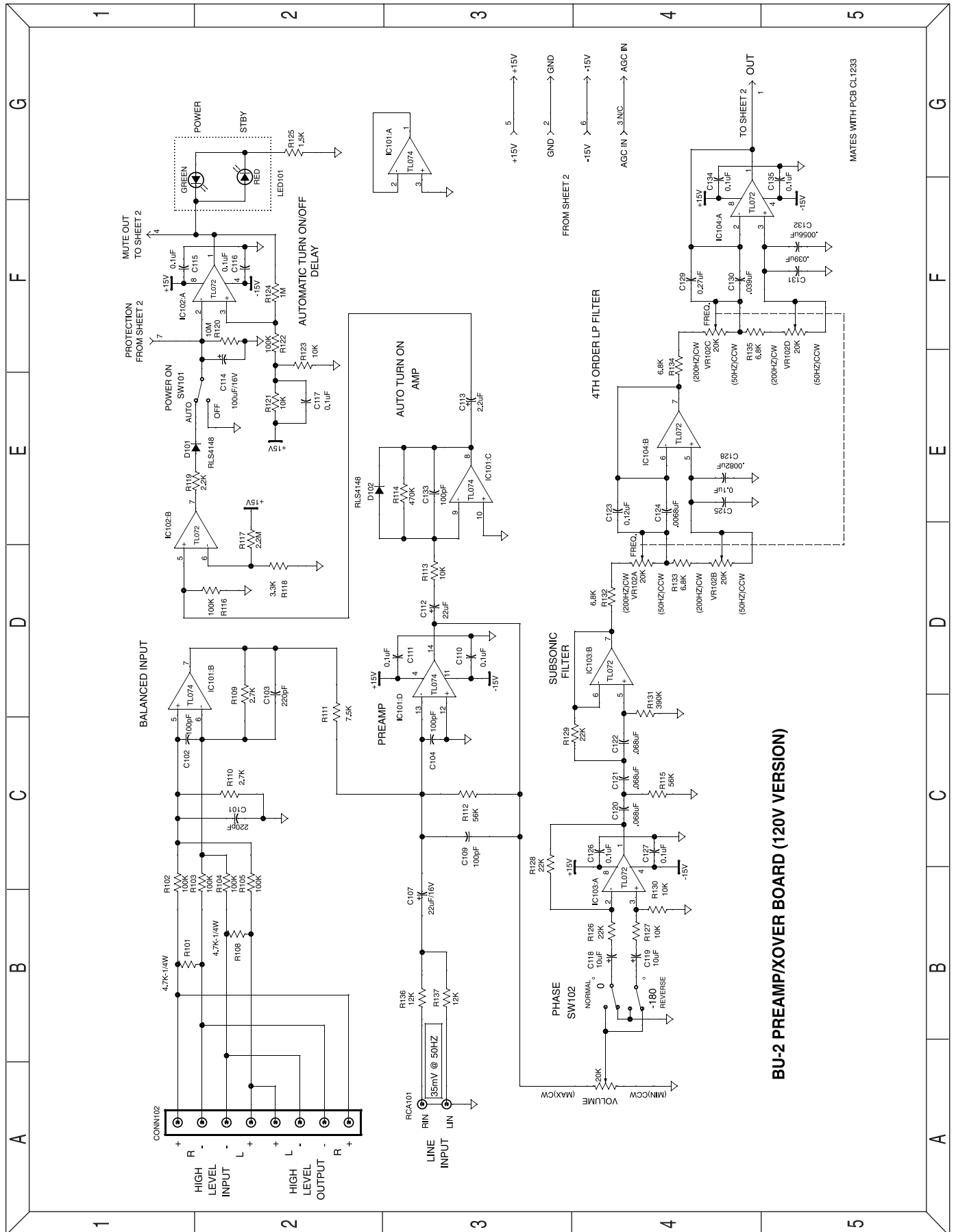
IC101 - TL074, Quad J-FET Input Op-Amp



PRINTED CIRCUIT BOARDS (BOTTOM VIEW, solder side)

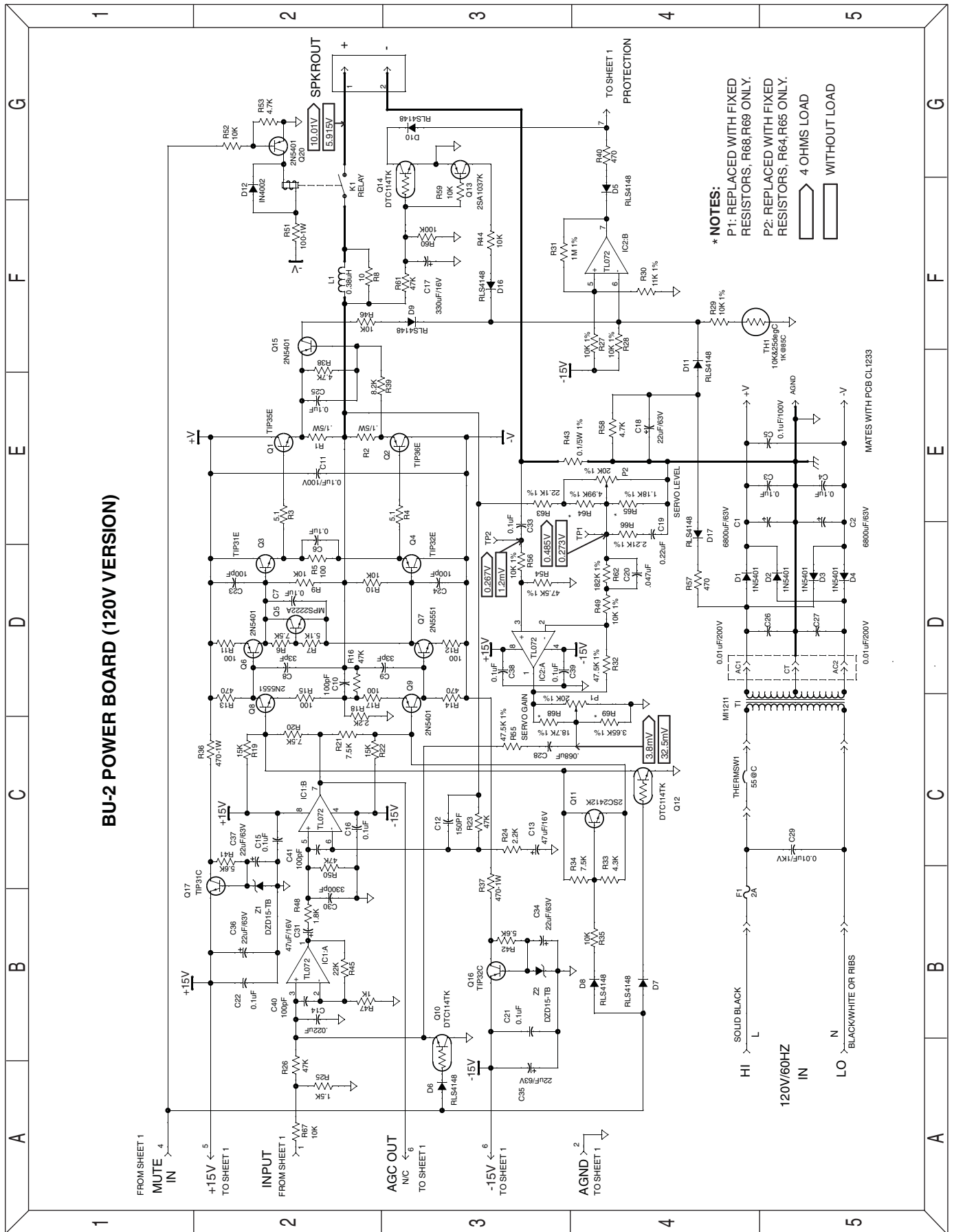


PREAMP/CROSSOVER SCHEMATIC 120V VERSION



BU-2 PREAMP/CROSSOVER BOARD (120V VERSION)

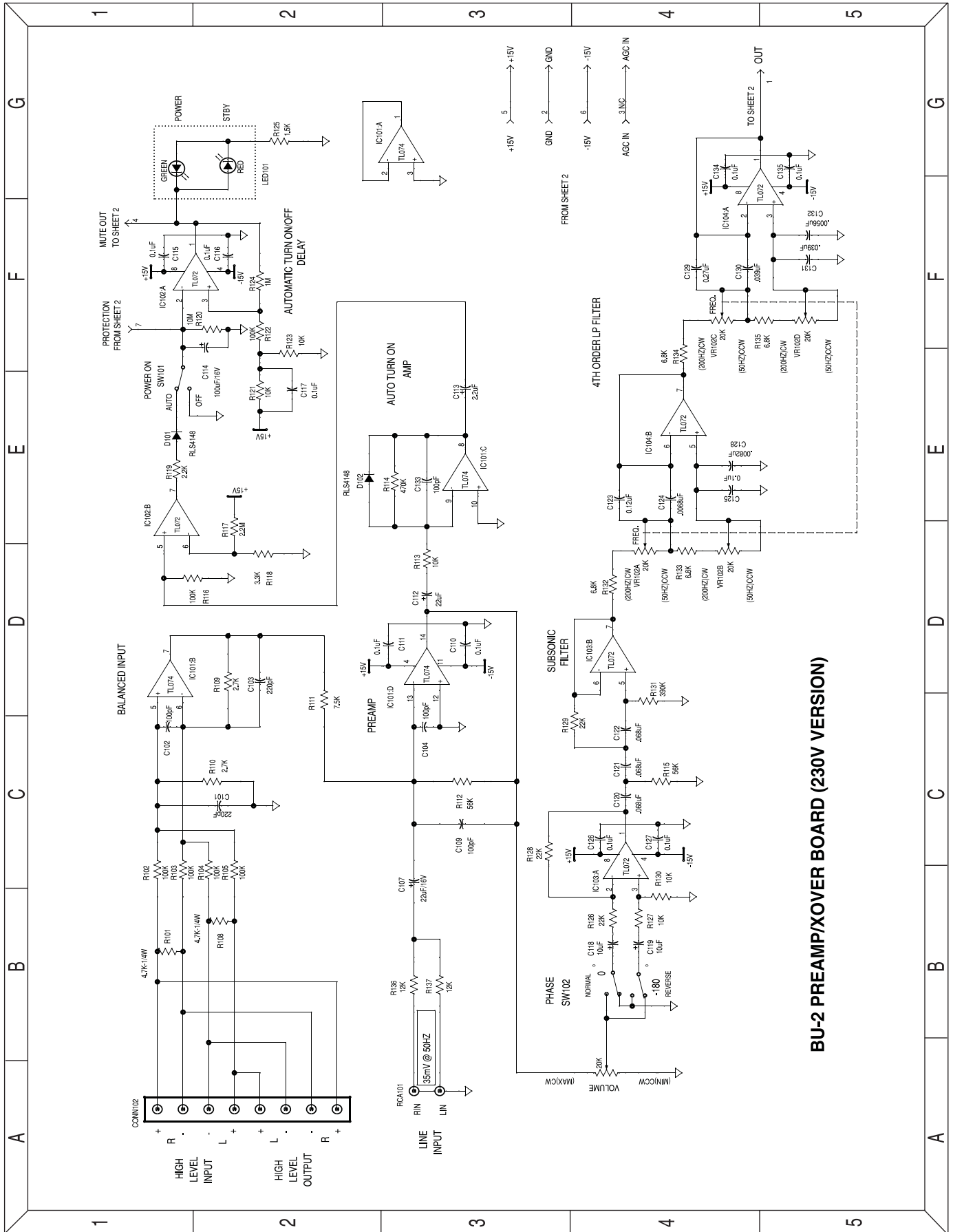
POWER SCHEMATIC 120V VERSION



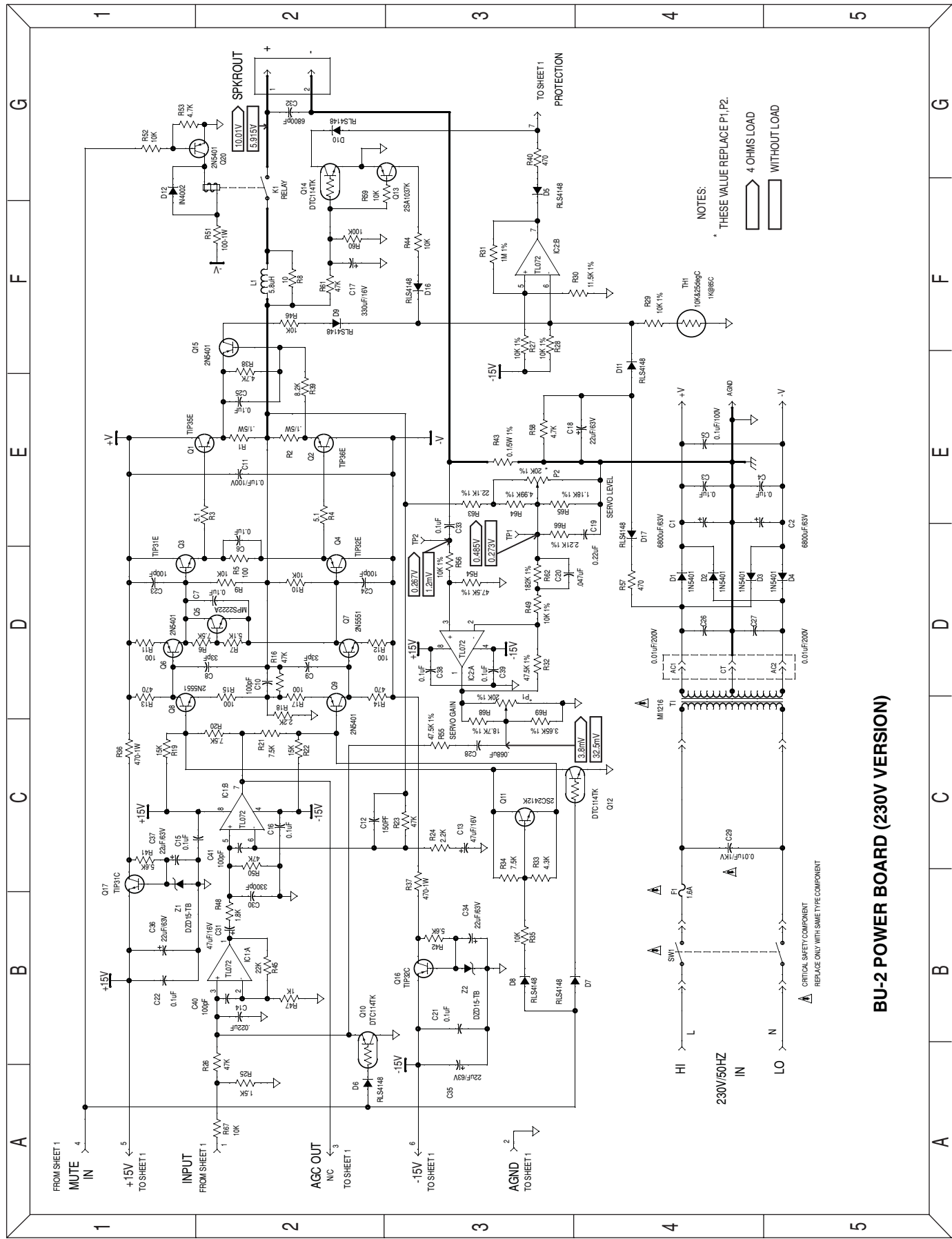
BU-2 POWER BOARD (120V VERSION)

*** NOTES:**
 P1: REPLACED WITH FIXED RESISTORS, R68,R69 ONLY.
 P2: REPLACED WITH FIXED RESISTORS, R64,R65 ONLY.
 [Symbol: 4 OHMS LOAD] 4 OHMS LOAD
 [Symbol: WITHOUT LOAD] WITHOUT LOAD

PREAMP/CROSSOVER SCHEMATIC 230V VERSION



POWER SCHEMATIC 230V VERSION



NOTES:
 * THESE VALUE REPLACE P1,P2.
 [Symbol] 4 OHMS LOAD
 [Symbol] WITHOUT LOAD

BU-2 POWER BOARD (230V VERSION)

▲ CRITICAL SAFETY COMPONENT
 REPLACE ONLY WITH SAME-TYPE COMPONENT