



Spider Valve

Head – HD100
Service Manual

TUBE AMP DESIGN BY
Bogner

6

5

4

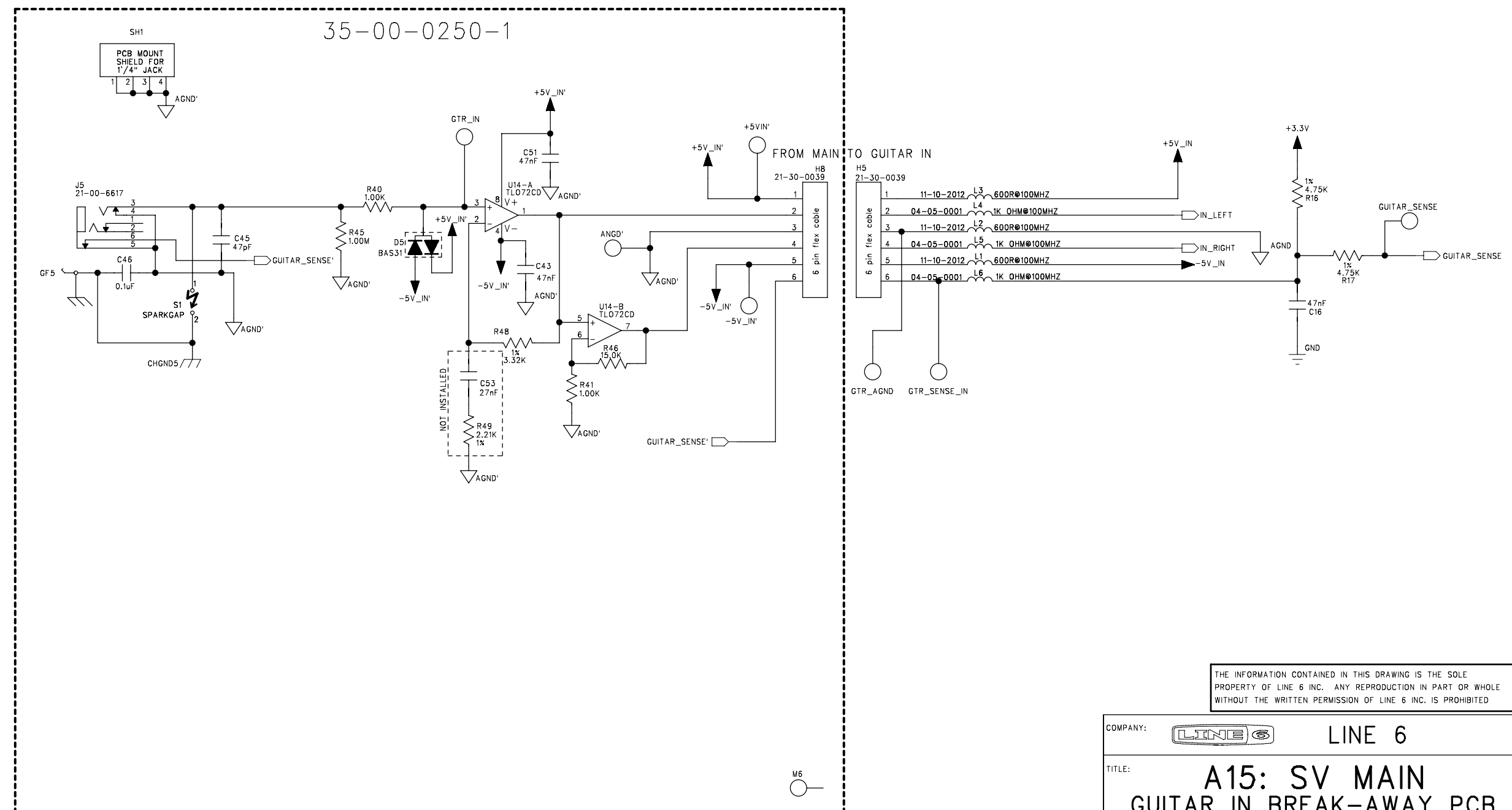
3

2

1

ECOs INCLUDED ON THIS SCHEMATIC/PCB REVISION		
ECO NO:	DATE:	DESCRIPTION:
0715903	06.08.07	Released as rev.A

GUITAR IN BREAK-AWAY PCB



THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF LINE 6 INC. ANY REPRODUCTION IN PART OR WHOLE WITHOUT THE WRITTEN PERMISSION OF LINE 6 INC. IS PROHIBITED

COMPANY:	LINE 6
TITLE:	A15: SV MAIN GUITAR IN BREAK-AWAY PCB
PROGRAM:	PADS POWER LOGIC 2004
REV:	A
FILENAME:	
SCALE: 1:1	SIZE: C
PART NUMBER: 35-00-0250	SHEET: 1 OF 6

DRAWN:	G. Kirtley / D. Molnar	DATED:	06/08/2007
CHECKED:	review panel	DATED:	

D

C

B

A

D

C

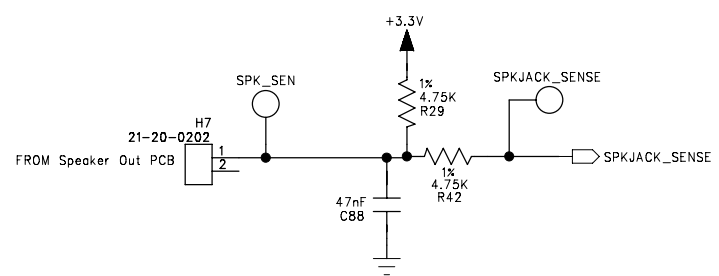
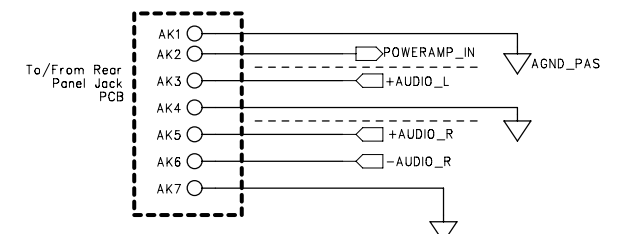
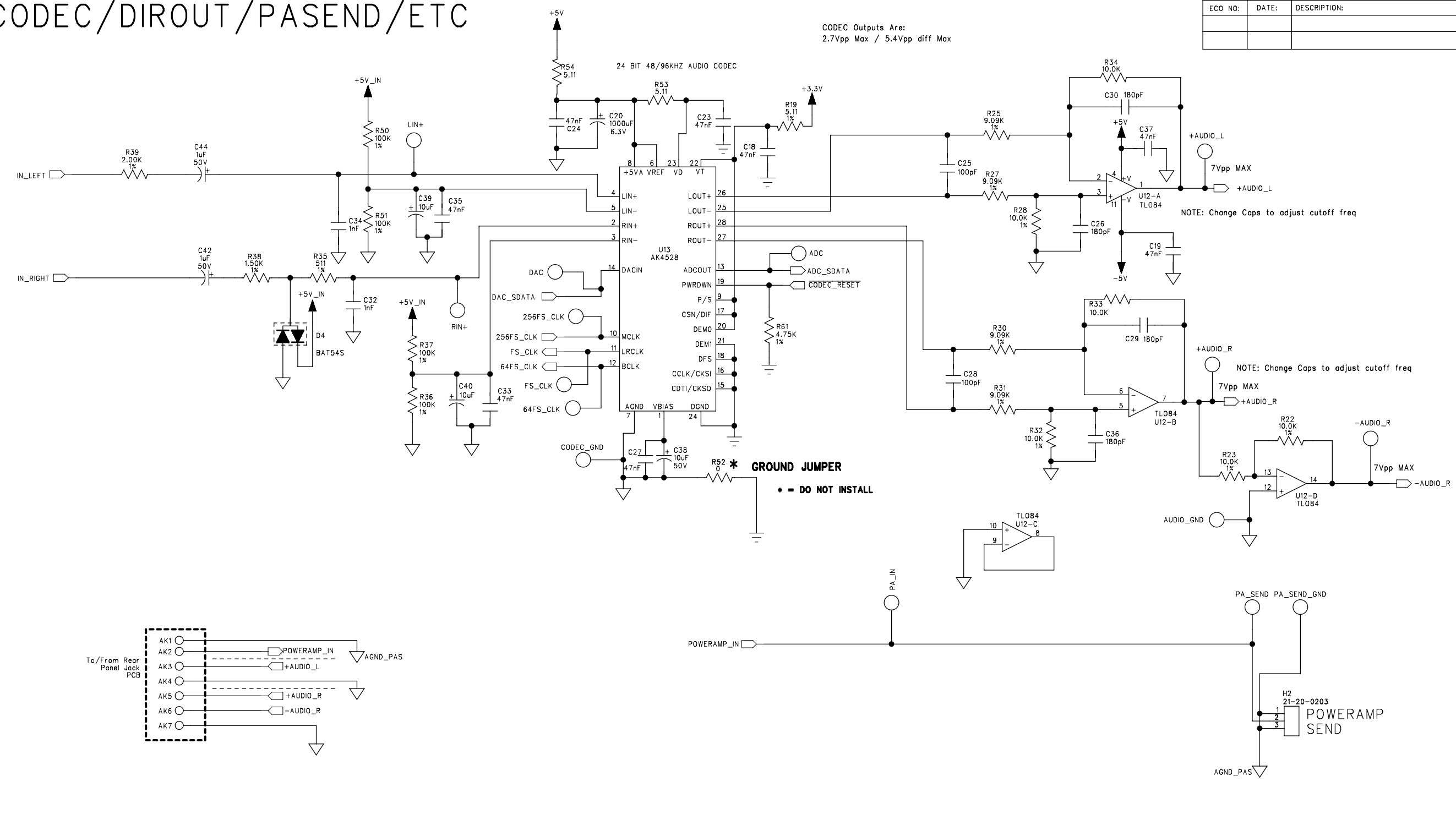
B

A

CODEC/DIROUT/PASEND/ETC

ECOs INCLUDED ON THIS SCHEMATIC/PCB REVISION		
ECO NO:	DATE:	DESCRIPTION:

CODEC Outputs Are:
2.7Vpp Max / 5.4Vpp diff Max

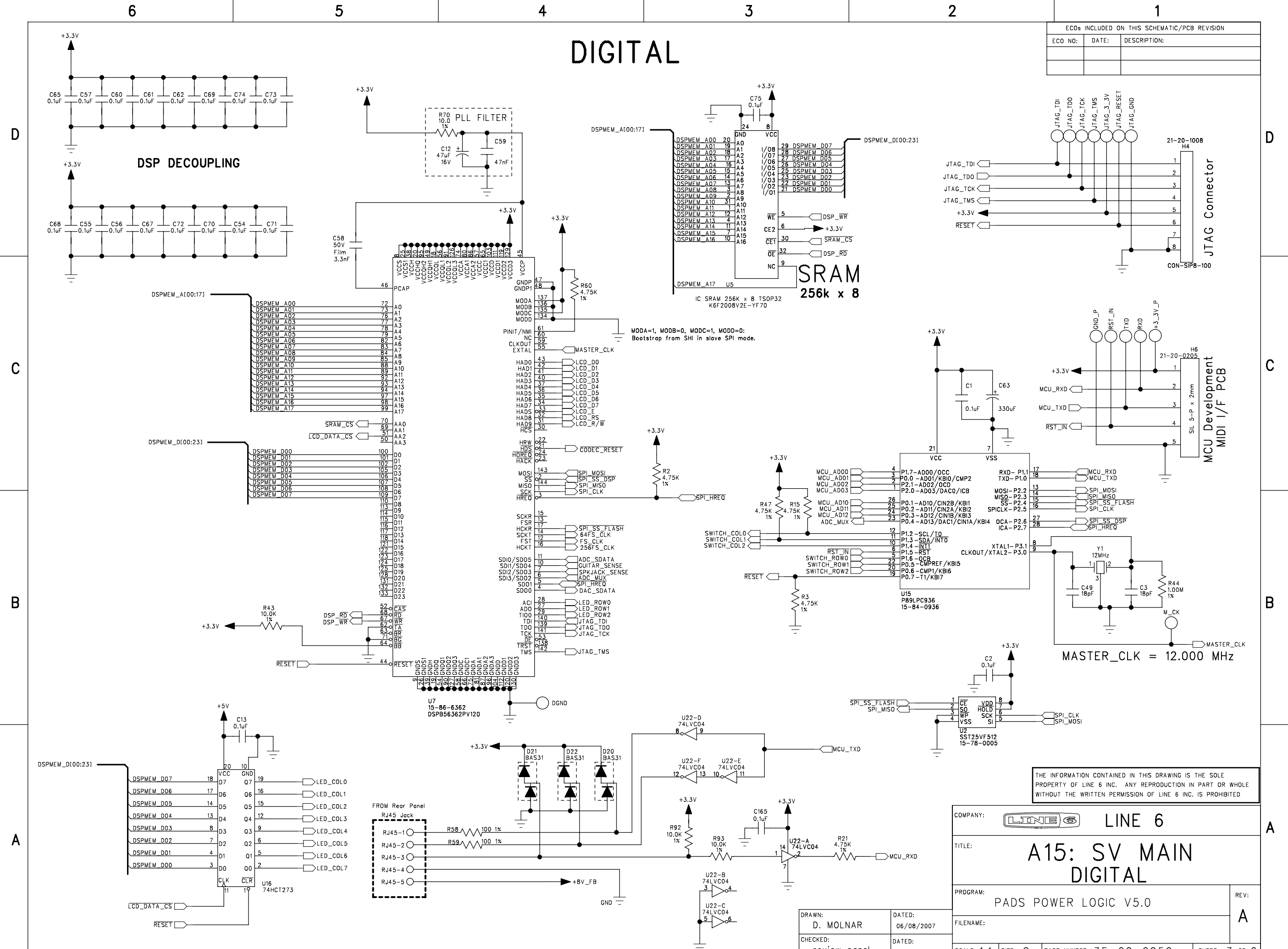


THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF LINE 6 INC. ANY REPRODUCTION IN PART OR WHOLE WITHOUT THE WRITTEN PERMISSION OF LINE 6 INC. IS PROHIBITED

COMPANY:	LINE 6	
TITLE:	A15: SV MAIN	
PROGRAM:	PADS POWER LOGIC 2004	REV: A
FILENAME:		
DRAWN:	G. Kirtley / D. Molnar	DATED: 06/08/2007
CHECKED:	review panel	DATED:
SCALE: 1:1	SIZE: C	PART NUMBER: 35-00-0250
SHEET: 2		OF 6

DIGITAL

ECOs INCLUDED ON THIS SCHEMATIC/PCB REVISION		
ECO NO:	DATE:	DESCRIPTION:



THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF LINE 6 INC. ANY REPRODUCTION IN PART OR WHOLE WITHOUT THE WRITTEN PERMISSION OF LINE 6 INC. IS PROHIBITED

COMPANY:	LINE 6	
TITLE:	A15: SV MAIN DIGITAL	
PROGRAM:	PADS POWER LOGIC V5.0	
FILENAME:		
SCALE: 1:1	SIZE: C	PART NUMBER: 35-00-0250
SHEET: 3 OF 6	REV: A	

DRAWN:	DATED:
D. MOLNAR	06/08/2007
CHECKED:	DATED:
review panel	

6

5

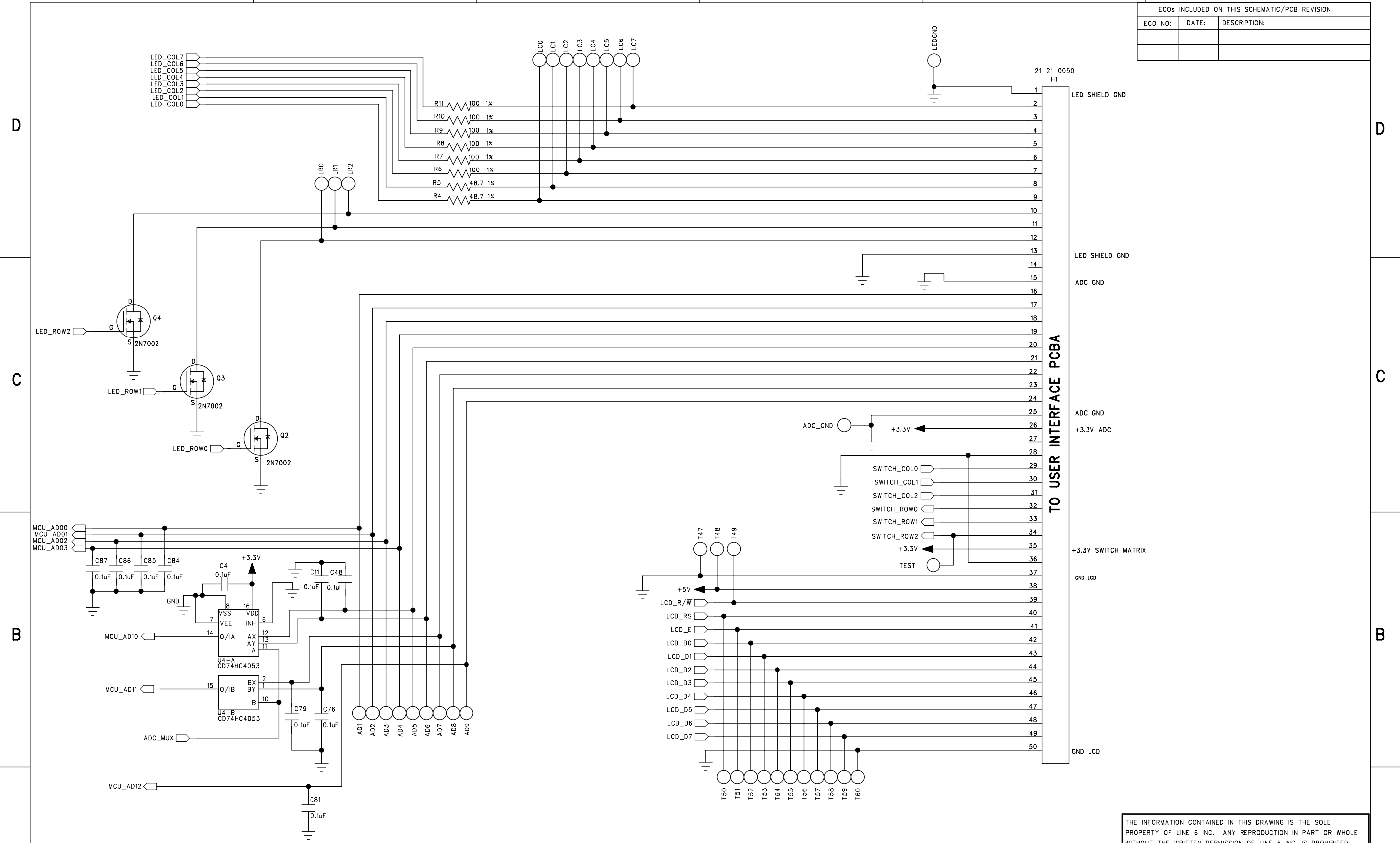
4

3


2

1

ECOs INCLUDED ON THIS SCHEMATIC/PCB REVISION		
ECO NO:	DATE:	DESCRIPTION:



THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF LINE 6 INC. ANY REPRODUCTION IN PART OR WHOLE WITHOUT THE WRITTEN PERMISSION OF LINE 6 INC. IS PROHIBITED

COMPANY:  LINE 6		REV: A
TITLE: A15: SV MAIN INTERFACE		
PROGRAM: PADS POWER LOGIC 2004		FILENAME:
DRAWN: D. MOLNAR		
CHECKED: review panel		SCALE: 1:1
DATED: 06/08/2007		SIZE: C
DATED:		PART NUMBER: 35-00-0250
SHEET: 4 OF 6		

6

5

4

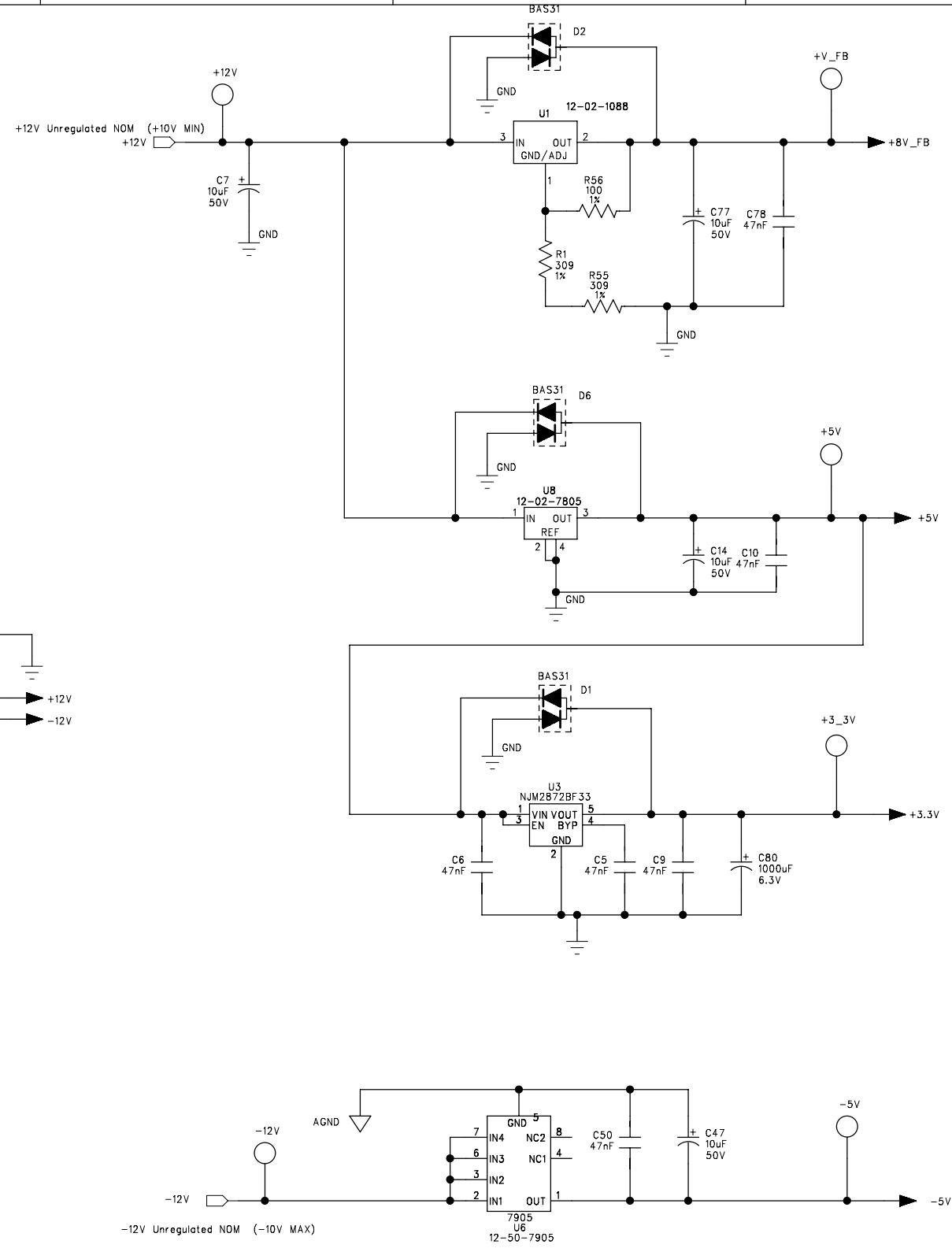
3

2

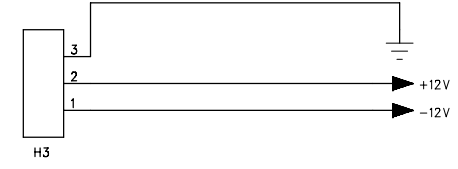
1

POWER

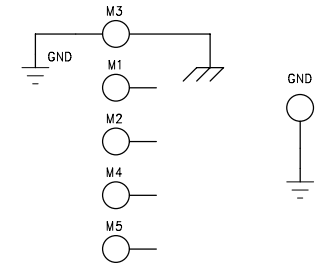
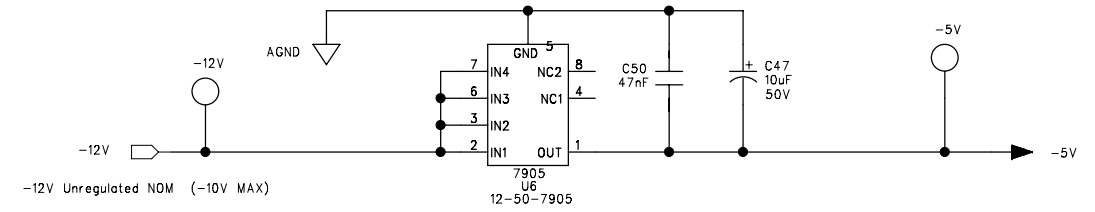
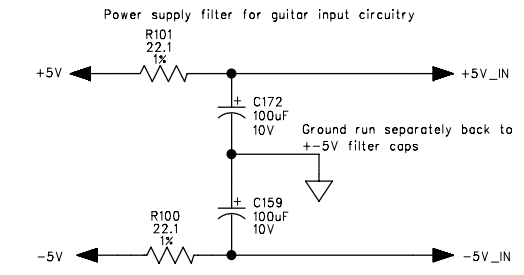
ECOs INCLUDED ON THIS SCHEMATIC/PCB REVISION		
ECO NO:	DATE:	DESCRIPTION:



FROM SUPPLY PCB



GND and AGND connected at supply



- FID1
- FID2
- FID3
- FID4
- FID5
- FID6
- FID7

THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF LINE 6 INC. ANY REPRODUCTION IN PART OR WHOLE WITHOUT THE WRITTEN PERMISSION OF LINE 6 INC. IS PROHIBITED

COMPANY:	
TITLE: A15: SV MAIN POWER	
PROGRAM: PADS POWER LOGIC 2004	REV: A
FILENAME:	
SCALE: 1:1	SIZE: C
PART NUMBER: 35-00-0250	SHEET: 5 OF 6

DRAWN: D. Molnar / G. Kirtley	DATED: 06/08/2007
CHECKED: review panel	DATED:

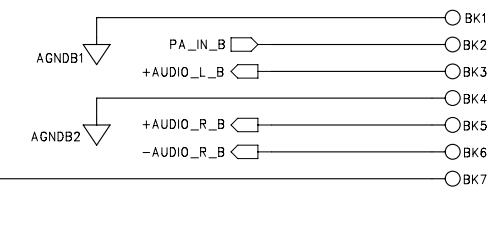
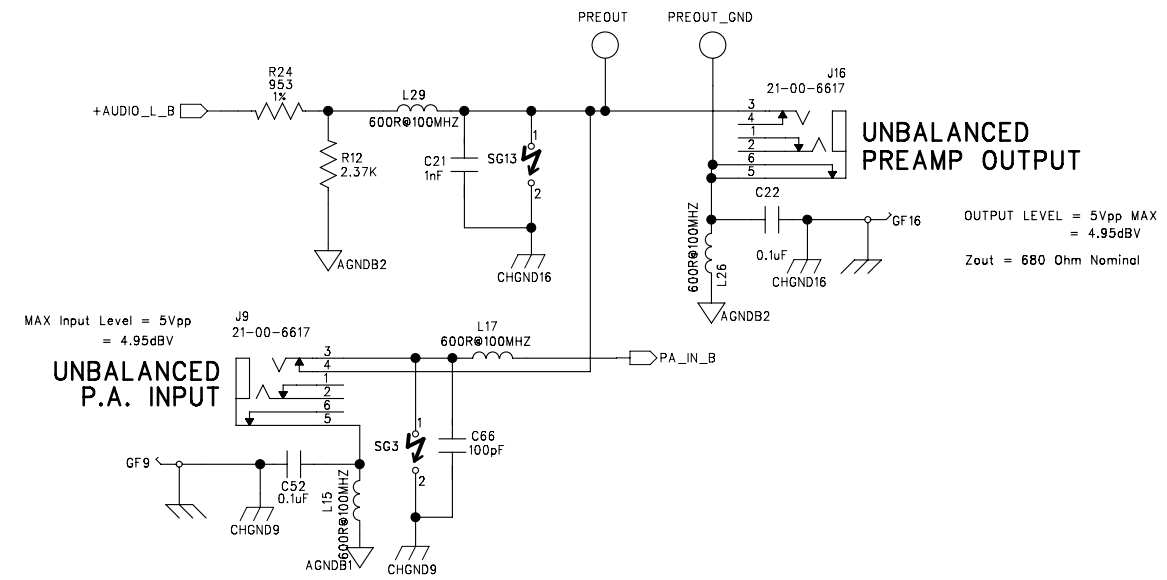
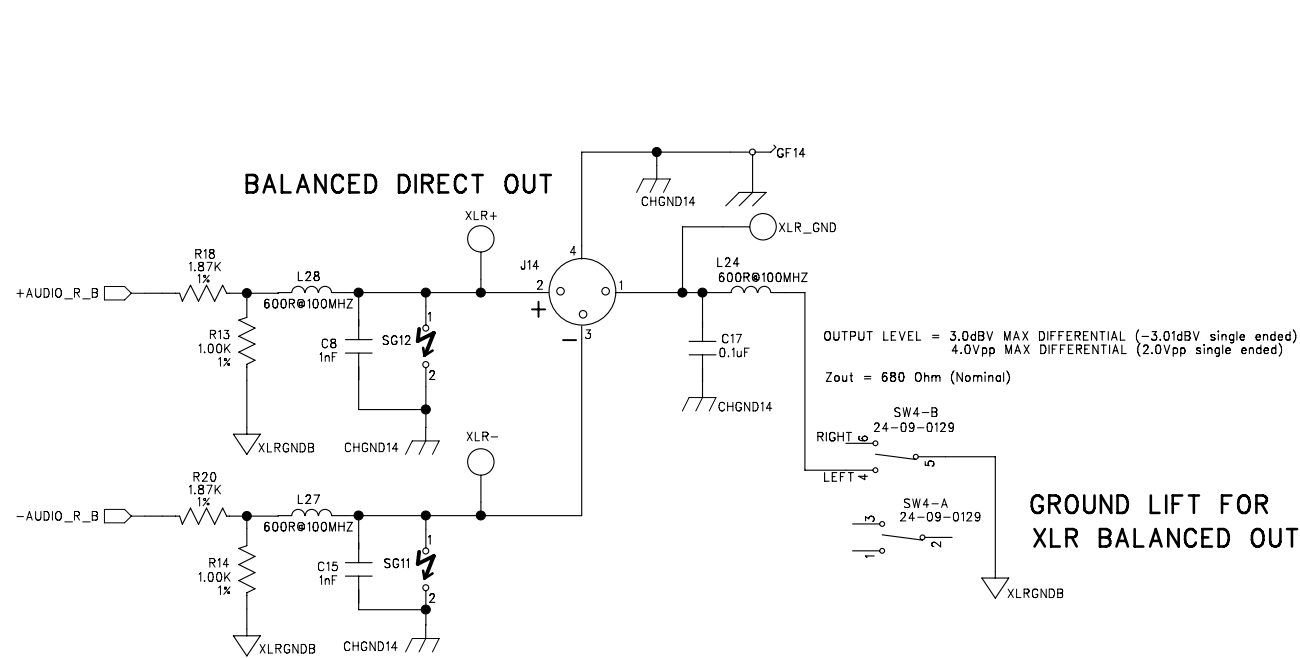
ECOs INCLUDED ON THIS SCHEMATIC/PCB REVISION		
ECO NO:	DATE:	DESCRIPTION:

D

D

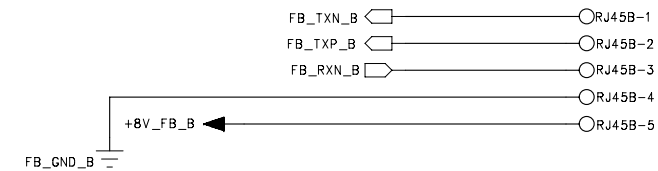
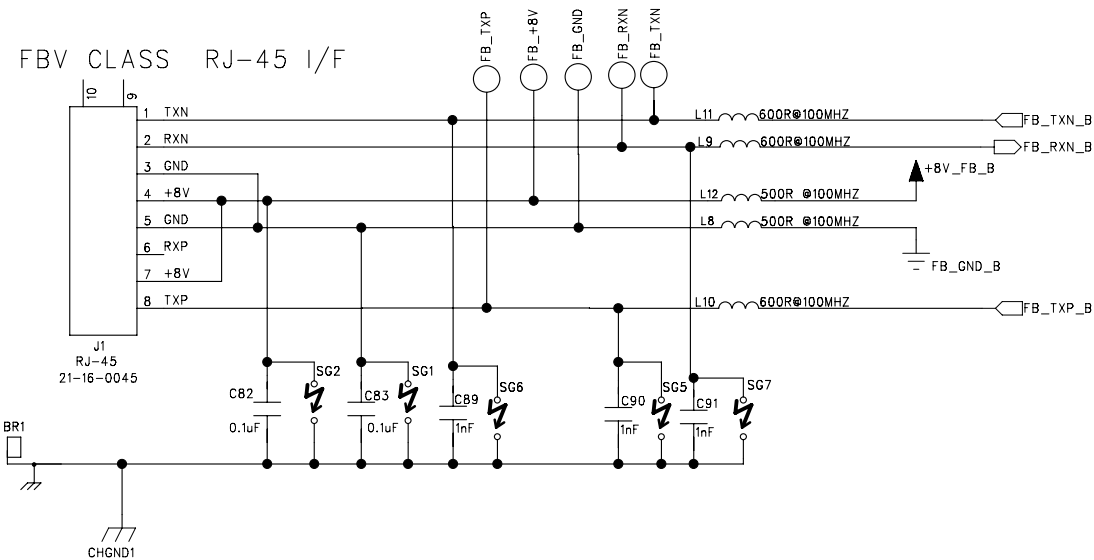
C

C



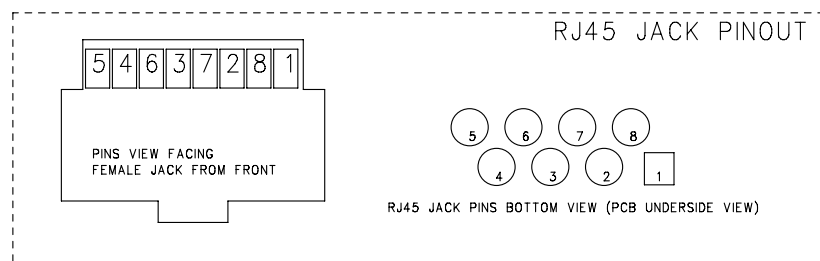
B

B



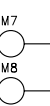
A

A



THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF LINE 6 INC. ANY REPRODUCTION IN PART OR WHOLE WITHOUT THE WRITTEN PERMISSION OF LINE 6 INC. IS PROHIBITED

PRELIMINARY DRAWINGS FOR QUOTATION PURPOSES ONLY DO NOT USE FOR PRODUCTION



DRAWN: D. MOLNAR	DATED: 06/08/2007
CHECKED: review panel	DATED:

COMPANY: LINE 6	REV: A
TITLE: A15: SV MAIN REAR PANEL JACKS BREAKAWAY PCB	PROGRAM: PADS LOGIC 2004
SCALE: 1:1	SIZE: C
PART NUMBER: 35-00-0250-2	SHEET: 6 OF 6

6

5

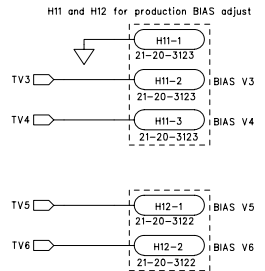
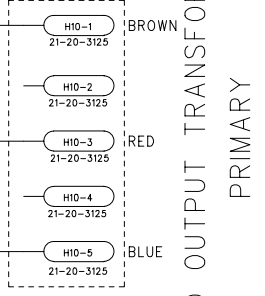
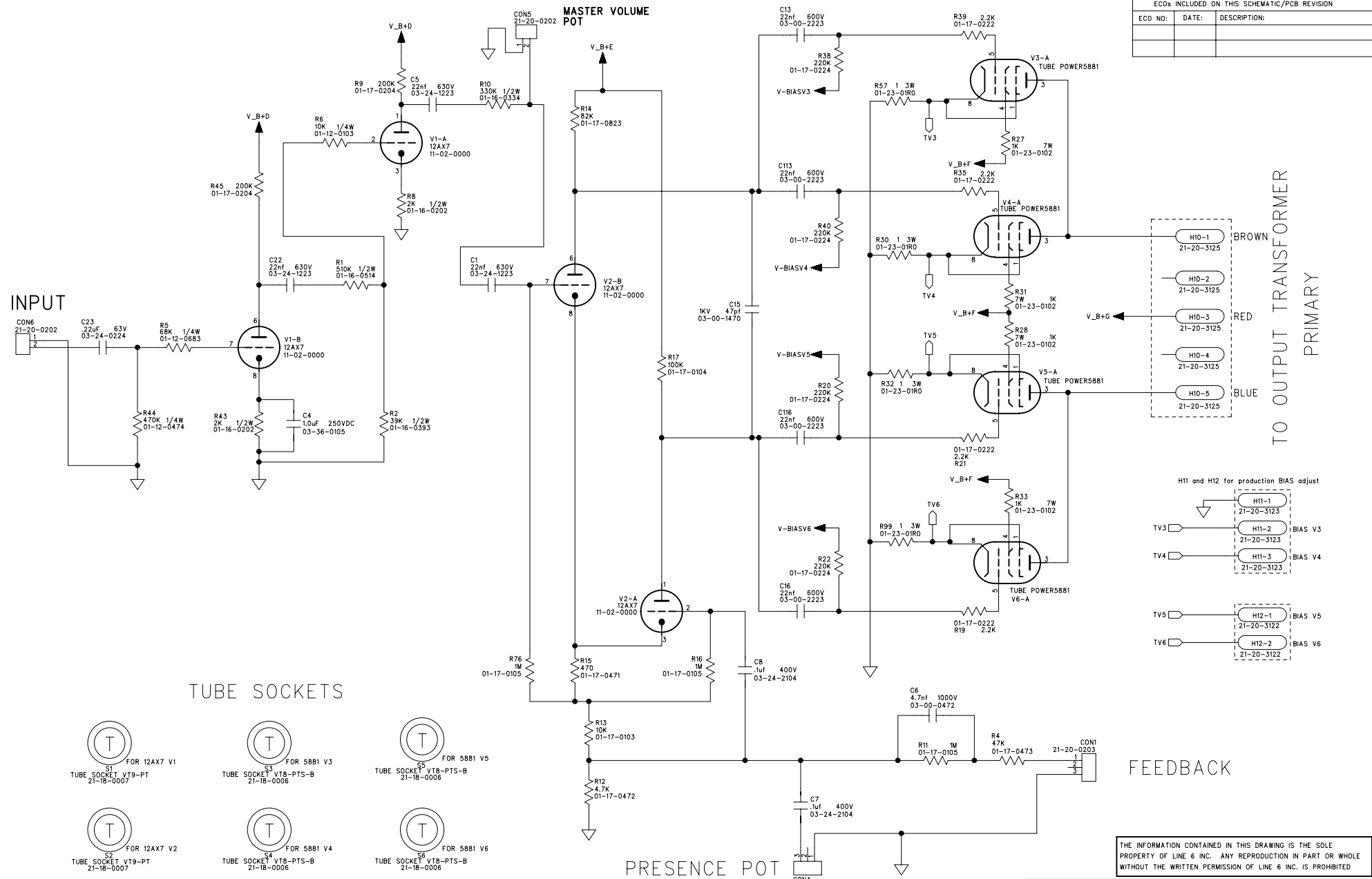
4

3

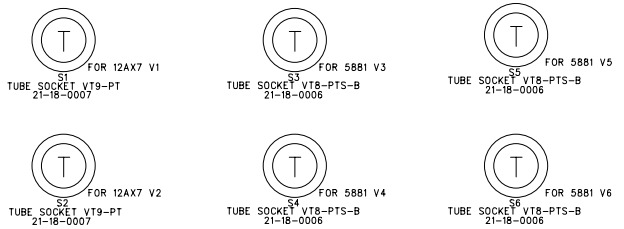
2

1

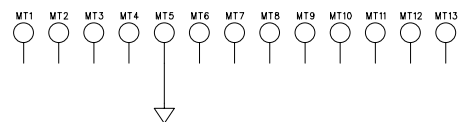
ECOs INCLUDED ON THIS SCHEMATIC/PCB REVISION		
ECO NO:	DATE:	DESCRIPTION:



TUBE SOCKETS



BOARD MOUNTING HOLES



PRESENCE POT



FEEDBACK

THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF LINE 6 INC. ANY REPRODUCTION IN PART OR WHOLE WITHOUT THE WRITTEN PERMISSION OF LINE 6 INC. IS PROHIBITED

COMPANY: LINE 6	
TITLE: A15: SV100 POWERAMP-SUPPLY	
PROGRAM: PADS LOGIC 2004	REV: A
FILENAME:	
SCALE: 1:1	SIZE: C
PART NUMBER: 35-00-0245	SHEET: 1 OF 2

DESIGN BY REINHOLD BOGNER

PRELIMINARY DRAWINGS FOR QUOTATION PURPOSES ONLY DO NOT USE FOR PRODUCTION

DRAWN: D. MOLNAR	DATED: 8/7/2007
CHECKED: review panel	DATED:

6 5 4 3 2 1

ECOs INCLUDED ON THIS SCHEMATIC/PCB REVISION		
ECO NO:	DATE:	DESCRIPTION:

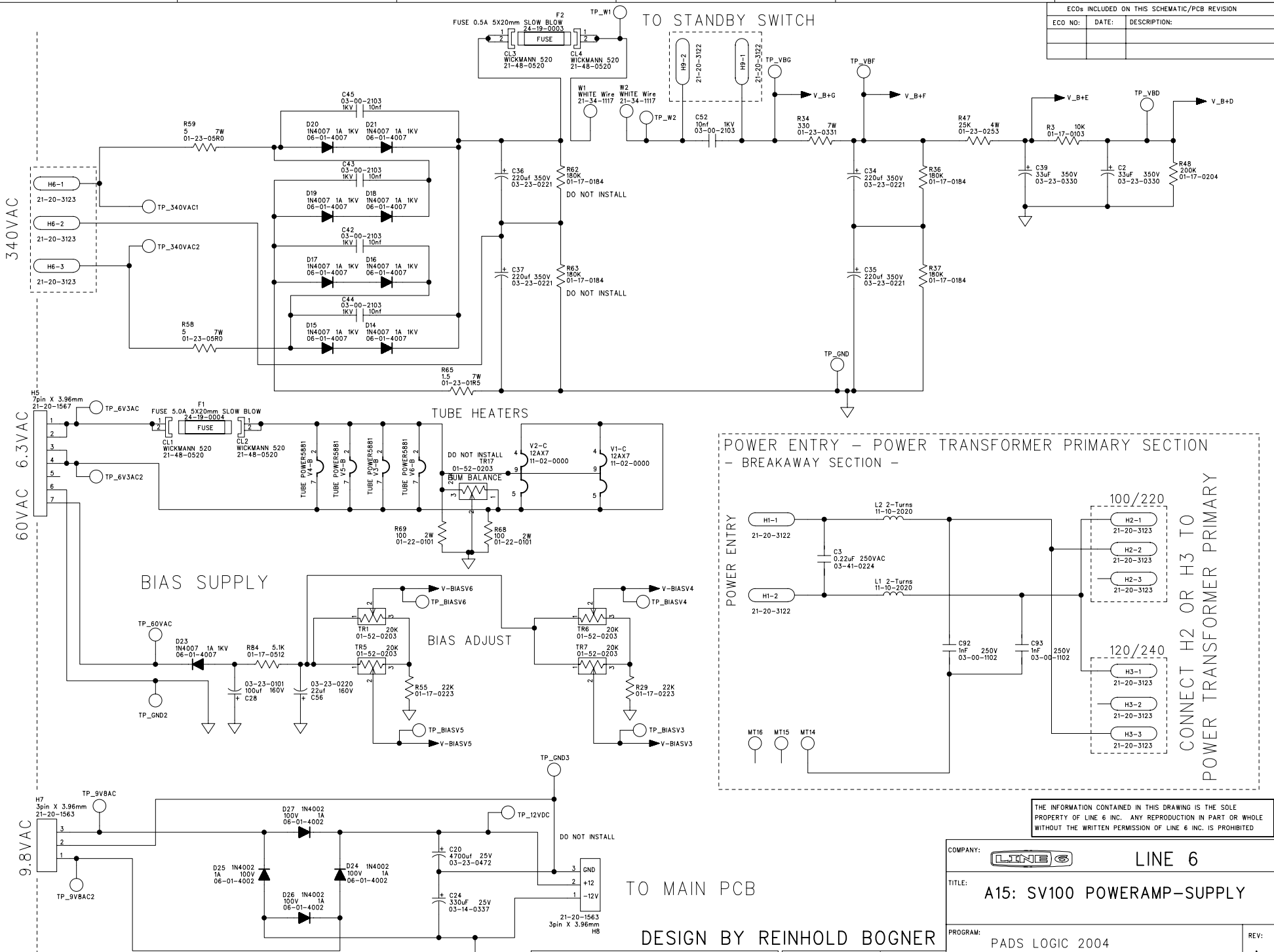
D

C

B

A

POWER TRANSFORMER SECONDARY CONNECTIONS



PRELIMINARY DRAWINGS
FOR QUOTATION PURPOSES ONLY
DO NOT USE FOR PRODUCTION

DESIGN BY REINHOLD BOGNER

DRAWN:	D. Molnar	DATED:	8/7/2007
CHECKED:		DATED:	

COMPANY:		LINE 6
TITLE:	A15: SV100 POWERAMP-SUPPLY	
PROGRAM:	PADS LOGIC 2004	
FILENAME:		
SCALE:	1:1	SIZE: C
PART NUMBER:	35-00-0245	SHEET: 2 OF 2

THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF LINE 6 INC. ANY REPRODUCTION IN PART OR WHOLE WITHOUT THE WRITTEN PERMISSION OF LINE 6 INC. IS PROHIBITED

6

5

4

3

2

1

ECOs INCLUDED ON THIS SCHEMATIC/PCB REVISION		
ECO NO:	DATE:	DESCRIPTION:

D

D

C

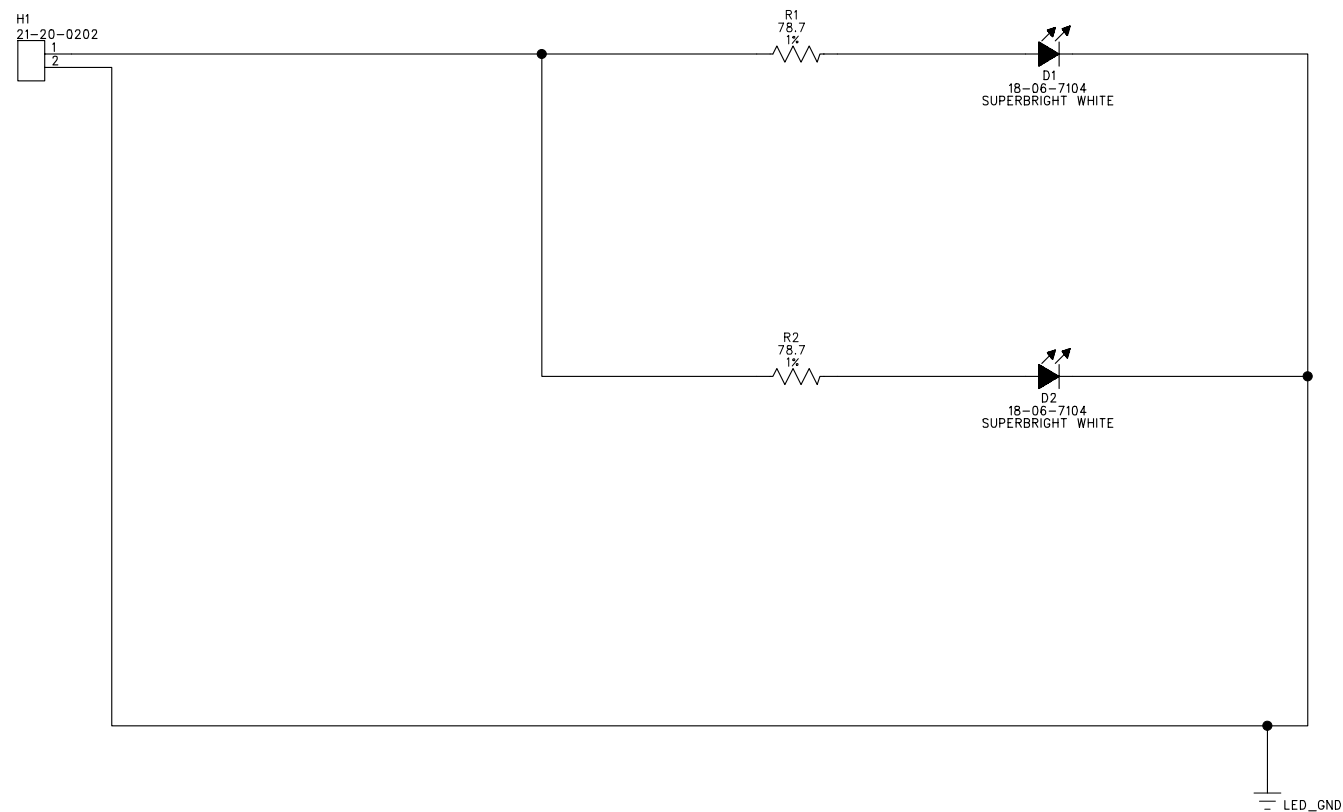
C

B


B

A

A



THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF LINE 6 INC. ANY REPRODUCTION IN PART OR WHOLE WITHOUT THE WRITTEN PERMISSION OF LINE 6 INC. IS PROHIBITED

COMPANY:		 LINE 6	
TITLE:			
A15: SV LED BOARD			
PROGRAM:			REV:
PADS LOGIC 2004			A
FILENAME:			
SCALE: 1:1	SIZE: C	PART NUMBER: 35-00-0249	SHEET: 1 OF 1

**PRELIMINARY DRAWINGS
FOR QUOTATION PURPOSES ONLY
DO NOT USE FOR PRODUCTION**

DRAWN:
D. MOLNAR
CHECKED:
review panel

DATED:
7/3/2007
DATED:

ECOs INCLUDED ON THIS SCHEMATIC/PCB REVISION		
ECO NO:	DATE:	DESCRIPTION:

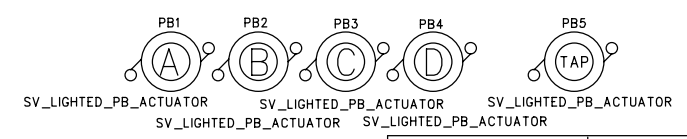
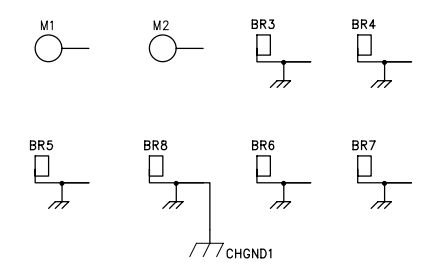
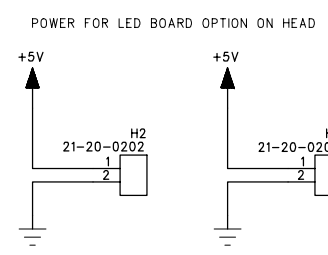
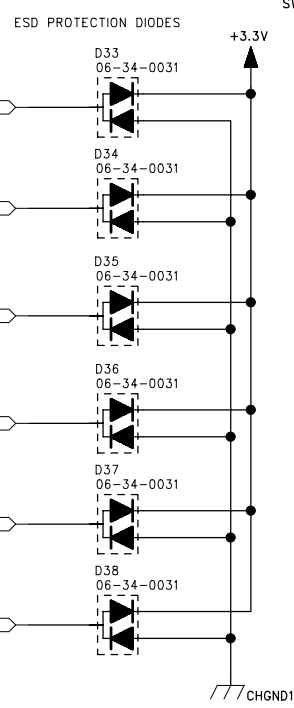
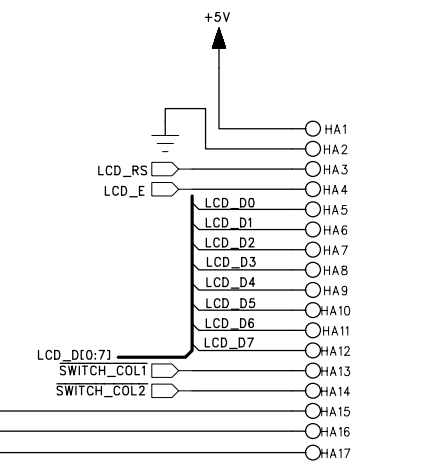
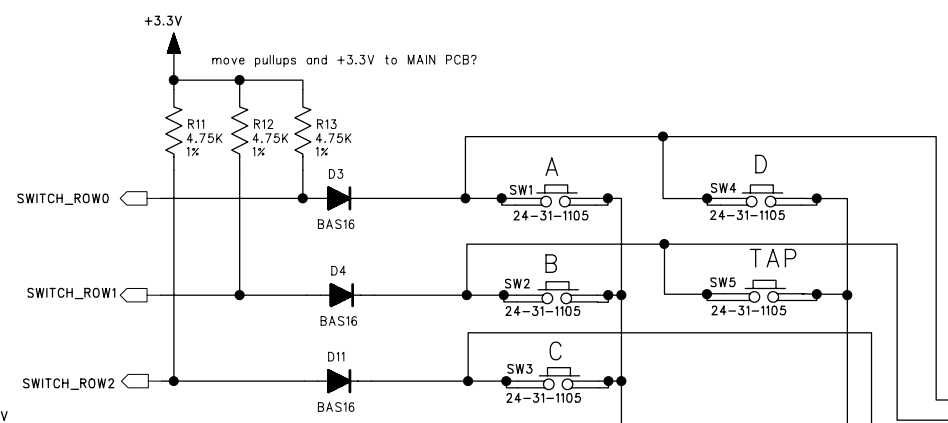
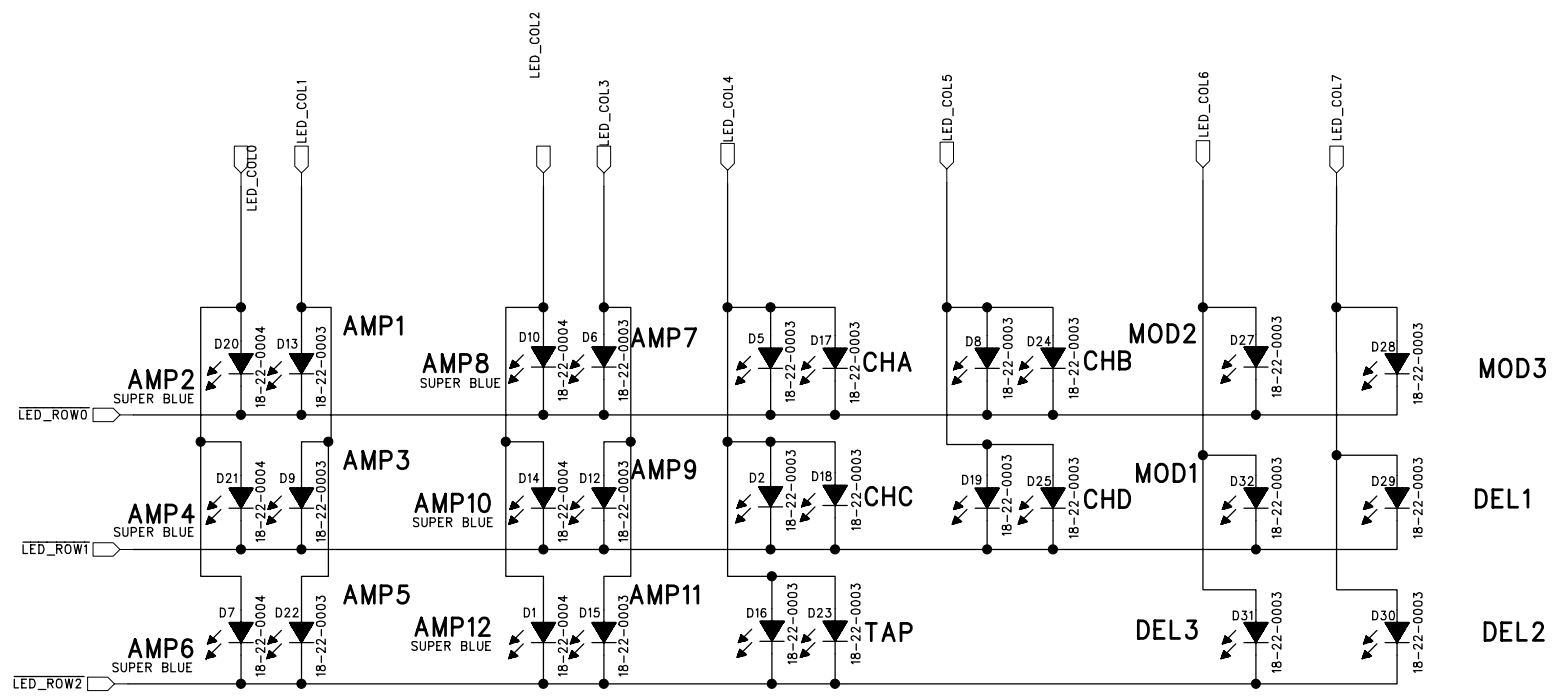
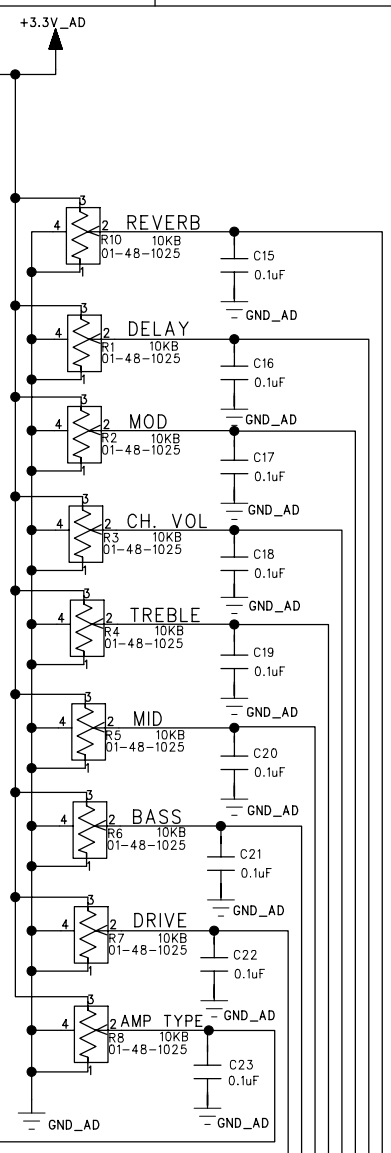
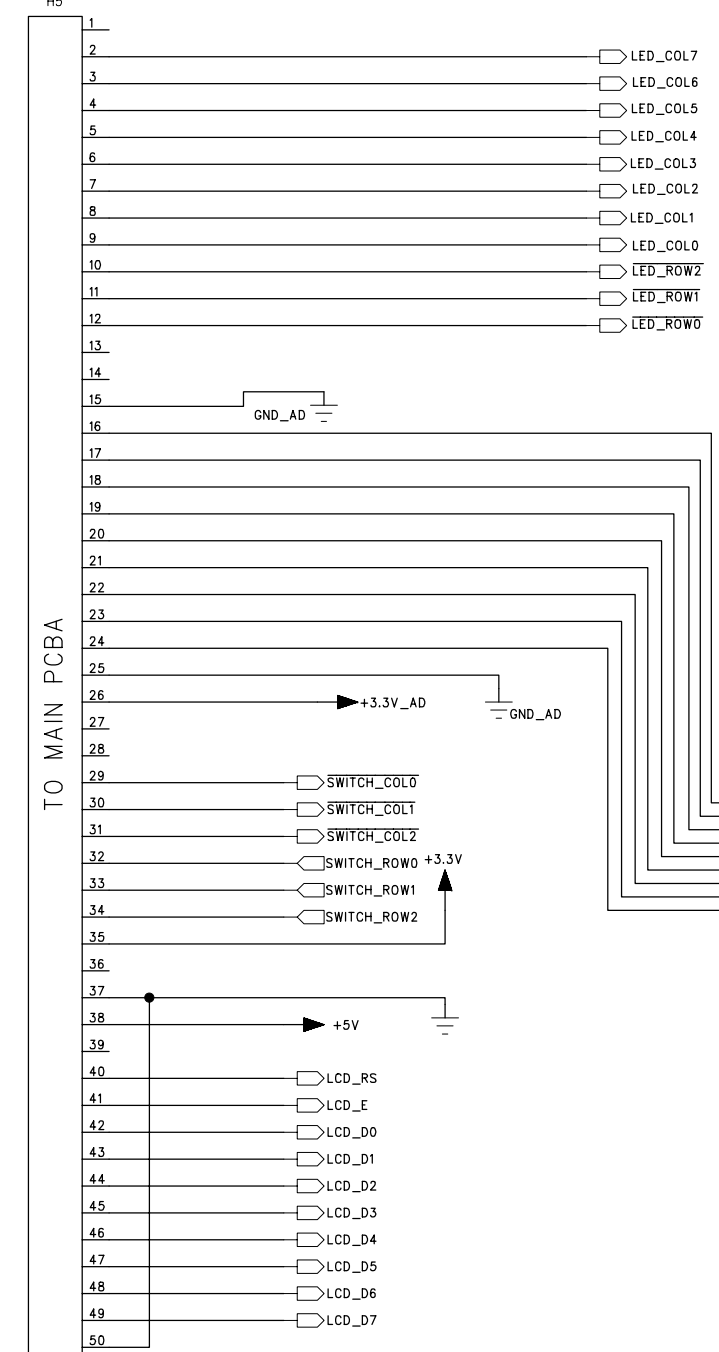
USER INTERFACE

All Pots - Linear Taper



source header after #pins decided

21-21-0050
H5



THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF LINE 6 INC. ANY REPRODUCTION IN PART OR WHOLE WITHOUT THE WRITTEN PERMISSION OF LINE 6 INC. IS PROHIBITED

COMPANY:	LINE 6	
TITLE:	A15: SV UI PCB LEFT HALF	
PROGRAM:	PADS POWER LOGIC 2004	REV: A
FILENAME:		
DRAWN:	D. MOLNAR	DATED: 6.07.2007
CHECKED:	review panel	DATED:
SCALE:	1:1	SIZE: C
PART NUMBER:	35-00-0247	SHEET: 1 OF 3

6

5

4

3

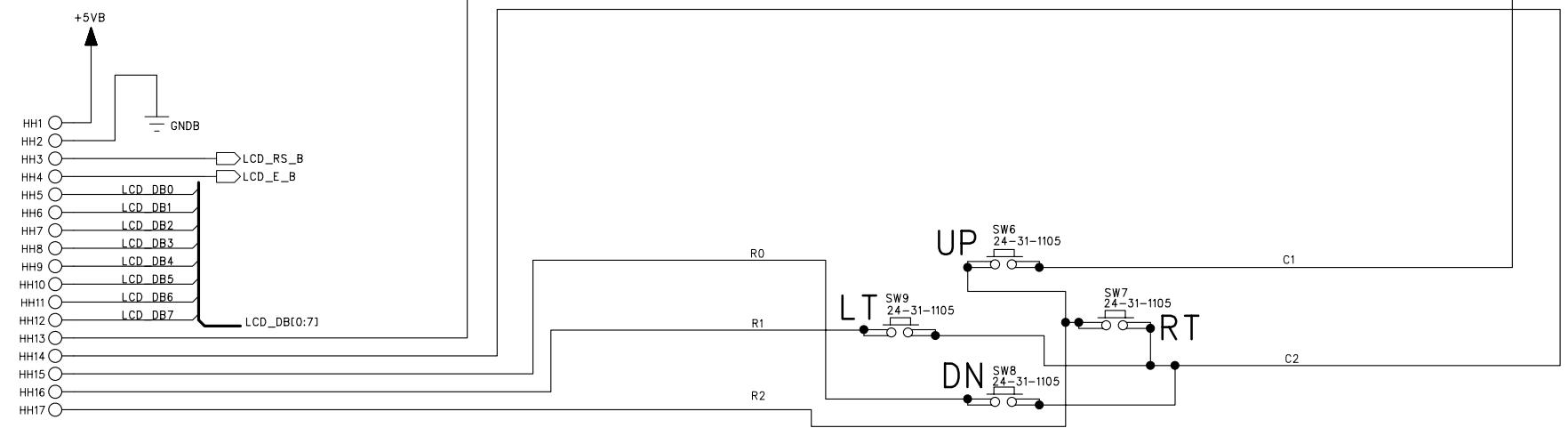
2

1

ECOs INCLUDED ON THIS SCHEMATIC/PCB REVISION		
ECO NO:	DATE:	DESCRIPTION:

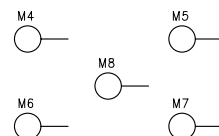
D

D



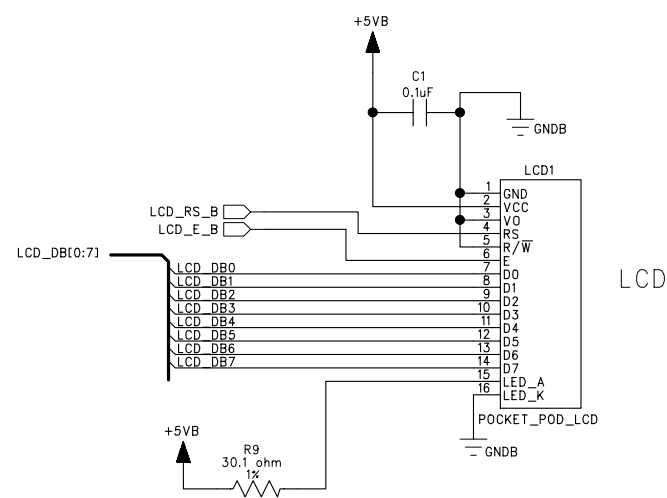
Possibly 2 rows of 9
or 1 row of 17
pending mechanical design

Mounting Holes on UI RIGHT PCB Half
for 4-way-switch



C

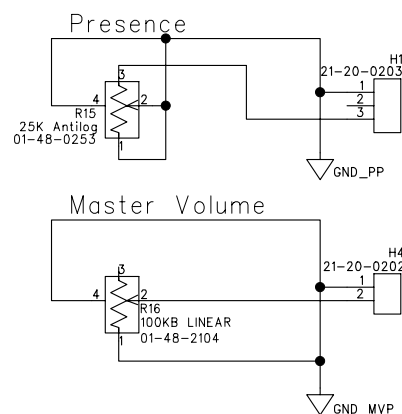
C



B

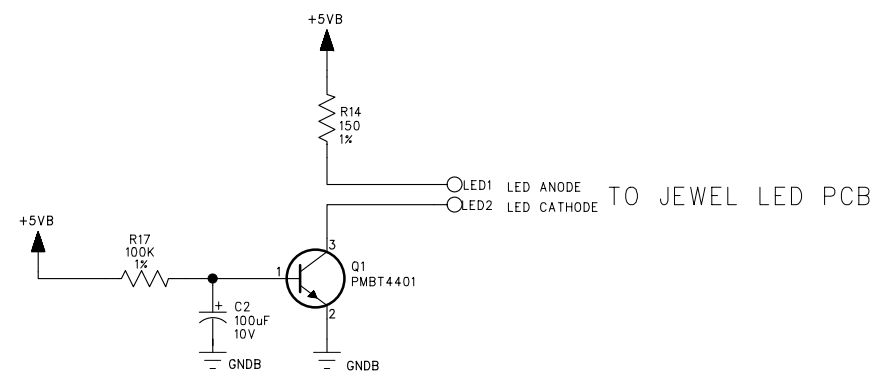
B

POWER AMPLIFIER CONTROL



A

A



THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE
PROPERTY OF LINE 6 INC. ANY REPRODUCTION IN PART OR WHOLE
WITHOUT THE WRITTEN PERMISSION OF LINE 6 INC. IS PROHIBITED

COMPANY:		LINE 6	
TITLE:			
A15: SV UI PCB RIGHT HALF			
PROGRAM:			REV:
PADS LOGIC 2004			A
FILENAME:			
SCALE: 1:1	SIZE: C	PART NUMBER: 35-00-0247-1	SHEET: 2 OF 3

PRELIMINARY DRAWINGS
FOR QUOTATION PURPOSES ONLY
DO NOT USE FOR PRODUCTION

DRAWN:	DATED:
D. MOLNAR	6.07.2007
CHECKED:	DATED:
review panel	

6

5

4

3

2

1

D

D

C

C

B

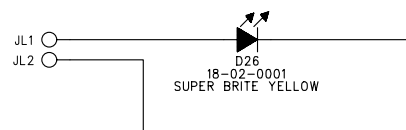
B

A


A

ECOs INCLUDED ON THIS SCHEMATIC/PCB REVISION		
ECO NO:	DATE:	DESCRIPTION:

JEWEL LIGHT LED PCB



THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF LINE 6 INC. ANY REPRODUCTION IN PART OR WHOLE WITHOUT THE WRITTEN PERMISSION OF LINE 6 INC. IS PROHIBITED

COMPANY:		 LINE 6	
TITLE:		A15: SV UI JEWEL LIGHT LED PCB	
PROGRAM:		PADS LOGIC 2004	REV: A
FILENAME:			
SCALE: 1:1	SIZE: C	PART NUMBER: 35-00-0247-2	SHEET: 3 OF 3

**PRELIMINARY DRAWINGS
FOR QUOTATION PURPOSES ONLY
DO NOT USE FOR PRODUCTION**

DRAWN: D. MOLNAR	DATED: 6.07.2007
CHECKED: review panel	DATED:

6

5

4

3

2

1

ECOs INCLUDED ON THIS SCHEMATIC/PCB REVISION		
ECO NO:	DATE:	DESCRIPTION:

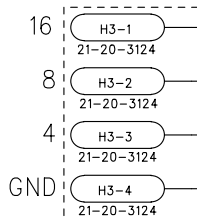
D

D

SPEAKER JACK SENSE TO MAIN PCB



POWER AMPLIFIER TRANSFORMER SECONDARY



C

C

B

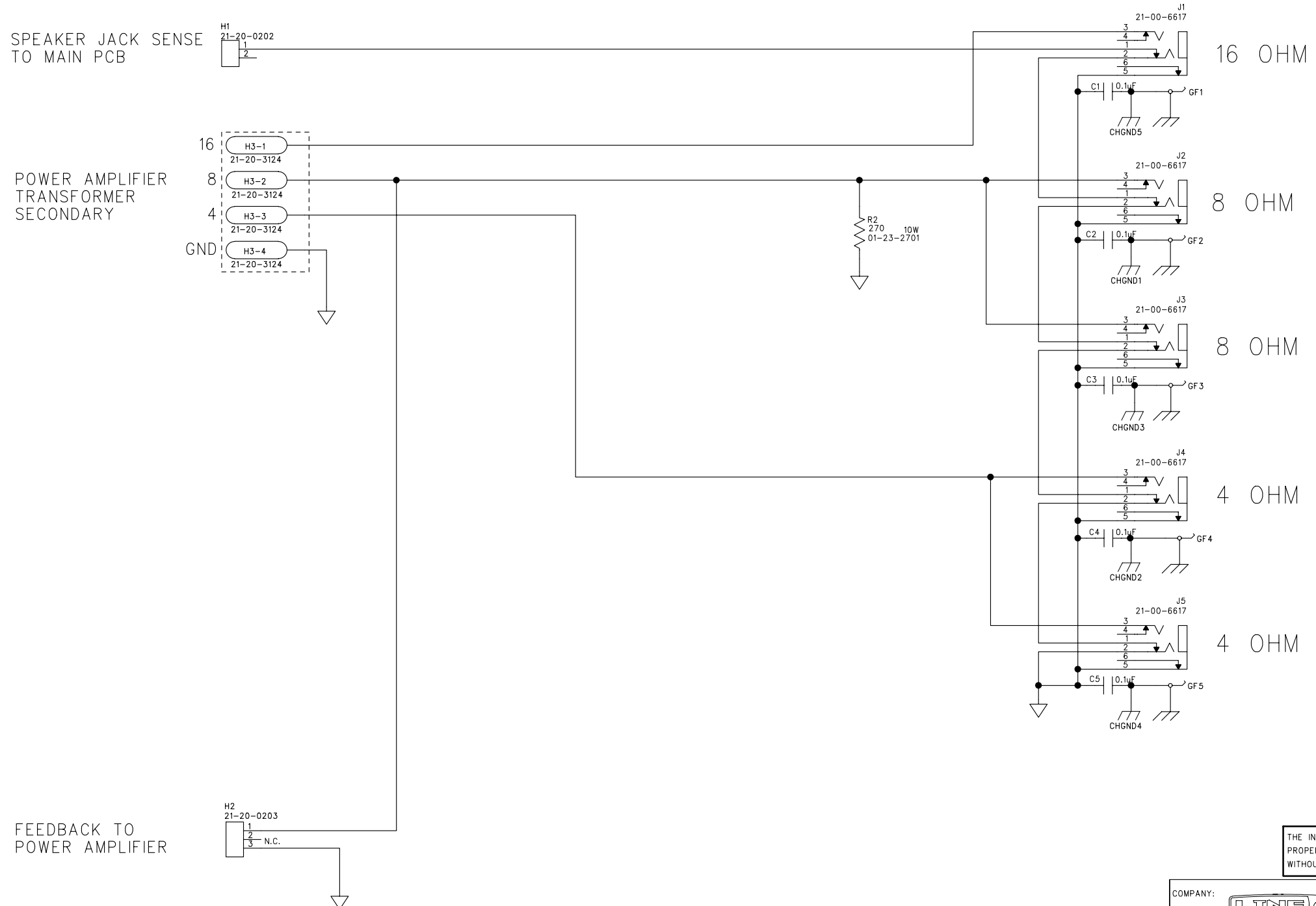
B

FEEDBACK TO POWER AMPLIFIER



A

A



THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF LINE 6 INC. ANY REPRODUCTION IN PART OR WHOLE WITHOUT THE WRITTEN PERMISSION OF LINE 6 INC. IS PROHIBITED

COMPANY:		LINE 6	
TITLE: A15: SV100 SPEAKER OUT			
PROGRAM: PADS LOGIC 2004			REV: A
FILENAME:			
SCALE: 1:1	SIZE: C	PART NUMBER: 35-00-0252	SHEET: 1 OF 1

**PRELIMINARY DRAWINGS
FOR QUOTATION PURPOSES ONLY
DO NOT USE FOR PRODUCTION**

DRAWN: D. MOLNAR
CHECKED: review panel

DATED: 8/8/2007
DATED:

99-021-0115 Spider Valve HD100 US			
Part Number	Description	Qty Per	Reference Designator Location
21-37-1160	CBL PWR UL/CSA SJT 8.2FT BLK EL-302 w/GND EL70	1	PACKOUT
40-00-0123	MANUAL USER SPIDER VALVE A15	1	
40-00-1000	CARD WARRANTY LINE 6 HARDWARE	1	
40-01-0016	CARD LICENSE-AGREEMNT END-USERALL-PRODUCTS	1	
40-03-0031	CARD REGISTRATION UK	1	
40-03-2000	CARD REGISTRATION US	1	
40-03-2000-1	CARD REGISTRATION EUROPE	1	
40-10-0006B	FOAM CORNER PE-LAM 1.5pcf BOTTOM	4	
40-10-0006T	FOAM CORNER PE-LAM 1.5pcf TOP	4	
40-10-0197	CARTON GIFT SPIDER VALVE A15-3	1	
40-15-0022	SILICA GEL PACK 3.0" x 3.5"	3	
40-15-0023	ANTISEPTIC PACK (5g/package)	1	
40-20-0010-3	POLYBAG 10PE 1090MM x 700MM	1	
40-20-0011	BAG PLASTIC 10 x 16 2 mil	1	
40-25-0024	STICKER ART SEAL EULA REV.B	1	SEAL THE UNIT BAG
40-25-0100	LABEL BAR CODE SERIAL NUMBER 4-PANEL LABEL	1	REAR CHASSIS/GIFT/SHIP CARTON
59-00-0270-1	ASSY UNIT COMPLETE SV HD100 A15-3 US 120V	1	
59-00-0270-1 ASSY UNIT COMPLETE SV HD100 A15-3 US 120V			
Part Number	Description	Qty Per	Reference Designator Location
30-00-0125	SCREW 8-32 x 5/16 W/LK WASH PPH BLK STL	2	
30-00-0812	SCREW w/WAX 8 x 3/4 PTB	8	
30-00-0858	SCREW #8 x 5/8IN PHIL-TRUSS BLACK w/WAX	6	
30-00-8102	SCREW WOOD #8 x 1.5" PHP STL BLK OXIDE	1	
30-03-0031	WSHR FL .50 OD x .28 ID x .08 STL BLK OXIDE	9	
30-03-0112	WASHER FINISHING #10 FLANGED STL BLK OXIDE	8	CHASSIS INSTALLATION
30-27-0279	LOGO PANEL 22.3 x 4.4 x 2.4 C CAST ACRYLIC CLEAR A15-3	1	
30-51-0312	MESH REAR 23.9 x 4.4 x .04 STEEL BLACK A15-3	1	
40-00-0137	GUIDE TOPPER SV HD100 A15-3	1	
40-25-0030	LABEL ETL KWANASIA 2"x 1"	1	
50-02-0249	PCBA SV LED BOARD A15-3	1	
50-03-0048	ASSY CAB SV HD A15-3	1	
50-04-0270-1	ASSY E/M CHASSIS SV HD100 A15-3 US 120V	1	
50-02-0249 PCBA SV LED BOARD A15-3			
Part Number	Description	Qty Per	Reference Designator Location
01-24-78R7	RES 78.7R 1% 0805	2	R1,R2
18-06-7104	LED ULTRA BRIGHT WHITE T1 TH	2	D1,D2
21-20-0202	HDR SIL PCB-MT 2 PIN x 2MM MALE SHRD VERT MT TH	1	H1
35-00-0249	PCB SV LED BOARD A15-3	1	
50-03-0048 ASSY CAB SV HD A15-3			
Part Number	Description	Qty Per	Reference Designator Location
30-00-0024	SCREW WD #8 x 1-1/8IN PPB STL	6	
30-00-0122	SCREW 10-24 x 0.7 OVH PHILLIPSNI PLD / CRM	4	
30-00-6839	SCREW WOOD 10-12 x 7/8" PPZ	4	RUBBER FEET
30-06-1024	NUT-T 10-24 X 5/16 STEEL	4	
30-27-0280	PIPING SV AMPS (A15)	5.6	
30-33-0073	CABINET PLYWOOD HD 25.5 x 8.75 x 9.0 A15-3	1	
30-36-0009	COVER VINYL SV VINYL	5.3	
30-57-0001	HANDLE CABINET PVC BLACK W/CHROME BRACKETS	1	
30-75-0008	RUBBER FOOT 1.50" I.D. x .75"HBLACK	4	

50-04-0270-1 ASSY E/M CHASSIS SV HD100 A15-3 US 120V			
Part Number	Description	Qty Per	Reference Designator Location
11-02-0000	VALVE 12AX7	2	V1,V2
11-02-0002	VALVE 5881/6L6 MATCHED QUARTET	1	V3,V4,V5,V6
11-30-0030	XFMR 100/120VAC SV HD100 A15-3	1	
11-33-1102	XFMR OUTPUT SPIDER VALVE A15-3	1	
21-30-0003	CBL DIL 50 PIN 28AWG 5.0" .100 PITCH	1	
21-34-0076-3	CBL SIL 2 COND 26AWG 2MM x 14.5" JST PHR-2 BLACK	2	
21-34-0093	CBL ASSY SIL 1 COND 26AWG 2.0MM PITCH 5.0" CON1-CON2	1	
21-34-0094-1	CBL ASSY SIL 3 PIN 2 COND 26AWG 2.0MM PITCH 3.50"	1	H2-SPEAKER OUT to POWERAMP/SUPPLY (CON1)
21-34-0095	CBL SIL 3 COND 18AWG 3 PIN 5.5" x .156" PITCH WHITE	1	H8-POWER AMP/SUPPLY to H3-MAIN
21-34-1022	CBL FSTN .187-RCPT x 2 1-COND 178MM STRAND 18AWG BK	1	IEC to POWER SWITCH
21-48-0004	HOLDER FUSE PANEL MOUNT SHOCK SAFE 500V	1	B+ FUSE HOLDER
21-48-0005	FUSE CAP No. 816 FOR 6.3 x 32MM	1	CAP FOR PANEL MOUNT FUSE HOLDER
24-03-0003	SWITCH TOGGLE SPST ON-OFF SHORT BAT 250V 10A 2 x QC PNL MNT	2	POWER & STANDBY SWITCHES
24-19-0010	FUSE 1.0A 250V SLOW BLOW 3AG	1	B+ PANEL MOUNT FUSE
24-19-0500	FUSE 5A 250V 5MM x20MM SLOW BLOW	1	
30-00-0042	SCREW SHEET METAL 4 x 0.375 INSELF-TAP PPB	2	
30-00-0043	SCREW 6-32 x 5/16 w/LK WASH PPZ STL	32	10-UI,5-MAIN,13-POWER AMP/SUPPLY,3-AC,1-GROUND
30-00-0125	SCREW 8-32 x 5/16 W/LK WASH PPH BLK STL	4	FOR OUTPUT XMFR
30-00-0126	SCREW #5-40 x 0.300 PHP SELF -TAP STL	8	TUBE SOCKETS TO CHASSIS BOTTOM
30-00-0375	SCREW 6-32 x .375 PPB	1	REAR CHASSIS TO REAR PANEL JACK PCBA
30-03-0038	WASHER .91 O.D. x .51 I.D. x .08 THK NYLON (A15)	4	TOGGLE SWITCHES
30-06-0832	NUT .335 HEX 8-32 STL ZINC W/ TOOTH WASHER	4	FOR POWER XFMR (screws included in XFMR)
30-15-0004	SPACER .13 THICK x .63OD NYLON	8	GRT IN (1), SPKR OUTS (5), PRE OUT (1), PA IN (1)
30-24-0003	CABLE TIE 4" CLEAR	6	
30-27-0277	LIGHT PIPE .10 DIA x .34 LG CLEAR PC A15	12	
30-27-0278	SHIELD LIGHT PIPE .19 DIA x .26 LG ABS BLACK A15	12	
30-27-0286	BEZEL LCD 2.2 x .85 x .08 PC CLEAR A15-3	1	
30-42-0052	OVERLAY UI HD 22.5 x 2.75 x .02 ALUMINUM A15-3	1	
30-45-0020	KNOB 0.84 DIA x 0.6 HIGH UREA PHENOLIC BLACK A15	11	
30-51-0113	LENS JEWEL D.610 x H.654" METAL BASE w/NUT CLEAR	1	
30-51-0311	CHASSIS HD 23.8x8.0x3.0 STEEL A15-3	1	
30-63-0031	FOAM RING W/ADH VOLARA .25 I.D x .40 O.D. x .125 THICK A15	5	
30-75-0051	GROMMET RUBBER 1.25 O.D. x .48I.D. x .25 THICK BLACK A15	2	
40-25-0015	LABEL GROUND SYMBOL	1	
50-00-0001	ASSY RECEPTACLE-A/C w/GND WIRE SNAP-IN	1	
50-02-0245	PCBA POWER AMP/SUPPLY SV HD100 A15-3	1	
50-02-0245-1	PCBA AC PRIMARY SV HD100 A15-3	1	
50-02-0247	PCBA UI LEFT SV A15	1	
50-02-0247-1	PCBA UI RIGHT SV A15	1	
50-02-0247-2	PCBA UI JEWEL LED SV A15	1	
50-02-0250-1	PCBA GUITAR INPUT SV A15	1	
50-02-0250-2	PCBA REAR PANEL JACK BOARD SV A15	1	
50-02-0250-3	PCBA MAIN SV HD100 A15-3	1	
50-02-0252	PCBA SPEAKER OUT SV A15-3	1	
50-00-0001 ASSY RECEPTACLE-A/C w/GND WIRE SNAP-IN			
Part Number	Description	Qty Per	Reference Designator Location
21-14-0002	JACK IEC w/FUSE MALE 3 PIN PANEL MOUNT SNAP IN VERT	1	
21-34-1116	CBL EARTHING w/EYELET 16AWG 5" GREEN w/YELLOW STRIPE		

50-02-0245 PCBA POWER AMP/SUPPLY SV HD100 A15-3

Part Number	Description	Qty Per	Reference Designator Location
01-12-0103	RES CARBON FILM 10K 1/4W 5% TH	1	R6
01-12-0474	RES CARBON FILM 470K 1/4W 5% TH	1	R44
01-12-0683	RES CARBON FILM 68K 1/4W 5% TH	1	R5
01-16-0202	RES CARBON FILM 2K 1/2W 5% TH	2	R8,R43
01-16-0334	RES CARBON FILM 330K 1/2W 5% TH	1	R10
01-16-0393	RES CARBON FILM 39K 1/2W 5% TH	1	R2
01-16-0514	RES CARBON FILM 510K 1/2W 5% TH	1	R1
01-17-0103	RES CARBON FILM 10K 1W 5% TH	2	R3,R13
01-17-0104	RES CARBON FILM 100K 1W 5% TH	1	R17
01-17-0105	RES CARBON FILM 1M 1W 5% TH	3	R11,R16,R76
01-17-0184	RES CARBON FILM 180K 1W 5% TH	2	R36,R37
01-17-0204	RES CARBON FILM 200K 1W 5% TH	3	R9,R45,R48
01-17-0222	RES CARBON FILM 2.2K 1W 5% TH	4	R19,R21,R35,R39
01-17-0223	RES CARBON FILM 22K 1W 5% TH	2	R29,R55
01-17-0224	RES CARBON FILM 220K 1W 5% TH	4	R29,R22,R38,R40
01-17-0471	RES CARBON FILM 470R 1W 5% TH	1	R15
01-17-0472	RES CARBON FILM 4.7K 1W 5% TH	1	R12
01-17-0473	RES CARBON FILM 47K 1W 5% TH	1	R4
01-17-0823	RES CARBON FILM 82K 1W 5% TH	1	R14
01-22-0101	RES METAL OXIDE 100R 2W 5% TH	2	R68,R69
01-23-0102	RES WIREWOUND 1K 7W 5% TH	4	R27,R28,R31,R33
01-23-01R0	RES WIREWOUND 1R 3W 1% TH	4	R30,R32,R57,R99
01-23-01R5	RES WIREWOUND 1.5R 7W 5% TH	1	R65
01-23-0253	RES WIREWOUND 25K 5% 3W TH	1	R47
01-23-0331	RES WIREWOUND 330R 7W 5% TH	1	R34
01-23-05R0	RES WIREWOUND 5R 7W 5% TH	2	R58,R59
01-52-0203	POT TRIM 20K SINGLE TURN 1/4 SQ V/ADJ	4	TR1,TR5,TR6,TR7
03-00-0472	CAP CER DISC 4.7nF 1KV Y5P 10MM-LS TH	1	C6
03-00-1470	CAP CER DISC 47pF 1KV TH	1	C15
03-00-2103	CAP CER DISC 10nF 1KV 10% TH	5	C42,C43,C44,C45,C52
03-00-2223	CAP POLY FILM 22nF 600V 10% TH	4	C13,C16,C113,C116
03-14-0337	CAP ELEC 330uF 25V 20% RADIAL 8/11.5/5	1	C24
03-23-0101	CAP ELEC 100uF 160V RADIAL	1	C28
03-23-0220	CAP ELEC 22uF 160V RADIAL	1	C56
03-23-0221	CAP ELEC 220uF 350V RADIAL	4	C34,C35,C36,C37
03-23-0330	CAP ELEC 33uF 450V RADIAL	2	C2,C39
03-23-0472	CAP ELEC 4700uF 25V RADIAL	1	C20
03-24-0224	CAP MET POLY 0.22uF 63V 10% TH	1	C23
03-24-1223	CAP MET POLY 22nF 630V 10% TH	3	C1,C5,C22
03-24-2104	CAP MET POLY 0.1uF 400V 10% THWIMA	2	C7,C8
03-36-0105	CAP ESTR 1uF 250VDC 10% TH 18.5/7.4/15/15	1	C4
06-01-4002	DIODE RECTIFIER 1N4002 100V 1ADO-41 TH	4	D24,D25,D26,D27
06-01-4007	DIODE RECTIFIER 1N4007 1KV 1A DO-41 TH	9	D14,D15,D16,D21,D23
21-18-0006	TUBE SOCKET VT8-PTS-B	4	S3,S4,S5,S6
21-18-0007	TUBE SOCKET BELTON VT9-PT	2	S1,S2
21-20-0202	HDR SIL PCB-MT 2 PIN x 2MM MALE SHRD VERT MT TH	2	CON5,CON6
21-20-0203	HDR SIL PCB-MT 3 PIN x 2MM MALE SHRD VERT MT TH	2	CON1,CON4
21-20-1563	HDR SIL PCB-MT 3 PIN x 3.96MM MALE VERT MNT FRIC LOCK	2	H7,H8
21-20-1567	HDR SIL PCB-MT 7 PIN x .156 MALE VERT MNT FRIC LOCK	1	H5
21-20-3123	HDR SIL PCB-MT 3 PIN x 7.92MM MALE VERT MNT FRIC LOCK	2	H6,H11
21-20-3125	HDR SIL PCB-MT 5 PIN x .312 MALE VERT MNT FRIC LOCK	1	H10
21-34-1117-1	CBL 1 COND STRAND 18AWG 2.25" .250 RCPT/TND-END WHITE	2	W1,W2
21-48-0520	FUSE CLIP PCB MNT FOR 5 x 20MM	4	LC1,LC2,LC3,LC4
24-19-0007	FUSE 1.0A 5MM x 20MM TIME LAG 218P SERIES	1	F2
24-19-1000	FUSE 10.0A 5MM x 20MM SLOW BLOW	1	F1
35-00-0245	PCB POWER AMP/SUPPLY SV HD100 A15-3	1	

50-02-0245-1 PCBA AC PRIMARY SV HD100 A15-3			
Part Number	Description	Qty Per	Reference Designator Location
03-00-1102	CAP CER DISC Y-CAP 1nF 250VAC 20% 8D/7/7.5	2	C92,C93
03-41-0224	CAP X-CAP 0.22uF 275VAC 20% POLYPROPYLENE 18/9.5/17.5/15	1	C3
11-10-2020	CHOKE WIDE BAND 1-5 TURNS	2	L1,L2
21-20-3122	HDR SIL PCB-MT 2 PIN x 7.92MM MALE VERT MNT FRIC LOCK	1	H1
21-20-3123	HDR SIL PCB-MT 3 PIN x 7.92MM MALE VERT MNT FRIC LOCK	2	H2,H3
35-00-0245-1	PCB AC PRIMARY SV HD100 A15-3	1	
50-02-0247 PCBA UI LEFT SV A15			
Part Number	Description	Qty Per	Reference Designator Location
01-24-4751	RES 4.75K 1% 0805	3	R11,R12,R13
01-48-1026	POT MONO 10KB LINEAR TAPER 25MM D-SHAFT	9	R1,R2,R3,R4,R5,R6,R7,R8,R10
03-10-0477	CAP ELEC 470uF 6.3V 20% RADIAL6.3/11/5	1	C28
03-52-0104	CAP X7R 0.1uF 50V 10% 0805	9	C15,C16,C17,C18,C19,C20,C21,C22,C23
06-34-0016	DIODE SWITCHING 75V 200mA 6nS SOT-23 SM	3	D3,D4,D11
06-34-0031	DIODE GEN PUR DUAL 120V 600mA 50nS SOT-23 SM	6	D33,D34,D35,D36,D37,D38
18-22-0003	LED YELLOW SUPER BRIGHT 2MM x 1.25MM SM	22	D2,D5,D6,D8,D9,D12,D13,D15,D16,D17,D18,D19,D22,D23,D24,D25,D27, D28,D29,D30,D31,D32
18-22-0004	LED BLUE SUPER 2.0 x 1.2 x 1.1MM SM	6	D1,D7,D10,D14,D20,D21
21-18-0002	TERMINAL SCREW PCB MOUNT RIGHTANGLE SNAP-IN 6-32 THREAD	6	BR3,BR4,BR5,BR6,BR7,BR8
21-20-0202	HDR SIL PCB-MT 2 PIN x 2MM MALE SHRD VERT MT TH	2	H2,H3
21-21-0050	HDR DIL PCB-MT 50PIN 2 x 20 x 2.54MM MALE SHRD VERT MNT TH	1	H5
21-30-0037	CBL SIL 17 PIN 26AWG .100 PITCH x 1.5" S/T	1	UI LEFT to UI RIGHT
24-31-1105	SWITCH TACT 6MM SQ 4 PIN TH	5	SW1,SW2,SW3,SW4,SW5
30-27-0265	BUTTON UI 1.0 x 0.5 x 0.7 NI-PLT ABS A15	5	
30-27-0266	LIGHT PIPE BUTTON 0.72 DIA x 0.56 PP CLEAR A15	5	
35-00-0247	PCB UI LEFT SV A15 REV.A	1	
50-02-0247-1 PCBA UI RIGHT SV A15			
Part Number	Description	Qty Per	Reference Designator Location
01-24-1001	RES 1.00K 1% 0805	1	R14
01-24-1003	RES 100K 1% 0805	1	R17
01-25-30R1	RES 30.1R 1% 0603	1	R9
01-48-0254	POT MONO 25K ANTILOG 15C TAPER30MM D-SHAFT	1	R15
01-48-2105	POT MONO 100K LINEAR TAPER 30MM D-SHAFT	1	R16
03-10-0107	CAP ELEC 100uF 10V 20% RADIAL 6.3/8/5	1	C2
03-58-0104	CAP X7R 0.1uF 25V 10% 0603	1	C1
09-10-4401	TRANS NPN SMALL SIGNAL SOT-23 SM	1	Q1
21-18-0002	TERMINAL SCREW PCB MOUNT RIGHTANGLE SNAP-IN 6-32 THREAD	4	BR9,BR10,BR11,BR12
21-20-0202	HDR SIL PCB-MT 2 PIN x 2MM MALE SHRD VERT MT TH	1	H4
21-20-0203	HDR SIL PCB-MT 3 PIN x 2MM MALE SHRD VERT MT TH	1	H1
21-21-1116-2	HDR SIL PCB-MT 16 PIN 4 x 16 x2MM MALE VERT MNT TH	1	
21-26-0002-2	CBL RIBBON 2 COND x .100 4.50" S/T	1	
24-31-1105	SWITCH TACT 6MM SQ 4 PIN TH	4	SW6,SW7,SW8,SW9
30-27-0217-1	BUTTON 4 WAY TOP .8 DIA x .4 HT ABS NO PLTG P10-1	1	
30-27-0218	BUTTON 4 WAY BOTTOM .8 DIA x .5 HT ABS P10-1	1	
30-27-0221	4-WAY SW PIVOT PIN .37 x .200 DIA NYLON 6/6 WHITE P10-1	1	
30-27-0269	FRAME 4-WAY 1.04 DIA x 0.7 NI-PLT ABS A15	1	
30-27-0283	SPRT DUAL LKG CKT BD TEARDROP .156 LG 6/6 NYLON NAT A15	2	
30-63-0028	FOAM RING 4-WAY SW RET PU .75 OD x .40 ID x .18 HT BLK P10-1	1	
35-00-0247-1	PCB UI RIGHT SV A15 REV.A	1	
50-04-0060	ASSY E/M LCD MODULE P9-1	1	
50-02-0247-2 PCBA UI JEWEL LED SV A15			
Part Number	Description	Qty Per	Reference Designator Location
18-03-0002	LED BLUE DIFFUSED T-1 3/4 5MM 465nm TH	1	D26
35-00-0247-2	PCB UI JEWEL LED SV A15 REV.A	1	

50-02-0250-1 PCBA GUITAR INPUT SV A15

Part Number	Description	Qty Per	Reference Designator Location
01-24-1001	RES 1.00K 1% 0805	2	R40,R41
01-24-1004	RES 1.00M 1% 0805	1	R45
01-24-1502	RES 15.0K 1% 0805	1	R46
01-24-3321	RES 3.32K 1% 0805	1	R48
03-52-0104	CAP X7R 0.1uF 50V 10% 0805	1	C46
03-52-0470	CAP X7R 47pF 50V 10% 0805	1	C45
03-52-0473	CAP X7R 47nF 50V 10% 0805	2	C43,C51
06-34-0031	DIODE GEN PUR DUAL 120V 600mA 50nS SOT-23 SM	1	D5
12-54-0072	IC OP AMP DUAL TL072 SM	1	U14
21-00-6617	JACK 1/4" TRS PCB MOUNT 6 PIN HORIZONTAL W/CHROME HRDWARE TH	1	J5
30-18-3030	CLIP GROUND PCB .30x.30x.07	1	GF5
30-51-0146	SHIELD PCB MT FOR 1/4 JACK 1.00 Hx1.25Wx.013THK BERYL COP	1	SH1
35-00-0250-1	PCB GUITAR INPUT SV A15 REV.A	1	

50-02-0250-2 PCBA REAR PANEL JACK BOARD SV A15

Part Number	Description	Qty Per	Reference Designator Location
01-24-1001	RES 1.00K 1% 0805	2	R13,R14
01-24-6191	RES 6.19K 1% 0805	2	R18,R20
01-24-9530	RES 953R 1% 0805	1	R24
03-52-0101	CAP X7R 100pF 50V 10% 0805	1	C66
03-56-0102	CAP NPO 1nF 50V 5% 0603	3	C8,C15,C21
03-58-0102	CAP X7R 1nF 50V 10% 0603	3	C89,C90,C91
03-58-0104	CAP X7R 0.1uF 25V 10% 0603	5	C17,C22,C52,C82,C83
11-10-0501	FERRITE BEAD 500R @100MHz 2.5A 1206 SM	2	L8,L12
11-10-2012	FERRITE BEAD 600R @ 100MHz 300mA 0805 SM	10	L9,L10,L11,L15,L17,L24,L26,L27,L28,L29
21-00-6617	JACK 1/4" TRS PCB MOUNT 6 PIN HORIZONTAL W/CHROME HRDWARE TH	2	J9,J16
21-08-0013	JACK XLR MALE PCB MOUNT RIGHT ANGLE TH	1	J14
21-16-0045	JACK RJ-45 MOD 8/8 RT/A FEMALE PCB 50AU	1	
21-18-0002	TERMINAL SCREW PCB MOUNT RIGHTANGLE SNAP-IN 6-32 THREAD	1	BR1
24-09-0129	SWITCH SLIDE DPDT 4MM 8MM SHAFT HORIZONTAL MNT	1	SW4
30-18-3030	CLIP GROUND PCB .30x.30x.07	3	GF9,GF14,GF16
35-00-0250-2	PCB REAR PANEL JACK BOARD SV A15 REV.A	1	

50-02-0250-3 PCBA MAIN SV HD100 A15-3

Part Number	Description	Qty Per	Reference Designator Location
01-24-1000	RES 100R 1% 0805	9	R6,R7,R8,R9,R10,R11,R56,R58,R59
01-24-1002	RES 10.0K 1% 0805	8	R22,R23,R28,R32,R33,R34,R43,R92
01-24-1003	RES 100K 1% 0805	4	R36,R37,R50,R51
01-24-10R0	RES 10.0R 1% 0805	1	R70
01-24-1501	RES 1.50K 1% 0805	1	R38
01-24-2001	RES 2.00K 1% 0805	1	R39
01-24-22R1	RES 22.1R 1% 0805	2	R100,R101
01-24-3090	RES 309R 1% 0805	2	R1,R55
01-24-4751	RES 4.75K 1% 0805	11	R2,R3,R15,R16,R17,R21,R29,R42,R47,R60,R61
01-24-48R7	RES 48.7R 1% 0805	2	R4,R5
01-24-5110	RES 511R 1% 0805	1	R35
01-24-5R11	RES 5.11R 1% 0805	3	R19,R53,R54
01-24-9091	RES 9.09K 1% 0805	4	R25,R27,R30,R31
01-25-1002	RES 10.0K 1% 0603	1	R93
01-25-1004	RES 1.00M 1% 0603	1	R44
03-10-0107	CAP ELEC 100uF 10V 20% RADIAL 6.3/8/5	2	C159,C172
03-10-0331	CAP ELEC 330uF 10V 20% RADIAL 6.3/11.2/5	1	C63
03-10-6108	CAP ELEC 1000uF 6.3V 20% RADIAL 8/11.5/5	2	C20,C80
03-12-0476	CAP ELEC 47uF 16V 20% RADIAL 6.3/11.2/5	1	C12
03-18-0105	CAP ELEC 1uF 50V 20% RADIAL 5/11/5	2	C42,C44
03-18-0106	CAP ELEC 10uF 50V 20% RADIAL 5/11/5	7	C7,C14,C38,C39,C40,C47,C77
03-45-0332	CAP FILM 3.3nF 50V 5% 1206	1	C58
03-50-0181	CAP NPO 180pF 50V 2% 0805	4	C26,C29,C30,C36
03-52-0101	CAP X7R 100pF 50V 10% 0805	2	C25,C28
03-52-0102	CAP X7R 1nF 50V 10% 0805	2	C32,C34

50-02-0250-3 PCBA MAIN SV HD100 A15-3			
Part Number	Description	Qty Per	Reference Designator Location
03-52-0104	CAP X7R 0.1uF 50V 10% 0805	30	C1,C2,C4,C11,C13,C48,C54,C55,C56,C57,C60,C61,C62,C65,C66,C67,C68,C69,C70,C71,C72,C73,C74,C75,C76,C79,C81,C84,C85,C86,C87
03-52-0473	CAP X7R 47nF 50V 10% 0805	17	C5,C6,C9,C10,C16,C18,C19,C23,C24,C27,C33,C35,C37,C50,C59,C78,C80
03-56-0180	CAP NPO 18pF 50V 5% 0603	2	C3,C49
03-58-0104	CAP X7R 0.1uF 25V 10% 0603	1	C165
04-05-0001	FERRITE BEAD 1K @100MHz 100mA 0603	3	L4,L5,L6
06-20-0099	DIODE GEN PUR DUAL 70V 215mA 6nS SOT-23 SM	3	D20,D21,D22
06-23-0054	DIODE SCHOTTKY DUAL 30V 200mA 5nS SOT-23 SM	1	D4
06-34-0031	DIODE GEN PUR DUAL 120V 600mA 50nS SOT-23 SM	3	D1,D2,D6
09-06-7002	TRANS MOSFET N-CHAN 60V 7R5 SOT-23 SM	3	Q2,Q3,Q4
11-00-1201	CRYSTAL 12MHz SHORT CAN HC49 TH	1	Y1
11-10-2012	FERRITE BEAD 600R @ 100MHz 300mA 0805 SM	3	L1,L2,L3
12-02-1088	IC REG ADJ TO-220 TH	1	U1
12-02-7805	IC REG +5V 1.5 AMP TH	1	U8
12-50-7905	IC REG -5V LM79L05 SO-8 SM	1	U6
12-52-0002	IC REG LINEAR LDO 3.3V 150mA SM	1	U3
12-54-0084	IC OP AMP QUAD TL084CD SM	1	U12
12-62-0053	IC SWITCH ANALOG TRIPLE 2-CHAN TSSOP-16 SM	1	U4
12-64-4528	IC CONVERTER 24BIT 96KHz AUDIO CODEC AK4528 SM	1	U13
15-64-0273	IC 74HCT273 OCTAL D-TYPE FLIP FLOP 8 BIT SO-20 SM	1	U16
15-65-0004	IC 74LVC04 LOW VOLTAGE HEX INVERTER SO-14 SM	1	U22
15-72-0001	IC SRAM 256K x 8 BIT TSOP32 SM	1	U5
15-86-6362	IC DSP 24 BIT AUDIO DSP56362 TQFP-144 SM	1	U7
21-20-0202	HDR SIL PCB-MT 2 PIN x 2MM MALE SHRD VERT MT TH	1	H7
21-20-0203	HDR SIL PCB-MT 3 PIN x 2MM MALE SHRD VERT MT TH	1	H2
21-20-1563	HDR SIL PCB-MT 3 PIN x 3.96MM MALE VERT MNT FRIC LOCK	1	H3
21-21-0050	HDR DIL PCB-MT 50PIN 2 x 20 x 2.54MM MALE SHRD VERT MNT TH	1	H1
21-30-0039	CBL SIL 6 PIN 26AWG .100 PITCH x 4.3" S/T	1	H5 to H8
21-30-0040	CBL SIL 5 PIN 26AWG .100 PITCH x 4.30" S/T	1	MAIN-REAR PANEL (RJ45)
21-30-0041	CBL SIL 7 PIN 26AWG .100 PITCH x 3.05" S/T	1	MAIN-REAR PANEL (AUDIO)
30-00-0043	SCREW 6-32 x 5/16 w/LK WASH PPZ STL	2	(U1,U8)
30-12-0632	STANDOFF HEX .250 6-32 F-F 1IN F-F AL	2	
30-15-0007	INSULATOR XTAL 4.9MM C-C 11.8 x 5.6MM MYLAR	1	(Y1)
35-00-0250	PCB MAIN SV A15 REV.A	1	
45-01-0034	IC PROGRAMMED MCU v1.01 SV A15-1 A15-2 A15-3	1	
45-02-0044	IC PROGRAMMED FLASH v1.00 SV HD100 A15-3	1	
50-02-0252 PCBA SPEAKER OUT SV A15-3			
Part Number	Description	Qty Per	Reference Designator Location
01-23-2701	RES WIREWOUND 270R 10W 5% TH	1	R2
03-58-0104	CAP X7R 0.1uF 25V 10% 0603	5	C1,C2,C3,C4,C5
21-00-6617	JACK 1/4" TRS PCB MOUNT 6 PIN HORIZONTAL W/CHROME HRDWARE TH	5	J1,J2,J3,J4,J5
21-20-0202	HDR SIL PCB-MT 2 PIN x 2MM MALE SHRD VERT MT TH	1	H1
21-20-0203	HDR SIL PCB-MT 3 PIN x 2MM MALE SHRD VERT MT TH	1	H2
21-20-3124	HDR SIL PCB-MT 4 PIN x 7.92MM MALE VERT MNT FRIC LOCK	1	H3
30-18-3030	CLIP GROUND PCB .30x.30x.07	5	GF1,GF2,GF3,GF4,GF5
35-00-0252	PCB SPEAKER OUT SV HD100 REV AA15-3	1	



Spider Valve 40, 50, 100H Biasing Notes.

The Spider Valve series amplifiers ship stock with a matched pair of Sovtek 6L6/ 5881 power tubes. Anytime these are replaced or service is performed, a bias routine should also be performed.

Now for some Q&A.

Q: What is Biasing?

A: Simply put, *Biasing* is the procedure of setting the correct idle current flowing through the tubes for optimum sound, life span, and operating temperature. Achieving this ideal setting will vary depending on the type and rating of the power amp tubes used. Incorrect biasing (under or over biasing) can result in poor amplifier sound, performance, or failure.

Q: Is Biasing covered under warranty?

A: Typically not. It should be considered as part of the routine maintenance in keeping your amplifier at its peak performance. However, if re-biasing is required as part of other warranty service, it will be covered under the warranty policy.

Now that that's out of the way. Let's get down to some specifications.

Using Ohm's Law and measuring across a precision 1Ω resistor, we know that $1\text{mV} = 1\text{mA}$, we want to establish a good starting bias point for the matched output tubes.

Our general rule specification is: **35mV, +/- 2mV**. This swing should account for most 6L6/5881 tubes available from Line 6 as well as on the market.

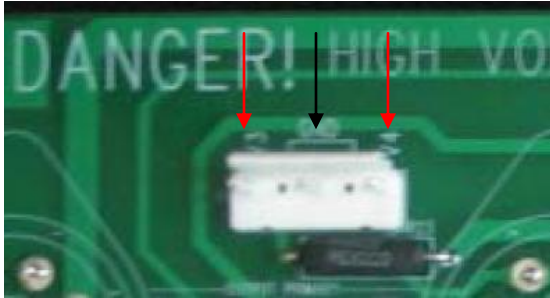
The most important thing is to replace both tubes with a matched pair. Installing other tubes, such as EL34/KT77 is **NOT** supported and any failure due to incorrect or forced biasing of such tubes will void the warranty.

Bias Adjustment- SV 112 and 212 Combos.

Option #1

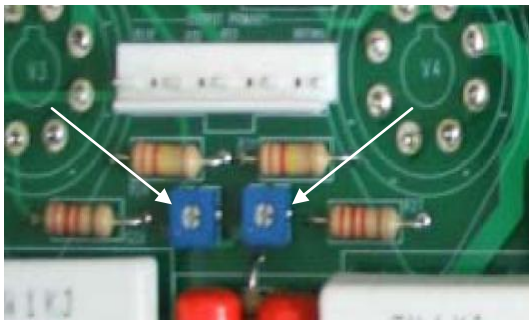
After replacing the output tubes, with the amp connected to a load (either a speaker or a load resistor @ 8Ω), turn the power on, set the master volume control to 0, and then flip the standby switch.

On the tube circuit board you'll notice a cable header connector identified as: H4. This is your bias test point.



Going from left to right on the header you'll see a +V test point for V3 (Valve #3), a common shared ground, and finally a +V test point for V4 (Valve #4).

Just south of the bottom through holes for the tube sockets are the relative trim pots to facilitate setting the bias on tubes V3 and V4.



Both of these trim pots have changed from 5K to 20K pots during initial release. The 20K will allow for greater variance range in setting the bias for the tubes.

With your meter connected to the test points you should turn these trim pots until your meter reads the above spec of 35mV, +/- 2mV.

Because we have a dual pot design, interaction is likely to occur, as new tubes require a settling in period of up to two days to become stable in plate current (think back to your old Radiotron Designers handbook). Running the amp for this amount of time, under load, and monitoring changes in bias is recommended.

Option #2

Once you've established your bias for V3, you may put your meter probes across the positive (+) pins. Your meter should read 0mV/ 0 mA.

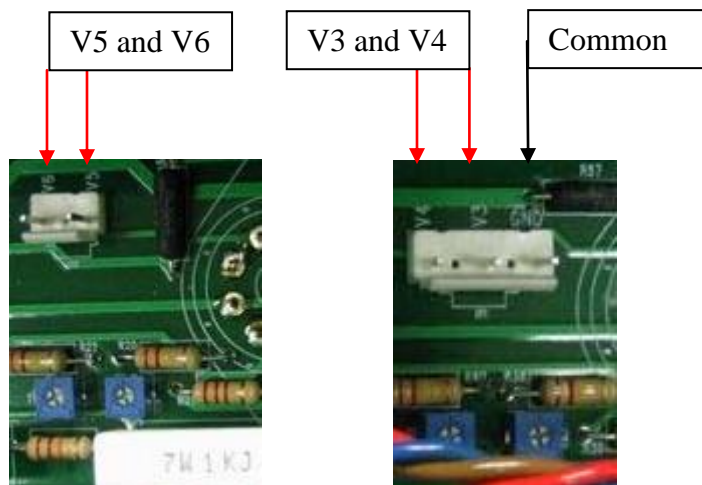
Now that we've covered the bias specification, use your ears. Does it sound right? If so, leave well enough alone. If not, adjust in +/- 1mV increments/decrements until it does. Most importantly be safe.

Bias Adjustment- SV HD100 Head.

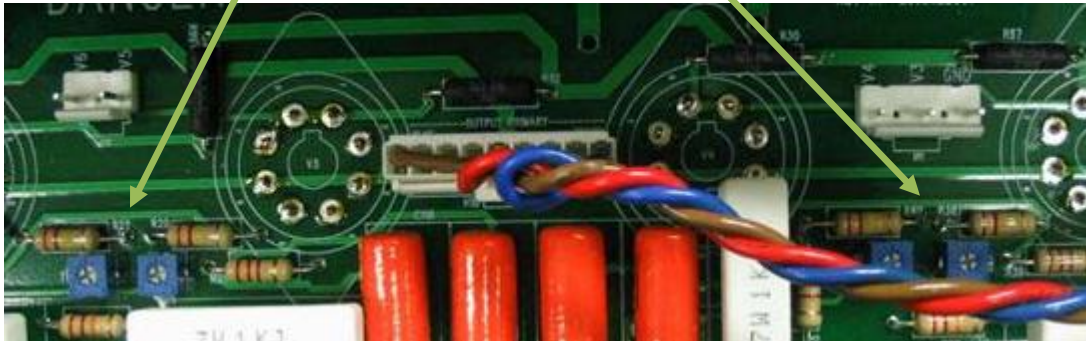
Similar to the combo amps, the Spider Valve HD100 has bias test point provisions in the way of header connectors and adjustment via 20K trim pots. The reference designators have changed, however; and they are as follows.

After replacing the output tubes, with the amp connected to a load (either a speaker or a load resistor @ 8Ω), turn the power on, set the master volume control to 0, and then flip the standby switch.

On the tube circuit board you'll notice 2 cable header connectors identified as: H11 and H12. These are your bias test points.



Just south of the bottom through holes for the tube sockets are the relative trim pots to facilitate setting the bias on tubes V3, V4, V5, and V6 respectively.



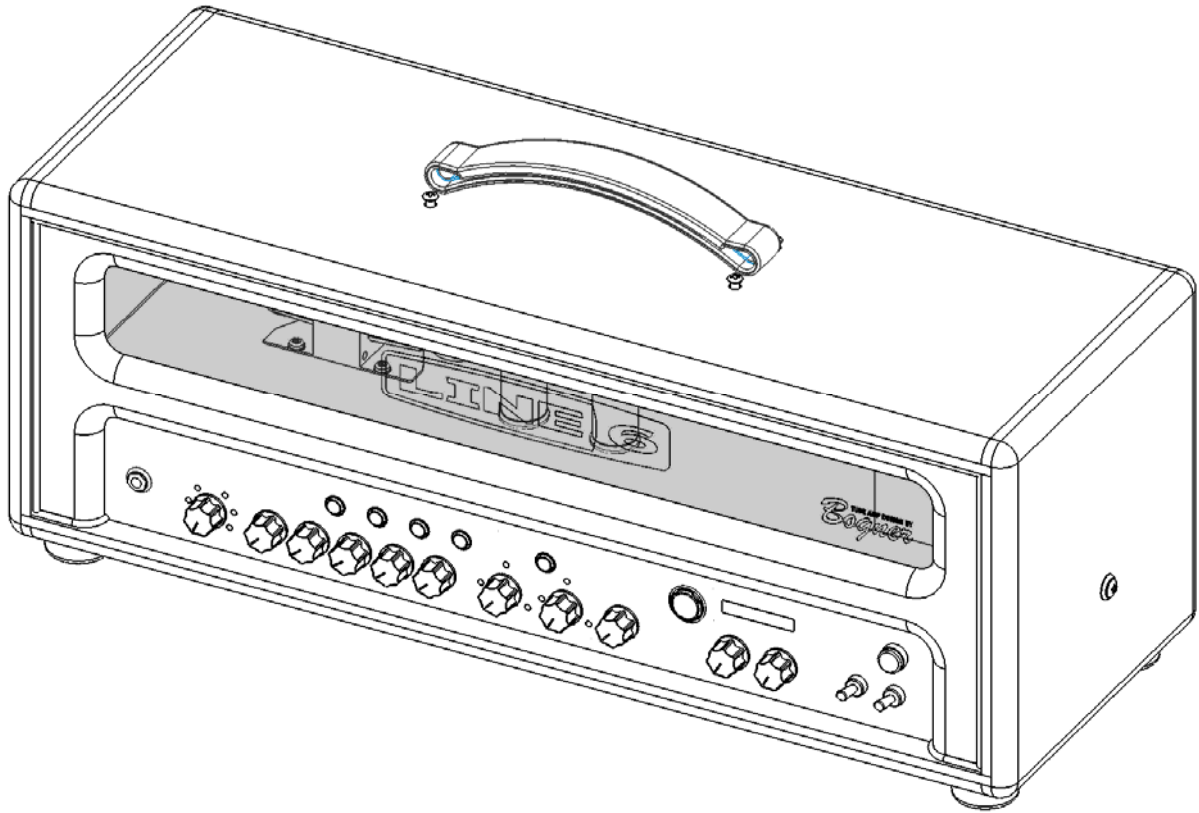
With your meter connected to the test points you should turn these trim pots until your meter reads the above spec of 35mV, +/- 2mV.

Because we have a dual pot design, interaction is likely to occur, as new tubes require a settling in period of up to two days to become stable in plate current (think back to your old Radiotron Designers handbook). Running the amp for this amount of time, under load, and monitoring changes in bias is recommended.

Option #2

Once you've established your bias for V3, V4, V5, and V6 you may put your meter probes across the positive (+) pins. Your meter should read 0mV/ 0 mA.

Now that we've covered the bias specification, use your ears. Does it sound right? If so, leave well enough alone. If not, adjust in +/- 1mV increments/decrements until it does. Most importantly be safe.



Forward and Notes

The information in this booklet applies to the SV Head (A15-3) Complete Unit. It is suggested that the steps for assembly follow the order presented in these instructions.

These instructions deal with the assembling of the major subassemblies, the final product, and quality/inspection considerations. See also the Related Electrical assembly documentation for major considerations in assembling the electrical components of the PCBs (through the soldering process and preparation of the board for addition of custom components).

A note on the text: the illustrations in this book are for reference only. In some cases, color and geometry of illustrations may not accurately reflect the color or exact geometry of actual parts.

- Unless otherwise noted, all dimensions are in inches.
- Drawings are not to scale.
- Torque value tolerance +/- .5 in.-lbs. Do not over tighten any components.
- For clarity, not all component details are shown. This is especially true with respect to cable assemblies. They are often omitted from views to provide a clearer picture of the material discussed. Do not be confused by the absence (or unexpected presence) of any component in the illustrations in this book.



Revision Comment Sheet

Revision	Changes
A	ECO 0724701. Initial release.
B	See ECO 0728502. Added Step 8B – 40-25-0015 Ground Symbol Sticker application. Step 33 – Revised cable to 21-34-0135-3 (was 21-34-0135-1).
C	See ECO 0730503. Step 48 – Revised screw P/N description. Specified fixture to be used. Added Step 57B – Application of ETL Label (P/N 40-25-0030).

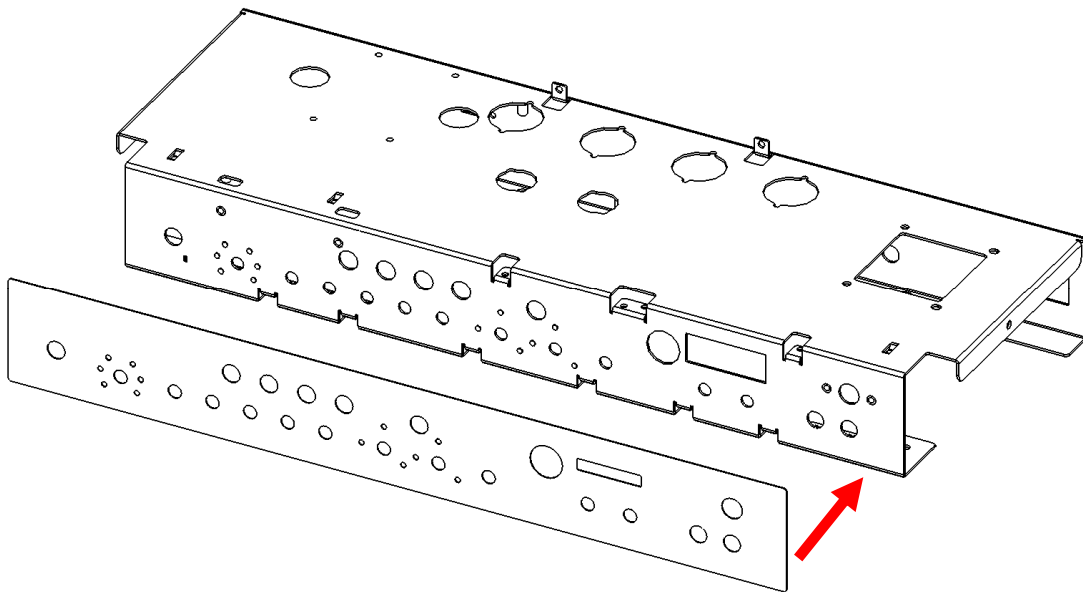
STEP 1

P/N required:

1 each **30-51-0311** CHASSIS A15-3

1 each **30-42-0052** UI OVERLAY

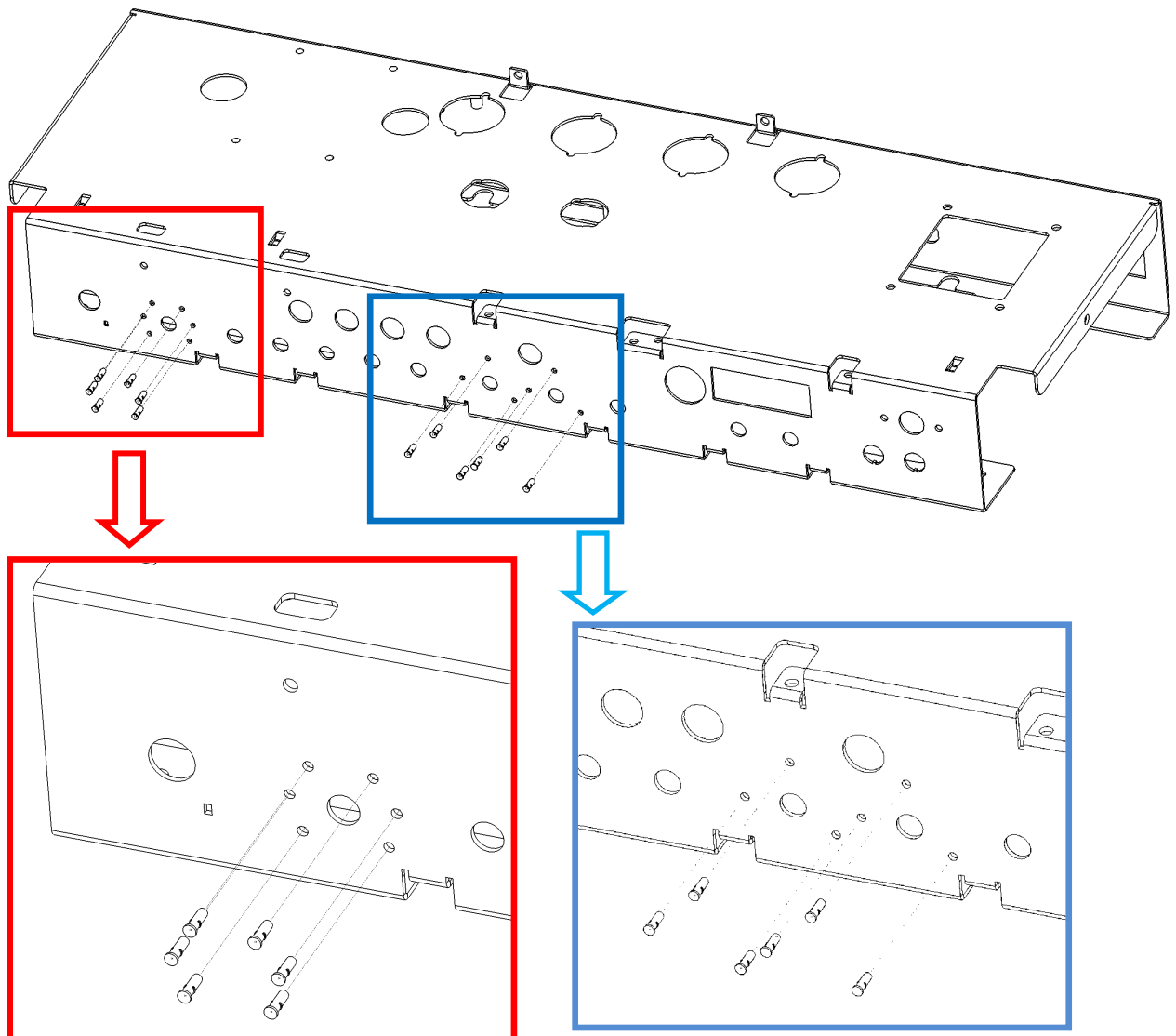
Remove the protective backing from the UI OVERLAY and press it into place on the CHASSIS face as shown. Care shall be taken to align the UI OVERLAY with edges and cutouts on the CHASSIS face.



STEP 2

P/N required:
12 each **30-27-0277** SMALL LIGHT PIPE

Insert the SMALL LIGHT PIPES into the 12 small holes as shown.

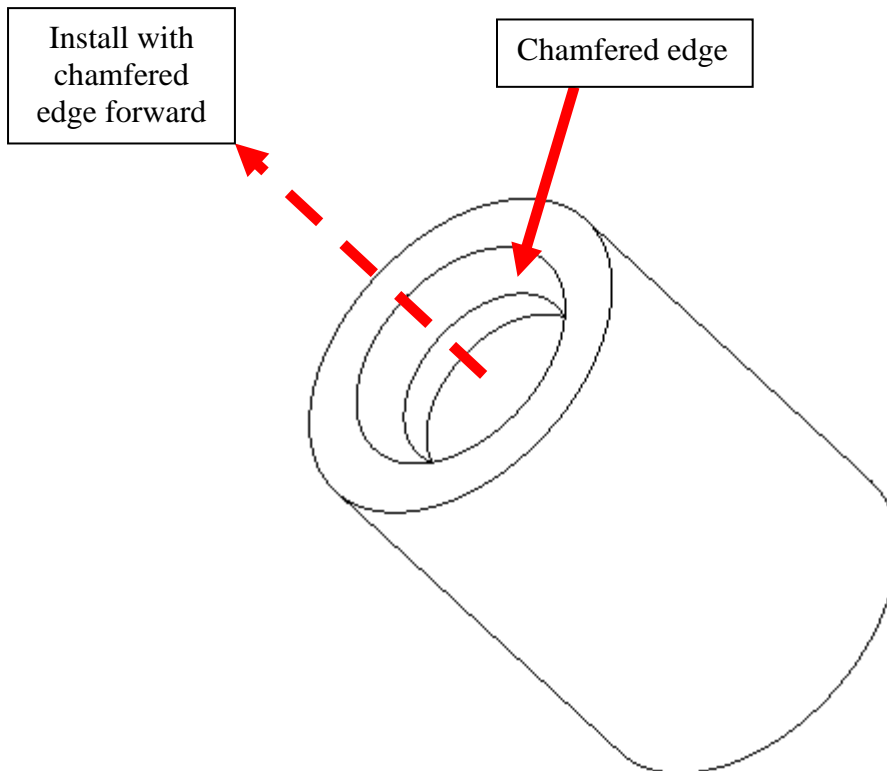


STEP 3

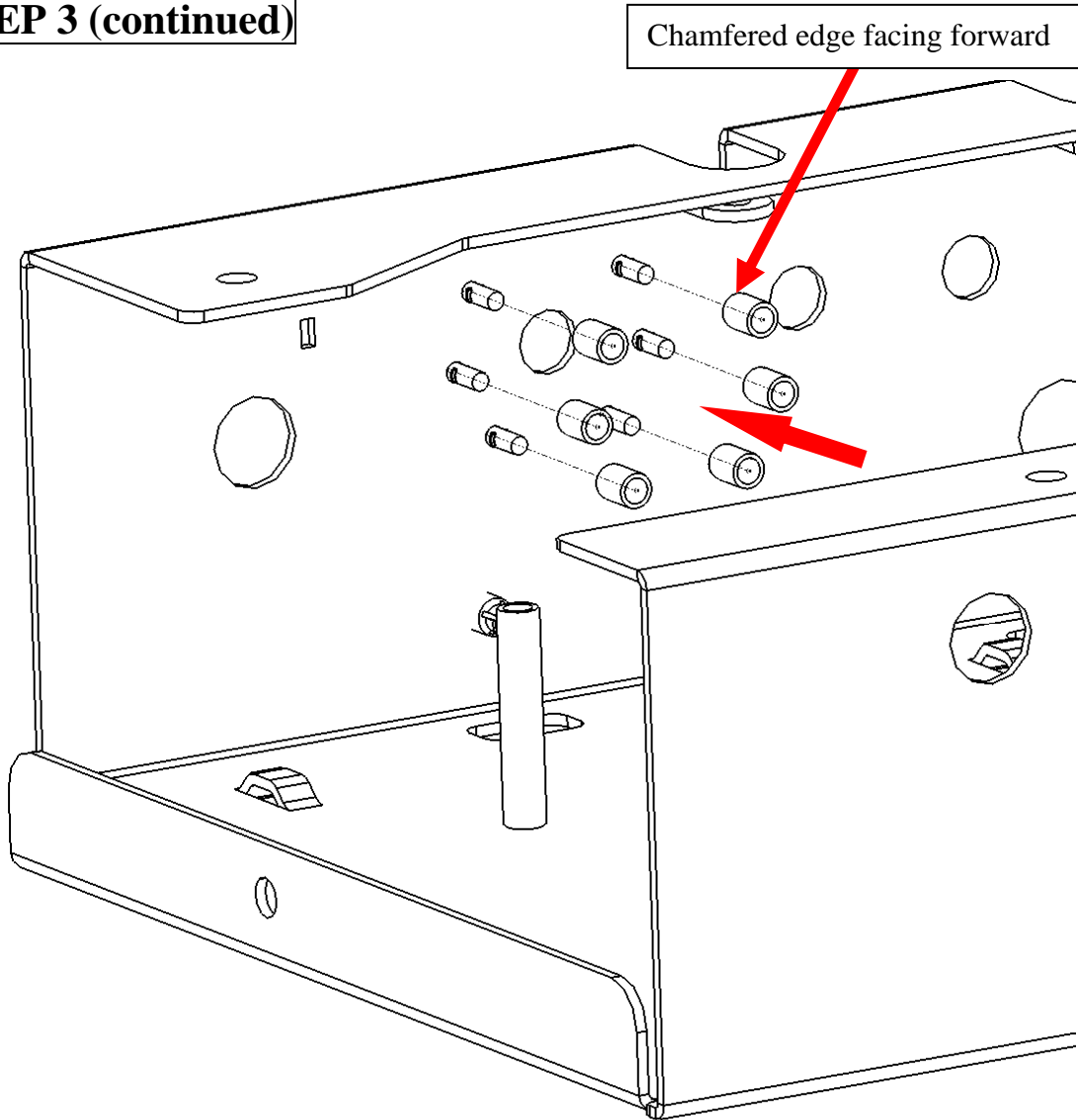
P/N required:

12 each **30-27-0278** SHIELD LIGHT PIPE .19 DIA x .2 6 LG ABS BLK

Install one SHIELD LIGHT PIPE over each SMALL LIGHT PIPE. Push the SHIELD LIGHT PIPE until it snaps onto the SMALL LIGHT PIPE.

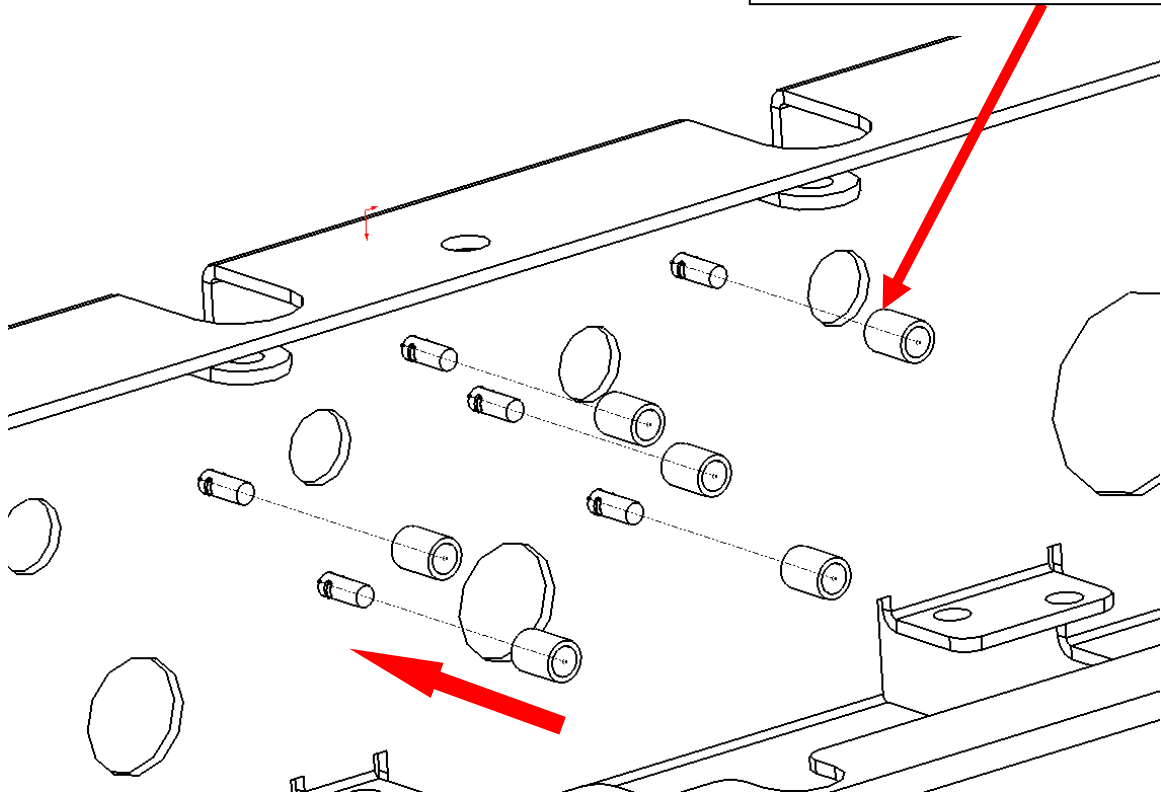


STEP 3 (continued)



STEP 3 (continued)

Chamfered edge facing forward

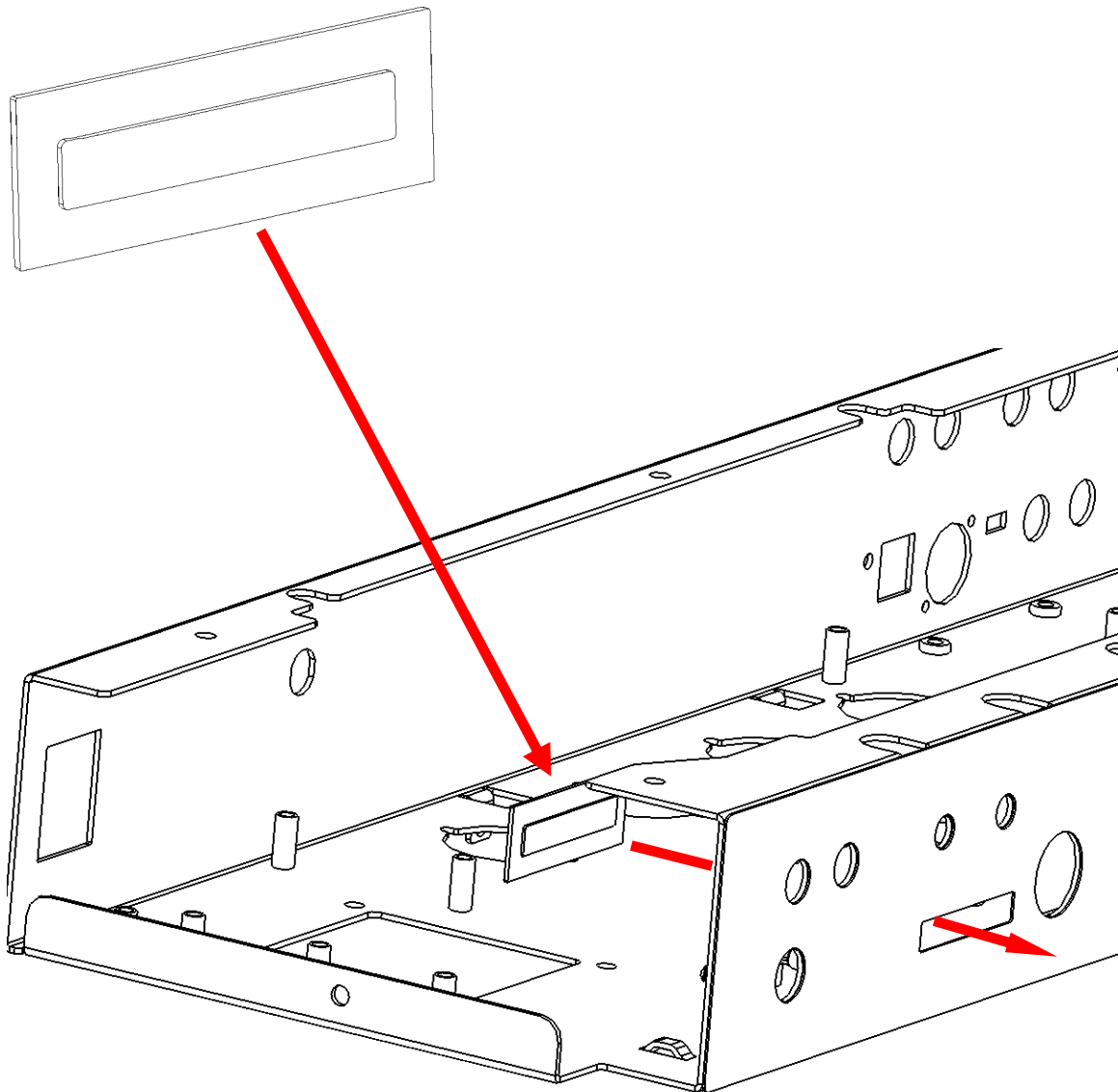


STEP 4

P/N required:

1 each **30-27-0286** BEZEL LCD 2.2 x .85 x .08 PC CLEAR

Press the BEZEL LCD into place such that the rectangular-shaped protrusion fits into the rectangular-shaped cutout in the UI OVERLAY.



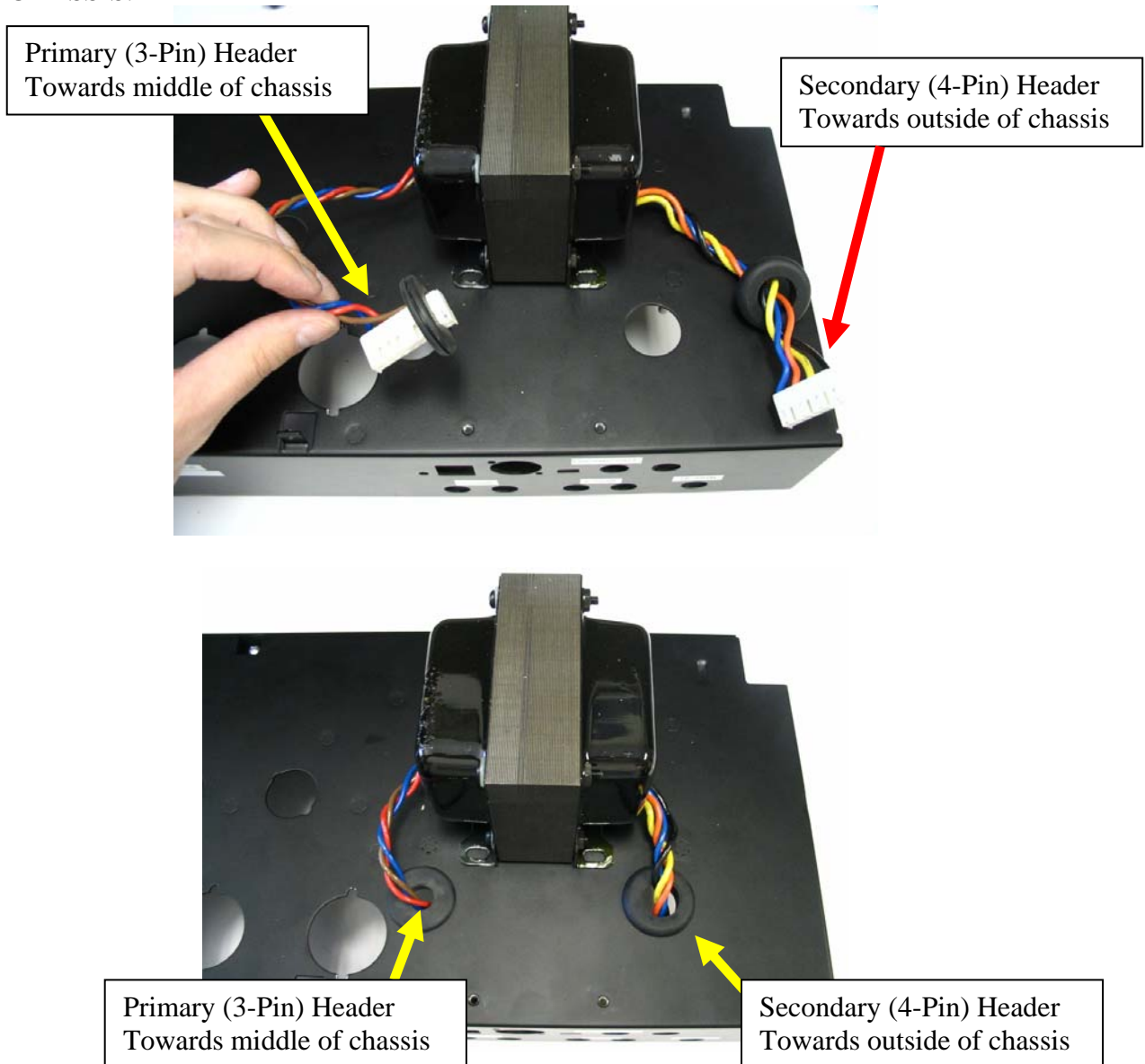
STEP 5

P/N required:

1 each **11-33-1102** XFMR OUTPUT SPIDER VALVE (TRANSFORMER)

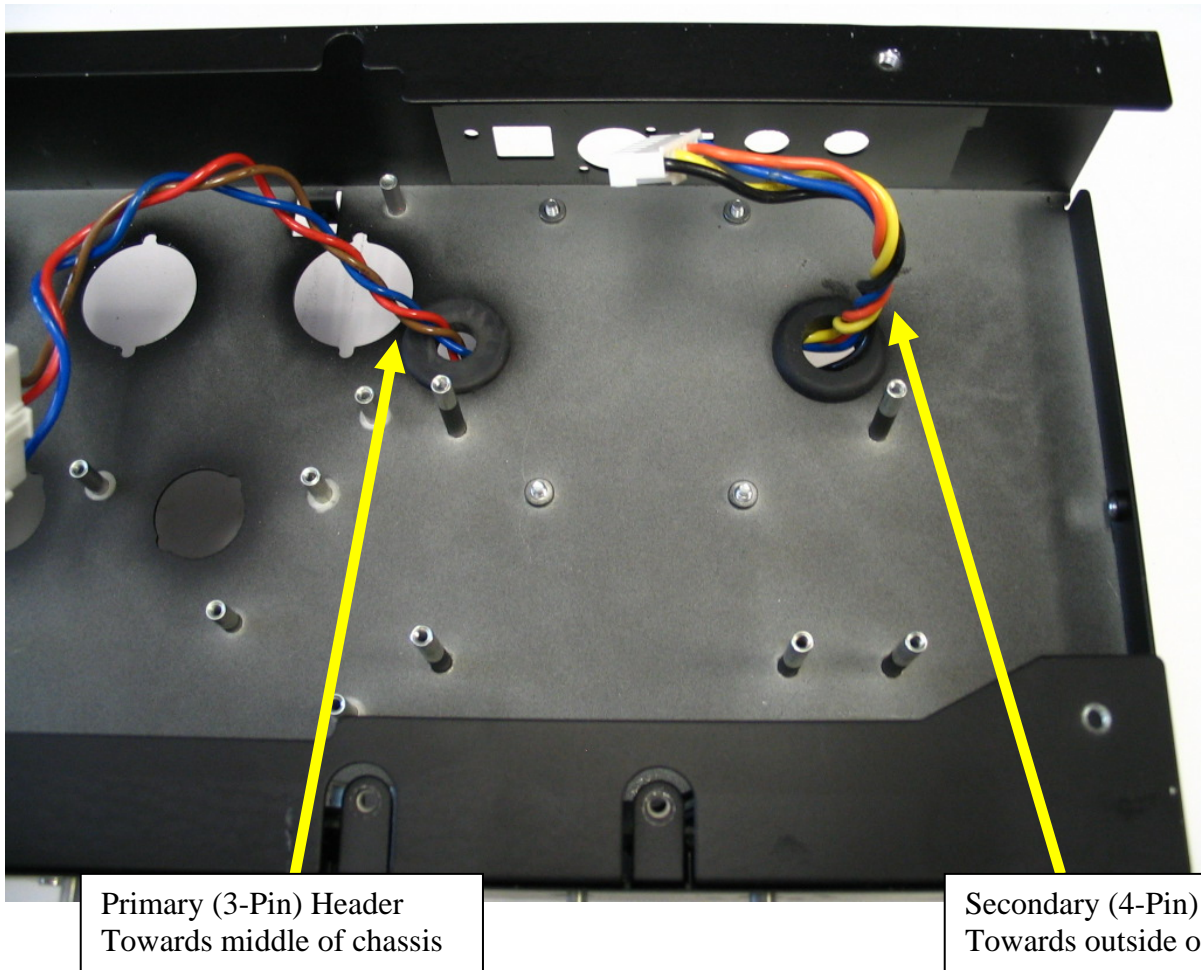
2 each **30-75-0051** GROMMET RUBBER 1.25 O.D. x .48 I.D. x .25 THK BLK

Pass the cables from the OUTPUT TRANSFORMER through 2 RUBBER GROMMETS. Pass the cables from the OUTPUT TRANSFORMER through the holes in the CHASSIS as shown. Install the RUBBER GROMMETS in the holes in the CHASSIS.



(Step 5 is continued on the next page.)

STEP 5 (continued)



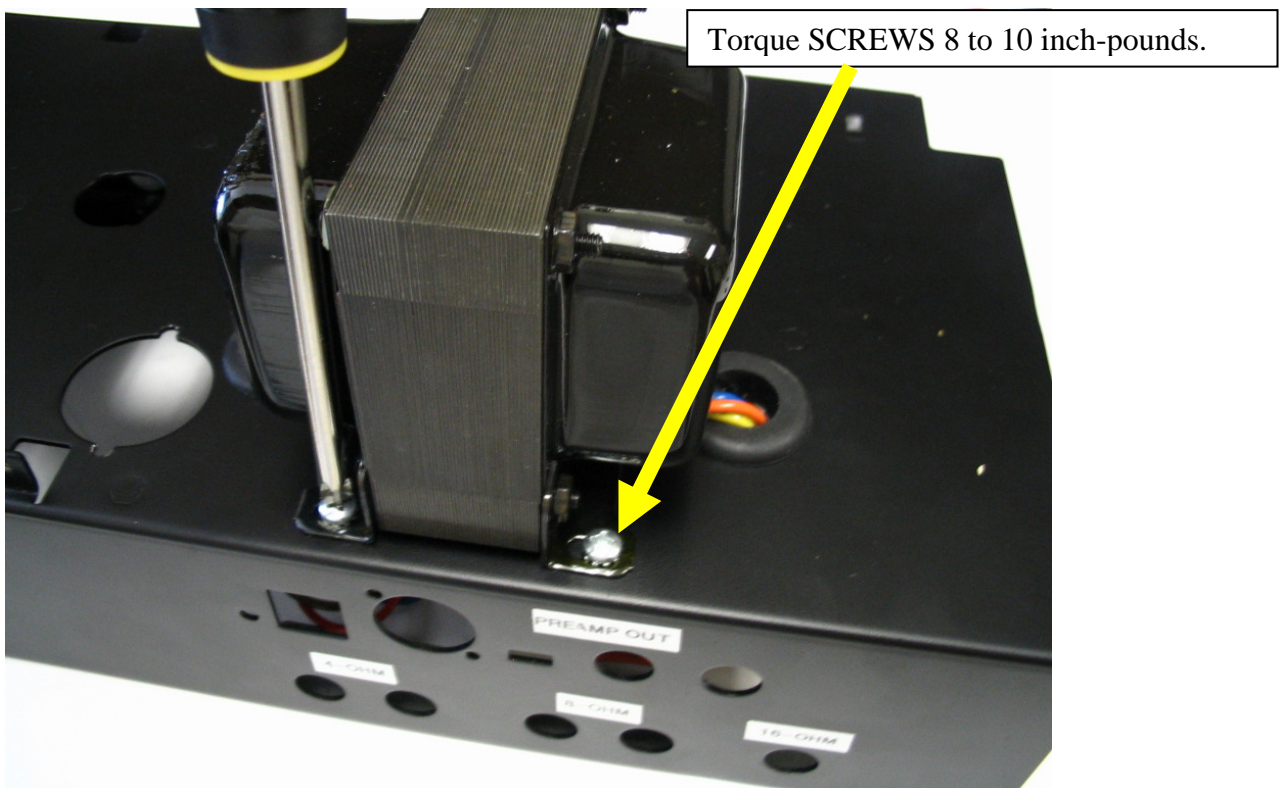
STEP 6

P/N required:

4 each **30-00-0125** SCREW 8-32 x 5/16 w/LK WASH BLK

Secure the OUTPUT TRANSFORMER to the chassis with 4 SCREWS.

Torque the SCREWS to 8 – 10 inch-pounds.



STEP 7

P/N required:

1 each Power Transformer (see **Table 1**)

4 each **30-06-0832** HEX NUT 8-32 WITH STAR WASHER

Torque NUTS to 8 – 10 inch-pounds. Apply loctite to each hex nut. Align the POWER TRANSFORMER such that the cables are located as shown.

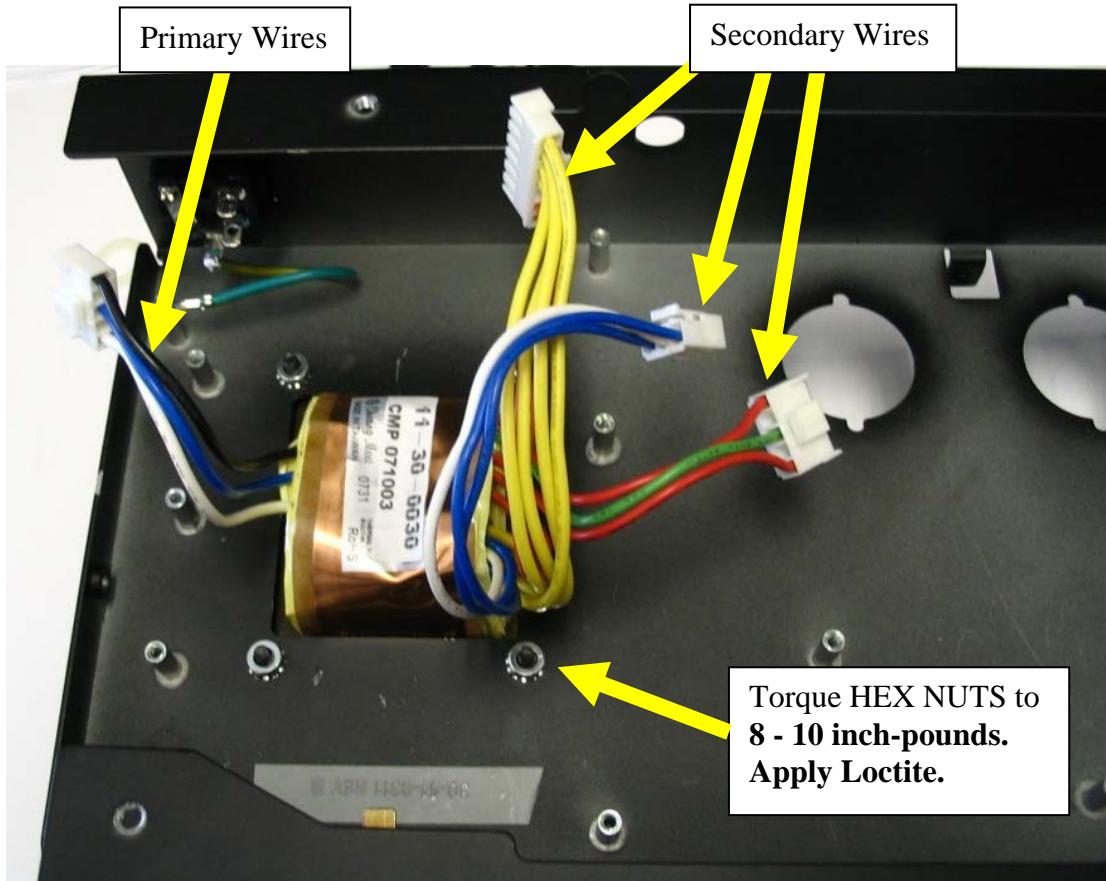
Table 1

AC Voltage	POWER TRANSFORMER part number
100 VAC (JA)	11-30-0030
120 VAC (US)	11-30-0030
240 VAC (AU, UK, EU)	11-30-0031



(Step 7 is continued on the next page.)

STEP 7 (continued)



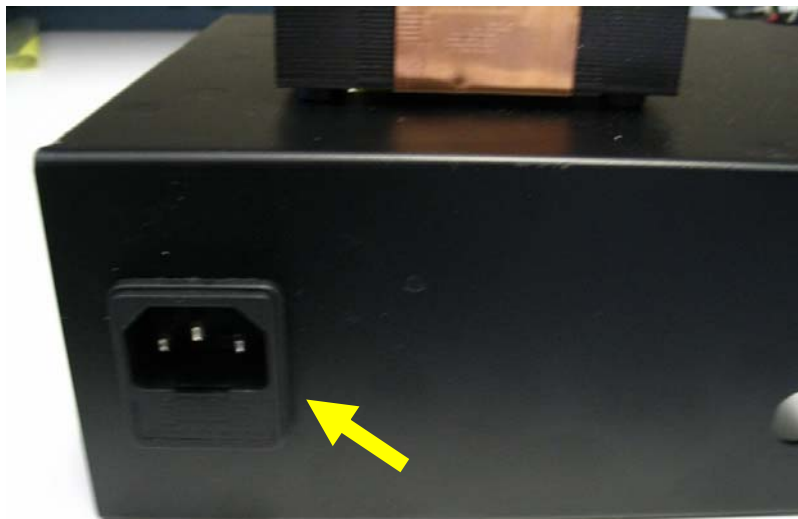
STEP 8A

P/N required:

1 each **50-00-0001** AC RECEPTACLE ASSEMBLY

1 each **30-00-0043** SCREW 6-32 x 5/16" WITH STAR WASHER

Secure the cable from the AC RECEPTACLE ASSEMBLY to the threaded insert shown with a SCREW 6-32 x 5/16" WITH STAR WASHER. Torque SCREW to 8 – 10 inch-pounds and apply loctite. The cable from the AC RECEPTACLE ASSEMBLY shall be installed completely within the CHASSIS.



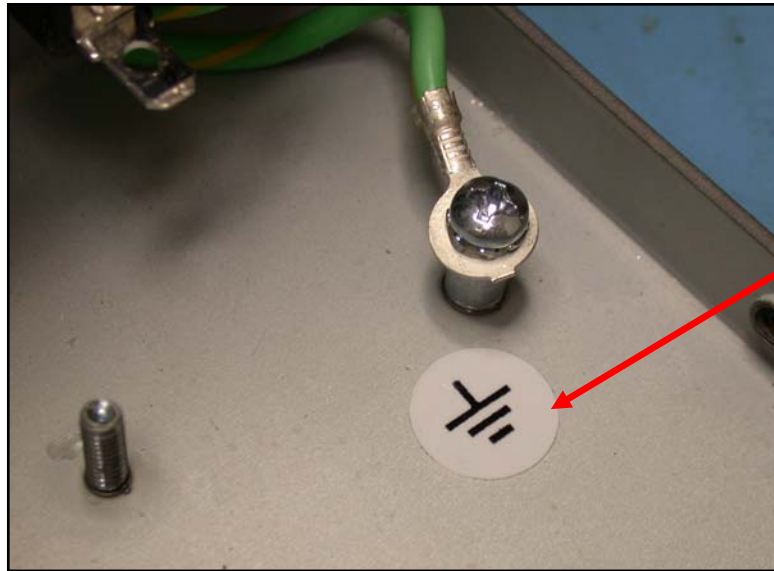
Torque SCREW to 8 – 10 inch-pounds. Apply Loctite.

STEP 8B

P/N required:

1 each 40-25-0015 GROUND SYMBOL STICKER.

Place ground label (P/N 40-25-0015) next to standoff.



Ground Label
40-25-0015



STEP 9

P/N required:

1 each Fuse (see Table 2)

Open and remove fuse holder. Install correct fuse value. Install fuse holder back into AC receptacle.

Table 2

AC Voltage	FUSE part number
100 VAC (JA)	24-19-0500 (5A/250V)
120 VAC (US)	24-19-0500 (5A/250V)
240 VAC (AU, UK, EU)	24-19-0250 (2.5A/250V)

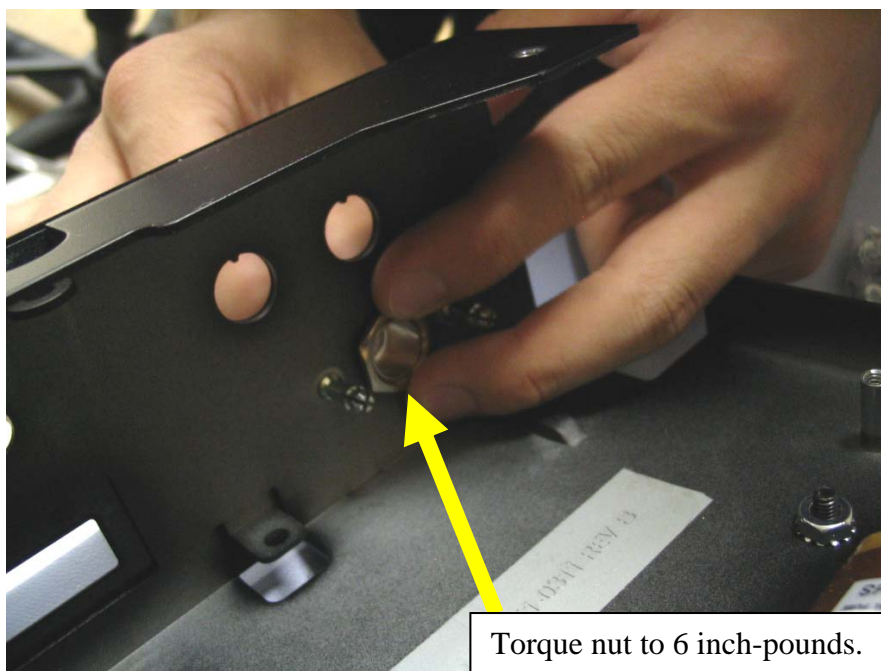


STEP 10

P/N required:

1 each **30-51-0113** JEWEL LENS WITH NUT

Torque nut to 6 inch-pounds.



STEP 11

P/N required:

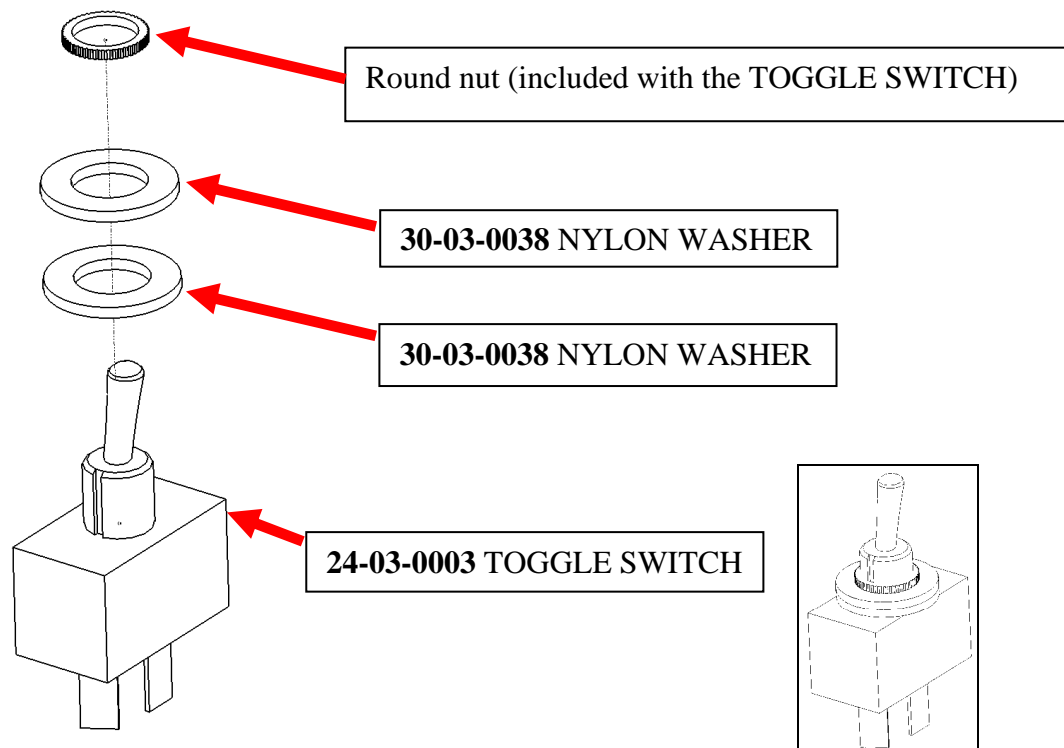
2 each **24-03-0003** TOGGLE SWITCH

4 each **30-03-0038** NYLON WASHER

Remove the hex nut from each of the TOGGLE SWITCHES. Slide two NYLON WASHERS onto the threaded barrel of each TOGGLE SWITCH. Finger-tighten the round nut onto the threaded barrel of each TOGGLE SWITCH to secure the two NYLON WASHERS.

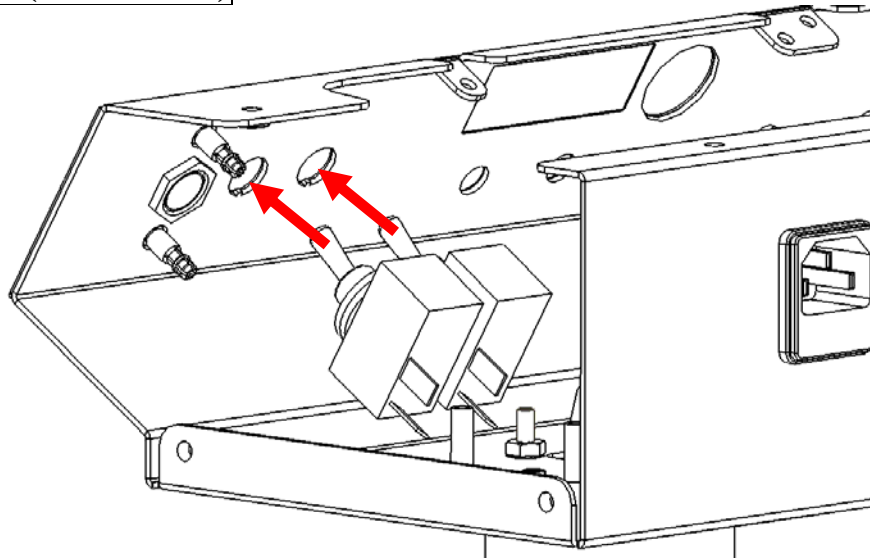
Insert the TOGGLE SWITCH into the CHASSIS hole. Be sure to align the notch in the CHASSIS hole with the keyway in the TOGGLE SWITCH. Secure the TOGGLE SWITCH to the chassis using the hex nut.

Torque the hex nuts to 6 inch-pounds.

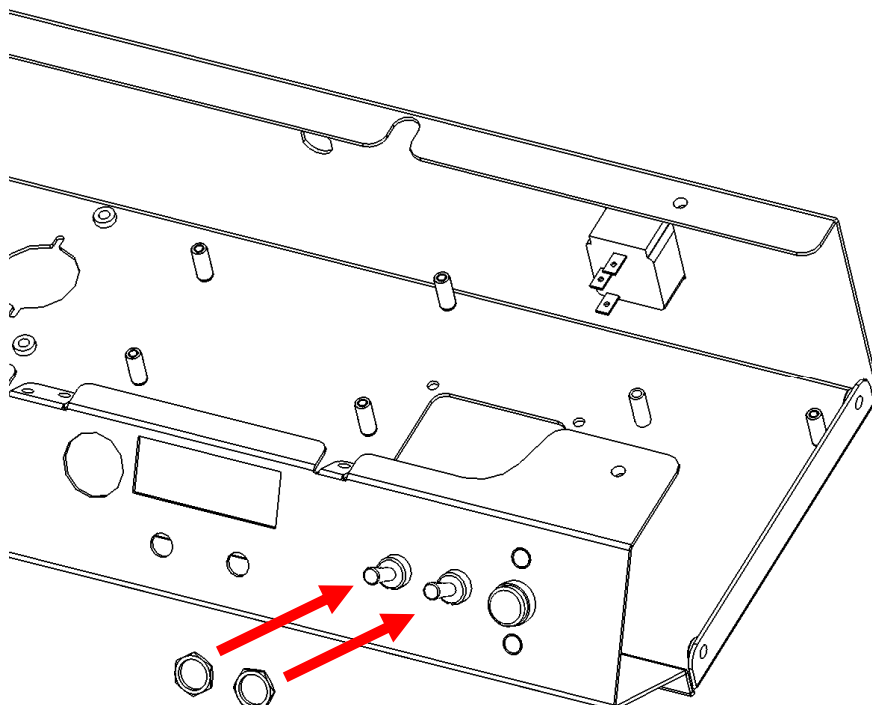


(Step 11 is continued on the next page.)

STEP 11 (continued)



A15-2, SV50, SV212 shown.

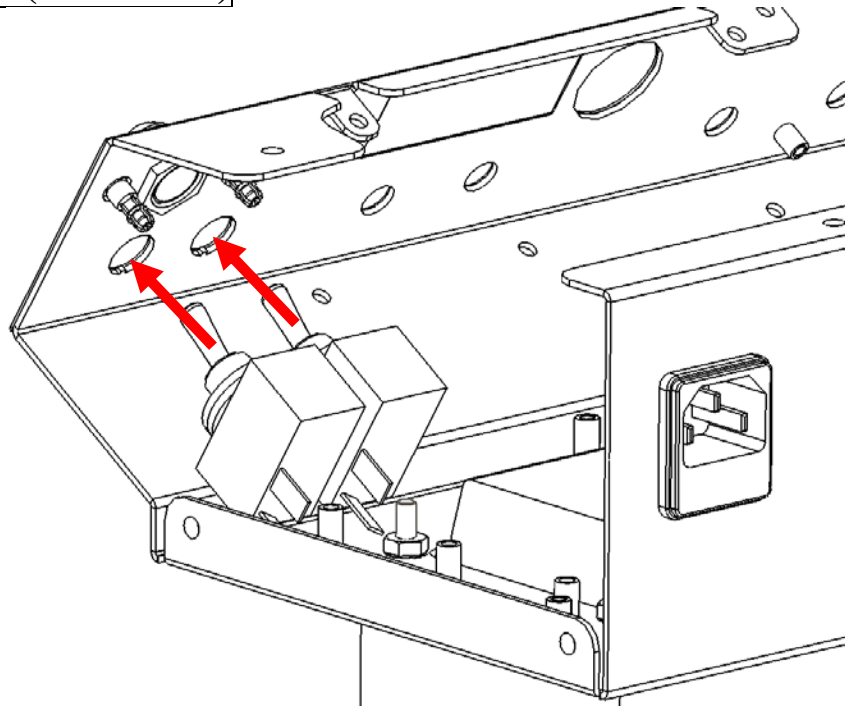


Hex nuts (included with the TOGGLE SWITCH)

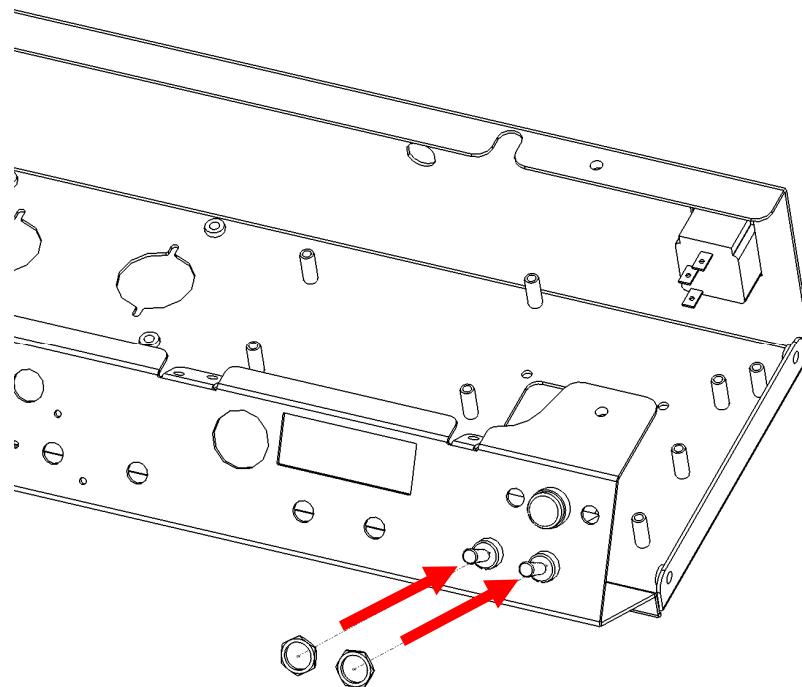
A15-2, SV50, SV212 shown.

(Step 11 is continued on the next page.)

STEP 11 (continued)



A15-1, SV40, SV112 shown.



A15-1, SV40, SV112 shown.

Hex nuts (included with the TOGGLE SWITCH)

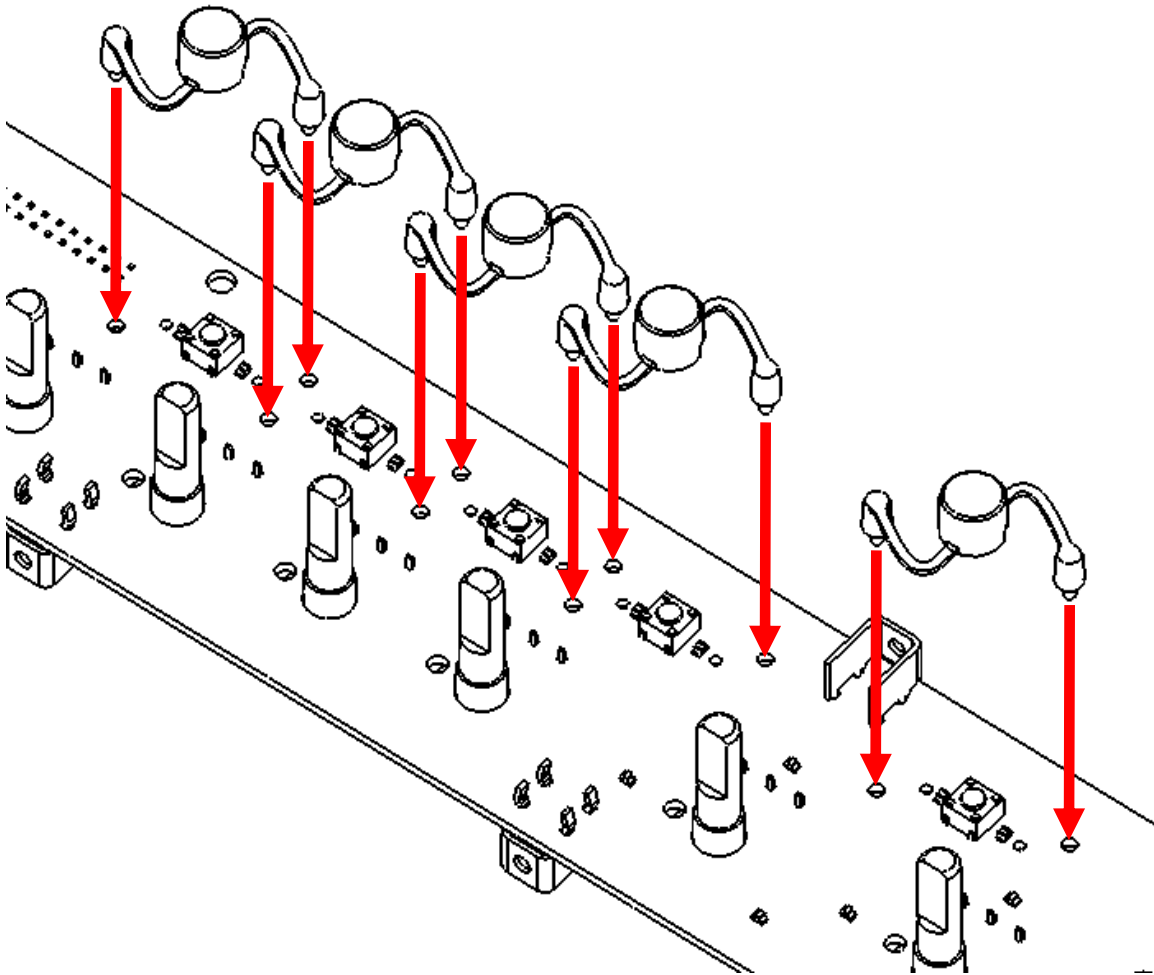
STEP 12

P/N required:

1 each **50-02-0247** UI LEFT PCBA

5 each **30-27-0265** BUTTON

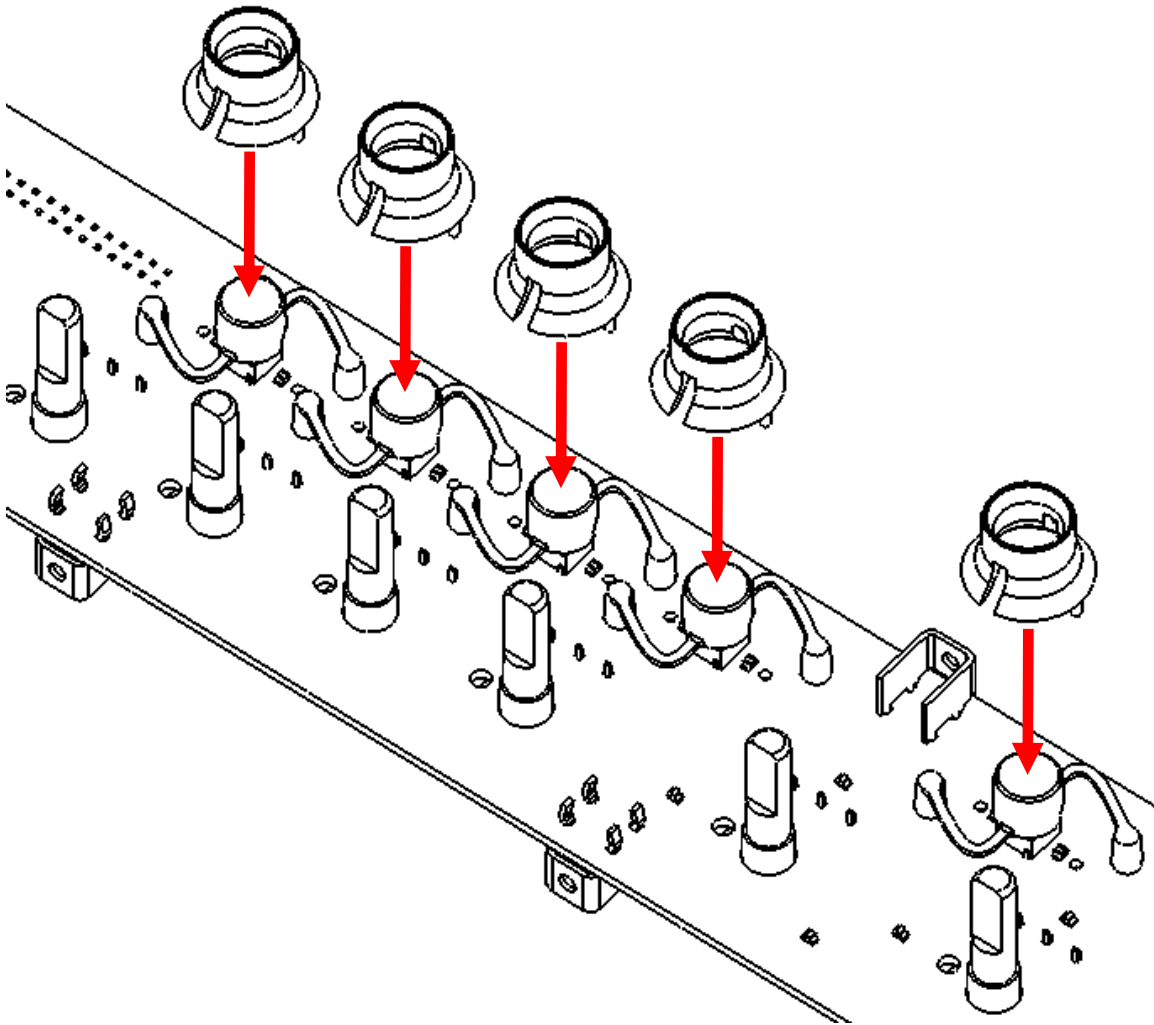
Secure the **BUTTONS** to the **UI LEFT PCBA** by heat-staking the posts on the **BUTTONS**.



STEP 13

P/N required:
5 each **30-27-0266** LIGHT PIPE

Secure the LIGHT PIPES to the UI LEFT PCBA by heat-staking the posts on the LIGHT PIPES.



STEP 14

P/N required:

1 each **30-27-0217-1** 4-WAY BUTTON TOP

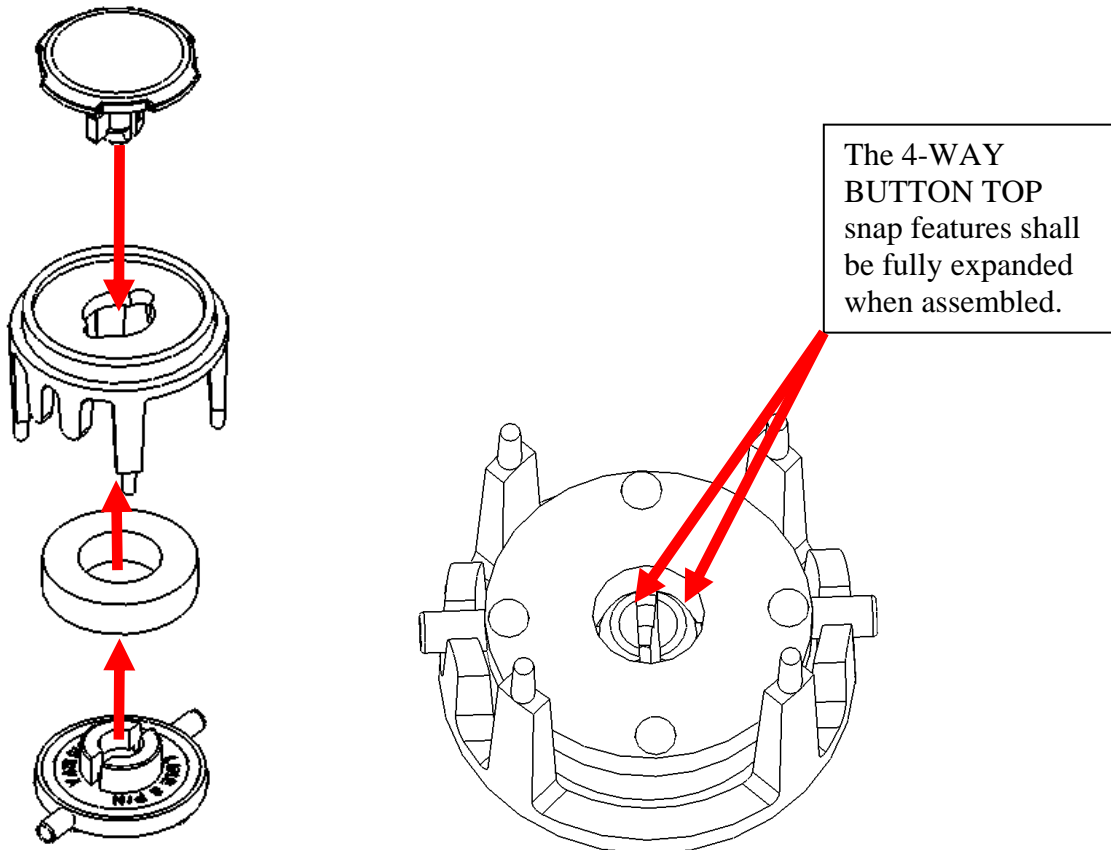
1 each **30-27-0218** 4-WAY BUTTON BOTTOM

1 each **30-63-0028** 4-WAY BUTTON RETAINER RING

1 each **30-27-0269** 4-WAY BUTTON FRAME

Assemble the 4-WAY BUTTON TOP to the 4-WAY BUTTON BOTTOM by snapping them through the DOUBLE BUTTON RIGHT and 4-WAY BUTTON RETAINER RING as shown.

Be sure that the 4-WAY BUTTON TOP snap features expand fully when assembled.



STEP 15

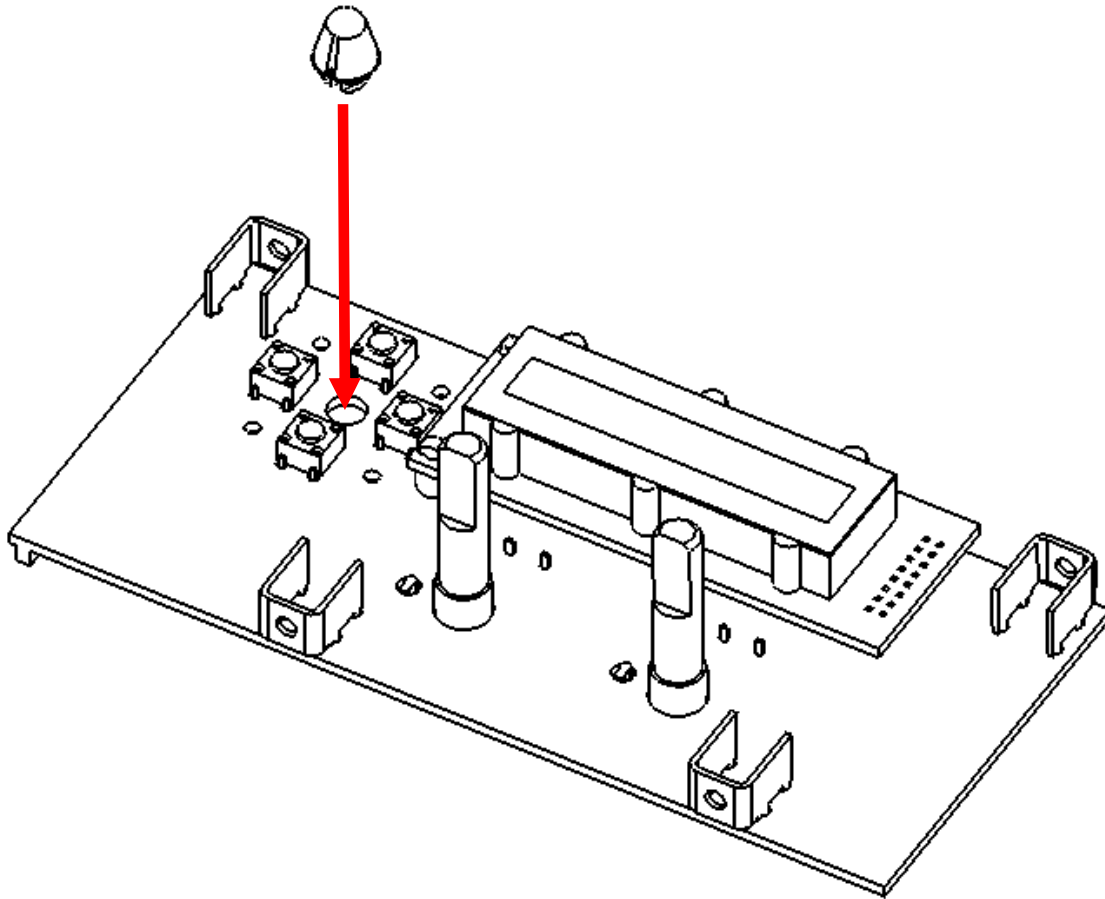
P/N required:

1 each **50-02-0247-1** UI RIGHT PCBA

1 each **30-27-0221** 4-WAY PIVOT PIN

Be sure that the snap features on the 4-WAY PIVOT PIN are expanded fully after installation.

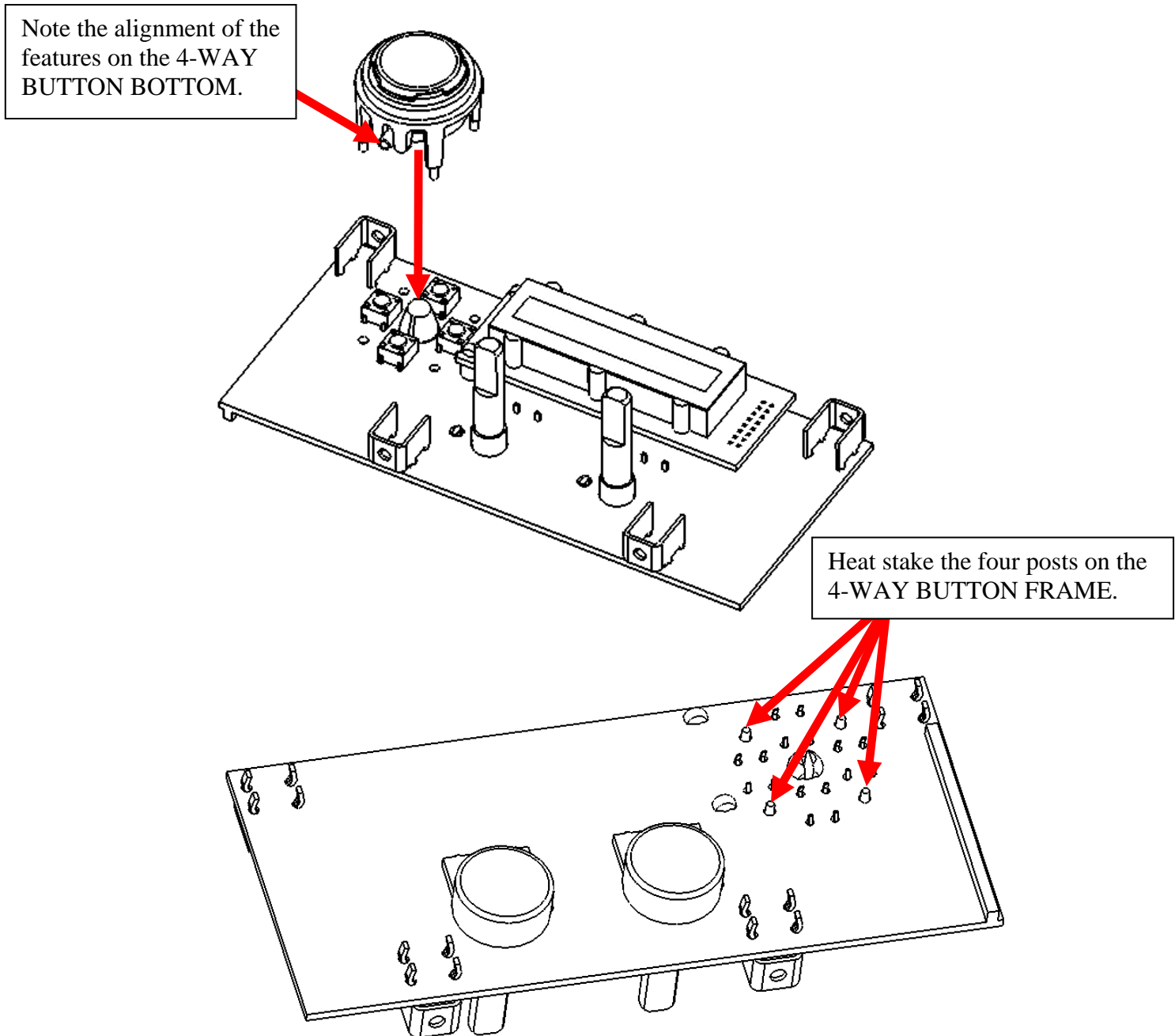
Note: UI LEFT PCBA not shown.



STEP 16

Secure the 4-WAY BUTTON FRAME to the UI RIGHT PCBA by heat-staking the four posts on the 4-WAY BUTTON FRAME. Align the 4-WAY BUTTON FRAME as shown.

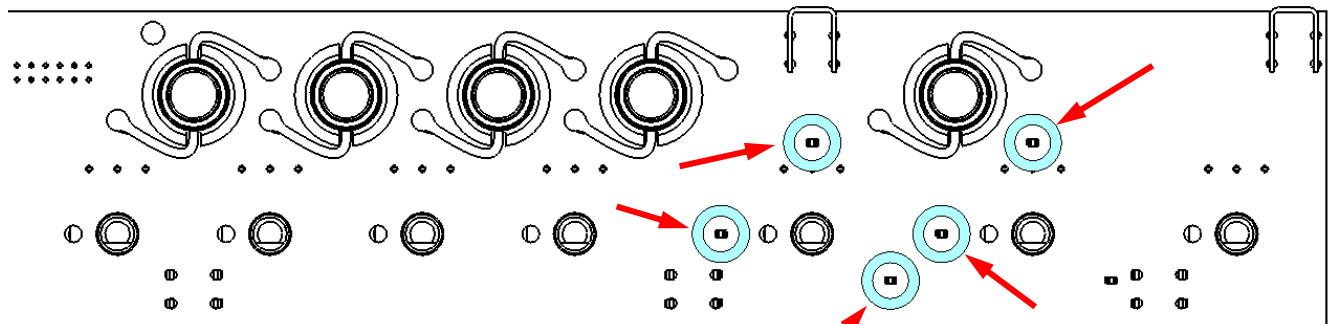
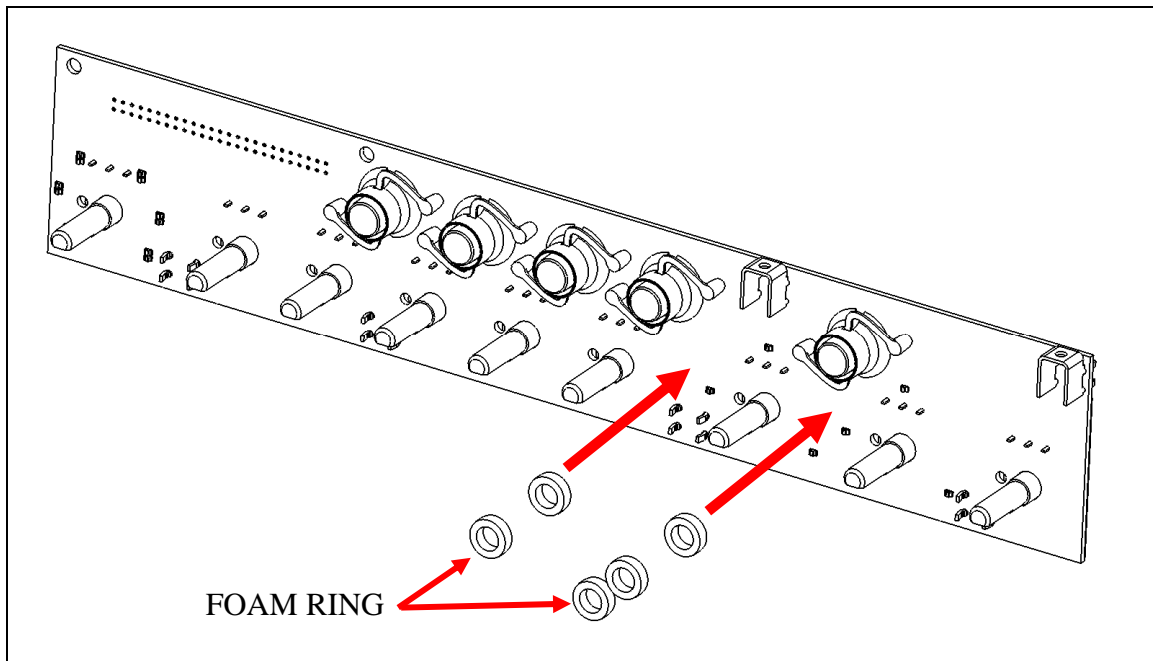
Note: UI LEFT PCBA not shown.



STEP 17

P/N required:
5 each **30-63-0031 FOAM RING**

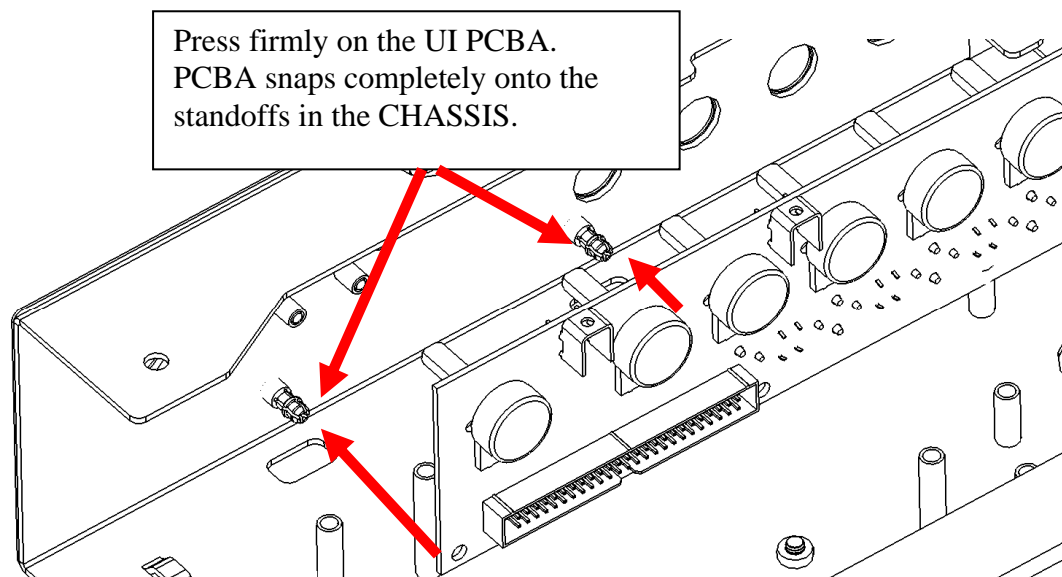
Adhere five FOAM RINGS around indicated surface mount LEDs. Center each FOAM RING around the LED as shown below.



Center FOAM RING around indicated surface mount LEDs.

STEP 18

Break the UI LEFT PCBA, JEWEL LIGHT PCBA, and UI RIGHT PCBA apart. Install as shown.



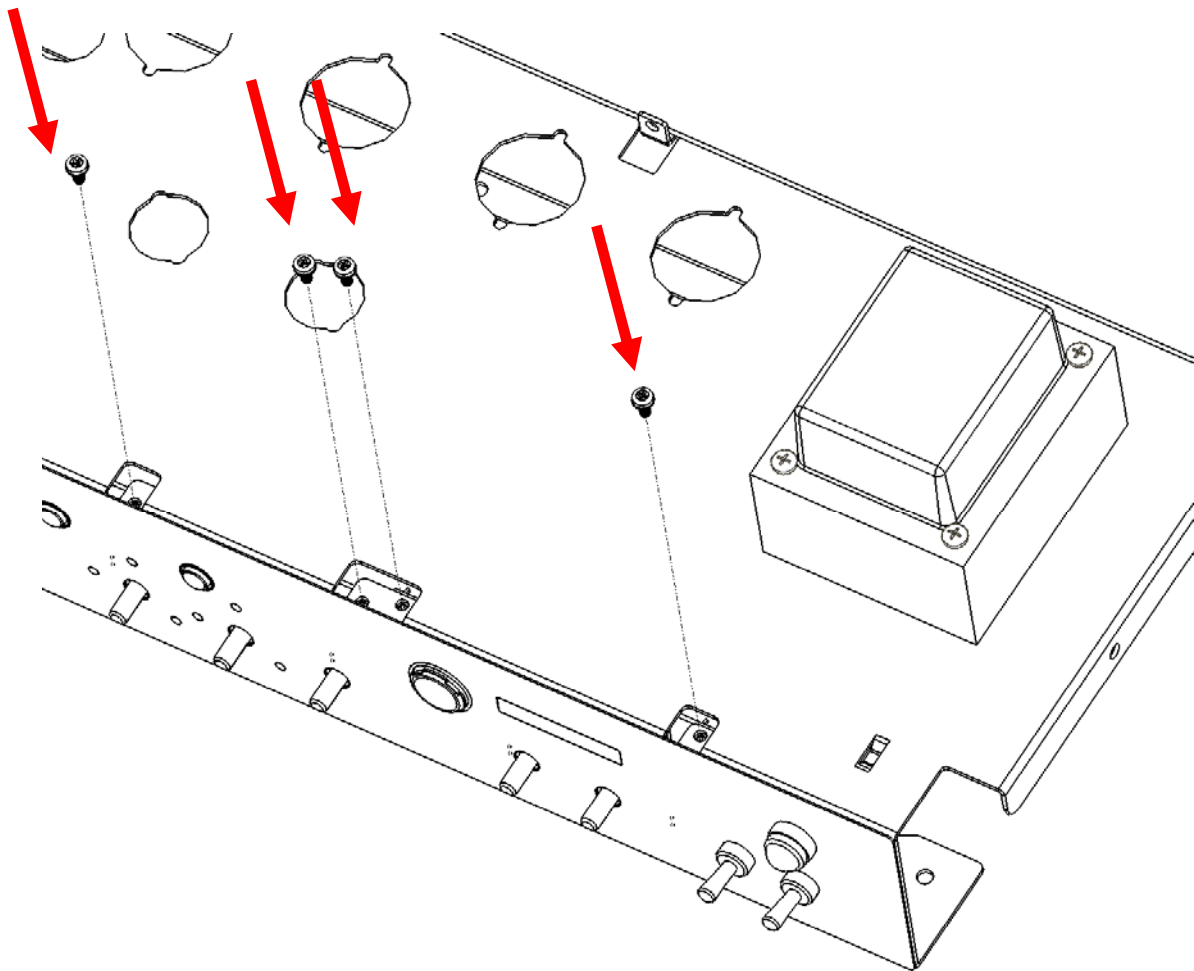
Press firmly on the UI PCBA.
PCBA snaps completely onto the
standoffs in the CHASSIS.

STEP 19

P/N required:

4 each **30-00-0043** SCREW 6-32 x 5/16" WITH STAR WASHER

Torque SCREWS to 8 – 10 inch-pounds. Apply loctite to each screw.

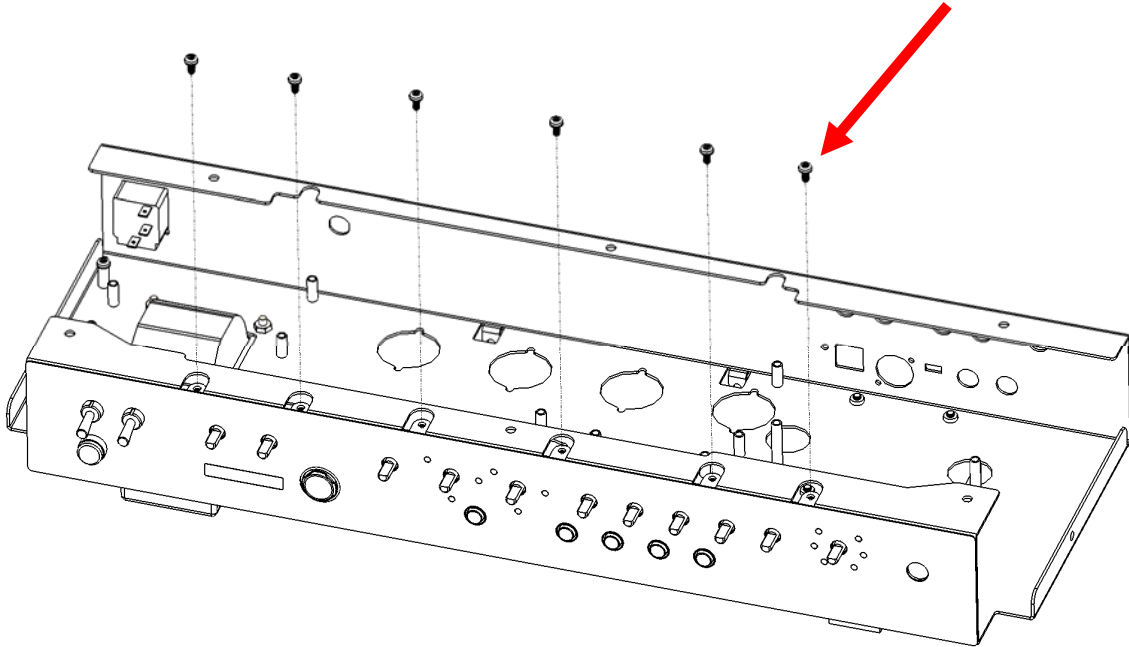


STEP 20

P/N required:

6 each **30-00-0043** SCREW 6-32 x 5/16" WITH STAR WASHER

Torque SCREWS to 8 – 10 inch-pounds. Apply loctite to each screw.



STEP 21

P/N required:

1 each **50-02-0250-3** PCBA MAIN SV HD100 A15-3

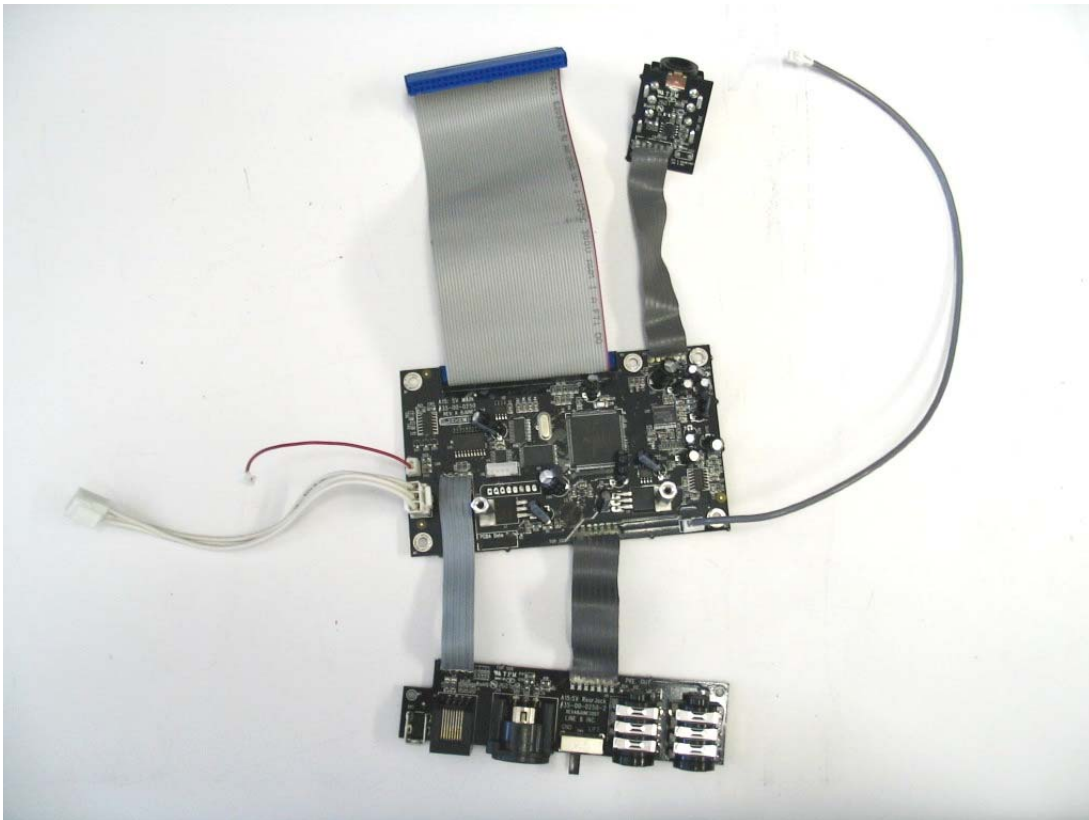
1 each **21-30-0003** CABLE 50-PIN

1 each **21-34-0093** CABLE 1-COND

1 each **21-34-0095** CABLE 3-COND

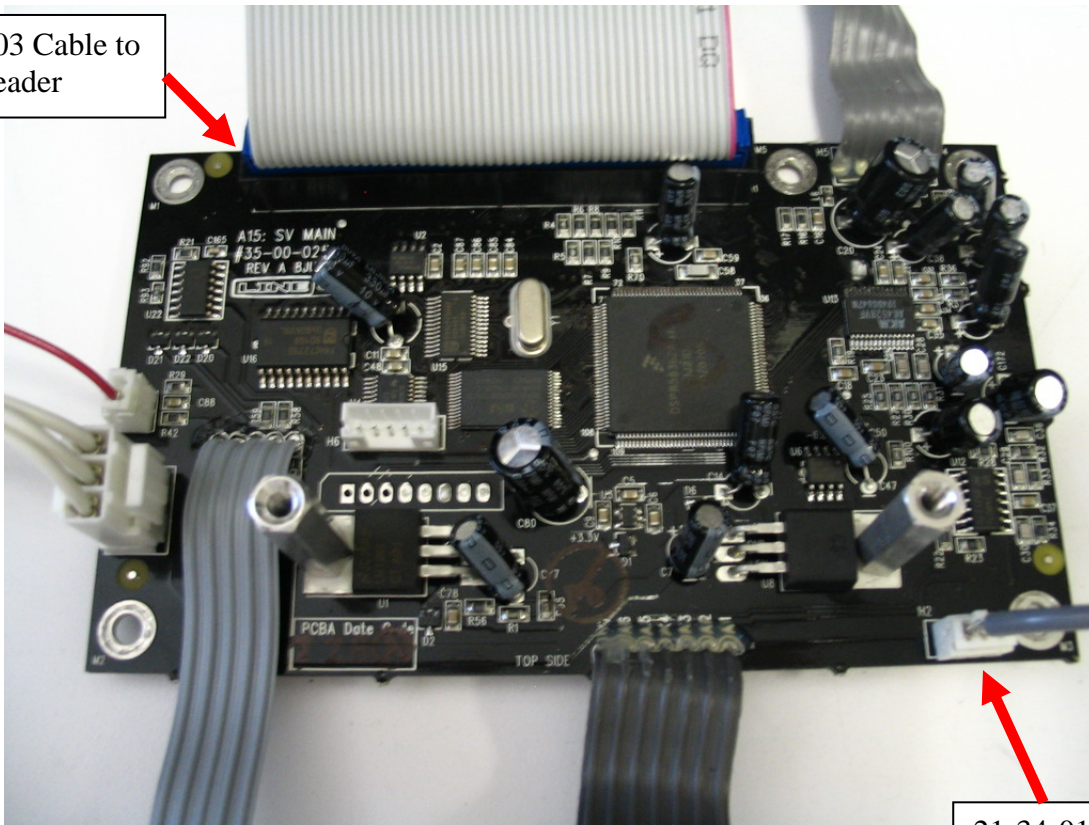
1 each **21-34-0100-1** CABLE SHIELDED

Connect each cable as shown.



(Step 21 is continued on the next page.)

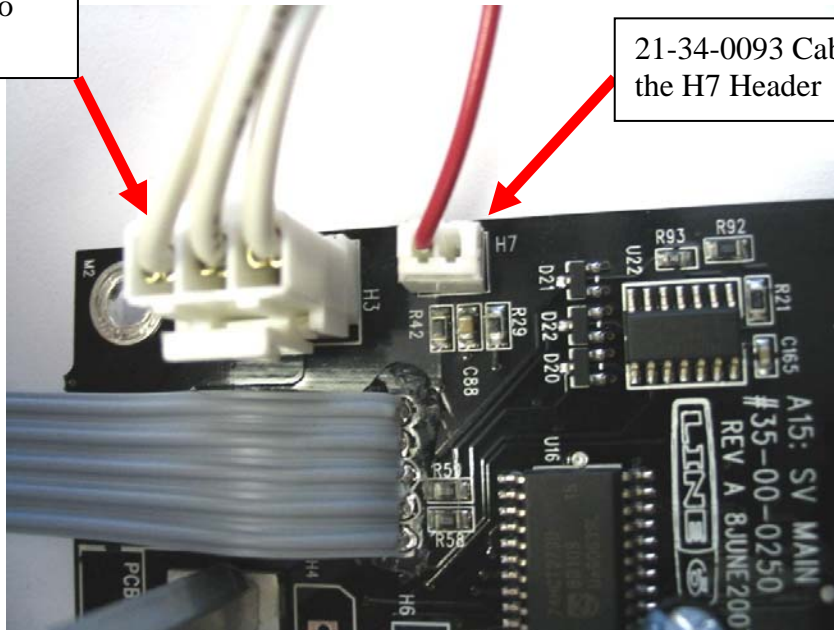
21-30-0003 Cable to
the H1 Header



21-34-0100-1 Cable
to the H2 Header

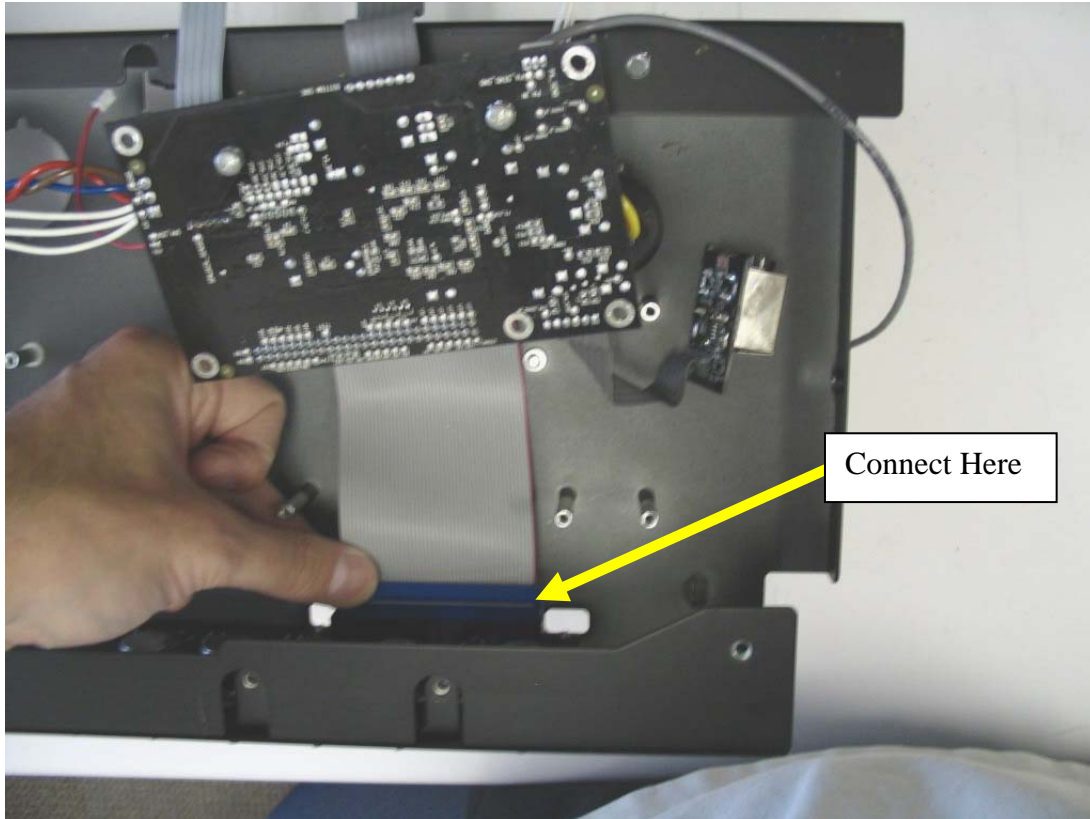
21-34-0095 Cable to
the H3 Header

21-34-0093 Cable to
the H7 Header



STEP 22

Place Main PCBA (with cables) into chassis. Connect the free end of the 21-30-0003 CABLE 50-PIN to the U/I RIGHT PCBA header H5.

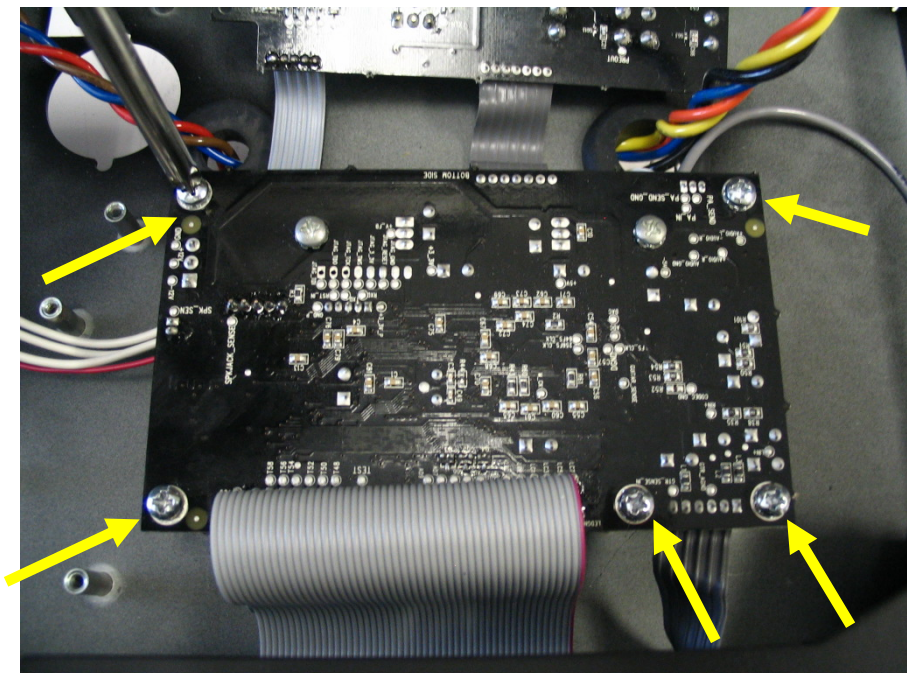


STEP 23

P/N required:

5 each **30-00-0043** SCREW 6-32 x 5/16" WITH STAR WASHER

Install the Main PCBA as shown using 5 SCREWS. Torque each screw to 8-10 in-lbs and apply loctite.



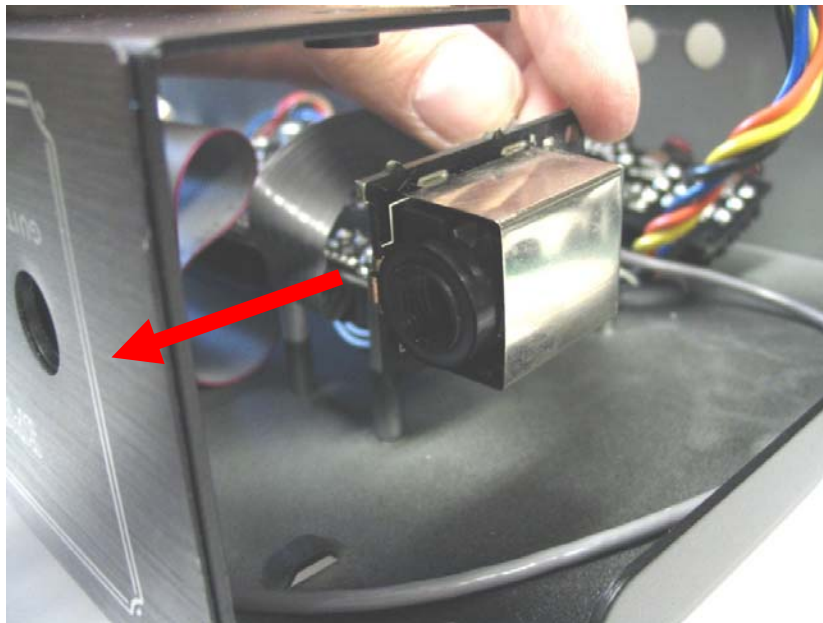
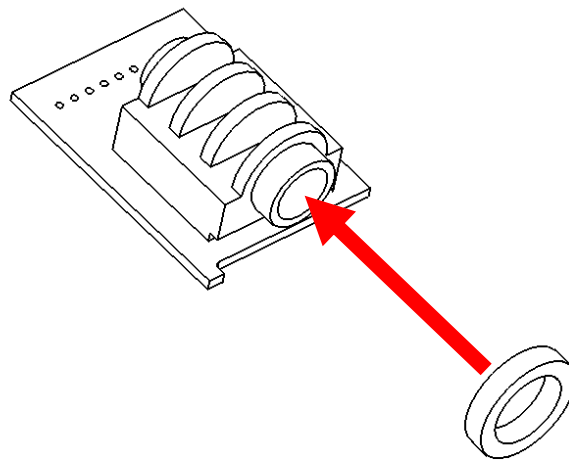
STEP 24

P/N required:

1 each **50-02-0250-1** GUITAR-IN PCBA

1 each **30-15-0004** JACK SPACER

Install the GUITAR-IN PCBA into the CHASSIS as shown. Be sure to align the tab on the GUITAR-IN PCBA with the small hole in the CHASSIS.





STEP 24 CONT'D

Torque the 1/4" jack nut to 5 - 6 inch-pounds.



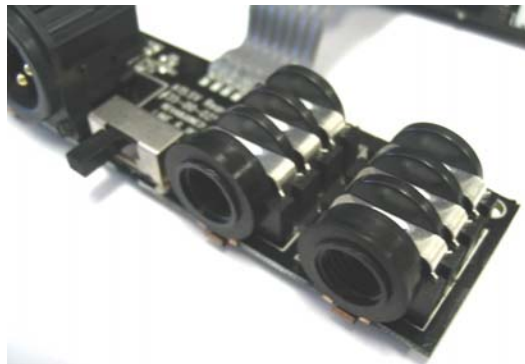
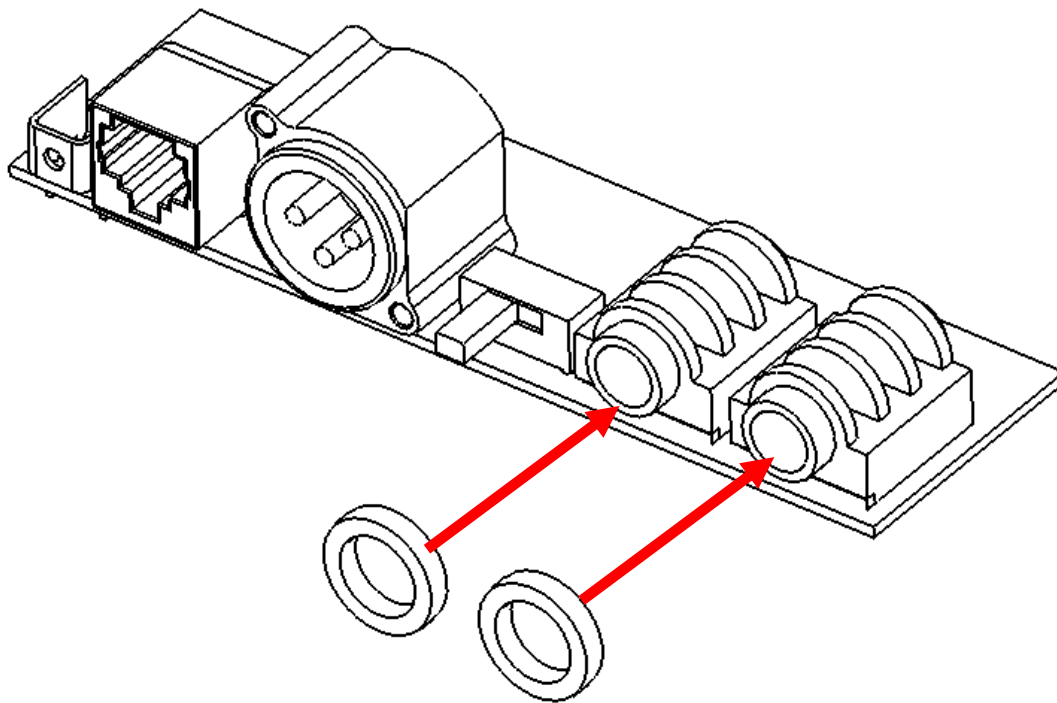
Torque the 1/4" jack nut
to 5 - 6 inch-pounds.

STEP 25

P/N required:

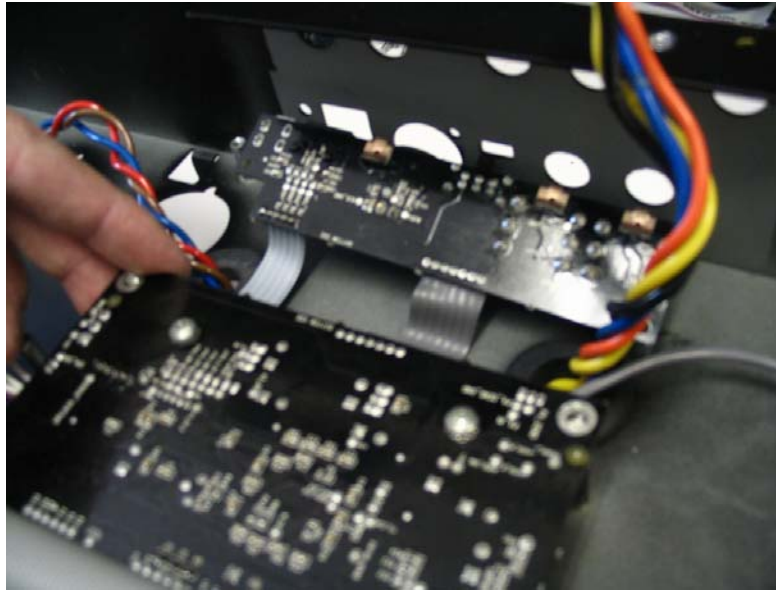
- 1 each **50-02-0250-2** REAR PANEL PCBA
- 2 each **30-15-0004** JACK SPACER
- 2 each **30-00-0042** SCREW #4 x 3/8" BLK
- 1 each **30-00-0375** SCREW 6-32 x 3/8" BLK

Install the REAR PANEL PCBA into the CHASSIS as shown. Torque the 1/4" jack nuts to 5 - 6 inch-pounds.



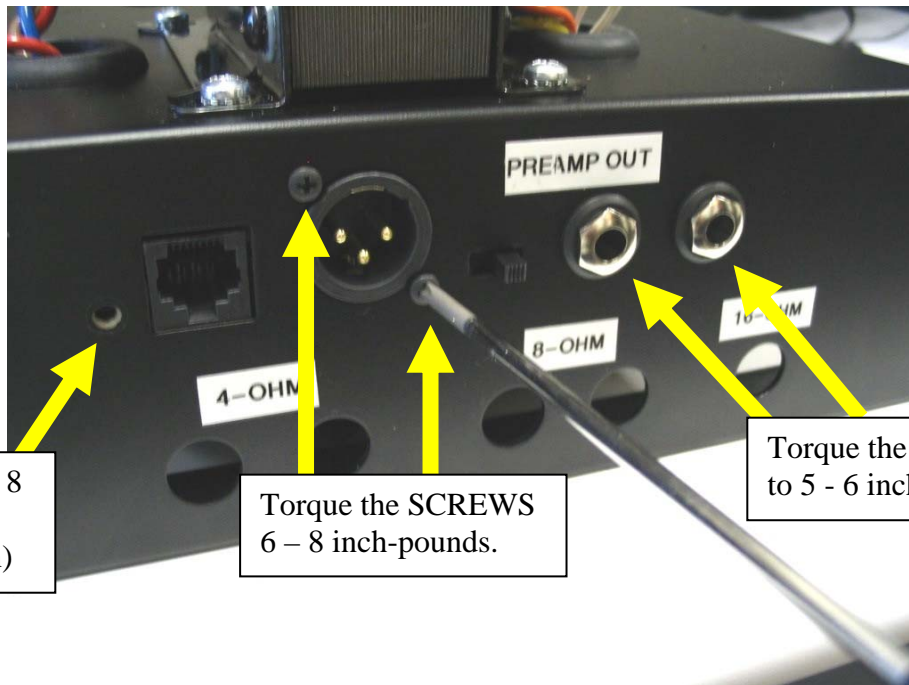
(Step 25 is continued on the next page.)

STEP 25 CONT'D



Torque the SCREWS #4 x 3/8" 6 – 8 inch-pounds.

Torque the SCREW 6-32 x 3/8" 8 – 10 inch-pounds.



Torque the SCREW 8 – 10 inch-pounds.
(SCREW not shown)

Torque the SCREWS 6 – 8 inch-pounds.

Torque the 1/4" jack nuts to 5 - 6 inch-pounds.

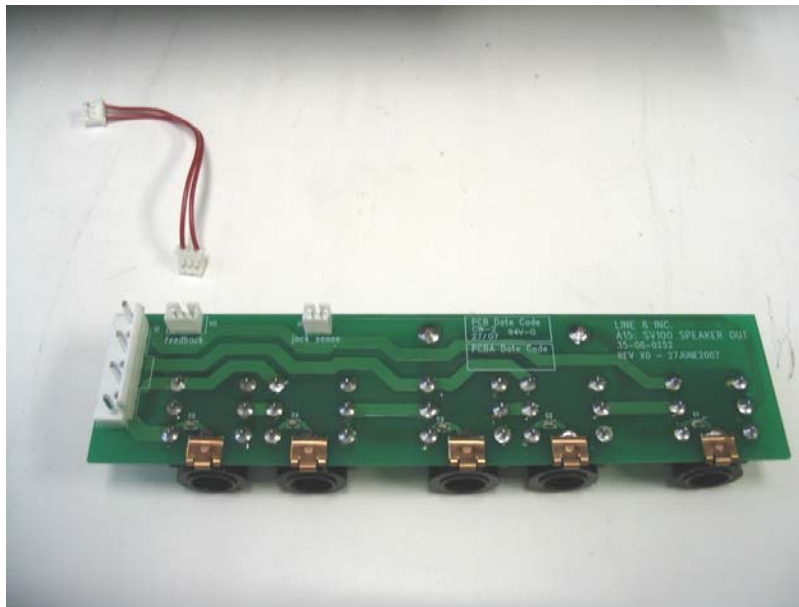
STEP 26

P/N required:

1 each **21-34-0094-1** CABLE 2-COND

1 each **50-02-0252** PCBA SPEAKER OUT

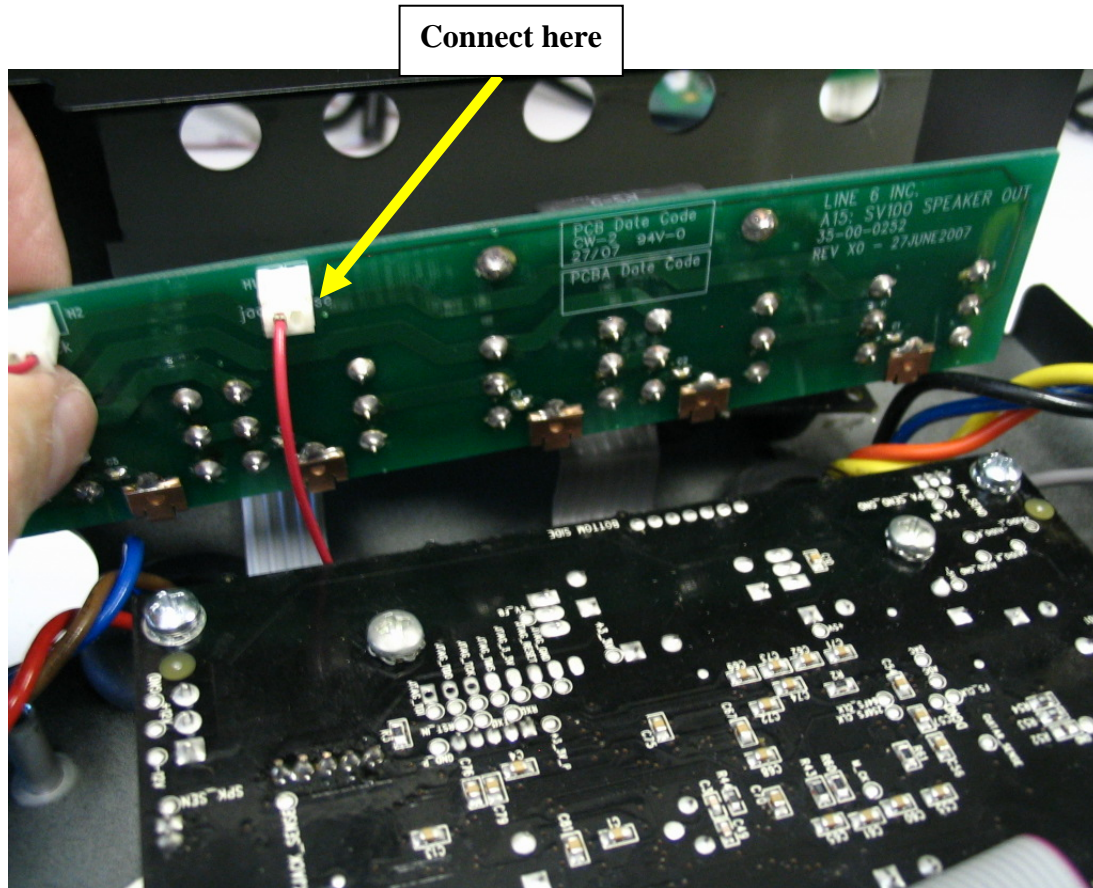
Connect the CABLE to the 'Feedback' header H2.



STEP 27

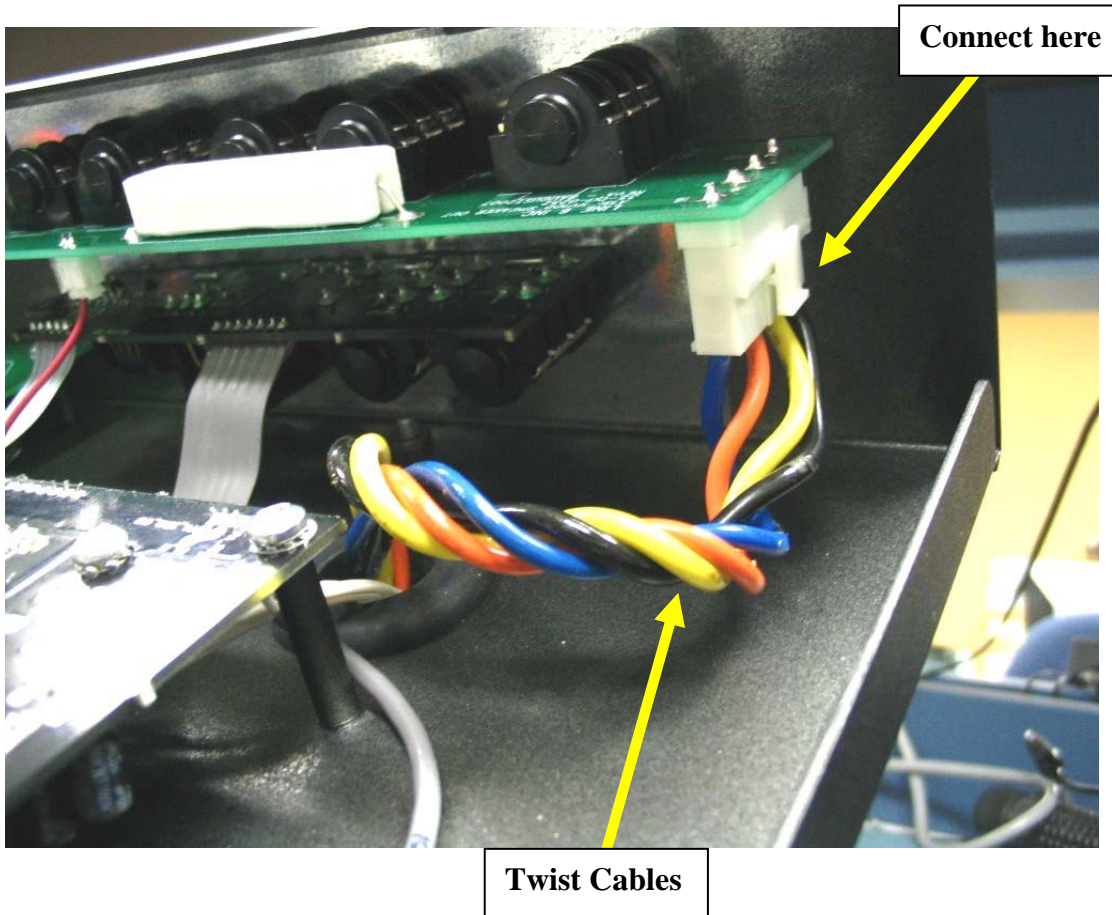
Insert the PCBA SPEAKER OUT into the Chassis.

Connect the **21-34-0093** CABLE 1-COND to the H1 'Jack Sense' header on the Speaker Out PCBA.



STEP 28

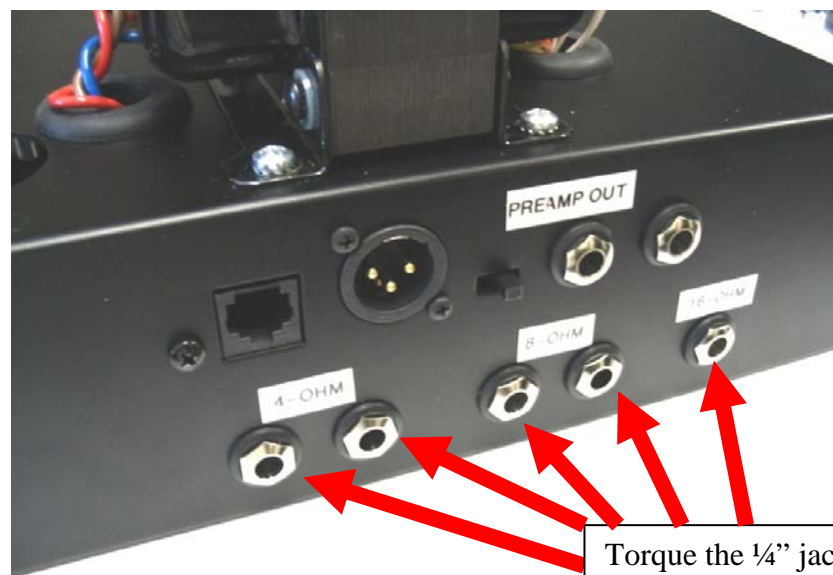
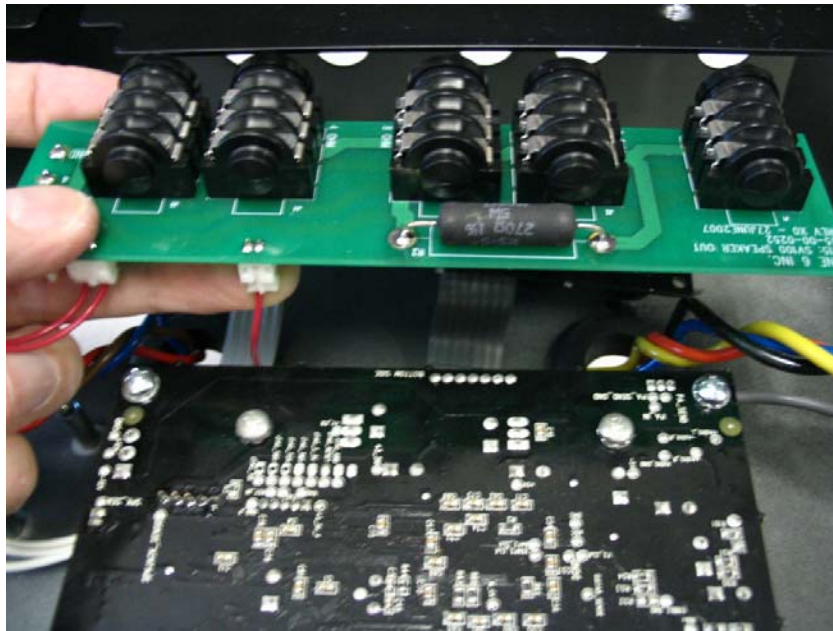
Twist OUTPUT TRANSFORMER secondary header and connect as shown.



STEP 29

P/N required:
5 each **30-15-0004** JACK SPACER

Install spacers and insert jacks thru the holes in the chassis. Secure board with Hex Nuts, 5 PL. Torque the 1/4" jack nuts to 5 - 6 inch-pounds.



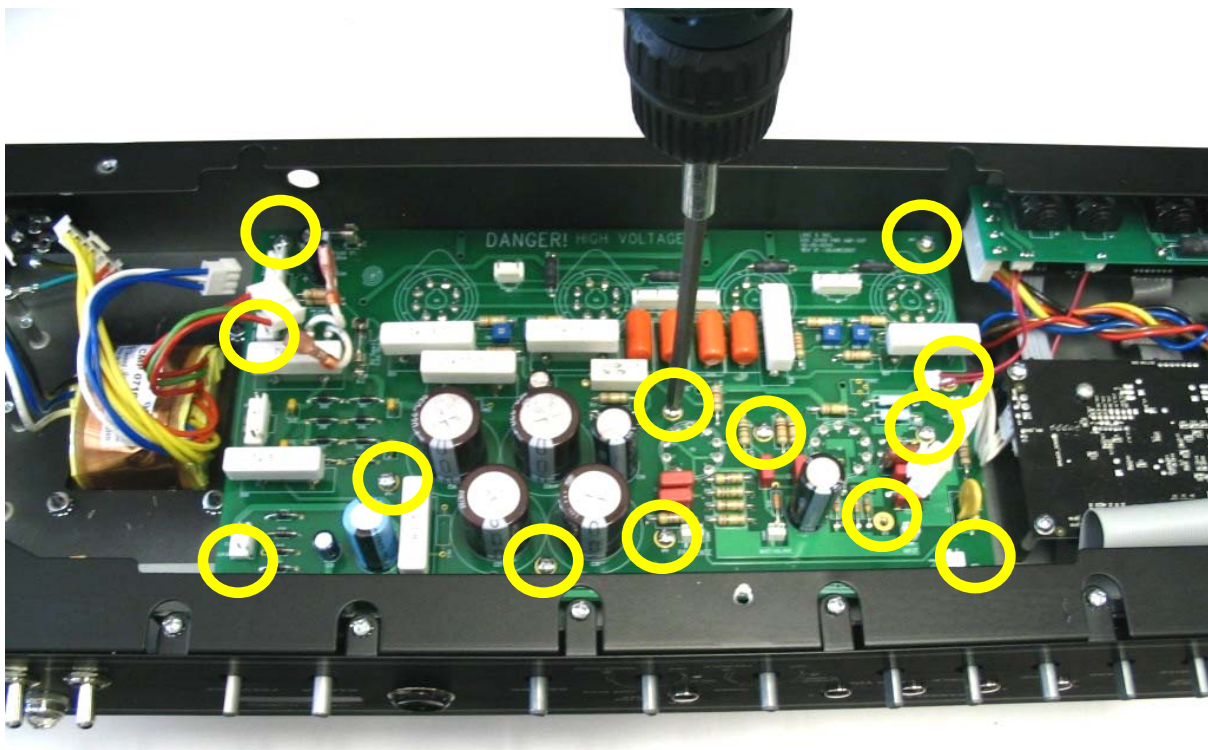
STEP 30

P/N required:

1 each **50-02-0245** PCBA POWER AMP/SUPPLY

13 each **30-00-0043** SCREW 6-32 x 5/16" WITH STAR WASHER

Install the PCBA POWER AMP/SUPPLY to chassis using SCREWS, 13 PL. Torque each screw to 8-10 in-lbs and apply Loctite.



STEP 31

P/N required:

1 each **50-02-0245-1** PCBA A/C PRIMARY

3 each **30-00-0043** SCREW 6-32 x 5/16" WITH STAR WASHER

Install A/C Power PCBA to chassis using three (3) SCREWS. PCBA shall be oriented as shown.

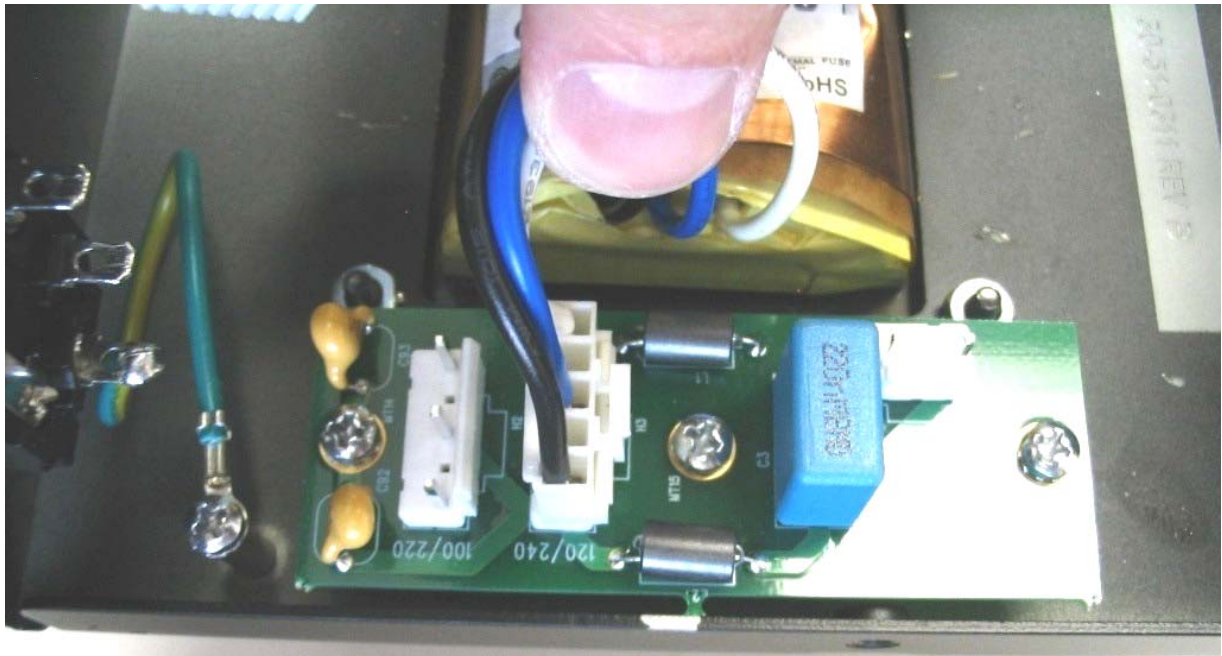


STEP 32

Connect primary wires (blue, black and white) to the appropriate header on the A/C POWER PCBA as shown.

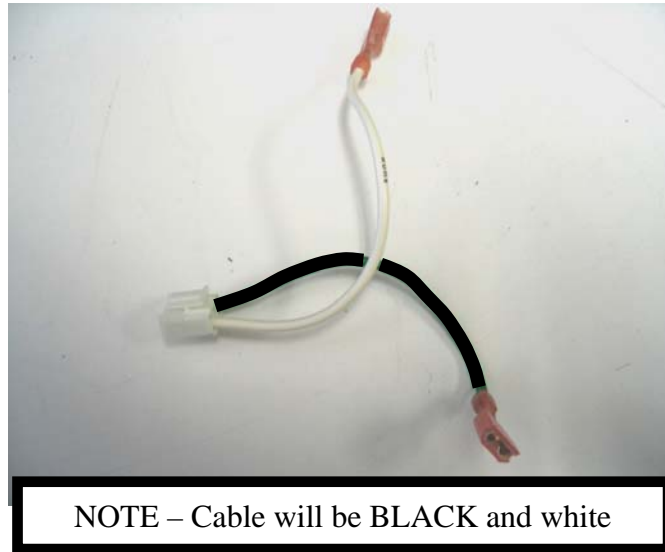
Table 1

AC Voltage	Header on AC PCBA
100 VAC (JA)	H2
120 VAC (US)	H3
220 VAC (EU)	H2
240 VAC (AU, UK)	H3

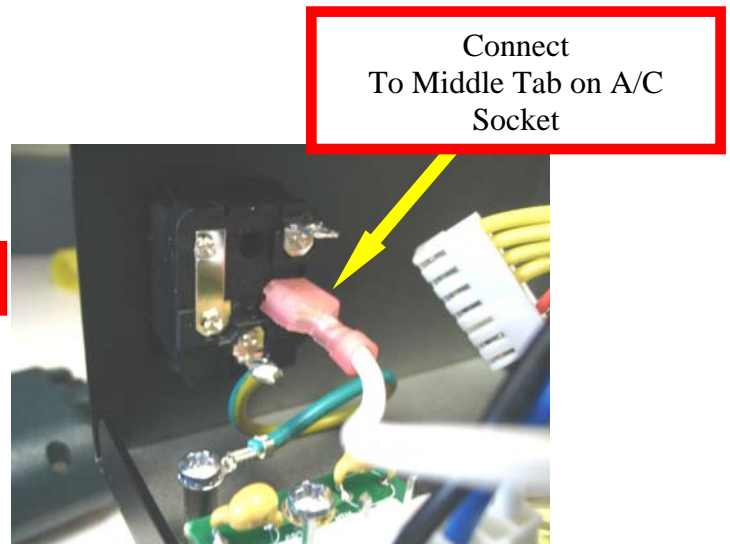
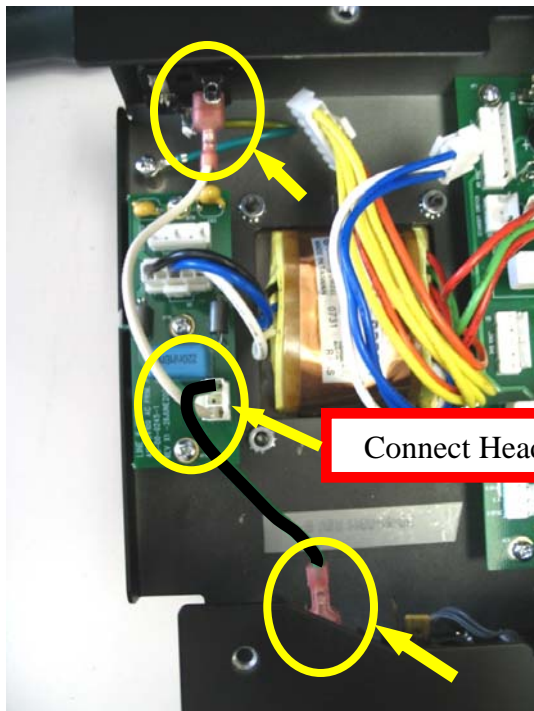


STEP 33

P/N required:
1 each **21-34-0135-3** CABLE ASSY

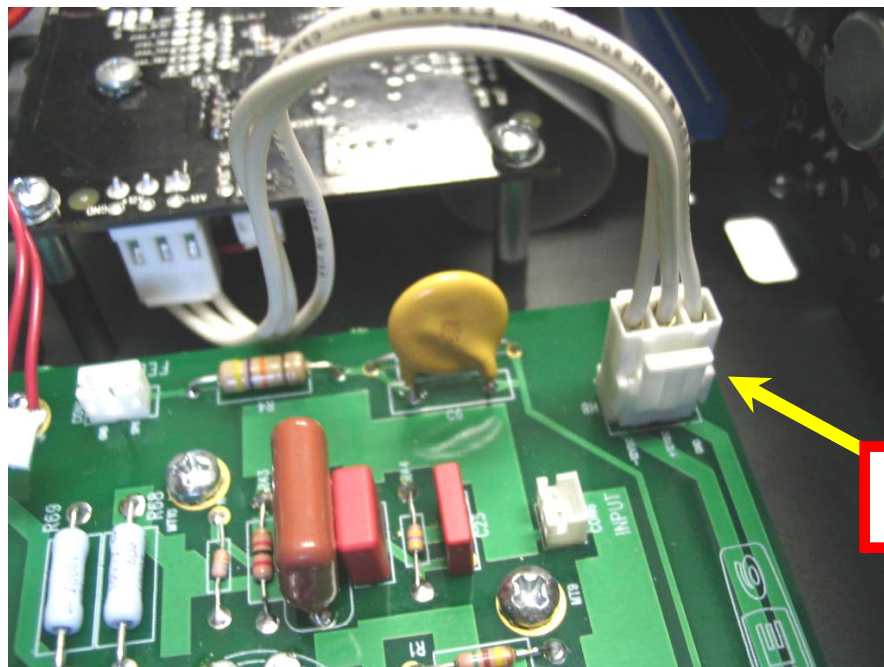
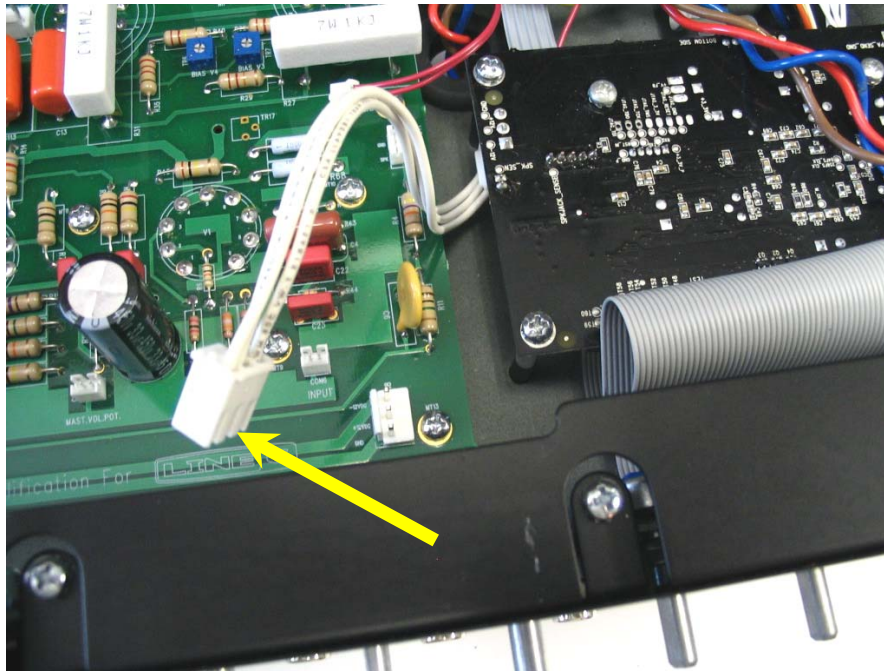


Connect the **header** to the **A/C POWER PCBA**.
Connect the **white cable** to the **middle tab** on the **A/C Receptacle**.
Connect the **black cable** to the **top tab** on the **'Power'** toggle switch.



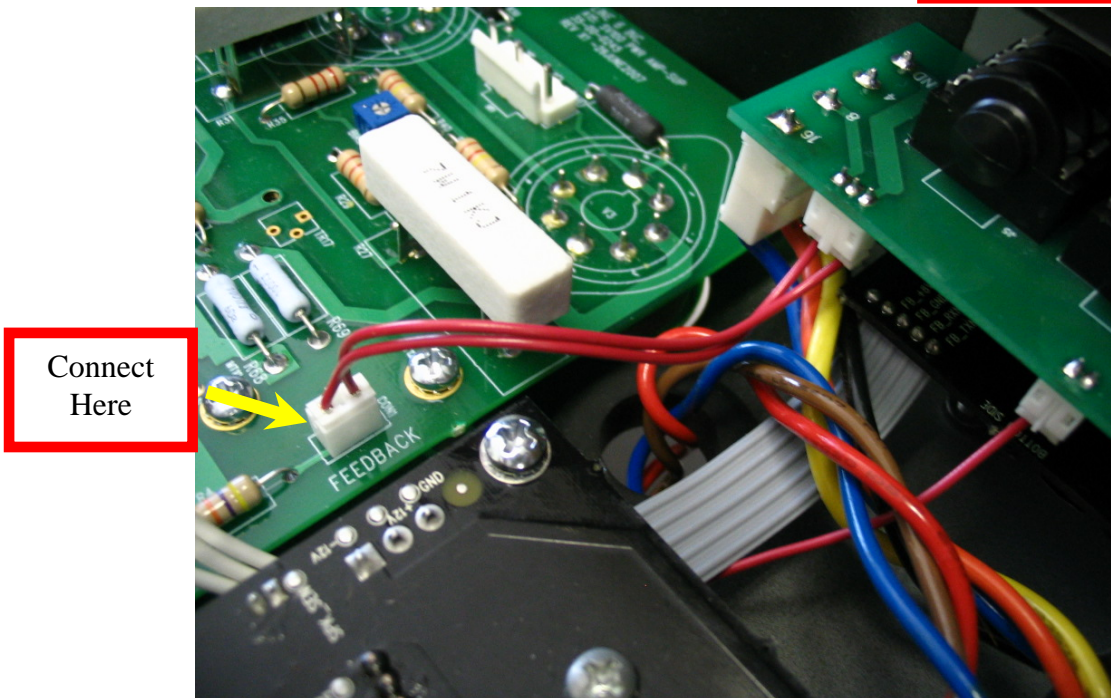
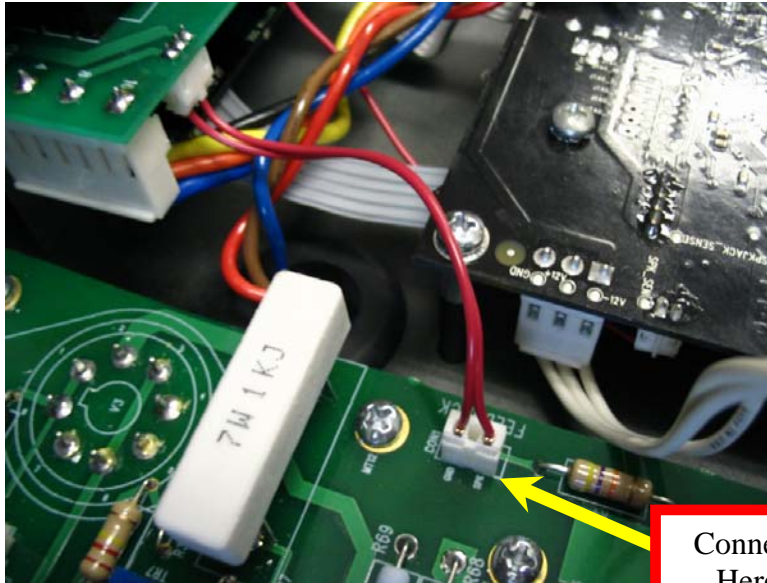
STEP 34

Connect the free end of the **21-34-0095** CABLE 3-COND to the H8 Header on the Power Amp.



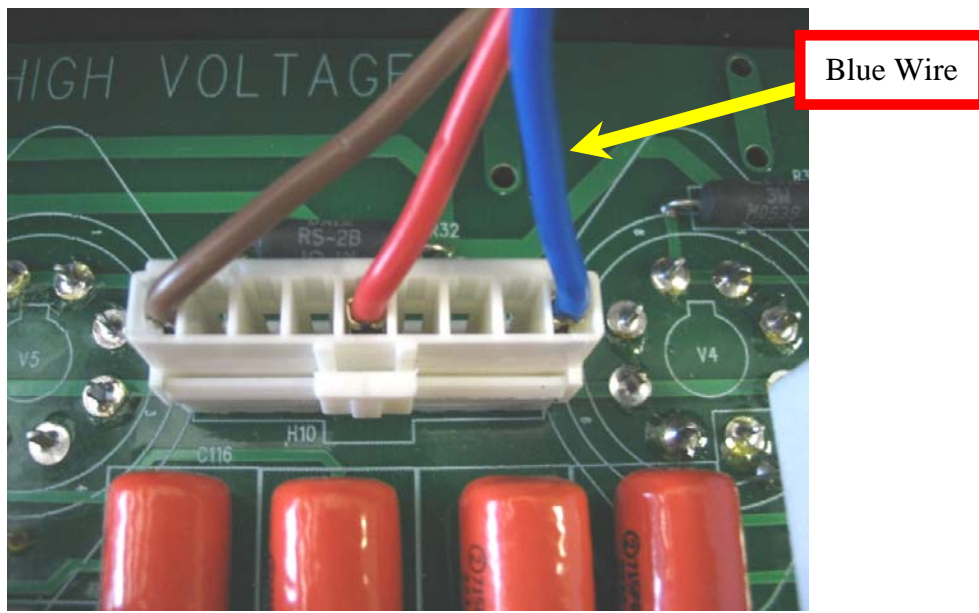
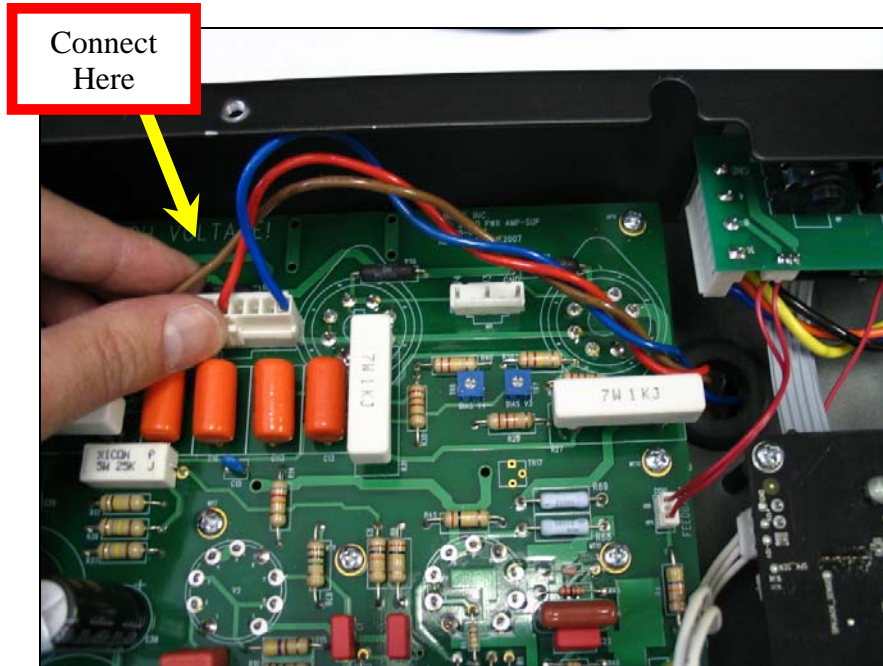
STEP 35

Connect the free end of the **21-34-0094-1** CABLE 2-COND to the CON1 “Feedback” Header on the Power Amp.



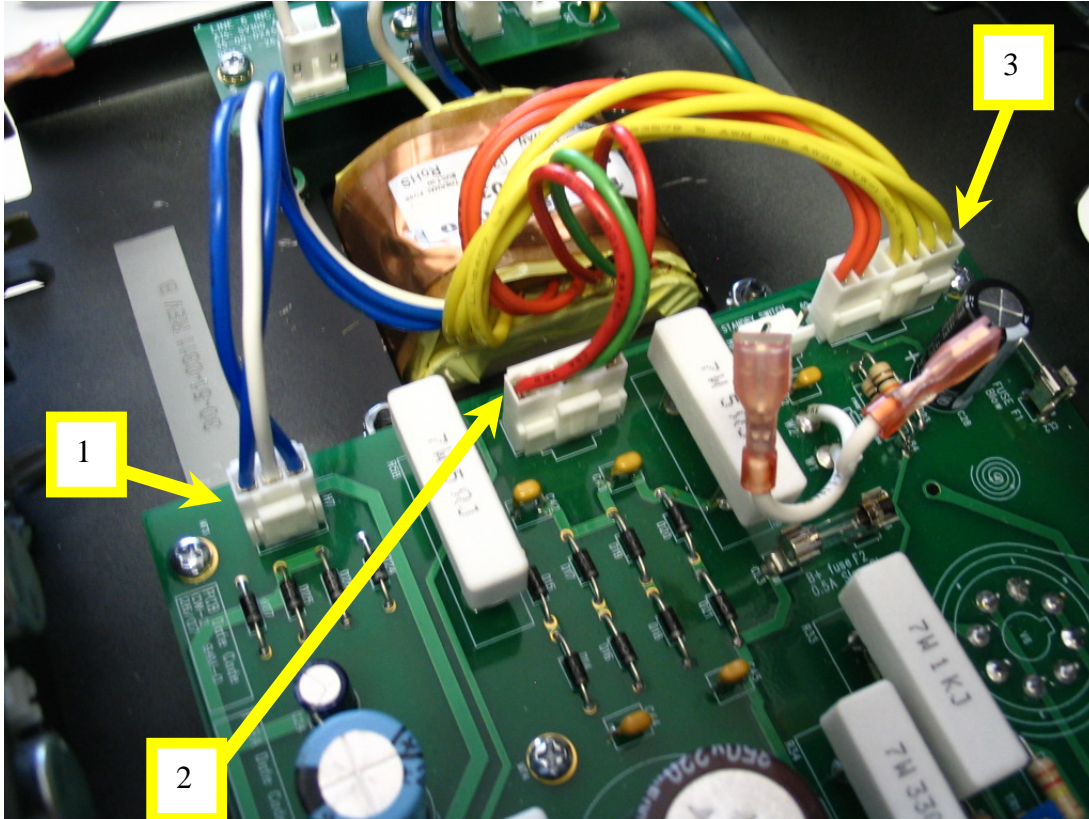
STEP 36

Twist and connect the primary (red, brown and blue) wire bundle from the OUTPUT TRANSFORMER to the H10 Header on the Power Amp PCBA.



STEP 37

Connect the Output transformer wire bundles as shown, 3 PL.



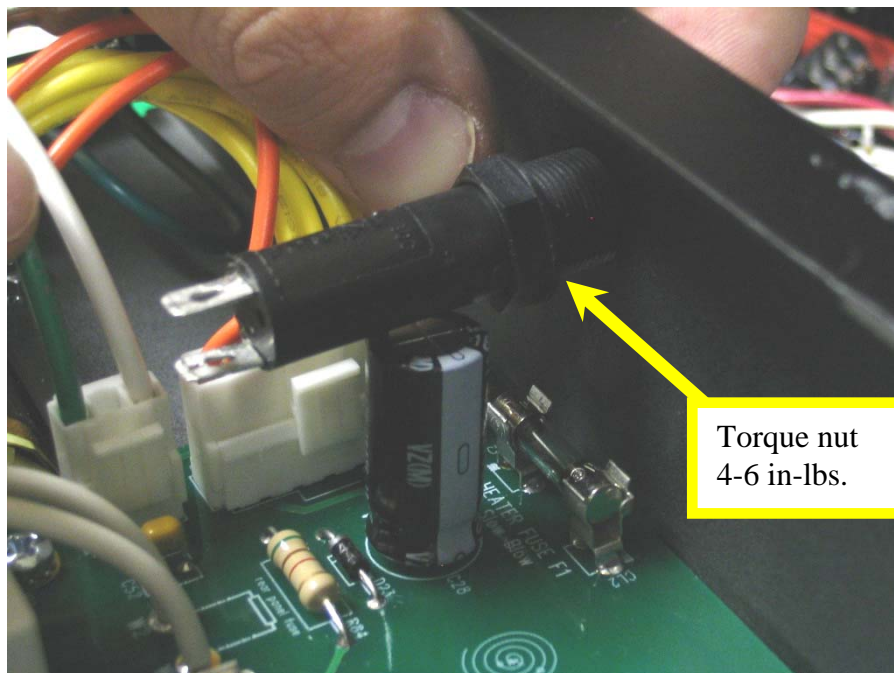
STEP 38

P/N required:

1 each **21-48-0004** FUSEHOLDER

1 each **24-19-0010** FUSE 1.0A 250V 3AG SLO-BLO

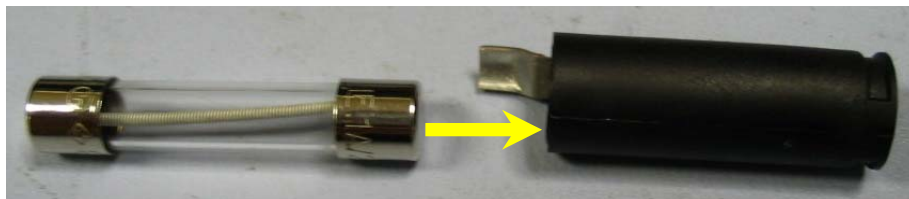
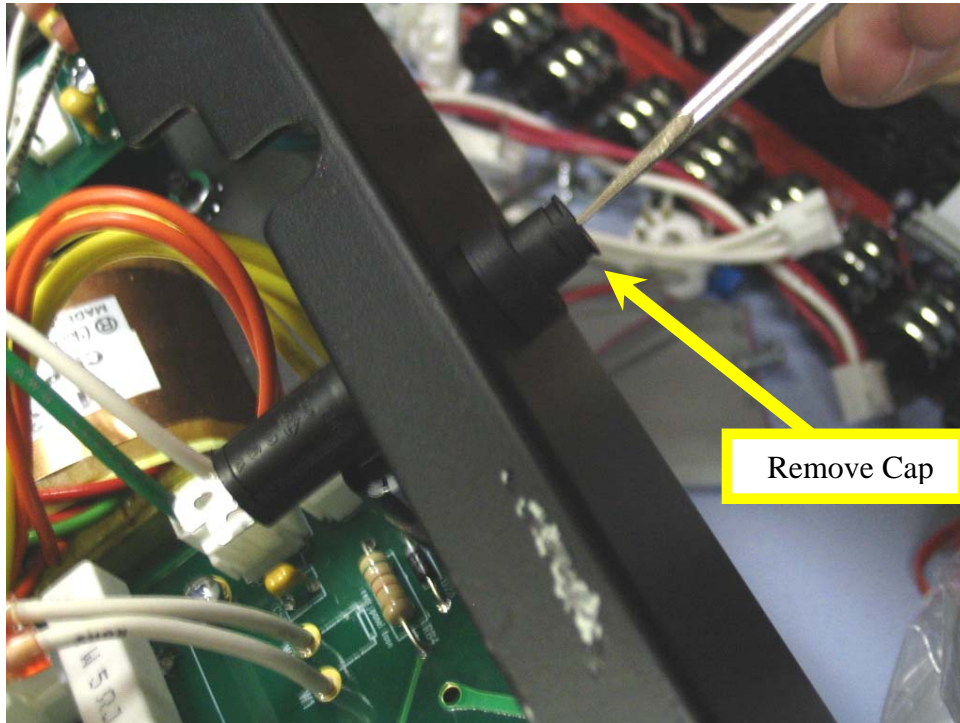
Insert the FUSEHOLDER into the hole in the CHASSIS as shown. Secure the FUSEHOLDER with the included nut. Torque the nut to 4 – 6 inch-pounds.



(step 39 is cont'd on next page)

STEP 38 CONT'D

Use a flathead screwdriver to remove the cap from the FUSEHOLDER by turning it ¼ turn counterclockwise. Install the FUSE 1.0A 250V 3AG SLO-BLO into the cap and reinstall it into the FUSEHOLDER.

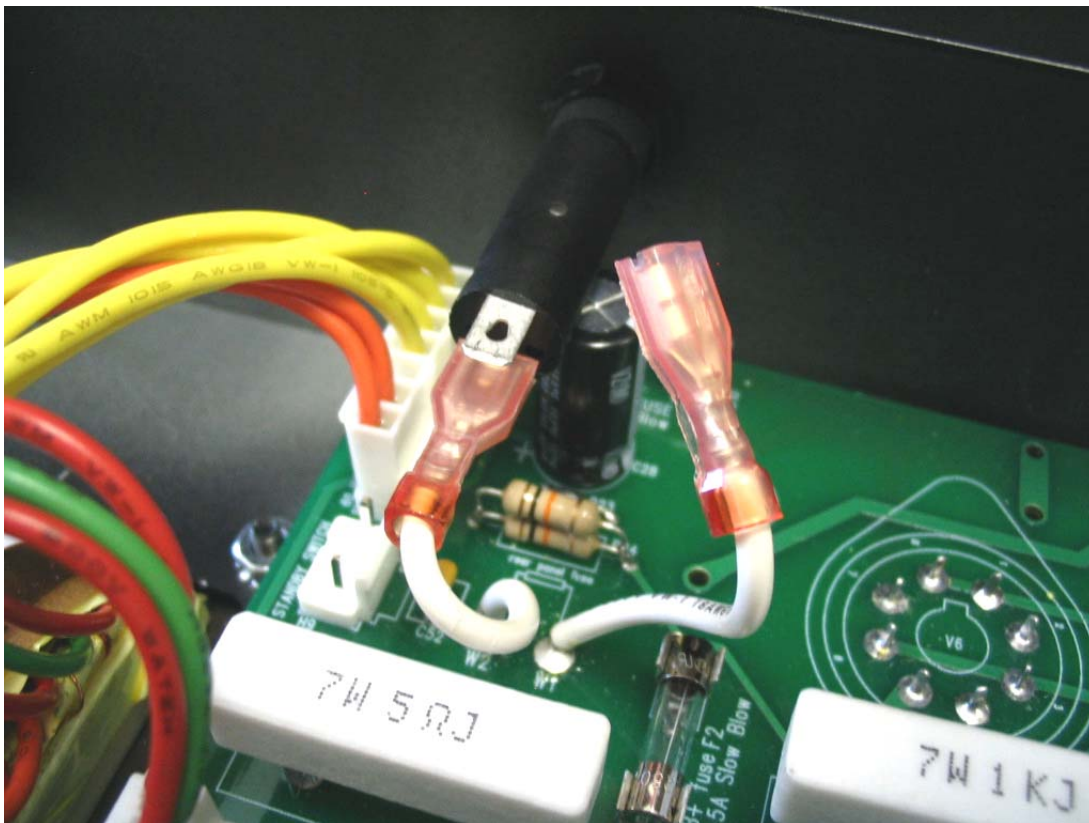


STEP 39

P/N required:

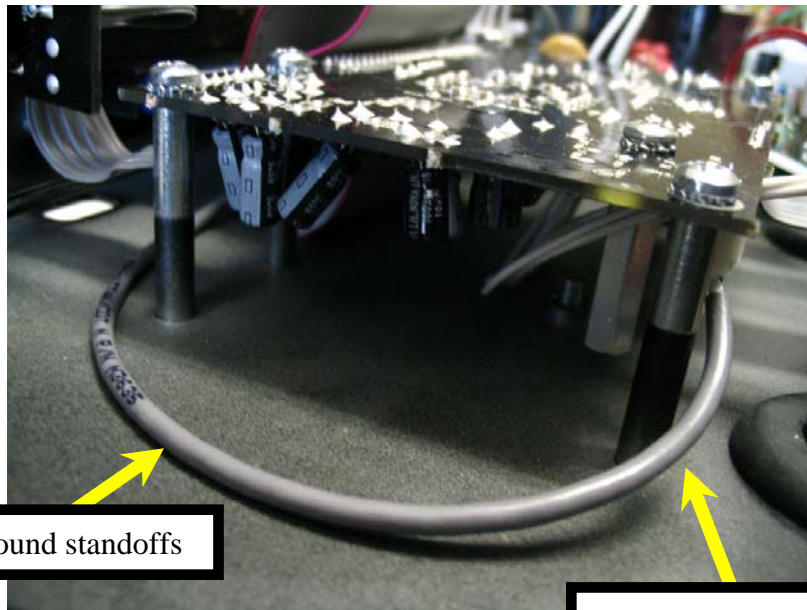
21-34-1117 CBL 1-COND STRND 18AWG 4.0IN .250-RCPT/TND-END WHT
(soldered on POWER SUPPLY PCBA)

Connect each CABLE to the fuse terminals. Each cable can be connected to either fuse terminal.



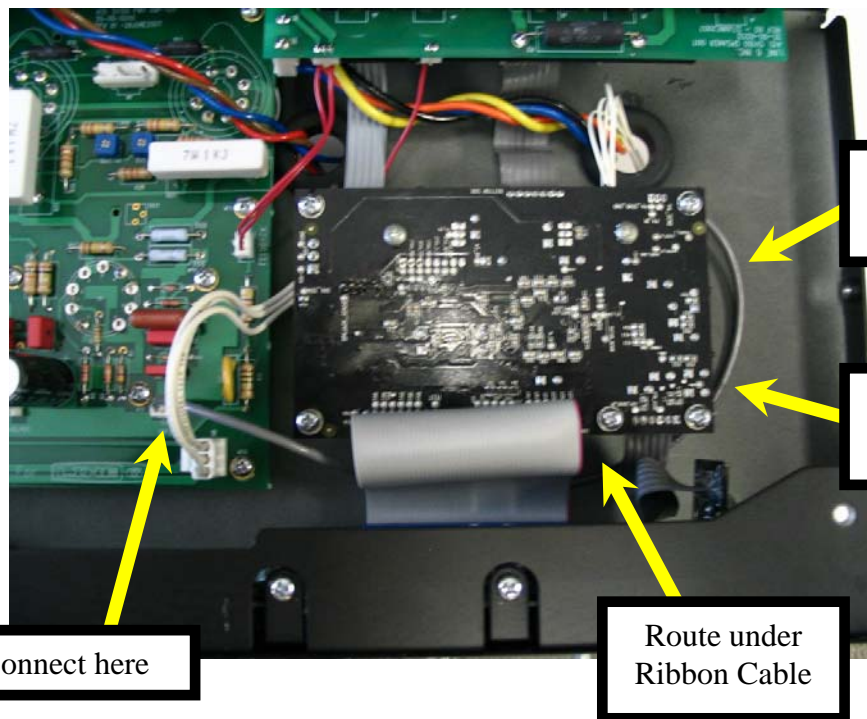
STEP 40

Route the free end of the **21-34-0100-1 CABLE SHIELDED** around the Main PCBA standoffs and under the **21-30-0003 CABLE 50-PIN** as shown. Connect the free end of the cable onto the CON6 Header on the Power Supply PCBA.



Route around standoffs

Route around standoffs



Connect here

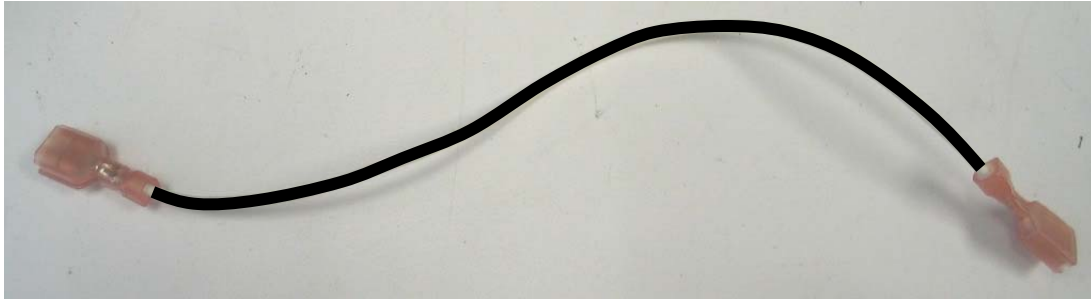
Route under Ribbon Cable

Route around standoffs

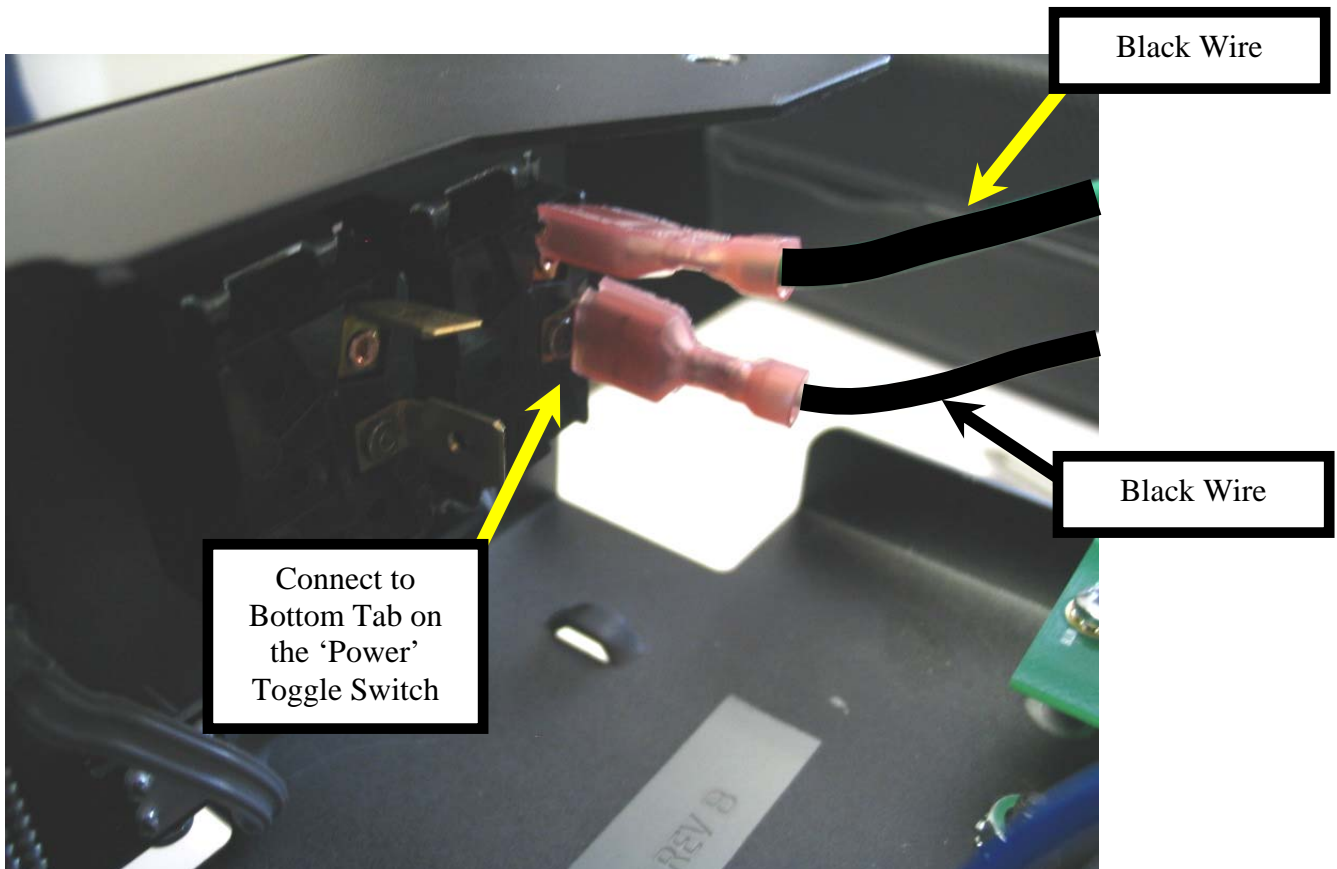
Route around standoffs

STEP 41

P/N required:
1 each **21-34-1022** CABLE 1-COND



Connect the CABLE to the bottom tab on the 'Power' Toggle Switch.



(step 42 is cont'd on next page)

STEP 41 Cont'd

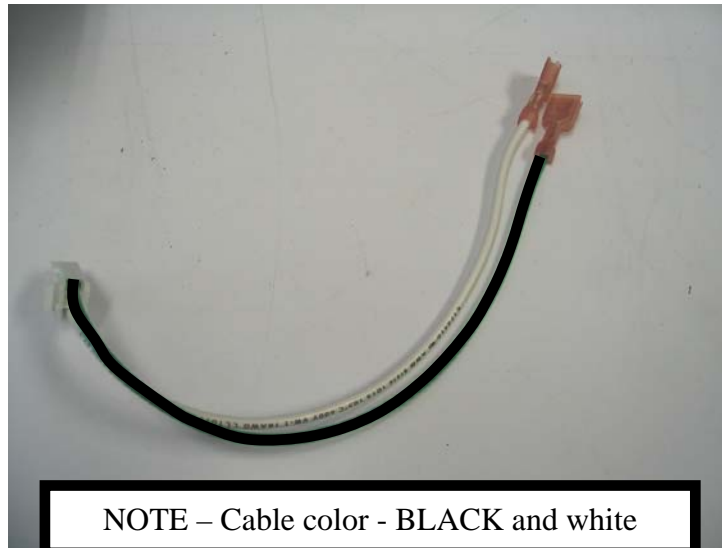
Connect the CABLE to the bottom tab on the A/C RECEPTACLE.

Connect to Bottom
Tab on the A/C
Receptacle



STEP 42

P/N required:
1 each **21-34-0135-3** CABLE



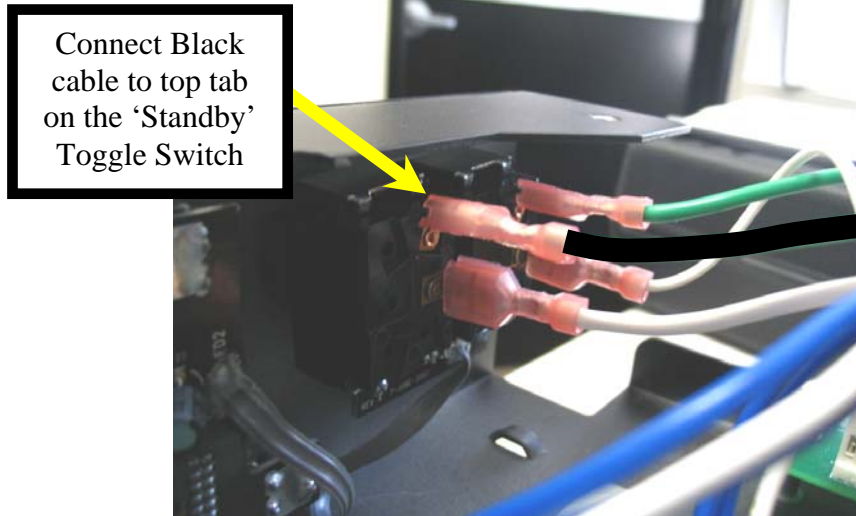
Connect the CABLE header to the ‘Standby Switch’ H9 Header on the POWER SUPPLY PCBA.



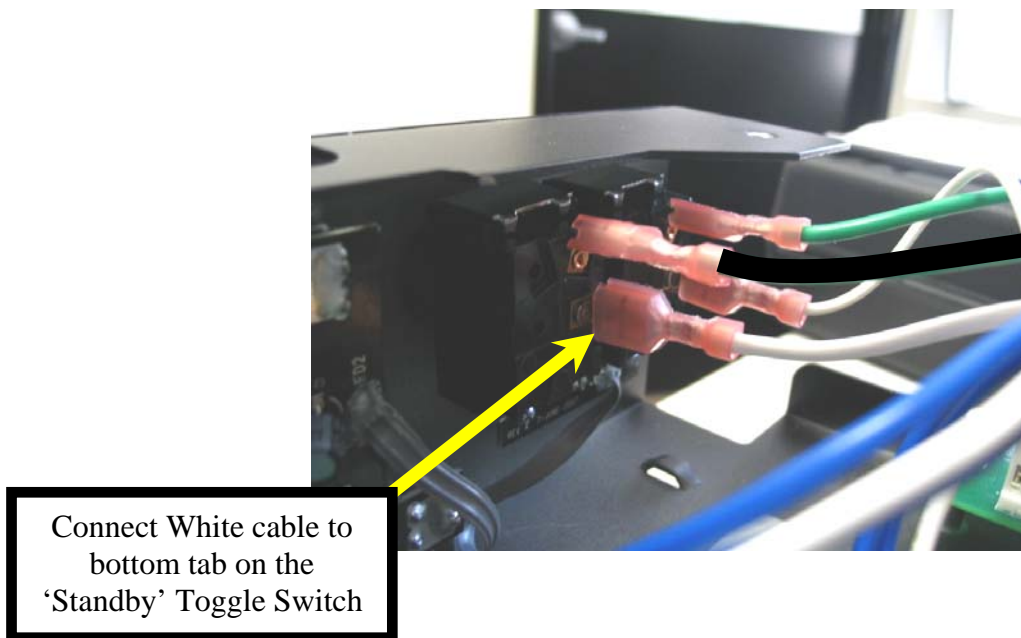
(step 43 is cont'd on next page)

STEP 42 Cont'd

Connect the black cable to the top tab on the 'Standby' Toggle Switch.



Connect the white cable to the bottom tab on the 'Standby' Toggle Switch.



STEP 43

P/N required:

1 each **21-34-0097-1** CBL ASSY 3-PIN SIL 2 COND 7.0" 26AWG SHLD

Connect the CABLE from the H1 header on the PCBA U/I RIGHT to the CON4 'Presence' Header on the Power Supply PCBA.

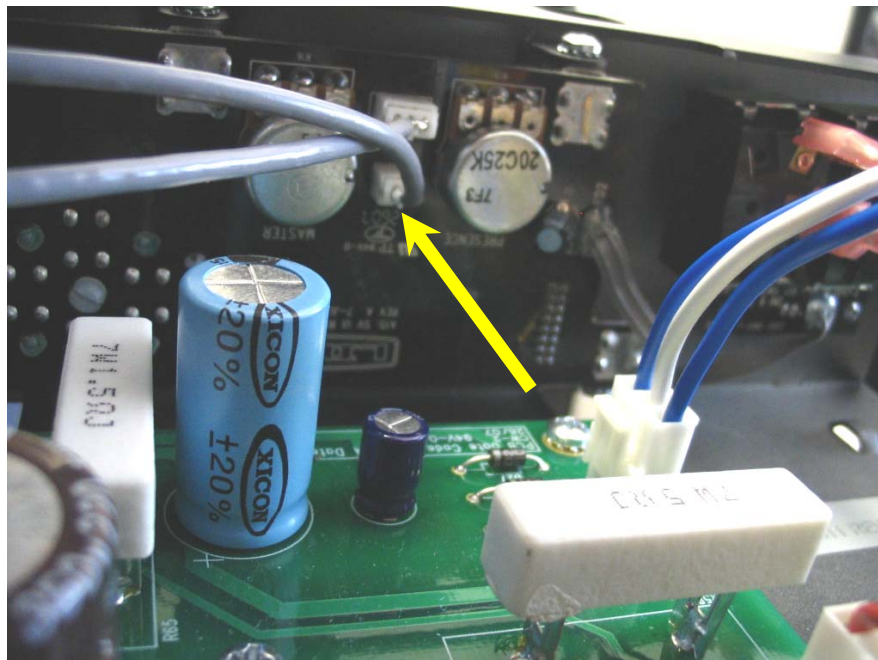
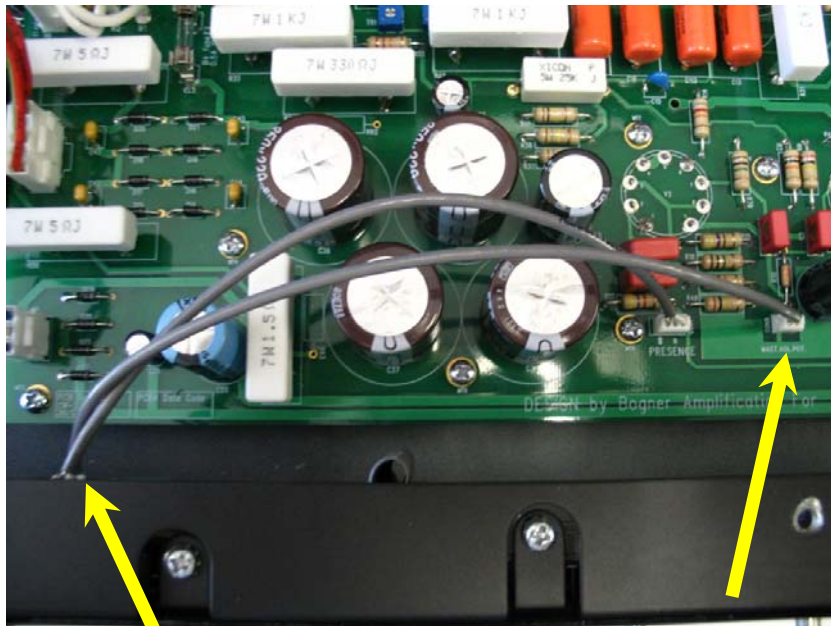


STEP 44

P/N required:

1 each **21-34-0101-1** CBL ASSY 2-PIN SIL 8.0" 26AWG SHLD A15-3

Connect the CABLE from the H4 header on the PCBA U/I RIGHT to the CON5 'MAST. VOL. POT.' Header on the Power Supply PCBA.

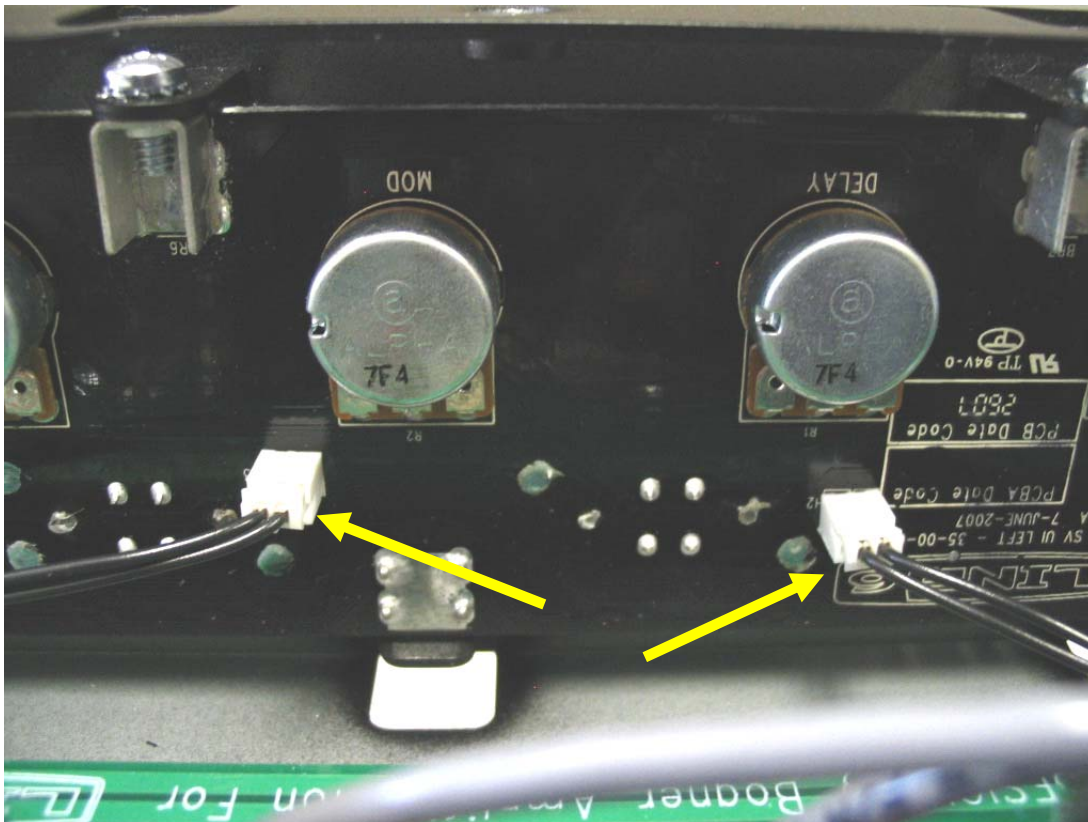


STEP 45

P/N required:

2 each **21-34-0076-3** CBL SIL 2-COND 26AWG 2mm x 14.5" JST PHR-2 BLK

Connect each CABLE end to the H2 and H3 Headers on the U/I PCBA.

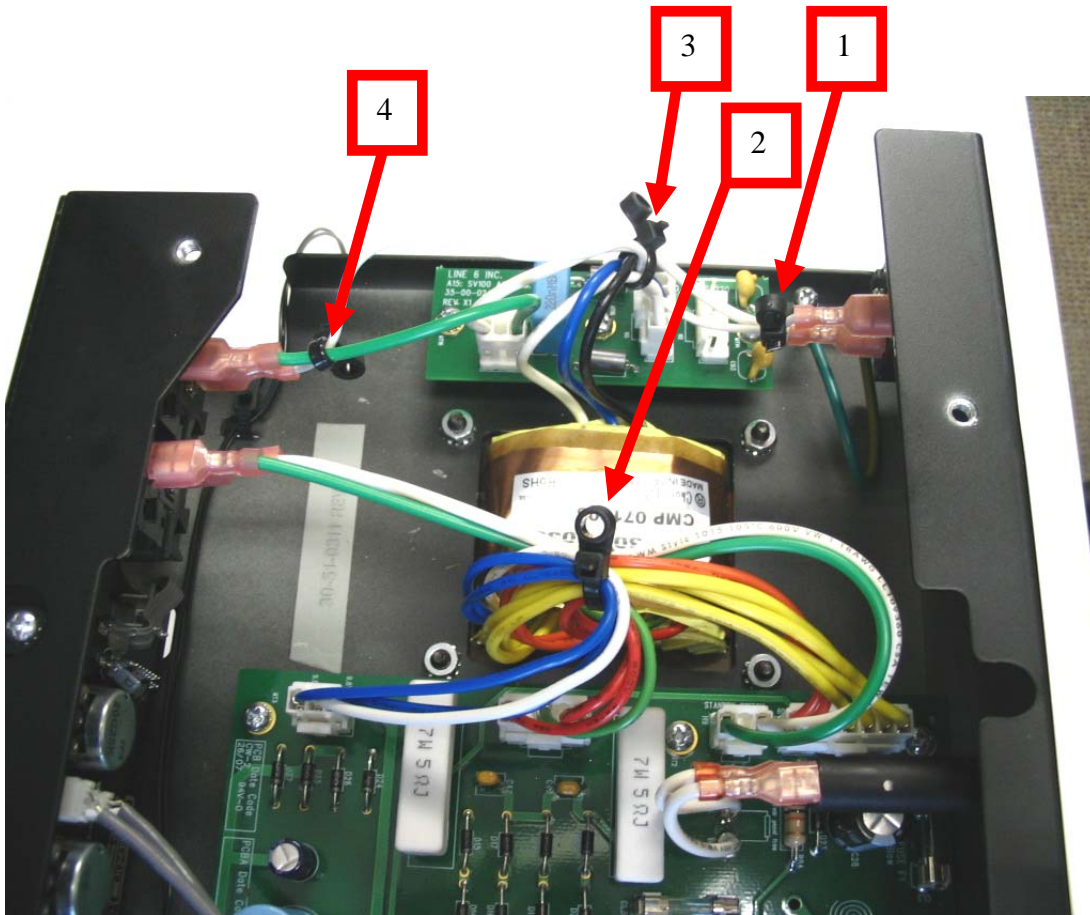


STEP 46

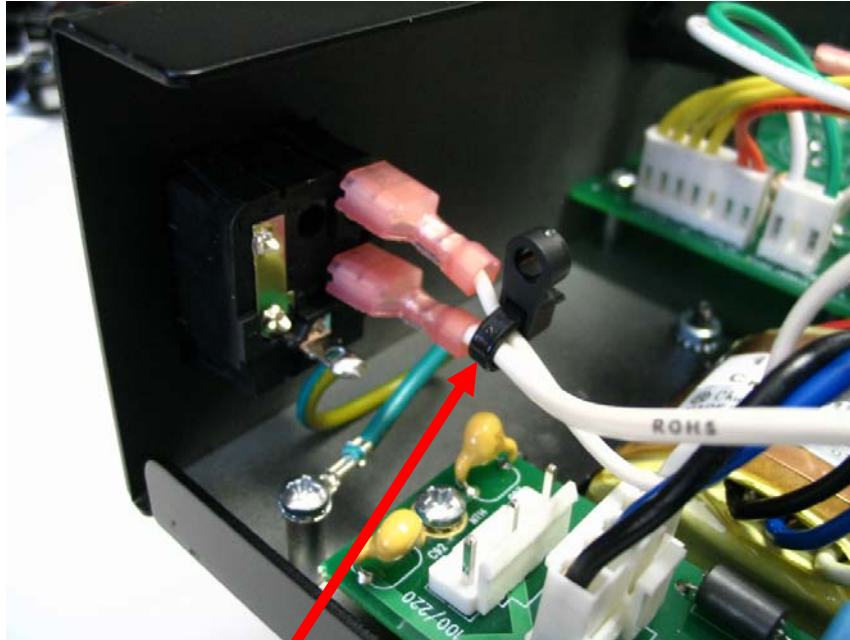
P/N required:
6 each **30-24-0003** CABLE-TIE 4" CLEAR

Install CABLE TIES as shown, 6 PL.

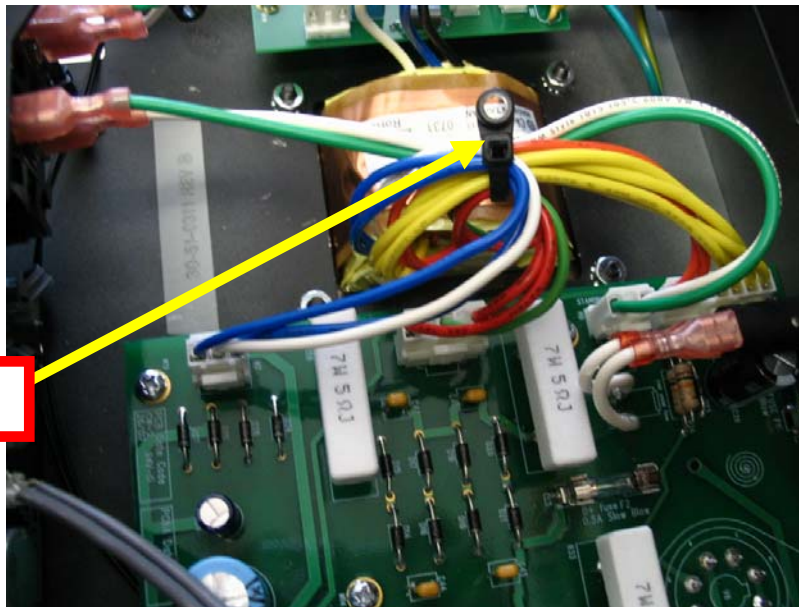
Clip off excess material from the CABLE TIES after installation.



STEP 46 CONT'D

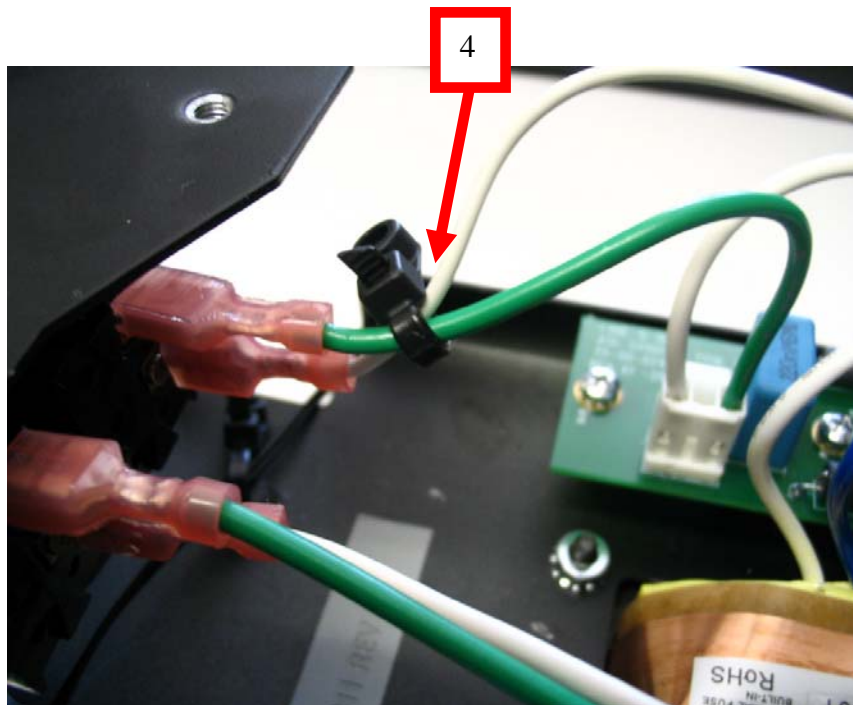
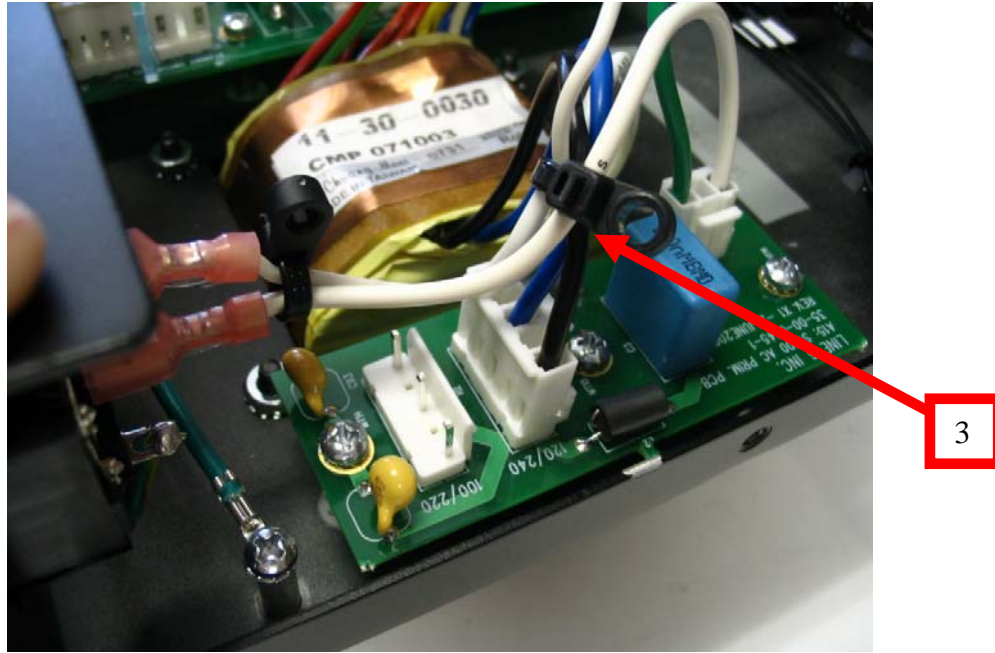


1



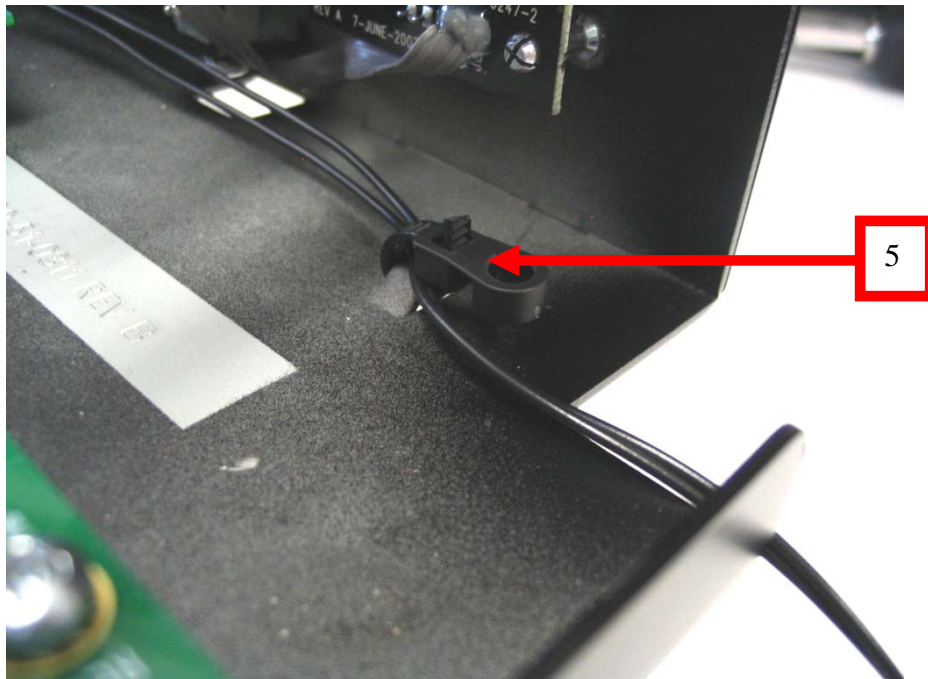
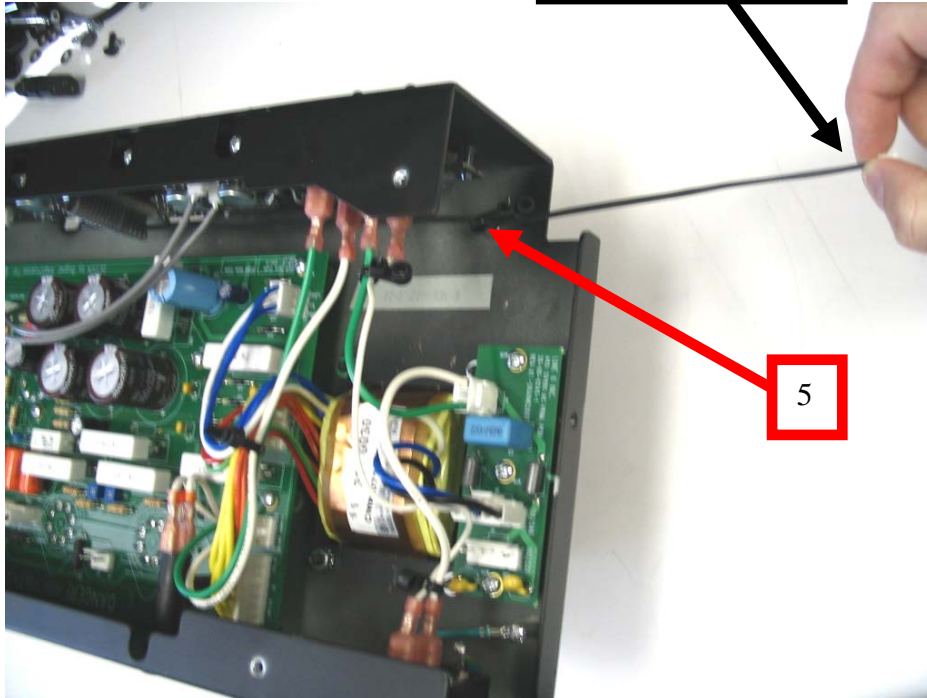
2

STEP 46 CONT'D

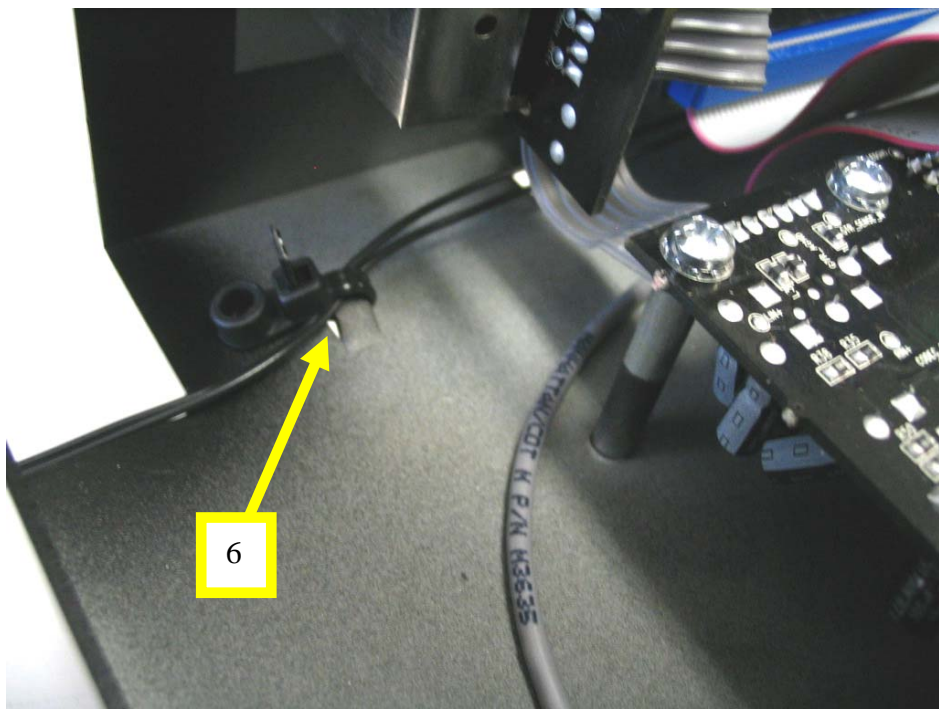
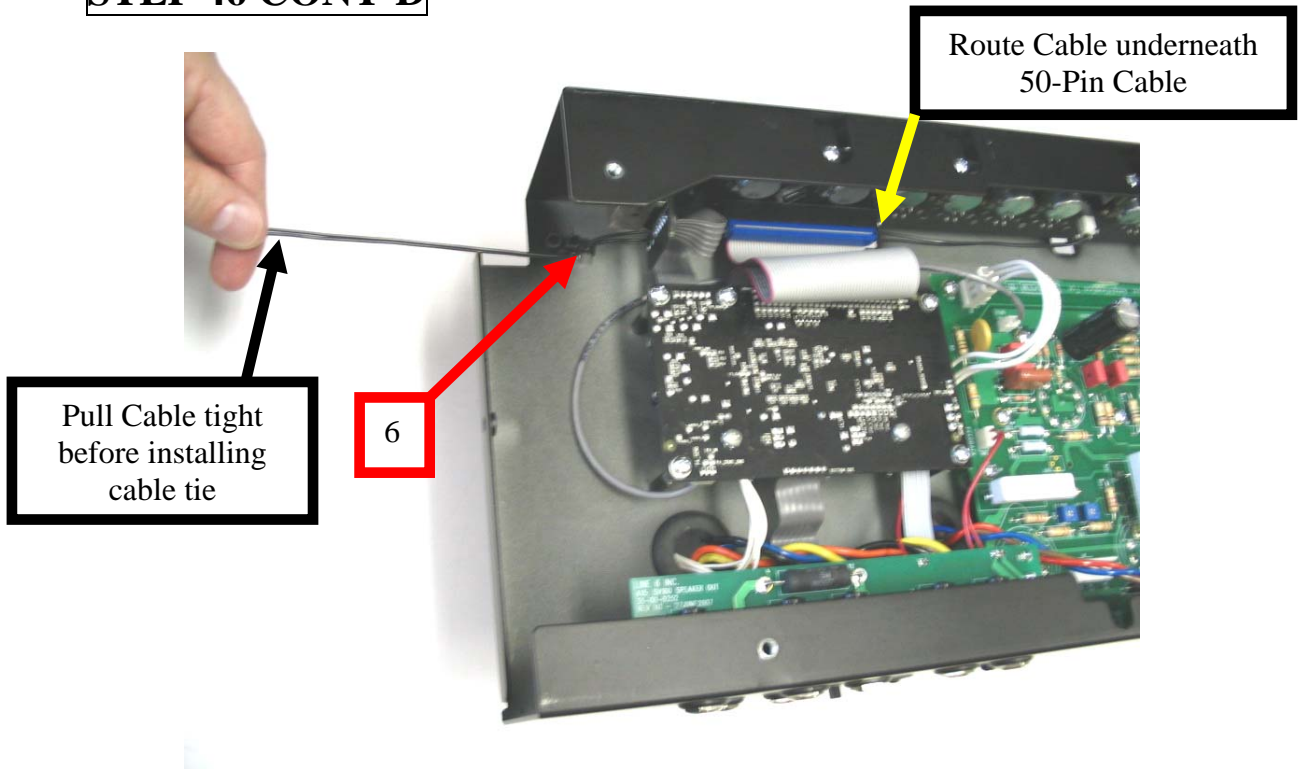


STEP 46 CONT'D

Pull Cable tight
before installing
cable tie



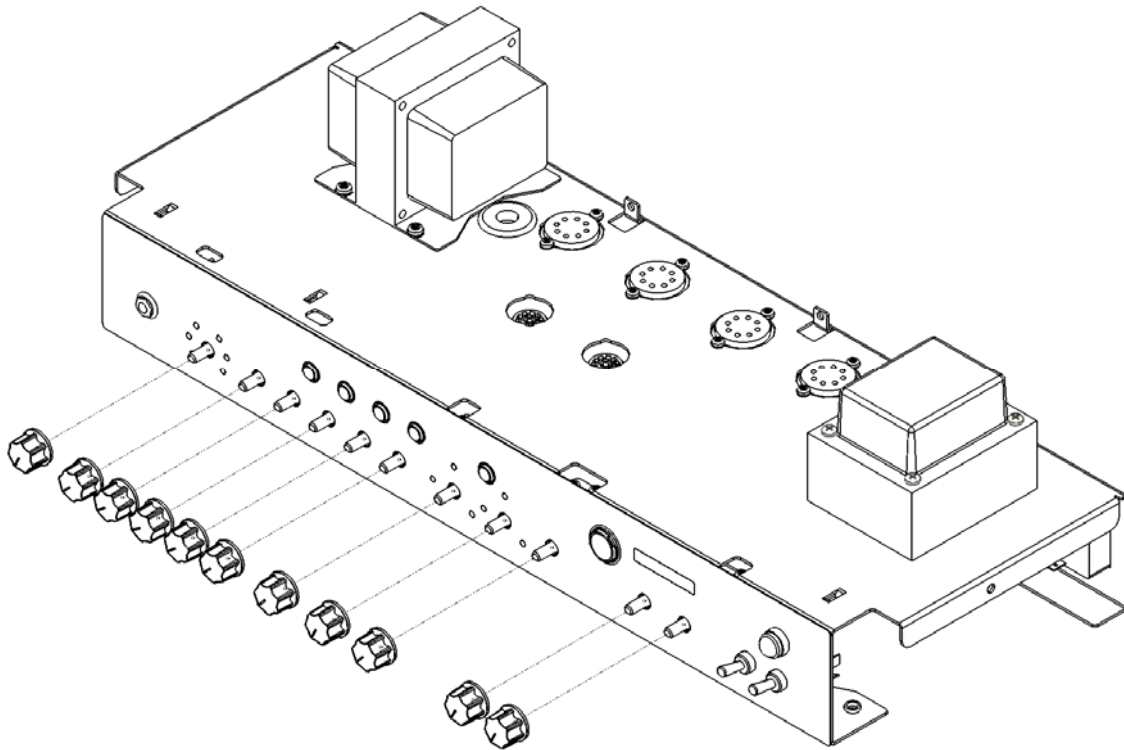
STEP 46 CONT'D



STEP 47

P/N required:
11 each **30-45-0020** KNOB

Press one KNOB fully onto the shaft of each potentiometer.



STEP 48

P/N required:

8 each **30-00-0126** SCREW #5-40 x 0.300 SELF-TAPPING

Use fixture shown below to support PCBA during screw installation.



Kwanasia Fixture

Install SCREWS, 2 PL each socket. Turn each SCREW until it is fully seated.



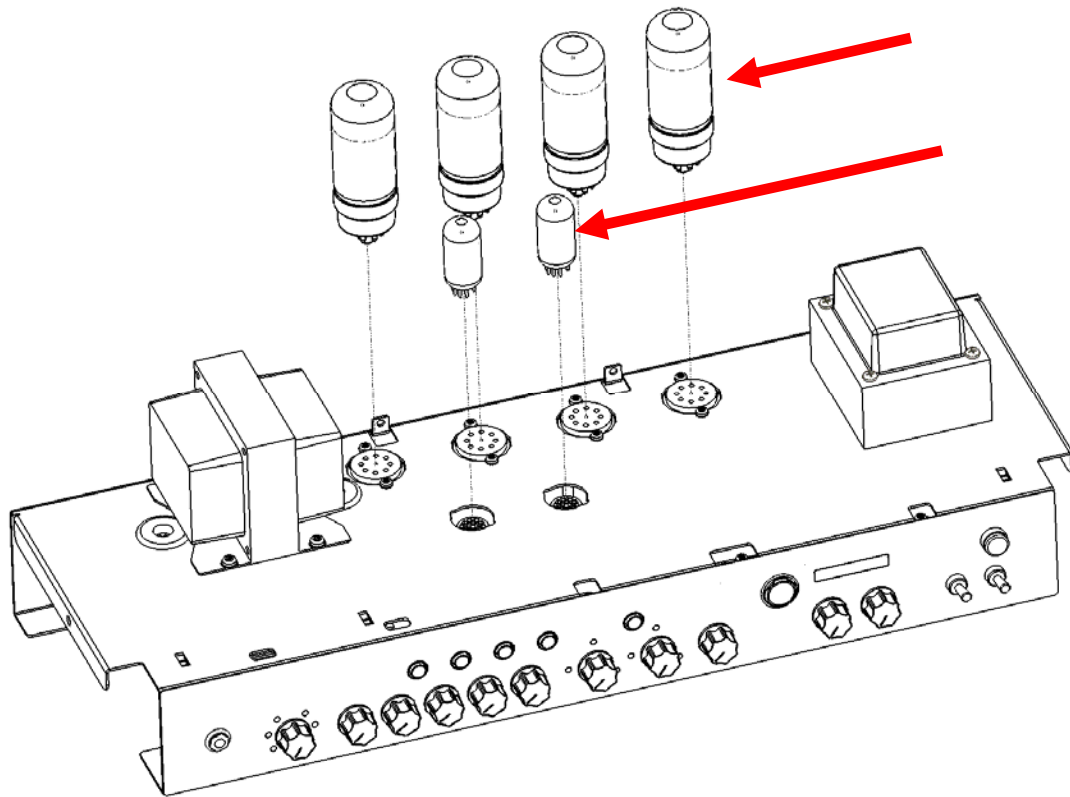
STEP 49

P/N required:

2 each **11-02-0000** TUBE 12AX7

1 each **11-02-0002** TUBE 5881/6L6 (MATCHED QUARTET)

Push one TUBE 12AX7 into each small tube socket on the bottom of the CHASSIS.
Push one TUBE 5881/6L6 into each large tube socket on the bottom of the CHASSIS.





STEP 50

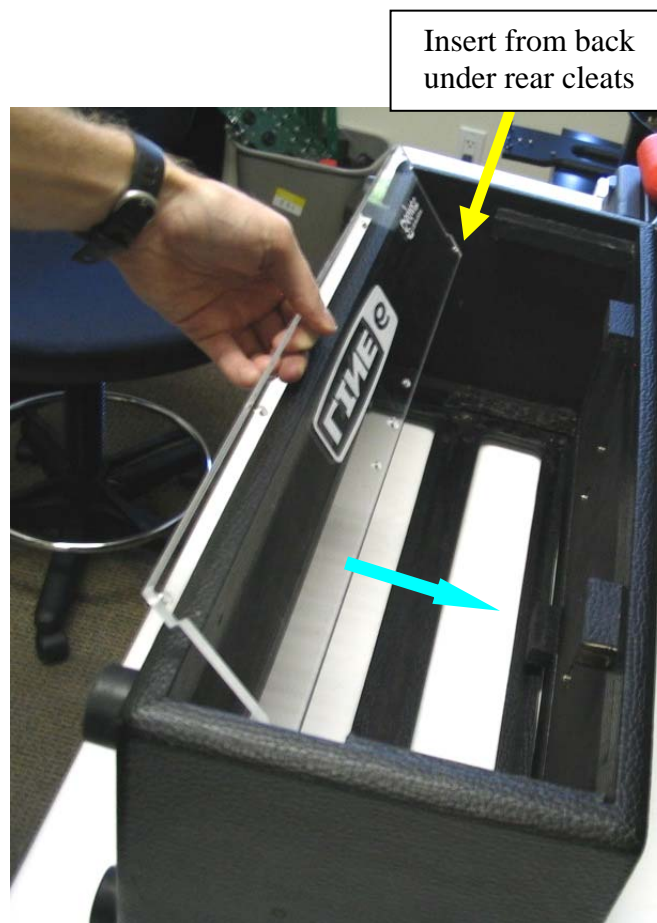
P/N required:

1 each **50-03-0048** CABINET ASSY

1 each **30-27-0279** LOGO PANEL

Insert LOGO PANEL into CABINET ASSY as shown.

CAUTION – wear protective gloves during this step to avoid getting fingerprints on the LOGO PANEL.



Step 51 is continued on next page

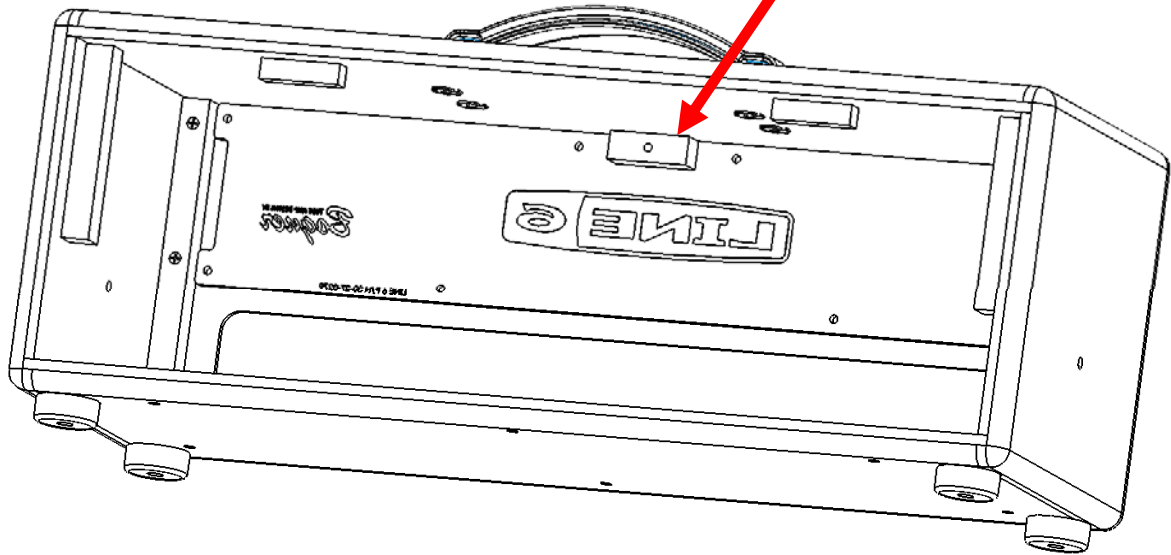


STEP 50 CONT'D

Lay LOGO PANEL
flat and push up to
cabinet top panel



Center CLEAT
shall be behind
LOGO PANEL



STEP 51

P/N required:

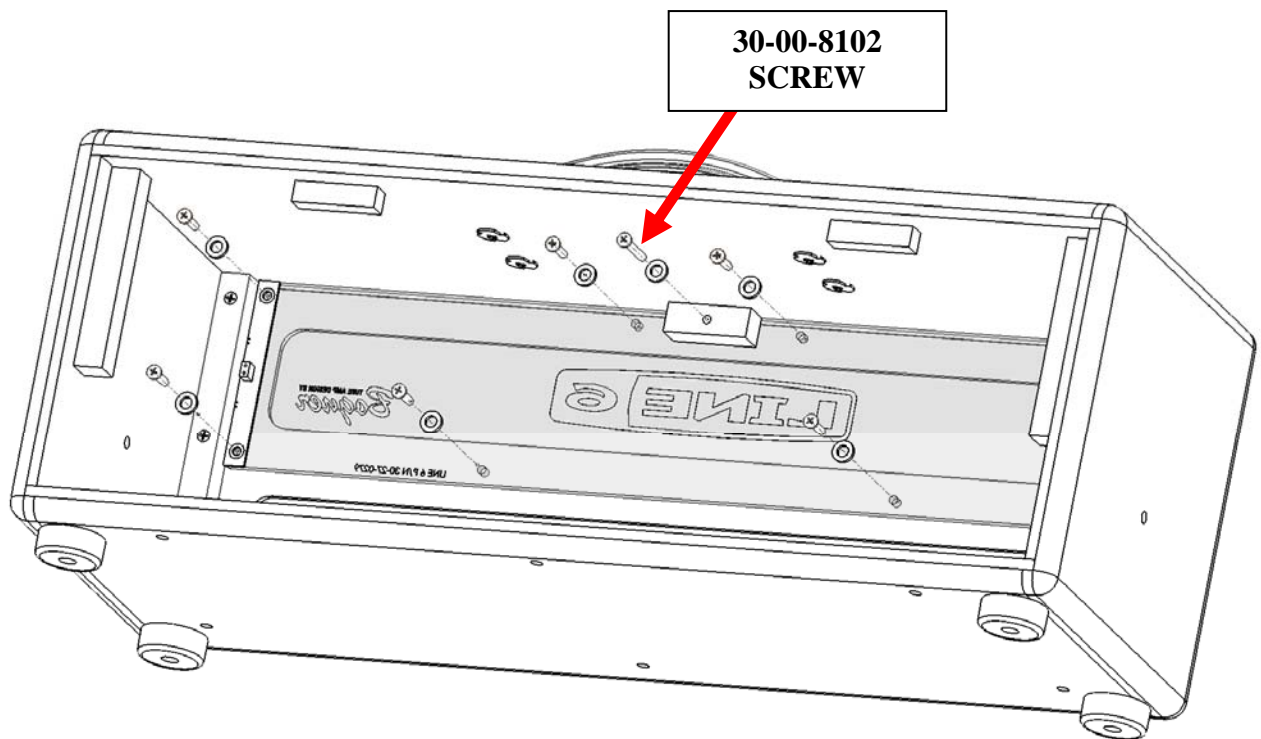
2 each **50-02-0249** PCBA SV LED BOARD

8 each **30-00-0812** SCREW #8 x 0.75 WOOD BLK

1 each **30-00-8102** SCREW #8 x 1.5 WOOD BLK

9 each **30-03-0031** WSHR FL .50 OD x .28 ID x .08 STL BLK OXIDE

Secure the LOGO PANEL using the following fastening scheme. Torque each screw to 8-10 in-lbs.



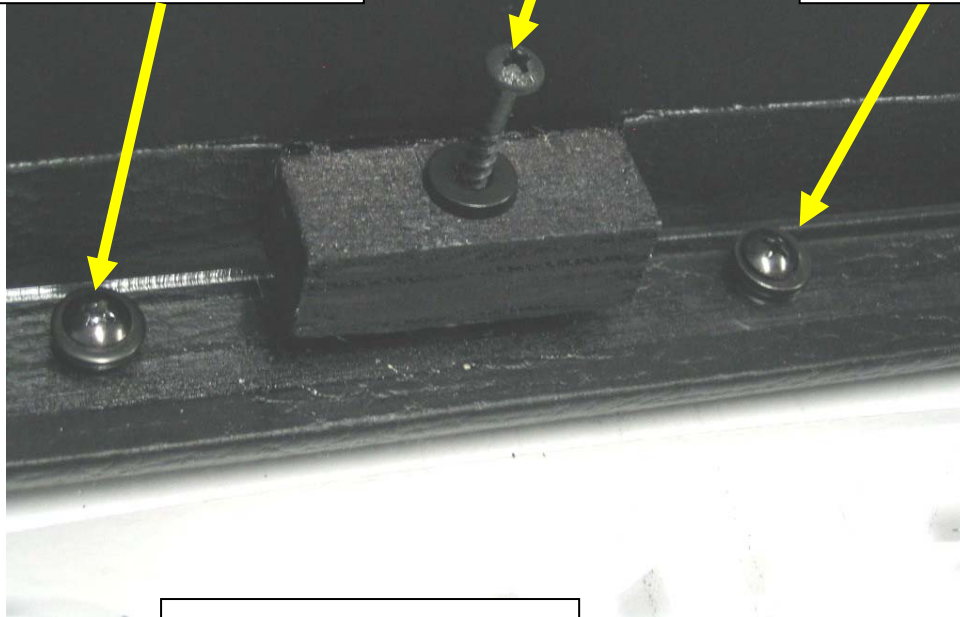
Step 52 is continued on next page

STEP 51 CONT'D

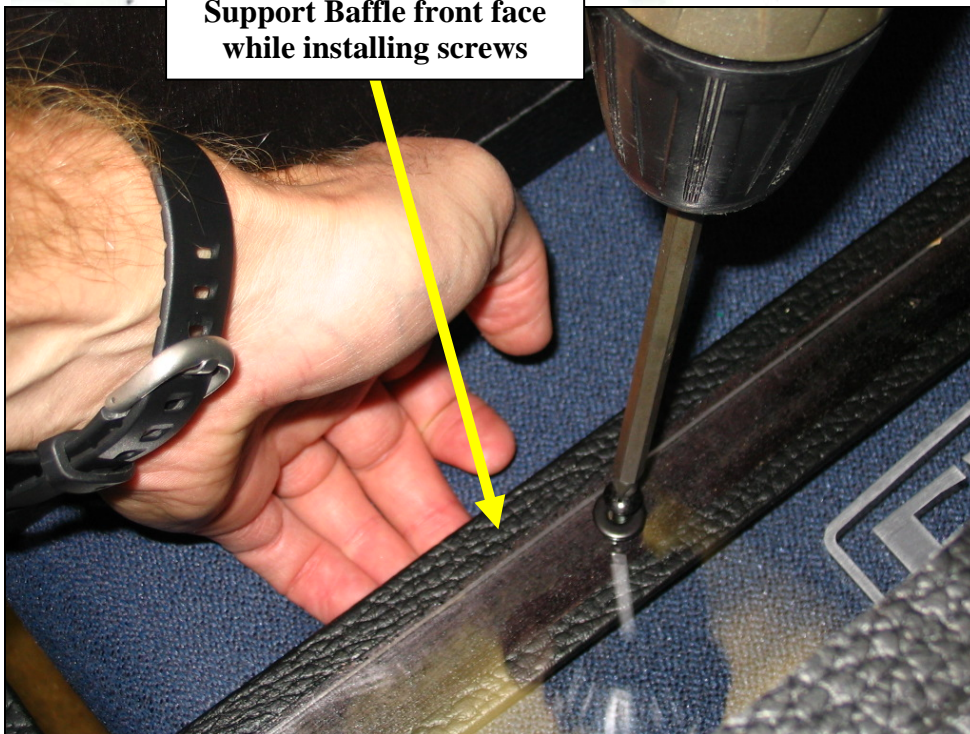
**30-00-0812 SCREW
&
30-03-0031 WASHER**

**30-00-8102 SCREW
&
30-03-0031 WASHER**

**30-00-0812 SCREW
&
30-03-0031 WASHER**

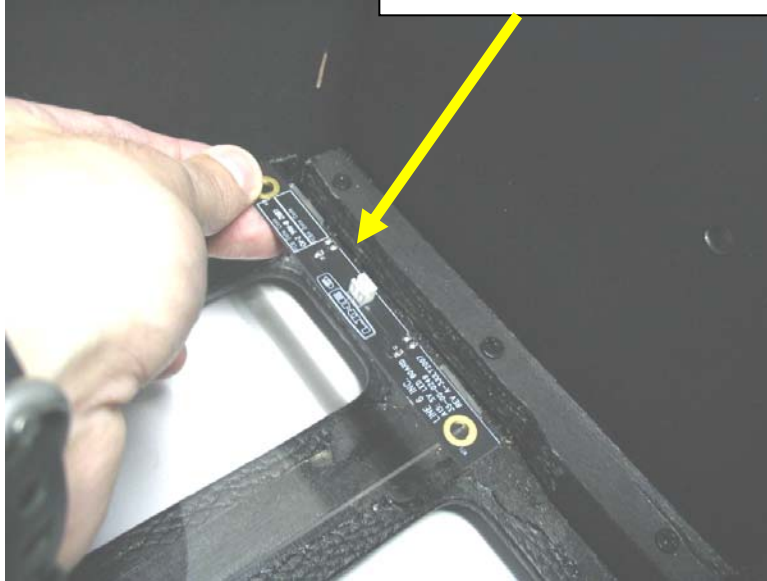


**Support Baffle front face
while installing screws**

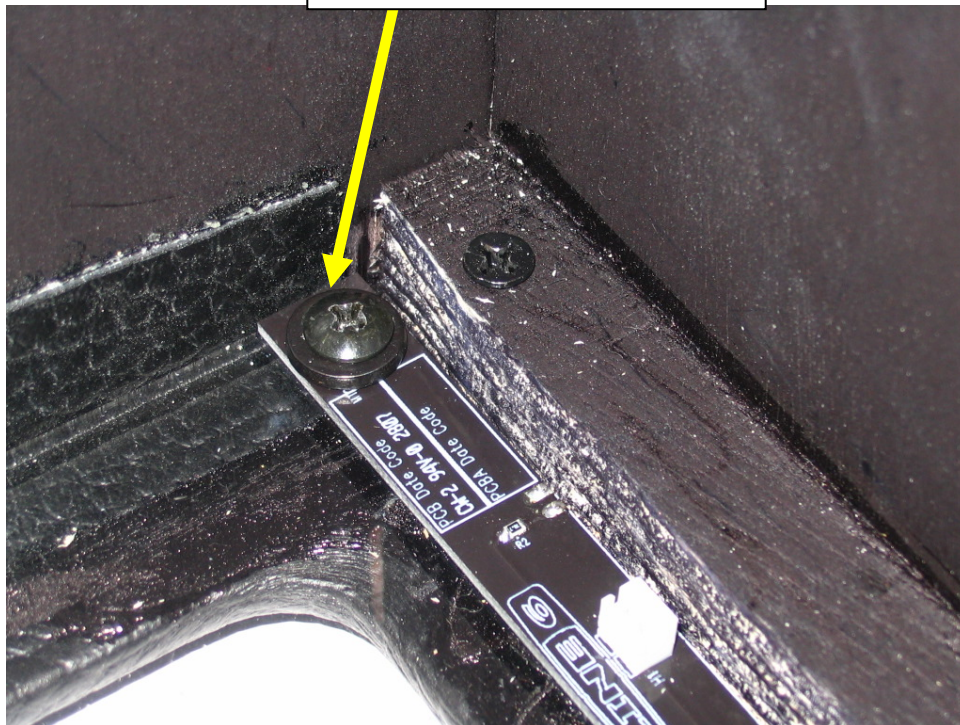


STEP 51 CONT'D

50-02-0249 PCBA SV LED BOARD



**30-00-0812 SCREW
&
30-03-0031 WASHER**



STEP 52

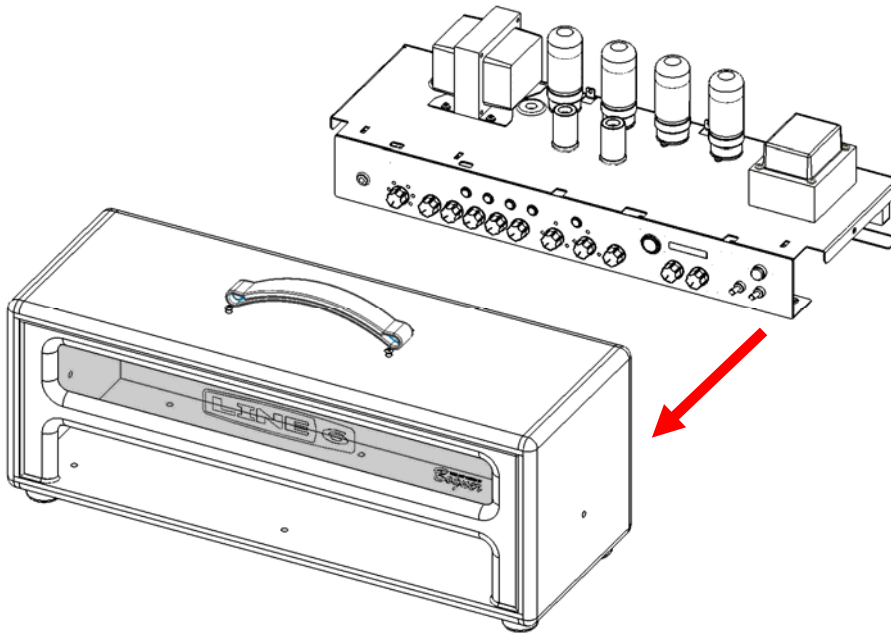
Insert the CHASSIS ASSY into the CABINET ASSY as shown.

Temporarily tape the ends of the **21-34-0076-3** CABLE 2-COND to the CHASSIS while installing as shown below.

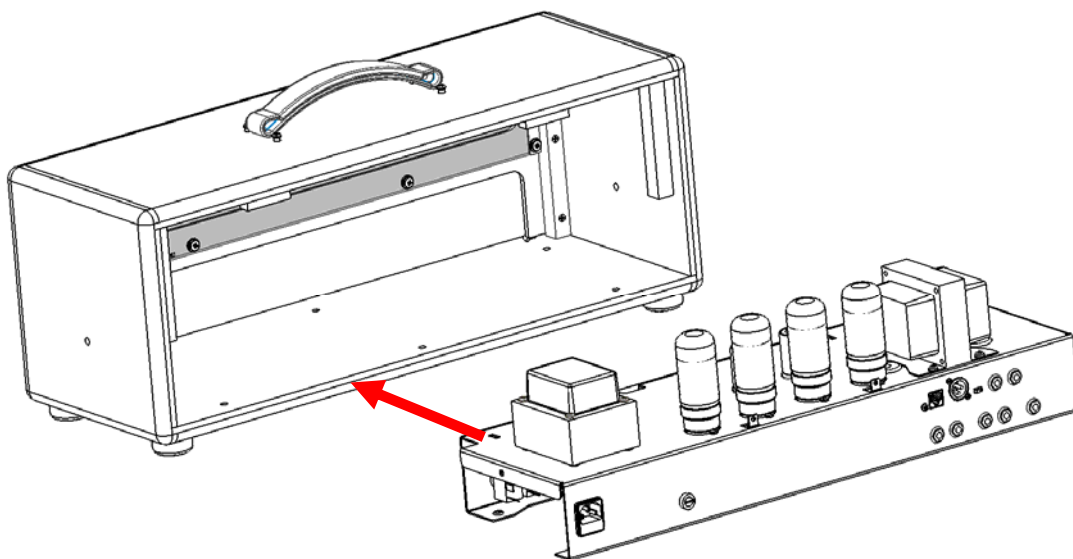


STEP 52 CONT'D

Reference views.



Front Isometric View



Rear Isometric View

STEP 53

REMOVE tape to hold cables.

Connect the free ends of the **21-34-0076-3** CABLE 2-COND to the H1 header on each LED PCBA.

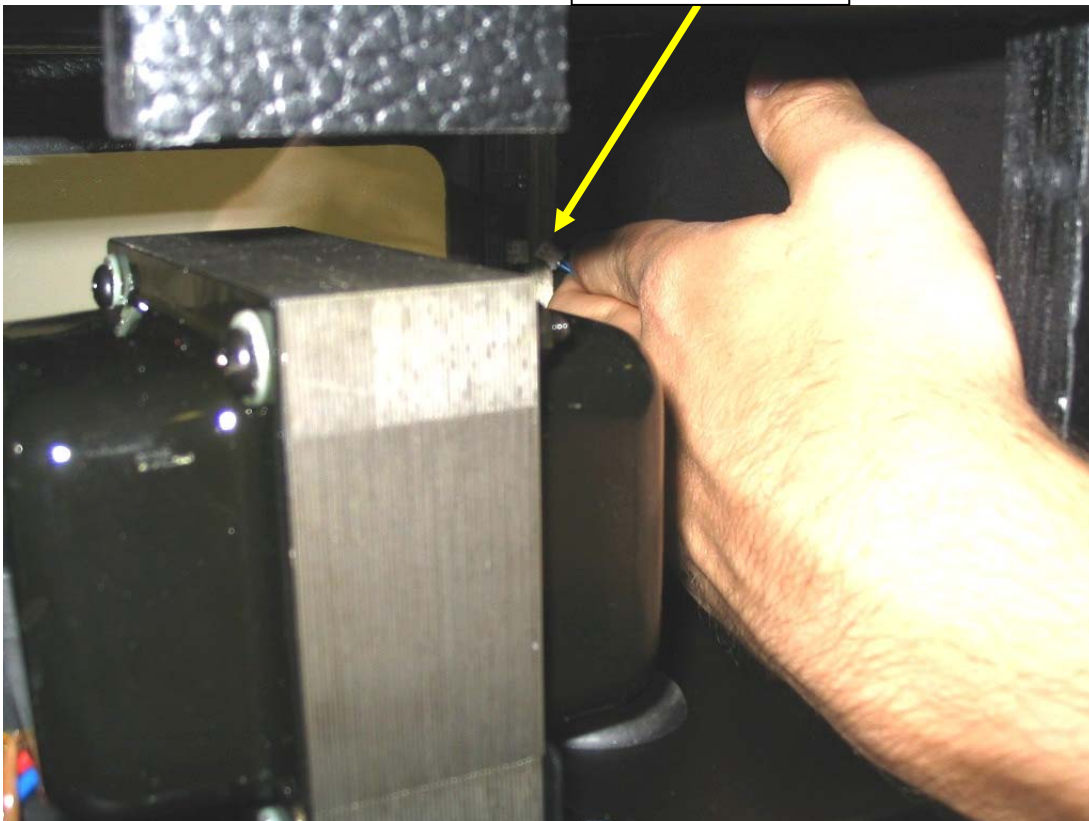
For better access to the LED PCBA on the POWER TRANSFORMER side,
You may remove the nearest **11-02-0002** TUBE.

After connecting the CABLE, install the **11-02-0002** TUBE.

CAUTION – the cable is keyed to register on header. Be sure the cable key is aligned with the header while installing.

CAUTION – wear protective gloves during this step to avoid getting fingerprints on the LOGO PANEL.

Connect CABLE



OUTPUT TRANSFORMER SIDE

STEP 53 CONT'D

**POWER
TRANSFORMER
SIDE**



Remove TUBE



Connect CABLE



Install TUBE

STEP 54

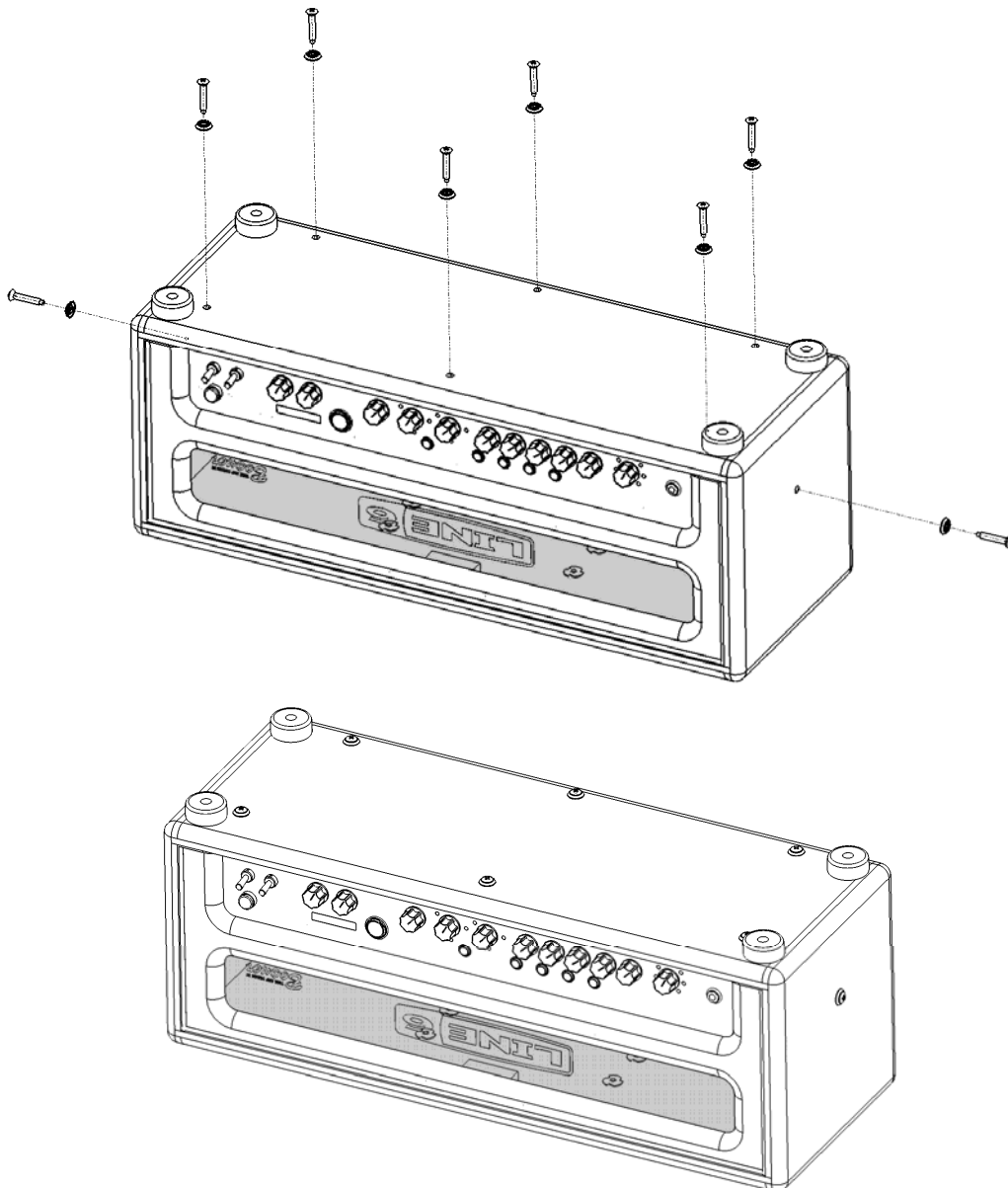
P/N required:

8 each **30-00-1129** SCREW 10-32 x 1 1/4" OVAL BLK w/PILOT TIP

8 each **30-03-0112** FINISHING WASHER #10

Secure CHASSIS ASSY to CABINET ASSY with FINISHING WASHERS and SCREWS as shown, 8 PLACES.

Torque each screw to 10-12 in-lbs.



STEP 55

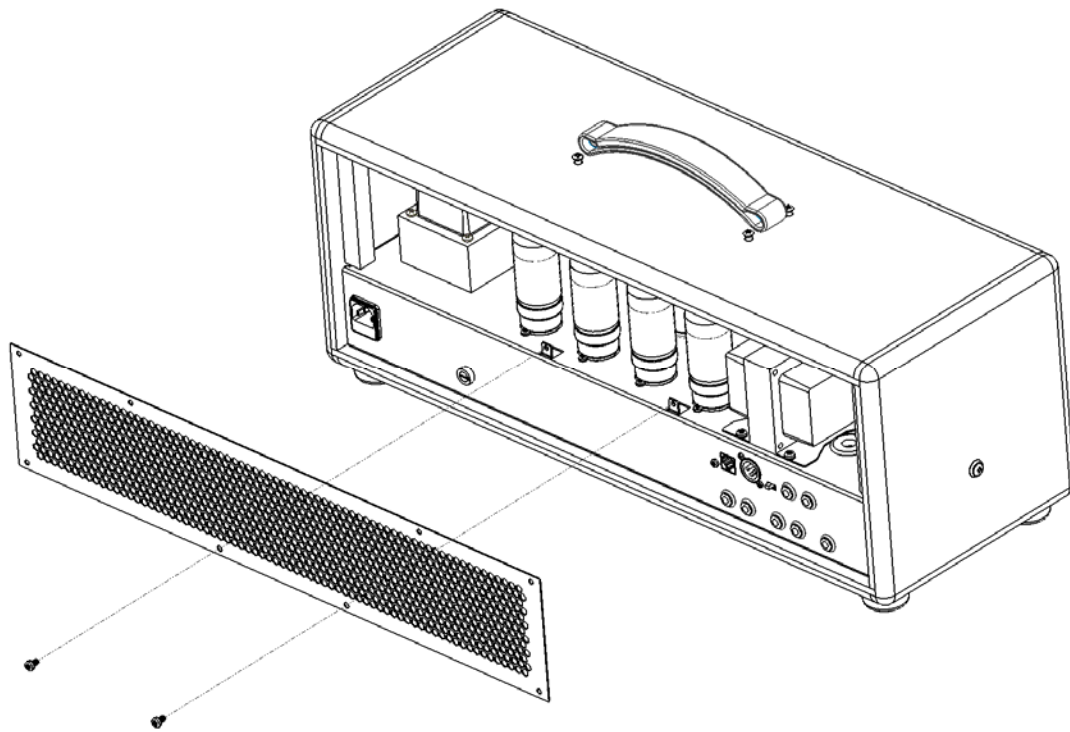
P/N required:

1 each **30-51-0312** MESH REAR 23.9 x 4.4 x .06 STL BLACK

2 each **30-00-0125** SCREW 8-32 x 5/16 w/LK WASH BLK

Insert the MESH GRILL as shown. Secure to chassis tabs using SCREWS.

Torque each screw to 8-10 in-lbs.



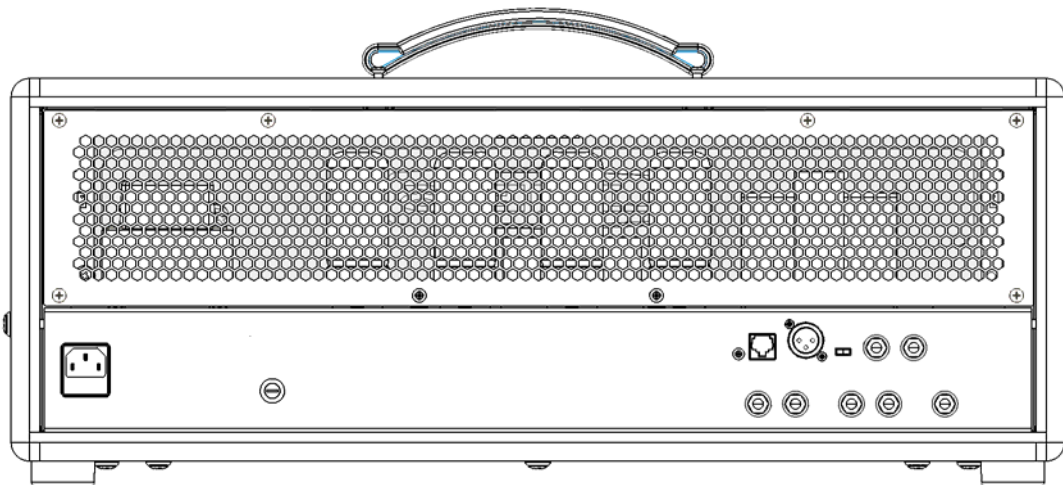
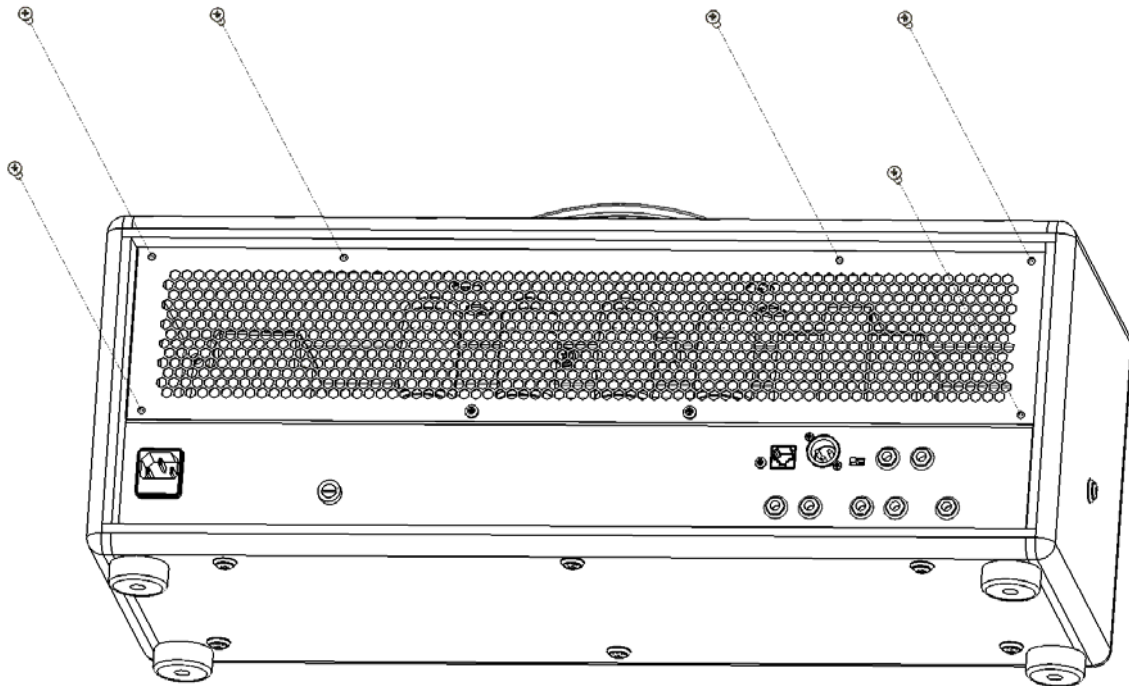
STEP 56

P/N required:

6 each **30-00-0858 SCREW #8 x 5/8IN PHIL-TRUSS BLACK w/WAX**

Install SCREWS, 6 PLACES to secure MESH.

Torque each screw to 8-10 in-lbs.

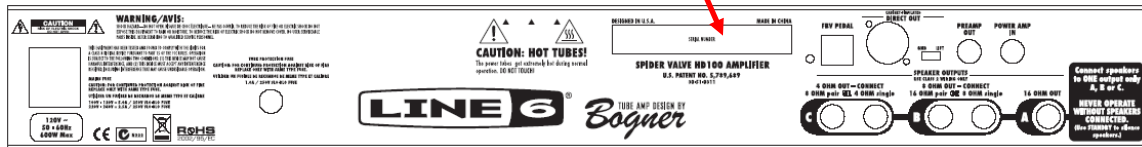




STEP 57A

1 each **40-25-0100 LABEL BAR CODE SERIAL NUMBER 4-PANEL LABEL**

Apply **LABEL BAR CODE** to rear of chassis as shown.

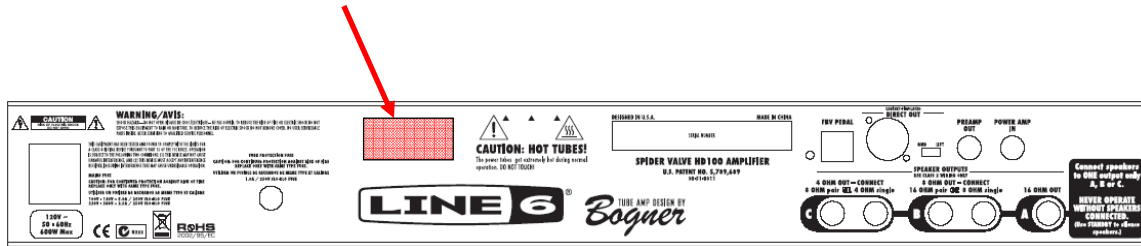




STEP 57B

1 each 40-25-0030 LABEL ETL

Apply **ETL LABEL** to rear of chassis. Position approximately as shown below.





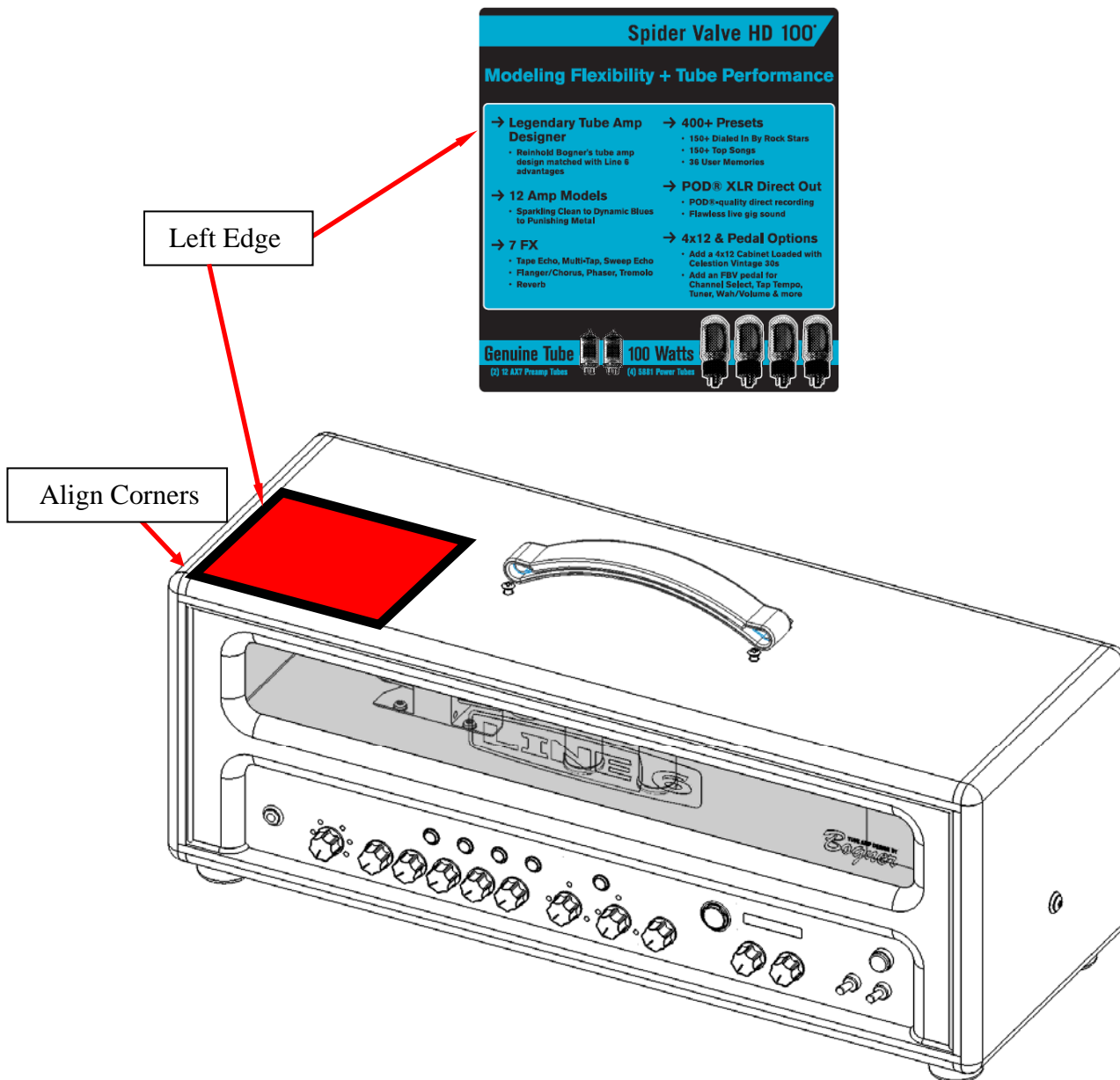
STEP 58

P/N required:

1 each **40-00-0137** GUIDE TOPPER SV HD100

Install promo sticker to the top of the unit in the location shown.

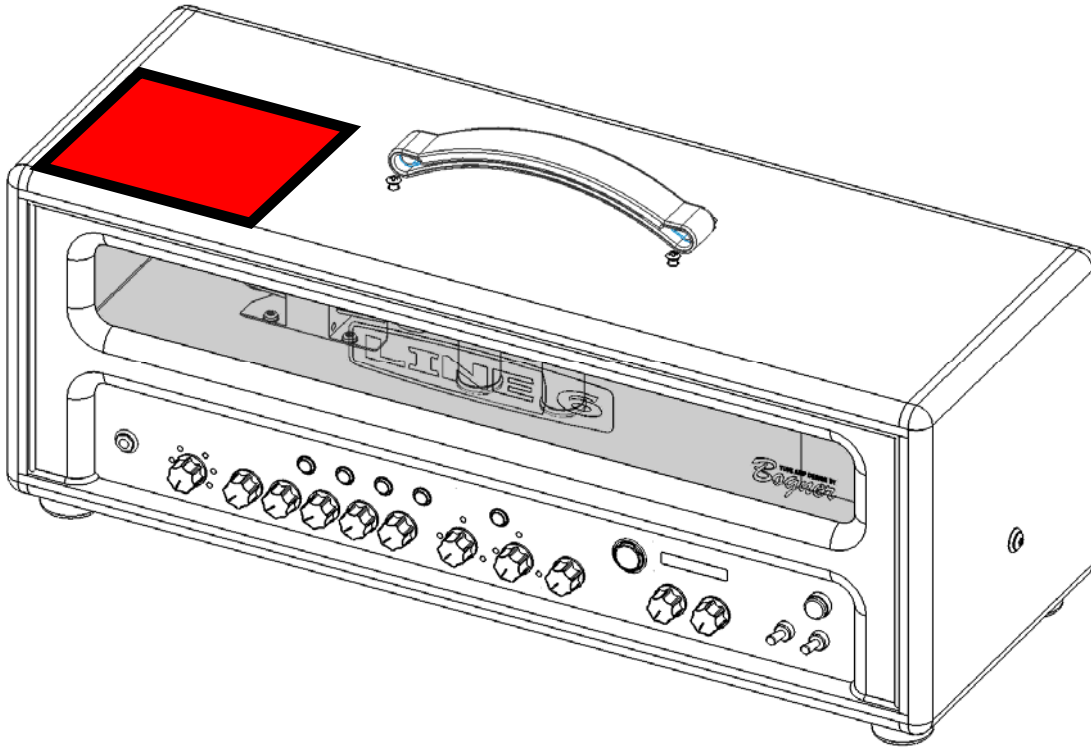
Align the lower left corner of the STICKER with the lower left corner of the top panel.



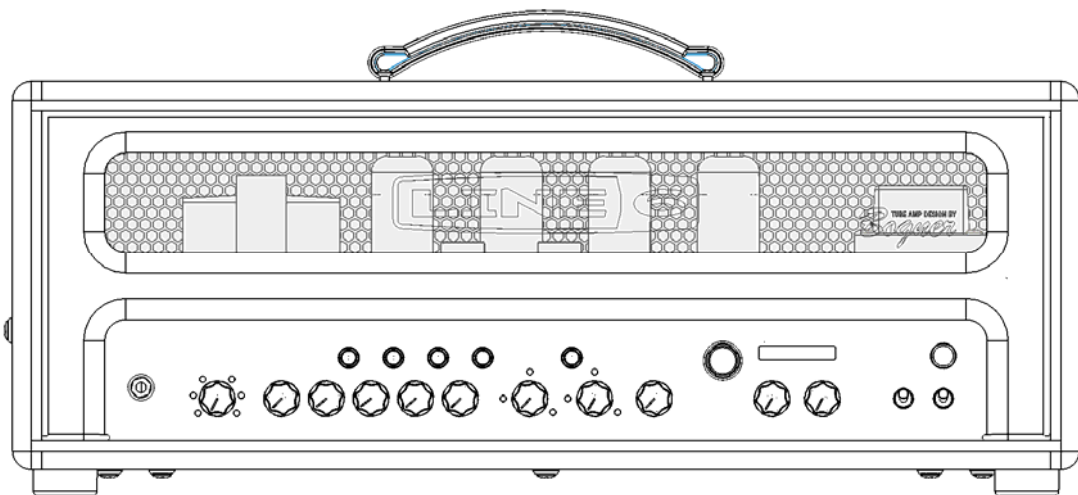
Assembly of the SV HD 100 (A15-3) Complete Unit is now complete.



Completed Unit Reference Views:



Completed Unit – Isometric View



Completed Unit – Front View

SV POWER AMP & SUPPLY PCBA ASSEMBLY INSTRUCTIONS

Rev. A

SV POWER AMP/SUPPLY SV HD100 A15-3: 50-02-0245

(Refers to Power Amp/Supply PCB, Rev.A: (35-00-0245))

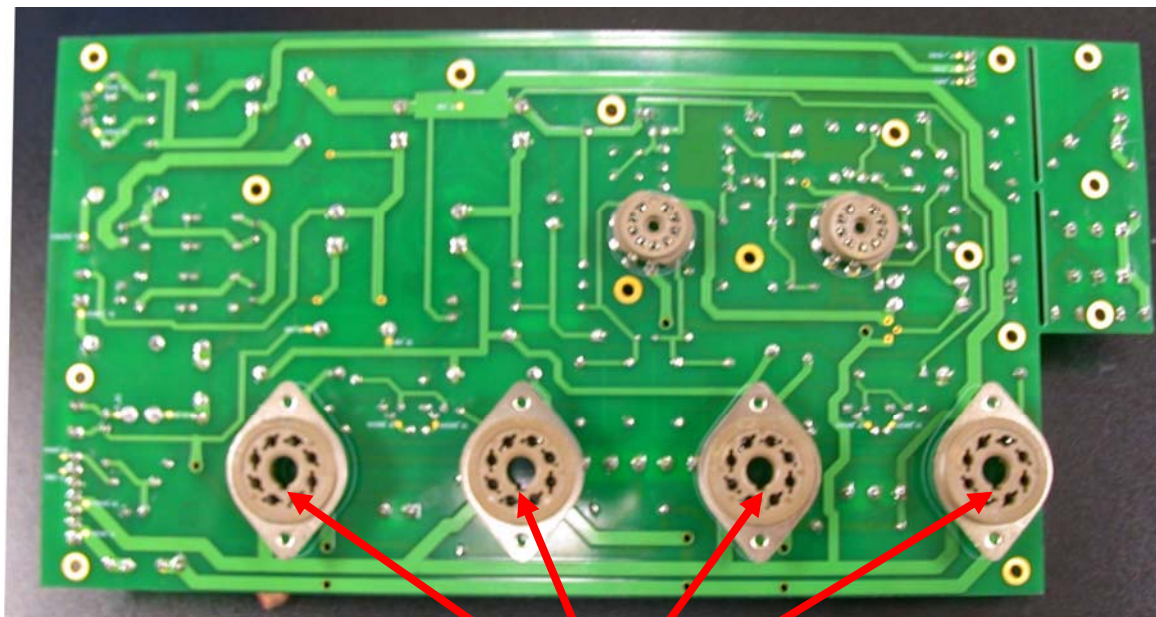
POWER AMP/POWER SUPPLY PCBA

AC PRIMARY
PCBA

TOP

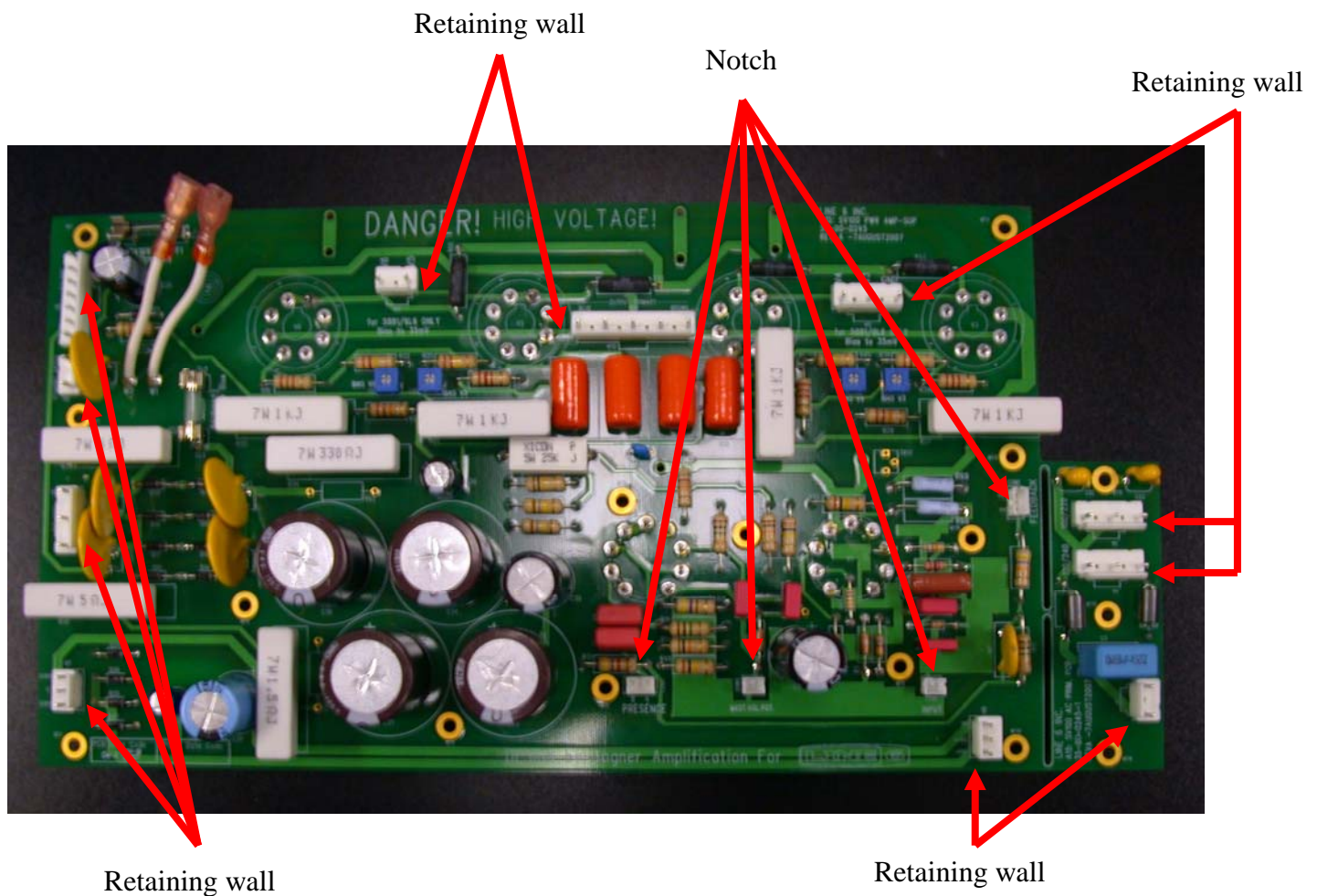


BOTTOM

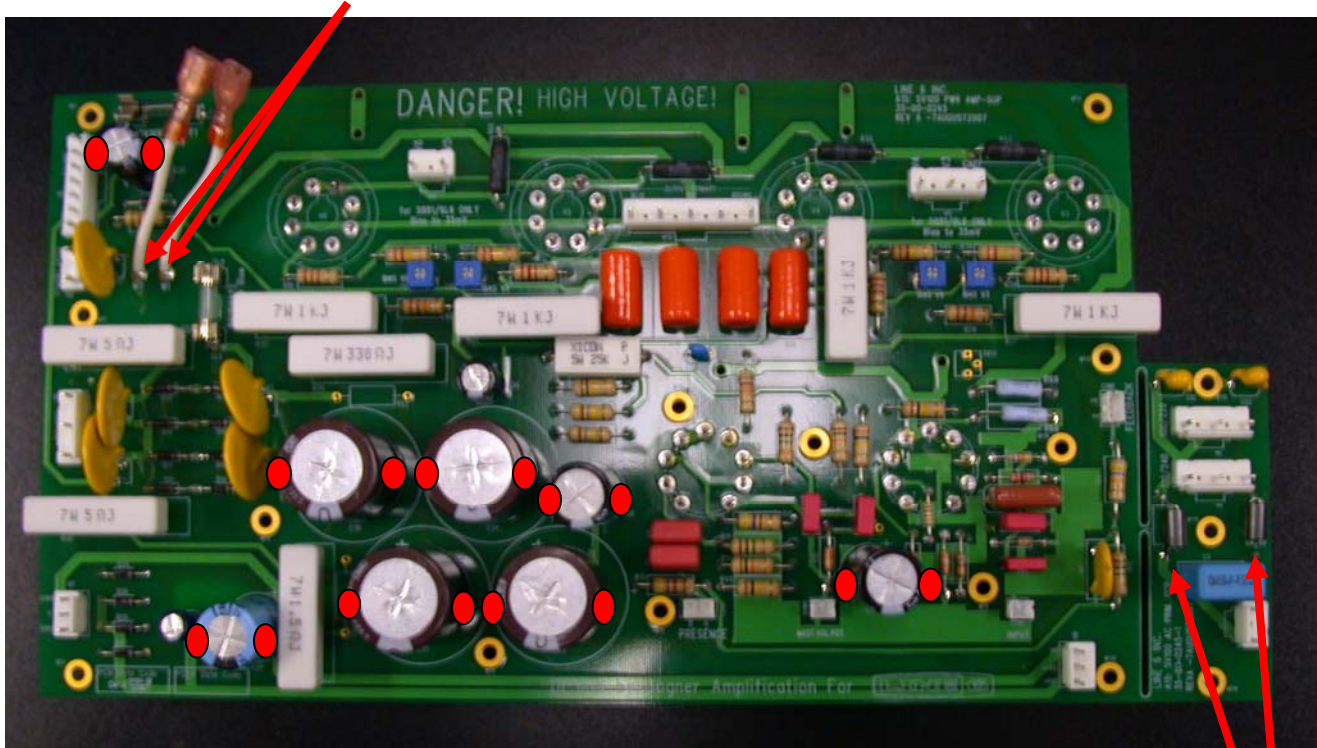


Notch faces down

1. **BREAKAWAY BOARD**: DO NOT BREAK THE AC PRIMARY PCBA FROM THE POWER SUPPLY/POWER AMP PCBA. ONLY SEPARATE BOARDS AFTER BED-OF-NAILS TEST IS COMPLETE.
2. **HEADERS**: All headers and connectors should be mounted flush with the PCB. Check that headers are installed correctly by confirming that the center notch in headers is on same side as notch in silkscreen outlines.



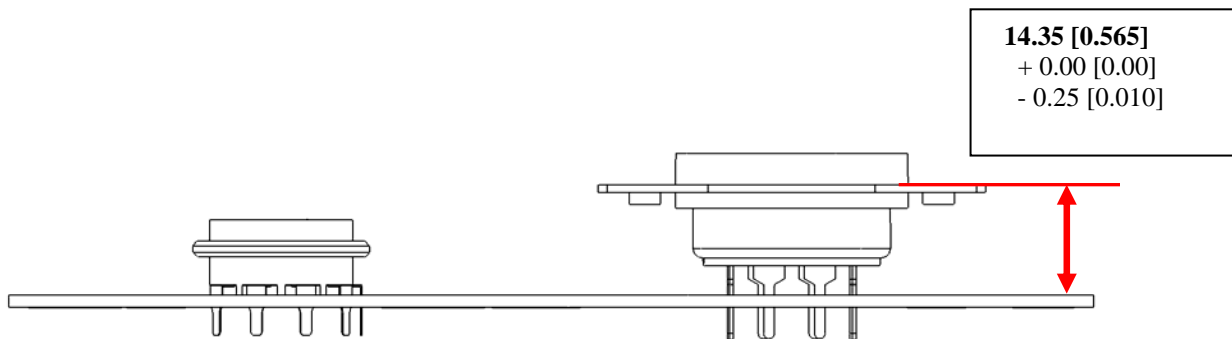
- ELECTROLYTIC CAPACITORS:** Make sure that all electrolytic capacitors are properly oriented. THIS PCBA CARRIES HIGH VOLTAGES AND REVERSE BIASED CAPACITORS MAY CREATE A SERIOUS EXPLOSION HAZARD.
- FUSE WIRES:** Solder two cables (21-34-1117-1) at the following location:



- RTV:**
Add RTV (designated by “●”) at the base of the 8 electrolytic caps shown above.
Avoid getting RTV on the CON5 and H5 headers.

Add RTV to each Ferrite on the AC breakaway PCBA here:

6. **TUBE SOCKETS:** Make sure height of Tube Socket (21-18-0006: VT8-PTS-B) from top side of Flange to nearest PCB surface is 14.35mm.



Note: A custom Jig may be necessary to consistently install this part at the correct height.

- END OF POWER AMP-SUPPLY PCBA INSTRUCTIONS -

PCBA ASSEMBLY INSTRUCTIONS REVISION CHANGE HISTORY

REVISION	NOTES	DATE	RELEASED BY
A	- Initial Release	09/05/07	Doug Barthold

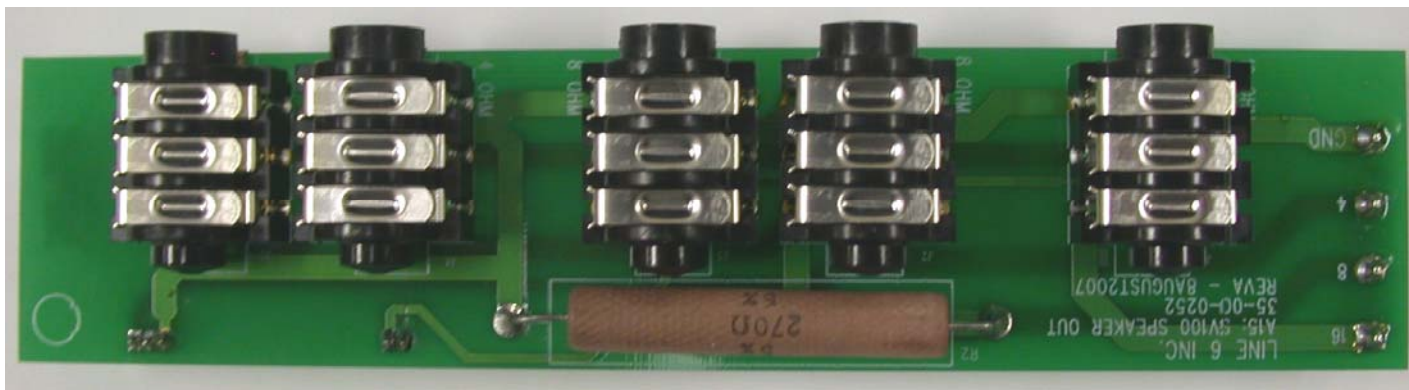
SV SPEAKER OUT PCBA ASSEMBLY INSTRUCTIONS

Rev. A

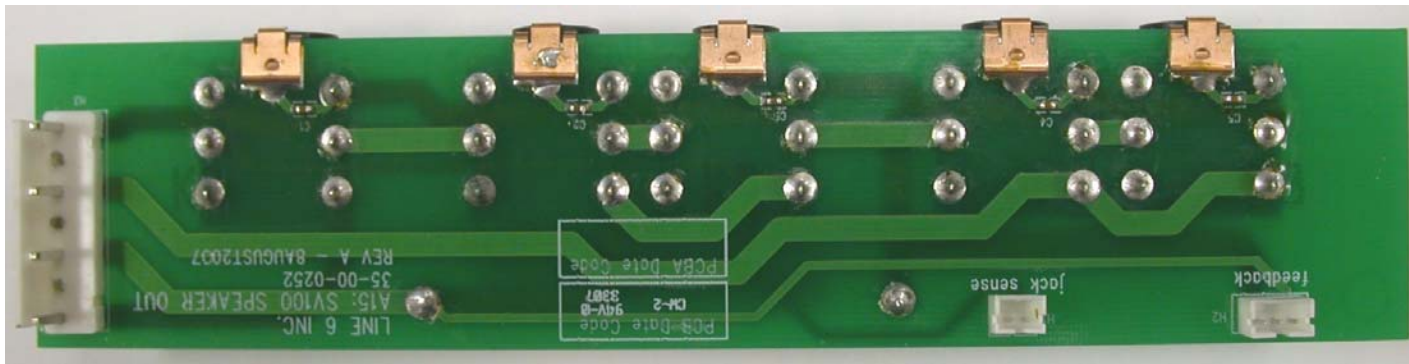
SV PCBA SPEAKER OUT SV HD100 A15-3: 50-02-0252

(Refers to Speaker Out PCB, Rev. A: (35-00-0252)

TOP



BOTTOM



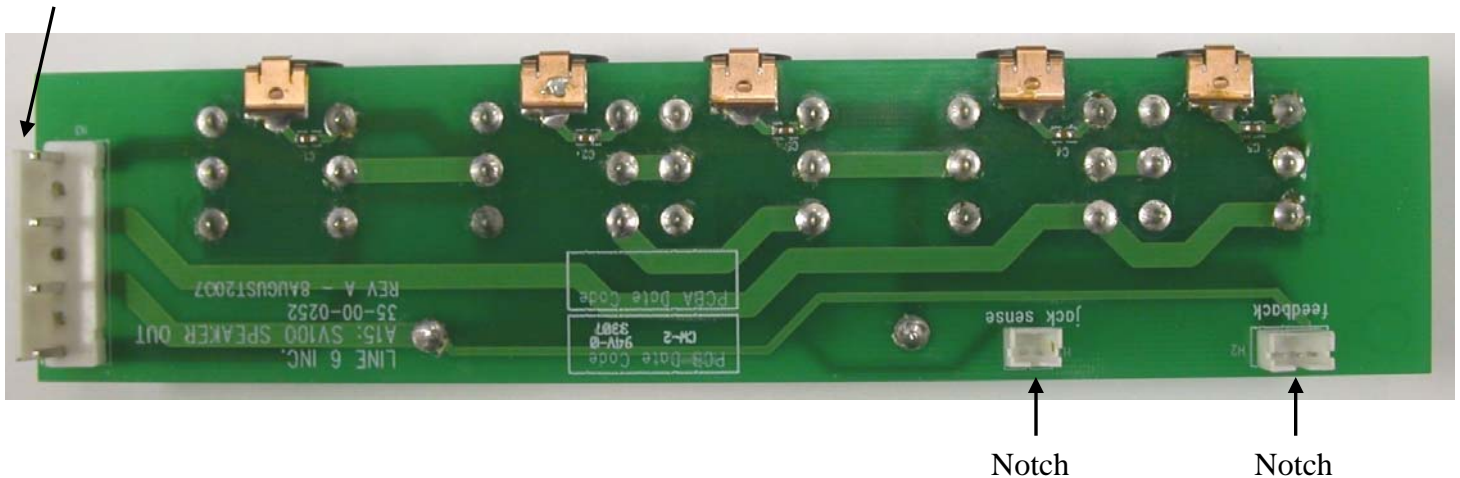
1. **JACK:** All ¼ Inch jacks J1-J5 (21-00-6617) must be mounted flush with the PCB and lined up with the silkscreen outline within +/-1 degree of accuracy.

LINE 6

Engineering

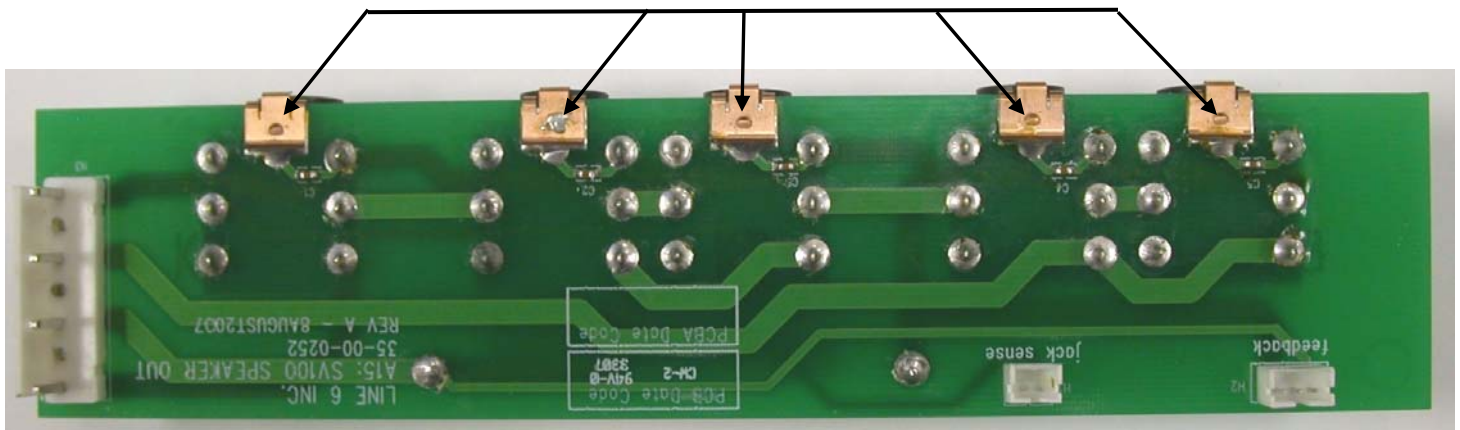
2. **HEADERS:** H1 (21-20-0202), H2 (21-20-0203), and H3 (21-20-3124) are mounted flush with the PCB. Check that headers are installed correctly by confirming center notch in headers is on same side as notch in silkscreen outline.

Retaining wall



3. **GROUNDING FINGER:** The grounding fingers (30-18-3030) are mounted flush against the PCB edge with their center clip hole on the **BOTTOM SIDE** of the PCB. All grounding fingers should be soldered to the PCB

Center clip hole





- END OF SPEAKER OUT PCBA INSTRUCTIONS -

PCBA ASSEMBLY INSTRUCTIONS REVISION CHANGE HISTORY

REVISION	NOTES	DATE	RELEASED BY
A	Initial Release	09/05/07	Doug Barthold

Spider Valve

Pilot's Guide

Manuel de pilotage

Pilotenhandbuch

Pilotenhandboek

Manual del Piloto





Spider Valve

Pilot's Guide
Manuel de pilotage
Pilotenhandbuch
Pilotenhandboek
Manual del Piloto

An in-depth exploration of the technologies and pulsing tonal pleasures of Spider Valve.

WARNING: To reduce the risk of fire or electric shock, do not expose this appliance to rain or moisture.

CAUTION: To reduce the risk of fire or electric shock, do not remove screws. No user-serviceable parts inside. Refer servicing to qualified service personnel.

NOTICE: This equipment has been tested and found to comply with the limits for a Class B digital device pursuant to Part 15 of FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.



The lightning symbol within a triangle means “electrical caution!” It indicates the presence of information about operating voltage and potential risks of electrical shock.



The exclamation point within a triangle means “caution!” Please read the information next to all caution signs.

You should read these Important Safety Instructions

Keep these instructions in a safe place

Before using your Spider Valve, carefully read the applicable items of these operating instructions and the safety suggestions.

1. Obey all warnings on the amp and in the Spider Valve Manual.
2. Connect only to AC power outlets rated 100-120V or 200-240V 47-63Hz (depending on voltage range of the power supply; refer to label on the unit).
3. Do not perform service operations beyond those described in the Spider Valve Manual. Service is required when the apparatus has been damaged in any way, such as:
 - power-supply cord or plug is damaged
 - liquid has been spilled or objects have fallen into the apparatus
 - the unit has been exposed to rain or moisture
 - the unit does not operate normally or changes in performance in a significant way
 - the unit is dropped or the enclosure is damaged.
4. The tubes and transformers can get hot during operation. Do not touch during operation or shortly after.
5. Do not place near heat sources, such as radiators, heat registers, or appliances which produce heat. Keep the rear of the unit at least three inches from walls or other items that might block heat radiation.
6. Do not block any of the ventilation openings or use in an enclosed space.
7. Guard against objects or liquids entering the enclosure. Do not use or place unit near water.
8. Do not step on power cords. Do not place items on top of power cords so that they are pinched or leaned on. Pay particular attention to the cord at the plug end and the point where it connects to the amp.
9. Unplug the amp when not in use for extended periods of time. Unplug the amp during lightning storms.
10. Clean only with a damp cloth.
11. Do not defeat the safety purpose of the grounding type plug. A grounding type plug has two blades and a third grounding prong. The third prong is provided for your safety. When the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
12. Only use attachments/accessories specified by the manufacturer.
13. Prolonged listening at high volume levels may cause irreparable hearing loss and/or damage. Always be sure to practice “safe listening.”

The serial number can be found on the back panel of your Spider Valve. It's the number that begins with "(21)". Please note it here for future reference:

SERIAL NO: _____

Please Note:

All product names referred to in this manual are trademarks of their respective owners, which are in no way associated or affiliated with Line 6. These trademarks of other manufacturers are used solely to identify the products of those manufacturers whose tones and sounds were studied during Line 6's sound model development.

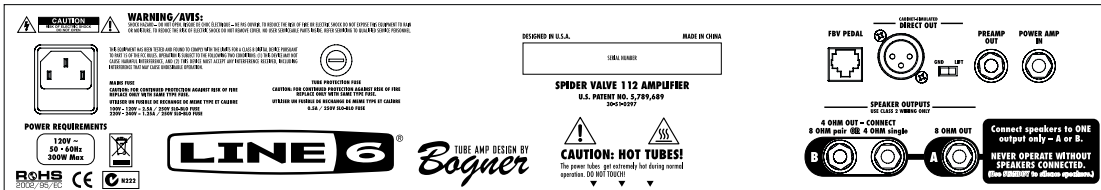
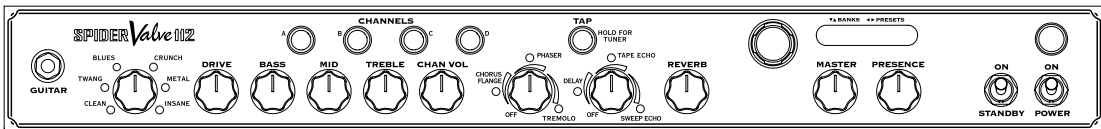
Table of Contents

The Spider Valve Story.....	i
Best of Both Worlds	i
Reinhold Bogner	ii
Spider Valve – This is a Real Tube Amp	ii
Controls & Connections.....	1•1
Presets, Tuner & More	2•1
Presets.....	2•1
Saving Presets.....	2•1
Tap Button “Extra” Functions.....	2•2
Special Hidden Functions.....	2•3
Factory Reset	2•3
Modeled Amps & Effects	3•1
Which Amps & Effects Are Modeled?	3•1
Effects	3•3
Using Your Feet	4•1
FBV2	4•1
FBV Express	4•2
FBV Shortboard	4•4
Maintenance and Troubleshooting	5•1
Tubes	5•1
Tube Troubleshooting	5•1
General Troubleshooting	5•2
Fuses	5•2

THE SPIDER VALVE STORY

Best of Both Worlds

Countless platinum-selling guitarists use our award-winning digital modeling technology to create and record their signature sounds. While our technology has proven itself in the studio, we set out to design a guitar amp that would deliver the ultimate performance, responsiveness, and tonal flexibility on the stage. After lots of experimentation and tons of prototypes, we found that using a genuine tube amplifier to serve up our digital models delivers the ultimate tonal experience. The result is Spider Valve, the world's first modeling guitar amp with a full tube power amplifier.



Why a tube power amp? Simple – feel and response. At stage volumes, tube amps provide a feel that is currently unmatched by any other technology. This is largely due to the fact that they have a great transient response, thanks to high-voltage supplies and the interaction between output transformer and speakers. There's no doubt about it – tube power amplification is currently the most complete way to provide you, the discerning guitarist, with the response and inspiration you crave on stage.

To develop the world-class tube amp, we partnered with a true legend in tube amp design, Reinhold Bogner.

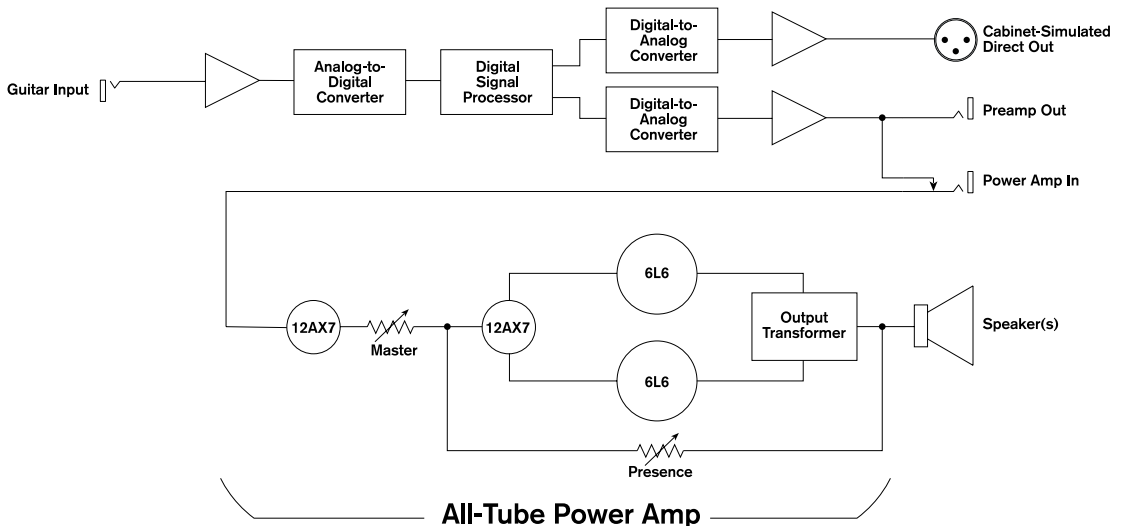
Reinhold Bogner

Reinhold Bogner had been designing and building amplifiers long before leaving Germany in 1989. Moving to Los Angeles he quickly gained the trust of many influential players, including Steve Stevens, Dan Huff, Allan Holdsworth, Mike Landau, and Steve Vai, who sought out his skill at modifying and custom building their amps. Eddie Van Halen entrusted Reinhold to overhaul and revitalize Eddie's #1 Marshall® Plexi. Eddie was pleased. Bogner Amplification was born.

Today, Bogner makes about 500 hand wired, point to point amps per year in North Hollywood, CA. They are regarded as some of the finest boutique amps around.

Spider Valve – This is a Real Tube Amp

The signal flow of the Spider Valve 112 and 212 is shown below:

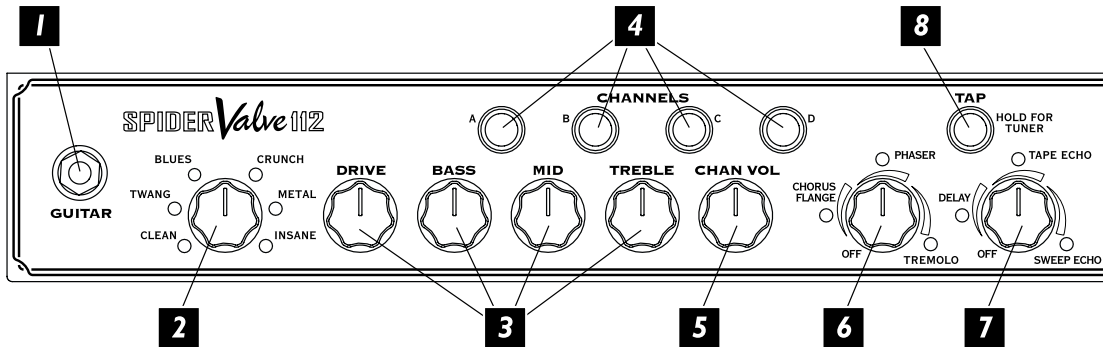


As you can see, it consists of a digital front end, which houses all the magic of our amp and effect models, along with an all-analog, all-tube Class AB amplifier section.

Make no mistake; with 12AX7 pre-amp tubes, 6L6 power amp tubes, and passive Master and Presence controls, these are real tube amplifiers. We hope you enjoy playing them as much as we enjoyed creating them.

* All product names are trademarks of their respective owners, which are in no way associated or affiliated with Line 6. MARSHALL® is a registered trademark of Marshall Amplification Plc.

CONTROLS & CONNECTIONS



1 Guitar In – Plug in here.

2 Amp Models – Spin this knob to select one of twelve Amp Models. All the Spider Valve controls except for **Master** and **Presence** will automatically be set to sound great with that Amp Model, so you can just play! See Chapter 3 for more info.

3 Tone Controls – **Drive** is like the volume or gain knob on other amps; controls how much “dirt” you get in your sound. **Bass**, **Mid**, and **Treble** controls are customized for each Amp Model to give you optimal tonal control.

4 Channel Memories – Four programmable channels come pre-loaded with great factory presets. These buttons are also used when saving user presets. See Chapter 2 for more information.

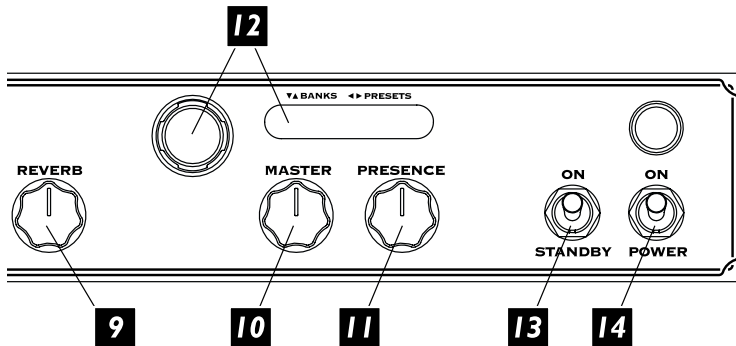
5 Channel Volume – This control helps you balance the volumes of different amp-and-effect setups that you store in your Spider Valve’s channels.

6 Mod Effects – Turn this knob to pick chorus/flange, phaser or tremolo, with a range of settings – from subtle to overpowering – for each effect. The LED shows the active effect.

7 Delay – picks delay, tape echo or sweep echo, with a range of mix settings from low to high. The LED shows the active effect and the **Tap** button LED flashes the delay time. Tap the **Tap** button to change the delay time.

8 Tap Button and LED – Tap on the **Tap** button a few times to set the delay

time, press and hold to activate the built-in Tuner.



9 Reverb – Dial up more or less virtual room.

10 Master Volume – Controls the overall volume of the amplifier, without affecting your tone. This is a passive, analog control that is tied directly to the tube amp.

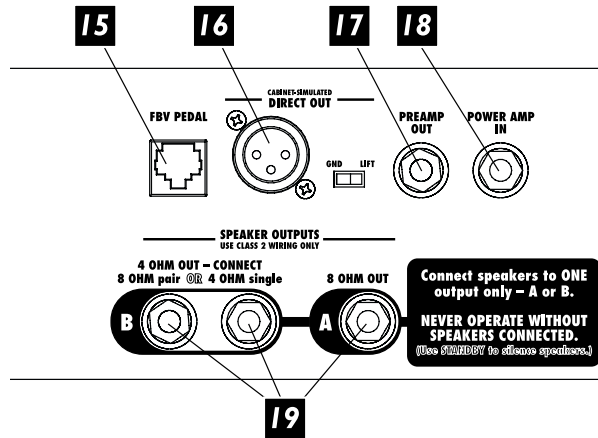
11 Presence – Controls the brightness of the tube power amp. This is also a passive, analog control that is tied directly to the tube amp.

12 Navigator & Channel Display – Navigate up and down to go through the various banks of presets (user, artist based, song based). Navigate left and right to select from different sounds in each of those banks. The display will indicate which preset you have selected both alphanumerically (e.g. 01A, 60S) and by name (e.g. Crunchzilla).

13 Standby – Use this switch to silence the on-board speakers without turning the amp off. For optimum tube life, it's important to use this switch when powering up the amp as follows:

- Set the **Standby** switch to the Standby (down) position.
- Set the **Power** switch to the On (up) position.
- Let the amp warm up for at least a minute.
- Set the **Standby** switch to the On (up) position
- Rock out!

14 Power – Turns the amp on or off.



15 FBV Pedal – Plug in a Line 6 model FBV2 footswitch to scroll through the 4 channels or connect an FBV Express for channel switching, tap tempo, wah/volume control and tuner capabilities. The ultimate would be an FBV Shortboard controller for channel switching, effects on/off control, wah/volume pedals, access to 32 more channel memories, a chromatic tuner, and tap tempo for delays.

16 Balanced Direct Out and Ground Lift – Provides full-time POD[®] -quality tone for studio-direct recording.

The ground lift switch can be used to eliminate hum or buzz that might be heard when connecting to equipment that is in another location. Place the switch in the **LIFT** position to internally “lift” (disconnect) the Pin 1 ground connection of the XLR or leave it in the **GND** position to leave the Pin 1 ground connection intact.

17 Preamp Out – This is a pre-tube amp output than can be used as an “effects send” to feed outboard effects. You can then use the **Power Amp In** as an “effects return”. However, you should NOT use this output for direct recording – that’s what the **Balanced Direct Out** is for.

18 Power Amp In – This is a direct connection to the all-tube power amp, including the dual 12AX7 preamp tubes, dual 6L6 power amp tubes, Master, and Presence controls.

Plugging into this jack will internally disconnect the **Preamp Out** feed from the tube amp.

19 Speaker Outputs – Connect speakers here. The details are as follows:

112 and 212 Combos

Output A is for an 8 ohm speaker load and will let you hook up (1) 8 ohm speaker.

Output B is for a 4 ohm speaker load. You can either hook up (1) 4 ohm speaker or (2) 8 ohm speakers.

HD100

Output A is for a 16 ohm speaker load and will let you hook up (1) 16 ohm speaker.

Output B is for an 8 ohm speaker load. You can either hook up (1) 8 ohm speaker or (2) 16 ohm speakers.

Output C is for a 4 ohm speaker load. You can either hook up (1) 4 ohm speaker or (2) 8 ohm speakers.

You should only use one output (A, B, or C) at a time and never run the amp without speakers connected. If you want to silence the speakers, use the **Standby** switch as described above.

Tubes – On the Spider Valve 112 and 212 combos, there are (2) 12AX7 preamp tubes and (2) 6L6 power amp tubes onboard. The Spider Valve HD100 has (2) 12AX7 preamp tubes and (4) 6L6 power amp tubes. See Chapter 5 for more information.

Speaker(s) – The Spider Valve 112 and 212 combos feature premium Celestion® Vintage 30 speakers. Enough said.

PRESETS, TUNER & MORE

Presets

Your new Spider Valve amplifier comes with 36 user presets and over 200 artist and song-based presets that can be accessed through the Navigator.

User Presets are loaded with a good variety of great tones but are ready for you to tweak and leave your own musical imprint on. See **Saving Presets** for more information. User presets are in Banks 1-9. Each bank contains 4 tones, ABCD on the display and will light the corresponding ABCD button on the front of the amp.

The Artist Presets were dialed in by a team of insane guitar slinging rock stars that cover a great range of styles. We sent an amp to each of them to create a bank of inspiring tone. Some chose to capture the tone of their records, some explored the insane range of tonal possibility that Spider Valve offers – whatever the outcome, their work is at your disposal and is organized into banks by artist name. It is as if they came to your home and helped you dial in your amp.

Song Based Presets are based on the top guitar rock songs of all time. These sounds are organized into banks by genre.

Saving Presets

Once you've dialed up your own killer sound you're probably going to want to save it so you can get to it another time. To prepare for saving, it's a good idea to browse through the various factory-stored user preset sounds to decide which user preset you can live without. Make a note of its Bank number and Channel letter so you can save your new tone there instead.

To save from a User Preset (Banks 1 thru 9), do the following:

- Press and hold the lit channel memory button for 1 second. The LED will start to blink.
- Edit the patch name, if desired. Press left and right to select the cursor position and up and down to select a letter, number or character.
- Pick a bank. When you have the name you want, press left until the cursor is under the bank number and then press up or down to select the bank you would like to

save within.

- Press the ABCD button you wish to save to to complete the save operation.

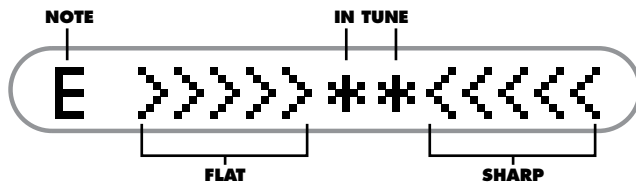
When you select an Artist or Song Based Preset, the ABCD channel LEDs will turn off to indicate that you have recalled a factory preset. If you'd like to copy this preset to a user location (banks 1-9), press and hold any of the ABCD buttons for 1 second. One of the LEDs will blink, and then follow the same instructions above.

Tap Button “Extra” Functions

The **Tap** button, in addition to setting the speed of your delay effects, also lets you access a few extra Spider Valve features: a **Tuner**, **Distortion Boost** and a built-in **Noise Gate** (the tuner and the boost are also accessible via the optional FBV Shortboard). When you hold down the **Tap** button, you can use some of Spider Valve's knobs to access these extra features.

Tuner

Press and hold the **Tap** button or **Tap** footswitch for 2 seconds or more and you get instant digital tuner. The volume is muted during tuning so you won't hear anything coming out of the amp. Press any button to exit Tuner Mode. If there is no FBV Shortboard connected, the LCD on the front panel of the Spider Valve will work as the tuner display.



Distortion Boost

Press and hold the **Tap** button as you turn the **Drive** knob up past twelve o'clock. As you do this, Spider Valve's Channel A LED comes on. This gives the kind of extra 'dirt' that you'd expect from a Distortion pedal with the distortion control set low and the output control set high. It boosts your guitar signal before it reaches the Amp Model, so that you hit the model harder and get a more distorted sound. Enabling this is the same as kicking on Stomp on the FBV Shortboard.

Noise Gate

Press and hold **Tap** as you turn the **Reverb** knob up past twelve o'clock, and you turn on a built-in Noise Gate, which helps to cut down on hiss and noise. When you do this, the Channel D LED comes on to indicate that the Gate is on.

Special Hidden Functions

When you select an Amp Model, Spider Valve automatically sets its tone controls and effects to match that Amp Model. You can disable the auto-FX selection (but not tone control auto-selection) by powering up Spider III with the Channel D button held. The auto-selection is re-enabled next time you power up.

Want to know where your Spider Valve's controls are set in the programmed channels? Hold – and keep holding – the **Tap** button. Now, before you do anything else, turn the **Amp Models** knob. This activates Spider Valve's "Compare" mode. Now turn any knob other than Amp Model and Master Volume, and the channel lights will tell you whether you need to turn that knob up (Channel A lights) or down (Channel D lights) to match the stored setting. The Channel B & C lights will be lit at the same time once the knob position matches the stored setting exactly.

Factory Reset

You can reset your Spider Valve's programmable channels to their factory-programmed states by holding down the Channel A button as you turn on the power.

Warning: This will erase ALL custom sounds you might have created. Ask yourself, "Do I really want to do this?" If your answer is yes, then go for it!

MODELED AMPS & EFFECTS

Which Amps & Effects Are Modeled?

There are 12 Amp Models and 7 Effects Models living within your Spider Valve. These Models were all tuned and tweaked in close collaboration with Reinhold Bogner. The following is a list of all Models available, along with a description of the original equipment that inspired them.

Clean

Amber LED: - Select this Amp Model and adjust the tone controls to get crisp, amazing clean tones, great warm jazz tones, and all the high-end shimmer you'll need with a generous amount of bottom end to boot. Then dial up a little chorus and delay to get the ultimate clean sound!

Blue LED: - We developed this Amp Model to emulate those late 60's and early 70's clean tones. It started off as an Amp Model based on a 1973 Hiwatt® custom 100. We extended the tone control range and tightened up the low end. Hit an open A chord and let that big sweet tone ring!

Twang

Amber LED: - This Amp Model draws on our analysis of mid 60's Fender® amps, including the blackface '65 Twin Reverb® and blackface '64 Deluxe Reverb®. We wanted an Amp Model that has that classic glassy high end tone, with some snap and bite for some serious chick'n pick'n. Things don't get too crunchy until reaching the top range of the **Drive** knob.

Blue LED: - This Amp Model is based on a number of vintage tweed amps. We evaluated a '53 Fender® tweed Deluxe, '58 Fender® tweed Bassman® and a '60 Gibson Explorer to create a swingin' Rockabilly tone. Add some reverb and a slap echo and Be-bop-alu-la!

Blues

Amber LED: - What would happen if we based a model on three helpings of '65 Marshall® JTM-45, one scoop of '58 Fender® Bassman®, a schmeer of '63 Fender® Vibroverb and a dash of Supro for good measure? The biggest, fattest down home Blues amp ever heard. This Amp Model slides between gritty swamp-infected cleans to syrupy smooth, walloping drive

* All product names are trademarks of their respective owners, which are in no way associated or affiliated with Line 6. These product names, descriptions and images are provided for the sole purpose of identifying the specific products that were studied during Line 6's sound model development. HIWATT® is a registered trademark of Fernandes Company, Inc. FENDER®, TWIN REVERB®, DELUXE REVERB®, and BASSMAN® are registered trademarks of Fender Musical Instruments Corporation.

tones. It's time to get down and dirty!

Blue LED: - Ready, steady....GO! This Amp Model is based on a fawn Vox® AC-30 amplifier with an updated and expanded tone control circuit. We wanted to capture that early British pop rock tone that the Beatles and the Stones are so well known for.

Crunch

Amber LED: - This sound was crafted during our studies of the '68 Marshall® Plexi 50 Watt. This type of Marshall® amp was used by a number of early metal bands. Check out albums like British Steel, Number of the Beast and Black Out. Crunch provides a wider range of tone control settings than the original Marshall® amp had. This Amp Model will allow you to bump up the mids even at the highest **Drive** settings.

Blue LED: - Plexi On Fire! This Amp Model is based on a '68 Marshall® Plexi 100 watt with a few added extras; The combination of a Variac and the jumpered input channels creates that infamous brown sound that will feel like flames are shooting out the input jack! "Come on Dave... Give me a break!"

Metal

Amber LED: - This Amp Model is based on the Mesa/Boogie® Dual Rectifier®. For Spider Valve, we made careful enhancements to this classic tone. The resulting Amp Model has a definite modern flavor. This monster truck of tone delivers a tight bottom end that's big, powerful, tight and fast. Use this Amp Model to get a tight and punchy, high gain Metal sound.

Blue LED: - This sound was created to be an aggressive high gain Amp Model with a unique **Mid** control that will sweep through an entire spectrum of tone on one knob. The **Mid** knob for this Amp Model changes the character of the distortion. When set to minimum, the distortion exhibits Fuzz pedal characteristics. When the **Mid** is set to noon, it mimics the creamy modern high gain amp tones. And when the **Mid** knob is turned up to max, it's very much reminiscent of that Class A sound. Of course, then there are all the places in-between...

Insane

Amber LED: - This model is our "dialed in for shredding" version of the Mesa/Boogie® Dual Rectifier® red channel. It combines the intensity and impact of Metal Red, but delivers

* All product names are trademarks of their respective owners, which are in no way associated or affiliated with Line 6. These product names, descriptions and images are provided for the sole purpose of identifying the specific products that were studied during Line 6's sound model development. VOX® is a registered trademark of Vox R&D Limited. MARSHALL® is a registered trademark of Marshall Amplification Plc. MESA/BOOGIE® and RECTIFIER® are registered trademarks of Mesa/Boogie, Ltd.

more midrange and teeth for that bone-crushing, brain piercing insane grind.

Blue LED: - Our goal with Insane was to provide you with as much input gain distortion as possible short of complete meltdown. You get an obscene helping of distortion, while still retaining tonal definition and character. As a result, you get way more bottom end and cabinet character than other small amps. Crank up the **Drive** control and prepare to dominate!

Effects

Great amp tone is only part of a great guitar sound. Effect processing – whether it's stomp boxes or rack gear – is also a big part of the story. Your Spider Valve packs the power of several of these tone shapers.

The **Modulation Effects** knob lets you choose between chorus/flange, phaser, and tremolo, and for each of these effects you can choose anything from a subtle hint of processing to total tone-mangling overkill.

The **Delay** knob gives you a trio of delay effect choices: a standard delay, tape echo, and a sweep echo.

While turning each of these knobs, Spider Valve adjusts all the individual aspects of the effect automatically to give you the range of sounds you're looking for, without having to mess with multiple knobs and switches to get your tone. So you can spend your time making music instead.

The **Reverb** knob gives you control over a great-sounding reverb.

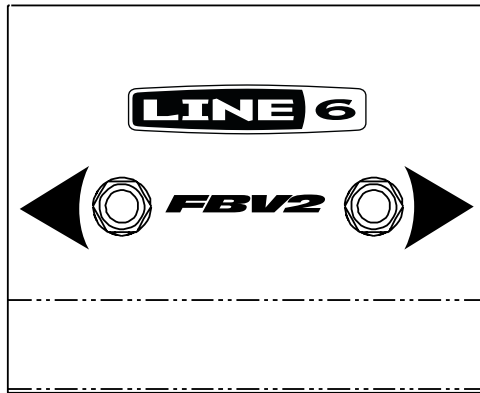
USING YOUR FEET

The FBV series of foot controllers includes the original FBV and the more-compact FBV Shortboard, which includes all the controls needed for the Spider Valve. Also available are the FBV Express for channel switching and tap and FBV2 for channel scroll.

Note that the “Line 6 Floor Board” and “FB4” foot controllers will not work with Spider Valve.

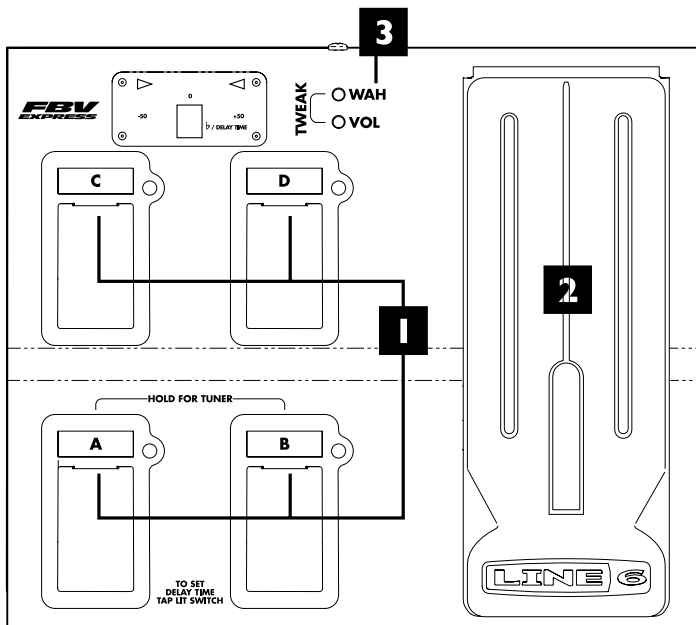
FBV footcontrollers come with an included RJ-45 cable. Connect this cable between the rear panel of the Spider Valve and the side of the FBV. If you ever need a replacement cable, look for a Category 5, 10 Base-T or RJ-45 cable with male connectors on both ends. These can be found at almost any computer supply retailer.

FBV2



The FBV2 functions as a two button channel scroll foot switch. This foot switch allows you to scroll through the 4 channels (the A,B,C & D buttons) of your Spider Valve.

FBV Express

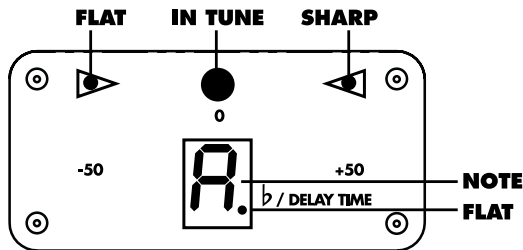
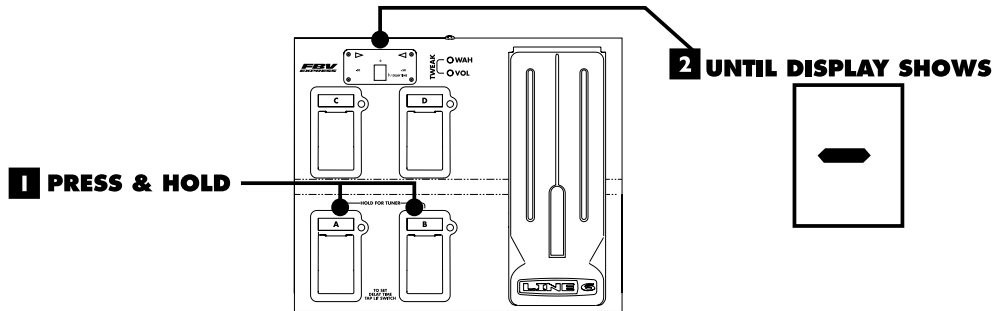


1. Channel A, B, C & D: Select from the four Channel Memories. You can also use your active channel to change your Tap Tempo setting. Just Tap the channel button twice to the drummer's beat and presto - you're locked in!

2. FBV Pedal: Press the pedal forward to click the toe-switch, turning the pedal from Volume to Wah.

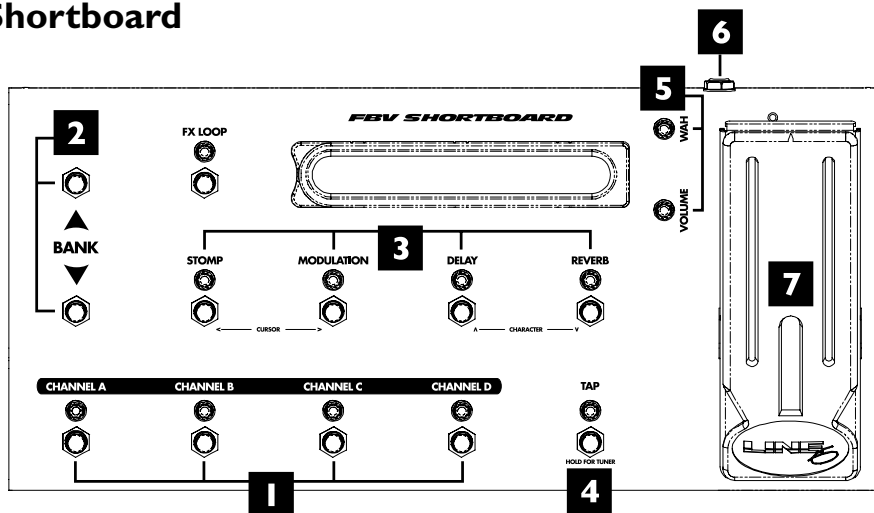
3. Wah and Volume Lights: These light to show that a pedal is ready to control Wah or Volume. Note: Press the pedal fully forward to click the toe-switch, switching the pedal to control Wah or Volume.

Using your FBV Express Tuner



**3 DONE TUNING?
PRESS ANY OF THE A,B,C OR D FOOTSWITCHES**

FBV Shortboard



1. Channel A, B, C & D: Select from the four Channel Memories.

2. Bank Up - Bank Down: The FBV Shortboard gives you 9 banks of 4 channels each. Bank 1 is the same 4 memories you get from the Spider Valve front panel A,B,C,D buttons when no FBV is connected.

3. Stomp/Mod/Delay/Reverb: You guessed it! These switch the Spider Valve effects Mod, Delay and Reverb on and off kinda like they were stomp boxes on a pedal board. Stomp engages the Distortion Boost (see Tap Button extra functions).

4. Tap/Tuner: Tap a couple beats to set the tempo. Or press and hold this switch until you see the tuner on the pedal's display. Press it again to exit tuner mode.

5. Wah and Volume Lights: These light to show that a pedal is ready to control Wah or Volume. Note: Pressing the pedal fully forward to click the toe-switch selects its control between Wah or Volume. If a separate expression pedal is connected to the Shortboard's rear panel 1/4-inch jack, the Shortboard pedal controls Wah only, with the toe switch toggling the Wah on/off.

6. External Pedal Jack: You can connect an expression pedal (such as the Line 6 EX-1) to the Shortboard's rear panel 1/4-inch jack, and the connected pedal will control Volume, while the Shortboard pedal controls Wah only.

7. FBV Pedal: Press the pedal forward to click the toe-switch, turning the pedal from Volume to Wah.

Saving with FBV Shortboard

To prepare for saving, it's a good idea to browse through the various factory-stored preset sounds to decide which you can do without. Make a note of their Bank number and Channel letter so you can save your own sounds there instead.

To save, do the following:

- Step on the FX LOOP switch until “NAME EDIT” is displayed.
- Edit the channel name by using the Shortboard's COMP and MOD switches to select one of the characters of the channel name, then pressing the DELAY and REVERB switches choose from the available letters, numbers and symbols.
- Use the Bank Up and Bank Down switches to pick a Bank you'd like to save within.
- Press the A, B, C or D switch to store to that Channel Memory in the chosen Bank.
- The display will show “SAVING”. Congratulations, you're all done!

MAINTENANCE AND TROUBLESHOOTING

Tubes

The Spider Valve 112 and 212 combo amps include (2) 12AX7 preamp tubes and (2) 6L6 power amp tubes. The Spider Valve HD100 head features (2) 12AX7 preamp tubes and (4) 6L6 power amp tubes. Keep in mind that tubes are like car tires – they get worn out through use and need to be replaced. How loud you play and how long you play for affects how often you need to re-tube your amp. If you play a lot, changing the power tubes once a year is normal. Preamp tubes can often last twice as long, even longer.

For the preamp tubes, Chinese or Sovtek 12AX7 tubes work great to maintain the original tone of your amp. Always change both tubes at the same time, since one bad tube can often “take down” a good tube.

When changing power tubes, you should always use a matched set of 6L6 power tubes and have them properly biased for optimum tone and tube life. Make sure you read and understand the safety instructions – this work is dangerous and repairs should only be done by a qualified technician!

5•1

Tube Troubleshooting

Most amp problems (squeals, crackling, low power, mushy bass response, etc.) can be traced to bad or weak tubes. If you hear your sound begin to deteriorate, it may be time to change your tubes. Here are some possible signs:

- Dull or cloudy sound, despite your tone settings
- Noticeable loss of low-end response
- Uneven tonal output – some notes seem louder than others
- Amp becomes noisy
- Amp sounds thin
- Amp feels weak or has low output
- Amp has fluctuating power output
- Output decays quickly – isn't able to produce your guitar's sustaining notes

In particular, a preamp tube that's gone bad will typically be "microphonic". This is where the tube has become highly sensitive to vibration and becomes very thin sounding and squealy like a microphone feeding back. A good way to check for a microphonic tube is to lightly tap on the tube with a pencil. If you can hear it tapping through the speakers, it's microphonic and should be changed. It's also possible for a bad pre-amp tube to simply not pass any audio and be dead, but they usually go microphonic before completely dying.

General Troubleshooting

Here are some general, non-tube troubleshooting tips:

- Always make sure your cables, guitars, effects and extension cabinets are working and hooked up correctly.
- If you think something is wrong with your amp, play straight into the amp with nothing else hooked up other than a guitar. That way you make sure it is the amp.
- Unplug the internal speaker and hook up an external speaker cabinet to make sure it's only the amp which is faulty.

Fuses

Your Spider Valve amp has (2) user-replaceable fuses. Both of them need to be good in order for the amp to work.

The Mains Fuse is located on the back panel below the power cable connection. To release the fuse holder you need to push the top and bottom latch towards each other with your finger nails and pull the insert out. If you can't get it out this way, use a little screw driver and first pull one, then the other latch. The insert will snap out. If the Mains Fuse blows, it could be just a voltage peak from your power outlet. Put a new one in and see what happens.

The Tube Protection fuse is located in a separate fuse holder on the back panel. Turn the fuse holder cap counter-clockwise to remove the fuse. This fuse protects the tube circuitry and usually blows if your power amp tubes are bad.

When replacing fuses, be sure to only use the exact type and value specified on the back panel of the amp.