



# ULTIMATE CHORUS DSP

p/n 022-6701-020 (120V)

## SERVICE MANUAL



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ULTIMATE CHORUS DSP  
(This is the model name for warranty claims)

# SERVICE MANUAL

MAY 2000

## IMPORTANT NOTICE:

The information contained herein is CONFIDENTIAL and PROPRIETARY to Fender Musical Instruments Corp. It is disclosed solely for use by qualified technicians for purposes of equipment maintenance and service. It is not to be disclosed to others without the expressed permission of Fender Musical Instruments Co. All specifications subject to change without notice.

For warranty repair service, only Fender specified part numbers are to be used. It is recommended they also be used for post-warranty maintenance and repair.

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

A coded naming convention is used in the description of certain parts. The codes and what they mean are as follows:

### 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

# ULTIMATE CHORUS DSP

## SPECIFICATIONS

<b>Product Release No.:</b>	PR 436 <i>(This is not a model number)</i>
<b>Part Number:</b>	120V Version : 22-6701-020 240V Aus : 22-6731-020 230V UK : 22-6741-020 230V Eur : 22-6761-020 100V : 22-6771-020
<b>Power Requirements:</b>	360W
<b>Power Amp Section</b>	
<b>Power output:</b>	65W per channel, (130W total) @ 5% THD
<b>Rated load impedance:</b>	8Ω per channel
<b>Sensitivity:</b>	1.4V RMS
<b>Preamp Section</b>	
<b>Input Impedance:</b>	Input 1: >1MΩ,           Input 2: >130kΩ
<b>Nominal level:</b>	Input 1: 100mV        Input 2: 200mV
<b>Mono effects loop:</b>	Nominal level: -10dBV Send output impedance: 1kΩ (balanced) Return input impedance: 18kΩ (balanced)
<b>Stereo effects loop:</b>	Nominal level: -10dBV Send output impedance: 1kΩ Return input impedance: 100kΩ Channels: Left on tip, Right on ring
<b>Speaker Complement:</b>	Two 8 Ω Fender Special Design 12" Speakers (P/N 0025923000)
<b>Dimensions:</b>	Height: 18 1/2"       (47 cm) Width: 26 1/8"       (66 cm) Depth: 10 1/4"       (26 cm)
<b>Weight:</b>	47 lbs.               (21.3 kg)

*Product specifications are subject to change without notice*

# ULTIMATE CHORUS DSP

## PARTS LIST

**NOTE: SHADED ITEMS ARE FOR REFERENCE ONLY**

### PRINTED CIRCUIT BOARD ASSEMBLY

<b>QTY</b>	<b>PART #</b>	<b>DESCRIPTION</b>	<b>REFERENCE DESIGNATION</b>
1	0040987000	CABLE RIBBON 10 CKT 3.75"	PW2
1	0048845000	CABLE RIBBON 12 CKT 3.75"	PW14
1	0048914000	CABLE RIBBON 8 CKT 7"	PW3
1	0051445003	CAP CD 22pF 500V 5%	C27
4	0051457003	CAP CD 100pF 500V 5%	C37-38 C60-61
15	0051406003	CAP CD 220pF 500V 10%	C31-32 C53-54 C64-68 C72-73 C82-85
7	0051458003	CAP CD 470pF 500V 10%	C5 C13 C23 C33-34 C69 C93
1	0051459003	CAP CD 560pF 500V 10%	C17
33	0034788003	CAP CR .1uF 50V 20% .2" LS	C46-52 C80-81 C88-89 C98-107 C114-117 C121-128
2	0027255003	CAP MPF .001uF 100V 10%	C4 C20
3	0027256003	CAP MPF .0015uF 100V 10%	C40-41 C43
3	0027257003	CAP MPF .0022uF 100V 10%	C15 C18-19
1	0027259003	CAP MPF .0033uF 100V 10%	C16
4	0027261003	CAP MPF .0047uF 100V 10%	C1-2 C56-57
2	0027264003	CAP MPF .01uF 100V 10%	C8 C55
2	0027265003	CAP MPF .015uF 100V 10%	C21-22
2	0027270003	CAP MPF .033uF 100V 10%	C9 C11
1	0027272003	CAP MPF .047uF 63V 10%	C95
1	0027277003	CAP MPF .082uF 100V 10%	C10
4	0027278003	CAP MPF .1uF 63V 10%	C26 C86-87 C94
2	0052003003	CAP MPF .1uF 250V 10%	C110-111
1	0053860000	CAP MPF .1uF 250VAC 20%	C131
5	0027281003	CAP MPF .22uF 63V 10%	C7 C25 C70-71 C96
4	0027286003	CAP MPF .47uF 63V 10%	C6 C24 C92 C97
2	0033477003	CAP MPF .68uF 63V 10%	C42 C44
2	0033606003	CAP AE RDL .47uF 50V 20%	C12 C14
8	0028459003	CAP AE RDL 2.2uF 50V 20%	C58-59 C74-77 C90 C109
3	0028460003	CAP AE RDL 4.7uF 50V 20%	C78-79 C108
11	0028467003	CAP AE RDL 22uF 50V 20%	C3 C28-30 C35-36 C39 C62-63 C129-130
3	0028474003	CAP AE RDL 100uF 25V 20%	C91 C119-120
1	0028485003	CAP AE RDL 470uF 16V 20%	C45
1	0028490003	CAP AE RDL 1000uF 6.3V 20%	C118
2	0031756000	CAP AE RDL 4700uF 50V +100%-20%	C112-113
2	0027937000	CONTROL SNAPIN 2k 15A TAPER	R17 R48 normal mid drive mid
3	0054390000	CONTROL SNAPIN 5k 15A TAPER	R68 R71 R75 normal RVB?DLY level drive RVB/DLY level CHR/MOD level
4	0027940000	CONTROL SNAPIN 50k 15A TAPER	R15-16 R46-47 normal treble normal bass drive treble drive bass
2	0027941000	CONTROL SNAPIN 50k B TAPER	R9 R40 normal volume drive volume
1	0027942000	CONTROL SNAPIN 50k 2B DETENT	R37 presence
1	0027947000	CONTROL SNAPIN 100k 30C TAPER	R27 gain
48	0006260001	DIODE 1N4448 SIGNAL LL	D1-8 D10-35 D45 D47-48 D50-54 D59 D61-63 D65-66
5	0064089001	DIODE 1N4003 LL	D40-43 D64
4	0025821001	DIODE HV FDH400 SWITCHING LL	D36-39
4	0029045000	DIODE 6A 400V 6A4 LEAD FORMED	D67-70
2	0031017001	DIODE ZEN 1N5223B 2.7V 5% LL	D56 D58

**ULTIMATE CHORUS DSP  
PRINTED CIRCUIT BOARD ASSEMBLY (cont)**

<b>QTY</b>	<b>PART #</b>	<b>DESCRIPTION</b>	<b>REFERENCE DESIGNATION</b>
4	0031635001	DIODE ZEN 1N5240B 10V 5% LL	D44 D46 D49 D60
3	0028119060	DIODE ZEN 1N5353B 16V 5W 5%	D71-73
1	0041074000	ENCODER 16-POS 4-BIT BINARY	S5
13	0025802000	FSTN TAB MALE .250x.032 PCB MT	P1-13
2	0051094003	FUSE CLIP PCB 5mm (EXPT)	@F1
1	0027421000	HDR .1 CTR 12 CKT SQ PIN	P14
7	0031611000	IC OP-AMP DUAL PC4560	U4-10
3	0016795000	IC OP-AMP DUAL TL072	U1-3
1	0041261000	IC VOLT REF LM4040DIZ-10.0	U11
1	0041812000	IC REGULATOR +5V MC7805CT	U12
1	0050849000	HEATSINK PCB LEVEL 576012U	@U12
1	0039420000	SCRW M 4-40X3/8 PHP SS SEMS	@U12
1	0097360000	NUT HEX 4-40 EX LOCK	@U12
1	0051658000	JACK MONO R/A	J7
6	0053450000	JACK STEREO R/A	J1-6
1	0049948003	LED RED LONG LEAD LUMEX	D9
1	0030755000	LED GREEN T-1 3mm DIFFUSED	D55
1	0049948000	LED RED LONG LEAD LUMEX	D57
2	0036178000	SPACER LED .5x.1 BRN A6192-1	@D55 D57
1	0055891000	PCB, MAIN, ULT CHR5 DSP	
2	0024945001	RES CF 1/4W 5% 33ohm LL	R138-139
7	0024947001	RES CF 1/4W 5% 47ohm LL	R83 R114-117 R200-201
2	0028015001	RES CF 1/4W 5% 130ohm LL	R12 R43
1	0024955001	RES CF 1/4W 5% 180ohm LL	R81
9	0024961001	RES CF 1/4W 5% 470ohm LL	R8 R110-113 R132-135
11	0024965001	RES CF 1/4W 5% 1k LL	R28 R58-61 R102-105 R162-163
5	0028842001	RES CF 1/4W 5% 1.1k LL	R19 R148-151
1	0028862001	RES CF 1/4W 5% 1.3k LL	R171
1	0024969001	RES CF 1/4W 5% 1.5k LL	R177
3	0024973001	RES CF 1/4W 5% 3.3k LL	R11 R26 R42
5	0024975001	RES CF 1/4W 5% 3.9k LL	R126-127 R130-131 R165
2	0024977001	RES CF 1/4W 5% 4.7k LL	R118-119
1	0028034001	RES CF 1/4W 5% 5.1k LL	R5
2	0024979001	RES CF 1/4W 5% 6.8k LL	R6 R186
4	0025942001	RES CF 1/4W 5% 7.5k LL	R23 R38-39 R84
2	0026510001	RES CF 1/4W 5% 9.1k LL	R72-73
6	0024981001	RES CF 1/4W 5% 10k LL	R52-55 R189 R191
1	0029002001	RES CF 1/4W 5% 11k LL	R22
2	0024983001	RES CF 1/4W 5% 12k LL	R85 R99
5	0024985001	RES CF 1/4W 5% 15k LL	R7 R86-87 R172 R187
3	0024986001	RES CF 1/4W 5% 18k LL	R69 R76 R166
13	0024987001	RES CF 1/4W 5% 22k LL	R14 R20-21 R32-33 R35 R45 R64-67 R167 R192
2	0028863001	RES CF 1/4W 5% 24k LL	R24 R98
6	0024988001	RES CF 1/4W 5% 27k LL	R88-89 R122-125
2	0024991001	RES CF 1/4W 5% 39k LL	R13 R44
7	0024993001	RES CF 1/4W 5% 47k LL	R92-97 R164
4	0028990001	RES CF 1/4W 5% 51k LL	R106-109
1	0024994001	RES CF 1/4W 5% 56k LL	R10
3	0024995001	RES CF 1/4W 5% 68k LL	R1-2 R34
1	0028153001	RES CF 1/4W 5% 75k LL	R41
3	0024996001	RES CF 1/4W 5% 82k LL	R70 R74 R77
13	0024997001	RES CF 1/4W 5% 100k LL	R49 R56-57 R62-63 R90-91 R100-101 R182 R188 R190 R194
1	0024998001	RES CF 1/4W 5% 120k LL	R50
1	0025059001	RES CF 1/4W 5% 220k LL	R18

**ULTIMATE CHORUS DSP  
PRINTED CIRCUIT BOARD ASSEMBLY (cont)**

<b>QTY</b>	<b>PART #</b>	<b>DESCRIPTION</b>	<b>REFERENCE DESIGNATION</b>
6	0025065001	RES CF 1/4W 5% 470k LL	R51 R78-79 R169 R176 R185
3	0028018001	RES CF 1/4W 5% 510k LL	R3-4 R29
3	0025067001	RES CF 1/4W 5% 680k LL	R120-121 R193
2	0025068001	RES CF 1/4W 5% 820k LL	R36 R184
4	0025069001	RES CF 1/4W 5% 1M LL	R30-31 R170 R173
2	0025079001	RES CF 1/4W 5% 4.7M LL	R195-196
1	0025084001	RES CF 1/4W 5% 10M LL	R25
2	0016946001	RES MF 1/4W 1% 825ohm LL	R140-141
4	0015718001	RES MF 1/4W 1% 1.00k LL	R152-155
1	0016953001	RES MF 1/4W 1% 1.78k LL	R82
2	0027632001	RES MF 1/4W 1% 2.43k LL	R136-137
1	0015581001	RES MF 1/4W 1% 9.53k LL	R80
1	0016971001	RES MF 1/4W 1% 33.2k LL	R181
1	0017191001	RES MF 1/4W 1% 36.5k LL	R183
2	0017372001	RES MF 1/4W 1% 51.1k LL	R179-180
1	0016979001	RES MF 1/4W 1% 215k LL	R178
6	0051040001	RES MOX FP 1/4W 5% 47ohm LL	R142-147
2	0026493001	RES CF 1/2W 5% 2.7k LL	R174-175
1	0028029001	RES FILM 1W 5% 1.5k LL	R168
4	0055932001	RES MOX 2W 5% .15ohm LL	R156-159
2	0051417001	RES MOX 2W 5% 22ohm LL	R160-161
1	0027628001	RES MOX 2W 5% 47ohm LL	R197
2	0028028000	RES WW BT 5W 10% .47ohm	R128-129
2	0029047000	RES WW BT 7W 10% 270ohm	R198-199
4	0028091000	SWITCH PUSH SLFLK SHORT STROKE	S1-4
4	0048451000	BUTTON PUSH OFF-WHITE	@S1-4
1	0051418003	THERMAL SENSOR PTC 100 DEG C	RT1
1	0026411000	THERMISTOR 2.5 ohm 8A C30-19	RT2
7	0014689003	XSTR N-CH JFET J111 TO-92	Q1-5 Q38-39
3	0016739003	XSTR NPN 2N4401 TO-92	Q20-21 Q37
6	0016742003	XSTR PNP 2N4403 TO-92	Q22-23 Q33-36
6	0025751003	XSTR NPN 2SC2362K/2SC2389STPS	Q6-11
2	0054418000	XSTR NPN 2SC3263 MT-100	Q28-29
2	0028760000	XSTR NPN 2SC4793/2SC3298B	Q24-25
2	0051448003	XSTR NPN 2SD1857	Q14-15
2	0014867003	XSTR NPN MPSW42 TO-92	Q18-19
3	0025752003	XSTR PNP 2SA1038STPS	Q12-13 Q32
2	0054417000	XSTR PNP 2SA1294 MT-100	Q30-31
2	0028759000	XSTR PNP 2SA1306A TO-220P	Q26-27
2	0014866003	XSTR PNP MPSW92 TO-226AE	Q16-17
1	0055881000	HEATSINK PLATE	HS1
3	0032908000	SCRW TF 6-32x3/8 PHP ZI	PCB to HEATSINK PLATE
8	0032934000	SCRW TF 4-40x1/2 HIHS ZI	@Q24-31
8	0032937000	WSHR CONE	@Q24-31
4	0040903000	INSULATOR MICA TO-218	@Q28-31

## ULTIMATE CHORUS DSP DSP PCB ASSEMBLY

QTY	PART #	DESCRIPTION	REFERENCE DESIGNATION
4	0053544004	XSTR NPN 2N2222 SMT	Q1-4
1	0053536004	IC, DSP, 56L811	U1
2	0053537004	SRAM, LOW VOLTAGE 32Kx8, SMT	U2-3
1	0055764000	PROGRAMMED EPROM	U4
1	0053540004	IC, CODEC, AK4520A	U5
1	0053541004	VOLT REGULATOR 3.3V W/R, SMT	U6
1	0049948000	LED RED LL LUMEX	D6
1	0036178000	SPACER LED .5x.1 BRN A6192-1	
2	0041074000	ENCODER	S1,S2 BREAK OFF LOCATING TABS-2PLCS
1	0027419000	HDR .1 CTR 10 CKT SQ PIN	P2
1	0027416000	HDR .1 CTR 8 CKT SQ PIN	P3
2	0053555004	CAP CER 0805 22pF 25V 5%	C10-11
1	0053558004	CAP CER 0805 750pF 25V 5%	C13
2	0053557004	CAP CER 0805 .001uF 25V 5%	C29-30
2	0053559004	CAP CER 0805 .0039uF 25V 5%	C33-34
5	0053556004	CAP CER 0805 .01uF 25V 5%	C12 C16 C19 C38-39
17	0053554004	CAP CER 0805 .1uF 25V 5%	C1-9 C14-15 C18 C22-23 C25 C27 C36
2	0053560004	CAP TAN 3528 4.7uF 15V 20%	C31-32
7	0053561004	CAP TAN 3528 10uF 15V 20%	C17 C21 C24 C26 C28 C35 C37
2	0055777004	RES MF 0805 1/10W 0 ohm	R59 R61
3	0053547004	RES MF 0805 1/10W 10 ohm 5%	R15-17
4	0053552004	RES MF 0805 1/10W 150ohm 5%	R40-43
2	0053550004	RES MF 0805 1/10W 180 ohm 5%	R34-35
8	0053549004	RES MF 0805 1/10W 560 ohm 5%	R25 R27-29 R54-R57
1	0053546004	RES MF 0805 1/10W 2k 5%	R2
4	0053548004	RES MF 0805 1/10W 3.3k 5%	R24 R26 R30-31
32	0053545004	RES MF 0805 1/10W 10k 5%	R3-14 R18-23 R36-39 R44-53
2	0053551004	RES MF 0805 1/10W 47k 5%	R32-33
1	0053553004	RES MF 0805 1/10W 1M 5%	R1
1	0053542004	CRYSTAL, 10 MHz, SMT	Y1
1	0053539004	IC SOCKET, 32 PLCC, SMT	@ U4
1	0053570000	PCB FAB, DSP SFX SERIES	

## CHASSIS ASSEMBLY

QTY	PART #	DESCRIPTION	REFERENCE DESIGNATION
1	0055898000	CHASSIS ULTIMATE CHORUS DSP	
1	0053884000	FUSE QA 20mmX5mm 125V4A ULCSA	
1	0020794000	FUSE QA 20mmx5mm 250v 2A	230V/240V
1	0055892000	PCB ASSY ULT CHRSDSP (MEX)	
1	0055590008	PCB ASSY DSP PRCN CHR DSP	
5	0028500000	SCRW TF 8-32x3/4 HWH SLTD Z1	chassis to heatsink
2	0021709000	BUSHING SR .437x.062x13/32 BLK	@speaker wires
4	0051404000	STANDOFF NYLON BLK .375	@PCBs
16	0026402000	KNOB POINTER BLACK	
1	0033045000	END BELL XFMR PWRCH	@xfmr
4	0028591000	NUT ACORN 8-32	@xfmr
4	0030007000	WSHR LCK INTL 8x.330x.02 ZI	@xfmr
1	0038900000	SCRW TF 6-32X1/4 PHP ZI	ground
7	0055838000	NUT PLASTIC BLK REAN JACK	
1	0055896000	PANEL FRNT ULT CHRSDSP	
1	0055897000	PANEL REAR ULT CHRSDSP	

**ULTIMATE CHORUS DSP  
CHASSIS ASSEMBLY (cont)**

<b>QTY</b>	<b>PART #</b>	<b>DESCRIPTION</b>	<b>REFERENCE DESIGNATION</b>
1	0031726000	HEATSINK BAR	
1	0054642000	CONNECTOR IEC SNAP-IN	
1	0039236000	SWITCH ROCKER DPST PSEUDO-IEC	
1	0040582000	SWITCH DPST .250 TAB GLOBAL	230V
1	0031668000	XFMR PWR 120v/125w	DOMESTIC
1	0039253000	XFMR PWR EXP ULTIMATE CHORUS	EXPORT

**CABINET ASSEMBLY**

<b>QTY</b>	<b>PART #</b>	<b>DESCRIPTION</b>	<b>REFERENCE DESIGNATION</b>
REF	037788000	CLOTH GRILLE BLACK/SILVER	
4	026566000	CORNER 2 HOLE w/TAB NI	
2	026568000	CORNER 3 HOLE NI	
4	019276000	GLIDE CAB 1.24x.335 NI	
4	019275000	INSERT GLIDE CUSHION 1.27 DIA	
1	027846000	HANDLE 9.25" NO LOGO	
2	019279000	HANDLE CAP 2 HOLE NI	
1	032524000	INSERT HANDLE	
4	056482000	MTG PLATE - SWIVEL CASTER	
12	021972000	NUT T 10-32x3/4 STR 3 PRNG BLX	
4	022244000	SCRW M 10-32x1-1/8 OHP NI	
10	026571000	SCRW SMAB 8x5/8 THP NI	
4	026625000	SCRW WOOD 8x1 FH	
16	027199000	SCRW SMAB 10x3/4 PHP NI	
REF	026570000	TOLEX BRAVURA BLACK	
REF	029085000	VELCRO STRIP LOOP 1.5"wd BLK	
REF	029086000	VELCRO STRIP HOOK 1.5"wd BLK	

**END ITEM**

<b>QTY</b>	<b>PART #</b>	<b>DESCRIPTION</b>	<b>REFERENCE DESIGNATION</b>
1	0040071000	CAB ASSY ULT CHORUS/STAGE160	
1	0055899000	CHS ASSY ULT CHRS DSP 120V	
REF	0055900000	CHS ASSY ULT CHRS DSP 230V	
REF	0055901000	CHS ASSY ULT CHRS DSP 240V	
REF	0055902000	CHS ASSY ULT CHRS DSP 100V	
4	0023513000	CASTER SWIVEL	
1	0047248000	CORD PWR W/IEC CONN DOM	
REF	0047251000	CORD PWR W/IEC CONN 230V	
REF	0047249000	CORD PWR W/IEC CONN 230V UK	
REF	0047250000	CORD PWR W/IEC CONN 250V	
REF	0053997000	CORD PWR W/IEC CONN 100V JPN	



**ULTIMATE CHORUS DSP  
END ITEM (cont)**

<b>QTY</b>	<b>PART #</b>	<b>DESCRIPTION</b>	<b>REFERENCE DESIGNATION</b>
1	0029906000	NAMEPLATE FENDER GENERIC SMALL	
2	0025923000	SPKR 12"8OHM 75W(099-4812-005)	
2	0018113000	SCRW SMA 4x1/2 OHP BLX	nameplate
8	0026577000	SCRW M 10-32x1 PHP BLX	speakers
6	0036199000	SCRW M 8-32x1-3/16 OHP BLX CP	chassis
6	0029527000	WSHR FNSH 8-5/8 FLNGD BLX WX	chassis
1	0055592000	FTSW ASSY 3-BTN PRCR DSP	
REF	0055907000	MANUAL OWNERS ULT CHRSDSP	
REF	0055890000	SVC DIAG COMB ULT CHRSDSP	
REF	0053569000	SVC DIAG COMB DSP PCB ASSY PRN CHRSDSP	

REV.	DESCRIPTION	DATE	APPROVED
A	PR4.36	19-OCT-99	R J D

REVISIONS

1

2

3

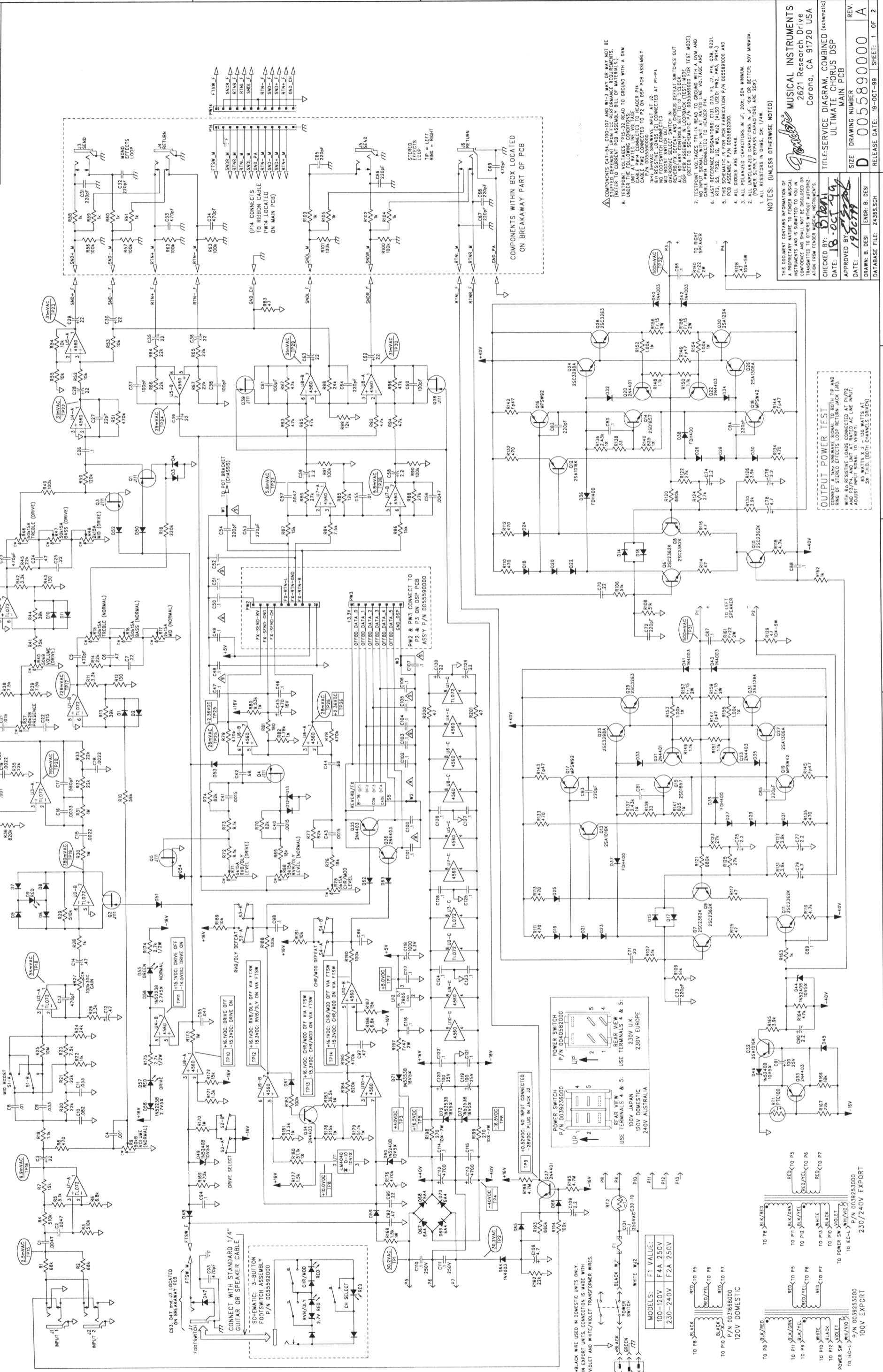
4

5

6

7

8



MUSICAL INSTRUMENTS  
2621 Research Drive  
Corona, CA 91720 USA

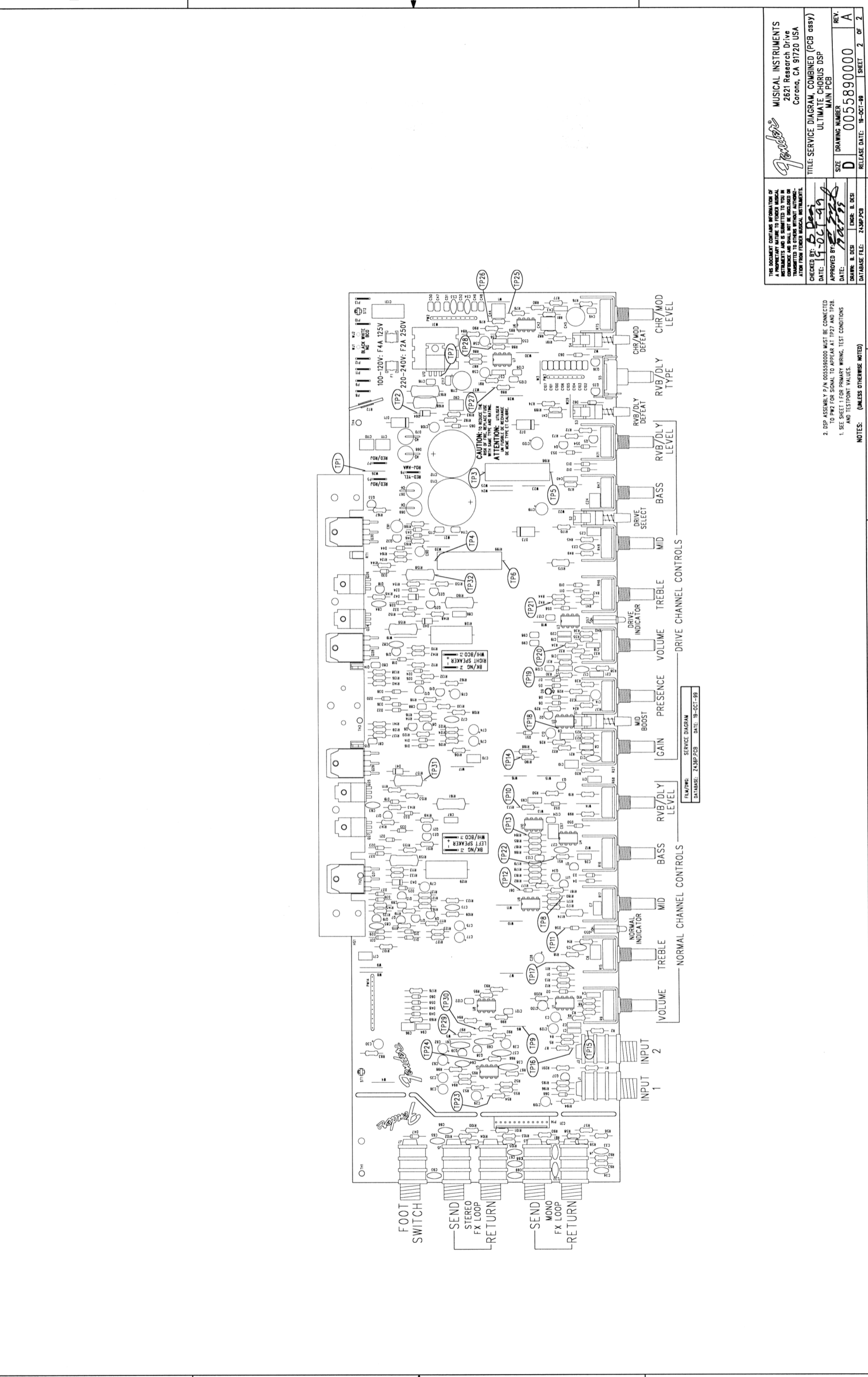
TITLE: SERVICE DIAGRAM, COMBINED (estometric)  
ULTIMATE CHORUS DSP  
MAIN PCB

CHECKED BY: *Diem*  
DATE: 18-Oct-99  
APPROVED BY: *RJD*  
DATE: 19-Oct-99

SIZE: DRAWING NUMBER  
D 005589000

REV. A  
RELEASE DATE: 19-OCT-99  
SHEET: 1 OF 2

REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
A	PR436	19-OCT-99	R J D



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CHECKED BY: *B. Dea*  
DATE: 14-OCT-99  
APPROVED BY: *[Signature]*  
DATE: *[Signature]*

MUSICAL INSTRUMENTS  
2821 Research Drive  
Corona, CA 91720 USA

TITLE: SERVICE DIAGRAM, COMBINED (PCB cassy)  
ULTIMATE CHORUS DSP  
MAIN PCB

SIZE: D  
DRAWING NUMBER: 0055890000  
REV. A

DATE: 19-OCT-99  
RELEASE DATE: 19-OCT-99  
SHEET 2 OF 2

2. DSP ASSEMBLY P/N 0055890000 MUST BE CONNECTED TO PW2 FOR SIGNAL TO APPEAR AT TP27 AND TP28.  
1. SEE SHEET 1 FOR PRIMARY WIRING, TEST CONDITIONS AND TESTPOINT VALUES.

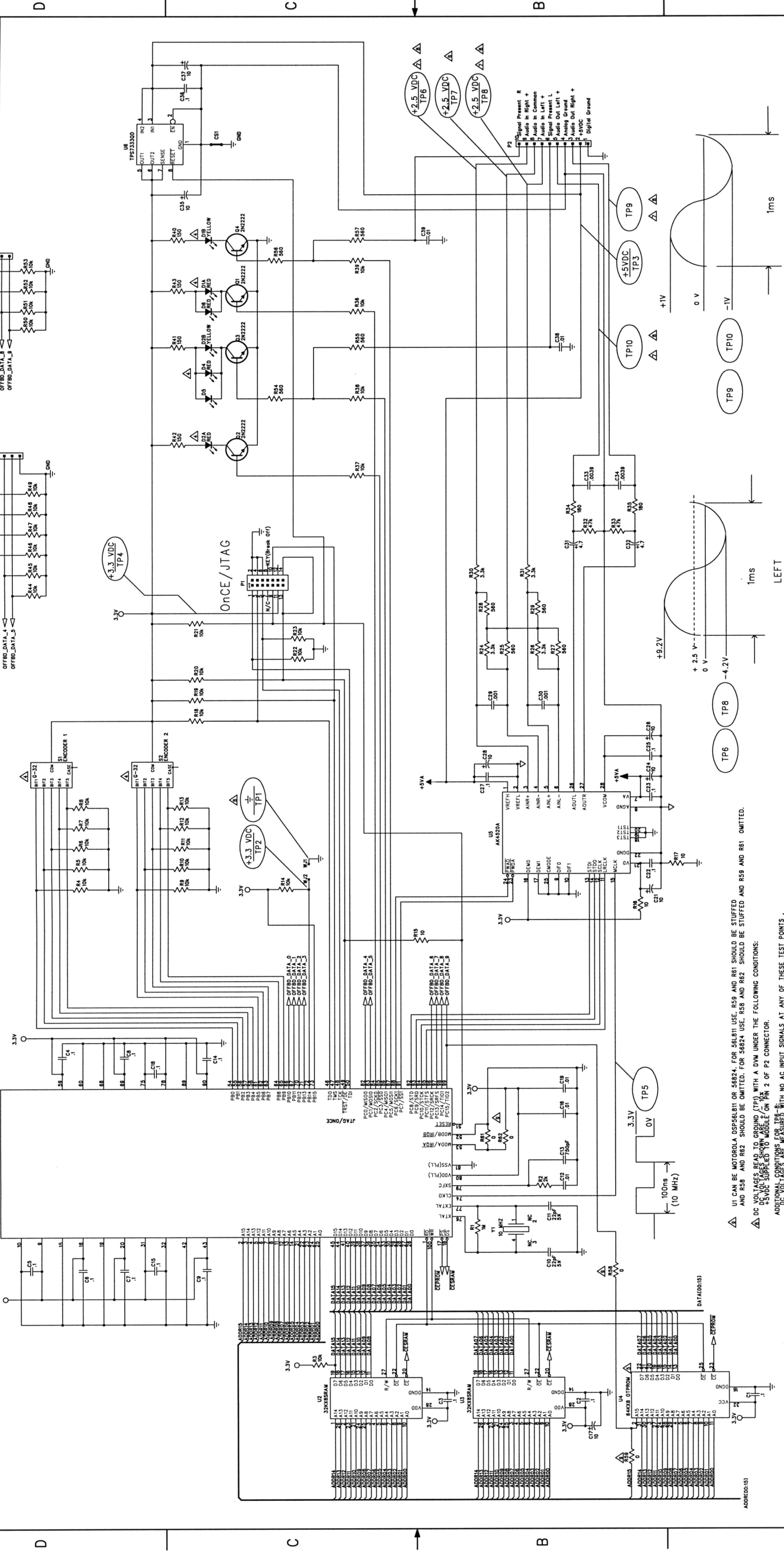
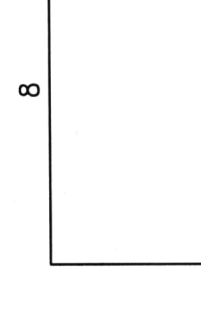
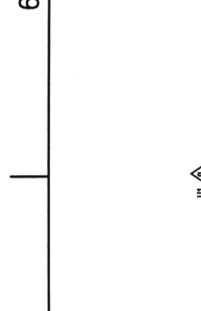
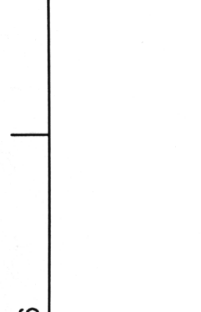
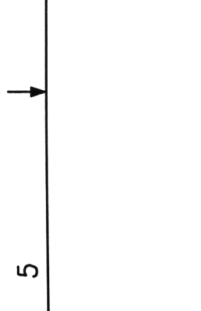
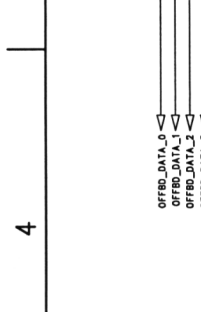
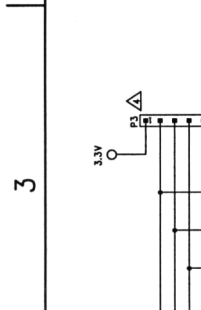
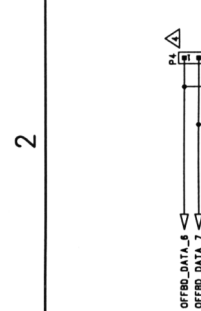
NOTES: (UNLESS OTHERWISE NOTED)

FILE NAME: SERVICE DIAGRAM  
DATABASE: Z43SP.PCB DATE: 19-OCT-99

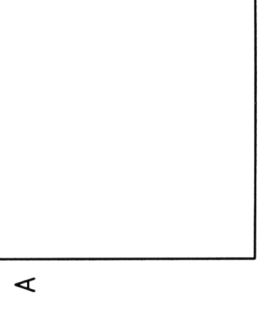
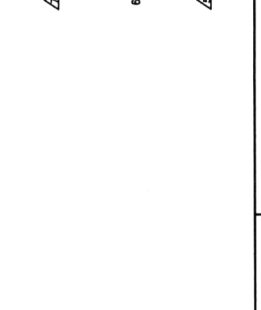
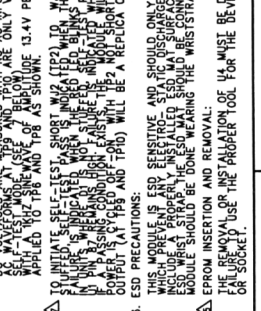
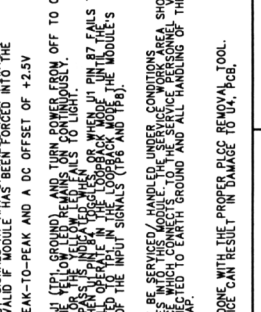
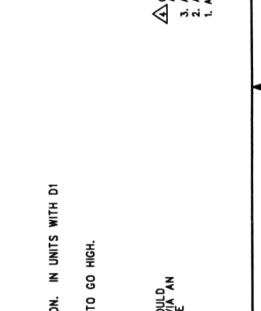
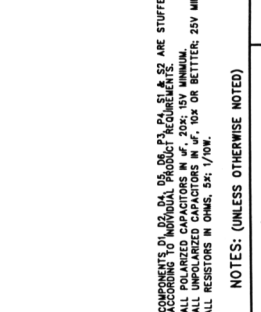
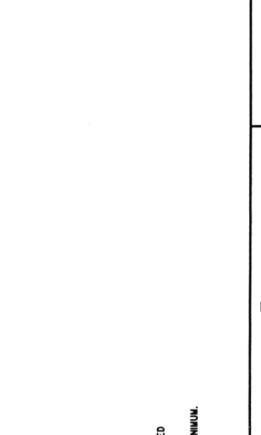
1 2 3 4 5 6 7 8

1 2 3 4 5 6 7 8

REV.	DESCRIPTION	DATE	APPROVED
A	PR 378	16-JAN-98	R. P.
B	PR 398	15-JUL-98	E M M
C	PR 406	30-OCT-98	LWF
D	EC 2271	31-MAR-99	JEB



REV.	DESCRIPTION	DATE	APPROVED
A	PR 378	16-JAN-98	R. P.
B	PR 398	15-JUL-98	E M M
C	PR 406	30-OCT-98	LWF
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REV.	DESCRIPTION	DATE	APPROVED
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C	PR 406	30-OCT-98	LWF
D	EC 2271	31-MAR-99	JEB

TITLE: SERVICE DIAGRAM, COMBINED (mechanical)  
 DSP SFX SERIES  
 CHECKED BY: *[Signature]*  
 DATE: 31-MAR-99  
 APPROVED BY: *[Signature]*  
 DRAWN: S. HOSNER/ENGR. POLYMER  
 DATE: 31-MAR-99  
 DATABASE FILE: 23695.SCH

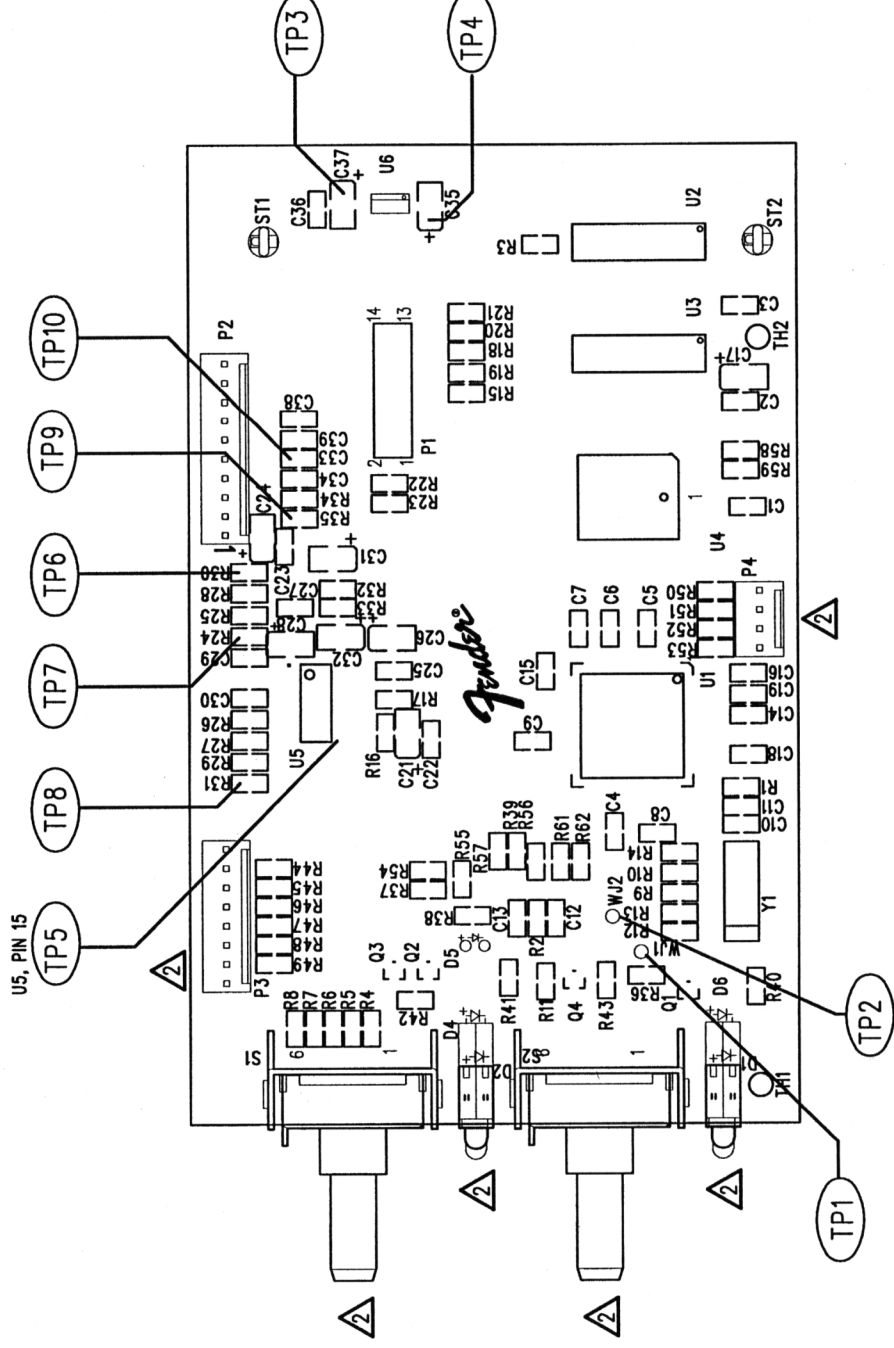
THIS DOCUMENT CONTAINS INFORMATION OF A PROPRIETARY NATURE TO FEMER MUSICAL INSTRUMENTS AND SHALL NOT BE DISCLOSED OR TRANSMITTED TO OTHERS WITHOUT AUTHORIZATION FROM FEMER MUSICAL INSTRUMENTS.  
 1. ALL UNPOLARIZED CAPACITORS IN  $\mu$ F, 10X OR BETTER; 25V MINIMUM.  
 2. ALL POLARIZED CAPACITORS IN  $\mu$ F, 10X OR BETTER; 25V MINIMUM.  
 3. ALL RESISTORS IN OHMS, 5% 1/4W.  
 NOTES: (UNLESS OTHERWISE NOTED)  
 1. ALL UNPOLARIZED CAPACITORS IN  $\mu$ F, 10X OR BETTER; 25V MINIMUM.  
 2. ALL POLARIZED CAPACITORS IN  $\mu$ F, 10X OR BETTER; 25V MINIMUM.  
 3. ALL RESISTORS IN OHMS, 5% 1/4W.

U1 CAN BE MOTOROLA DSP56181 OR 56824. FOR 56824 USE, R59 AND R61 SHOULD BE STUFFED AND R58 AND R62 SHOULD BE OMITTED. FOR 56824 USE, R58 AND R62 SHOULD BE STUFFED AND R59 AND R61 OMITTED.  
 DC VOLTAGES READ TO GROUND (TP1) WITH A DVM UNDER THE FOLLOWING CONDITIONS:  
 +5VDC SUPPLIED TO MODULE ON PIN 2 OF P2 CONNECTOR.  
 ADDITIONAL CONDITIONS: TEST WITH NO AS INPUT SIGNALS AT ANY OF THESE TEST POINTS. DC VOLTAGES AT TP8 AND TP10 ARE ONLY VALID IF MODULE HAS BEEN FORCED INTO THE LOW POWER MODE WITH A 100ns PULSE OF 13.4V PEAK-TO-PEAK AND A DC OFFSET OF +2.5V APPLIED TO TP8 AND TP8 AS SHOWN.  
 TO INITIATE SELF-TEST, SHORT WIZ (TP2) TO GROUND AND TURN POWER FROM OFF TO ON. IN UNITS WITH D1 FAILURE IS INDICATED WHEN THE YELLOW LED Blinks IN THE LOW POWER MODE OR WHEN U1 PIN 87 FAILS TO GO HIGH. IN UNITS WITH D2 FAILURE IS INDICATED WHEN THE RED LED Blinks IN THE LOW POWER MODE OR WHEN U1 PIN 87 FAILS TO GO HIGH. FAILURE TO INITIATE SELF-TEST, SHORT WIZ (TP2) TO GROUND AND TURN POWER FROM OFF TO ON. IN UNITS WITH D1 FAILURE IS INDICATED WHEN THE YELLOW LED Blinks IN THE LOW POWER MODE OR WHEN U1 PIN 87 FAILS TO GO HIGH. IN UNITS WITH D2 FAILURE IS INDICATED WHEN THE RED LED Blinks IN THE LOW POWER MODE OR WHEN U1 PIN 87 FAILS TO GO HIGH.  
 6. ESD PRECAUTIONS:  
 THIS MODULE IS ESD SENSITIVE AND SHOULD ONLY BE SERVICED/HANDLED UNDER CONDITIONS OF AN ESD CONTROLLED ENVIRONMENT. ESD PREVENTION STRIPS SHOULD BE USED TO PROTECT THE MODULE FROM ESD DAMAGE. ESD PREVENTION STRIPS SHOULD BE CONNECTED TO EARTH GROUND AND ALL HANDLING OF THE MODULE SHOULD BE DONE WEARING THE WASTRIKING.  
 FAILURE TO USE THE PROPER TOOL FOR THE SERVICE CAN RESULT IN DAMAGE TO U4, PCB, OR SOCKET.

REVISIONS

REV.	DESCRIPTION	DATE	APPROVED
A	PR 378	16-JAN-98	R.P.
B	PR 398	15-JUL-98	E M M
C	PR 406	30-OCT-98	L W F
D	EC 2271	31-MAR-99	J E B

FILM/DWG: SERVICE DIAGRAM  
 DATABASE: Z369P.PCB DATE: 31-MAR-99



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*Fender*  
 MUSICAL INSTRUMENTS  
 2621 Research Drive  
 Corona, CA 91720 USA

TITLE: SERVICE DIAGRAM, COMBINED (PCB assy)	
DSP SFX SERIES	
SIZE	DRAWING NUMBER
B	0053569000
REV.	D
RELEASE DATE: 16-JAN-98	SHEET 2 OF 2

CHECKED BY: *[Signature]*  
 CK DATE: 31-MAR-99  
 APPROVED BY: *[Signature]*  
 AP DATE: 30 MAR 99  
 DRAWN: S. HOSNER ENGR: R. POVINMIRE  
 DATABASE FILE: Z369P.PCB

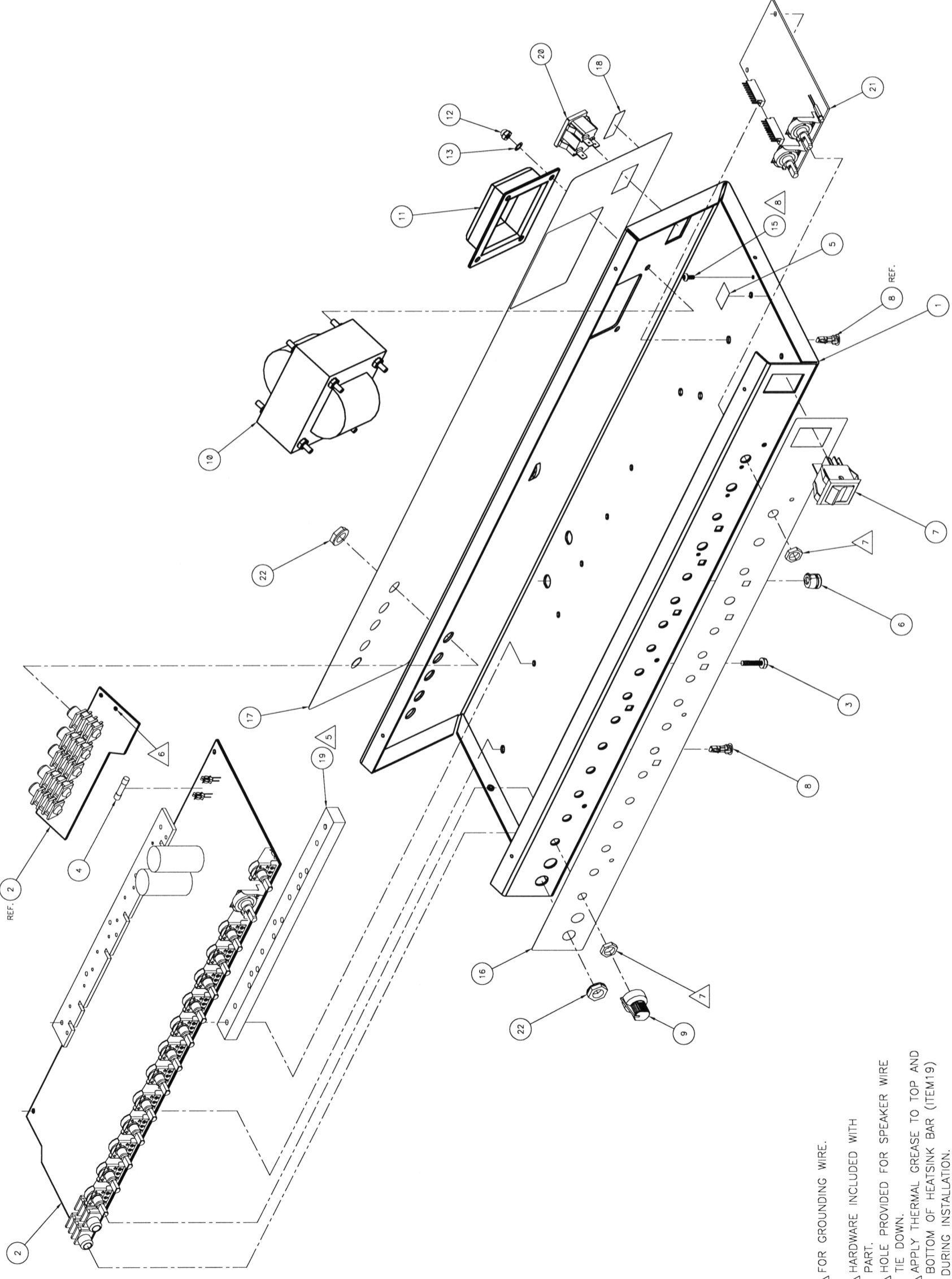
3. TEST POINT LOCATIONS AND VALUES ARE VALID FOR ALL PRODUCT CONFIGURATIONS.  
 COMPONENTS D1, D2, D4, D5, D6, P3, P4, S1 & S2 ARE STUFFED ACCORDING TO INDIVIDUAL PRODUCT REQUIREMENTS. SEE SPECIFIC PRODUCT BILL OF MATERIALS TO DETERMINE WHICH COMPONENTS SHOULD BE PRESENT. REFERENCE MASTER ASSEMBLY DRAWING 0053567000

1. SEE SHEET 1 FOR TEST CONDITIONS AND TEST POINT VALUES.

NOTES: (UNLESS OTHERWISE NOTED)

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REV	DATE
A	10/22/99
PR 436	JR



- 8. FOR GROUNDING WIRE.
  - 7. HARDWARE INCLUDED WITH PART.
  - 6. HOLE PROVIDED FOR SPEAKER WIRE TIE DOWN.
  - 5. APPLY THERMAL GREASE TO TOP AND BOTTOM OF HEATSINK BAR (ITEM19) DURING INSTALLATION.
  - 4. COPYRIGHT - 1999 - FENDER MUSICAL INSTRUMENTS CORP.
  - 3. - 3 - SAMPLES OF FIRST PARTS MUST BE APPROVED BY FENDER R&D BEFORE STARTING PRODUCTION.
  - 2. ALL DIMENSIONS ARE IN INCHES.
  - 1. DO NOT SCALE DRAWING.
- NOTES: UNLESS OTHERWISE NOTED

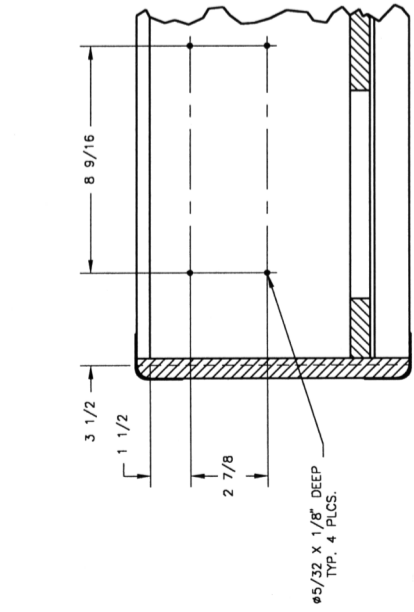
(N.S.) = NOT SHOWN

22	7	0055838000	NUT PLASTIC BLK REAN JACK
21	1	0055590008	PCB ASSY DSP PRON CHR DSP
20	1	0054642000	CONNECTOR IEC SNAP IN
19	1	0031726000	HEATSINK BAR
18	1	SEE MATRIX	LABEL VOLTAGE
17	1	0055897000	PANEL REAR ULT CHRS DSP
16	1	0055896000	PANEL FRONT ULT CHRS DSP
15	1	0038900000	SCRW TF 6-32X1/4 PHP ZI
14	1	SEE MATRIX	WIRE SET CHS ULT CHRS DSP (N.S.)
13	4	0030007000	WSHR LCK INTL 8x.330x.02 ZI
12	4	0028591000	NUT ACORN 8-32
11	1	0033045000	END BELL XFMR PWRRCH
10	1	SEE MATRIX	XFMR PWR
9	16	0026402000	KNOB POINTER BLACK
8	4	0051404000	STANDOFF NYLON BLK .375
7	1	SEE MATRIX	SWITCH DPST
6	2	0021709000	BUSHING SR .437x.062x13/32 BLK
5	1	0013020000	LABEL GROUNDING SEMKO
4	1	SEE MATRIX	FUSE QA 20mmx5mm
3	5	0028500000	SCRW TF 8-32x3/4 HWH SLTD Z1
2	1	0055892004	PCB ASSY ULT CHRS DSP
1	1	0055898000	CHASSIS ULTIMATE CHORUS DSP

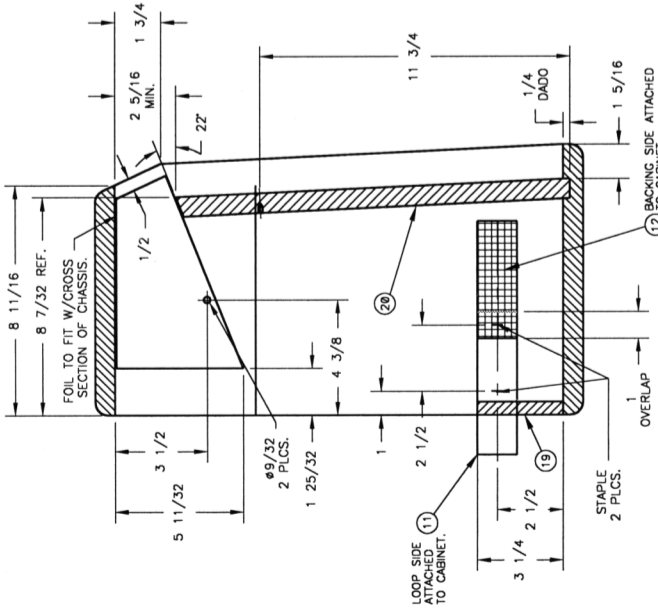
ITEM QTY	PART NO.	DESCRIPTION
ENGINEER DESIDERIO		
DRAWN RICHARDS		
DATE 09/23/99		
DFT.	ENG.	REV.
ST	ST	1
DATE	DATE	DATE
10-21-99	10-21-99	
APPROVED		
DATE		
22-OCT-99		
SCALE	N/A	
SHEET SIZE	D	0055899000
DRAWING NUMBER		MASTER/ASSEMBLY
CHASSIS ASSEMBLY		
ULTIMATE CHORUS DSP		

ITEM	COMPONENT	ITEM	COMPONENT	ITEM	COMPONENT
18	LABEL VOLTAGE	0039022000	NONE	0036329000	0036329000
14	WIRE SET	0055904000		0055905000	0055905000
10	XFMR PWR	0031668000		0039253000	0039253000
7	SWITCH DPST	0039236000		0040582000	0039236000
4	FUSE	0053884000	0020794000	0053884000	0053884000
	ULT CHRS DSP	120V DOM	ULT CHRS DSP	ULT CHRS DSP	ULT CHRS DSP
	120V DOM	230V EUR/UK	230V EUR/UK	240V AUST	100V JPN
	0055900000	0055901000	0055902000		0055902000

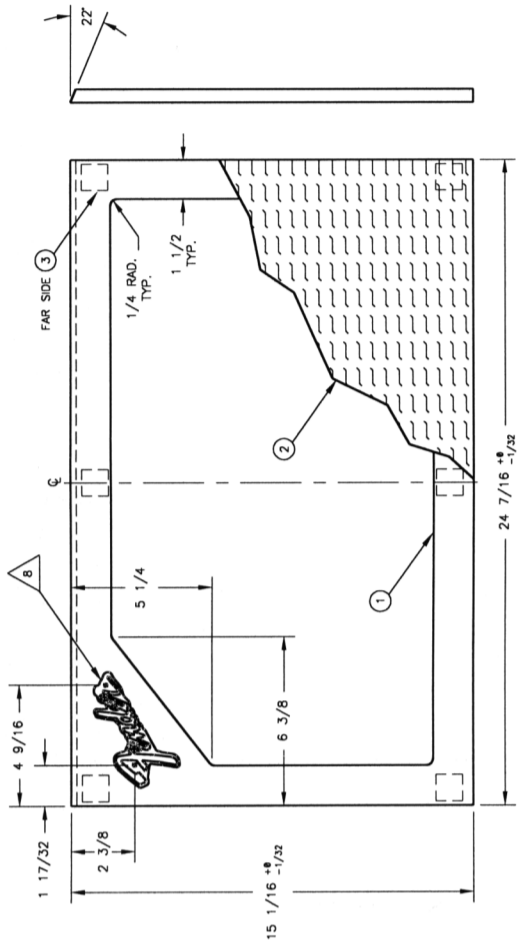
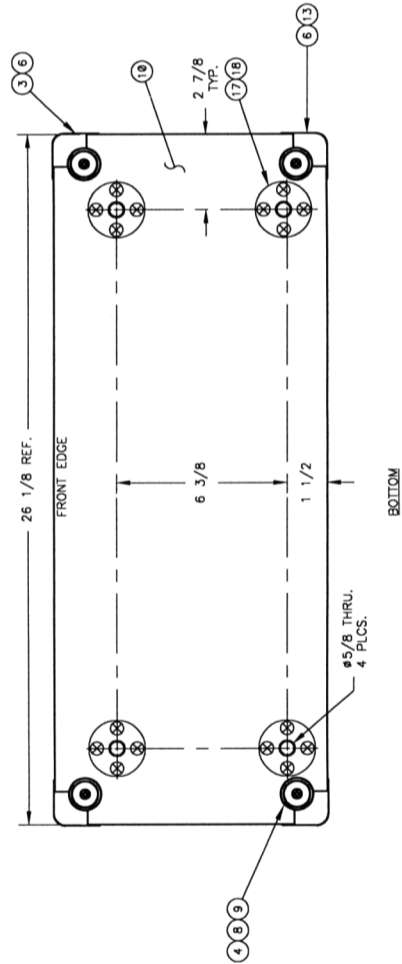
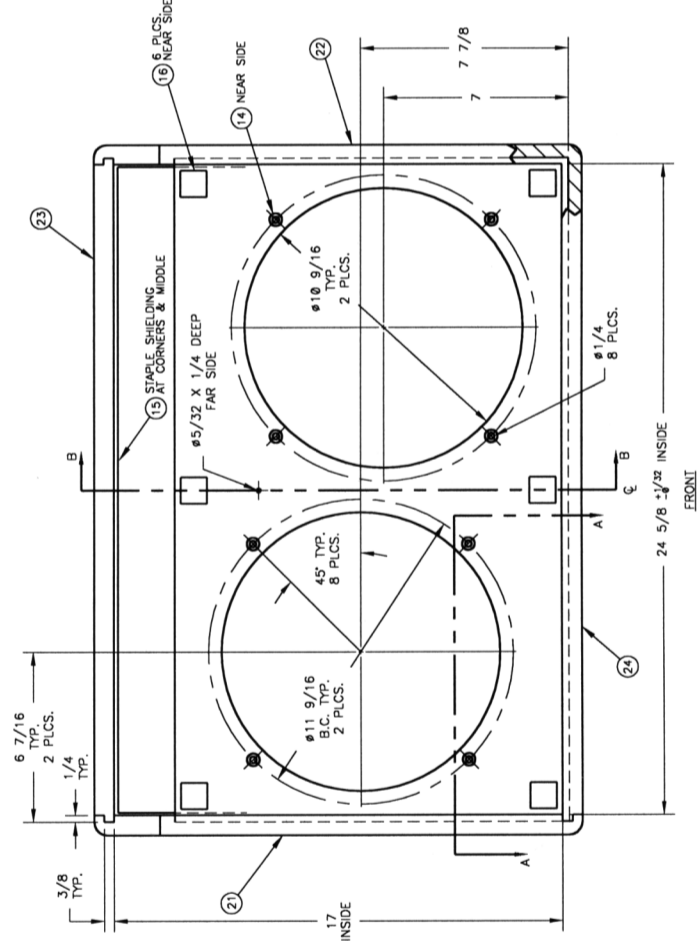
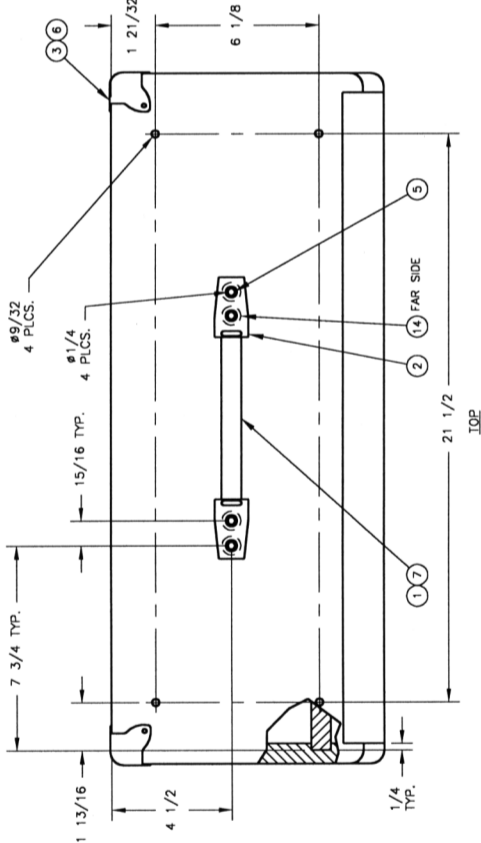
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SECTION A-A

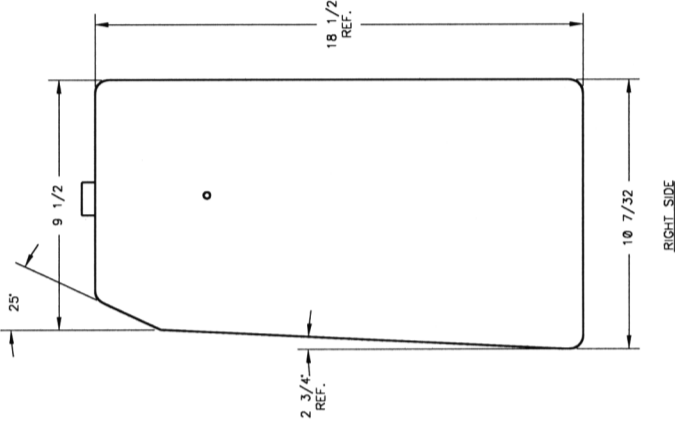


SECTION B-B



GRILLE ASSY  
P/N 0040072000

ITEM	QTY.	PART NO.	DESCRIPTION
3	1	0029085000	VELCRO STRIP LOOP 1.5" wd BLK
2	AR	0037780000	GRILLE CLOTH BLK/SLV
1	1	0031299000	GRILLE FRAME 1/2" P.B. 0027503000



RIGHT SIDE

ITEM	QTY.	PART NO.	DESCRIPTION
24	1	0031295000	CAB BOTTOM PRO
23	1	0031295000	CAB TOP PRO
22	1	0031293000	CAB RIGHT SIDE PRO
21	1	0031291000	CAB LEFT SIDE PRO
20	1	0031298000	CAB BAFFLE PRO
19	1	0031297000	CAB BACK LOW PRO
18	16	0027199000	SCRW SMAB 10x3/4 PHP NI
17	4	0023505000	MTG PLATE - SWIVEL CASTER
16	1	0029086000	VELCRO STRIP HOOK 1.5" wd BLK
15	AR	0027648000	TAPE ALUM 6" x60YDS
14	12	0021972000	NUT T 10-32x3/4 STR 3 PRNG BLX
13	2	0026568000	CORNER 3 HOLE NI
12	7	0029086000	VELCRO STRIP HOOK 1.5" wd BLK
11	7	0029085000	VELCRO STRIP LOOP 1.5" wd BLK
10	AR	0026570000	TOLEX BLACK
9	4	0026625000	SCRW WOOD 8x1 FH
8	4	0032524000	INSERT HANDLE
7	1	0019275000	INSERT GLIDE CUSHION 1.27 DIA
6	10	0026571000	SCRW SMAB 8X5/8 THP NI
5	4	0022244000	SCRW M 10-32x1-1/8 OHP NI
4	4	0019276000	GLIDE CAB 1.24x.335 NI
3	4	0026566000	CORNER 2 HOLE w/TAB NI
2	2	0019279000	HANDLE CAP 2 HOLE NICKEL
1	1	0027846000	HANDLE 9.25" NO LOGO

MATERIAL  
P/N 0027503000: 1/2" P.B., BACKBOARD  
P/N 0027502000: 3/4" P.B., ALL ELSE

FINISH  
ALL EXPOSED SURFACES TO BE STAINED BLACK.

TOLEX UNLESS NOTED

FRACT. --- 1/32  
.X --- 0.050  
.XX --- 0.010  
.XXX --- 0.010  
HOLE DIA. --- +0.005 - 0.001  
UNMARKED ANGLES ARE 90 DEGREES.

ENGINEER R&D  
DRAWN GIFFORD/GOOLER  
DATE 7/14/92

DFT. ENG. 5/15/00  
BY JHP/AN  
DATE 5/15/00  
APPROVED

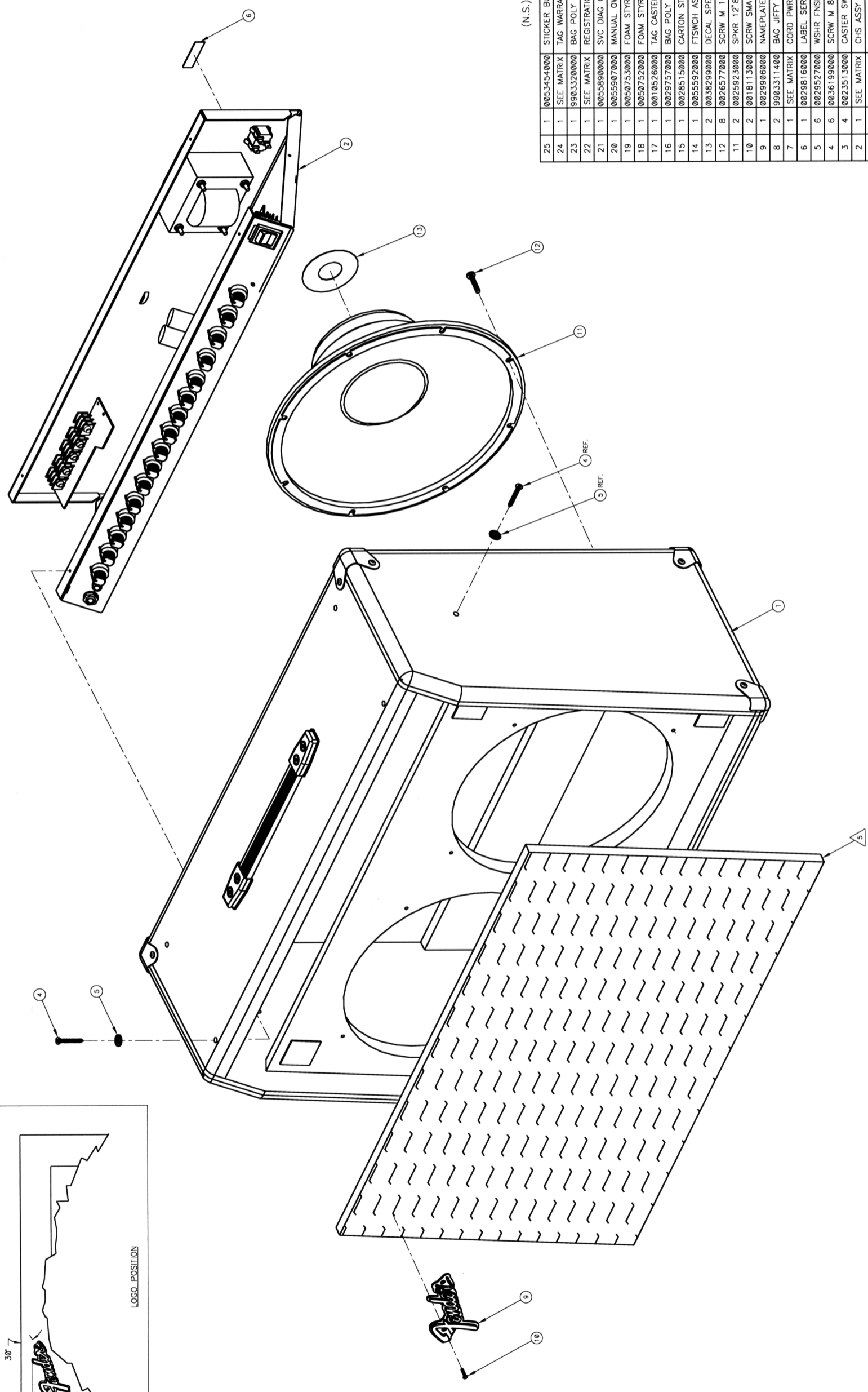
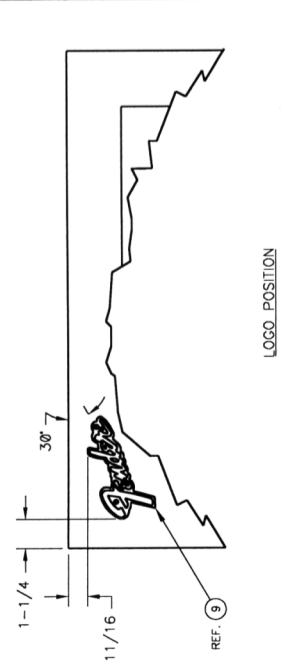
TITLE  
CABINET ASSEMBLY  
ULTIMATE CHORUS / STAGE 160

SHEET 1/1  
SCALE N/A

REV. F  
DRAWING NUMBER 0040071000  
ASSEMBLY

- FEET, HANDLE AND CORNERS NOT SHOWN IN ALL VIEWS FOR CLARITY.
  - LOGO IS NOT PART OF THIS ASSEMBLY.
  - TOLEX TO BE APPLIED IN STANDARD STYLE WRAP.
  - ALL CORNER RADI TO BE 1/2".
  - DRILL HOLES BEFORE COVERING.
  - COPYRIGHT - 2000 - FENDER MUSICAL INSTRUMENTS CORP.
  - 3 - 3 - SAMPLES OF FIRST PARTS MUST BE APPROVED BY FENDER R&D BEFORE STARTING PRODUCTION.
  - ALL DIMENSIONS ARE IN INCHES.
  - DO NOT SCALE DRAWING.
- NOTES: UNLESS OTHERWISE NOTED

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(N.S.) = NOT SHOWN

25	1	00534540000	STICKER BUMPER FEND SINCE 1946 (N.S.)
24	1	SEE MATRIX	TAG WARRANTY 5 YR FENDER-NEW (N.S.)
23	1	99033200000	BAG POLY ZIP 10x13.2M (N.S.)
22	1	SEE MATRIX	REGISTRATION CARD (N.S.)
21	1	00558900000	SVC DIAG COMB ULT CHRS DSP (N.S.)
20	1	00559070000	MANUAL OWNERS ULT CHRS DSP (N.S.)
19	1	00507530000	FOAM STYRENE BOTTOM (N.S.)
18	1	00507520000	FOAM STYRENE TOP (N.S.)
17	1	00105260000	TAG CASTER REMOVAL NOTICE (N.S.)
16	1	00297570000	BAG POLY 35x22x52 .0015 (N.S.)
15	1	00285150000	CARTON STAGE160/ULTIMATE CHR (N.S.)
14	1	00555920000	FTSWCH ASSY 3 BTN PRGR DSP (N.S.)
13	2	00382990000	DECAL SPEAKER GLOBE ROUND
12	8	00265770000	SCRW M 10-32x1 PHP BLX
11	2	00259230000	SPKR 12"8OHM 75W(099-4812-005)
10	2	00181130000	SCRW SMA 4x1/2 OHP BLX
9	2	00299060000	NAMEPLATE FENDER GENERIC SMALL
8	2	99033114000	BAG JIFFY #1 7-1/4x12 (N.S.)
7	1	SEE MATRIX	CORD PWR W/IEC CONN (N.S.)
6	1	00298160000	LABEL SERIAL MEXICO
5	6	00295270000	WSHR FNH 8-5/8 FLNGD BLX WX
4	6	00361990000	SCRW M 8-32x1-3/16 OHP BLX CP
3	4	00235130000	CASTER SWIVEL (N.S.)
2	1	SEE MATRIX	CHS ASSY ULT CHORUS DSP
1	1	00400710000	CAB ASSY ULT CHORUS/STAGE 160

ENGINEER: DESIDERIO  
 DRAWN: RICHARDS  
 DATE: 10/01/99

DFT. ENG. DATE: 10/01/99  
 DATE: 10/01/99  
 APPROVED: [Signature]

TITLE: END ITEM CHORUS DSP  
 ULTIMATE DRAWING NUMBER: 0226701020  
 SHEET SIZE: 1/1  
 SCALE: N/A  
 REV. B

MATERIAL	n/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
UNWARD ANGLES	ARE 90 DEGREES.

24	TAG WARRANTY 5 YR FENDER-NEW	00534120000	NONE	NONE	NONE	NONE	NONE
22	REGISTRATION CARD	00543870000	NONE	NONE	NONE	NONE	NONE
7	CORD PWR W/IEC CONN	00472480000	00472490000	00472500000	00472510000	00472520000	00539970000
2	CHS ASSY ULT CHRS DSP	00558990000	00559000000	00559010000	00559020000	00559030000	00559040000
ITEM	COMPONENT	ULT CHRS DSP 120W DOM. 0226701020	ULT CHRS DSP 240W AUST. 0226741020	ULT CHRS DSP 100W U.K. 0226751020	ULT CHRS DSP 0226761020	ULT CHRS DSP 0226771020	0226781020

5. GRILLE ASSEMBLY (00400772000) IS PART OF CABINET ASSEMBLY (0040071000).

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3. - 3 - SAMPLES OF FIRST PARTS MUST BE APPROVED BY FENDER R&D BEFORE STARTING PRODUCTION.

2. ALL DIMENSIONS ARE IN INCHES.

1. DO NOT SCALE DRAWING.

NOTES: UNLESS OTHERWISE NOTED