

BXR 15

BASS EXTENDED RANGE

SERVICE MANUAL





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OCTOBER 1994 REV A

TYPE PR260

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 asterick (*) 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

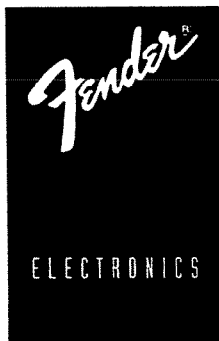
CAP AE = Aluminum Electrolytic
 CAP CA = Ceramic Axial
 CAP CD = Ceramic Disk
 CAP MPF = Metalized Polyester Film
 CAP MY = Mylar
 CAP PFF = Polyester Film/Foil

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



BXR 15

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SPECIFICATIONS

POWER AMPLIFIER SECTION

Power output:	15 Watts
Rated load impedance:	8 Ohms
Distortion at rated power:	5%
Power bandwidth:	40 Hz to 20 kHz
Compression range:	19dB

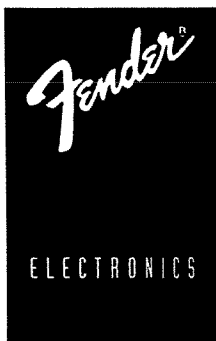
PREAMP SECTION:

Input impedance:	202k Ohms
Sensitivity (@ 1kHz):	4mV at onset of compression
Equalization range:	HIGH +/- 15 dB at 8 kHz MID +/- 15 dB at 800 Hz LOW +/- 15 dB at 40 Hz

PHYSICAL SPECIFICATIONS

Width:	13-1/4 inches	(34.3 cm)
Height:	15 inches	(38.1 cm)
Depth:	9-3/4 inches	(24.8 cm)
Weight:	21 lbs.	(9.5 kg)

Sound *HUGE*



BXR 15

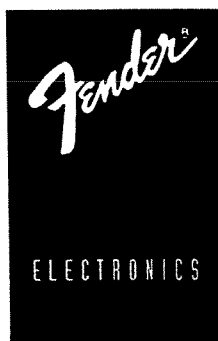
BASS EXTENDED RANGE

THEORY OF OPERATION

The input circuitry is a low pass filter with the -3dB down point at 22kHz. This sets up the initial response of the amplifier and provides RF suppression. U1B is an "Auto Pad". It provides excellent headroom and low noise. At upper volume control settings, it also rolls off low frequencies at 219Hz. U1A makes up the tone controls. They provide 15dB of boost or cut at 40Hz (Low), 800Hz (Mid), and 8kHz (High). U2B is a special tone shaping circuit used for sonic enhancement.

U2A is a unity gain amplifier which drives the power amp stage. In conjunction with U4, it acts as the gain reduction circuit for the Delta Comp™. The output of the power amplifier is sensed through R23 by the Comparator U5A. As the amplifier output approaches clipping, the output of U5A goes negative. This charges Capacitors C20-C23 through the time constant made up with R41 ($3.9K \times 8.8\mu F = 34.3mSec$). This single-pole charge is the attack time for the Delta Comp™. As the capacitors charge, the voltage at the base of transistor Q1 goes negative, turning on this Darlington device. Current from Q1 controls the output voltage of U4 (Operational Transconductance Amplifier). The output of U2A also drives the inverting input of U4. The inverted output from U4 mixes with the non-inverted input to U2A causing a cancellation effect. This attenuates the signal to the power amp, thus eliminating clipping. When the power amp output is reduced, the output U5A goes positive. Blocking Diodes CR8-CR11 force the Capacitors to discharge through R40. This 4-pole discharge is the Release for the Delta Comp™.

The power amplifier is contained within U3. CR1 and CR2 keep the output centered during clipping. CR3 and CR4 provide flyback protection for the output of U3.



BXR 15

BASS EXTENDED RANGE

PARTS LIST

PRINTED CIRCUIT BOARD ASSEMBLY

QTY	PART #	DESCRIPTION	REFERENCE	DESIGNATION
9	026517	CAP AE AX 2.2 μ F 50V	C2,4,5,13,18,20,21,22,23	
1	038693	CAP AE AX 47 μ F 16V	C15	
2	028471	CAP AE RDL 47 μ F 50V 20%	C26,27	
2	033607	CAP AE RDL 2200 μ F 35V 20%	C24,25	
1	038703	CAP CA .1 μ F 50V	C12	
1	038873	CAP CA 22PF 100V	C14	
1	038699	CAP CA 100PF 100V	C3	
1	039259	CAP CA 220PF 100V	C1	
1	039260	CAP CA 270PF 100V	C10	
1	038700	CAP CA 390PF 50V	C6	
1	039267	CAP CA 3900PF 100V	C32	
1	038702	CAP CA 6800PF 50V	C7	
1	027286	CAP MPF .47 μ F 63V	C8	
1	033588	CAP PFF RDL .01 μ F 100V 10%	C16	
1	033591	CAP PFF RDL .033 μ F 100V 10%	C19	
4	033592	CAP PFF RDL .047 μ F 100V 10%	C28,29,30,31	
1	038656	CONTROL 10KB SNAP IN	R7	
3	038655	CONTROL 50KB W/CD SNAP IN	R8,9,10	
6	064089	DIODE 1N4003	CR3,4,15,16,17,18	
9	006260	DIODE 1N4448/1N914B SIGNAL	CR1,2,5,6,8,9,10,11,12	
2	047140	DIODE ZEN 1N5349B 12V 5W	CR13,14	
2	025996	FUSE CLIP PCB .250 & 5MM FUSE	XF1	
1	068411	FUSE QA 1-1/4X1/4 250V 0.5A	F1	(100/120V ONLY)
1	020781	FUSE QA 20mmX5mm 250V .25A	F1	(230V EXPORT ONLY)
1	041952	HEATSINK BRONCO		
1	027404	IC CA3080AE OTA	U4	
3	016795	IC DUAL OP AMP TL072	U1,2,5	
1	029912	IC POWER AMP PC1188H 20W	U3	
1	041988	INSULATOR MICA 10 PIN SIP	AT HEATSINK	
2	037036	JACK PHONE PCB MONO CA PREMIUM	J1,3	
1	031570	JACK PHONE PCB STEREO PREMIUM	J2	
9	020888	JUMPER WIRE 22GA. .5X.175	W1,2,3,4,5,6,7,8,9	
1	028039	LED RED 5X5MM SLB-55VR3	LD1	
1	047499	PCB ASSY BXR 15	(STUFFED)	
1	047498	PCB FAB BXR 15	(RAW BOARD)	
1	024952	RES CF 1/4W 5% 100 Ω	R31	
2	024959	RES CF 1/4W 5% 330 Ω	R5,45	
2	024965	RES CF 1/4W 5% 1K	R19,48	
2	024971	RES CF 1/4W 5% 2.2K	R11,14	
2	024972	RES CF 1/4W 5% 2.7K	R6,34	
1	024975	RES CF 1/4W 5% 3.9K	R41	



BXR 15

BASS EXTENDED RANGE

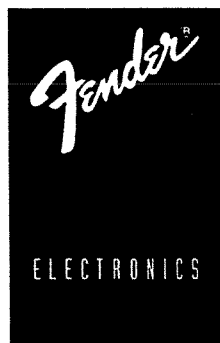
PARTS LIST

PRINTED CIRCUIT BOARD ASSEMBLY CONTINUED

QTY	PART #	DESCRIPTION	REFERENCE	DESIGNATION
1	024977	RES CF 1/4W 5% 4.7K	R36	
1	028948	RES CF 1/4W 5% 6.2K	R32	
1	024980	RES CF 1/4W 5% 8.2K	R23	
5	024981	RES CF 1/4W 5% 10K	R15,25,26,28,30	
5	024989	RES CF 1/4W 5% 33K	R1,4,24,27,29	
2	024993	RES CF 1/4W 5% 47K	R18,21	
4	028990	RES CF 1/4W 5% 51K	R37,38,39,40	
1	024996	RES CF 1/4W 5% 82K	R12	
1	024997	RES CF 1/4W 5% 100K	R20	
1	024998	RES CF 1/4W 5% 120K	R33	
1	024999	RES CF 1/4W 5% 150K	R13	
2	025059	RES CF 1/4W 5% 220K	R3,17	
1	025061	RES CF 1/4W 5% 330K	R16	
1	025069	RES CF 1/4W 5% 1M	R2	
1	029083	RES CF 1/2W 5% 10Ω	R22	
1	026549	RES CF 1/2W 5% 1.5K	R42	
4	028045	RES FILM 1W 5% 220Ω	R43,44,46,47	
2	027638	SCRW TF 4-40X3/8 HWHS ZI.1HD	AT HEATSINK	
2	032908	SCRW TF 6-32X3/8 PHP ZI	AT HEATSINK	
1	9904701440	SPACER LED .7X.125 BLUE	AT LD1	
1	014408	XSTR PNP MPSA63 TO-92	Q1	

CHASSIS ASSEMBLY

QTY	PART #	DESCRIPTION	REFERENCE	DESIGNATION
4	033206	BUSHING KNOB SPACER	(@ CONTROLS)	
1	007565	BUSHING SR.625X.125X37/64 BLK	(@ POWER CABLE)	
1	026527	CABLE ASSY PWR 120V.187 TABS		
1	047505	CHS ASSY BXR 15		
1	022491	CLAMP CABLE NYL SCRW MNT 5/16		
4	026402	KNOB POINTER BLACK		
1	048439	LABEL REAR BXR 15		
1	047502	PANEL FRONT BXR 15		
1	048440	PLATE REAR BXR 15		
1	038900	SCRW TF 6-32X1/4 PHP ZI	(@ GROUND LUG)	
2	037353	SCRW TF 6-32X3/4 PHP ZI	(PCB MOUNT)	



BXR 15

BASS EXTENDED RANGE

PARTS LIST

CHASSIS ASSEMBLY CONTINUED

QTY	PART #	DESCRIPTION	REFERENCE	DESIGNATION
5	032908	SCRW TF 6-32X3/8 PHP ZI	(XFMR/HEATSINK MOUNT)	
2	047040	STANDOFF NYLON PCB SNAPIN 1/2"		
1	025935	SWITCH DPST .187 TAB (DOM)	(POWER SWITCH)	
5	026459	WSHR FLAT 6X3/8 ZI		
1	025413	XFMR POWER F1158UC SQ15 FOJ	(120V DOMESTIC)	
1	041775	XFMR POWER EXPORT 100V	(100V JAPAN)	
1	031634	XFMR POWER FD15 230V	(230V EXPORT)	

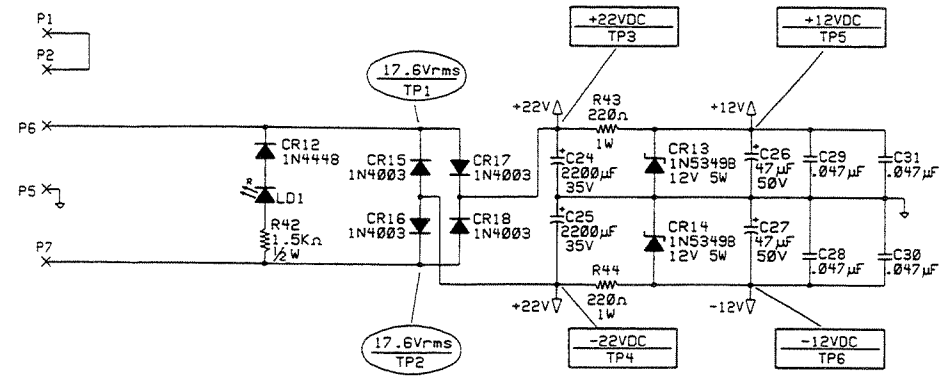
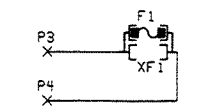
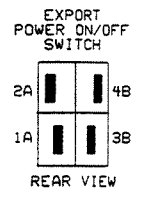
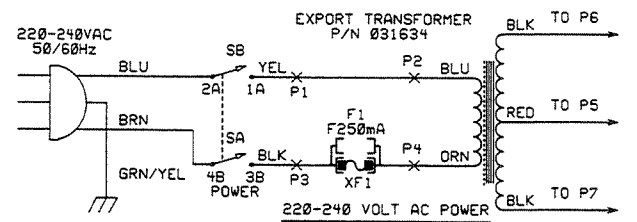
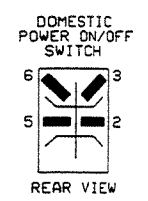
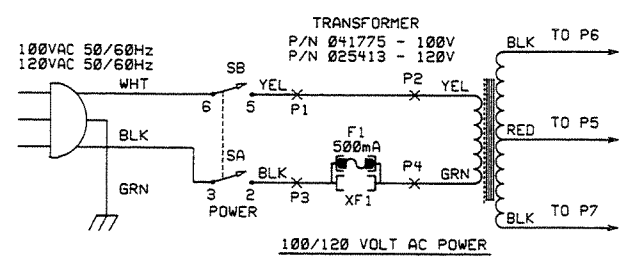
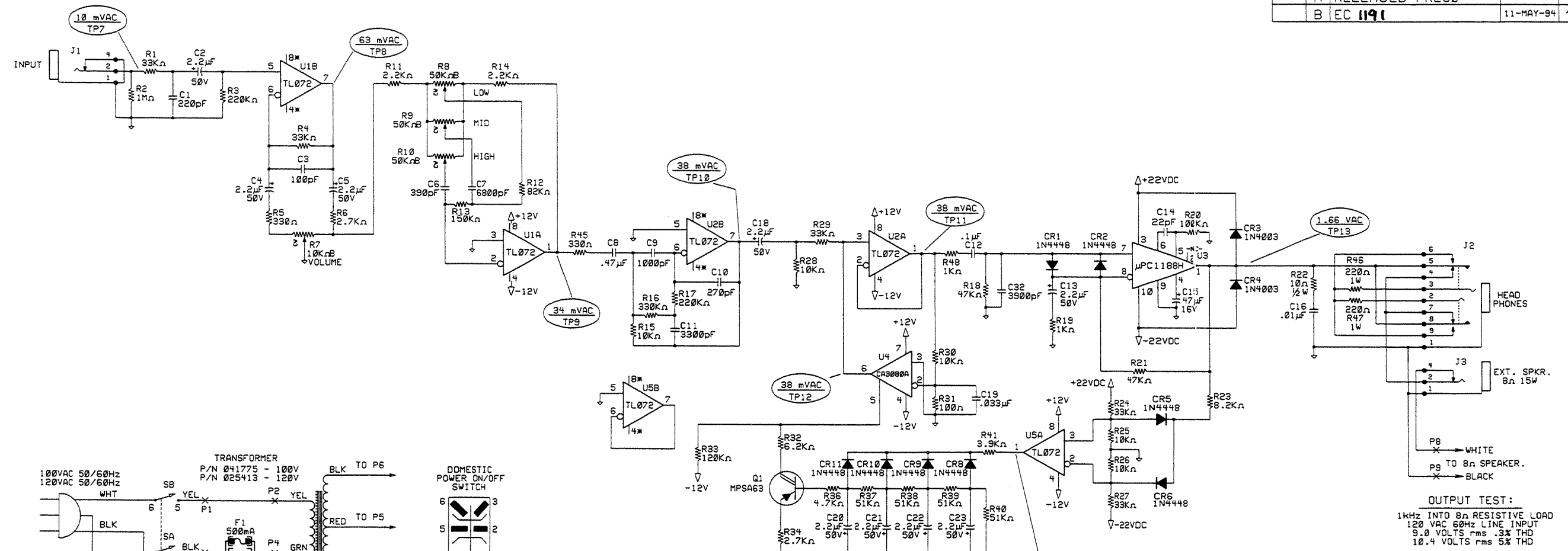
CABINET ASSEMBLY

QTY	PART #	DESCRIPTION	REFERENCE	DESIGNATION
1	047500	CAB ASSY BXR 15		
4	031838	CORNER 2 HOLE W/TAB BLK PWDRD		
4	031840	CORNER 3 HOLE BLK PWDRD		
4	029323	FOOT RUBBER 1.0 DIA SMALL		
1	047500	GRILLE ASSY BXR 15	(COMPLETE GRILLE)	
2	047793	HANDLE CAP 1 HOLE PWDR COAT BLK		
1	025883	HANDLE SHORT NO LOGO		
1	011298	NAMEPLATE FENDER SMALL	(LOGO)	
2	017441	SCRW M 10-32X1-1/2 OHP STL BLX	(HANDLE/CHASSIS MOUNT)	
2	036199	SCRW M 8-32X1-3/16 OHP BLX CP	(CHASSIS SIDE MOUNT)	
4	029828	SCRW PB 8X3/4 PHP ZI		
4	9904101110	SCRW PB 8X5/8 PHP BL		
2	018113	SCRW SMA 4X1/2 OHP BLX	(LOGO MOUNT)	
20	026576	SCRW SMA 8X5/8 THP BLACK	(CORNER MOUNT)	
4	026800	SCRW SMAB 8X1-3/4 OHP BLX	(GRILLE/BAFFLE MOUNT)	
1	025421	SPEAKER 8 INCH PF8643		
6	029527	WSHR FNSH 8-5/8 FLNGD BLX WX	(CHASSIS MOUNT)	

MISCELLANEOUS

QTY	PART #	DESCRIPTION	REFERENCE	DESIGNATION
1	047508	MANUAL OWNERS BXR 15		
1	047496	SCHEMATIC REDUCED BXR 15		

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	RELEASED PR260	04-FEB-94	
	B	EC 1191	11-MAY-94	<i>now</i>



- NOTES: UNLESS OTHERWISE SPECIFIED.
1. ALL RESISTORS 1/4W. ± 5%.
 2. ALL CAPACITORS 50V MINIMUM.
 3. DC VOLTAGES READ TO GROUND WITH A DVM, NO INPUT SIGNAL.
 4. 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
ALL CONTROLS SET TO 12 O'CLOCK
 5. ALL VOLTAGES MAY VARY ± 20%.

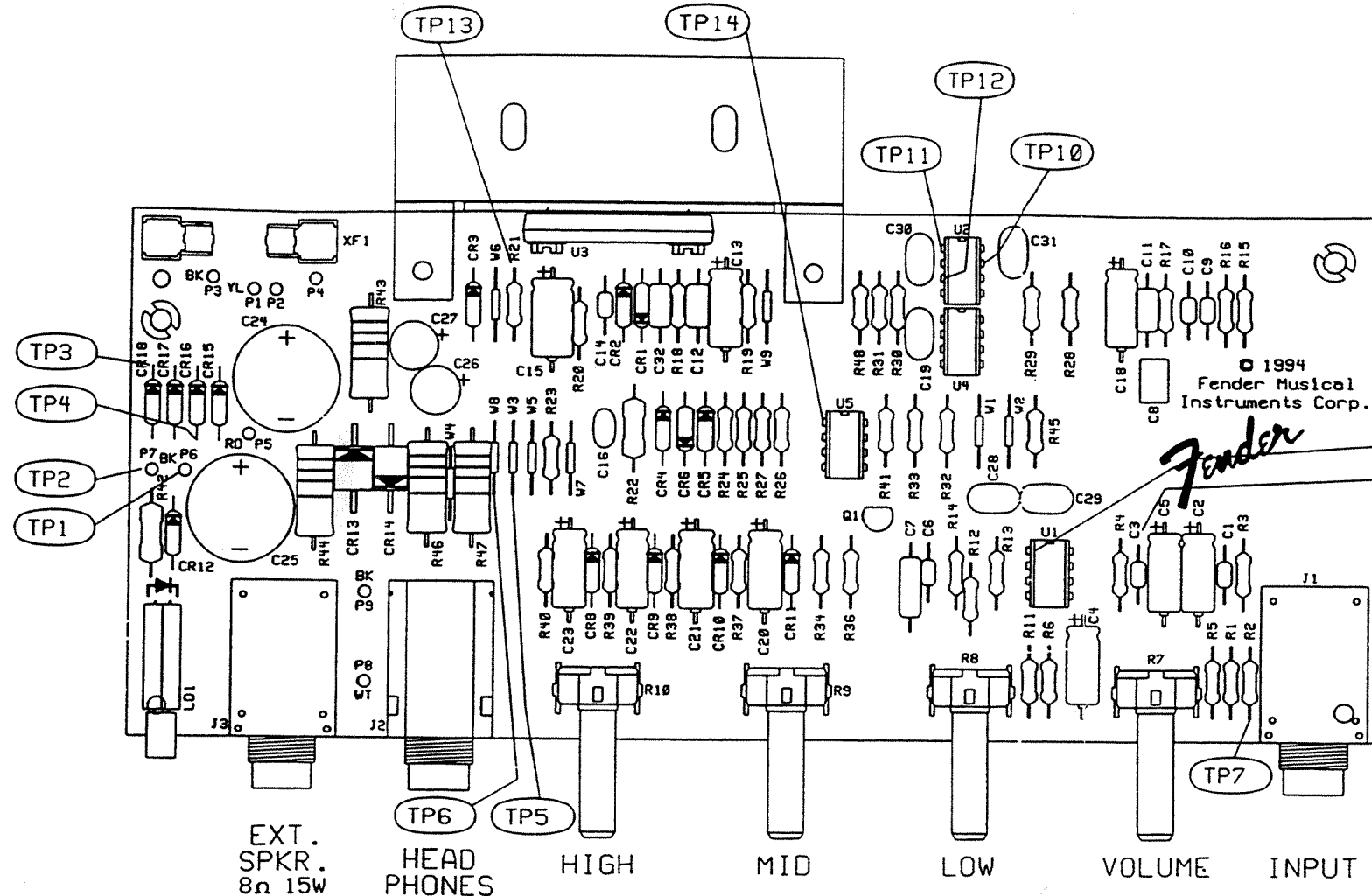
OUTPUT TEST:
1kHz INTO 8Ω RESISTIVE LOAD
120 VAC 60Hz LINE INPUT
9.0 VOLTS rms 3% THD
10.4 VOLTS rms 5% THD

DATABASE FILE: 2260S.DBF CHECKED BY: <i>now</i> DATE: 5/18/94 APPROVED: <i>now</i> DATE: 5/18/94 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 EXPRESS WRITTEN CONSENT FROM: FENDER MUSICAL INSTRUMENTS CO. 1130 COLUMBIA ST. BREA, CALIFORNIA 92621 ROCK ON. NEXT HIGHER ASSEMBLY: BXR 15	Fender MUSICAL INSTRUMENTS 1130 Columbia Street Brea, CA 92621 TITLE: SCHEMATIC DIAGRAM BXR 15 BASS AMP SIZE: DRAWN: JS SAHS DRAWING NUMBER: 047495 REV. B ENGR: JS SAHS SCALE: N/A CREATED: 7/12/91 PLOTTED: 11-MAY-94 SHEET 1 OF 1
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REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	RELEASED PR260	04-FEB-94	MOW



FILM/DWG: SERVICE DIAGRAM
 DATABASE: Z260P.DBF DATE: 03-FEB-94
 LAYERS PLOTTED: 1 2 3 4 10
 18

DATABASE FILE: Z260P.DBF CHECKED BY: <i>MOW</i> DATE: <i>2/4/94</i> APPROVED: <i>MOW</i> DATE: <i>2/4/94</i>	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. 1130 COLUMBIA ST. BREA, CALIFORNIA 92621 ROCK ON. NEXT HIGHER ASSEMBLY: BXR 15	MUSICAL INSTRUMENTS 1130 Columbia Street Brea, Ca. 92621 TITLE: SERVICE DIAGRAM BXR 15 BASS AMPLIFIER SIZE: D DRAWN: JS SAMS ENGR: JS SAMS DRAWING NUMBER: 047497 REV.: A CREATED: 12-28-93 PLOTTED: 03-FEB-94 SCALE: NONE SHEET 1 OF 1
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