

65 TWIN REVERB REISSUE

p/n 021-7300-000 (120V)
p/n 021-7350-000 (220V)
p/n 021-7340-000 (240V)
p/n 021-7370-000 (100V)

SERVICE MANUAL



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65 TWIN REVERB REISSUE

(This is the model name for warranty claims)

SERVICE MANUAL

MARCH 1991

IMPORTANT NOTICE:

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Only Fender specified part numbers are to be used for warranty repair service. 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
P5. The red/yellow wire goes to P4.

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

65 TWIN REVERB REISSUE

PARTS LIST

PRINTED CIRCUIT BOARD ASSEMBLY

QTY	PART #	DESCRIPTION	REFERENCE DESIGNATION
1	037628	PRINTED CIRCUIT BOARD	PC1 (BLANK)
1	037629	PCB ASSEMBLY (120V)	PCB1 (STUFFED)
1	037630	PCB ASSEMBLY (220/240V)	PCB1 (STUFFED)
1	037631	PCB ASSEMBLY (100V)	PCB1(STUFFED)
3	037805	CABLE RIBBON 6CKT 2-1/4"	
1	018764	CAP 125VAC .01uF +0	C29 (120V DOMESTIC)
2	013638	CAPAE 285V 220uF 20%	C30 C31
3	024819	CAPAE 500V 22uF 20%	C32 C33 C34
1	020883	CAPCD 1KV 10pF 10%	C17
2	020925	CAPCD 1KV 120pF 10%	C5 C10
1	007029	CAPCD 1KV 220pF 10%	C38
2	020917	CAPCD 1KV 250pF 10%	C2 C7
1	020842	CAPCD 1KV 500pF 10%	C13
1	017620	CAPCD 1KV 1500pF 10%	C39
7	028465	CAPRE 25V 22uF 20%	C1 C6 C11 C14 C15 C27 C28
1	036954	CAPRE 63V 22uF 20%	C36
1	031069	CAPRE 100V 10uF 20%	C37
1	031040	CAPRE 100V 100uF 20%	C35
1	024853	CAPRF 250V .1uF 10%	C21
1	037666	CAPRF 400V .001uF 10%	C20
2	024823	CAPRF 400V .01uF 10%	C25 C26
2	024833	CAPRF 400V .022uF 10%	C12 C24
3	024845	CAPRF 400V .047uF 10%	C4 C9 C18
3	024854	CAPRF 400V .1uF 10%	C3 C8 C19
1	037040	CAPRF 400V .0033 10%	C16
1	024835	CAPRF 600V .022uF 10%	C40
2	024855	CAPRF 630V .1uF 10%	C22 C23
2	037596	CTRL, 1M, 30A	R10 R21
1	037601	CTRL, 3M, 30C	R56
1	017502	CTRL, 10K, B	R71
2	037598	CTRL, 10K, 10A	R9 R20
1	037602	CTRL, 50K, 30C	R64
1	037600	CTRL, 100K, B	R29
2	037599	CTRL, 250K, 10A	R8 R19
2	037597	CTRL, 250K, 30A	R7 R18
1	064089	DIODE,1N4003 200PRV, 1AMP	CR5
4	026730	DIODE, 800PRV, 1AMP	CR1 CR2 CR3 CR4
15	026000	FASTON TAB, .187	CP17 THRU CP31
16	025802	FASTON TAB, .250	CP1 THRU CP16
6	020775	FUSE CLIP 5MM 220V/240V	XF2 XF3 XF4
1	013109	FUSE 250mA 250V 5MM	XF2(220V/240V)
1	013115	FUSE 2AT 250V 5MM	XF3 (220V/240V)
1	013684	FUSE 8AT 250V 5MM	XF4 (220V/240V)
3	027413	HEADER,.1" 6 CIRCUIT	P1 P2 P3
4	037117	JACK,PHONE,MONO RA	J1 J2 J3 J4 (INPUTS)
1	025933	JACK,RCA,DUAL	J8 (REVERB PAN CONN.)

**65 TWIN REVERB REISSUE
PRINTED CIRCUIT BOARD ASSEMBLY (cont)**

QTY	PART #	DESCRIPTION	REFERENCE DESIGNATION
1	037836	OPTOISOLATOR ASSY, NEON	OP1
1	027350	RESCF 1W 22K 5%	R36
1	037619	RESCF 1W 82K 5%	R42
1	027353	RESCF 1W 100K 5%	R43
1	027347	RESCF 1W 2.2K 5%	R25
1	037665	RESCF 1/2W 27K 5%	R72
8	025116	RESCF 1/2W 100K 5%	R4 R11 R15 R22 R28 R33 R62 R61
3	025117	RESCF 1/2W 220K 5%	R54 R65 R66
1	028861	RESCF 1/2W 3.3K 5%	R70
7	025069	RESCF 1/4W 1M 5%	R3 R14 R24 R37 R38 R57 R58
1	024981	RESCF 1/4W 10K 5%	R75
1	025084	RESCF 1/4W 10M 5%	R63
1	024937	RESCF 1/4W 10ohm 5%	R73
4	024995	RESCF 1/4W 68K 5%	R1 R2 R12 R13
1	024996	RESCF 1/4W 82K 5%	R74
1	029613	RESCF 1/4W 91K 5%	R55
6	024969	RESCF 1/4W 1.5K 5%	R5 R16 R46 R47 R48 R49
2	024997	RESCF 1/4W 100K 5%	R6 R17
1	024952	RESCF 1/4W 100ohm 5%	R40
1	025075	RESCF 1/4W 2.2M 5%	R59
1	024972	RESCF 1/4W 2.7K 5%	R60
6	025059	RESCF 1/4W 220K 5%	R26 R31 R34 R35 R44 R45
1	025060	RESCF 1/4W 270K 5%	R76
1	025077	RESCF 1/4W 3.3M 5%	R32
1	025063	RESCF 1/4W 390K 5%	R30
1	024961	RESCF 1/4W 470ohm 5%	R41
3	024964	RESCF 1/4W 820ohm 5%	R23 R27 R39
1	037664	RESFP 1W 1K 5%	R67
1	036469	RESFP 1W 4.7K 5%	R68
2	037835	SWITCH 1P1T SLIDE	S4 S5
1	028503	THERMISTOR, KCC.C60	TH1
1	037923	WIRE SET PCB	

CHASSIS ASSEMBLY

QTY	PART #	DESCRIPTION	REFERENCE DESIGNATION
1	037971	CHASSIS ASS'Y COMPLETE	CH1 (120V DOMESTIC)
1	037937	CHASSIS ASS'Y COMPLETE	CH1 (220V EXPORT)
1	037972	CHASSIS ASS'Y COMPLETE	CH1 (240V EXPORT)
1	037974	CHASSIS ASS'Y COMPLETE	CH1 (100V EXPORT)
1	037582	CHASSIS (BLANK)	CB1
7	018022	BUSHING SNAP 5/16 X 17/32	
1	026038	BUSHING STRAIN RELIEF	(100V/120V AC CORD)
1	010401	BUSHING STRAIN RELIEF	(220V/240V AC CORD)
1	026541	CABLE ASS'Y POWER	(100V/120V)
1	033331	CABLE ASS'Y POWER	(220V/240V)
1	036486	CHOKE FILTER	L1
1	022491	CLAMP CABLE SCRW MNT	
1	028421	CONTROL 100ohm SCREW ADJ.	R69 (HUM BALANCE)
1	017502	CONTROL 10K 20% SCREW ADJ.	R71 (BIAS ADJUST)
1	037854	COVER CAPACITOR	

65 TWIN REVERB REISSUE

CHASSIS ASSEMBLY (CONT)

QTY	PART #	DESCRIPTION	REFERENCE DESIGNATION
1	013115	FUSE 2A 250V SB	F1 (220V/240V)
1	013737	FUSE 4A 250V SB	F1 (100V/120V)
1	036702	FUSEHOLDER 3AG FINGER GRIP	XF1 (100V/120V)
1	036703	FUSEHOLDER 5MM FINGER GRIP	XF1 (220V/240V)
1	021550	JACK PHONE CLOSED CIRCUIT	J5 (SPEAKER OUT)
1	021956	JACK PHONE OPEN CIRCUIT	J6 (EXT.SPEAKER OUT)
1	013043	JACK, PHONE, STEREO	J7 (FOOTSWITCH)
11	024604	KNOB BLACK W/WHITE STAMP	
1	027887	LUG SOLDER 3/8	(HUM BAL.WIPER GND)
5	016352	NUT HEX 3/8-32X3/32 TK NI	(HUM BIAS OUTPUT FTS)
8	022004	NUT KEPS #8-32	(XFMR MOUNTING)
1	037821	PANEL FRONT	
1	037825	PANEL REAR 100V	(EXPORT)
1	037822	PANEL REAR 120V	(DOMESTIC)
1	037824	PANEL REAR 220V	(EXPORT)
1	037823	PANEL REAR 240V	(EXPORT)
1	032219	PILOT LIGHT COLLAR	
1	021642	PILOT LIGHT #47	
1	021741	PILOT LIGHT HOLDER	
1	031625	PILOT LIGHT NUT	
1	036595	PILOT LIGHT LENS JEWEL RED	
4	024969	RES CF 1/4W 1.5K 5%	(TUBE SOCKET)
4	021402	RESCC 1W 470ohm 10%	R50 R51 R52 R53 (TUBE SOCKET)
4	027979	SCREW MA 4-40X1/4 PHP NI	(SLIDE SWITCHES)
14	028937	SCREW TF 6-32X5/8 PHP ZI	(MAIN PCB)(CAP PCB)
1	9904101560	SCREW 6X3/8 HI-LO PHP BLX	(RCA JACK)
4	016473	SCREW MA 8-32 X 1/2 PHP ZI	(OUTPUT XFMR)
1	032806	SCREW MA TF 6-32X1/4 BLX	(REAR PANEL)
30	029913	SCREW TF 6-32X3/16 PHP ZI	(TUBE SOCKETS,CHOKE, REVERB XFMR)
4	023580	SOCKET TUBE 8 PIN	
6	023606	SOCKET TUBE 9 PIN	
10	025936	STAND-OFF PCB PUSH ON	
5	037783	STAND-OFF PCB PUSH ON 1/4L	
1	036570	SWITCH TOGGLE DPST	S1 (POWER OFF/ON)
1	036571	SWITCH TOGGLE SPDT	S2 (120V GND SWITCH)
1	037039	SWITCH TOGGLE SPST	S3 (STANDBY)
1	037612	TRANSFORMER OUTPUT	T2
1	037611	TRANSFORMER POWER (EXPORT)	T1 (100V 220/240V)
1	037610	TRANSFORMER POWER 120V	T1 (DOMESTIC)
1	037099	TRANSFORMER REVERB	T3
4	031091	TUBE CLAMP	(POWER TUBES)
6	023598	TUBE SHIELD	(PREAMP TUBES)
2	023531	TUBE VACUUM 12AT7	V3 V6
4	023556	TUBE VACUUM 6L6GC	V7 V8 V9 V10
4	013341	TUBE VACUUM 7025/12AX7	V1 V2 V4 V5
	012398	TUBING SHRINK 3/16 WHITE	
3	022293	WASHER FLAT .473 X .750	(SWITCHES:POWER, STAND-BY, GROUND)

65 TWIN REVERB REISSUE CHASSIS ASSEMBLY (CONT)

QTY	PART #	DESCRIPTION	REFERENCE DESIGNATION
3	031153	WASHER FLAT 3/8X.614 NI	(JACKS SPEAKER,FTSW)
4	9904300100	WASHER LCK INTL 3/8X.618	(JACKS SPEAKER,FTSW, HUM BALANCE)
1	037975	WIRE SET	(120V CHASSIS)
1	038520	WIRE SET	(220/240V CHASSIS)

CABINET ASSEMBLY

QTY	PART #	DESCRIPTION	REFERENCE DESIGNATION
1	037555	CABINET ASSY COMPLETE	
1	037558	BACKBOARD ASSY LOWER	
1	037557	BACKBOARD ASSY UPPER	
4	024695	CORNER CABINET NICKEL	
4	024653	GLIDE CABINET NI PLATED	
4	022483	GLIDE-INSERT CUSHION	
1	037556	GRILLE BAFFLE ASSY	
.6SY	037788	GRILLE CLOTH BLACK/SILVER	
2	025395	HANDLE CAP	
1	032524	HANDLE INSERT SPRING STEEL	
1	037790	HANDLE STRAP BLACK RIBBED	
2	021972	NUT-T 10-32X3/4	(HANDLE MOUNTING)
2	022244	SCREW MA 10-32X1-1/8 OHP NI	(HANDLE MOUNTING)
8	037543	SCREW SMAB 8X3/4" OHP NI	(CORNER MOUNTING)
4	026625	SCREW WOOD 8X1" FLAT HEAD	(GLIDE MOUNTING)
16	075598	SCREW, CAPTIVE MTG 8-32X1	(SPEAKER MOUNTING)
	037350	TAPE ALUMINUM 8"WIDE	(HEAT SHIELD)

FOOTSWITCH ASSEMBLY

QTY	PART #	DESCRIPTION	REFERENCE DESIGNATION
1	037211	FOOTSWITCH ASSY COMPLETE	
1	021691	BUSHING SR .500X.100X7/16	(STRAIN RELIEF)
1	022665	COVER CUP DUAL FTSW ASSY	(BLACK, SNAP-ON)
1	024638	CUP FOOTSWITCH DUAL	(HOUSING 2 BUTTON)
1	016063	DECAL FOOTSWITCH	(VIBRO/REVERB)
1	013172	PLUG 3 CONDUCTOR RT ANGLE	
2	024042	SWITCH, STOMP SPST	S6 S7 (FOOTSWITCHES)
2	022293	WASHER FLAT .473X.750 NI	
12FT	023861	WIRE BLACK 2 CONDUCTOR	(SHIELD OVER 1 COND)
.3FT	023945	WIRE BRAIDED SHIELD	(INTERNAL GND JUMPER)

MISCELLANEOUS

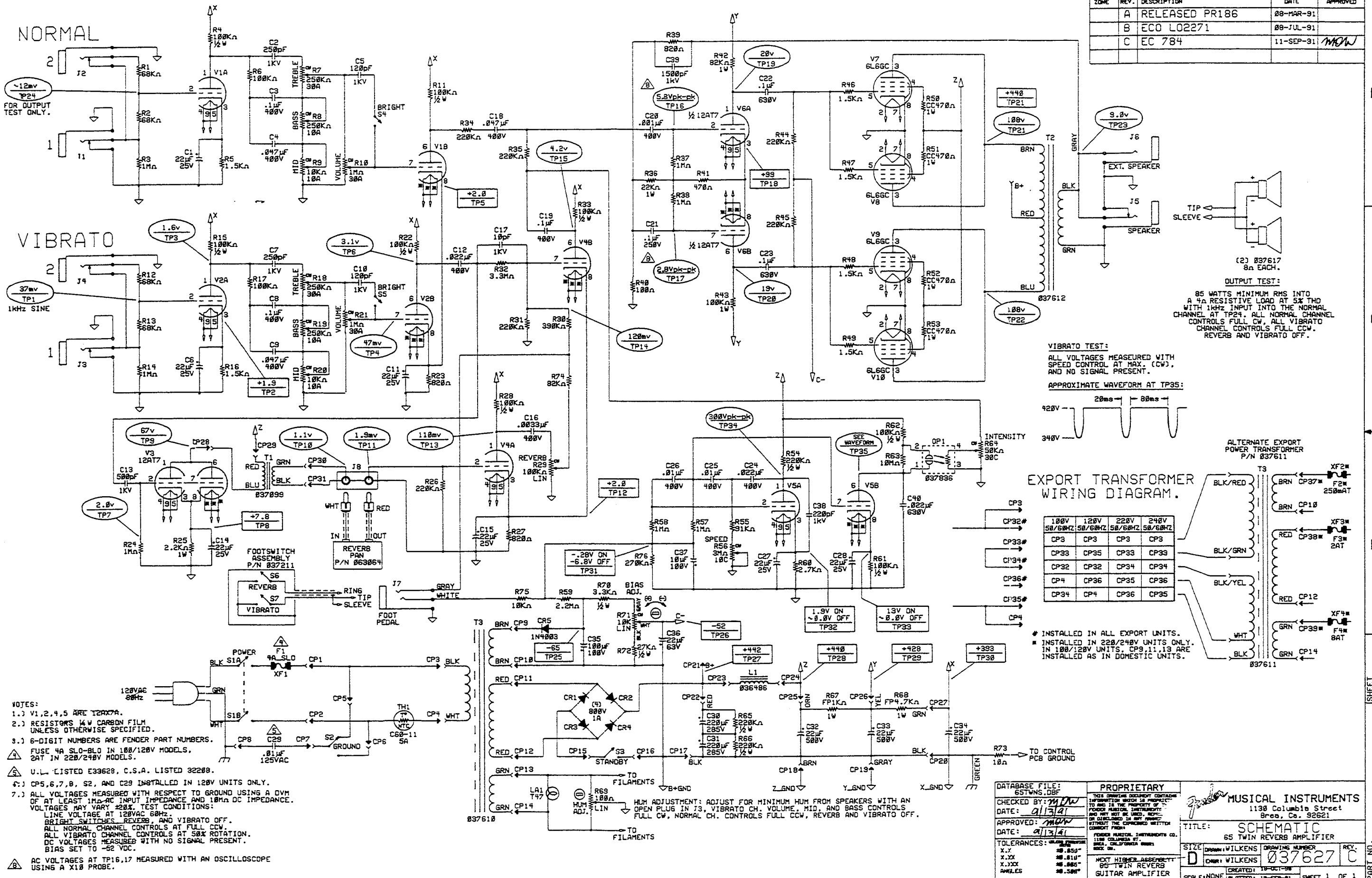
QTY	PART #	DESCRIPTION	REFERENCE DESIGNATION
2	022491	CLAMP CABLE NYL SCRW MNT 5/16	(AC,REVERB CABLE)
1	9906900590	CLAMP CABLE NYL ADHESIVE	(ON REVERB PAN)
1	028044	CABLE ASSY SPKR RT ANG 33"	(CHASSIS TO SPEAKER)
2	024828	LEG AMP TILT 16"	
2	021998	NUT LOCK 10-32 W/NYLON INSERT	(TILT BACK LEGS)
16	022004	NUT KEPS 8-32 ZINC	(SPEAKER MOUNTING)
1	023192	NAMEPLATE "FENDER" 65 TWIN	
1	025722	REVERB CABLE ASSY, SHIELDED	
1	028453	REVERB, CARDBOARD PAD	
1	031849	REVERB, BAG	
1	064063	REVERB UNIT 4 SPRING 4AB3C1B	(PAN)
5	011678	SCREW SMA 8X1-1/2 OHP NI	(GRILLE MOUNTING)
4	022236	SCREW MA 8-32X3-1/4 OHP NI	(CHASSIS MOUNTING)
2	022277	SCREW MA 10-32X1-1/2 OHP NI	(TILT BACK LEGS)
8	037952	SCREW SMA #6X1 OHP NI	(BACK BOARD MOUNT)

65 TWIN REVERB REISSUE

MISCELLANEOUS (cont)

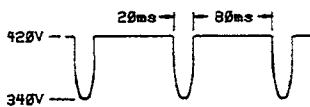
QTY	PART #	DESCRIPTION	REFERENCE DESIGNATION
7	029828	SCREW PB #8X3/4 PHP ZI	(REVERB MOUNTING) (CHASSIS MOUNTING) (CABLE CLAMP MOUNT)
2	031344	SCREW SMA #10X3/4 OHP NI	(LEG STOP)
2	024752	STRAP CHASSIS 4-1/2" NI	(CHASSIS MOUNTING)
*****IMPORTANT***** ASK WHICH AMP AND SPEAKER THEY HAVE BEFORE ORDERING SPEAKERS			
2	0994812002	SPKR 12" 8/50w VINT CER.	1993-2000 Eminance vint ceramic
2	0057146000	SPKR 12" 8OHM JENSEN C12K	2000 - Current Jensen vint ceramic
2	022285	WASHER SP LOCK 1/4X.493 ZI	(TILT BACK LEGS)
6	022319	WASHER FLAT 1/4X9/16 NI	(TILT BACK LEGS)
2	024646	WASHER LEG STOP TN	(TILT BACK LEGS)
5	029527	WASHER FINISH #8X5/8 BLX	(GRILLE MOUNTING)
2	022327	WASHER FLAT #8X7/16 NI	(REVERB MOUNTING)
2	026459	WASHER FLAT #6X3/8 ZI	(CABLE CLAMP MOUNT)
8	037215	WASHER C'SINK #6 NI	(BACK BOARD MOUNT)
1	037213	WIRESET FINAL 18G TWPR B/W	(SPEAKER TO SPEAKER)

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
A		RELEASED PR186	08-MAR-91	
B		ECO L02271	08-JUL-91	
C		EC 784	11-SEP-91	MDW

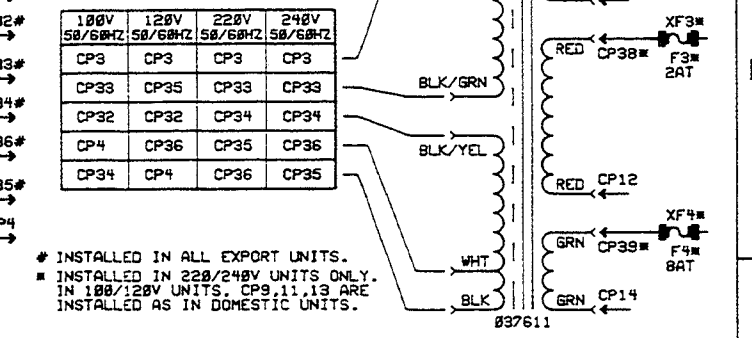


OUTPUT TEST:
85 WATTS MINIMUM RMS INTO
A 4Ω RESISTIVE LOAD AT 5% THD
WITH 1KHZ INPUT INTO THE NORMAL
CHANNEL AT TP24. ALL NORMAL CHANNEL
CONTROLS FULL CW, ALL VIBRATO
CHANNEL CONTROLS FULL CCW,
REVERB AND VIBRATO OFF.

VIBRATO TEST:
ALL VOLTAGES MEASURED WITH
SPEED CONTROL AT MAX. (CW),
AND NO SIGNAL PRESENT.
APPROXIMATE WAVEFORM AT TP35:



EXPORT TRANSFORMER WIRING DIAGRAM.



- NOTES:
- V1, 2, 4, 5 ARE 12AX7A.
 - RESISTORS 1/4W CARBON FILM UNLESS OTHERWISE SPECIFIED.
 - 6-DIGIT NUMBERS ARE FENDER PART NUMBERS.
 - FUSE 4A SLO-BLO IN 100/120V MODELS, 2AT IN 220/240V MODELS.
 - U.L. LISTED E3628, C.S.A. LISTED 32208.
 - CP5, 6, 7, 8, S2, AND C29 INSTALLED IN 120V UNITS ONLY.
 - ALL VOLTAGES MEASURED WITH RESPECT TO GROUND USING A DVM OF AT LEAST 1MΩ-AC INPUT IMPEDANCE AND 10MΩ DC IMPEDANCE. VOLTAGES MAY VARY ±2%. TEST CONDITIONS: LINE VOLTAGE AT 120VAC 60Hz. BRIGHT SWITCHES, REVERB, AND VIBRATO OFF. ALL NORMAL CHANNEL CONTROLS AT FULL CCW. ALL VIBRATO CHANNEL CONTROLS AT 50% ROTATION. DC VOLTAGES MEASURED WITH NO SIGNAL PRESENT. BIAS SET TO -52 VDC.
 - AC VOLTAGES AT TP16, 17 MEASURED WITH AN OSCILLOSCOPE USING A X10 PROBE.

HUM ADJUSTMENT: ADJUST FOR MINIMUM HUM FROM SPEAKERS WITH AN OPEN PLUG IN J3, VIBRATO CH. VOLUME, MID, AND BASS CONTROLS FULL CW, NORMAL CH. CONTROLS FULL CCW, REVERB AND VIBRATO OFF.

DATABASE FILE: 65TWS.DBF
 CHECKED BY: MDW
 DATE: 01/31/91
 APPROVED: MDW
 DATE: 01/31/91

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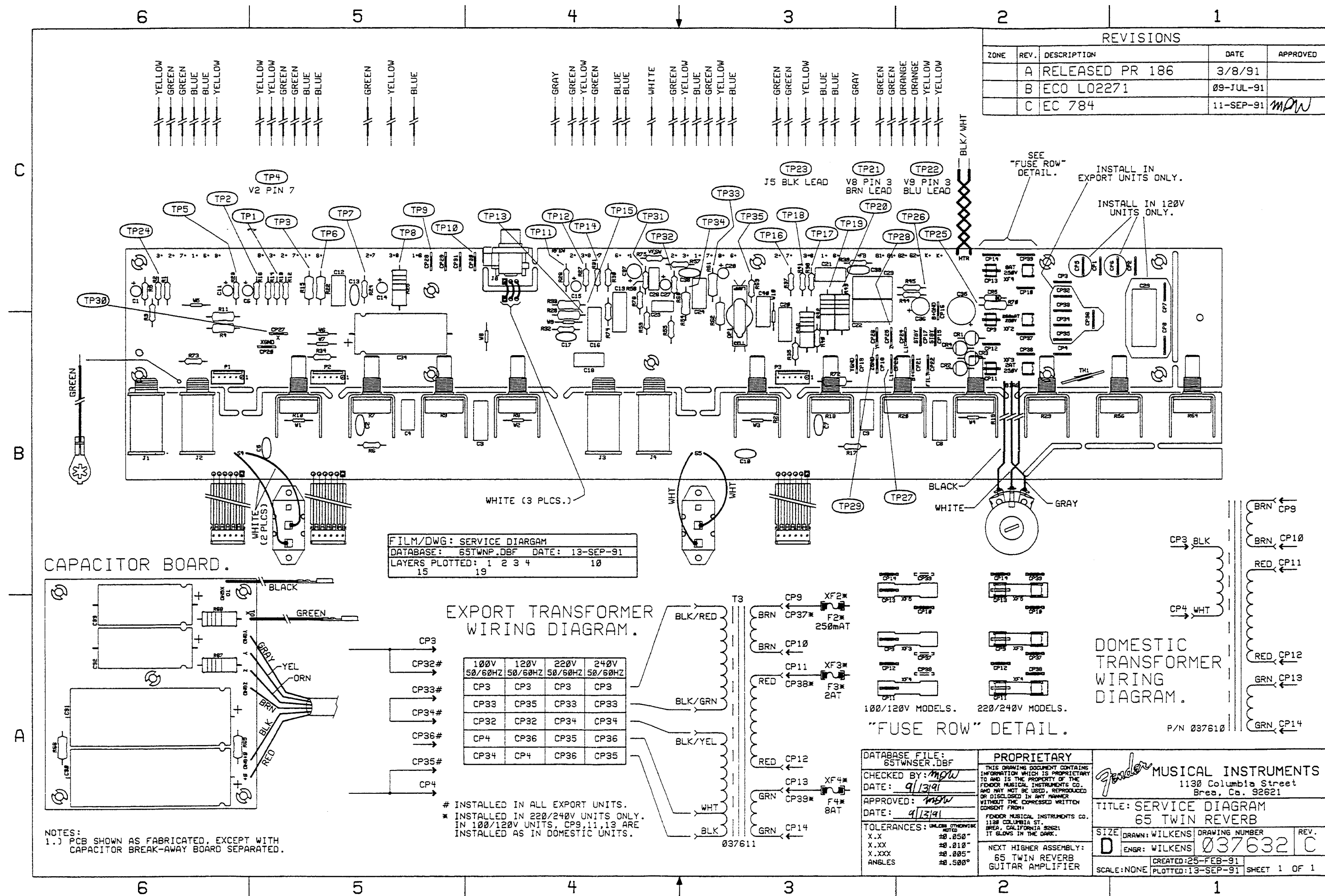
MUSICAL INSTRUMENTS
 1138 Columbia Street
 Brea, Ca. 92621

TITLE: SCHEMATIC
 6S TWIN REVERB AMPLIFIER

SIZE: D
 DRAWN: WILKENS
 CHECKED: WILKENS
 NEXT HIGHER ASSEMBLY: 6S TWIN REVERB GUITAR AMPLIFIER
 DRAWING NUMBER: 037627
 REV. C

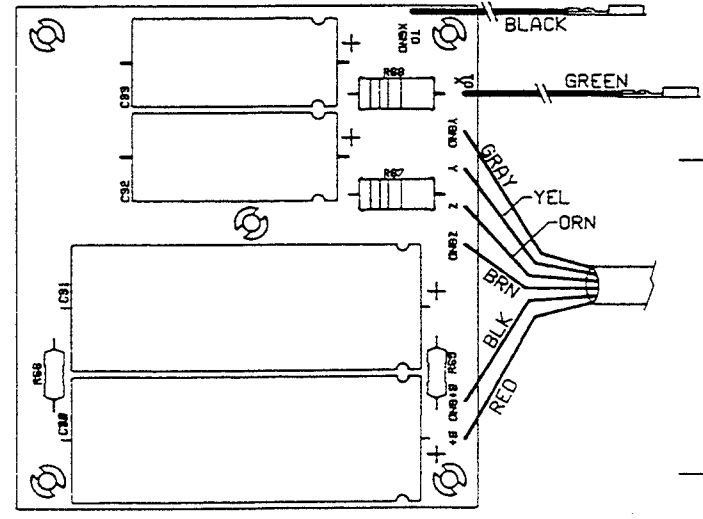
SCALE: NONE
 CREATED: 10-OCT-90
 PLOTTED: 13-SEP-91
 SHEET 1 OF 1

PART NO. 0037633000 1 OF 1 SHEET



REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	RELEASED PR 186	3/8/91	
	B	ECO L02271	09-JUL-91	
	C	EC 784	11-SEP-91	MDW

CAPACITOR BOARD.



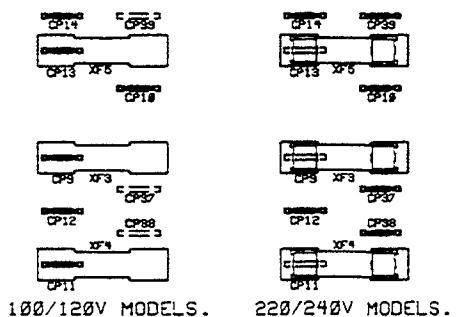
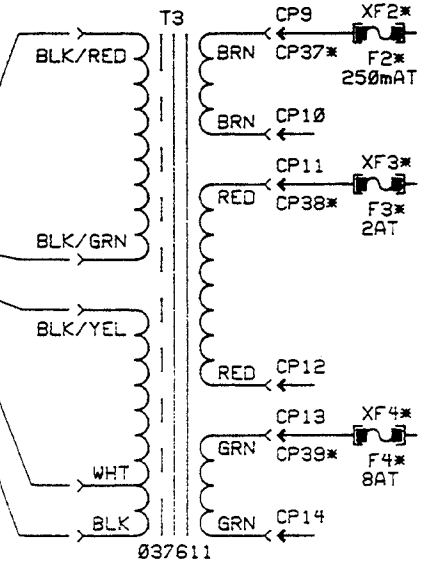
NOTES:
 1.) PCB SHOWN AS FABRICATED, EXCEPT WITH CAPACITOR BREAK-AWAY BOARD SEPARATED.

FILM/DWG: SERVICE DIAGRAM
 DATABASE: 65TWNP.DBF DATE: 13-SEP-91
 LAYERS PLOTTED: 1 2 3 4 10 15 19

EXPORT TRANSFORMER WIRING DIAGRAM.

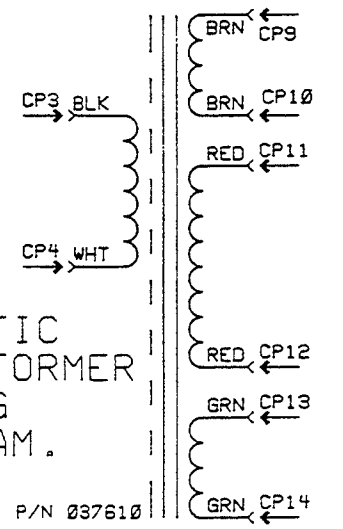
	100V 50/60HZ	120V 50/60HZ	220V 50/60HZ	240V 50/60HZ
CP3	CP3	CP3	CP3	CP3
CP32#	CP33	CP35	CP33	CP33
CP33#	CP32	CP32	CP34	CP34
CP34#	CP4	CP36	CP35	CP36
CP36#	CP34	CP4	CP36	CP35
CP35#				
CP4				

INSTALLED IN ALL EXPORT UNITS.
 * INSTALLED IN 220/240V UNITS ONLY.
 IN 100/120V UNITS, CP9,11,13 ARE INSTALLED AS IN DOMESTIC UNITS.



"FUSE ROW" DETAIL.

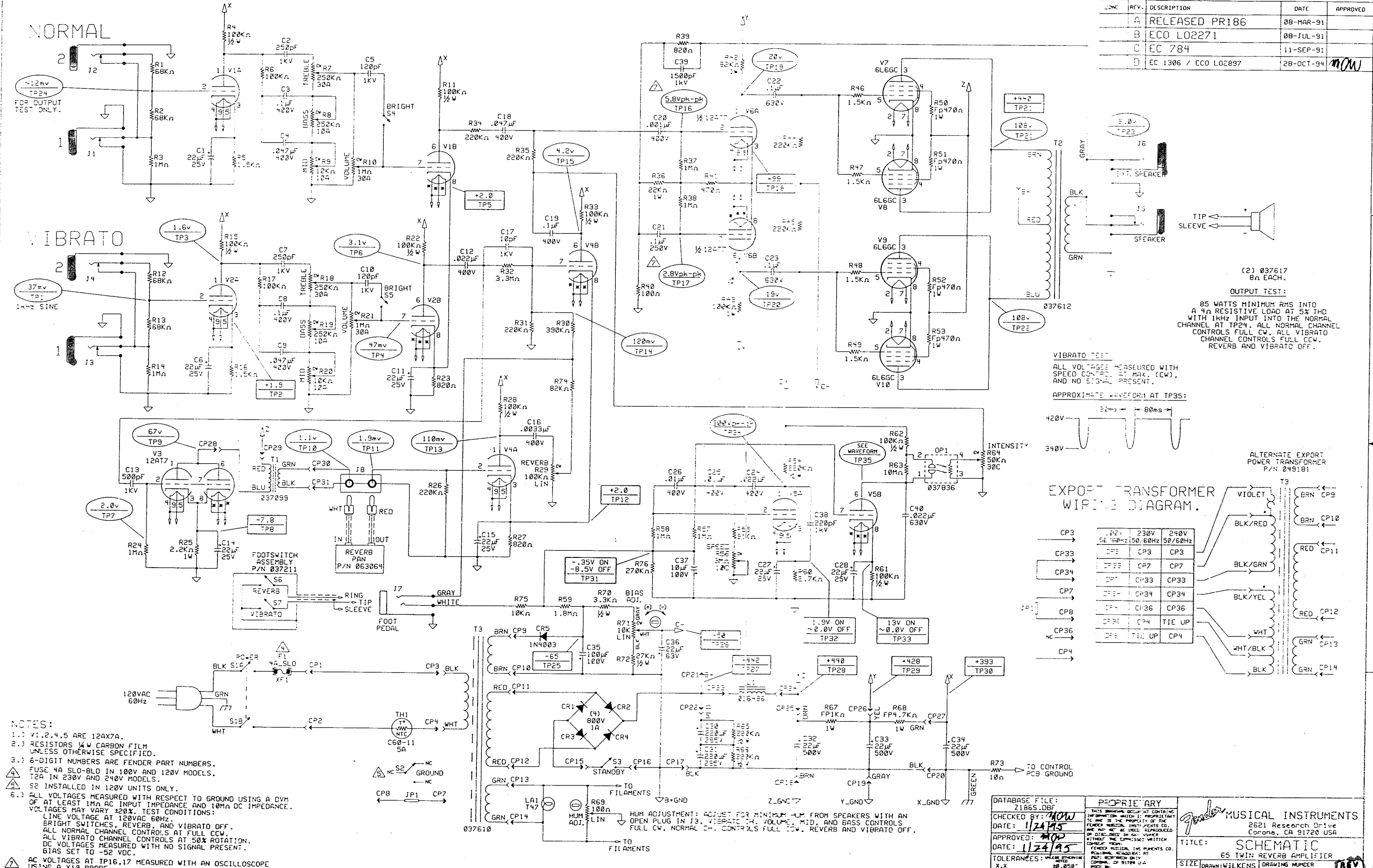
DOMESTIC TRANSFORMER WIRING DIAGRAM.



DATABASE FILE: 65TWNPR.DBF CHECKED BY: MDW DATE: 9/13/91 APPROVED: MDW DATE: 9/13/91 TOLERANCES: UNLESS OTHERWISE NOTED X.X ±0.050" X.XX ±0.010" 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. 1138 COLUMBIA ST. BREA, CALIFORNIA 92621 IT GLOWS IN THE DARK. NEXT HIGHER ASSEMBLY: 65 TWIN REVERB GUITAR AMPLIFIER	Fender MUSICAL INSTRUMENTS 1138 Columbia Street Brea, Ca. 92621 TITLE: SERVICE DIAGRAM 65 TWIN REVERB SIZE: D DRAWN: WILKENS DRAWING NUMBER: 037632 REV.: C ENGR: WILKENS CREATED: 25-FEB-91 PLOTTED: 13-SEP-91 SHEET 1 OF 1
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REVISIONS

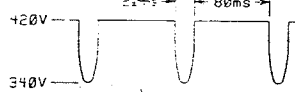
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B		ECO L02271	08-JUL-91	
C		EC 784	11-SEP-91	
D		EC 1306 / ECO L02897	28-OCT-94	<i>MOW</i>



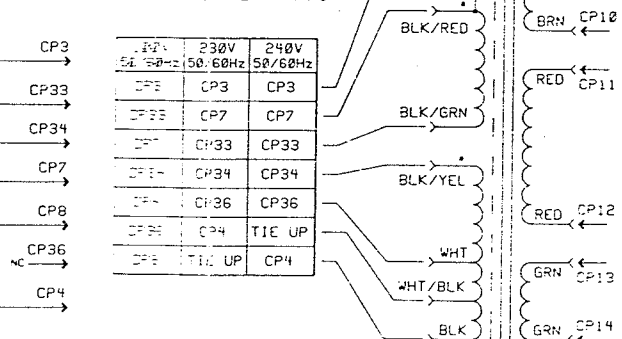
OUTPUT TEST:
 85 WATTS MINIMUM RMS INTO
 A 4Ω RESISTIVE LOAD AT 5% THD
 WITH 1KHz INPUT INTO THE NORMAL
 CHANNEL AT TP24. ALL NORMAL CHANNEL
 CONTROLS FULL CW. ALL VIBRATO
 CHANNEL CONTROLS FULL OFF.
 REVERB AND VIBRATO OFF.

VIBRATO TEST
 ALL VOLTAGES MEASURED WITH
 SPEED CONTROL AT MAX. (CW),
 AND NO SIGNAL PRESENT.

APPROXIMATE WAVEFORM AT TP35:



EXPORT TRANSFORMER
 WIRING DIAGRAM.



- NOTES:
- V1, 2, 4, 5 ARE 12AX7A.
 - RESISTORS 1/4W CARBON FILM UNLESS OTHERWISE SPECIFIED.
 - 6-DIGIT NUMBERS ARE FENDER PART NUMBERS.
 - FUSE 4A SLO-BLO IN 100V AND 120V MODELS. 12A IN 230V AND 240V MODELS.
 - S2 INSTALLED IN 120V UNITS ONLY.
 - ALL VOLTAGES MEASURED WITH RESPECT TO GROUND USING A DVM OF AT LEAST 1MA AC INPUT IMPEDANCE AND 10MΩ DC IMPEDANCE. VOLTAGES MAY VARY ±20%. TEST CONDITIONS:
 LINE VOLTAGE AT 120VAC 60Hz.
 BRIGHT SWITCHES, REVERB, AND VIBRATO OFF.
 ALL NORMAL CHANNEL CONTROLS AT FULL CCW.
 ALL VIBRATO CHANNEL CONTROLS AT 50% ROTATION.
 DC VOLTAGES MEASURED WITH NO SIGNAL PRESENT.
 BIAS SET TO -52 VDC.
 - AC VOLTAGES AT TP16, 17 MEASURED WITH AN OSCILLOSCOPE USING A X10 PROBE.
 - INSTANCES NOT USED: C29 CP5 CP6 CP32 CP35

DATABASE FILE: 21865.DBF
 CHECKED BY: *MOW*
 DATE: 1/24/95
 APPROVED: *MOW*
 DATE: 1/24/95

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MUSICAL INSTRUMENTS
 2621 Research Drive
 Corona, CA 91720 USA

TITLE: SCHEMATIC
 6S TWIN REVERB AMPLIFIER

SIZE: DRAWN: WILKENS DRAWING NUMBER: 037627
 ENGR: WILKENS

SCALE: NONE
 PLOTTED: 16-OCT-90
 SHEET 1 OF 1

0037633000

6

5

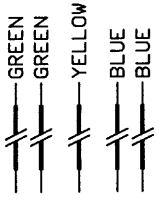
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3

2

1

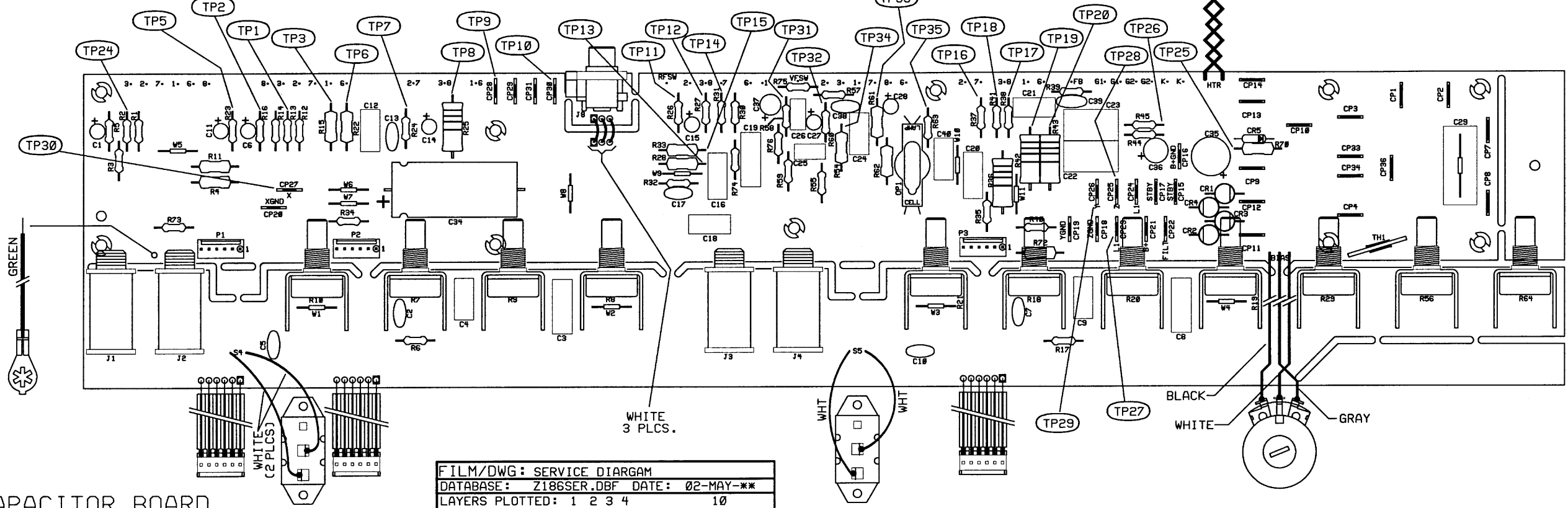
REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	RELEASED PR 186	3/8/91	
	B	ECO L02271	09-JUL-91	
	C	EC 784	11-SEP-91	
⚠	D	EC 1388 / ECO L02839	24-JAN-95	WOW



BLK/WHT

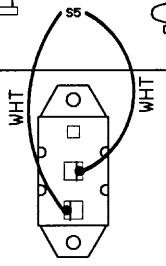
TP4 V2 PIN 7

TP23 J5 BLK LEAD TP21 V8 PIN 3 BRN LEAD TP22 V9 PIN 3 BLU LEAD



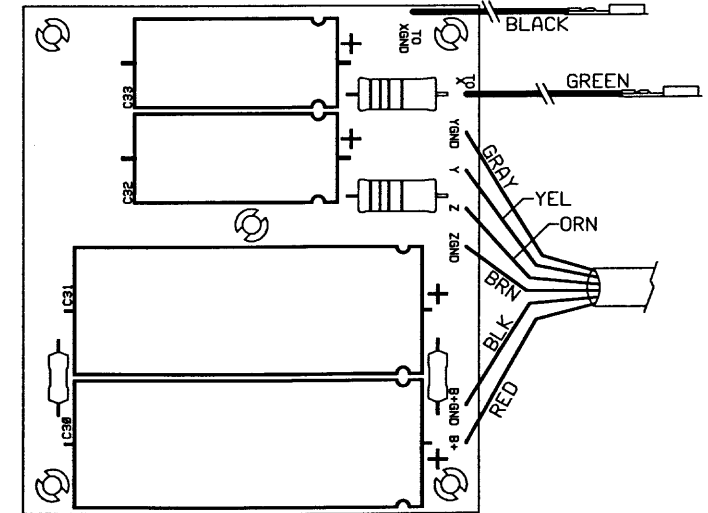
GREEN

WHITE 3 PLCS.



BLACK WHITE GRAY

CAPACITOR BOARD.



FILM/DWG: SERVICE DIAGRAM
DATABASE: Z186SER.DBF DATE: 02-MAY-95
LAYERS PLOTTED: 1 2 3 4 10 15 18

- NOTES:
- PCB SHOWN AS FABRICATED, EXCEPT WITH CAPACITOR BREAK-AWAY BOARD SEPARATED.
 - REV. D REFLECTS THE REMOVAL OF SECONDARY FUSING IN EXPORT UNITS THAT USE POWER TRANSFORMER P/N 049181, AND THE REMOVAL OF THE LINE BYPASS CAPACITOR IN DOMESTIC UNITS.

DATABASE FILE: Z186SER.DBF
CHECKED BY: KEPL0T
DATE: 02-MAY-01
APPROVED: WOW
DATE: 02-MAY-01
TOLERANCES: UNLESS OTHERWISE NOTED
X.X ±0.050"
X.XX ±0.010"
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 91720 USA
 STILL GLOWING...
 NEXT HIGHER ASSEMBLY:
 65 TWIN REVERB GUITAR AMPLIFIER

Fender MUSICAL INSTRUMENTS
 2621 Research Drive
 Corona, CA 91720 USA

TITLE: SERVICE DIAGRAM
 65 TWIN REVERB

SIZE: B	DRAWN: WILKENS	DRAWING NUMBER: 037632	REV.: D
ENGR: WILKENS		CREATED: 01-NOV-90	SCALE: NONE
PLOTTED: 02-MAY-95 SHEET 1 OF 1			

6

5

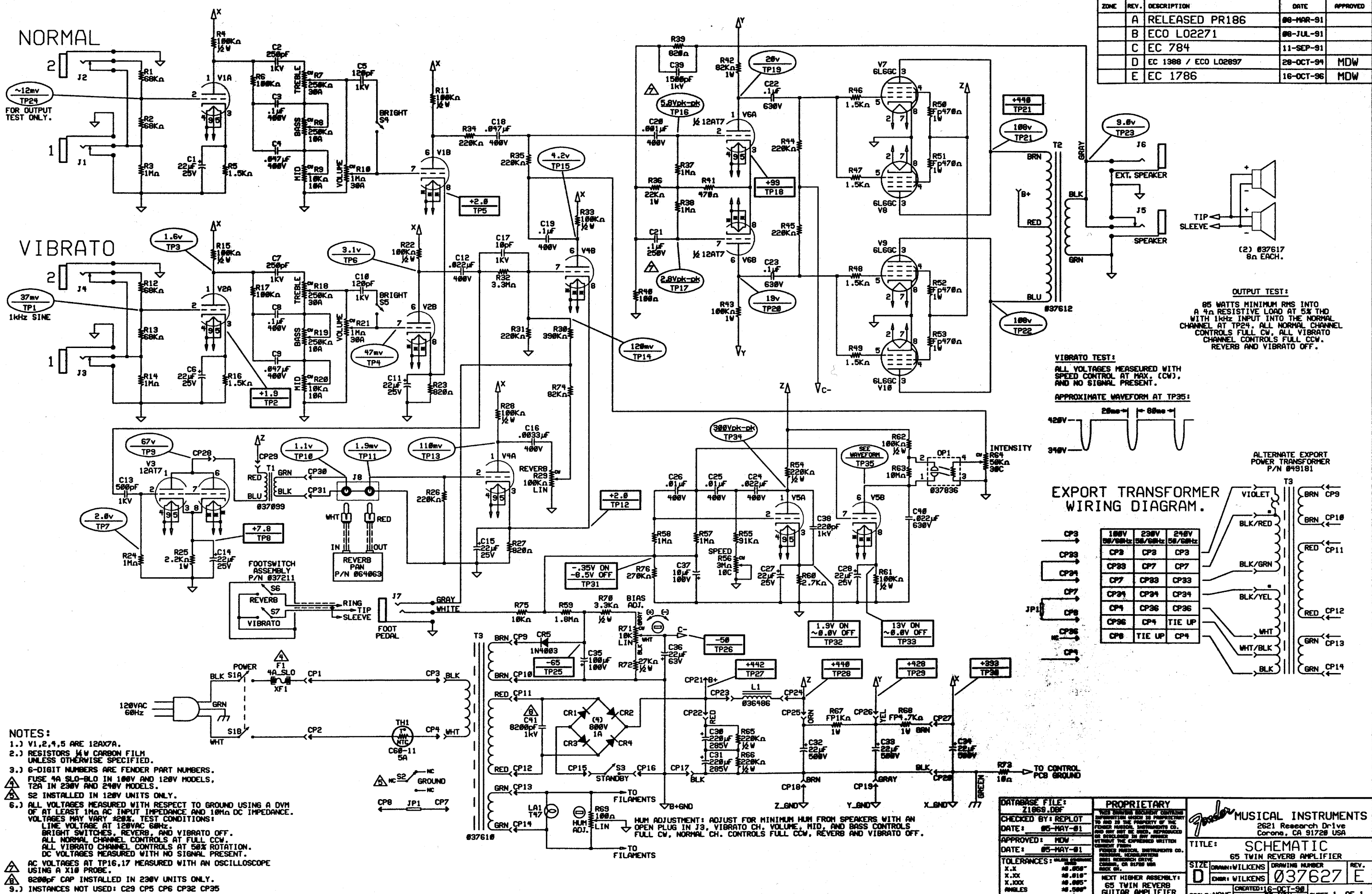
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3

2

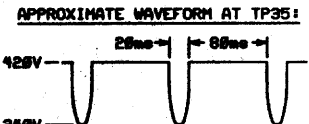
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REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	RELEASED PR186	08-MAR-91	
	B	ECO L02271	08-JUL-91	
	C	EC 784	11-SEP-91	
	D	EC 1388 / ECO L02897	28-OCT-94	MDW
	E	EC 1786	16-OCT-96	MDW

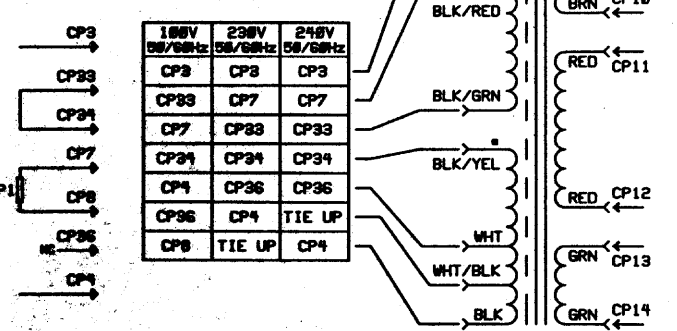


OUTPUT TEST:
 85 WATTS MINIMUM RMS INTO A 4Ω RESISTIVE LOAD AT 5% THD WITH 1kHz INPUT INTO THE NORMAL CHANNEL AT TP24. ALL NORMAL CHANNEL CONTROLS FULL CW, ALL VIBRATO CHANNEL CONTROLS FULL CCW. REVERB AND VIBRATO OFF.

VIBRATO TEST:
 ALL VOLTAGES MEASURED WITH SPEED CONTROL AT MAX. (CW), AND NO SIGNAL PRESENT.



EXPORT TRANSFORMER WIRING DIAGRAM.



- NOTES:**
- V1,2,4,5 ARE 12AX7A.
 - RESISTORS 1/4W CARBON FILM UNLESS OTHERWISE SPECIFIED.
 - 6-DIGIT NUMBERS ARE FENDER PART NUMBERS. FUSE 4A SLO-BLO IN 100V AND 120V MODELS, T2A IN 230V AND 240V MODELS. S2 INSTALLED IN 120V UNITS ONLY.
 - ALL VOLTAGES MEASURED WITH RESPECT TO GROUND USING A DVM OF AT LEAST 1MΩ AC INPUT IMPEDANCE AND 10MΩ DC IMPEDANCE. VOLTAGES MAY VARY ±2%. TEST CONDITIONS: LINE VOLTAGE AT 120VAC 60Hz. BRIGHT SWITCHES, REVERB, AND VIBRATO OFF. ALL NORMAL CHANNEL CONTROLS AT FULL CCW. ALL VIBRATO CHANNEL CONTROLS AT 50% ROTATION. DC VOLTAGES MEASURED WITH NO SIGNAL PRESENT.
 - AC VOLTAGES AT TP16,17 MEASURED WITH AN OSCILLOSCOPE USING A X10 PROBE.
 - 8200pF CAP INSTALLED IN 230V UNITS ONLY.
 - INSTANCES NOT USED: C29 CP5 CP6 CP32 CP35

PROPRIETARY
 THIS 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 WRITTEN CONSENT FROM FENDER MUSICAL INSTRUMENTS CO. CORONA, CA 91720 USA

MUSICAL INSTRUMENTS
 2621 Research Drive
 Corona, CA 91720 USA

TITLE: SCHEMATIC
 6S TWIN REVERB AMPLIFIER

SIZE: D
 DRAWN: WILKENS
 CHECKED: WILKENS
 DATE: 05-MAY-91

REVISIONS:
 X.X 40.000"
 X.XX 40.010"
 X.XXX 40.005"
 ANGLES 40.000"

SCALE: NONE
 CREATED: 16-OCT-90
 PLOTTED: 02-MAY-91

DATE: 05-MAY-91
APPROVED: MDW

CHECKED BY: REPLIT
DATE: 05-MAY-91

DATABASE FILE: Z1869.DBF

TO CONTROL PCB GROUND

6

5

4

3

2

1

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	RELEASED PR 186	3/8/91	
	B	ECO L02271	09-JUL-91	
	C	EC 784	11-SEP-91	
⚠	D	EC 1388 / ECO L02839	24-JAN-95	<i>WOW</i>



C

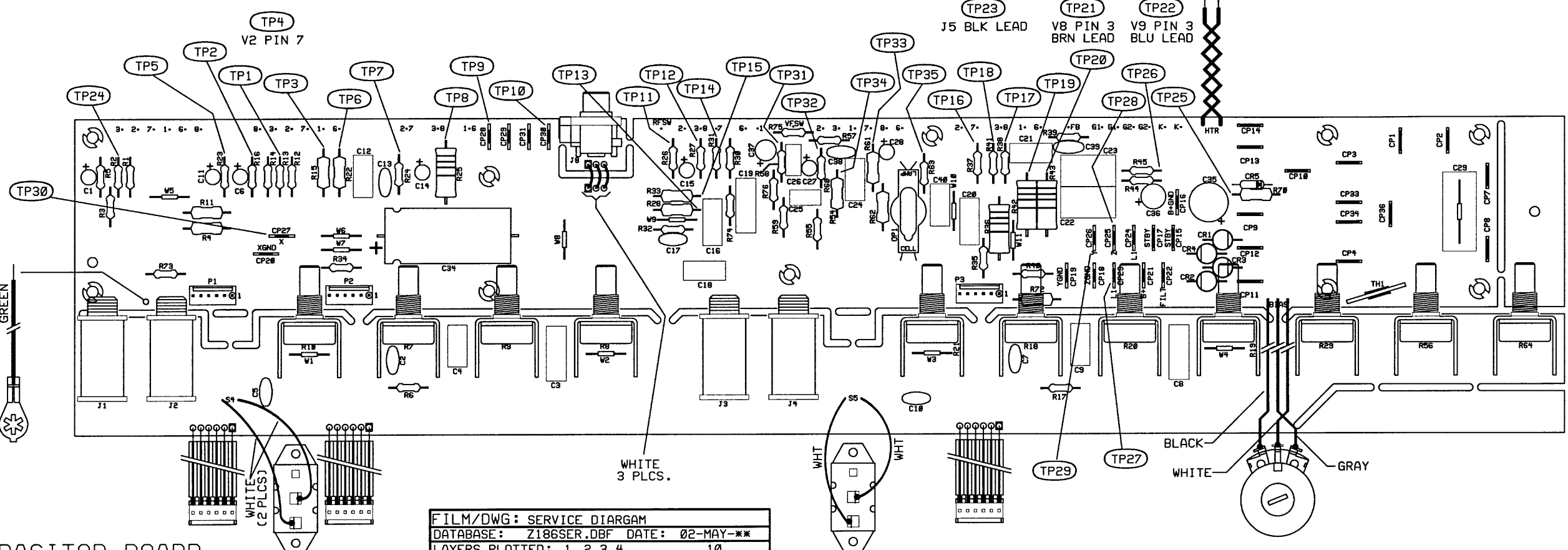
C

B

B

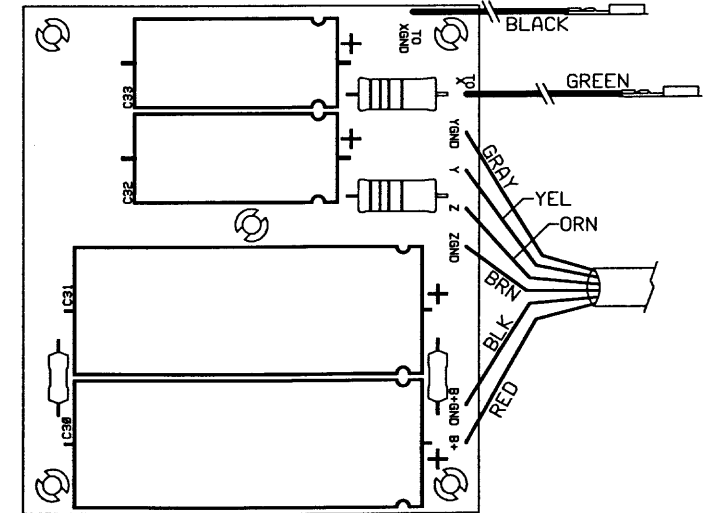
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A



FILM/DWG: SERVICE DIAGRAM
 DATABASE: Z186SER.DBF DATE: 02-MAY-95
 LAYERS PLOTTED: 1 2 3 4 10 15 18

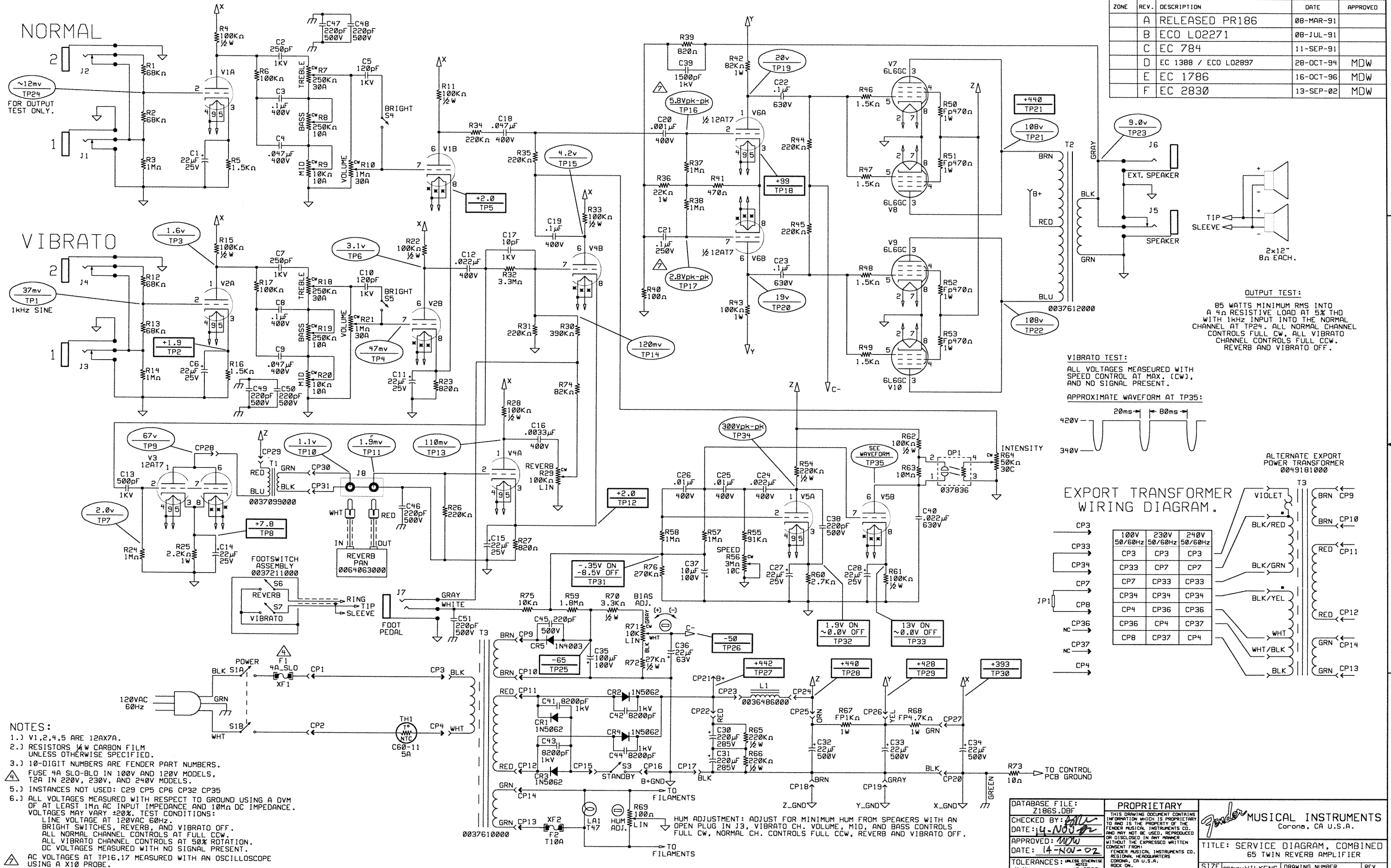
CAPACITOR BOARD.



- NOTES:
- PCB SHOWN AS FABRICATED, EXCEPT WITH CAPACITOR BREAK-AWAY BOARD SEPARATED.
 - REV. D REFLECTS THE REMOVAL OF SECONDARY FUSING IN EXPORT UNITS THAT USE POWER TRANSFORMER P/N 049181, AND THE REMOVAL OF THE LINE BYPASS CAPACITOR IN DOMESTIC UNITS.

DATABASE FILE: Z186SER.DBF CHECKED BY: <i>KEPLOT</i> DATE: 02-MAY-01 APPROVED: <i>WOW</i> DATE: 02-MAY-01 TOLERANCES: UNLESS OTHERWISE NOTED X.X ±0.050" X.XX ±0.010" 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 91720 USA STILL GLOWING... NEXT HIGHER ASSEMBLY: 65 TWIN REVERB GUITAR AMPLIFIER	Fender MUSICAL INSTRUMENTS 2621 Research Drive Corona, CA 91720 USA TITLE: SERVICE DIAGRAM 65 TWIN REVERB SIZE: B DRAWN: WILKENS ENGR: WILKENS DRAWING NUMBER: 037632 REV.: D CREATED: 01-NOV-90 SCALE: NONE PLOTTED: 02-MAY-95 SHEET 1 OF 1
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REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	RELEASED PR186	08-MAR-91	
	B	ECO L02271	08-JUL-91	
	C	EC 784	11-SEP-91	
	D	EC 1388 / ECO L02897	28-OCT-94	MDW
	E	EC 1786	16-OCT-96	MDW
	F	EC 2830	13-SEP-02	MDW



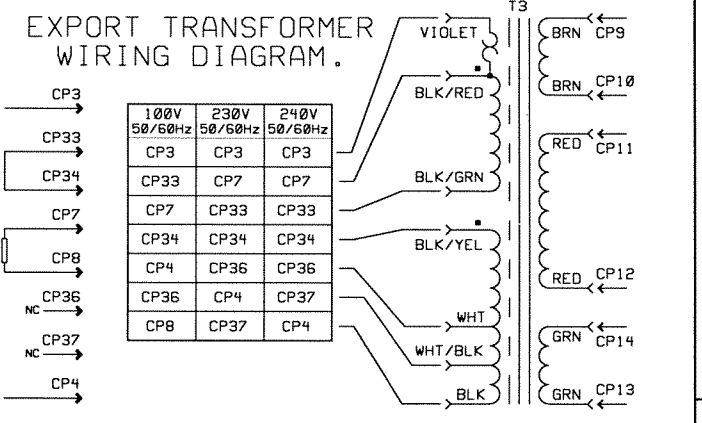
NOTES:

- 1.) V1,2,4,5 ARE 12AX7A.
- 2.) RESISTORS 1/4W CARBON FILM UNLESS OTHERWISE SPECIFIED.
- 3.) 10-DIGIT NUMBERS ARE FENDER PART NUMBERS. FUSE 4A SLO-BLO IN 100V AND 120V MODELS. T2A IN 220V, 230V, AND 240V MODELS.
- 4.) INSTANCES NOT USED: C29 CP5 CP6 CP32 CP35
- 5.) ALL VOLTAGES MEASURED WITH RESPECT TO GROUND USING A DVM OF AT LEAST 1MΩ AC INPUT IMPEDANCE AND 10MΩ DC IMPEDANCE. VOLTAGES MAY VARY ±20%. TEST CONDITIONS: LINE VOLTAGE AT 120VAC 60Hz. BRIGHT SWITCHES, REVERB, AND VIBRATO OFF. ALL NORMAL CHANNEL CONTROLS AT FULL CCW. ALL VIBRATO CHANNEL CONTROLS AT 50% ROTATION. DC VOLTAGES MEASURED WITH NO SIGNAL PRESENT.
- 6.) AC VOLTAGES AT TP15,17 MEASURED WITH AN OSCILLOSCOPE USING A X10 PROBE.

OUTPUT TEST:
85 WATTS MINIMUM RMS INTO A 4Ω RESISTIVE LOAD AT 5% THD WITH 1KHz INPUT INTO THE NORMAL CHANNEL AT TP24. ALL NORMAL CHANNEL CONTROLS FULL CCW, ALL VIBRATO CHANNEL CONTROLS FULL CCW, REVERB AND VIBRATO OFF.

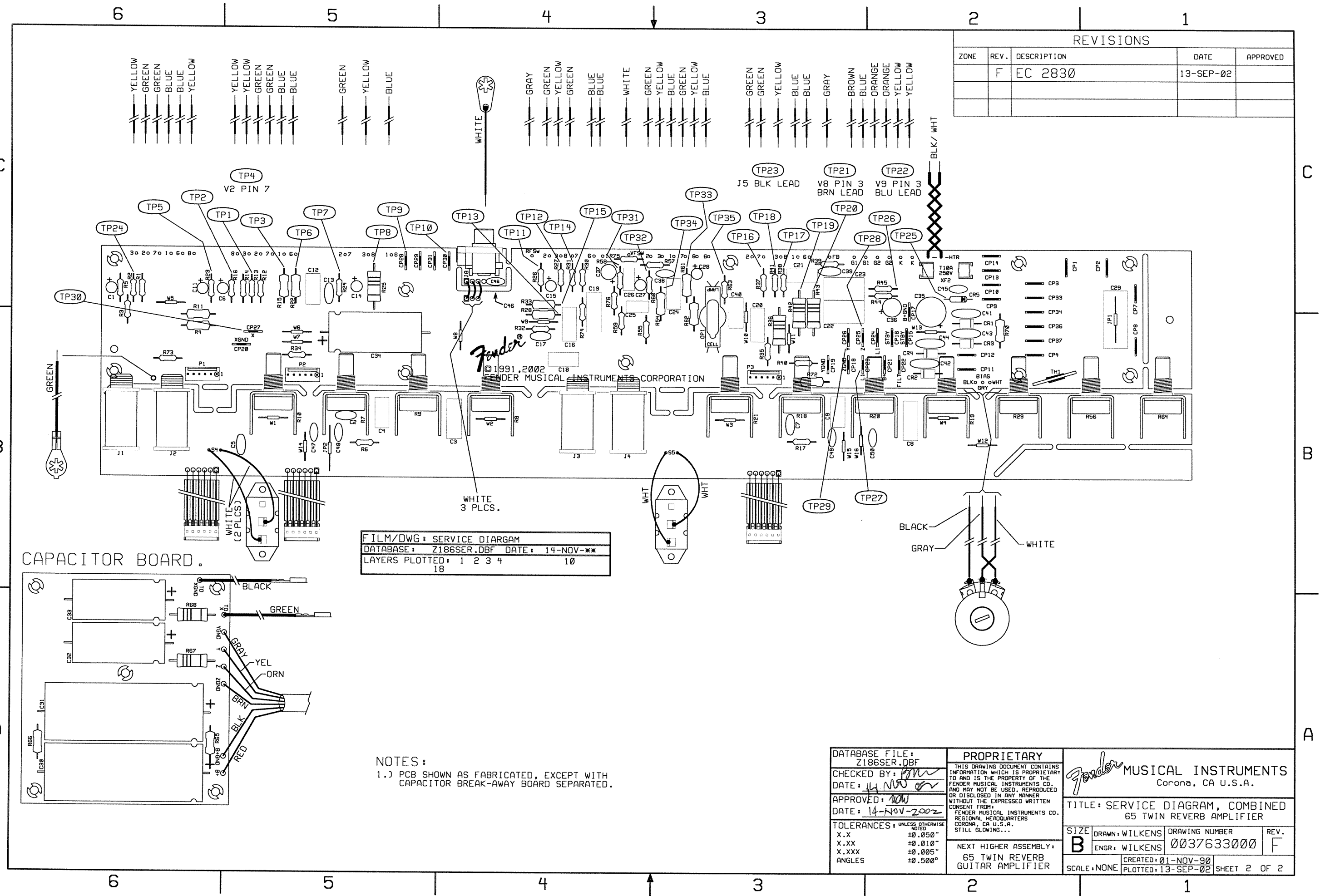
VIBRATO TEST:
ALL VOLTAGES MEASURED WITH SPEED CONTROL AT MAX. (CW), AND NO SIGNAL PRESENT.

APPROXIMATE WAVEFORM AT TP35:

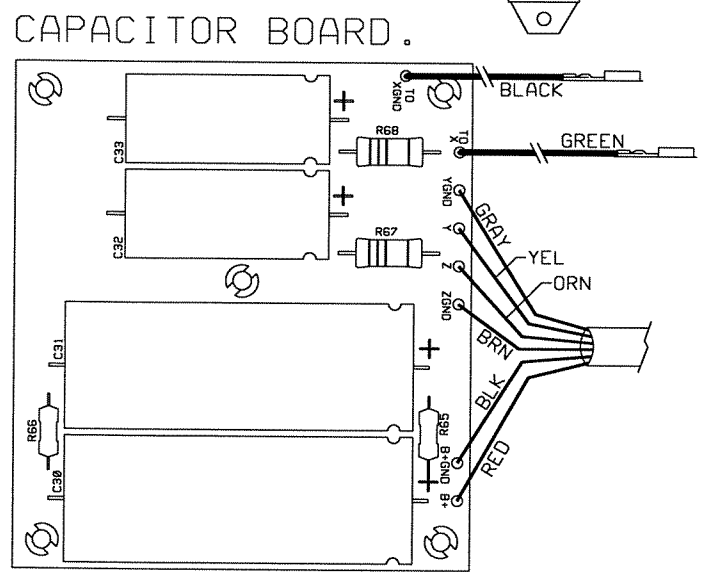


DATABASE FILE: Z1865.DBF CHECKED BY: [Signature] DATE: 14-NOV-02 APPROVED: [Signature] DATE: 14-NOV-02 TOLERANCES: UNLESS OTHERWISE NOTED X.X ±0.050" X.XX ±0.010" X.XXX ±0.005" ANGLES ±0.500°	PROPRIETARY THIS DRAWING DOCUMENT CONTAINS INFORMATION WHICH IS PROPRIETARY TO AND IS THE PROPERTY OF THE FENDER 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 CORONA, CA U.S.A., ROCK ON.	FENDER MUSICAL INSTRUMENTS Corona, CA U.S.A. TITLE: SERVICE DIAGRAM, COMBINED 65 TWIN REVERB AMPLIFIER SIZE: DRAWN: WILKENS DRAWING NUMBER: 0037633000 REV. F ENGR: WILKENS NEXT HIGHER ASSEMBLY: 65 TWIN REVERB GUITAR AMPLIFIER CREATED: 16-OCT-90 SCALE: NONE PLOTTED: 13-SEP-02 SHEET 1 OF 2
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REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	F	EC 2830	13-SEP-02	



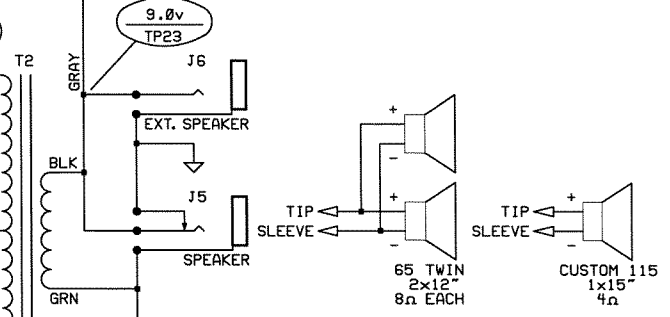
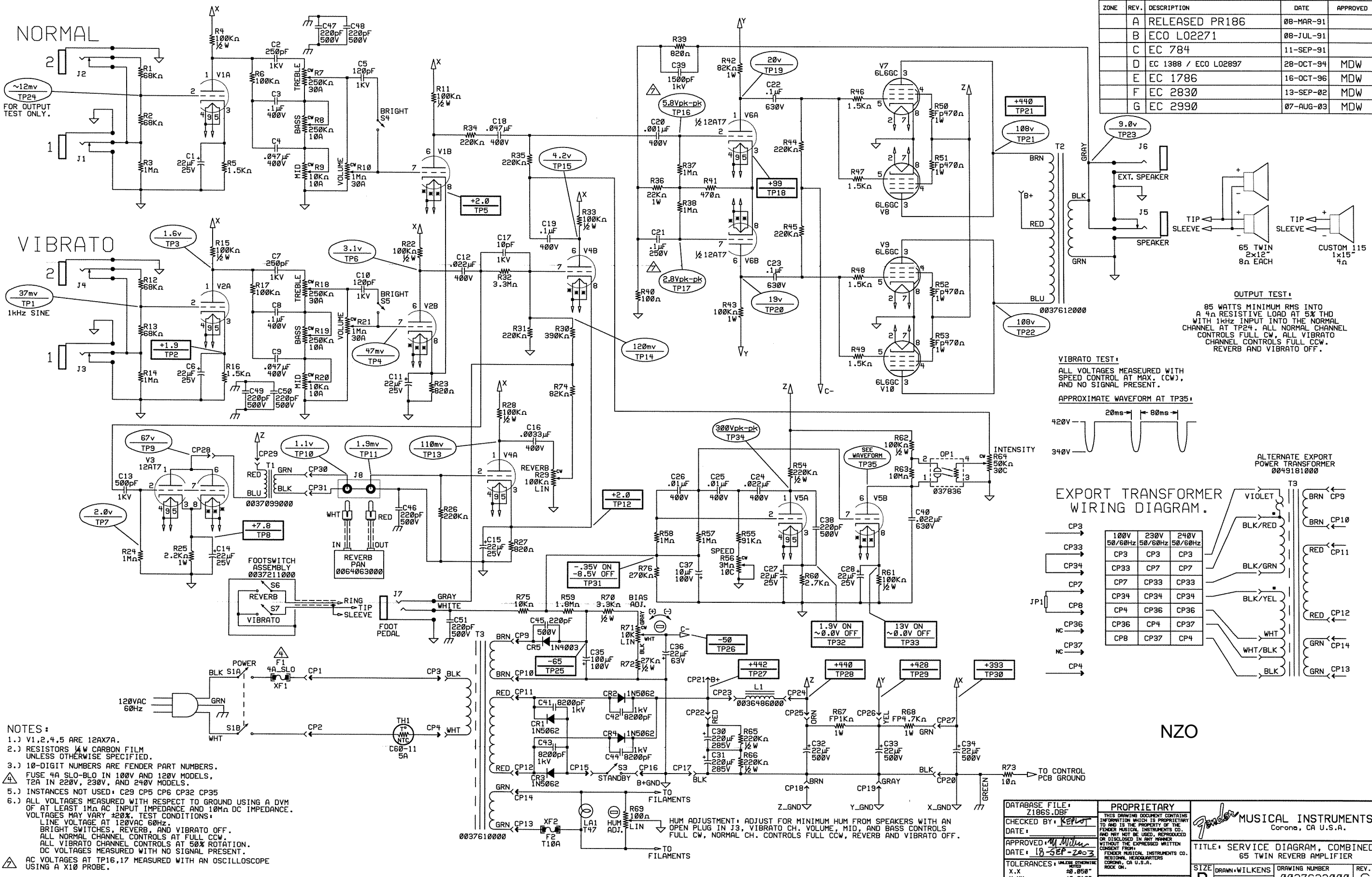
FILM/DWG: SERVICE DIAGRAM
 DATABASE: Z186SER.DBF DATE: 14-NOV-02
 LAYERS PLOTTED: 1 2 3 4 10 18



NOTES:
 1.) PCB SHOWN AS FABRICATED, EXCEPT WITH CAPACITOR BREAK-AWAY BOARD SEPARATED.

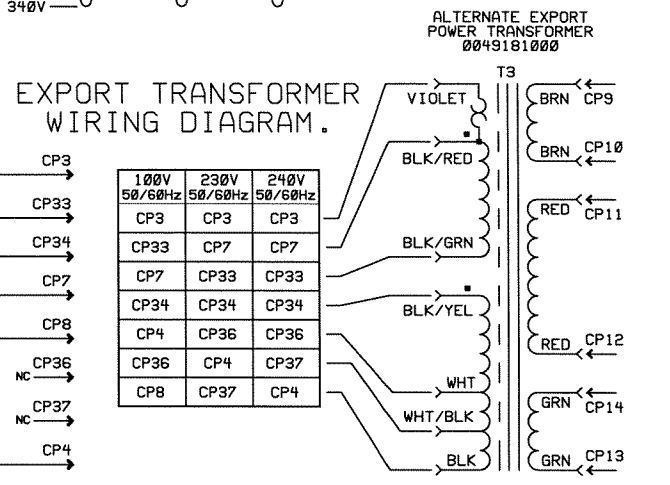
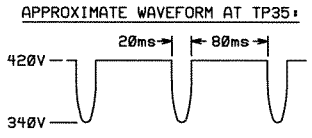
DATABASE FILE: Z186SER.DBF CHECKED BY: <i>[Signature]</i> DATE: 14 NOV 02 APPROVED: <i>[Signature]</i> DATE: 14-NOV-2002 TOLERANCES: UNLESS OTHERWISE NOTED X.X ±0.050" X.XX ±0.010" X.XXX ±0.005" ANGLES ±0.500°	PROPRIETARY THIS DRAWING DOCUMENT CONTAINS INFORMATION WHICH IS PROPRIETARY TO AND IS THE PROPERTY 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 CORONA, CA U.S.A. STILL GLOWING... NEXT HIGHER ASSEMBLY: 65 TWIN REVERB GUITAR AMPLIFIER	MUSICAL INSTRUMENTS Corona, CA U.S.A. TITLE: SERVICE DIAGRAM, COMBINED 65 TWIN REVERB AMPLIFIER SIZE: B DRAWN: WILKENS ENGR: WILKENS DRAWING NUMBER: 0037633000 REV: F SCALE: NONE CREATED: 01-NOV-90 PLOTTED: 13-SEP-02 SHEET 2 OF 2
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REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	RELEASED PR186	08-MAR-91	
	B	ECO L02271	08-JUL-91	
	C	EC 784	11-SEP-91	
	D	EC 1388 / ECO L02897	28-OCT-94	MDW
	E	EC 1786	16-OCT-96	MDW
	F	EC 2830	13-SEP-02	MDW
	G	EC 2990	07-AUG-03	MDW



OUTPUT TEST:
 85 WATTS MINIMUM RMS INTO A 4Ω RESISTIVE LOAD AT 5% THD WITH 1kHz INPUT INTO THE NORMAL CHANNEL AT TP24. ALL NORMAL CHANNEL CONTROLS FULL CW, ALL VIBRATO CHANNEL CONTROLS FULL CCW. REVERB AND VIBRATO OFF.

VIBRATO TEST:
 ALL VOLTAGES MEASURED WITH SPEED CONTROL AT MAX. (CW), AND NO SIGNAL PRESENT.

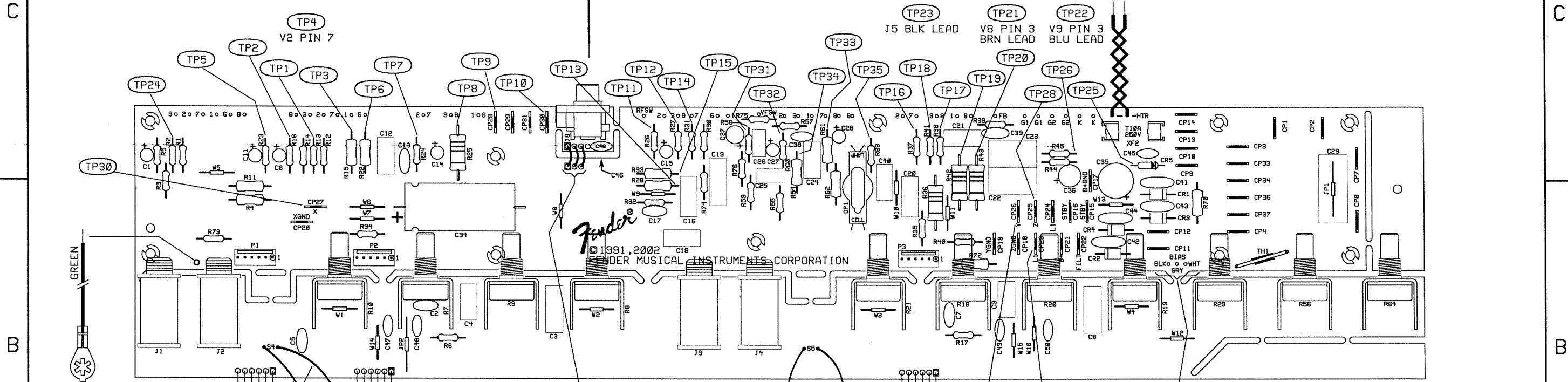
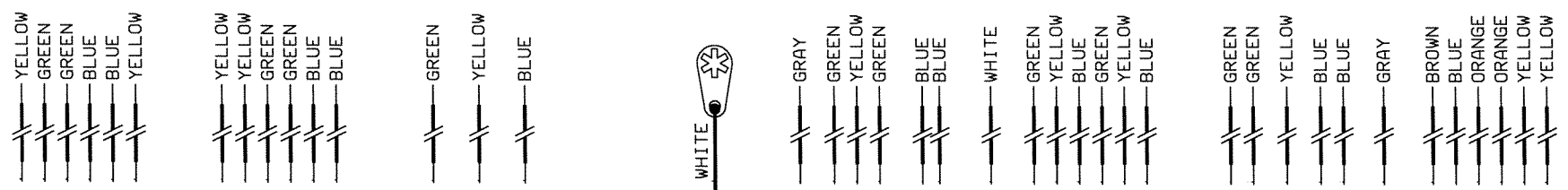


- NOTES:**
- V1, 2, 4, 5 ARE 12AX7A.
 - RESISTORS 1/4W CARBON FILM UNLESS OTHERWISE SPECIFIED.
 - 10-DIGIT NUMBERS ARE FENDER PART NUMBERS.
 - FUSE 4A SLO-BLO IN 100V AND 120V MODELS, 2A IN 220V, 230V, AND 240V MODELS.
 - INSTANCES NOT USED: C29 CP5 CP6 CP32 CP35
 - ALL VOLTAGES MEASURED WITH RESPECT TO GROUND USING A DVM OF AT LEAST 1MΩ AC INPUT IMPEDANCE AND 10MΩ DC IMPEDANCE. VOLTAGES MAY VARY ±20%. TEST CONDITIONS:
 LINE VOLTAGE AT 120VAC 60Hz.
 BRIGHT SWITCHES, REVERB, AND VIBRATO OFF.
 ALL NORMAL CHANNEL CONTROLS AT FULL CCW.
 ALL VIBRATO CHANNEL CONTROLS AT 50% ROTATION.
 DC VOLTAGES MEASURED WITH NO SIGNAL PRESENT.
 - AC VOLTAGES AT TP16, 17 MEASURED WITH AN OSCILLOSCOPE USING A X10 PROBE.

DATABASE FILE: Z186S.DBF CHECKED BY: <i>Reptor</i> DATE: APPROVED: <i>M. Miller</i> DATE: 18-SEP-2003 TOLERANCES: UNLESS OTHERWISE NOTED X.X ±0.05" X.XX ±0.010" 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. CENTRAL HEADQUARTERS CORONA, CA U.S.A.	MUSICAL INSTRUMENTS Corona, CA U.S.A. TITLE: SERVICE DIAGRAM, COMBINED 65 TWIN REVERB AMPLIFIER SIZE: DRAWN: WILKENS ENGR: WILKENS DRAWING NUMBER: 0037633000 REV. G NEXT HIGHER ASSEMBLY: 65 TWIN REVERB GUITAR AMPLIFIER CREATED: 16-OCT-90 PLOTTED: 07-AUG-03 SHEET 1 OF 2
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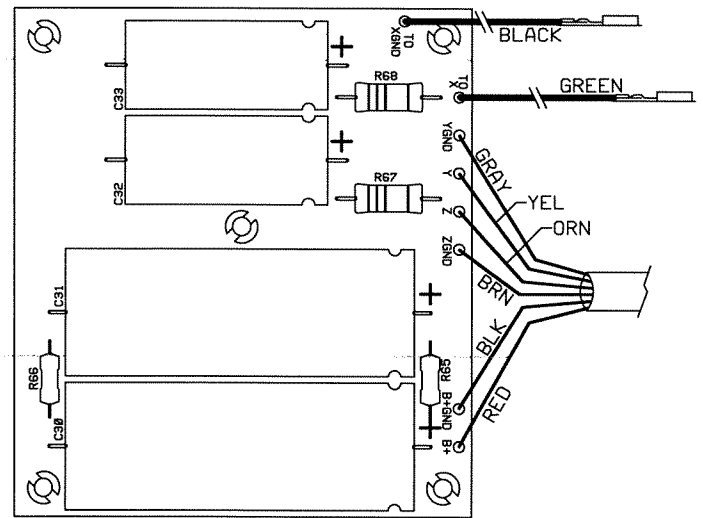
6 5 4 3 2 1

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	F	EC 2830	13-SEP-02	
	G	EC 2990	07-AUG-03	



FILM/DWG: SERVICE DIAGRAM
 DATABASE: Z186SER.DBF DATE: 18-SEP-03
 LAYERS PLOTTED: 1 2 3 4 10 18

CAPACITOR BOARD.



NOTES:
 1.) PCB SHOWN AS FABRICATED, EXCEPT WITH CAPACITOR BREAK-AWAY BOARD SEPARATED.

DATABASE FILE: Z186SER.DBF
 CHECKED BY: RELOT
 DATE:
 APPROVED: M. Wilkins
 DATE: 18-SEP-2003
 TOLERANCES: UNLESS OTHERWISE NOTED
 X.X ±0.050"
 X.XX ±0.010"
 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 CORONA, CA U.S.A. STILL GLOWING...

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

TITLE: SERVICE DIAGRAM, COMBINED
 65 TWIN REVERB AMPLIFIER

SIZE	DRAWN: WILKINS	DRAWING NUMBER	REV.
B	ENGR: WILKINS	0037633000	G

SCALE: NONE
 CREATED: 01-NOV-90
 PLOTTED: 07-AUG-03 SHEET 2 OF 2

6 5 4 3 2 1