



# MODEL T

p/n 021-3303-000 (120V)

# SERVICE MANUAL



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# MODEL T

(This is the model name for warranty claims)

MAY 1998

## 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

### 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

### RESISTOR CODES

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

# SPECIFICATIONS

# PARTS LIST

NOTE: SHADED ITEMS ARE FOR REFERENCE ONLY

<b>Product Release No.:</b>	PR 344 <i>(This is not a model number)</i>	
<b>Part Number:</b>	120V Version	: 21-3303
	240V Aust	: 21-3333
	230V UK	: 21-3343
	230V	: 21-3363
	100V	: 21-3373
<b>Input impedance:</b>	1 MΩ	
<b>Tubes:</b>	Four 6L6GC Tubes	p/n 053980
	Two 12AX7A Tubes	p/n 023572
	Four 12AX7WA Tubes	p/n 013341
<b>Power output:</b>	120 Watts RMS Arena	
	29 Watts RMS Club	
	1 kHz sine wave into 8Ω @ 5% THD Presence @ "1"	
<b>Power Requirements:</b>	120V:	120 VAC 60 Hz, 360W
	240V:	240 VAC 50 Hz, 360W
	230V:	230 VAC 50 Hz, 360W
	100V:	100 VAC 50/60 Hz, 360W
<b>Speaker:</b>	Designed for use with Sunn 412 Loudspeaker Enclosures	
<b>Fuse:</b>	T4A 250V fuse for 100V and 120V versions	
	T2A 250V fuse for 230V and 240V versions	
<b>Footswitch:</b>	2 Button Footswitch	p/n 053584
	(Controls Channel & Effects Loop Select)	
<b>Dimensions:</b>	Height:	10.2" (25.9 cm)
	Width:	24.5" (62.2 cm)
	Depth:	11.6" (29.5 cm)
<b>Weight:</b>	45 lbs.	(20.4 kg)

Product specifications are subject to change without notice

## MAIN PRINTED CIRCUIT BOARD ASSEMBLY

QTY	PART #	DESCRIPTION	REFERENCE DESIGNATION
2	051660	BRACKET R/A PC MT #6-32	BK1 BK2
1	038690	CAP AE AX 1.0uF 100V	C17
2	028953	CAP AE AX 100uF 350V +50% -10%	C47 C48
2	038692	CAP AE AX 10uF 35V	C35 C38
3	024819	CAP AE AX 22uF 500V	C49 C52 C53
1	038693	CAP AE AX 47uF 16V	C1
2	024820	CAP AE AX 47uF 350V	C50 C51
2	041589	CAP AE AX 47uF 500V	C54 C55
2	028494	CAP AE RDL 1000uF 35V 20%	C60 C61
2	031040	CAP AE RDL 100uF 100V 20%	C56 C57
2	028482	CAP AE RDL 220uF 50V 20%	C58 C59
2	036954	CAP AE RDL 22uF 63V 20%	C62 C63
3	051458	CAP CD 470pF 500V 10%	C3 C8 C18
1	011435	CAP CD 680pF 1000V 10%	C16
2	025951	CAP CD 750pF 1000V 10%	C13 C15
1	025995	CAP CD 8200pF 1KV 20%	C46
5	027272	CAP MPF .047uF 63V	C21 C33 C37 C32 C36
1	027280	CAP MPF .15uF 63V	C34
1	027286	CAP MPF .47uF 63V	C31
1	024823	CAP MPF RDL .01mF 400V 10%	C22
6	024833	CAP MPF RDL .022uF 400V 10%	C9 C10 C12 C19 C20 C40
4	024845	CAP MPF RDL .047uF 400V 10%	C2 C14 C24 C23
2	024846	CAP MPF RDL .047uF 630V 10%	C44 C45
2	024853	CAP MPF RDL .1uF 250V 10%	C42 C43
1	037666	CAP PPF .001uF 400V 10%	C5
1	026202	CAP PPF .0022uF 600V	C4
2	025962	CAP PPF .0047uF 400V	C6 C41
2	033477	CAP RF 63V .68uF 10%	C7 C11
2	041507	CONTROL SNAPIN 1M 10A	R6 R15
2	047540	CONTROL SNAPIN 250K 15A	R37 R18
3	037597	CONTROL SNAPIN 250K 30A	R14 R36 R40
1	047031	CONTROL SNAPIN 25K 30C TAPER	R110
2	041510	CONTROL SNAPIN 25K B	R16 R38
2	026133	CONTROL TRIM 25K LIN	R141 R139

# PARTS LIST

## MAIN PRINTED CIRCUIT BOARD ASSEMBLY (CONT)

QTY	PART #	DESCRIPTION	REFERENCE DESIGNATION
17	026730	DIODE 1N4006/1N5062 800PRV 1A LL	CR35 CR37 CR36 CR38 CR41 CR44 CR42 CR43 CR39 CR47 CR49 CR50 CR48 CR40 CR28 CR29 CR57
15	006260	DIODE 1N4448/1N914B SIGNAL LL	CR1 CR9 CR13 CR12 CR25 CR15 CR18 CR16 CR17 CR19 CR21 CR22 CR24 CR11 CR23
2	029690	DIODE HV 3KV 200mA LL	CR33 CR34
4	031017	DIODE ZEN 1N5223B 2.7V 5% LL	CR56 CR55 CR54 CR53
2	031019	DIODE ZEN 1N5245B 15V .5W 5% LL	CR2 CR3
2	028119	DIODE ZEN 1N5353B 16V 5W 5% LL	CR51 CR52
2	041811	DIODE ZEN 1N5368B 47V 5W 5% LL	CR45 CR46
7	041296	EYELET G.S. 4-4	P2A P3A P4A P5A P13A P14A P35
23	025802	FSTN TAB MALE .250x.032 PCB MT	CP26 CP2 CP1 CP3 CP4 CP5 CP6 CP7 CP8 CP10 CP9 CP21 CP19 CP20 CP15 CP16 CP25 CP24 CP17 CP18 CP23 CP13 CP14
3	026000	FSTN TAB MALE PCB MT .187x.032	CP11 CP12 CP22
1	027416	HDR .1 CTR 8 CKT SQ PIN	P15
2	031611	IC DUAL OPAMP PC4560	U1 U2
1	037117	JACK PCB MONO CLOSED CIRCUIT	J1
3	026481	JACK TIP	J11 J12 J10
2	033177	LED RED/GREEN 5x5mm BI-COLOR	LD3 LD2
2	036178	SPACER LED .5x.1 BRN	@ LD3 LD3
1	025926	LED RED PC MOUNT 3mm	LD1
1	051431	PCB FAB MAIN MODEL T	
2	036613	RELAY DPDT DIP 24 VOLT 8.3mA	K2 K1
7	025116	RES CF 1/2W 5% 100K LL	R10 R3 R21 R31 R34 R12 R112
1	025113	RES CF 1/2W 5% 10K LL	R104
4	027871	RES CF 1/2W 5% 1K LL	R154 R153 R148 R147
1	025117	RES CF 1/2W 5% 220K LL	R127
2	026368	RES CF 1/2W 5% 100 ohm LL	R133 R134
1	036957	RES CF 1/2W 5% 470K LL	R26
1	031065	RES CF 1/2W 5% 91K LL	R111
1	041277	RES CF 2W 5% 820 ohm	R83
3	024969	RES CF 1/4W 5% 1.5K LL	R4 R22 R46

# PARTS LIST

## MAIN PRINTED CIRCUIT BOARD ASSEMBLY (CONT)

QTY	PART #	DESCRIPTION	REFERENCE DESIGNATION
1	024937	RES CF 1/4W 5% 10 ohm LL	R81
5	024997	RES CF 1/4W 5% 100K LL	R90 R96 R97 R113 R114
15	024981	RES CF 1/4W 5% 10K LL	R25 R9 R20 R30 R44 R84 R85 R82 R98 R91 R92 R93 R33 R152 R146
1	028955	RES CF 1/4W 5% 130K LL	R138
1	024999	RES CF 1/4W 5% 150K LL	R107
2	024986	RES CF 1/4W 5% 18K LL	R27 R137
1	024965	RES CF 1/4W 5% 1K LL	R100
11	025069	RES CF 1/4W 5% 1M LL	R1 R43 R86 R87 R101 R99 R5 R19 R41 R103 R106
4	025059	RES CF 1/4W 5% 220K LL	R17 R24 R29 R39
4	024987	RES CF 1/4W 5% 22K LL	R42 R157 R151 R145
1	024959	RES CF 1/4W 5% 330 ohm LL	R89
1	024989	RES CF 1/4W 5% 33K LL	R35
1	024961	RES CF 1/4W 5% 470 ohm LL	R105
1	024977	RES CF 1/4W 5% 4.7K LL	R109
5	025065	RES CF 1/4W 5% 470K LL	R7 R8 R23 R28 R95
3	024993	RES CF 1/4W 5% 47K LL	R45 R47 R108
1	028948	RES CF 1/4W 5% 6.2K LL	R94
1	024963	RES CF 1/4W 5% 680 ohm LL	R102
2	024995	RES CF 1/4W 5% 68K LL	R13 R2
2	024964	RES CF 1/4W 5% 820 ohm LL	R11 R32
2	029613	RES CF 1/4W 5% 91K LL	R140 R142
8	027354	RES FILM 1W 5% 220K LL	R125 R126 R156 R155 R150 R149 R144 R143
1	029870	RES FILM 2W 5% 1.5K LL	R128
1	036921	RES FILM 2W 5% 1K	R129
2	033095	RES MOX FP 1W 5% 1 ohm LL	R117 R118
2	036470	RES MOX FP 1W 5% 10K LL	R131 R132
1	041740	RES MOX FP 2W 5% 4.7K	R130
4	041256	RES WW BT 5W 10% 470 ohm	R119 R120 R123 R124
2	029047	RES WW BT 7W 10% 270 ohm	R135 R136
4	051442	SOCKET, TUBE 9PIN PCB MOUNT	V2 V1 V3 V4
1	028091	SWITCH PUSH SLFLK SHORT STROKE	S1
1	028104	BUTTON PUSH BLACK	@ S1
1	049976	SWITCH TOGGLE DPST DC W/NUTS	S6
1	028503	THERMISTOR 10 ohm 5A C60-11	TH1

# PARTS LIST

## MAIN PRINTED CIRCUIT BOARD ASSEMBLY (CONT)

QTY	PART #	DESCRIPTION	REFERENCE DESIGNATION
1	041465	XSTR N-CH JFET J113 TO-92	Q1
5	016739	XSTR NPN 2N4401 TO-92	Q8 Q7 Q6 Q4 Q5

## EFFECTS PCB ASSEMBLY

1	053963	PCB FAB FX MODEL T	
1	048914	CABLE RIBBON 8 CKT 7 in	@P15
1	038690	CAP AE AX 1.0uF 100V	C30
1	009512	CAP AE AX 22uF 25V 20%	C28
1	027286	CAP MPF .47uF 63V	C39
1	024823	CAP MPF RDL .01uF 400V 10%	C25
1	024845	CAP MPF RDL .047uF 400V 10%	C29
1	024853	CAP MPF RDL .1uF 250V 10%	C27
1	024876	CAP MPF RDL .68uF 250V 10%	C26
4	047540	CONTROL SNAPIN 250k 15A	R49 R51 R63 R65
5	006260	DIODE 1N4448 SIGNAL LL	CR5-6 CR10 CR20 CR26
1	031635	DIODE ZEN 1N5240B 10V 5% LL	CR4
2	031019	DIODE ZEN 1N5245B 15V 5% LL	CR7-8
4	037036	JACK PHONE PCB MONO CA PREMIUM	J2 J4 J5-6
1	031570	JACK PHONE PCB STEREO PREMIUM	J3
2	036613	RELAY DPDT DIP 24 VOLT 8.3mA	K3-4
2	025116	RES CF 1/2W 5% 100k LL	R57 R69
2	024969	RES CF 1/4W 5% 1.5k LL	R56 R70
4	024937	RES CF 1/4W 5% 10 ohm LL	R61 R74 R79 R80
1	024997	RES CF 1/4W 5% 100k LL	R62
2	024981	RES CF 1/4W 5% 10k LL	R55 R68
2	024965	RES CF 1/4W 5% 1k LL	R60 R75
7	025069	RES CF 1/4W 5% 1M LL	R53-54 R67 R71-73 R77
2	025059	RES CF 1/4W 5% 220k LL	R58-59
1	024987	RES CF 1/4W 5% 22k LL	R78
1	024989	RES CF 1/4W 5% 33k LL	R48
1	028948	RES CF 1/4W 5% 6.2k LL	R76
4	024980	RES CF 1/4W 5% 8.2k LL	R50 R52 R64 R66

# PARTS LIST

## EFFECTS PCB ASSEMBLY (CONT)

QTY	PART #	DESCRIPTION	REFERENCE DESIGNATION
1	028091	SWITCH PUSH SLFLK SHORT STROKE	S2
1	048451	BUTTON PUSH OFF WHITE	@S2
1	041465	XSTR N-CH JFET J113 TO-92	Q3
1	016739	XSTR NPN 2N4401 TO-92	Q2

## CHASSIS ASSEMBLY

1	051432	PCB ASSY MAIN PCB SUNN MODEL T	
1	053964	PCB ASSY FX LOOP SUNN MODEL T	
2	028069	BUSHING SNAP 3/4x1-1/8 WHT	@ PWR XFMR
1	018022	BUSHING SNAP 5/16x17/32 BLK	@ CHOKE
2	012560	BUSHING SNAP 5/8x27/32 BLK	@ OUTPUT XFMR
1	051425	CHASSIS SUNN MODEL T	
1	036486	CHOKE	CHOKE L1
1	032219	COLLAR-PILOT LIGHT	@ PILOT LIGHT
1	047213	CONN. AC LINE MALE IEC	IEC PWR JACK
1	053892	COVER BOX BIAS CONTROLS	
4	026730	DIODE 1N4006 800V LL	@ V7 V8 V9 V10
1	051439	FRONT PANEL SUNN MODEL T	
	036702	FUSE HOLDER 3AG FINGER GRIP	@ LINE FUSE F1
	013737	FUSE TD 1-1/4x1/4" 250V 4A	LINE FUSE F1 (120V/100V UNITS)
	013115	FUSE TD 20mm x 5mm 250V 2A	LINE FUSE F1 (230V/240V UNITS)
	036703	FUSE HOLDER 5mm FINGER GRIP	@ V7-V10 PROTECT, @ F1 (230V/240V).
	013004	FUSE 100mA TIME 5mm	V7-V10 PROTECT F2 F3
14	024604	KNOB BLACK W/WHITE STAMP 1-10	@ ALL CONTROLS
1	021741	HOLDER DIAL LITE ASSY PILOT	@ PILOT LIGHT
1	026471	JACK XLR MALE PANEL MOUNT	XLR LINE OUT
1	021550	JACK PHONE TIP SHUNT 12A	MAIN SPKR JACK J8
1	021956	JACK PHONE OPEN CKT 11	EXT. SPKR JACK J9
1	025718	JEWEL PILOT LITE RED #20	@ PILOT LIGHT
1	031625	NUT 1/16-27 HOLDER PILOT LIGHT	@ PILOT LIGHT
4	028272	NUT KEP 1/4x20 FOJ	@ PWR XFMR
4	022004	NUT KEPS #8-32 ZINC	@ OUTPUT XFMR

# PARTS LIST

## PARTS LIST

### CAB ASSEMBLY

#### CHASSIS ASSEMBLY (CONT)

QTY	PART #	DESCRIPTION	REFERENCE DESIGNATION
2	097360	NUT HEX 4-40 EX LOCK	@ IEC PWR JACK
2	016352	NUT HEX 3/8-32 x 3/32 TK NI	@ SPKR JACKS J8 J9
1	021642	PILOT LIGHT #T47	@ PILOT LIGHT
4	024969	RES CF 1/4W 5% 1.5K LL	@ V7 V8 V9 V10
2	014172	SCREW M 4-40 x 1/4" PHP BLX	@ IEC PWR JACK
2	026521	SCREW SMB 8 x 3/8" RH PHS BLK	@ XLR LINE OUT
2	021568	SCREW M 6-32 x 3/16" PHP NI	@ IMPED. SELECTOR
4	026553	SCREW M 8-32 x 3/8" PHP BLX	@ OUTPUT XFMR
4	026501	SCREW C 1/4-20x1/2" HH BLX	@ PWR XFMR
2	014999	SCREW M 6-32x1/4 PHP BLX	@ BK1 BK2
16	032806	SCREW TF 6-32x1/4" PHP BLX	@ CHOKE , SOCKETS, COVER BOX
2	038900	SCREW TF 6-32x1/4" PHP ZI	@ CHASSIS GNDS
25	031184	SCREW M 6-32x1/4 PHP BLX ITLW	@ STANDOFFS
1	036570	SWITCH TOGGLE DPST W/NUTS	PWR SWITCH
1	026472	SWITCH SLIDE DPTT	IMPED. SELECTOR
1	051855	SWITCH ROCKER DPST W/BEZEL SUNN	STANDBY SWTCH
2	023572	TUBE 7025/12AX7A CHINESE	V1 V2
4	013341	TUBE 7025/12AX7WA RUSSIAN MADE	V3 V4 V5 V6
4	053980	TUBE 6L6GC SVETLANA	V7 V8 V9 V10
4	023580	TUBE SOCKET 8 PIN	@ V7 V8 V9 V10
2	023606	TUBE SOCKET 9 PIN	@ V5 V6
4	020424	TUBE RING UNIVERSAL (277H-2)	@ V7 V8 V9 V10
2	023598	TUBE SHIELD	V5 V6
4	053893	TUBE SHIELD MODEL T	V1 V2 V3 V4
2	022293	WSHR FLAT .473x.750 NI	@ PWR SWTCH & ARENA/CLUB SWTCH
8	022319	WSHR FLT 1/4x9/16 NI	@ PWR XFMR
2	031153	WSHR FLAT 3/8 x .614" NI	@ SPKR JACKS J8 J9
2	016436	WSHR LCK INTL 3/8 x .687 x .035 NI	@ SPKR JACKS J8 J9
2	026564	WSHR FLAT .284x1/2 ZI	@ R139 R141
5	028501	WSHR FLAT .477x.625 NI	@ J2-J6 FX BOARD JACKS
1	026478	XFMR OUTPUT 100W 4,8,16 OHMS	OUTPUT XFMR T2
1	051463	XFMR POWER SUNN MODEL T	PWR XFMR T1

QTY	PART #	DESCRIPTION	REFERENCE DESIGNATION
8	029071	CORNER NOTCHED NICKEL (FD)	
4	051049	FOOT RUBBER 1.5 DIA	
2	027846	HANDLE 9.25" NO LOGO	
4	019279	HANDLE CAP 2 HOLE NICKEL	
2	032524	INSERT HANDLE	
8	021972	NUT T 10-32x3/4 STR 3 PRNG BLX	
16	026571	SCRW SMAB 8x5/8 THP NI	
4	026625	SCRW WOOD 8x1 FH	
8	031344	SCRW SMA 10x3/4 OHP NI	
.012	027648	TAPE ALUM 6"x60 YDS	
1.05	051343	VINYL TOLEX 4227A	

### UNIT ASSEMBLY

1	053861	CABINET ASSY MODEL T	
	051426	CHASSIS ASSY. 120V DOM.	
	051428	CHASSIS ASSY. 240V AUST.	
	051427	CHASSIS ASSY. 230V	
	051429	CHASSIS ASSY. 100V JAP.	
	047248	CORD PWR W/IEC CONN DOM	
	047250	CORD PWR W/IEC CONN 240V AUST	
	047249	CORD PWR W/IEC CONN 240V UK	
	047251	CORD PWR W/IEC CONN 230V EUR	
	053997	CORD PWR W/IEC CONN 100V JAP	
1	053584	FOOTSWITCH ASSY 2 BUTTON SUNN	
1	051437	GRILLE FRONT SUNN MODEL T	
1	051438	GRILLE REAR SUNN MODEL T	
1	051380	NAME PLATE SUNN	@ FRONT GRILLE
4	097360	NUT HEX 4-40 EXT LOCK	@ SUNN LOGO
4	014171	SCRW M 4-40x3/8 PHP BLX	@ SUNN LOGO
8	036112	SCRW SMAB 6-32x1-1/4 OHP BLX W/WS	@ GRILLES
4	9904101550	SCREW M 8-32x1-1/4 OHP BLX WX	@ CAB TO CHASS
4	029527	WSHR FNSH 8-5/8 FLNGD BLX WX	@ CAB TO CHASS

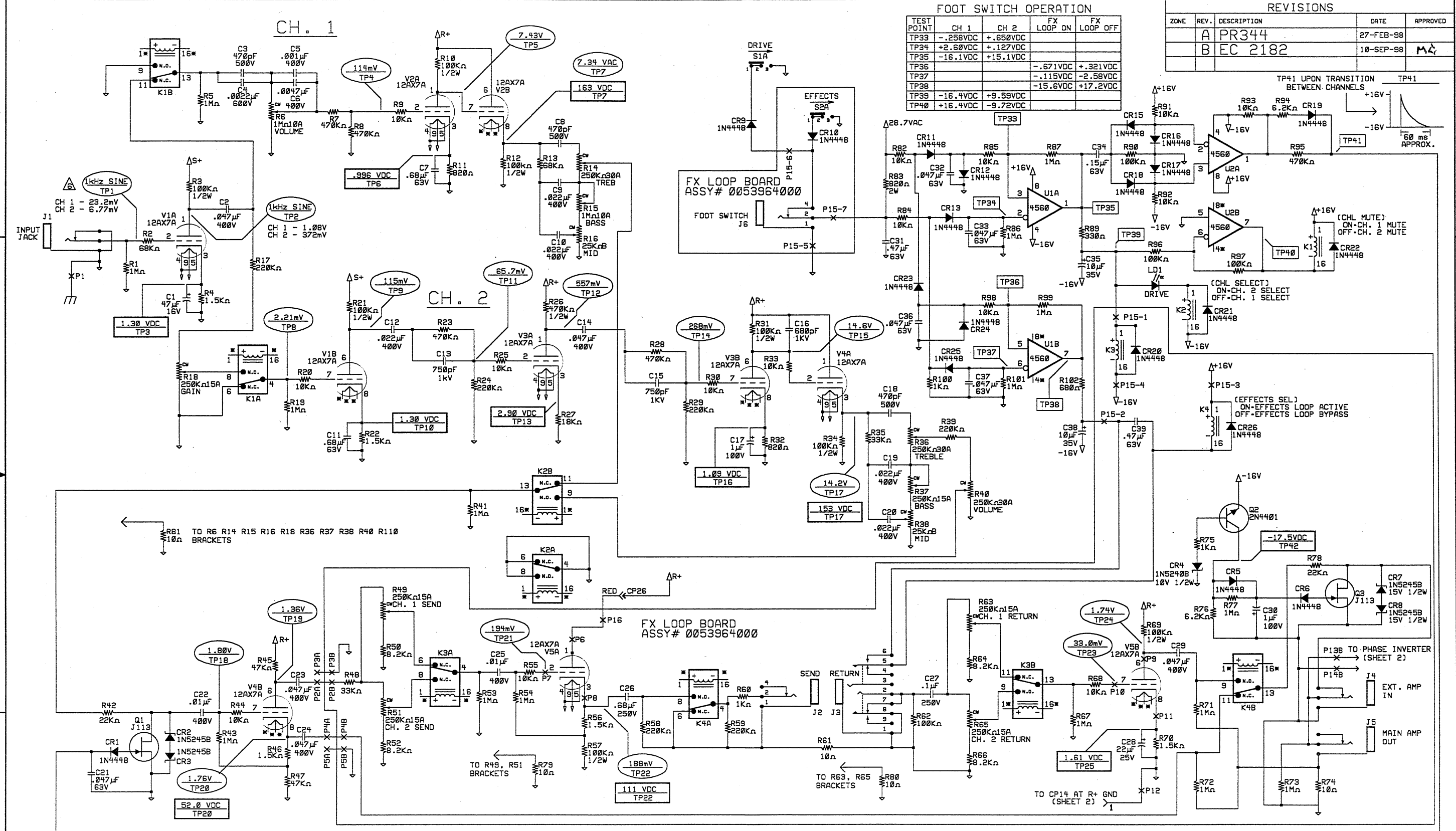
# PARTS LIST

## FOOTSWITCH ASSEMBLY

<b>QTY</b>	<b>PART #</b>	<b>DESCRIPTION</b>	<b>REFERENCE DESIGNATION</b>
1	028448	PCB ASSY FT SW 2 BUTTON	
1	028107	HSG FTSW 2 BUTTON	
1	053585	TOP PLATE	
1	028109	HSG END CUP LEFT FTSW	
1	028143	HSG END CUP RIGHT FTSW	
8	028684	SCRW SMB 6x3/8 PH PHS BLX	
1	028895	CABLE ASSY FTSW RT ANG 12'	
2	031899	WSHR NYL .485x.775x.150 TK	
1	031647	NUT HEX 12mmx1mm NI	

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	PR344	27-FEB-98	
	B	EC 2182	10-SEP-98	MA

FOOT SWITCH OPERATION				
TEST POINT	CH 1	CH 2	FX LOOP ON	FX LOOP OFF
TP33	-0.258VDC	+0.650VDC		
TP34	+2.60VDC	+1.127VDC		
TP35	-16.1VDC	+15.1VDC		
TP36			-0.671VDC	+0.321VDC
TP37			-0.115VDC	-2.58VDC
TP38			-15.6VDC	+17.2VDC
TP39	-16.4VDC	+9.59VDC		
TP40	+16.4VDC	-9.72VDC		



NOTES: UNLESS OTHERWISE SPECIFIED

- SHEET 1 INSTANCES NOT USED: CR14 R88
- SHEET 1 LAST INSTANCES: C39, CR26, J6, K4, LD1, P16, Q3, R102, S2, U2, V5.
- P15-8 NOT CONNECTED
- ALL RESISTORS ARE 1/4W 5% CARBON FILM
- ALL VOLTAGES MEASURED WITH RESPECT TO GROUND USING A DVM OF AT LEAST 1MΩ AC INPUT IMPEDANCE AND 10MΩ DC INPUT IMPEDANCE. VOLTAGES MAY VARY ±20% TEST CONDITIONS: UNIT AT RATED LINE VOLTAGE.
- ALL CONTROLS SET TO "5/2" (50% ROTATION) EXCEPT CH 1 VOL AT "3", CH 2 GAIN AT "2", CH 2 VOL AT "9".
- EFFECTS LOOP ENGAGED WITH GUITAR CORD FROM SEND TO RETURN, LOOP CONTROLS SET FOR UNITY GAIN (APPROX. "5/2").
- BIAS SET FOR 30mV PER TUBE. SEE NOTE 8
- ALL DC VOLTAGES MEASURED WITH NO INPUT SIGNAL.

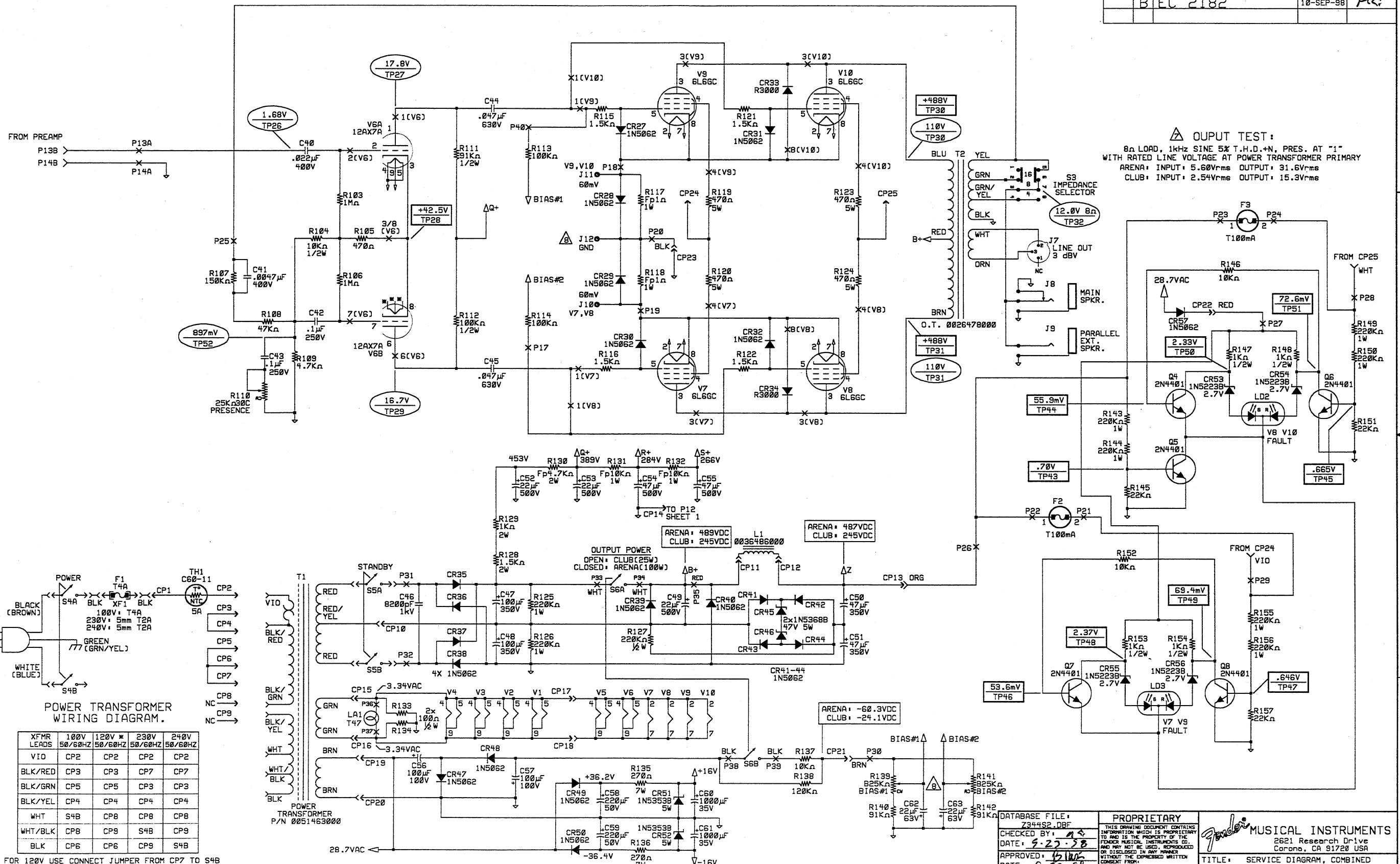
⚠ ALL AC VOLTAGES MEASURED WITH INPUT SIGNALS NORMALIZED TO PRODUCE 1.00V RMS AT TP18 WHICH PRODUCES 12.0Vrms INTO AN 8Ω RESISTIVE LOAD AT TP32 (SHEET 2).

⚠ OUTPUT SWITCH WITH 1kHz SINE APPLIED AT EXT. AMP IN JACK. PRESENCE CONTROL FULL CCW ("1")

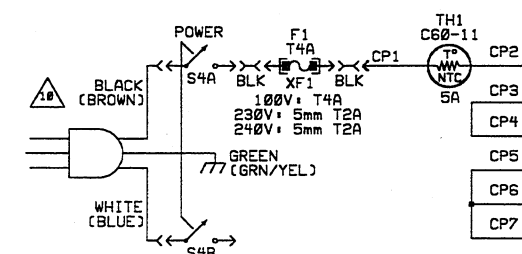
⚠ BIAS ADJUSTMENTS - OUTPUT SWITCH SET TO ARENA, NO SIGNAL APPLIED (SHEET 2)  
 A. - SET BIAS CONTROL TO OBTAIN 60mV BETWEEN J10 AND J12 TEST JACKS  
 B. - SET BALANCE CONTROL TO OBTAIN 0mV BETWEEN J10 AND J11 TEST JACKS

DATABASE FILE: 7344S1.DBF CHECKED BY: MC DATE: 9-25-98 APPROVED: [Signature] DATE: 9-25-98 TOLERANCES: UNLESS OTHERWISE NOTED X.X ±0.050" X.XX ±0.018" X.XXX ±0.005" ANGLES ±0.500°	PROPRIETARY THIS DRAWING DOCUMENT CONTAINS INFORMATION WHICH IS PROPRIETARY TO AND IS THE PROPERTY OF THE FENDER MUSICAL INSTRUMENTS CO. AND MAY NOT BE USED, REPRODUCED OR DISCLOSED IN ANY MANNER WITHOUT THE EXPRESSED WRITTEN CONSENT FROM FENDER MUSICAL INSTRUMENTS CO. REGIONAL HEADQUARTERS 2621 RESEARCH DRIVE CORONA, CA 91728 USA	FENDER MUSICAL INSTRUMENTS 2621 Research Drive Corona, CA 91728 USA TITLE: SERVICE DIAGRAM, COMBINED SUNN MODEL T (SCHEMATIC) DRAWN: M.COZZA DRAWING NUMBER: 0051434000 ENGR: M.COZZA REV: B CREATED: JULY 1997 PLOTTED: 23-SEP-98 SCALE: N/A SHEET 1 OF 4
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REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	PR344	27-FEB-98	
	B	EC 2182	10-SEP-98	MC



**OUTPUT TEST:**  
 8Ω LOAD, 1kHz SINE 5% T.H.D.+N, PRES. AT "1"  
 WITH RATED LINE VOLTAGE AT POWER TRANSFORMER PRIMARY  
 ARENA: INPUT: 5.60Vrms OUTPUT: 31.6Vrms  
 CLUB: INPUT: 2.54Vrms OUTPUT: 15.3Vrms



POWER TRANSFORMER WIRING DIAGRAM.

XFMR LEADS	100V 50/60HZ	120V 50/60HZ	230V 50/60HZ	240V 50/60HZ
V10	CP2	CP2	CP2	CP2
BLK/RED	CP3	CP3	CP7	CP7
BLK/GRN	CP5	CP5	CP3	CP3
BLK/YEL	CP4	CP4	CP4	CP4
WHT	S4B	CP8	CP8	CP8
WHT/BLK	CP8	CP9	S4B	CP9
BLK	CP6	CP6	CP9	S4B

\* FOR 120V USE CONNECT JUMPER FROM CP7 TO S4B

NOTES: SEE SHEET 1  
 SHEET 2 LAST INSTANCES: C63, CR57, J12, LD3, P40, Q8, R157, S6, V10

DATABASE FILE: 734452.DRF CHECKED BY: [Signature] DATE: 5-27-98 APPROVED: [Signature] DATE: 9-22-98	<b>PROPRIETARY</b> THIS DRAWING DOCUMENT CONTAINS INFORMATION WHICH IS PROPRIETARY TO AND IS THE PROPERTY OF THE FENDER MUSICAL INSTRUMENTS CO. AND MAY NOT BE USED, REPRODUCED OR DISCLOSED IN ANY MANNER WITHOUT THE EXPRESSED WRITTEN CONSENT FROM: FENDER MUSICAL INSTRUMENTS CO. REGIONAL HEADQUARTERS 8821 RESEARCH DRIVE CORONA, CA 91728 USA NEXT HIGHER ASSEMBLY:	<b>MUSICAL INSTRUMENTS</b> 2621 Research Drive Corona, CA 91728 USA TITLE: SERVICE DIAGRAM, COMBINED <b>SUNN MODEL T (SCHEMATIC)</b> SIZE: DRAWN: M. COZZA DRAWING NUMBER: REV. D ENGR: M. COZZA 0051434000 B CREATED: JULY 1997 SCALE: N/A PLOTTED: 23-SEP-98 SHEET 2 OF 4
--	--	---



8

7

6

5

4

3

2

1

NOTES:

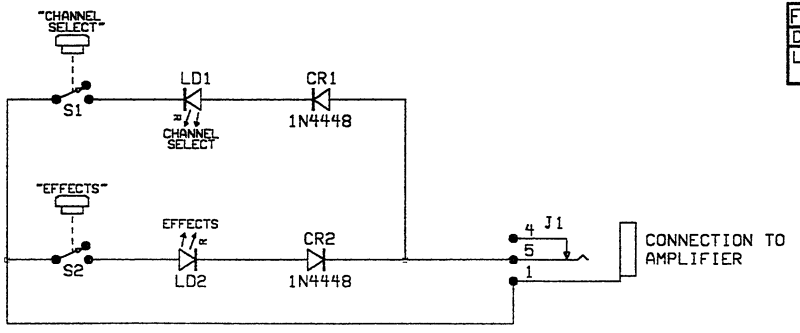
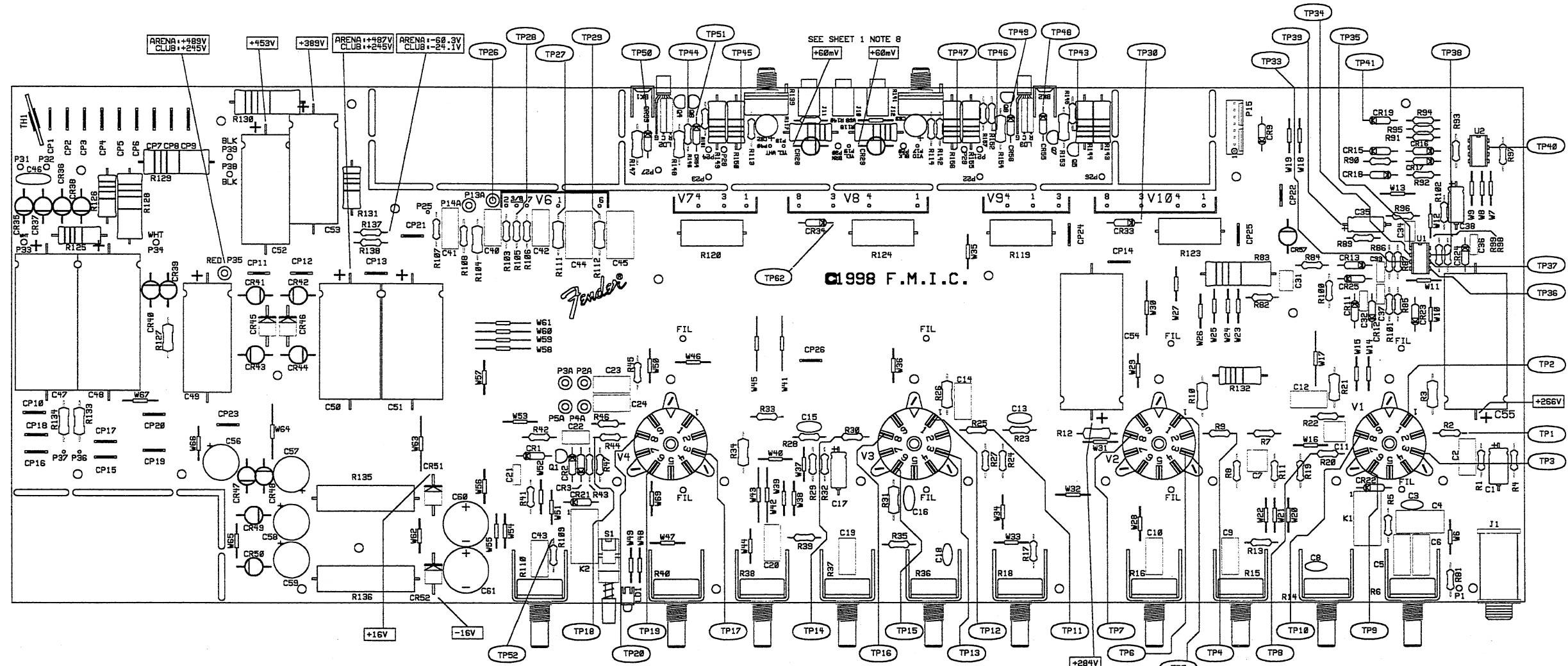
- 1. PCB SHOWN AS FABRICATED BEFORE BREAKAWAY IS PLACED IN CHASSIS.
- 2. WIRES NOT SHOWN FOR CLARITY.

TP32 AT IMPEDANCE SELECTOR SWITCH (GREEN WIRE)

TP21 THROUGH TP25 AND TP42 SHOWN ON SHEET #.

REVISIONS

ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	PR344	27-FEB-98	
	B	EC 2182	18-SEP-98	



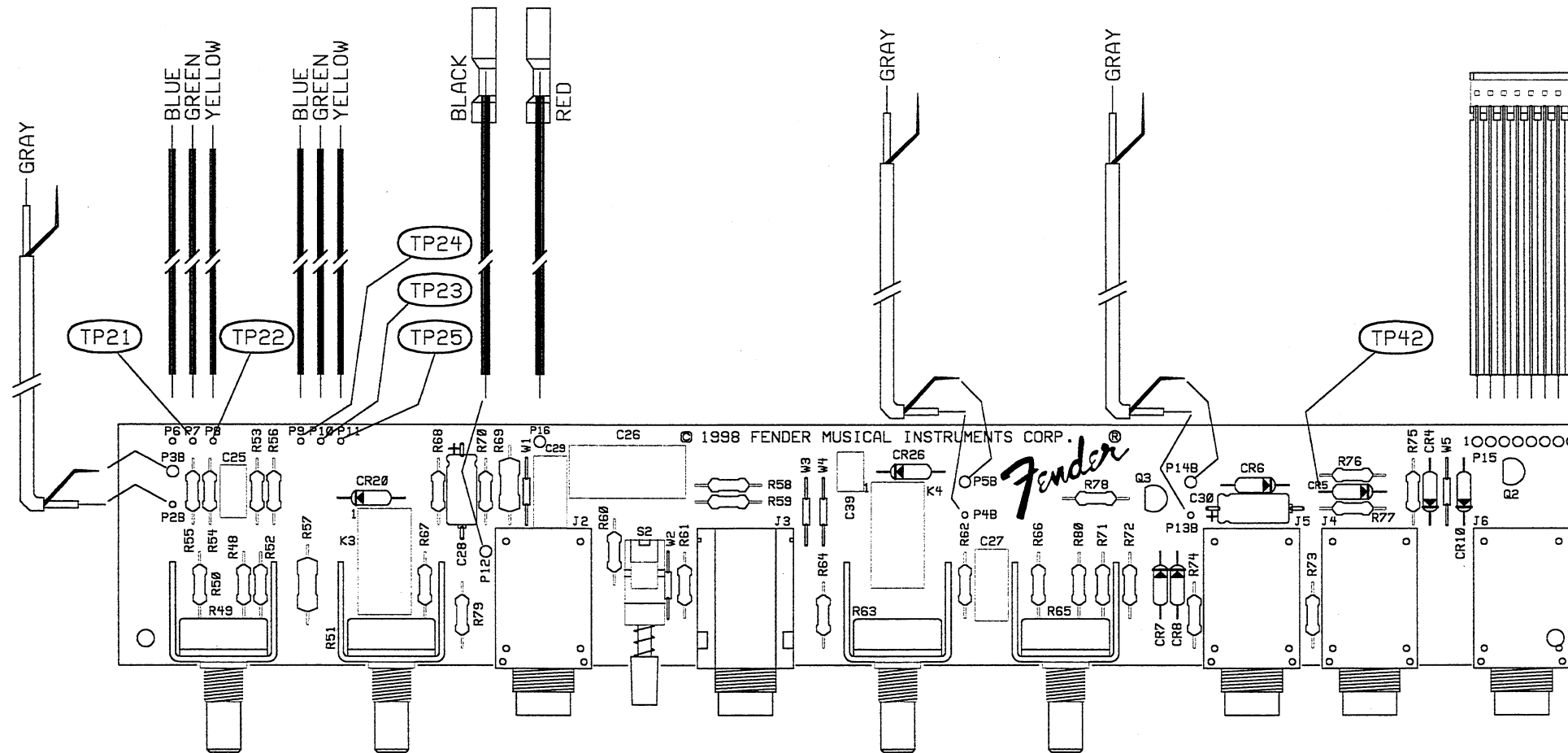
FOOTSWITCH ASSY # 0053584000

FILM/DWG: SERVICE DIAGRAM  
 DATABASE: DATE: 10-SEP-98  
 LAYERS PLOTTED: 1 2 3 4 10 18

DATABASE FILE: Z344P1.DBF CHECKED BY: <i>[Signature]</i> DATE: 9-22-98 APPROVED: <i>[Signature]</i> DATE: 9-22-98 TOLERANCES: UNLESS OTHERWISE SPECIFIED .X.X ±.050" .X.XX ±.010" .X.XXX ±.005" ANGLES ±.500°	<b>PROPRIETARY</b> THIS DRAWING DOCUMENT CONTAINS INFORMATION WHICH IS PROPRIETARY TO AND IS THE PROPERTY OF THE FENDER MUSICAL INSTRUMENTS CO. AND MAY NOT BE USED, REPRODUCED OR DISCLOSED IN ANY MANNER WITHOUT THE EXPRESSED WRITTEN CONSENT FROM: FENDER MUSICAL INSTRUMENTS CO. REGIONAL HEADQUARTERS 2621 RESEARCH DRIVE CORONA, CA 91728 USA NEXT HIGHER ASSEMBLY:	<b>Fender</b> MUSICAL INSTRUMENTS 2621 Research Drive Corona, CA 91720 USA TITLE: SERVICE DIAGRAM, COMBINED (PCB ASSY) SUNN MODEL T (MAIN PCB) SIZE: DRAWN: M.COZZA DRAWING NUMBER: 0051434000 REV: B ENGR: M.COZZA SCALE: CREATED: 23-FEB-98 PLOTTED: 10-SEP-98 SHEET 3 OF 4
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REVISIONS

ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	RELEASED PR344	27-FEB-98	
	B	EC 2182	10-SEP-98	

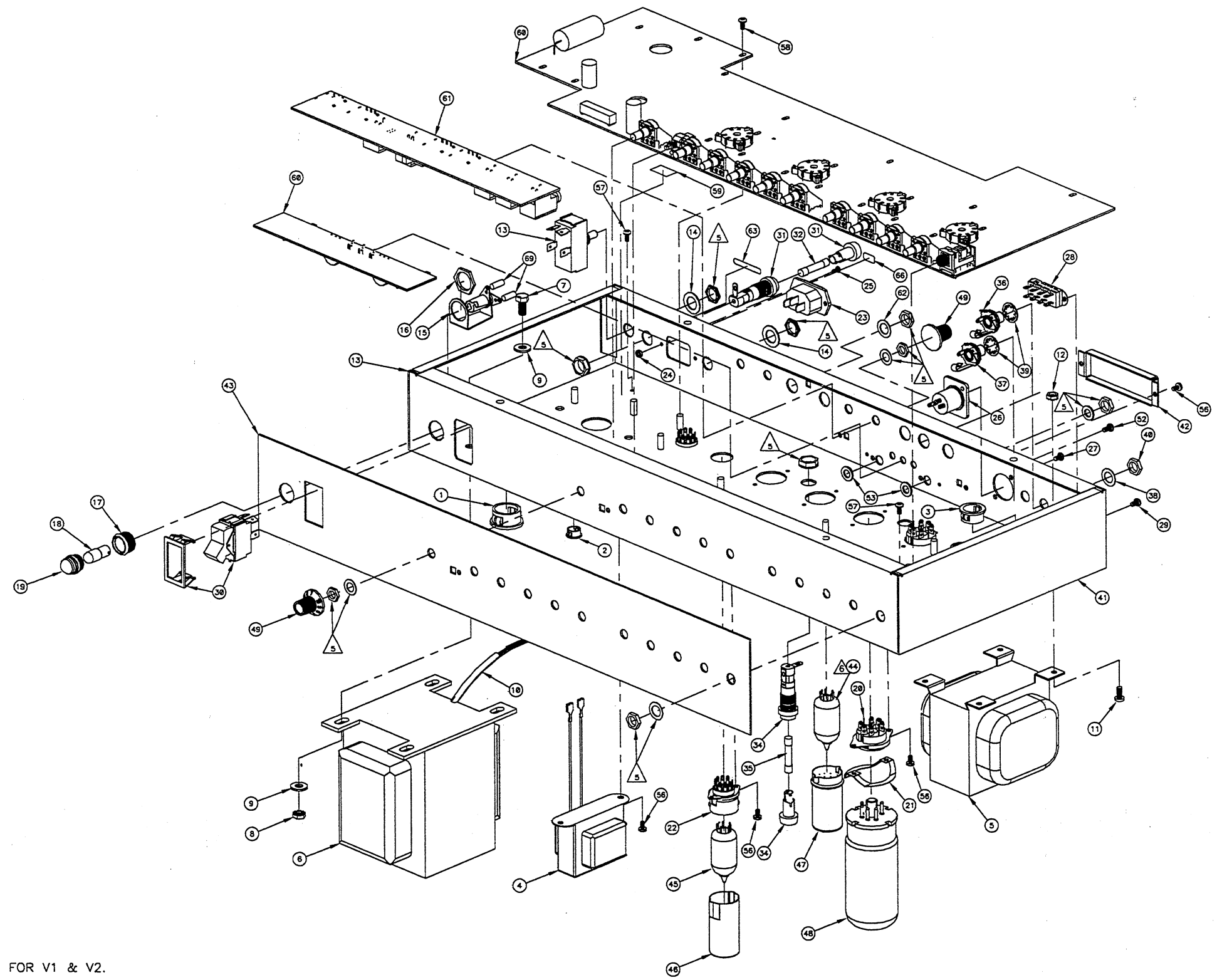


PINOUT, P15:  
P15-1: TO K3 1, CR20 K  
P15-2: TO J3 6, C39  
P15-3: +16V TO K4 1, CR26 K  
P15-4: -16V TO Q2 E, K3 16,  
CR20 ANODE  
P15-5: FOOTSWITCH GROUND  
P15-6: TO CR10 K, J6 4  
P15-7: TO J2, PIN 1  
P15-8: NO CONNECTION

FILM/DWG: SERVICE DIAGRAM
DATABASE: Z344P2.DBF      DATE: 10-SEP-98
LAYERS PLOTTED: 1 2 3 4      10
18

DATABASE FILE: Z344P2.DBF CHECKED BY: <i>B Des</i> DATE: <i>9-22-98</i> APPROVED: <i>MS</i> DATE: <i>9-22-98</i> TOLERANCES: UNLESS OTHERWISE NOTED X.X            ±0.050" X.XX          ±0.010" X.XXX        ±0.005" ANGLES       ±0.500°	<b>PROPRIETARY</b> THIS DRAWING DOCUMENT CONTAINS INFORMATION WHICH IS PROPRIETARY TO AND IS THE PROPERTY OF THE FENDER MUSICAL INSTRUMENTS CO. AND MAY NOT BE USED, REPRODUCED OR DISCLOSED IN ANY MANNER WITHOUT THE EXPRESSED WRITTEN CONSENT FROM: FENDER MUSICAL INSTRUMENTS CO. REGIONAL HEADQUARTERS 2621 RESEARCH DRIVE CORONA, CA 91720 USA NEXT HIGHER ASSEMBLY: SUNN MODEL T AMP.	 <b>MUSICAL INSTRUMENTS</b> 2621 Research Drive Corona, CA 91720 USA TITLE: SERVICE DIAGRAM, COMBINED SUNN MODEL T (effects loop PCB assy) SIZE: <b>B</b> DRAWN: WILKENS    DRAWING NUMBER: 0051434000    REV. <b>B</b> ENGR: COZZA CREATED: 23-FEB-98 SCALE: N/A    PLOTTED: 10-SEP-98    SHEET 4 OF 4
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REV	EC NUMBER	BY	DATE/ISSUE
A	PR 344	GHG	2/26/98
B	EC 2157	GHG	8/5/98
C	EC 2378 - ADD ITEM 70, UPDATE DWG.	BW	1/13/2000



(N.S.) = NOT SHOWN

ITEM	QTY.	PART NO.	DESCRIPTION
60	1	0051432000	PCB ASSY SUNN MODEL T MAIN PCB
59	1	0013020000	LABEL GROUNDING SEMKO
58	25	0031184000	SCRW M6-32x1/4 PHPS BLX ITLW
57	2	0038900000	SCRW TF 6-32x1/4 PHP ZI
56	16	0032806000	SCRW TF 6-32x1/4 PHP BLX
54	1	SEE MATRIX	CHASSIS WIRE SET (N.S. FOR CLARITY)
53	2	0026564000	WSHR FLAT .284x1/2 ZI
52	2	0014999000	SCRW M 6-32x1/4 PHP BLX
51	4	0026730001	DIODE 1N4006/1N5062 800PRV 1A LL (N.S. ON SOCKET)
50	4	0024969001	RES CF 1/4W 5% 1.5K LL (N.S. ON SOCKET)
49	14	0024604000	KNOB BLACK W/WHITE STAMP 1-10
48	4	0053980000	TUBE 6L6GC SVETLANA
47	4	0053893000	TUBE SHIELD
46	2	0023598000	TUBE SHIELD
45	4	0013341000	TUBE 7025/12AX7WA RUSSIAN MADE
44	2	0023572000	TUBE 7025/12AX7A CHINESE $\Delta$
43	1	0051439000	FRONT PANEL SUNN MODEL T
42	1	0053892000	COVER BOX BIAS CONTROLS
41	1	0051425000	CHASSIS SUNN MODEL T
40	2	0016352000	NUT HEX 3/8-32x3/32 TK NI
39	2	0016436000	WSHR LCK INTL 3/8x.687x.035 NI
38	2	0031153000	WSHR FLAT 3/8x.614 NI
37	1	0021956000	JACK PHONE OPEN CIRCUIT 11
36	1	0021550000	JACK PHONE TIP SHUNT 12A
35	2	0013004000	FUSE 100mA TIME 5mm
34	2	0036703000	FUSE HOLDER 5MM FINGER GRIP
32	1	SEE MATRIX	FUSE
31	1	SEE MATRIX	FUSE HOLDER
30	1	0051855000	SWTCH ROCKER DPST W/BEZEL SUNN
29	2	0021568000	SCRW M 6-32x3/16 PHP NI
28	1	0026472000	SWTCH SLIDE DPST
27	2	0026521000	SCRW SMB 8x3/8 RH PHS BLK
26	1	0026471000	JACK XLR MALE PANEL MOUNT
25	2	0014172000	SCREW M 4-40x1/4 PHP BLX
24	2	0097360000	NUT HEX 4-40 EX LOCK
23	1	0047213000	CONNECTOR AC LINE MALE IEC
22	2	0023606000	TUBE SOCKET 9 PIN
21	4	0020424000	TUBE RING UNIVERSAL (277H-2)
20	4	0023580000	TUBE SOCKET 8 PIN
19	1	0025718000	JEWEL PILOT LITE RED #20
18	1	0021642000	PILOT LIGHT #T47
17	1	0032219000	COLLAR-PILOT LIGHT
16	1	0031625000	NUT HOLDER PILOT LIGHT 1/16-27
15	1	0021741000	HOLDER IDAL LITE ASSY PILOT
14	2	0022293000	WSHR FLAT .473x.750 NI
13	1	0036570000	SWTCH TOGGLE DPST W/NUTS
12	4	0022004000	NUT KEPS #8-32 ZINC
11	4	0026553000	SCRW M 8-32x3/8 PHP BLX
10	.25	0047163000	TUBING SHRINK 1" BLACK
9	8	0022319000	WSHR FLAT 1/4x9/16 NI
8	4	0028272000	NUT KEP 1/4x20 FOJ
7	4	0026501000	SCRW C 1/4-20x1/2 HH BLK
6	1	0051463000	XFMR POWER SUNN MODEL T
5	1	0026478000	XFMR OUTPUT 100W 4,8,16 OHMS
4	1	0036486000	CHOKE
3	2	0012560000	BUSHING SNAP 5/8x27/32 BLK
2	1	0018022000	BUSHING SNAP 5/16x17/32 BLK
1	2	0028069000	BUSHING SNAP 3/4x1-1/8 WHT

$\Delta$  USE 0023572000 FOR V1 & V2.

$\Delta$  HARDWARE INCLUDED WITH PART.

4. COPYRIGHT - 2000 - 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

MATRIX

70	LABEL	N/A	0033485000	0033485000	0033485000
66	FUSE LABEL	N/A	0048859000	0048859000	N/A
65	VOLTAGE LABEL	N/A	0050506000	0050505000	0050507000
64	WIRE SET	0054201000	0054203000	0054203000	0054203000
62	FUSE	0013737000	0013115000	0013115000	0013737000
61	FUSE HOLDER	0036702000	0036703000	0036703000	0036702000
CHASSIS ASSY.		SUNN MODEL T 120V DOM. 0051426000	SUNN MODEL T 240V AUST. 0051428000	SUNN MODEL T 100V JPN. 0051427000	SUNN MODEL T 100V JPN. 0051429000

(N.S.) = NOT SHOWN

70	1	SEE MATRIX	LABEL MADE IN USA 1-3/4 x 7/32 (N.S.)
69	.09	0012398000	TUBING, SHRINK 3/16" BLK
66	1	SEE MATRIX	LABEL FUSE
63	1	SEE MATRIX	LABEL VOLTAGE
62	5	0028501000	WSHR FLAT .477x.625 NI
61	1	0053964000	PCB ASSY EFFECTS SUNN MODEL T

ENGINEER  
COZZA

DRAWN  
GOOLER

DATE  
2/24/98

DFT. ENG. ENG.  
MAGNET MS

DATE DATE DATE  
1/30/00 1/12/00 1/12/00

APPROVED  
UG

DATE  
1/13/2000

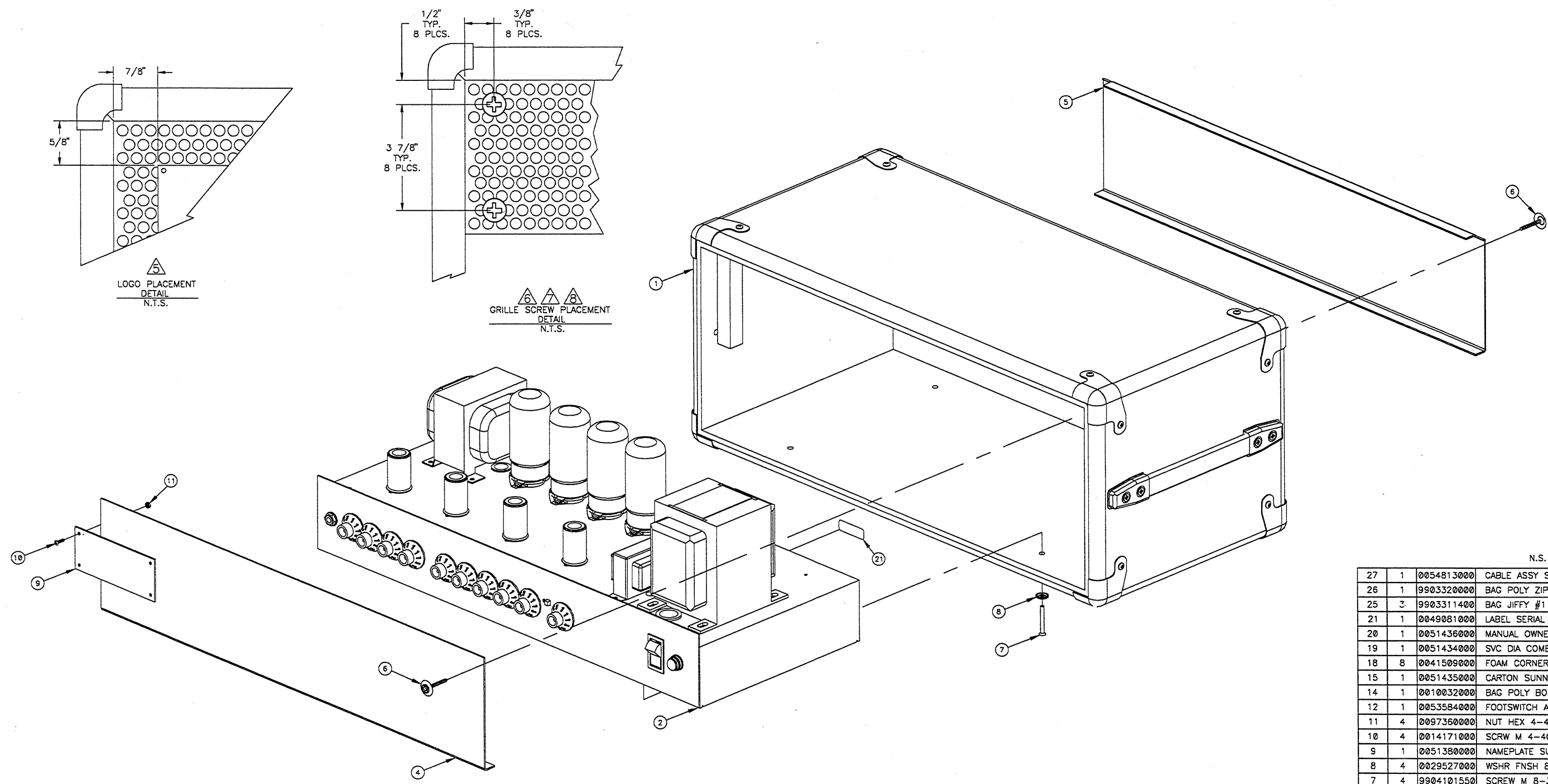
TITLE  
CHASSIS ASSEMBLY  
SUNN MODEL T

Fender  
FENDER MUSICAL INSTRUMENTS CORP.  
CORONA, CALIFORNIA 91720

SHEET	SIZE	DRAWING NUMBER	REV.
1/1	D	0051426000	C
SCALE	N/A	MASTER/ASSEMBLY	

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REV	EC NUMBER	BY	DATE/APPOR
A	PR 344	GHG	2/27/98
B	EC 2155	B.S.	8/19/98
C	CR 199 ADD SPKR CABLE TO BOM	JR	2/2/99



- ⊠ DISTANCE BETWEEN CHASSIS TOP AND REAR GRILLE 1/16".
  - ⊠ DISTANCE BETWEEN FRONT PANEL TOP EDGE AND FRONT GRILLE 1/16".
  - ⊠ LOCATE SCREWS AS HOLES WILL PERMIT.
  - ⊠ LOCATE LOGO AS HOLES WILL PERMIT.
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

ITEM	QTY.	PART NO.	DESCRIPTION
27	1	0054813000	CABLE ASSY SPEAKER SUNN (N.S.)
26	1	9903320000	BAG POLY ZIP 10x13 2M (N.S.)
25	3	9903311400	BAG JIFFY #1 7-1/4x12 (N.S.)
21	1	0049081000	LABEL SERIAL (CORONA)
20	1	0051436000	MANUAL OWNERS SUNN MODEL T (N.S.)
19	1	0051434000	SVC DIA COMB SUNN MODEL T (N.S.)
18	8	0041509000	FOAM CORNER 5x5x5 2" (N.S.)
15	1	0051435000	CARTON SUNN MODEL T (N.S.)
14	1	0010032000	BAG POLY BOX BTM 23x17x40 .002 (N.S.)
12	1	0053584000	FOOTSWITCH ASSY. 2 BUTTON SUNN (N.S.)
11	4	0097360000	NUT HEX 4-40 EX LOCK
10	4	0014171000	SCRW M 4-40x3/8 PHP BLX
9	1	0051380000	NAMEPLATE SUNN
8	4	0029527000	WSHR FNSH 8-5/8 FLNGD BLX WX
7	4	9904101550	SCREW M 8-32x1-1/4 OHPS BLX WX
6	8	0036112000	SCRW SMAB 6x1-1/4 OHP BLX w/WS
5	1	0051438000	GRILLE REAR SUNN MODEL T
4	1	0051437000	GRILLE FRONT SUNN MODEL T
3	1	SEE MATRIX	CORD, PWR (N.S.)
2	1	SEE MATRIX	CHASSIS
1	1	0053861000	CABINET ASSY. SUNN MODEL T

MATERIAL n/a	ENGINEER COZZA	 FENDER MUSICAL INSTRUMENTS CORP. CORONA, CALIFORNIA 91720
FINISH n/a	DRAWN GOOLER	
	DATE 2/25/98	TITLE END ITEM SUNN MODEL T
	DATE 2/2/99	SHEET 1/1
	DATE 2/8/99	SIZE D
		DRAWING NUMBER 0213303000
		REV. C

MATRIX

ITEM	0047248000	0047250000	0047249000	0047251000	0053997000
③ CORD.PWR	0047248000	0047250000	0047249000	0047251000	0053997000
② CHASSIS	0051426000	0051428000	0051427000	0051427000	0051429000
END ITEM	SUNN MODEL T DOM 120V 0213303000	SUNN MODEL T AUST. 240V 0213333000	SUNN MODEL T UK. 230V 0213343000	SUNN MODEL T EUR. 230V 0213363000	SUNN MODEL T JAP. 100V 0213373000

TOL. UNLESS NOTED  
 FRACT. ----- + 1/32  
 .X ----- + 0.050  
 .XX ----- + 0.010  
 .XXX ----- + 0.005  
 ANGLES ----- + 0.5 DEGREES  
 HOLE DIA. ----- + 0.005 - 0.001  
 UNMARKED ANGLES ARE 90 DEGREES.