



BULLET/BULLET REVERB

(These are the model names for warranty claims)

PARTS LIST

BULLET/BULLET REVERB

SERVICE MANUAL

PRINTED CIRCUIT BOARD ASSEMBLY

JULY 1993

NOTICE:

The information contained herein is CONFIDENTIAL and PROPRIETARY to Fender Musical Instruments. 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. All specifications subject to change without notice.

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

CAPACITOR CODES

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

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 Plating

NOTICE:

The parts and quantities are listed for the "Bullet Reverb" only. Parts used in the Reverb circuit are simply not stuffed in the "Bullet".

QTY	PART #	DESCRIPTION	REFERENCE	DESIGNATION
1	041524	PCB ASSY BULLET AMP	(STUFFED)	
1	041410	PCB ASSY BULLET REVERB AMP	(STUFFED)	
1	028104	BUTTON PUSH SWITCH BLACK	(@ S1)	
2	038689	CAP AE AX .47µF 100V 20%	C12,13	
2	026517	CAP AE AX 2.2µF 50V	C4,24	
1	038691	CAP AE AX 4.7µF 50V 20%	C23	
2	025960	CAP AE AX 22µF 16V	C7,34	
1	038693	CAP AE AX 47µF 16V 20%	C26	
2	028471	CAP AE RDL 47µF 50V 20%	C31,32	
2	033607	CAP AE RDL 2200µF 35V 20%	C29,30	
1	039255	CAP CA 10PF 100V 5%	C22	
2	038698	CAP CA 47PF 100V 5%	C3,36	
1	039256	CAP CA 68PF 100V 5%	C21	
1	038699	CAP CA 100PF 100V 5%	C25	
1	038701	CAP CA 470PF 50V 5%	C11	
1	038874	CAP CA 560PF 50V 5%	C14	
2	039268	CAP CA 4700PF 50V 5%	C1,2	
2	038703	CAP CA .1µF 50V 10%	C6,33	
1	027278	CAP MPF .1µF 63V 10%	C27	
1	027286	CAP MPF .47µF 63V	C28	
2	033580	CAP PFF RDL .0022µF 100V 10%	C5,35	
1	033581	CAP PFF RDL .0033µF 100V 10%	C18	
1	033583	CAP PFF RDL .0047µF 100V 10%	C19	
1	036234	CAP PFF RDL .015µF 100V 10%	C38	
1	033590	CAP PFF RDL .022µF 100V 10%	C16	
2	033591	CAP PFF RDL .033µF 100V 10%	C9,10	
4	033592	CAP PFF RDL .047µF 100V 10%	C8,15,17,20	
1	033596	CAP PFF RDL .068µF 100V 10%	C37	
2	034719	CONTROL 50KB SNAP IN	R29,58	
1	037323	CONTROL 50K 15A SNAP IN	R13	
3	037324	CONTROL 100K 30C SNAP IN	R20,24,28	
1	040552	CONTROL 250K 30C	R30	
4	006260	DIODE 1N4448 SIGNAL BENT	CR1-CR4	
6	064089	DIODE 1N4003 200PRV,1AMP	CR5-10	
2	009165	DIODE ZEN 1N4744A 15V 1W 5%	CR11-CR12	
2	025996	FUSE CLIP PCB .250 & 5MM FUSE	XF1	
1	068411	FUSE QA 1-1/4X1/4 250V 0.5AMP	F1	(100V/120V ONLY)
1	020781	FUSE QA 20mmX5mm 250V 0.25AMP	F1	(230V/240V ONLY)

BULLET/BULLET REVERB

PRINTED CIRCUIT BOARD ASSEMBLY CONTINUED

QTY	PART #	DESCRIPTION	REFERENCE	DESIGNATION
2	027408	HDR .1 CTR 2 CKT SQ PIN	P10,P11	
1	037030	HEATSINK FENDER X-15		
4	016795	IC DUAL OP AMP TL072	U1,2,3,5	
1	029912	IC PC1188H 20W	U4	
1	041988	INSULATOR MICA 10 PIN SIP	(@ U4)	
1	031570	JACK PHONE PCB STEREO PREMIUM	J3	
2	037036	JACK PHONE PCB MONO CA PREMIUM	J1,2	
12	020888	JUMPER WIRE 22GA .5X.175		
1	028039	LED RED 5X5MM SLB-55VR3	LD3	
2	9902202281	LED RED LONG LEAD LUMEX CS02	LD1,LD2	
1	041409	PCB FAB BULLET AMPS	(BLANK)	
1	024942	RES CF 1/4W 5% 22_	R54	
2	024964	RES CF 1/4W 5% 820_	R38,42	
1	024965	RES CF 1/4W 5% 1K	R7	
1	024969	RES CF 1/4W 5% 1.5K	R50	
1	024971	RES CF 1/4W 5% 2.2K	R12	
3	024973	RES CF 1/4W 5% 3.3K	R19,21,57	
1	028034	RES CF 1/4W 5% 5.1K	R5	
1	024979	RES CF 1/4W 5% 6.8K	R3	
1	024980	RES CF 1/4W 5% 8.2K	R18	
1	024981	RES CF 1/4W 5% 10K	R55	
3	024985	RES CF 1/4W 5% 15K	R1,6,34	
6	024987	RES CF 1/4W 5% 22K	R8,16,17,32,52,53	
5	024993	RES CF 1/4W 5% 47K	R11,26,27,31,33	
1	026507	RES CF 1/4W 5% 62K	R43	
3	024997	RES CF 1/4W 5% 100K	R37,47,51	
1	024999	RES CF 1/4W 5% 150K	R39	
2	025058	RES CF 1/4W 5% 180K	R9,36	
6	025059	RES CF 1/4W 5% 220K	R10,14,15,23,25,56	
2	025065	RES CF 1/4W 5% 470K	R22,35	
2	028018	RES CF 1/4W 5% 510K	R2,4	
1	025073	RES CF 1/4W 5% 1.5M	R59	
1	030737	RES CF 1/2W 5% 5.6_	R40	
2	028045	RES FILM 1W 5% 220_	R48,49	
2	028740	RES FILM 1W 5% 470_	R45,46	
1	039128	RES FILM 1W 5% 120_	R44	
1	032958	RES WW BT 5W 10% .33_	R41	
2	027638	SCRW TF 4-40X3/8 HWHS ZI	(U4 TO HEATSINK MOUNT)	
2	032908	SCRW TF 6-32X/38 PHP ZI	(HEATSINK TO PCB MOUNT)	
1	9904701440	SPACER LED .7X.125 BLUE	(@ LD3)	
1	028091	SWITCH PUSH SLFLK SHORT STROKE	S1	

BULLET/BULLET REVERB

CHASSIS ASSEMBLY

QTY	PART #	DESCRIPTION	REFERENCE	DESIGNATION
1	041415	CHS ASSY BULLET REVRB AMP 120V		
7	033206	BUSHING KNOB SPACER		
1	029084	CABLE ASSY 120V FD15	(100V/120V ONLY)	
1	026528	CABLE ASSY PWR 230V .187 TAB	(230V ONLY)	
1	012582	CLAMP CABLE NYL SCRW MNT 1/4	(@ POWER CABLE)	
7	026402	KNOB POINTER BLACK		
1	041515	PANEL FRONT BULLET AMP		
1	041411	PANEL FRONT BULLET REVERB AMP		
5	028684	SCRW SMB 6X3/8 PH PHS BLX	(PCB/XFMR MOUNT)	
1	025935	SWITCH POWER DPST	(120V DOMESTIC ONLY)	
1	039287	SWITCH POWER DPST .187 TAB GLOBAL	(230V/240V EXPORT ONLY)	
5	026459	WSHR FLAT 6X3/8 ZI	(PCB/XFMR MOUNT)	
1	025413	FOJ XFMR PWR F1158UC SQ15	(120V DOMESTIC ONLY)	
1	031634	XFMR PWR FD15 230V	(230V EXPORT ONLY)	

CABINET ASSEMBLY

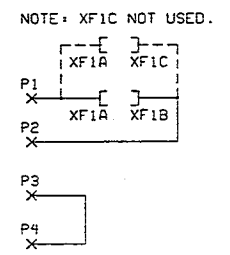
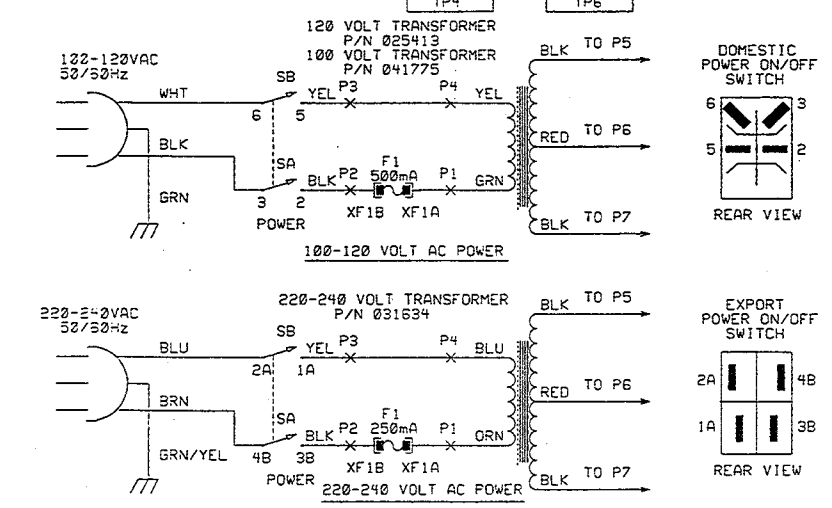
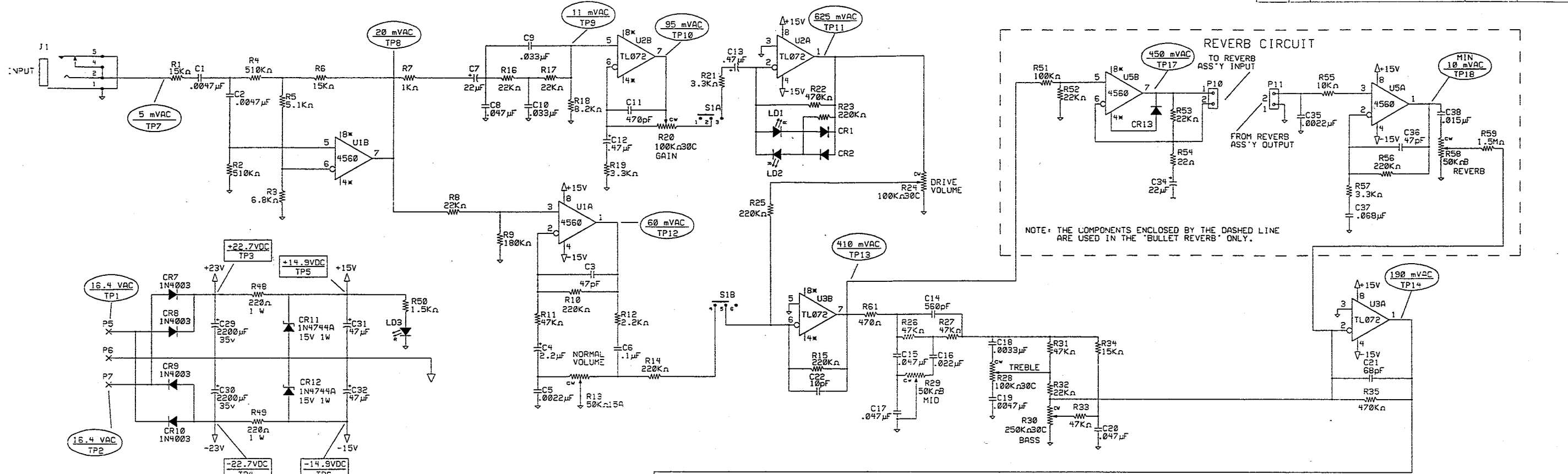
QTY	PART #	DESCRIPTION	REFERENCE	DESIGNATION
1	040142	CAB ASSY BLK/SLVR X-15 '92	(COMPLETE CABINET)	
2	012582	CLAMP CABLE NYL SCRW MNT 1/4	(@ POWER CABLE)	
1	026016	FOAM STRIP 1/8X1X7	(REVERB PAN TO SLEEVE)	
1	026017	FOAM STRIP 3/8X1-1/4X8 DBL STK	(SLEEVE TO CHASSIS)	
4	029323	FOOT RUBBER		
1	040143	GRILLE ASSY BLK/SLVR X-15 '92	(COMPLETE GRILLE)	
1	041516	LABEL REAR BULLET AMP	(@ CABINET BACK)	
1	041412	LABEL REAR BULLET REVERB AMP	(@ CABINET BACK)	
1	011298	NAMEPLATE FENDER SMALL		
1	041397	REVERB SPRING 1BB2E4A	(REVERB PAN)	
12	026571	SCRW CORNER MOUNTING		
4	022277	SCRW M 10-32X1-1/2 OHP NI	(HANDLE MOUNT)	
1	029828	SCRW PB 8X3/4 PHP ZI	(CABLE CLAMP MOUNT)	
4	9904101110	SCRW PB 8X5/8 PHP	(FOOT MOUNT)	
2	018113	SCRW SMA 4X1/2 OHP BLX	(LOGO MOUNT)	
2	026800	SCRW SMAB 8X1-3/4 OHP BLX	(GRILLE BAFFLE MOUNT)	
4	029677	SCRW SMA 6X1 THP BLX	(BACKBOARD MOUNT)	
2	022152	SCRW SMA 3X1/2 OHP BLX		
1	025954	SLEEVE-REVERB PAN CHAMP 12	(CARDBOARD OVER REVERB PAN)	
1	025421	SPEAKER, 8 INCH, PF8643		
2	029527	WSHR FNSH 8-5/8 FLNGD BLX WX	(GRILLE BAFFLE MOUNT)	

BULLET/BULLET REVERB

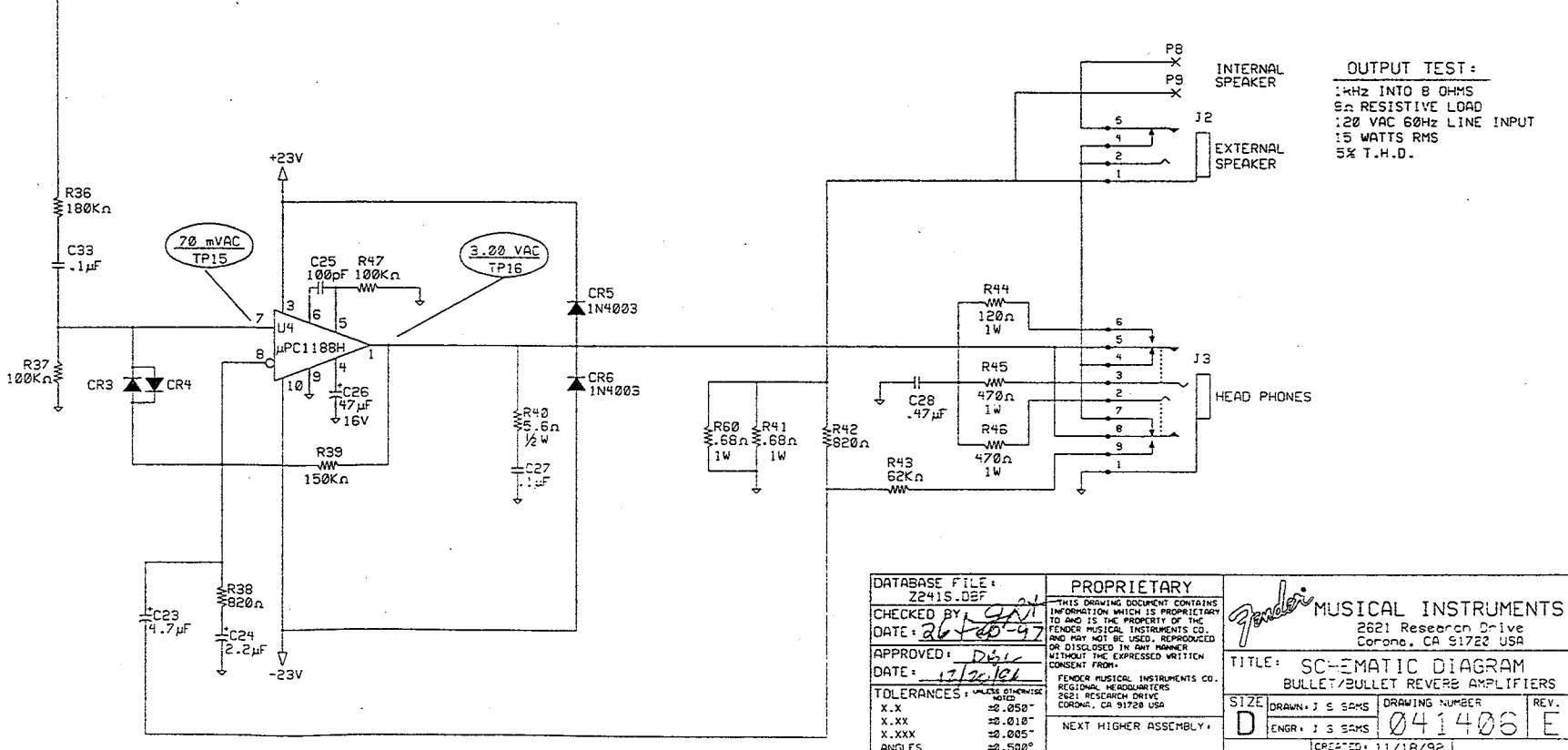
MISCELLANEOUS

<u>QTY</u>	<u>PART #</u>	<u>DESCRIPTION</u>	<u>REFERENCE</u>	<u>DESIGNATION</u>
1	041526	MANUAL OWNERS BULLET AMPS		
1	041407	SCHEMATIC REDUCED W/SVC BULLET AMPS		

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	PR 241	4/2/93	JSS
	B	CC 1015	7/1/93	JSS
	C	CC 1042	9/15/93	MH
	D	EC 1114	10-FEB-94	MDW
	E	LC 1771	28-AUG-96	DBL



- NOTES: UNLESS OTHERWISE SPECIFIED.
- ALL RESISTORS 1/4W, ± 5%.
 - ALL CAPACITORS 50V MINIMUM.
 - ALL DIODES 1N4448.
 - DC VOLTAGES READ TO GROUND WITH A DVM, NO INPUT SIGNAL.
 - AC VOLTAGE READINGS TAKEN WITH DVM TO GROUND UNDER THE FOLLOWING CONDITIONS:
 - 1KHz INPUT APPLIED THROUGH 1/4" PLUG TO J1
 - 2Ω RESISTIVE LOAD CONNECTED AT P8, P9
 - GAIN AT 9 O'CLOCK
 - ALL OTHER CONTROLS SET TO 12 O'CLOCK
 - FOR BULLET REVERB ONLY:
 - REVERB UNIT CONNECTED
 - REVERB AT "0"

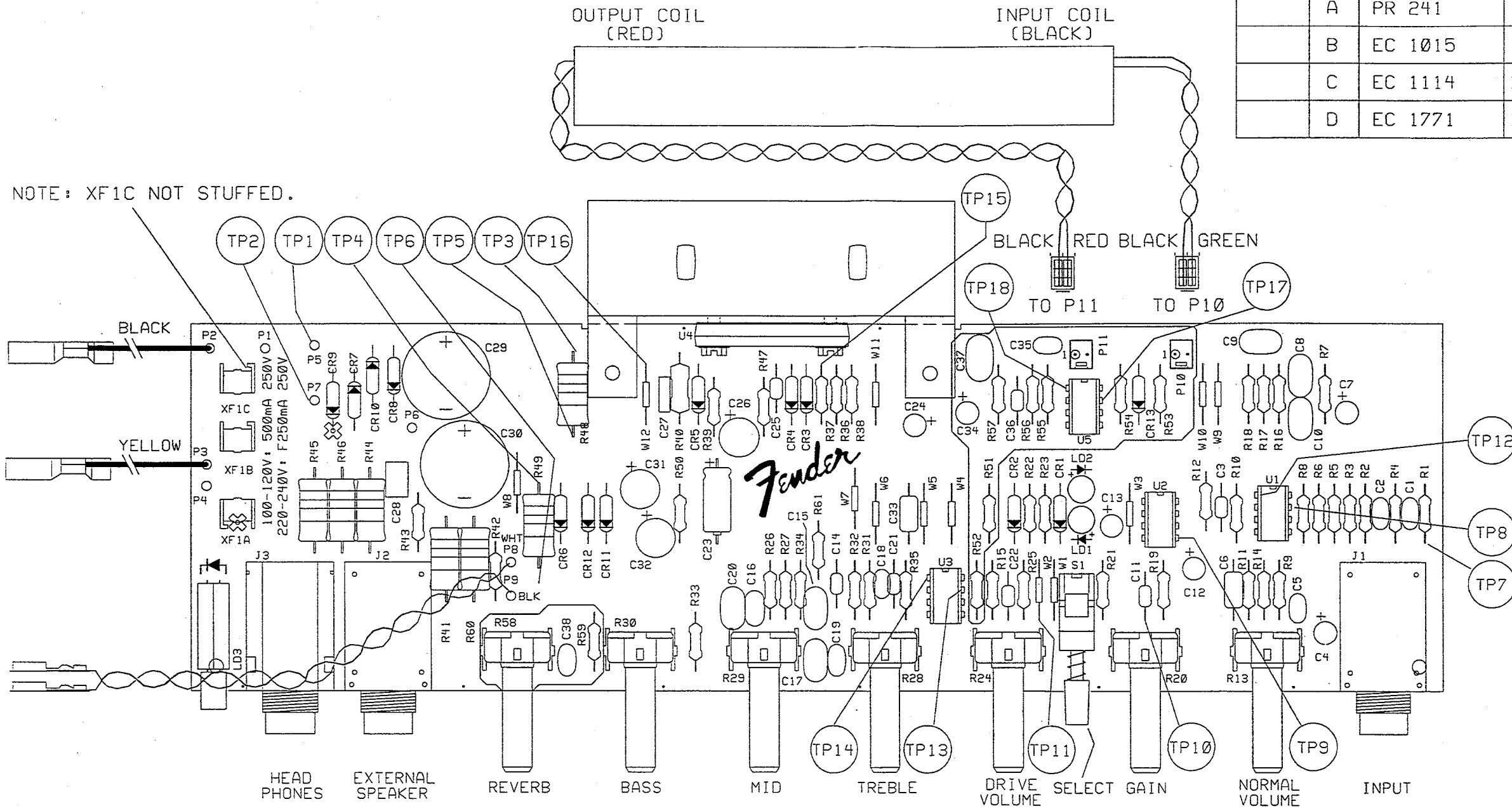


OUTPUT TEST:
 1KHz INTO 8 OHMS
 8Ω RESISTIVE LOAD
 120 VAC 60Hz LINE INPUT
 15 WATTS RMS
 5% T.H.D.

DATABASE FILE: ZP415.DBF CHECKED BY: <i>DBL</i> DATE: <i>11/20/92</i> APPROVED: <i>DBL</i> TOLERANCES: UNLESS OTHERWISE NOTED X.XX ±0.01" 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: SCHEMATIC DIAGRAM BULLET/BULLET REVERB AMPLIFIERS SIZE: D DRAWN: J S SAMS DRAWING NUMBER: 041406 REV: E ENGR: J S SAMS SCALE: N/A CREATED: 11/18/92 PLOTTED: 28-DEC-93 15:55:11 OF 1
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REVISIONS

ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	PR 241	4/02/93	JSS
	B	EC 1015	6/21/93	JSS
	C	EC 1114	10-FEB-94	MDW
	D	EC 1771	13-DEC-96	DBL



NOTE: XF1C NOT STUFFED.

FILM/DWG: SERVICE DIAGRAM	
DATABASE: Z241P.DBF	DATE: 20-DEC-96
LAYERS PLOTTED: 1 2 3 4	10
	18

NOTE: THE FOLLOWING PCB COMPONENTS ARE USED IN THE BULLET REVERB AMPLIFIER ONLY: C34-C38, CR13, R51-R59, P10, P11, U5 THESE COMPONENTS ARE SHOWN ENCLOSED IN BOXES ABOVE AND ON THE PCB.

DATABASE FILE:	Z241P.DBF
CHECKED BY:	<i>JHL</i>
DATE:	<i>26-Feb-97</i>
APPROVED:	<i>DBL</i>
DATE:	<i>12/20/96</i>
TOLERANCES: UNLESS OTHERWISE NOTED	
X.X	±0.050"
X.XX	±0.010"
X.XXX	±0.005"
ANGLES	±0.500°

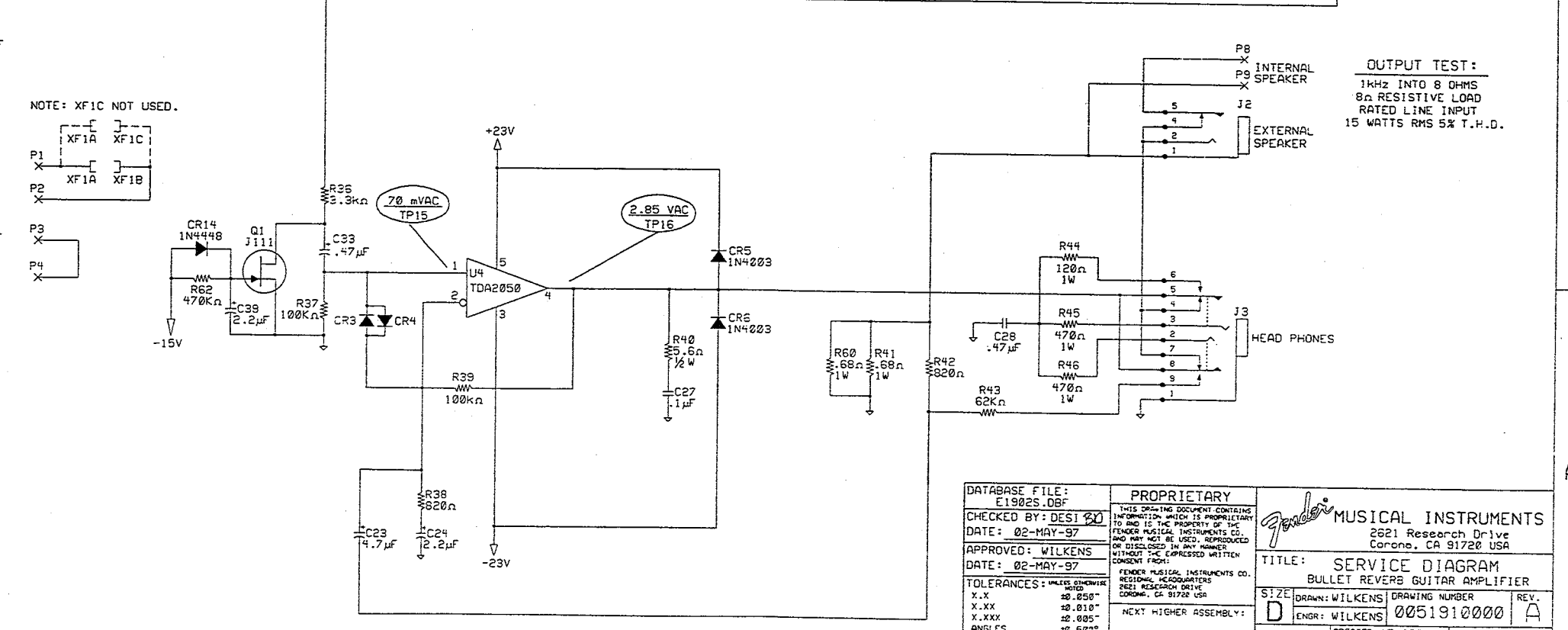
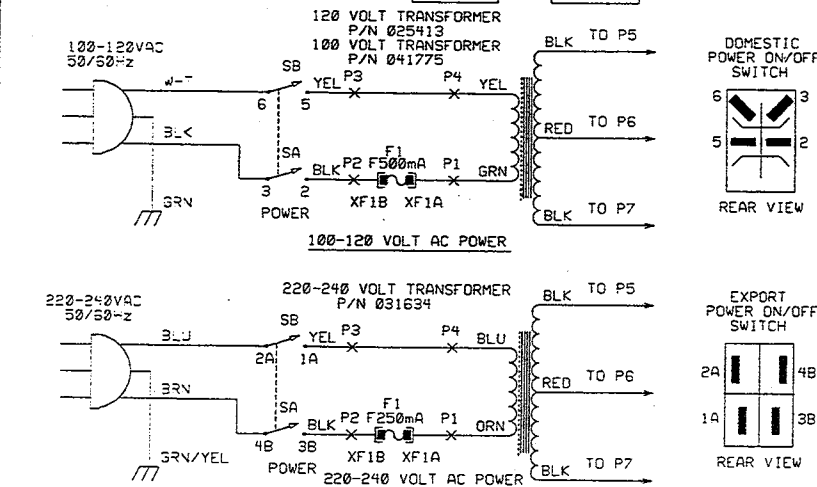
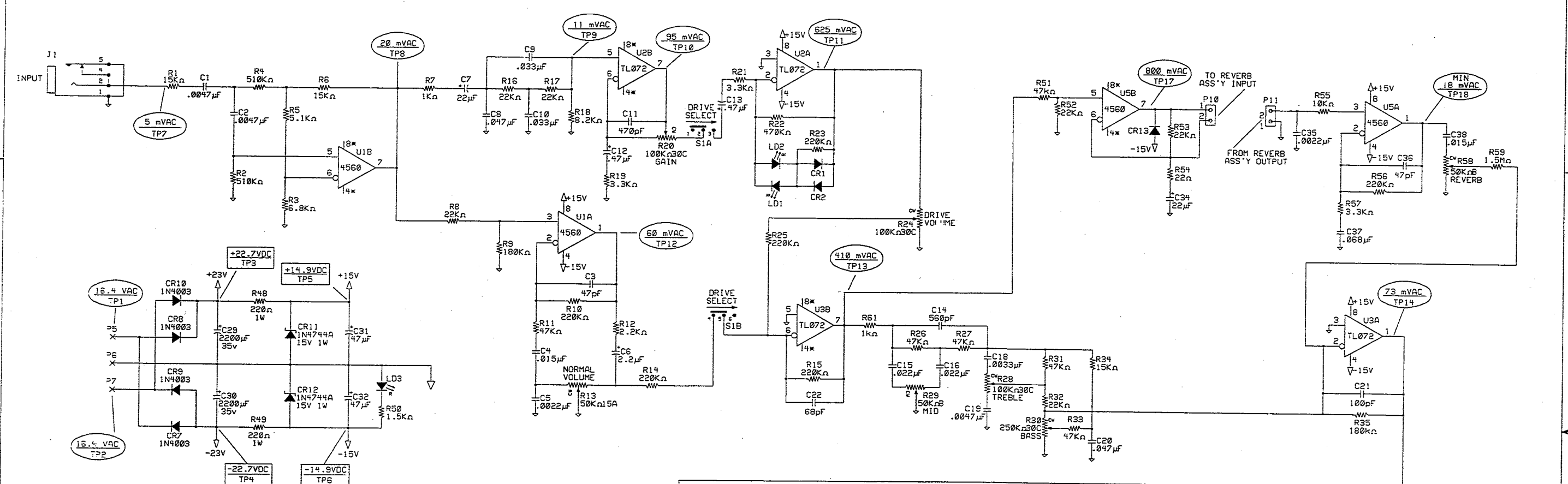
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 REGIONAL HEADQUARTERS
 2621 RESEARCH DRIVE
 CORONA, CA 91720 USA
 NEXT HIGHER ASSEMBLY:

Fender MUSICAL INSTRUMENTS
 2621 Research Drive
 Corona, CA 91720 USA

TITLE: BULLET GUITAR AMPLIFIERS SERVICE DIAGRAM

SIZE	DRAWN: D.LEWIS	DRAWING NUMBER	REV.
B	ENGR: D.LEWIS	041408	D
SCALE: N/A	CREATED: 8/23/96	PLOTTED: 20-DEC-96	SHEET 1 OF 1

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	RELEASED EC1902	02-MAY-97	MDW

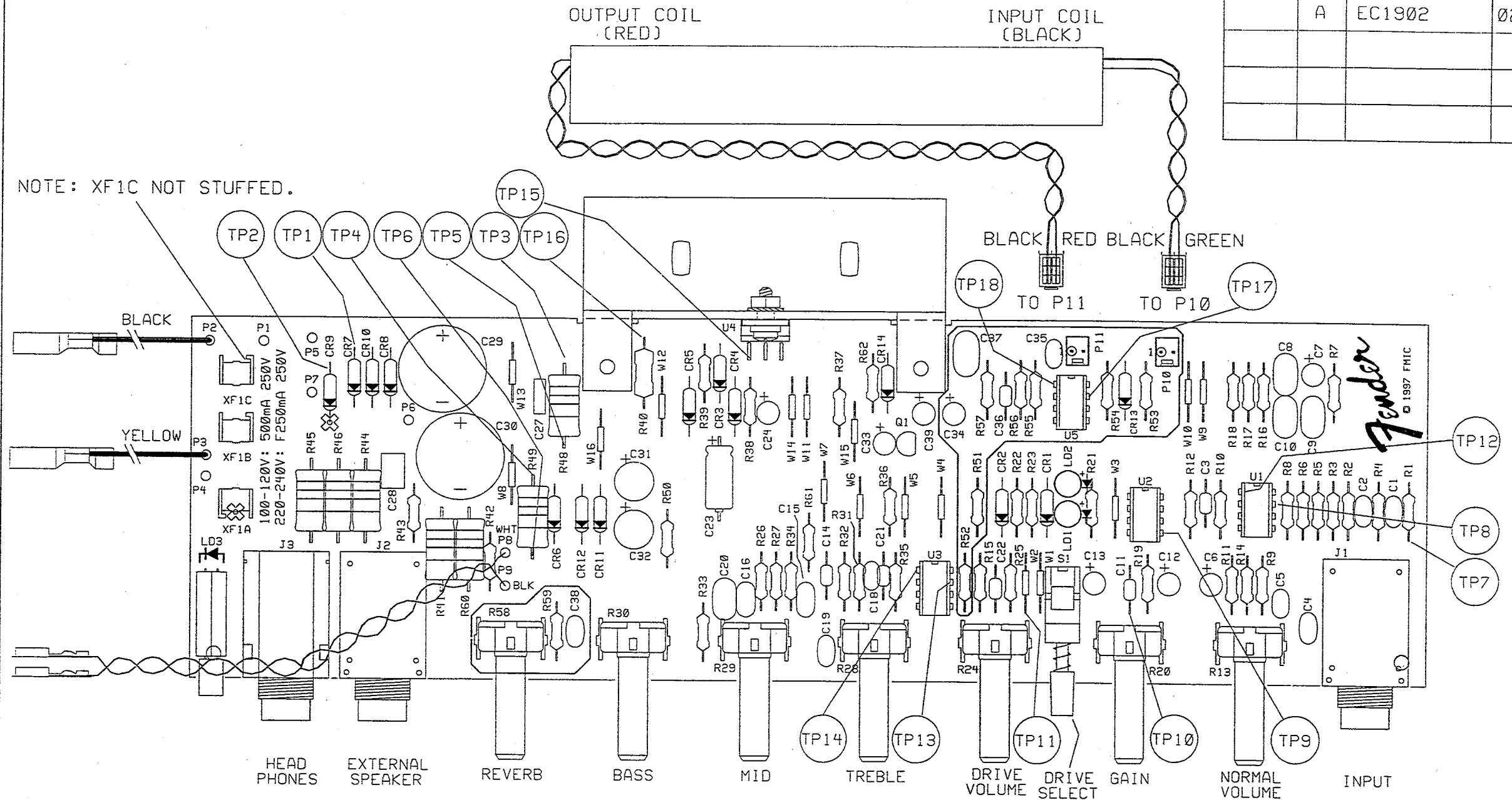


- NOTES: UNLESS OTHERWISE SPECIFIED.
1. ALL RESISTORS 1/4W, ± 5%.
 2. ALL CAPACITORS 50V MINIMUM.
 3. ALL DIODES 1N4448.
 4. DC VOLTAGES READ TO GROUND WITH A DVM. NO INPUT SIGNAL.
 5. AC VOLTAGE READINGS TAKEN WITH DVM TO GROUND UNDER THE FOLLOWING CONDITIONS:
 - 1KHz INPUT APPLIED THROUGH 1/4" PLUG TO J1
 - 8Ω RESISTIVE LOAD CONNECTED AT P8, P9
 - SWAN AT 9 O'CLOCK
 - ALL OTHER CONTROLS SET TO 12 O'CLOCK
 - FOR BULLET REVERB ONLY: REVERB UN-CONNECTED
 - REVERB A = 0
 6. INSTANCES NOT USED: C17 C25 C26 R47

DATABASE FILE: E1902S.DBF CHECKED BY: DESI 20 DATE: 02-MAY-97 APPROVED: WILKENS DATE: 02-MAY-97 TOLERANCES: UNLESS OTHERWISE NOTED R.XX ±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. RESIDUAL HEADQUARTERS 2621 RESEARCH DRIVE CORONA, CA 91720 USA	Fender MUSICAL INSTRUMENTS 2621 Research Drive Corona, CA 91720 USA TITLE: SERVICE DIAGRAM BULLET REVERB GUITAR AMPLIFIER SIZE: DRAWN: WILKENS DRAWING NUMBER: 0051910000 REV. A ENGR: WILKENS SCALE: N/A CREATED: 15-APR-97 PLOTTED: 05-JUN-97 SHEET 1 OF 2
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REVISIONS

ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	EC1902	02-MAY-97	MDW



FILM/DWG: SERVICE DIAGRAM
 DATABASE: E1902P.DBF DATE: 05-JUN-97
 LAYERS PLOTTED: 1 2 3 4 10
 18

DATABASE FILE:
E1902P.DBF
 CHECKED BY: BDesi
 DATE: 6/5/97
 APPROVED: [Signature]
 DATE: 6/5/97
 TOLERANCES: UNLESS OTHERWISE NOTED
 X.X ±0.050"
 X.XX ±0.010"
 X.XXX ±0.005"
 ANGLES ±0.500°

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 2621 RESEARCH DRIVE
 CORONA, CA 91720 USA
 NEXT HIGHER ASSEMBLY:

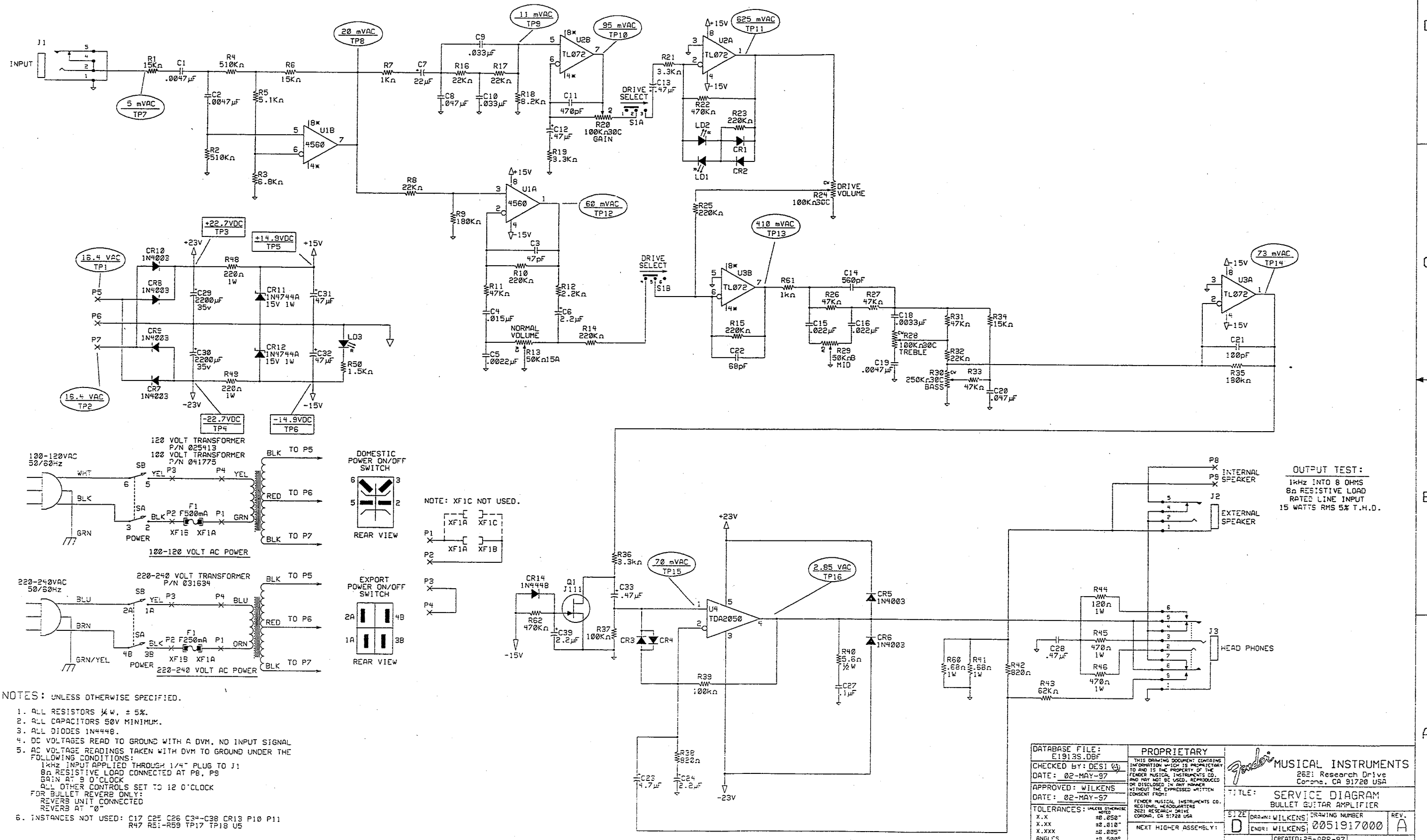
Fender MUSICAL INSTRUMENTS
 2621 Research Drive
 Corona, CA 91720 USA

TITLE: SERVICE DIAGRAM
 BULLET REVERB AMPLIFIER

SIZE	DRAWN: WILKENS	DRAWING NUMBER	REV.
B	ENGR: WILKENS	0051910000	A

SCALE: N/A
 CREATED: 15-APR-97
 PLOTTED: 05-JUN-97 SHEET 2 OF 2

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	RELEASED EC1913	02-MAY-97	MDW



- NOTES: UNLESS OTHERWISE SPECIFIED:
- ALL RESISTORS 1/4 W, ± 5%.
 - ALL CAPACITORS 50V MINIMUM.
 - ALL DIODES 1N4448.
 - DC VOLTAGES READ TO GROUND WITH A DVM, NO INPUT SIGNAL.
 - AC VOLTAGE READINGS TAKEN WITH DVM TO GROUND UNDER THE FOLLOWING CONDITIONS:
 1KHZ INPUT APPLIED THROUGH 1/4" PLUG TO J1;
 8Ω RESISTIVE LOAD CONNECTED AT P8, P9;
 GAIN AT 9 O'CLOCK
 ALL OTHER CONTROLS SET TO 12 O'CLOCK
 FOR BULLET REVERB ONLY:
 REVERB UNIT CONNECTED
 REVERB AT 0
 - INSTANCES NOT USED: C17 C25 C26 C34-C38 CR13 P10 P11
 R47 R51-R59 TP17 TP18 U5

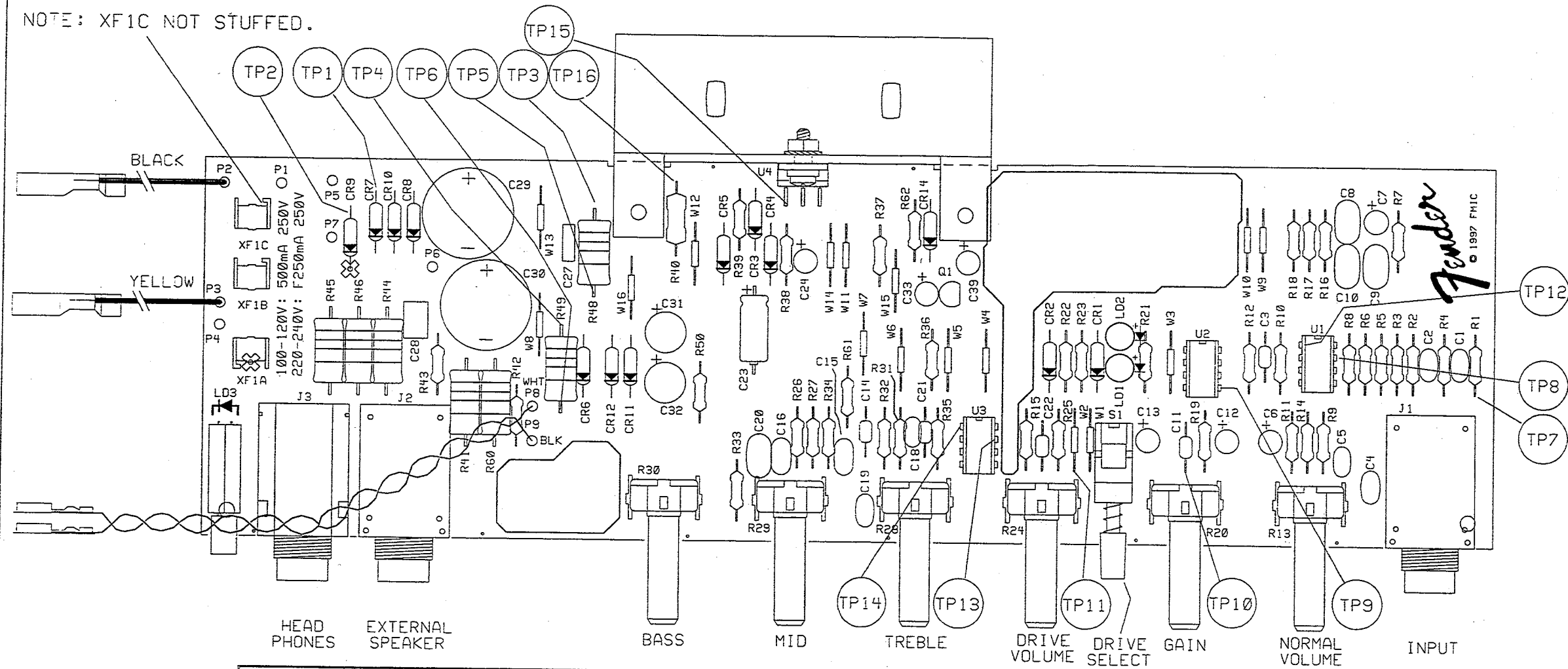
OUTPUT TEST:
 1kHz INTO 8 OHMS
 8Ω RESISTIVE LOAD
 RATED LINE INPUT
 15 WATTS RMS 5% T.H.D.

DATABASE FILE: E1913S.DBF CHECKED BY: DESI (S) DATE: 02-MAY-97 APPROVED: WILKENS DATE: 02-MAY-97 TOLERANCES: UNLESS OTHERWISE SPECIFIED: X.X .050" X.XX .010" X.XXX .005" ANGLES .0500°	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 NEXT HIGHER ASSEMBLY:	Fender MUSICAL INSTRUMENTS 2621 Research Drive Corona, CA 91728 USA TITLE: SERVICE DIAGRAM BULLET GUITAR AMPLIFIER SIZE: DRAWN: WILKENS; DRAWING NUMBER: 0051917000 ENGR: WILKENS; REV: A SCALE: N/A CREATED: 25-APR-97 PLOTTED: 26-JUN-97 SHEET 1 OF 2
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REVISIONS

ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	EC1913	02-MAY-97	MDW

NOTE: XF1C NOT STUFFED.



FILM/DWG: SERVICE DIAGRAM	
DATABASE: E1913P.DBF	DATE: 06-JUN-97
LAYERS PLOTTED: 1 2 3 4	10
18	

DATABASE FILE: E1913P.DBF	
CHECKED BY: <i>B. West</i>	
DATE: <i>6-16-97</i>	
APPROVED: <i>MDW</i>	
DATE: <i>6/16/97</i>	
TOLERANCES: UNLESS OTHERWISE NOTED	
X.X	±0.050"
X.XX	±0.010"
X.XXX	±0.005"
ANGLES	±0.500°

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 CORONA, CA 91720 USA
 NEXT HIGHER ASSEMBLY:

Fender MUSICAL INSTRUMENTS
 2621 Research Drive
 Corona, CA 91720 USA

TITLE: SERVICE DIAGRAM
 BULLET AMPLIFIER

SIZE	DRAWN: WILKENS	DRAWING NUMBER	REV.
B	ENGR: WILKENS	0051917000	A

SCALE: N/A
 CREATED: 15-APR-97
 PLOTTED: 06-JUN-97 SHEET 2 OF 2