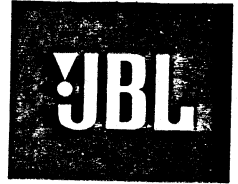


# Technical Manual

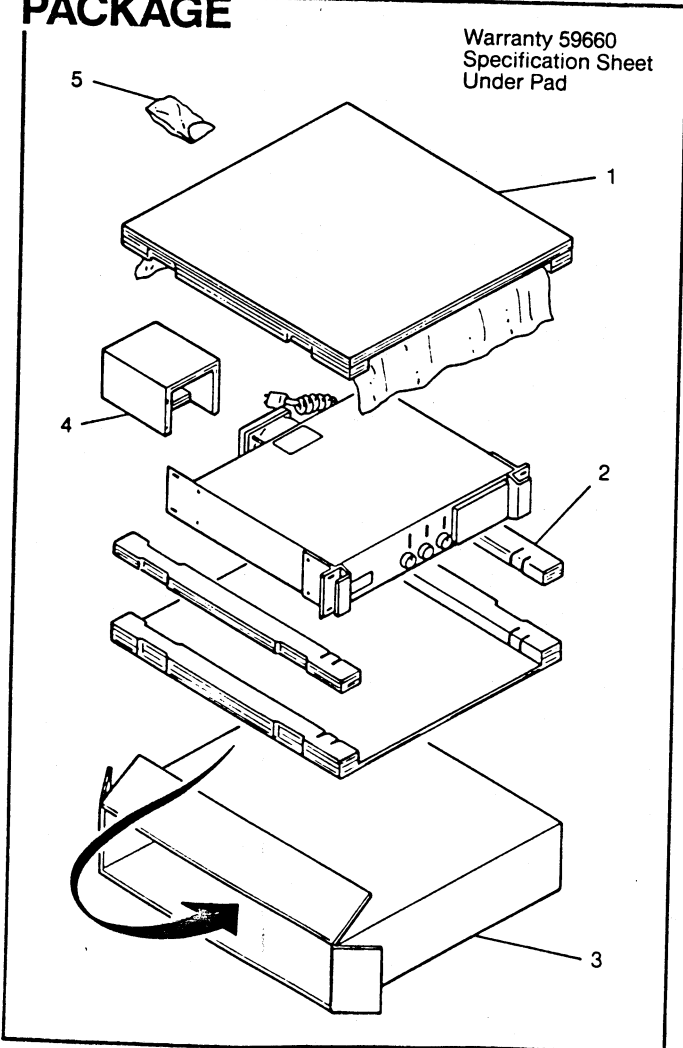
# JBL/UREI ES150 POWER AMPLIFIER SPECIFICATIONS



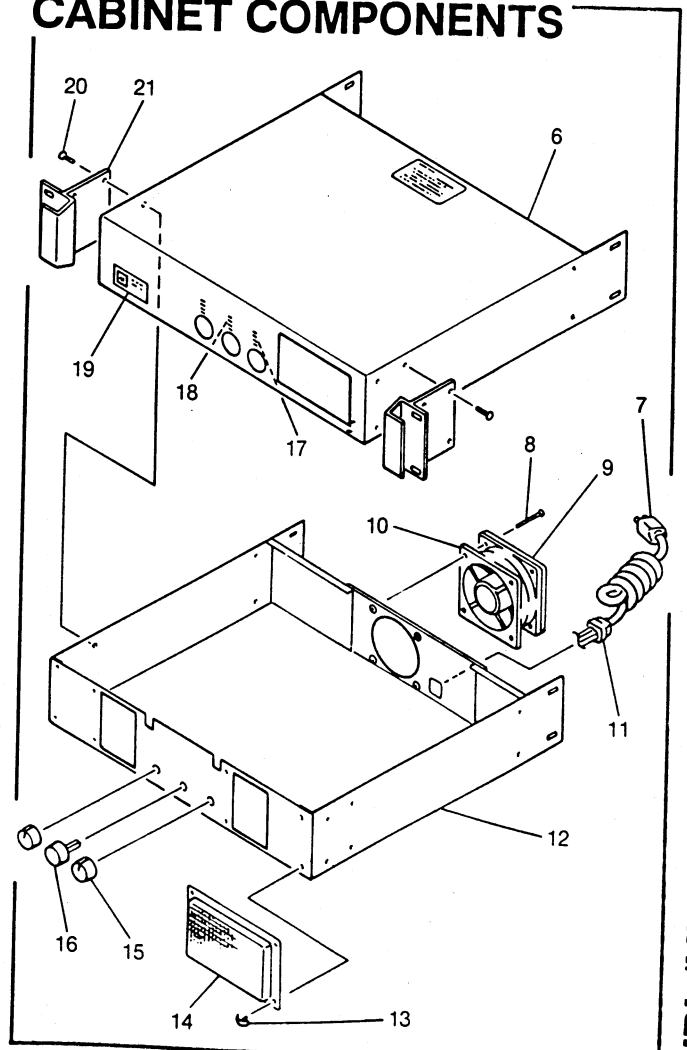
- |                       |                 |                 |                     |                      |
|-----------------------|-----------------|-----------------|---------------------|----------------------|
|                       | <b>4 Ohm/Ch</b> | <b>8 Ohm/Ch</b> | <b>8 Ohm Bridge</b> | <b>16 Ohm Bridge</b> |
| <b>Rated Power:</b>   | 75 W            | 50 W            | 150 W               | 100 W                |
| <b>Midband Power:</b> | 85 W            | 60 W            |                     |                      |
- Rated Power:** is minimum continuous sine wave output per channel, with both channels driving their rated load over a power bandwidth of 20 Hz to 20 kHz. Maximum total harmonic or intermodulation distortion measured at any power level from 250 milliwatts to rated power is less than 0.1%. Maximum Transient Intermodulation Distortion is less than 0.05%.
- Midband Power:** is maximum output power per channel, with both channels driven, at onset of clipping with 1 kHz sine wave, THD 1%.
- Frequency Response:**  $\pm 1$  dB, 20 Hz to 20 kHz, at any level up to rated power.
- Noise:** At least 100 dB below rated output (15.7 kHz noise bandwidth, A weighted).
- Input:** Balanced bridging differential amplifier.
- Input Impedance:** Line: 40 k ohms used as balanced input; 20 k ohms used as unbalanced (single-ended) input.
- Maximum Input Level:** +20 dB (7.75 V rms).
- Input Sensitivity:** 1.1 V for rated output into 8 ohm load.
- Damping Factor:** Greater than 200 at any frequency from 20 Hz to 1 kHz into 8 ohm load.
- AC Power:** Power Consumption: At idle (approx.): 40 W. At rated output (4 ohms both channels): 400 W.
- Polarity:** Positive-going signal on pin 3 of XL or barrier strip + terminal gives positive-going signal at - output terminal.

- Connectors:** Input connectors are Female XL style 3 pin and barrier strip wired in parallel. Output connectors are 5-way binding posts on  $\frac{3}{4}$  inch (19mm) centers.
- Controls:** Channel Gain (2). Power, Stereo/Bridge Mono/Dual Mono Switch. Ground Lift Strap on Barrier Strip.
- Indicators:** Power, Signal Present (2), -24 dB (2), -8 dB (2), Clip (2), Standby, Remote.
- Dimensions:** 19 inch Rack Mounting: 88mm (3.5 in.) high by 368mm (14.5 in.) deep to rear panel. 406mm (16 in.) depth to rear of Rear rack mounting ears.
- Net Weight:** 32 lbs. (14.5 kg)
- Rear Panel:** Input Connectors: XLR Barrier Strip Ground Lift Jumper. Mode Switch: Stereo/Dual Mono/Bridge Mono. Output Connections: 5-Way Binding Posts In Line on  $\frac{3}{4}$  in. Centers. Rear Input panel may be removed and replaced with optional input accessories. Locations to attach rack supports at rear panel. Circuit Breakers.
- Front Panel:** Power Switch. 1 dB/Step Input Level Controls. Digitally controlled. Recessed Lockout switch disables Front Panel Gain Controls. Rack Handles. LED Indicators: Power; Input Signal Present; Output Level -24 dB, -6 dB, Clip; Standby; Remote
- Other:** Fan cooled (air flow is back-to-front). Low inrush current design.
- Warranty Information:** Refer to the Warranty Statement packed with each product.

## PACKAGE



## CABINET COMPONENTS



JBL/UREI ES150 REV B

# JBL/UREI ES150

## COMPONENTS PARTS LIST

ITEM	PART NO.	QTY	DESCRIPTION
1	33-0415	2	INSRT
2	33-0425	2	INSRT DIE CUT ES/SR
3	33-0414	1	SHIPPING CARTON SR
4	33-0419	2	INSRT, REAR (FAN)-2 PCS/PACK
5	10-16525	1	RACK SCREW KIT ES
6	25-16512	1	COVER CHASSIS FAB ES150
7	36-0330	1	CORD PW 14/3 5.5' SJT
8	30-0322	4	SCR, 6-32x1-3/4 PFH
9	45-0118	1	FAN GUARD SOMM (NO SCREEN)
10	45-0116	1	FAN DC TB AXL 12V
11	36-0333	1	STRAIN RELIEF AC CRD
12	25-16664	1	CHASSIS MAIN FAB ES SER.
13	27-0567	4	CONN, TAB .187" FASTON
14	25-16488	1	GRILL, FLTR-BLK NO LOGO
15	24-16446	2	KNOB ES
16	24-16410	1	PWR BUTTON ES
17	25-16419	2	LENS, LED 4 WINDOWS
18	25-16503	1	LENS, LED 3 WINDOWS
19	25-16418	1	PLATE LOGO ES AMP
20	30-0325	12	SCR, 10-32x1/2 PPH B0
21	25-16477	2	RACK EAR 2 RACK SPACE
22	36-0531	4	BUTTON MTG
23	15-16416	1	SW SLIDE 3P3T PCMT
24	30-0327	2	SCR, 3x5MM PPH
25	30-0234	4	SCR, 6-32x1/4 PPH SEMS
26	16-16425	1	XFMR PW 120V-ES150
27	30-0332	4	SCR, 8-32x2 PPH
28	28-0038	4	WSHR, #8 FBR SHLDR
29	30-0230	4	SCR, 8-32x3/8 PPH
30	29-0048	1	NUT 6-32 HEX KEPS
31	13-0281	1	RECT BRDG 25A 200V
32	30-0293	1	SCR, 6-32x3/4 PPH
33	15-0468	1	CIRCUIT BREAKER 4A
34	27-0222	2	BIND, POST-BLK
35	27-0221	2	BIND, POST-RED
36	30-0234	1	SCR, 6-32x1/4 PPH SEMS
37	42-0034	1	LUG, #6 MTG

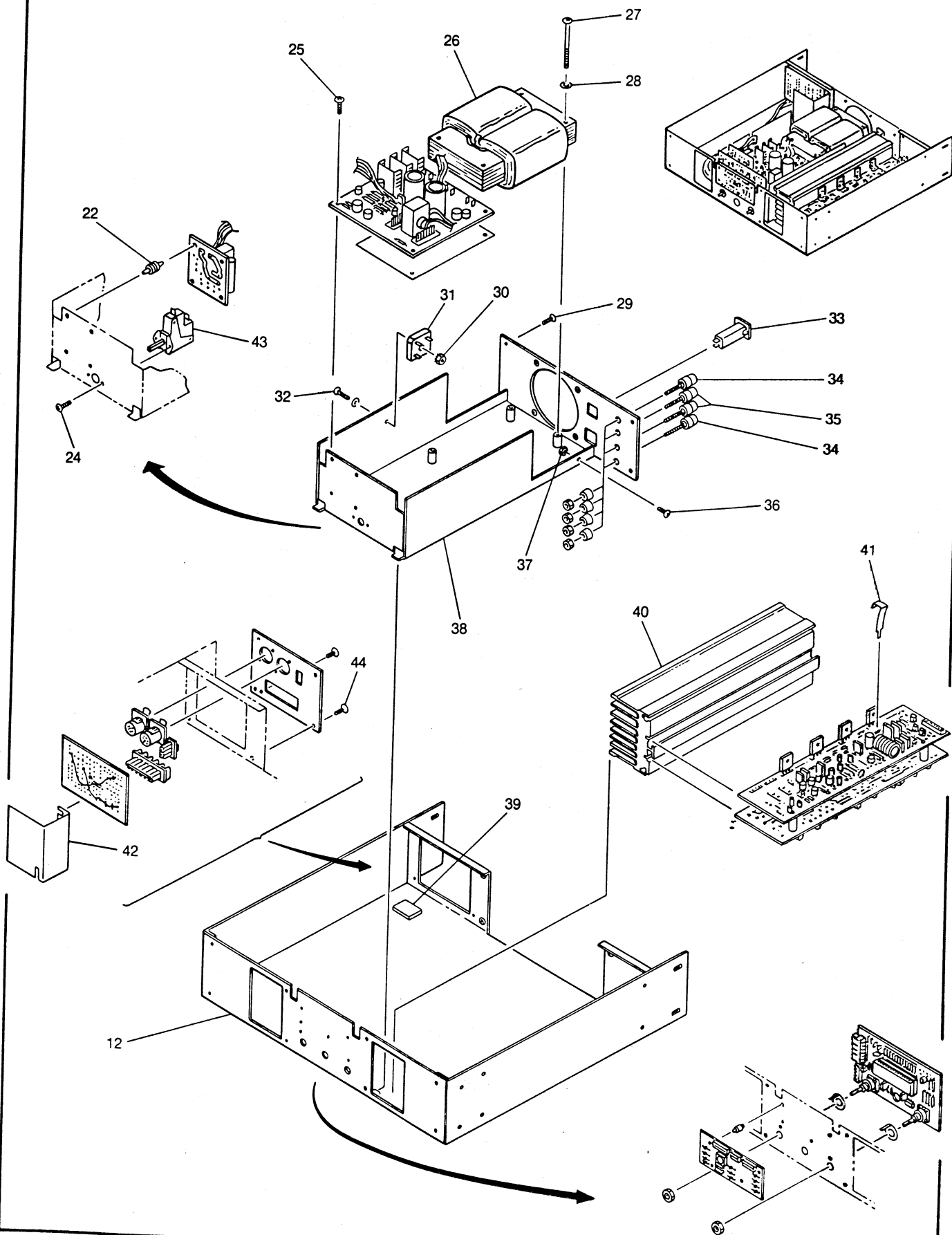
ITEM	PART NO.	QTY	DESCRIPTION
38	25-16745	1	CHASSIS PWR SUPP 6615/150
39	36-0325	1	BUMPER, RUBBER
40	25-16620	1	HEATSINK, FAB ES/SR
41	25-16413	11	CLIP, HEATSINK ES/SR
42	25-16649	1	SHIELD, ESI AIR-FLOW
43	15-1463	1	SW PW SPST 15A
44	30-0255	4	SCR, 4-40x1/4 PPH BZ
45			
46			
47			
48			
49			
50			

### CIRCUIT BOARDS

51	13-0414	2	TR, PNP, SIG, 2N3906, 40V
52	13-0590	1	IC, DUAL DIG POT 10K DS1267
53	13-0276	6	IC, OP-AMP, DUAL, NE5532N
54	13-0425	2	XSTR, FET J113
55	13-0424	3	XSTR, PNP, 60V, 2N6728
56	13-0543	2	TR PNP PW 2SA1386
57	13-0542	2	XSTR, 2SC2837
58	13-0541	2	XSTR, 2SA1186
59	13-0544	2	XSTR, 2SC3519
60	13-0280	2	OPTOISOLATOR HIIAI
61	16-14573	2	COIL, AIR, CORE, 2.2UH
62	13-0545	14	XSTR, 2SA1208S
63	13-0546	10	XSTR, 2SC2910S
64	13-0423	7	XSTR, NPN, 60V, 2N6716
65	13-0547	2	TR PNP PW 2SA1011E
66	13-0548	2	TR NPN PW 2SC2344E
67	189-00004-00	1	THERMISTOR ASSY
68	15-0473	1	RELAY SPST 24V
69	27-0402	1	IC SOCKET 40 PIN DIP
70	13-0601	1	IC MICROCONTROLLER/PROG'D
71	13-0449	1	EEPROM NMC9306N
72	13-0586	3	LED, RED SUB-MINI
73	13-0587	6	LED, GRN SUB-MINI

# JBL/UREI ES150

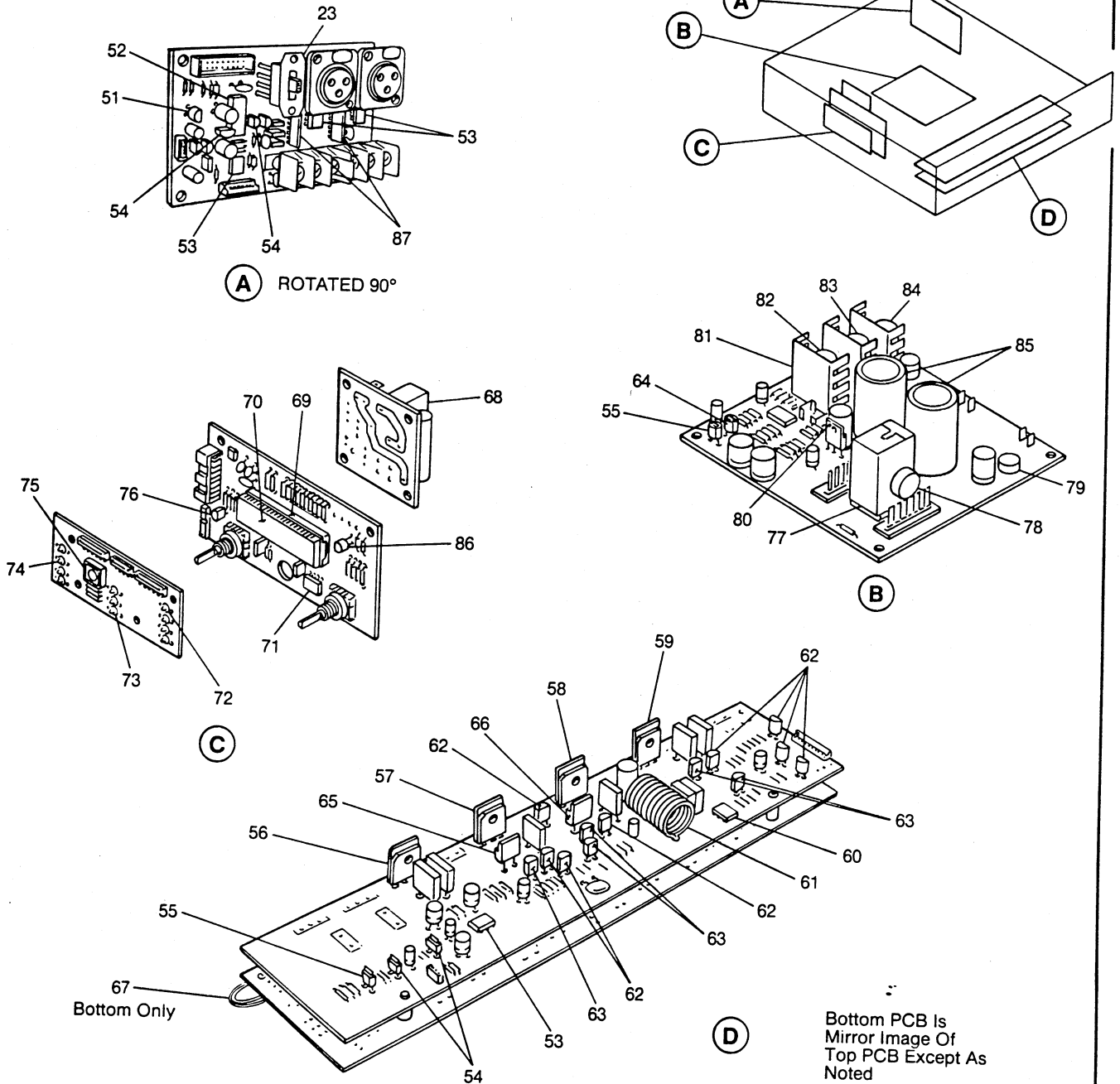
## COMPONENT EXPLODED VIEW



JBL/UREI ES150

# JBL/UREI ES150

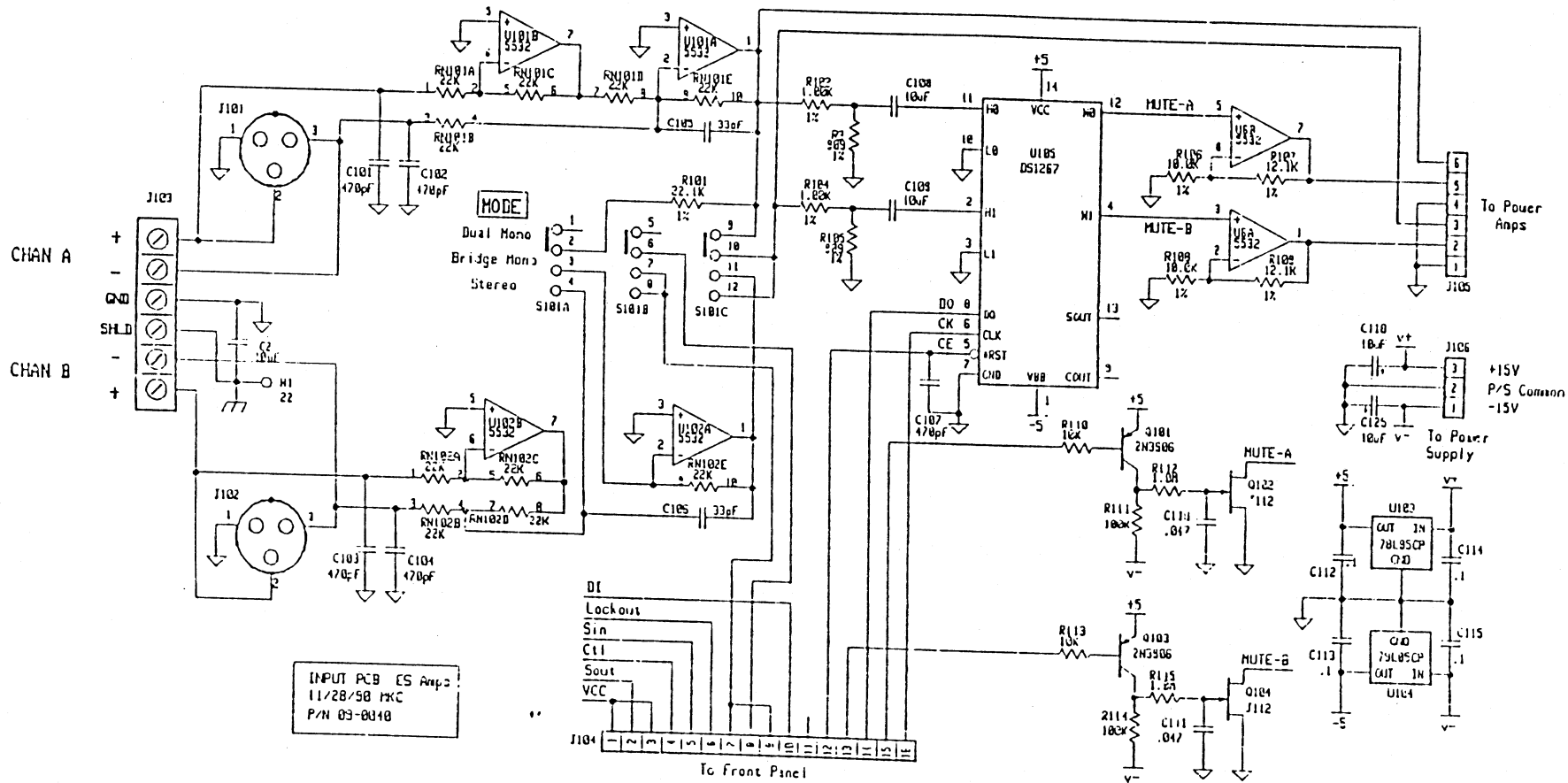
## CIRCUIT BOARDS



ITEM	PART NO.	QTY	DESCRIPTION
74	13-0588	2	LED, AMBER SUB-MINI
75	15-16414	2	SW RTRY ENCODER 5BIT
76	13-0413	1	TR. NPN. SIG. 2N3904. 40V
77	15-0389	1	RELAY DPDT 24V
78	36-0403	2	CERAMIC BASE MAGNET
79	13-0390	2	RECT. BRDG. 200V. 1.5A
80	13-0383	1	REG. E. POS. 5V. K. T092
81	36-0446	3	HEATSINK
82	13-0195	1	IC, E. REG. -15V. 7915. T0-220

ITEM	PART NO.	QTY	DESCRIPTION
83	13-0194	2	IC, E. REG. 15V. 7815. T0-220
84	13-0284	1	REG. E. POS. 5V. T0-220
85	14-0784	2	CAP. EL. 6800UF. M. 50V
86	13-0614	1	IC UNDER E SENS'G CIR
87	13-0369	2	RES. NTWK. SIP. 22K. 10P

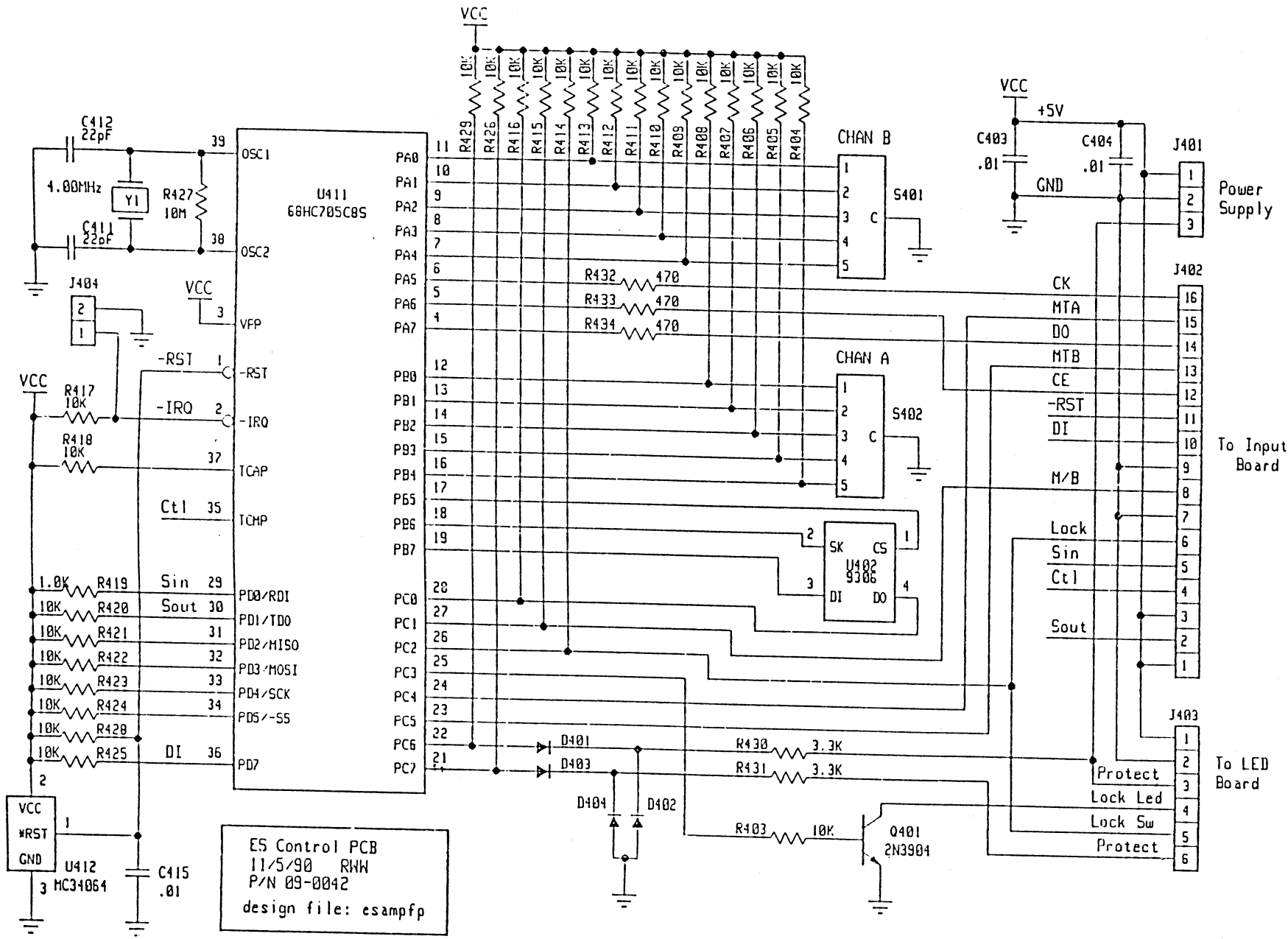
SCHEMATIC, INPUT, PCB, ES-A (05-17018)



INPUT PCB ES Amps  
11/28/58 HXC  
P/N 03-0010

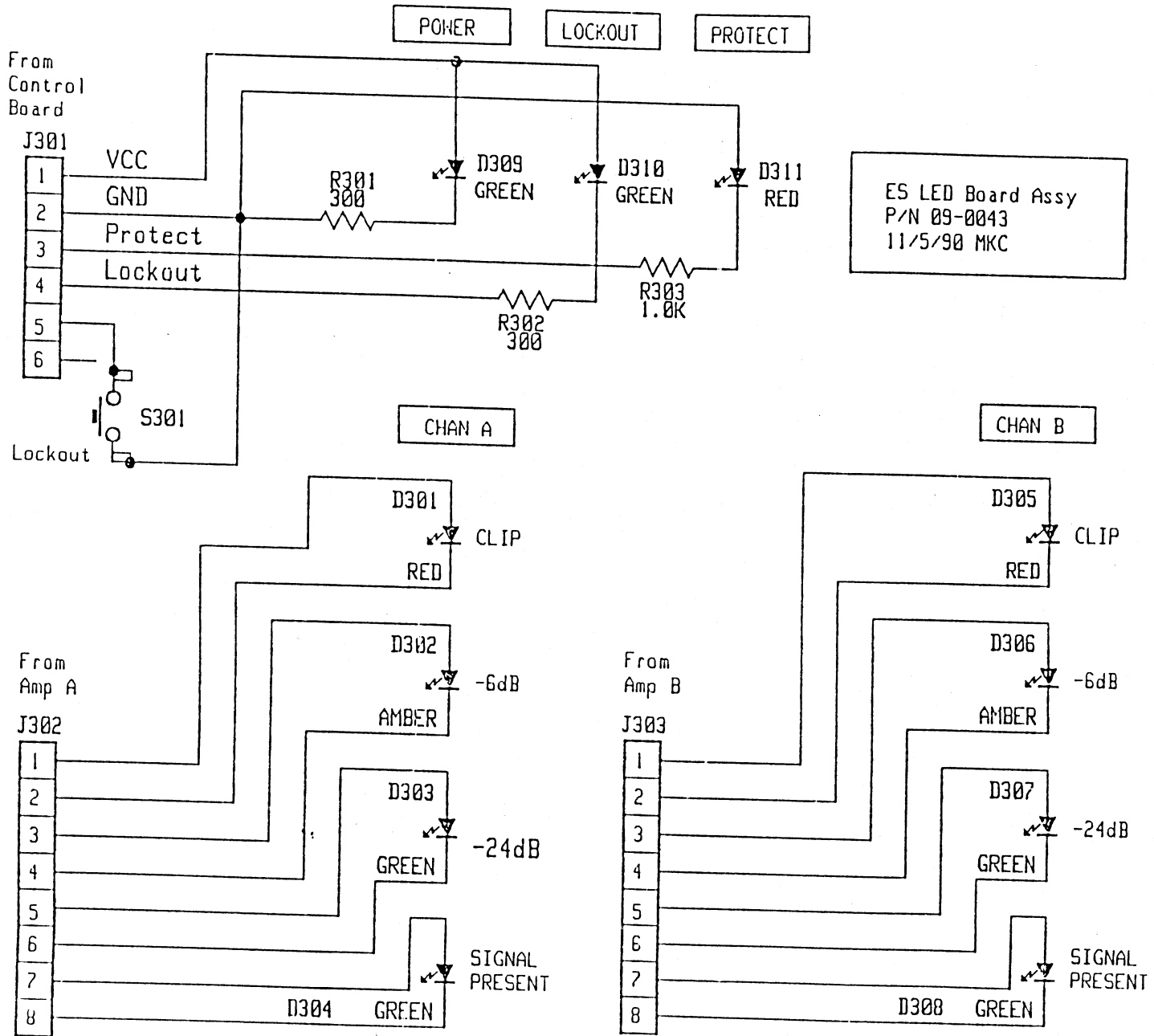
JBL/UREI ES150, ES300, ES600

SCHEMATIC, M'PROCCSR, ES-A (05-17021)



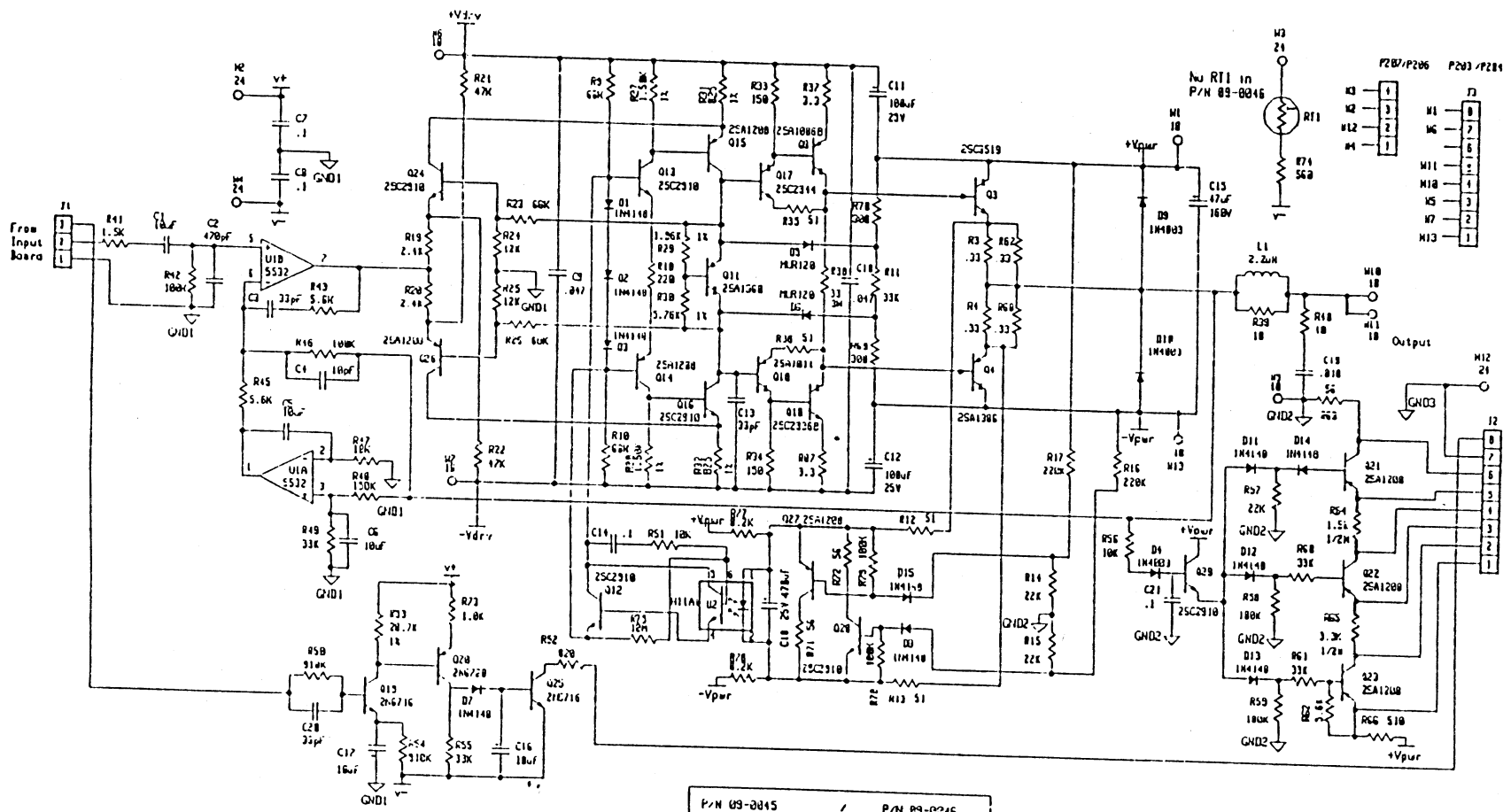
ES Control PCB  
11/5/90 RHW  
P/N 09-0042  
design file: esampfp

JBL/UREI ES150, ES300, ES600



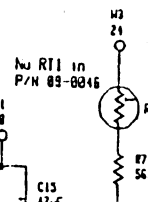
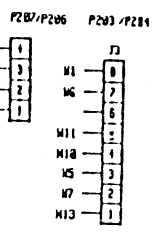
# JBL/UREI ES150, ES300, ES600

# SCHEMATIC, PWR, AMP, ES150A (05-17024)



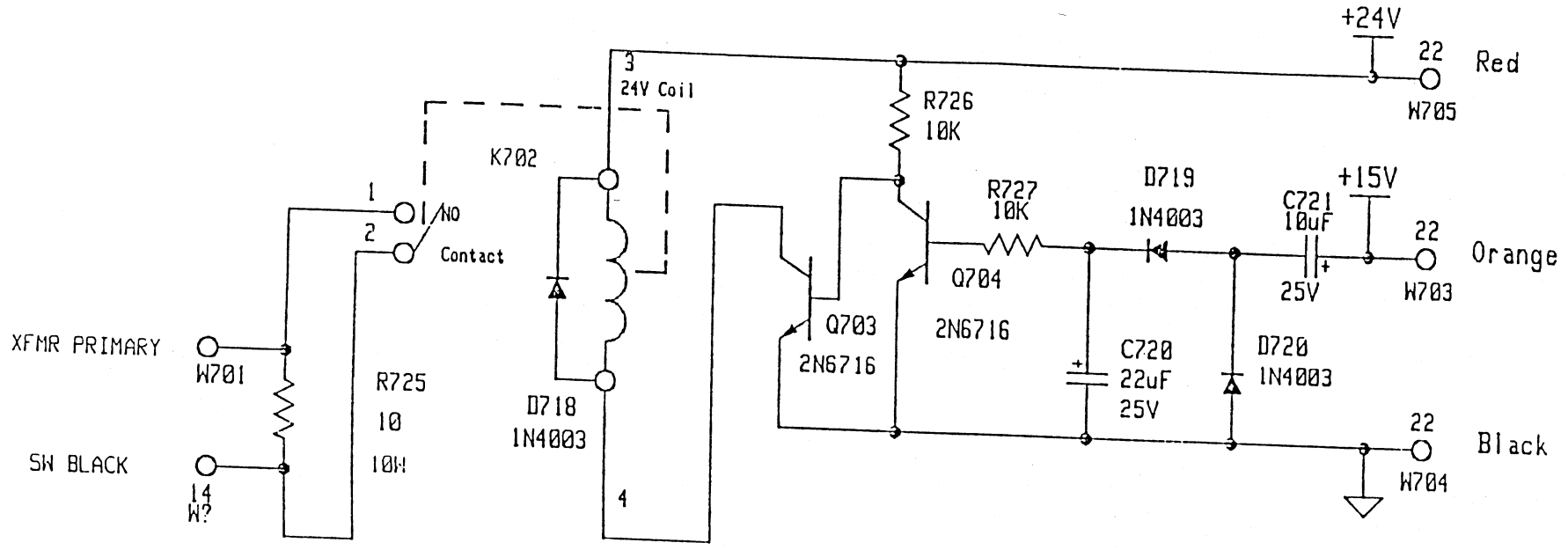
P/N 09-0045 / P/N 09-0346  
 ES150 Amplifier A / ES150 Amplifier B  
 Rev 11/27/98 PXC

To LED Board





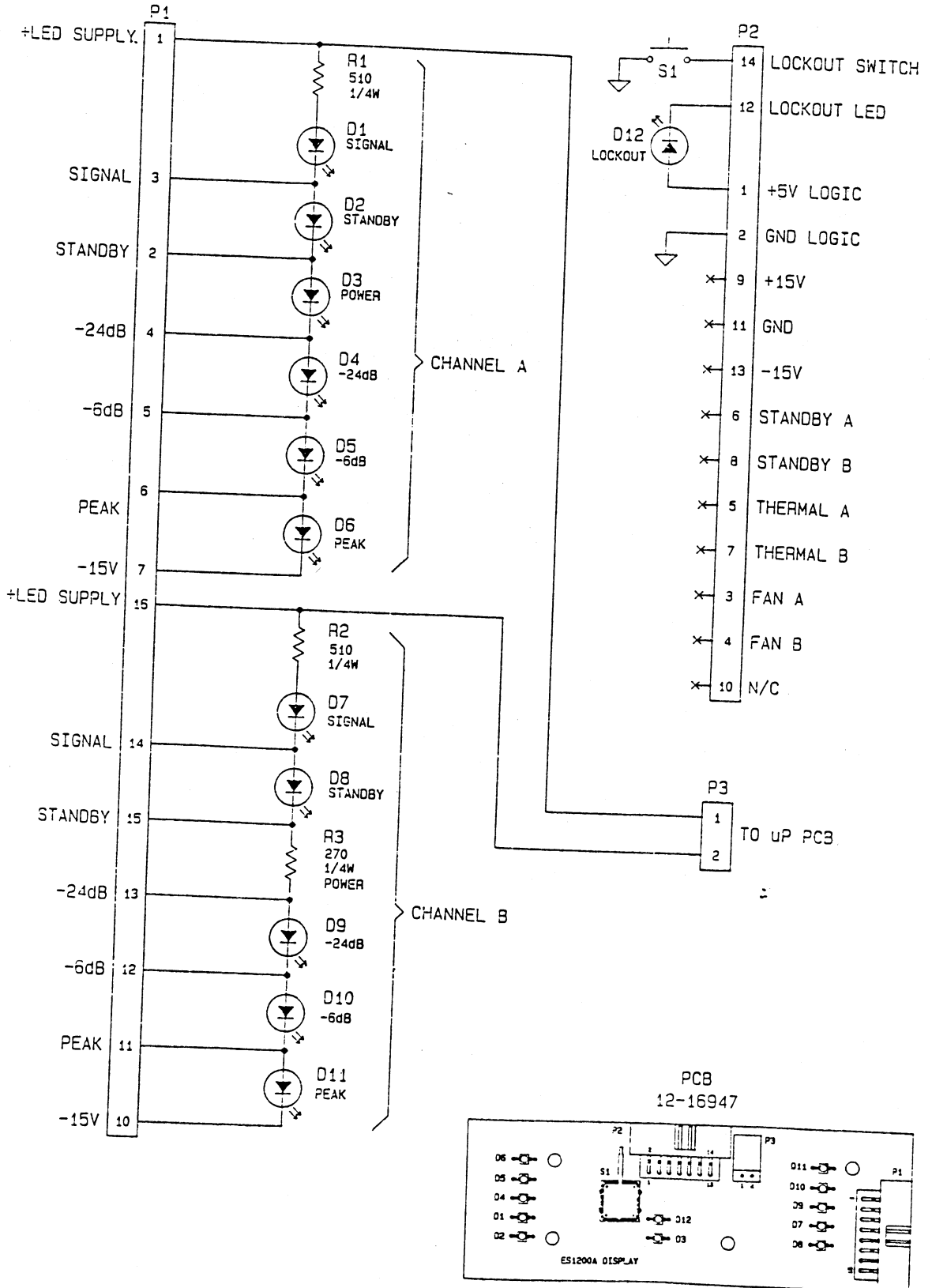
**JBL/UREI ES150, ES300, ES600**



**SCHEMATIC, INRUSH, LMT, ES-A (05-17029)**

ES Series Inrush Limiter Asy  
 P/N 09-0041  
 11/5/90 MKC  
 Design File: inrush

# JBL/UREI ES150



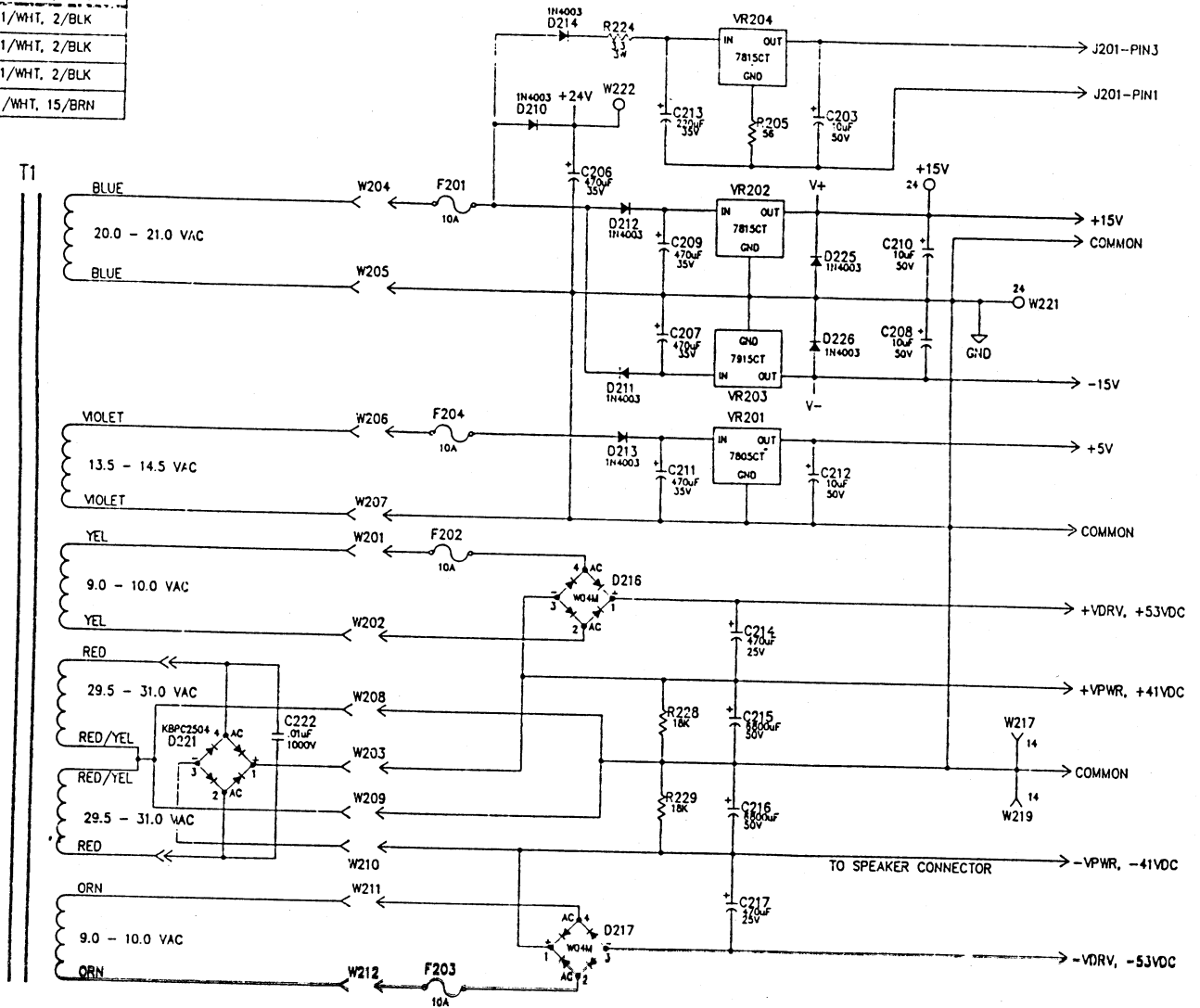
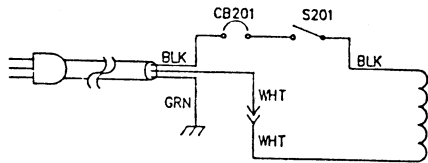
**SCHEMATIC, DISPLAY, ES1200A (05-16981)**

SCHEM, ES150, XFMR, WIRING (05-17066)

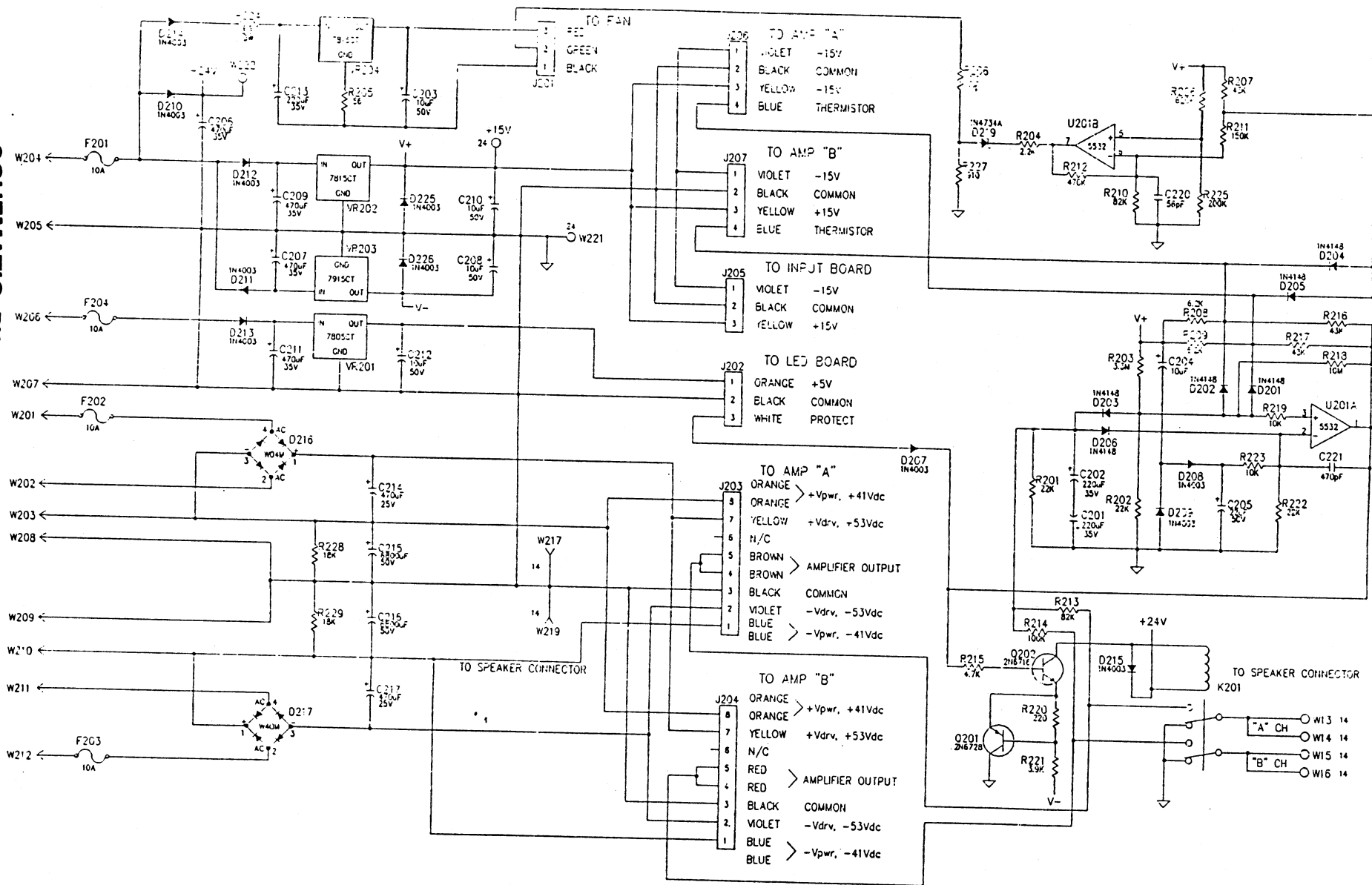
JBL/UREI ES150

TRANSFORMER (T1) P/N	LINE VOLTAGE	LINE FREQUENCY	PRIMARY WIRING NUMBER/COLOR
16-16425	120VAC	60Hz	1/WHT, 2/BLK
16-16426	100VAC	50/60Hz	1/WHT, 2/BLK
16-16427	230VAC	50/60Hz	1/WHT, 2/BLK
16-16427	240VAC	50/60Hz	1/WHT, 15/BRN

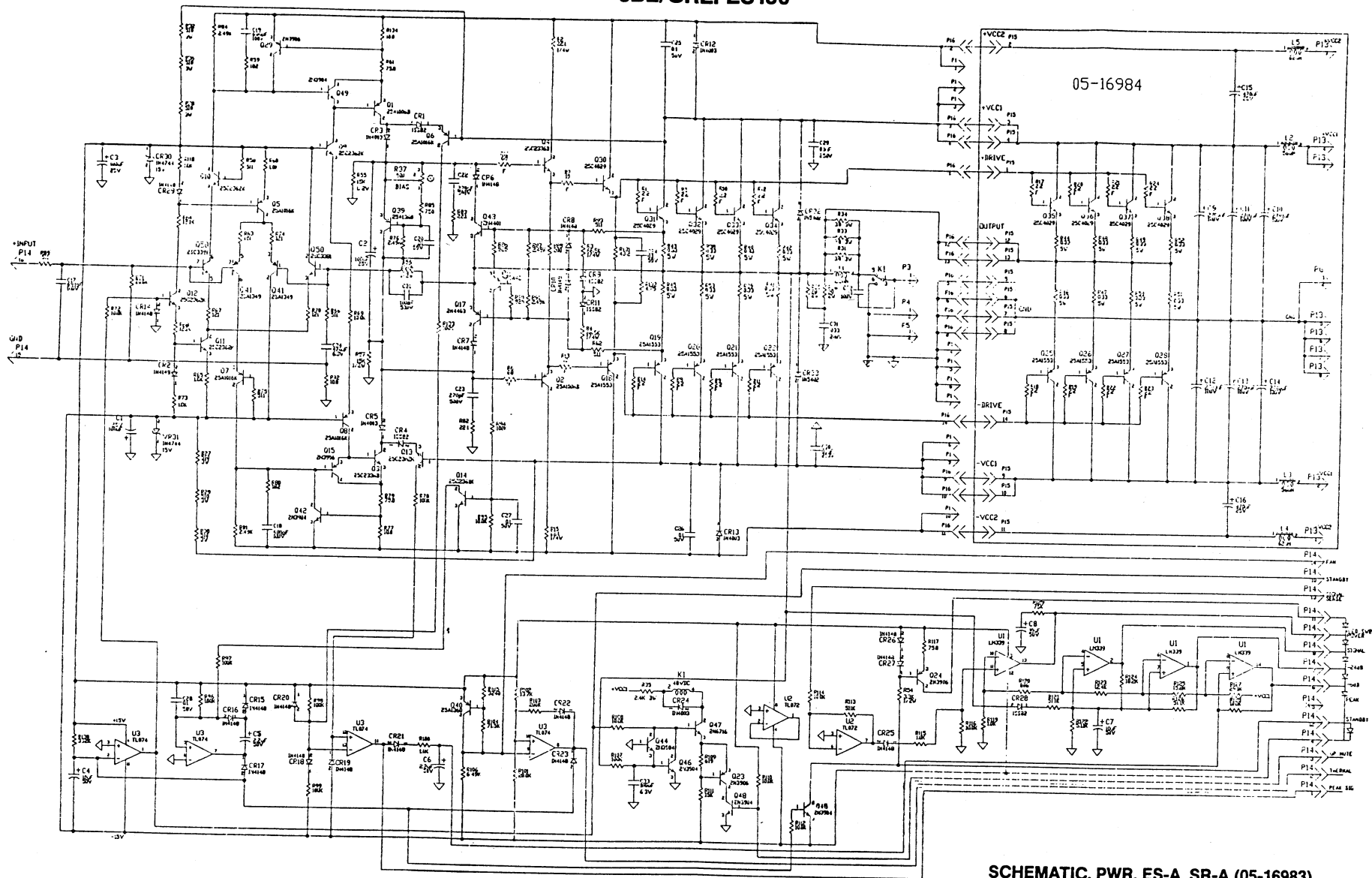
NOTE : 120VAC 60Hz WIRING SHOWN



SEE SCHEMATIC 05-17030 FOR COMPLETE POWER SUPPLY



# JBL/UREI ES150



SCHMATIC, PWR, ES-A, SR-A (05-16983)

PQM Number : ES150A - PWR,AMP 120V

Item#	X Part Number....	.Quantity.	...Alt-Part#...	.....Reference Designator.....	.UM.	Alt.	.ECO No.	ECO Date	StartUse	End Use.
	Description.....	Rev	Inv	.Oper#.		UM	Yield%			
005	X 10-16857 ES150 PACKING MAT. KIT	1.0000				EA	100		10-26-90	
010	10-16907 KIT,FINAL,AMP,ES-A,115V	1.0000				EA	100		11-06-90	
015	X 10-16921 KIT,PACKING,ES	1.0000				EA	100		11-06-90	
020	15-0463 SW PW SPST 15A	1.0000				EA	100		10-26-90	
025	15-0468 CIRCUIT BREAKER 4A	1.0000				EA	100		10-26-90	
030	16-16425 XFMR PW 120V-ES150	1.0000				EA	100		10-26-90	
035	24-16410 PWR BUTTON ES	1.0000				EA	100		10-26-90	
	24-16446 KNOB ES	2.0000				EA	100		10-26-90	
045	25-16413 CLIP,HEATSINK ES/SR	11.0000				EA	100		10-26-90	
050	25-16418 PLATE LOGO ES AMP	1.0000				EA	100		10-26-90	
055	25-16419 LENS,LED 4 WINDOWS	2.0000				EA	100		10-26-90	
060	25-16475 RING,ENCODER	2.0000				EA	100		10-26-90	
065	25-16477 RACK EAR 2 RACK SPACE	2.0000				EA	100		10-26-90	
070	25-16488 GRILL,FLTR-BLK NO LOGO 2	1.0000				EA	100		10-26-90	
075	25-16491 PLATE,OPTION CARD/ES	1.0000				EA	100		10-26-90	
080	25-16503 LENS,LED 3 WINDOW	1.0000				EA	100		10-26-90	
085	25-16512 COVER CHASSIS FAB ES150	1.0000				EA	100		10-26-90	

POM Number : ES150A - PWR,AMP 120V

Item#	X Part Number....	Quantity.	Alt-Part#...	Reference Designator.....	UM.	Alt. UM	ECD No. Yield%	ECD Date	StartUse	End Use.
	Description.....	Rev	Inv	Oper#.						
090	25-16555 INSUL,TRANSISTOR	2.0000				EA	100		10-26-90	
			A							
095	25-16620 HEATSINK,FAB ES/SR	1.0000	25-16408			EA	100		10-26-90	
			B							
100	25-16664 CHASSIS MAIN FAB ES SER.	1.0000				EA	100		10-26-90	
			A							
105	25-16745 CHASSIS PWR SUPP 6615/150	1.0000				EA	100		10-26-90	
			B							
110	27-0221 BIND. POST,RED	2.0000				EA	100		10-26-90	
115	27-0222 BIND. POST-BLK.	2.0000				EA	100		10-26-90	
120	27-0567 CONN,TAB .187" FASTON	4.0000				EA	100		10-26-90	
			B							
	29-0048 NUT 6-32 HEX KEPS	1.0000				EA	100		10-26-90	
130	30-0234 SCR,6-32X1/4 PPH SEMS	4.0000				EA	100		10-26-90	
135	30-0255 SCR,4-40X1/4 PPH BZ	4.0000				EA	100		10-26-90	
			A							
140	31-0046 RIVET AAD 4-5	4.0000				EA	100		10-26-90	
145	33-0419 INSRT,REAR(FAN)-2PCS/PACK	2.0000				EA	100		10-26-90	
			A							
150	36-0181 FASTENER,MT6	4.0000				EA	100		10-26-90	
155	36-0325 BUMPER,RUBBER	1.0000				EA	100		10-26-90	
160	36-0330 CORD PW 14/3 5.5' SJT	1.0000				EA	100		10-28-90	
			A							
165	36-0333 STRAIN RELIEF AC CRD HEYC	1.0000				EA	100		10-26-90	
170	36-0459 FASTON .187 FEM 14-16 AWG	8.0000				EA	100		10-26-90	
			A							

BOM Number : ES150A - PWR,AMP 120V

Item#	X Part Number	Quantity	Alt-Part#	Reference Designator	UM	Alt. UM	ECO No.	ECO Date	StartUse	End Use
	Description	Rev	Inv	Oper#			Yield%			
175	36-0518 POST SUPPORT 1/2"	2.0000	A		EA		100		10-26-90	
180	36-0529 POST SUPPORT 1/8" HT	4.0000	A		EA		100		10-26-90	
185	36-0533 CLAMP FLAT CABLE	2.0000	A		EA		100			
190	4153-10003 HT SHRK 10MM BLK	0.3000	1		FT		100		10-26-90	
195	45-0116 FAN DC TB AXL 12V	1.0000	D		EA		100		10-28-90	
200	45-0118 FAN GUARD 80MM(ND SCREEN)	1.0000	A		EA		100		10-26-90	
205	97-16600 LABEL CAUTION ES/SR	1.0000	A		EA		100		10-26-90	
	25-16646 INSUL,ES/SR PS	1.0000	A	BETWEEN PCBA/CHASSIS	EA		100		10-26-90	
215	30-0293 SCR,6-32X3/4 PPH	1.0000		BRIDGE RECT MTG	EA		100		10-26-90	
220	13-0281 RECT BRDG 25A 200V	1.0000	C	CR221	EA		100		10-28-90	
225	30-0322 SCR,6-32X1-3/4 PFH	4.0000	C	30-0098 FAN MOUNTING	EA		100		10-26-90	
230	36-0531 BUTTON MTG	4.0000	A	GRILL MTS MB-3-187	EA		100		10-26-90	
235	30-0234 SCR,6-32X1/4 PPH SEMS	1.0000		GROUND	EA		100		10-26-90	
240	42-0034 LUG,#6 MTG.	1.0000		GROUND	EA		100		10-26-90	
245	36-0530 POST SUPPORT 1/4" HT	4.0000	A	INRUSH SPACER	EA		100		10-26-90	
250	14-0051 CAP,CD,.01UF,M,1KV	1.0000		MAIN BRIDGE	EA		100		10-28-90	
255	25-16649 SHIELD,ESI AIR-FLOW	1.0000	B	NOISE REDUCTION	EA		100		10-26-90	



BQM Number : ES150A - PWR,AMP 120V

Item#	X Part Number....	.Quantity.	...Alt-Part#...	.....Reference Designator.....	.UM.	Alt.	.ECO No.	ECO Date	StartUse	End Use.
	Description.....	Rev	Inv	.Oper#.	UM	Yield%				
260	30-0230 SCR,8-32X3/8 PPH	4.0000		P/S TO CHASSIS	EA	100			10-26-90	
265	30-0327 SCR,3X5MM PPH	2.0000	A	POWER SWITCH	EA	100			10-26-90	
270	28-0038 WSHR,#8 FBR SHLDR	4.0000	A	T1 MTG	EA	100			10-26-90	
275	30-0332 SCR,8-32X2 PPH	4.0000	1	T1 MTG	EA	100				
280	30-0325 SCR,10-32X1/2 PPH B0	12.0000	A	TOP COVER/RACKERS	EA	100			10-26-90	
285	P 09-0040 ASSY,INPUT,ES-A	1.0000			EA	100			10-26-90	
010	13-0276 IC,NE5532AF	3.0000		U101,102,106	EA	100				
	13-0383 REG E +5V K TO-92 78L05CP	1.0000	A	U103	EA	100				
030	13-0373 REG E -5V 10% TO-92	1.0000	A	U104	EA	100				
040	13-0414 TR,PNP,SIG,2N3906,40V	2.0000	A	Q101,103	EA	100				
050	13-0425 XSTR,FET	2.0000		Q102,104	EA	100				
060	13-0590 IC,DUAL DIG POT 10K DS126	1.0000	A	U105	EA	100				
070	13-0369 RES,NET. 22K 10P	2.0000	F	RN101,102	EA	100				
080	185-01002-00 RES,10K 1/6W 5% CF	2.0000		R110,113	EA	100				
090	185-01004-00 RES,1 MEG 5% 1/6W CF	2.0000		R112,115	EA	100				
100	186-02212-00 RES,MF 22.1K 1% 1/8W	1.0000	A	R101	EA	100				
110	186-01212-00 RES,MF 12.1K 1% 1/8W	2.0000	A	R107,109	EA	100				

Procedure: PDC-R-07

Phantoms Exploded

Revision: 2

PQM Number : ES150A - PWR,AMP 120V

Item#	X Part Number....	Quantity.	Alt-Part#...	Reference Designator.....	UM.	Alt.	ECO No.	ECO Date	StartUse	End Use.
	Description.....	Rev	Inv	Oper#.	UM	UM	Yield%			
120	185-01003-00 RES,CF 100K 1/6W 5%	2.0000		R111,114	EA		100			
130	186-01002-00 RES,MF 10K 1% 1/8W	2.0000	A	R106,108	EA		100			
140	186-09090-00 RES,MF 909 OHM 1% 1/8W UF	2.0000	A	R103,105	EA		100			
150	186-01001-00 RES,MF 1K 1% 1/8W	2.0000	A	R102,104	EA		100			
160	14-0600 CAP,EL,10UF,M,50V,RD	2.0000		C118,125	EA		100			
170	14-0633 CAP,CD,33PF,K,500V	2.0000	A	C105,106	EA		100			
180	14-0636 CAP,CD,470PF,K,500V	5.0000		C101-104,107	EA		100			
	14-0581 CAP,SF,.047UF,50V	2.0000		C110,111	EA		100			
200	14-0622 CAP,PE,.1UF,J,63V,BX	4.0000		C112-115	EA		100			
210	14-0560 CAP,ELNP,10UF,50V	3.0000	B	C102,108,109	EA		100			
220	27-0524 CONN,16 PIN FLAT CBL	1.0000		J104	EA		100			
230	27-0550 HEADER 6 POS .098" SP	1.0000	A	J105	EA		100			
240	27-0548 HEADER 3 POS .098" SP	1.0000	A	J106	EA		100			
250	27-0344 TER BLK 6 POS 3/8" SP	1.0000	A	J103	EA		100			
260	27-0342 CONN,FEMALE PC XLR	2.0000		J101,102	EA		100			
270	15-16416 SW SLIDE 3P3T PCMT	1.0000	A	S101	EA		100			
280	32-0425 WR 186A 16X30 UL1569 GRN	0.2080	A		FT		100			

BQM Number : ES150A - PWR,AMP 120V

Item#	X Part Number....	Quantity.	Alt-Part#...	Reference Designator.....	.UM.	Alt.	ECO No.	ECO Date	StartUse	End Use.
	Description.....	Rev	Inv	.Oper#.		UM	Yield%			
290	42-0033 LUG SOLDER #4	1.0000				EA	100			
300	P 12-16802 PCB,INPUT,ES-A	1.0000				EA	100			
	P 12-16529 PCB,FAB PANEL ES AMPS	0.1000				EA	100		10-28-90	
310	36-0402 NYLON SPACER	2.0000				EA	100			
290	P 09-0041 INRSH,LMTR,ES-A	1.0000				EA	100		10-26-90	
010	13-0005 DIODE,1N4003	3.0000		0718-720		EA	100			
020	181-01002-00 RES,10K 5% 1/4WF	2.0000		R726,727		EA	100			
	187-00052-00 RES,PW 10 OHM 10W10%	1.0000		R725		EA	100			
040	15-0473 RELAY SPST 24V	1.0000		K702		EA	100			
050	13-0423 TR,NPN,2N6716	2.0000		13-0148 FOR H/S Q703,704		EA	100			
060	14-0600 CAP,EL,10UF,M,50V,RD	1.0000		C721		EA	100			
070	14-0601 CAP,EL,22UF,M,50V,RD	1.0000		C720		EA	100			
080	27-0218 TERM. QUICK DISC.	1.0000		W701		EA	100			
090	32-0261 WIRE,14GA,41X30UL1015 BLK	0.2910		TO PWR SW		FT	100			
100	36-0406 FASTON 16-14GA FEM .250	1.0000				EA	100			
110	36-0502 TER AMP-IN 18-14GA AMP 77	1.0000				EA	100			
120	36-0539 TER AMP-IN 26/22GA	3.0000		W703-705		EA	100			

BOM Number : ES150A - PWR,AMP 120V

Item#	X Part Number	Quantity	Alt-Part#	Reference Designator	UM	Alt. UM	ECD No.	ECD Date	StartUse	End Use
	Description	Rev	Inv	Oper#			Yield%			
130	P 12-16804 PCB,FAB,INRUSH	1.0000	A		EA		100			
	P 12-16529 PCB,FAB PANEL ES AMPS	0.0250	D		EA		100		10-28-90	
295	P 09-0042 MICROPROCESSOR,ES-A	1.0000			EA		100		10-26-90	
010	13-0601 IC MICROCONTROLLER/PROG'D	1.0000	A	13-0562 U411	EA		100			
020	13-0413 TR,NPN,S16,2N3904,40V	1.0000	A	Q401	EA		100			
030	13-0449 EEPROM	1.0000		U402	EA		100			
040	13-0614 IC UNDER E SENS'G CIR MC3	1.0000	A	U412	EA		100			
	13-0554 RESONATOR CER 4.0MHZ	1.0000	A	Y401	EA		100			
060	27-0402 IC SOCKET 40 PIN DIP	1.0000	C	XU401	EA		100			
070	15-16414 SW RTRY ENCODER 5BIT	2.0000	A	S401,402	EA		100			
080	27-0555 HEADER 3 POS .098" SP	1.0000	A	J401	EA		100			
090	27-0619 HDR,90-DEG,6POS,2.5MM,SP	1.0000	A	J403	EA		100			
100	27-0525 CONN,16 PIN DUAL ML	1.0000		J402	EA		100			
110	13-0564 DIODE,1N4148MOD	4.0000	A	13-0135HM13-419 D401-404	EA		100			
120	185-01002-00 RES,10K 1/6W 5% CF	25.0000		R403-418,420-426,428,429	EA		100			
130	185-01001-00 RES,1K 1/6W 5% CF	1.0000		R419	EA		100			
140	185-01005-00 RES,10MEG,5%,1/6WF	1.0000	A	R427	EA		100			

BQM Number : ES150A - PWR,AMP 120V

Item#	X Part Number....	Quantity.	Alt-Part#...	Reference Designator.....	UM.	Alt. UM	ECO No.	ECO Date	StartUse	End Use.
	Description.....	Rev Inv	Oper#.				Yield%			
150	185-03301-00 RES,3.3K 1/6W 5%	2.0000		R430,431	EA		100			
160	185-04700-00 RES,470-OHM,5%,1/6WF	3.0000 A		R432-434	EA		100			
170	14-0767 CAP,CD,22PF,J,1KV	2.0000	USE-0179 FOR HS	C401,402	EA		100			
180	14-0750 CAP,.1UF/100V 10% BM	2.0000		C403,404	EA		100			
190	14-0781 CAP,.01/50V SF	1.0000		C415	EA		100			
200	P 12-16801 PCB,MICROPROCESSOR,ES-A	1.0000 1			EA		100			
	P 12-16529 PCB,FAB PANEL ES AMPS	0.1000 D			EA		100		10-28-90	
	P 09-0043 ASSY,DISPLAY,ES-A	1.0000			EA		100		10-26-90	
010	13-0586 LED,RED SUB-MINI	3.0000 A		D301,311,305	EA		100			
020	13-0587 LED,GRN SUB-MINI	6.0000 A		D303,304,307-310	EA		100			
030	13-0588 LED,AMBER SUB-MINI	2.0000 A		D302,306	EA		100			
040	181-03000-00 RES,300 OHM 5% 1/4W	2.0000		R301,302	EA		100			
050	181-01001-00 RES,1K 5% 1/4WF	1.0000		R303	EA		100			
060	27-0557 HEADER 8 POS .098" SP	2.0000 A		J302,303	EA		100			
070	27-0619 HDR,90-DEG,6POS,2.5MM,SP	1.0000 A		J301	EA		100			
080	15-0479 SW KEY LD-PRD .47"X.47"	1.0000 B		S301	EA		100			
090	P 12-16803 PCB,DISPLAY,ES-A	1.0000 1			EA		100			

PQM Number : ES150A - PWR,AMP 120V

Item#	X Part Number....	.Quantity.	...Alt-Part#...	.....Reference Designator.....	.UM.	Alt.	.ECO No.	ECO Date	StartUse	End Use.
	Description.....	Rev	Inv	.Oper#.	UM	UM	Yield%			
	P 12-16529	0.0250			EA				10-28-90	
	PCB,FAB PANEL ES AMPS		D				100			
305	P 09-0044	1.0000			EA				10-26-90	
	PWR,SPLY,ES-A/SR-A						100			
010	13-0005	11.0000		D207-215,225,226	EA					
	DIODE,1N4003						100			
020	13-0564	6.0000	13-0135HM13-419	D201-206	EA					
	DIODE,1N4148MOD		A				100			
030	13-0140	1.0000		D209	EA					
	DIOD,ZR,						100			
040	181-01003-00	1.0000		R214	EA					
	RES,100K 5% 1/4WF						100			
050	181-01002-00	2.0000		R219,223	EA					
	RES,10K 5% 1/4WF						100			
	181-02200-00	1.0000		R220	EA					
	RES,220 OHM 5% 1/4WF						100			
070	181-01503-00	1.0000		R211	EA					
	RES,150K 5% 1/4WF						100			
080	181-08202-00	2.0000		R210,213	EA					
	RES,82K 5% 1/4WF						100			
090	181-02201-00	1.0000		R204	EA					
	RES,2.2K 5% 1/4WF						100			
100	181-03901-00	1.0000		R221	EA					
	RES,3.9K 1/4W 5% CF						100			
110	181-04701-00	1.0000		R215	EA					
	RES,4.7K 5% 1/4WF						100			
120	181-06201-00	2.0000		R208,209	EA					
	RES,6.2K 1/4W 5% C.F						100			
130	181-02202-00	3.0000		R201,202,222	EA					
	RES,22K 5% 1/4WF						100			
140	181-04302-00	3.0000		R207,216,217	EA					
	RES,43K 5% 1/4W C.F.						100			
150	181-04703-00	1.0000		R212	EA					
	RES,470K 5% 1/4WF						100			

BQM Number : ES150A - PWR,AMP 120V

Item#	X Part Number....	.Quantity.	...Alt-Part#...	.....Reference Designator.....	.UM.	Alt.	.ECO No.	ECO Date	StartUse	End Use.
	Description.....	Rev Inv	.Oper#.		UM	UM	Yield%			
160	181-03304-00 RES,3.3M 1/4W 5%	1.0000		R203	EA		100			
170	181-01005-00 RES,10 MEG 5% 1/4WC	1.0000		R218	EA		100			
180	181-09100-00 RES,910 OHM 5% 1/4 WCF	1.0000	1	R227	EA		100			
190	181-06203-00 RES,620K 5% 1/4W	1.0000		R226	EA		100			
200	181-02003-00 RES,200K 5% 1/4W	1.0000		R225	EA		100			
210	181-15600-00 RES,56 OHM CF 5%1/4W	1.0000		R205	EA		100			
220	181-00000-00 RES,ZERO OHM 1/4W	2.0000		JW201,202	EA		100			
	185-00000-00 RES,ZERO OHM 1/6W	1.0000		R206	EA		100			
240	187-01802-00 RES,18K 1W 5% MD	2.0000	A	R228,229	EA		100			
250	187-00053-00 RES,3.3 OHM J 3W RD	1.0000		R224	EA		100			
260	13-0390 RECTIFIER,BRIDGE	2.0000		D216,217	EA		100			
270	13-0423 TR,NPN,2N6716	1.0000		13-0148 FOR H/S Q202	EA		100			
280	13-0424 XSTR,2N6728	1.0000		13-0149 FOR H/S Q201	EA		100			
290	13-0276 IC,NE5532AF	1.0000		IC201	EA		100			
300	13-0194 IC,MOT7815CKC	2.0000		VR202,204	EA		100			
310	13-0195 IC,MOT7915CKC	1.0000		VR203	EA		100			
320	14-0822 CAP,EL,220UF,M,35V	3.0000	B	C201,202,213	EA		100			

PQM Number : ES150A - PWR,AMP 120V

Item#	X Part Number....	.Quantity.	...Alt-Part#...	.....Reference Designator.....	.UM.	Alt.	.ECO No.	ECO Date	StartUse	End Use.
	Description.....	Rev	Inv	.Oper#.		UM	Yield%			
330	14-0726 CAP,EL,470UF,M,25V,RD	2.0000	C	C214,217	EA		100			
340	14-0600 CAP,EL,10UF,M,50V,RD	5.0000		C203,204,208,210 C212	EA		100			
350	14-0798 CAP,EL,470MF,M,35V	4.0000	A	C206,207,209,211	EA		100			
360	14-0784 CAP,EL,6800UF,M,50V	2.0000		C218,219	EA		100			
370	14-0601 CAP,EL,22UF,M,50V,RD	1.0000	A	C205	EA		100			
380	14-0755 CAP,CD,56PF,K,100V	1.0000		C220	EA		100			
390	36-0446 HEATSINK,	3.0000		XVR201-203	EA		100			
	15-0389 RELAY DPDT 24V	1.0000		K201	EA		100			
410	36-0403 CERAMIC BASE MAGNET	2.0000		YK201	EA		100			
420	27-0565 HEADER 4 POS .098" SP	2.0000	A	J206,207	EA		100			
430	27-0548 HEADER 3 POS .098" SP	3.0000	A	J201,202,205	EA		100			
440	27-0532 HDR 8 POS .156" .045" SQ	2.0000	A	J203,204	EA		100			
450	27-0218 TERM. QUICK DISC.	10.0000			EA		100			
460	32-0261 WIRE,14GA,41X30UL1015 BLK	1.2910	A	W217-SP	FT		100			
470	32-0261 WIRE,14GA,41X30UL1015 BLK	1.2910	A	W219-SP	FT		100			
480	32-0262 WIRE,14GA,41X30UL1015 RED	1.2700	A	W216-SP	FT		100			
490	32-0266 WIRE,14GA,41X30UL1015 BRN	1.2700	A	W214-SP	FT		100			



EQM Number : ES150A - PWR,AMP 120V

Item#	X Part Number....	Quantity.	Alt-Part#...	Reference Designator.....	UM.	Alt.	ECO No.	ECO Date	StartUse	End Use.
	Description.....	Rev	Inv	Oper#.		UM	Yield%			
500	32-0417	0.4370		W203-RECT(+)		FT				
	WIRE,146A,41X30UL1015 ORG A						100			
510	32-0416	0.4370		W210-RECT(-)		FT				
	WIRE,146A,41X30UL1015 BLU A						100			
520	36-0406	2.0000				EA				
	FASTON 16-146A FEM .250						100			
530	36-0502	6.0000				EA				
	TER AMP-IN 18-146A AMP 77						100			
540	36-0459	4.0000				EA				
	FASTON .187 FEM 14-16 AWG A						100			
550	13-0284	1.0000		VR201		EA				
	REG POS E 5V T0-220 A						100			
560	32-0442	0.5000		W205-W705		FT				
	WR 246A 7X32 UL1569 RED A						100			
	32-0443	0.5000		+15-W703		FT				
	WR 246A 7X32 UL1569 ORG A						100			
580	32-0440	0.5380		W204-W704		FT				
	WR 246A 7X32 UL1569 BLK A						100			
590	36-0539	3.0000				EA				
	TER AMP-IN 26/226A A						100			
600	P 12-16805	1.0000				EA				
	PCB,PWR,SPLY,SR-A		1				100			
	P 12-16529	0.2500				EA			10-28-90	
	PCB,FAB PANEL ES AMPS		D				100			
610	15-0492	2.0000		F1,2		EA				
	FUSE,PICD-II,10A,125V A						100			
310	P 09-0045	1.0000				EA				10-26-90
	AMP,PWR,B,ES150A		1				100			
010	13-0005	3.0000		D4,9,10		EA				
	DIODE,1N4003						100			
020	13-0564	7.0000	13-0135HM13-419	D7,8,11-15		EA				11-05-90
	DIODE,1N4148MOD		A				100			
030	13-0676	1.0000		Q9		EA				
	TR,PNP,PW,-250V,2SA1006B A						100			

PNM Number : ES150A - PWR,AMP 120V

Item#	X Part Number.... Description.....	Quantity. Rev	Alt-Part#... Inv .Oper#.	Reference Designator.....	UM.	Alt. UM	ECO No. Yield%	ECO Date	StartUse	End Use.
040	13-0677 TR,NPN,PW,250V,2SC2336B	1.0000 A		Q10		EA	100			
050	13-0543 TR PNP PW 2SA1386	1.0000 B		Q4		EA	100			
060	13-0544 XSTR,2SC3519	1.0000		Q3		EA	100			
070	13-0680 TR,PNP,PW,-150V,2SA1360	1.0000 A		Q11		EA	100			
080	13-0547 TR PNP PW 2SA1011E	1.0000 B		Q18		EA	100			
090	13-0548 TR NPN PW 2SC2344E	1.0000 B		Q17		EA	100			
100	13-0545 XSTR,2SA1208S	7.0000		Q14,15,21,22, Q23,26,27		EA	100			
	13-0546 XSTR,2SC2910S	6.0000		Q12,13,16, Q24,28,29		EA	100			
120	13-0423 TR,NPN,2N6716	2.0000	13-0148 FOR H/S	Q19,25		EA	100			
130	13-0424 XSTR,2N6728	1.0000	13-0149 FOR H/S	Q20		EA	100			
140	13-0276 IC,NE5532AF	1.0000		U1		EA	100			
150	13-0280 OPTOISOLATOR H11AI	1.0000 B		U2		EA	100			
160	13-0549 DIODE,MUR120	2.0000		D5,6		EA	100			
170	181-01003-00 RES,100K 5% 1/4WF	6.0000		R42,46,58,59,78,79		EA	100		11-05-90	
180	181-01002-00 RES,10K 5% 1/4WF	1.0000		R51		EA	100			
190	181-01500-00 RES,150 OHM 5% 1/4WF	2.0000		R33,34		EA	100			
200	181-15600-00 RES,56 OHM CF 5%1/4W	1.0000		R63		EA	100			

POM Number : ES150A - PWR,AMP 120V

Item#	X Part Number....	Quantity.	Alt-Part#...	Reference Designator.....	UM.	Alt.	ECO No.	ECO Date	StartUse	End Use.
	Description.....	Rev	Inv	Oper#.		UM	Yield%			
210	181-03302-00 RES,33K 5% 1/4WF	4.0000		R49,55,60,61	EA		100			
215	181-02202-00 RES,22K 5% 1/4WF	2.0000		R14,15	EA		100			
220	181-01202-00 RES,12K 1/4W 5%	2.0000		R24,25	EA		100			
230	181-01501-00 RES,1.5K 5% 1/4WF	3.0000		R27,28,41	EA		100			
240	181-02200-00 RES,220 OHM 5% 1/4WF	1.0000		R18	EA		100			
250	181-02401-00 RES,2.4K 5% 1/4WF	2.0000		R19,20	EA		100			
260	181-01503-00 RES,150K 5% 1/4WF	1.0000		R48	EA		100			
	181-05601-00 RES,5.6K 5% 1/4W C.F	3.0000		R43,45,62	EA		100			
280	181-04702-00 RES,47K 5% 1/4WF	2.0000		R21,22	EA		100			
290	181-15100-00 RES,CF 51 OHM 5% 1/4W	4.0000	1	R12,13,71,72	EA		100			
300	181-06802-00 RES,68K 5% 1/4WF	2.0000		R9,10	EA		100			
310	181-08200-00 RES,820 OHM 5% 1/4WF	3.0000		R31,32,52	EA		100			
320	181-06802-00 RES,68K 5% 1/4WF	2.0000		R23,26	EA		100			
335	181-13900-00 RES,CF 39 OHM 5% 1/4W	2.0000	1	R35,36	EA		100			
340	181-02203-00 RES,220K 5% 1/4WF	2.0000		R16,17	EA		100			
350	181-03000-00 RES,300 OHM 5% 1/4W	2.0000		R69,70	EA		100			
360	181-05100-00 RES,510 OHM 5% 1/4WF	1.0000		R66	EA		100			

BOM Number : ES150A - PWR,AMP 120V

Item#	X Part Number....	Quantity.	...Alt-Part#...	.....Reference Designator.....	.UM.	Alt.	.ECO No.	ECO Date	StartUse	End Use.
	Description.....	Rev	Inv	.Oper#.		UM	Yield%			
370	181-01802-00 RES,18K 5% 1/4WF	1.0000		R47		EA	100			
380	181-01001-00 RES,1K 5% 1/4WF	1.0000		R73		EA	100			
390	181-09103-00 RES,910K 5% 1/4W	2.0000	1	R50,54		EA	100			
400	181-05600-00 RES,560 OHM 5% 1/4WF	1.0000		R74		EA	100			
420	181-02202-00 RES,22K 5% 1/4WF	1.0000		R57		EA	100			
430	182-03301-00 RES,3.3K 5% 1/2WF	1.0000		R65		EA	100			
440	182-01501-00 RES,1.5K 5% 1/2WF	1.0000		R64		EA	100			
	184-02872-00 RES,28.7K 1% RN60D	1.0000		R53		EA	100			
460	186-05761-00 RES,5.76K,MF,1%,1/8W	1.0000	A	R30		EA	100			
470	186-01961-00 RES,1.96K,MF,1%,1/8W	1.0000	A	R29		EA	100			
480	185-00000-00 RES,ZERO OHM 1/6W	2.0000		MODEL,CHANNEL		EA	100			
490	187-00053-00 RES,3.3 OHM J 3W RD	2.0000		R37,87		EA	100			
500	187-00054-00 RES,10 OHM J 3W RD	2.0000		R39,40		EA	100			
510	187-00051-00 RES,.33 OHM 5 W	4.0000		R3,4,67,68		EA	100			
520	187-00056-00 RES,MD 33K J 3W	1.0000	A	R11		EA	100			
530	187-00057-00 RES,MW 33 J 3W AX	1.0000	B	R38		EA	100			
540	187-08201-01 RES,MD,8.2K,5%,1W	2.0000	1	R76,77		EA	100			

PQM Number : ES150A - PWR,AMP 120V

Item#	X Part Number....	.Quantity.	...Alt-Part#...	.....Reference Designator.....	.UM.	Alt.	.ECO No.	ECO Date	StartUse	End Use.
	Description.....	Rev	Inv	.Oper#.	UM	Yield%				
550	189-00004-00 THERMISTOR ASSY	1.0000	D	RT1	EA	100				
560	14-0632 CAP,CD,10PF,K,500V	1.0000		C4	EA	100				
570	14-0633 CAP,CD,33PF,K,500V	3.0000	A	C3,13,20	EA	100				
580	14-0636 CAP,CD,470PF,K,500V	1.0000		C2	EA	100				
590	14-0639 CAP,CD,.1,M,50V	4.0000		C7,8,14,21	EA	100				
600	14-0603 CAP,EL,100UF,M,25V,RD	2.0000	A	C11,12	EA	100				
610	14-0600 CAP,EL,10UF,M,50V,RD	2.0000		C16,17	EA	100				
620	14-0791 CAP,SF,.018MF,J,100V	1.0000	A	C19	EA	100				
630	14-0792 CAP,MP,.047MF K 250V	2.0000	A	C9,10	EA	100				
640	14-0560 CAP,ELNP,10UF,50V	3.0000	B	C1,5,6	EA	100				
650	14-0726 CAP,EL,470UF,M,25V,RD	1.0000	C	C18	EA	100				
660	14-0793 CAP,EL,47MF,160V,RD	1.0000	A	C15	EA	100				
670	X 16-14573 COIL 2.2MH-62XX/ES/SR	1.0000	*	L1	EA	100				
680	27-0548 HEADER 3 POS .098" SP	1.0000	A	J1	EA	100				
690	27-0551 HEADER 8 POS .098" SP	1.0000	A	J2	EA	100				
700	32-0447 WR 246A 7X32 UL1569 VID	1.9160	A	W4-P206/1	FT	100				
710	32-0440 WR 246A 7X32 UL1569 BLK	1.3750	A	W12-P206/2	FT	100				

BOM Number : ES150A - PWR,AMP 120V

Item#	X Part Number....	Quantity.	Alt-Part#...	Reference Designator.....	UM.	Alt. UM	ECO No.	ECO Date	StartUse	End Use.
	Description.....	Rev Inv	Oper#.				Yield%			
720	32-0444 WR 246A 7X32 UL1569 YEL	1.9160 A		W2-P206/3	FT		100			
730	32-0446 WR 246A 7X32 UL1569 BLU	1.3750 A		W3-P206/4	FT		100			
750	32-0426 WR 186A 16X30 UL1569 BLU	1.9160 A		W13-P204/1	FT		100			
760	32-0427 WR 186A 16X30 UL1569 VID	1.6660 A		W7-P204/2	FT		100			
770	32-0420 WR 186A 16X30 UL1569 BLK	1.4160 A		W5-P204/3	FT		100			
780	32-0421 WR 186A 16X30 UL1569 BRN	1.4500 A		W10-P204/4	FT		100			
790	32-0421 WR 186A 16X30 UL1569 BRN	1.4500 A		W11-P204/5	FT		100			
	32-0424 WR 186A 16X30 UL1569 YEL	1.5410 A		W6-P204/7	FT		100			
810	32-0423 WR 186A 16X30 UL1569 DRG	1.2500 A		W1-P204/8	FT		100			
830	27-0564 CONN,ID SKT 4 POS .098*SP	1.0000 A		P204	EA		100			
840	27-0534 CONN,RCPT E 8 POS	1.0000 A		P206	EA		100			
850	36-0502 TER AMP-IN 18-146A AMP 77	7.0000 A			EA		100			
860	36-0539 TER AMP-IN 26/226A	4.0000 A			EA		100			
870	P 12-16806 PCB,PWR,AMP,SR-A	1.0000 1			EA		100			
	P 12-16529 PCB,FAB PANEL ES AMPS	0.2500 D			EA		100		10-18-90	
880	181-01005-00 RES,10 MEG 5% 1/4WC	1.0000 A		R75	EA		100		11-05-90	
890	13-0135 DIODE,1N914B,VID	3.0000 A	13-0564HM13-419 D1,2,3		EA		100		11-05-90	

PQM Number : ES150A - PWR,AMP 120V

Item#	X Part Number	Quantity	Alt-Part#	Reference Designator	UM	Alt	ECO No.	ECO Date	StartUse	End Use
	Description	Rev	Inv	Oper#		UM	Yield%			
315	P 09-0046 AMP,PWR,A,ES150A	1.0000				EA			10-26-90	
			1				100			
010	13-0005 DIODE,1N4003	3.0000		04,9,10		EA				
							100			
020	13-0564 DIODE,1N4148MOD	7.0000	13-0135HM13-419	07,8,11-15		EA			11-05-90	
			A				100			
030	13-0676 TR,PNP,PW,-250V,2SA1006B	1.0000		Q9		EA				
			A				100			
040	13-0677 TR,NPN,PW,250V,2SC2336B	1.0000		Q10		EA				
			A				100			
050	13-0543 TR PNP PW 2SA1386	1.0000		Q4		EA				
			B				100			
060	13-0544 XSTR,2SC3519	1.0000		Q3		EA				
							100			
	13-0680 TR,PNP,PW,-150V,2SA1360	1.0000		Q11		EA				
			A				100			
080	13-0547 TR PNP PW 2SA1011E	1.0000		Q18		EA				
			B				100			
090	13-0548 TR NPN PW 2SC2344E	1.0000		Q17		EA				
			B				100			
100	13-0545 XSTR,2SA1208S	7.0000		Q14,15,21,22, Q23,26,27		EA				
							100			
110	13-0546 XSTR,2SC2910S	6.0000		Q12,13,16, Q24,28,29		EA				
							100			
120	13-0423 TR,NPN,2N6716	2.0000	13-0148 FOR H/S	Q19,25		EA				
							100			
130	13-0424 XSTR,2N6728	1.0000	13-0149 FOR H/S	Q20		EA				
							100			
140	13-0276 IC,NE5532AF	1.0000		U1		EA				
							100			
150	13-0280 OPTOISOLATOR HI1AI	1.0000		U2		EA				
			B				100			
160	13-0549 DIODE,MUR120	2.0000		05,6		EA				
							100			

POM Number : ES150A - PWR,AMP 120V

Item#	X Part Number....	Quantity.	...Alt-Part#...	.....Reference Designator.....	.UM.	Alt.	.ECO No.	ECO Date	StartUse	End Use.
	Description.....	Rev	Inv	.Oper#.		UM	Yield%			
170	181-01003-00 RES,100K 5% 1/4WF	6.0000		R42,46,58,59,78,79		EA	100		11-05-90	
180	181-01002-00 RES,10K 5% 1/4WF	1.0000		R51		EA	100			
190	181-01500-00 RES,150 OHM 5% 1/4WF	2.0000		R33,34		EA	100			
200	181-15600-00 RES,56 OHM CF 5%1/4W	1.0000		R63		EA	100			
210	181-03302-00 RES,33K 5% 1/4WF	4.0000		R49,55,60,61		EA	100			
215	181-02202-00 RES,22K 5% 1/4WF	2.0000		R14,15		EA	100			
220	181-01202-00 RES,12K 1/4W 5%	2.0000		R24,25		EA	100			
	181-01501-00 RES,1.5K 5% 1/4WF	3.0000		R27,28,41		EA	100			
240	181-02200-00 RES,220 OHM 5% 1/4WF	1.0000		R18		EA	100			
250	181-02401-00 RES,2.4K 5% 1/4WF	2.0000		R19,20		EA	100			
260	181-01503-00 RES,150K 5% 1/4WF	1.0000		R48		EA	100			
270	181-05601-00 RES,5.6K 5% 1/4W C.F	3.0000		R43,45,62		EA	100			
280	181-04702-00 RES,47K 5% 1/4WF	2.0000		R21,22		EA	100			
290	181-15100-00 RES,CF 51 OHM 5% 1/4W	4.0000	1	R12,13,71,72		EA	100			
300	181-06802-00 RES,68K 5% 1/4WF	2.0000		R9,10		EA	100			
310	181-08200-00 RES,820 OHM 5% 1/4WF	3.0000		R31,32,52		EA	100			
320	181-06802-00 RES,68K 5% 1/4WF	2.0000		R23,26		EA	100			



PQM Number : ES150A - PWR,AMP 120V

Item#	X Part Number....	Quantity.	...Alt-Part#...	.....Reference Designator.....	.UM.	Alt.	.ECO No.	ECO Date	StartUse	End Use.
	Description.....	Rev	Inv	.Oper#.		UM	Yield%			
335	181-13900-00 RES,CF 39 OHM 5% 1/4W	2.0000 1		R35,36		EA	100			
340	181-02203-00 RES,220K 5% 1/4WF	2.0000		R16,17		EA	100			
350	181-03000-00 RES,300 OHM 5% 1/4W	2.0000		R69,70		EA	100			
360	181-05100-00 RES,510 OHM 5% 1/4WF	1.0000		R66		EA	100			
370	181-01802-00 RES,18K 5% 1/4WF	1.0000		R47		EA	100			
380	181-01001-00 RES,1K 5% 1/4WF	1.0000		R73		EA	100			
390	181-09103-00 RES,910K 5% 1/4W	2.0000 1		R50,54		EA	100			
	181-05600-00 RES,560 OHM 5% 1/4WF	1.0000		R74		EA	100			
430	182-03301-00 RES,3.3K 5% 1/2WF	1.0000		R65		EA	100			
435	182-01501-00 RES,1.5K 5% 1/2WF	1.0000		R64		EA	100			
440	181-02202-00 RES,22K 5% 1/4WF	1.0000		R57		EA	100			
450	184-02872-00 RES,28.7K 1% RN60D	1.0000		R53		EA	100			
460	186-05761-00 RES,5.76K,MF,1%,1/8W	1.0000 A		R30		EA	100			
470	186-01961-00 RES,1.96K,MF,1%,1/8W	1.0000 A		R29		EA	100			
480	185-00000-00 RES,ZERO OHM 1/6W	2.0000		MODEL,CHANNEL		EA	100			
490	187-00053-00 RES,3.3 OHM J 3W RD	2.0000		R37,87		EA	100			
500	187-00054-00 RES,10 OHM J 3W RD	2.0000		R39,40		EA	100			

RQM Number : ES150A - PWR,AMP 120V

Item#	X Part Number....	Quantity.	Alt-Part#...	Reference Designator.....	UM.	Alt. UM	ECO No.	ECO Date	StartUse	End Use.
	Description.....	Rev	Inv	Oper#.			Yield%			
510	187-00051-00 RES,.33 OHM 5 W	4.0000		R3,4,67,68	EA		100			
520	187-00056-00 RES,MO 33K J 3W	1.0000	A	R11	EA		100			
530	187-00057-00 RES,WW 33 J 3W AX	1.0000	B	R38	EA		100			
540	187-08201-01 RES,MO,8.2K,5%,1W	2.0000	1	R76,77	EA		100			
560	14-0632 CAP,CD,10PF,K,500V	1.0000		C4	EA		100			
570	14-0633 CAP,CD,33PF,K,500V	3.0000	A	C3,13,20	EA		100			
580	14-0636 CAP,CD,470PF,K,500V	1.0000		C2	EA		100			
	14-0639 CAP,CD,.1,M,50V	4.0000		C7,8,14,21	EA		100			
600	14-0603 CAP,EL,100UF,M,25V,RD	2.0000	A	C11,12	EA		100			
610	14-0600 CAP,EL,10UF,M,50V,RD	2.0000		C16,17	EA		100			
620	14-0791 CAP,SF,.018MF,J,100V	1.0000	A	C19	EA		100			
630	14-0792 CAP,MP .047MF K 250V	2.0000	A	C9,10	EA		100			
640	14-0560 CAP,ELNP,10UF,50V	3.0000	B	C1,5,6	EA		100			
650	14-0726 CAP,EL,470UF,M,25V,RD	1.0000	C	C18	EA		100			
660	14-0793 CAP,EL,47MF,160V,RD	1.0000	A	C15	EA		100			
670	X 16-14573 COIL 2.2MH-62XX/ES/SR	1.0000	*	L1	EA		100			
680	27-0548 HEADER 3 POS .098" SP	1.0000	A	J1	EA		100			

BOM Number : ES150A - PWR,AMP 120V

Item#	X Part Number....	Quantity.	Alt-Part#...	Reference Designator.....	UM.	Alt.	ECO No.	ECO Date	StartUse	End Use.
	Description.....	Rev	Inv	Oper#.		UM	Yield%			
690	27-0551 HEADER B POS .098" SP	1.0000	A	J2		EA	100			
700	32-0447 WR 246A 7X32 UL1569 VID	1.5000	A	W4-P207/1		FT	100			
710	32-0440 WR 246A 7X32 UL1569 BLK	2.3330	A	W12-P207/2		FT	100			
720	32-0444 WR 246A 7X32 UL1569 YEL	1.5000	A	W2-P207/3		FT	100			
730	32-0446 WR 246A 7X32 UL1569 BLU	2.3330	A	W3-P207/4		FT	100			
750	32-0426 WR 186A 16X30 UL1569 BLU	1.1250	A	W13-P203/1		FT	100			
760	32-0427 WR 186A 16X30 UL1569 VID	1.2700	A	W7-P203/2		FT	100			
770	32-0420 WR 186A 16X30 UL1569 BLK	1.6040	A	W5-P203/3		FT	100			
780	32-0421 WR 186A 16X30 UL1569 BRN	1.5620	A	W10-P203/4		FT	100			
790	32-0421 WR 186A 16X30 UL1569 BRN	1.5620	A	W11-P203/5		FT	100			
800	32-0424 WR 186A 16X30 UL1569 YEL	1.4500	A	W6-P203/7		FT	100			
810	32-0423 WR 186A 16X30 UL1569 DRG	1.7500	A	W1-P203/8		FT	100			
830	27-0564 CONN,ID SKT 4 POS .098"SP	1.0000	A	P203		EA	100			
840	27-0534 CONN,RCPT E 8 POS	1.0000	A	P207		EA	100			
850	36-0502 TER AMP-IN 18-146A AMP 77	7.0000				EA	100			
860	36-0539 TER AMP-IN 26/226A	4.0000	A			EA	100			
870	P 12-16806 PCB,PWR,AMP,SR-A	1.0000	1			EA	100			

POM Number : ES150A - PWR,AMP 120V

Item#	X Part Number....	.Quantity.	...Alt-Part#...	.....Reference Designator.....	.UM.	Alt.	.ECO No.	ECO Date	StartUse	End Use.
	Description.....	Rev Inv	.Oper#.		UM	Yield%				
	P 12-16529	0.2500			EA				10-18-90	
	PCB,FAB PANEL ES AMPS	D				100				
880	181-01005-00	1.0000		R75	EA				11-05-90	
	RES,10 MEG 5% 1/4WC					100				
890	13-0135	3.0000	13-0564HM13-419	D1,2,3	EA				11-05-90	
	DIODE,1N914B,V10					100				
320	P TBD	1.0000		CABLE SET FINAL ASSY	EA				10-26-90	
	TO BE DETERMINED	1				100				