

FTM 5150^{III}®

EVH5150III 100S

(This is the model name for warranty claims)
p/n 2250250000 BLACK 120V

SERVICE MANUAL SUPPLEMENT



Reason For Supplement: Introduction of a limited production special artist version of the EVH 5150III 100W Head. It is hand modified to the version Eddie Van Halen is currently using on tour with special blacked-out stealth cosmetics. This supplement contains a Parts List and Schematic for the new circuitry. Please file and use in conjunction with the original EVH5150III 100W Head Service Manual.

IMPORTANT SERVICE NOTE: This version of the 5150III Head is manufactured with a matched quartet of Svetlana Winged C Output Tubes per the Artist's preference. FMIC is not a supplier for this tube so in case of warranty failure they will need to be sourced from a secondary vendor. The tubes should be added to the FMIC Warranty Claim under Non-FMIC Parts for reimbursement. Non-Warranty replacement tubes shall be the consumer's choice.



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tion. All specifications are subject to change without notice. This information and any copies produced electronically or otherwise must be surrendered upon demand of Fender® Musical Instruments Corporation.

- 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 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 FU = Fusible
 RES MF = Metal Film
 RES MOX = Metal Oxide
 RES WW = Wire Wound

HARDWARE CODES

BLX = Black Oxide

CAP = Cap Screw
 CR = Chrome Plated
 FLHP = Fillister Head Phillips
 FHP = Flat Head Phillips
 HSH = Hex Socket Head
 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
 SMAB = Sheet Metal "AB" Point
 SMB = Sheet Metal "B" Point
 SS = Stainless Steel
 TF = Thread Forming
 THP = Truss Head Phillips
 ZI = Zinc Plated

SPECIFICATIONS

MODEL NAME:	EVH5150III 100S
PART NUMBERS: (Black)	
(120V, 60Hz) US:	22-50250-000
(110V, 50/60Hz) TW:	22-50251-010
(240V, 50Hz) AUS:	22-50253-010
(230V, 50Hz) UK:	22-50254-010
(220V, 50Hz) ARG:	22-50255-010
(230V, 50Hz) EUR:	22-50256-010
(100V, 50/60Hz) JPN:	22-50257-010
(220V, 60Hz) ROK:	22-50259-010
TYPE:	PR2950
POWER REQUIREMENT:	533W
IMPEDANCE:	
INSERT (Input)	>1M Ω (Insert 1)
RETURN (Power Amp Input)	10k Ω
PREAMP (Output):	1k Ω
POWER AMP:	
POWER OUTPUT:	100W into 16, 8, or 4 Ω @ 5%THD, 1KHz
SENSITIVITY (at RETURN):	250mV for 50W into 4, 8 or 16 Ω @ 5 %THD
TUBE COMPLEMENT:	
Preamp	7x 12AX7 (0074287100)
Power Amp	4x 6L6GC matched quad Wing-C
	1x 12AX7 (0074287100)
FOOTSWITCH:	4-Button EVH (0070926000)
DIMENSIONS	
HEIGHT:	10.25 in (26.0 cm)
WIDTH:	29.75 in (75.5 cm)
DEPTH:	11.5 in (29.3 cm)
WEIGHT:	56.0lbs (25.0 kg) – without Footswitch

Product specifications are subject to change without notice

SERVICE NOTES

Refer to the EVH 5150III 100W Head Service Manual along with this addendum for servicing of the EVH 5150 III 100S Head. This addendum details the differences between the standard 100W Head and the Special Edition 100S Head.

The 100W and the 100S differences –

- Three independent rear panel Resonance Controls, one for each channel.
- Rear panel bias control adjustment control and measurement test jacks.
- Wing-C Premium Output Tubes
- Blacked-out “stealth” cosmetics.
- Increased gain on Channels TWO and THREE configured to match Eddie Van Halen’s latest Tour Rig

Power Supply PCB Changes

The following changes create EVH 5150III 100S Power Supply Assembly (7700345000)

- R18, the Bias Adjust Pot, has been removed from the PCB and replaced with a rear panel 10K panel mount screw driver adjust control (0017502000) with connections as follows:
 - CCW – VIO (4”)
 - WIPER – WHT (4”)
 - CW – GRY (4”)
- R20 changed to 27K from 68K
- R21 changed to 3.9K from 10K
- R4, R5 and R6 fixed resistors have been removed and replaced with three 1MEG RESONANCE controls (0064704000) on the rear panel for independent control of RESONANCE for each amp channel. The controls are wired as follows:

R4/K1A-6 node – ORG wire (20”) – CH1 Resonance Control CCW
R5/K1A-8 node – YEL wire (19”) – CH2 Resonance Control CCW
R6/K2A-8 node – GRN wire (18”) – CH3 Resonance Control CCW
D3-Anode node – BLU wire – Common node to all 3 controls RESONANCE Controls, CW and WIPER

Main PCB Changes

The following changes to the 100W MAIN PCB create the PCB ASSY MAIN EVH 100S (7700344000).

- Component changes -

R34 – 100K 1/2W changed to 220K 1/2W

R25 – 100K 1/4 W changed to 10K 1/4W

R26, R56 and C13 – Removed

R65 – 18K 1/4W changed to 5.1K

R35 – 330K 1/4W changed to 100K

C3 - .022uF, 400V to .047uF, 400V

C35 – Changed from .01, 400V to .0047, 400V

R12 – CH THREE LOW – Changed from 1M-5A to 1M-10A

R13 - CH THREE MID - Added a jumper wire from WIPER to CW pins.

Added C62, 22uF/35V cap across R37 with the + lead toward V3 cathode.

Added C23, 0.0047uF, 400V cap across R6 CW and WIPER pins on the bottom of the PCB.

- Traces that were cut to facilitate topology changes:

Trace from R61 that is routed between V4 pins 2 and 3 cut.

Trace from R29 cut.

- Coax Cables – Two miniature coax cables added.

Cable 1 –

Shield to the bracket of R6 and the center conductor to the C13 (@ R25 connection).

The other end center conductor to R28's lead adjacent to control R11, shield not connected.

Cable 2 –

Shield to bracket of R11 and center conductor to R29 lead away from R11. The other end center conductor to R61 near V4, shield not connected.

The cables are secured with a standoff adjacent to V4 with two cable clamps on top that the cables route through. RTV is added to secure the coax to the clamps.

PARTS LIST: 100S MAIN PCB ASSEMBLY (changes)			
QTY.	PART #	DESCRIPTION	REFERENCE DESIGNATION
1	0009512001	CAP AE AX 22uF 25V 20%	C62
1	0024845000	CAP MPF RDL .047uF 400V 10%	C3
2	0025962002	CAP PFF .0047uF 400V 10%	C23 C35
1	7725470000	CONTROL SNAPIN 1M 10A TAPER	R12 (MUST USE NOBLE BRAND!)
1	0025117001	RES CF 1/2W 5% 220k LL	R34
1	0024997001	RES CF 1/4W 5% 100k LL	R35
1	0024981001	RES CF 1/4W 5% 10k LL	R25
1	0028034001	RES CF 1/4W 5% 5.1k LL	R65

PARTS LIST: 100S POWER PCB ASSEMBLY (changes)			
QTY.	PART #	DESCRIPTION	REFERENCE DESIGNATION
1	0024975001	RES CF 1/4W 5% 3.9k LL	R21
1	0024988001	RES CF 1/4W 5% 27k LL	R20

PARTS LIST: CHASSIS ASSEMBLY (changes)			
QTY.	PART #	DESCRIPTION	REFERENCE DESIGNATION
1	0099654000	*PANEL FRONT EVH 5150 III 100S	
1	7700344000	*PCB ASSY EVH 5150III 100S MAIN	
1	7700345000	*PCB ASSY EVH 5150III 100S PWR SPLY	
1	REF	TUBE 6L6 WING C QUARTET MATCHED	MATCHED QUAD (See Note First Page)
18	7701158000	KNOB POINT 1/4 SHAFT EVH 100S	100S SPECIAL CHICKEN HEAD KNOBS
1	7701678000	**COVER CONTROL REAR PANEL	@BIAS CONTROL
2	0004889000	SCRW TF 4-40x1/4 PHP BLX	@BIAS CONTROL COVER
1	0017502000	CONTROL 10K LIN SCREW ADJ	BIAS CONTROL
3	0066455000	KNOB BLACK SET SCREW	@ RESONANCE CONTROLS
3	0064704000	CONTROL CTS CHS MNT 1M A	RESONANCE CONTROL
4	0031153000	WSHR FLAT 3/8x.614 NI	@ RESONANCE/BIAS CONTROLS
1	7701791000	JACK BANANA RED NYLON	BIAS (+)
1	7701792000	JACK BANANA BLACK NYLON	BIAS (-)

PARTS LIST: END ITEM ASSEMBLY (changes)			
QTY.	PART #	DESCRIPTION	REFERENCE DESIGNATION
1	7700251000	*GRILLE ASSEMBLY EVH 100S HEAD	

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

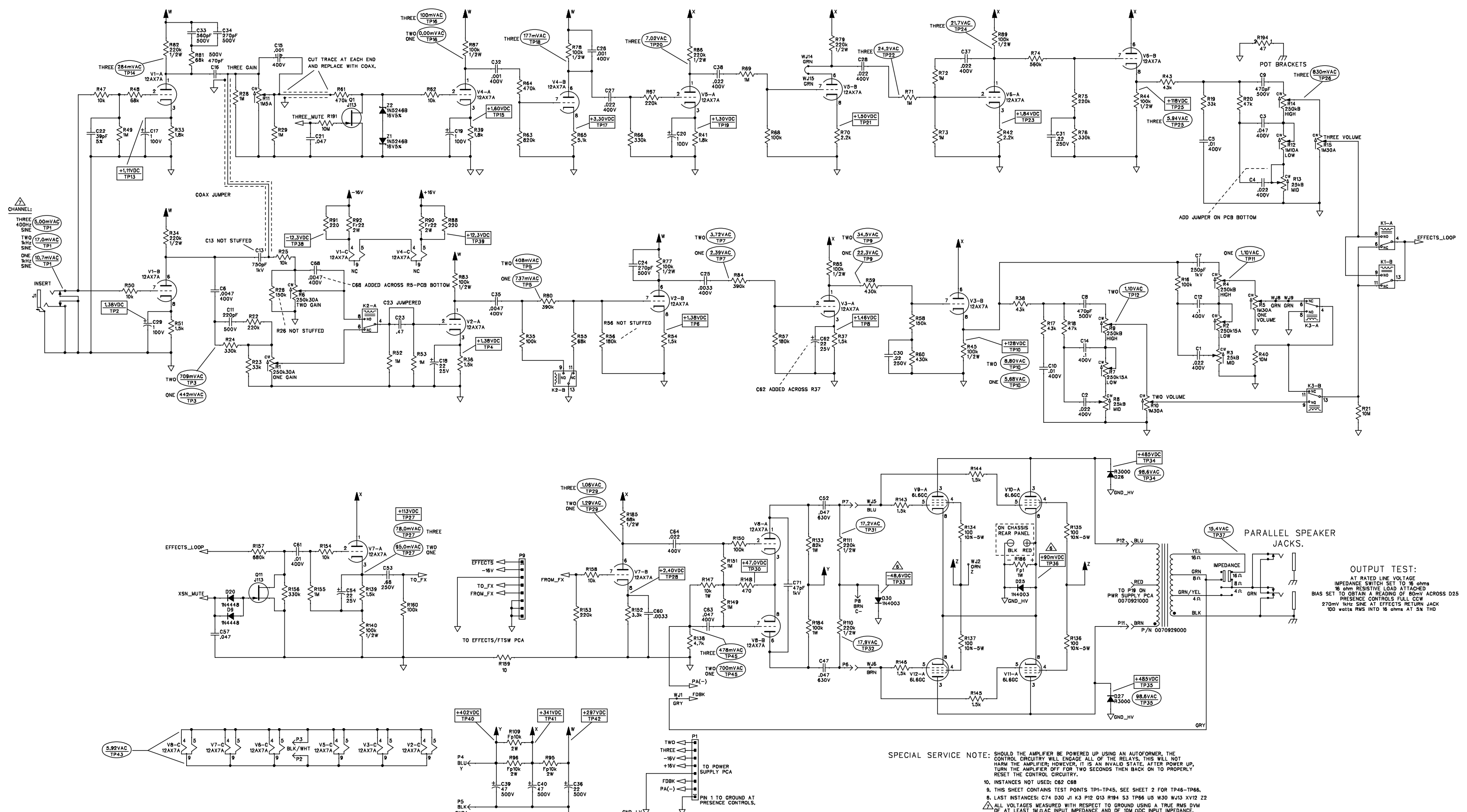
*shaded + *** Both a unique Fender® part and a Safety Requirement part as defined above.

Service Diagram List

SERVICE DIAGRAM (Schematic).....MAIN EVH100S - 7700254000
SERVICE DIAGRAM (Schematic).....POWER SUPPLY EVH100S - 7700253000



REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
A	PR2950	07-NOV-13	HBK
B	EC14-0005	21-JAN-14	HBK



OUTPUT TEST:
 AT RATED LINE VOLTAGE
 IMPEDANCE SWITCH SET TO 8Ω
 16Ω RESISTIVE LOAD ATTACHED
 TO OBTAIN A READING OF 80mV ACROSS D25
 PRESENCE CONTROLS FULL CCW
 270mV 1kHz SINE AT EFFECTS RETURN JACK
 100 WATT RMS INTO 16Ω AT 5% THD

SPECIAL SERVICE NOTE: SHOULD THE AMPLIFIER BE POWERED UP USING AN AUTOTRANSFORMER, THE CONTROL CIRCUITRY WILL ENGAGE ALL OF THE RELAYS. THIS WILL NOT HARM THE AMPLIFIER; HOWEVER, IT IS AN INVALID STATE, AFTER POWER UP, TURN THE AMPLIFIER OFF FOR TWO SECONDS THEN BACK ON TO PROPERLY RESET THE CONTROL CIRCUITRY.

10. INSTANCES NOT USED: C62 C68
 9. THIS SHEET CONTAINS TEST POINTS TP1-TP45, SEE SHEET 2 FOR TP46-TP86.
 8. LAST INSTANCES: C74 D30 J1 K3 P12 O13 R194 S3 TP86 U5 W30 WJ13 XV12 Z2
 7. ALL VOLTAGES MEASURED WITH RESPECT TO GROUND USING A TRUE RMS DVM OF AT LEAST 1MΩ INPUT IMPEDANCE AND OF 10M ΩDC INPUT IMPEDANCE. VOLTAGES MAY VARY +/-20%, TEST CONDITIONS:
 UNIT OPERATING AT RATED LINE VOLTAGE.
 BIAS SET TO 20mA PER OUTPUT TUBE. SEE NOTE 6.
 ALL DC AND SUPPLY MEASUREMENTS MADE WITH NO SIGNAL.
 ALL CONTROLS AT 50% ROTATION EXCEPT AS NOTED BELOW.
 R6 TWO GAIN AND R11 THREE GAIN AT 20% ROTATION (9 O'CLOCK).
 APPLIED SIGNAL AS SPECIFIED AT TP1 TO TEST EACH CHANNEL.
 BIAS ADJUSTMENT - NO SIGNAL APPLIED, RATED LINE VOLTAGE AT POWER TRANSFORMER PRIMARY, UNIT ON AND WARMED UP FOR AT LEAST TWO MINUTES. SET BIAS ADJUSTMENT R8 ON POWER SUPPLY PCA 007082000 TO OBTAIN A READING OF +90mV AT TP36. VOLTAGE SHOWN AT TP33 IS FOR REFERENCE ONLY AND WILL VARY FROM UNIT TO UNIT.

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TITLE: SERVICE DIAGRAM, COMBINED (schematic)
 EVH 5150III 100S AMPLIFIER
 MAIN PCA

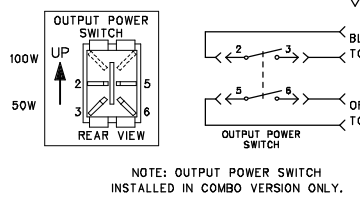
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APPROVED BY: _____
 DATE: _____

DRAWN: HAN LE ENGR: H.KAPLAN
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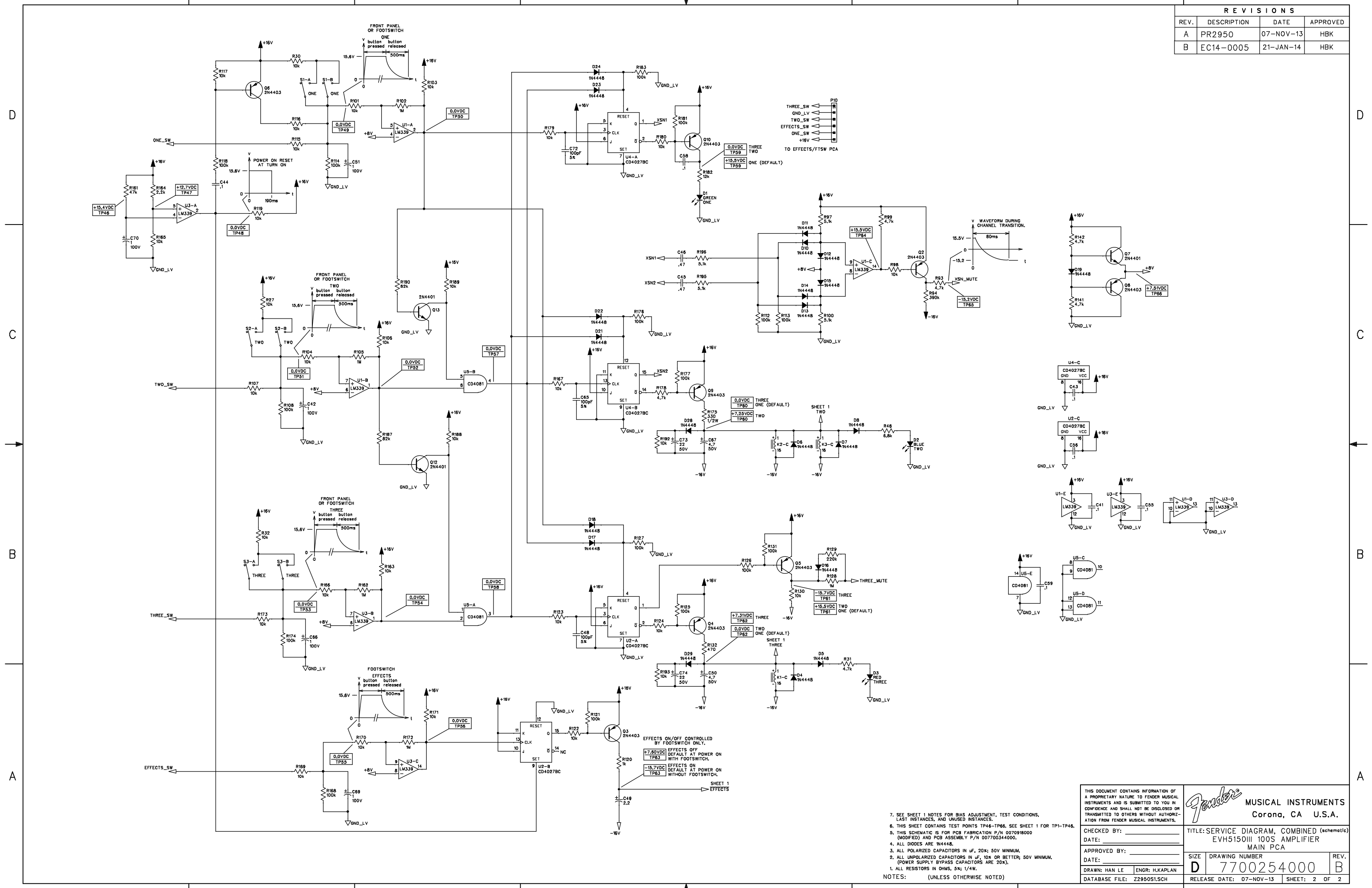
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RELEASE DATE: 07-NOV-13 SHEET: 1 OF 2



NOTES: (UNLESS OTHERWISE NOTED)

REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
A	PR2950	07-NOV-13	HBK
B	EC14-0005	21-JAN-14	HBK



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TITLE: SERVICE DIAGRAM, COMBINED (schematic)
EVH5150III 100S AMPLIFIER
MAIN PCA

CHECKED BY: _____
DATE: _____

APPROVED BY: _____
DATE: _____

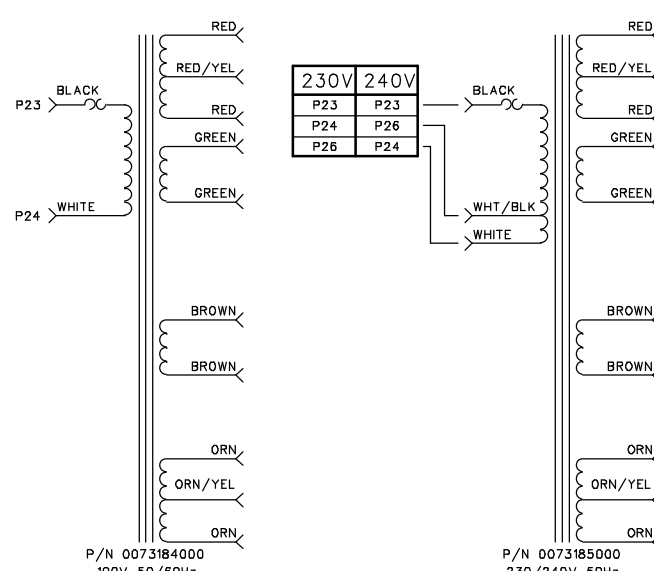
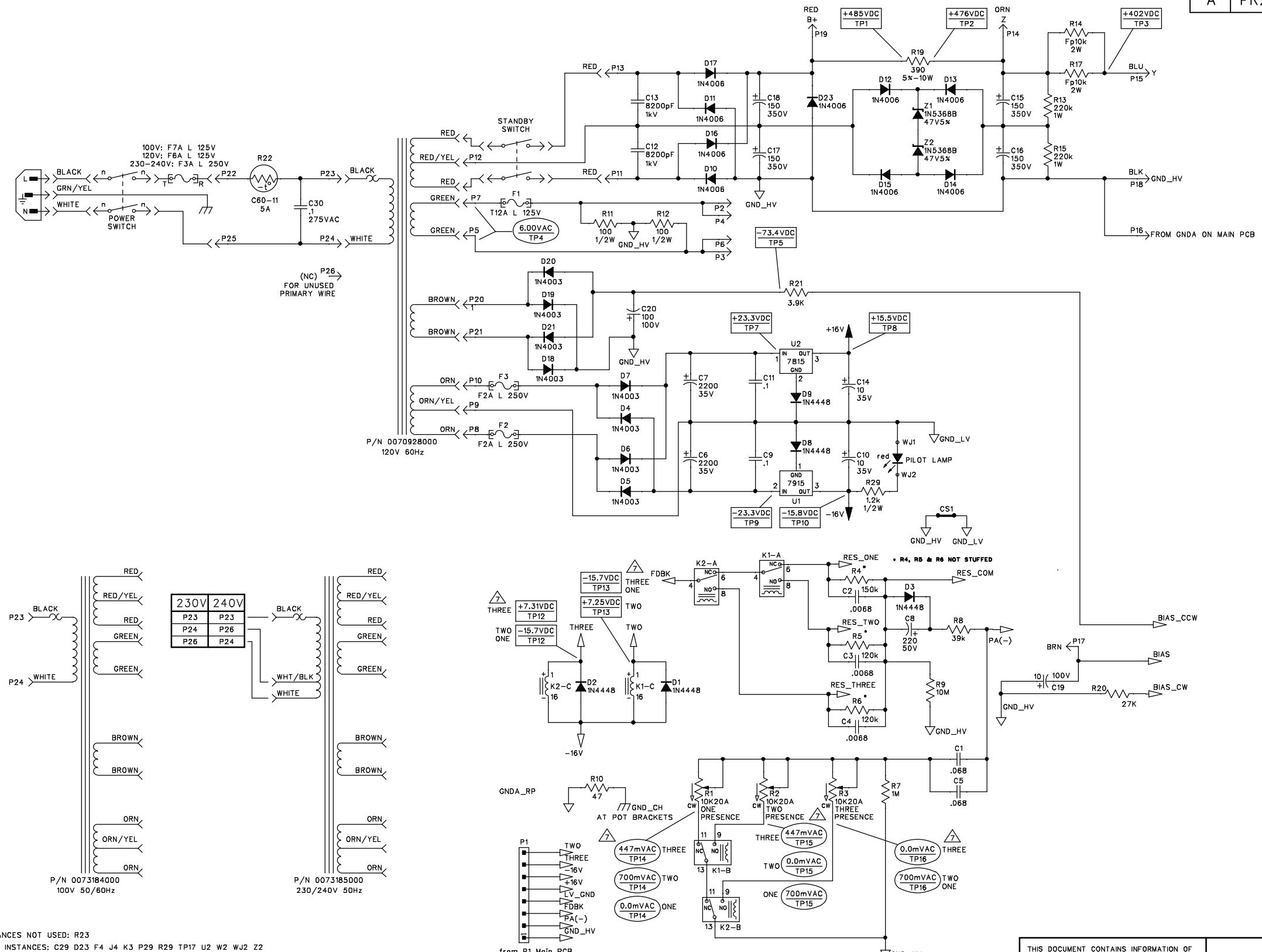
DRAWN: HAN LE ENGR: H.KAPLAN
DATABASE FILE: Z2950S1.SCH

SIZE: **D** DRAWING NUMBER: **7700254000** REV. **B**

RELEASE DATE: 07-NOV-13 SHEET: 2 OF 2

- SEE SHEET 1 NOTES FOR BIAS ADJUSTMENT, TEST CONDITIONS, LAST INSTANCES, AND UNUSED INSTANCES.
 - THIS SHEET CONTAINS TEST POINTS TP46-TP86. SEE SHEET 1 FOR TP1-TP45.
 - THIS SCHEMATIC IS FOR PCB FABRICATION P/N 0070918000 (MODIFIED) AND PCB ASSEMBLY P/N 007700344000.
 - ALL DIODES ARE 1N4448.
 - ALL POLARIZED CAPACITORS IN μ F, 20% 50V MINIMUM.
 - ALL UNPOLARIZED CAPACITORS IN μ F, 10% OR BETTER; 50V MINIMUM. (POWER SUPPLY BYPASS CAPACITORS ARE 20%).
 - ALL RESISTORS IN OHMS, 5% 1/4W.
- NOTES: (UNLESS OTHERWISE NOTED)

REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
A	PR2950	07-NOV-13	HBK

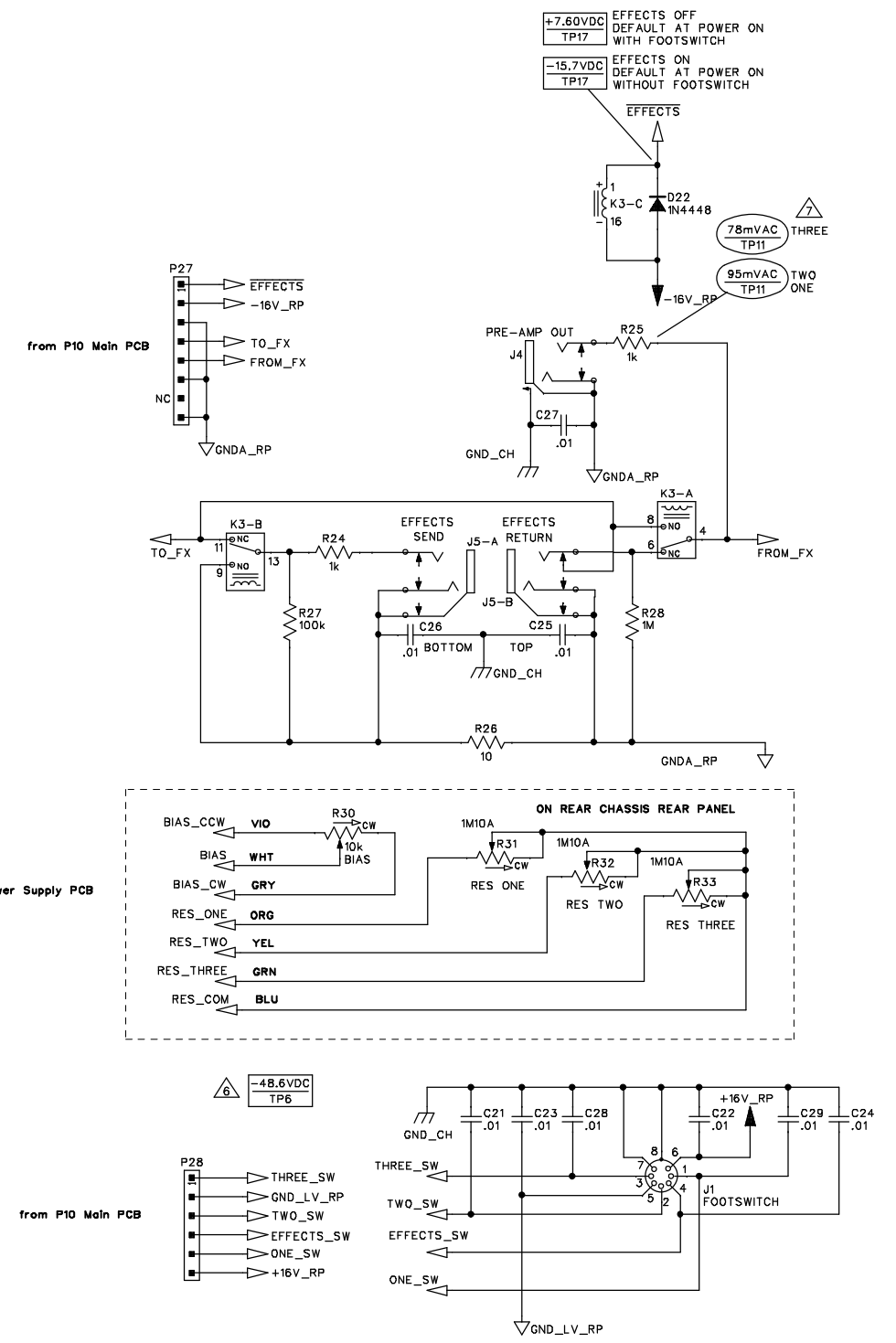


9. INSTANCES NOT USED: R23
8. LAST INSTANCES: C29 D23 F4 J4 K3 P29 R29 U17 U2 W2 WJ2 Z2
7. SEE SCHEMATIC 7700254000 SHEET 1 NOTE 7 FOR TESTING CONDITIONS. NOTE THE DIFFERENT INPUT SIGNAL VOLTAGES AND FREQUENCIES USED FOR TESTING EACH CHANNEL.
6. SEE SCHEMATIC 7700254000 SHEET 1 NOTE 6 FOR BIASING INSTRUCTIONS. VOLTAGE SHOWN AT TP6 IS FOR REFERENCE ONLY AND WILL VARY FROM UNIT TO UNIT.
5. THIS SCHEMATIC IS FOR PCB FABRICATION P/N 0070919000 (MODIFIED) AND PCB ASSEMBLY P/N 7700345000.
4. ALL DIODES ARE 1N4448.
3. ALL POLARIZED CAPACITORS IN μ F, 20%; 50V MINIMUM.
2. ALL UNPOLARIZED CAPACITORS IN μ F, 10% OR BETTER; 50V MINIMUM. (POWER SUPPLY BYPASS CAPACITORS ARE 20%).
1. ALL RESISTORS IN OHMS, 5%; 1/4W.

NOTES: (UNLESS OTHERWISE NOTED)

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CHECKED BY: _____ DATE: _____				TITLE: SERVICE DIAGRAM, COMBINED (schematic) EVH 5150III 100S POWER SUPPLY PCB
APPROVED BY: _____ DATE: _____		SIZE	DRAWING NUMBER	REV.
DRAWN: H.KAPLAN ENGR: H.KAPLAN DATABASE FILE: Z2950S2.SCH		C	7700253000	A
RELEASE DATE: 07-NOV-13		SHEET: 1 OF 2		

REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
A	PR2950	07-NOV-13	HBK



6. Parts on this page on rear panel PCB unless noted otherwise.
 5. THIS SCHEMATIC IS FOR PCB FABRICATION P/N 0070919000 (MODIFIED) AND PCB ASSEMBLY P/N 7700345000.
 4. ALL DIODES ARE 1N4448.
 3. ALL POLARIZED CAPACITORS IN μ F, 20%; 50V MINIMUM.
 2. ALL UNPOLARIZED CAPACITORS IN μ F, 10% OR BETTER; 50V MINIMUM. (POWER SUPPLY BYPASS CAPACITORS ARE 20%).
 1. ALL RESISTORS IN OHMS, 5%; 1/4W.
- NOTES: (UNLESS OTHERWISE NOTED)

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APPROVED BY: _____ DATE: _____		SIZE C	DRAWING NUMBER 7700253000
DRAWN: H.KAPLAN	ENGR: H.KAPLAN	REV. A	
DATABASE FILE: Z2950S2.SCH		RELEASE DATE: 07-NOV-13	SHEET: 2 OF 2