WorkingPro™ 400 & 700

(This is the model name for warranty claims)

WorkingPro 700 p/n 4450000010 (120V)

WorkingPro 400 p/n 4450200010 (120V)

SERVICE MANUAL

CONTENTS:

Fender Musical Instruments Corporation / 8860 East Chaparral Road, Suite 100 / Scottsdale, AZ 85250

Revised: January 2006

IMPORTANT NOTICE

- Parts marked with two asterisks (**) indicate the required use of that specific part. This is necessary for RELIABILITY and SAFETY requirements. **DO NOT USE A SUBSTITUTE!**

PARTS LIST CODES

The description codes used in the itemized Parts Lists are defined below:

CAPACITOR CODES

CAP AE	=	Aluminum Electrolytic
CAP CA	=	Ceramic Axial
CAP CD	=	Ceramic Disk
CAP CR	=	Ceramic Radial
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 MOX	=	Metal Oxide
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

MODEL:		WorkingPro™ 400	WorkingPro™ 700
PART NUMBERS:		4450200010 (120V, 60Hz) USA	4450000010 (120V, 60Hz) USA
POWER REQUIREMENT:		840 W	1440 W
POWER AMP MINIMUM IMPEDANCE:		4Ω	4Ω
SENSITIVITY:		700mV RMS, 1kHz	1V RMS, 1kHz
POWER OUTPUT:		405W RMS into 4@ < 0.1% THD, 1kHz 250W RMS into 8@ < 0.1% THD, 1kHz	710W RMS into 4@ < 0.1% THD, 1kHz 440W RMS into 8@ < 0.1% THD, 1kHz
PRE AMP	INPUT IMPEDANCE:	3.9M	3.9M
	SENSITIVITY AT FULL POWER:	15mV	20mV
TONE CONTROLS–	BASS:	±15dB @	100Hz ±15dB @ 100Hz
	TREBLE:	±15dB @ 2kHz	±15dB @ 2kHz
	MIDRANGE SEMI-PARAMETRIC EQ:	±15dB @ MID FREQ frequency	±15dB @ MID FREQ frequency
	BASS INTENSIFIER:	±15dB below CUTOFF freq	±15dB below CUTOFF freq
	TRANSPARENCY:	±15dB @ 5kHz	±15dB @ 5kHz
EFFECTS LOOP–	SEND IMPEDANCE:	2k	2k
	RETURN IMPEDANCE:	27k	27k
UNBALANCED LINE OUT–	SEND IMPEDANCE:	1k	1k
BALANCED LINE OUT–	SEND IMPEDANCE:	1.5k	1.5k
FOOTSWITCH (INCLUDED):		2-button, Mute, Bass Intensifier (P/N 065436)	2-button, Mute, Bass Intensifier (P/N 065436)
LINE FUSE–	110V-120V MODELS:	T8A, 250V	T15A, 250V
	230V-240V MODELS:	T4A, 250V	T8A, 250V
DIMENSIONS–	HEIGHT:	3.5 in (8.9 cm)	3.5 in (8.9 cm)
	WIDTH:	19 in (48.3 cm)	19 in (48.3 cm)
	DEPTH:	13.5 in (34.3 cm)	13.5 in (34.3 cm)
WEIGHT:		25 lb (11.25 kg)	25 lb (11.25 kg)

Product specifications are subject to change without notice.

SERVICE NOTES

1. **TOP COVER REMOVAL** is accomplished by removing 10 flat-head screws from the top & sides of the chassis. Then remove 4 hex cap screws from the front panel.
2. **WorkingPro MAIN PCB REMOVAL** is accomplished by disconnecting the three ribbon cables from the PCB Assembly. Disconnect the chassis ground connection near the input by removing the #6 nut from the chassis PEM. Disconnect the power LED from the chassis by either working the LED loose from the chassis adhesive, or un-soldering the leads from the board. Remove the knobs, nuts, & washers from the 11 front panel controls. Remove the nut & washer from the input jack.
3. **WorkingPro I/O PCB REMOVAL** is accomplished by removing the following items: two screws at the XLR jack, 6 nuts & washers at the 1/4" jacks, 3 standoff screws behind the DIN jack. Disconnect the two ribbon cables at the PCB headers.
4. **WorkingPro SPEAKER OUT PCB REMOVAL** is accomplished by removing the two fast-on connections from the power amp, the nuts & washers from the two 1/4" jacks, and three #6 standoff screws behind the PCB. It may be necessary to remove the power supply PCB in order to remove this PCB.
5. **WorkingPro POWER SUPPLY PCB REMOVAL** is accomplished by removing all fast-on connections from the transformer & power amp, the #8 nut from the chassis PEM at the rectifier, and the two #6 standoff screws.
6. **POWER MODULE REMOVAL** is accomplished by removing the cable from the 9 pin header, 7 fast-on connections, and 4 screws from the underside of the chassis.

PCB EXCHANGE POLICY

Parts marked with a single asterisk (*) in the Part Lists are not field replaceable. If a failure due to one of these components is detected, please contact the FMIC Customer Service Department to order the complete Assembly.

CIRCUIT DESCRIPTION

This section provides concise information about new or unusual circuitry designs incorporated into this amplifier model. The purpose is to aid the service technician by providing insight into the design areas most likely to become obstacles in troubleshooting. Information is focused for its effective use while maintaining the security of Fender® proprietary information wherever possible.

Overview

The WorkingPro series consists of the WorkingPro 400 and the WorkingPro 700 amplifiers. Both amplifiers share the same preamp, and differ only in output power. All PCB assemblies are the same in both amps. The WorkingPro 400 has a smaller power transformer than the 700, and has two less power transistors in the power module assembly.

The circuitry is derived from the classic SWR amplifiers & is designed to deliver the same tone and performance as the rest of the SWR amplifier line. New electronic features to SWR include the Bass Intensifier effect, a tuner mute function, and a new footswitching scheme.

Preamp

The following discussion follows the signal path through the functional blocks of the amplifier: The signal is introduced at J1 & sees a 3.9MΩ input impedance. U3A provides input gain, which is reduced by the input pad switch S2.

U3B provides additional gain, and serves as a buffer for the Aural Enhancer circuit, which provides part of the signature SWR tone. U5A provides gain to make up for the attenuation of the passive Aural Enhancer circuit.

The gain control is a passive shunt-style with external taper caused by R36. U5B provides additional make-up gain for the passive gain control.

The next block consisting of U7, U9, & U11 is the Bass Intensifier circuit. The path through U7B is the clean signal. U9B is a lowpass filter with a variable cutoff frequency set by R71. This feeds a compressor circuit at U11. The compressed low-frequency signal is then mixed with the clean signal at U7A, resulting in an extreme bass boost. Q3 disables the Bass Intensifier when switched from the front panel or the footswitch.

The next stage comprising of U6 & U8A is the tone section. This is the same architecture as any other SWR amplifier, and boosts each frequency range by +/- 15dB. The frequency response of this stage is flat when all of the level knobs are at their center-detent position.

The Effects Blend control is the standard SWR circuit. When there is no plug in the Effects Return jack (J203), the "EFF_RETURN_R" signal, going to J203 ring, is open circuit, and the "EFF_RETURN_T" signal, going to J203 tip, is grounded. Therefore, the effects return control does nothing if there is no plug at J203.

When a jack is inserted into J203, the "EFF_RETURN_R" signal is grounded, so the Effects Blend control wiper is grounded. As the control is turned, the grounded wiper will attenuate either the dry or the wet signal.

The Master Volume control is also a passive shunt-style attenuator, with make-up gain at U14B. The limiter circuit is also included at U14B, and compresses the signal at high levels. The amount of compression is set by R98 (Limiter Adj), and is adjusted at the factory to a pre-determined level.

The stage at U15B serves as a gain buffer for the power amp, and also provides the mute point for the tuning mute.

The switching circuitry allows control of the mute and Bass Intensifier functions. The architecture of the two switching circuits are basically the same. The circuit looks for a momentary pulse that can be generated by either the footswitch, or the front panel switch. Since the two switches are in parallel, both the front panel switch and the footswitch will remain operational when the footswitch is plugged in. The pulses from the switch are debounced, and then toggle the state of a flip flop, which drives both the control circuitry and the LED indicators. Mute & Bass Intensifier functions are controlled by driving J111 switching FETs in the respective circuits.

The Overload circuit operates simply by monitoring several stages of the amplifier. If any of the sense points rise above the overload threshold (approximately 12V), the Preamp Clip LED will be illuminated.

Rear Panel PCB

The rear panel PCB is connected to the main preamp PCB through two 8 circuit cable assemblies (P1-2 / P201-202). There are five signal circuits that are routed to the rear panel: Direct, Line, Headphone, Effects Send, & Effects Return. The other signals are for power & control.

The Tuner Out comes from the "Direct" signal, and is not affected by the tuner mute.

The circuitry around U202 is for the XLR & Unbalanced Out jacks (J204 & J207). S201 switches the Line Out source from "Direct" to "Line". Two muting points (Q201-202) mute both the XLR out and the Unbalanced Out jacks. The Pad switch at S203 attenuates the signal by approximately 10dB. U202B inverts the signal for the balanced output. The Unbalanced Out also taps from the output of U202B.

The effects send comes directly from the main PCB U6B, after the tone section. As described earlier, when a jack is inserted into J203, the ring is grounded, enabling the Effects Blend control.

The Footswitch was designed so that it could work in parallel with the front panel buttons. LEDs on both the footswitch and the front panel will track the switching status from both the front panel buttons and the footswitch.

Power Amp

The power amp has two configurations: the SWR500 module and the SWR1000 module. The only significant difference between these two modules is that the SWR500 module has 3 pairs of output transistors instead of 4. Also, the SWR500 module uses a lower voltage version of the power transistor. The PCB assembly is the same for both. The SWR500 module was intended for lower power applications, and is therefore used in the WorkingPro 400. The SWR1000 module is used in the WorkingPro 700.

The power module receives its high voltage power from a separate power supply PCB. This is provided through three fast-on connections for +HV, -HV, and Ground.

The amplifier output is at two more fast-on connections, which are connected to a separate speaker output PCB. The Speaker Output ground is the primary chassis ground connection for the Power Amplifier and also provides chassis ground reference for the power supply.

The power module also includes a low voltage +/- 15V supply. This low voltage supply is made available to the preamp through the 9 pin preamp header. The low voltage supply is derived from a separate transformer winding which is connected to two fast-ons on the module. This winding has a center tap that is connected to the main HV center tap inside the transformer.

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PARTS LIST: MAIN – PCB ASSEMBLY (Rev C)

QTY.	PART #	DESCRIPTION	REFERENCE DESIGNATION
*1	006474600x	PCB ASSY WORKINGPRO PREAMP	
	REF	SVC DIA COMB WORKINGPRO AMPS	
1	0028474003	CAP AE RDL 100uF 25V 20%	C51
2	0028463003	CAP AE RDL 10uF 50V 20%	C5 C35
5	0028458003	CAP AE RDL 1uF 50V 20%	C1-2 C17 C19 C34
3	0028459003	CAP AE RDL 2.2uF 50V 20%	C10 C37 C45
1	0028492000	CAP AE RDL 1000uF 16V 20%	C50
6	0051457003	CAP CD 100pF 500V 5%	C11 C14 C16 C24 C46 C48
2	0051960003	CAP CD 180pF 500V 10%	C7 C9
1	0051407003	CAP CD 390pF 500V 10%	C44
13	0034788003	CAP CR .1uF 50V 20% .2" LS	C3-4 C12-13 C15 C20-21 C30 C33 C42-43 C49 C52
3	0027264003	CAP MPF .01uF 100V 10%	C6 C38 C47
1	0027261003	CAP MPF .0047uF 100V 10%	C36
1	0066032000	CAP MYLAR .001uF 63V 5%	C18
1	0066034000	CAP MYLAR .0039uF 100V	C29
2	0066037000	CAP MYLAR .015uF 250V 10%	C22 C28
2	0066039000	CAP MYLAR .01uF 250V 10%	C39 C41
1	0066040000	CAP MYLAR .022uF 250V	C31
2	0066041000	CAP MYLAR .033uF 250V 10%	C27 C40
1	0066043000	CAP MYLAR .068UF 250V	C32
1	0066046000	CAP MYLAR .1uF 100V 5%	C23
2	0066047000	CAP MYLAR .22uF 63V MIN 10%	C8 C25
1	0066048000	CAP MYLAR .27uF 100V 10%	C26
11	0006260001	DIODE 1N4448 SIGNAL LL	D1-2 D6-10 D13-15 D17
2	0027416000	HDR .1 CTR 8 CKT SQ PIN	P1-2
1	0065443000	HDR .1 CTR 9 CKT RT ANG LOCKING	PW1
3	0026547000	IC COMPARATOR QUAD LM339	U1 U4 U13
1	0066409000	IC DIP J-K DUAL FLIP-FLOP CD4027BCN	U2
10	0016795000	IC OP-AMP DUAL TL072	U3 U5-9 U11-12 U14-15
1	0016917000	JACK 1/4 PCB 3/CD DCC	J1
1	0066471000	LED BLUE #480010	D5
3	0064511000	LED RED T-1 3mm CLEAR	D3-4 D12
5	0065470000	SPACER LED VERTICAL .1"x .935"	@ D3-5 D11 D12
1	0064404000	LED GREEN T-1 3mm CLEAR	D11
1	0065383000	LED FLYING LEAD 4" BLUE CLEAR	D16
1	0056327000	OPTO-ISOLATOR LDR NSL32S01	U10
1	0064624000	CONTROL VERT 500K 10C	R77
5	0064621000	CONTROL VERT 50KB	R32 R47 R60 R106 R115
4	0064622000	CONTROL VERT 50KB W/DETENT	R56 R69 R84 R92
1	0064713000	CONTROL VERT 100k 10C DUAL	R71
2	0024969001	RES CF 1/4W 5% 1.5k LL	R91 R105
13	0024997001	RES CF 1/4W 5% 100k LL	R3-4 R13-14 R21 R44 R51 R58-59 R73-74 R118 R123
2	0024952001	RES CF 1/4W 5% 100ohm LL	R46 R100

* Non-serviceable part. Replace complete parent assembly. See PCB EXCHANGE POLICY above.

shaded Unique Fender® part. Order directly from the FMIC Parts Department.

shaded + * Access to this part or assembly is controlled. Please contact the FMIC Customer Service Department.

** Safety Requirement part. Replacement must match *Safety Agency…–Value*, if specified *–Type*, if specified *–Approval Mark(s)* if on part.

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PARTS LIST: MAIN – PCB ASSEMBLY (Rev C)

QTY.	PART #	DESCRIPTION	REFERENCE DESIGNATION
23	0024981001	RES CF 1/4W 5% 10k LL	R7-8 R10-11 R15 R27 R29 R33 R35 R39-40 R49 R52-53 R61 R63 R86-87 R94 R103 R121 R124-125
1	0024937001	RES CF 1/4W 5% 10ohm LL	R126
1	0024998001	RES CF 1/4W 5% 120k LL	R68
1	0024999001	RES CF 1/4W 5% 150k LL	R82
9	0024965001	RES CF 1/4W 5% 1k LL	R2 R6 R17 R19-20 R42 R55 R70 R76
9	0025069001	RES CF 1/4W 5% 1M LL	R9 R16 R25 R90 R93 R95 R99 R116-117
1	0025084001	RES CF 1/4W 5% 10M LL	R88
8	0024971001	RES CF 1/4W 5% 2.2k LL	R22-23 R26 R34 R37 R54 R107 R109
2	0029455001	RES CF 1/4W 5% 2.4k LL	R65 R79
1	0024972001	RES CF 1/4W 5% 2.7k LL	R101
4	0024987001	RES CF 1/4W 5% 22k LL	R38 R48 R113-114
2	0024988001	RES CF 1/4W 5% 27k LL	R18 R102
4	0024973001	RES CF 1/4W 5% 3.3k LL	R41 R67 R83 R89
1	0024975001	RES CF 1/4W 5% 3.9k LL	R28
1	0066903001	RES CF 1/4W 5% 3.9M LL	R31
5	0024989001	RES CF 1/4W 5% 33k LL	R50 R75 R97 R108 R111
9	0024977001	RES CF 1/4W 5% 4.7k LL	R1 R5 R12 R24 R30 R43 R45 R110 R120
1	0025065001	RES CF 1/4W 5% 470k LL	R96
1	0024961001	RES CF 1/4W 5% 470ohm LL	R80
6	0024993001	RES CF 1/4W 5% 47k LL	R62 R64 R66 R72 R85 R112
3	0024994001	RES CF 1/4W 5% 56k LL	R57 R81 R119
2	0024980001	RES CF 1/4W 5% 8.2k LL	R36 R122
1	0024996001	RES CF 1/4W 5% 82k LL	R104
1	0024964001	RES CF 1/4W 5% 820ohm LL	R78
2	0065468000	SWITCH DPDT VERTICAL MOMENTARY	S1 S3
2	0050817000	SWITCH PB PC VERT MNT DPDT	S2 S4
4	0065384000	EXTENSION BUTTON 2.8mm SHAFT	@S1-4
4	0065385000	BUTTON SWITCH ROUND GRAY	@S1-4
1	0066772000	TRIM POT HORIZ 10K LINEAR	R98
1	0067238003	XSTR N-CH JFET 2N5457 TO-92	Q4
3	0014689003	XSTR N-CH JFET J111 TO-92	Q3 Q5-6
2	0016739003	XSTR NPN 2N4401 TO-92	Q1-2
1	REF	**WIRESET PCB WORKINGPRO	@WJ1

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shaded Unique Fender® part. Order directly from the FMIC Parts Department.

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PARTS LIST: I/O REAR PANEL – PCB ASSEMBLY (Rev B)

QTY.	PART #	DESCRIPTION	REFERENCE DESIGNATION
*1	006474900x	PCB ASSY WORKINGPRO I/O	
REF	0064747000	SVC DIA COMB. WORKINGPRO AMPS	
1	0028467003	CAP AE RDL 22uF 50V 20%	C204
2	0047195003	CAP AE RDL 47uF 63V 20%	C210 C212
1	0051457003	CAP CD 100pF 500V 5%	C211
1	0051960003	CAP CD 180pF 500V 10%	C213
7	0051406003	CAP CD 220pF 500V 10%	C202-203 C205-209
1	0051458003	CAP CD 470pF 500V 10%	C201
1	0065388000	CONNECTOR DIN VERT PCB 5 PIN FEMALE	J202
1	0006260001	DIODE 1N4448 SIGNAL	D201
2	0065442000	HDR .1 CTR 8 CKT RT ANG LOCKING	P201-202
1	0031611000	IC OP-AMP DUAL PC4560	U201
1	0016795000	IC OP-AMP DUAL TL072	U202
2	0066431000	JACK 1/4" MONO PASSIVE	J204-205
1	0030771000	JACK 1/4 PCB 2/CD SCC	J206
1	0051007000	JACK 1/4 PCB STEREO W/ SWITCH	J201
1	0066432000	JACK1/4"STPLST NON-SHORTNG	J203
3	0024969001	RES CF 1/4W 5% 1.5k LL	R210 R213 R216
3	0024981001	RES CF 1/4W 5% 10k LL	R203 R209 R212
2	0024965001	RES CF 1/4W 5% 1k LL	R207 R217
2	0024977001	RES CF 1/4W 5% 4.7k LL	R206 R215
4	0024947001	RES CF 1/4W 5% 47ohm LL	R201-202 R204-205
2	0024961001	RES CF 1/4W 5% 470ohm LL	R214 R218
3	0050817000	SWITCH PB PC VERT MNT DPDT	S201-203
3	0065385000	BUTTON SWITCH ROUND GRAY	@S201-203
3	0065384000	EXTENSION BUTTON 2.8mm SHAFT	@S201-203
1	0049892000	XLR CONNECTOR MALE GOLD	J207
2	0014689003	XSTR N-CH JFET J111 TO-92	Q201-202
1	0065591000	CABLE RIBBON 5 COND 2"	@P203-204

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PARTS LIST: SPEAKER OUT – PCB ASSEMBLY

QTY.	PART #	DESCRIPTION	REFERENCE DESIGNATION
*1	0064752000	PCB ASSY WORKINGPRO SPKR OUT	
2	0067388000	CONNECTOR SPEAKON PC MT VERT	J302 J304
2	0029175000	JACK PHONE 1/4" HI CURRENT PC	J301 J303

PARTS LIST: POWER SUPPLY – PCB ASSEMBLY

QTY.	PART #	DESCRIPTION	REFERENCE DESIGNATION
*1	0064753000	PCB ASSY WORKINGPRO PWR SPLY	
1	0065173000	BRIDGE RECTIFIER 40A 400V I/L	
2	0053915000	CAP AE RDL 10000uF 100V	C401-402
1	0053860000	**CAP MPF .1uF 275V 10%	C6
1	0024853000	CAP MPF RDL .1uF 250V 10%	C5
2	0025116000	RES CF 1/2W 100k 5%	R1-2
1	0026411000	**THERMISTOR 2.5 ohm 8A C30-19	RT1

PARTS LIST: POWER AMP – PCB ASSEMBLY (Rev D)

QTY.	PART #	DESCRIPTION	REFERENCE DESIGNATION
*1	0064548000	PCB ASSY SWR500/1000 PWR AMP	
	REF	SVC DIA COMB SWR 500/1000 PWR AMP	
1	0038692000	CAP AE AX 10uF 35V 20%	C13
3	0068838000	CAP AE RDL 2200uF 35V LP 105C	C17-18 C29
1	0028458003	CAP AE RDL 1uF 50V 20%	C5
4	0028460003	CAP AE RDL 4.7uF 50V 20%	C19-20 C22 C24
1	0028471003	CAP AE RDL 47uF 50V 20%	C10
2	0025787003	CAP AE RDL MINI 100uF 16V NP	C1 C3
2	0039270001	CAP CA .01uF 50V	C6 C21
4	0038703001	CAP CA .1uF 50V	C16 C23 C25-26
1	0038703001	CAP CD 10pF 1000v 10%	C8
2	0051445003	CAP CD 22pF 500V 5%	C2 C4
2	0027261003	CAP MPF .0047uF 100V 10%	C30-31
6	0051416003	CAP SF .1uF 100V 10%	C9 C11 C14-15 C27-28
8	0064089001	DIODE 1N4003	D19-24 D29 D34
23	0006260001	DIODE 1N4448 SIGNAL	D1 D3-10 D13-15 D17-18 D25-28 D30-32 D35-36
2	0025821001	DIODE HV FDH400 SWITCHING LL	D2 D11
1	0031017001	DIODE ZEN 1N5223B 2.7V 5% LL	D33
1	0031018001	DIODE ZEN 1N5239B 9.1V 5% LL	D37
2	0031635001	DIODE ZEN 1N5240B 10V 5% LL	D12 D16
2	0070334001	**FUSE QA AXIAL LEAD 7A 125V	F1-2
1	0054303000	CABLE RIBBON 10CKT 7.5"	P2
1	0027419000	HDR .1 CTR 10 CKT SQ PIN	P10
2	0027408000	HDR .1 CTR 2 CKT SQ PIN	P12
1	0027418000	HDR .1 CTR 9 CKT SQ PIN	PW1
1	0027410000	HDR .1 CTR 3 CKT SQ PIN	P13

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shaded Unique Fender® part. Order directly from the FMIC Parts Department.

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PARTS LIST: POWER AMP – PCB ASSEMBLY (Rev D)

QTY.	PART #	DESCRIPTION	REFERENCE DESIGNATION
1	0013562000	IC REGULATOR +15V MC7815CT	U2
1	0013564000	IC REGULATOR -15V MC7915CT	U1
2	0050849000	HEATSINK PCB LEVEL 576012U	@ U1-2
2	0017974000	INSULATOR MICA TO-220	@ U1-2
3	0097360000	NUT HEX 4-40 EX LOCk	@ U1-2 Q25
3	0039420000	SCRW M 4-40x3/8 PHP SS ITLW	@ U1-2 Q25
2	0017746000	WSHR SHLDR NYL 1/8x1/4	@ U1-2
2	REF	JUMPER WIRE 22 GA	W1-2
1	0027387000	INDUCTOR AIR CORE RDL 2.5uH	L1
1	0029557001	RES CF 1/4W 5% 1 ohm LL	R68
1	0024969001	RES CF 1/4W 5% 1.5k LL	R88
5	0024997001	RES CF 1/4W 5% 100k LL	R5 R31 R35 R39 R84
3	0024981001	RES CF 1/4W 5% 10k LL	R18 R32 R38
4	0024937001	RES CF 1/4W 5% 10ohm LL	R3 R6 R83 R90
1	0029002001	RES CF 1/4W 5% 11k LL	R89
1	0024985001	RES CF 1/4W 5% 15k LL	R42
6	0024965001	RES CF 1/4W 5% 1k LL	R4 R15 R25 R29 R49 R74
2	0025069001	RES CF 1/4W 5% 1M LL	R28 R33
3	0024971001	RES CF 1/4W 5% 2.2k LL	R78-79 R87
2	0024972001	RES CF 1/4W 5% 2.7k LL	R27 R75
3	0024988001	RES CF 1/4W 5% 27k LL	R12 R26 R30
1	0024977001	RES CF 1/4W 5% 4.7k LL	R20
1	0025065001	RES CF 1/4W 5% 470k LL	R41
2	0024961001	RES CF 1/4W 5% 470ohm LL	R37 R72
2	0024993001	RES CF 1/4W 5% 47k LL	R19 R76
1	0024962001	RES CF 1/4W 5% 560ohm LL	R86
1	0024994001	RES CF 1/4W 5% 56k LL	R36
1	0028948001	RES CF 1/4W 5% 6.2k LL	R73
1	0024963001	RES CF 1/4W 5% 680ohm LL	R77
2	0048903001	RES CF 1/2W 5% 18k LL	R46 R69
1	0027627001	RES FILM 1W 5% 10ohm LL	R1
1	0064459001	RES MF 1/4W 1% 1.69k LL	R47
1	0064515001	RES MF 1/4W 1% 316ohm LL	R44
1	0016946001	RES MF 1/4W 1% 825ohm LL	R48
1	0056577001	**RES MOX FP 1/4W 5% 100ohm LL	R71
2	0068848000	**RES MOX FP 1/4W 5% 10k LL	R7 R80
4	0068847000	**RES MOX FP 1/4W 5% 1k LL	R8-9 R81-82
4	0068719001	**RES MOX FP 1/4W 5% 220ohm LL	R2 R23 R45 R66
8	0068846000	**RES MOX FP 1/4W 5% 4.7ohm LL	R54-58 R61 R64-65
6	0051040001	**RES MOX FP 1/4W 5% 47ohm LL	R10-11 R14 R16-17 R21
2	0068720001	**RES MOX FP 1/4W 5% 470ohm LL	R22 R24
8	0055932001	RES MOX 2W 5% .15ohm LL	R50-53 R59-60 R62-63
2	0027628001	RES MOX 2W 5% 47ohm LL	R34 R43
2	0069305000	RES MOX 5W 5% 10Ω W/STANDOFF	R67 R85
1	0065472000	**THERMISTOR 10kOhm 5.5" LEADS	TC1
1	REF	WIRESET PCB SWR500/100 PWR AMP	@WJ1
4	0016739003	XSTR NPN 2N4401 TO-92	Q18 Q20 Q22-23
4	0025751003	XSTR NPN 2SC2362K/2SC2389STPS	Q10 Q14-16
7	0014867003	XSTR NPN MPSW42 TO-226AE	Q1-2 Q11-13 Q27-28
1	0051448003	XSTR NPN 2SD1857	Q24
5	0016742003	XSTR PNP 2N4403 TO-92	Q19 Q21 Q31-33

* Non-serviceable part. Replace complete parent assembly. See PCB EXCHANGE POLICY above.

shaded Unique Fender® part. Order directly from the FMIC Parts Department.

shaded + * Access to this part or assembly is controlled. Please contact the FMIC Customer Service Department.

** Safety Requirement part. Replacement must match *Safety Agency…–Value*, if specified *–Type*, if specified *–Approval Mark(s)* if on part.

shaded +** Both a unique Fender® part *and* a Safety Requirement part as defined above.

WorkingPro™ 400 & 700

(This is the model name for warranty claims)

PARTS LIST: POWER AMP – PCB ASSEMBLY (Rev D)

QTY.	PART #	DESCRIPTION	REFERENCE DESIGNATION
2	0025752003	XSTR PNP 2SA1038STPS	Q8 Q17
1	0051447003	XSTR PNP 2SB1236	Q26
8	0014866003	XSTR PNP MPSW92 TO-226AE	Q3-7 Q9 Q29-30
1	0028759000	XSTR PNP 2SA1306A TO-220P	Q25

PARTS LIST: POWER MODULE ASSEMBLY (Rev C)

QTY.	PART #	DESCRIPTION	REFERENCE DESIGNATION
*1	0064714000	MODULE ASSY SWR500 PWR AMP	
*1	0064754000	MODULE ASSY SWR1000 PWR AMP	
*1	0064548000	PCB ASSY SWR500/1000 PWR AMP	
8	0031184000	SCRW M6-32X1/4 PHPS BLX ITLW	@ PCB standoffs
1	0070539000	TUNNEL HEATSINK TOP SWR1000 PWR AMP	
1	0070540000	TUNNEL HEATSINK BOTTOM SWR1000 PWR AMP	
1	0064607000	HEATSINK SWR500/1000 PWR AMP	
1	0065393000	FAN SWR500/1000 PWR AMP	
4	0065473000	SCRW SMA #8x2" HWHS ZI	fan mount
1	0065391000	SPACER FOAM SWR500/100 PWR AMP	
1	0068817000	XSTR NPN MJE15034 TO-220	Q35
1	0068818000	XSTR PNP MJE15035 TO-220	Q44
2	0017746000	WSHR SHLDR NYL 1/8x1/4	@ Q35, Q44
2	0068819000	INSULATOR SILICONE TO-220 NAR	@ Q35, Q44
1	0028760000	XSTR NPN 2SC4793/2SC3298B	Q34
6	0027638000	SCRW TF 4-40x 3/8 HWHS ZI .1"	@ driver xstrs, tunnel, & thermistor
		Items Below are for SWR500 Power Module Assy #0064714000, used in WorkingPro 400	
3	0054804000	XSTR NPN 2SC2922 MT-200	Q36-38
3	0054805000	XSTR PNP 2SA1216 MT-200	Q40-42
6	0065390000	INSULATOR SILICONE MT-200	@ Q36-38, Q40-42
15	0032937000	WSHR CONE	@ Q34, Q36-38, Q40-42
12	0032934000	SCRW TF 4-40x1/2 HWHS ZI .1"	@ Q36-38, Q40-42
		Items Below are for SWR1000 Power Module Assy #0064754000, used in WorkingPro 700	
4	0066778000	XSTR NPN 2SC3264 MT-200	Q36-39
4	0068373000	XSTR PNP 2SA1295 MT-200	Q40-43
8	0065390000	INSULATOR SILICONE MT-200	@ Q36-39, Q40-43
19	0032937000	WSHR CONE	@ Q34, Q36-39, Q40-43
16	0032934000	SCRW TF 4-40x1/2 HWHS ZI .1"	@ Q36-39, Q40-43

---

* Non-serviceable part. Replace complete parent assembly. See PCB EXCHANGE POLICY above.

shaded Unique Fender® part. Order directly from the FMIC Parts Department.

shaded + * Access to this part or assembly is controlled. Please contact the FMIC Customer Service Department.

** Safety Requirement part. Replacement must match *Safety Agency…–Value*, if specified *–Type*, if specified *–Approval Mark(s)* if on part.

shaded +** Both a unique Fender® part *and* a Safety Requirement part as defined above.

WorkingPro™ 400 & 700

(This is the model name for warranty claims)

PARTS LIST: CHASSIS ASSEMBLY (Rev C)

QTY.	PART #	DESCRIPTION	REFERENCE DESIGNATION
*1	0064746000	PCB ASSY,WORKINGPRO PREAMP	
*1	0064749000	PCB ASSY, WORKINGPRO I/O	
*1	0064752000	PCB ASSY, WORKINGPRO SPKR OUT	
*1	0064753000	PCB ASSY PWR SPLY WORKINGPRO	
2	9904300100	WASHER LCK INTL 3/8X.681X.032	@ speaker jacks
2	0066374000	HANDLE OVAL CHROME	
4	0066500000	SCRW M 10-32x1/2 FHP BLX	@ handles
1	0047213000	CONNECTOR AC LINE MALE IEC	
3	0069393000	NUT 6-32 HEX EXT LOCK	GND, Regulator, Input GND
12	0041602000	SCRW M 6-32x3/8 FHP BLX	Top Cover, IEC
4	0070633000	SCRW M 6-32x3/8 FHP BLX W/NYLON PATCH	Power module mount
8	0065589000	MACH SC 8-32X3/8 SHCS B/OX	@ Front Panel
4	0055743400	RUBBER FOOT 11/16"IA 240001	
4	0017433000	SCRW M 6-32x3/8 PHP BLX	@ feet
8	0031184000	SCRW M 6-32x1/4 PHP BLX ITLW	@ output PCB, PS PCB, DIN
2	0051155000	SCRW SMB 4x3/8 PHP BLX	@ XLR jack
1	0022004000	NUT KEPS #8-32 ZINC	@ bridge rectifier
1	0053910000	SCRW M 1/4-20x3 CAR BLX	xfmr mount
1	9904300900	WASHER FLAT 1/4X1 STL BLX	xfmr mount
1	0028272000	NUT KEP 1/4x20 FOJ	xfmr mount
*1	0065926000	BADGE SWR "HUBCAP" SMALL	
2	0067098000	SPEED NUT PUSH ON TYPE SMALL	
11	0066453000	KNOB BLACK PUSH-ON 18 TOOTH	
1	0065395000	CABLE ASSY CRIMP 8 CKT 14" RED	
1	0065389000	CABLE ASSY CRIMP 8 CKT 14" GRN	
1	0065396000	CABLE ASSY CRIMP 9 CKT 15" BLK	
1	0067122000	SWITCH ROCKER 15 A	(100/120V models)
-	0068325000	SWITCH ROCKER SPST 16A EURO	(230/240V models)
1	REF	WIRESET CHASSIS WORKINGPRO AMPS	
	*	LABEL, NORDIC	(230/240V models)
		Items Below are for WorkingPro 400 Chassis Assy	
*1	0064714000	MODULE ASSY SWR500 PWR AMP	
1	0064821000	**XFMR SWR 400 W AMPS 120V 60Hz	(120V models)
	0064822000	**XFMR SWR 400 W AMPS 230/240V 50Hz	(230/240V models)
	0064823000	**XFMR SWR 400 W AMPS 100V 50Hz	(100V models)
	0036703000	**FUSE HOLDER 5MM FINGER GRIP	
1	0013684000	**FUSE TD 20mmx5mm 250v 8A	(100/120V models)
	0013679000	**FUSE TD 20mmx5mm 250v 4A	(230/240V models)
	*	LABEL FUSE T4A 250V	(230/240V models)
		Items Below are for WorkingPro 700 Chassis Assy	
*1	0064754000	MODULE ASSY SWR1000 PWR AMP	
-	0064817000	**XFMR TOROID SWR 750W 230/240V 50 Hz	(230/240V models)
1	0064818000	**XFMR TOROID SWR 750W 120V 60 Hz	(120V models)
-	0064819000	**XFMR TOROID SWR 750W 100V 50 Hz	(100V models)
1	0036702000	**FUSE HOLDER 3AG FINGER GRIP	(100/120V models)
1	0032028000	**FUSE TD 1-1/4x1/4 250v 15A	(100/120V models)
1	*	LABEL FUSE T15A 250V	(100/120V models)
-	0036703000	**FUSE HOLDER 5MM FINGER GRIP	(230/240V models)
-	0013684000	**FUSE TD 20mmx5mm 250v 8A	(230/240V models)
1	*	LABEL WATTAGE "1440W"	
1	*	LABEL WATTAGE "700W"	

***** Non-serviceable part. Replace complete parent assembly. See PCB EXCHANGE POLICY above.

shaded Unique Fender® part. Order directly from the FMIC Parts Department.

shaded + ***** Access to this part or assembly is controlled. Please contact the FMIC Customer Service Department.

****** Safety Requirement part. Replacement must match *Safety Agency…–Value*, if specified *–Type*, if specified *–Approval Mark(s)* if on part.

shaded +****** Both a unique Fender® part *and* a Safety Requirement part as defined above.

PARTS LIST: **FOOTSWITCH ASSY**

QTY.	PART #	DESCRIPTION	REFERENCE DESIGNATION
1	0065436000	FOOTSWITCH 2 BTN WORKINGPRO AMPS	
1	*	CASE FOOTSWITCH 2 BTN WORKINGPRO	
2	*	WASHER FLAT .482x.709 NI	

Service Diagram List

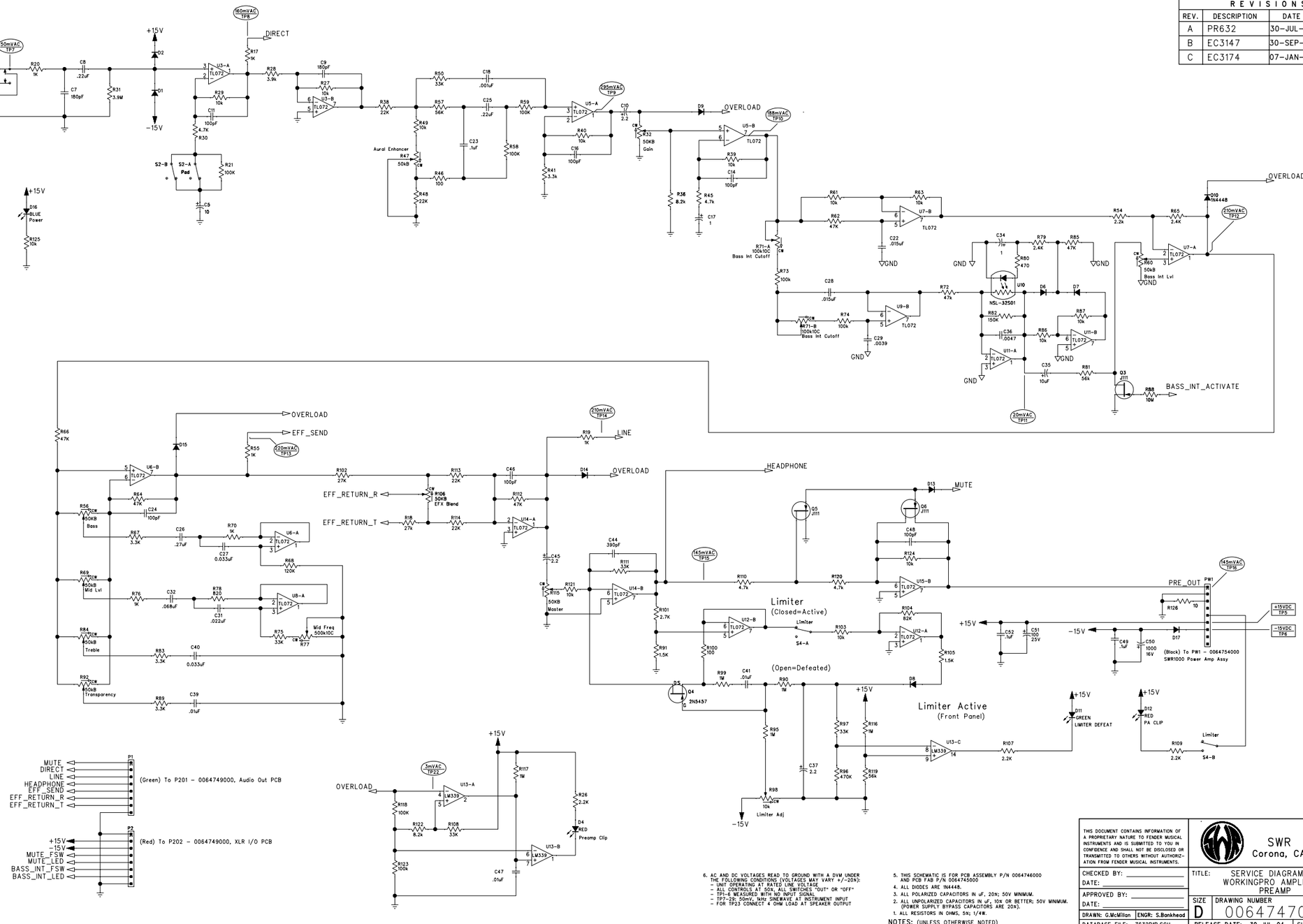
Service Diagram (Schematic) .....WorkingPro Amplifiers

Service Diagram (PCB Assembly) .....WorkingPro Amplifiers

Service Diagram (Schematic) .....SWR 500/1000 Power Amp

Service Diagram (PCB Assembly) .....SWR 500/1000 Power Amp

REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
A	PR632	30-JUL-04	GMx
B	EC3147	30-SEP-04	GMx
C	EC3174	07-JAN-05	S.M.B.



6. AC AND DC VOLTAGES READ TO GROUND WITH A DVM UNDER THE FOLLOWING CONDITIONS (VOLTAGES MAY VARY +/-20%):
   - UNIT OPERATING AT RATED LINE VOLTAGE.
   - ALL CONTROLS AT 50%, ALL SWITCHES "OUT" OR "OFF"
   - TP1-4 MEASURED WITH NO INPUT SIGNAL
   - TP7-29: 50mV, 1kHz SINEWAVE AT INSTRUMENT INPUT
   - FOR TP23 CONNECT 4 OHM LOAD AT SPEAKER OUTPUT

5. THIS SCHEMATIC IS FOR PCB ASSEMBLY P/N 0064746000 AND PCB FAB P/N 0064745000

4. ALL DIODES ARE IN4448.

3. ALL POLARIZED CAPACITORS IN uF, 20%; 50V MINIMUM.

2. ALL UNPOLARIZED CAPACITORS IN uF, 10% OR BETTER; 50V MINIMUM. (POWER SUPPLY BYPASS CAPACITORS ARE 20%).

1. ALL RESISTORS IN OHMS, 5%; 1/4W.

NOTES: (UNLESS OTHERWISE NOTED)

CHECKED BY: _____ DATE: _____

APPROVED BY: _____ DATE: _____

DRAWN: G.McMillan | ENGR: S.Bonkhead

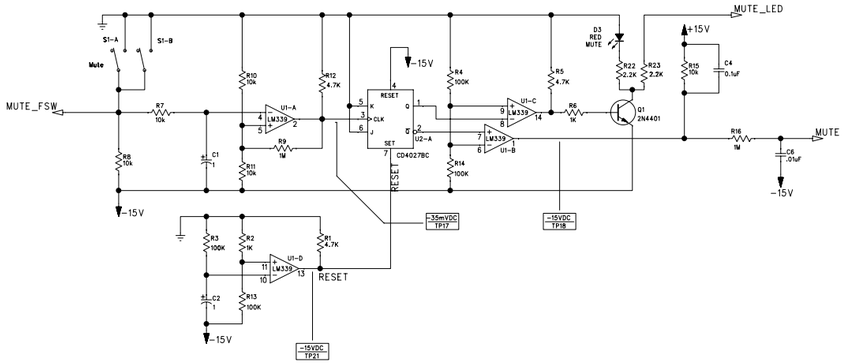
DATABASE FILE: Z632P1B.SCH

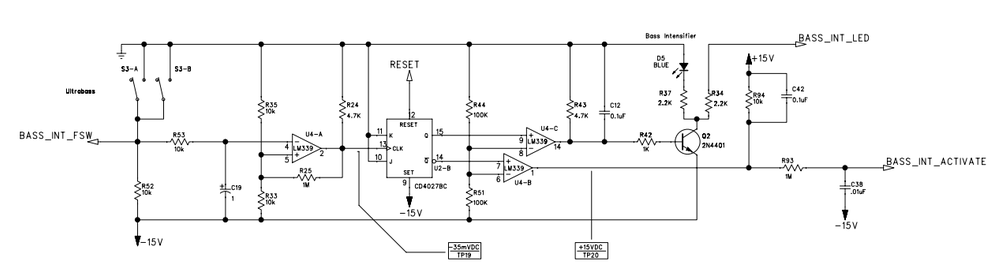
SWR
Corona, CA U.S.A.

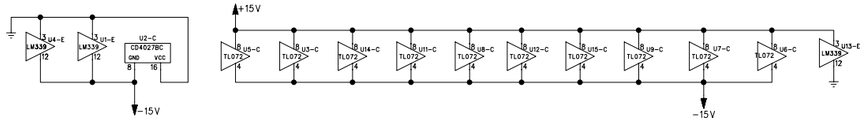
TITLE: SERVICE DIAGRAM, (schematic)
WORKINGPRO AMPLIFIERS
PREAMP

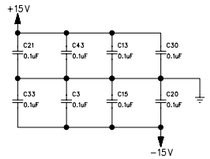
SIZE	DRAWING NUMBER	REV.
D	0064747000	C

RELEASE DATE: 30-JUL-04 | SHEET: 1 OF 5

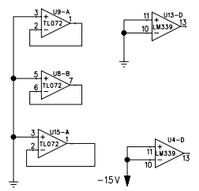


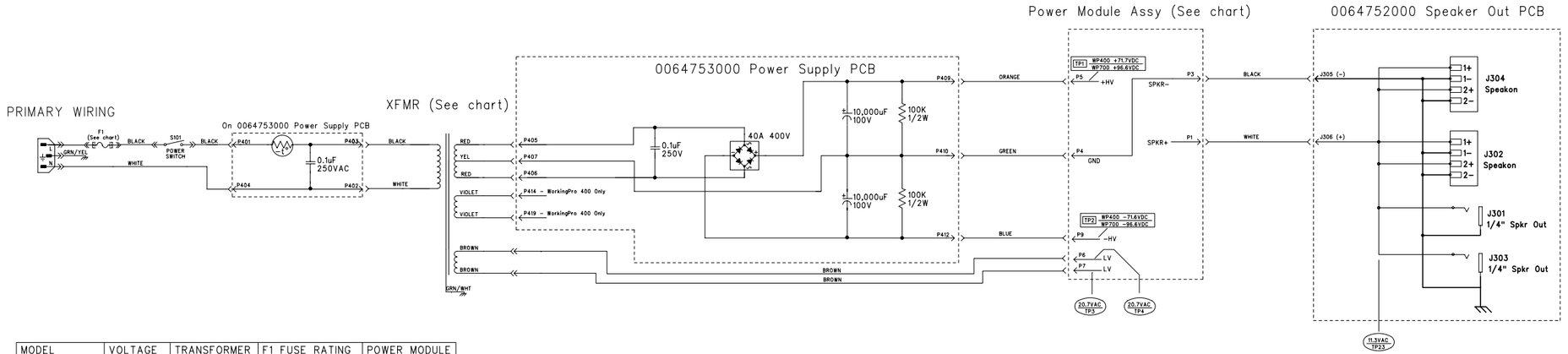




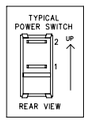


Spares:





MODEL	VOLTAGE	TRANSFORMER	F1 FUSE RATING	POWER MODULE
WorkingPro 700	100V	0064819000	T15A 250V 3AG	0064754000
	120V	0064818000	T15A 250V 3AG	0064754000
	230V	0064817000	T8A 250V 5mm	0064754000
WorkingPro 400	100V	0064823000	T8A 250V 5mm	0064714000
	120V	0064821000	T8A 250V 5mm	0064714000
	230V	0064822000	T4A 250V 5mm	0064714000



1. SEE SHEET 1 FOR TEST CONDITIONS
NOTES: (UNLESS OTHERWISE NOTED)

CHECKED BY: _____ DATE: _____
APPROVED BY: _____ DATE: _____
DRAWN: G.McMillan | ENGR: S.Bankhead
DATABASE FILE: Z632P1B.SCH

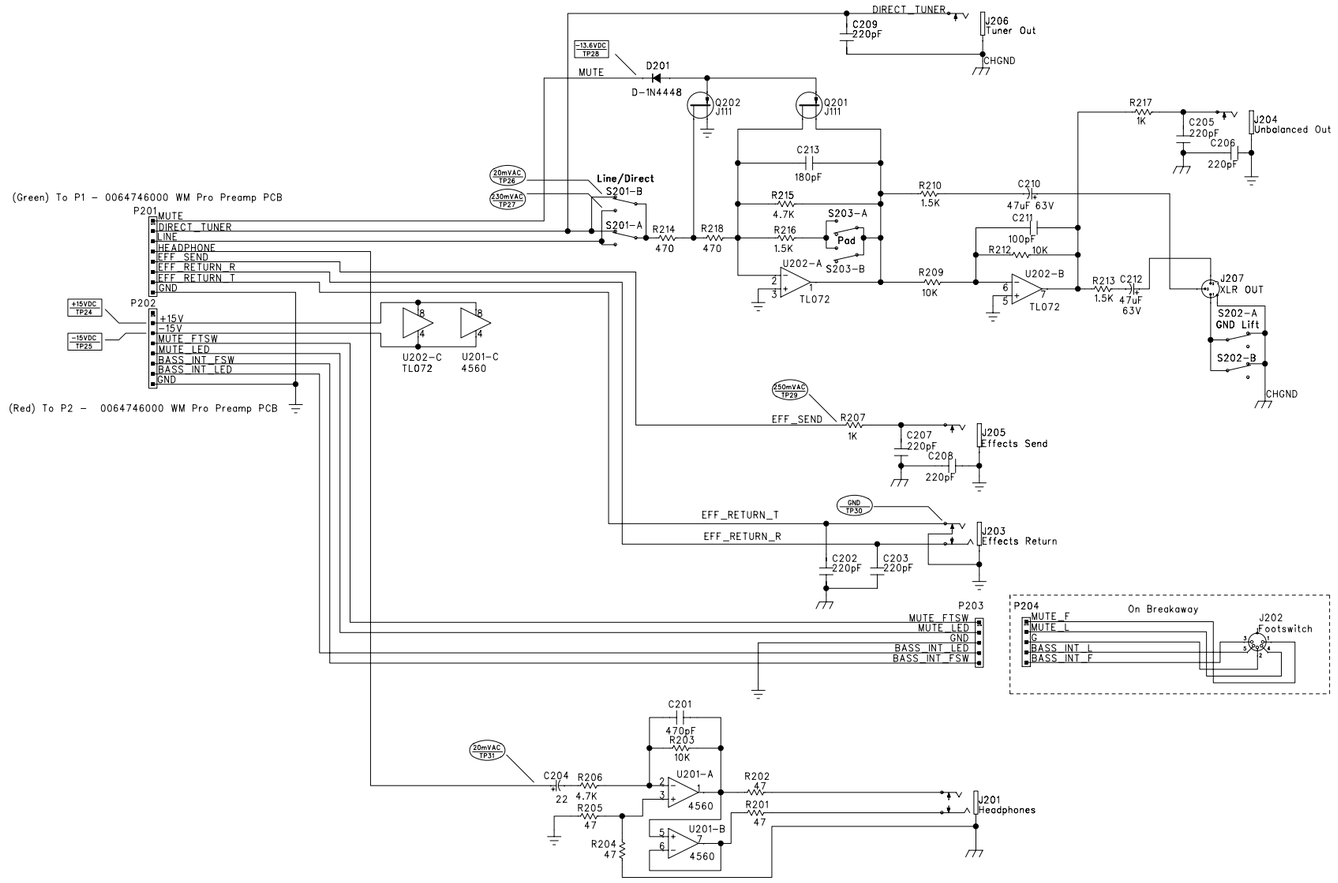
SWR
Corona, CA U.S.A.

TITLE: SERVICE DIAGRAM, COMBINED (schematic)
WORKINGPRO AMPLIFIERS
PREAMP & CHASSIS WIRING

SIZE	DRAWING NUMBER	REV.
D	0064747000	C

RELEASE DATE: 30-JUL-04 | SHEET: 2 OF 5

REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
A	PR632	30 JUL 04	GMx
B	EC3147	30 SEP 04	GMx
C	EC3174	07 JAN 05	S.M.B.



5. SEE SHEET 1 FOR TEST CONDITIONS
4. THIS SCHEMATIC IS FOR PCB ASSY P/N 0064749000 AND PCB FAB P/N 0064748000
3. ALL DIODES ARE 1N4448
2. ALL UNPOLARIZED CAPACITORS IN uF, 10% OR BETTER, 50V MINIMUM
1. All resistors are 1/4 Watt 5%

NOTES: (UNLESS OTHERWISE NOTED)

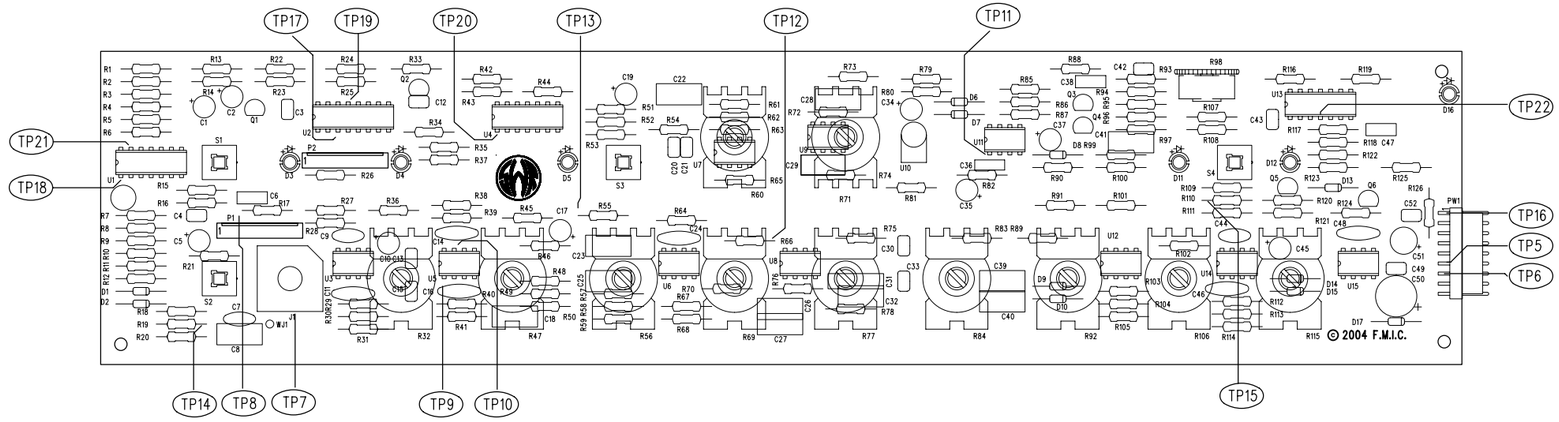
CHECKED BY: _____
DATE: _____
APPROVED BY: _____
DATE: _____
DRAWN: G.McMillan | ENGR: S.Bankhead
DATABASE FILE: Z632P2B.SCH

SWR
Corona, CA U.S.A.

TITLE: SERVICE DIAGRAM, (schematic)
WORKINGPRO AMPLIFIERS
AUDIO I/O PCB

SIZE D | DRAWING NUMBER 0064747000 | REV. C
RELEASE DATE: 30-JUL-04 | SHEET: 3 OF 5
Last Update: 4-Oct-04

REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
A	PR632	30-JUL-04	GMx
B	EC3147	30-SEP-04	GMx
C	EC3174	07-JAN-05	S.M.B.



FILM/DWG:	SERVICE DIAGRAM
DATABASE: Z632P1B.PCB	DATE: 15-Sep-04

Unless otherwise noted:

1. SEE SHEET 1 FOR TEST CONDITIONS & TEST POINT VALUES

CHECKED BY: _____
DATE: _____

APPROVED BY: _____
DATE: _____

DRAWN: G McMillan | ENGR: S Bankhead

DATABASE FILE: Z632P1B.PCB

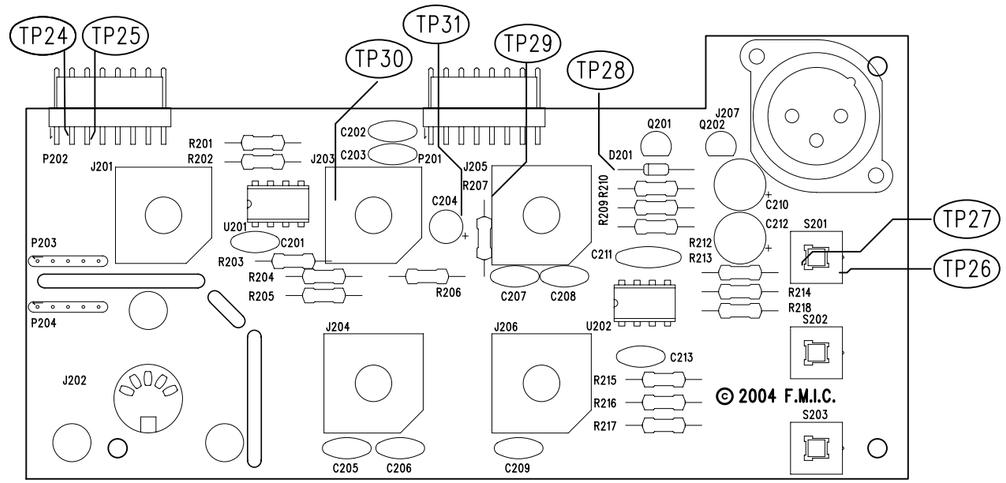
SWR
Corona, CA U.S.A.

TITLE: SERVICE DIAGRAM, COMBINED (PCB assy)
SWR – Working Pro
Preamp PCB

SIZE	DRAWING NUMBER	REV.
C	0064747000	C

RELEASE DATE: 30-JUL-04 | SHEET 4 OF 5

REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
A	PR632	30-JUL-04	GMx
B	EC3147	30-SEP-04	GMx
C	EC3174	07-JAN-05	S.M.B.



FILM/DWG:	SERVICE DIAGRAM
DATABASE:	Z632P2B.PCB DATE: 14-Sep-04

1. SEE SHEET 1 FOR TEST CONDITIONS & TEST POINT VALUES

NOTES: (UNLESS OTHERWISE NOTED)

CHECKED BY: _____
DATE: _____

APPROVED BY: _____
DATE: _____

DRAWN: G.McMillan ENGR: S.Bankhead

DATABASE FILE: Z632P2B.PCB

SWR
Corona, CA U.S.A.

TITLE: SERVICE DIAGRAM, COMBINED (PCB assy)
WorkingPro AMPLIFIERS
AUDIO I/O PCB

SIZE	DRAWING NUMBER	REV.
B	0064747000	C

RELEASE DATE: 30-JUL-04 SHEET 5 OF 5

REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
A	PR632	30-JUL-04	B H
B	EC3147	30-SEP-04	S.M.B.
C	EC3174	07-JAN-05	S.M.B.
D	EC3213	14-APR-05	S.M.B.

PWR_OUTPUT WJ1 BLACK — P10: +BASE_DRIVE, PA_GND_A, -HV, -PROTECT, PROTECT_MIRROR, PROTECT, -DRIVER_BASE, +15V, -15V

Connections between PCB halves

P8 PWR_OUTPUT — P2: +BASE_DRIVE, PA_GND_A, -HV, -PROTECT, PROTECT_MIRROR, PROTECT, -DRIVER_BASE, +15V, -15V

TO PREAMP PCB — P8: PA_SEND_A, PA_GND_A, GND, RESET, CLIP_LIGHT, +15V, -15V

Output Power Test: ⚠

With 700W power platform connected (XFWR 0064818000 & PS assy 0068893000):

Connect 4 ohm resistive load to speaker terminals. Increase input signal amplitude to clipping @ .1THD. 700W output power should be observed.

For other amplifier configurations, refer to the product level service diagram and test plan for output power measurements.

Clip Light Driver

Fan Control Circuit

⚠ TP1-2 & output power measurements are shown here for 700W platform. Refer to the product level service diagram for product specific measurments. All other measurements should be the same regardless of the amplifier configuration.

8. AC AND DC VOLTAGES READ TO GROUND WITH A DVM UNDER THE FOLLOWING CONDITIONS (VOLTAGES MAY VARY +/-20%):
   - POWER SUPPLY CONNECTED AS APPROPRIATE FOR THE INTENDED PRODUCT USAGE. (SEE NOTE #9)
   - DC SUPPLY TO BE OPERATING AT RATED LINE VOLTAGE
   - TEST POINTS TP1-6 MEASURED WITH NO INPUT SIGNAL
   - TEST POINT 7 VARIES WITHIN THE SPECIFIED RANGE DEPENDING ON THE TEMPERATURE OF THE HEATSINK
   - TEST POINTS TP8-9 MEASURED WITH: 100Hz, 1kHz SINEWAVE AT P9#1 PIN 1, SIGNAL GND AT PIN 2, 4 OHM RESISTIVE LOAD BETWEEN P1-P3

7. THIS SCHEMATIC SHEET IS FOR PCB FABRICATION P/N 0064547000 AND PCB ASSEMBLY P/N 0064548000
6. DO NOT STUFF: C7 C12 R13 R40 R70 R91 P11 P14
5. FOR SWR500 MODULE, DELETE Q39 & Q43
4. ALL DIODES 1N4448.
3. ALL POLARIZED CAPACITORS IN uF, 20%; 50V MINIMUM.
2. ALL UNPOLARIZED CAPACITORS IN uF, 10% OR BETTER; 50V MINIMUM. (POWER SUPPLY BYPASS CAPACITORS ARE 20%).
1. ALL RESISTORS IN OHMS, 5%; 1/4W.

NOTES: (UNLESS OTHERWISE NOTED)

CHECKED BY: _____ DATE: _____

APPROVED BY: _____ DATE: _____

DRAWN: W. HUGHES ENGR: W. HUGHES

DATABASE FILE: s632s5.SCH

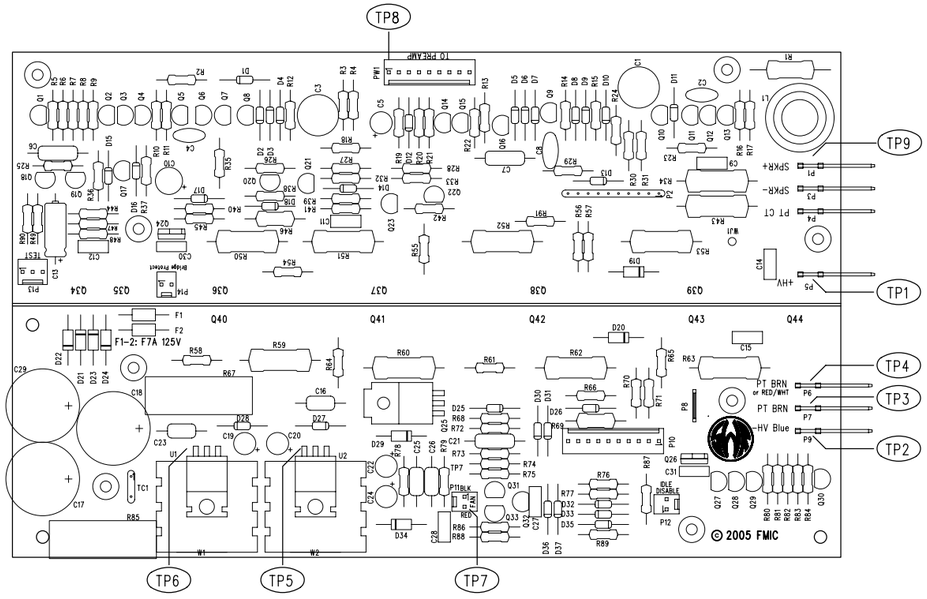
SWR Corona, CA U.S.A.

TITLE: SERVICE DIAGRAM, COMBINED (schematic) SWR 500/1000 POWER AMP

SIZE D | DRAWING NUMBER 0064549000 | REV. D

RELEASE DATE: 29-JUL-04 | SHEET: 1 OF 2

REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
A	PR632	30-JUL-04	S.M.B.
B	EC3147	30-SEP-04	S.M.B.
C	EC3174	07-JAN-05	S.M.B.
D	EC3213	14-APR-05	S.M.B.



FILM/DWG:	SERVICE DIAGRAM
DATABASE: z632p5.PCB	DATE: 14-APR-05

1. SEE SHEET 1 FOR TEST CONDITIONS & TEST POINT VALUES

NOTES: (UNLESS OTHERWISE NOTED)

CHECKED BY: _____
DATE: _____

APPROVED BY: _____
DATE: _____

DRAWN: R.MURRAY | ENGR: B.HUGHES

DATABASE FILE: z632p5.PCB

SWR
Corona, CA U.S.A.

TITLE: SERVICE DIAGRAM, COMBINED (PCB assy)
SWR 500/1000
POWER AMP

SIZE	DRAWING NUMBER	REV.
C	0064549000	D

RELEASE DATE: 30-JUL-04 | SHEET 2 OF 2