

BXR 25

BASS EXTENDED RANGE

SERVICE MANUAL



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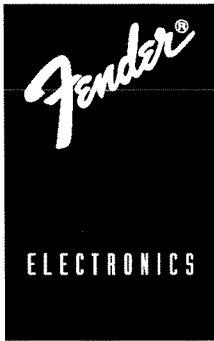
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FEBRUARY 1995 REV A

IMPORTANT NOTICE:

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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

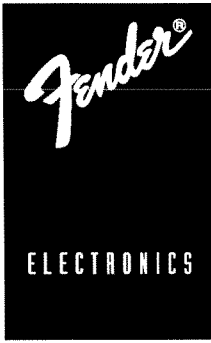
CAP AE = Aluminum Electrolytic
 CAP CA = Ceramic Axial
 CAP CD = Ceramic Disk
 CAP MPF = Metalized Polyester Film
 CAP MY = Mylar
 CAP PFF = Polyester Film/Foil

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



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SPECIFICATIONS

PART NUMBER

022-4403

POWER AMPLIFIER SECTION

Power output:	25 Watts
Rated load impedance:	8 Ohms
Distortion at rated power:	5%
Power bandwidth:	20 Hz to 20 kHz
Input sensitivity:	.90 Volts R.M.S.
Input impedance:	>10K Ohms

PREAMP SECTION:

Input impedance:	Input 1 > 220K Ohms
	Input 2 > 110K Ohms

Sensitivity :	
Volume at maximum, all tone controls at "0" detent, power amp at 25 Watts, 8 Ohms	Input 1 > 10mV
	Input 2 > 20mV

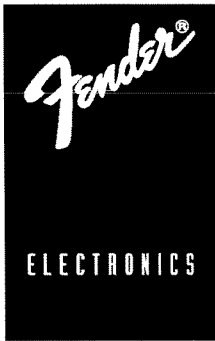
Equalization range:	HIGH +/- 15 dB at 8 kHz
	MID +/- 15 dB at 800 Hz
	LOW +/- 15 dB at 40 Hz

PHYSICAL SPECIFICATIONS

Width:	14-3/4 inches	(37.5 cm)
Height:	18 inches	(45.7 cm)
Depth:	10 inches	(25.4 cm)
Weight:	32 lbs.	(14.5 kg)

Sound

HUGE



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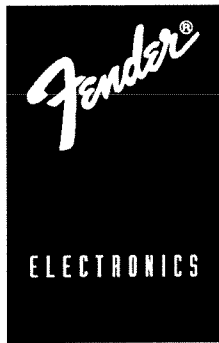
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THEORY OF OPERATION

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. U1A is an "Auto Pad". It provides excellent headroom and low noise. At upper volume control settings, it also rolls off low frequencies at 219Hz. U1B makes up the tone controls. They provide 15dB of boost or cut at 40Hz (Low), 800Hz (Mid), and 8kHz (High). U2A is a special tone shaping circuit used for sonic enhancement. It also drives the Effects Loop. The signal is normalled through the Power Amp In jack, and feeds the unity gain opamp U2B. U2B also sums any signal from the Tape In jacks.

U4B 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 R24 by the Comparator U4A. As the amplifier output approaches clipping, the output of U4A goes negative. This charges Capacitors C20-C23 through the time constant made up with R43 ($3.9K \times 8.8\mu F = 34.3mSec$). 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 U5 (Operational Transconductance Amplifier). The output of U4B also drives the inverting input of U5. The inverted output from U5 mixes with the input to U4B causing a cancellation effect. This attenuates the signal to the power amp, thus eliminating clipping. When the power amp output is reduced, the output U4A goes positive. Blocking Diodes CR8-CR11 force the Capacitors to discharge through R41. 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. The output drives the speaker through the Headphone Output jack. Plugging headphones into the jack will mute the signal to the speaker.



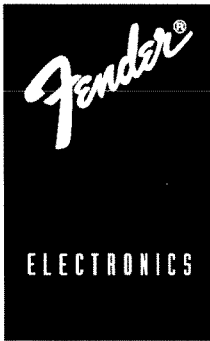
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PARTS LIST

PRINTED CIRCUIT BOARD ASSEMBLY

QTY	PART #	DESCRIPTION	REFERENCE	DESIGNATION
1	038666	PCB ASSY "RAD BASS" (ALL VOLTAGES)	(STUFFED)	
1	038662	PCB "RAD BASS"	(BLANK BOARD)	
8	028459	CAP AE RDL 2.2 μ F 50V 20%	C2,4,5,,13,20-23	
4	028465	CAP AE RDL 22 μ F 25V 20%	C12,18,28,29	
3	028471	CAP AE RDL 47 μ F 50V 20%	C15,26,27	
2	033607	CAP AE RDL 2200 μ F 35V 20%	C24,25	
1	040260	CAP CD 22pF 1KV 10%	C14	
2	025979	CAP CD 50pF 1KV 10%	C1,31	
2	069724	CAP CD 100pF 1KV 10%	C3,19	
1	020917	CAP CD 250pF 1KV 10%	C10	
1	025986	CAP CD 390pF 1KV 10%	C6	
4	027272	CAP MPF .047 μ F 63V 10%	C32-35	
1	027278	CAP MPF .1 μ F 63V 10%	C30	
1	027286	CAP MPF .47 μ F 63V 10%	C8	
1	033588	CAP PF RDL .01 μ F 100V 10%	C16	
1	033578	CAP PF RDL .001 μ F 100V 10%	C9	
1	033581	CAP PF RDL .0033 μ F 100V 10%	C11	
1	033583	CAP PF RDL .0047 μ F 100V 10%	C17	
1	033586	CAP PF RDL .0068 μ F 100V 10%	C7	
3	038655	CONTROL 50KB W/CD	R9-11	(LOW,MID,HIGH)
1	038656	CONTROL 10KB	R8	(VOLUME)
9	006260	DIODE 1N4448/1N914B SIGNAL	CR1,2,5,6,8-12	
2	009165	DIODE ZEN 1N4744A 15V 1W 5%	CR13,14	
1	027329	DIODE ZENER 1N5228B 3.9V .5W 5%	CR7	
5	064089	DIODE 1N4003	CR3,4,15-18	
10	025802	FSTN TAB MALE .250X.032 PCB MT		
2	026000	FSTN TAB MALE PCB MT .187X.032		
1	034889	FUSE QA 1-1/4X1/4 250V 1 AMP	F1	(100V/120V)
1	020786	FUSE QA 20mmX5mm 250V 500mA	F1	(220V/240V)
2	025996	FUSE CLIP PCB .250 & 5mm FUSE	XF1	
1	038618	FUSE LABEL	(AT XF1)	(120V ONLY)
1	034883	HEATSINK PLATE "RAD/HOT/JAM"	(PCB MOUNT)	
1	027404	IC CA3080AE OTA	U5	
3	016795	IC DUAL OP AMP TLO72	U1,2,4	
1	029912	IC POWER AMP PC1188H 20W	U3	
1	041988	INSULATOR MICA 10 PIN SIP		
1	025933	JACK PHONO DUAL PCB MT	J5	(TAPE IN RCAs)
1	031570	JACK PHONE PCB STEREO PREMIUM	J6	(HEADPHONE)
4	037036	JACK PHONE PCB MONO CA PREMIUM	J1-4	(INPUTS,PREOUT,PWRIN)
15	020888	JUMPER WIRE 22GA .5X.175	W1-15	
1	026043	JUMPER WIRE 18GA .8X.175	JP1	
1	028039	LED 5X5mm RED SLB-55VR3	LD1	



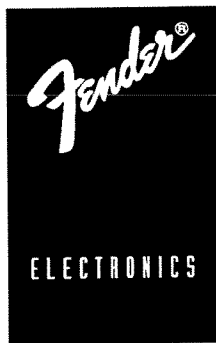
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PARTS LIST

PRINTED CIRCUIT BOARD ASSEMBLY CONTINUED

QTY	PART #	DESCRIPTION	REFERENCE	DESIGNATION
1	024952	RES CF 1/4W 100Ω	5%	R32
1	024959	RES CF 1/4W 330Ω	5%	R6
4	024965	RES CF 1/4W 1K	5%	R20,29,36,47
1	024967	RES CF 1/4W 1.2K	5%	R44
3	024971	RES CF 1/4W 2.2K	5%	R12,15,56
1	024972	RES CF 1/4W 2.7K	5%	R7
1	024975	RES CF 1/4W 3.9K	5%	R43
1	024977	RES CF 1/4W 4.7K	5%	R37
1	024980	RES CF 1/4W 8.2K	5%	R24
6	024981	RES CF 1/4W 10K	5%	R16,26,27,31,33,35
1	024987	RES CF 1/4W 22K	5%	R38
6	024989	RES CF 1/4W 33K	5%	R5,25,28,30,39,49,50
2	024993	RES CF 1/4W 47K	5%	R22,40
4	024995	RES CF 1/4W 68K	5%	R1,2,51,52
1	024996	RES CF 1/4W 82K	5%	R13
3	024997	RES CF 1/4W 100K	5%	R19,21,48
1	024998	RES CF 1/4W 120K	5%	R34
3	024999	RES CF 1/4W 150K	5%	R14,41,53
2	025059	RES CF 1/4W 220K	5%	R4,18
1	025061	RES CF 1/4W 330K	5%	R17
1	025069	RES CF 1/4W 1M	5%	R3
1	029083	RES CF 1/2W 10Ω	5%	R23
2	028740	RES FILM 1W 470Ω	5%	R45,46
2	034704	RES FILM 2W 180Ω	5%	R54,55
2	027638	SCRW TF 4-40X3/8 HWHS ZI		(U3 MOUNTING)
2	032908	SCRW TF 6-32X3/8 PHP ZI		(HEATSINK TO PCB MNT)
1	9904701440	SPACER LED .7X.125 BLUE		(AT LD1)
1	014408	XSTR PNP DARLNTN MPSA63 TO-92		Q1



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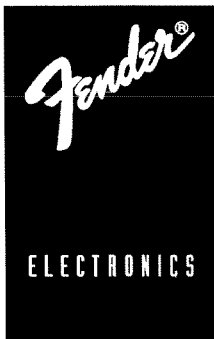
PARTS LIST

CHASSIS ASSEMBLY

QTY	PART #	DESCRIPTION	REFERENCE DESIGNATION
1	048300	CHASSIS ASSY BXR 25 120V	
1	021709	BUSHING SR .437X.062X13/32 BLK	(SPEAKER WIRES)
1	026038	BUSHING SR .625X.062X37/64 BLK	(CABLE PWR 100/120V)
1	010401	BUSHING SR .625X.125X37/64 WHT	(CABLE PWR 220/240V)
4	033206	BUSHING KNOB SPACER	
1	026527	CABLE ASSY PWR 120V .187 TABS	(100/120V ONLY)
1	026528	CABLE ASSY POWER W/TABS	(220/240V ONLY)
1	038669	CHASSIS "RAD BASS"	(BLANK CHASSIS)
1	034885	HEATSINK BAR "RAD/HOT/JAM"	(HEATSINK/CHASSIS MT)
4	026403	KNOB POINTER BLACK 180 DEG	
4	069393	NUT 6-32 HEX EXT LOCK	TRANSFORMER MOUNT
5	031647	NUT HEX 12mmX1mm NI	(JACK MOUNT)
1	047997	PANEL FRONT BXR 25	
1	047998	PANEL REAR BXR 25	
2	028500	SCRW TF 8-32X3/4 HWH SLTD ZI	(HEATSINK/CHASSIS MT)
2	028937	SCRW TF 6-32X5/8 PHP ZI TAPTYT	(PCB TO CHASSIS MT)
1	038900	SCRW TF 6-32X1/4 PHP ZI	(GROUND LUG)
1	9904101560	SCRW 6X3/8" HI-LO PHP BLX	(TAPE IN RCA JACKS)
2	025936	STANDOFF NYLON PCB SNAPIN 3/8"	(PCB MOUNT)
1	025935	SWITCH POWER DPST .187 TAB	
1	033613	TRANSFORMER POWER 120V	(DOMESTIC 120V)
1	033614	TRANSFORMER POWER EXPORT	(100V/220V/240V)

CABINET ASSEMBLY

QTY	PART #	DESCRIPTION	REFERENCE DESIGNATION
1	040161	CAB ASSY RAD BASS VINYL THICK	
6	031867	CORNER 2 HOLE W/NOTCH BLK PWDRD	(TOP REAR)
2	031840	CORNER 3 HOLE BLK PWDRD	(BOTTOM REAR)
4	029323	FOOT RUBBER	
1	040162	GRILLE ASSY RAD BASS BLACK	
2	031845	HANDLE CAP 2-3/16" BLK PWDRD	(HANDLE MOUNT)
1	025884	HANDLE INSERT 7-7/8"	(SPRING STEEL)
1	025883	HANDLE SHORT NO LOGO	(PLASTIC)
1	011298	NAMEPLATE "FENDER" SMALL	
7	021972	NUT T #10-32X3/4" STR 3 PRNG BLX	(HANDLE/SPEAKER MT)
4	026577	SCRW M #10-32X1" PHP BLX	(SPEAKER MOUNT)
4	9904101550	SCRW M #8-32X1-1/4" OHPS BLX	(CHASSIS MOUNT)



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PARTS LIST

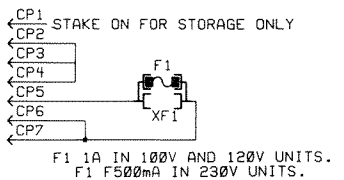
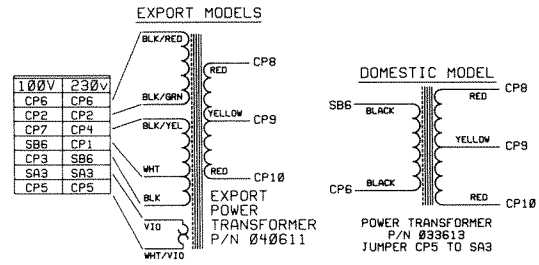
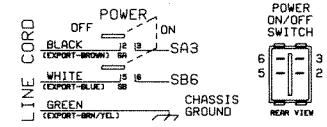
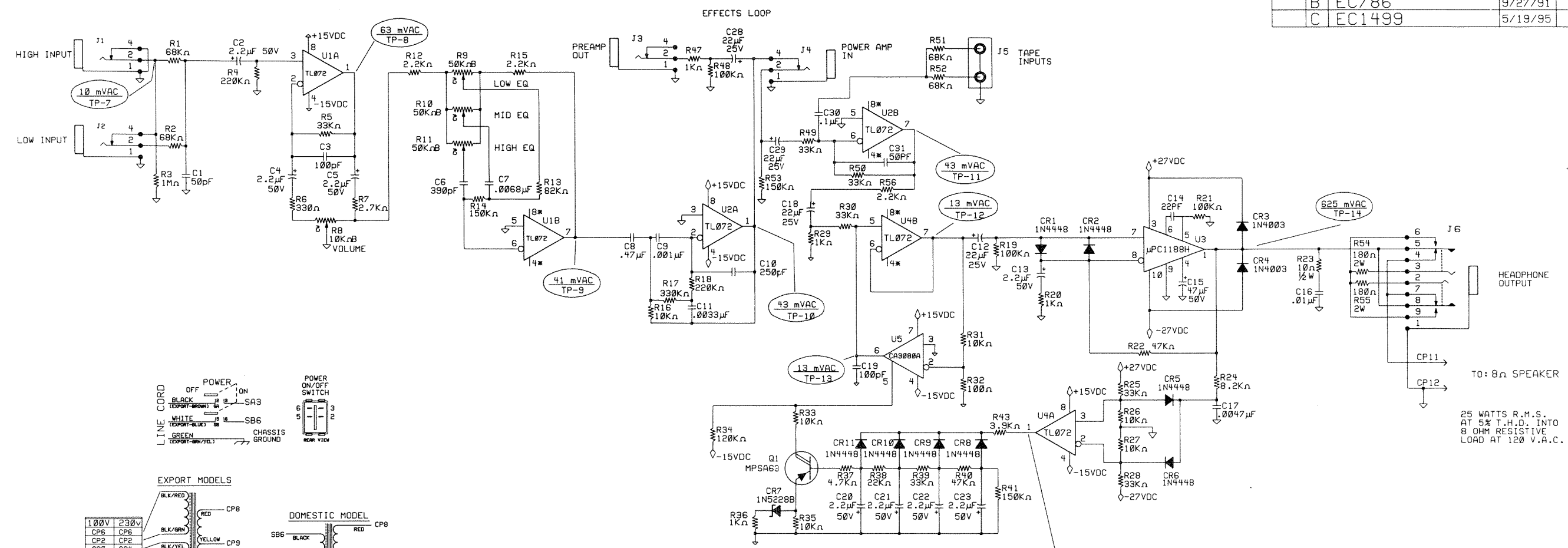
CABINET ASSEMBLY CONTINUED

QTY	PART #	DESCRIPTION	REFERENCE DESIGNATION
4	017393	SCRW M #10-32X1-1/8" OHP BLX	(HANDLE MOUNT)
4	018113	SCRW SMA #4X1/2" OHP BLX	(LOGO MOUNT)
18	026576	SCRW SMA #8X5/8" THP BLX	(CORNER/FOOT MOUNT)
1	038657	SPEAKER 10 INCH 8ohm	
4	029527	WSHR FNSH #8-5/8" FLNGD BLX WX	(CHASSIS MOUNT)

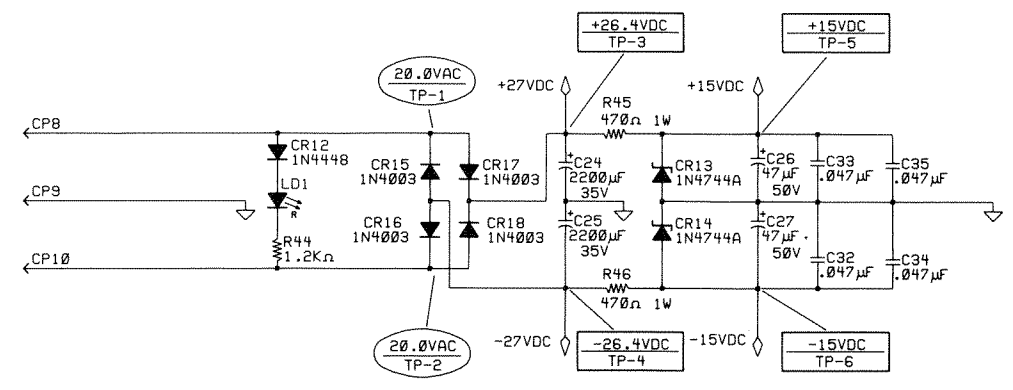
MISCELLANEOUS

QTY	PART #	DESCRIPTION	REFERENCE DESIGNATION
1	038664	SCHEMATIC REDUCED "RAD BASS"	
1	047999	MANUAL OWNERS BXR 25	

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	PR190	8/1/91	JSS
	B	EC786	9/27/91	JSS
	C	EC1499	5/19/95	MDW

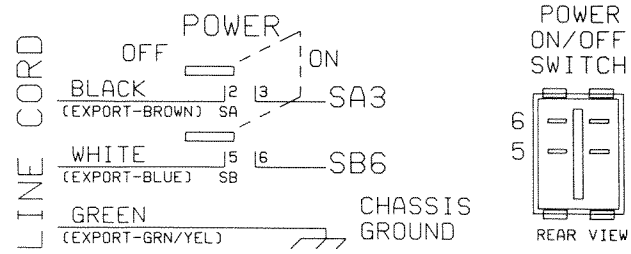


- NOTES: UNLESS OTHERWISE SPECIFIED.
1. ALL RESISTORS 1/4W, ± 5%.
 2. ALL CAPACITORS 63V MINIMUM.
 3. ALL DIODES 1N4448.
 4. DC VOLTAGES READ TO GROUND WITH A DVM AND NO INPUT SIGNAL.
 5. AC VOLTAGE READINGS TAKEN WITH A DVM UNDER THE FOLLOWING CONDITIONS:
1kHz INPUT
8Ω RESISTIVE LOAD CONNECTED TO CP11-CP12
ALL CONTROLS SET TO 12 O'CLOCK

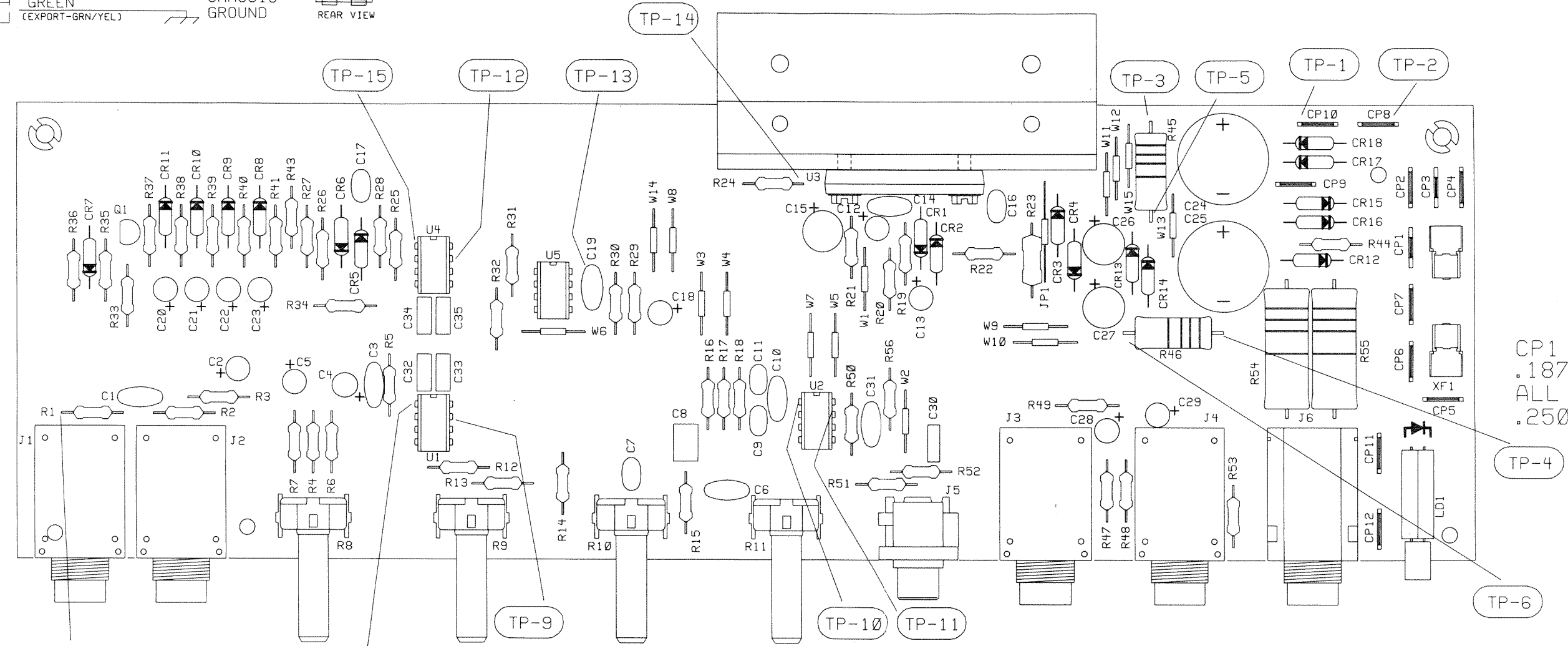


DATABASE FILE: 2190S.DBF CHECKED BY: MDW DATE: 5-30-95 APPROVED: MDW DATE: 5-30-95	PROPRIETARY THIS DRAWING DOCUMENT CONTAINS INFORMATION WHICH IS PROPRIETARY TO AND IS THE PROPERTY OF THE FENDER MUSICAL INSTRUMENTS CO. AND MAY NOT BE USED, REPRODUCED OR DISCLOSED IN ANY MANNER WITHOUT THE EXPRESSED WRITTEN CONSENT FROM: FENDER MUSICAL INSTRUMENTS CO. REGIONAL HEADQUARTERS 2621 RESEARCH DRIVE CORONA, CA 91720 USA NEXT HIGHER ASSEMBLY: RABASS/BXR25	Fender MUSICAL INSTRUMENTS 2621 Research Drive Corona, CA 91720 USA TITLE: SCHEMATIC DIAGRAM RABASS/BXR25 SIZE: D DRAWN: JS SAMS ENGR: JS SAMS DRAWING NUMBER: 038663 REV: C SCALE: NONE CREATED: 7/12/91 PLOTTED: 19-MAY-95 SHEET 1 OF 1
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0038664000 1 OF 1

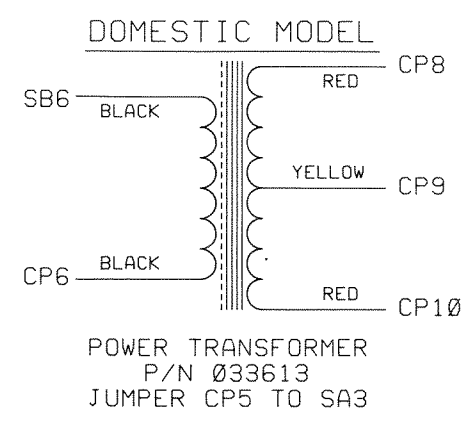
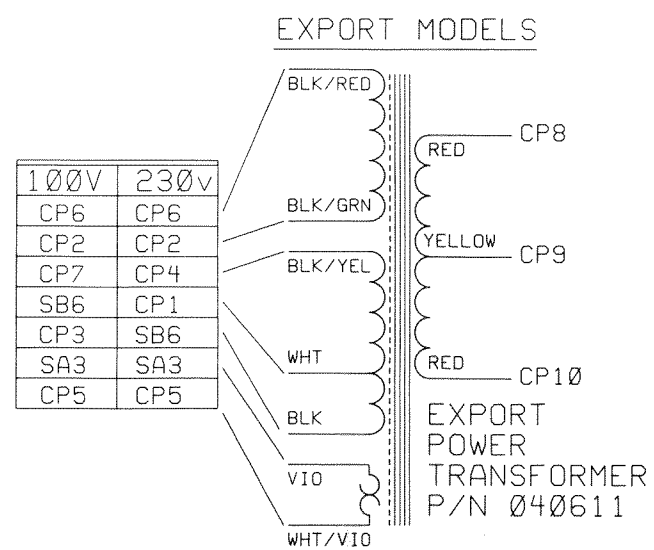


REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	PR 190	7-30-91	
	B	ECO LO 2304	9-18-91	JSS
	C	ECO LO 2327	1-20-92	JSS
	D	EC 1499	5-19-95	MDW



CP1 AND CP3 ARE .187" FASTON TABS
ALL OTHERS ARE .250" FASTON TABS

FILM/DWG: SERVICE DIAGRAM
 DATABASE: Z190P.DBF DATE: 19-MAY-95
 LAYERS PLOTTED: 1 2 3 4 10
 18



DATABASE FILE: Z190P.DBF

CHECKED BY: MDW

DATE: 5/30/95

APPROVED: MDW

DATE: 5/30/95

TOLERANCES: UNLESS OTHERWISE NOTED

X.X	±0.050"
X.XX	±0.010"
X.XXX	±0.005"
ANGLES	±0.500°

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ROCK ON.

NEXT HIGHER ASSEMBLY:
RADBASS/BXR25

Fender MUSICAL INSTRUMENTS

2621 Research Drive
Corona, CA 91720

TITLE: SERVICE DIAGRAM
RADBASS/BXR25

SIZE	DRAWN: JS SAMS	DRAWING NUMBER	REV.
B	ENGR: JS SAMS	038665	D

SCALE: NONE

CREATED: PLOTTED: 19-MAY-95

SHEET 1 OF 1