GUITAR AMPLIFIER

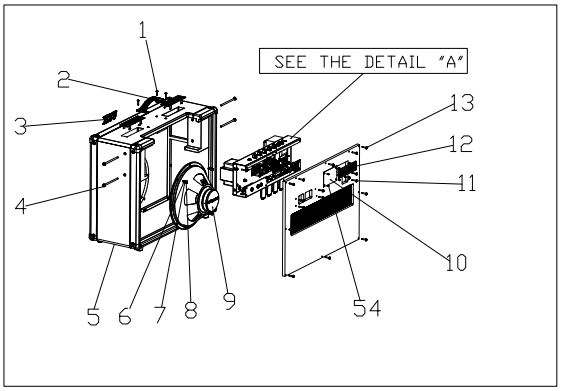
AC30S1

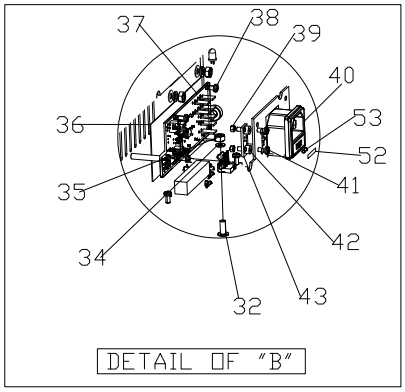
SERVICE MANUAL

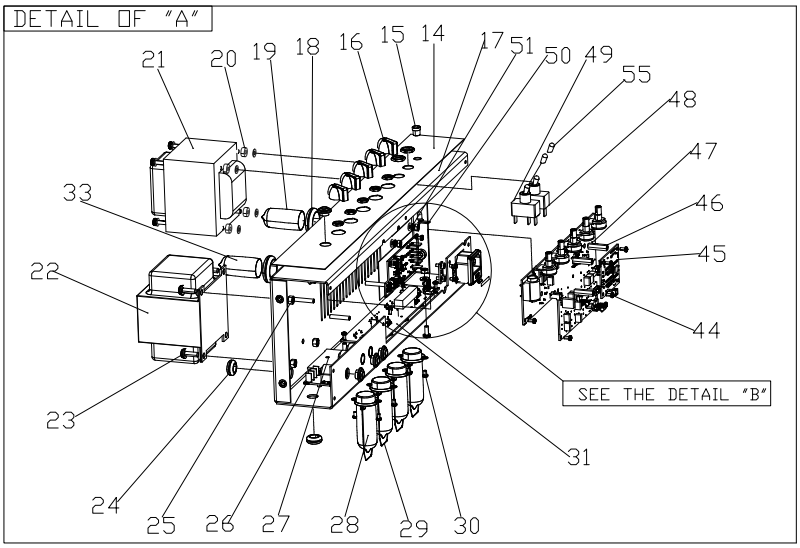
TABLE OF CONTENTS

VOX
AMPLIFICATION LTD.

Issued: Nov. 12, 2018
Ver. 1.0







ITEM	GPE P/N	DESCRIPTION	QTY
53	5120-1155+0	FUSE T1.25A 250V 5X20/EU/UK/AUS/ARG	1
	5120-0150+1	FUSE 2A 250V 20X5 SEMKO/JP/120V	1
52	3001-4871+0	LABEL WARNING 22X7 /AUS	1
	3001-5960+0	LABEL S/N MODEL 22X7 /JP/120V	1
51	2607-4008+0653	SPRING WASHER M4X0.8X6.5 MM BZ	4
50	PCB-30S121+LED	PCB ASSY LED COM AC30S1	1
49	5200-5057+0	PWR SW TOGGLE SPST/EU/UK/ARG	1
	5200-5020+0	PWR SW TOGGLE SPST/JP/AUS/120V	1
48	5200-5020+0	PWR SW TOGGLE SPST	1
47	PCB-30S121+PWR	PCB ASSY POWER EU/UK/ARG	1
	PCB-30S101+PWR	PCB ASSY POWER JP/AUS/120V	1
46	4136-0101+0	SPINDLE PCB M3X25 STEEL	3
45	PCB-30S121+REV	PCB ASSY REVERB COM	1
44	2900-3006+4000	SCREW PH M3X6	15
43	PCB-30S121+SW	PCB ASSY SW /EU/UK/ARG	1
⚠ 42	4136-1971+1	SPINDLE BOTTOM M3X10.5 BRASS	2
41	2904-3004+3000	SCREW MACHINE BIND HEAD /EU/UK/ARG	2
40	2113-3373+0	PWR INLET C14 CL1 250V 10A U	1
39	2640-3022+0540	EPR SWINUT HEX /EU/UK/ARG	2
38	2900-3004+4000	SCREW M3X4 /EU/UK/ARG	3
37	PCB-30S121+ERP	PCB ASSY ERP /EU/UK/ARG	1
36	4155-6471+0	SHEET PC 110X44 PC BK /EU/UK/ARG	1
35	2640-4030+0704	NUT HEX M4	1
34	2600-4008+1000	METAL WASHER M4x0.8x10mm YZ	1
33	4601-2AX0+1V	VALVE COMPACTRON 12AX7 V GRADE	1
32	2900-4008+4000	SCREW M4*8	1
31	PCB-30S121+AMP	PCB ASSY AMPLIFIER COM	1
30	2900-3006+3000	MS SCREW M3X6 BLACK	8
29	4135-9301+0	CLIP TUBE 34X27X6.8 METAL	4
28	460E-L840+1V	VALVE COMPACTRON EL84 V GRADE	4
27	PCB-30S121+FX	PCB ASSY FX COM AC30S1	1
26	PCB-30S121+OUTP	PCB ASSY OUTPUT COM	1
25	2640-4030+0683	NUT HEX M4X3X6.8 BZ	4
24	4154-0261+0	PLASTIC BUSHING	2
23	2900-4010+3030	PH W/WASHER M4X10 BL ZN	4
⚠ 22	1806-4291+0100	XFORMER AUDIO 173.2/0-14.9-21.4V	1
⚠ 21	1806-4290+0100	XFORMER PWR 120V 109W/120V	1
	1806-42B8+0100	XFORMER PWR 240/250V 109W/AUS	1
	1806-42B7+0100	XFORMER PWR 230/250V 109W/EU/UK/ARG	1
	1806-42B9+0100	XFORMER PWR 100/250V 109W JP	1
20	2600-4040+0800	WASHER METAL 4X4X8 YZ	4
19	4601-2AX0+1C	VALVE COMPACTRON 12AX7 C GRADE	1
18	4155-4071+0	GROMMET-VALVE D30X1.6 PVC	2
17	1409-5711+1	CHASSIS MAIN 450X150X76/EU/UK/ARG	1
	1409-5701+1	CHASSIS MAIN 450X150X76/JP/AUS/120V	1
16	2447-9002+1	KNOB CHICKENHEAD 31.9X17 BX1	5
15	4172-0190+0	LED HOLDER D9.25X13.4 ME TAL+PC	1
14	146A-1901+0	PANEL TOP 450X63X0.8 PC	1
13	2912-4032+3061	SCREW TA-C1 D-CS 4X32 CR LCS	7
12	1468-6201+1	VENT-LARGE PP BLK 94V0	3
11	2902-4022+3061	SCREW MACH D-CS 4X22 CR LCS	10
10	1408-670S+0	PLATE REAR SECC T=0.5 BK/120V	1
	1408-670V+0	PLATE REAR SECC T=0.5 BK/AUS	1
	1408-670T+0	PLATE REAR SECC T=0.5 BK /EU/UK/ARG	1
	1408-670R+0	PLATE REAR SECC T=0.5 BK/JP	1
9	CLSD5729+09CNX1	TS729 G1P-80 16OHM (DIC) VOX	1
8	2904-5018+3000	SCREW MACH BIND 5X18 CR	4
7	2607-5012+0853	WASHER SPRING M5X1.2X8.5 BZ	4
6	2600-5008+1003	WASHER METAL M5X0.8X10	4
5	1402-9341+0CZ	WOOD CAB 650X260X487 MDF T18	1
4	2803-0001+3000	SCREW MACH TRU 6X110 CR	4
3	2150-7361+0	BADGE VOX PLASTIC PLATING	1
2	4155-4273+0	HANDLE TOP 187X25.8X15.8PVC	1
1	2902-4022+4000	SCREW MACH D-CS 4X22 CR	4

ITEM	GPE P/N	DESCRIPTION	QTY
55	1469-7001+0	SWITCH CAPS TOP DBX1B PVC BLK	2
54	2910-3008+3000	SCREW TA-C1 PAN M3X8 CR LCS-BZ	4

ISSUE	DESCRIPTION	DWG. BY	APP. BY	DATE
B	UPDATE ITEM 21/22/42 ⚠	Vincent Ye		2018.05.15
A	DRAWING RELEASE	Eddy Chen		2018.03.24

GP Electronics(SZ)Limited

MATERIAL:

UNLESS SPECIFIED COMPLY WITH THE RoHS2.0

FINISHING:

TITLE: AC30S1 ASSEMBLY EXPLODE DWG

SCALE: MODEL NO.: VTMG30S1+07CSX1

UNIT:MM SIZE:A0 PART NO.:

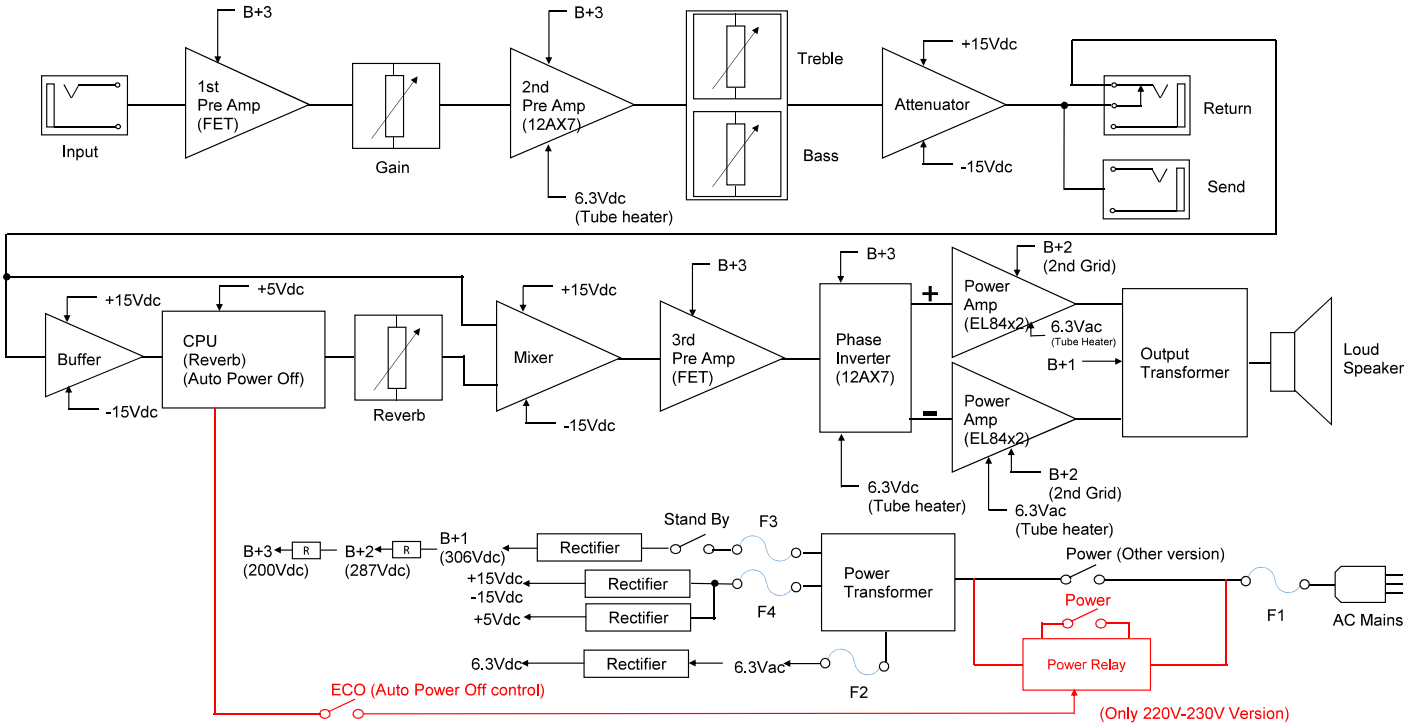
PRJ 3rd ANGLE

SHEET 1 OF 1 ISSUE: B

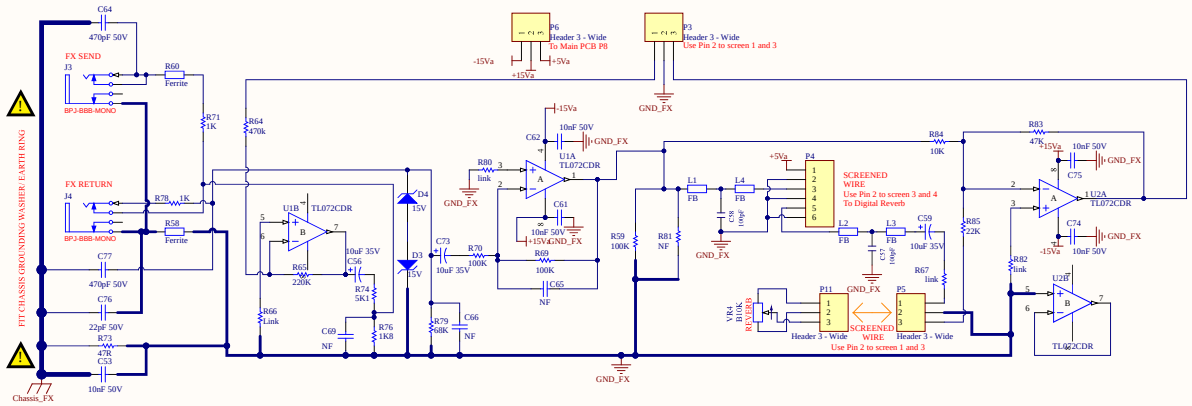
LINEAR DIMENSIONS BY SEGMENTS (MM)										
TOLERANCE GRADE	0.5~3	3~6	6~30	30~120	120~315	315~400	400~500	500~630	630~800	800~1000
M GRADE	±0.1	±0.1	±0.2	±0.3	±0.5	±0.7	±0.8	±1.2	±1.6	±2.0
C GRADE	±0.2	±0.3	±0.5	±0.8	±1.2	±1.8	±2.0	±3.0	±4.0	±5.0

ANGULAR DIMENSIONS BY SEGMENTS (MM)					
TOLERANCE GRADE	400	400~800	800~1250	1250~2000	>2000
M GRADE	±0°	±30'	±20'	±15'	±10'
C GRADE	±1°30'	±1°	±30'	±20'	±15'

UNLESS OTHERWISE SPECIFIED, TOLERANCE COMPLY THIS TABLE

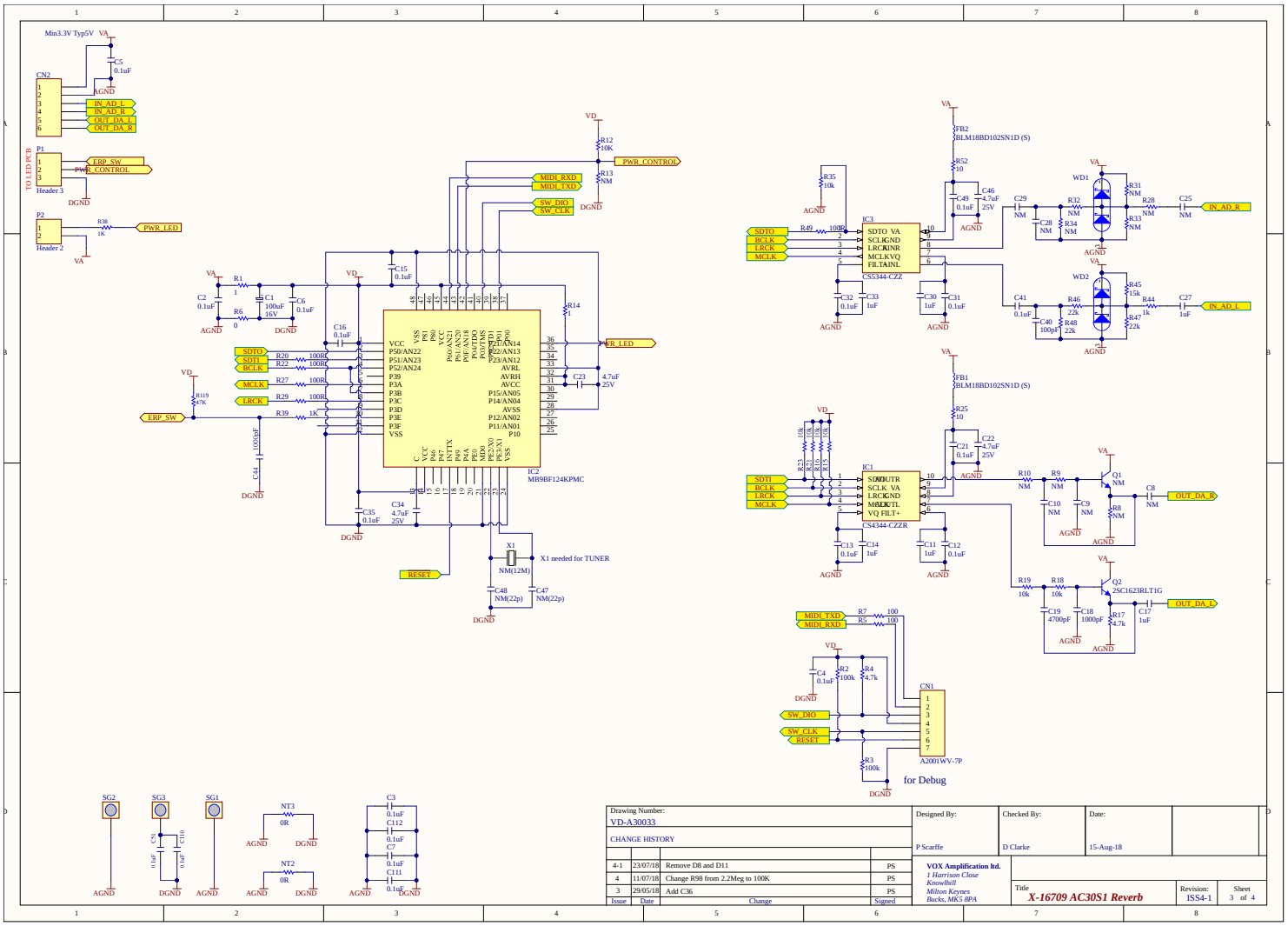


AC30C1 Block Diagram



Drawing Number: VD-A30032				Designed By:	Checked By:	Date:	
CHANGE HISTORY				P Scarffe	D Clarcke	15-Aug-18	
4-1	23/07/18	Remove D8 and D11	PS	**VOX Amplification ltd.** *1 Harrison Close Knowlhill Milton Keynes Bucks, MK5 8PA*			
4	11/07/18	Change R98 from 2.2Meg to 100K	PS				
3	29/05/18	Add C36	PS				
Issue	Date	Change	Signed				

Title	Revision:	Sheet
X-16709 AC30S1 FX S/R	1SS4-1	2 of 4



Drawing Number: VD-A30033	Designed By:	Checked By:	Date:
CHANGE HISTORY	P Scarffe	D Clarke	15-Aug-18

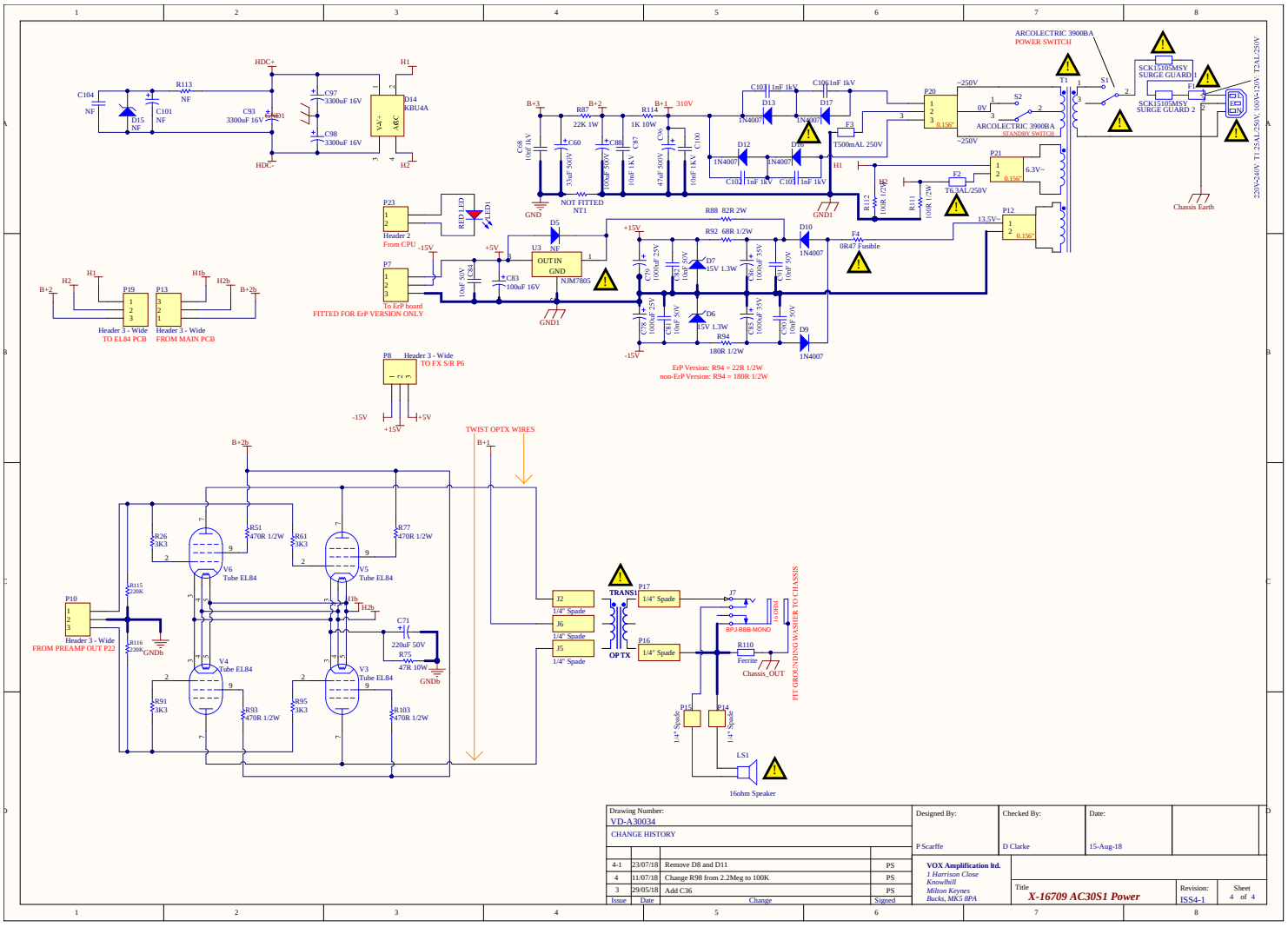
Issue	Date	Change	Signed
4-1	23/07/18	Remove D8 and D11	PS
4	11/07/18	Change R98 from 2.2Meg to 100K	PS
3	29/05/18	Add C36	PS

VOX Amplification ltd.
1 Harrison Close
Knowlhill
Milton Keynes
Bucks, MK5 8PA

Title: *X-16709 AC30S1 Reverb*

Revision: ISS4-1

Sheet 3 of 4



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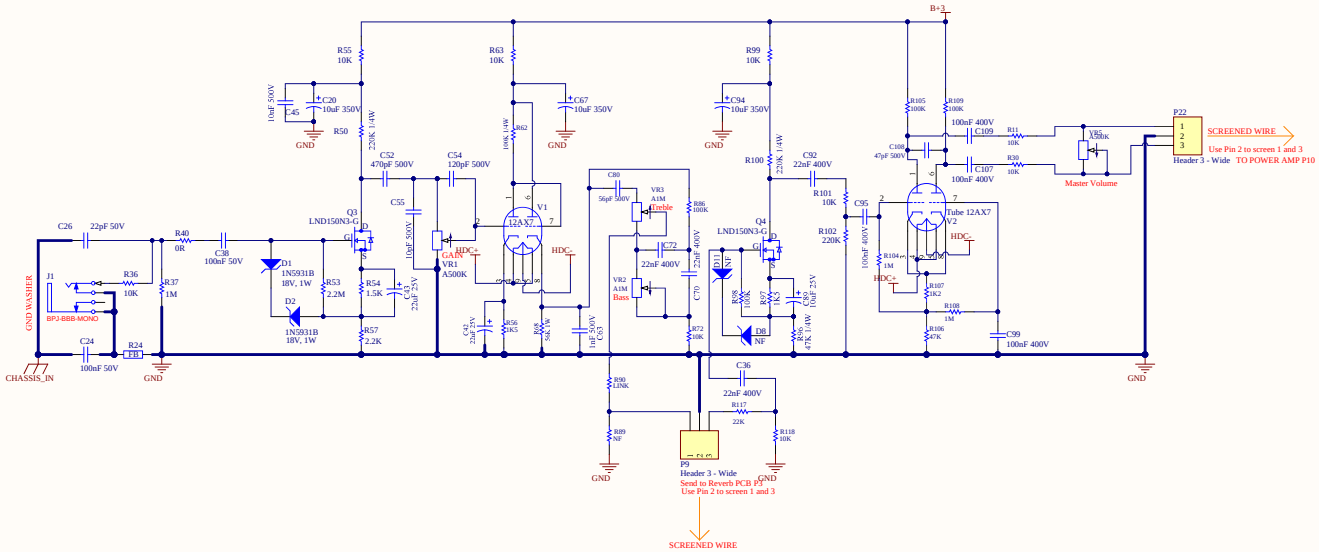
CHANGE HISTORY				P Scarffe	D Clarke	15-Aug-18	
Issue	Date	Change	Signed				
4-1	23/07/18	Remove D8 and D11	PS				
4	11/07/18	Change R98 from 2.2Meg to 100K	PS				
3	29/05/18	Add C36	PS				

VOX Amplification ltd.
1 Harrison Close
Knowlhill
Milton Keynes
Bucks, MK5 8PA

Title: ***X-16709 AC30S1 Power***

Revision: ISS4-1

Sheet 4 of 4



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CHANGE HISTORY			P Scarffe	Dave Clarke	15-Aug-18	
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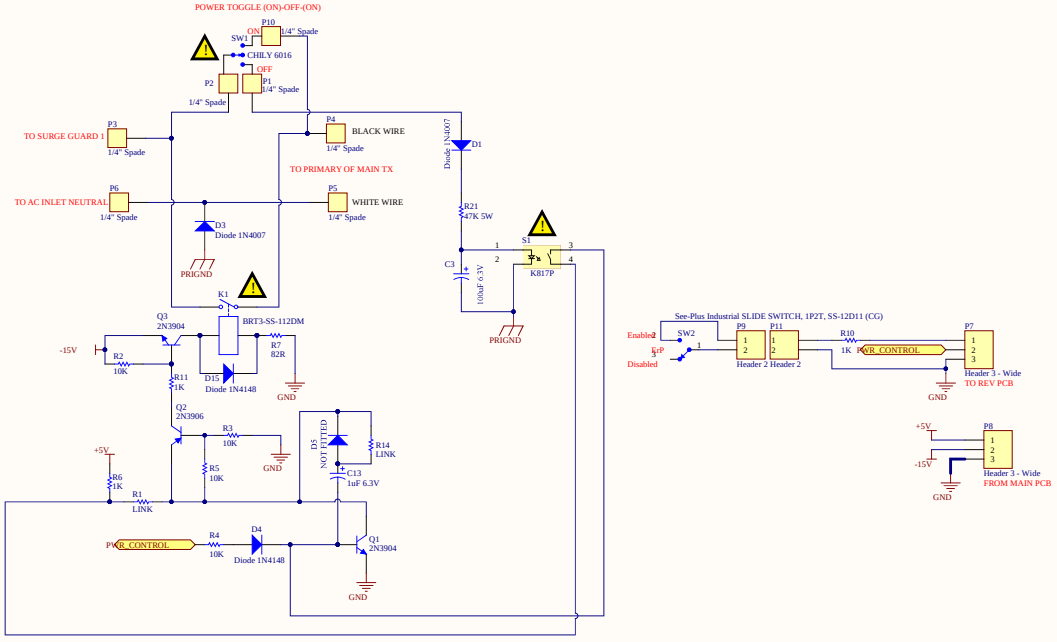
4	11/07/18	Change R98 from 2.2Meg to 100K	PS			
3	29/05/18	Add C36	PS			
Issue	Date	Change	Signed			

Only 220-230V



SAFETY CRITICAL COMPONENT
REPLACE ONLY WITH THE SAME TYPE & RATING
IF IN DOUBT CONTACT SUPPLIER

Issue	Reason for change	Date	Revised by

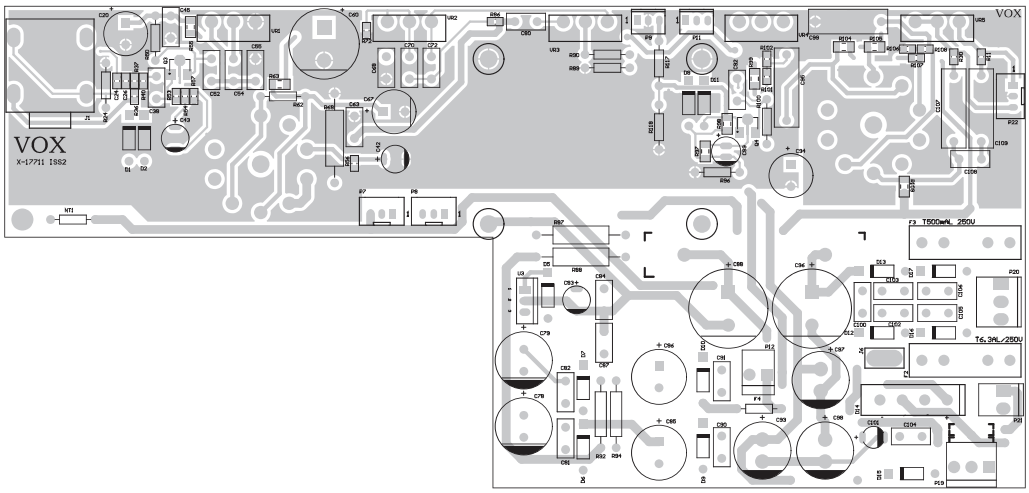
Author: P. Scarffe	Title: *AC30S1 ErP*		**VOX Amplification ltd.** *1 Harrison Close Knowlhill Milton Keynes Bucks. MK5 8PA*
Checked By:	Size: A3	Number: VD-A30035	Revision: ISS2
	Date: 09-Mar-18	Time: 9:01:52 AM	Sheet 1 of 1
	File: V:\Altium\Projects\AC30C1\AC25C1 ErP\AC25 ErP.SchDoc		

PCB LAYOUT

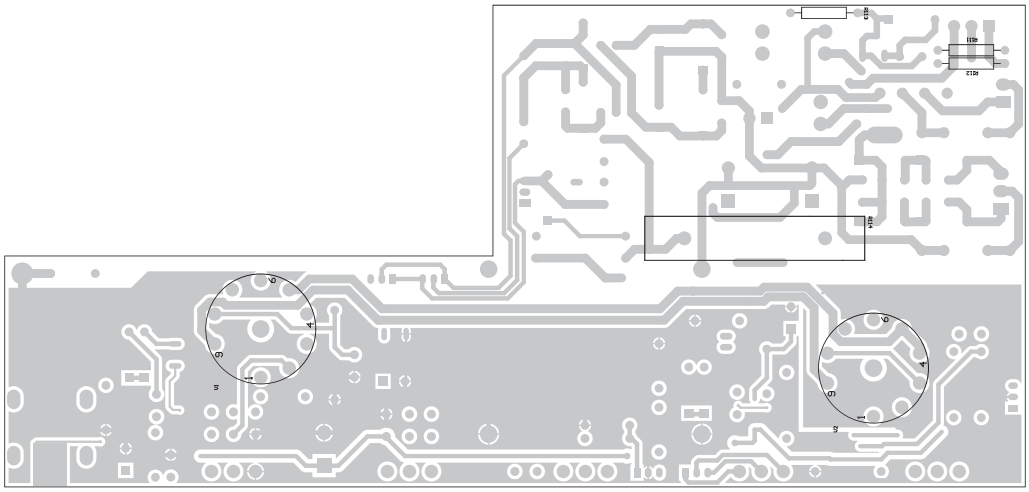
POWER PCB

Lot: Q-05(1st lot) to Q-07

top side



bottom side

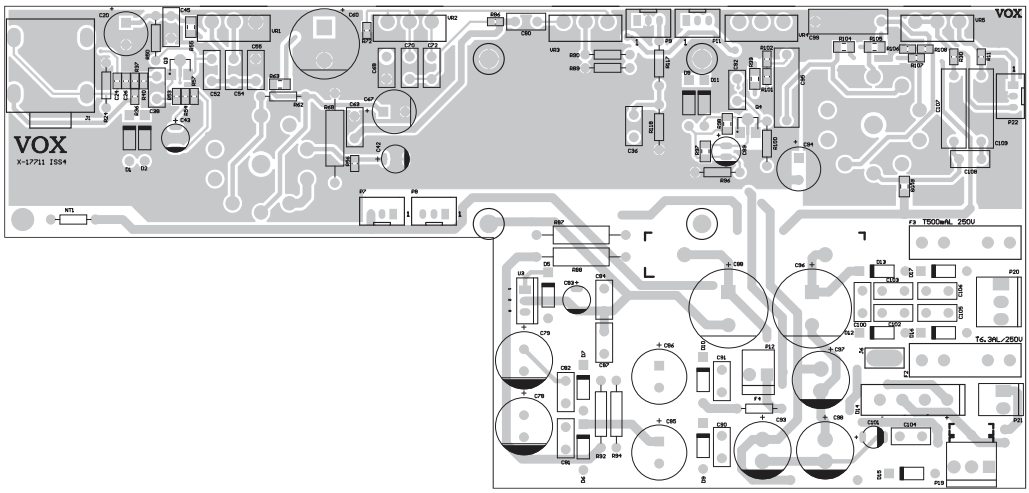


PCB LAYOUT

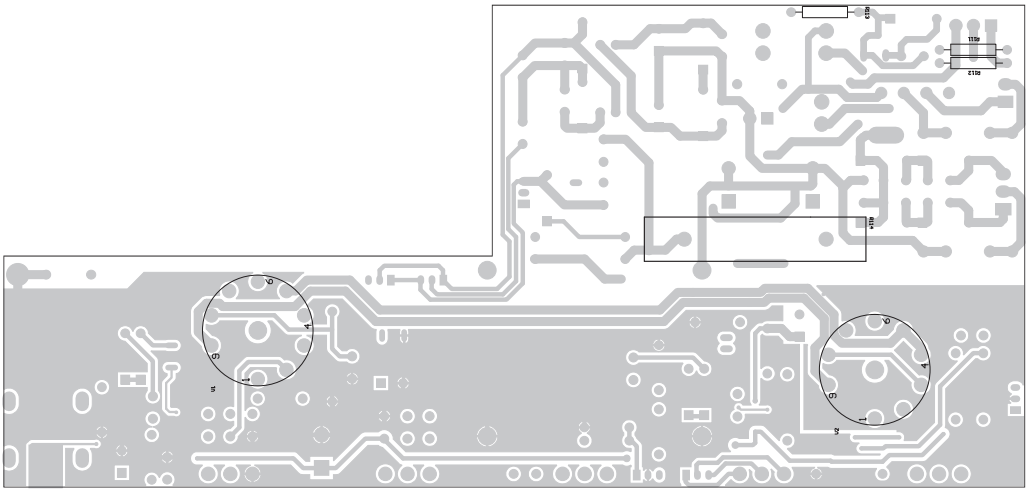
POWER PCB

Lot: Q-08~

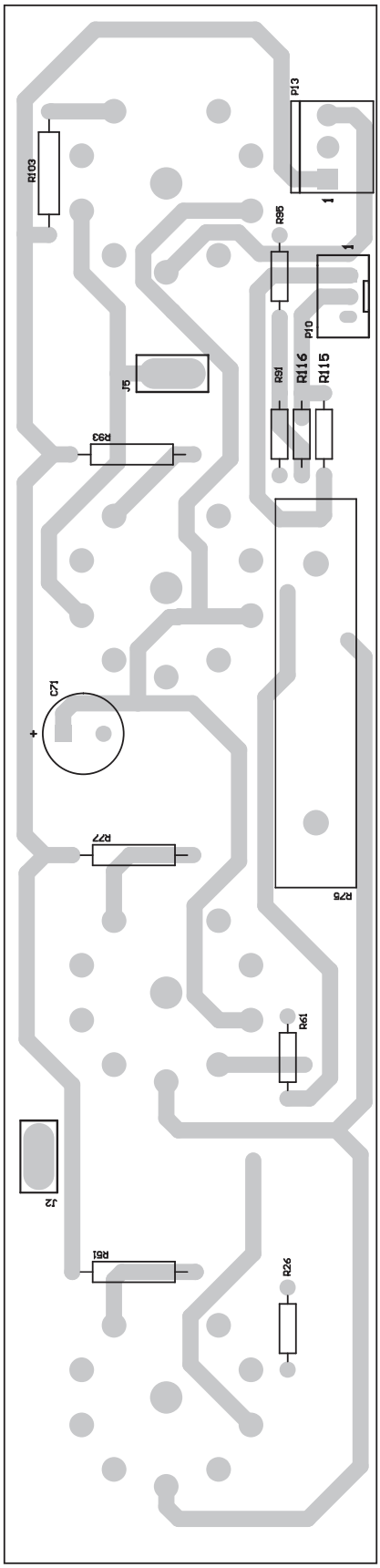
top side



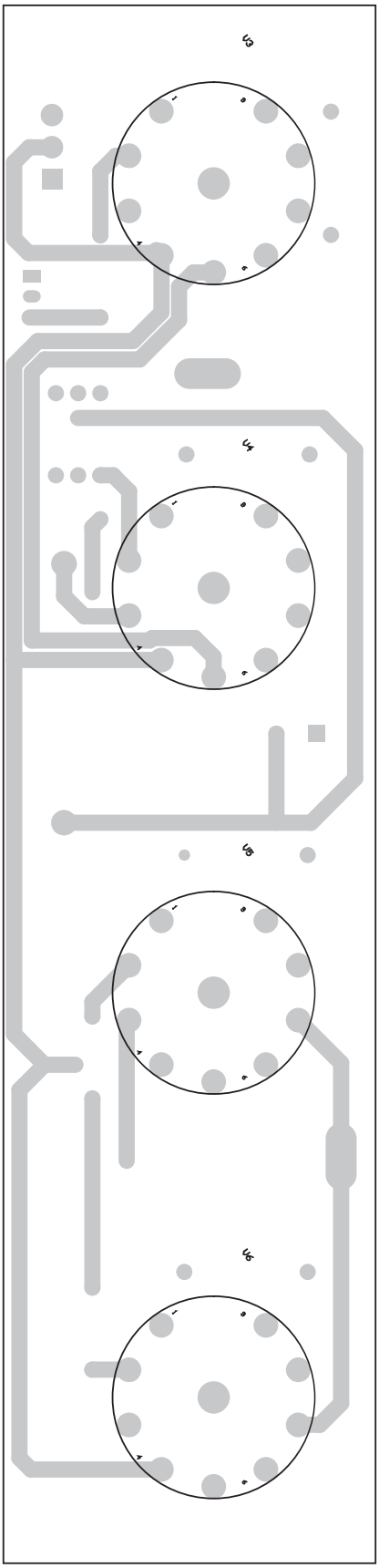
bottom side



AMPLIFIER PCB

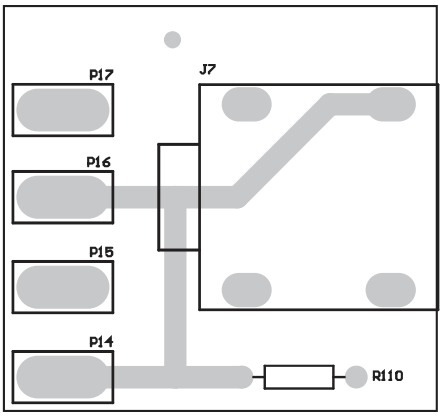


top side

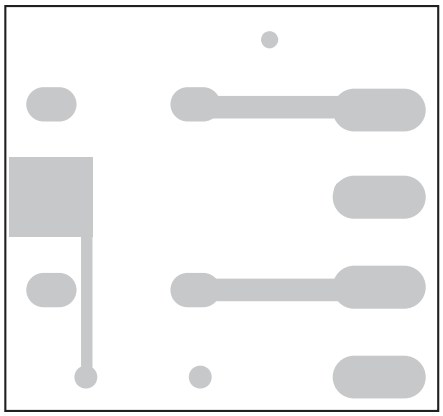


bottom side

OUTPUT PCB



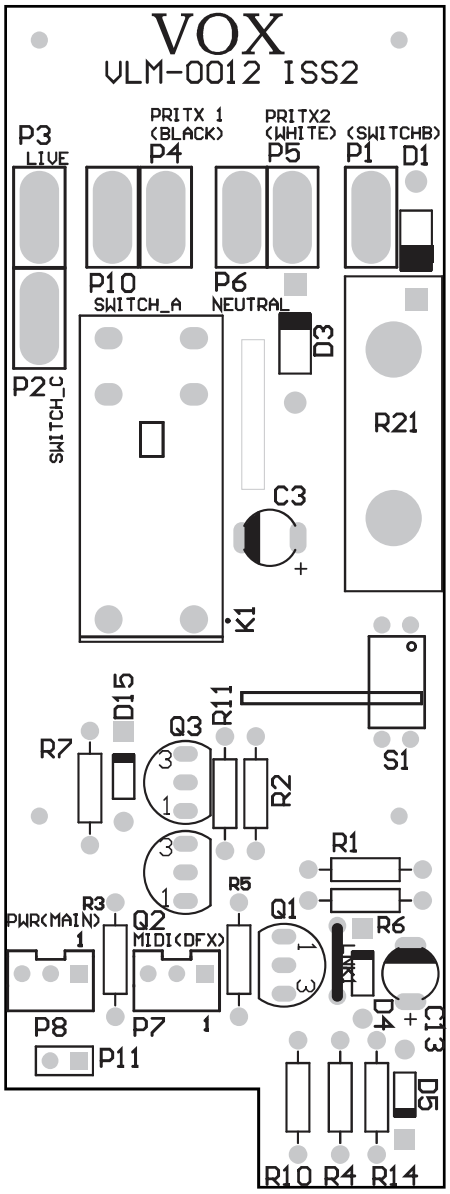
top side



bottom side

ERP PCB

Only 220-230V



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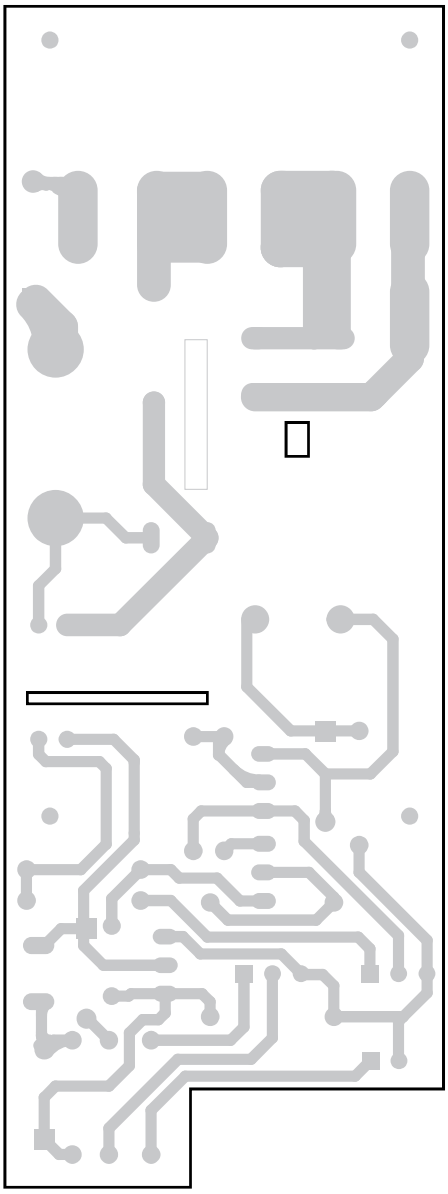
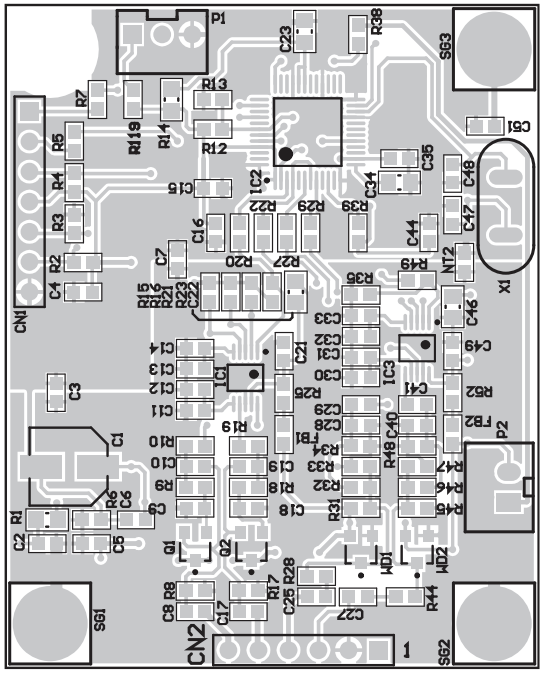


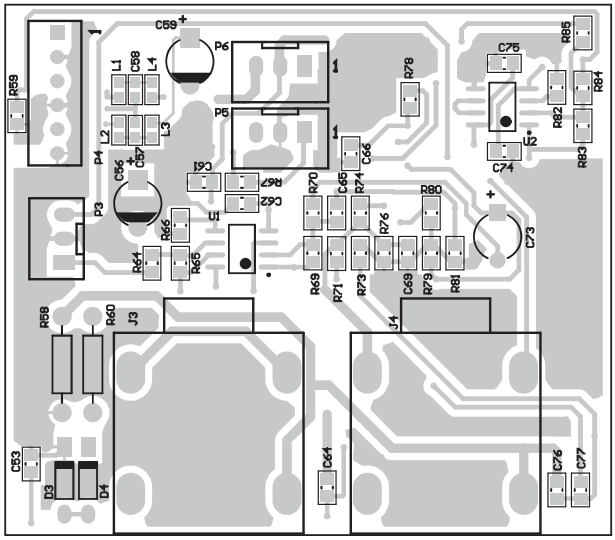
bottom side

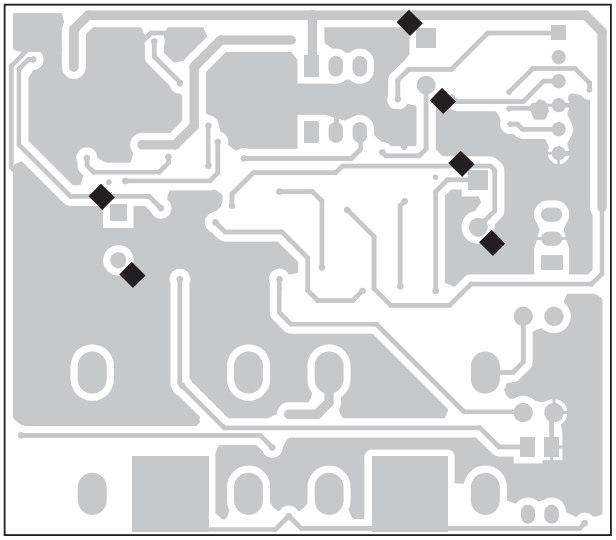
REVERB PCB



top side　　bottom side

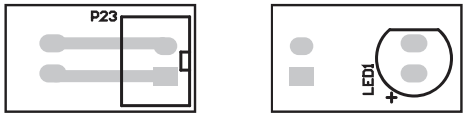
FX PCB





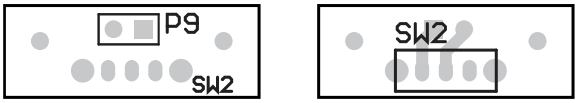
top side　　bottom side

LED PCB



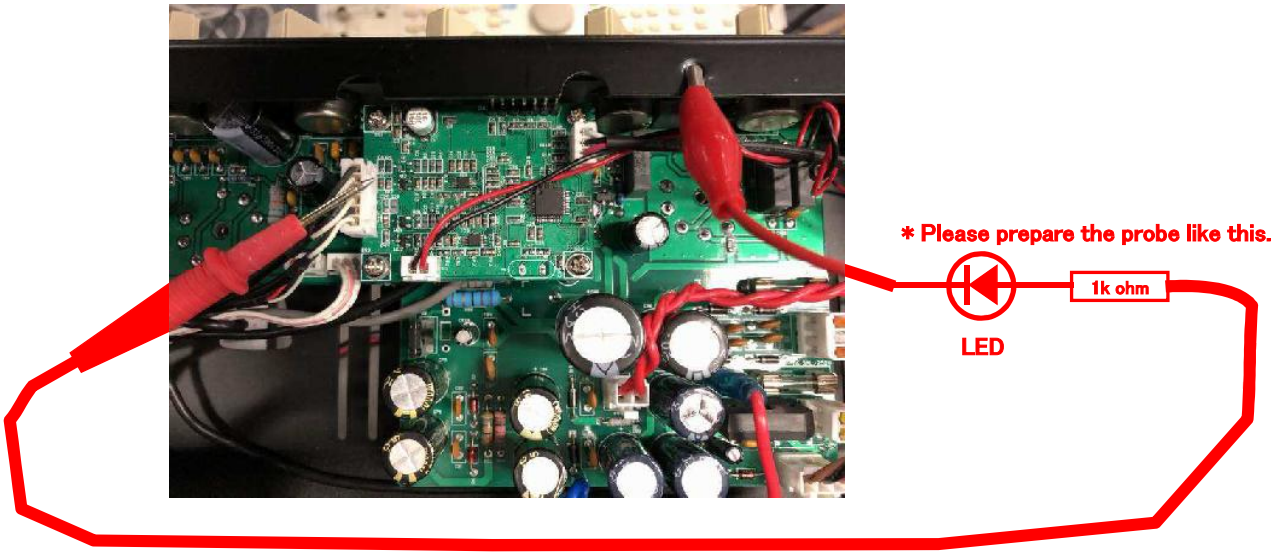
top side　　bottom side

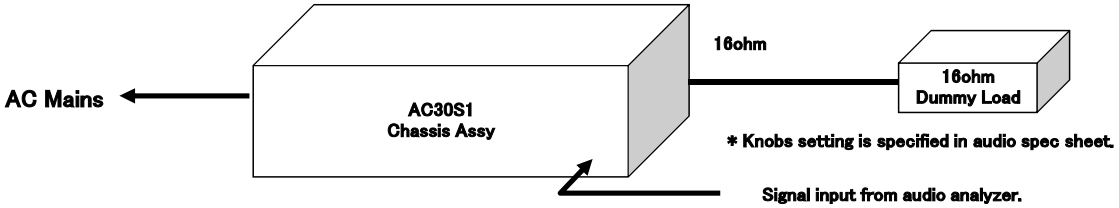
SW PCB

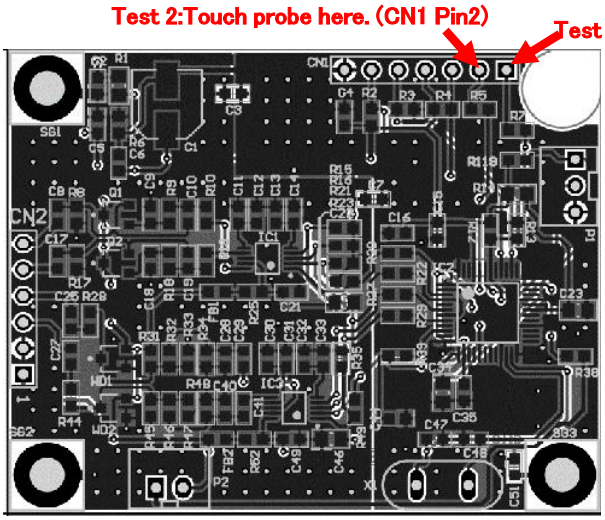


top side　　bottom side

AC30S1 Erp function test procedure







AC30S1 Reverb PCB

Test1: Count Down Timer function check.
~~Power is ON =>~~ ~~Stand-By SW is ON =>~~ ECO SW is switched to ECO.
No INPUT: Probe LED is lit off. (LED Off means Count Down Timer is working.)
High level signal input: Probe LED is lit on. (LED On means Count Down Timer is stopped.)
Low level signal input: Probe LED is lit off.
When ECO SW is OFF: Probe LED is lit on.
* Signal level are specified in audio spec sheet.

Test2: Auto Power Off function check.
ECO SW is switched to ECO.
When touch probe for 0.5 second, power is turned off automatically.

AC30S1 Audio Test
Load: 16ohm resistance

ITEM	Check Point	Knob Positions					Input conditions	Filters			SLOW	Value
		GAIN	BASS	TREBLE	REVERB	VOLUME		80k	20k	AUDIO		
1	* EXTERNAL SPEAKER (16ohm)	MAX	MIN	MIN	MIN	MAX	1kHz/−50dBm	o				17dBm ~ 23dBm
	Internal speaker (16ohm)	↓	↓	↓	↓	↓						
2	GAIN − max	↓	↓	↓	↓	↓	1kHz/−50dBm	o				17dBm ~ 23dBm
3	Insert cable plug to RETURN	↓	↓	↓	↓	↓	1kHz/−50dBm					Output Off
4	Insert cable plug to SEND	↓	↓	↓	↓	↓	1kHz/−50dBm					17dBm ~ 23dBm
5	Remove cable from SEND & RETURN	↓	↓	↓	↓	↓	1kHz/−50dBm					17dBm ~ 23dBm
6	GAIN − min	MIN	↓	↓	↓	↓	1kHz/−50dBm			o		−65dBm ~ −40dBm The fluctuation should be less than 1dB.
7	BASS − min	MAX	↓	↓	↓	↓	100Hz/−50dBm	o			o	−2dBm ~ 6dBm
8	BASS − max	↓	MAX	↓	↓	↓	100Hz/−50dBm	o			o	16dBm ~ 24dBm
9	TREBLE − min	↓	MIN	↓	↓	↓	10kHz/−50dBm	o				14dBm ~ 20dBm
10	TREBLE − max	↓	↓	MAX	↓	↓	10kHz/−50dBm	o				22dBm ~ 30dBm
11	adjusting GAIN (+29.0dBm ou	Adjust	↓	MIN	↓	↓	1kHz/−20dBm	o				**Set Level to + 29.0dBm (+28.9dBm~+29.1dBm)**
12	DISTORTION	↓	↓	↓	↓	↓	1kHz/−20dBm		o		o	≦22 %
13	CHECK REVERB (ex). remove INPUT jack and	↓	↓	↓	MAX	↓	1kHz/−20dBm		o		o	
14	VOLUME − min	MAX	↓	↓	MIN	MIN	1kHz/−20dBm			o	o	< −5dBm
15	ALL MAX NOISE	↓	MAX	MAX	MAX	MAX	OSC OFF			o	o	−55dBm ~ −25dBm
16	Remove Input Plug	↓	↓	↓	↓	↓	No Input			o	o	−55dBm ~ −25dBm
	* Erp Function Test (230V only)	↓	MIN	MIN	MIN	MIN						
17	Erp function check No Input	↓	↓	↓	↓	↓	No Input	Test Probe LED is lit off (CH1 Pin1)				
18	Erp function check level high	↓	↓	↓	↓	↓	1kHz/−5dBm	Test Probe LED is lit on (CH1 Pin1)				
19	Erp function check level low	↓	↓	↓	↓	↓	1kHz/−50dBm	Test Probe LED is lit Off (CH1 Pin1)				
20	ECO Switch check	↓	↓	↓	↓	↓	1kHz/−50dBm	Test Probe LED is lit on (CH1 Pin1)				
21	Auto Power Off check	↓	↓	↓	↓	↓		Touch Probe to CH1 Pin2 and the power is turned off				
	Factory Set Up	MIN	MIN	MIN	MIN	MIN	**POWER SW is off, HT SW is STAND BY.**					

"Filters" are applied to Panasonic VP−7723.

VOX AC30S1 Parts List

⚠ : SAFETY CRITICAL COMPONENT.
EXP=EXPLODED VIEW Item No

Code	Part Name	Location	EXP	Reference	QTY
530000003637	PCB ASSY POWER COM	POWER	47	for 220-230V only (R94 = 22R 1/2W)	1
530000003638	PCB ASSY POWER JP AC30S1	POWER		others (R94 = 180R 1/2W)	
530000003645	CC 500V 10P 10% RLT	POWER		C55	1
530000003640	CC 500V 47P 10% RLT	POWER		C108	1
530000003649	CC 500V 56PF 10% RLT 5X5	POWER		C80	1
530000003644	CC 500V 120P 10% RLT 5X5	POWER		C54	1
530000003643	CC 500V 470PF 10% RLT	POWER		C52	1
530000003647	CC 500V 1000P 10% RLT	POWER		C63	1
530000002605	CC 1000V 1000P 10% RLT	POWER		C102,C103,C105,C106	4
530000003639	CC 1KV 0.01u 20% RL	POWER		C68, C87, C100	3
530000002418	CC 500V 10NF 10% RLT 5X5	POWER		C45	1
530000003648	CC 500V 22NF 10% RLT 5X5	POWER		C70, C72, C92	3
530000003642	CM 400V 0.1U 5% RB	POWER		C95, C99, C107,C109	4
530000002417	CE 400V 10U 20% RL 10X16	POWER		C20, C67, C94	3
530000003646	CE 500V 33U 20% RL 16X25	POWER		C60	1
530000003651	CE 500V 47U 20% RL 16X30	POWER		C96	1
530000003650	CE 500V 100U 20% RL 18X	POWER		C88	1
530000003374	DZ 1W 18V 5% 1N5931B AT	POWER		D1, D2, D8, D11	4
530000003181	DZ 1.3W 15V 10% AT	POWER		D6,D7	2
530000002089	DIODE IN4007-F AT	POWER		D9, D10, D12, D13, D16, D17	6
530000003641	RMF 1W 22K 5% AT	POWER		R87	1
530000003653	RWR 10W 1K 5% SQZ RL	POWER		R114	1
530000003654	RMF 1W 56K 5% AT	POWER		R68	1
530000003655	RMF 2W 82R 5% AT	POWER		R88	1
530000003377	VR ROTARY A500KX1 20% V	POWER		VR1, VR5	2
530000002631	VR ROTARY A1MX1 30% V	POWER		VR2, VR3	2
530000003656	VR ROTARY 10KBX1 20% H	POWER		VR4	1
530000002094⚠	FUSE T6.3A 250V	POWER		F2	1
530000001929⚠	FUSE T500MA 250V	POWER		F3	1
530000003652⚠	RMF 1/4W 0.47R 5% AT	POWER		F4	1
530000002060	SOCKET 9PIN 500V D=22	POWER		V1,V2	2
530000003657	PCB ASSY AMPLIFIER COM	AMPLIFIER	31		1
530000003658	RWR 10W 47R 5% SQZ RL	AMPLIFIER		R75	1
530000002060	SOCKET 9PIN 500V D=22	AMPLIFIER		V3,V4,V5,V6	4
530000003659	PCB ASSY FX COM AC30S1	FX	27		1
530000002637	DZ 1/2W 15V 5% TEMIC AT	FX		D3, D4	2
530000003660	IC TL072CDR OPAMP DUAL	FX		U1, U2	2
530000003661	PCB ASSY LED COM AC30S1	LED	50		1
530000003662	PCB ASSY OUTPUT COM	OUTPUT	26		1
530000003663	PCB ASSY REVERB COM (DATA)	REVERB	45		1
530000003664	PCB ASSY ERP EU UK	ERP	36	for 220-230V Only	1
530000002089	DIODE IN4007-F AT	ERP		D1, D3	2
530000003385	TR 2N3904TA RLT	ERP		Q1, Q3	2
530000003665	TR 2N3906 RLT TO92	ERP		Q2	1
530000003178	RWR 5W 47K 5% SQZ RL	ERP		R21	1
530000003177⚠	RELAY 12V 0.033A SPST RE	ERP		K1	1
530000003180⚠	PHOTOCOUPLER EL817	ERP		S1	1
530000003666	PCB ASSY SW EU UK AC30S1	SW		for 220-230V Only	1
530000003387	SW SLIDE SPDT 12V 0.1A	SW		SW2	1
530000003667⚠	HANDLE-TOP 187X25.8X15.8		2		1
530000001874	Logo 45X11		3		1
530000001584	T5729 G12P-80 16OHM [OIC] VOX		9	Loud Speaker	1
530000002046⚠	VENT-LARGE PP BLK 94V0		12		3
530000002923	KNOB-CHICKENHEAD AC4C1		16		5
530000002617	RUBBER RING(COMPACTRON)		18		2

Code	Part Name	Location	EXP	Reference	QTY
530000002080	VALVE COMPACTRON 12AX7B		19		2
530000003671	XFORMER PWR 120V 109W/120V		21		1
530000003672	XFORMER PWR 240/250V 109W/AUS				
530000003673	XFORMER PWR 230/250V 109W/EU/UK/ARG				
530000003674	XFORMER PWR 100/250V 109W/JP				
530000003675	XFORMER AUDIO 173.2/0-14.9-21.4V		22		1
530000002081	VALVE COMPACTRON EL84		28		4
530000002067	CLIP TUBE 34X27X68 METAL		29		4
530000002611	AC INLET M 3P 250V 10A(NT50H)		40		1
530000002101	THERMISTOR NTC 10R 20%				1
530000002641	SWITCH POWER SPST 250V		48, 49		1or2
530000003184	SWITCH POWER TOGGLE SPDT		48	for 220-230V Only	1or0
530000001920	FUSE T1.25A 250V		53	for 220-230V, 240V	1
530000002096	FUSE 2A 250V			for 100V, 120V	
530000003436	SWITCH CAPS TOP D8X18 PVC BLK		55		2
530000001887	CORD-AC POWER UK 3X0.75	Accessories		CORD-AC(UK)	1
530000001888	CORD-AC UL/CSA 125V 10A	Accessories		CORD-AC(US)	
530000001889	POWER CORD 10A AUSTRALIA	Accessories		CORD-AC(AUS)	
530000001890	CORD-AC CE 250V 10A	Accessories		CORD-AC(EU)	
530000001891	CORD-AC JAP 100V 12A	Accessories		CORD-AC(JP)	

AC30S1 modification for reduce noise

9-Jun-18

Summary: Some units happen the noise when turn on the power and for a few minutes continue and finally disappear.

Corresponding Lot number: Q05~Q07

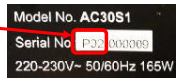
Action: Adding capacitor as shown below.

＊The capacitor has added in the factory from Lot number Q06, but a few units still happen this noise. In this case, remove D8 & D11.

23-Jul-18

[Parts] ・Ceramic capacitor 22nF 250V usage:1pcs/1product

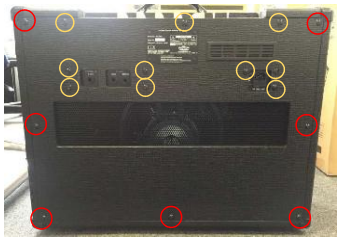
Lot number



[Procedure]

【1】Bring out the product from packing box.

Loosen the screws at marking points as below, and remove the backboard.

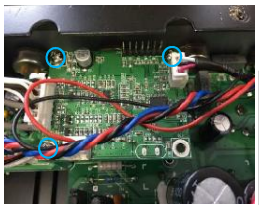


◯ : 7 screws for woodworking

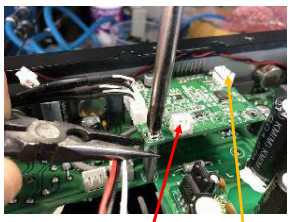
◯ : 10 screws for chassis

【2】Remove the screws at 3 points as below, and get the PCB and harness away like following pic.

When loosen screws, grip the stand-off by the pliers. (Otherwise, the bottom screw will loosen).

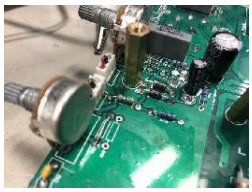
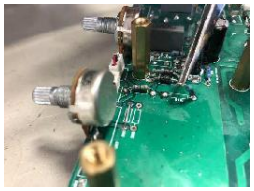


◯ : 3 screws (silver) for fixing the PCB



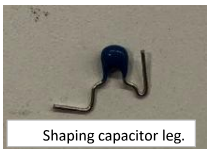
Remove connectors before removing screw.

【3】1.Remove the one-side of legs of resistors(R117,R118) from the PCB using solder-iron and tweezers.
(In advance, add solder to the pads and it will be easy to remove them.)
2. Shape capacitor legs and solder the right angle leg to the hole for R118.
3. Lay down both resister 's leg to the capacitor and connect 3 legs by soldering.
4. Glue around the capacitor.

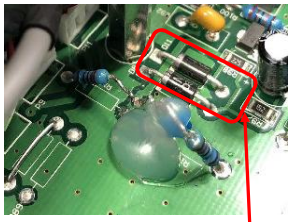




If you had broken off the resister, exchange to the new one.
Standard carbon film resistor (1/8~1/4W) is OK.

R117: 22K
R118: 10K


Shaping capacitor leg.





Remove D8 & D11

【4】Fix the PCB with screws and connectors.
In advance, confirm all the stand-off are fixed firmly.
If not, turn to the right faster many times and
it can be fixed.

【5】1. Put on the back board. Connect AC cord and turn the POWER SW to ON.
Confirm the LED is On.


2 Fix all the screws.

3. Turn the knobs as shown below and turn STAND BY SW to ON and check the sound.
here should not be abnormal noise. Also check when turn the GAIN knob to Max.

4. Connect guitar or music player to INPUT and check all knobs function briefly.

5. Turn all SWs and knobs to Off and minimum.

【6】Packing the product.