6   5   4   3   2   1

ECOs INCLUDED ON THIS SCHEMATIC/PCB REVISION

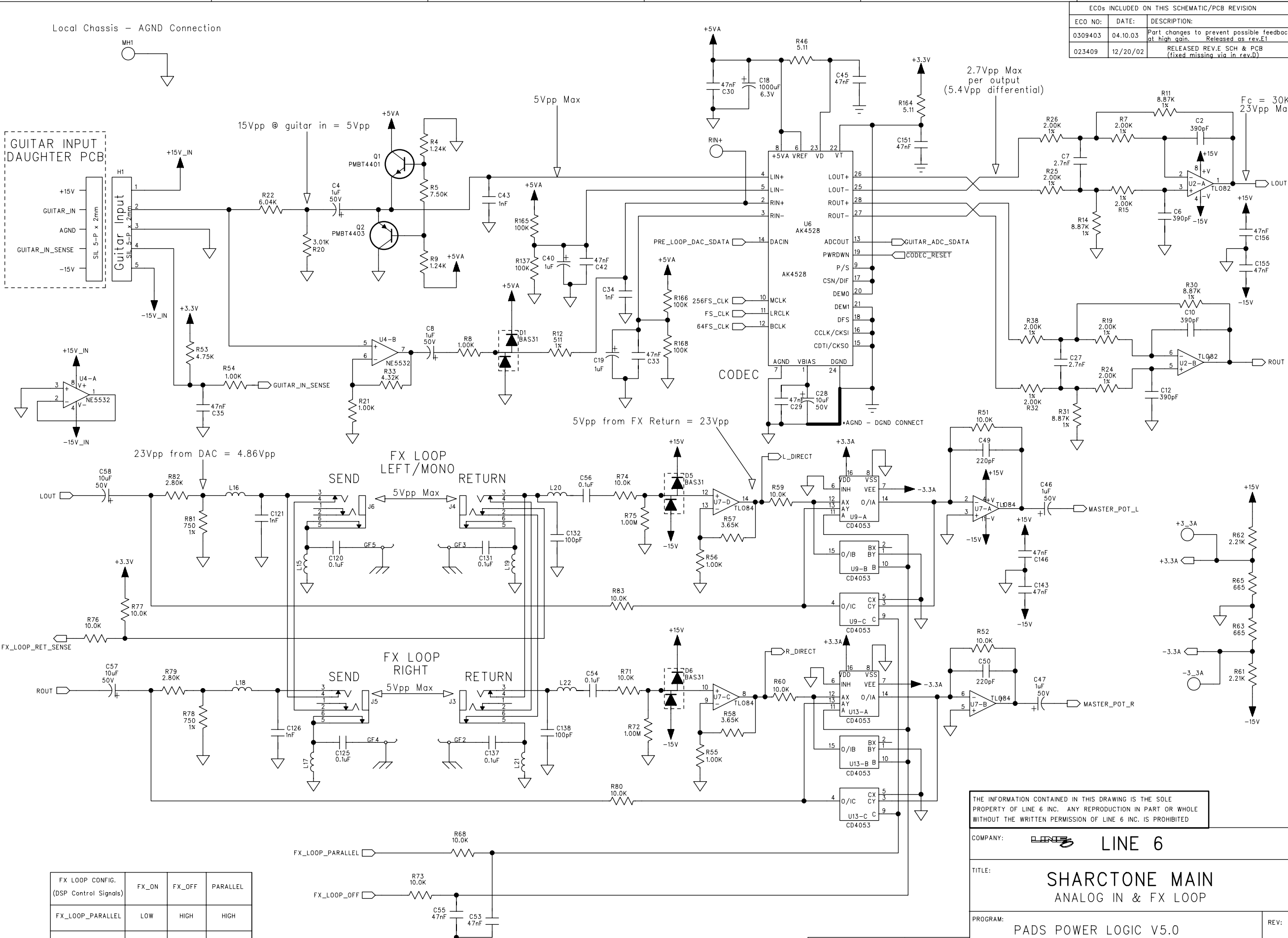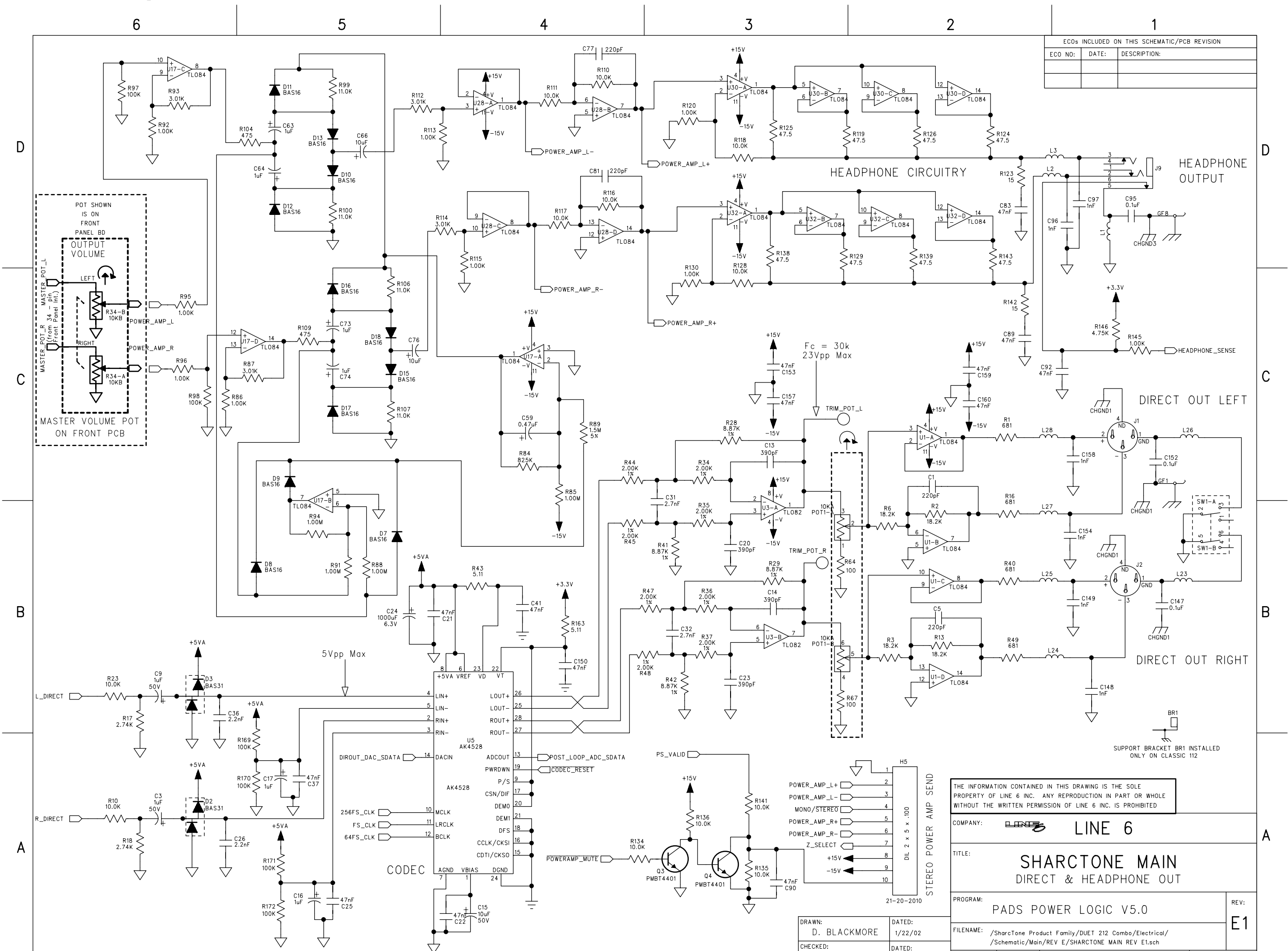| ECO NO:	DATE:	DESCRIPTION:
0309403	04.10.03	Part changes to prevent possible feedback at high gain. Released as rev.E1
023409	12/20/02	RELEASED REV.E SCH & PCB (fixed missing via in rev.D)

Local Chassis – AGND Connection

MH1

D

GUITAR INPUT DAUGHTER PCB

+15V_IN

15Vpp @ guitar in = 5Vpp

+5VA

5Vpp Max

+5VA   R46 5.11   +5VA

C18 1000uF 6.3V   47nF C30   C45 47nF   +3.3V

R164 5.11

2.7Vpp Max per output (5.4Vpp differential)

Fc = 30K 23Vpp Max

R11 8.87K 1%   R26 2.00K 1%   R7 2.00K 1%   C2 390pF

H1   +15V   GUITAR_IN   AGND   GUITAR_IN_SENSE   –15V

Guitar Input

R22 6.04K   Q1 PMBT4401   R4 1.24K   R5 7.50K   C43 1nF   +5VA

RIN+   C151 47nF   C7 2.7nF   R25 2.00K   C6 390pF   R14 8.87K 1%   R15 2.00K   U2-A TLO82   LOUT   +15V

3.01K R20   Q2 PMBT4403   R9 1.24K   +5VA

R165 100K

LIN+ 4   LIN– 5   RIN+ 1   RIN– 3   U6 AK4528

LOUT+ 26   LOUT– 25   ROUT+ 28   ROUT– 27

+5VA VREF VD VT   8 10 23 22

+5VA

C156 47nF   C155 47nF   –15V

CODEC

–15V_IN

+3.3V   R53 4.75K

R54 1.00K   GUITAR_IN_SENSE

R137 100K   C40 1uF   C42 47nF

C34 1nF   +5VA

R166 100K   256FS_CLK   MCLK 10   PRE_LOOP_DAC_SDATA   DACIN 14

ADCOUT 13   GUITAR_ADC_SDATA   PWRDWN 19   CODEC_RESET

R30 8.87K 1%

R38 2.00K 1%   R19 2.00K 1%   C10 390pF

+15V_IN   R53   U4-A NE5532

C   –15V_IN

U4-B   R33 4.32K   C8 1uF 50V   R8 1.00K   D1 BAS31   R12 511 1%   C19 1uF   C33 47nF   R168 100K

AK4528   FS_CLK   LRCLK 11   64FS_CLK   BCLK 12

P/S 9   CSN/DIF 17   DEMO 20   DEM1 21   DFS 18   CCLK/CKSI 16   CDTI/CKSO 15

C27 2.7nF   R24 2.00K   U2-B TLO82   ROUT   R31 8.87K 1%   R32 2.00K   C12 390pF

R21 1.00K

AGND VBIAS DGND   7 6 24

C29 47nF   C28 10uF 50V

*AGND – DGND CONNECT

23Vpp from DAC = 4.86Vpp

5Vpp from FX Return = 23Vpp

FX LOOP LEFT/MONO

+15V   L_DIRECT   +3.3A

R51 10.0K   C49 220pF   +15V

C58 10uF 50V   R82 2.80K   L16   SEND   5Vpp Max   RETURN   L20   C56 0.1uF   R74 10.0K   D5 BAS31   U7-C TLO84   R59 10.0K   VDD VSS VEE   U9-A CD4053   U7-A TLO84   C46 1uF 50V   MASTER_POT_L   +15V

LOUT   R81 750 1%   C121 1nF   J6   J4   R75 1.00M   R57 3.65K   AX AY A   O/IA   –3.3A   –15V   +15V

+15V

L15 GF5   C120 0.1uF   GF3   C131 0.1uF   L19   C132 100pF   –15V   R56 1.00K

+3_3A   R62 2.21K   +3.3A

R77 10.0K   +3.3V

U9-B CD4053   BX BY B 15   O/IB 2 1 10

R65 665

R83 10.0K

B   FX_LOOP_RET_SENSE   R76 10.0K

U9-C CD4053   CX CY 15   O/IC 4 3 9

R63 665

FX LOOP RIGHT

C47 47nF   C143 47nF   –15V

C57 10uF 50V   R79 2.80K   L18   SEND   5Vpp Max   RETURN   L22   C54 0.1uF   R71 10.0K   D6 BAS31   U7-D TLO84   R60 10.0K   R_DIRECT +3.3A   VDD VSS VEE   U13-A CD4053   R52 10.0K   C50 220pF   U7-B TLO84   MASTER_POT_R   +15V

ROUT   R78 750 1%   C126 1nF   J5   J3   R72 1.00M   R58 3.65K   AX AY A   O/IA   –3.3A   –15V   –3.3A R61 2.21K   –15V

L17 GF4   C125 0.1uF   GF2   C137 0.1uF   L21   C138 100pF   –15V   R55 1.00K

U13-B CD4053   BX BY B 15   O/IB 2 1 10

R80 10.0K

U13-C CD4053   CX CY 15   O/IC 4 3 9

FX_LOOP_PARALLEL   R68 10.0K

FX_LOOP_OFF   R73 10.0K   C55 47nF   C53 47nF

FX LOOP CONFIG. (DSP Control Signals)	FX_ON	FX_OFF	PARALLEL
FX_LOOP_PARALLEL	LOW	HIGH	HIGH
FX_LOOP_OFF	LOW	HIGH	LOW

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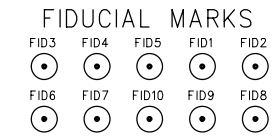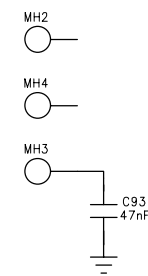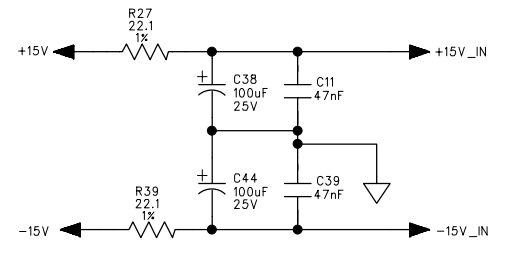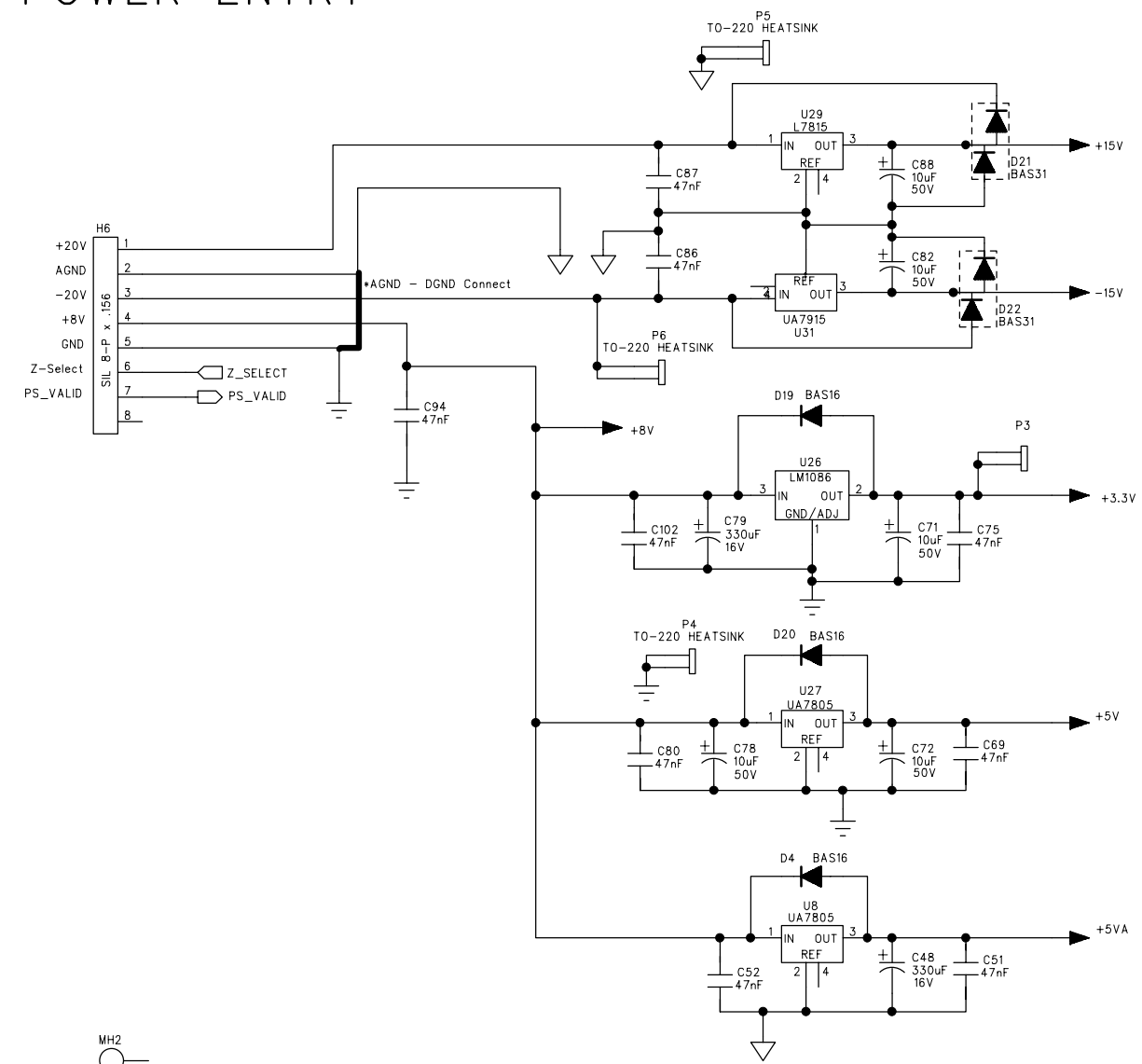
COMPANY: LINE 6

TITLE: SHARCTONE MAIN   ANALOG IN & FX LOOP

PROGRAM: PADS POWER LOGIC V5.0   REV: E1
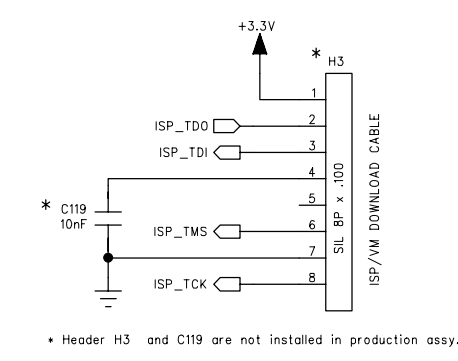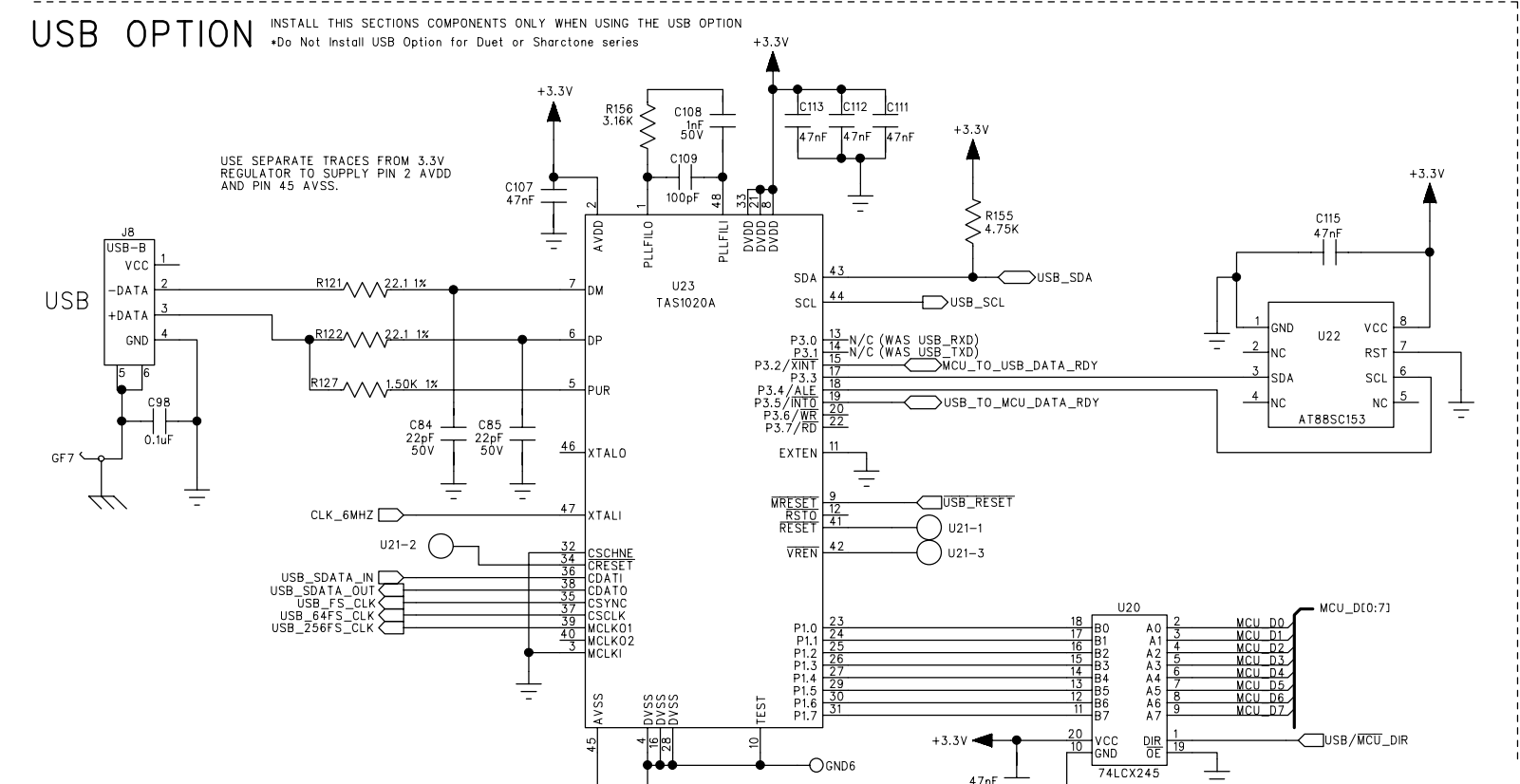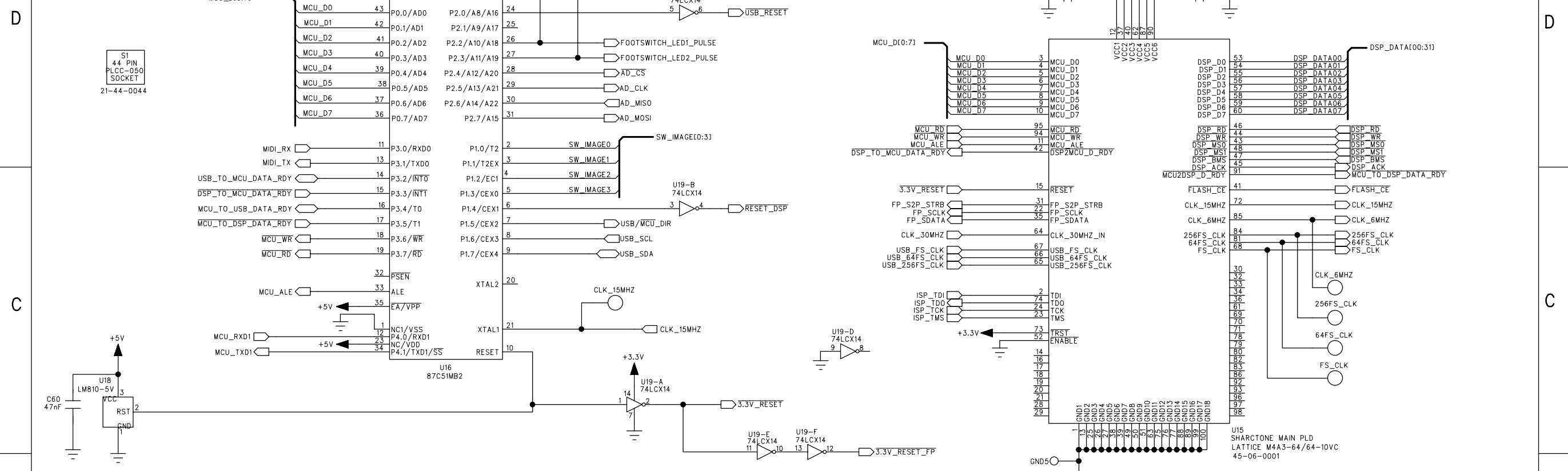
DRAWN: DBLACKMORE   DATED: 1/22/02

CHECKED: Name (F.Last)   DATED: 00/00/01

FILENAME: /SharcTone Product Family/DUET 212 Combo/Electrical/ /Schematic/Main/REV E/SHARCTONE MAIN REV E1.sch

SCALE: 1:1   SIZE: C   PART NUMBER: 35-00-0121   SHEET: 1 OF 7

6   5   4   3   2   1

ECOs INCLUDED ON THIS SCHEMATIC/PCB REVISION

ECO NO:	DATE:	DESCRIPTION:

HEADPHONE CIRCUITRY

HEADPHONE OUTPUT

OUTPUT VOLUME

POT SHOWN IS ON FRONT PANEL BD

MASTER VOLUME POT ON FRONT PCB

LEFT
RIGHT

MASTER_POT_L
MASTER_POT_R (from R — pin 34 — Front Panel Int.)

POWER_AMP_L
POWER_AMP_R

R34-B 10KB
R34-A 10KB

Fc = 30k
23Vpp Max

TRIM_POT_L
TRIM_POT_R

DIRECT OUT LEFT
DIRECT OUT RIGHT

5Vpp Max
5VA Max

POWER_AMP_L-
POWER_AMP_L+
POWER_AMP_R-
POWER_AMP_R+

CHGND1 CHGND2 CHGND3

SUPPORT BRACKET BR1 INSTALLED ONLY ON CLASSIC 112

HEADPHONE_SENSE

L_DIRECT
R_DIRECT

CODEC

U5 AK4528

+5VA VREF VD VT
LIN+
LIN-
RIN+
RIN-
DACIN
PWRDWN
P/S
CSN/DIF
DEMO
DEM1
DFS
CCLK/CKSI
CDTI/CKSO
LOUT+
LOUT-
ROUT+
ROUT-
ADCOUT
MCLK
LRCLK
BCLK
AGND VBIAS DGND

256FS_CLK
FS_CLK
64FS_CLK

DIROUT_DAC_SDATA
POST_LOOP_ADC_SDATA
CODEC_RESET
PS_VALID

POWERAMP_MUTE

STEREO POWER AMP SEND

H5
DIL 2 x 5 x .100

POWER_AMP_L+
POWER_AMP_L-
MONO/STEREO
POWER_AMP_R+
POWER_AMP_R-
Z_SELECT
+15V
-15V

21-20-2010
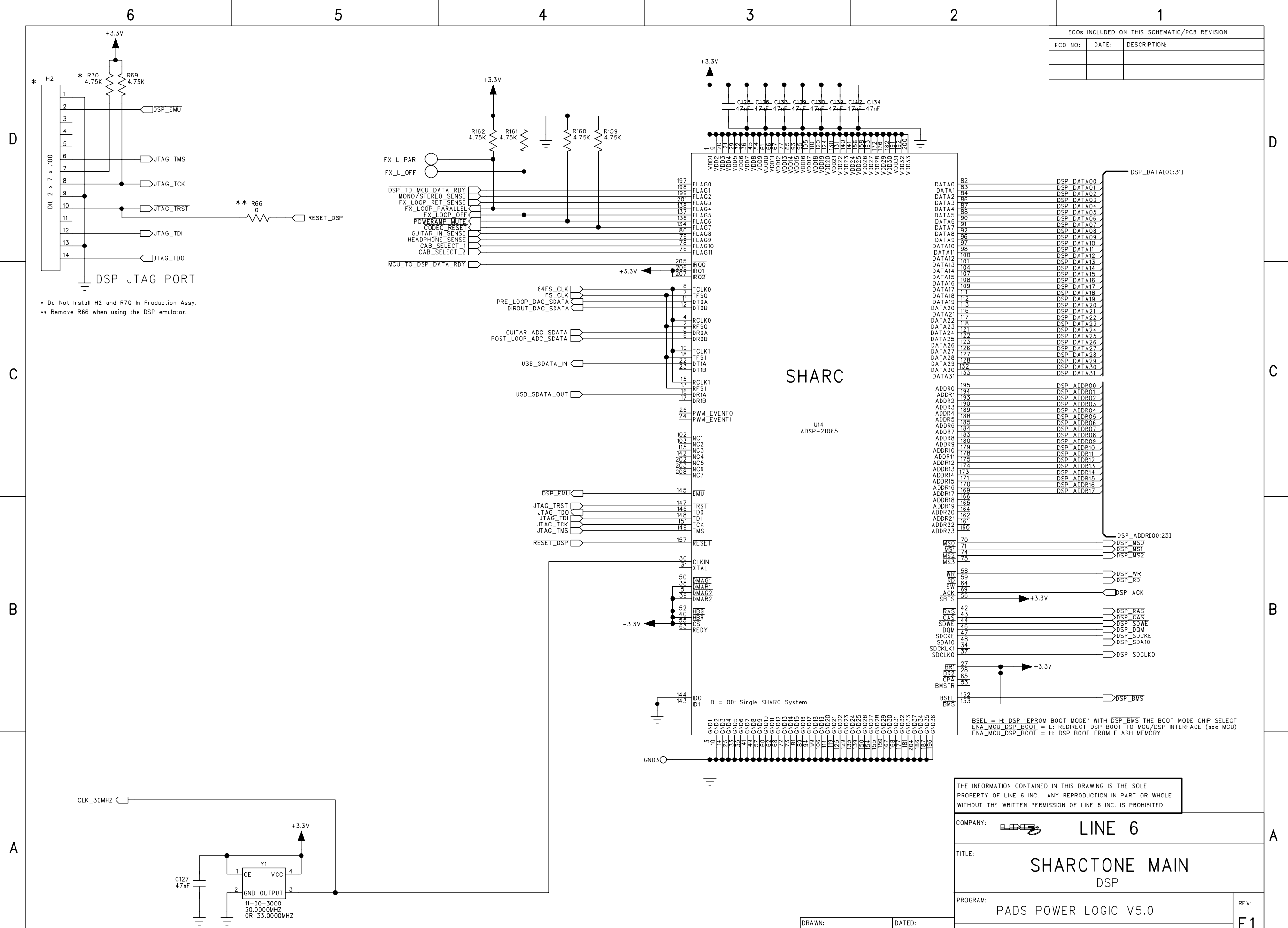
Q3 PMBT4401
Q4 PMBT4401

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COMPANY: LINE 6

TITLE: SHARCTONE MAIN
DIRECT & HEADPHONE OUT

PROGRAM: PADS POWER LOGIC V5.0

REV: E1

DRAWN: D. BLACKMORE   DATED: 1/22/02
CHECKED: Name (F.Last)   DATED: 00/00/01

FILENAME: /SharcTone Product Family/DUET 212 Combo/Electrical/ /Schematic/Main/REV E/SHARCTONE MAIN REV E1.sch

SCALE: 1:1   SIZE: C   PART NUMBER: 35-00-0121   SHEET: 2 OF 7

6 5 4 3 2 1

POWER ENTRY

FROM POWER SUPPLY PCB

P5
TO-220 HEATSINK

U29
L7815
IN OUT
REF

C87
47nF

C86
47nF

C88
10uF
50V

D21
BAS31

+15V

REF
IN OUT
UA7915
U31

P6
TO-220 HEATSINK

C82
10uF
50V

D22
BAS31

-15V

H6
+20V 1
AGND 2
-20V 3
+8V   4
GND   5
Z-Select 6
PS_VALID 7
8

SIL 8-P x .156

AGND - DGND Connect

Z_SELECT

PS_VALID

C94
47nF

+8V

R27
22.1
1%

C38
100uF
25V

C11
47nF

+15V_IN

+15V

R39
22.1
1%

C44
100uF
25V

C39
47nF

-15V

-15V_IN

D19 BAS16

U26
LM1086
IN OUT
GND/ADJ

P3

C102
47nF

C79
330uF
16V

C71
10uF
50V

C75
47nF

+3.3V

P4
TO-220 HEATSINK

D20 BAS16

U27
UA7805
IN OUT
REF

C80
47nF

C78
10uF
50V

C72
10uF
50V

C69
47nF

+5V

D4 BAS16

U8
UA7805
IN OUT
REF

C52
47nF

C48
330uF
16V

C51
47nF

+5VA

MH2

MH4

MH3

C93
47nF

FIDUCIAL MARKS
FID3 FID4 FID5 FID1 FID2
FID6 FID7 FID10 FID9 FID8

COMPANY: LINE 6

TITLE:

SHARCTONE MAIN
POWER

PROGRAM:
PADS POWER LOGIC V5.0

REV:
E1

DRAWN: D. BLACKMORE	DATED: 1/22/02
CHECKED: Name (F.Last)	DATED: 00/00/01

FILENAME: /SharcTone Product Family/DUET 212 Combo/Electrical/
/Schematic/Main/REV E/SHARCTONE MAIN REV E1.sch

SCALE: 1:1 SIZE: C PART NUMBER: 35-00-0121 SHEET: 3 OF 7

ECOs INCLUDED ON THIS SCHEMATIC/PCB REVISION

ECO NO:	DATE:	DESCRIPTION:

TEST_POINT
GND4

C122
47nF

+5V

R157
1.00K

R158
1.00K

U19-C
74LCX14

USB_RESET

MCU_D[0:7]

S1
44 PIN
PLCC-050
SOCKET
21-44-0044

MCU_D0	43 P0.0/AD0	P2.0/A8/A16 24	FOOTSWITCH_LED1_PULSE
MCU_D1	42 P0.1/AD1	P2.1/A9/A17 25	FOOTSWITCH_LED2_PULSE
MCU_D2	41 P0.2/AD2	P2.2/A10/A18 26	AD_CS
MCU_D3	40 P0.3/AD3	P2.3/A11/A19 27	AD_CLK
MCU_D4	39 P0.4/AD4	P2.4/A12/A20 28	AD_MISO
MCU_D5	38 P0.5/AD5	P2.5/A13/A21 29	AD_MOSI
MCU_D6	37 P0.6/AD6	P2.6/A14/A22 30	
MCU_D7	36 P0.7/AD7	P2.7/A15 31	

MIDI_RX 11 P3.0/RXD0
MIDI_TX 13 P3.1/TXD0
USB_TO_MCU_DATA_RDY 14 P3.2/INT0
DSP_TO_MCU_DATA_RDY 15 P3.3/INT1
MCU_TO_USB_DATA_RDY 16 P3.4/T0
MCU_TO_DSP_DATA_RDY 17 P3.5/T1
MCU_WR 18 P3.6/WR
MCU_RD 19 P3.7/RD

P1.0/T2 2 SW_IMAGE0
P1.1/T2EX 3 SW_IMAGE1
P1.2/EC1 4 SW_IMAGE2
P1.3/CEX0 5 SW_IMAGE3
P1.4/CEX1 6 RESET_DSP
P1.5/CEX2 7 USB/MCU_DIR
P1.6/CEX3 8 USB_SCL
P1.7/CEX4 9 USB_SDA

SW_IMAGE[0:3]

U19-B
74LCX14

MCU_ALE 32 PSEN
33 ALE
35 EA/VPP

XTAL2 20
XTAL1 21 CLK_15MHZ CLK_15MHZ

MCU_RXD1 1 NC1/VSS
P4.0/RXD1
NC/VDD
P4.1/TXD1/SS
RESET 10

MCU_TXD1

U16
87C51MB2

+5V
U18
LM810-5V
VCC
RST
GND
C60
47nF

U19-A
74LCX14
+3.3V 3.3V_RESET

U19-D
74LCX14

U19-E 74LCX14   U19-F 74LCX14
3.3V_RESET_FP

+3.3V

C123
47nF

C124
47nF

MCU_D[0:7]

DSP_DATA[00:31]

MCU_D0	3	DSP_D0 53	DSP_DATA00
MCU_D1	4	DSP_D1 54	DSP_DATA01
MCU_D2	5	DSP_D2 55	DSP_DATA02
MCU_D3	6	DSP_D3 56	DSP_DATA03
MCU_D4	7	DSP_D4 57	DSP_DATA04
MCU_D5	8	DSP_D5 58	DSP_DATA05
MCU_D6	9	DSP_D6 59	DSP_DATA06
MCU_D7	10	DSP_D7 60	DSP_DATA07

MCU_RD 95 MCU_RD
MCU_WR 94 MCU_WR
MCU_ALE 11 MCU_ALE
DSP_TO_MCU_DATA_RDY 42 DSP2MCU_D_RDY

DSP_RD 46 DSP_RD
DSP_WR 44 DSP_WR
DSP_MS0 43 DSP_MS0
DSP_MS1 48 DSP_MS1
DSP_BMS 47 DSP_BMS
DSP_ACK 45 DSP_ACK
MCU2DSP_D_RDY 91 MCU_TO_DSP_DATA_RDY

3.3V_RESET 15 RESET
FP_S2P_STRB 31 FP_S2P_STRB
FP_SCLK 22 FP_SCLK
FP_SDATA 35 FP_SDATA
FLASH_CE 41 FLASH_CE

CLK_30MHZ 64 CLK_30MHZ_IN
CLK_15MHZ 72 CLK_15MHZ
CLK_6MHZ 85 CLK_6MHZ

USB_FS_CLK 67 USB_FS_CLK
USB_64FS_CLK 66 USB_64FS_CLK
USB_256FS_CLK 65 USB_256FS_CLK
256FS_CLK 84 256FS_CLK
64FS_CLK 81 64FS_CLK
FS_CLK 68 FS_CLK

ISP_TDI 2 TDI
ISP_TDO 74 TDO
ISP_TCK 24 TCK
ISP_TMS 23 TMS

+3.3V 73 TRST
52 ENABLE

GND5

U15
SHARCTONE MAIN PLD
LATTICE M4A3-64/64-10VC
45-06-0001

CLK_6MHZ
256FS_CLK
64FS_CLK
FS_CLK

+3.3V
H3
ISP_TDO
ISP_TDI
C119
10nF
ISP_TMS
ISP_TCK
SIL 8P x .100
ISP/VM DOWNLOAD CABLE

* Header H3 and C119 are not installed in production assy.

USB OPTION

INSTALL THIS SECTIONS COMPONENTS ONLY WHEN USING THE USB OPTION
*Do Not Install USB Option for Duet or Sharctone series

USE SEPARATE TRACES FROM 3.3V
REGULATOR TO SUPPLY PIN 2 AVDD
AND PIN 45 AVSS.

+3.3V
R156 3.16K
C108 1nF 50V
C109 100pF
C113 47nF
C112 47nF
C111 47nF
+3.3V
R155 4.75K
C115 47nF
+3.3V

J8
USB-B
VCC
-DATA
+DATA
GND

USB

R121 22.1 1%
R122 22.1 1%
R127 1.50K 1%

C98
0.1uF
GF7

AVDD 2
PLLFILO
PLLFILI
DVDD DVDD DVDD

DM 7
DP 6
PUR 5

C84 22pF 50V
C85 22pF 50V

XTALO 46
XTALI 47
CLK_6MHZ

U23
TAS1020A

P3.0 13 N/C (WAS USB_RXD)
P3.1 14 N/C (WAS USB_TXD)
P3.2/XINT 15
P3.3 17 MCU_TO_USB_DATA_RDY
P3.4/ALE 18
P3.5/INT0 19 USB_TO_MCU_DATA_RDY
P3.6/WR 20
P3.7/RD 22

EXTEN 11

SDA 43 USB_SDA
SCL 44 USB_SCL

U21-2
USB_SDATA_IN 32 CSCHNE
34 CRESET
36 CDATI
38 CDATO
35 CSCLK
37 CSYNC
39 MCLKO1
40 MCLKO2
3 MCLKI

USB_SDATA_OUT
USB_FS_CLK
USB_64FS_CLK
USB_256FS_CLK

C107 47nF

U22
GND 1
NC 2
SDA 3
NC 4
VCC 8
RST 7
SCL 6
NC 5
AT88SC153

MRESET 9 USB_RESET
RSTO 12
RESET 41 U21-1
VREN 42 U21-3

U20
P1.0 23 B0   A0 18 MCU_D0
P1.1 24 B1   A1 17 MCU_D1
P1.2 25 B2   A2 16 MCU_D2
P1.3 26 B3   A3 15 MCU_D3
P1.4 27 B4   A4 14 MCU_D4
P1.5 28 B5   A5 13 MCU_D5
P1.6 30 B6   A6 12 MCU_D6
P1.7 31 B7   A7 11 MCU_D7
MCU_D[0:7]

AVSS 45
DVSS DVSS DVSS
TEST

+3.3V
VCC
GND
DIR 1
OE 19
74LCX245
USB/MCU_DIR

47nF
C116

GND6

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WITHOUT THE WRITTEN PERMISSION OF LINE 6 INC. IS PROHIBITED

COMPANY: LINE 6

TITLE:
SHARCTONE MAIN
DIGITAL

PROGRAM: PADS POWER LOGIC V5.0

REV: E1

DRAWN: D. MOLNAR
DATED: 3/29/2002

CHECKED: Name (F.Last)
DATED: 00/00/01

FILENAME: /SharcTone Product Family/DUET 212 Combo/Electrical/
/Schematic/Main/REV E/SHARCTONE MAIN REV E1.sch

SCALE: 1:1   SIZE: C   PART NUMBER: 35-00-0121   SHEET: 4 OF 7

6   5   4   3   2   1

+3.3V

* H2
* R70 4.75K   R69 4.75K

DSP_EMU

JTAG_TMS
JTAG_TCK
JTAG_TRST
JTAG_TDI
JTAG_TDO

** R66 0
RESET_DSP

DIL 2 x 7 x 100

DSP JTAG PORT

* Do Not Install H2 and R70 In Production Assy.
** Remove R66 when using the DSP emulator.

+3.3V

R162 4.75K   R161 4.75K   R160 4.75K   R159 4.75K

FX_L_PAR
FX_L_OFF

C128 C136 C133 C129 C130 C139 C142 C134
47nF 47nF 47nF 47nF 47nF 47nF 47nF 47nF

+3.3V

VDD1...VDD33

DSP_TO_MCU_DATA_RDY   197 FLAG0
MONO/STEREO_SENSE   198 FLAG1
FX_LOOP_RET_SENSE   199 FLAG2
FX_LOOP_PARALLEL   201 FLAG3
FX_LOOP_OFF   138 FLAG4
POWERAMP_MUTE   137 FLAG5
CODEC_RESET   136 FLAG6
GUITAR_IN_SENSE   134 FLAG7
HEADPHONE_SENSE   80 FLAG8
CAB_SELECT_1   79 FLAG9
CAB_SELECT_2   78 FLAG10
                          76 FLAG11

MCU_TO_DSP_DATA_RDY   205 IRQ0
                   +3.3V   206 IRQ1
                          207 IRQ2

64FS_CLK   8 TCLK0
FS_CLK   7 TFS0
PRE_LOOP_DAC_SDATA   11 DT0A
DIROUT_DAC_SDATA   12 DT0B

                          4 RCLK0
                          5 RFS0
GUITAR_ADC_SDATA   6 DR0A
POST_LOOP_ADC_SDATA   9 DR0B

                          19 TCLK1
                          18 TFS1
USB_SDATA_IN   22 DT1A
                          23 DT1B

                          15 RCLK1
                          13 RFS1
USB_SDATA_OUT   16 DR1A
                          17 DR1B

                          26 PWM_EVENT0
                          24 PWM_EVENT1

                          102 NC1
                          103 NC2
                          115 NC3
                          142 NC4
                          202 NC5
                          203 NC6
                          208 NC7

DSP_EMU   145 EMU
JTAG_TRST   147 TRST
JTAG_TDO   146 TDO
JTAG_TDI   148 TDI
JTAG_TCK   151 TCK
JTAG_TMS   149 TMS

RESET_DSP   157 RESET

                          30 CLKIN
                          31 XTAL

                          50 DMAG1
                          38 DMAR1
                          39 DMAG2
                          52 DMAR2

                   +3.3V   40 HBG
                          55 HBR
                          63 CS
                          REDY

                          144 ID0
                          143 ID1

SHARC
U14
ADSP-21065

ID = 00: Single SHARC System

DATA0...DATA31   82...133   DSP_DATA00...DSP_DATA31   DSP_DATA[00:31]

ADDR0...ADDR23   195...160   DSP_ADDR00...DSP_ADDR17   DSP_ADDR[00:23]

MS0   70   DSP_MS0
MS1   71   DSP_MS1
MS2   74   DSP_MS2
MS3   75

WR   58   DSP_WR
RD   59   DSP_RD
SW   64   DSP_ACK
ACK   69
SBTS 56   +3.3V

RAS   42   DSP_RAS
CAS   43   DSP_CAS
SDWE 44   DSP_SDWE
DQM   46   DSP_DQM
SDCKE 47   DSP_SDCKE
SDA10 48   DSP_SDA10
SDCLK1 34
SDCLK0 37   DSP_SDCLK0

BRT   27   +3.3V
BR2   28
CPA   65
BMSTR 53

BSEL 152 DSP_BMS
BMS   153

BSEL = H: DSP "EPROM BOOT MODE" WITH DSP_BMS THE BOOT MODE CHIP SELECT
ENA_MCU_DSP_BOOT = L: REDIRECT DSP BOOT TO MCU/DSP INTERFACE (see MCU)
ENA_MCU_DSP_BOOT = H: DSP BOOT FROM FLASH MEMORY

GND1...GND36

GND3

CLK_30MHZ

+3.3V

Y1
1 OE   VCC 4
2 GND OUTPUT 3

C127 47nF

11-00-3000
30.0000MHZ
OR 33.0000MHZ

COMPANY: LINE 6

TITLE: SHARCTONE MAIN
DSP

PROGRAM: PADS POWER LOGIC V5.0

DRAWN: D. MOLNAR   DATED: 3/29/2002
CHECKED: Name (F.Last)   DATED: 00/00/01

FILENAME: /SharcTone Product Family/DUET 212 Combo/Electrical/
/Schematic/Main/REV E/SHARCTONE MAIN REV E1.sch

SCALE: 1:1   SIZE: C   PART NUMBER: 35-00-0121

REV: E1

| 6 | 5 | 4 | 3 | 2 | 1 |

DSP MEMORY

SDRAM LOWER
1M X 16

+3.3V

C144 47nF   C140 47nF

DSP_ADDR[00:23]
DSP_DATA[00:31]

DSP_ADDR00 21 A0   DQ0 2 DSP_DATA00
DSP_ADDR01 22 A1   DQ1 4 DSP_DATA01
DSP_ADDR02 23 A2   DQ2 5 DSP_DATA02
DSP_ADDR03 24 A3   DQ3 8 DSP_DATA03
DSP_ADDR04 27 A4   DQ4 9 DSP_DATA04
DSP_ADDR05 28 A5   DQ5 11 DSP_DATA05
DSP_ADDR06 29 A6   DQ6 12 DSP_DATA06
DSP_ADDR07 30 A7   DQ7 39 DSP_DATA07
DSP_ADDR08 31 A8   DQ8 40 DSP_DATA08
DSP_ADDR09 32 A9   DQ9 42 DSP_DATA09
DSP_SDA10   20 A10 DQ10 43 DSP_DATA10
DSP_ADDR13 19 A11 DQ11 45 DSP_DATA11
                    DQ12 46 DSP_DATA12
DSP_RAS   17 RAS DQ13 48 DSP_DATA13
DSP_CAS   16 CAS DQ14 49 DSP_DATA14
                    DQ15   DSP_DATA15
DSP_MS2   18 CS
DSP_SDWE   15 WL   NC1 33
DSP_SDCKE   34 CKE NC2 37
DSP_SDCLK0 35 CLK
DSP_DQM   14 LDQM
            36 UDQM

U11
HY57V161610D

TEST POINT
GND1

SDRAM UPPER
1M X 16

+3.3V

C145 47nF   C141 47nF

DSP_DATA[00:31]
DSP_ADDR[00:23]
DSP_DATA[00:31]

DSP_ADDR00 21 A0   DQ0 2 DSP_DATA16
DSP_ADDR01 22 A1   DQ1 4 DSP_DATA17
DSP_ADDR02 23 A2   DQ2 5 DSP_DATA18
DSP_ADDR03 24 A3   DQ3 8 DSP_DATA19
DSP_ADDR04 27 A4   DQ4 9 DSP_DATA20
DSP_ADDR05 28 A5   DQ5 11 DSP_DATA21
DSP_ADDR06 29 A6   DQ6 12 DSP_DATA22
DSP_ADDR07 30 A7   DQ7 39 DSP_DATA23
DSP_ADDR08 31 A8   DQ8 40 DSP_DATA24
DSP_ADDR09 32 A9   DQ9 42 DSP_DATA25
DSP_SDA10   20 A10 DQ10 43 DSP_DATA26
DSP_ADDR13 19 A11 DQ11 45 DSP_DATA27
                    DQ12 46 DSP_DATA28
DSP_RAS   17 RAS DQ13 48 DSP_DATA29
DSP_CAS   16 CAS DQ14 49 DSP_DATA30
                    DQ15   DSP_DATA31
DSP_MS2   18 CS
DSP_SDWE   15 WL   NC1 33
DSP_SDCKE   34 CKE NC2 37
DSP_SDCLK0 35 CLK
DSP_DQM   14 LDQM
            36 UDQM

U12
HY57V161610D

SDRAM LOWER
4M X 16

+3.3V

DSP_ADDR[00:23]

DSP_ADDR00 23 A0   DQ0 2 DSP_DATA00
DSP_ADDR01 24 A1   DQ1 5 DSP_DATA01
DSP_ADDR02 25 A2   DQ2 7 DSP_DATA02
DSP_ADDR03 26 A3   DQ3 8 DSP_DATA03
DSP_ADDR04 29 A4   DQ4 10 DSP_DATA04
DSP_ADDR05 30 A5   DQ5 11 DSP_DATA05
DSP_ADDR06 31 A6   DQ6 13 DSP_DATA06
DSP_ADDR07 32 A7   DQ7 42 DSP_DATA07
DSP_ADDR08 33 A8   DQ8 44 DSP_DATA08
DSP_ADDR09 34 A9   DQ9 45 DSP_DATA09
DSP_SDA10   22 A10 DQ10 47 DSP_DATA10
DSP_ADDR11 35 A11 DQ11 48 DSP_DATA11
DSP_ADDR12 20 BA0 DQ12 50 DSP_DATA12
DSP_ADDR13 21 BA1 DQ13 51 DSP_DATA13
                    DQ14 53 DSP_DATA14
DSP_RAS   18 RAS DQ15   DSP_DATA15
DSP_CAS   17 CAS
DSP_MS2   19 CS
DSP_SDWE   16 WL   NC1 36
DSP_SDCKE   37 CKE NC2 40
DSP_SDCLK0 38 CLK
DSP_DQM   15 LDQM
            39 UDQM

Z1
SDRAM_4MX16

SDRAM UPPER
4M X 16

+3.3V

DSP_ADDR[00:23]

DSP_ADDR00 23 A0   DQ0 2 DSP_DATA16
DSP_ADDR01 24 A1   DQ1 5 DSP_DATA17
DSP_ADDR02 25 A2   DQ2 7 DSP_DATA18
DSP_ADDR03 26 A3   DQ3 8 DSP_DATA19
DSP_ADDR04 29 A4   DQ4 10 DSP_DATA20
DSP_ADDR05 30 A5   DQ5 11 DSP_DATA21
DSP_ADDR06 31 A6   DQ6 13 DSP_DATA22
DSP_ADDR07 32 A7   DQ7 42 DSP_DATA23
DSP_ADDR08 33 A8   DQ8 44 DSP_DATA24
DSP_ADDR09 34 A9   DQ9 45 DSP_DATA25
DSP_SDA10   22 A10 DQ10 47 DSP_DATA26
DSP_ADDR11 35 A11 DQ11 48 DSP_DATA27
DSP_ADDR12 20 BA0 DQ12 50 DSP_DATA28
DSP_ADDR13 21 BA1 DQ13 51 DSP_DATA29
                    DQ14 53 DSP_DATA30
DSP_RAS   18 RAS DQ15   DSP_DATA31
DSP_CAS   17 CAS
DSP_MS2   19 CS
DSP_SDWE   16 WL   NC1 36
DSP_SDCKE   37 CKE NC2 40
DSP_SDCLK0 38 CLK
DSP_DQM   15 LDQM
            39 UDQM

Z2
SDRAM_4MX16

FLASH MEMORY

+3.3V

C135 47nF

DSP_ADDR[00:23]
DSP_DATA[00:31]

DSP_ADDR00 25 A0   VCC 37
DSP_ADDR01 24 A1   DQ0 29 DSP_DATA00
DSP_ADDR02 23 A2   DQ1 31 DSP_DATA01
DSP_ADDR03 22 A3   DQ2 33 DSP_DATA02
DSP_ADDR04 21 A4   DQ3 35 DSP_DATA03
DSP_ADDR05 20 A5   DQ4 38 DSP_DATA04
DSP_ADDR06 19 A6   DQ5 40 DSP_DATA05
DSP_ADDR07 18 A7   DQ6 42 DSP_DATA06
DSP_ADDR08 7   A8   DQ7 44 DSP_DATA07
DSP_ADDR09 6   A9   DQ8 30 DSP_DATA08
DSP_ADDR10 5   A10   DQ9 32 DSP_DATA09
DSP_ADDR12 4   A11   DQ10 34 DSP_DATA10
DSP_ADDR13 3   A12   DQ11 36 DSP_DATA11
DSP_ADDR14 2   A13   DQ12 39 DSP_DATA12
DSP_ADDR15 1   A14   DQ13 41 DSP_DATA13
DSP_ADDR16 48 A15   DQ14 43 DSP_DATA14
DSP_ADDR17 17 A16   DQ15/A-1 45 DSP_DATA15
                A17

9
10
13
14
16

FLASH_CE 26 CE   RY/BY 15
DSP_RD   28 OE
DSP_WR   11 WE
+3.3V   47 BYTE GND1 27 TEST POINT
RESET_DSP 12 RESET GND2 46 GND2

U10
AM29LV400B

NOTE: The PCB layout is configured to install Either the 1M X 16 or the 4M X 16 parts but not both!

COMPANY: LINE 6

LINE 6

TITLE:

SHARCTONE MAIN
DSP MEMORY

PROGRAM: PADS POWER LOGIC V5.0

REV: E1

DRAWN: D. MOLNAR   DATED: 1/22/02
CHECKED: Name (F.Last)   DATED: 00/00/01

FILENAME: /SharcTone Product Family/DUET 212 Combo/Electrical/ /Schematic/Main/REV E/SHARCTONE MAIN REV E1.sch

SCALE: 1:1   SIZE: C   PART NUMBER: 35-00-0121   SHEET: 6 OF 7

FBX CLASS FOOT CONTROLLER INTERFACE
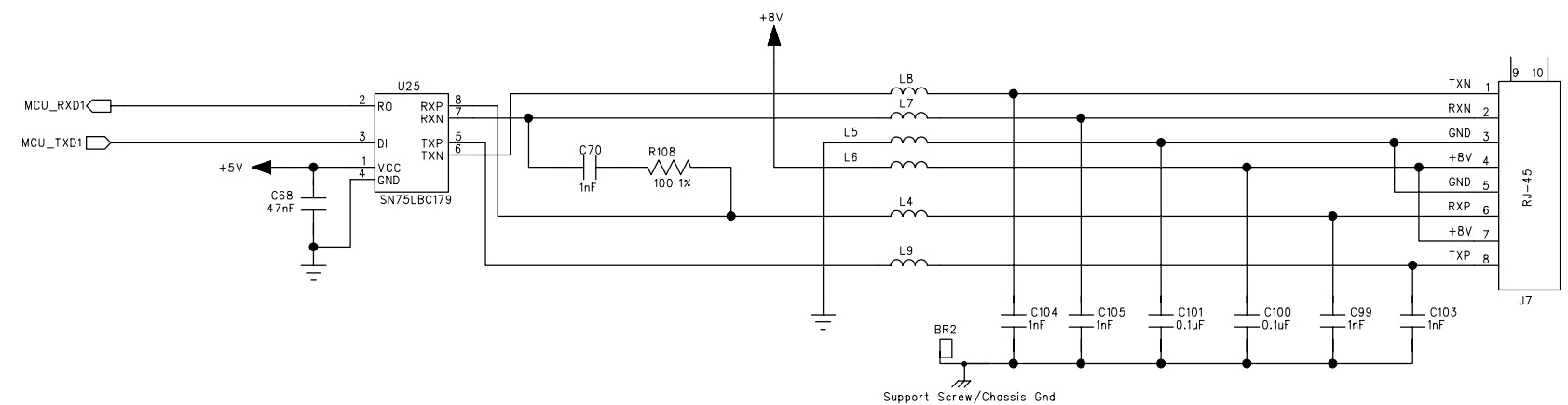
FRONT PANEL INTERFACE

MIDI INTERFACE

MIDI IN

MIDI OUT
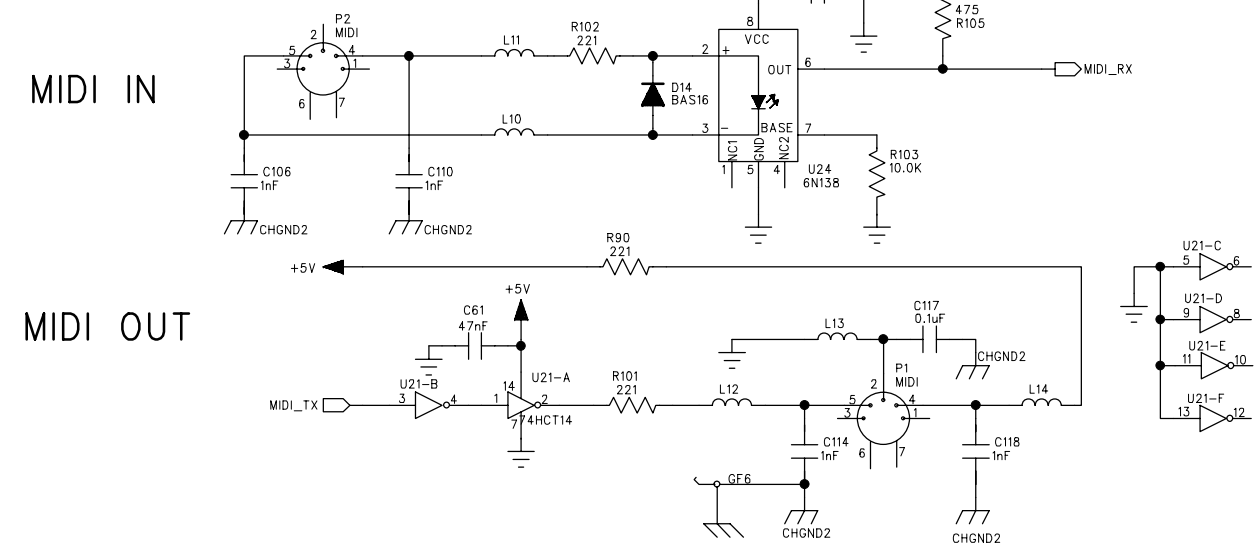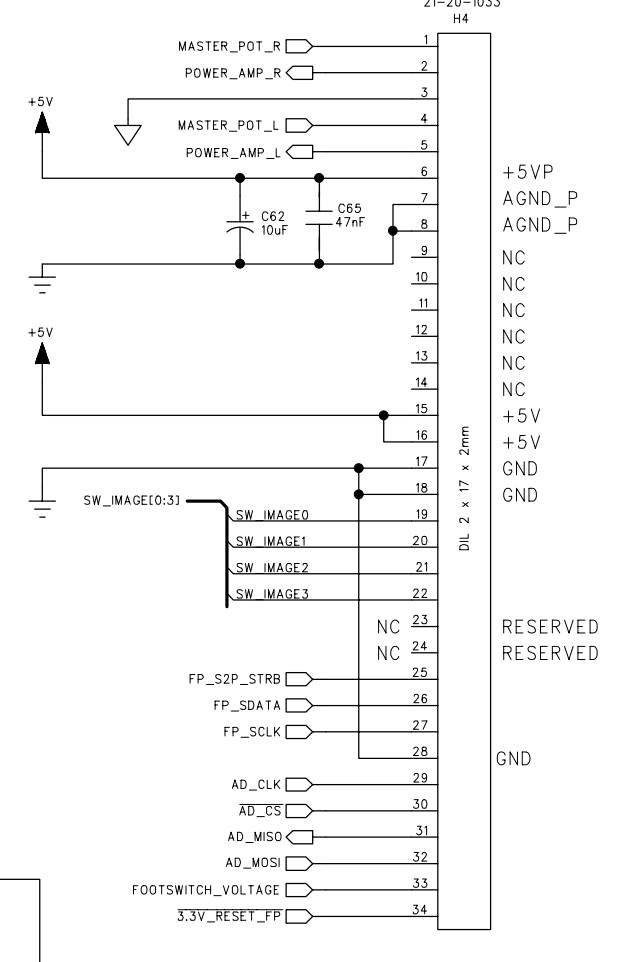
SPEAKER OUT CONNECTOR
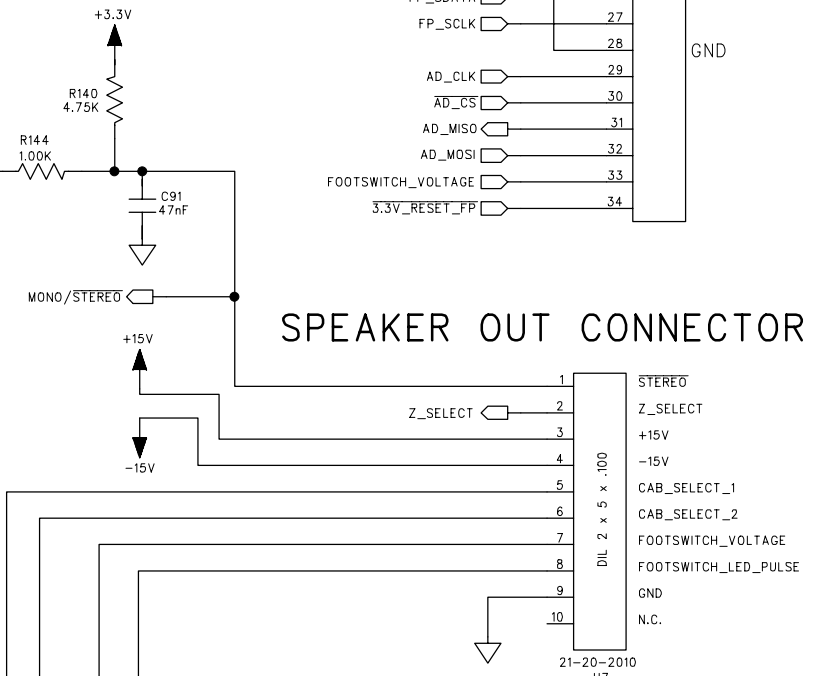
FROM FOOTSWITCH JACK (2 switch / 2 LED)

FROM CAB SELECT SWITCH

COMPANY: LINE 6

TITLE:

SHARCTONE MAIN
INTERFACE

PROGRAM: PADS POWER LOGIC V5.0

REV: E1

DRAWN: D. BLACKMORE
DATED: 3/29/2002

CHECKED: Name (F.Last)
DATED: 00/00/01

FILENAME: /SharcTone Product Family/DUET 212 Combo/Electrical/
/Schematic/Main/REV E/SHARCTONE MAIN REV E1.sch

SCALE: 1:1   SIZE: C   PART NUMBER: 35-00-0121   SHEET: 7 OF 7

VETTA/HD147 HEAD POWER AMP

*Vetta Head and Combo use the same PCB
The schematic reflects the components inserted for each respective assembly

(*)DO NOT INSTALL

COMPANY: LINE 6

TITLE: VETTA/HD147 HEAD POWER AMP

PROGRAM: PADS POWER LOGIC V3.5.1

FILENAME: G:/Clients/Ffd/SharcTone Product Family/Sharctone HD/

DRAWN: RJP T.B. **DATED:** 10/01/01 5/29/03

CHECKED: Name (F.Last) **DATED:** 00/00/01

SCALE: 1:1 **SIZE:** C **PART NUMBER:** 35-00-0205 **SHEET:** 1 OF 4

REV: B

VETTA/HD147 HEAD POWER AMP

ECOs INCLUDED ON THIS SCHEMATIC/PCB REVISION

ECO NO:	DATE:	DESCRIPTION:

ANALOG SWITCH GATES

Z_SELECT	A/C	B/D
(4) +15V	-7.5V	-7.5V
(8) HI-Z	+7.5V	-7.5V
(16) -15V	+7.5V	+7.5V

note: for HD147 R87,R147,R150,R151 are 2.49k

note: C12 and C23 only installed on HD147

OUTPUT STAGE
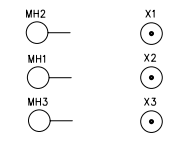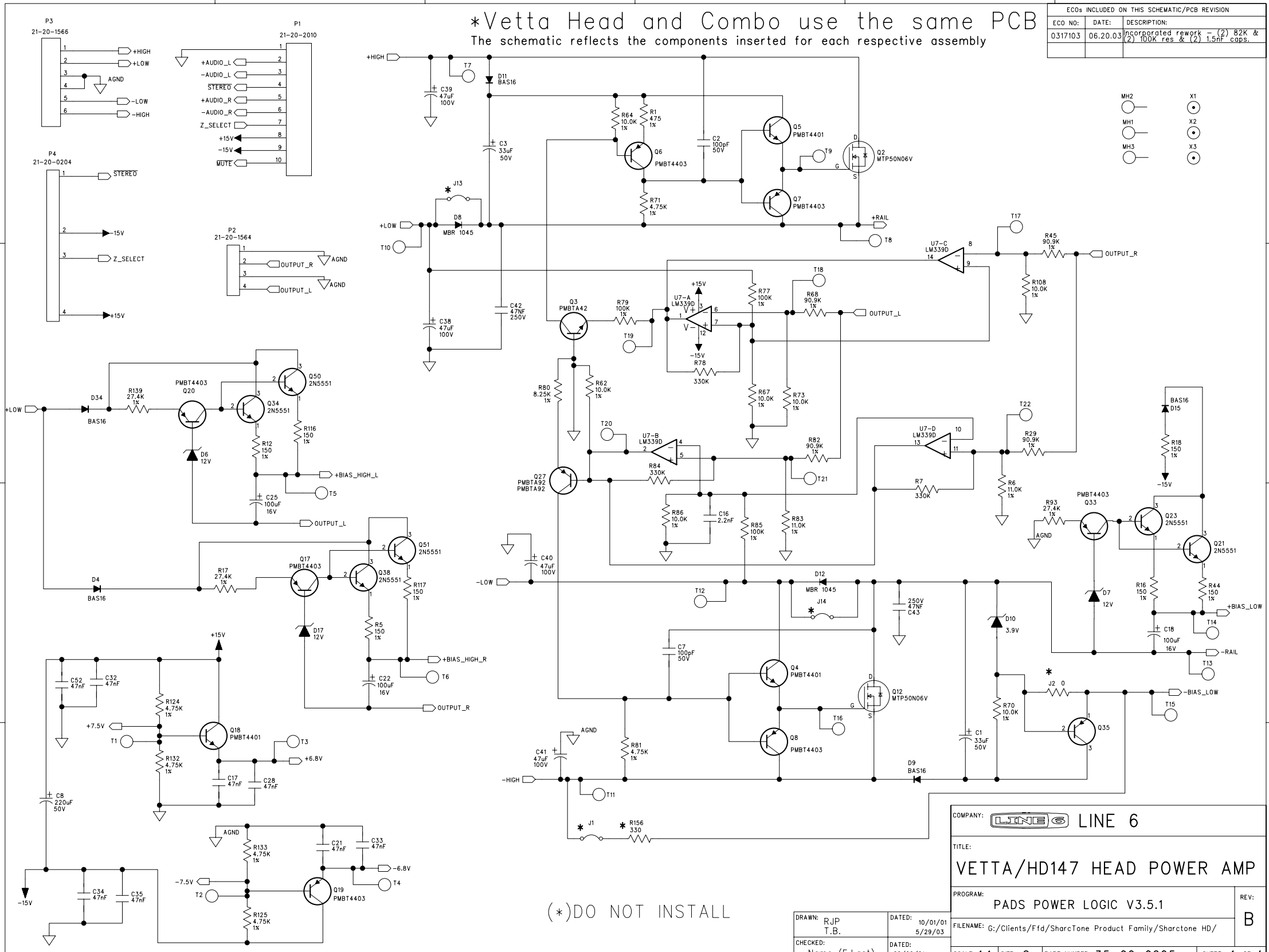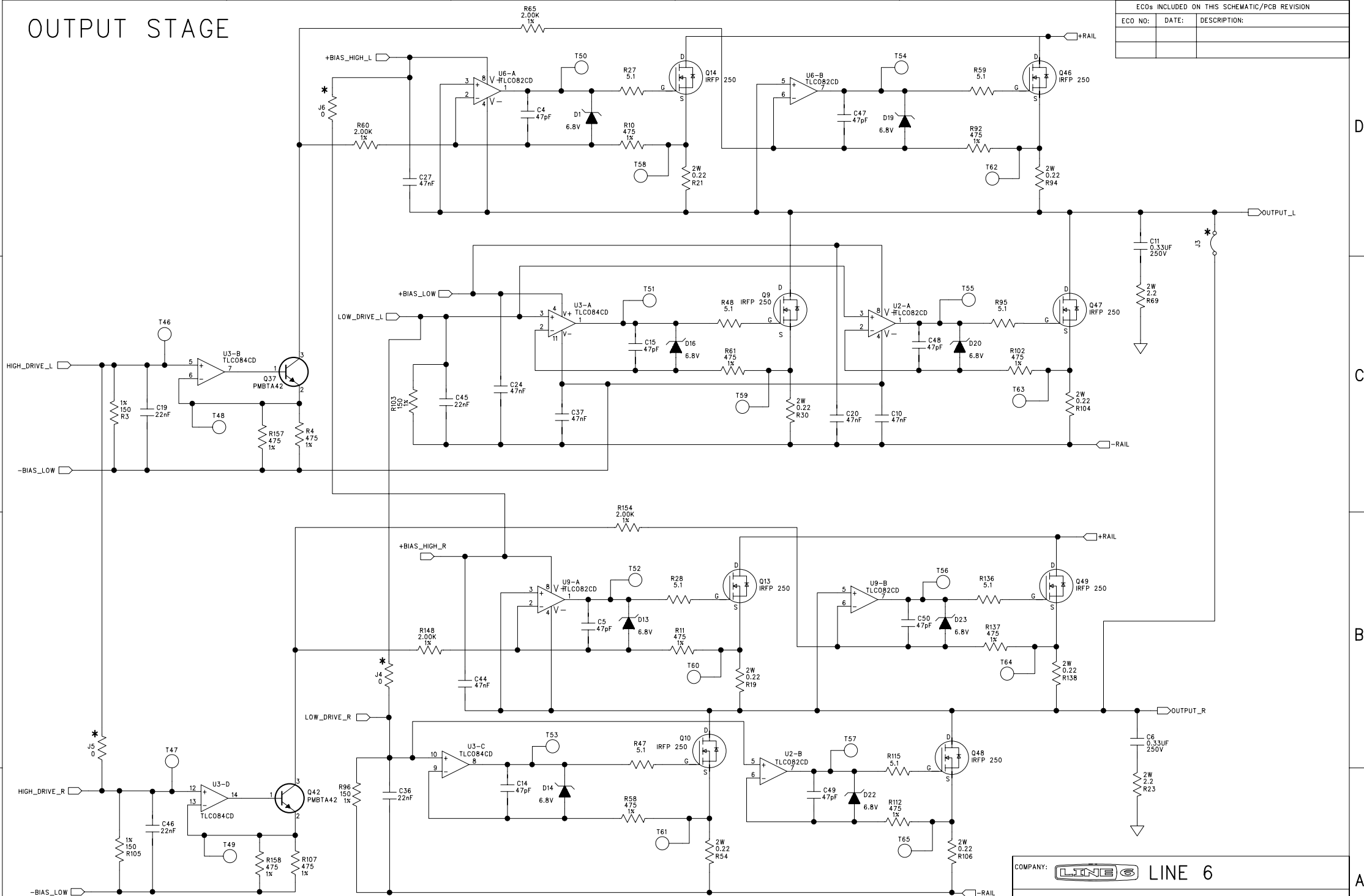
(*)DO NOT INSTALL

COMPANY: LINE 6

TITLE: VETTA/HD147 HEAD POWER AMP

PROGRAM: PADS POWER LOGIC V3.5.1

REV: B

FILENAME: G:/Clients/Ffd/SharcTone Product Family/Sharctone HD/

DRAWN: RJP / T.B.   DATED: 10/01/01 / 5/29/03

CHECKED: Name (F.Last)   DATED: 00/00/01

SCALE: 1:1   SIZE: C   PART NUMBER: 35-00-0205   SHEET: 3 OF 4

ECOs INCLUDED ON THIS SCHEMATIC/PCB REVISION

ECO NO: DATE: DESCRIPTION:

PRIMARY POWER SECTION

SECONDARY POWER SECTION

HOUSEKEEPING SECTION

DO NOT INSTALL
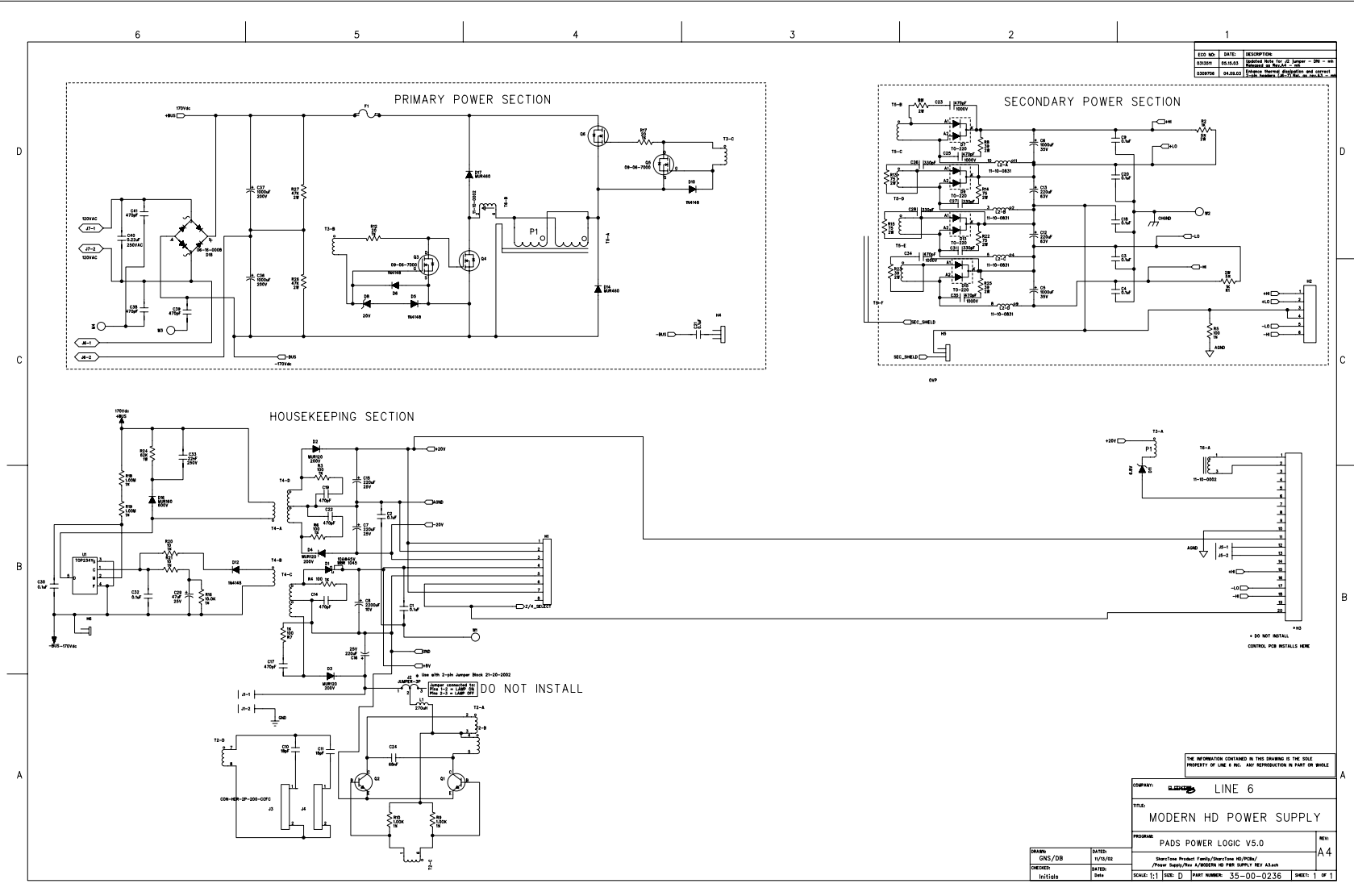
COMPANY: LINE 6

TITLE: MODERN HD POWER SUPPLY

PROGRAM: PADS POWER LOGIC V5.0

REV: A4

DRAWN: GNS/DB DATED: 11/13/02
CHECKED: Initials DATED: Date

SCALE: 1:1 SIZE: D PART NUMBER: 35-00-0236 SHEET: 1 OF 1

* DO NOT INSTALL

REVISION RECORD

LTR	ECO NO:	APPROVED:	DATE:
A	0302701 Released as rev.A	Gregg Stock	01.28.03
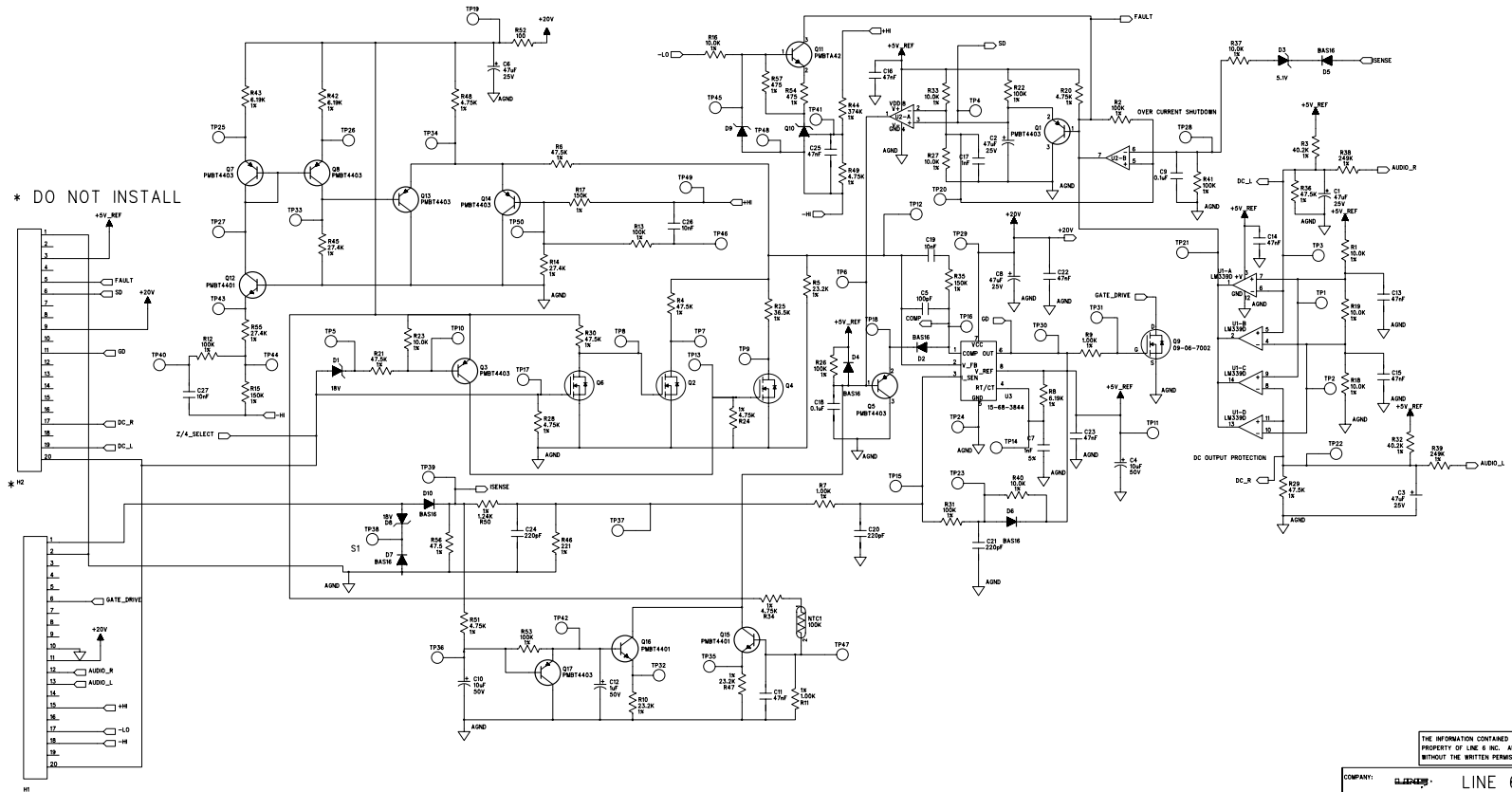
COMPANY: LINE 6

TITLE: MODERN HD PS CONTROL

PROGRAM: PADS POWER LOGIC V4.0

REV: A

DRAWN: Name (F.Last) DATED: 00/00/01
CHECKED: Name (F.Last) DATED: 00/00/01

FILENAME: Data on Ftd/Clients/Ftd/Product/Hardware/Schematics/File.sch

SCALE: 1:1 SIZE: D PART NUMBER: 35-00-0119 SHEET: 1 OF 1

OVER CURRENT SHUTDOWN

DC OUTPUT PROTECTION

FAULT
SD
GD
DC_R
DC_L
Z/4_SELECT
GATE_DRIVE
AUDIO_R
AUDIO_L
+HI
-LO
-HI
ISENSE

HD SPEAKER OUTPUTS PCB

SPEAKER LEFT/MONO #1 J1B
C1 1nF
C63 NPO 1nF J42
SPEAKER LEFT/MONO #2 J28
C47 NPO 1nF J43

RIGHT SPKR GROUND
RIGHT SPKR SIGNAL
LEFT SPKR GROUND
LEFT SPKR SIGNAL
J8

J1

J7-1
J7-2

RIGHT
16 OHM
8 OHM
4 OHM
CENTER OFF
LEFT
SW1-A

CENTER OFF
SW1-B

H3

SPEAKER RIGHT #1 J16
C2 1nF
C54 NPO 1nF J44
SPEAKER RIGHT #2 J30
C53 NPO 1nF J45

LINE 6
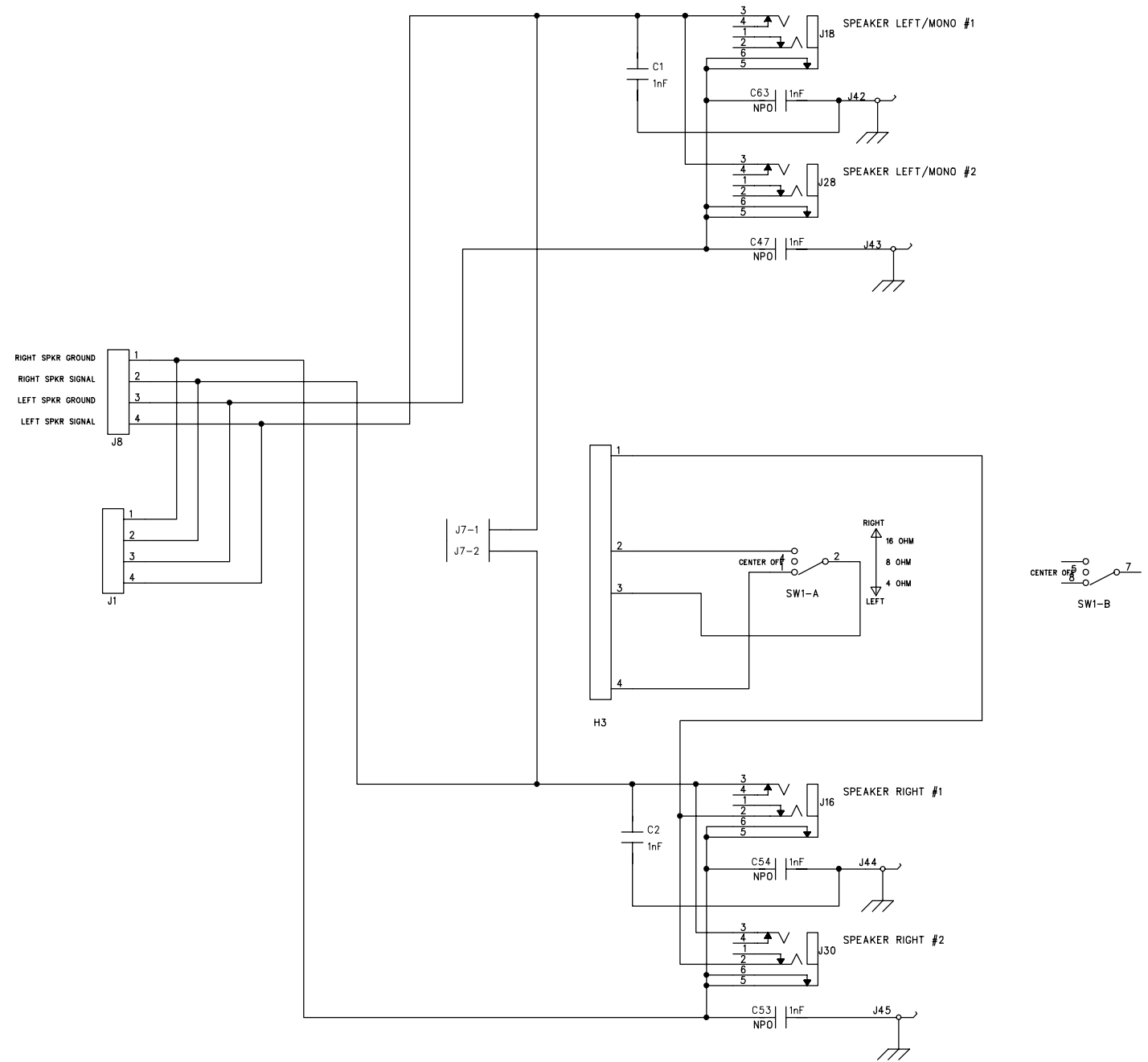
TITLE: HD SPEAKER OUTPUTS PCB

COMPANY:	LINE 6
TITLE:	HD SPEAKER OUTPUTS PCB
PROGRAM: PADS POWER LOGIC V5.0	REV: B
DRAWN: T Burton	DATED: Date
CHECKED: Initials	DATED: Date
FILENAME: .../SharcTone Product Family/Sharctone HD/PCBs/ /Speaker Out/Rev A/Modern HD SPKR OUT REV B.sch	
SCALE: 1:1	SIZE: C	PART NUMBER: 35-00-0237	SHEET: 1 OF 1

SWITCHES AND ENCODERS

INTERFACE TO MAIN PCB

21-20-1033
H1

Pin	Signal
1	MASTER_POT_R
2	POWER_AMP_R
3	AGND
4	MASTER_POT_L
5	POWER_AMP_L
6	+5V_P
7	AGND_P
8	AGND_P
9	NC
10	NC
11	NC
12	NC
13	NC
14	NC
15	+5V
16	+5V
17	GND
18	GND
19	SW_IMAGE0
20	SW_IMAGE1
21	SW_IMAGE2
22	SW_IMAGE3
23	NC
24	NC
25	FP_S2P_STRB
26	FP_SDATA
27	FP_CLK
28	
29	AD_CLK
30	AD_CS
31	AD_MISO
32	AD_MOSI
33	
34	3.3V_RESET

+5V_P
AGND_P
AGND_P
+15V
-15V
+8V
+8V
GND_M
GND_M
+5V
+5V
GND
GND

RESERVED
RESERVED

GND

+5V_P
C17 47nF
AGND_P

+5V
C12 47nF
C31 10uF 50V

SW_IMAGE[0:3]

ENCODER 0
AMP 1

ENC1
EC20A1B

M1

BREAKAWAY BOARD
18 COUNT INCR ENCODER W/PUSH BUTTON

D3 — BAS16
D1 — BAS16
D2 — BAS16

H3

H2

SW_IMAGE[0:3]
SW_IMAGE0
SW_IMAGE1
SW_IMAGE2
SW_GROUP0

+5V
C4 47nF

U3
74HCT595

GND +V
OE
RCLK Q7
       Q6
SCLR   Q5
       Q4
SCLK   Q3
       Q2
SER   Q1
SDO   Q0

FP_S2P_STRB
3.3V_RESET
FP_CLK
FP_SDATA

SW_GROUP3
SW_GROUP2
SW_GROUP1
SW_GROUP0

FP_SDATA_CHAIN

SW_GROUP1
MOD   SW8   D39 — BAS16
SW_GROUP3
DELAY   SW5   D37 — BAS16
GATE   SW9   D20 — BAS16
COMP   SW7   D23 — BAS16
TAP   SW6   D25 — BAS16
SW_GROUP2
A   SW1   D22 — BAS16   SW_IMAGE0
B   SW2   D21 — BAS16   SW_IMAGE1
C   SW3   D24 — BAS16   SW_IMAGE2
D   SW4   D26 — BAS16   SW_IMAGE3

MH3 MH6 MH4 MH5 MH7 MH11 MH10 MH14
Mounting holes for switch frame

COMPANY: LINE 6 INC

TITLE:
FT3 FRONT PANEL
(Classic Series / Modern-HD)

PROGRAM: PADS POWER LOGIC V5.0

REV: C

FILENAME: /SharcTone Product Family/SharcTone 212 Combo/Electrical/
/Schematic/Front Panel/REV C/FT3 Front Panel REV C.sch

DRAWN: RP/DB	DATED: 5/20/02
CHECKED: Name (F.Last)	DATED: 00/00/01

SCALE: 1:1 | SIZE: C | PART NUMBER: 35-00-0146 | SHEET: 1 OF 3

POTENTIOMETERS

ECOs INCLUDED ON THIS SCHEMATIC/PCB REVISION

ECO NO:	DATE:	DESCRIPTION:

+5V_P

DRIVE POT0 — BASS POT1 — MID POT2 — TREBLE POT3 — PRESENCE POT4 — VOLUME POT5 — REVERB POT6

C14 47nF

R31 — R30 — R29 — R28 — R27 — R26 — R25

C28 47nF

ALL POTS

AGND_P

+5V

C13 47nF

VCC 20   GND 10

IN1 1   REF+ 14
IN2 2
IN3 3
IN4 4   REF- 13
IN5 5   EOC 19
IN6 6   DOUT 16   AD_MISO
IN7 7   ADRIN 17   AD_MOSI
IN8 8   CLK 18   AD_CLK
IN9 9   CSN 15   AD_CS
IN10 11
IN11 12

U4
TLC1543CDW

+5V_P

R15 10.0

C30
1uF
50V

AGND_P

C7 C8 C9 C10 C11 C15 C18 C19 C16
47nF 47nF 47nF 47nF 47nF 47nF 47nF 47nF 47nF

AGND_P

R13 10.0K 1%   R14 10.0K 1%   +5V_P

AGND_P

+5V_P

MOD — DELAY

C26 47nF

R24 — R23

POT7 — POT8

AGND_P

MASTER VOLUME POT

MASTER_POT_R
POWER_AMP_R

R21 10.0K

R22-A
10KB LINEAR

MASTER_POT_L
POWER_AMP_L

R20 10.0K

R22-B
10KB LINEAR

AGND

AGND
CONNECTION
TO SHAFT

This section is electrically isolated
from the rest of the front panel PCB.

COMPANY: LINE 6 INC

TITLE:
FT3 FRONT PANEL
(Classic Series / Modern-HD)

PROGRAM: PADS POWER LOGIC V5.0

REV: C

DRAWN: RP/DB	DATED: 5/20/02
CHECKED: Name (F.Last)	DATED: 00/00/01

FILENAME: /SharcTone Product Family/SharcTone 212 Combo/Electrical/
/Schematic/Front Panel/REV C/FT3 Front Panel REV C.sch

SCALE: 1:1   SIZE: C   PART NUMBER: 35-00-0146   SHEET: 2 OF 3

FRONT PANEL LEDS

ENCODER LEDS

CHANNEL SELECT SWITCH LEDS

JEWEL LED BREAK-AWAY PCB

FIDUCIAL MARKS

PCB MOUNTING HOLES

Mounting holes for 16 position light pipe

Mounting holes for 6 position light pipe

Mounting holes for 6 position light pipe

COMPANY: LINE 6

TITLE: FT3 FRONT PANEL (Classic Series / Modern-HD)

PROGRAM: PADS POWER LOGIC V5.0

REV: C

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

DRAWN: G. STOCK/DB | DATED: 5/20/02
CHECKED: Name (F.Last) | DATED: 00/00/01

FILENAME: /SharcTone Product Family/SharcTone 212 Combo/Electrical/ /Schematic/Front Panel/REV C/FT3 Front Panel REV C.sch

SCALE: 1:1 | SIZE: C | PART NUMBER: 35-00-0146 | SHEET: 3 OF 3

GUITAR INPUT PCB

Pre-Emphasis Characteristics:
Gain(DC) = 9.5dB
Gain(Pre-E) = 14dB
f1=830Hz , f2=3.6KHz

COMPANY: LINE 6

TITLE: DUET GUITAR INPUT PCB

PROGRAM: PADS POWER LOGIC V4.0

REV: C

DRAWN: D. Blackmore
DATED: Date 7/10/02

CHECKED: Initials
DATED: Date

FILENAME: SHARCTONE Product Family/DUET 212 Combo/Electrical/ /Schematic/GUITAR IN/REV C/DUET GUITAR IN REV C.SCH

SCALE: 1:1   SIZE: B   PART NUMBER: 35-00-0169   SHEET: 1 OF 1

OUTSIDE LEDS — INSTALLED
4 LEDs PER SIDE

OUTSIDE LEDS — DO NOT INSTALL
DO NOT INSTALL THESE RESISTORS AND LEDs
3 LEDs PER SIDE

CENTER
DO NOT INSTALL THESE RESISTORS AND LEDS

	REVISION RECORD		
LTR	ECO NO:	APPROVED:	DATE:
B	0233607	KD/DB	5.14.03
C	0315307	KD/DB	5.27.03

Corrected (+) on silkscreen for LEDs. — DB

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
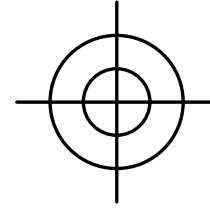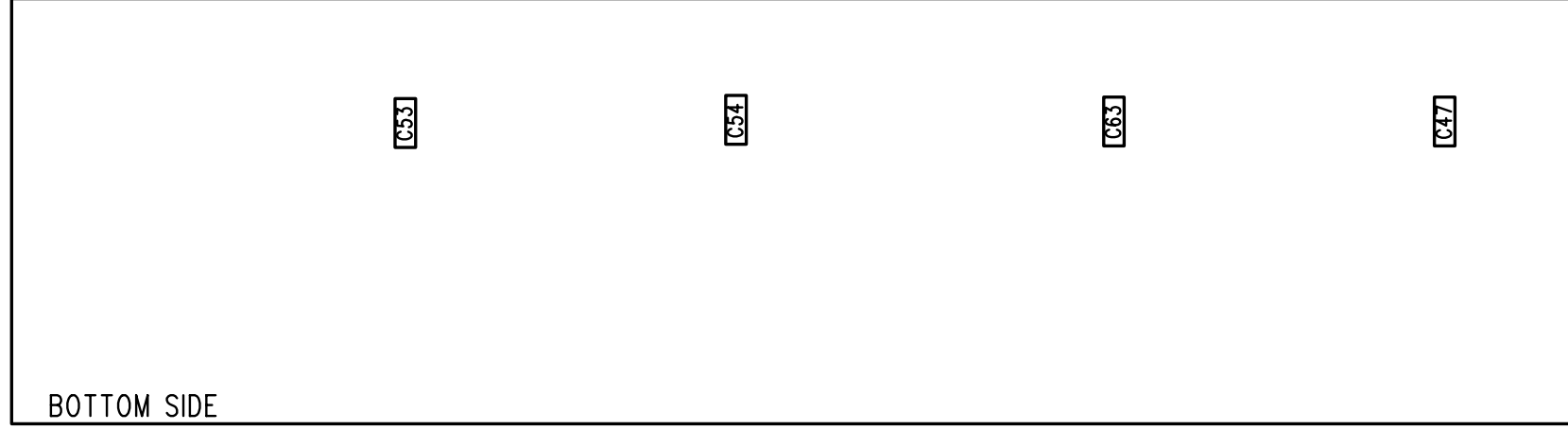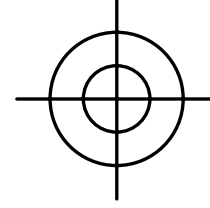
COMPANY: LINE 6   LINE 6

TITLE:

MODERN HD LED BD

PROGRAM:
PADS POWER LOGIC V5.0

REV:
C

DRAWN: Initials	DATED: Date
CHECKED: Initials	DATED: Date

FILENAME:
.../Sharctone HD/PCBs/LED — 0008/Rev A/Modern HD Led Bd Rev A.sch

SCALE: 1:1   SIZE: B   PART NUMBER: 35-00-0008   SHEET: 1 OF 1

Place PCBA date code here per note

PCB Date Code | PCBA Date Code

ASSEMBLY TOP

DATE CODE REQUIREMENTS

1) Silkscreen date code for bare PCB fabrication
   in area marked on drawing.

2) Place date code stamp or sticker for
   finished PCBA in area marked on drawing.

COMPANY: LINE 6   LINE 6

PROGRAM: PADS POWER PCB V5.0

FILE: \SharcTone Product Family\Duet 212 Combo\Electrical\
PCB\Sharctone Family Main\REV E\SHARCTONE MAIN REV E.pcb

SCALE: 1:1 | REV: E | DATE: DECEMBER 20, 2002
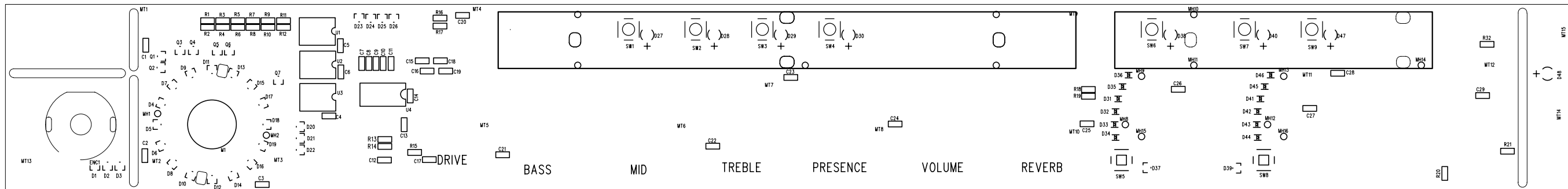
TITLE: Sharctone Main Board

PART # 35-00-0121

ASSEMBLY DRAWING BOTTOM

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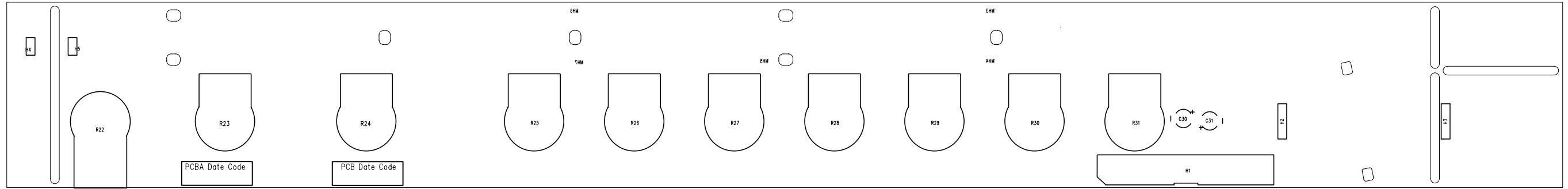WITHOUT THE WRITTEN PERMISSION OF LINE 6 INC. IS PROHIBITED

COMPANY: LINE 6

PROGRAM: PADS POWER PCB V5.0

FILE: \SharcTone Product Family\Duet 212 Combo\Electrical\
PCB\Sharctone Family Main\REV E\SHARCTONE MAIN REV E.pcb

| SCALE: 1:1 | REV: E | DATE: DECEMBER 20, 2002 |

TITLE: Sharctone Main Board

PART # 35-00-0121

DATE CODE REQUIREMENTS

1) Silkscreen date code for bare PCB fabrication
   in area marked on drawing.

2) Place date code stamp or sticker for
   finished PCBA in area marked on drawing.

PLACE PCBA DATE CODE HERE

LINE 6, INC.

PCB Date Code

PCBA Date Code

POWER AMP
REV. A 4/9/03

LINE

ASSEMBLY TOP

COMPANY:	LINE 6 LINE 6 INC.
PROGRAM: PADS POWER PCB V5.0	
FILE: \SharcTone HD\PCBs\Power Amp\Modern HD Power Amp Rev B.pcb	
SCALE: NONE REV: B	DATE: MAY 30, 2003
TITLE: MODERN HD POWER AMP	DRAWING NO: 35-00-0205

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

ASSEMBLY BOTTOM

COMPANY: LINE 6 INC.

PROGRAM: PADS POWER PCB V5.0

FILE: /ShareTone HD/PCBs/Power Amp/Modern HD Power Amp Rev B.pcb

SCALE: NONE **REV:** B **DATE:** MAY 30, 2003

TITLE: MODERN HD POWER AMP

DRAWING NO: 35-00-0205

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

Modern HD Power Amp Rev — Thu Jun 05 14:05:35 2003

DATE CODE REQUIREMENTS

1) Silkscreen date code for bare PCB fabrication in area marked on drawing.

2) Place date code stamp or sticker for finished PCBA in area marked on drawing.

ASSEMBLY TOP

LINE 6 INC.

COMPANY:	
PROGRAM: PADS POWER PCB 5.0	
FILE: \ShoreTone Product Family\ShoreTone HD\PCBA's \Power Supply\Rev A\MODERN HEAD POWER SUPPLY REV A.pcb	
SCALE: NONE	REV: A
TITLE: MODERN HEAD POWER SUPPLY	DATE: JANUARY 24, 2003
	DRAWING NO: 35-00-0236
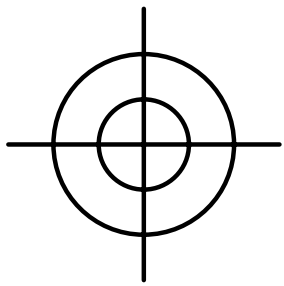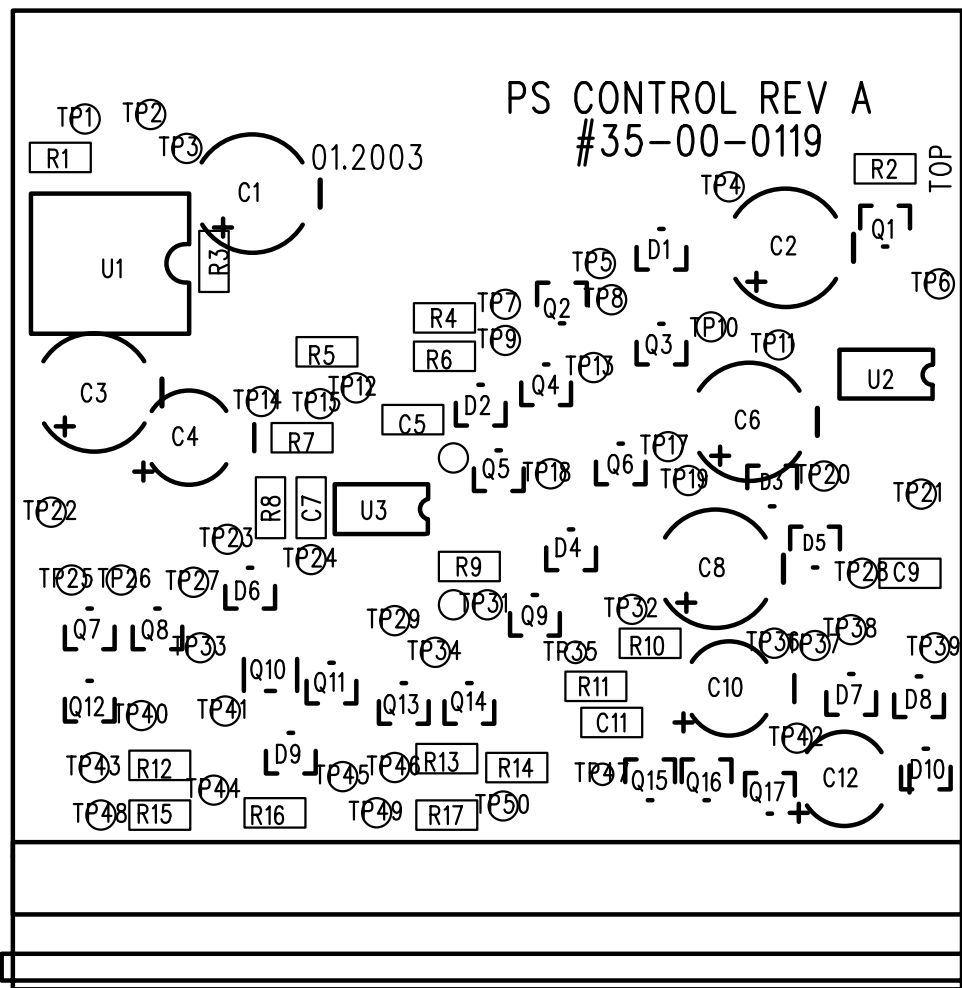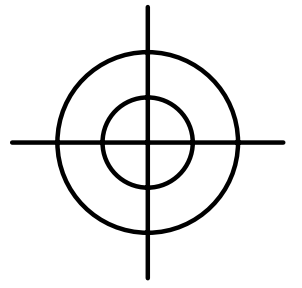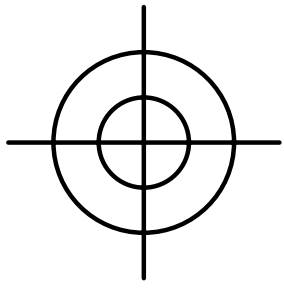
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LINE 6

MODERN HD
POWER SUPPLY REV A
PART #35-00-0236
01.2003

CAUTION! HIGH VOLTAGE

PCB Date Code

PCBA Date Code

PLACE PCB ASSY DATE CODE HERE

PS CONTROL REV A
#35-00-0119

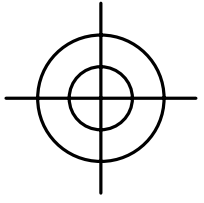## ASSEMBLY TOP

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LINE 6 Inc.

PROGRAM: PADS POWER PCB V5.0

FILE: ...\Sharctone HD\PCBs\PS Control\REV A\PS Control Rev A.pcb

SCALE: 1:1   REV: A   DATE: JANUARY 27, 2003

TITLE: **MODERN HD P.S. CONTROL**
PART # 35-00-0119

DATE CODE REQUIREMENTS

1) Silkscreen date code for bare PCB fabrication in area marked on drawing.

2) Place date code stamp or sticker for finished PCBA in area marked on drawing.

H2

BOTTOM

| PCBA Date Code | PCB Date Code |

R18 R19
C14 C13
C15
R20 R21
R22 R23 R24 R25
C16
C17
R26
R27 C18
R28
R33 R30 C19 R31 R29
R37 R34 R35 C20 R36 R32
C22 C21 R38 R39
C23 R40
R41
R42 R43
R44 R45
R49
R46 R47 C25
R50 C24 R51 NTC1 R48 R54 R55
R52 R57 C27
R53
R56 C26

H1

ASSEMBLY BOTTOM

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LINE 6 Inc.

PROGRAM: PADS POWER PCB V5.0

FILE: .../Sharetone HD/PCBs/PS Control/REV A/PS Control Rev A.pcb

| SCALE: 1:1 | REV: A | DATE: JANUARY 27, 2003 |

TITLE: MODERN HD P.S. CONTROL
PART # 35-00-0119

9000Mils

Place PCBA Date Code Here.

PCBA Date Code

J1 C1 L1 C4 M3 C3 L2 R1 R2 RT1 F1 M1 M2 J2

ASSEMBLY TOP

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THE WRITTEN PERMISSION OF LINE 6 INC. IS PROHIBITED

DATE CODE REQUIREMENTS

1) Silkscreen date code for bare PCB fabrication
   in area marked on drawing.

2) Place date code stamp or sticker for
   finished PCBA in area marked on drawing.

COMPANY:	LINE 6 INC.	
PROGRAM: PADS POWER PCB 3.5.1		
FILE: Data on Ffd/Clients/FFD/HDII/Hardware/Pcb/HDII LINE FILTER REV B.PCB		
SCALE: NONE	REV: B	DATE: MAR 5, 2001
TITLE: HDII LINE FILTER	DRAWING NO: 35-00-4001	
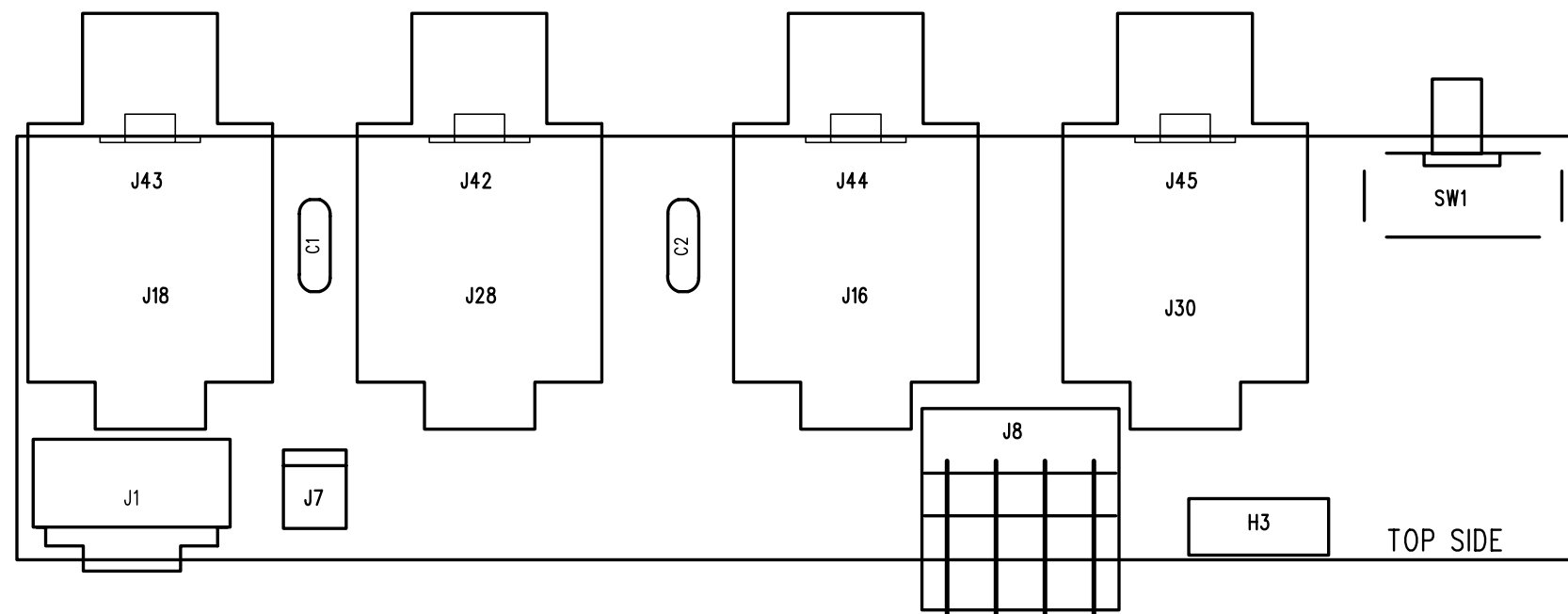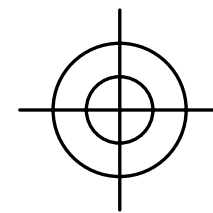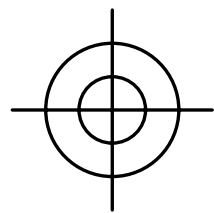
J43

J42

J44

J45

SW1

C1

C2

J18

J28

J16

J30

J1

J7

J8

H3

TOP SIDE

ASSEMBLY TOP

COMPANY:	LINE 6	LINE 6 INC.
PROGRAM:	PADS POWER PCB V5.0	
FILE:	\SharcTone HD\PCBs\Speaker Out\Rev A\Modern HD Speaker Out Rev B.pcb	

SCALE: NONE	REV: B	DATE: APRIL 7, 2003

TITLE: MODERN HEAD SPEAKER OUTPUTS	DRAWING NO: 35-00-0237

BOTTOM SIDE

C53   C54   C63   C47

ASSEMBLY DRAWING BOTTOM

COMPANY:

LINE 6 INC.

LINE6

PROGRAM: PADS POWER PCB V5.0

FILE: /ShareTone HD/PCBs/Speaker Out/Rev A/Modern HD Speaker Out Rev B.pcb

SCALE: NONE   REV : B   DATE: APRIL 7, 2003

TITLE:
MODERN HEAD
SPEAKER OUTPUTS

DRAWING NO: 35-00-0237

DRIVE   BASS   MID   TREBLE   PRESENCE   VOLUME   REVERB

SILKSCREEN TOP

COMPANY:	LINE 6 INC.
PROGRAM: PADS POWER PCB V5.0	
FILE: FT3 Front Panel Rev C.pcb	
SCALE: NONE REV: C	DATE: MARCH 21, 2003
TITLE: FT3 FRONT PANEL	DRAWING NO: 35-00-0146

R22

R23   R24   R25   R26   R27   R28   R29   R30   R31   C30   C31

PCBA Date Code   PCB Date Code

Place PCBA Date Code Here

ASSEMBLY BOTTOM

DATE CODE REQUIREMENTS

1) Silkscreen date code for bare PCB fabrication
   in area marked on drawing.

2) Place date code stamp or sticker for
   finished PCBA in area marked on drawing.

COMPANY: LINE 6 INC.

PROGRAM: PADS POWER PCB V5.0

FILE: FT3 Front Panel Rev C.pcb

SCALE: NONE   REV: C   DATE: MARCH 21, 2003

TITLE: FT3 FRONT PANEL   DRAWING NO: 35-00-0146

ASSEMBLY TOP

COMPANY: **LINE 6 INC.**

PROGRAM: PADS POWER PCB V4.0

FILE: \SHARCTONE Product Family\DUET 212 Combo\Electrical\PCB\GUITAR IN\REV C\DUET GUITAR IN REV C.pcb

SCALE: NONE	REV: C	DATE: AUGUST 27, 2002

DRAWING NO: 35-00-0169

TITLE:
SHARCTONE GUITAR INPUT

Items: 99-020-0515

I

Level	Seq	Component-Item	Component-Description							Qty-Per-Parent

==

Parent Item: 99-020-0515   HD 147 US

Level	Seq	Component-Item	Component-Description							Qty-Per-Parent
1	10	21-37-1160	CABLE PWR UL/CSA SJT 8.2ft Blk EL-302 w/GND EL70	10	EA	.0	A	Y	N	1.000000
1	20	40-00-0021	MANUAL USERS HD147 FT3	10	EA	.0	A	Y	N	1.000000
1	30	40-00-0024	CHART PRESET HD147	10	EA	.0	A	Y	N	1.000000
1	40	40-00-0073	SHEET ACCESSORY DOMESTIC	10	EA	.0	A	Y	N	1.000000
1	50	40-10-0057	CARTON GIFT HD147 28.75x 12.5x 13.75, FOL, 275 D	10	EA	.0	A	Y	N	1.000000
1	60	40-10-0059	FOAM CORNER PE-LAMINATE 1.75" GRAY 5"-CUBE	10	EA	.0	A	Y	N	8.000000
1	70	40-20-0010	BAG PLASTIC 43"x38"x.004 CLEAR	10	EA	.0	A	Y	N	1.000000
1	80	40-20-0011	BAG PLASTIC 10 x 16 2 mil	10	EA	.0	A	Y	N	1.000000
1	90	55-00-0001	COVER AMPLIFIER POLISHING MODERN-HD FT3	10	EA	.0	A	Y	N	1.000000
1	100	59-00-0515	ASSY UNIT COMPLETE MODERN-HD FT3	10	EA	.0	A	Y	N	1.000000
2	20	21-30-0009-4	CBL DIL 10 PIN .100 PITCH 5.5-IN	10	EA	.0	A	Y	N	1.000000
2	30	21-34-0007-3	CBL SIL 4-COND 26AWG 2 x 127mm F-F RED	10	EA	.0	A	Y	N	1.000000
2	40	21-34-0008-2	CBL SIL 4-PINS .156 IN PITCH 10.0-IN	10	EA	.0	A	Y	N	1.000000
2	50	21-34-0014-2	CBL SIL 8-PINS .156 IN PITCH 13.0-IN	10	EA	.0	A	Y	N	1.000000
2	60	21-34-0015	CBL SIL 5-COND 26AWG 2mm x 151.0mm F-F Z-TYPE	10	EA	.0	A	Y	N	1.000000
2	70	21-34-0018-1	CBL SIL-4 3-COND 18AWG 7.5mm 229.0/203.0mm 1-BK/2-WH	10	EA	.0	A	Y	N	1.000000

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====================================================================================================================

2            80 21-34-0021-3    CBL SIL 6-PIN .156 PITCH     10  EA       .0   A  Y  N                    1.000000
                10.0-IN

2            90 21-34-0030      CBL ASSY SIL 2-CON 2.0 IN 2mm 10  EA      .0   A  Y  N                    1.000000

2           100 21-34-9034-1    CBL DIL RIBBON 34-COND 28AWG  10  EA      .0   A  Y  N                    1.000000
                1.27mm 203.20mm

2           110 21-36-0265      CABLE SPKR 2 COND 24AWG 12.0" 10  EA      .0   A  Y  N                    2.000000
                WHT INSUL SOLID

                          Ref: 1. PWR Amp to SPK OUT   2. LED PCBA to POWER SUPPLY J1
2           120 24-03-0002      SWITCH TOGGLE SPST ON-OFF    10  EA       .0   A  Y  N                    1.000000
                250V 6A 2-PIN CHASSIS MNT

2           130 24-21-1122      CAP SWITCH                   10  EA       .0   A  Y  N                    1.000000

2           140 30-00-0018      SCREW SELF-TAP 6-32 x .75 PFZ 10  EA      .0   A  Y  N                    4.000000

2           150 30-00-0035      SCREW 6-32 x 1" PPZ w/EXT    10  EA       .0   A  Y  N                    1.000000
                TOOTH CAPTIVE WASHER

2           160 30-00-0039      SCREW 10-32 x 1 IN PHIL-TRUSS 10  EA      .0   A  Y  N                    8.000000
                BLACK

2           170 30-00-0040      SCREW 3-48 UNFx .25 FLT HD BLK 10  EA     .0   A  Y  N                    2.000000

2           180 30-00-0041      SCREW 10-24 x .75 PHIL OVAL HD 10  EA     .0   A  Y  N                    4.000000

2           185 30-00-0046      SCREW SHEET METAL NO. 6 x 5/8 10  EA      .0   A  Y  N                    2.000000
                PPZ

                          Ref: Power Supply Heat Sink Spacers
2           186 30-00-0047      SCREW 10-32 x 5/8 IN PPZ     10  EA       .0   A  Y  N                    4.000000

2           190 30-00-0375      SCREW 6-32 x .375 PPB        10  EA       .0   A  Y  N                   15.000000

2           200 30-00-0607      SCREW 6-32 x 7/16IN w/LK WASH 10  EA      .0   A  Y  N                   38.000000
                PPZ STL

2           210 30-00-8375      SCREW SHEET METAL #8 x.375"  10  EA       .0   A  Y  N                    2.000000
                SELF-TAP PPB

2           230 30-00-4250      SCREW SHEET METAL SELF-TAP   10  EA       .0   A  Y  N                    4.000000
                #4 x .250IN PPB

2           235 30-03-0015      WASHER .750 OD x.560 IDx .045 10  EA      .0   A  Y  N                    1.000000
```

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====================================================================================================================
2          240 30-06-0025     NUT .370 HEX 10-32 STL ZINC  10  EA       .0   A  Y  N                      2.000000
                   w/NYLON INSERT

2          250 30-06-0024     NUT .370 HEX 10-24 STL ZINC  10  EA       .0   A  Y  N                      4.000000
                   w/NYLON INSERT

2          260 30-06-0623     NUT HEX 6-32 w/CPTV STAR-WASHR  10  EA    .0   A  Y  N                      2.000000


2          270 30-10-0001     PLUG HOLE FINISHING 3/8"ID x  10  EA      .0   A  Y  N                      2.000000
                   1/2"OD STEEL NI-PLATED

2          290 30-12-8418     STANDOFF HEX .250 6-32 M-F   10  EA       .0   A  Y  N                      9.000000
                   1IN AL

2          295 30-15-0004     SPACER .13THKx.63OD NYLON    10  EA       .0   A  Y  N                      1.000000


2          300 30-15-0012     SPACER .75 OD x .50 ID x .19HT  10  EA    .0   A  Y  N                      1.000000
                   NYLON

2          307 30-15-0014     SPACER .615 OD x .386 ID x   10  EA       .0   A  Y  N                      1.000000
                   .189 LG WHITE NYLON

2          310 30-15-0016     SPACER 6.4 x 3.7 x 15mm      10  EA       .0   A  Y  N                      1.000000
                   NYLON NATURAL

2          325 30-15-0019     SPACER HT SNK .75 ODx.830 HT  10  EA      .0   A  Y  N                      2.000000
                   NYLON 6/6 BLK

2          330 30-27-0049     LT PIPE SHARCTONE 1.4 OD x   10  EA       .0   A  Y  N                      1.000000
                   .47 HIGH CLR POLY MINITEXTURE

2          340 30-27-0060     LIGHTPIPES 6 PIN .38 x .719  10  EA       .0   A  Y  N                      2.000000
                   LEXAN HIGHLY POLISHED

2          350 30-27-0061     BUTTON .315 DIA x .325 HIGH  10  EA       .0   A  Y  N                      2.000000
                   POLYOXMETHYLENE BLACK W/MATTE

2          360 30-33-0039-1   END CAP RIGHT 8.4x8.3x1.0 IN  10  EA      .0   A  Y  N                      1.000000
                   MDF BLK

2          370 30-33-0039-2   END CAP LEFT 8.4x8.3x1.0 IN  10  EA       .0   A  Y  N                      1.000000
                   MDF BLK

2          394 30-45-0007     KNOB SPLINE .77DIA x .76 METAL  10  EA    .0   A  Y  N                     10.000000
                   w/INDICATOR CHROME

2          396 30-45-0008     KNOB SPLINE .77DIA x .76 METAL  10  EA    .0   A  Y  N                      1.000000
                   CHROME

2          400 30-51-0070     SHIELD CHASSIS 23.44x 8x .5IN  10  EA     .0   A  Y  N                      1.000000
                   STEEL-EG

2          410 30-51-0113     LENS JEWEL D.610 x H.654IN   10  EA       .0   A  Y  N                      1.000000
                   METAL BASE w/NUT CLEAR

2          420 30-51-0122     CHASSIS BASE 8.4x 23.5 x 1.6IN  CRS CHROME-PLATED                           1.000000
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| 2 | 430 30-51-0125 | CHASSIS TOP 23.50x8.35x4.75 IN CRS CHROME PLATED | 10 EA | .0 | A Y N | 1.000000 |

| 2 | 440 30-51-0126 | PANEL I/O 11.35 x 5.77 x .30IN CRS BLK | 10 EA | .0 | A Y N | 1.000000 |

| 2 | 450 30-51-0127 | PANEL AC-RECEPT 5.77 x 4.10IN CRS BLACK | 10 EA | .0 | A Y N | 1.000000 |

| 2 | 460 30-51-0137 | OVERLAY 23.5x3.75x.02 AL | 10 EA | .0 | A Y N | 1.000000 |

| 2 | 470 30-57-0001 | HANDLE HD147 | 10 EA | .0 | A Y N | 1.000000 |

| 2 | 490 30-60-0005 | LOGO LINE 6 MED 139.70x28.63mm BRUSHED/BLK FINISH AL | 10 EA | .0 | A Y N | 1.000000 |

| 2 | 500 30-75-0008 | FOOT RUBBER 1.50" I.D. x .75"H BLACK | 10 EA | .0 | A Y N | 4.000000 |

| 2 | 510 30-75-9600 | GROMMET RUBBER 7/16-D x 1/16-GRV x 9/16IN GRV-DIA BLK | 10 EA | .0 | A Y N | 1.000000 |

| 2 | 540 50-00-0169 | PCBA INPUT GUITAR HD147 | 10 EA | .0 | A Y N | 1.000000 |

| 3 | 10 01-00-0102 | RES 1K 5% 0805 | 10 EA | .0 | A Y N | 1.000000 |

Ref: R4

| 3 | 20 01-00-0105 | RES 1M 5% 0805 | 10 EA | .0 | A Y N | 1.000000 |

Ref: R3

| 3 | 30 01-24-1002 | RES 10.0K 1% 0805 | 10 EA | .0 | A Y N | 1.000000 |

Ref: R1

| 3 | 40 01-24-4991 | RES 4.99K 1% 0805 | 10 EA | .0 | A Y N | 1.000000 |

Ref: R2

| 3 | 50 01-24-8870 | RES 887R 1% 0805 | 10 EA | .0 | A Y N | 1.000000 |

Ref: R5

| 3 | 60 03-46-0104 | CAP X7R 0.1uF 50V 20% 1206 | 10 EA | .0 | A Y N | 1.000000 |

Ref: C1

==

| 3 | 70 | 03-50-0470 | CAP NPO 47pF 50V 10% 0805 | 10 | EA | .0 | A | Y | N | 1.000000 |

Ref: C4

| 3 | 80 | 03-52-0473 | CAP X7R 47nF 50V 20% 0805 | 10 | EA | .0 | A | Y | N | 3.000000 |

Ref: C2-3,C5

| 3 | 90 | 11-10-0601 | FERRITE BEAD 600R @100MHZ 1206 | 10 | EA | .0 | A | Y | N | 1.000000 |

Ref: L1

| 3 | 100 | 12-54-0134 | IC OP AMP - OPA134UA SM SO-8 | 10 | EA | .0 | A | Y | N | 1.000000 |

Ref: U1

| 3 | 110 | 21-00-6617 | JACK 1/4" TRS 6-PIN PCB MT HORIZ TH W/CHROME HRDWARE | 10 | EA | .0 | A | Y | N | 1.000000 |

Ref: J3

| 3 | 120 | 21-20-0205 | HDR PCB MT SIL 5-PIN x 2mm MALE SHRD VERT MT TH | 10 | EA | .0 | A | Y | N | 1.000000 |

Ref: J1

| 3 | 130 | 30-18-3030 | CLIP GND PCB .30x.30x.07 | 10 | EA | .0 | A | Y | N | 1.000000 |

Ref: J2

| 2 | 550 | 50-00-0204 | PCBA MAIN HD47 | 10 | EA | .0 | A | Y | N | 1.000000 |

| 3 | 10 | 01-00-0000 | RES 0R 5% 0805 | 0 | EA | .0 | A | Y | N | 1.000000 |

Ref: R66

| 3 | 15 | 01-00-0155 | RES 1.5M 5% 0805 | 0 | EA | .0 | A | Y | N | 1.000000 |

Ref: R89

| 3 | 20 | 01-24-1000 | RES 100R 1% 0805 | 0 | EA | .0 | A | Y | N | 3.000000 |

Ref: R64,R67,R108

| 3 | 25 | 01-24-1001 | RES 1.00K 1% 0805 | 0 | EA | .0 | A | Y | N | 19.000000 |

Ref: R8,R21,R54-56,R86,R92,R95-96,R113,R115,R120,R130,R144-145,
R153-154,R157-158

| 3 | 30 | 01-24-1002 | RES 10.0K 1% 0805 | 0 | EA | .0 | A | Y | N | 27.000000 |

Ref: R10,R23,R51-52,R59-60,R68,R71,R73-74,R76-77,R80,R83,R103,
R110-111,R116-118,R128,R131-132,R134,R136,R141,R147

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| 3 | 35 01-24-1003 | RES 100K 1% 0805 | 0 EA | .0 | A Y N | 11.000000 |

Ref: R97-98,R135,R137,R165-166,R168-172

| 3 | 40 01-24-1004 | RES 1.00M 1% 0805 | 0 EA | .0 | A Y N | 6.000000 |

Ref: R72,R75,R85,R88,R91,R94

| 3 | 45 01-24-1102 | RES 11.0K 1% 0805 | 0 EA | .0 | A Y N | 4.000000 |

Ref: R99-100,R106-107

| 3 | 50 01-24-1241 | RES 1.24K 1% 0805 | 0 EA | .0 | A Y N | 2.000000 |

Ref: R4,R9

| 3 | 55 01-24-15R0 | RES 15R 1% 0805 | 0 EA | .0 | A Y N | 2.000000 |

Ref: R123,R142

| 3 | 60 01-24-1822 | RES 18.2K 1% 0805 | 0 EA | .0 | A N | 4.000000 |

Ref: R2-3,R6,R13

| 3 | 65 01-24-2000 | RES 200R 1% 0805 | 0 EA | .0 | A N | 1.000000 |

Ref: R150

| 3 | 70 01-24-2001 | RES 2.00K 1% 0805 | 0 EA | .0 | A Y N | 16.000000 |

Ref: R7,R15,R19,R24-26,R32,R34-38,R44-45,R47-48

| 3 | 75 01-24-2002 | RES 20.0K 1% 0805 | 0 EA | .0 | A Y N | 2.000000 |

Ref: R133,R149

| 3 | 80 01-24-2210 | RES 221R 1% 0805 | 0 EA | .0 | A Y N | 3.000000 |

Ref: R90,R101-102

| 3 | 85 01-24-2211 | RES 2.21K 1% 0805 | 0 EA | .0 | A Y N | 2.000000 |

Ref: R61,R62

| 3 | 90 01-24-22R1 | RES 22.1R 1% 0805 | 0 EA | .0 | A Y N | 2.000000 |

Ref: R27,R39

| 3 | 95 01-24-2741 | RES 2.74K 1% 0805 | 0 EA | .0 | A Y N | 2.000000 |

Ref: R17-18

| 3 | 100 01-24-2801 | RES 2.80K 1% 0805 | 0 EA | .0 | A Y N | 2.000000 |

Ref: R79,R82

| 3 | 105 01-24-3011 | RES 3.01K 1% 0805 | 0 EA | .0 | A Y N | 6.000000 |

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                         Ref: R20,R87,R93,R112,R114,R148
3         110 01-24-3651 RES 3.65K 1% 0805         0  EA       .0  A  Y  N                              2.000000


                         Ref: R57-58
3         115 01-24-4321 RES 4.32K 1% 0805         0  EA       .0  A  Y  N                              1.000000


                         Ref: R33
3         120 01-24-4750 RES 475R 1% 0805          0  EA       .0  A  Y  N                              3.000000


                         Ref: R104-105,R109
3         125 01-24-4751 RES 4.75K 1% 0805         0  EA       .0  A  Y  N                             10.000000


                         Ref: R53,R69,R140,R146,R151-152,R159-162
3         130 01-24-47R5 RES 47.5R 1% 0805         0  EA       .0  A  Y  N                              8.000000


                         Ref: R119,R124-126,R129,R138-139,R143
3         135 01-24-5110 RES 511R 1% 0805          0  EA       .0  A  Y  N                              1.000000


                         Ref: R12
3         140 01-24-5R11 RES 5.11R 1% 0805         0  EA       .0  A  Y  N                              4.000000


                         Ref: R43,R46,R163-164
3         145 01-24-6041 RES 6.04K 1% 0805         0  EA       .0  A  Y  N                              1.000000


                         Ref: R22
3         150 01-24-6650 RES 665R 1% 0805          0  EA       .0  A  Y  N                              2.000000


                         Ref: R63,R65
3         155 01-24-6810 RES 681R 1% 0805          0  EA       .0  A  Y  N                              4.000000


                         Ref: R1,R16,R40,R49
3         160 01-24-7500 RES 750R 1% 0805          0  EA       .0  A  Y  N                              2.000000


                         Ref: R78,R81
3         165 01-24-7501 RES 7.50K1% 0805          0  EA       .0  A  Y  N                              1.000000


                         Ref: R5
3         170 01-24-8253 RES 825K 1% 0805          0  EA       .0  A  Y  N                              1.000000


                         Ref: R84
3         175 01-24-8871 RES 8.87K 1% 0805         0  EA       .0  A  Y  N                              8.000000
                                      Ref: R11,R14,R28-31,R41-42
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3       180 01-48-9103    POT STEREO 10KA  AUDIO TAPER    0  EA      .0   A  Y  N                    1.000000
                HORIZ MT 25mm RND PLASTIC


                        Ref: POT1
3       185 03-10-6108    CAP ELEC 1000uF 6.3V 20%        0  EA      .0   A  Y  N                    2.000000
                RADIAL 8/11.5/5


                        Ref: C18,C24
3       190 03-12-0337    CAP ELEC 330uF 16V 20% RADIAL   0  EA      .0   A  Y  N                    2.000000
                8/11.5/5


                        Ref: C48,C79
3       195 03-14-0107    CAP ELEC 100uF 25V 20% RADIAL   0  EA      .0   A  Y  N                    2.000000
                6.3/11.2/5


                        Ref: C38,C44
3       200 03-18-0105    CAP ELEC 1uF 50V 20% RADIAL     0  EA      .0   A  Y  N                   14.000000
                5/11/5


                        Ref: C3-4,C8-9,C16-17,C19,C40,C46-47,C63-64,C73-74
3       205 03-18-0106    CAP ELEC 10uF 50V 20% RADIAL    0  EA      .0   A  Y  N                   12.000000
                5/11/5


                        Ref: C15,C28,C57-58,C62,C66,C71-72,C76,C78,C82,C88
3       210 03-18-0474    CAP ELEC 0.47uF 50V 20% RADIAL  0  EA      .0   A  Y  N                    1.000000
                5/11/5


                        Ref: C59
3       215 03-50-0102    CAP NPO 1nF 50V 5% 0805         0  EA      .0   A  Y  N                    4.000000



                        Ref: C70,C106,C110,C118
3       220 03-50-0272    CAP NPO 2.7nF 50V 5%  0805      0  EA      .0   A  Y  N                    4.000000



                        Ref: C7,C27,C31-32
3       225 03-50-0391    CAP NPO 390pF 50v 5% 0805       0  EA      .0   A  Y  N                    8.000000



                         Ref: C2,C6,C10,C12-14,C20,C23
3       230 03-52-0101    CAP X7R 100pF 50V 20% 0805      0  EA      .0   A  Y  N                    2.000000



                        Ref: C132,C138
3       235 03-52-0102    CAP X7R 1nF 50V 20% 0805        0  EA      .0   A  Y  N                   15.000000



                        Ref: C34,C43,C96-97,C99,C103-105,C114,C121,C126,C148-149,C154,
                          C158

3       240 03-52-0104    CAP X7R 0.1uF 50V 20% 0805      0  EA      .0   A  Y  N                   12.000000



                        Ref: C54,C56,C95,C100-101,C117,C120,C125,C131,C137,C147,C152
3       245 03-52-0221    CAP X7R 220pF 50V 20% 0805      0  EA      .0   A  Y  N                    6.000000
                                    Ref: C1,C5,C49-50,C77,C81
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   3       250 03-52-0222    CAP X7R 2.2nF 50V 20% 0805    0  EA       .0  A Y  N                2.000000



                            Ref: C26,C36
   3       255 03-52-0473    CAP X7R 47nF 50V 20% 0805     0  EA       .0  A Y  N               63.000000



                            Ref: C11,C21-22,C25,C29-30,C33,C35,C37,C39,C41-42,C45,C51-53,C55,
                                 C60-61,C65,C67-69,C75,C80,C83,86-87,89-94,102,C115,C122-124,

                                 C127-130,C133-136,C139-146,C150-151,C153,C155-157,C159-160
   3       260 06-20-0099    DIODE GEN PUR DUAL 70V 215mA  0  EA       .0  A Y  N                8.000000
                 6nS SOT-23 SM BAV99


                            Ref: D1-3,D5-6,D21-23
   3       265 06-34-0016    DIODE SWITCHING 75V 200mA     0  EA       .0  A Y  N               15.000000
                 6nS SOT-23 SM BAS16LT1


                            Ref: D4,D7-20
   3       270 09-10-4401    TRANS NPN SMALL-SIGNAL MBT4401  0  EA     .0  A Y  N                3.000000
                 SOT-23 SM


                            Ref: Q1,Q3-4
   3       275 09-10-4403    TRANS PNP SMALL-SIGNAL MBT4403  0  EA     .0  A Y  N                1.000000
                 SOT-23 SM


                            Ref: Q2
   3       280 11-00-3000    CRYSTAL OSCILLATOR 30MHz 3.3V  0  EA      .0  A Y  N                1.000000
                 DIP4 TH


                            Ref: Y1
   3       285 11-10-0501    FERRITE BEAD 500R @100mHZ     0  EA       .0  A Y  N                2.000000
                 2.5A 1206 SM


                            Ref: L5-6
   3       290 11-10-0601    FERRITE BEAD 600R @100MHZ 1206  0  EA     .0  A Y  N               26.000000



                            Ref: L1-4,L7-28
   3       295 12-02-1086    IC REG +3.3V TO-220 TH        0  EA       .0  A Y  N                1.000000
                 LM1086


                            Ref: U26
   3       300 12-02-7805    IC REG +5v 1.5 Amp TH         0  EA       .0  A Y  N                2.000000



                            Ref: U8,U27
   3       305 12-02-7815    IC REG +15V 1AMP TO-220 TH    0  EA       .0  A Y  N                1.000000



                            Ref: U29
   3       310 12-02-7915    IC REG -15V 1AMP TO-220 TH    0  EA       .0  A Y  N                1.000000
                 7915


                            Ref: U31
   3       315 12-54-0082    IC OP AMP DUAL TL082CD SO-8 SM  0  EA     .0  A Y  N                3.000000
                                        Ref: U2-3,U33
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3        320 12-54-0084     IC OP AMP QUAD TL084CD SM    0  EA      .0  A Y  N                    6.000000


                           Ref: U1,U7,U17,U28,U30,U32
3        325 12-54-5538     IC OP-AMP DUAL LO NOISE     0  EA      .0  A Y  N                    1.000000
                 NE5532AD8 SM  SO-8


                           Ref: U4
3        330 12-62-4053     IC SWITCH-ANALOG TRIPLE 2-CHAN  0  EA   .0  A Y  N                   2.000000
                 TSSOP-16 SM CD4053BPW


                           Ref: U9,U13
3        335 12-64-4528     IC CONVERTER 24B 48/96KHz   0  EA      .0  A Y  N                    2.000000
                 AUDIO CODEC SM AK4528


                           Ref: U5-6
3        340 15-40-6138     IC 6N138 OPTO-ISOLATOR      0  EA      .0  A Y  N                    1.000000
                 DIP-8 TH


                           Ref: U24
3        345 15-64-0014     IC 74HCT14 HEX INVERTER     0  EA      .0  A Y  N                    1.000000
                 6 SM


                           Ref: U21
3        350 15-65-0014     IC 74LCX14 LOW VOLTAGE CMOS  0  EA     .0  A Y  N                    1.000000
                 INV HEX SCHMITT TRIGGER SM


                           Ref: U19
3        355 15-67-0179     IC RS-485 LOW PWR DIFF      0  EA      .0  A Y  N                    1.000000
                 TRANSCEIVER SN75LBC179 SO-8 SM


                           Ref: U25
3        360 15-70-1610     IC DRAM 1M X 16 SDRAM       0  EA      .0  A Y  N                    2.000000
                 HY57V161610DTC-7 SM


                           Ref: U11-12
3        365 15-86-1065     IC DSP SHARC                0  EA      .0  A Y  N                    1.000000
                 ADSP-21065LKS-240  MQFP208 SM


                           Ref: U14
3        370 15-92-5810     IC RESET 5V 5% ACTIVE-HI    0  EA      .0  A Y  N                    1.000000
                 SOT-23 SM  LM810


                           Ref: U18
3        375 21-00-6616     JACK 1/4" TRS 6-PIN PCB MT  0  EA      .0  A Y  N                    5.000000
                 HORIZ TH


                           Ref: J3-6,J9
3        380 21-04-5075     JACK DIN 5-PIN FEMALE MIDI  0  EA      .0  A Y  N                    2.000000
                 PCB-MNT RT-ANG LN 05075


                           Ref: P1-2
3        385 21-08-0013     JACK XLR MALE PCB MNT RT ANG  0  EA    .0  A Y  N                    2.000000
                 TH NEUTRIK-NC3MAH


                           Ref: J1-2
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 3      390 21-16-0045    JACK RJ-45 8-PIN FEMALE     0  EA      .0   A  Y  N                1.000000
             PCB-MNT RT-ANG


                         Ref: J7
 3      395 21-18-0002    TERMINAL SCREW PCB MOUNT    0  EA      .0   A  Y  N                1.000000
             RT ANGLE SNAP-IN TH


                         Ref: BR2
 3      400 21-20-0205    HDR PCB MT SIL 5-PIN x 2mm  0  EA      .0   A  Y  N                1.000000
             MALE SHRD VERT MT TH


                         Ref: H1
 3      405 21-20-1033    HDR PCB MT DIL 34-PIN 2x17x2mm 0 EA    .0   A  Y  N                1.000000
             MALE SHRD VERT MT TH


                         Ref: H4
 3      410 21-20-1568    HDR PCB MT SIL 8-PIN X .156 0  EA      .0   A  Y  N                1.000000
             MALE VERT-MNT FRIC-LOCK


                         Ref: H6
 3      415 21-20-2010    HDR PCB MT DIL 10-PIN 2x5x100 0 EA     .0   A  Y  N                2.000000
             MALE SHRD VERT


                         Ref: H5,H7
 3      420 21-44-0044    SOCKET 44 PIN PLCC - .050 LOW 0 EA     .0   A  Y  N                1.000000
             PROFILE SMT


                         Ref: S1
 3      425 24-09-0222    SWITCH SLIDE DPDT           0  EA      .0   A  Y  N                1.000000



                         Ref: SW1
 3      430 30-00-0607    SCREW 6-32 x 7/16IN w/LK WASH 0 EA     .0   A  Y  N                2.000000
             PPZ STL


                         Ref: U29,U31
 3      435 30-06-0623    NUT HEX 6-32 w/CPTV STAR-WASHR 0 EA    .0   A  Y  N                2.000000



                         Ref: U29,U31
 3      440 30-18-3030    CLIP GND PCB .30x.30x.07    0  EA      .0   A  Y  N                7.000000



                         Ref: GF1-6,GF8
 3      445 30-51-0029    HEATSINK AL BLK ANODIZED    0  EA      .0   A  Y  N                1.000000



                         Ref: P3
 3      450 30-51-0057    HEAT SINK, BLACK ANODIZED AL, 0 EA     .0   A  Y  N                1.000000
             WAKEFIELD #287-1AB


                         Ref: P4
 3      460 45-01-0001    IC PROGRAMMED MPU V1.01     0  EA      .0   A  Y  N                1.000000
                c/s = CFA3 DUET


                         Ref: U16
 4       10 15-84-8752    IC MCU 87C51MB OTP w/2K byte 10 EA     .0   A  Y  N                1.000000
             SRAM and 64K ROM   PLCC44
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  3       470 45-02-0006    IC PROGRAMMED FLASH v1.01    0  EA      .0   A  Y  N                          1.000000
                   c/s=05AC161F MODERN-HD


                      Ref: U10
  4        10 15-78-0000    IC FLASH 4Meg 512Kx8/256x16  0  EA      .0   A  Y  N                          1.000000
                   TSOP-48 SM  AM29LV400


  3       475 45-06-0001    IC PROGRAMMED PLD HD147      0  EA      .0   A  Y  N                          1.000000
                   REV B


                      Ref: U15
  4        10 15-96-0000    IC PLD 64 MACROCELL/64IO    10  EA      .0   A  Y  N                          1.000000
                   TQFP100 SM M4A3-64/64-10VC


  2       560 50-00-0238    ASSY CAP SWITCH w/ARTWORK   10  EA      .0   A  Y  N                          1.000000
                   CLASSIC FT3


  3        10 30-27-0066    SWITCH CAP 6.4x.63x.55       0  EA      .0   A     N          .0000           1.000000



  2       570 50-00-4001    PCBA LINE FILTER            10  EA      .0   A  Y  N                          1.000000



  3        10 01-12-0154    RES CARBON FILM 150K 1/4W 5% 0  EA      .0   A  Y  N                          2.000000
                   TH


                      Ref: R1-R2.
  3        20 01-70-0516    THERMISTOR INRUSH 0.5R@16A   0  EA      .0   A  Y  N                          1.000000
                   5/22/7.8 TH


                      Ref: RT1.
  3        30 03-00-1102    CAP Y-CAP 1nF 250VAC 20% CER 0  EA      .0   A  Y  N                          2.000000
                   DISC 8D/7/7.5


                      Ref: C3-C4.
  3        40 03-41-0224    CAP X-CAP 0.22uF 275VAC 20%  0  EA      .0   A  Y  N                          1.000000
                   POLYPROYPYLENE 18/9.5/17.5/15


                      Ref: C1.
  3        50 11-10-3501    INDUCTOR COMMON MODE LINE    0  EA      .0   A  Y  N                          2.000000
                    FILTER   ICE  LF-35040-0044


                      Ref: L1-2
  3        60 21-14-8301    JACK IEC ANGLED 10A IEC320   0  EA      .0   A  Y  N                          1.000000
                   POWER-COMPONENTS 83011172


                      Ref: J1.
  3        65 21-20-2075    HDR PCB MT SIL 2-PIN X 7.5mm 0  EA      .0   A  Y  N                          1.000000
                   MALE VERT MT FRIC-LOCK TH


                      Ref: J2
  3        90 21-34-1806    CBL S-T/EYE 1-COND 126mm STRND 0  EA    .0   A  Y  N                          1.000000
                   18AWG GRN/YL EARTHING


                      Ref: Solder to through hole clip on pn# 21-14-8301 at M4
  3       100 21-48-9521    CLIP FUSE HOLDER             0  EA      .0   A  Y  N                          2.000000
                                      Ref: F,F1.
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3        105 24-19-8250    FUSE 8A/250V 5X20mm FRN F    0  EA       .0   A  Y   N           1.000000
                LITTLEFUSE 217 008 or eqiv

                     Ref: f,f1(install into fuse clip holders,pn# 21-48-9521).


2        580 50-00-9102    ASSY FINAL POWER AMP HD147  10  EA       .0   A  Y   N           1.000000


3         10 30-00-0010    SCREW 8-32 x 9/16 SKT-CAP   10  EA       .0   A  Y   N          10.000000
                S-STL

3         20 30-03-0002    WASHER #8 .293 x.174x .040  10  EA       .0   A  Y   N          12.000000
                STEEL

3         30 30-06-0007    NUT .344 HEX 8-32 STEEL ZINC 10  EA      .0   A  Y   N          10.000000


3         40 30-51-0059-2  HEATSINK 6.0 IN LG AL ALY   10  EA       .0   A  Y   N           1.000000


3         50 30-51-0073    CLAMP HEATSINK TO-220       10  EA       .0   A  Y   N          10.000000
                1.3x.45x.35" CR STEEL 1018

3         60 30-63-4001    PAD THERMAL TO-247          10  EA       .0   A  Y   N           8.000000
                BERG-400AC-7-102

3         70 30-63-4005    PAD THERMAL TO-220          10  EA       .0   A  Y   N           4.000000
                BERG-400-7-54

3         80 30-63-5050    GAP-PAD VO-SOFT .125"THK x .50 10  EA    .0   A  Y   N           1.000000
                " x .50"

3         90 50-00-0205    PCBA POWER AMP HD147        10  EA       .0   A  Y   N           1.000000


4         10 01-00-0334    RES 330K 5% 0805             0  EA       .0   A  Y   N           3.000000


                     Ref: R7,R78,R84
4         20 01-00-0393    RES 39K 5% 0805              0  EA       .0   A  Y   N           4.000000


                     Ref: R2,R25,R145-146
4         30 01-00-05R1    RES 5.1R 5% 0805             0  EA       .0   A  Y   N           8.000000


                     Ref: R27-28,R47-48,R59,R95,R115,R136
4         60 01-20-02R2    RES METAL OXIDE 2.2R 2W 5% TH   0  EA    .0   A  Y   N           2.000000
                S/B 01-22-02R2

                     Ref: R23,R69
4         70 01-20-0R22    RES METAL OXIDE 0.22R 2W 5% TH  0  EA    .0   A  Y   N           8.000000
                S/B 01-22-0R22              Ref: R19,R21,R30,R54,R94,R104,R106,R138
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4   80 01-24-1001   RES 1.00K 1% 0805   0 EA   .0   A Y N   4.000000

                         Ref: R36,R109,R119,R128
4   90 01-24-1002   RES 10.0K 1% 0805   0 EA   .0   A Y N   15.000000

                         Ref: R49,R51-52,R62,R64,R67,R70,R73,R86,R97,R101,R108,R111,
                             R142,R144

4   100 01-24-1003   RES 100K 1% 0805   0 EA   .0   A Y N   20.000000

                         Ref: R8,R13,R15,R26,R33,R35,R50,R55,R76-77,R79,R85,R130,R134,
                             R143,R159-161,R162,R163

4   110 01-24-1004   RES 1.00M 1% 0805   0 EA   .0   A Y N   9.000000

                         Ref: R31,R34,R74,R99,R121,R129,R149,R153,R155
4   120 01-24-1102   RES 11.0K 1% 0805   0 EA   .0   A Y N   2.000000

                         Ref: R6,R83
4   130 01-24-1242   RES 12.4K 1% 0805   0 EA   .0   A Y N   4.000000

                         Ref: R22,R24,R88,R152
4   140 01-24-1500   RES 150R 1% 0805   0 EA   .0   A Y N   15.000000

                         Ref: R3,R5,R12,R16,R18,R38,R44,R46,R96,R103,R105,R116-117,R123
                             R127

4   150 01-24-1502   RES 15.0K 1% 0805   0 EA   .0   A Y N   2.000000

                         Ref: R39,R118
4   160 01-24-2001   RES 2.00K 1% 0805   0 EA   .0   A Y N   4.000000

                         Ref: R60,R65,R148,R154
4   170 01-24-2491   RES 2.49K 1% 0805   0 EA   .0   A Y N   .0000   4.000000

                         Ref: R87,R147,R150-151
4   180 01-24-2492   RES 24.9K 1% 0805   0 EA   .0   A Y N   2.000000

                         Ref: R57,R114
4   190 01-24-2493   RES 249K 1% 0805   0 EA   .0   A Y N   1.000000

                         Ref: R63
4   200 01-24-2742   RES 27.4K 1% 0805   0 EA   .0   A Y N   8.000000
                             Ref: R9,R17,R20,R53,R75,R93,R110,R139

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4	210 01-24-3161	RES 3.16K 1% 0805	0 EA	.0 A Y N	2.000000

Ref: R40,R126

| 4 | 220 01-24-3482 | RES 34.8K 1% 0805 | 0 EA | .0 A Y N | 2.000000 |

Ref: R89,R141

| 4 | 230 01-24-4750 | RES 475R 1% 0805 | 0 EA | .0 A Y N | 15.000000 |

Ref: R1,R4,R10-11,R41-42,R58,R61,R92,R102,R107,R112,R137,R157-158

| 4 | 240 01-24-4751 | RES 4.75K 1% 0805 | 0 EA | .0 A Y N | 12.000000 |

Ref: R37,R71,R81,R98,R100,R120,R122,R124-125,R132-133,R135

| 4 | 250 01-24-4752 | RES 47.5K 1% 0805 | 0 EA | .0 A Y N | 2.000000 |

Ref: R32,R131

| 4 | 260 01-24-4753 | RES 475K 1% 0805 | 0 EA | .0 A Y N | 1.000000 |

Ref: R56

| 4 | 270 01-24-4992 | RES 49.9K 1% 0805 | 0 EA | .0 A Y N | 2.000000 |

Ref: R43,R90

| 4 | 280 01-24-6041 | RES 6.04K 1% 0805 | 0 EA | .0 A Y N | 3.000000 |

Ref: R14,R72,R91

| 4 | 290 01-24-6492 | RES 64.9K 1% 0805 | 0 EA | .0 A Y N | 1.000000 |

Ref: R66

| 4 | 300 01-24-8251 | RES 8.25K 1% 0805 | 0 EA | .0 A Y N | 1.000000 |

Ref: R80

| 4 | 310 01-24-8252 | RES 82.5K 1% 0805 | 0 EA | .0 A Y N | .0000 | 2.000000 |

Ref: R164,R165

| 4 | 320 01-24-8871 | RES 8.87K 1% 0805 | 0 EA | .0 A Y N | 2.000000 |

Ref: R113,R140

| 4 | 330 01-24-9092 | RES 90.9K 1% 0805 | 0 EA | .0 A Y N | 4.000000 |

Ref: R29,R45,R68,R82

| 4 | 340 01-70-0080 | THERMISTOR 80C PTC TH 100/300/200 | 0 EA | .0 A Y N | 1.000000 |

Ref: RT1

| 4 | 350 03-12-0107 | CAP ELEC 100uF 16V 20% RADIAL | Ref: C18,C22,C25 | | 3.000000 |

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| 4 | 360 03-18-0105 | CAP ELEC 1uF 50V 20% RADIAL 5/11/5 | 0 EA | .0 | A Y N | | 4.000000 |

Ref: C54-57

| 4 | 370 03-18-0227 | CAP ELEC 220uF 50V 20% RADIAL 10/12.5/5 | 0 EA | .0 | A Y N | | 1.000000 |

Ref: C8

| 4 | 380 03-18-0336 | CAP ELEC 33uF 50V 20% RADIAL 5/11/5 | 0 EA | .0 | A Y N | | 2.000000 |

Ref: C1,C3

| 4 | 390 03-18-0474 | CAP ELEC 0.47uF 50V 20% RADIAL 5/11/5 | 0 EA | .0 | A Y N | | 1.000000 |

Ref: C9

| 4 | 400 03-22-0476 | CAP ELEC 47uF 100V 20% RADIAL 10/15/5 | 0 EA | .0 | A Y N | | 4.000000 |

Ref: C38-41

| 4 | 410 03-24-0334 | CAP 0.33uF 250V 5% FILM-POLY TH 12.5/6.5/11.5/7.5 | 0 EA | .0 | A Y N | | 2.000000 |

Ref: C6,C11

| 4 | 420 03-32-0473 | CAP POLYESTER 47nF 250V 10% TH 7.9/4.5/7.4/5 | 0 EA | .0 | A Y N | | 2.000000 |

Ref: C42-43

| 4 | 440 03-50-0152 | CAP NPO 1.5nF 50V 20% 0805 | 0 EA | .0 | A Y N | .0000 | 2.000000 |

Ref: C12,C23

| 4 | 450 03-52-0101 | CAP X7R 100pF 50V 20% 0805 | 0 EA | .0 | A Y N | | 2.000000 |

Ref: C2,C7

| 4 | 460 03-52-0222 | CAP X7R 2.2nF 50V 20% 0805 | 0 EA | .0 | A Y N | | 1.000000 |

Ref: C16

| 4 | 470 03-52-0223 | CAP X7R 22nF 50V 10% 0805 SM | 0 EA | .0 | A Y N | | 4.000000 |

Ref: C19,C36,C45-46

| 4 | 480 03-52-0470 | CAP X7R 47pF 50V 20% 0805 | 0 EA | .0 | A Y N | | 8.000000 |

Ref: C4-5,C14-15,C47-50

| 4 | 490 03-52-0473 | CAP X7R 47nF 50V 20% 0805 | 0 EA | .0 | A Y N | | 16.000000 |

Ref: C10,C17,C20-21,C24,C27-28,C32-35,C37,C44,C51-53

| 4 | 500 03-52-1220 | CAP X7R 22pF 200V 20% 0805 | 0 EA | .0 | A Y N | | 2.000000 |

Ref: C13,c26

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  4       510 06-12-1045    DIODE SCHOTTKY 45V 10A      0 EA      .0   A Y  N                      2.000000
                  TO-220AC TH MBR1045


                      Ref: D8,D12
  4       520 06-28-8412    DIODE ZENER 12V 5% 350mW    0 EA      .0   A Y  N                      3.000000
                  SOT-23  SM BZX84C12


                      Ref: D6-7,D17
  4       530 06-28-8418    DIODE ZENER 18V 5% 350mW    0 EA      .0   A Y  N                      1.000000
                  SOT-23 SM BZX84C18


                      Ref: D21
  4       540 06-28-8439    DIODE ZENER 3.9V 5% 350mW   0 EA      .0   A Y  N                      1.000000
                  SOT-23  SM BZX84C3V9


                      Ref: D10
  4       550 06-28-8468    DIODE ZENER 6.8V 5% 350mW   0 EA      .0   A Y  N                      8.000000
                  SOT-23 SM BZX84C6V8


                      Ref: D1,D13-14,D16,D19-20,D22-23
  4       560 06-34-0016    DIODE SWITCHING 75V 200mA   0 EA      .0   A Y  N                     11.000000
                  6nS SOT-23 SM BAS16LT1


                      Ref: D2-5,D9,D11,D15,D18,D24-25,D34
  4       570 09-00-4403    TRANS PNP SMALL-SIGNAL 2N4403  0 EA   .0   A Y  N                      1.000000
                  TH


                      Ref: Q35
  4       580 09-00-5551    TRANS NPN SMALL-SIGNAL 2N5551  0 EA   .0   A Y  N                      6.000000
                  TH


                      Ref: Q21,Q23,Q34,Q38,Q50-51
  4       590 09-06-0006    TRANS POWER-MOSFET N-CHAN   0 EA      .0   A Y  N                      2.000000
                  MTP50N06V TH TO-220


                      Ref: Q2,Q12
  4       600 09-06-0251    TRANS MOSFET N-CHAN 200V    0 EA      .0   A Y  N                      8.000000
                  .075R TO-247 TH IRFP250N


                      Ref: Q9,Q10,Q13-14,Q46-49
  4       610 09-10-0042    TRANS NPN POWER 300V 200mA  0 EA      .0   A Y  N                      3.000000
                  SOT-23 SM MMBTA42


                      Ref: Q3,Q37,Q42
  4       620 09-10-0092    TRANS SMALL-SIGNAL PMBTA92  0 EA      .0   A Y  N                      5.000000
                  SOT-23 SMD


                      Ref: Q1,Q24,Q27,Q41,Q43
  4       630 09-10-4401    TRANS NPN SMALL-SIGNAL MBT4401  0 EA   .0  A Y  N                     12.000000
                  SOT-23 SM


                      Ref: Q4-5,Q11,Q16,Q18,Q26,Q28-29,Q32,Q39-40,Q45
  4       640 09-10-4403    TRANS PNP SMALL-SIGNAL MBT4403  0 EA   .0  A Y  N                     13.000000
                  SOT-23 SM


                      Ref: Q6-8,Q15,Q17,Q19-20,Q22,Q25,Q33,Q36,Q44,Q52
  4       650 09-10-4416    TRANS SMALL-SIGNAL SST4416 N-CHANNEL J-FET    Ref: Q30-31             2.000000
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   4          660 12-54-0084     IC OP AMP QUAD TL084CD SM     0  EA        .0   A  Y   N                                 1.000000


                              Ref: U10
   4          670 12-54-1082     IC OP-AMP DUAL TLC082CD       0  EA        .0   A  Y   N                                 3.000000
                      SINGLE-SUPPLY SM

                              Ref: U2,U6,U9
   4          680 12-54-1084     IC OP-AMP QUAD TLC084CD       0  EA        .0   A  Y   N                                 3.000000
                      SINGLE-SUPPLY SM

                              Ref: U3-5
   4          690 12-58-0339     IC COMPARATOR QUAD LM339D  SM 0  EA        .0   A  Y   N                                 1.000000


                              Ref: U7
   4          700 12-62-4066     IC SWITCH QUAD BI 14-PIN SM   0  EA        .0   A  Y   N                                 2.000000
                      TI CD4066BM

                              Ref: U1,U8
   4          710 21-20-0204     HDR PCB MT SIL 4-PIN x 2mm    0  EA        .0   A  Y   N                                 1.000000
                      MALE SHRD VERT MT TH

                              Ref: P4
   4          720 21-20-1564     HDR PCB MT SIL 4-PIN X .156   0  EA        .0   A  Y   N                                 1.000000
                      MALE VERT-MNT FRIC-LOCK

                              Ref: P2
   4          730 21-20-1566     HDR PCB MT SIL 6-PIN X .156   0  EA        .0   A  Y   N                                 1.000000
                      MALE VERT-MNT FRIC-LOCK

                              Ref: P3
   4          740 21-20-2010     HDR PCB MT DIL 10-PIN 2x5x100 0  EA        .0   A  Y   N                                 1.000000
                      MALE SHRD VERT

                                 Ref: P1



   2          585 50-02-0008     PCBA LED CHASSIS ILLUMINATION 10 EA        .0   A  Y   N                                 1.000000
                      HD147

   3           10 01-12-0181     RES CARBON FILM 180R 1/4W 5%  0  EA        .0   A  Y   N                                 4.000000
                      TH

                              Ref: R2,R3,R6,R8
   3           20 18-03-0001     LED ULTRAVIOLET InGaN 0.228-IN 0 EA        .0   A  Y   N                                 8.000000
                      400nm CLEAR T1-3/4 TH

                              Ref: D1,D3,D5,D7-8,D10,D12,D14
   3           30 21-20-3002     HDR PCB MT SIL 2-PIN x .100   0  EA        .0   A  Y   N                                 1.000000
                      VERT MT FRICT LOCK TH

                              Ref: J1
   3           40 35-00-0006     PCB SUPPORT-LED END-A  MODERN-HD FT3 REV.A  Ref: LED PCB to CHASSIS TOP               2.000000
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2        590 50-02-0146      PCBA USER INTERFACE HD147    10  EA      .0  A  Y  N                    1.000000


3         10 01-24-1500      RES 150R 1% 0805             0   EA      .0  A  Y  N                    1.000000


                             Ref: R32
3         20 18-02-0001      LED YELLOW SUPERBRITE T1(3MM) 0  EA      .0  A  Y  N                    1.000000
                     TH  L934SYC

                             Ref: D48
3         30 21-20-0202      HDR PCB MT SIL 2-PIN x 2mm   0   EA      .0  A  Y  N                    2.000000
                     MALE SHRD VERT MT TH

                             Ref: H4-5
3         40 50-00-0146      PCBA USER INTERFACE HD147    0   EA      .0  A  Y  N                    1.000000


4         10 01-24-1002      RES 10.0K 1% 0805            0   EA      .0  A  Y  N                    2.000000


                             Ref: R13-14
4         20 01-24-10R0      RES 10.0R 1% 0805            0   EA      .0  A  Y  N                    1.000000


                             Ref: R15
4         30 01-24-48R7      RES 48.7R 1% 0805            0   EA      .0  A  Y  N                   16.000000


                             Ref: R1-12,R16-19
4         40 01-48-0103      POT MONO 10KB LINEAR TAPER   0   EA      .0  A  Y  N                    9.000000
                     25 mm D-SHAFT

                             Ref: R23-31
4         50 01-48-4103      POT STEREO 10KB LINEAR TAPER 0   EA      .0  A  Y  N                    1.000000
                     25mm

                             Ref: R22
4         60 03-18-0105      CAP ELEC 1uF 50V 20% RADIAL  0   EA      .0  A  Y  N                    1.000000
                     5/11/5

                             Ref: C30
4         70 03-18-0106      CAP ELEC 10uF 50V 20% RADIAL 0   EA      .0  A  Y  N                    1.000000
                     5/11/5

                             Ref: C31
4         80 03-52-0473      CAP X7R 47nF 50V 20% 0805    0   EA      .0  A  Y  N                   29.000000
                             Ref: C1-29
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4        90 06-34-0016    DIODE SWITCHING 75V 200mA    0  EA      .0   A Y  N                    12.000000
                          6nS SOT-23 SM BAS16LT1


                             Ref: D1-2,D3,D20-26,D37,D39
4       100 09-06-7002    TRANS MOSFET N-CHAN 60V 7R5   0  EA      .0   A Y  N                     7.000000
                          SOT-23 SM 2N7002


                             Ref: Q1-7
4       110 12-64-1543    IC ADC 10 BIT 11 CHANNEL SM   0  EA      .0   A Y  N                     1.000000
                          TLC1543CDW


                             Ref: U4
4       120 15-64-0595    IC 74HCT595 OCTAL SHIFT REG   0  EA      .0   A Y  N                     3.000000
                          W/ 3-S SO-16 SM


                             Ref: U1-3
4       130 18-02-0001    LED YELLOW SUPERBRITE T1(3MM) 0  EA      .0   A Y  N                     7.000000
                          TH  L934SYC


                             Ref: D27-30,D38,D40,D47
4       140 18-22-0003    LED YELLOW SUPER 2.0x1.2x1.1mm 0  EA      .0   A N  N                    12.000000
                          AP2012SYC SM


                             Ref: D31-36,D41-46
4       150 18-26-0001    LED TRI-STATE RD/GRN 627/565nm 0  EA      .0   A Y  N                    16.000000
                          CLR LENS COM-CATH SOT-23 SM


                             Ref: D4-19
4       160 21-20-1033    HDR PCB MT DIL 34-PIN 2x17x2mm 0  EA      .0   A Y  N                     1.000000
                          MALE SHRD VERT MT TH


                             Ref: H1
4       170 24-12-0003    ENCODER 18-STEP w/PUSH SW     0  EA      .0   A Y  N                     1.000000
                          25mm D-SHFT METAL V-MNT PCB


                             Ref: ENC1
4       175 21-34-0036    CAB ASSY  4 PIN 2.54MM PITCH  0  EA      .0   A Y  N                     1.000000
                          2.165 LG


                             Ref: H2 to H3
4       180 24-31-1102    SWITCH TACT 6mm SQ 4-PIN TH   0  EA      .0   A Y  N                     2.000000
                          W/ SQ 2.8mm ACTUATOR


                             Ref: SW5,SW8
4       190 24-31-1105    SWITCH TACT 6mm  SQ 4-PIN TH  0  EA      .0   A Y  N                     7.000000



                             Ref: SW1-4,SW6-7,SW9



2       600 50-02-0236    PCBA POWER SUPPLY w/CONTROL  10  EA      .0   A Y  N                     1.000000
                          HD147/VETTA-HD SERIES


3         1 30-00-0607    SCREW 6-32 x 7/16IN w/LK WASH 10  EA      .0   A Y  N                     4.000000
                          PPZ STL
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3	5 30-51-0158	BRACKET MOUNTING POWER SUPPLY ASSY	10	EA	.0	A	Y	N		1.000000
3	10 50-00-0119	PCBA CONTROL POWER SUPPLY HD147/VETTA-HD SERIES	10	EA	.0	A	Y	N		1.000000
4	10 01-00-0101	RES 100R 5% 0805	0	EA	.0	A	Y	N		1.000000
		Ref: R52								
4	20 01-24-1001	RES 1.00K 1% 0805	0	EA	.0	A	Y	N		3.000000
		Ref: R7,R9,R11								
4	30 01-24-1002	RES 10.0K 1% 0805	0	EA	.0	A	Y	N		9.000000
		Ref: R1,R16,R18-19,R23,R27,R33,R37,R40								
4	40 01-24-1003	RES 100K 1% 0805	0	EA	.0	A	Y	N		8.000000
		Ref: R2,R12-13,R22,R26,R31,R41,R53								
4	50 01-24-1241	RES 1.24K 1% 0805	0	EA	.0	A	Y	N		1.000000
		Ref: R50								
4	60 01-24-1503	RES 150K 1% 0805	0	EA	.0	A	Y	N		3.000000
		Ref: R15,R17,R35								
4	70 01-24-2210	RES 221R 1% 0805	0	EA	.0	A	Y	N		1.000000
		Ref: R46								
4	80 01-24-2322	RES 23.2K 1% 0805	0	EA	.0	A	Y	N		3.000000
		Ref: R5,R10,R47								
4	90 01-24-2493	RES 249K 1% 0805	0	EA	.0	A	Y	N		2.000000
		Ref: R38-39								
4	100 01-24-2742	RES 27.4K 1% 0805	0	EA	.0	A	Y	N		3.000000
		Ref: R14,R45,R55								
4	110 01-24-3652	RES 36.5K 1% 0805	0	EA	.0	A	Y	N		1.000000
		Ref: R25								
4	120 01-24-3743	RES 374K 1% 0805	0		.0	A		N	.0000	1.000000
		Ref: R44								
4	130 01-24-4022	RES 40.2K 1% 0805	0	EA	.0	A	Y	N		2.000000
		Ref: R3,R32								

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   4       140 01-24-4750   RES 475R 1% 0805          0  EA      .0  A Y  N                              2.000000


                            Ref: R54,R57
   4       150 01-24-4751   RES 4.75K 1% 0805         0  EA      .0  A Y  N                              7.000000


                            Ref: R20,R28,R34,R48,R24,R49,R51
   4       160 01-24-4752   RES 47.5K 1% 0805         0  EA      .0  A Y  N                              6.000000


                            Ref: R4,R6,R21,R29-30,R36
   4       170 01-24-47R5   RES 47.5R 1% 0805         0  EA      .0  A Y  N                              1.000000


                            Ref: R56
   4       180 01-24-6191   RES 6.19K 1% 0805         0  EA      .0  A Y  N                              3.000000


                            Ref: R8,R42-43
   4       190 01-70-0001   THERMISTOR NTC 100K@25C   0  EA      .0  A Y  N                              1.000000
                    0603 SM

                            Ref: NTC1
   4       200 03-14-0476   CAP ELEC 47uF 25V 20% RADIAL  0  EA   .0  A Y  N                             5.000000
                    6.3/7/5

                            Ref: C1-3,C6,C8
   4       210 03-18-0105   CAP ELEC 1uF 50V 20% RADIAL   0  EA   .0  A Y  N                             1.000000
                    5/11/5

                            Ref: C12
   4       220 03-18-0106   CAP ELEC 10uF 50V 20% RADIAL  0  EA   .0  A Y  N                             2.000000
                    5/11/5

                            Ref: C4,C10
   4       230 03-50-0102   CAP NPO 1nF 50V 5% 0805   0  EA      .0  A Y  N                              2.000000


                            Ref: C7,C17
   4       240 03-50-0221   CAP NPO 220pF 50V 20% 0805    0  EA   .0  A Y  N                             3.000000


                            Ref: C20-21,C24
   4       250 03-52-0101   CAP X7R 100pF 50V 20% 0805    0  EA   .0  A Y  N                             1.000000


                            Ref: C5
   4       260 03-52-0104   CAP X7R 0.1uF 50V 20% 0805    0  EA   .0  A Y  N                             2.000000


                            Ref: C9,C18
   4       270 03-52-0473   CAP X7R 47nF 50V 20% 0805     0  EA   .0  A Y  N                             8.000000


                            Ref: C11,C13-16,C22-23,C25
   4       280 03-52-1103   CAP X7R 10nF 100V 10% 0805    Ref: C19,C26-27                               3.000000
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| 4 | 290 06-28-8418 | DIODE ZENER 18V 5% 350mW | 0 EA | .0 | A | Y | N | | 2.000000 |

SOT-23 SM BZX84C18

Ref: D1,D8

| 4 | 300 06-28-8451 | DIODE ZENER 5.1V 5% 350mW | 0 EA | .0 | A | | N | | 2.000000 |

SOT-23 SM BZX84C5V1

Ref: D3,D9

| 4 | 310 06-34-0016 | DIODE SWITCHING 75V 200mA | 0 EA | .0 | A | Y | N | | 6.000000 |

6nS SOT-23 SM BAS16LT1

Ref: D2,D4-7,D10

| 4 | 320 09-06-7002 | TRANS MOSFET N-CHAN 60V 7R5 | 0 EA | .0 | A | Y | N | | 4.000000 |

SOT-23 SM 2N7002

Ref: Q2,Q4,Q6,Q9

| 4 | 330 09-10-0042 | TRANS NPN POWER 300V 200mA | 0 EA | .0 | A | Y | N | | 1.000000 |

SOT-23 SM MMBTA42

Ref: Q11

| 4 | 340 09-10-4401 | TRANS NPN SMALL-SIGNAL MBT4401 | 0 EA | .0 | A | Y | N | | 3.000000 |

SOT-23 SM

Ref: Q12,Q15-16

| 4 | 350 09-10-4403 | TRANS PNP SMALL-SIGNAL MBT4403 | 0 EA | .0 | A | Y | N | | 8.000000 |

SOT-23 SM

Ref:Q1,Q3,Q5,Q7-8,Q13-14,Q17

| 4 | 360 12-50-0431 | IC REG ADJ PREC SHUNT <36V | 0 EA | .0 | A | Y | N | | 1.000000 |

TL431 SOT23-5 SM

Ref: Q10

| 4 | 370 12-58-0339 | IC COMPARATOR QUAD LM339D SM | 0 EA | .0 | A | Y | N | | 1.000000 |

Ref: U1

| 4 | 380 12-58-0393 | IC COMPARATOR DUAL LM393D-T SM | 0 EA | .0 | A | Y | N | | 1.000000 |

Ref: U2

| 4 | 390 15-68-3844 | IC CONTROLLER PWM SO-8 | 0 EA | .0 | A | Y | N | | 1.000000 |

UC3844D8

Ref: U3

| 4 | 400 21-20-0021 | HDR SIL 20-PIN PCB-MNT | 0 | .0 | A | | N | .0000 | 1.000000 |

Ref: H1

| 3 | 20 50-00-0236 | PCBA POWER SUPPLY | 10 EA | .0 | A | Y | N | | 1.000000 |

HD147/VETTA-HD SERIES

| 4 | 10 01-21-0623 | RES METAL OXIDE 62K 1W 5% TH | 0 EA | .0 | A | Y | N | .0000 | 1.000000 |

Ref: R24

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  4       20 01-22-0102   RES METAL OXIDE 1K 2W 5%      0  EA      .0   A  Y  N        .0000      2.000000


                          Ref: R1-2
  4       30 01-22-0390   RES METAL OXIDE 39R 2W 5% TH  0  EA      .0   A  Y  N        .0000      4.000000


                          Ref: R8,R11,R23,R25
  4       40 01-22-0473   RES METAL OXIDE 47K 2W 5% TH  0  EA      .0   A  Y  N        .0000      2.000000


                          Ref: R26-27
  4       50 01-22-0750   RES METAL OXIDE 75R 2W 5% TH  0  EA      .0   A     N        .0000      4.000000


                          Ref: R13-15,R22
  4       60 01-32-1000   RES METAL FILM 100R 1/8W 1%   0          .0   A     N        .0000      5.000000


                          Ref: R3-7
  4       70 01-32-1001   RES METAL FILM 1.00K 1/8W 1%  0          .0   A     N        .0000      2.000000


                          Ref: R9-10
  4       80 01-32-1002   RES METAL FILM 10.0K 1/8W 1%  0          .0   A     N        .0000      1.000000


                          Ref: R16
  4       90 01-32-1004   RES METAL FILM 1.00M 1/8W 1%  0          .0   A     N        .0000      2.000000


                          Ref: R18-19
  4      100 01-32-10R0   RES METAL FILM 10R 1/8W 1%  TH 0         .0   A     N        .0000      2.000000


                          Ref: R20-21
  4      110 01-32-20R0   RES METAL FILM 20R 1/8W 1%  TH 0         .0   A     N        .0000      2.000000


                          Ref: R12,R17
  4      120 03-00-0180   CAP CER DISC 18pF 3KV 5% TH   0  EA      .0   A     N        .0000      2.000000


                          Ref: C10-11
  4      130 03-00-0331   CAP CER DISC 330pF 1000V 10%  0  EA      .0   A  Y  N                   4.000000
                TH 6/4.5/5

                          Ref: C26-28,C31
  4      140 03-00-0471   CAP CER DISC 470pF 1000V 10%  0  EA      .0   A  Y  N                   4.000000
                TH 6/4.5/5

                          Ref: C23,C25,C34-35
  4      150 03-00-1104   CAP CER 0.1uF 100V 10% TH 200/ 0         .0   A     N        .0000     10.000000


                          Ref: C1-4,C9,C18,C20-21,C30,C32
  4      160 03-00-2471   CAP CER 470pF 100V 10% TH 150/ 0         .0   A     N        .0000      4.000000
                                       Ref: C14,C17,C19,C22
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| 4 | 170 03-10-0228 | CAP ELEC 2200uF 10V 20% 105C LowZ 0.04R RADIAL 12.5/25/5 | 0 EA | .0 | A Y N | | 1.000000 |

Ref: C8

| 4 | 180 03-14-0476 | CAP ELEC 47uF 25V 20% RADIAL 6.3/7/5 | 0 EA | .0 | A Y N | | 1.000000 |

Ref: C29

| 4 | 190 03-14-1227 | CAP ELEC 220uF 25V 20% RADIAL LowZ 0.15R RADIAL 8/15/5 | 0 EA | .0 | A Y N | | 3.000000 |

Ref: C7,C15-16

| 4 | 200 03-16-1108 | CAP ELEC 1000uF 35V 20% 105C LowZ 0.04R RADIAL 12.5/31.5/5 | 0 EA | .0 | A Y N | | 2.000000 |

Ref: C5-6

| 4 | 210 03-20-0227 | CAP ELEC 220uF 63V 20% 105C LowZ 0.07R RADIAL 12.5/20/5 | 0 EA | .0 | A Y N | | 2.000000 |

Ref: C12-13

| 4 | 220 03-22-0108 | CAP ELEC 1000uF 200V 20% SNAP- IN RADIAL 25/50/10 | 0 EA | .0 | A Y N | | 2.000000 |

Ref: C36-37

| 4 | 230 03-24-0223 | CAP MET-POLY 22nF 250V 10% TH 10.3/4.4/7.5/7.5 | 0 EA | .0 | A Y N | | 1.000000 |

Ref: C33

| 4 | 240 03-24-0683 | CAP MET-POLY 68nF 50V 5% TH 7. | 0 | .0 | A N | .0000 | 1.000000 |

Ref: C24

| 4 | 250 03-41-0224 | CAP X-CAP 0.22uF 275VAC 20% POLYPROYPYLENE 18/9.5/17.5/15 | 0 EA | .0 | A Y N | | 1.000000 |

Ref: C40

| 4 | 260 03-42-0471 | CAP Y-CAP 470pF 250VAC 20% TH CER DISC 8D/7/7.5 | 0 EA | .0 | A Y N | | 3.000000 |

Ref: C38-39,C41

| 4 | 270 04-00-0271 | INDUCTOR DRUM-CORE 270uH@ 4MHz 840mA TH | 0 EA | .0 | A N | | 1.000000 |

Ref: L1

| 4 | 280 06-00-4148 | DIODE SMALL-SIGNAL 100V 300mA 4nS DO-35 TH 1N4148 | 0 EA | .0 | A Y N | | 4.000000 |

Ref: D5-6,D10,D12

| 4 | 285 06-02-0120 | DIODE ULTRA FAST 200V 1A 50nS | 0 EA | .0 | A Y N | .0000 | 3.000000 |

Ref: D2-4

| 4 | 290 06-08-0020 | DIODE ZENER 20V 5% 1W DO-41 TH 1N4747A | 0 EA | .0 | A Y N | | 1.000000 |

Ref: D8

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=============================================================================================================================
  4      300 06-08-0068   DIODE ZENER 6.8V 5% 1W       0  EA      .0   A  Y  N                              1.000000
               DO-41 TH 1N4736A


                            Ref: D11
  4      310 06-12-0160   DIODE ULTRA FAST 600V 1A 50nS 0  EA      .0   A  Y  N                              1.000000
               59-04 PLASTIC TH MUR160


                            Ref: D16
  4      320 06-12-1045   DIODE SCHOTTKY 45V 10A       0  EA      .0   A  Y  N                              1.000000
               TO-220AC TH MBR1045


                            Ref: D1
  4      330 06-16-0008   DIODE BRIDGE-RECT 8A 600V    0  EA      .0   A  Y  N                              1.000000
               4-PIN SIL TH   KBU8J


                            Ref: D18
  4      340 06-24-0460   DIODE ULTRAFAST 4A 600V TH   0  EA      .0   A  Y  N                              2.000000
               MUR460


                            Ref: D14,D17
  4      350 06-24-1660   DIODE ULTRAFAST DUAL 8A 600V 0  EA      .0   A  Y  N                              4.000000
               COM CATHODE MUR1660CT


                            Ref: D7,D9,D13,D15
  4      360 09-00-1616   TRANS BIPOLAR NPN SMALL-SIGNAL 0         .0   A     N           .0000             2.000000



                            Ref: Q1-2
  4      370 09-06-0460   TRANS MOSFET N-CHAN PWR 500V 0  EA      .0   A  Y  N                              2.000000
               0.27R TO-247AC TH IRFP460


                            Ref: Q4,Q6
  4      380 09-06-7000   TRANS MOSFET N-CHAN 60V 5R TO- 0  EA    .0   A  Y  N           .0000             2.000000



                            Ref: Q3,Q5
  4      390 11-10-0002   INDUCTOR CUR-SENSING TH      0  EA      .0   A  Y  N                              1.000000
               PREMIER MAGNETICS PM-CI02


                            Ref: T6
  4      400 11-10-0584   XFMR OFFLINE GATE DR TH      0  EA      .0   A  Y  N                              1.000000
               PULSE P0584                                 P  Y  N


                            Ref: T3
  4      410 11-10-0831   INDUCTOR POWER FORWARD       0  EA      .0   A  Y  N                              1.000000
               CONVERTER  ICE  ICA-0831


                            Ref: L2
  4      420 11-30-0012   XFMR CCFL 8P TH              0         .0   A     N           .0000             1.000000



  4      430 11-30-0617   XFMR VERT BOBBIN 49/v20/-1rtg 0  EA     .0   A  Y  N                              1.000000
               ICE ICA-0617


                            Ref: T5
  4      440 11-30-0633   XFMR HOUSE-KEEPING           0  EA      .0   A  Y  N                              1.000000
               ICE ICA-0633            Ref: T4
```

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===================================================================================================================
   4      450 12-12-1234   IC CONTROLLER PWM           0  EA      .0   A  Y  N                         1.000000
                           POWER-INTERGRATIONS TOP234Y


                           Ref: U1
   4      460 21-20-0003   HDR SIL 3-PIN x 2mm PCB-MNT 0  EA      .0   A  Y  N                         1.000000
                           MALE


                           Ref: J2
   4      470 21-20-0005   HDR SIL 2-PIN x .200 PCB-MNT 0           .0   A     N            .0000      2.000000



                           Ref: J3-4
   4      480 21-20-1566   HDR PCB MT SIL 6-PIN X .156 0  EA      .0   A  Y  N                         1.000000
                           MALE VERT-MNT FRIC-LOCK


                           Ref: H2
   4      490 21-20-1568   HDR PCB MT SIL 8-PIN X .156 0  EA      .0   A  Y  N                         1.000000
                           MALE VERT-MNT FRIC-LOCK


                           Ref: H1
   4      497 21-20-2075   HDR PCB MT SIL 2-PIN X 7.5mm 0  EA     .0   A  Y  N                         2.000000
                           MALE VERT MT FRIC-LOCK TH


                           Ref: J6,J7
   4      500 21-20-3002   HDR PCB MT SIL 2-PIN x .100 0  EA      .0   A  Y  N                         1.000000
                           VERT MT FRICT LOCK TH


                           Ref: J5
   4      530 21-29-0006   WIRE 20AWG 70.00mm INSUL    0  EA      .0   A  Y  N            .0000        1.000000



   4      540 21-34-0006   CAB SIL 2-PIN 1.95" .156"   0  EA      .0   A  Y  N                         1.000000
                           PITCH


                           Ref: J6
   4      550 21-48-9521   CLIP FUSE HOLDER            0  EA      .0   A  Y  N                         2.000000



                           Ref: F1
   4      560 24-19-6325   FUSE 6.3 AMP 250V 5X20mm DOM F 0  EA   .0   A  Y  N                         1.000000



                           Ref: F1
   4      570 30-00-0440   SCREW #4-40 X 3/8 Socket CAP 0  EA     .0   A  Y  N                        10.000000
                           ALLOY


                           Ref: Heatsink H5-D7,D9,D13,D15/Heatsinks to PCB
   4      580 30-00-0607   SCREW 6-32 x 7/16IN w/LK WASH 0  EA    .0   A  Y  N                         1.000000
                           PPZ STL


                           Ref: d1
   4      590 30-00-1632   SCREW 6-32 x 3/8IN PPB      0  EA      .0   A  Y  N                         2.000000
                           TAP-TITE STL


                           Ref: PCB Brace to Heatsinks
   4      600 30-00-2632   SCR 6-32 x .500 LG SHCS BLK 0  EA      .0   A  Y  N                         3.000000
                                         Ref: Heatsink H4-Q4, Q6, D18
```

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4	610	30-00-3125	SCREW 4-40 x .3125 PPB STL	0	EA	.0	A	Y	N	1.000000

Ref: U1-H6

4	620	30-03-0400	WASHER #4 SPLIT LOCKWASHER ZINC	0	EA	.0	A	Y	N	10.000000

Ref: Heatsink H5-D7,D9,D13,D15/Heatsinks to PCB

4	630	30-03-0425	WASHER,#4,0.125" ID,.233" OD, .018 HEIGHT,ZINC PLATE	0	EA	.0	A	Y	N	4.000000

Ref: Heatsink H5-D7,D9,D13,D15

4	640	30-03-0600	WASHER #6 SPLIT LOCKWASHER ZINC	0	EA	.0	A	Y	N	3.000000

Ref: Heatsink H4-Q4, Q6, D18

4	650	30-03-0606	WASHER #6 FLAT ZINC	0	EA	.0	A	Y	N	3.000000

Ref: Heatsink H4-Q4, Q6, D18

4	660	30-06-0440	NUT HEX .242 4-40 STL/ZNC	0	EA	.0	A	Y	N	1.000000

Ref: U1-H6

4	665	30-12-0632	STANDOFF HEX .250 6-32 F-F 1IN F-F AL	0	EA	.0	A	Y	N	1.000000

Ref: D1

4	680	30-15-0404	SHOULDER BUSHING TO-220 VALPAK NY04-040-140-012TWG	0	EA	.0	A	Y	N	4.000000

Ref: Heatsink H5-D7,D9,D13,D15

4	690	30-51-0057	HEAT SINK, BLACK ANODIZED AL, WAKEFIELD #287-1AB	0	EA	.0	A	Y	N	1.000000

Ref: H6

4	700	30-51-6001	Heat sink, HD 2 P/S#1	0	EA	.0	A	Y	N	1.000000

Ref: H4

4	710	30-51-6002	Heat sink, HD 2 P/S#2	0	EA	.0	A	Y	N	1.000000

Ref: H5

4	720	30-63-4002	INSULATOR THERMAL K6 TO-247	0	EA	.0	A	Y	N	3.000000

Ref: Heatsink H4-Q4,Q6

4	730	30-63-4005	PAD THERMAL TO-220 BERG-400-7-54	0	EA	.0	A	Y	N	4.000000

Ref: Heatsink H5-D7,D9,D13,D15

2	610	50-02-0237	PCBA SPEAKER OUT HD147/VETTA-HD SERIES	10	EA	.0	A	Y	N	1.000000

3	5	03-36-0102	CAP ESTR 1nF 100V 5% TH	Ref: C1-2		2.000000

==

| 3 | 10 03-50-0102 | CAP NPO 1nF 50V 5% 0805 | 0 | EA | .0 | A | Y | N | | 4.000000 |

Ref: C47,C53-54,C63

| 3 | 20 21-00-6616 | JACK 1/4" TRS 6-PIN PCB MT HORIZ TH | 0 | EA | .0 | A | Y | N | | 4.000000 |

Ref: J16,J18,J28,J30

| 3 | 30 21-20-0204 | HDR PCB MT SIL 4-PIN x 2mm MALE SHRD VERT MT TH | 0 | EA | .0 | A | Y | N | | 1.000000 |

Ref: H3

| 3 | 40 21-20-1564 | HDR PCB MT SIL 4-PIN X .156 MALE VERT-MNT FRIC-LOCK | 0 | EA | .0 | A | Y | N | | 1.000000 |

Ref: J1

| 3 | 45 21-20-1574 | HDR PCB MT SIL 4-PIN X .156 MA | 0 | | .0 | A | | N | .0000 | 1.000000 |

Ref: J8

| 3 | 50 21-20-3002 | HDR PCB MT SIL 2-PIN x .100 VERT MT FRICT LOCK TH | 0 | EA | .0 | A | Y | N | | 1.000000 |

Ref: J7

| 3 | 60 24-09-0128 | SWITCH SLIDE DPDT RA PCB MT ON-OPEN-ON SWEETA SPA-128 | 0 | EA | .0 | A | Y | N | | 1.000000 |

Ref: SW1

| 3 | 70 30-18-3030 | CLIP GND PCB .30x.30x.07 | 0 | EA | .0 | A | Y | N | | 4.000000 |

Ref: J42-45

HD147 Factory reinstall/Reset

Hold the A and D buttons down while powering up.

HD147 Flash code version ID

Hold C button down while powering up. B, C and D LEDs will flash to show the flash code version. "B" designates the major version, "C" and "D" LEDs designate the first and second decimal points, respectively, in a point release. For example, if "B" flashes once, "C" once and "D" twice, the flash code version is 1.12.

HD147 OTP/Boot code version ID

Hold B button down while powering up. B, C and D LEDs will flash to show the OTP/boot code version. "B" designates the major version, "C" and "D" LEDs designate the first and second decimal points, respectively, in a point release. For example, if "B" flashes once, "C" once and "D" twice, the OTP/boot code version is 1.12.

LINE 6
Engineering

Mechanical Assembly Instructions: Rev B
HD147   p/n 59-00-0515

Forward and Notes

The information in this booklet applies to the HD147 mechanical assembly only.

This booklet deals with assembling the major sub-assemblies, 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.
- Part identifying notes are in this format: Description P/N (P/N = part number)
- Drawings are not to scale.
- Cotton gloves should be worn when handling the chrome chassis parts.
- Special care must be taken when handling the chrome chassis parts, to avoid scratches & dings.

LINE 6
Engineering

Table of contents:

BASE CHASSIS SUB ASSEMBLY …………………………………………..3

TOP CHASSIS SUB ASSEMBLY…………………………………………21

TEST AND INSPECT THE COMPLETED UNIT…………..…………...61

COMPONENT SETTINGS FOR FINAL PACKAGING………………61

PACK-OUT LIST……………………………………………………62

HD147 Assembly Instructions

BASE CHASSIS ASSEMBLY
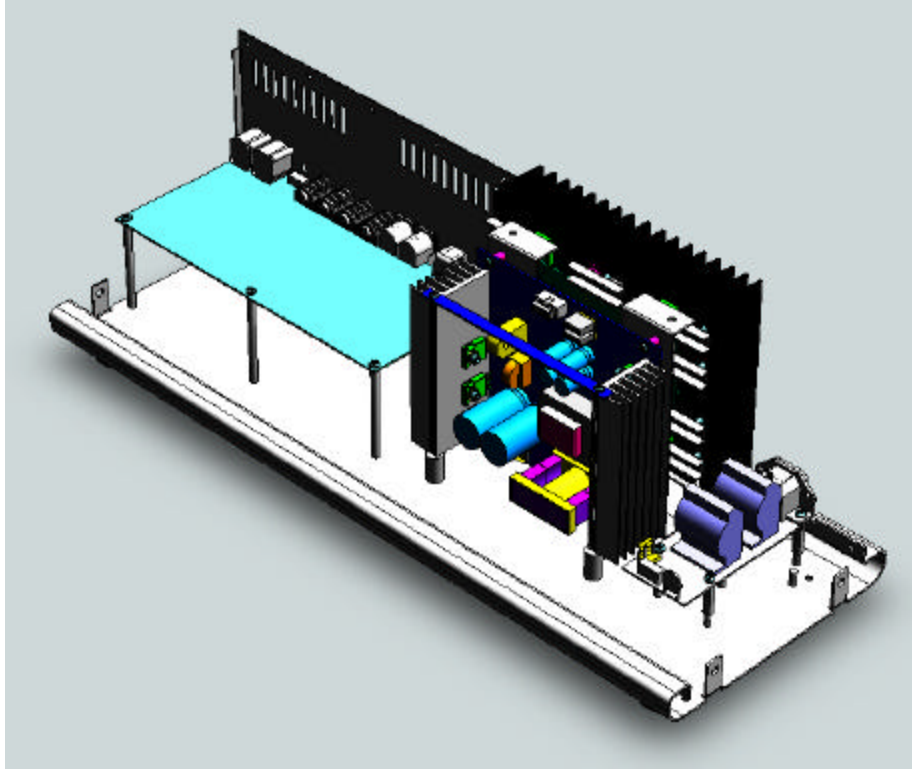
Full Base Chassis Sub-Assembly
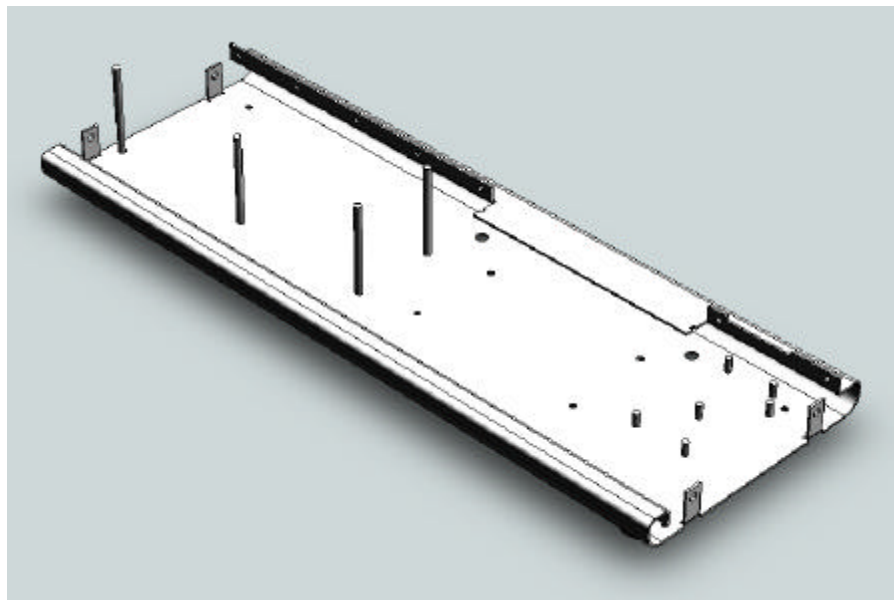
Base Chassis p/n 30-51-0122

HD147 Assembly Instructions

LINE 6
Engineering

1) Install 4 rubber feet (p/n 30-75-0008) with 4 each 10-32 x .5/8" screws (30-00-0047). Torque to 8-10 in/lbs)
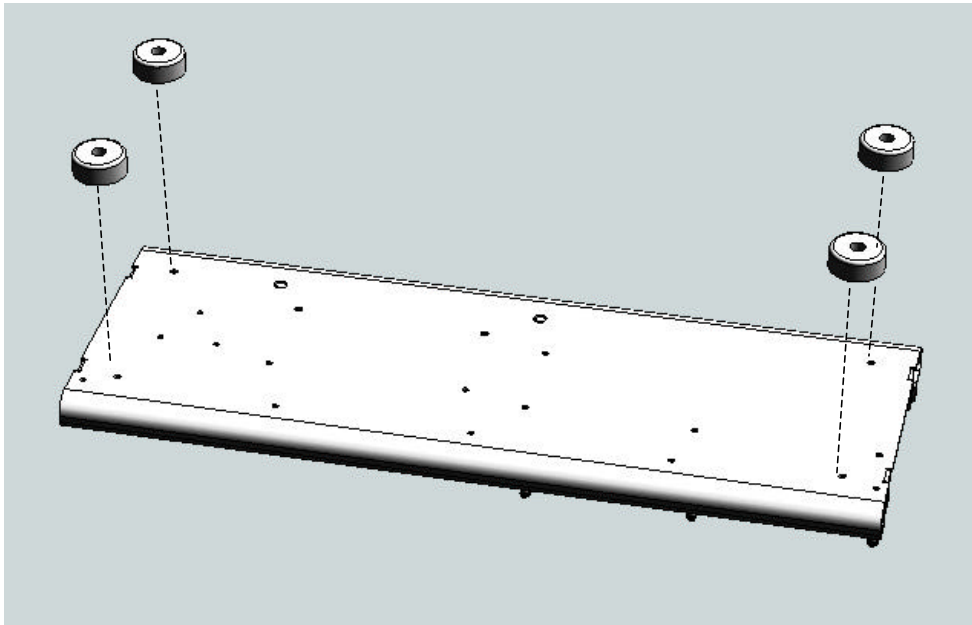
Foot installation onto bottom surface of Base Chassis - 4 places
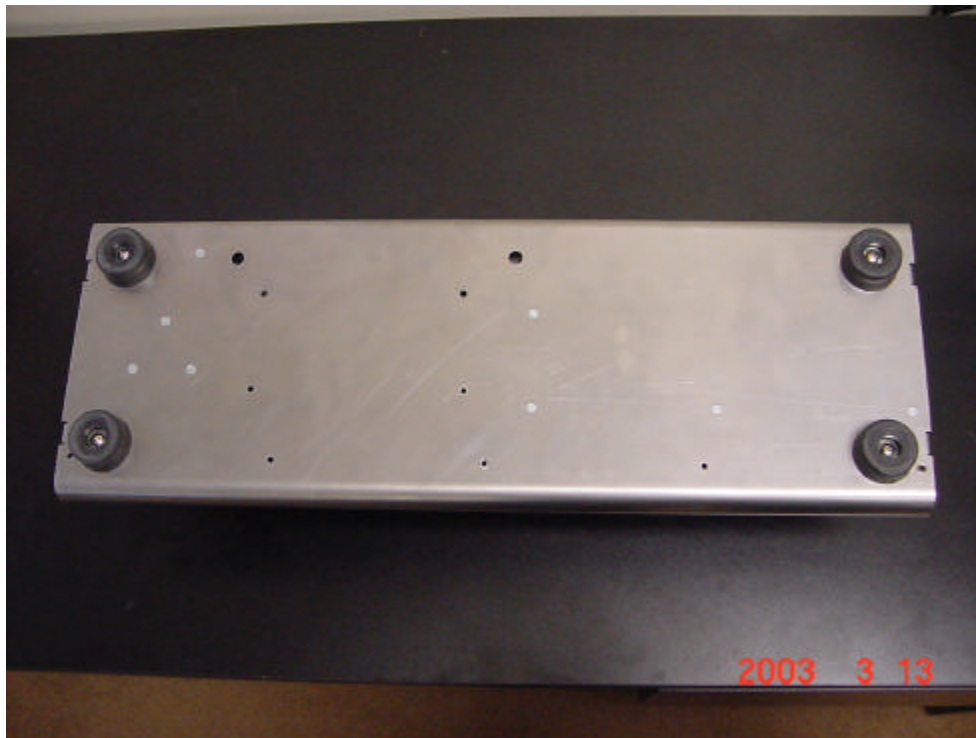
Foot installation complete

HD147 Assembly Instructions

2) Install 2 HEAT SINK SPACERS (p/n 30-15-0019) with two 6-32 x .75" screws (30-00-0018).

Spacer 30-15-0019

Screw 30-00-0018
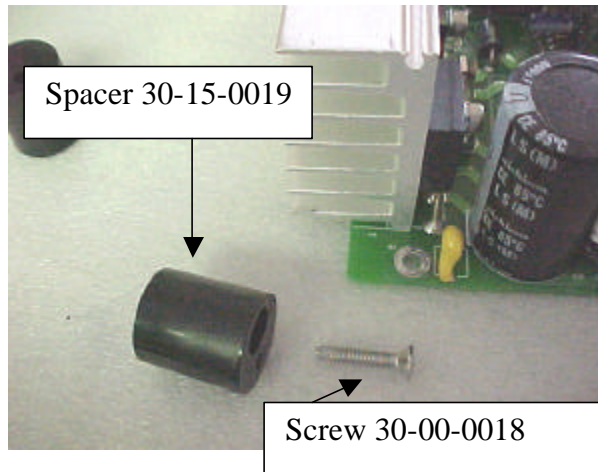
Screw spacer into heat sink, until the screw bottoms out in the spacer.
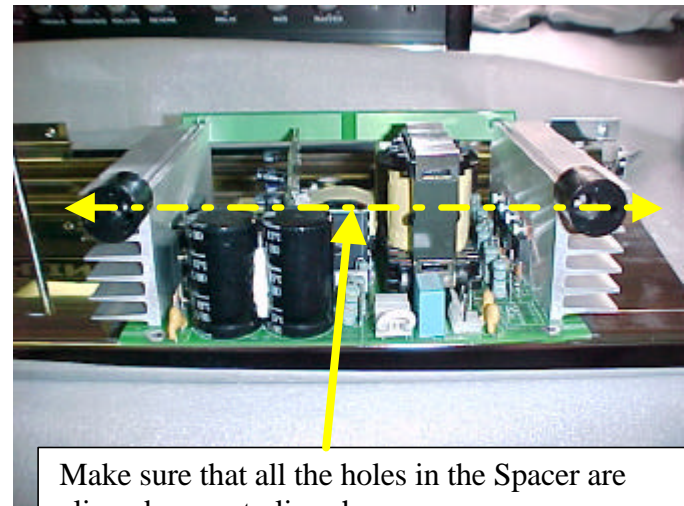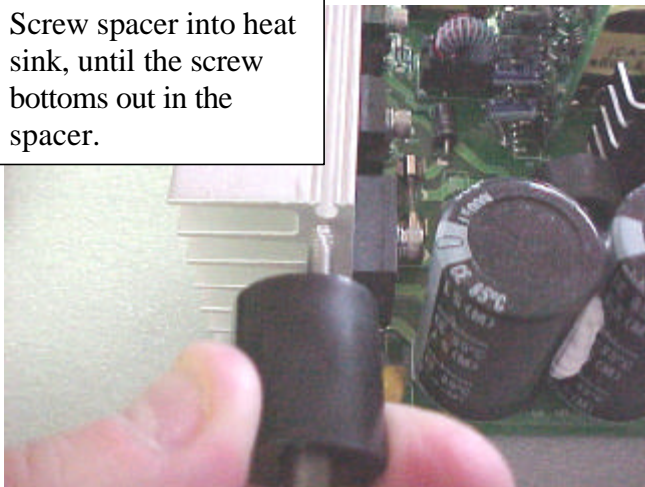
Make sure that all the holes in the Spacer are aligned on centerline shown.
Chassis mounting holes on the Spacer should be facing outward, away from the PCBA transformer.

3) Install five, 1 inch long hex standoffs (p/n 30-12-8418) into pre-assembled .5" chassis standoffs. Torque standoffs to 8 in-lbs.

5 Stand-offs
30-12-8418

These spacers 30-15-0019 should be pre-installed on the Power Supply.

No stand-off here. This is the Ground wire connection.

Standoff installation

2003 3 13
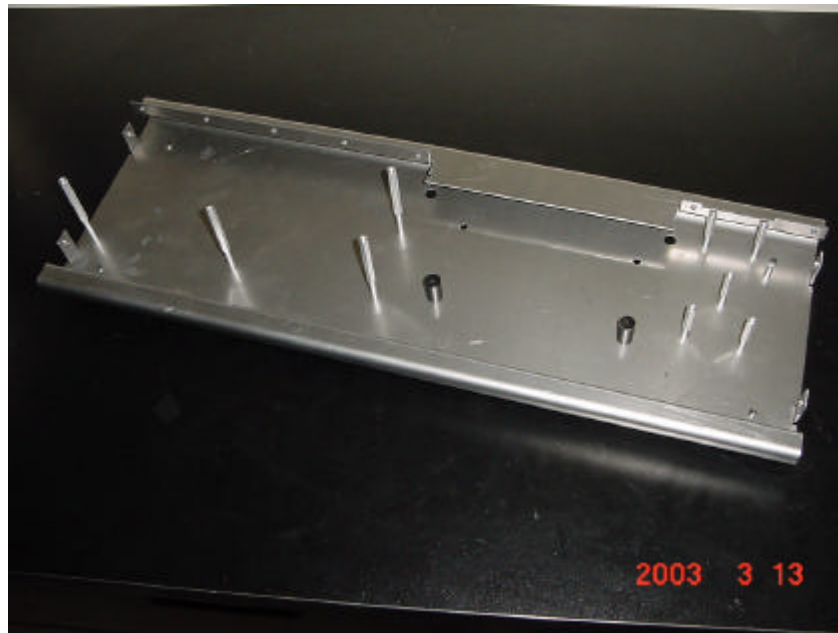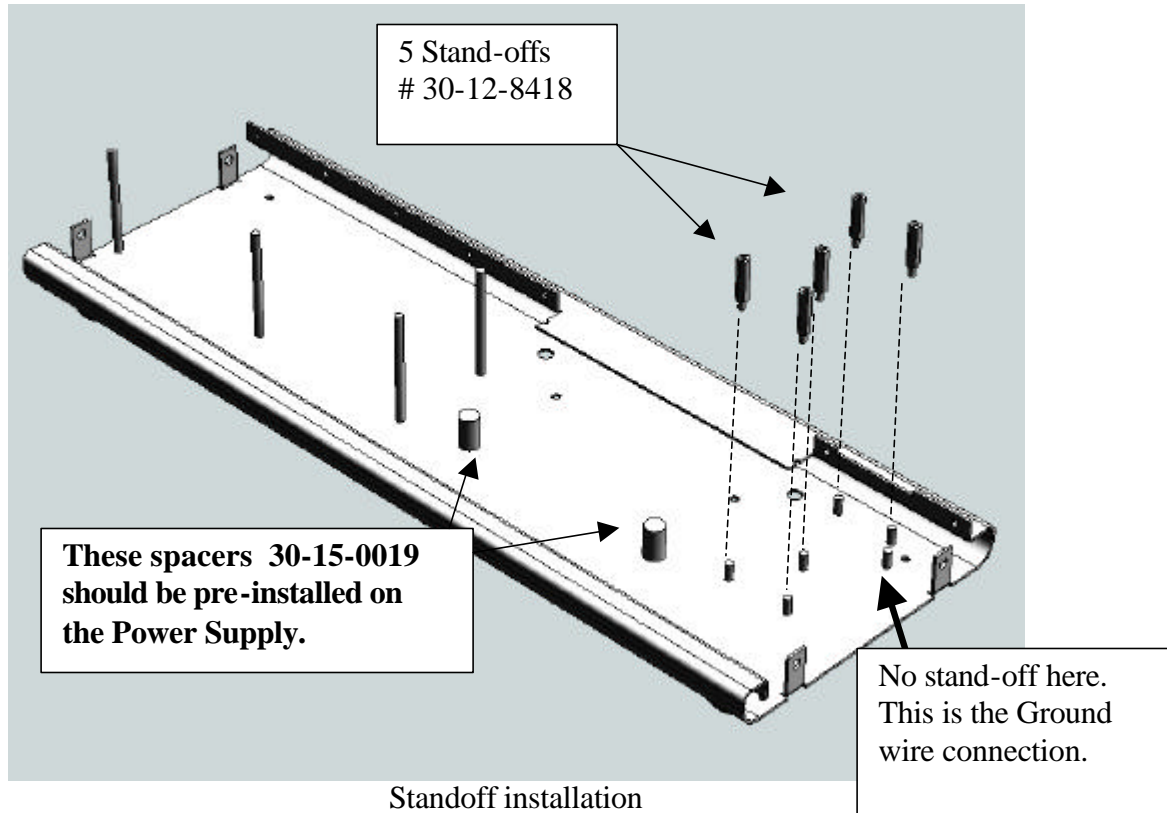
Completed Installation

4) Install 1 each Power Amplifier assy (p/n 50-00-9102) with 2 each 6-32 self tapping screws (p/n 30-00-0018). Torque screws to 10-12 in-lbs.

Power Amp
50-00-9102

Secure power amp using 2x self-tapping
screws (30-00-0018) at these locations
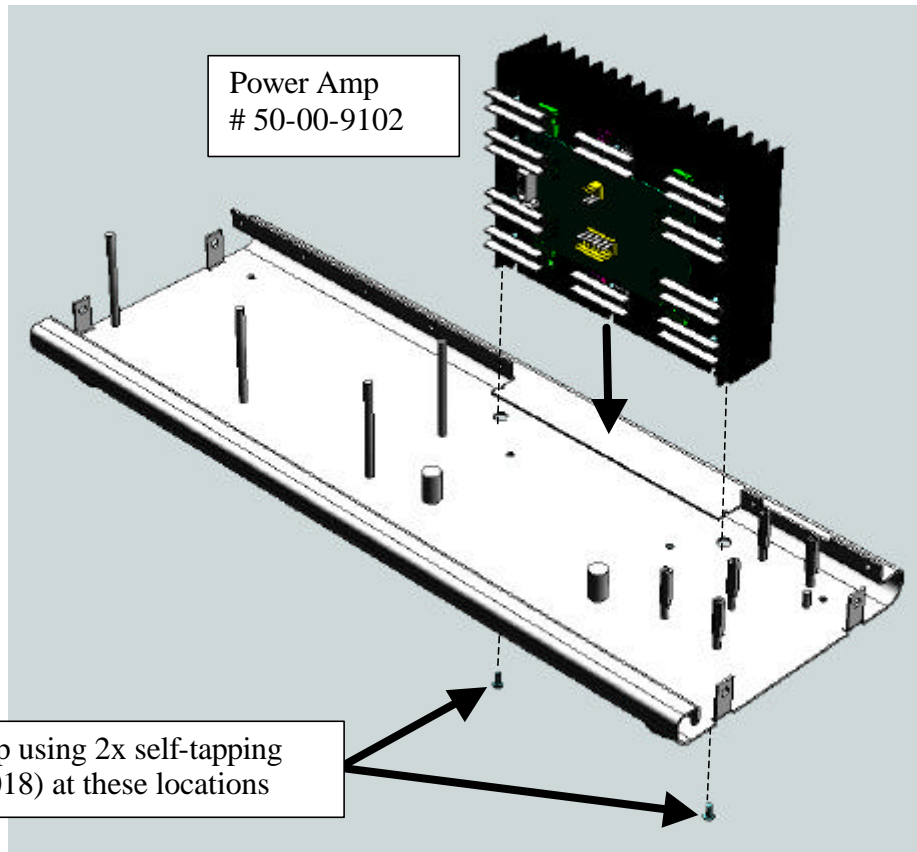
Power Amplifier Assembly onto Base Chassis

2003 3 13
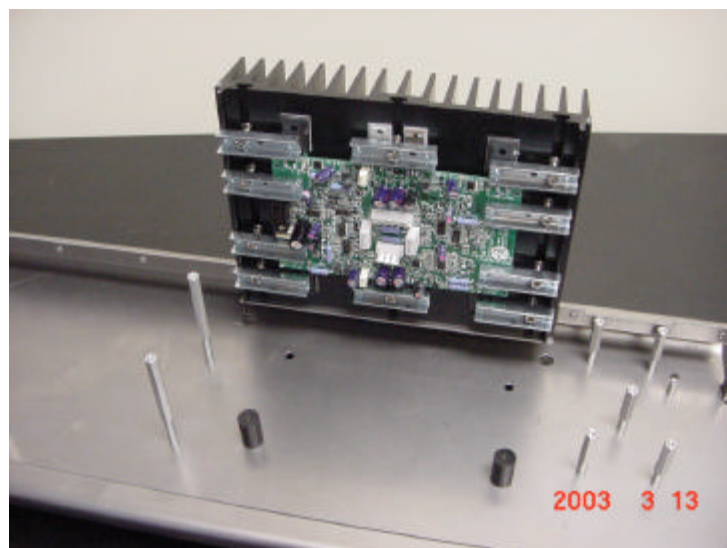
Completed Installation

5) Install Power Amplifier cables
1 each (# 21-34-0008-2, # 21-30-0009-4, # 21-34-0007-3)
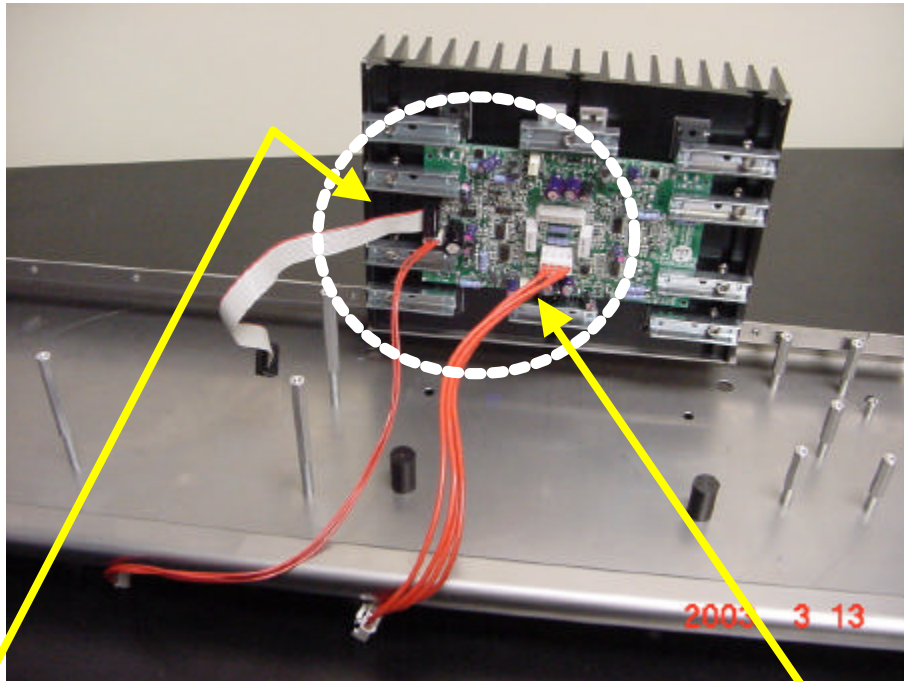
Power Amplifier Cable Installation

21-30-0009-4
Power Amp to Main.

21-34-0008-2
Power Amp to
Speaker out PCBA.

21-34-0007-3
Power Amp to
Speaker Out
PCBA.
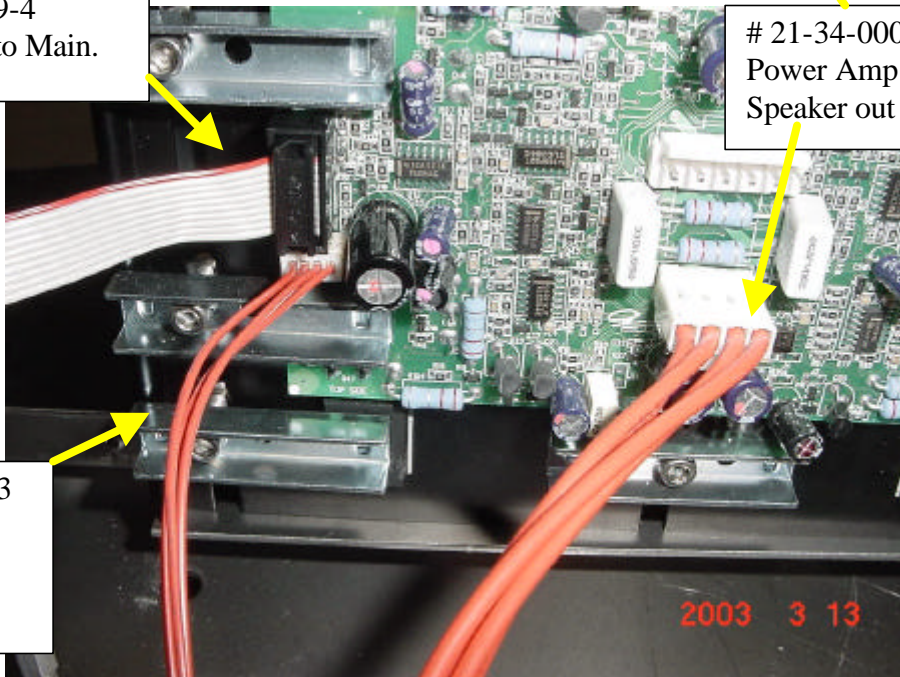
PCBA and Cable Connector detail

HD147 Assembly Instructions

6) Install 1 each Power Supply Assembly (p/n 50-02-0236)

- **Prior to mounting the Bracket, install cable assembly (p/n 21-34-0021-3) onto Power Supply and Power Amplifier (see next figure #7).**
- **Install the Power Supply using 2 each 10-32UNF-2A screws (#30-00-1012) with lock washer (#30-03-0001) . Torque screws to 12-14 in-lbs.**
-

Power Supply
PCBA # 50-02-0236
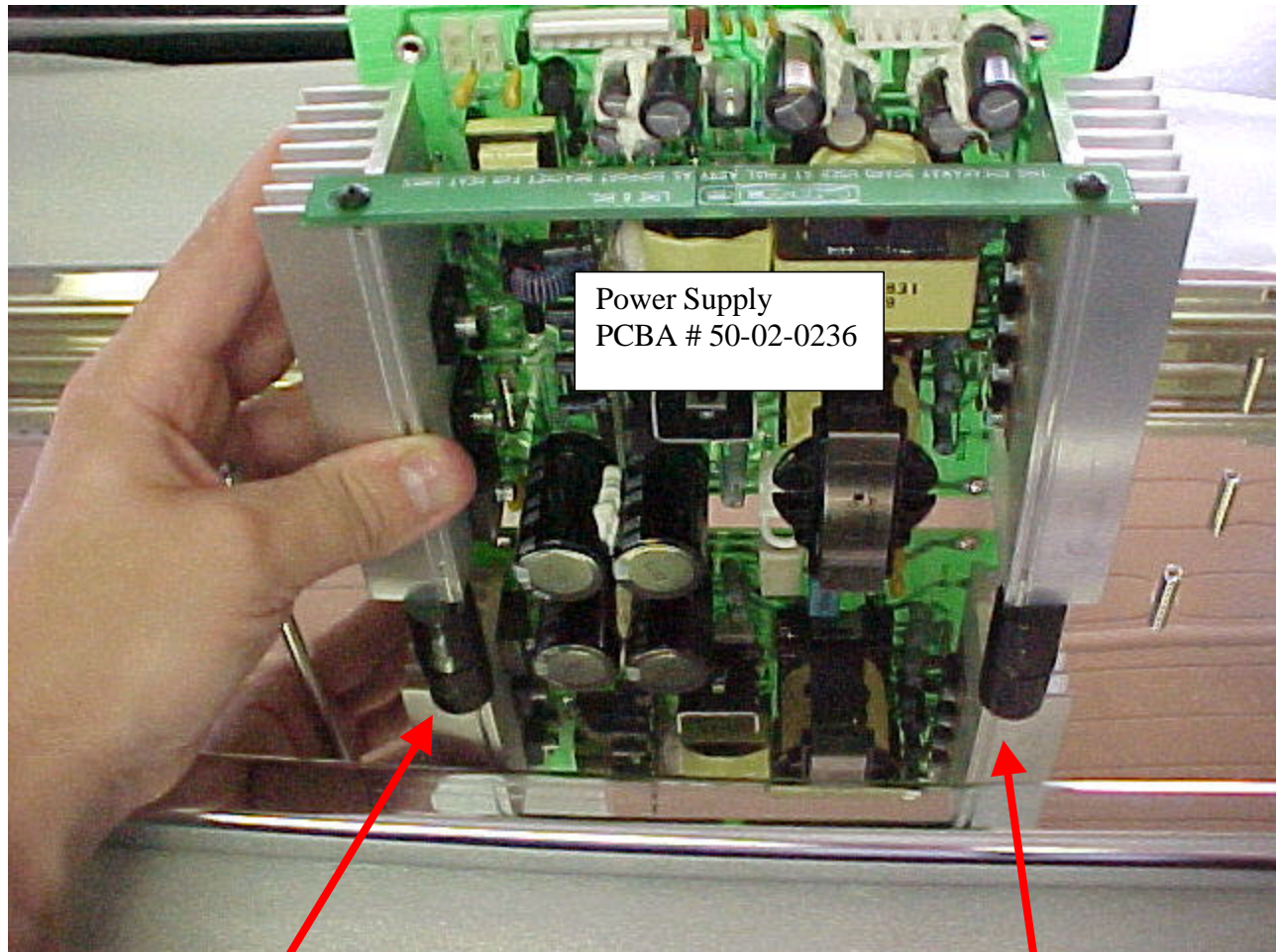
Power Supply Installation

To mount the power supply Spacers (30-15-0019) to the chassis,
Use screws #30-00-0046 #6 Sheet metal Phillips Pan Zinc (2 per)

7) Install Power supply cable (21-34-0021-3) to Power Amplifier assembly <u>prior</u> to mounting the Power Supply Bracket onto the Base Chassis.

- **Make sure that Jumper Cable #21-34-0006, is INSTALLED for 100/120v units. It must be removed for 220/240v units.**
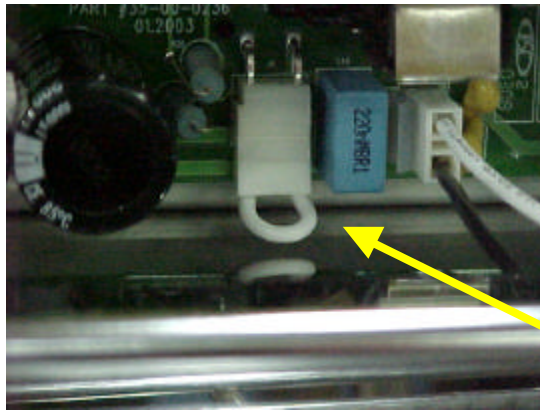
Cable – Voltage jumper.
#21-34-0006.
100/120V – INSTALLED
220/240V – NOT INSTALLED.
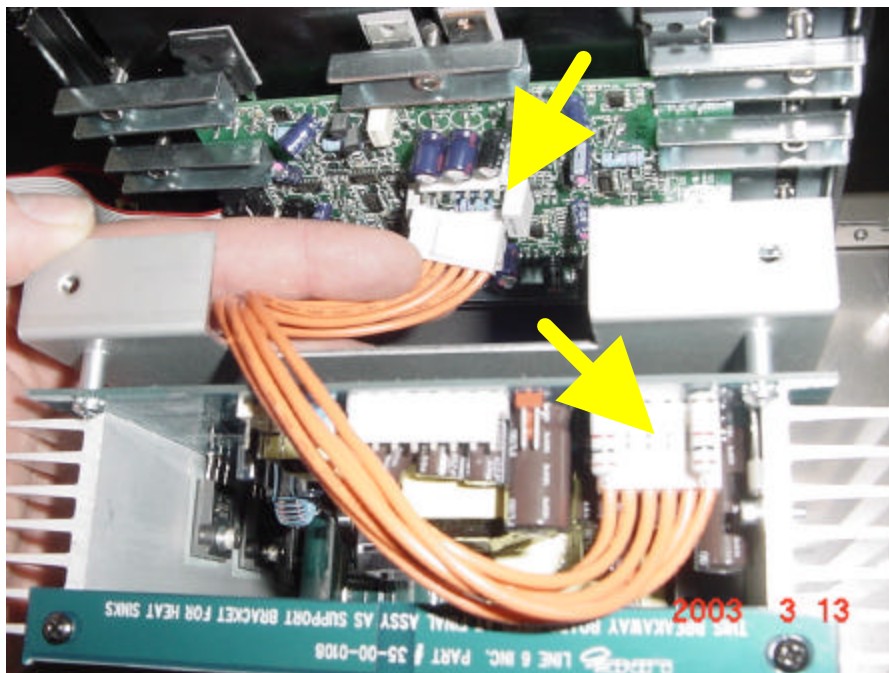
Power Supply to Power Amplifier cable installation

HD147 Assembly Instructions
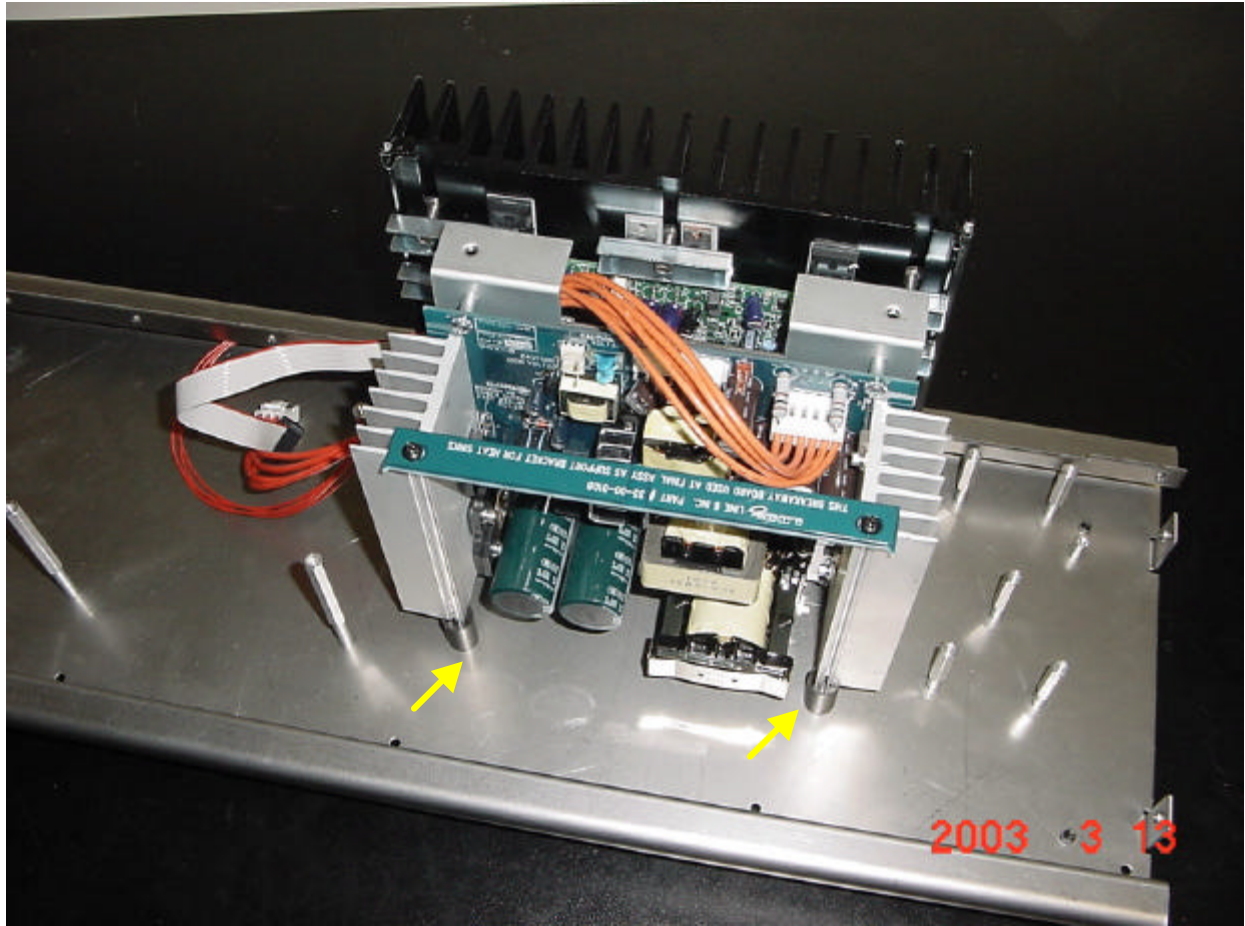
Completed Power Supply Installation

Note :

> To mount the power supply Spacers (30-15-0019) to the chassis,
> Use screws #30-00-0046 #6 Sheet metal Phillips Pan Zinc (2 per), at
> positions shown, from the <u>bottom </u>of the chassis base.

8) SUB-ASSEMBLY: assemble the following parts;   **1 each I/O PANEL p/n 30-51-0126,**
1 each MAIN PCBA p/n 50-00-0204,
1 each SPEAKER OUT PCBA p/n 50-02-0237

Panel #30-51-0126

Main PCBA
50-00-0204

Speaker Out PCBA
50-02-0237
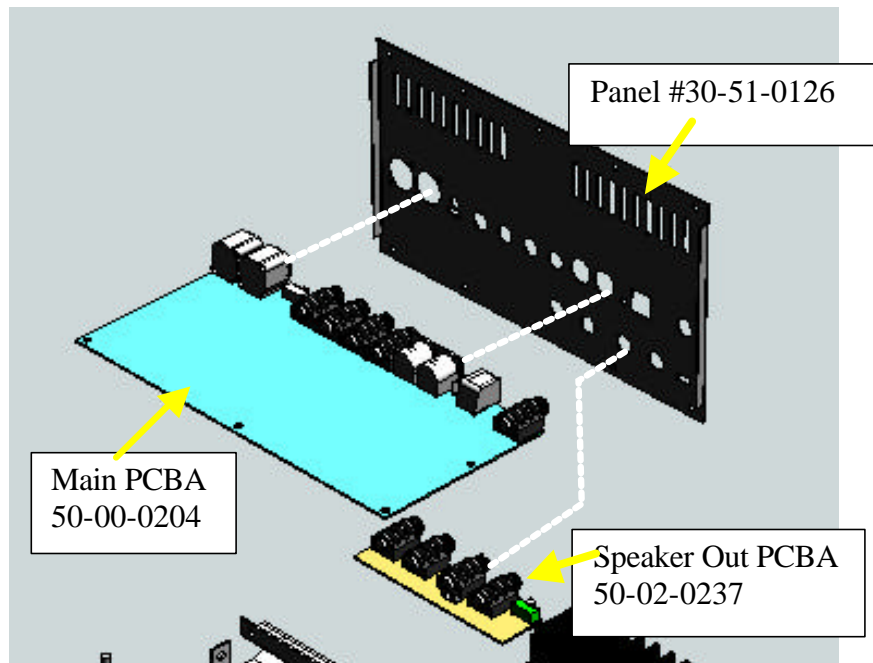
Main PCBA and Speaker Output PCBA mounting
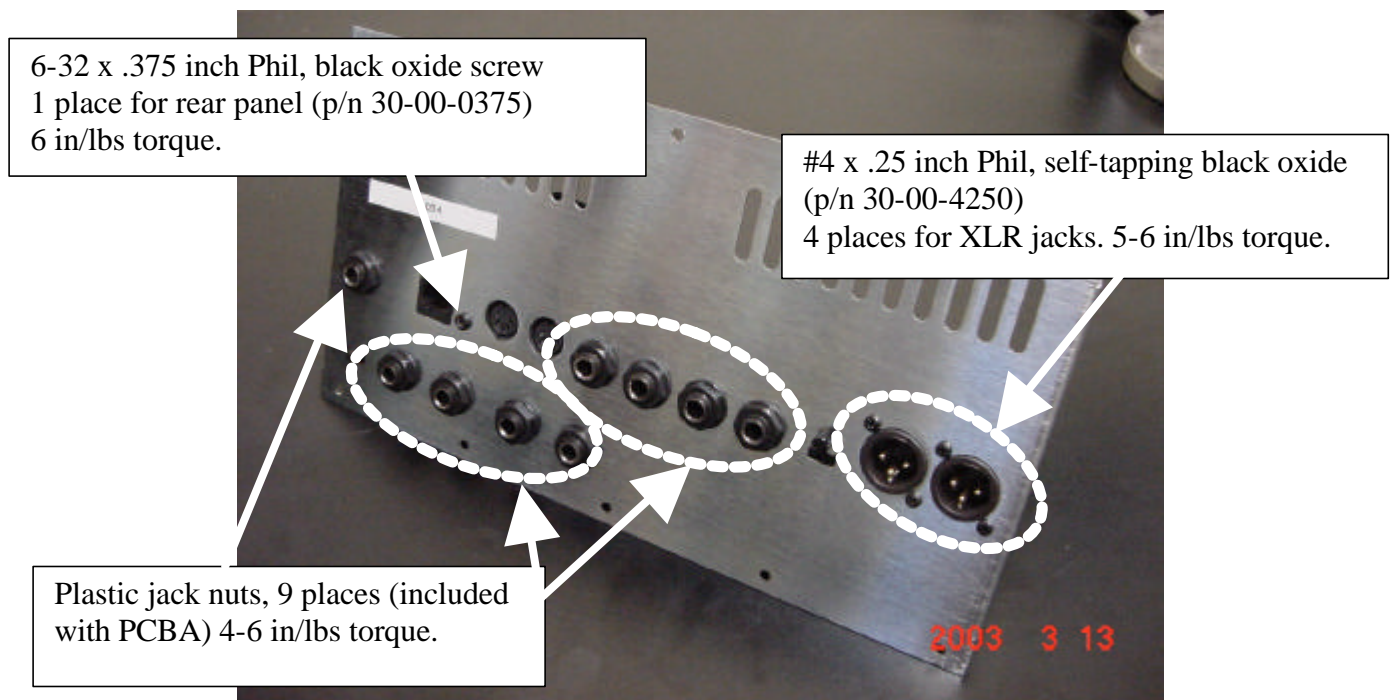
6-32 x .375 inch Phil, black oxide screw
1 place for rear panel (p/n 30-00-0375)
6 in/lbs torque.

#4 x .25 inch Phil, self-tapping black oxide
(p/n 30-00-4250)
4 places for XLR jacks. 5-6 in/lbs torque.

Plastic jack nuts, 9 places (included
with PCBA) 4-6 in/lbs torque.

Completed Rear Panel Assembly – top view

HD147 Assembly Instructions
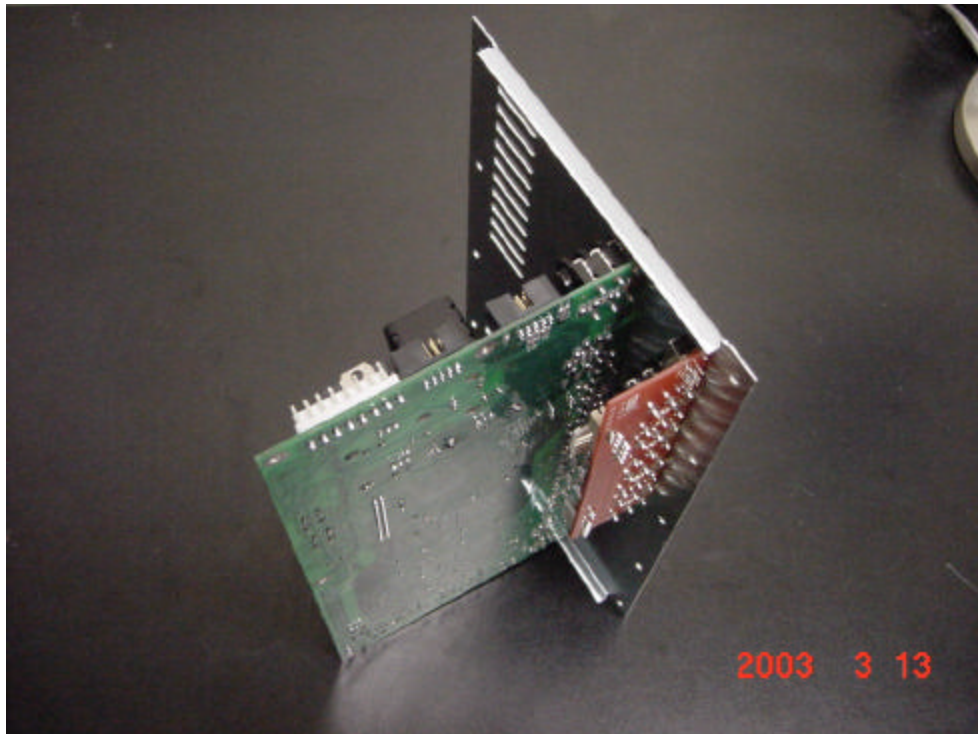
Completed Rear Panel Assembly – end view
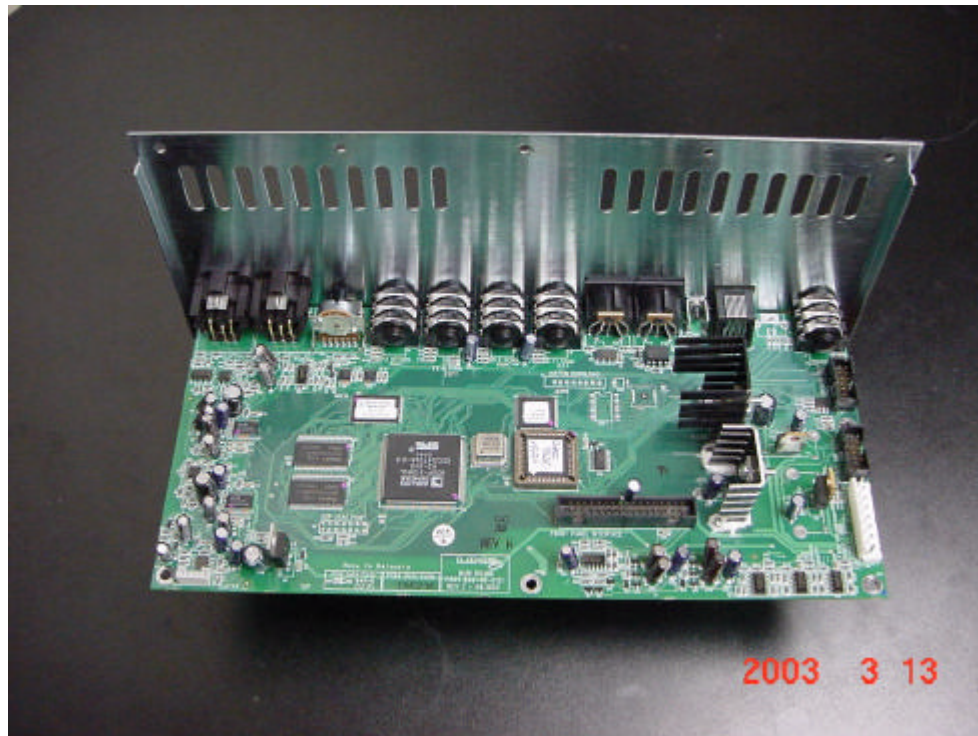
Completed Rear Panel Assembly – rear view

HD147 Assembly Instructions

9) Rear panel assembly installation onto Base Chassis.
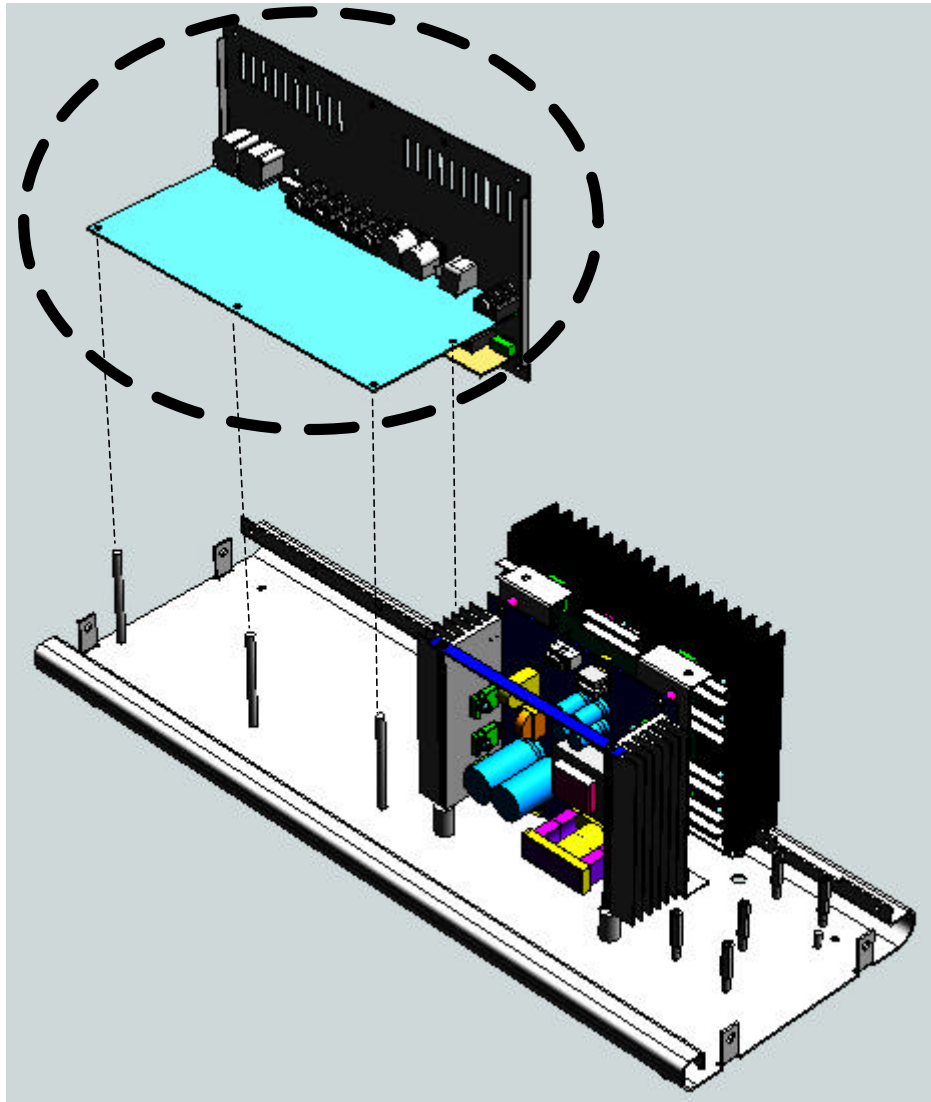
Rear Panel Assembly installation onto Base Chassis

10) Connect Power Amplifier cables to Main PCBA and Speaker Output PCBA.

Cable # 21-34-0008-2
Power Amp to
Speaker out PCBA.

Cable # 21-34-0007-3
Power Amp to Speaker
Out PCBA.

Cable #21-36-0265
Power Supply PCBA
(J5) to Speaker out
PCBA.

Cable # 21-30-0009-4
Power Amp to Main.
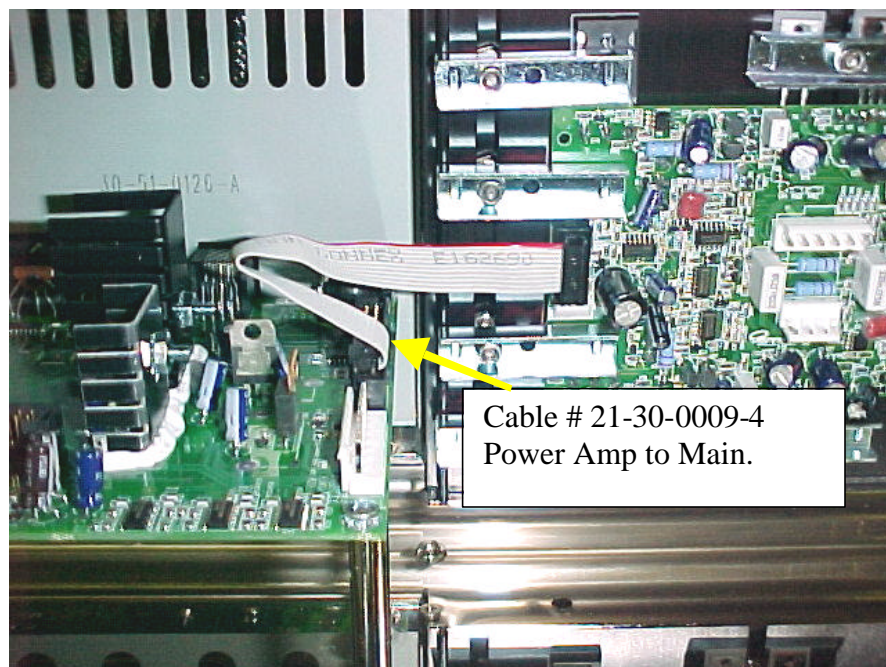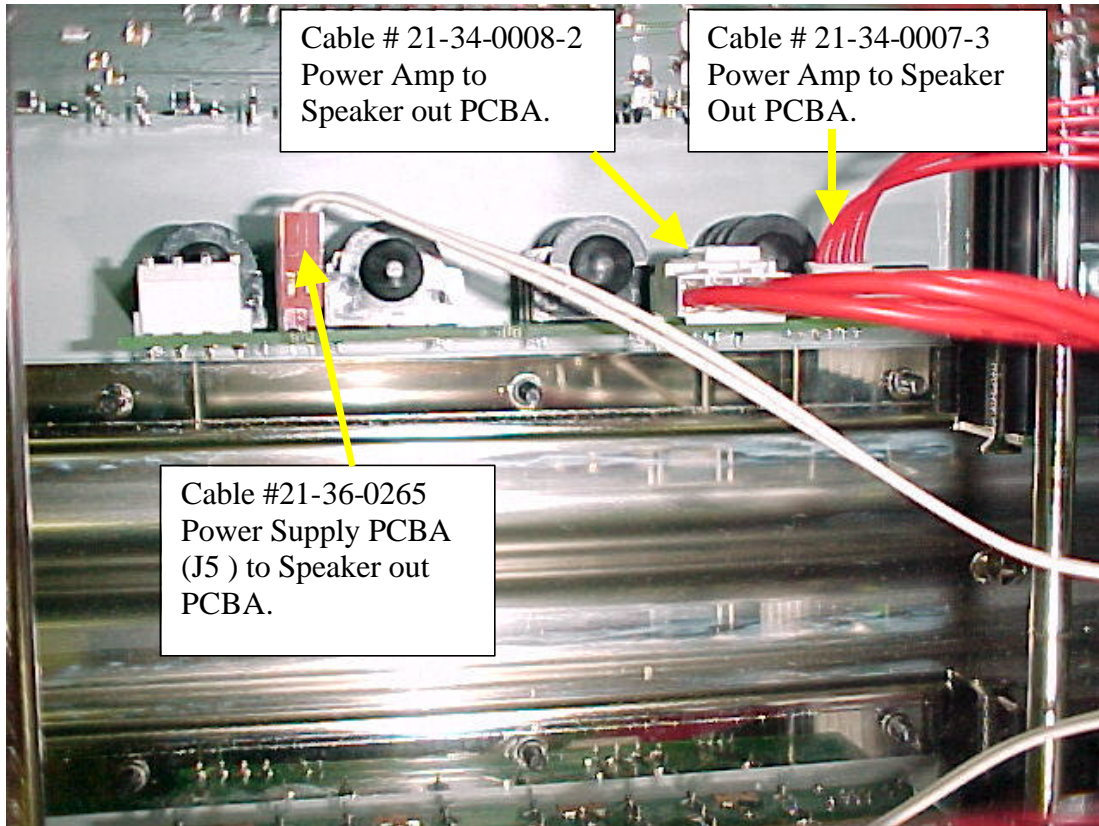
11) Secure MAIN PCBA with 4 each 6-32 screws (p/n 30-00-0607). Torque the screws to 8-10 in-lbs.

4 Screws (# 30-00-0607)
8-10 in/lbs torque.
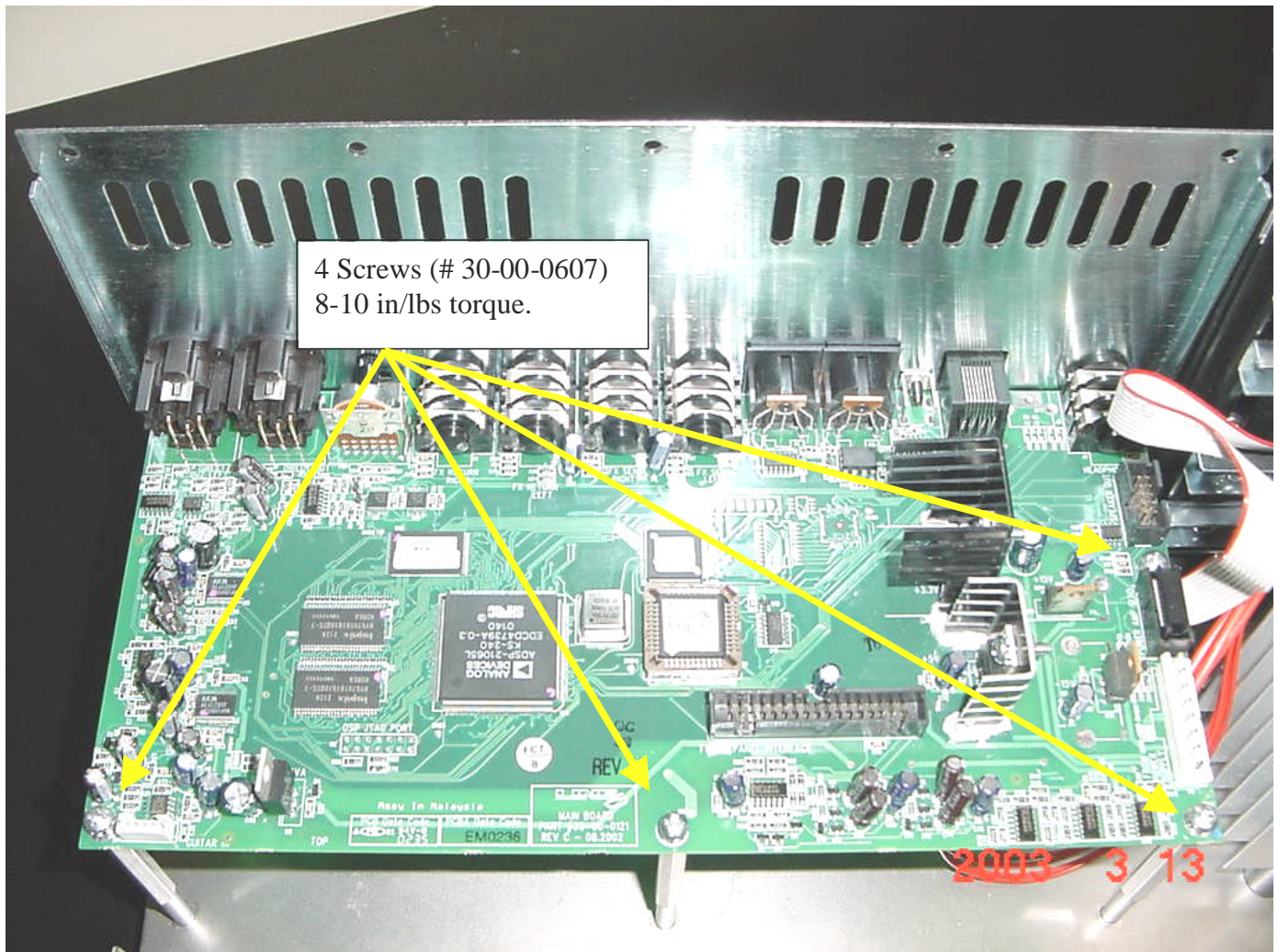
Main PCBA fastening to the Base Chassis

12) <u>LOOSELY</u> install 5 each BLACK SCREWS (p/n 30-00-0375) to hold panel to chassis. These screws can be fully torqued down, when the Top Chassis is assembled.
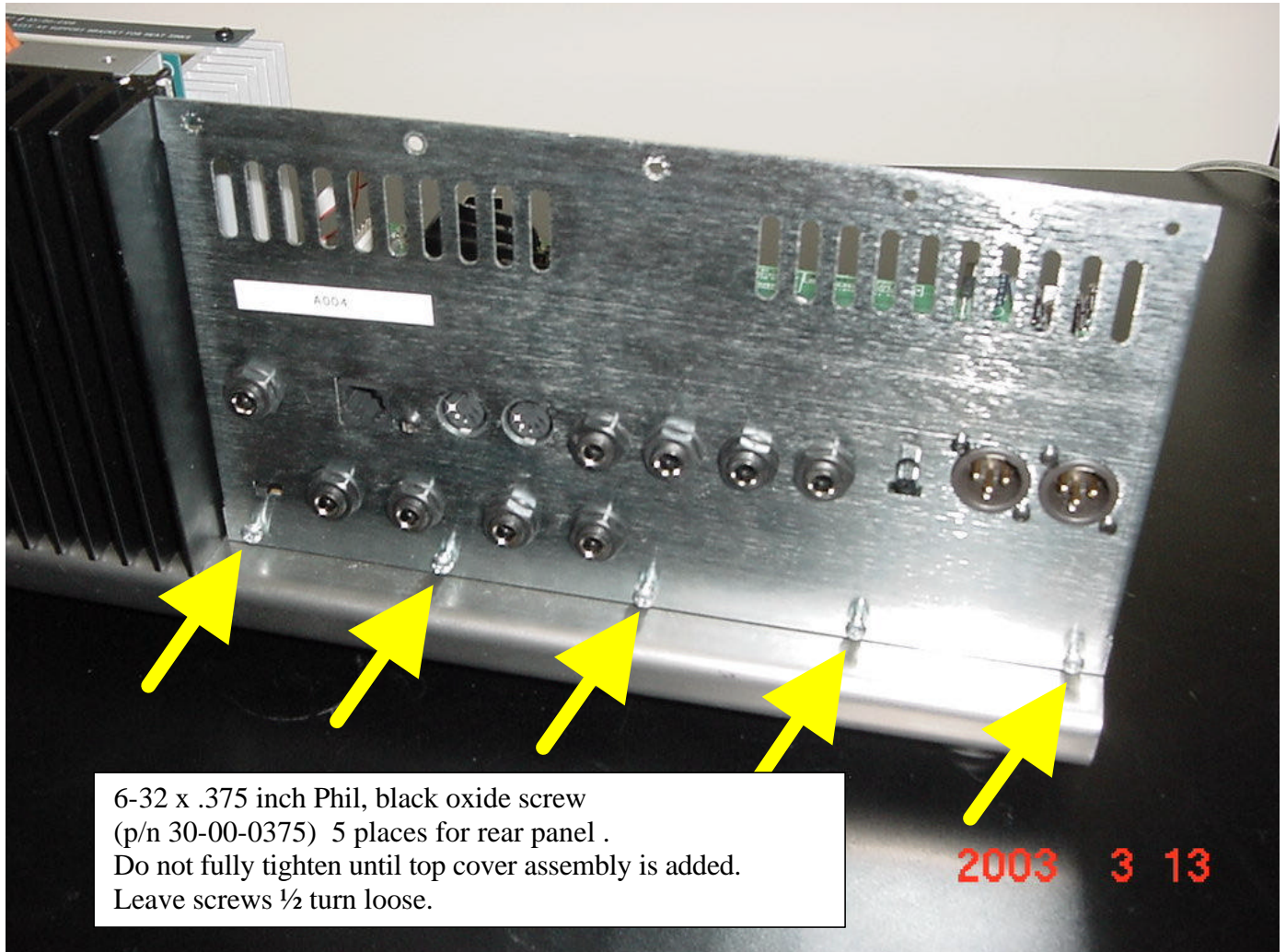
6-32 x .375 inch Phil, black oxide screw
(p/n 30-00-0375) 5 places for rear panel .
Do not fully tighten until top cover assembly is added.
Leave screws ½ turn loose.

13) Install POWER SUPPLY to MAIN PCBA CABLE ASSEMBLY (# 21-34-0014-2).
Route the cable around the back of the Power Supply Bracket as shown.

Note: cable routing.

Power Supply to Main PCBA Cable # 21-34-0014-2.

Cable # 21-34-0014-2

Cable # 21-34-0021-3
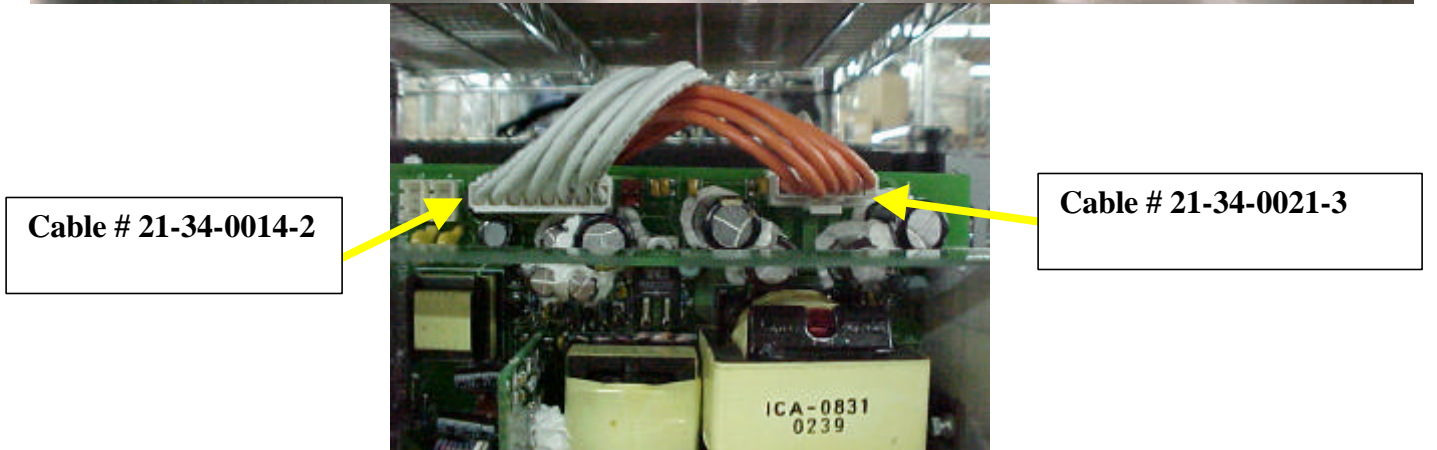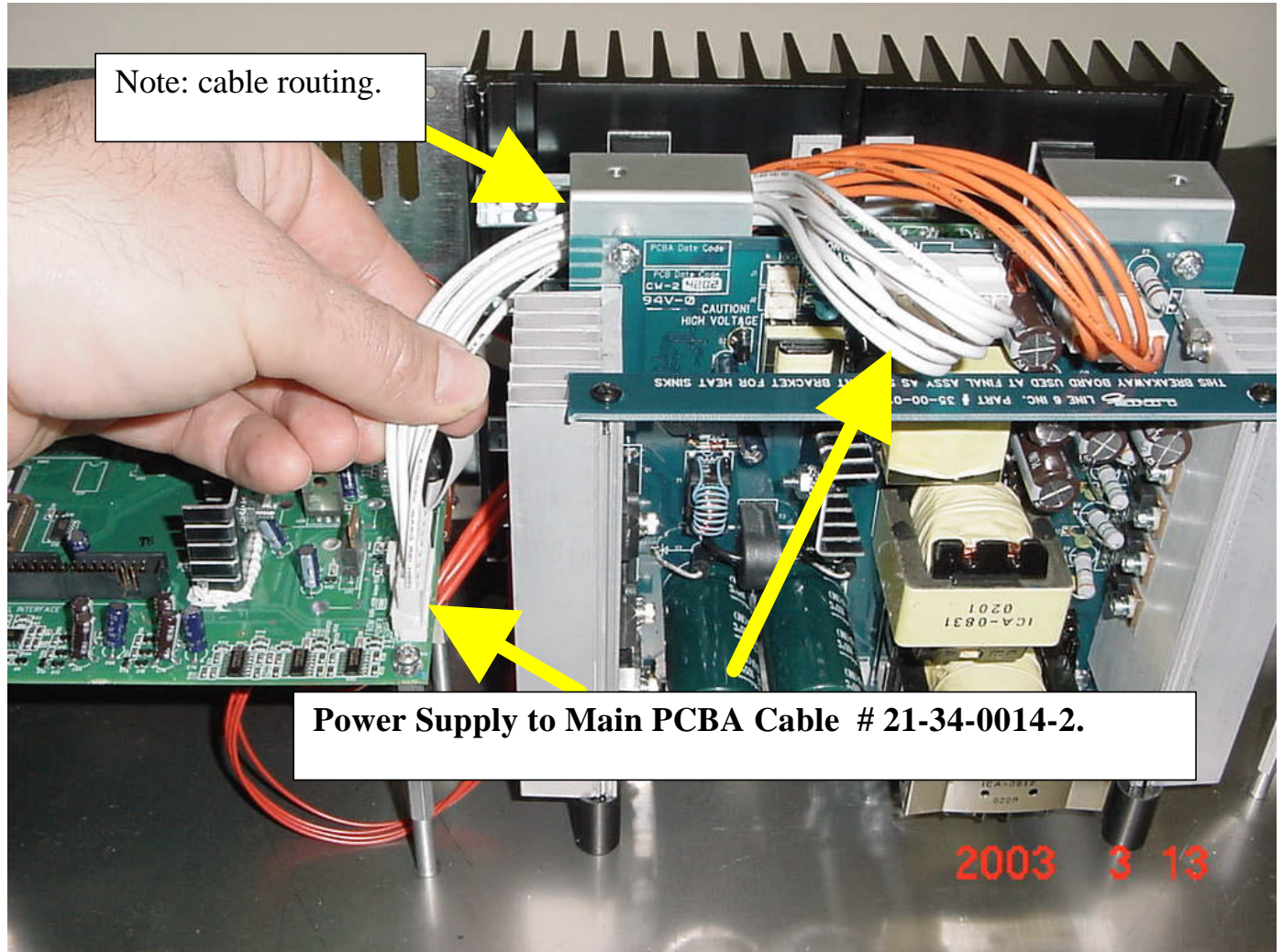
14) Install the LINE FILTER PCBA p/n 50-00-4001 into chassis.

Line Filter PCBA # 50-00-4001
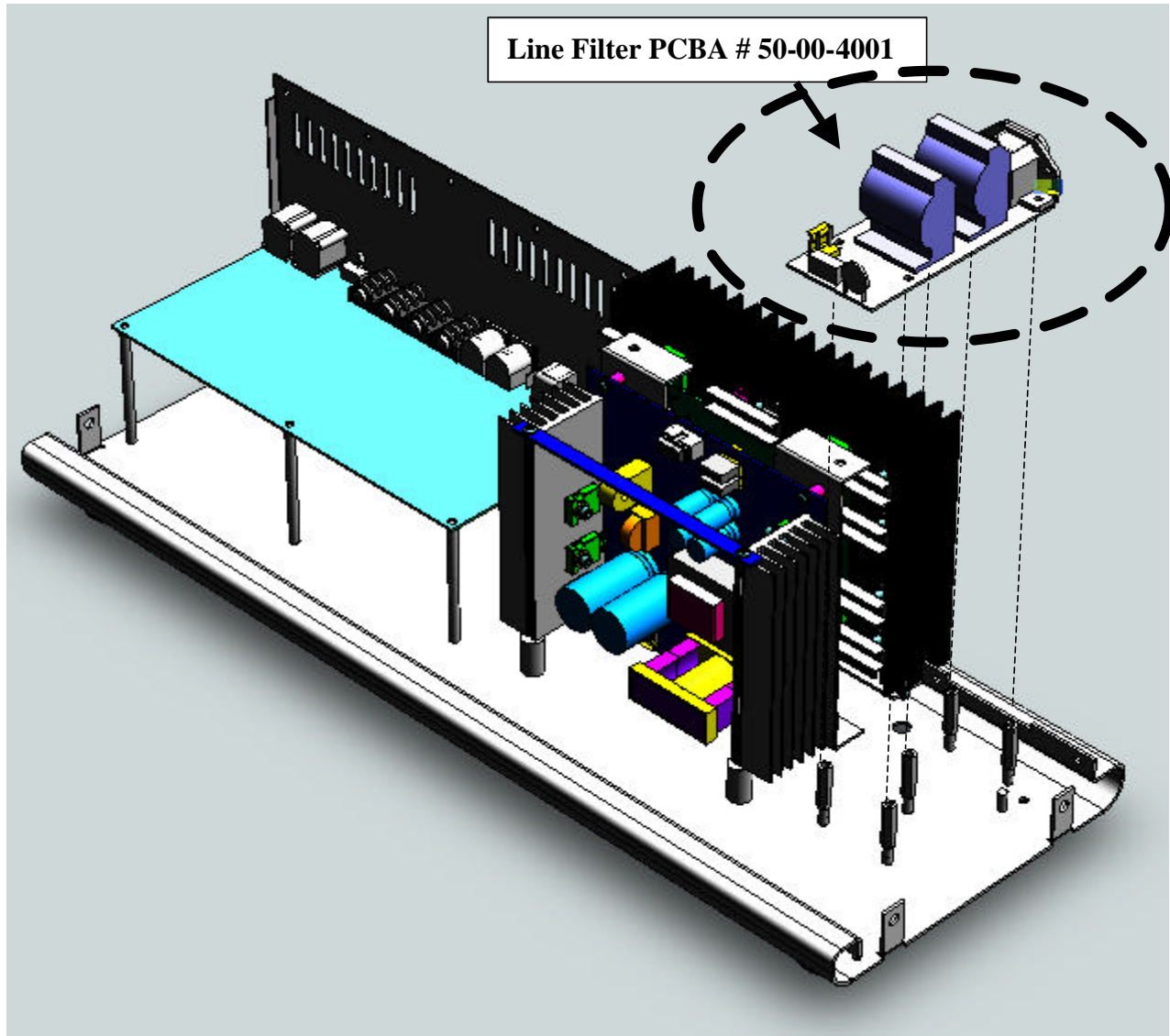
Line Filter PCBA Installation

LINE 6
Engineering

14a) Install the LINE FILTER PCBA p/n 50-00-4001 into chassis using 5 each 6-32 screws p/n 30-00-0607, to 8-10 in/lbs.
Attach AC receptacle ground wire to chassis standoff using 1 each 6-32 screws (p/n 30-00-0607).
Torque all screws to 8-10 in-lbs.

Ground Wire connection to chassis.

6-32 pan head phil w/ captive lock washer #30-00-0607.
- 5 places for PCBA,
- 1 place for ground wire.

Place Ground symbol label (p/n 40-25-0015) near standoff
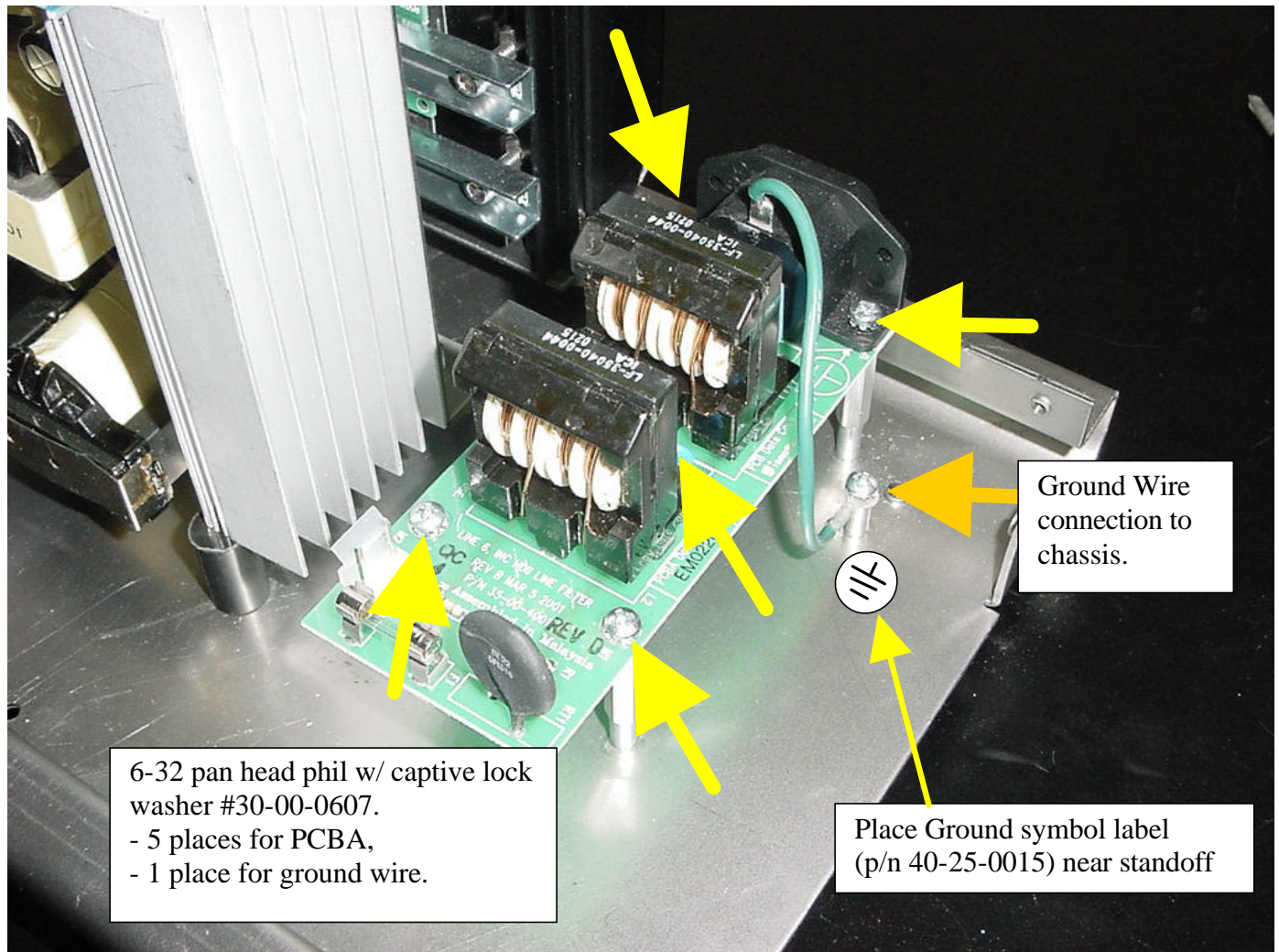
FUSES:		
220/240v Units use #24-19-4250	**4 amp 250v 5 x 20mm FRN**	
100/120v Units use #24-19-8250	**8 amp 250v 5 x 20mm fast acting.**	

HD147 Assembly Instructions

15) Install the LINE FILTER PCBA to POWER SUPPLY cable assembly # 21-34-0018-1.
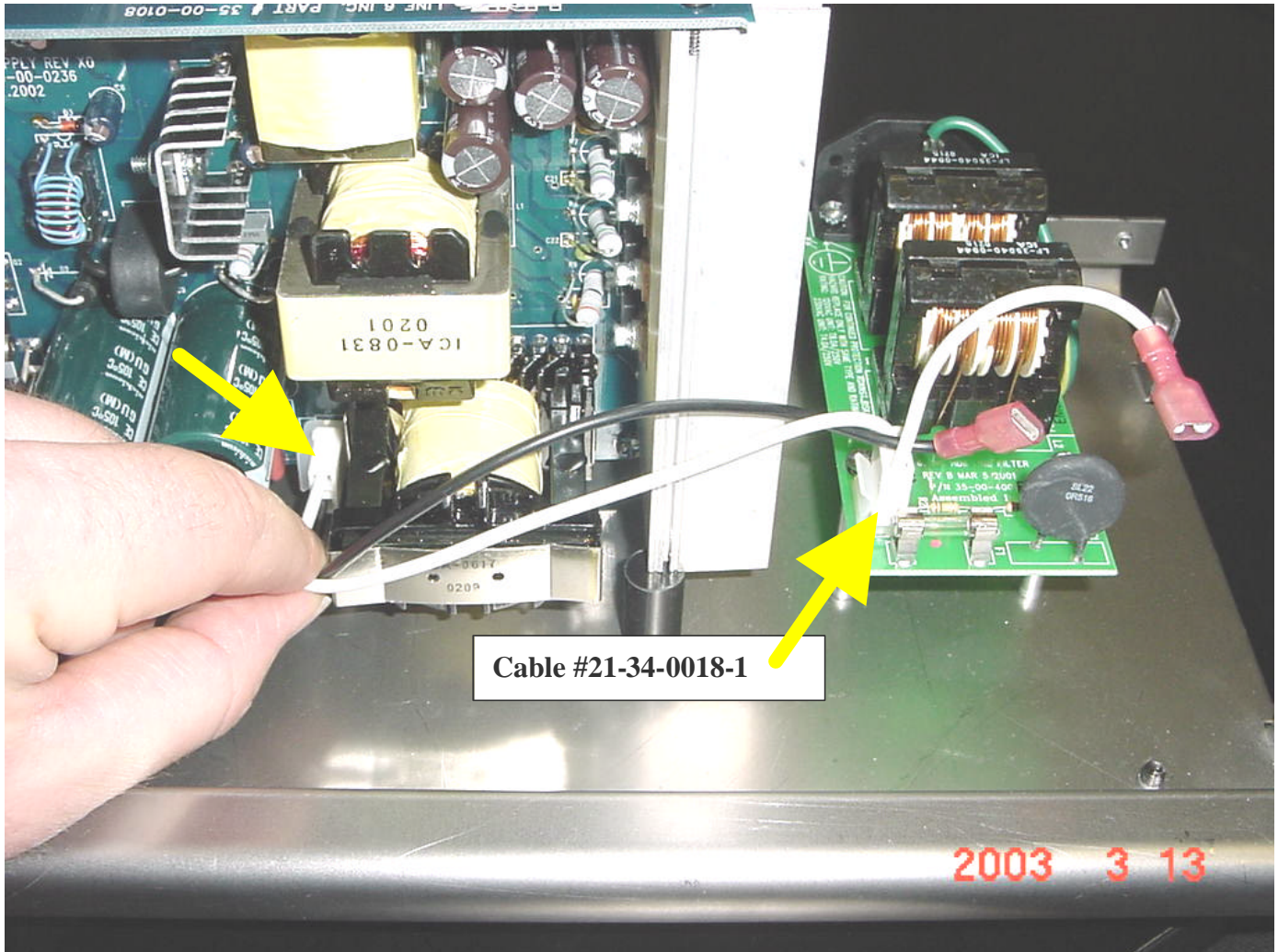
Cable #21-34-0018-1

TOP CHASSIS SUB-ASSEMBLY
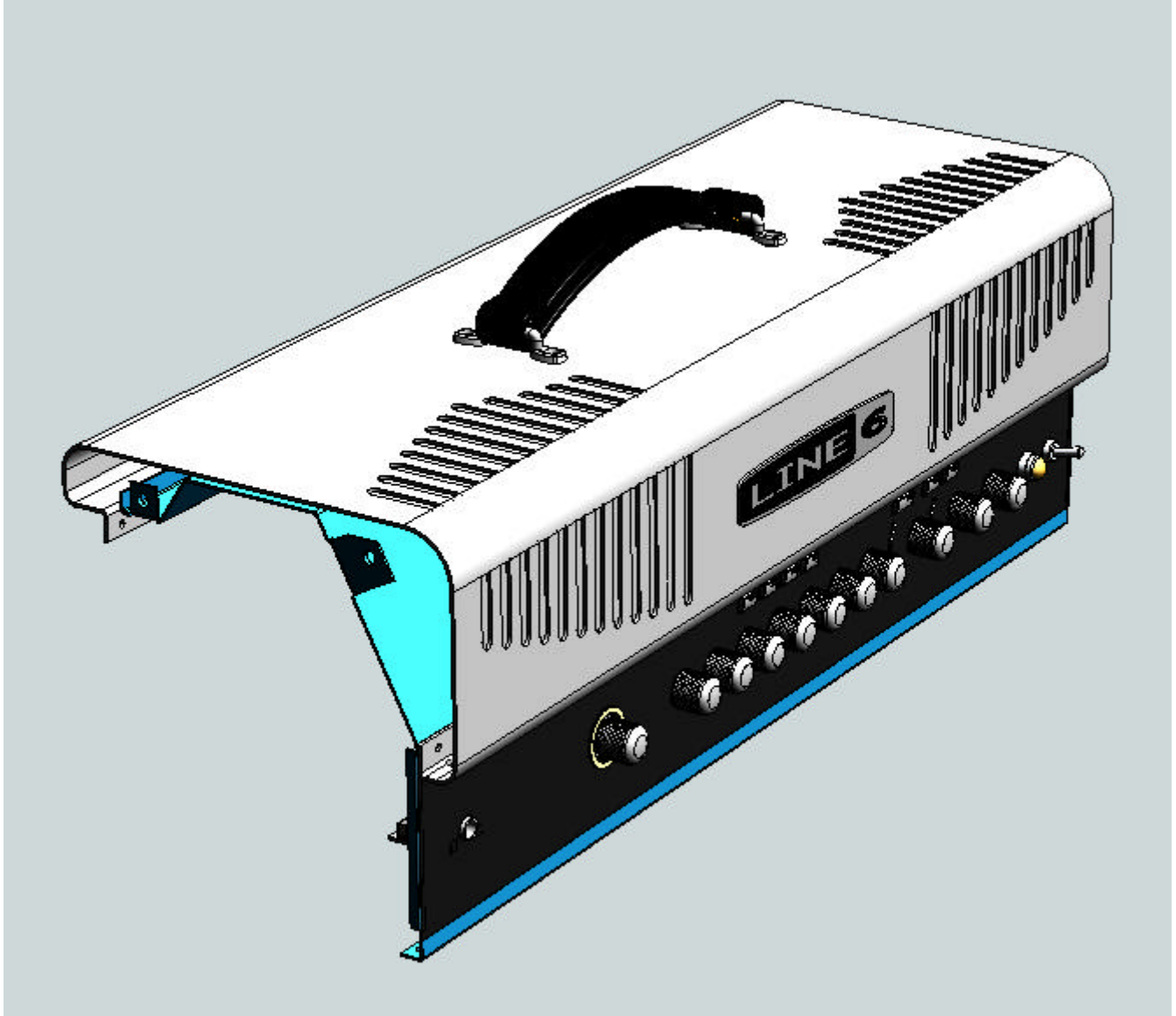
Full View - Front View - Top Chassis Sub Assembly

Full View - Front View - Top Chassis Sub Assembly
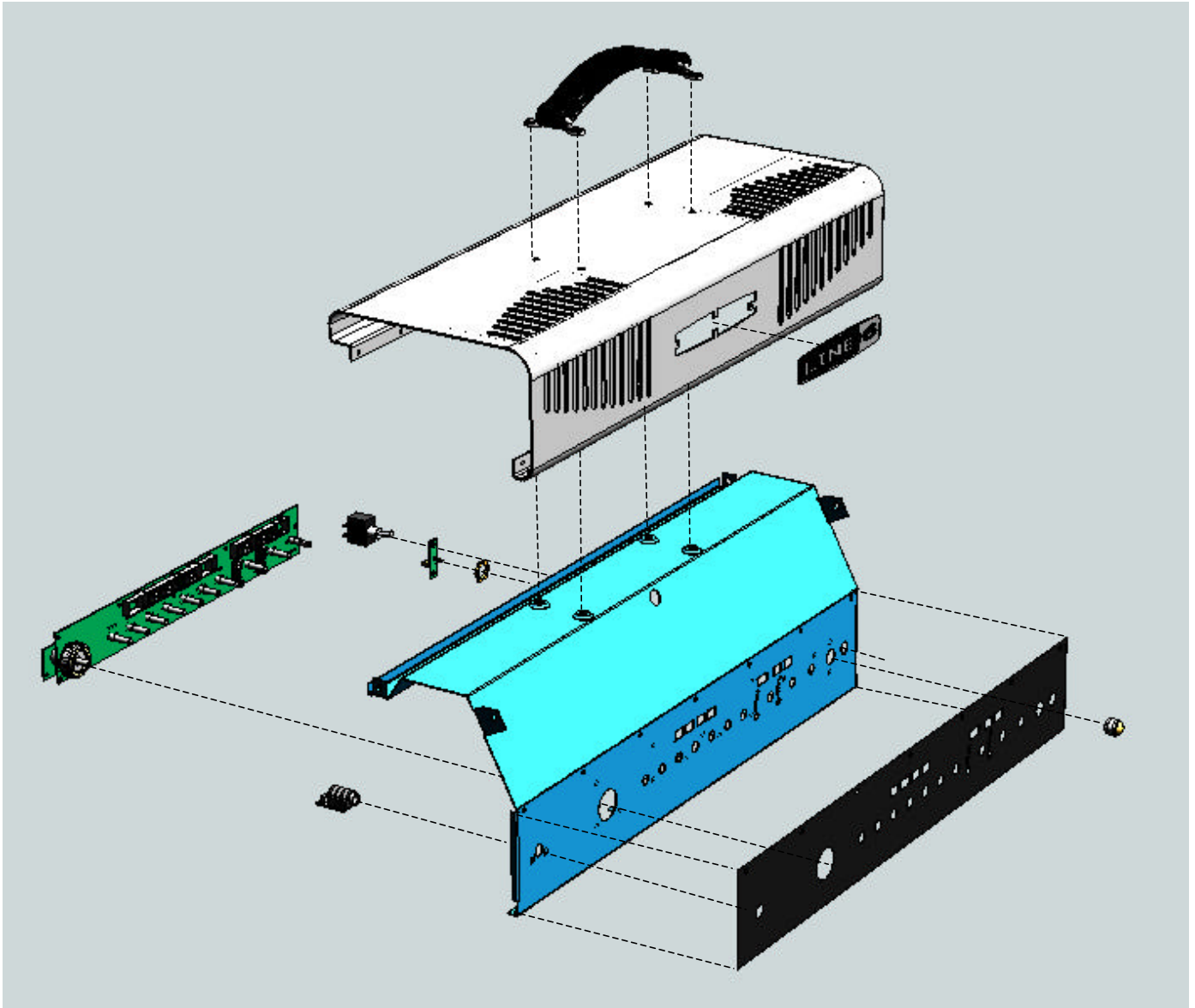
Exploded View - Main Components – Front-Left View - Top Chassis Sub Assembly
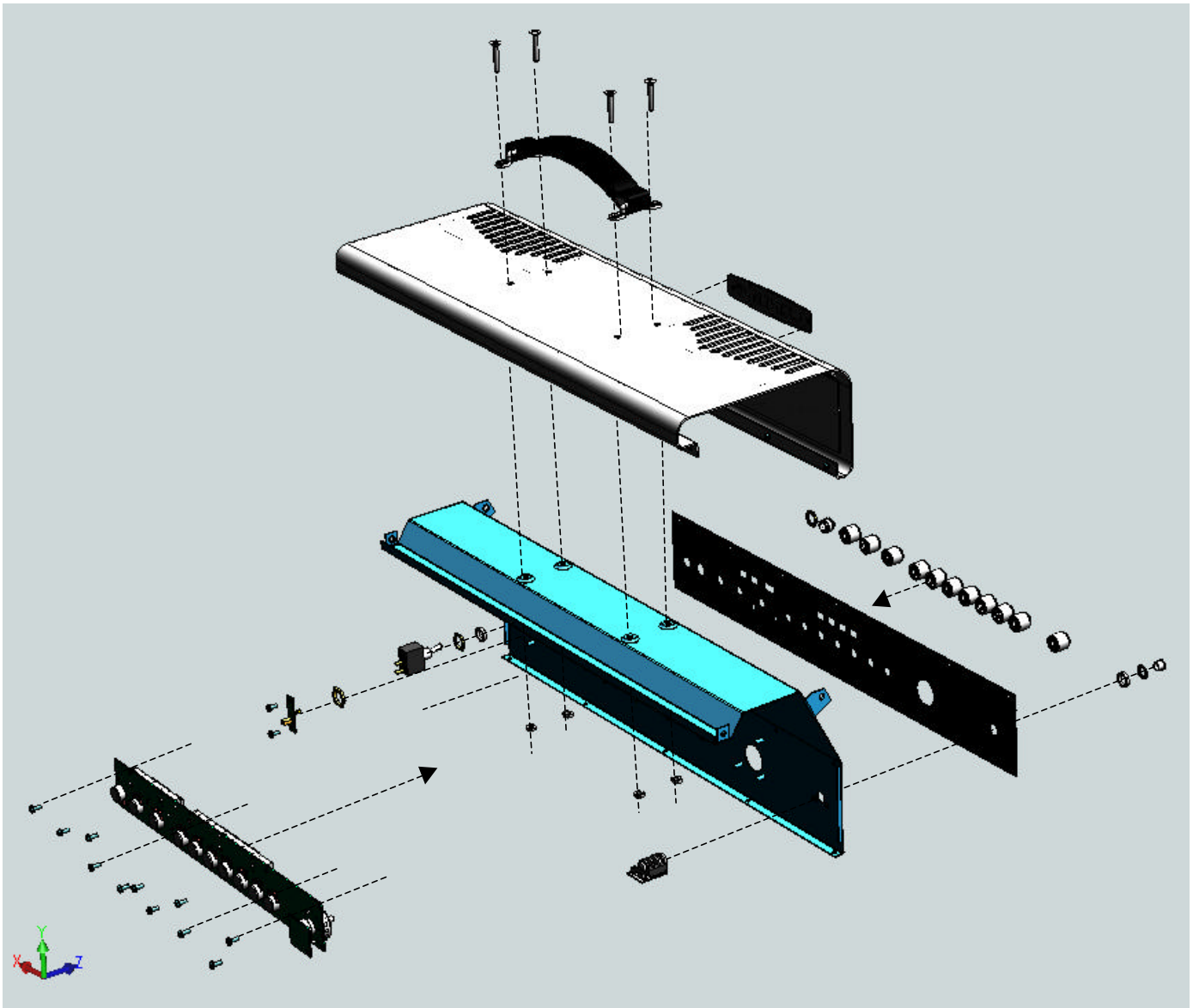
Exploded View - Main Components – Rear-Left View – Top Chassis Sub Assembly
(NOTE: LED PCBA 50-02-0008 is not shown)

HD147 Assembly Instructions

16a) # 50-02-0008 LED PCBA assembly to top chassis :

LED PCBA 50-02-0008
Center section supports.
35-00-0007

Apply RTV (**GE RTV-5240 #30-64-0005)** or similar Line 6 approved material, to PCB edges, as shown

Outer support PCB's 35-00-0006.
Apply RTV (**GE RTV-5240 #30-64-0005)** or similar Line 6 approved material, to PCB edges, as shown
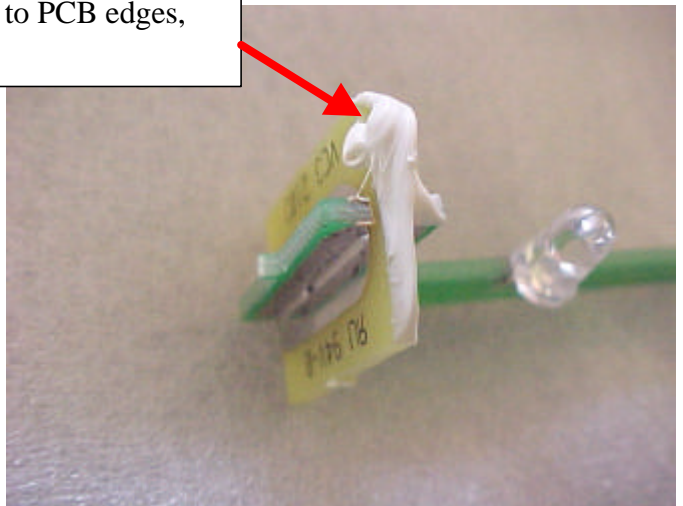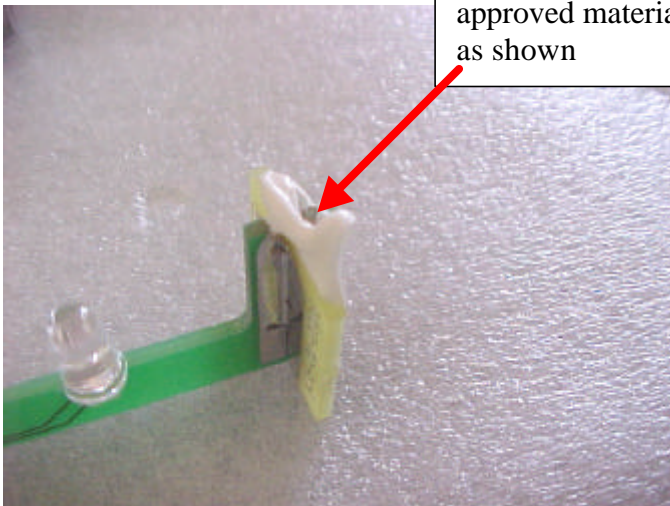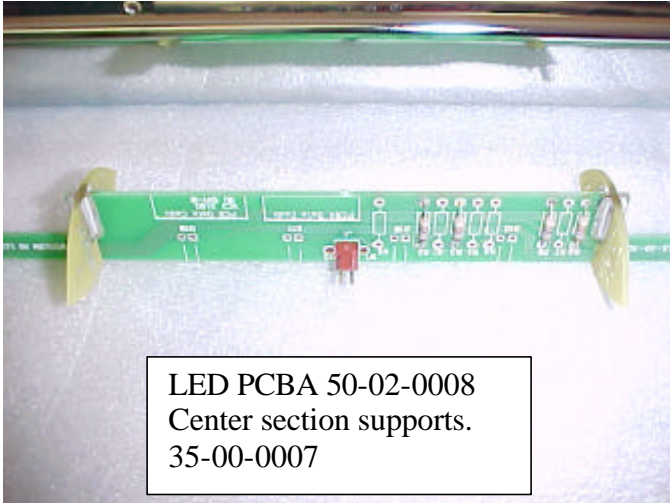
16b) # 50-02-0008 LED PCBA assembly to top chassis cont. :
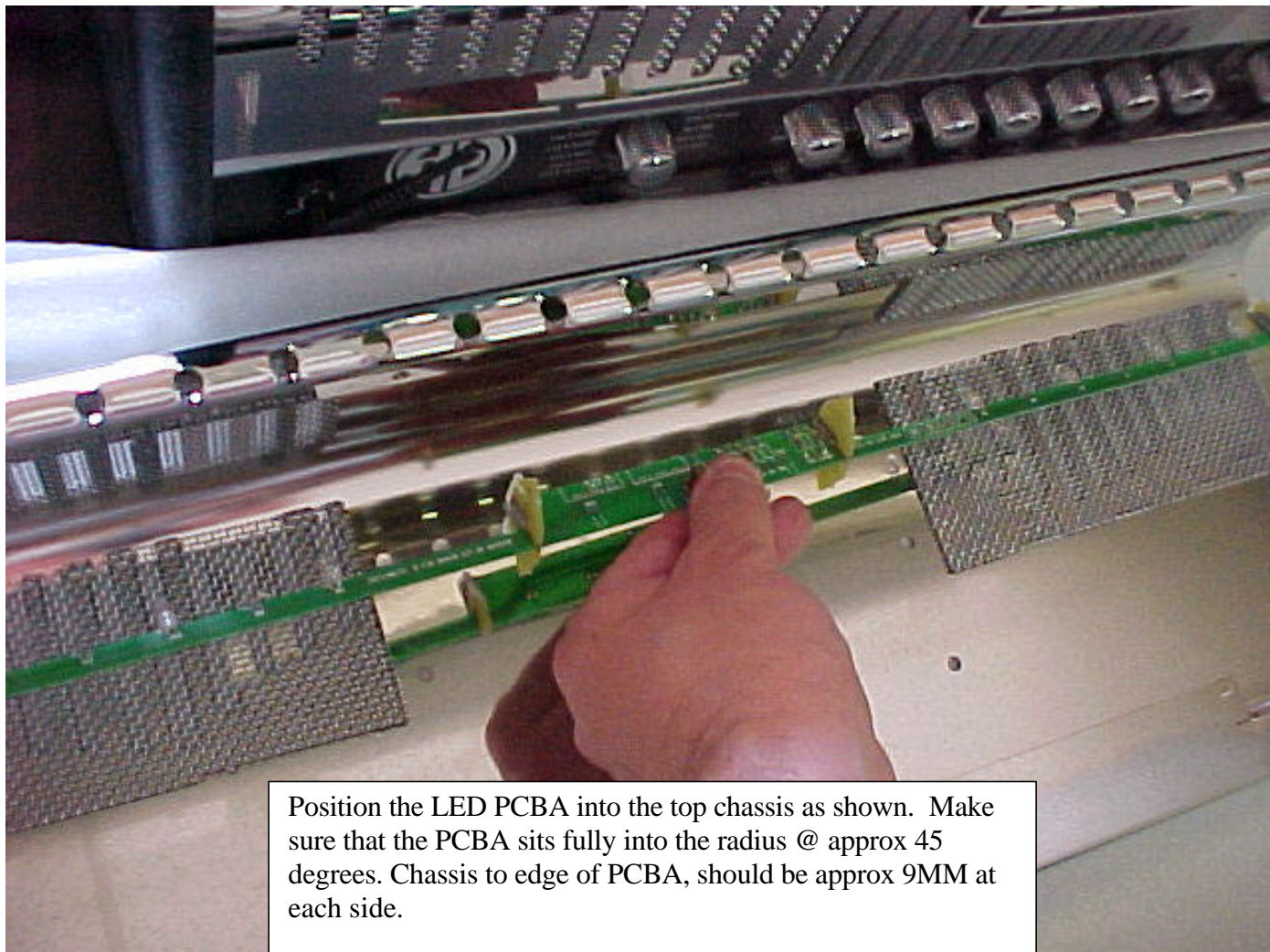
Position the LED PCBA into the top chassis as shown. Make sure that the PCBA sits fully into the radius @ approx 45 degrees. Chassis to edge of PCBA, should be approx 9MM at each side.
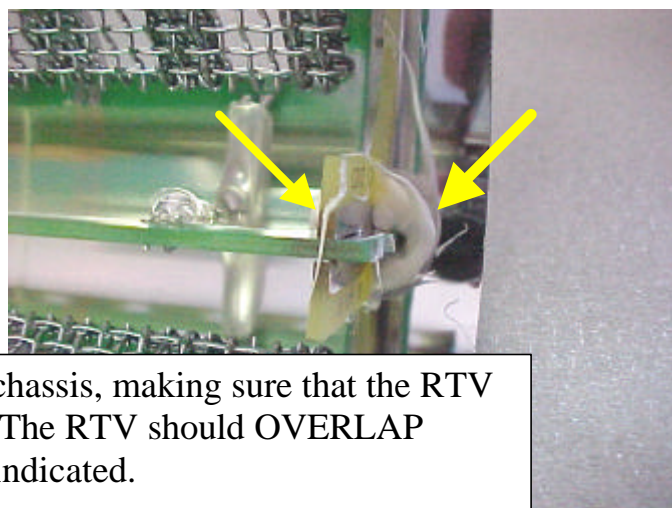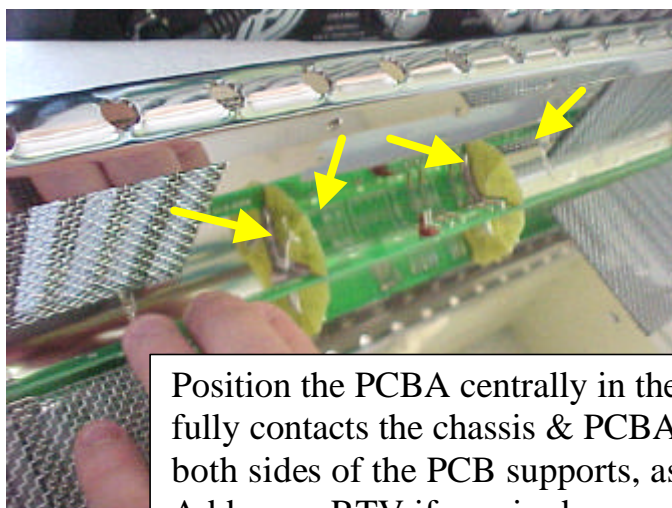
Position the PCBA centrally in the chassis, making sure that the RTV fully contacts the chassis & PCBA. The RTV should OVERLAP both sides of the PCB supports, as indicated.
Add more RTV if required.

16c) # 50-02-0008 LED PCBA assembly to top chassis cont. :
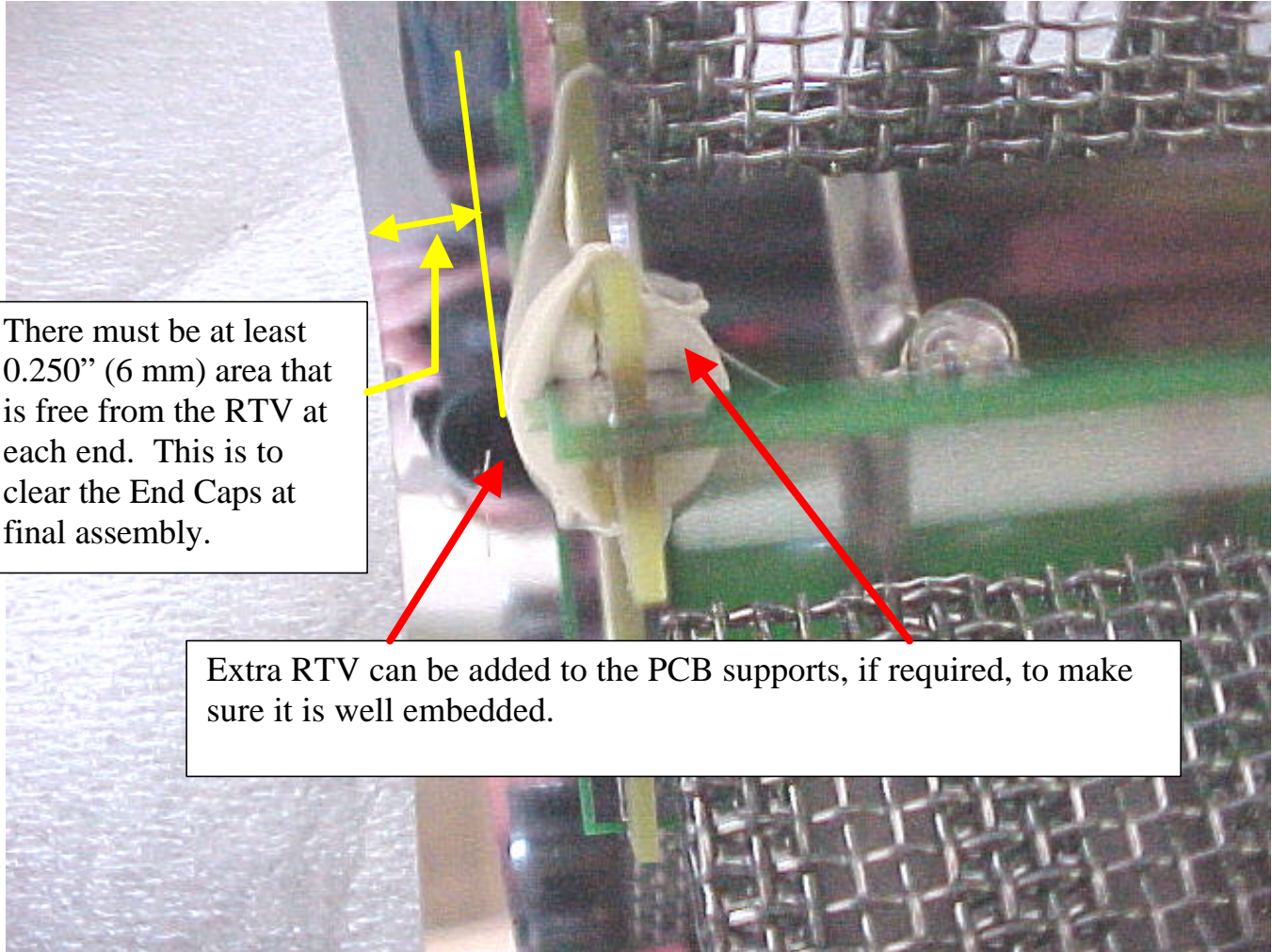
There must be at least 0.250" (6 mm) area that is free from the RTV at each end. This is to clear the End Caps at final assembly.

Extra RTV can be added to the PCB supports, if required, to make sure it is well embedded.

❑

NOTE : Set the Chassis aside & allow a minimum of 20 minutes, for the RTV to cure, before assembling the Shield (30-51-0070).

Check that the LED PCBA is still in the correct position, and hasn't moved. If the LED PCBA has moved, then it should be re-positioned.

- **Attach Cable #21-36-0265 on to LED PCBA (J1)**

Assemble parts onto the sheet metal SHIELD.
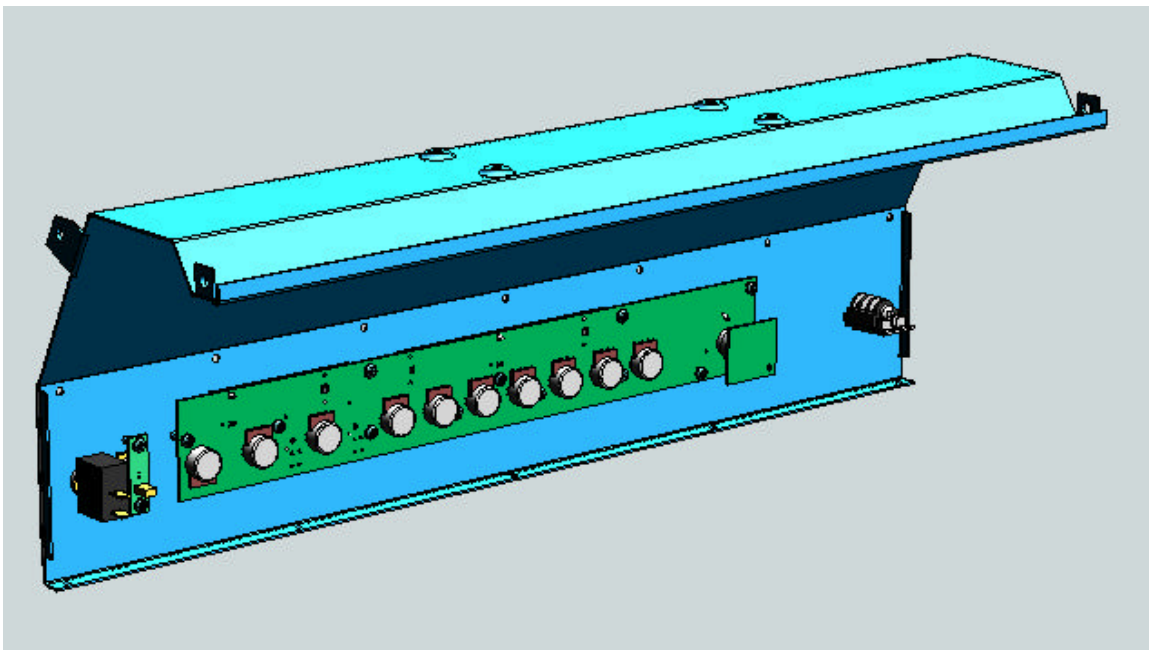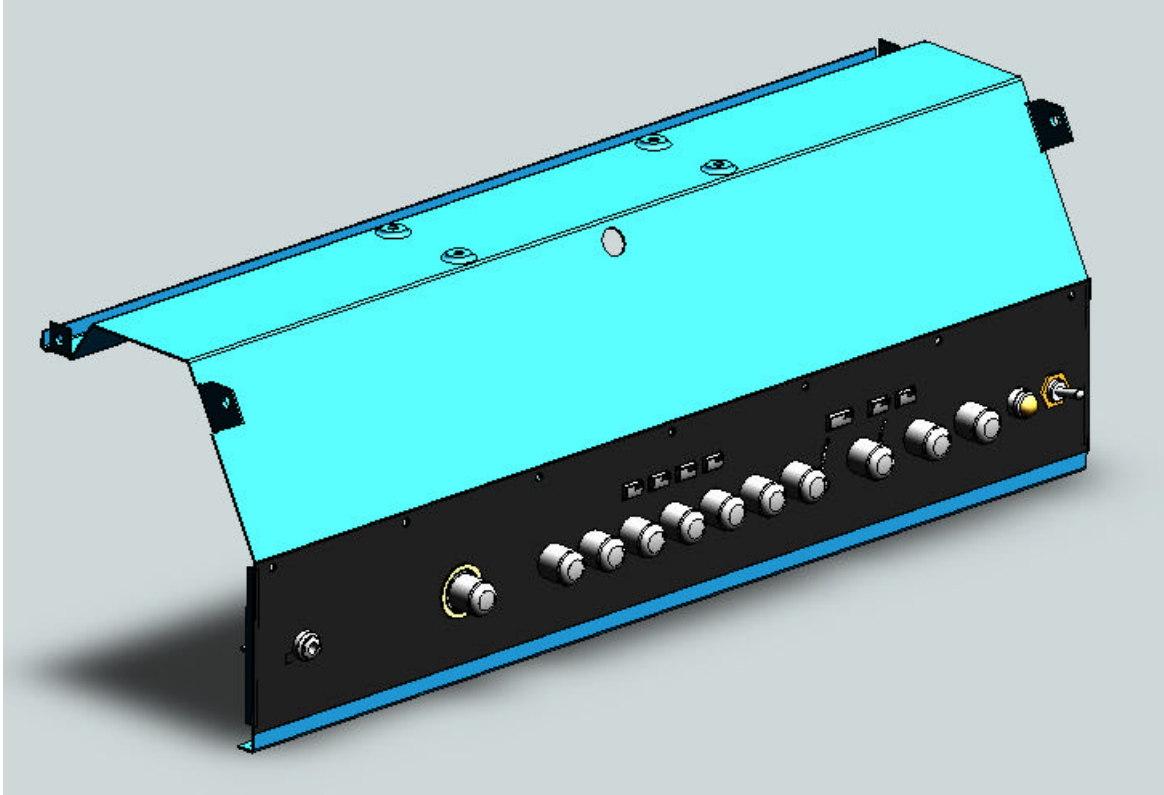
17) Install OVERLAY (# 30-51-0137) onto SHIELD (# 30-51-0070). Remove self-adhesive cover paper, align to SHIELD holes and firmly press overlay onto the SHIELD front face as shown. An alignment fixture is recommended, to assure accurate alignment of the holes.

SHIELD CHASSIS
#30-51-0070

OVERLAY
30-51-0137
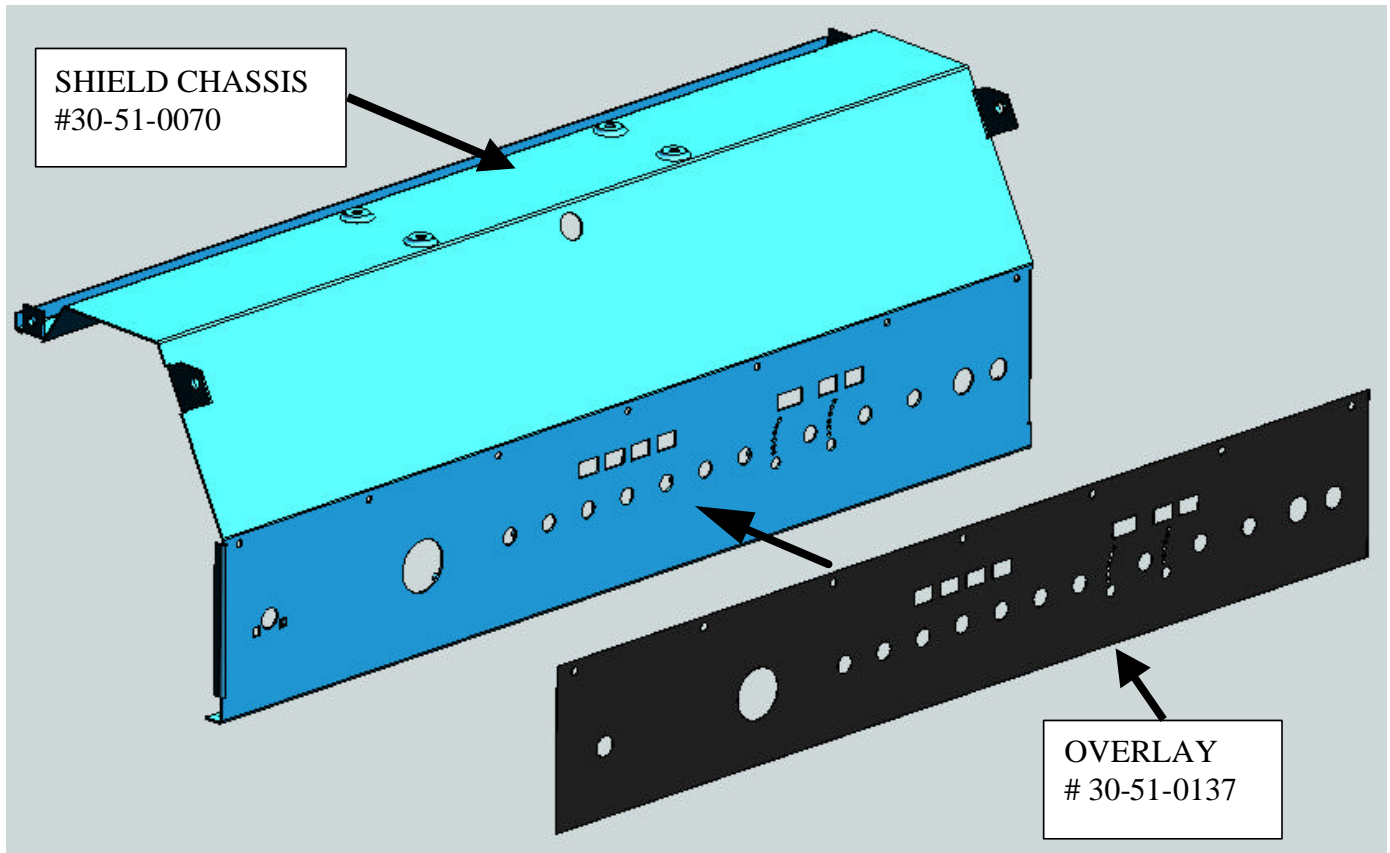
18) Install USER INTERFACE PCBA (# 50-02-0146) onto SHIELD.
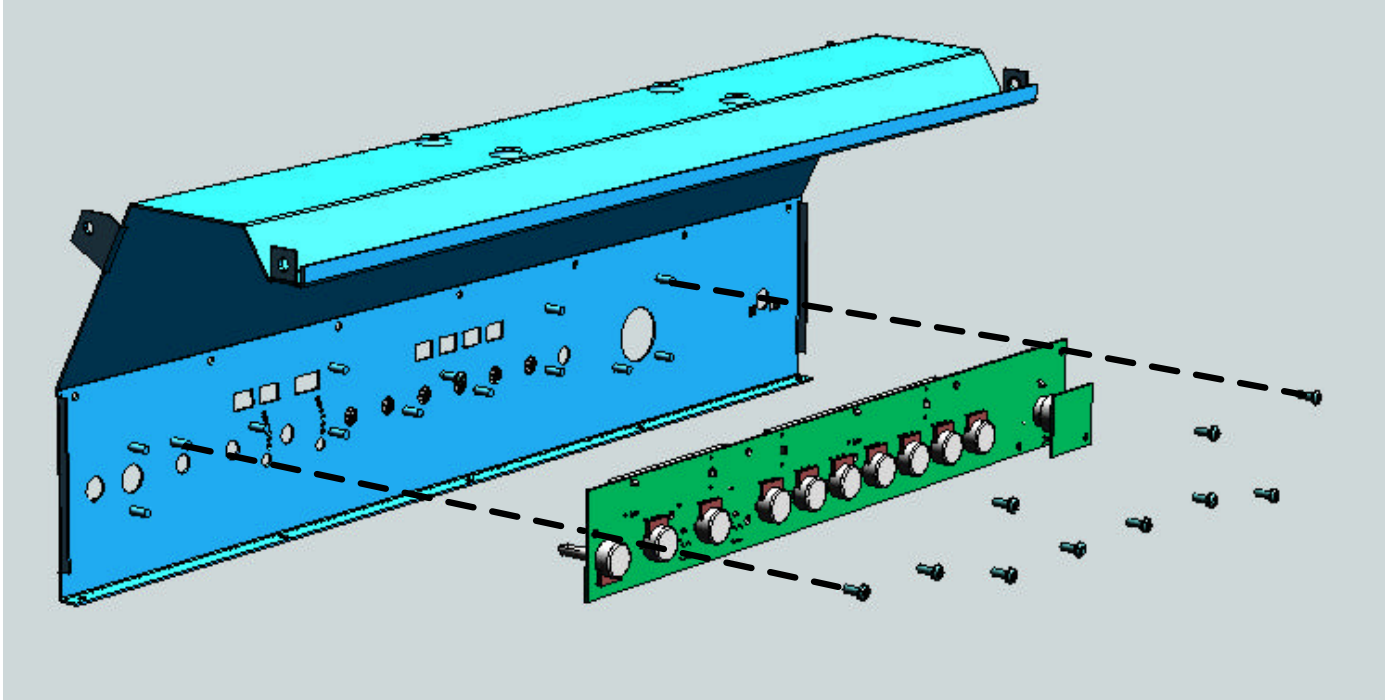
SHIELD / USER INTERFACE PCBA – exploded view

18a) To Assemble the UI front panel PCBA.

1) Inspect the UI front panel (50-02-0146) and ensure all pots, encoders, LED's and tack switches are soldered flat to the PCB surface. Inspect for concentricity for shafts with the silkscreen artwork.

2) Apply the spacer washer (#30-15-0014) over the shaft and pass the encoder though the circular cutout (see figure). Before finger snug the nut and washer on the encoder and check that (1) the shaft of the encoder is concentric with the though hole and that (2) the corner 6-32 screw clearance holes between the front panel and breakaway are concentric (see below). Finish tightening nut to 6-8 inch-lbs.

Washer # 30-15-0014

Encoder breakaway

Encoder breakaway

UI front panel

UI front panel

Note concentricity for through holes between 2 PCB's at this location
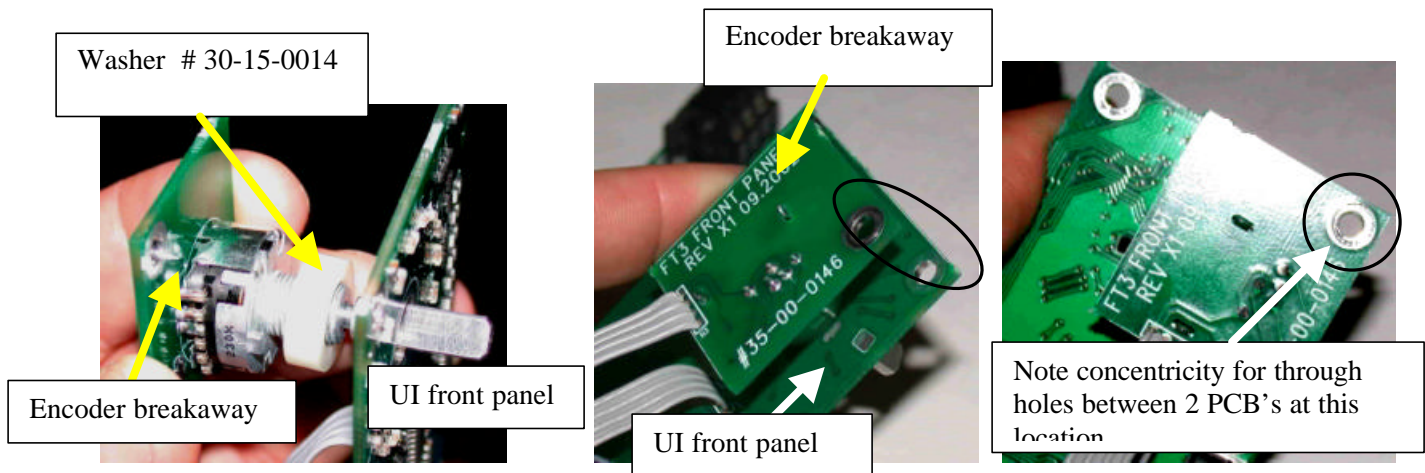
3) Heat stake the 2 light pipes (30-27-0060) to the front panel at the though holes adjacent to the 2 tack switches (see figure below left). Ensure that the shafts of the light pipes perpendicular to the PCBA board while securing in place (see figure below).

Ensure good perpendicularity while heat-staking

Ensure good seating onto PCB surface prior to heat-stake.
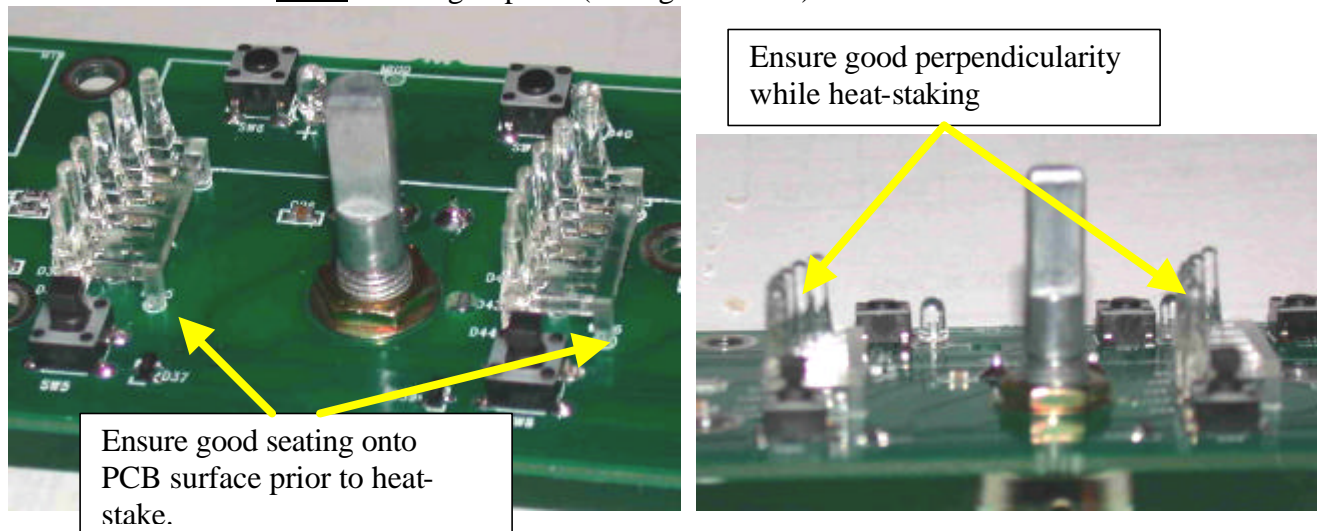
4) Clip the indicated keycaps and framing from the switch cap (24-21-1122). Install on the front panel at position M1.

BEFORE →

AFTER →

Clip frame here

Clip out these keycaps
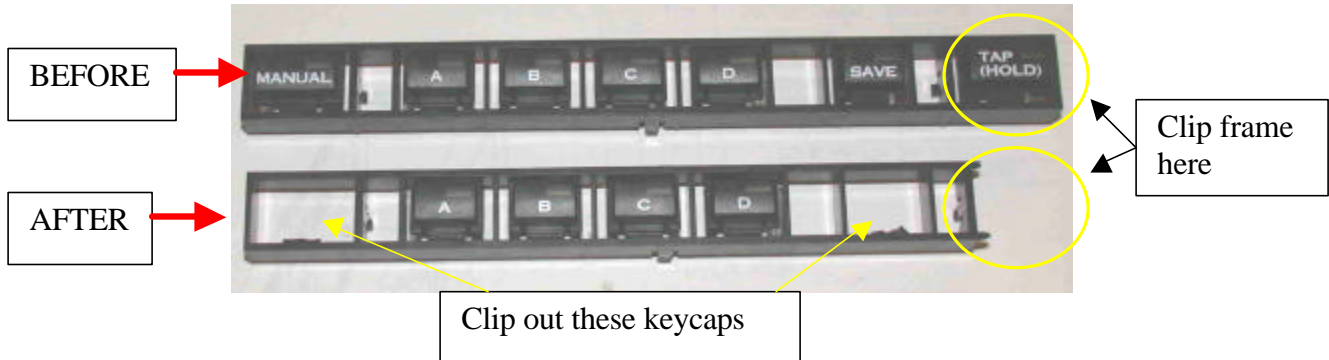
5) Clip the indicated keycaps and framing from the assy art switch cap (50-00-0238) and install on the front panel as indicated below.

BEFORE →

AFTER →

Clip frame here

Clip out this keycap
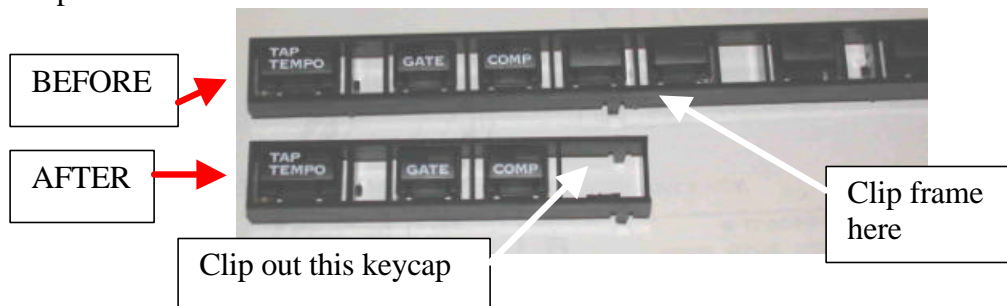
6) Install the 2-shot light pipe (30-27-0049) over the main encoder. Check that the part is fully clipped onto the panel and does not sit on any of the LED's. Also confirm that it sits concentric with the opening.

If it does not, remove the light pipe, loosen the hex nut and adjust the concentricity of the shaft to match the silkscreen hole. Re-install the light pipe and confirm concentricity.
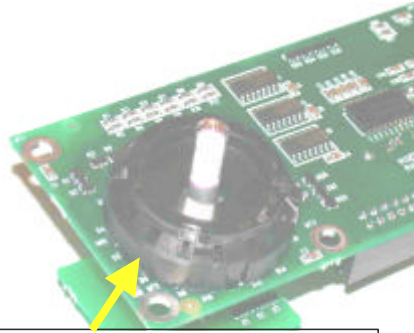
30-27-0049 Lightpipe.
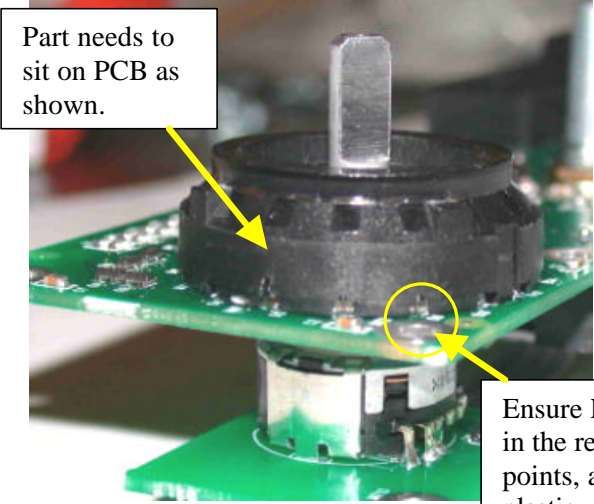
Part needs to sit on PCB as shown.

Ensure LED's are in the recess points, and not on plastic.

LINE 6

Engineering

c) Install the User Interface PCBA and guitar input PCBA to the chassis cover.

1) Immediately prior to installing the UI PCBA (35-00-0146) to the chassis cover, install the 2 plastic select buttons (30-27-0061) onto the tack buttons on the UI front panel as shown below. (NOTE: these do not clip in and can come loose before installation – do not tip the panel as the buttons may fall off).
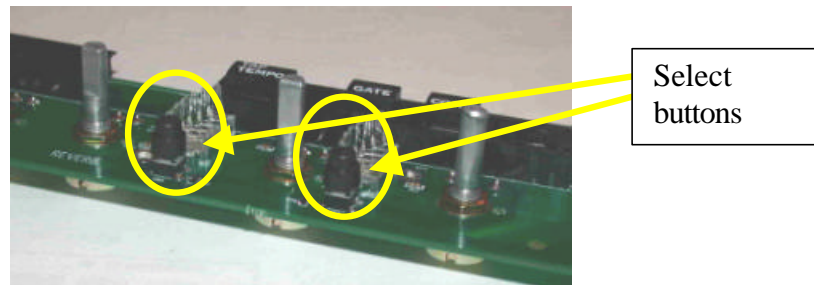
Select buttons

2) Install the UI front panel into the chassis cover without inverting the PCBA (see below). Ensure that the light pipes, select buttons and switch caps protrude without interference. Ensure that the encoder light pipe protrudes though overlay and sits about .020 inch over the surface.

Ensure light pipes and select button protrudes

Ensure light pipe protrudes though the front panel
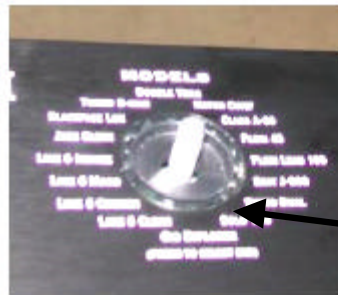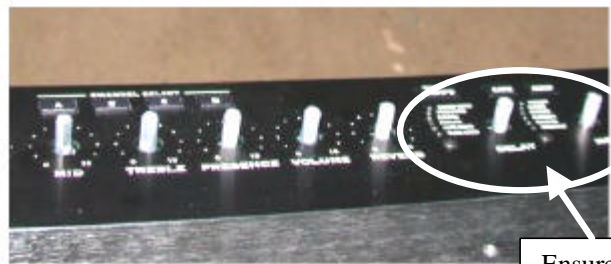
3) Secure the front panel to the chassis cover using 11 Screws 6-32 PHPS (30-00-0607) at the locations indicated. Secure and align the breakaway PCB using the long spacer (30-15-0016) and 1 inch long 6-32 PHPS (30-00-0035). Tighten the 1-inch screw to only 4 inch-lbs max.

LINE 6

Engineering

Secure the PCBA with eleven 6-32 captured lock-star pan head Phillips (30-00-0607) as shown. Torque 8-10in/lbs.
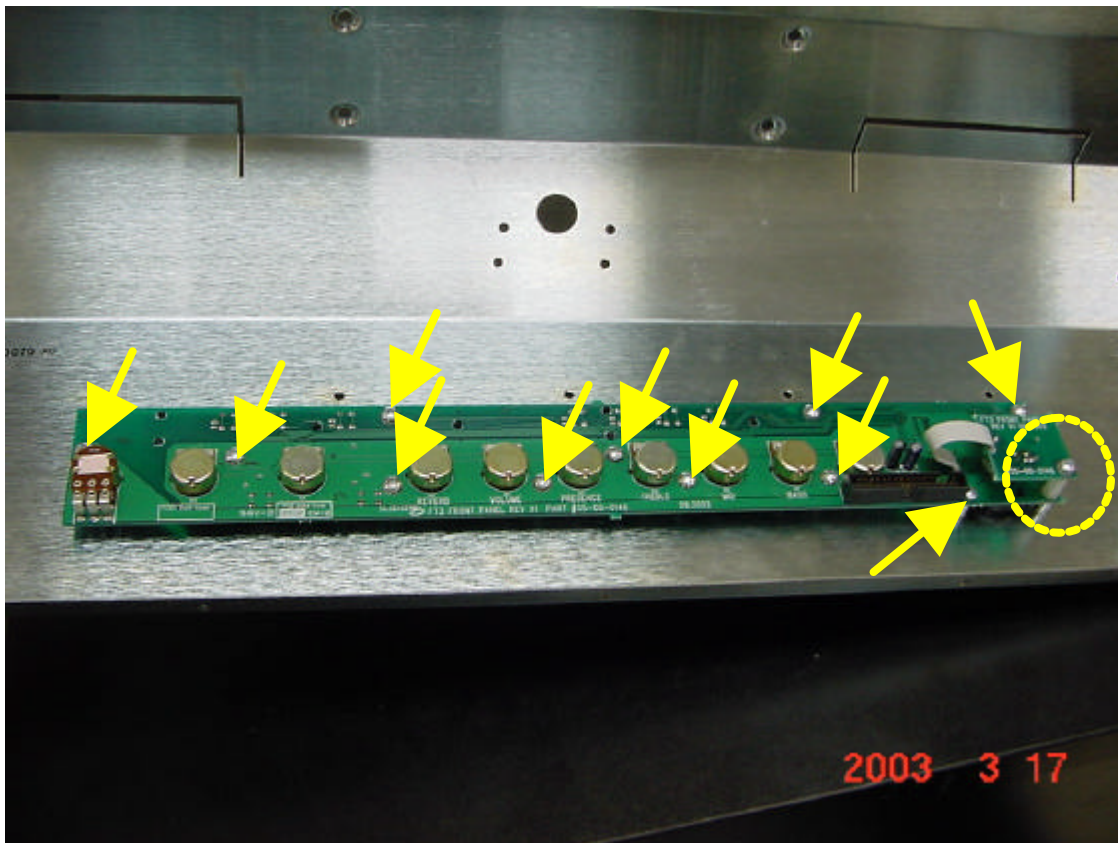
USER INTERFACE PCBA Installation

6-32 x 1 inch screw
#30-00-0035. Torque 4 in/lbs max.

Spacer (30-15-0016)
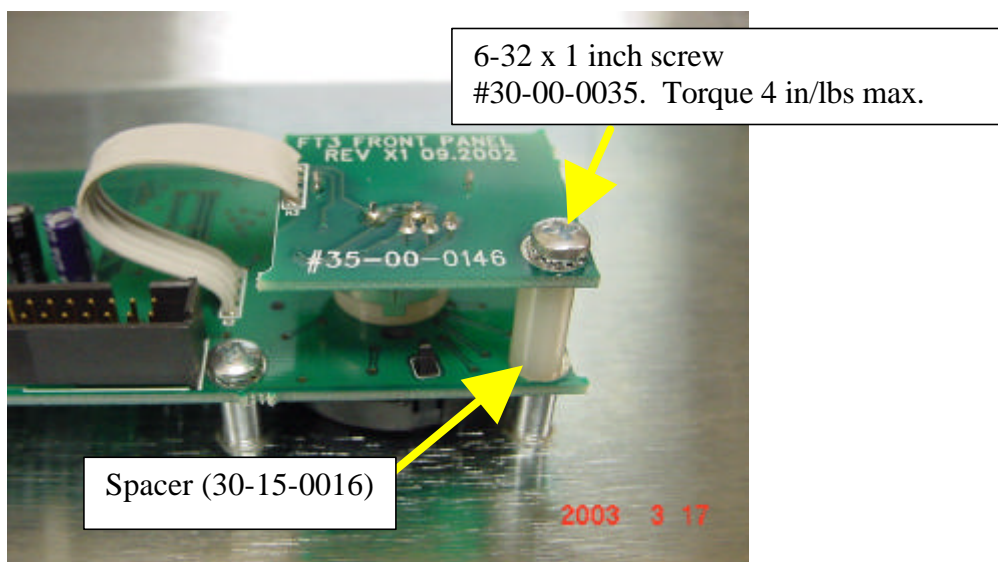
USER INTERFACE Light Pipe and Encoder PCBA Installation

HD147 Assembly Instructions

Inspect to see that the light pipe is sitting flush or slightly above the sheet metal (see figure below). If the light pipe sits below the sheet metal, loosen the screws, reset the front panel until the light pipe is seated and then tighten the screws.
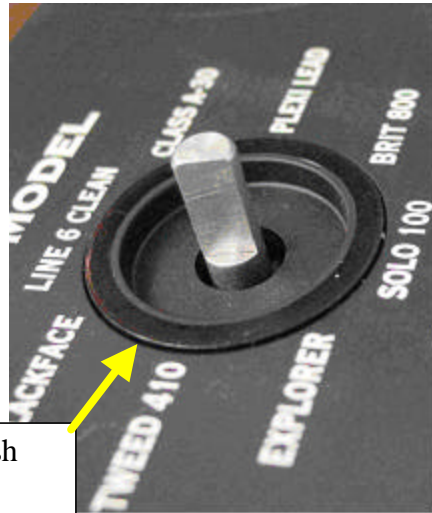
Note that the edge of light pipe is flush or slightly above the OVERLAY.

g) Install Guitar input jack PCBA (# 50-00-0169) onto SHIELD
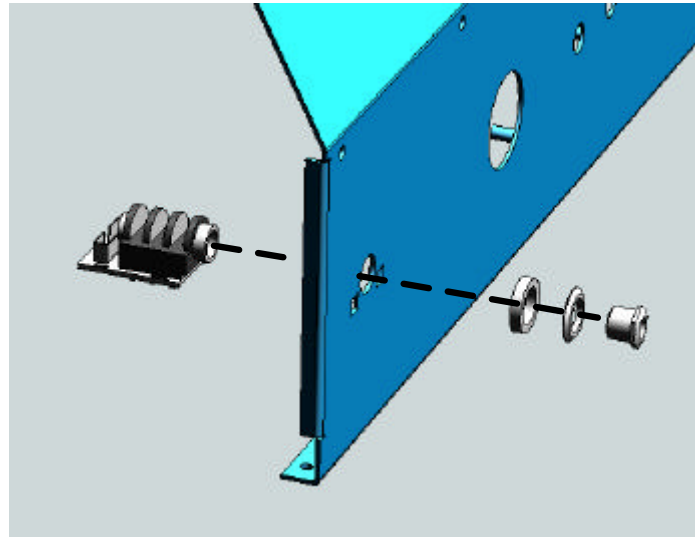
When positioned, secure the jack from the front face first installing a black spacer (30-15-0004), followed by an included black plastic corner washer and secured with the nickel finishing nut (included with the PCB assembly). Torque 6 in/lbs.

SPACER
#30-15-0004

CORNER WASHER

NICKEL NUT

2003 3 17

#50-00-0169
Guitar input jack PCBA
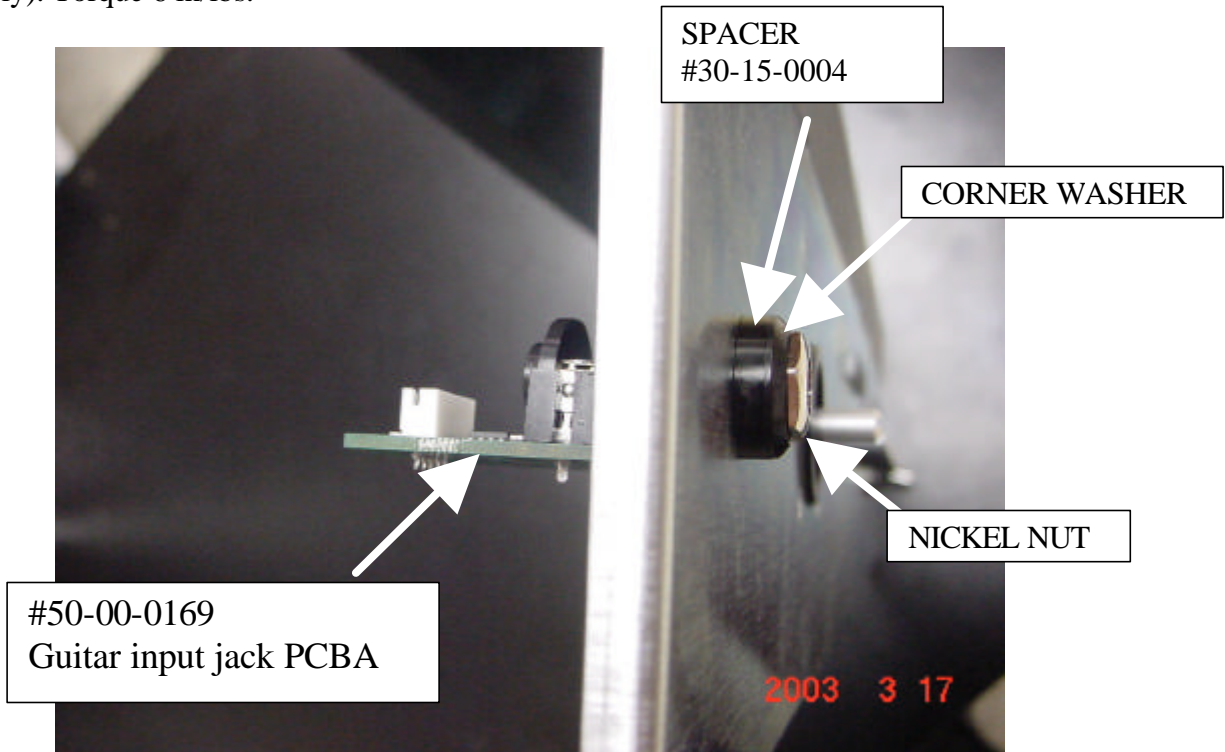
f) Install JEWEL LENS # 30-51-0113 & Install LED PCBA # 50-02-0146 .
Secure the PCBA with two 6-32 captured lock-star pan head Phillips (30-00-0607) as shown. Torque 6 in/lbs.
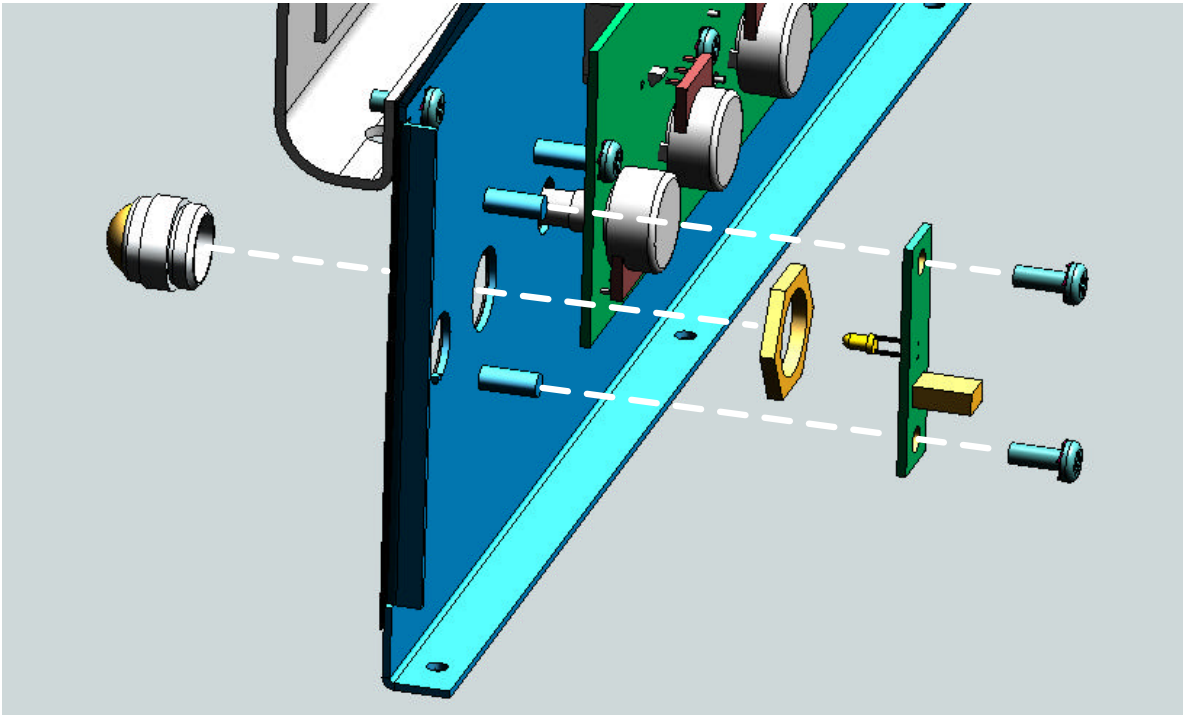
JEWEL LENS and LED PCBA – exploded view
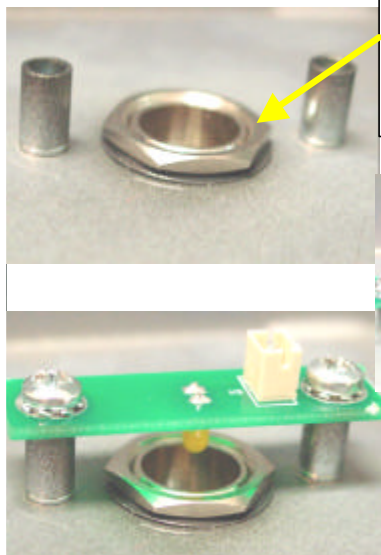
Use supplied nut and wave washer (30-03-0015). Torque 6 in/lbs
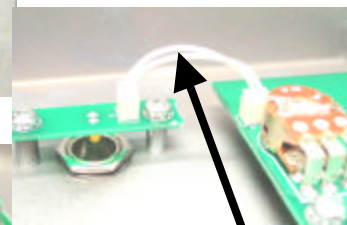
Cable for breakaway. # 21-34-0030

g) Install POWER SWITCH (# 24-03-0002) into SHIELD.

Switch
#24-03-0002

Nut

Finishing washer

Nut
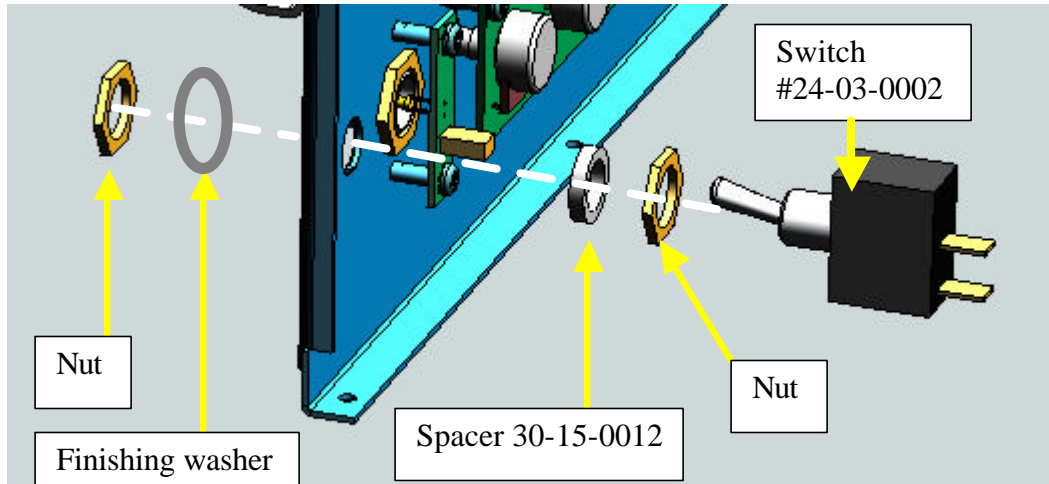
Spacer 30-15-0012

POWER SWITCH - exploded view
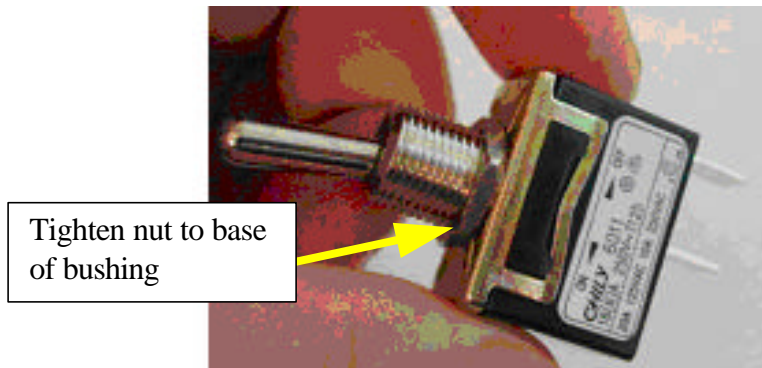
Tighten nut to base
of bushing
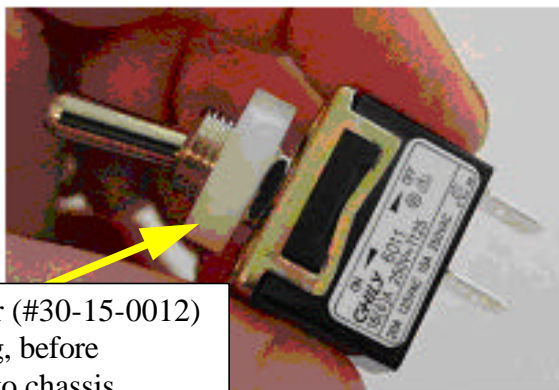
Place spacer (#30-15-0012)
onto bushing, before
installing into chassis.
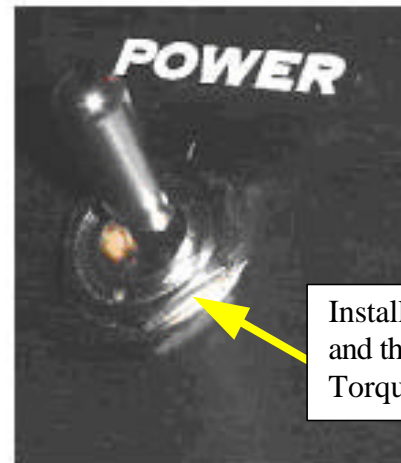
Install finishing washer
and then hex nut.
Torque 6 in/lbs

POWER SWITCH (#24-03-0002) hardware detail

![LINE 6 Engineering logo]

Toggle Switch
#24-03-0002

Nut (comes w/switch)

Spacer #30-15-0012

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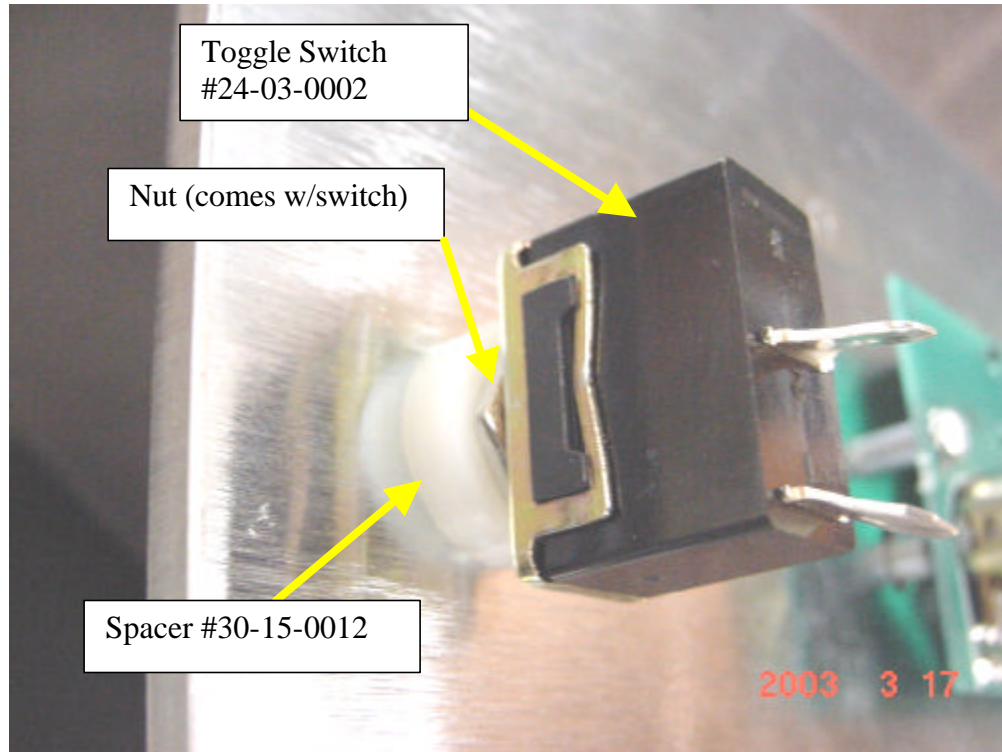
POWER SWITCH installation – rear view

g) Assembly of the Top Chassis(# 30-51-0125) and Shield subassembly.
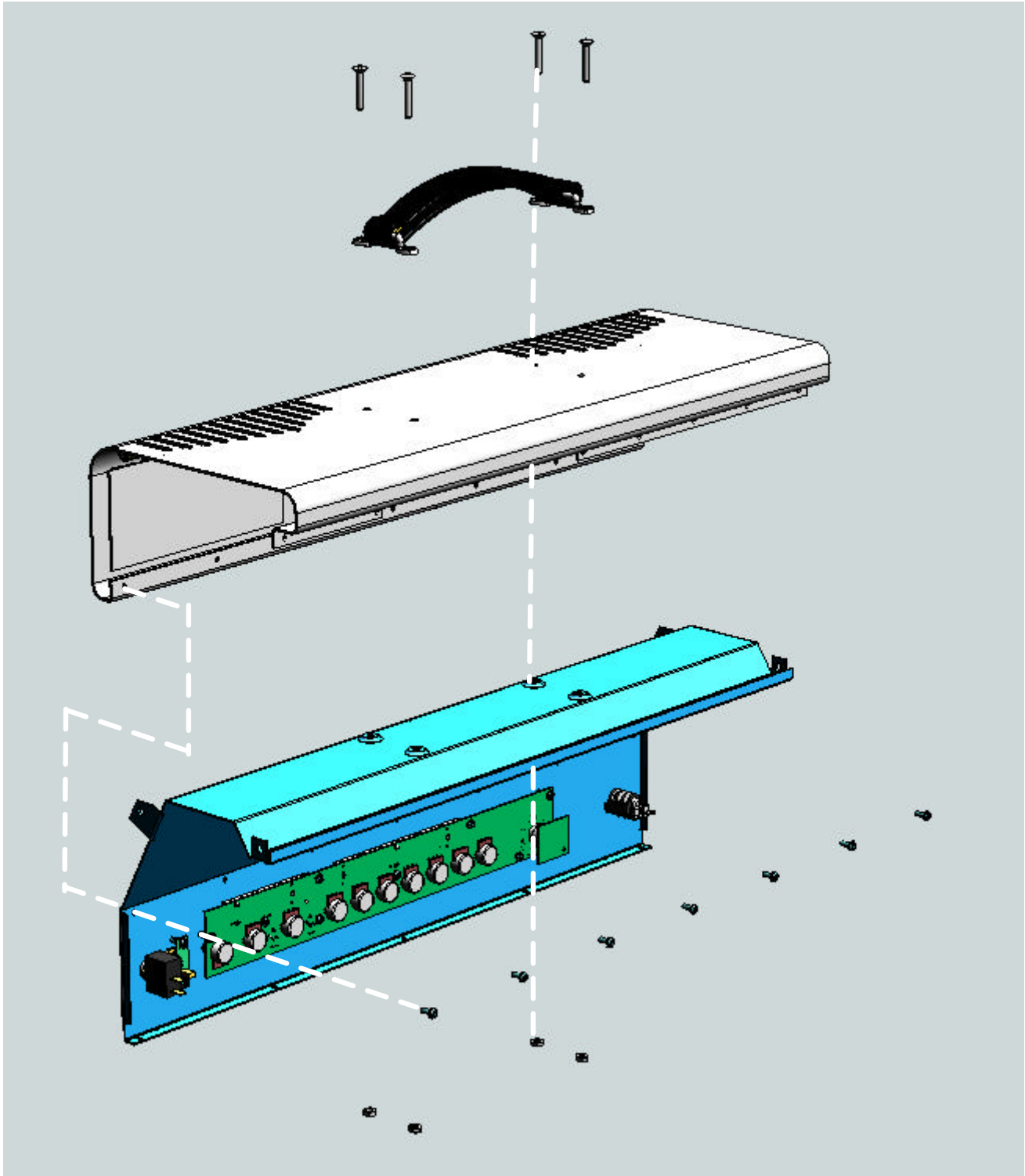
TOP CHASSIS / SHIELD SUBASSEMBLY – exploded view

Installation of SHIELD assembly into TOP CHASSIS.

g) Install GROMMIT #30-75-9600, and feed (#21-36-0265) cable (1 per) through SHIELD wall.

GROMMIT #30-75-9600

Cable 21-36-0265
(photo shows 2 cables.
Should only use 1. Photo for
reference only

2003 3 17
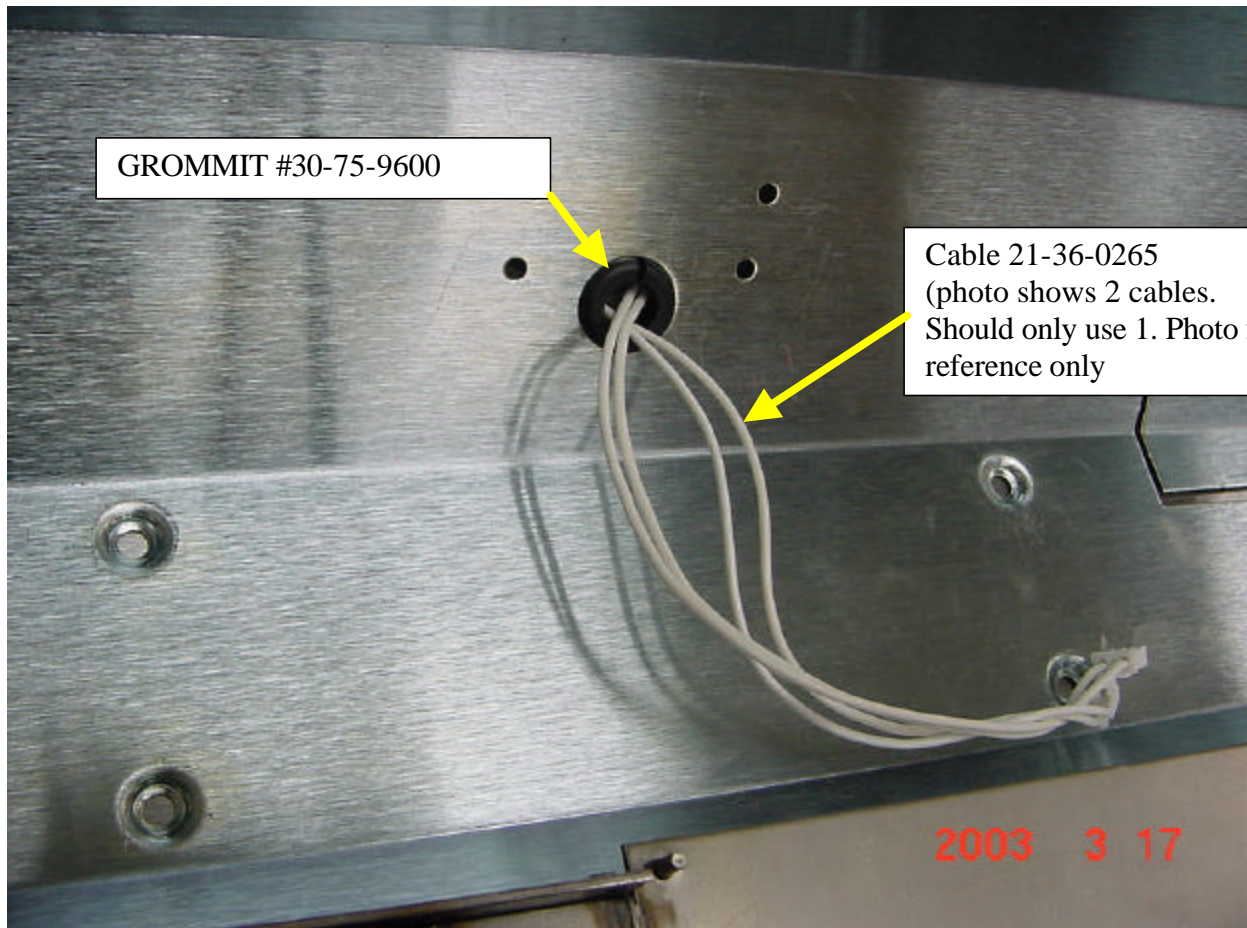
g) Rotate SHIELD subassembly into TOP CHASSIS as shown.
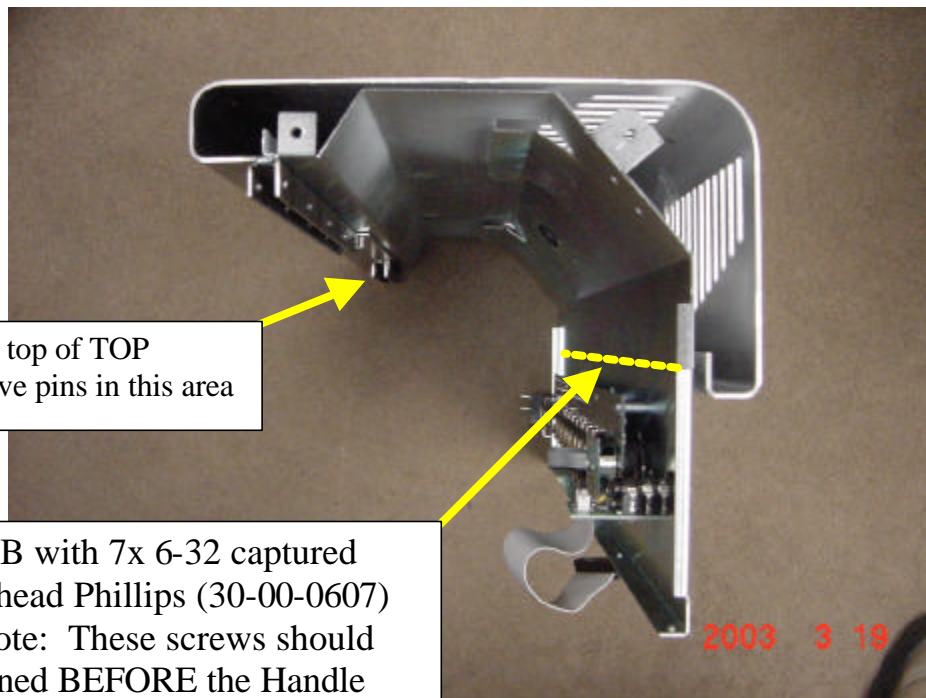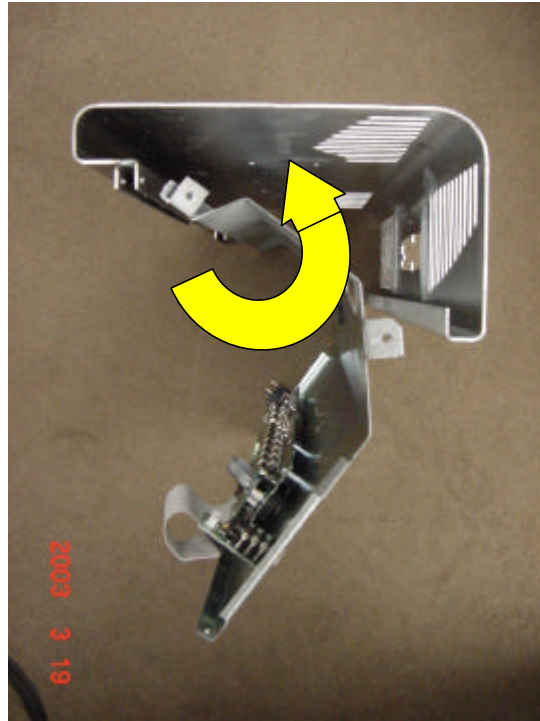
Shield rests on top of TOP CHASSIS above pins in this area

Secure the PCB with 7x 6-32 captured lock-star pan head Phillips (30-00-0607) along here. Note: These screws should be fully tightened BEFORE the Handle screws.

HD147 Assembly Instructions

g) Install HANDLE screws (# 30-00-0041), through HANDLE (30-57-0001), TOP CHASSIS and SHIELD walls and use 10-32 lock nuts (# 30-06-0024) to secure handle. Torque 12 in/lbs.
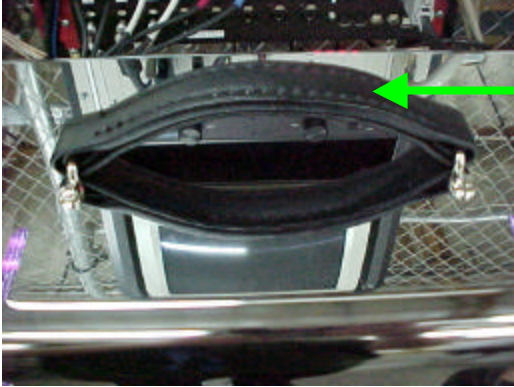
Pre-form the HANDLE (#30-57-0001), into a smooth radius curve as shown. DO NOT BEND AT THE CENTER POINT.

#30-06-0024 NUT (4 per)

 # 30-00-0041 SCREW (4 per)

2003 3 17
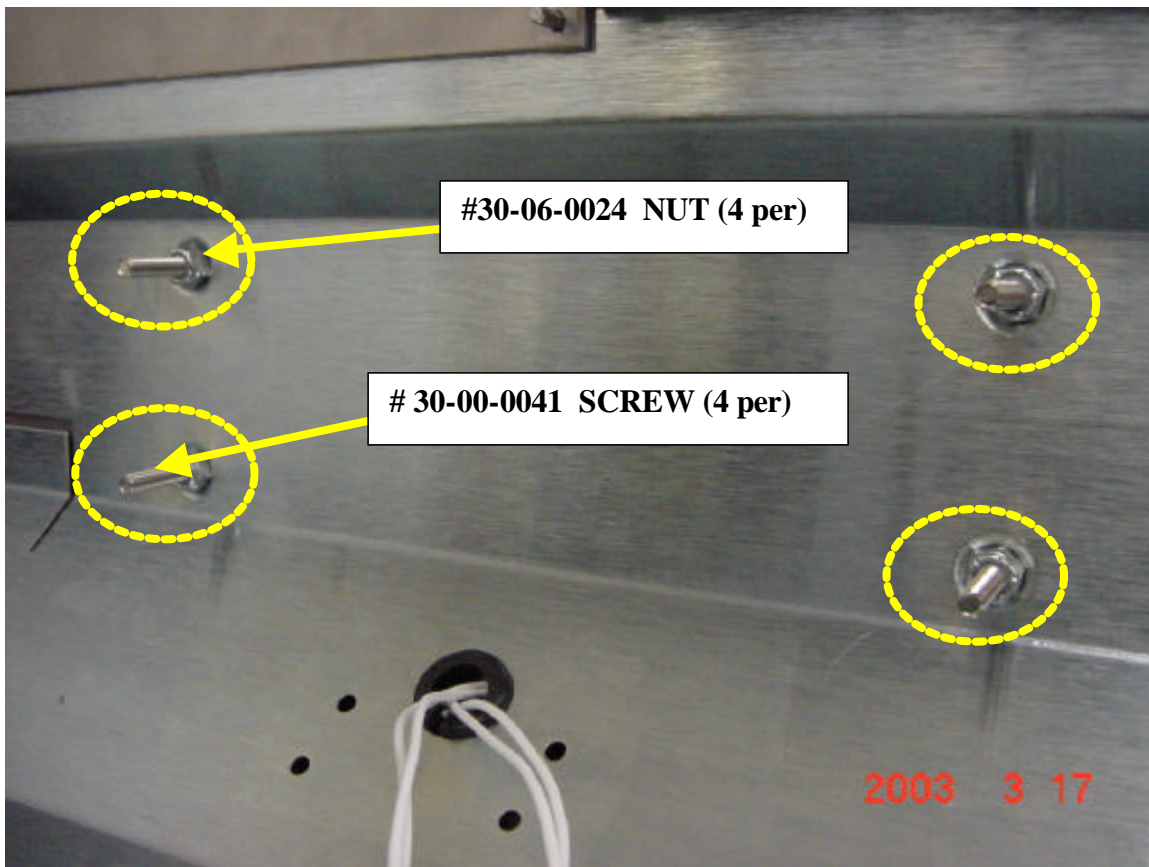
g) Attach MAIN PCBA ribbon cable (# 21-34-9034-1) to USER INTERFACE PCBA.
Attach GUITAR INPUT cable to MAIN PCBA (#21-34-0015).

#21-34-0015
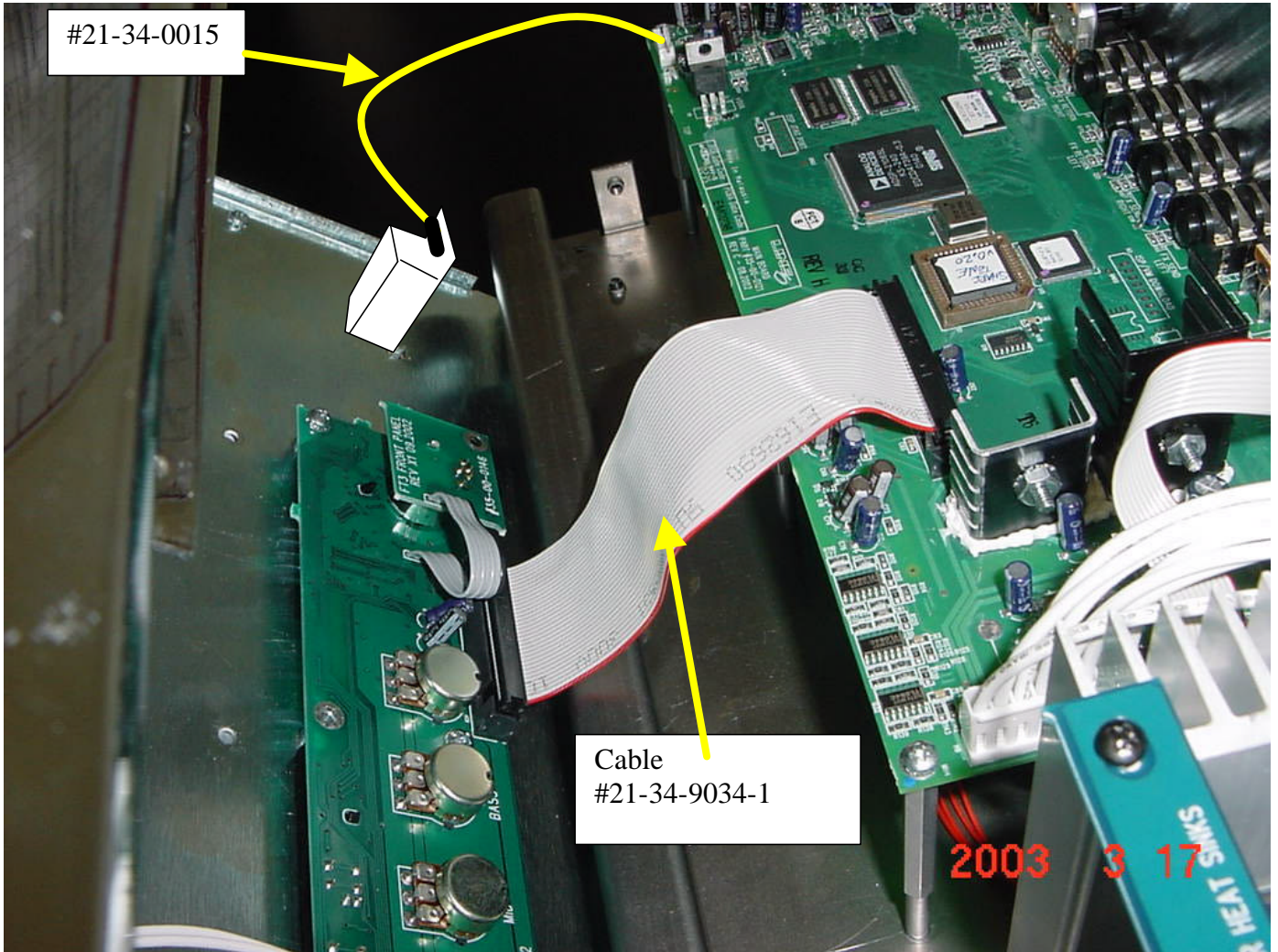
Cable
#21-34-9034-1

g) Attach #21-36-0265 cable to POWER SUPPLY header (J1) as shown.

J1 Header

Cable from LED
PCBA #21-36-0265
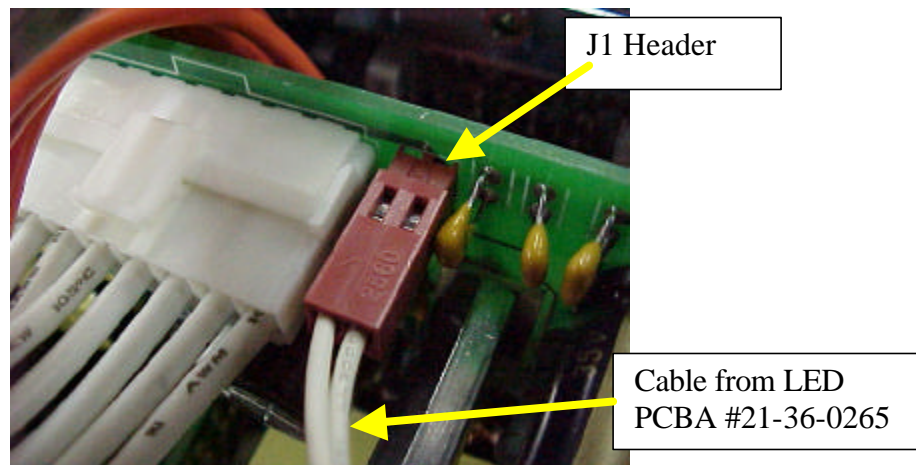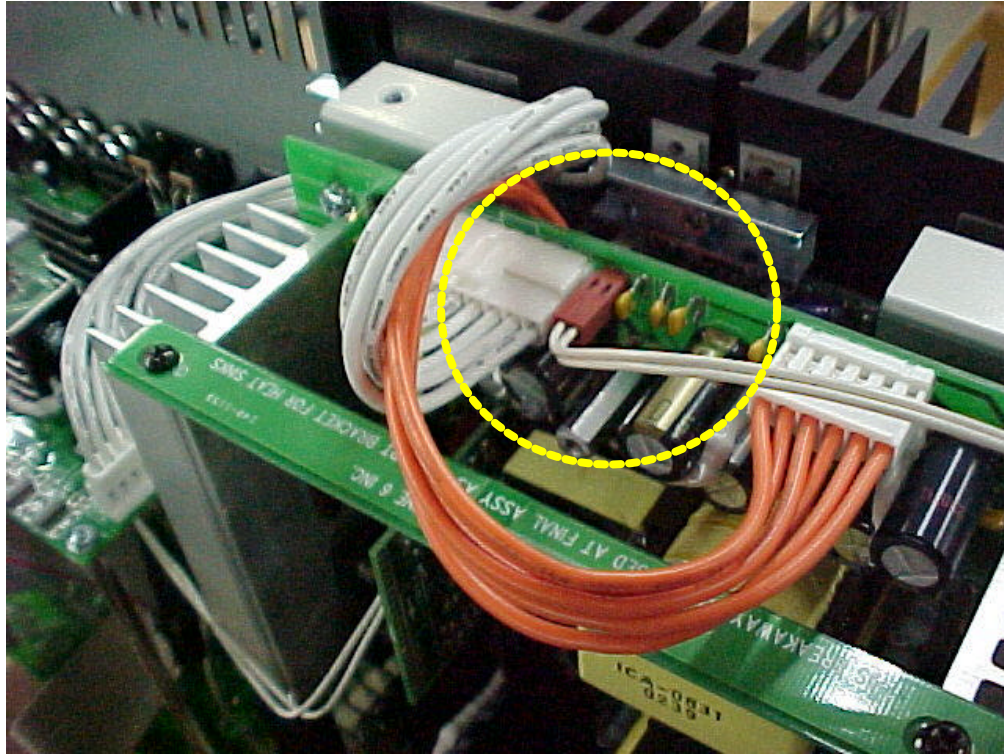
LINE 6
Engineering

g) Insert the two TOP CHASSIS Pins into the mounting channels in the POWER AMP HEATSINK.
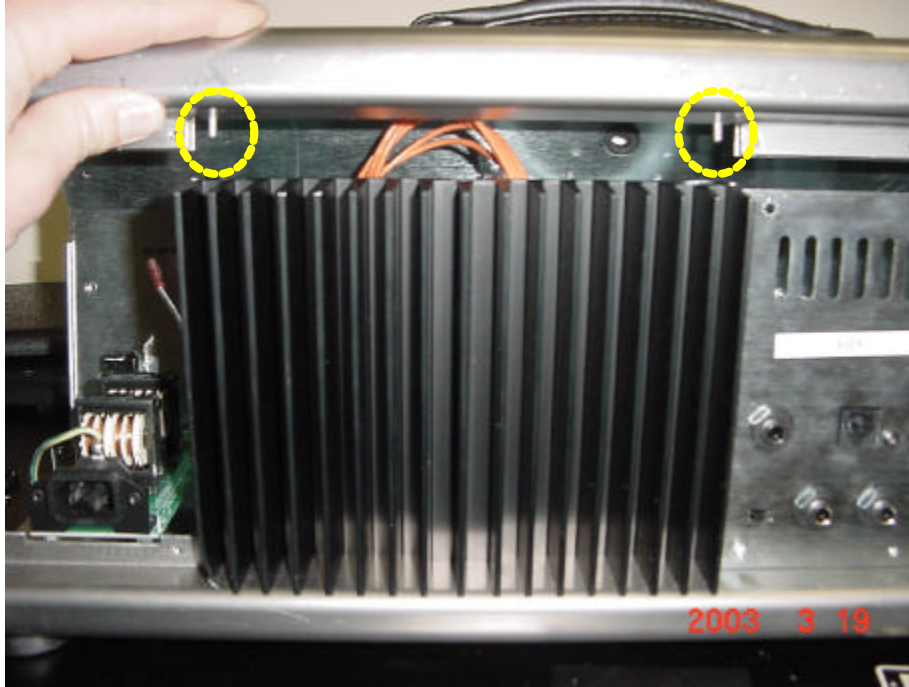
Rear View – POWER AMP heatsink & TOP CHASSIS pins
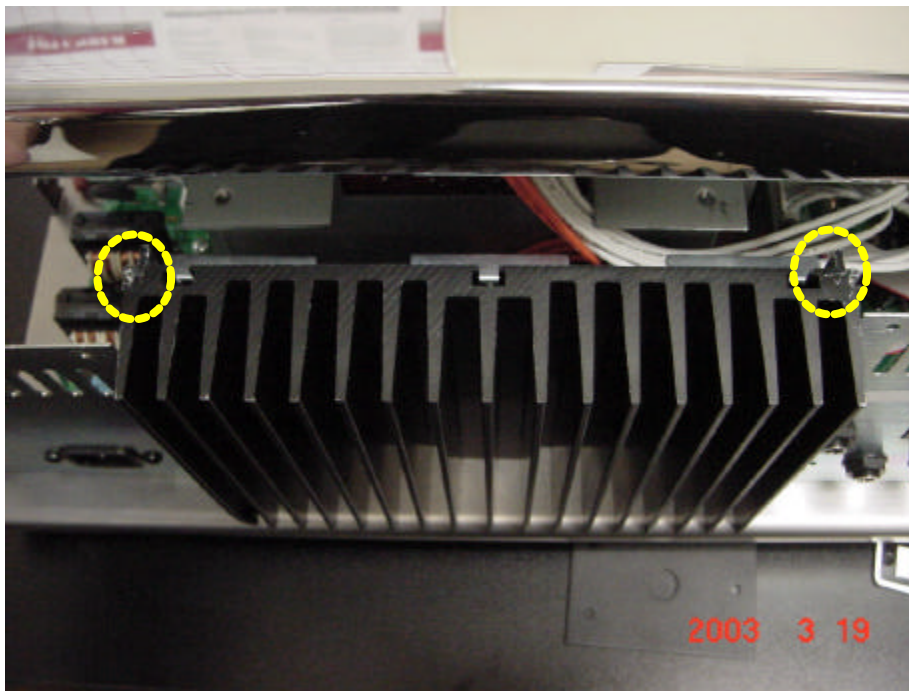
Top View – POWER AMP heatsink mounting channel locations

HD147 Assembly Instructions
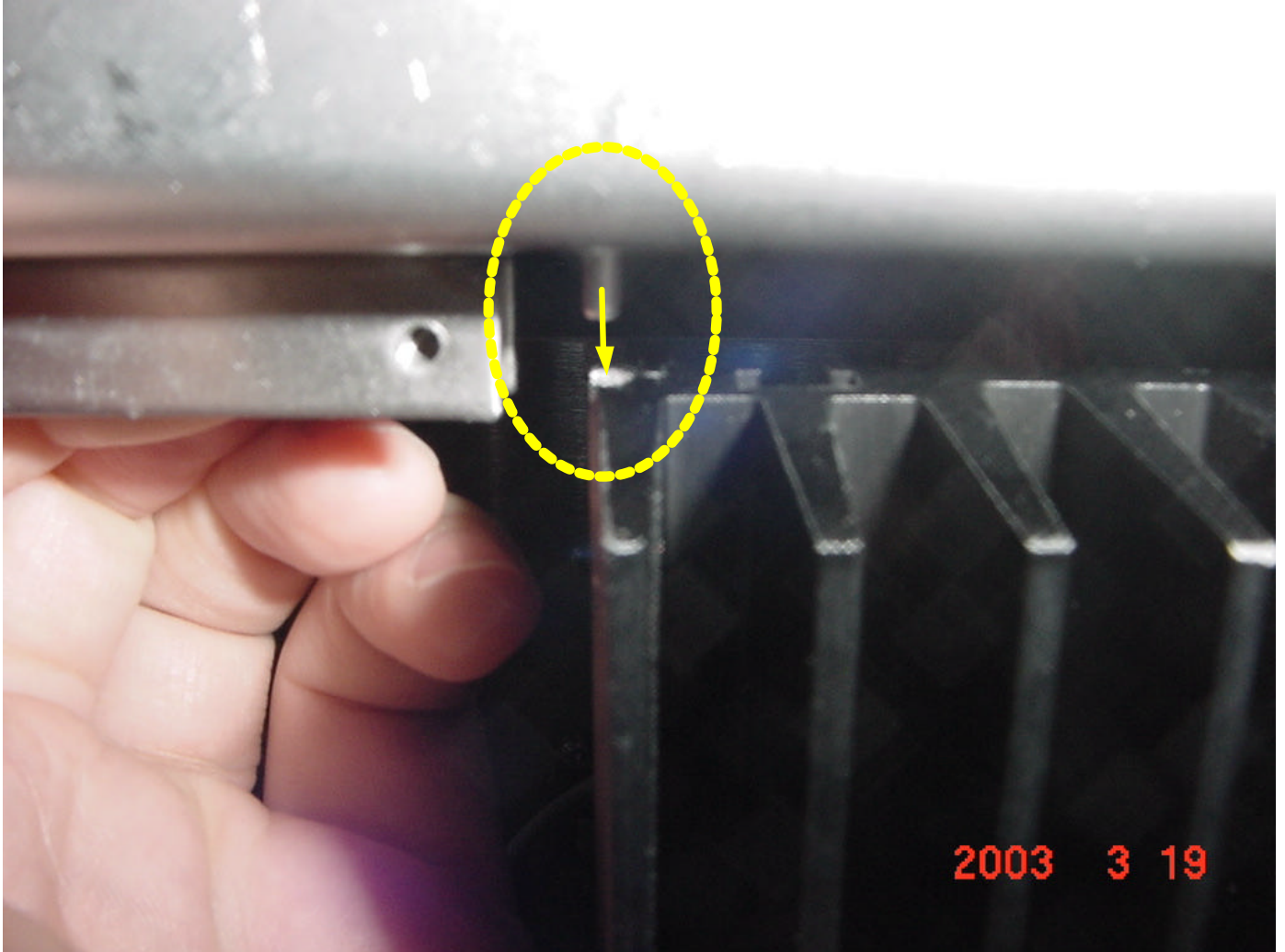
TOP CHASSIS pin detail - Left Side

HD147 Assembly Instructions

h) Install the AC PANEL onto the CHASSIS assembly as shown. 4 screws #30-00-0375.Torque 10-12 in/lbs. AC jack screws (2 per -# 30-00-8375) 4-5 in/lbs.

4 Screws
30-00-0375

#30-00-8375
2 screws, AC connector

2003 3 17

Cable # 21-34-0018-1
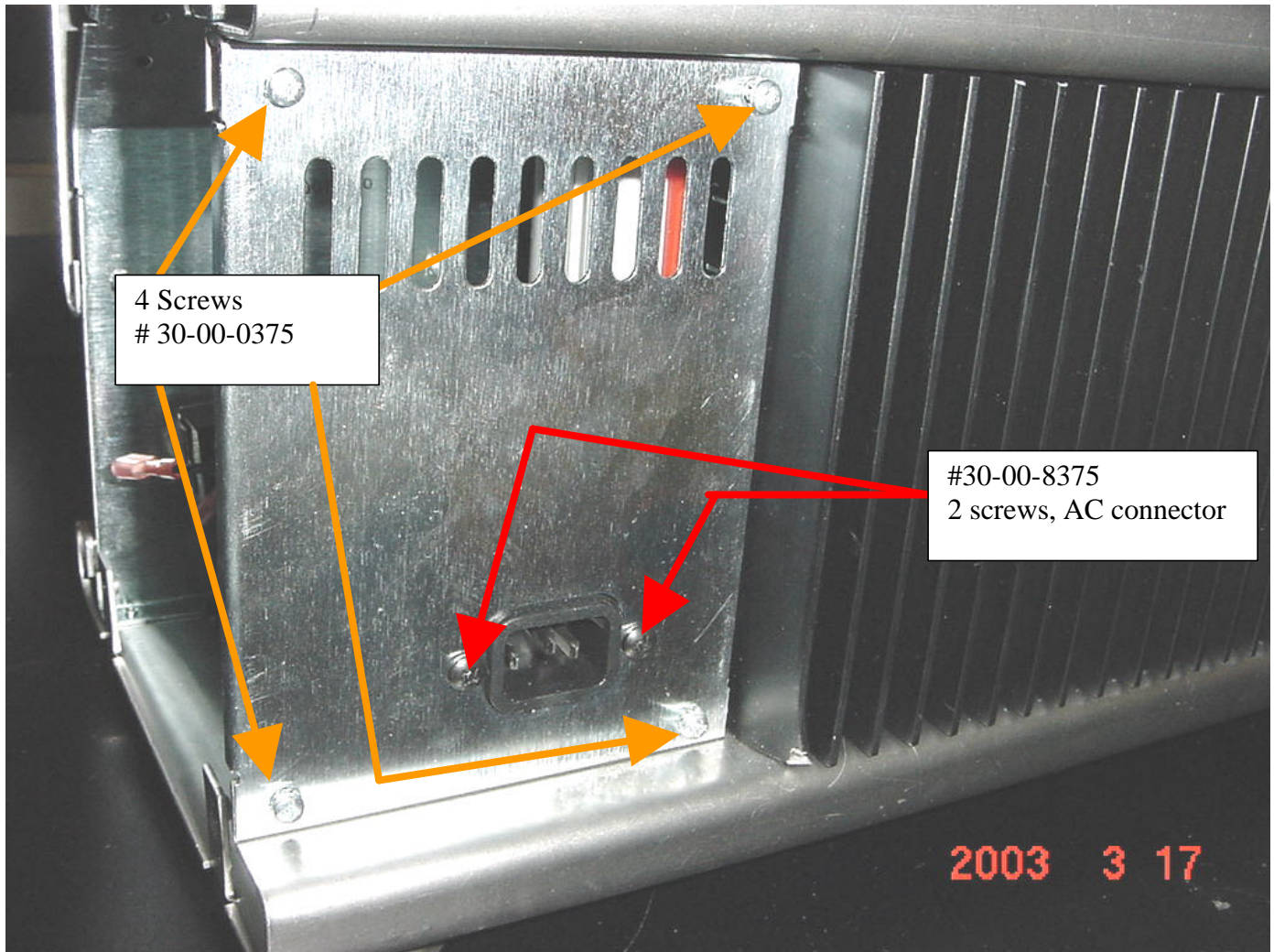
Line filter …..J2.
Power Supply ….J7
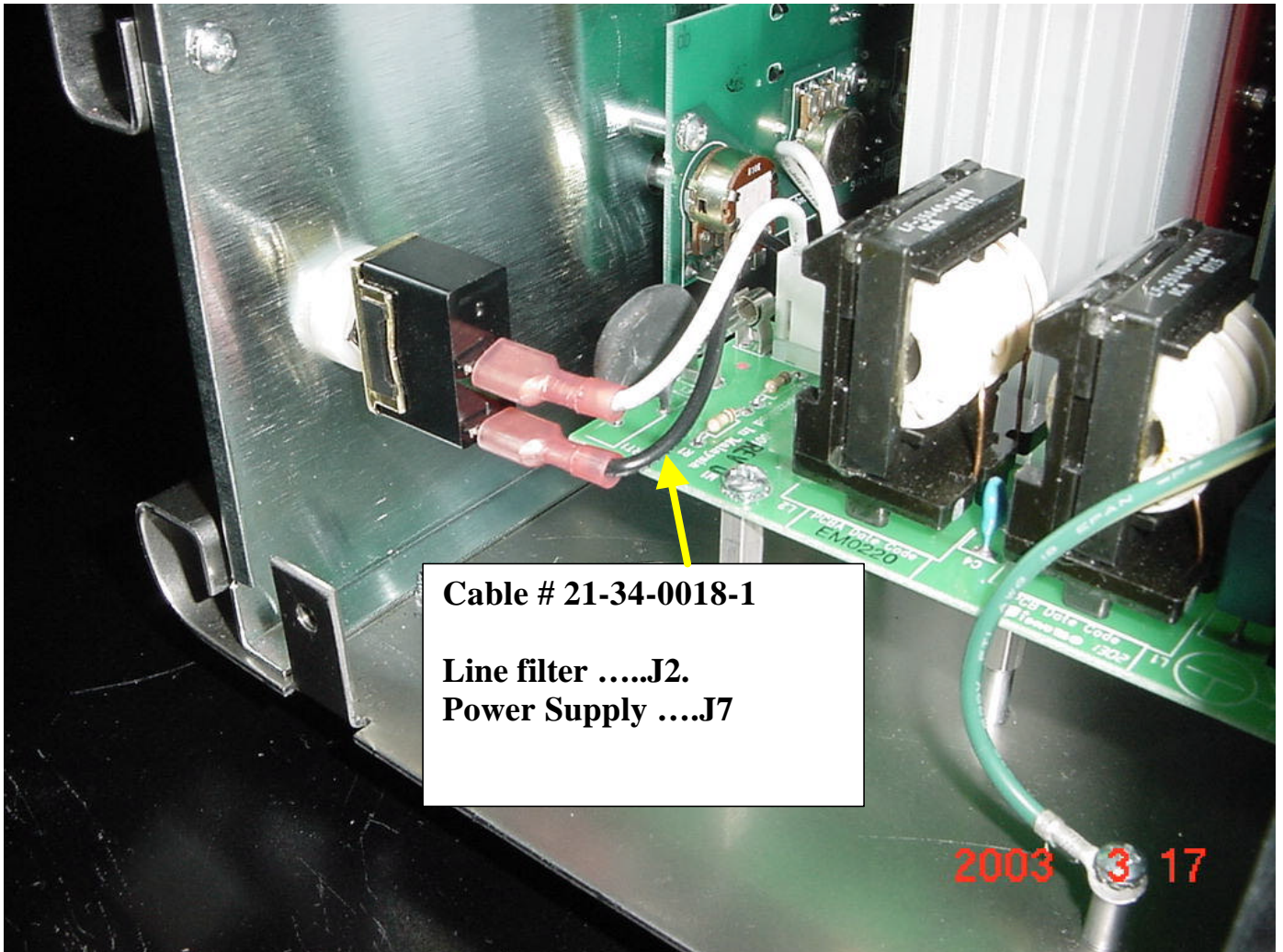
Install cable (# 21-34-0018-1) to the Power switch, Line filter PCBA, and Power supply PCBA, as shown.
Note: White cable to top connector of Switch.

HD147 Assembly Instructions

i) Attach SHIELD to BASE CHASSIS. Torque screws to 10-12 in-lbs.
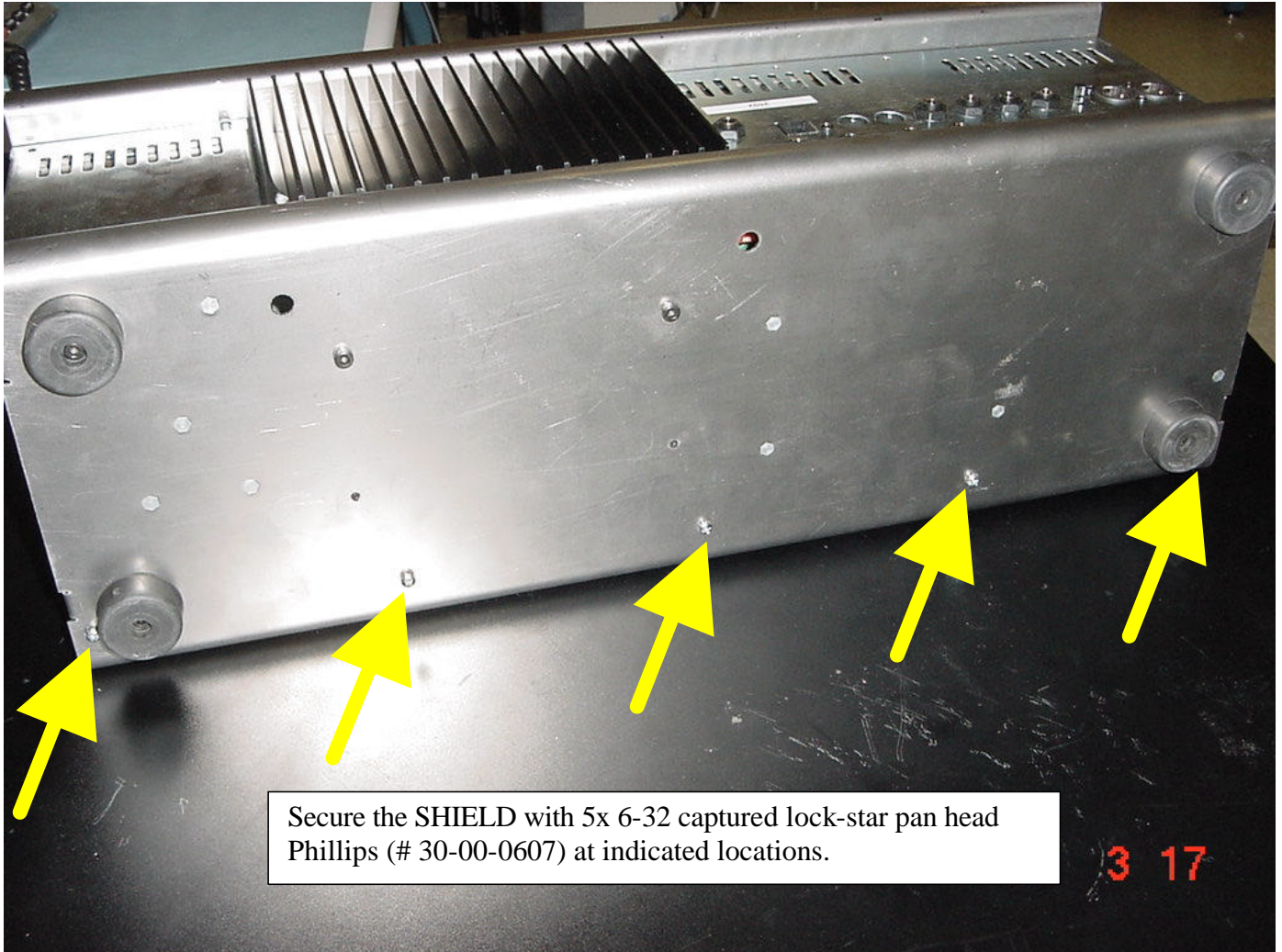
Secure the SHIELD with 5x 6-32 captured lock-star pan head Phillips (# 30-00-0607) at indicated locations.

j) Install two nickel plated PLUGS (# 30-10-0001) into the BASE CHASSIS Power Amp heatsink screw access hole locations as shown.
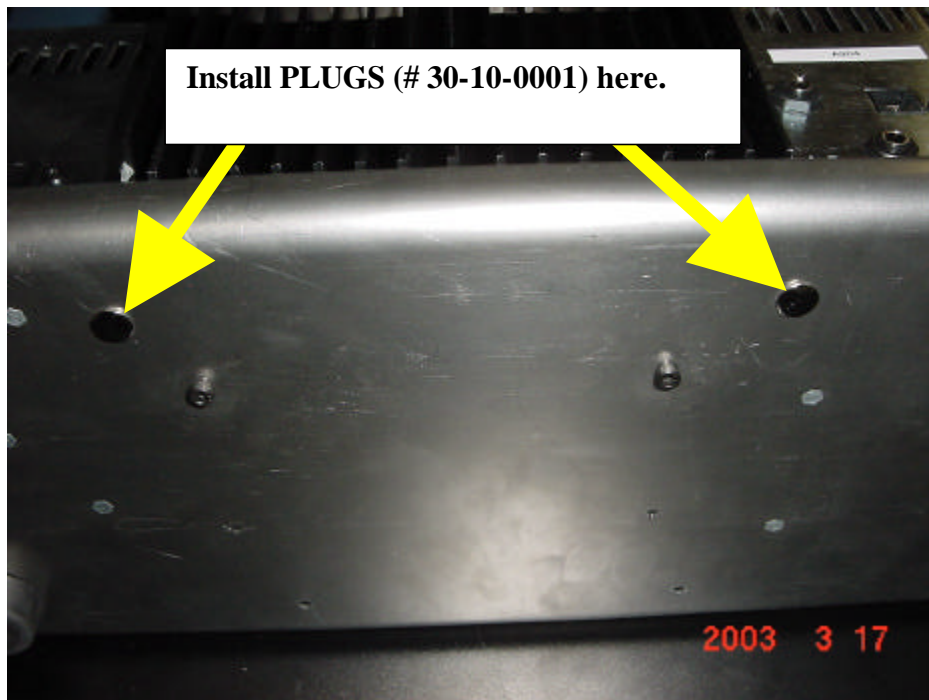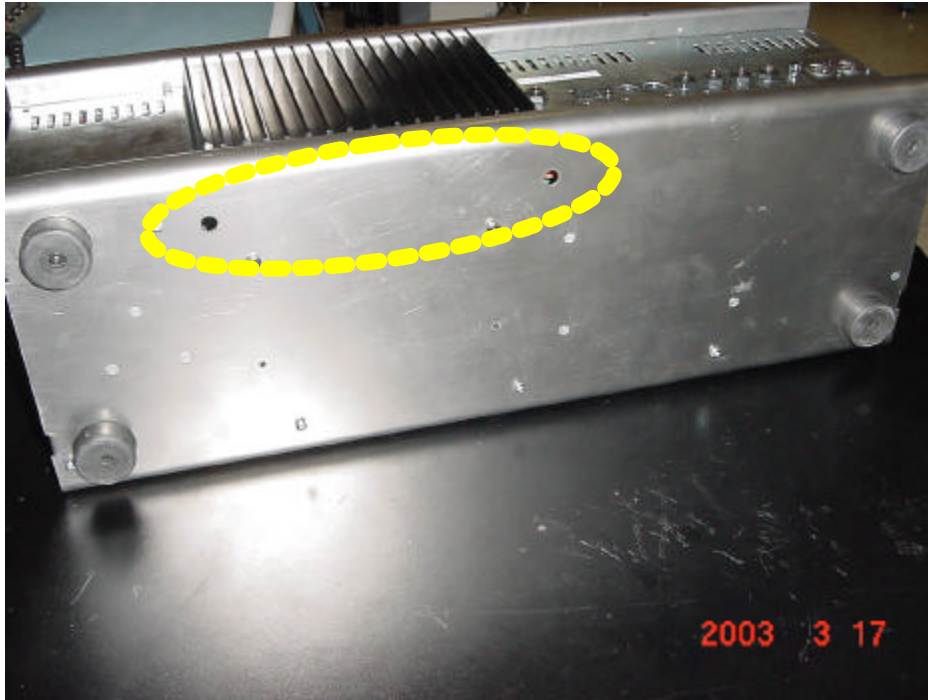
Install PLUGS (# 30-10-0001) here.

k) Install two nickel plated PLUGS (30-10-0001) by firmly pressing the parts into the holes as shown.

l) Install LOGO (#30-60-0005) onto TOP CHASSIS, using two 3-48 black flat head screws (# 30-00-0040). Torque to 5-6 in/lbs.

LOGO # 30-60-0005

2 SCREWS, #30-00-0040.
Note: photo shows nickel
screws, for reference only.

2003   3 17

HD147 Assembly Instructions
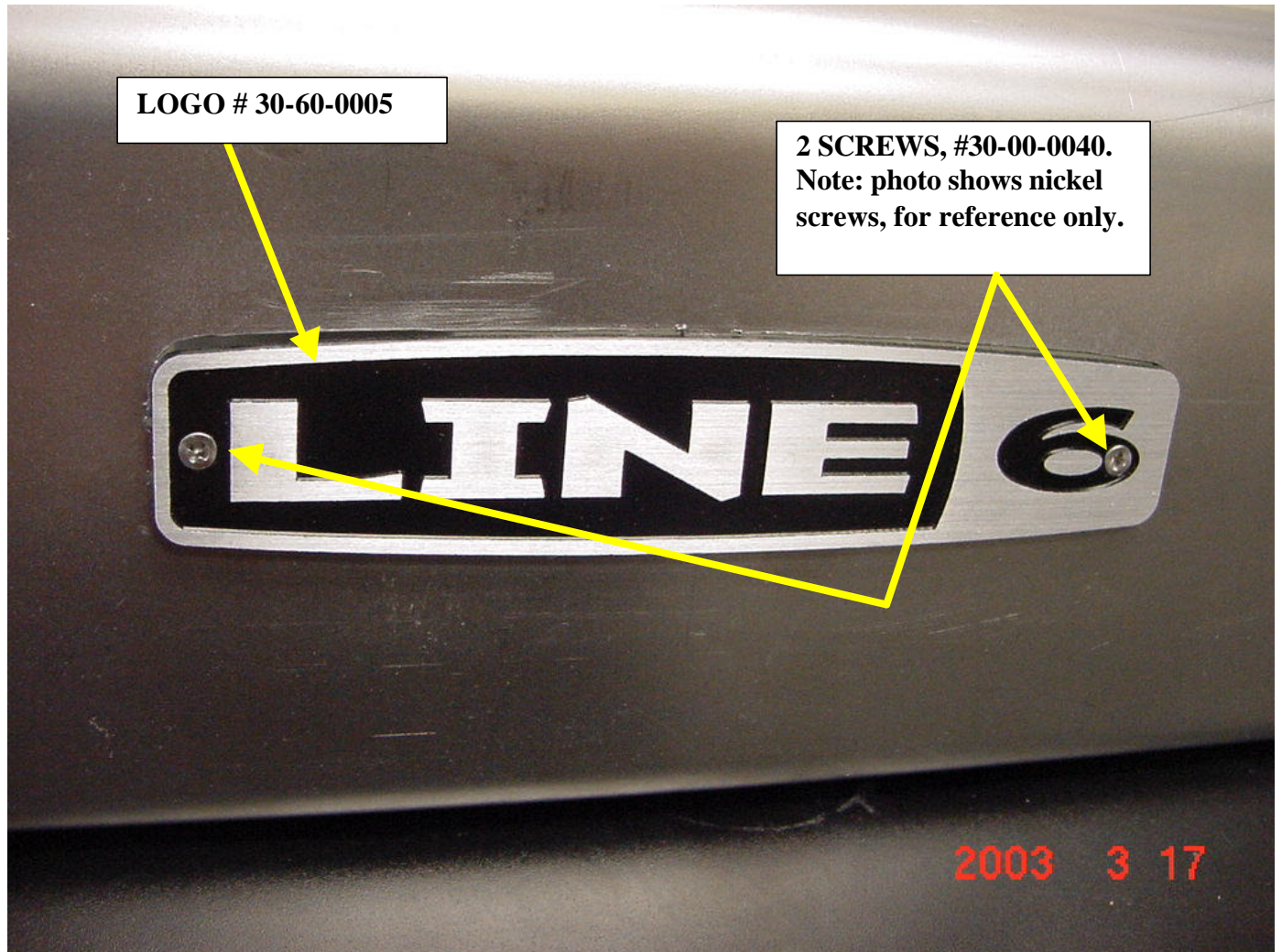
m)   Install End Caps.

Install end caps #30-33-0039-1 (right hand side) & #30-33-0039-2 (left hand side, using screws #30-00-0039 4 per side. Torque to 10 in/lbs.

Screws #30-00-0039 4 per side .
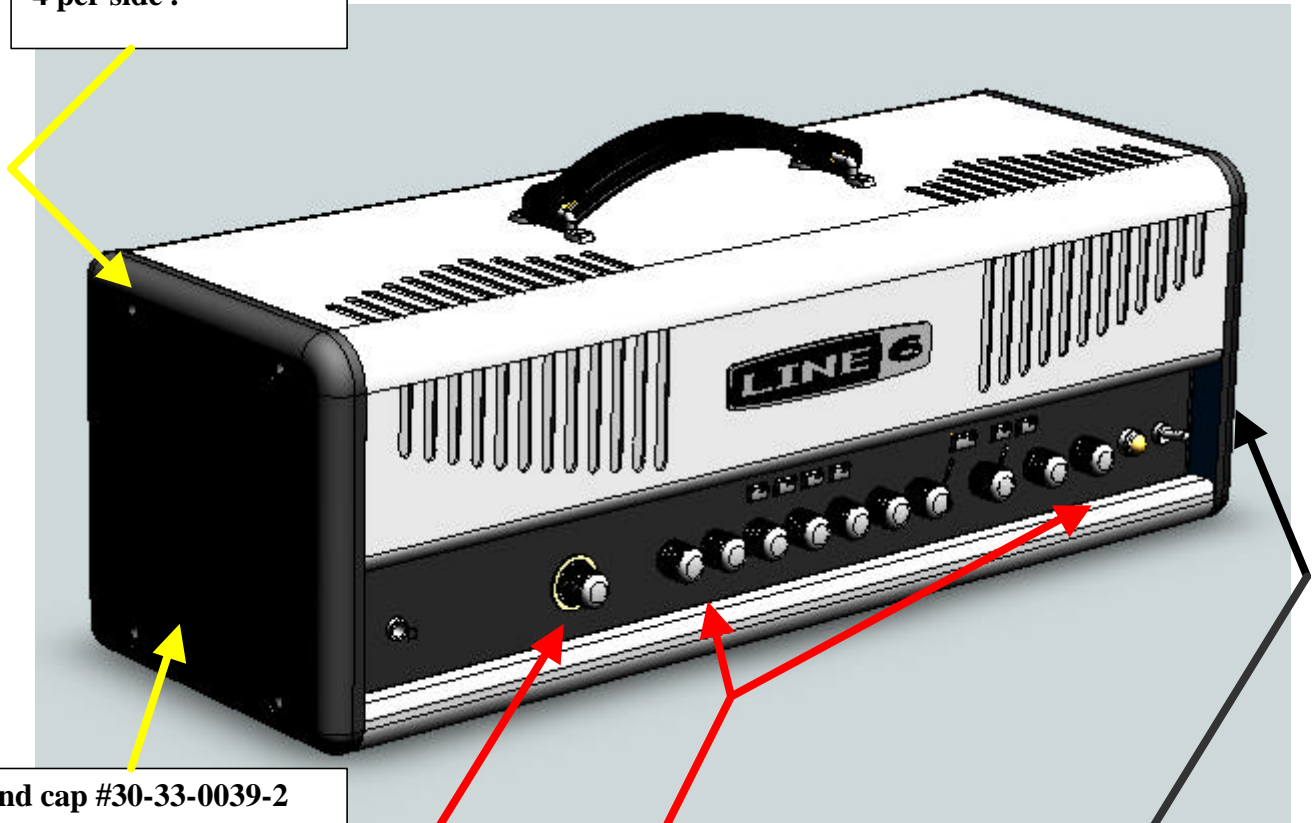
Left End cap #30-33-0039-2

Knob #30-45-0008 (1 per)

Knobs w/indicator **#30-45-0007 (10 per)**

Right End cap #30-33-0039-1

n) Install Knobs.

Install "Model" Knob 30-45-0008 (1 per), and Knobs w/indicator 30-45-0007 (10 per) as shown above. Make sure that they are fully seated.

HD147 Assembly Instructions

LINE 6
Engineering

Test & Inspect completed unit.

To help ensure maximum quality of all products, it is the responsibility of the assembler to complete a post assembly inspection prior to sending the unit on to electrical testing and final inspection. This should help achieve one goal: no unit shall ever be returned from test and inspection for rework because of a mechanical defect that could have been corrected at the assembly stage. Remember that things that have already been inspected during assembly may have been inadvertently damaged during the assembly process. With this in mind, fully inspect the unit for mechanical defects. Things to look for include:

- Cosmetic damage to any visible surface of the unit. This includes but is not limited to: defects to the silk-screening – both front and back panel, dents, dings or scratches in all outer surfaces, smooth even surface color of the front panel, even Chrome finish, scratches or fingerprints on buttons, damage to button text or keycaps, and/or visible process marks on knobs and other plastic parts.

- **Unit must be free of all fingerprints.**

- Proper complete assembly of all parts. This includes but is not limited to: Presence of all parts, flush full insertion of all screws. Even consistent spacing of knobs, proper centering of lenses in cutouts, etc.

- Proper mechanical function of all components. This includes re-testing all knobs for smooth consistent feel, testing all buttons for proper feel.

- Add serial number label (40-25-0101) to rear of unit (space is specified on the silkscreen), and make sure that the unit is marked to reflect the correct AC voltage- Cover up LABELS #40-30-0020 used for 220/240v units, and #40-30-0017 used for 100v models.

If there is any question about the quality of a unit, consult a supervisor for guidance. If the unit passes assembly inspection, the unit is complete and ready to proceed to electrical testing, final inspection, pack and ship.

Unit Final configuration:
Front panel:
- POWER SWITCH: Off
- DRIVE, BASS, MID, TREBLE, PRESENCE, CHANNEL VOL to 12:00 O'Clock.
- REVERB, MOD, DELAY, MASTER to 7:00 O'Clock (fully counter clockwise)

Rear Panel:
- LEVEL TRIM: 12:00 O'Clock
- GROUND LIFT: Ground

HD147 Assembly Instructions

PACK OUT LIST.

1. **#40-25-0100 LABEL BARCODE SERIAL NUMBER 4 PANEL…..(1 PER)**

2. **POWER CORDS (1 per -depends on voltage configuration):**
   - i) **#21-37-1160 CABLE POWER US/JA……………(1 PER)**
   - ii) **#21-37-1163 CABLE POWER AU ……………….(1 PER)**
   - iii) **#21-37-1167 CABLE POWER EU ………………...(1 PER)**
   - iv) **#21-37-1168 CABLE POWER UK ………………(1 PER)**

3. **#40-00-0021 MANUAL, USER …………………………..(1 PER)**

4. **#40-00-0024 PRESET CHART, HD147 ………….(1 PER)**

5. **#40   -20-0010   BAG PLASTIC 43"x 38" x .004" CLEAR….(1 PER)**

6. **#40-20-0011   BAG PLASTIC 10"x 16" 2MIL CLEAR…..(1 PER)**

7. **#40-10-0059   FOAM CORNERS………………………..(8 PER)**

8. **#40-10-0057 CARTON GIFT HD147 …………………(1 PER)**

9. **#55-00-0001   COVER HD147 HEAD …………..(1 PER)**

HD147
Pilot Handbook

The serial number can be found on the back panel of your HD 147. It's the number that begins with "(21)". Please note it here for future reference:

SERIAL NO: _____

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.

CAUTION: 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.

Before using your HD 147, carefully read the applicable items of these operating instructions and safety suggestions:

1. Obey all warnings on the HD 147 and in this Pilot's Handbook.

2. Do not place near heat sources, such as radiators, heat registers, or appliances which produce heat.

3. Guard against objects or liquids entering the enclosure.

4. Connect only to AC power outlets rated 100-120V or 230V 47-63Hz (depending on the voltage range of the unit; refer to the back panel). Current ratings should be 4A for the 120V range and 2 A for the 230V range.

5. 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.

6. Unplug your HD 147 when not in use for extended periods of time.

7. Do not perform service operations beyond those described in the HD 147 Pilot's Handbook. In the following circumstances, repairs should be performed only by qualified service personnel:

    • liquid is spilled into the unit

    • an object falls into the unit

    • the unit does not operate normally or changes in performance in a significant way

    • the unit is dropped or the enclosure is damaged

8. Prolonged listening at high volume levels may cause irreparable hearing loss and/or damage. Always be sure to practice "safe listening."

Please Note:

WELCOME TO HD 147

Register

Thanks for buying a HD 147! Please send in that included registration card or click on over to www.line6.com to get registered. We'll wait right here...

Line 6 and HD 147

You probably know Line 6 as a technological innovator in the guitar world—first to put digital software modeling technology to work in guitar combo amps, pioneering direct recording technology in POD and other products, and capturing the soul of classic pedals in modern stomp boxes. We make gear that's packed with features and hi-tech breakthroughs, and bring new value and capabilities to guitarists.

Like all Line 6 products, the HD 147 is packed with tone—full of refined models of premier guitar amps and effects from the past five decades.

What sets the HD 147 apart from other amplifiers of its stature are the 14 custom Line 6 custom amp models that put you on the forefront of a new wave of Line 6 innovation. You see, after carefully modeling a plethora of coveted vintage and modern amps, our tone craftsmen have picked up a thing or two about what makes great amps magical. Armed with this knowledge, our hardy band of adventurers has tunneled deep into the "Middle Earth" of guitar tone on a tireless quest to bring you awesome new gems of sonic power.

By bringing you these unique tonal treasures along side a bevy of premier amp models ranging from punishing high gain tone to crystal clear cleans, HD 147 gives you a trove of tonal riches you can't get from anywhere but Line 6.

HD 147 also includes Line 6's signature A.I.R. II direct outs, so you of course get your tone to its destination without compromise or complication in every situation. And, of course, it's all ready to dazzle your audience with its other worldly chromed chassis and glowing black lights.

So flip the page, you lucky devil. And let's take your hot new tone buggy for a spin!

1 • 2

Connect at www.line6.com

Join the thriving community at **www.line6.com**. The discussion boards are humming with Line 6ers sharing insights to get the most from their gear and the great adventure of making music. Learn what's new from the artists that rely on Line 6, be the first to hear about new products, and tap into Customer Support via the powerful FAQTRAQ system.

WORKING IT

In a rush? Well, then, just read this page and come back for the rest later:

Quick Start Guide

POWER: Connect the power cord from HD 147's rear panel to your power outlet. *But don't turn the power on yet.*

PLUG IN: Connect your speaker cabinet and set the impedance switch on the back of the amp to match the impedance of your cab. Jack your guitar into HD 147's **Input**. Turn HD 147's **Master** knob (on the far right) all the way down, and kick the **Power** switch to fire that bad boy up. Spin **Master** up to 9 o'clock or so. Rock on!

MODELS KNOB: Spin this to select from the 16 amp flavors, each with two variations, for 32 Amp Models total.

DRIVE, BASS, MID, TREBLE, PRESENCE, VOLUME KNOBS: What you see is what you get here—turn knobs 'til things sound good!

DELAY: Press the button to the left of the **Delay** knob to pick one of the Delay effects. Tap in a tempo for the delay, and turn the **Delay Tweak** knob to get more or less of the effect.

MOD: Press the button to the left of the **Mod** knob to pick one of the Mod effects. Turn the **Mod Tweak** knob to adjust the amount of the selected effect.

COMP/GATE: Press **Comp** and/or **Gate** to engage each effect. The Compressor will smooth out your dynamics and add sustain. The Gate will mute the inherent noise common to high gain amp tones when you're not playing.

CHANNEL MEMORIES: These are like the buttons on a car radio that remember your favorite stations. Press A, B, C or D to recall one of the 4 Channel Memories. Press that button again to get back to "manual mode." You're in manual mode if none of the A, B, C, or D buttons are lit. And just like a car radio, hold any of the buttons for 3 seconds to save your current settings to that memory for later recall.

Front Panel Features
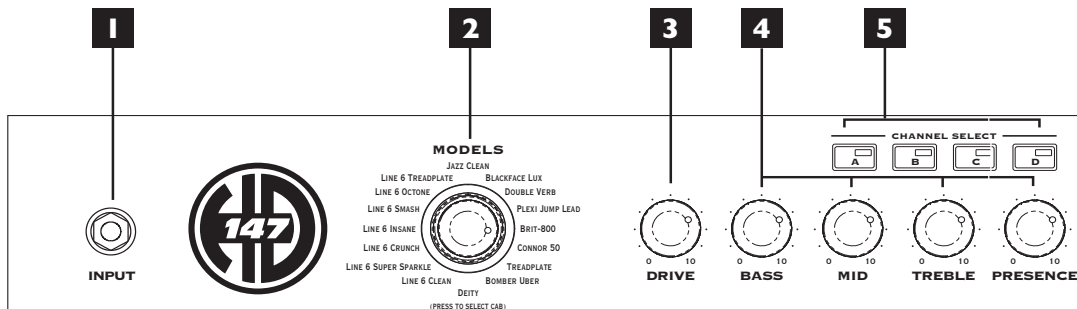
1. **Guitar Input:** Plug your guitar in here.

2. **Models - Amps:** As you turn this knob, one of the lights surrounding it will light. An AMBER (yellow) light next to one of the Model names tells you that you've selected that Amp Model. Turn the knob one more click to get a RED light, and you've got a whole new amp model within a similar genre. **Chapter 3** describes all 32 Amp Models.

   Models - Cabs: When you select an Amp Model, your HD 147 is selecting an appropriate Cab Model to go with it behind the scenes. Many of the amp models on the HD 147 use the "No Cab" cabinet model. "No Cab" bypasses the additional cabinet coloration to allow the natural character of your speaker cabinet to come though. To choose a different cabinet from the 16 available models, press and hold the Model knob while turning it; you'll see GREEN lights. The cabs run from smallest to largest, so selecting green lights from "Line 6 Super Sparkle" through "Deity Lead" takes you all the way from petite combo amp cabinets to ferocious 4x12s. Turn to "Line 6 Clean" to bypass the cab modeling.

3. **Drive:** Turn this knob to set how hard you're driving the chosen Amp Model. Similar to the input volume control on a non-master volume amp, the higher the setting, the more "dirt."

4. **Tone Controls – Bass, Mid, Treble and Presence:** These controls are made to behave like the controls of the amps that were modeled for HD 147. Twist them round until things sound just the way you like. See **Chapter 3** for details.
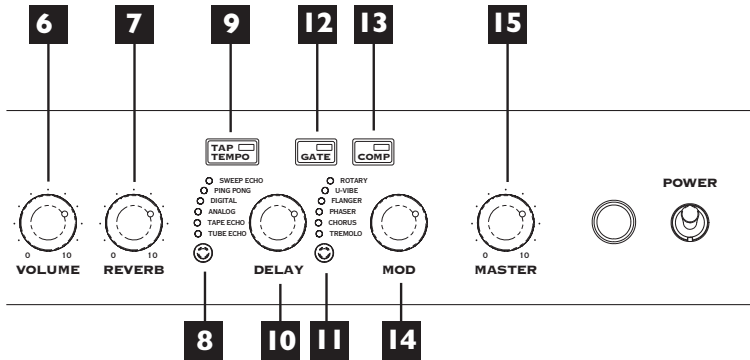
5. **Channel Select Buttons – A, B, C, D:** HD 147 uses these buttons to remember your favorite settings—no more need to mark up the front of your amp with grease pencil to note your favorite settings! Each memory is pre-set with delicious tone when an HD 147 leaves the factory—press a button to hear the saved setting. As you do, notice that HD 147's lights indicate which Amp Model is used in the Channel Memory, which effects are on, etc. To get back to the "manual mode," just press the lit button again to turn it off. Plus...

As you come across your own favorite settings that you'd like to keep, you can save them to the A, B, C and D buttons to replace the factory presets. Just hold down any of A, B, C or D buttons for about 3 seconds until it flashes and presto—HD 147 has now memorized your custom tone for easy recall! See **Using The Channel Memories** on page 2•6 for more detail. The Line 6 FBV class foot controllers let you select these Channel Memories with your feet—and expand the number of memories recallable to a total of 36. **Chapter 5** has got the details.

6. **Volume:** This knob controls the relative volume level of the "channel" you are playing through — thus, Channel Volume. Use this to balance levels between the sounds you store in two different HD 147 Channel Memories (say between your rhythm and lead tones).
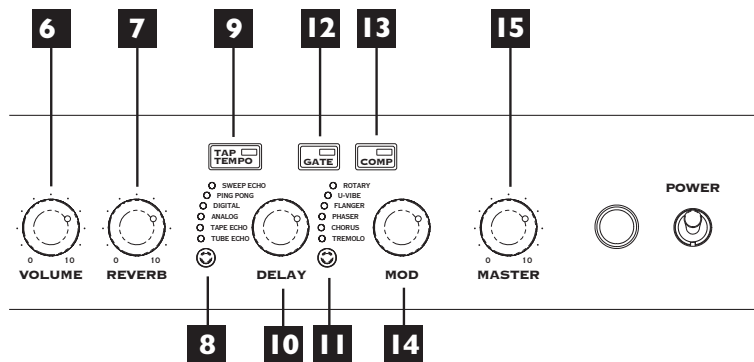
7. **Reverb:** Just turn the knob to get the amount of reverb you'd like. Turn the knob fully counter-clockwise for no reverb.

   Bonus Feature: Reverb Tweak- To adjust the type and decay of the Reverb, press and hold the Tap Tempo button and turn the **Reverb** knob. There are three different Reverb types accessible throughout the range of the knob. The first third of the knob is a spring, the second third a Room, and the final third a Plate, each with a range of decays, from short to long.

8. **Delay Select:** Press this to step though the Delay effects listed to the left of the Delay knob, or to turn off the Delay (all lights off). Press and hold the **Delay Select** button to bypass the current model without losing your place in the effects list. The next press of the **Delay Select** button restores the model you had previously selected. (The bypass feature works with the **Mod Select** button too!)

9. **Tap Tempo:** Tap the button at the tempo you'd like—the delay time switches to match that tempo.

10. **Delay (Tweak):** Dynamically adjusts multiple delay parameters, including mix, feedback and tone. Spin it to get more or less delay.

    Delay Time - To set the delay time without having to deal with tapping, press and hold the **Tap Tempo** button while turning the **Delay** knob. For shorter delays, dial counter-clockwise. Longer delays, clockwise.

Bonus Features: Delay Feedback - To adjust only the Delay Feedback, press and hold the **Delay Select** button and turn the **Delay** knob. *Note: Turning the Delay knob after tweaking the feedback will override your feedback setting. So it's best to first get the general Delay set with the Delay knob, and then fine-tune the feedback if necessary.*

11. **Mod:** Press this to step though the Mod effects listed to the left of the Mod knob, or to turn off the Mod (all lights off).

12. **Gate:** Engages the on-board gate. The gate kicks in when your guitar signal drops below a certain "threshold," and is intended to mute the noise that you might otherwise hear at that time. To adjust the Gate threshold, press and hold the **Gate** button while turning either the **Delay** or **Mod** knob. The lower the threshold (clockwise), the more the sustain of your notes will tend to get chopped off.

13. **Comp:** Engages the on-board Compressor. The compressor will add sustain to your guitar sound, and smooth out your dynamics. To set the amount of compression, press and hold the **Comp** button while turning either the **Delay** or **Mod** knob. The higher the setting, (clockwise) the more your notes will sustain.

14. **Mod (Tweak):** Dynamically adjusts multiple modulation parameters, including rate and depth.

   Bonus Feature: Modulation 2nd Function - Each modulation model can be fine-tuned by pressing and holding the Mod Button while turning the **Mod** Knob. The list below shows which fine-tuning is available for each effect.

MOD Effect	Fine-Tune
Rotary	Tone
U-Vibe	Depth
Phaser	Feedback
Flanger	Rate
Chorus	Rate
Tremolo	Waveform (sine – square)

15. **Master:** Sets the overall volume of your HD 147. Adjust this to set your basic loudness, then use the **Volume** knob to balance the relative volume of the sounds you store with the A, B, C, D buttons.

Manual Mode: What You See Is What You Get

When *none* of the **A, B, C, D Buttons** are lit, HD 147 is operating in **Manual Mode**, meaning that all of the controls are active and the sound of the amp is determined by the current knob settings. Just like a regular amplifier, right?

If you are not in **Manual Mode** and would like to be, simply give the lit **A, B, C,** or **D Button** a quick press.

Using The Channel Memories

HD 147 can store and recall your favorite settings using the **A, B, C, D Buttons**.

Save: Any time you've dialed up a sound that you'd like to save for later recall, all you have to do is hold down button **A, B, C** or **D** for 3 seconds. At the end of that 3 seconds, the button you held will flash to let you know that you've successfully stored your present setting of all the controls to that button.

Recall: When you tap one of the **A, B, C, D Buttons** to light it up, HD 147 recalls the settings that were stored in that button's Channel Memory. This includes your choice of Amp and Cab **Models**, the **Drive**, **Bass**, **Mid**, **Treble**, **Presence, Reverb** and **Channel Volume** settings, plus your **Mod** and **Delay** settings. *Note: The Master Volume setting is not stored with each Channel. Instead, it acts as a global volume that controls the overall level of all channels.*

The various front panel lights will show the recalled settings, but the knobs will not. Turning any knob or operating any button will override the recalled setting for that control only. To override all the recalled settings and get the sound determined by the current setting of all the knobs, press the lit **A, B, C,** or **D Button**. You're now back in what-you-see-is-what-you-get **Manual Mode**.

See **Chapter 5** for details on how to store and recall a total of 36 HD 147 Channel Memories using your feet.

To reset all the Channel Memories (including all 36 available from an FBV and MIDI) to their factory state, hold the **A** and **D Buttons** while powering up your HD 147.

Creating Amp Defaults

Amp Defaults are simply snapshots of all the important Amp Model controls that are automatically recalled when you select a model via the **Model** knob. Every time you select a model, HD 147 loads the associated Amp Default to expedite your trip to tone nirvana.

You can edit any or all of the Amp Defaults, and pack your HD 147 with all the special amp-tweaking genius that only you possess. This brilliance will then be available instantly at the turn of the **MODEL** knob. For instance, when you turn the **MODEL** knob to load the Plexi-45 model, you'll get *your* personal Plexi-45, with all the controls set for your very own version! Here's how it works:

Choose an Amp Model, change the cab if you like, dial in the amp controls, etc. When you're happy with what you've got, press and hold the **MODEL** knob *being careful not to turn it*. After about 5 seconds, the light for the selected model will start to blink and you can let go. Your custom settings have been saved.

Using MIDI, you can customize a whole bunch of other controls and store them with the Amp Setup. Check out the MIDI Appendix for detail on the continuous controller messages that drive each of these parameters. After making tweaks via MIDI, you can save the result as the Amp Default.

Amp parameters accessible via MIDI include:

Drive	Compression Gain	Reverb Model
Bass	Compression Threshold	Reverb Decay
Mid	Comp Enable	Reverb Tone
Treble	Gate Threshold	A.I.R. II Model
Presence	Gate Decay Time	Cabinet Model
Channel Volume	Noise Gate Enable	Volume PRE/POST

Rear Panel Features
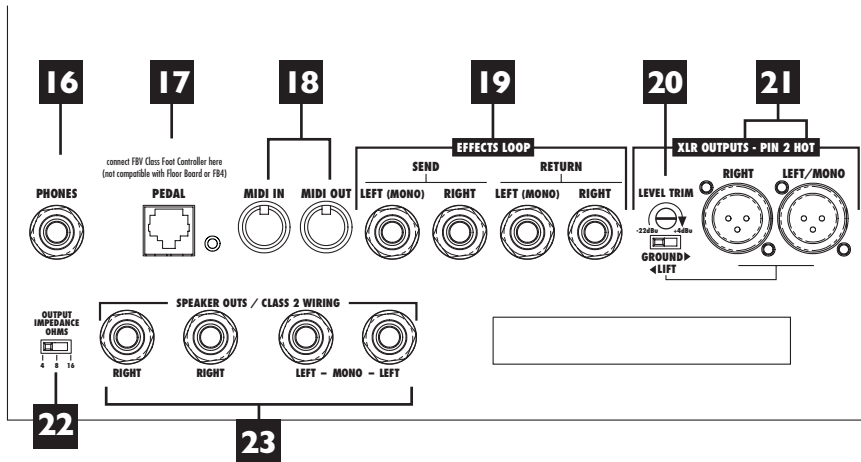
16. **Phones:** Keep it quiet around the house by connecting headphones to the **Phones** jack—plugging in headphones disables your speaker outputs. The **Master** knob sets the output level while you're using headphones—be sure you turn the knob down as you switch between headphones and the speakers to make sure you don't unexpectedly blast yourself with volume.

17. **Pedal:** Connect the RJ-45 cable supplied with your FBV or FBV Shortboard here. **Chapter 5** has the full details.

18. **MIDI In & MIDI Out:** Connect standard MIDI cables here. HD 147 always sends and receives on MIDI Channel 1. See the MIDI appendix for more details.

19. **Effects Loop:** Use the Left(Mono) Send and Return for a mono rack effect. Connect stereo effects as shown. Generally, stomp boxes go before the amp, *not* in this loop.
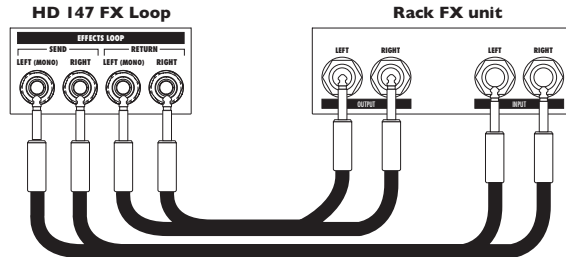
20. **Level Trim:** The level of the XLR Outputs is set by the small rear panel trim, and is not affected by the **Master** knob.

21. **XLR Balanced Outputs & Ground Lift:** These versatile connections are designed with Line 6's exclusive A.I.R. II technology to give you the perfect pair of direct connections for live performance and studio recording sessions. See **Using Your Direct XLR Outputs** on page 2•15 for details. Try flipping the Ground Lift switch if you are experiencing buzzing or hum when connected to other equipment via the **Direct XLR Outs**.

 Please Note: there can be an audible 'pop' on the XLR outputs when powering your HD 147 on or off. We recommend that you either disconnect the direct outputs or power down whatever the direct outs are connected to before turning your HD 147 On or Off.

 Power Switch & Connector (not shown in diagram): These are on the side of the rear panel that's not included in the illustration. Connect the supplied power cable to your wall outlet, then flick the power switch to let the electrons in to do their stuff.

Speaker Cabinet Basics

Be sure to turn the amplifier off when connecting or disconnecting speaker cables and cabinets. (This protects both the amplifier and the speakers.)

Use only heavy gauge, unshielded cables for hooking up speaker cabinets. (Do not use standard guitar cables to connect speaker cabinets, as they will degrade your sound.)

Take a Load Off!
While you would never want to operate a tube amplifier without a load (that means without speakers attached), operating the HD 147 without a load is OK! You do not need to have speakers connected to the amplifier in order to use the balanced Direct Outputs.

Volume Levels
Exercise some common sense about volume levels. The HD 147 can drive four 4x12 cabinets with power to spare, so it's got enough juice to fry the speakers of most setups if you really tried. If you see the speakers practically jump out through the speaker grille, back off on the HD 147's Master Volume a wee bit to get things back into the realm of reasonable operational levels. Also understand that Line 6 cannot be liable for replacement of speakers damaged by abuse. So, feel free to crank it up, but do it with a bit of sense and some regard for y our speakers.

Setting the 4/16/18 Ohm Switch
It's important that you set your HD 147's rear panel 4/8/16 OHM switch to match the impedance of the cabinets that you are driving. You must match impedance to get the full volume and response, and to avoid overheating and shutting down the power amplifiers.

Sometimes the correct setting of the 4/8/16 OHM switch may not be immediately obvious. While most modern speaker cabinets (Like the Line 6 4x12) will clearly label their jacks with the impedance load that the speakers present to an amplifier, some vintage cabinets don't include impedance labeling. There are, fortunately, some general rules of thumb that you can usually rely on:

The first thing to know is that, due to the magical nature of electricity, the impedance load that a speaker cabinet creates depends on (1) the impedance of each speaker and (2) whether these speakers are hooked up in *series* or *parallel*. Series means that the speakers are wired up to the speaker jack in their cabinet so that electricity coming into

the jack from your HD 147 flows first into one speaker, and then into the next. Parallel means that the speakers are wired so that each has a direct connection to the jack, giving them each a direct connection to the electrical power supplied by your HD 147.

Typically, 2x12 cabinets are loaded with 8 ohm speakers. If they operate in mono, their internal wiring is generally done in parallel for a 4 ohm load. If they have a stereo option, this splits the speakers so that each acts as an 8 ohm load.

- To use the HD 147 with this typical 2x12 cabinet in mono, you'd set the HD 147's 4/8/16 OHM switch to 4 ohms and connect only the HD 147's left/mono output to the single mono input of the cabinet.

- For stereo HD 147 operation with this typical 2x12 cabinet, you'd set the HD 147's 4/8/16 OHM switch to 8 ohms and connect cables from HD 147's left output to the speaker cabinets left input, and from HD 147's right output to the speaker cabinet's right input.

Most 4x12 cabinets are loaded with 16 ohm speakers. When they operate in mono, their internal wiring is generally done in a combination parallel/series configuration that adds up to a 16 ohm load. If they have a stereo option, this configures the speakers left/right so that each side acts as an 8 ohm load.

Line 6 4x12 cabs are loaded with 8 ohm speakers wired for a 4 or 16 ohm load when running stereo, and either 2 or 8 ohms in mono.

If you connect two cabinets that have the same impedance to the two Left jacks of your HD 147 or the two right jacks (but not one each to left and right), that side of the HD 147's power amp will be connected to the speakers in parallel, and the result will be an ohm load that is one half of the impedance of one speaker cabinet alone. For instance, if two 16 ohm 4x12 cabinets are connected to the left outputs (or the right ones) of your HD 147, the impedance of the combined cabinet setup is 8 ohms, and you should set the HD 147 rear panel 4/8/16 OHM switch to this setting.

See the following pages for illustrations of typical setups.

Hooking up your HD 147 in mono with single 4x12
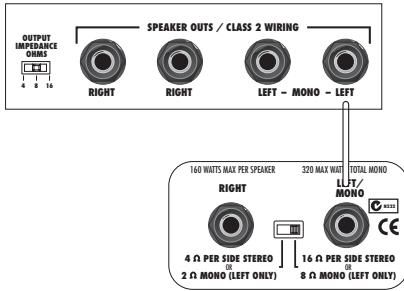
Hooking up your HD 147 in stereo with single 4x12
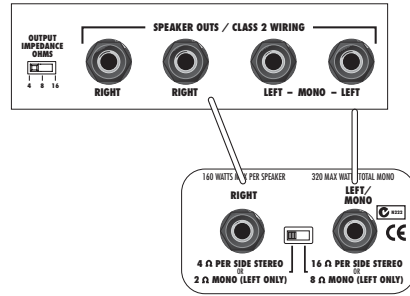
Hooking up your HD 147 in side by side stereo with two 4x12s
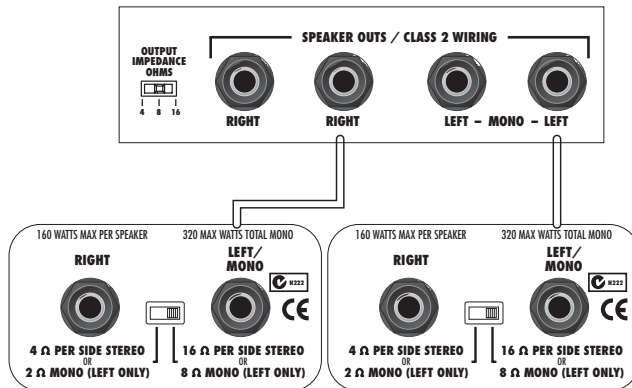
Hooking up your HD 147 in stacked stereo with two 4x12s
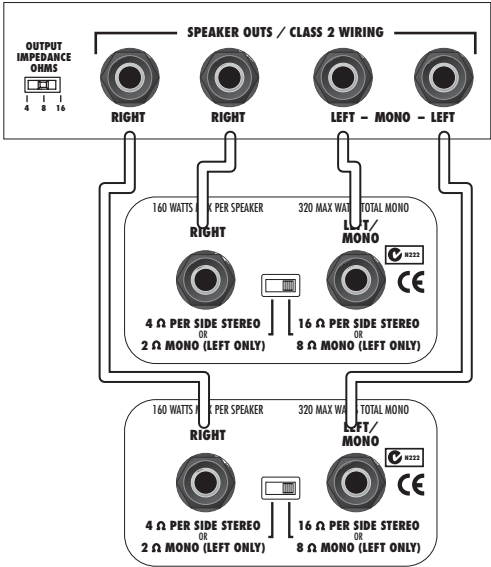
Hooking up your HD 147 to a single 2x12 in stereo.
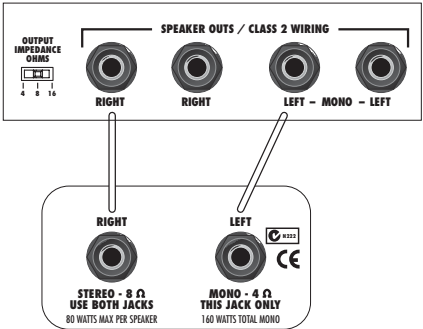
Hooking up your HD 147 in side by side stereo with two 2x12s.
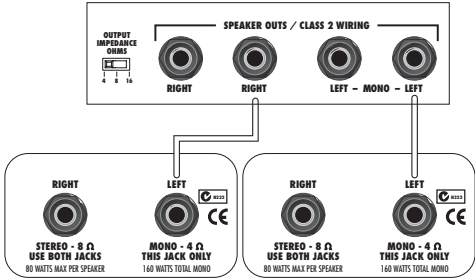
HD 147 through four 4x12s
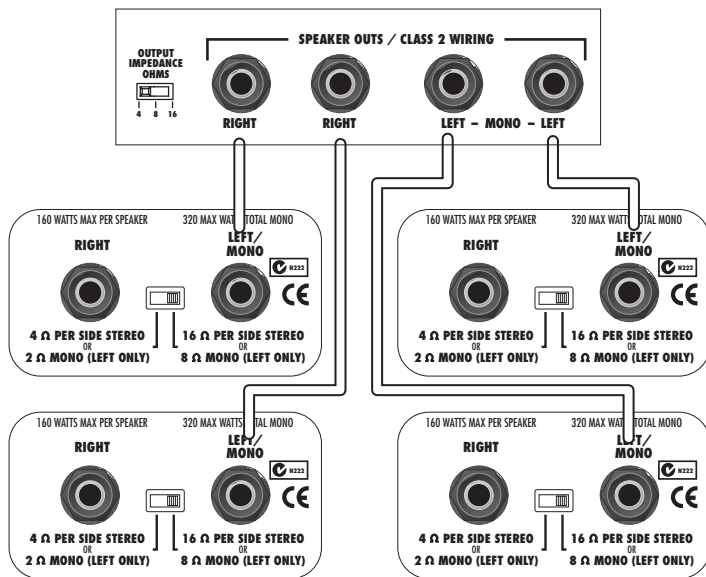
Using Your Direct XLR Outputs

One of the nifty features inside your HD 147 is Line 6's exclusive A.I.R. II technology that enables you to get that great mic'd up sound out of your amplifier without the microphone! Your Direct outputs can be used either in the studio or as a direct feed to the house sound system for a live performance.

The **Master** knob on your HD 147 sets the level for the internal speakers (and any external speakers you connect), without having any effect on your Direct Output level. This is a good thing, for instance, when you're playing live. It means you can set a low volume level for your amp on stage (maybe it's a small venue) while still pumping out full level at the direct outs so the house sound system is getting plenty of juice. And any adjustments you make to your on-stage level during the gig don't send the sound man scrambling to compensate on his end. This is also a good thing if you're recording in the studio, using your amp to monitor with the other band members while your direct out is being recorded. Once again, an appropriately low master volume level that you might want for the amp doesn't force you to have a low level signal going to tape, and adjustments you make to your level don't interfere with the levels in the control room.

HD 147 can send enough direct out level to light up the input meters for +4 dBu pro recording. For live sound systems, as well as many recording setups designed to work with lower levels, this can sometimes be overkill. The **Level Trim** knob on HD 147's rear panel lets you roll back the direct out level and keep your sound guy or lower-level recording system happy.

If you're setting the levels yourself, and want to make sure you don't overdo it, you can follow these basic steps. First, plug the hottest output level guitar you plan to use into your HD 147, switch to your hottest pickup setting, and crank the guitar's output volume (or put it as high as you ever set it). If you plan to change sounds on your HD 147 during the gig, start by selecting the HD 147 sound that seems to have the loudest output level. You can set your **Master** knob on HD 147 low as you do all this so you don't blow yourself out; it won't affect the direct output level. Now, with this guitar and HD 147 setup, play hard (so you're sending maximum volume out those direct outputs) and have someone adjust HD 147's rear panel **Level Trim** knob until a good healthy level is being received by the equipment you're sending sound to. The level shouldn't be so hot that it's causing input distortion or clipping on that receiving equipment. If the receiving equipment has an input level adjustment, you'll probably get your best signal-to-noise ratio by setting it as *low* as possible while setting your HD 147's **Level Trim** as *high* as possible.

THE AMPS & CABS

HD 147's heart is its collection of Amp and Cab Models—resulting from Line 6's meticulous study of a dream collection of vintage and modern amplifiers and cabinets. Each position of HD 147's **Model** knobs calls up a particular Amp/Cab combination, powered by many of the same coveted models that appear in the Line 6 Vetta series amps as well as PODxt.

What's In There

Line 6 Clean
To create this Amp Model, we essentially grafted the preamp and tone stack of a JC-120 (Roland's popular "Jazz Chorus" solid state combo) onto the power amp and transformer of a classic Marshall JTM-45 tube head, thereby giving you the crisp and clear front end typical of a solid state amp, but with a rich, satisfying tube amp-style bite as you turn it up.

Line 6 Super Clean (Red alternate model for "Line 6 Clean")
Forget what you know about how clean or how bright a guitar amplifier can go. Line 6 Super Clean goes farther, adding a *lot* of brightness. While this model is both Sparkley and Clean it has two other fun tricks up its sleeve as well: Setting the Drive knob at max gives a really broken "small amp on 10 about to die" sound. FUN! And the bass knob has an extreme effect when set to minimum— for sweet AM radio sounding tone.

Caution: Because Super Clean adds so much brightness, it generally won't work so well with distortion pedals, since they usually add lots of high frequencies, too. The combination may produce unnatural artifacts—or just rip your head off. Plug an un-distorted guitar in here, though, and we're talking super happy shiny bright.

Line 6 Super Sparkle
You know how all great amps have a certain sweet spot — a particular setting where they sound magical — dripping with tone? Super Sparkle captures that organic vibe with a new twist: its voiced in the clean/low gain realm where everything usually sounds too clinical or too dark. Super Sparkle is an edgy tone that will sparkle and shimmer if you treat her right. So play nice.

Line 6 Mood (Red alternate model for "Line 6 Super Sparkle")

And here we give you a fantasia tone, based on our fondest memories of grunge guitar tones we have known and loved. You can almost here the Seattle rain tapping on a practice room window somewhere.

Line 6 Crunch

While having cousins marry is not such a good idea in real life, in the amp world, it can have a great payoff. Since the design of some early Marshall amps had a lot in common with the Fender Tweed Bassman circuitry, we wondered what it would be like if we took the preamp and tone stack of our JTM-45 and ran it into the power amp and transformer of our '58 Tweed Bassman. Point, click, cut, paste (it would be nice if it were really that easy, huh? We'd sure be able to get more sleep). What we got was *way* happening, as Line 6 Crunch will attest. Great grind and nice punch. A tone that the whole family can enjoy.

Line 6 Spinal Puppet (Red alternate model for "Line 6 Crunch")

The monster truck of tone. Big, powerful, tight and fast. We studied some of the best stock and modded Marshalls in the world to create this hybrid monster that goes *way* past 11. This is all about serious amounts of gain for discerning high gain players.

Line 6 Insane

Imagine running your Boogie Dual Rectifier as a preamp for your Triple Rectifier, and you've got a pretty good picture of just how much sheer gain is involved in Line 6 Insane. It's entirely possible to get completely out of control with this one, and we heartily encourage you to do just that.

Line 6 Purge (Red alternate model for "Line 6 Insane")

We took our model of a Marshall JMP-1 preamp and hot-rodded it. It was hard work sticking in that digital dual overhead cam and hooking up the virtual glasspacks, but when we were done, we had the ultimate shred machine. Look out world, here you come.

Line 6 Smash

Got an axe to grind? Dial up Smash to take it way over the top with an obscene helping of gain. Smash delivers a tight bottom end, and a serious mid range void that'll render Hi-Fi, butt-kicking rhythm tone every time.

Line 6 Big Bottom (Red alternate model for "Line 6 Smash")

Just can seem to get enough bottom end out of your cabinet? Try punishing it with Big Bottom. We crossed a Boogie Triple Rectifier with a Rivera Los Lobottom sub rig and dialed it in for serious disembowelment. But it's not just about the bass. A super wide midrange control and an extra present high midrange maintain articulation and power throughout the tonal range of this amp.

Line 6 Octone
Now here's something we hope you'll really like. What would it be like if you built a tube-based Octave Distortion preamp for a Class A poweramp? Line 6 Octone provides the answer. You'd get an Octave box that tracks better than anything you've ever used, deals with consonant intervals with a degree of panache that just wasn't possible before, and kicks some major rock and roll butt!

Line 6 Agro (Red alternate model for "Line 6 Octone")

An aggressive high gain amp with a unique Mid control that will take you though the entire gamut of tone on one knob. How did we do it? The mid knob for this 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 creates creamy modern high gain amp tones a la Soldano. And when the Mid knob is turned up to Max it's very much reminiscent of that Class A Vox sound. Of course, then there are all the places in between…

Line 6 Treadplate
The original POD had a popular amp model simply called Rectified. It was our best attempt at the time to pay homage to the Mesa Boogie Rectifier series of amplifiers. In addition to the Boogie vibe, that model had some unique qualities that were all its own, and which we've captured here. In a way, Treadplate marks the first time we've actually modeled another Line 6 product! Here is an excerpt from the old POD manual to describe it: "…modeled after a 1994 Mesa Boogie Dual Rectifier Tremoverb. You can use this Amp Model to get that tight, high gain sound used by bands like Dream Theater or Metallica. Boogie made their mark in the late 70's and early 80's by adding master volumes and more gain stages to amps with Fender-style circuitry. You can hear the Fender heritage but with more "punch" in the mids. The Boogie Dual Rectifier's tone controls are post-distortion and, as with the tone sections of most of the amps we based our models on, the individual controls interact with each other and with the Drive."

Criminal based on the Peavey 5150 MkII

This is the alternate, "red light" model at the Line 6 Treadplate spot on the Model knob.

No doubt, Eddie Van Halen will forever be known as one of the premier rock guitarists of all time. His technique and tone inspired legions of young guitar players, a couple of EVH custom guitars and this Peavey amp. Apparently Eddie committed some serious time to tweaking the distortion, tone and control range of this amp until it played and sounded just right. Interesting enough, it goes way beyond the classic "brown sound" that Eddie famously coaxed out of walls of Marshalls, and takes you into some serious rhythmic shredding territory.

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Jazz Clean - based on a Roland JC-120

This Amp Model is modeled after the classic Roland JC-120.

This transistor amp was known for a strident clean sound and built-in stereo chorus. When using the JC-120 model, try cranking up the Treble for a shimmering clean sound that'll cut through just about any mix. It's also perfect for that 80's "new wave" sound (after all, it was Andy Summers' favorite amp with The Police).

You should also try setting all the tone controls at 12 o'clock for a darker jazz tone. It'll give you an essentially flat response, providing a balanced tone across the fretboard for jazz chord melodies or single-line phrasing.

Class A-30 TB – based on a 1967 Vox AC-30 Top Boost

This is the alternate, "red light" model at the Jazz Clean spot on the Model knob.

Music was changing in the early '60s and guitarists were asking for more brilliance & twang. So the Jennings Company, makers of Vox amps, decided to add Treble and Bass controls (and an extra 12AX7 gain stage, incidentally) in addition to the Treble Cut knob it already had (which in actuality was a sliding bandpass filter); this additional circuit became known as Top Boost. On this Amp Model, HD 147's Mid control acts like the original Cut knob on the AC 30.

The AC 30 with Top Boost was the amp made famous by many British invasion bands. Much of the unique character of the Vox sound can be attributed to the Class A circuitry—Class A amps overdrive in a very different way than Class AB. Brian May of Queen, Mike Campbell of Tom Petty's Heartbreakers, and The Edge of U2 have all used classic AC 30s to make their music. Although often played fairly clean, a cranked AC 30 has a great saturated lead tone, a la Brian May on early Queen albums.

Blackface Lux – based on a 1964 Fender Deluxe Reverb

The Holy Grail for many blues, country, and "roots" players has been a blackface Fender Deluxe Reverb. The particular amp we studied for modeling was built in 1964, and is truly one of the finest examples of what a Deluxe Reverb can be.

Most players love a Deluxe when it's turned up to about 7 for a nice gritty sound that cleans up when you back off your guitar's volume knob just a little. Notice how the tone control response changes as this Amp Model's Drive is changed: clean settings are crisp and present, while more driven settings will mellow the high end. This is typical of what you get from a Deluxe and is nicely captured here.

The Deluxe itself has only Bass and Treble controls. The Mid knob of HD 147's Blackface model lets you add some post-Amp Model midrange contouring when you want to expand on the Deluxe Reverb's capabilities for a little more flexibility. And Presence adds, well, Presence. Set the Mid knob to its 12 o'clock position and the Presence knob to 0 for the classic Deluxe sound. Tweaked up right, this tone will cut through and sing.

Fender 1961 Tweed Champ

This is the alternate, "red light" model at the Blackface Lux spot on the Model knob.

Modeled after a 1961 Tweed Champ, this model has a great sound when the Drive is cranked (not bad clean, either). These amps were originally designed to be sold to beginners, but rock and rollers quickly discovered that you could get a great distorted sound at fairly low volume levels. Many of the classic guitar solos of the 50's were recorded through a Champ. The Champ had no tone control, only volume. With your HD 147, it's easy to get a classic Champ tone. Just leave the Bass, Mid and Treble controls parked at 12 o'clock, which means they are "flat," making no contribution to the tone. Set Presence to 0, and it will also be letting the unadorned classic Champ tone through. When you're ready to explore further sonic territory, spin those and work your magic.

Since the Champ's only got one input jack, that's what we plugged into as we burned the midnight oil making our model based on this puppy.

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Double Verb – based on a 1965 Fender Twin Reverb

The classic blackface Fender Twin (in this case, a 1965 Twin) was a real workhorse. Everybody used it, from jazz and country players to serious rockers. I myself remember seeing Johnny Winter at a concert where both he and Rick Derringer—am I dating myself or what?—were using six Twins stacked in a pyramid. Each. We were in the second balcony and it was REALLY loud even all the way back there. The Twin has a lot of tonal flexibility and is at home in a great many different situations. It never gets extremely overdriven and dirty, mostly just louder—a lot louder.

With HD 147's killer spring reverb model, this is a great choice for the classic surf sound. Goose the reverb, crank up the volume, and get ready to party with Annette Funicello and the rest of the gang!

Tweed B-man – based on a 1958 Fender Tweed Bassman

This is the alternate, "red light" model at the Double Verb spot on the Model knob.

The classic '58 Fender Bassman 4x10 combo was the amp that started it all—instant rock and roll tone. Originally a bass guitar amp, the Bassman became a Blues staple for 6-string guitarists thanks to its fat bottom end and the Fender twang on the top.

An interesting thing about the Bassman—and HD 147's Tweed 410 model—is just how interactive the Mid and Treble controls are. The Mid control isn't a bandpass, as in most tone control setups. Instead, it's almost like a second treble control. The two are additive, so if you're running the Mid knob higher than halfway up, you'll find the Treble control might give you more bright than you really want. On the other hand, when you turn the Mid knob down, you'll probably want to boost the Treble.

The Bassman, like many of the amps modeled by HD 147, didn't have a master volume, and you had to really crank it up to get the great tone it delivers at high volume. With HD 147, you can get that kind of tone at a bedroom or studio level—or through your headphones even—by cranking up the Drive knob. Give your best R&B licks a try with Drive set to about 4 or 5.

Plexi Lead 100 - based on "Jumped"1968 Marshall Super Lead

We literally scoured the world for this particular amp, finally finding a great example of a Super Lead languishing (we like to think fate preserved it for us) in Holland. One of the fun things you can do with a Plexi is take a short guitar cable and jumper channel I and channel II (as they're frequently numbered) together for a little extra saturation. Some guys loved this sound so much that they pulled the chassis and permanently wired a jumper into the amp. We modeled the Super Lead this way.

Hendrix used a Super Lead with the 'lay down' transformer unique to the 68 models, and Van Halen's first two records also owed their "brown sound" to a '68 Plexi. To get a nice crunch sound out of a Plexi, you crank all the volume and tone controls to 10. In keeping with our "make-it-sound-a-whole-lot-like-the-original" concept, diming all your knobs with HD 147's Plexi Lead gets you pretty darned near the same thing.

Plexi 45 – based on a 1965 Marshall JTM-45

This is the alternate, "red light" model at the Plexi Lead 100 spot on the Model knob.

When the royal agents that we had dispatched to the UK found this particular amp, we instantly fell in love. The amp even has the original KT-66 tubes in it, still in great shape! It's one of the finest examples of a JTM-45 we've ever heard, and it's a constant battle at Line 6 to see who gets to take it home for the weekend.

Those interested in the genealogy of tone will be interested to note that the JTM-45 marked the beginning of Marshall's transition from a mellower Fender-like tone to the distinctive, bright "crunchy" sound of the later Marshalls.

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Brit J- 800 – based on a 1987 Marshall JCM 800

Turn to this Amp Model to conjure up tones of the coveted JCM 800, one of Marshall's most universally-acclaimed modern amps. This updated version of the Plexi continued Marshall's heritage with added gain and edge for a new generation of rock guitarists. One of the biggest differences here is that the tone controls are located after the preamp tubes, giving them more tone-sculpting effect at high gain settings. Some versions of the JCM 800, by the way, get their distortion by clipping a diode. The amp we modeled uses a tube for distortion.

The JCM 800 is, of course, the metal sound Marshall made famous. And although not many people play Marshalls clean, it is a great tone, so you should also be sure to check out this model with a low Drive setting. Of course, you can always pump up the drive and rage....

Brit J-2000 – based on a Marshall JCM2000

This is the alternate, "red light" model at the Brit J-800 spot on the Model knob.

The JCM2000 captures the modern Marshall tone, by refining the JCM series into a multi-channel power house. Our recreation captures the OD2 channel, with the Deep switch kicked in on a 60W TSL. The JCM200 uses a quartet of ECC83 pre-amp tubes and a pair of EL34 output tubes.

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Connor 50 – based on a Cornford mk50h

The Cornford mk50h is a fine, British-made boutique amplifier that our very own Line 6 UK lads tipped us onto. The Cornford has a fair amount of gain and breaks up like a Marshall Plexi, but retains a certain clarity that is more typical of Vox amplifiers.

One odd thing about the Cornford is the fact that it actually runs its drive channel in series with the Clean channel. This provides for some unique interaction that we captured during our modeling process by sweeping both controls though their range at the same time, and tying all of this to your HD 147's Drive knob. Lower Drive settings give you a tone dominated by the clean channel tonalities. As you turn the knob up past noon, you'll be moving into it more progressive high gain territory.

Brit Silver – based on 1985 Marshall Silver Jubilee

This is the alternate, "red light" model at the Connor 50 spot on the Model knob.

In 1987, to commemorate 25 years in the amp business, Jim Marshall introduced a limited edition collection of tube amps based on the 2203 and 2204 master volume designs. They were very distinctive products, with silver vinyl covering and chrome panels, known simply as the "25/50 Silver Jubilee" Series models. The Silver Jubilee models used a unique diode clipping stage for extra gain and a redesigned tone block to offer much more tonal variation than previous Marshalls.

Guns N' Roses' lead guitarist, Slash, is way into this amp. So much so, in fact, that Marshall reintroduced the 100 watt model as the "Slash Limited Edition Signature Amplifier" in 1996.

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Treadplate – based on a 2001 Mesa Boogie Dual Rectifier

This Amp Model is based on a 2001 Mesa Boogie Dual Rectifier Solo Head.

The Dual Rectifier was part of Boogie's more modern, high gain approach. In contrast to the earlier Boogies, the Dual Rectifier's tone controls have more influence at high gain settings, so you can scoop the mids and increase the bottom end. This is a great model to try if you're looking for the aggressively high gain sound of much of today's modern rock.

Diamond Plate – based on a Mesa Boogie 2001 Triple Rectifier

This is the alternate, "red light" model at the Recto Dual spot on the Model knob.

This model is based on the Channel 3 'Modern' setting of a 2001 Mesa Boogie Triple Rectifier Solo Head. Rock and roll is all about excess, now, innit? If two are good, three have got to be better, especially if you like the spongy feel of sagging rectifier tubes. No need to be bashful. Plug in, dial up some volume, and have some fun.

As with the Dual Rectifier model, we used Channel 3 in its Modern mode, with the rear switches set to Bold and Tube for this.

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Bomber Uber – based on a Bogner Uberschall

Much like the Bogner Extacy, which we're about to meet, the Uberschall dishes up serious tone for high gain players. This is a fabulous boutique amp with a focused high gain tone that'll cut thought the band and soar overhead for days.

The Uberschall has a very unique Presence control that we did our best to model here. Unlike most presence controls that tend to shave off very high frequencies, the Uberschall presence knob messes with the whole recipe. Mids, treble, bass and presence will come in and out, effecting both the pre gain and post gain tonality. A tonal roller coaster ride brought to you by one of the tube amp world's finest designers.

Bomber X-TC – based on a Bogner Extacy

This is the alternate, "red light" model at the Bomber Uber spot on the Model knob.

Reinhold Bogner was good enough to personally select and deliver a Bogner Extacy for use in crafting this model. Reinhold was designing and building amplifiers long before he left Germany in 1989 to move to Los Angeles. Once in the US, he quickly gained the trust of many influential players including Steve Stevens, Dann Huff, Allan Holdsworth, Mike Landau and Steve Vai. They all 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. We hear that Eddie was pleased.

The Extacy covers a wide range of tone, and you'll find that your HD 147's Bomber X-TC model lets you do much the same as you work the Drive knob, as well as your guitar's volume knob. On the top end, this one'll bark like a Plexi, or you can take it down through swampy crunch and finally arrive in the realm of lush clean tone. The Extacy is a really versatile amp from a really great guy, and we're pleased that he helped us model it for your HD 147.

Deity Lead – based on a Diezel VH4

What is it about Deutchland and high gain guitar amplifiers? When we met Peter Diezel, and opened up the VH4 we new we were in the presence of a serious tone fanatic. The VH4 is the Ducati of high performance guitar amplifiers. Meticulous attention to every detail, and enough tone and power to not only take on but seriously destroy any competitor.

Some of the most serious players in the Metal genre have come to depend on their VH4's for tight, focused and perfectly refined tone. The VH4's tone lies somewhere between a Soldano SLO 100 and a Mesa Boogie Dual Rectifier. It is perfect for lead work, and when the drive is brought back to noon, affords some excellent rhythm tones as well. Our model captures channel 4 on this sublime beauty.

Deity's Son – based on a Diezel Herbert

This is the alternate, "red light" model at the Deity spot on the Model knob.

After messing with the VH4 we knew you'd get into another amp from Peter Diezel. Herbert is one of those simple, ingenious designs. It is unique among amps in its ability to achieve an incredibly wide range of tone on a single channel. Your HD 147'smodel is very faithful to the original in tone, but due to a couple extra knobs on the Herbert, we had to make a few choices for you. Our model tackles Channel 3 with the Deep control preset to 2 O'Clock. The original also had a Mid Cut Intensity knob — this is the magic control that affords this amp its serious tonal range. To bring you this same joy, we set Herbert's Mid knob to about 2 o'clock when modeling the tone stack. That allowed us to offer you control of Herbert's unique Mid Cut Intensity with your HD 147's Mid knob. Treble, Bass, Presence and Gain all work as the original.

The Cabinets

Here's the list of speaker Cabinet Models you've got in HD 147:

Cab Size	The model was created through careful study of this actual cabinet:	Model Knob Position
0	Cabinet Modeling Bypass	Line 6 Clean
2x2	2 x 2" Fender Mini Twin	Line 6 Super Sparkle
1x8	1 x 8" Fender '61 Champ	Line 6 Crunch
1x12	1 x 12" Fender '64 Deluxe	Line 6 Insane
2x12	2 x 12" Roland JC-120	Line 6 Smash
2x12	2 x 12" Vox '67 AC-30	Line 6 Octone
2x12	2 x 12" Fender '65 Twin	Line 6 Treadplate
4x10	4 x 10" Fender '58 Bassman	Jazz Clean
4x12	4 x 12" Marshall '67 with Greenbacks 20's	Blackface Lux
4x12	4 x 12" Marshall '68 with Greenbacks 25's	Double Verb
4x12	4 x 12" Marshall with Celestion T75's	Plexi Lead 100
4x12	4 x 12" Marshall with Celestion V30's	Brit J-800
4X12	4 x 12" Marshall with 2 V30's & 2 T75's	Connor 50
4X12	4 x 12" Mesa Boogie with Extended Low End	Treadplate
4X12	4 x 12" Line 6 Custom	Bomber Uber
4x12	4 x 12" Mesa Boogie with Celestion V30's	Deity Lead

As described in Chapter 2, you can select a Cab Model by pressing and holding the **Model** knob. A green light will come on in the ring around the knob to show you what cab is currently selected. Turning the knob *while still pressing and holding it* will change the cabinet selection. The cabinets are organized from small to large. It all starts out small with the cab at the "Line 6 Super Sparkle" position and gets bigger as you go clockwise to the "Deity Lead" spot. Turn the knob to "Line 6 Clean" to disable the cab modeling. As you select Amp Models via the **Model** knob, HD 147 is loading an appropriate cab for each amp in the background so you don't have to. See **Creating Amp Defaults** on page 2•7 to learn how to change which cab will load with a particular Amp Model.

THE EFFECTS

About the Delay and Modulation Effects

Welcome to the Effects section of our manual. Against our accountant's better judgment, we took the liberty of adapting a bunch of great stomp box models from Line 6's MM4 Modulation Modeler and DL4 Delay Modeler pedals, and stuffed them all into your HD 147.

Now you may be wondering, how it is that we were able to take all of the controls associated with cool effects like a Flanger or an Analog Delay and distill them down to a single Delay or Mod control? Well, we asked around and discovered that a lot of people like to run their effects in similar ways. For example, it's common when setting up a slap echo to turn the feedback down, while long delay times usually are accompanied by increased feedback. Similarly, with modulation its generally accepted that as the rate is increased, the depth needs to decrease in order for the perceived intensity of the effect to remain the same.

We used this knowledge to make the Delay and Mod knobs 'smart,' with each controlling a number of parameters as needed to give you a full range of usable sounds via just one control. Then, as described on page 2•5 and page 2•5, we threw in the ability to further fine-tune Delay Feedback as well as various aspects of the Mod effects. The result is great sounding effects that are also really easy to use!

So, why don't we learn about each of the effects in detail...

Delays

As detailed on page 2•5, you've got these controls for Delay:

Delay Select Button chooses from the Delay Models or turns Delay off

Delay Knob gives you more/less of the selected delay effect

Tap Tempo Button sets the delay time when you tap it

Or press and hold **Tap Tempo** and turn the **Delay Knob** to set delay time

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For extra tweakability, press and hold the **Delay Select Button** and turn the **Delay Knob** to fine-tune just the Delay Feedback

Tube Echo - Maestro EP-1 Echoplex

The classic 1963 Maestro EP-1 was the first of a series of "Echoplex" designs distributed by the company, and made by Harris-Teller in Chicago. As touted in a Maestro advertisement, the Echoplex's "...special effects range all the way from a controlled high speed reverberation to a full, throbbing echo"!

The main feature of the Echoplex design is a special cartridge of looped 1/4-inch audio tape that wraps past separate record and playback heads. The position of the playback head can be moved to adjust the delay time from 60 to 650 milliseconds.

If you listen closely, you can hear some wow and flutter in the delay sound of this model, just like you'd get on the wonderfully organic-sounding original.

Tape Echo - Roland RE-101 Space Echo

Long before Boss pedals, the Space Echo was Roland's first venture into the world of effects processing. Rather than the single movable playback head of the Echoplex, this machine has multiple stationary heads that can all play back at the same time to create its signature multi-tap delay effects. The Tape Echo in your HD 147 recreates this classic sound.

Analog - Electro-Harmonix Deluxe Memory Man

This model is based on the Electro-Harmonix Deluxe Memory Man and its classic analog echo "bucket brigade" electronics. This classic effect also has a chorus circuit that is applied to the echoes only, leaving the direct sound unaffected. The resulting warm, distorted tone and swimming echoes of the Memory Man appealed to many guitarists, and were an essential part of the guitar sounds for the first U2 album.

4 • 3

Digital

Straight up mono digital delay here, for basic echo-cho-cho-cho.

Ping-Pong

Ping pong Delay bounces the delays all around the stereo field. Our Ping Pong delay has two modes: when the Delay Knob is turned counter-clockwise past noon, your delay time is set to quarter notes on the left and straight eighth notes on the right for a more traditional stereo ping pong delay. Turning the delay Knob past noon gives you quarter notes on the left and dotted-eighths on the right for a classic U2 Edge sound.

Sweep Echo

Sweep Echo is a Line 6 original. It first appeared on our DL4 Delay Modeler and has turned out to be a special favorite amongst the many DL4 users that we've spoken to. It's kind of like a garden variety digital delay line with the unique addition of a sweeping resonant filter applied to the delayed signal. The Filter's Sweep rate is tied to Tap Tempo and will complete a cycle every two bars. "Warp speed, Scotty!"

Modulations

As detailed on page 2•5, you've got these controls for Mod:

> **Mod Select Button** chooses from the Mod Models or turns Mod off
>
> **Mod Knob** gives you more/less of the selected mod effect
>
> For extra tweakability, press and hold the **Mod Select Button** and turn the **Mod Knob** to fine-tune a **Modulation 2nd Function.**

Tremolo
This is based on the smooth, even-sounding tremolo circuits of blackface Fender amps like the '64 Deluxe and '65 Twin Reverb. They have a light bulb and a photo-resistor: when the light gets brighter, the tremolo gets louder. Adjusting the **Mod Knob** will change the speed and depth of the Tremolo from a smooth Fender sound to Ginsu knife-style chopping. The **Mod 2nd Function** adjusts the Depth.

Chorus
Here's big, beefy, extra wide, stereo sine wave modulated-chorus. This custom bad boy take cues from the greats like the Roland CE-1 and the TC Electronic SCF. Adjusting the **Mod knob** will affect the amount of Chorus, and scale the depth appropriately. Use the **Mod 2nd function** to adjust the Chorus Rate independently.

Flanger - A/DA Flanger
This is our model of the A/DA Flanger. Introduced in 1977, this stomp box's 35-to-1 sweep range and built-in compressor work together with the tone circuitry to create a signature jet-like sweep. It can be very dramatic with its unique wave shape and ability to create almost ring modulator-like effects at extreme settings. The **Mod knob** changes the amount of Flange and scales depth and feedback though the range of subtle to extreme. Use the **Mod 2nd function** to adjust the Modulation Rate independently.

Phaser - MXR Phase 90

The unassuming metal box pictured here is the phaser that changed the world—the MXR Phase 90. The Phase 90 is relatively subtle compared to other phasers, and when you use it, it becomes part of the overall guitar tone rather than trying to grab the spotlight all to itself. Its lush, organic, and groovy swirl can be heard all over the first two Van Halen albums, as well as Jimmy Page's work on Physical Graffiti. The **Mod knob** adjusts the rate. Use the **MOD 2nd function** to adjust the Feedback independently.

U-Vibe - Uni-Vibe

The now-legendary Uni-Vibe was put on the map in 1969 by Jimi Hendrix. Essentially a four-stage phase shifter, the Uni-Vibe is best known for its watery texture and sultry tones. One listen to "Machine Gun" and you'll know what we mean. Adjusting the **Mod knob** changes the rate. Use the **MOD 2nd function** to adjust the Depth independently.

Rotary - Leslie 145

Fine furniture and cool tones—the Leslie 145 gave you both at once. This tube-driven behemoth (you definitely *don't* want to try picking one up on your own) features a belt-drive rotating high frequency horn along with a downwards facing 15-inch speaker that had a segmented drum spinning over it to disperse the sound. It was originally designed to be used with electric organs like the Hammond B3, but once guitarists (and even vocalists!) heard it, they just had to get in on the rotate-o-rama. The Leslie's sole control is a fast/slow switch labeled Tremolo/Chorale. Setting the **Mod knob** below 12 O'Clock selects the slow setting, above noon, the fast. The **2nd function** adjusts the Tone.

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.

USING YOUR FEET

FBV Class Foot Controllers

The optional FBV series foot controllers give you Wah and Volume pedal control plus the ability to name, store and recall thirty-six HD 147 Channel Memories.

The FBV series of foot controllers includes the original FBV—with its extensive effects controls for the Line 6 Vetta amps—and the more-compact FBV Shortboard, which includes all the controls needed for the HD 147. The Shortboard comes with a sticker that re-labels some of the controls that are used for non-HD 147 functions on other Line 6 products. We'll assume you've got that in place as we describe the Shortboard's functions here.

Note that the Line 6 Floor Board and FB4 foot controllers will not work with HD 147.

Connecting an FBV

Your FBV comes with an included RJ-45 cable. Connect this cable between the rear panel of the HD 147 and the rear panel of the FBV. The cable supplies power as well as communication, so there's no separate power supply required for the pedal.

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**.

• "Category 5" refers to a 1 to 5 grading system for cable quality, with 5 being the highest quality. Get the good one.

• "10 Base-T" is a kind of computer network that uses these same cables.

• "RJ-45" is what you call the connectors on the ends of the cable.

If you're unsure if you've got the right thing, note that RJ-45 connectors basically look like a wide version of standard US telephone line connectors, with eight contacts instead of four.

So What Do All These Buttons and Pedals Do?

5 • 2
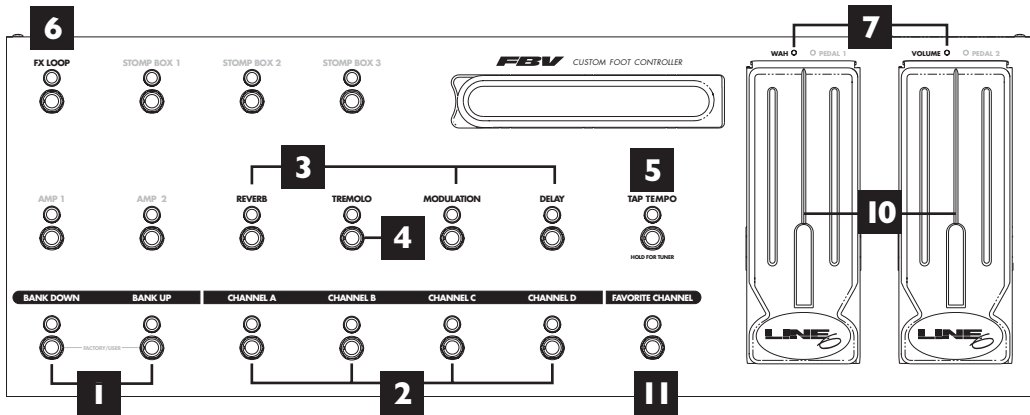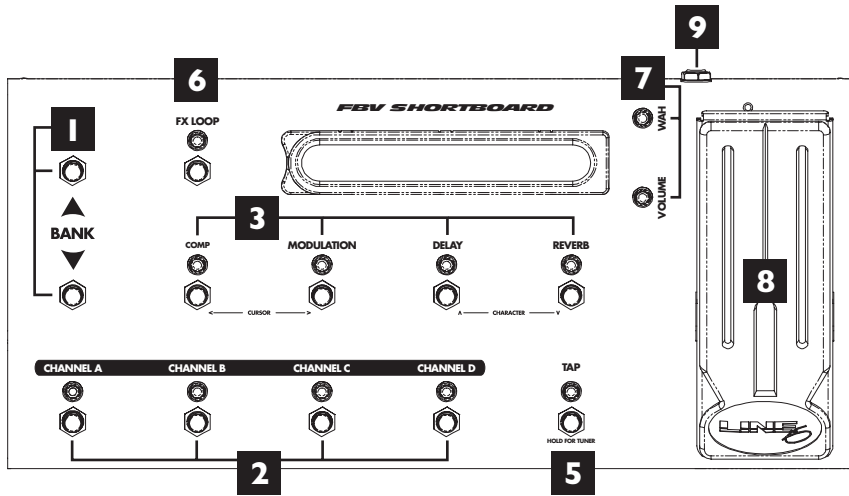
1. **Bank Up - Bank Down:** Use these two switches to choose any of the 9 Banks of your HD 147's Channel Memories. Bank 1 is the same four memories you get from the front panel **A, B, C, D Buttons** when no FBV is connected.

2. **Channel A, B, C & D:** Select from the four Channel Memories in the current Bank.

3. **COMP/MOD/DELAY/REVERB:** You guessed it! These switch the HD 147 effects COMP, MOD, DELAY and REVERB on and off kinda like they were stomp boxes on a pedal board. *Note: FBV Shortboard includes a sticker labeled "COMP" to place over the STOMP graphic on the pedal.*

4. **TREMOLO (FBV only):** The Tremolo button on the FBV will turn HD 147's Compressor on/off. Contact our Customer Service department if you'd like a handy dandy sticker to re-label your FBV.

5. **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.

6. **FX Loop:** Turns HD 147's Effects Loop on or off.

7. **Wah and Volume Lights:** These light to show that a pedal is ready to control Wah or Volume. The FBV's Pedal 1 and Pedal 2 lights are not used with the HD 147.

8. **FBV Shortboard Pedal:** Press the pedal fully forward to click the toe-switch, switching the pedal to control 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.

9. **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.

10. **FBV Pedals:** Press a pedal forward to click the toe-switch, turning the pedal on/off.

11. **Favorite Channel (FBV only):** Recalls a channel of your choice no matter what bank you are currently using. To make a channel your favorite, select that channel, then press and hold the favorite switch until the display shows **"SAVING"**—that's it!

    Note: Any switches not being used by your HD 147 do send MIDI messages and can be used to control other devices. See the MIDI Appendix for details.

Saving and Naming with an FBV

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.

1. **Save:** Step on the **FX LOOP** switch until **"NAME EDIT"** is displayed.

2. **FBV SHORTBOARD users - Name:** The Shortboard's **COMP** and **MOD** switches (labeled **Cursor** in small text) select one of the characters of the channel name so you can edit it. The **DELAY** and **REVERB** switches (labeled **Character** in small text) choose from the available letters, numbers and symbols. Once you've got a name you're happy with, jump ahead to step 3.

2. **FBV Users - Name:** The **REVERB** and **TREMOLO** switches select which character of the channel name you would like to edit. The **MODULATION** and **DELAY** switches choose from the available letters, numbers and symbols. Once you've got a name you're happy with...

3. **Pick a Bank: Bank Up** and **Bank Down** switches pick a Bank you'd like to save to.

4. **Complete the Save:** 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!

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APPENDIX A: AMP MODELS

#	Amp Model	Based On	Cab Model	Mic	Vol Pre/Post	MIDI CC
1a	Line 6 Clean	Line 6 21st Century Clean	No Cab	SM-57 Off Axis	Pre	0
1b	Line6 Super Clean	Line6 Super Clean	No Cab	SM-57 Off Axis	Pre	16
2a	Line 6 Super Sparkle	Line 6 Super Sparkle	No Cab	SM-57 Off Axis	Pre	1
2b	Line 6 Mood	Line 6 Mood	No Cab	SM-57 Off Axis	Pre	17
3a	Line 6 Crunch	Line 6 Crunch	No Cab	SM-57 Off Axis	Pre	2
3b	Line 6 Spinal Puppet	Line 6 Spinal Puppet	No Cab	SM-57 Off Axis	Post	18
4a	Line 6 Insane	Line 6 Insane	No Cab	SM-57 Off Axis	Post	3
4b	Line 6 Purge	Line 6 Purge	No Cab	SM-57 Off Axis	Post	19
5a	Line 6 Smash	Line 6 Smash	No Cab	SM-57 Off Axis	Post	4
5b	Line 6 Big Bottom	Line 6 Big Bottom	No Cab	SM-57 Off Axis	Post	20
6a	Line 6 Octone	Line 6 Octone	No Cab	SM-57 Off Axis	Post	5
6b	Line 6 Agro	Line 6 Agro	No Cab	SM-57 Off Axis	Post	21
7a	Line 6 Treadplate	Line 6 Treadplate	No Cab	SM-57 Off Axis	Post	6
7b	Criminal	'02 Peavey 5150 Mk II	No Cab	SM-57 Off Axis	Post	22
8a	Jazz Clean	'87 Roland JC-120	2x12 Jazz	SM-57 Off Axis	Pre	7
8b	Class A-30 TB	'63 Vox AC 30 with Top Boost	2x12 Class A	SM-57 Off Axis	Pre	23
9a	Blackface Lux	'64 Fender Deluxe	1x12 Blackface	SM-57 Off Axis	Pre	8
9b	Tiny Tweed	'61 Fender Champ	1x8 Tweed	SM-57 Off Axis	Pre	24
10a	Double Verb	'65 Blackface Fender Twin	2x12 Blackface	SM-57 Off Axis	Pre	9
10b	Tweed B-Man	'58 Fender Bassman	4x10 Tweed	SM-57 Off Axis	Pre	25
11a	Plexi Lead 100	'68 Marshall 'Plexi' Super Lead	No Cab	SM-57 Off Axis	Post	10
11b	Plexi 45	'65 Marshall JTM-45	No Cab	SM-57 Off Axis	Pre	26
12a	Brit J-800	'90 Marshall JCM-800	No Cab	SM-57 Off Axis	Post	11
12b	Brit J-2000	'00 Marshall TSL60	No Cab	SM-57 Off Axis	Post	27
13a	Connor 50	'02 Cornford mk50h	No Cab	SM-57 Off Axis	Post	12
13b	Brit Silver	'85 Marshall Silver Jubilee	No Cab	SM-57 Off Axis	Post	28
14a	Treadplate	'01 Mesa Boogie Dual Rectifier	No Cab	SM-57 Off Axis	Post	13
14b	Diamond Plate	'02 Mesa Boogie Triple Rectifier	No Cab	SM-57 Off Axis	Post	29
15a	Bomber Uber	Bogner Uberschall	No Cab	SM-57 Off Axis	Post	14
15b	Bomber X-TC	Bogner Extacy	No Cab	SM-57 Off Axis	Post	30
16a	Deity Lead	Diezel VH4	No Cab	SM-57 Off Axis	Post	15
16b	Deity's Son	Diezel Herbert	No Cab	SM-57 On Axis	Post	31

APPENDIX B: CABINET MODELS

#	Cab Model	Based On	MIDI CC
1	No Cab	Cabinet Modeling Bypass	0
2	2x2 Mini	2 x 2'' Fender Mini Twin	1
3	1x8 Tweed	1 x 8'' Fender '61 Champ	2
4	1x12 Blackface	1 x 12" Fender '64 Deluxe	3
5	2x12 Jazz	2 x 12" Roland JC-120	4
6	2x12 Class A	2 x 12" Vox '67 AC-30	5
7	2x12 Blackface	2 x 12" Fender '65 Twin	6
8	4x10 Tweed	4 x 10" Fender '58 Bassman	7
9	4x12 Green 20's	4 x 12" Marshall '67 with Greenbacks 20's	8
10	4x12 Green 25's	4 x 12" Marshall '68 with Greenbacks 25's	9
11	4x12 Celest T75	4 x 12" Marshall with Celestion T75's	10
12	4x12 Celest V30	4 x 12" Marshall with Celestion V30's	11
13	4X12 X-Load	4 x 12" Marshall with 2 V30's & 2 T75's	12
14	4X12 Big Bottom	4 x 12" Mesa Boogie with Extended Low End	13
15	4X12 Custom	4 x 12" Line 6 Custom	14
16	4x12 Treadplate	4 x 12" Mesa Boogie with Celestion V30's	15

APPENDIX C: MIDI

MIDI Channel

HD 147 always communicates on MIDI Channel 1.

MIDI Program Changes

MIDI Program Change Messages 0-36 can be used to select HD 147's Channel Memories or Manual Mode, and are sent by HD 147 to control MIDI effects, etc.:

MIDI Program Change	HD 147 Channel Memory	MIDI Program Change	HD 147 Channel Memory
0	Manual Mode	19	5C
1	1A	20	5D
2	1B	21	6A
3	1C	22	6B
4	1D	23	6C
5	2A	24	6D
6	2B	25	7A
7	2C	26	7B
8	2D	27	7C
9	3A	28	7D
10	3B	29	8A
11	3C	30	8B
12	3D	31	8C
13	4A	32	8D
14	4B	33	9A
15	4C	34	9B
16	4D	35	9C
17	5A	36	9D
18	5B	37	Tuner

Notes:
MIDI PC 0 puts the HD 147 in Manual mode. (See Chapter 2 for a description of Manual Mode).
MIDI PC37 toggles tuner mode on and off. This is only useful if you have a FBV series controller attached to your HD 147.

MIDI Sysex (Memory Dumps)

There are 3 special hidden functions on the Flextone III that will transmit a Sysex message that can be recorded by a MIDI application, or sent to another Flextone III amplifier.

1. Presets & Amp Setups – To transmit all of your custom presets and Amp Defaults: press and hold the **Tap Tempo**, **Comp** & **Mod Select** buttons while powering up the amp. Connect the MIDI out of the source amp to the MIDI In of your computer or another amp. (If you are connecting to another HD 147, you can power up the target amp normally.) Press the **Delay Select** button to send the message.

2. The Whole Enchilada – To transmit the entire memory of the amplifier including your custom presets, amp setups, and DSP software, (the brains behind the operation): press and hold the **Tap Tempo, Gate** & **Mod Select** buttons while powering up the amp. Connect the MIDI out of the source amp to the MIDI In of your computer or another amp. (If you are connecting to another HD 147, you can power up the target amp normally.) Press the **Mod Select** button to send the message.

3. The Edit Buffer – To transmit the current state of the amp, press and hold the **Tap Tempo** and any of the **A**, **B**, **C** or **D** buttons.

APPENDIX D: MIDI CONTINUOUS CONTROL

Amp Parameter	MIDI		MIDI CC Range			Notes
	TX	RX	CC#	Min	Max	
Amp Settings						
Amp Model Select	√	√	12	0	31	Loads Amp Model without Amp Model Defaults. Amp Models list gives CC values.
Amp Select		√	11	0	31	Loads Amp with Amp Defaults. Amp Models list gives CC values.
Drive	√	√	13	0	127	
Bass	√	√	14	0	127	
Mid	√	√	15	0	127	
Treble	√	√	16	0	127	
Presence	√	√	21	0	127	
Channel Volume	√	√	17	0	127	
Reverb Level	√	√	18	0	127	
A.I.R. Settings						
Cabinet Model	√	√	71	0	15	Cab Model list gives CC numbers.
A.I.R. II Model		√	70	0	127	Range = 0~6. See Note 1
Compressor						
Compression Gain		√	5	0	127	0 to +31dB
Compression Threshold	√	√	9	0	127	-63dB to 0dB
Comp Enable	√	√	26	0	127	0-63=Off, 64-127=On
Noise Gate						
Gate Threshold	√	√	23	0	96	0 to -96dB
Gate Decay Time		√	24	0	127	0=.1msecs; 127=2000msecs
Noise Gate Enable	√	√	22	0	127	0-63=Off, 64-127=On
Modulation						
Modulation Model	√	√	58	0	5	See note 2
Mod Tweak		√	3	0	127	Same as adjusting the Mod knob
Mod Param 1 (Speed)		√	29	0	127	Mod Speed
Mod Param 1 Dbl Precision		√	61	0	127	Mod Speed, Double Precision
Mod Param 1 Note value		√	51	1	13	See note 3
Mod Param 2		√	52	0	127	See note 4
Mod Param 3		√	53	0	127	See note 4
Mod Param 4		√	54	0	127	See note 4
Mod Volume/Mix		√	56	0	127	0 to 100%
Mod Pre/Post		√	57	0	127	0-63=Pre, 64-127=Post
Mod Enable	√	√	50	0	127	0-63=Off, 64-127=On

Note 1 - A.I.R. II Models: 0=A.I.R. II Off, 1=Shure SM 57on axis, 2=Shure SM 57off axis, 3=MD 421 on axis, 4=MD421 off axis, 5=U-67 on axis, 6= U-67 off axis

Note 2 - Modulation Models: 0= Tremolo, 1= Chorus, 2= Flanger, 3= Phaser, 4= U-Vibe, 5= Rotary

Note 3 - Note Values: 0 = Note Off, 1 = Whole, 2=Dotted Half, 3 =Half, 4=Half Triplet, 5=Dotted Quarter, 6 =Quarter, 7 =Quarter Triplet, 8 =Dotted Eighth, 9 =Eighth, 10 =Eighth Triplet, 11 =Dotted Sixteenth, 12=Sixteenth, 13=Sixteenth Triplet

Note 4 - Modulation Parameters: Some Mod models have unique parameters. All use P1(parameter) for Speed. For Tremolo P2= Waveform; Chorus P2= Depth, P3= Bass, P4= Treble; Flanger P2= Depth, P3= Feedback, P4= Manual; Phaser P2= Feedback; U-Vibe P2= Depth; Rotary P2= Tone.

Appendix D: MIDI Continuous Control

Amp Parameter	MIDI		MIDI CC Range			Notes
	TX	RX	CC#	Min	Max	
Delay						
Delay Model	√	√	88	0	5	See Note 5
Delay Tweak		√	2	0	127	Same as adjusting the Delay knob
Delay Param 1 (Time)		√	30	0	127	Delay time
Delay Param 1 Dbl Prec		√	62	0	127	Delay time, double-precision
Delay Param 1 Note value		√	31	1	13	See note 3
Delay Param 2 (Feedback)		√	33	0	127	See note 6
Delay Param 3		√	35	0	127	See note 6
Delay Param 4		√	85	0	127	See note 6
Delay Volume/Mix		√	34	0	127	0 to 100%
Delay Pre/Post		√	87	0	127	0-63=Pre, 64-127=Post
Delay Enable	√	√	28	0	127	0-63=Off, 64-127=On
Tempo Settings						
Tap Tempo MSB	√	√	89	0	127	30.0-960.0 BPM
Tap Tempo LSB	√	√	90	0	127	
Tap	√	√	64	0	127	64-127= a Tap
Reverb						
Reverb Enable	√	√	36	0	127	0-63=Off, 64-127=On
Reverb Model		√	37	0	15	Range = 0~15, see note 7
Reverb Decay		√	38	0	127	0.1 to 9.0sec
Reverb Pre-Delay		√	40	0	127	0 to 100ms
Reverb Tone		√	39	0	127	0 to 100%
Performance Controllers						
FX Loop Enable	√	√	107	0	127	0-63=Off, 64-127=On
Tuner Enable	√	√	69	0	127	0-63=Off, 64-127=On
Wah Enable	√	√	43	0	127	0-63=Off, 64-127=On
Wah Position	√	√	4	0	127	
Vol Pedal Position	√	√	7	0	127	
Volume PRE/POST	√	√	47	0	127	0~63 = Pre, 64~127 = Post
FBV Series Foot Controllers						
(FBV) Stomp Box 1	√		25	0	127	0-63=Off, 64-127=On
(FBV) Stomp Box 2	√		109	0	127	0-63=Off, 64-127=On
(FBV) Stomp Box 3	√		110	0	127	0-63=Off, 64-127=On
(FBV) Amp 1	√		111	0	127	0-63=Off, 64-127=On
(FBV) Amp 2	√		112	0	127	0-63=Off, 64-127=On
(FBV) Pitch/Tremolo	√		113	0	127	0-63=Off, 64-127=On
(FBV) Modulation	√		50	0	127	0-63=Off, 64-127=On
(FBV) Delay	√		28	0	127	0-63=Off, 64-127=On
(FBV) Reverb	√		36	0	127	0-63=Off, 64-127=On
(FBV) Tap	√		64	0	127	TX127

Note 5 - Delay Models: 0= Tube Echo, 1=Tape Echo, 2=Analog, 3=Digital, 4=Ping Pong, 5=Sweep Echo
Note 6 - Delay Parameters: All use P1 for Delay Time, P2 for Feedback;Tube Echo P3=Flutter, P4= Drive;Tape Echo P3= Heads, P4= Flutter; Analog & Digital P3= Bass, P4= Treble; Ping Pong P3= Offset, P4= Spread; Sweep Echo P3= Sweep Rate, P4= Sweep Depth **Note 7- Reverb Models:** 0= Deluxe Spring, 1= Twin Spring, 2= King Spring, 3= Small Room 1, 4= Tiled Room 5= Bright Room 1, 6= Dark Hall 1, 7= Medium Hall, 8= Really Large Hall, 9= Rich Chamber 1, 10= Rich Chamber 2, 11= Cavernous Chamber, 12= Slap Plate 1, 13= Plate, 14= Large Plate 1

APPENDIX E: CUSTOMER SERVICE

Before contacting the Line 6 Customer Service team, please take the time to look through this publication to see if it can answer your questions. Additional helpful information is on the Support page of the Line 6 web site (www.line6.com), including the searchable FAQTRAQ system which is often the fastest and easiest way to go answers.

Need to talk to an actual human on the Line 6 Customer Service team by phone? Have your serial number handy and take some notes for yourself before you call, so you remember everything you want to ask about. In the USA or Canada, you can contact Line 6 at (818) 575-3600, 8AM to 5PM Monday through Friday (Pacific Time). Outside the USA and Canada, please contact your distributor directly to arrange service. The list of Line 6 distributors is available on the Internet at www.line6.com.

To obtain factory service:
If a member of the Line 6 Customer Service Team determines that your HD 147 needs to be sent to Line 6 for service, you will be given a return authorization (RA) number. Products returned without an RA number will be returned to you at your sole expense. Pack the product in its original shipping carton and attach a description of the problem along with your name and a phone number where Line 6 can contact you if necessary. Ship the product insured and freight prepaid to Line 6 Customer Service, 6033 De Soto Avenue, Woodland Hills, CA 91367.

APPENDIX F: WARRANTY INFORMATION

LINE 6 LIMITED WARRANTY INFORMATION

Sending in your registration card allows us to register key information so that we may handle problems faster and inform you of advance information, upgrades and other news. Thanks in advance for filling out your registration card and sending it to us. And good luck in your music!

Line 6, Inc. (hereinafter "Line 6") warrants that your new Line 6 product, when purchased at an authorized Line 6 dealer in the United States of America ("USA") or Canada, shall be free of defects in materials and workmanship for a period of one (1) year from the original date of purchase. Please contact your dealer for information on warranty and service outside of the USA and Canada.

During the warranty period, Line 6 shall, at its sole option, either repair or replace any product that proves to be defective upon inspection by Line 6.

Line 6 reserves the right to update any unit returned for repair and to change or improve the design of the product at any time without notice. Line 6 reserves the right to use reconditioned parts and assemblies as warranty replacements for authorized repairs.

This warranty is extended to the original retail purchaser. This warranty can be transferred to anyone who may subsequently purchase this product provided that such transfer is made within the applicable warranty period and Line 6 is provided with all of the following items: (i) all warranty registration information (as set forth on the registration card) for the new owner, (ii) proof of the transfer within thirty (30) days of the transfer purchase, and (iii) a photocopy of the original sales receipt. Warranty coverage shall be determined by Line 6 in its sole discretion.

This is your sole warranty. Line 6 does not authorize any third party, including any dealer or sales representative, to assume any liability on behalf of Line 6 or to make any warranty for Line 6.

Line 6 may, at it's option, require proof of original purchase date in the form of a dated copy of original authorized dealer's invoice or sales receipt.

Service and repairs of Line 6 products are to be performed only at the Line 6 factory or a Line 6 authorized service center. Line 6 may require advanced authorization of repairs to authorized service centers. Unauthorized service, repair or modification will void this warranty.

DISCLAIMER AND LIMITATION OF WARRANTY

THE FOREGOING WARRANTY IS THE ONLY WARRANTY GIVEN BY LINE 6 AND IS IN LIEU OF ALL OTHER WARRANTIES. ALL IMPLIED WARRANTIES, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR ANY PARTICULAR PURPOSE, EXCEEDING THE SPECIFIC PROVISIONS OF THIS WARRANTY ARE HEREBY DISCLAIMED AND EXCLUDED FROM THIS WARRANTY. UPON EXPIRATION OF THE APPLICABLE EXPRESS WARRANTY PERIOD (1 YEAR), LINE 6 SHALL HAVE NO FURTHER WARRANTY OBLIGATION OF ANY KIND, EXPRESS OR IMPLIED. LINE 6 SHALL IN NO EVENT BE LIABLE FOR ANY SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES SUFFERED BY THE PURCHASER OR ANY THIRD PARTY, INCLUDING WITHOUT LIMITATION, DAMAGES FOR LOSS OF PROFITS OR BUSINESS, OR DAMAGES RESULTING FROM USE OR PERFORMANCE OF THE PRODUCT, WHETHER IN CONTRACT OR IN TORT. LINE 6 SHALL NOT BE LIABLE FOR ANY EXPENSES, CLAIMS, OR SUITS ARISING OUT OF OR RELATING TO ANY OF THE FOREGOING. Some states do not allow the exclusion or limitation of implied warranties so some of the above limitations and exclusions may not apply to you. This warranty gives you specific legal rights, and you may also have other rights, which vary, from state to state. This warranty only applies to products sold and used in the USA and Canada. Line 6 shall not be liable for damages or loss resulting from the negligent or intentional acts of the shipper or its contracted affiliates. You should contact the shipper for proper claims procedures in the event of damage or loss resulting from shipment.