



# BULLET® 15 DSP

(This is the model name for warranty claims)

p/n 2267700020 (120V)

# SERVICE MANUAL



## CONTENTS:

<a href="#">Notices</a> .....	2
<a href="#">Specifications</a> .....	3
<a href="#">Service Notes</a> .....	4
<a href="#">Circuit Description</a> .....	5
Parts Lists:	
<a href="#">PCB Assembly</a> .....	6
<a href="#">uDSP Assembly</a> .....	8
<a href="#">Chassis Assembly</a> .....	8
<a href="#">Cabinet Assembly</a> .....	9
<a href="#">End Item Assembly</a> .....	9
<a href="#">Service Diagrams</a> .....	10



# BULLET® 15 DSP

(This is the model name for warranty claims)

June, 2002

## IMPORTANT NOTICE

Copyright © 2002 FMIC. All rights reserved. All information contained herein is CONFIDENTIAL and PROPRIETARY and is the property of Fender® Musical Instruments Corporation. It is not to be sold or assigned to another party and is disclosed solely for use by Fender Authorized Service Centers for purposes of product service and maintenance. All information is not to be disclosed to others without the expressed permission of Fender® Musical Instruments Corporation. All

specifications are subject to change without notice. This information and any copies produced electronically or otherwise must be surrendered upon demand of Fender Musical Instruments Corporation.

Parts marked with two asterisks (\*\*) indicate the required use of that specific part. This is necessary for RELIABILITY and SAFETY requirements. **DO NOT USE A SUBSTITUTE!**

## PARTS LIST CODES

The description codes used in the itemized Parts Lists are defined below:

### CAPACITOR CODES

CAP AE = Aluminum Electrolytic  
CAP CA = Ceramic Axial  
CAP CD = Ceramic Disk  
CAP MPF = Metalized Polyester Film  
CAP MY = Mylar  
CAP PFF = Polyester Film/Foil

### RESISTOR CODES

RES CC = Carbon Comp  
RES CF = Carbon Film  
RES FP = Flame Proof  
RES MF = Metal Film  
RES WW = Wire Wound

### HARDWARE CODES

BLX = Black Oxide  
CR = Chrome Plated  
HWH = Hex Washer Head  
M = Machine Screw  
NI = Nickel Plated  
OHP = Oval Head Phillips  
PB = Particle Board  
PHP = Pan Head Phillips  
PHPS = Pan Head Phillips Sems  
SMA = Sheet Metal "A" Point  
SMB = Sheet Metal "B" Point  
SS = Stainless Steel  
TF = Thread Forming  
ZI = Zinc Plated



## SPECIFICATIONS

<b>Model Name:</b>		<b>Bullet 15 DSP</b>
<b>Release Number:</b> <i>(Not a model number)</i>		PR 241
<b>Part Numbers</b>	(120V, 60Hz) US:	2267700020
	(110V, 60Hz) TW:	2267701020
	(240V, 50Hz) AUS:	2267703020
	(230V, 50Hz) UK:	2267704020
	(230V, 50Hz) ARG:	2267705020
	(230V, 50Hz) EUR:	2267706020
	(100V, 50/60Hz) JPN:	2267707020
	(220V, 60Hz) ROK:	2267709020
<b>Power Requirement:</b>		38W
<b>Power Output:</b>		15W RMS into 8 ohms @ 5%THD
<b>Nominal Input Level:</b>		100mV for 15W into 8 ohms @ 5%THD
<b>Impedances</b>	<b>Input (Pre-Amp):</b>	1M ohms
	<b>CD Input:</b>	greater than 30k ohms
<b>Speaker Complement:</b>		One (1) 8", 8 ohm, Fender Special Design Speaker (P/N 0025421000)
<b>Dimensions</b>	<b>Height:</b>	12.4 in (31.4 cm)
	<b>Width:</b>	13.25 in (33.7 cm)
	<b>Depth:</b>	7.13 in (18.1 cm)
<b>Weight:</b>		15 lbs (6.8 kg)

*Product specifications are subject to change without notice*

**BULLET® 15 DSP**

(This is the model name for warranty claims)

## SERVICE NOTES

- 1. CHASSIS REMOVAL** is accomplished by first removing four (4) screws from the Rear Cabinet Panel and two (2) screws from the top of the Cabinet; detach the speaker wires from the speaker and then slide the Chassis toward the rear of the Cabinet.
- 2. uDSP PCB ASSEMBLY REMOVAL** is accomplished by disconnecting the Ribbon cable on the uDSP PCB Assembly, releasing the tabs on each of the plastic Stand-offs which the uDSP PCB Assembly is mounted. Removal of the uDSP PCB Assembly may be necessary should any of the Digital Effects operate improperly.
- 3. BULLET 15 DSP MAIN PCB REMOVAL** is accomplished by removing the following items: All Knobs, one (1) screw at the CD Input Jack, two (2) nuts and washers at the Input and Headphone Jacks, two (2) screws at the Heatsink which attaches to the Chassis. Desolder the Transformer Leads at P1, P4, P5, P6 and P7. Disconnect the Yellow and Black wires at the Power Switch leading from P2 and P3. Disconnect the Ribbon Cable at P8.

## PCB EXCHANGE POLICY

Parts marked with a single asterisk (\*) in the Part Lists (starting on page 9) are not field replaceable. If a failure due to one of these components is detected, please contact the Fender® Dealer

Customer Service Department to order the complete PCB Assembly.



## BULLET® 15 DSP

(This is the model name for warranty claims)

### CIRCUIT DESCRIPTION

This section provides an overview of any new or unusual circuitry incorporated into this amplifier model. The purpose is to aid the service technician by providing insight into the design areas most likely to present a challenge in troubleshooting. This overview is focused for the efficient use and security of Fender® proprietary information.

#### **PRE-AMPLIFIER**

The guitar input signal is fed into the high pass filter at U1-B before splitting into two signal paths. The Normal Channel signal path (U1-A to U3-B) is active until the Drive Select switch is pushed "IN" to change the signal path from the Normal Channel to the Drive Channel (U2-B to U3-B). Differential amplifier U4-A and follower U4-B adjust the signal level and provides +1.65VDC bias voltage to the uDSP effects card. The preamp is in series with the digital effects card, therefore, disconnecting the card breaks the overall signal path. The signal from the uDSP card is recovered at U6-A. It is necessary to bring the signal back to its level prior to entering the uDSP card. This is accomplished by increasing the signal gain at U6-B. The signal is fed through the Passive Tone Control circuitry to the summing amplifier at U3-A, where it is mixed with the CD/Tape Input. The signal is fed through the Headphone buffer amplifier (U8-A and U8-B) and on to the Power Amplifier. FET Q2 is used to mute U6-A at power shutdown, preventing any uDSP card signal transients from getting through to the Power amplifier.

#### **POWER AMPLIFIER**

Current Feedback topology is used for the Power amplifier. The Power amplifier IC (U5) is configured as a non-inverting amplifier. Diodes D7 and D8 are used for common-mode protection of the amplifier. Current feedback is achieved by sampling current at the negative speaker terminal and feeding the signal back to the inverting node of the Power amplifier through R41 and series capacitor C25. The negative speaker terminal is referenced to ground through resistors R42 and R43. FET Q1 provides a mute function at the Power amplifier input.

#### **POWER SUPPLY**

Standard bridge rectifiers for high voltage (+/-22V), with zener regulation (D14-15) for the +/-15V supplies. +15V supplies U7, 7805 regulator for +5V supply for the uDSP card and digital user-interface.

#### **DIGITAL USER INTERFACE**

The uDSP Effects control (R65) is a linear pot that sets a DC level (0-5V), which is read by an A/D converter located on the uDSP card. These DC levels determine which desired Effect is selected.

#### **DIGITAL NOISE**

The uDSP effects card generates some high frequency noise (>50kHz), which is a normal product of DSP processing. This does not affect amplifier performance, but may be visible when observing the output of the amplifier on an oscilloscope.

**BULLET® 15 DSP**

(This is the model name for warranty claims)

<b>PARTS LIST: MAIN – PCB ASSEMBLY</b>			
<b>QTY.</b>	<b>PART #</b>	<b>DESCRIPTION</b>	<b>REFERENCE DESIGNATION</b>
1	0057257004	PCB ASSY BULLET 15 DSP	
1	*	**PCB FAB BULLET 15 DSP	
1	*	HEATSINK BULLET 15 DSP	
REF	0057259000	SERV. DIA. COMB. BULLET 15 DSP	
1	*	CAP AE AX 22uF 35V 20%	C38
1	*	CAP AE AX 4.7uF 50V 20%	C25
3	*	CAP AE RDL .47uF 50V 20%	C12-13 C27
2	*	CAP AE RDL 1uF 50V 20%	C26 C51
2	*	CAP AE RDL 2.2uF 50V 20%	C6 C24
2	*	CAP AE RDL 2200uF 35V 20%	C33-34
3	*	CAP AE RDL 22uF 50V 20%	C7 CC48-49
2	*	CAP AE RDL 47uF 50V 20%	C35-36
2	*	CAP CD 120pF 500V 5%	C54-55
1	*	CAP CA 100pF 100V 5%	C21
3	*	CAP CA 220pF 100V 5%	C46 C52-53
1	*	CAP CA 33pF 50V 5%	C20
2	*	CAP CA 470pF 50V 5%	C11 C22
1	*	CAP CA 47pF 100V 5%	C3
3	*	CAP CA 560pF 50V 5%	C14 C29 C32
1	*	CAP CA 68pF 100V 5%	C45
1	*	**CAP MPF .1uF 250VAC 20%	C50
9	*	CAP MPF .1uF 63V 10%	C23 C37 C39-44 C47
2	*	CAP MPF .33uF 63V 10%	C30-31
1	*	CAP PFF RDL .0022uF 100V 10%	C5
1	*	CAP PFF RDL .0033uF 100V 10%	C17
3	*	CAP PFF RDL .0047uF 100V 10%	C1-2 C18
1	*	CAP PFF RDL .015uF 100V 10%	C4
2	*	CAP PFF RDL .022uF 100V 10%	C15-16
2	*	CAP PFF RDL .033uF 100V 10%	C9-10
3	*	CAP PFF RDL .047uF 100V 10%	C8 C19 C28
3	*	CONTROL 100K 30C SNAP IN	R20 R24 R34
1	*	CONTROL 10KB	R65
1	*	CONTROL 250K 30C	R35
1	*	CONTROL 50KB SNAP IN	R33
1	*	CONTROL SNAPIN 50K 15A	R13
7	*	DIODE 1N4003	D5-6 D10-13 D17
7	*	DIODE 1N4448 SIGNAL	D3-4 D7-9 D18-19
2	*	DIODE ZEN 1n4744a 15v 1w 5%	D14-15
1	*	HEADER .1 8x2	P8
2	*	IC DUAL OP AMP TL072	U2-3
4	*	IC DUAL OPAMP PC4560	U1 U4 U6 U8
1	*	IC OP AMP PWR TDA2050V	U5
1	*	IC REGULATOR +5V MC7805CT	U7
1	*	JACK MONO R/A	J1
1	*	JACK PHONO DUAL PC MTG	J3
1	*	JACK STEREO R/A W/SL	J2

\* Non-serviceable part. Replace complete parent assembly. See PCB EXCHANGE POLICY on page 4.

Unique Fender® part. Order directly from the Fender® dealer Customer Service Department.

\*\* Safety Requirement part. Replacement must match *Safety Agency*...–*Value*, if specified –*Type*, if specified –*Approval Mark(s)* if on part.

\*\* Both a unique Fender® part and a Safety Requirement part as defined above.



# BULLET® 15 DSP

(This is the model name for warranty claims)

PARTS LIST: <b>MAIN – PCB ASSEMBLY</b> (continued)			
QTY.	PART #	DESCRIPTION	REFERENCE DESIGNATION
3	*	LED, RED LONG LEAD LUMEX	D1-2 D16
1	*	SPACER LED .5x.1 BRN	@ D16
1	*	RES CF 1/2W 1.5k 5%	R64
1	*	RES CF 1/2W 5.6 ohm 5%	R44
2	*	RES CF 1/4W 27k 5%	R50-51
3	*	RES CF 1/4W 100k 5%	R38 R46-47
6	*	RES CF 1/4W 10k 5%	R8 R37 R61 R67 R71 R73
3	*	RES CF 1/4W 15k 5%	R1 R6 R32
1	*	RES CF 1/4W 180k 5%	R36
4	*	RES CF 1/4W 1k 5%	R7 R26 R54-55
2	*	RES CF 1/4W 1M ohm 5%	R66 R76
4	*	RES CF 1/4W 2.2k 5%	R12 R59 R69-70
5	*	RES CF 1/4W 220k 5%	R10 R14-15 R23 R25
4	*	RES CF 1/4W 22k 5%	R16-17 R31 R77
4	*	RES CF 1/4W 30k 5%	R52-53 R56-57
5	*	RES CF 1/4W 3.3k 5%	R19 R21 R49 R74-75
1	*	RES CF 1/4W 4.7k 5%	R68
2	*	RES CF 1/4W 470k 5%	R22 R48
5	*	RES CF 1/4W 47k 5%	R11 R27-30
1	*	RES CF 1/4W 5.1Kohm 5%	R5
2	*	RES CF 1/4W 510Kohm 5%	R2 R4
3	*	RES CF 1/4W 6.8k 5%	R3 R58 R72
1	*	RES CF 1/4W 75k 5%	R60
1	*	RES CF 1/4W 8.2k 5%	R18
1	*	RES CF 1/4W 82k 5%	R9
2	*	RES CF 1/4W 820ohm 5%	R41 R45
1	*	RES CF 1/4W 120k 5%	R78
2	*	RES FILM 1W .68 ohm 5%	R42-43
2	*	RES FILM 1W 120 ohm 5% LL	R39-40
2	*	RES FILM 1W 220ohm 5%	R62-63
2	*	SCRW M 4-40x3/8 PHP BLX	@ U5 U7
2	*	SCRW TF 6-32x3/8 PHP ZI	@ HEATSINK
2	*	NUT HEX 4-40 EX LOCK	@ U5 U7
1	*	INSULATOR MICA TO-220	@ U5
1	*	SWITCH PUSH SLFLK SHORT STROKE	S1
1	*	BUTTON PUSH OFF WHITE	@S1
1	*	**PCB WIRE SET, BULLET 15 DSP	
1	*	WSHR SHLDR NYL 1/8x1/4	@ U5
2	*	XSTR N-CH JFET J111 TO-92	Q1-2
2	*	**FUSE CLIP PCB 5MM	F1
42	*	JUMPER WIRE 22 GA	W1-21 W23-43

\* Non-serviceable part. Replace complete parent assembly. See PCB EXCHANGE POLICY on page 4.

Unique Fender® part. Order directly from the Fender® dealer Customer Service Department.

\*\* Safety Requirement part. Replacement must match *Safety Agency...-Value*, if specified –*Type*, if specified –*Approval Mark(s)* if on part.

\*\* Both a unique Fender® part and a Safety Requirement part as defined above.



# BULLET® 15 DSP

(This is the model name for warranty claims)

## PARTS LIST: **uDSP – PCB ASSEMBLY**

QTY.	PART #	DESCRIPTION	REFERENCE DESIGNATION
1	0057261008	PCB ASSY uDSP BULLET 15 DSP	w/EPROM
REF	0057283000	SVC DIAG COMB MICRO DSP	
1	*	IC ROM BULLET 15 DSP V1.01	
1	*	PCB FAB uDSP	
2	*	CAP 0805 CER .001uF 25V 5%	
14	*	CAP 0805 CER .01uF 25V 5%	
10	*	CAP 0805 CER .1uF 25V 5%	
2	*	CAP 0805 CER 22pF 25V 5%	
2	*	CAP 0805 CER 750Pf 25v 5%	
3	*	CAP 3528 TAN 4.7uF 16V 20%	
6	*	CAP 3528 TAN 10uF 16V 20%	
5	*	DIODE SMT 1N4448 SIGNAL	
2	*	HDR .1 CTR 8x2 CKT SQ PIN	
4	*	RES 0805 MF 1/10W 5% 0ohm	
2	*	RES 0805 MF 1/10W 5% 100ohm	
4	*	RES 0805 MF 1/10W 5% 750ohm	
4	*	RES 0805 MF 1/10W 5% 1k	
1	*	RES 0805 MF 1/10W 5% 2k	
1	*	RES 0805 MF 1/10W 5% 3.3k	
2	*	RES 0805 MF 1/10W 5% 4.7k	
1	*	RES 0805 MF 1/10W 5% 15k	
1	*	RES 0805 MF 1/10W 5% 47k	
1	*	IC SMT SOCKET PLCC 44-TT	
1	*	IC SMT TLC549 AD	
1	*	IC SMT SRAM 64Kx16	
1	*	IC SMT COUNTER 74LV4040	
1	*	IC SMT HEX SCHMITT-T INV 74HC14	
1	*	IC SMT VREG +3.3V LM1117	
1	*	IC SMT CODEC TLC320AD77C	
1	*	IC SMT DSP TMS320VC5402PGE	
1	*	IC SMT VREG +1.8V 150mA TPS76318	
1	*	IC SMT RESET 5V MC34064D-5	
1	*	XTAL 20MHz HC49SD	

## PARTS LIST: **CHASSIS ASSEMBLY**

QTY.	PART #	DESCRIPTION	REFERENCE DESIGNATION
1	*	CHASSIS BULLET 15 DSP AMP	
1	*	CLAMP CABLE NYL SCRW MNT 5/16	@ 100V-120V PWR CORDS
-	0041775000	**XFMR PWR EXPORT 100v	100V XFMR
1	0025413000	**XFMR PWR F1158UC MEX AMPS/BRNC	120V XFMR
-	0031634000	**XFMR PWR FD15 230v	220V-240V XFMR
1	0025935000	**SWITCH DPST .187 TAB (DOM)	POWER SWITCH, ALL MODELS
6	0053986000	KNOB RTRY SS W/CHR INSERT	@ R13 R20 R24 R33-35
1	0057256000	KNOB RTRY ARROW W/CHR INS	@ R65
5	0026459000	WSHR FLAT 6x3/8 ZI	@ XFMRs, HEATSINK, PWR CORD
5	0028684000	SCRW SMB 6x3/8 PH PHS BLX	@ XFMRs, HEATSINK, PWR CORD
2	0053479000	NUT HEX 7/16 20X1/8 NI	@J1-2
2	0053480000	WASHER FLAT .442 X.692 NI	@J1-2
1	0038900000	SCRW TF 6-32X1/4 PHP ZI	@ GND
1	0048377000	**FUZE QA 20mm X 5mm 250V .5A	100V-120V FUZE
-	0020781000	**FUZE QA 20mmx5mm 250v .25A	220V-240V FUZE
1	*	PANEL FRONT BULLET 15 DSP	
1	0051330000	**CABLE ASSY 120V 6 FT	

\* Non-serviceable part. Replace complete parent assembly. See PCB EXCHANGE POLICY on page 4.

Unique Fender® part. Order directly from the Fender® dealer Customer Service Department.

\*\* Safety Requirement part. Replacement must match *Safety Agency...-Value*, if specified –*Type*, if specified –*Approval Mark(s)* if on part.

\*\*\* Both a unique Fender® part and a Safety Requirement part as defined above.





# BULLET® 15 DSP

(This is the model name for warranty claims)

PARTS LIST: <b>CHASSIS ASSEMBLY</b> (continued)			
QTY.	PART #	DESCRIPTION	REFERENCE DESIGNATION
-	0040992000	**CABLE ASSY PWR 5A U.K..187 TAB	
-	0026528000	**CABLE ASSY PWR 230v .187 TAB	
-	0036479000	**CABLE ASSY PWR AUST .187 TABS	
-	0048465000	**CABLE ASSY PWR .187 100V	
-	0057675000	**CORD PWR ARG .187 TABS	
1	0057359000	CABLE RIBBON 16 CKT W/2 CONN	
4	0051404000	STANDOFF NYLON BLK .375	@ uDSP
1	0031868000	SCRW PLASTITE 4x1/4 PHP BLX	@ J3
-	*	CLAMP CABLE NYL SCRW MNT 1/4	@ 230V-240V PWR CORDS

PARTS LIST: <b>CABINET ASSEMBLY</b>			
QTY.	PART #	DESCRIPTION	REFERENCE DESIGNATION
12	0026571000	SCRW SMAB 8X5/8 THP NI	@ CORNERS
4	0029071000	CORNER NOTCHED NICKLE (FD)	
0.910	*	TOLEX "BRAVURA BLACK"	
4	0029323000	FOOT RUBBER 1.0 DIA SMALL	
2	0026566000	CORNER 2 HOLE w/TAB NI	
0.003	*	TAPE ALUM 5" x 60 YDS	

PARTS LIST: <b>END ITEM ASSEMBLY</b>			
QTY.	PART #	DESCRIPTION	REFERENCE DESIGNATION
1	0025421000	SPKR 8" PF8643 (099-4808-002)	
5	0029828000	SCRW PB 8x3/4 PHP ZI	@ SPKR & CABLE CLAMP
1	0057262000	MANUAL OWNERS BULLET 15 DSP	
1	0057254000	LABEL REAR BULLET 15 DSP	
-	0057255000	LABEL REAR ROK BULLET 15 DSP	
1	0029906000	NAMEPLATE FENDER GENERIC SMALL	@ BAFFLE ASSY
2	0018113000	SCRW SMA 4x1/2 OHP BLX	@ LOGO
2	0025395000	HANDLE CAP 1 HOLE NI (DWG 17420)	@ HANDLE
1	0025883000	HANDLE SHORT NO LOGO	
2	0022277000	SCRW M 10-32x1-1/2 OHP NI	@ HANDLE
1	0057763000	CAB ASSY BULLET 15 DSP	
1	0050711000	CAB BACK LAMTED BLK PB 3/8"	
1	0040143000	GRILLE ASSY BLK/SLVR X-15 '92	
4	0029677000	SCRW SMA 6x1 THP BLX	@ CAB BACK
1	0022491000	CLAMP CABLE NYL SCRW MNT 5/16	@ PWR CORD & CAB
1	0022327000	WSHR FLAT 8x7/16 NI	@ CABLE CLAMP
2	0029527000	WSHR FNSH 8-5/8 FLNGD BLX WX	@ CAB SIDE
2	0026800000	SCRW SMAB 8x1-3/4 OHP BLX	@ CAB SIDE
0.2	0029085000	VELCRO STRIP LOOP 1.5" WD BLK	@ CAB BACK
0.2	0029086000	VELCRO STRIP HOOK 1.5" WD BLK	@ CAB BACK

\* Non-serviceable part. Replace complete parent assembly. See PCB EXCHANGE POLICY on page 4.

Unique Fender® part. Order directly from the Fender® dealer Customer Service Department.

\*\* Safety Requirement part. Replacement must match *Safety Agency...-Value*, if specified -*Type*, if specified -*Approval Mark(s)* if on part.

\*\* Both a unique Fender® part and a Safety Requirement part as defined above.



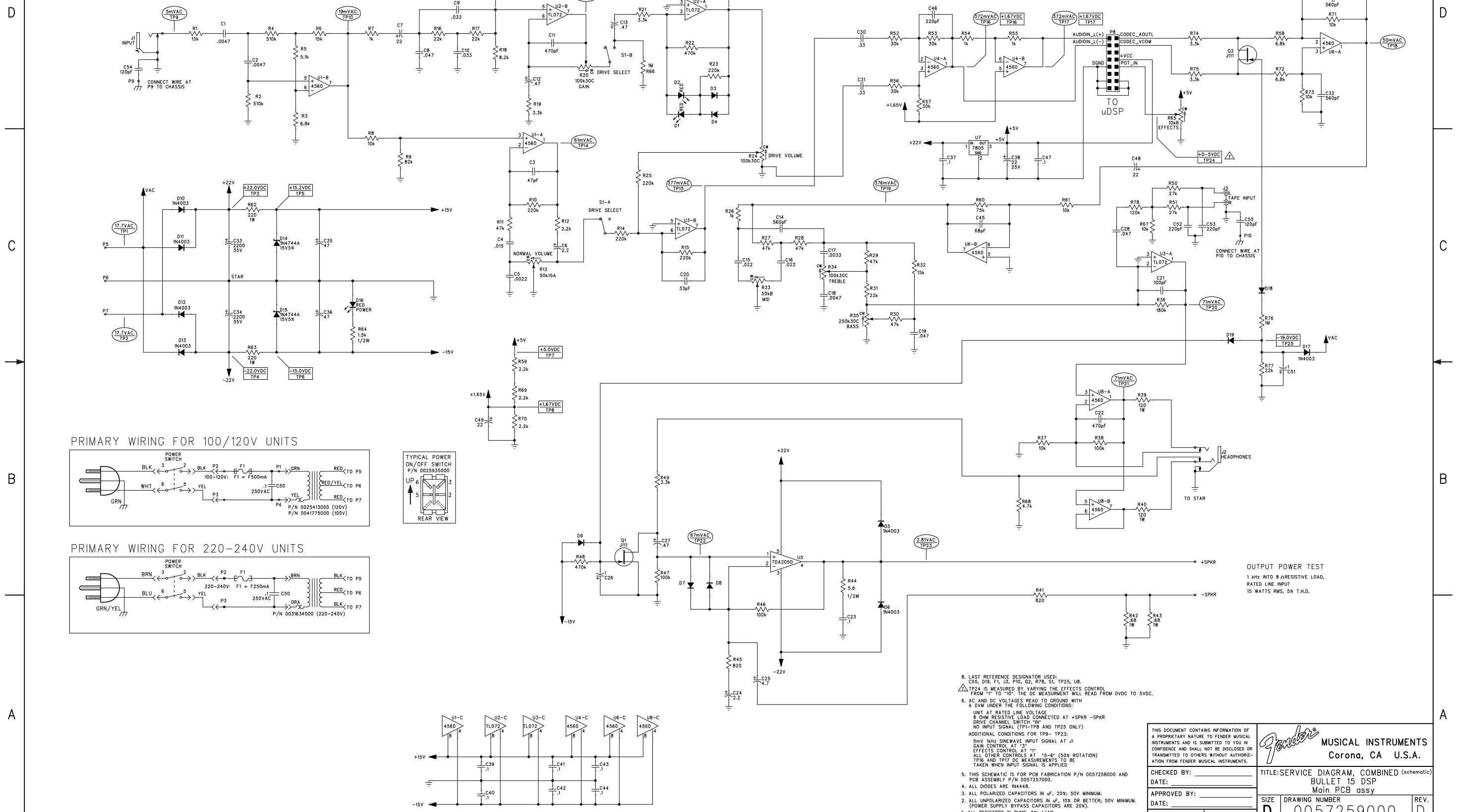
# BULLET® 15 DSP

(This is the model name for warranty claims)

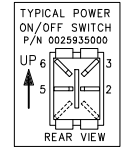
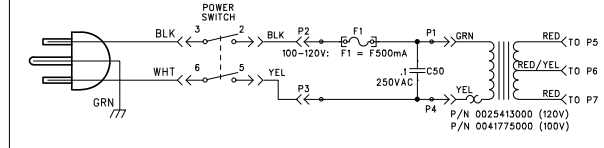
## Schematics and Drawings

Service Diagram (Schematic) .....	Bullet 15 DSP
Service Diagram (PCB Assy) .....	Bullet 15 DSP
Service Diagram (Schematic) .....	Micro DSP
Service Diagram (PCB Assy) .....	Micro DSP
Chassis Assy .....	Bullet 15 DSP
End Item Assy .....	Bullet 15 DSP

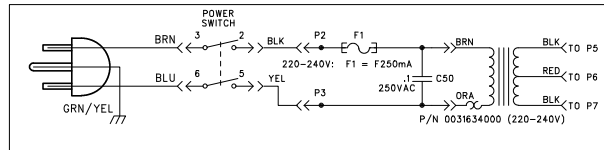
REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
A	PR480	30-NOV-01	M C U
B	NO RELEASE	06-MAR-02	M C U
C	EC2736A	06-MAR-02	M C U
D	EC2756	20-MAR-02	M C U



PRIMARY WIRING FOR 100/120V UNITS



PRIMARY WIRING FOR 220-240V UNITS



- 8. LAST REFERENCE DESIGNATOR USED: C55, D19, F1, J3, P10, Q2, R78, S1, TP25, U8.
- TP24 IS MEASURED BY VARYING THE EFFECTS CONTROL FROM "1" TO "10". THE DC MEASUREMENT WILL READ FROM 0VDC TO 5VDC.
- 6. AC AND DC VOLTAGES READ TO GROUND WITH A DVM UNDER THE FOLLOWING CONDITIONS:  
 UNIT AT RATED LINE VOLTAGE  
 8 OHM RESISTIVE LOAD CONNECTED AT +SPKR -SPKR DRIVE CHANNEL SWITCH "M"  
 NO INPUT SIGNAL (TP1-TP5 AND TP25 ONLY)
- ADDITIONAL CONDITIONS FOR TP9 - TP23:  
 5mV 1kHz SINEWAVE INPUT SIGNAL AT J1  
 GAIN CONTROL AT "3"  
 EFFECTS CONTROL AT "1"  
 ALL OTHER CONTROLS AT "0-6" (50% ROTATION)  
 TP16 AND TP17 DC MEASUREMENTS TO BE TAKEN WHEN INPUT SIGNAL IS APPLIED
- 5. THIS SCHEMATIC IS FOR PCB FABRICATION P/N 0057258000 AND PCB ASSEMBLY P/N 0057257000.
- 4. ALL DIODES ARE 1N4448.
- 3. ALL POLARIZED CAPACITORS IN uF, 20%; 50V MINIMUM.
- 2. ALL UNPOLARIZED CAPACITORS IN uF, 10% OR BETTER; 50V MINIMUM. (POWER SUPPLY BYPASS CAPACITORS ARE 20%).
- 1. ALL RESISTORS IN OHMS, 5%; 1/4W.

THIS DOCUMENT CONTAINS INFORMATION OF A PROPRIETARY NATURE TO FENDER MUSICAL INSTRUMENTS AND IS SUBMITTED TO YOU IN CONFIDENCE AND SHALL NOT BE DISCLOSED OR TRANSMITTED TO OTHERS WITHOUT AUTHORIZATION FROM FENDER MUSICAL INSTRUMENTS.

**Fender** MUSICAL INSTRUMENTS  
Corona, CA U.S.A.

CHECKED BY: \_\_\_\_\_  
DATE: \_\_\_\_\_

APPROVED BY: \_\_\_\_\_  
DATE: \_\_\_\_\_

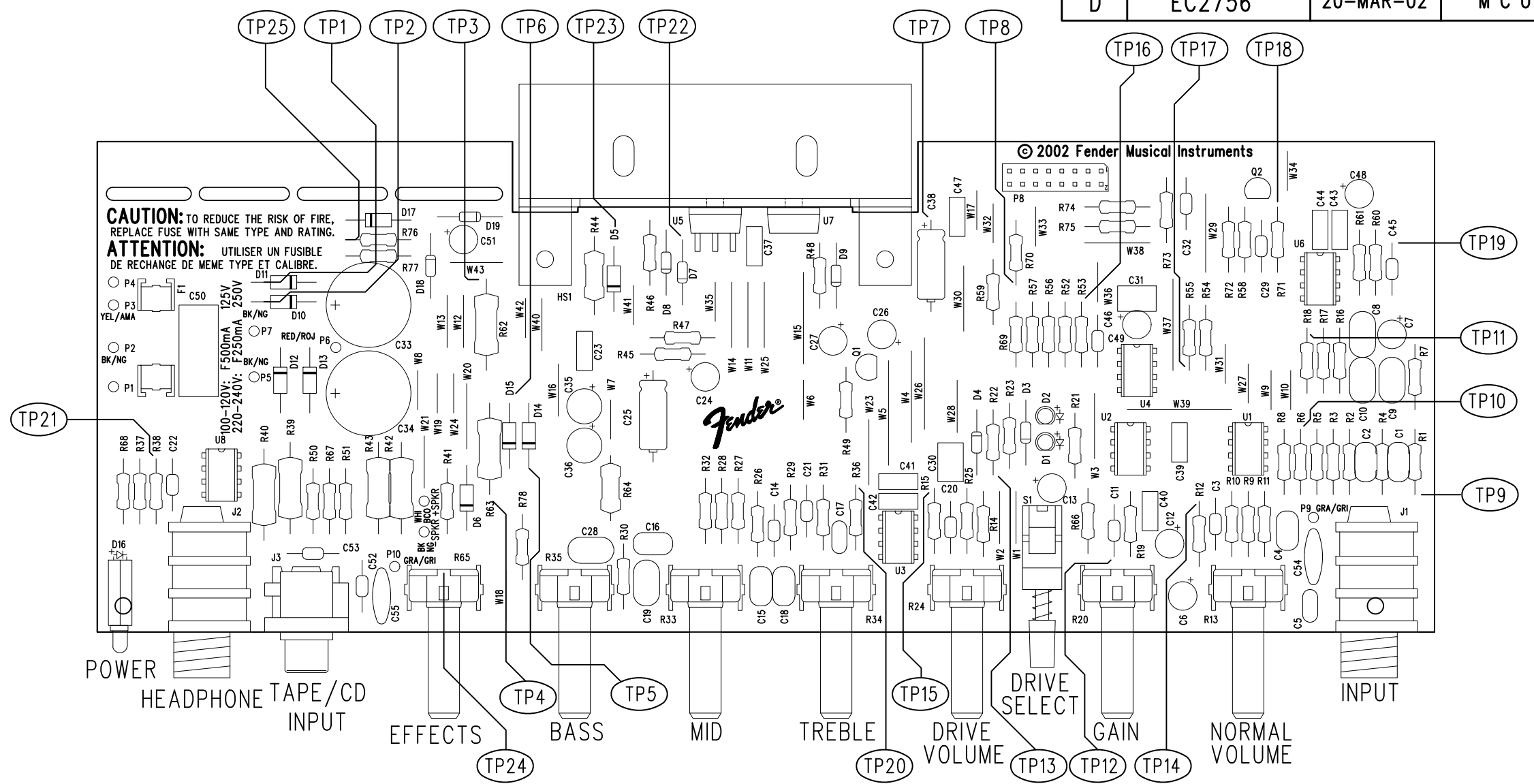
DRAWN: GCJ ENGR: GCJ  
DATABASE FILE: Z480S.SCH

TITLE: SERVICE DIAGRAM, COMBINED (schematic)  
BULLET 15 DSP  
Main PCB assy

SIZE: D DRAWING NUMBER: 0057259000 REV. D

RELEASE DATE: 30-NOV-01 SHEET: 1 OF 2

REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
A	PR480	30-NOV-01	M C U
B	NO RELEASE	06-MAR-02	M C U
C	EC2736A	06-MAR-02	M C U
D	EC2756	20-MAR-02	M C U



**CAUTION:** TO REDUCE THE RISK OF FIRE, REPLACE FUSE WITH SAME TYPE AND RATING.  
**ATTENTION:** UTILISER UN FUSIBLE DE RECHANGE DE MEME TYPE ET CALIBRE.

FILM/DWG: SERVICE DIAGRAM  
 DATABASE: Z480P.PCB DATE: 20-MAR-02

1. SEE SHEET 1 FOR PRIMARY WIRING, SWITCH DETAIL, TEST POINTS & TEST POINT VALUES.  
 NOTES: (UNLESS OTHERWISE NOTED)

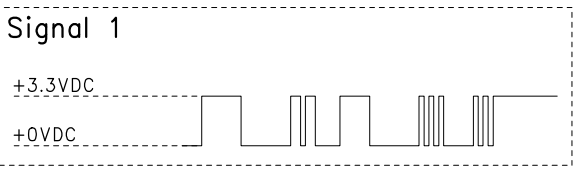
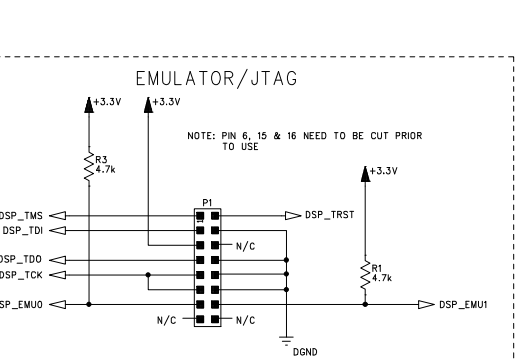
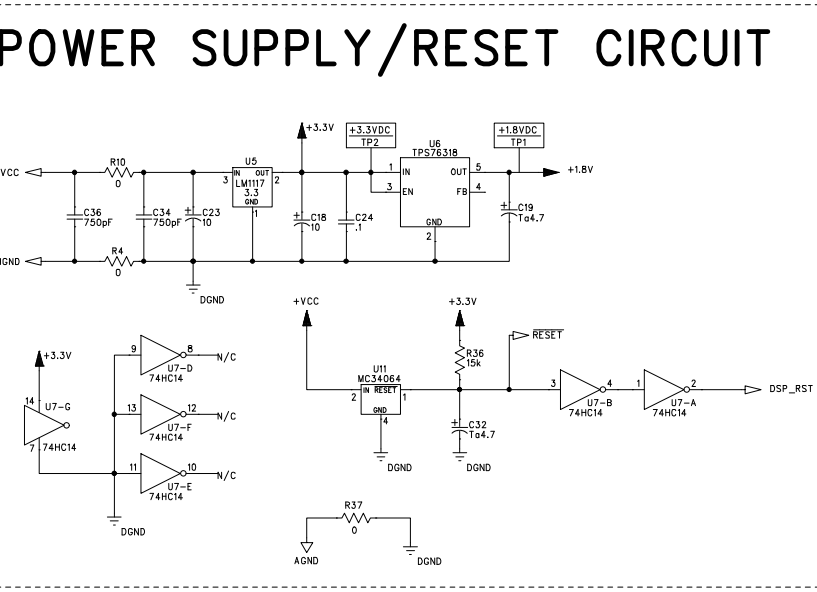
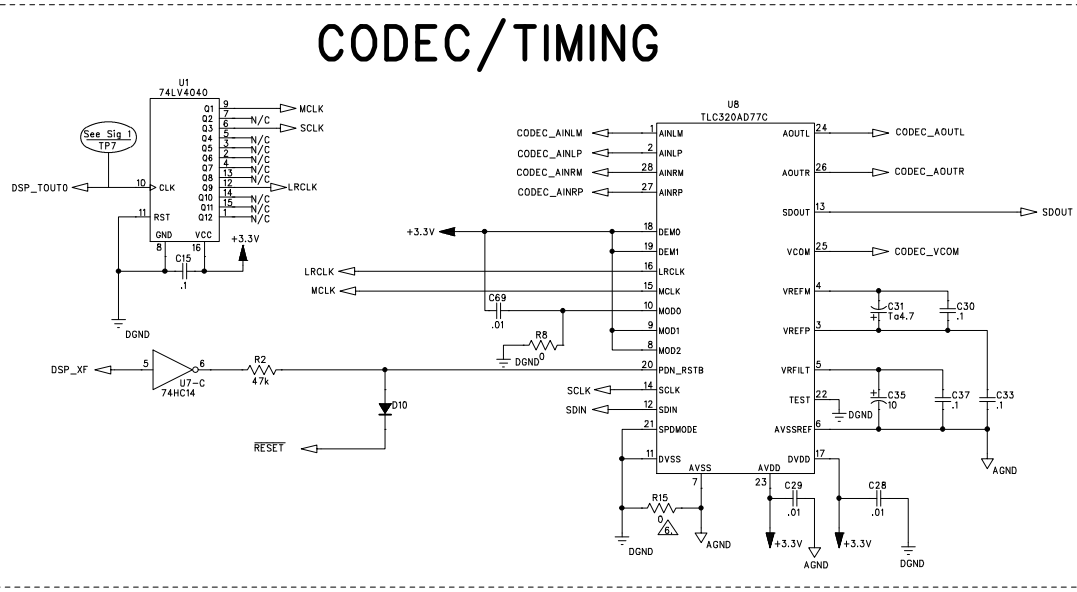
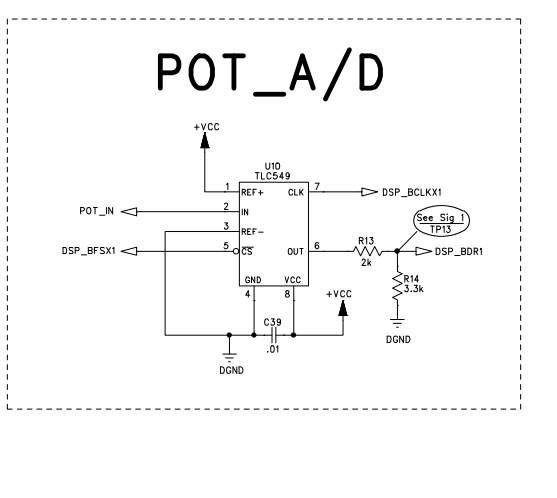
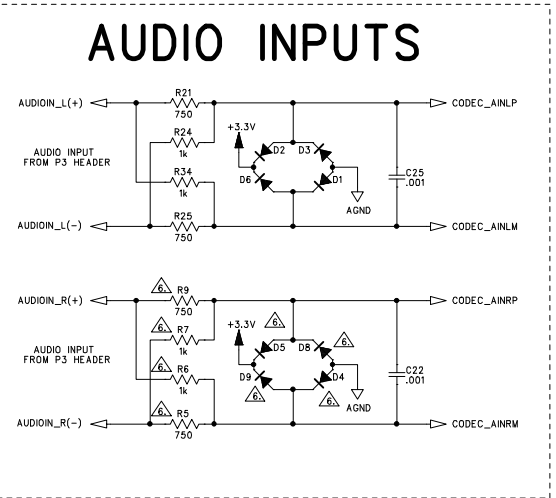
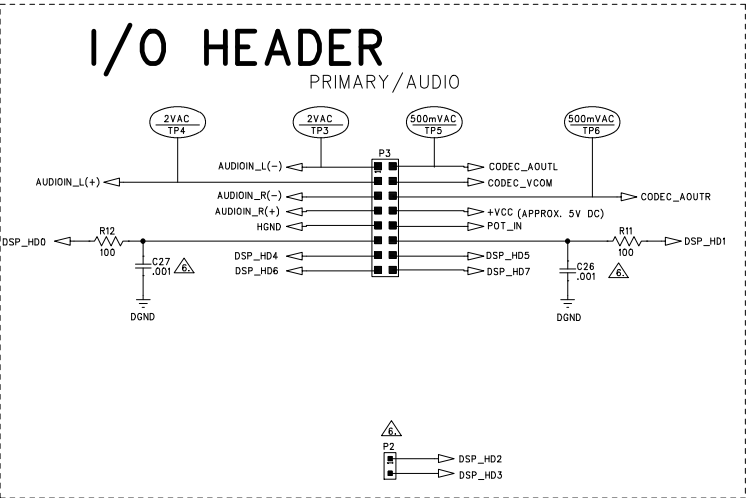
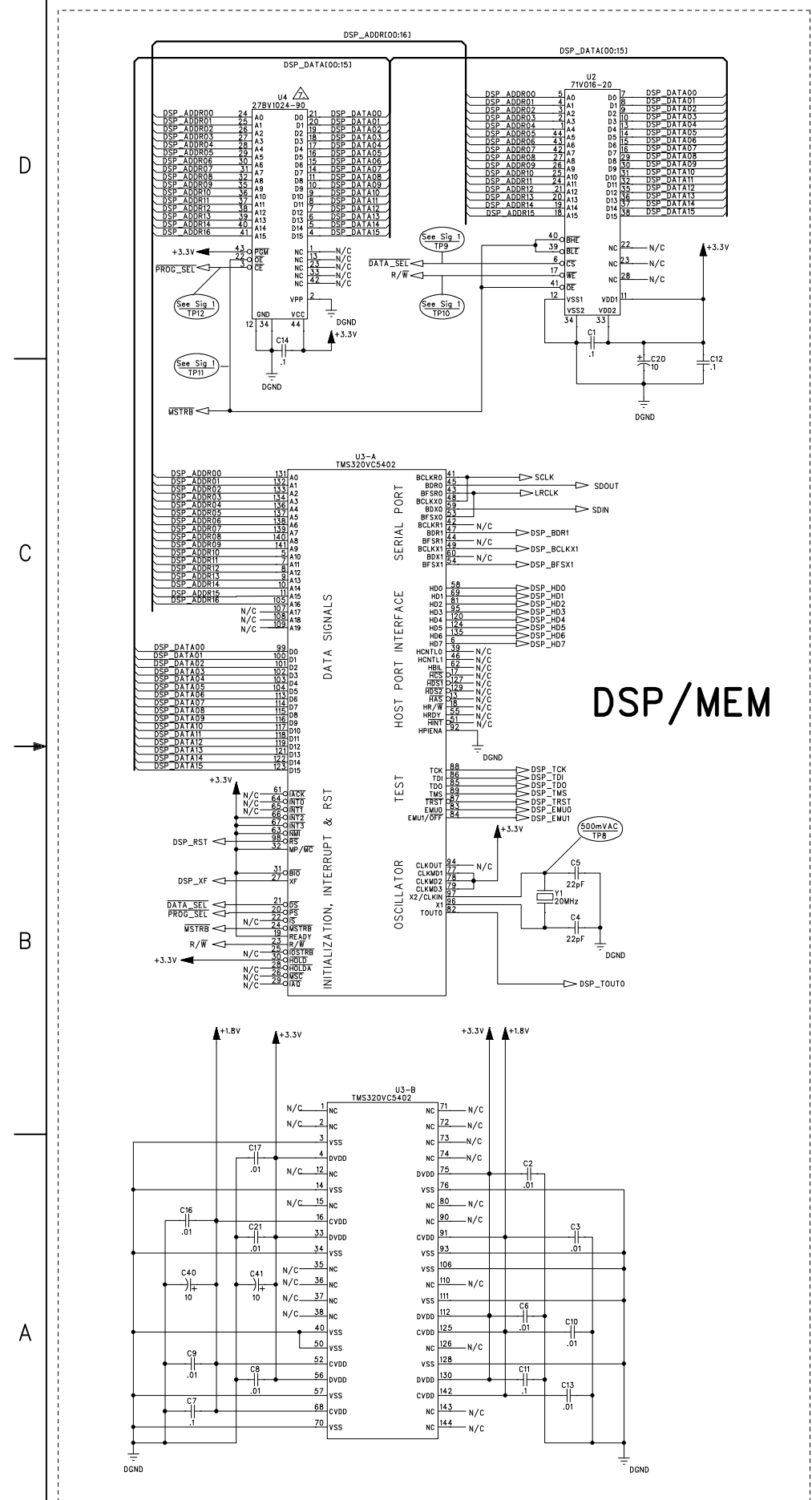
THIS DOCUMENT CONTAINS INFORMATION OF A PROPRIETARY NATURE TO FENDER MUSICAL INSTRUMENTS AND IS SUBMITTED TO YOU IN CONFIDENCE AND SHALL NOT BE DISCLOSED OR TRANSMITTED TO OTHERS WITHOUT AUTHORIZATION FROM FENDER MUSICAL INSTRUMENTS.

**Fender** MUSICAL INSTRUMENTS  
 Corona, CA U.S.A.

CHECKED BY: \_\_\_\_\_  
 DATE: \_\_\_\_\_  
 APPROVED BY: \_\_\_\_\_  
 DATE: \_\_\_\_\_  
 DRAWN: J. JIMENEZ ENGR: M. ULRICH  
 DATABASE FILE: Z480P.PCB

TITLE: SERVICE DIAGRAM, COMBINED (PCB assy)  
 BULLET 15 DSP  
 MAIN PCB assy  
 SIZE **B** DRAWING NUMBER 0057259000 REV. **D**  
 RELEASE DATE: 30-NOV-01 SHEET 2 OF 2

REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
A	PR480	29-NOV-01	J T L
B	EC 2743	07-MAR-02	J T L



- NOTES: (UNLESS OTHERWISE NOTED)
- INSTALL IC IN SOCKET. FENDER P/N 0056585005
  - DO NOT STUFF C26-27, D4-5, D8-9, P2, R5-7, R9, R15.
  - THIS SCHEMATIC IS FOR PCB FABRICATION P/N 0057284000 AND PCB ASSEMBLY P/N 0057285000.
  - ALL DIODES ARE 1N4448.
  - ALL POLARIZED CAPACITORS IN uF, 20% 15V MINIMUM.
  - ALL UNPOLARIZED CAPACITORS IN uF, 10% OR BETTER; 16V MINIMUM. (POWER SUPPLY BYPASS CAPACITORS ARE 20%).
  - ALL RESISTORS IN OHMS, 5% 1/10W.

THIS DOCUMENT CONTAINS INFORMATION OF A PROPRIETARY NATURE TO FENDER MUSICAL INSTRUMENTS AND IS SUBMITTED TO YOU IN CONFIDENCE AND SHALL NOT BE DISCLOSED OR TRANSMITTED TO OTHERS WITHOUT AUTHORIZATION FROM FENDER MUSICAL INSTRUMENTS.

**Fender** MUSICAL INSTRUMENTS  
Corona, CA U.S.A.

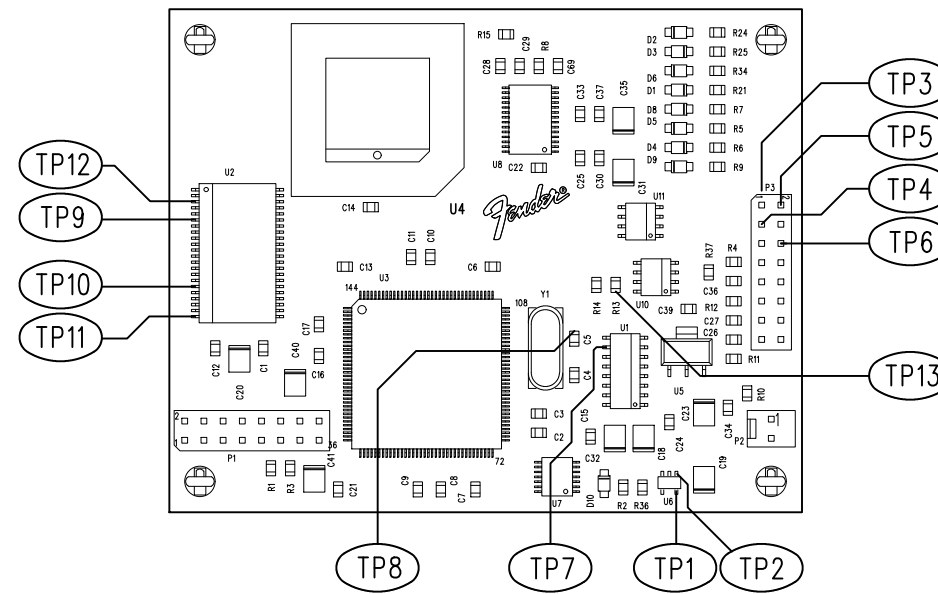
CHECKED BY: \_\_\_\_\_ TITLE: SERVICE DIAGRAM, COMBINED (schematic)  
DATE: \_\_\_\_\_ MICRO DSP

APPROVED BY: \_\_\_\_\_ SIZE: \_\_\_\_\_ DRAWING NUMBER: \_\_\_\_\_ REV: \_\_\_\_\_  
DATE: \_\_\_\_\_ D 0057283000 B

DRAWN: J. Jimenez ENGR: J. Lamb DATABASE FILE: Z481S.SCH RELEASE DATE: 29-NOV-01 SHEET: 1 OF 2


REVISIONS

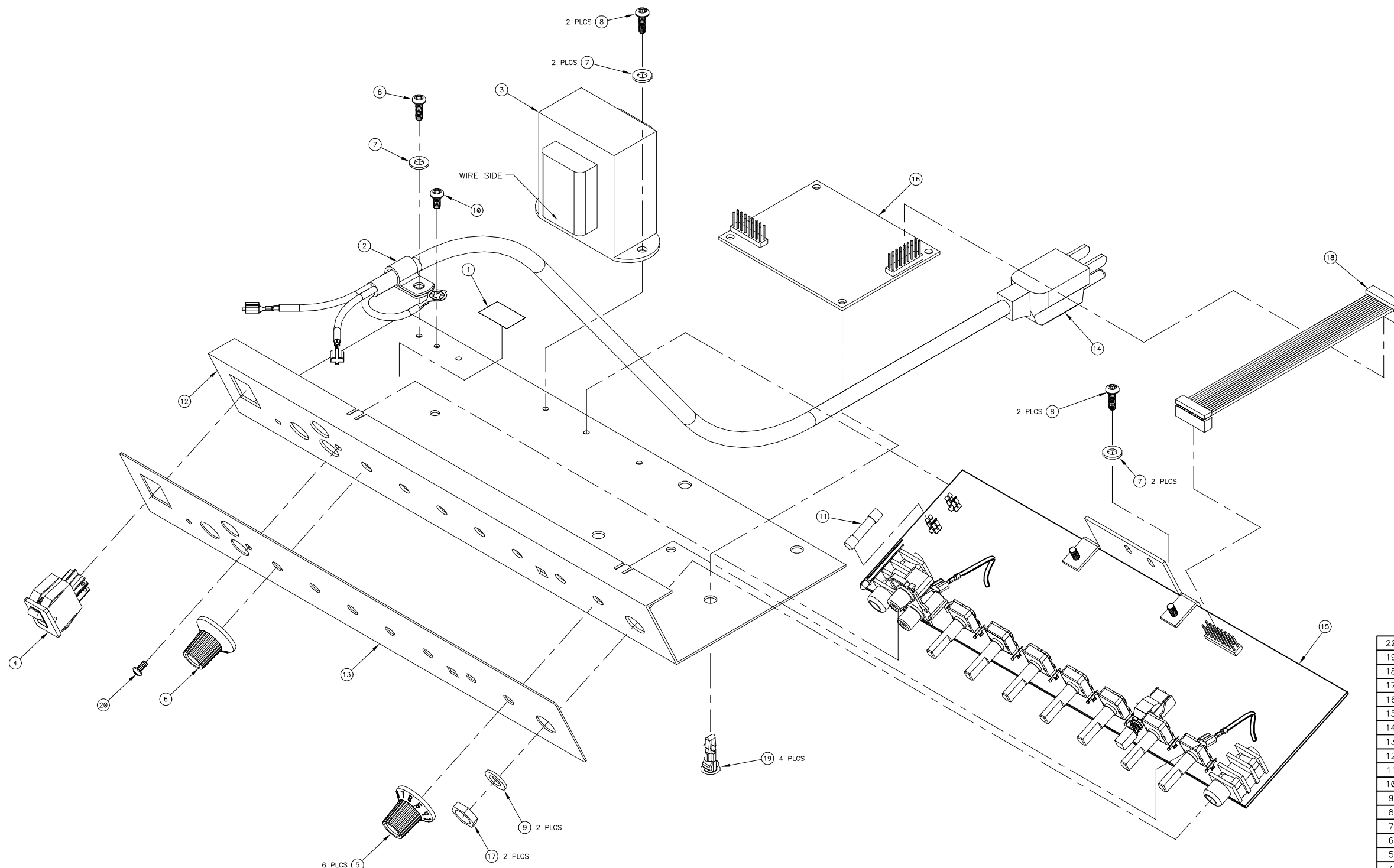
REV.	DESCRIPTION	DATE	APPROVED
A	PR480	30-NOV-01	J T L
B	EC 2743	07-MAR-02	J T L



FILM/DWG: SERVICE DIAGRAM  
 DATABASE: Z481P.PCB DATE: 07-MAR-02

1. SEE SHEET 1 FOR TEST CONDITIONS AND TEST POINT VALUES.  
 NOTES: (UNLESS OTHERWISE NOTED)

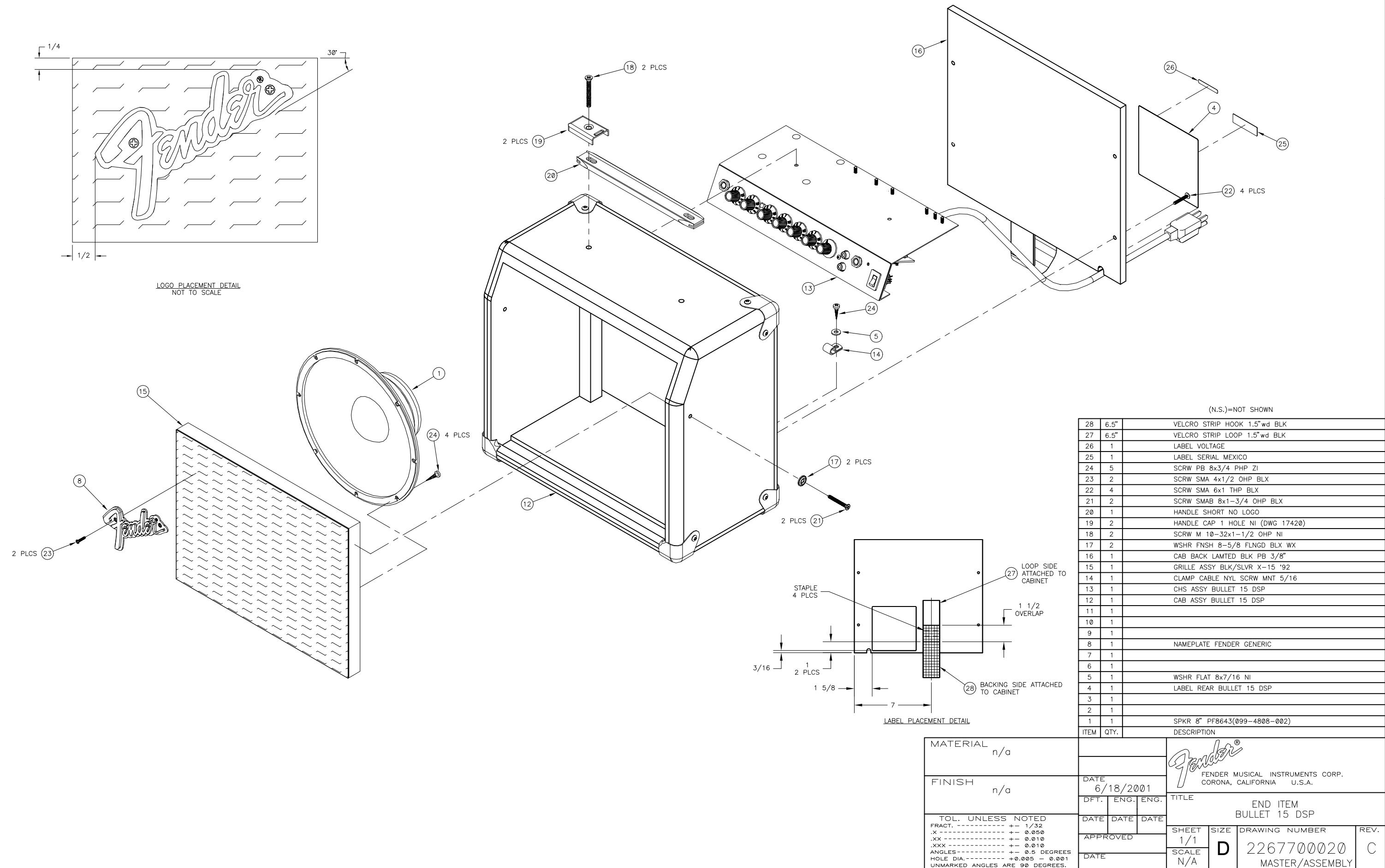
THIS DOCUMENT CONTAINS INFORMATION OF A PROPRIETARY NATURE TO FENDER MUSICAL INSTRUMENTS AND IS SUBMITTED TO YOU IN CONFIDENCE AND SHALL NOT BE DISCLOSED OR TRANSMITTED TO OTHERS WITHOUT AUTHORIZATION FROM FENDER MUSICAL INSTRUMENTS.		 MUSICAL INSTRUMENTS Corona, CA U.S.A.	
CHECKED BY: _____ DATE: _____		TITLE: SERVICE DIAGRAM, COMBINED (PCB assy) uDSP SERIES	
APPROVED BY: _____ DATE: _____		SIZE <b>B</b>	DRAWING NUMBER 0057283000
DRAWN: J. Jimenez	ENGR: J. Lamb	RELEASE DATE: 30-NOV-01	REV. <b>B</b>
DATABASE FILE: Z481P.PCB		SHEET 2 OF 2	2



20	1	SCRW PLASTITE 4x1/4 PHP BLX
19	4	STANDOFF NYLON BLK .375
18	1	RIBBON CABLE 16 CKT W/2 CONN
17	2	NUT HEX 7/16 20X1/8 NI
16	1	PCB ASSY MICRO DSP
15	1	PCB ASSY BULLET DSP
14	1	POWER CABLE ASSY
13	1	PANEL FRONT BULLET 15 DSP
12	1	CHASSIS BULLET 15 DSP
11	1	FUSE
10	1	SCREW TF 6-32X1/4 PHP ZI
9	2	WASHER FLAT .442x.692 NI
8	5	SCRW SMB 6x3/8 PH PHS BLK
7	5	WSHR FLAT 6x3/8 ZI
6	1	KNOB RTRY ARROW W/CHR INS
5	6	KNOB ROTARY SS W/CHR INS
4	1	SWITCH DPST .187 TAB (DOM)
3	1	XFMR
2	1	CLAMP CABLE NYL SCRW MNT 5/16
1	1	LABEL GROUNDING SEMKO
ITEM	QTY.	DESCRIPTION

				FENDER MUSICAL INSTRUMENTS CORP. CORONA, CALIFORNIA U.S.A.			
DATE 6/14/2001							
DFT.		ENG.		ENG.		TITLE CHASSIS ASSEMBLY, BULLET 15 DSP	
DATE	DATE	DATE					
APPROVED		SHEET 1/1	SIZE D	DRAWING NUMBER 0057252000	REV. B		
DATE		SCALE 1:1	MASTER/ASSEMBLY				

D  
C  
B  
A




LOGO PLACEMENT DETAIL  
NOT TO SCALE

LABEL PLACEMENT DETAIL

(N.S.)=NOT SHOWN

ITEM	QTY.	DESCRIPTION
28	6.5"	VELCRO STRIP HOOK 1.5"wd BLK
27	6.5"	VELCRO STRIP LOOP 1.5"wd BLK
26	1	LABEL VOLTAGE
25	1	LABEL SERIAL MEXICO
24	5	SCRW PB 8x3/4 PHP ZI
23	2	SCRW SMA 4x1/2 OHP BLX
22	4	SCRW SMA 6x1 THP BLX
21	2	SCRW SMAB 8x1-3/4 OHP BLX
20	1	HANDLE SHORT NO LOGO
19	2	HANDLE CAP 1 HOLE NI (DWG 17420)
18	2	SCRW M 10-32x1-1/2 OHP NI
17	2	WSHR FNSH 8-5/8 FLNGD BLX WX
16	1	CAB BACK LAMTED BLK PB 3/8"
15	1	GRILLE ASSY BLK/SLVR X-15 '92
14	1	CLAMP CABLE NYL SCRW MNT 5/16
13	1	CHS ASSY BULLET 15 DSP
12	1	CAB ASSY BULLET 15 DSP
11	1	
10	1	
9	1	
8	1	NAMEPLATE FENDER GENERIC
7	1	
6	1	
5	1	WSHR FLAT 8x7/16 NI
4	1	LABEL REAR BULLET 15 DSP
3	1	
2	1	
1	1	SPKR 8" PF8643(099-4808-002)

MATERIAL	n/a	 FENDER MUSICAL INSTRUMENTS CORP. CORONA, CALIFORNIA U.S.A.
FINISH	n/a	
TOL. UNLESS NOTED FRACT. ----- +- 1/32 .X ----- +- 0.050 .XX ----- +- 0.010 .XXX ----- +- 0.010 ANGLES ----- +- 0.5 DEGREES HOLE DIA. ----- +0.005 - 0.001 UNMARKED ANGLES ARE 90 DEGREES.		DATE 6/18/2001 DFT. ENG. ENG. DATE DATE DATE APPROVED DATE
		TITLE END ITEM BULLET 15 DSP
SHEET	SIZE	DRAWING NUMBER
1/1	D	2267700020
SCALE		MASTER/ASSEMBLY
N/A		