SERVICE MANUAL
VOX VT80+



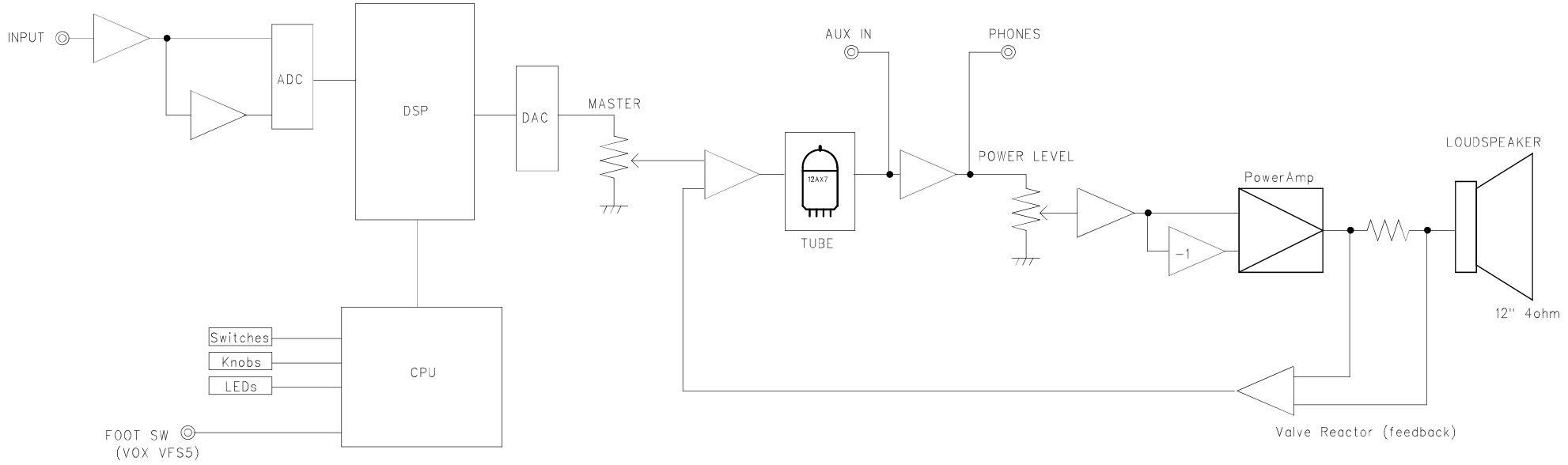
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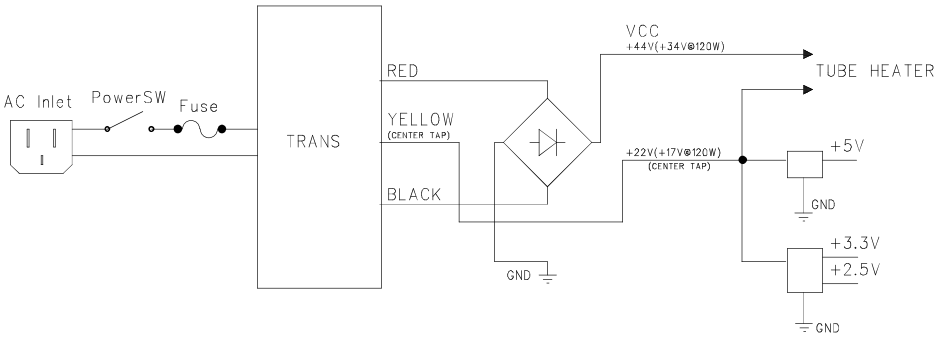
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Ver.1.0
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VOX VT80+

BlockDiagram

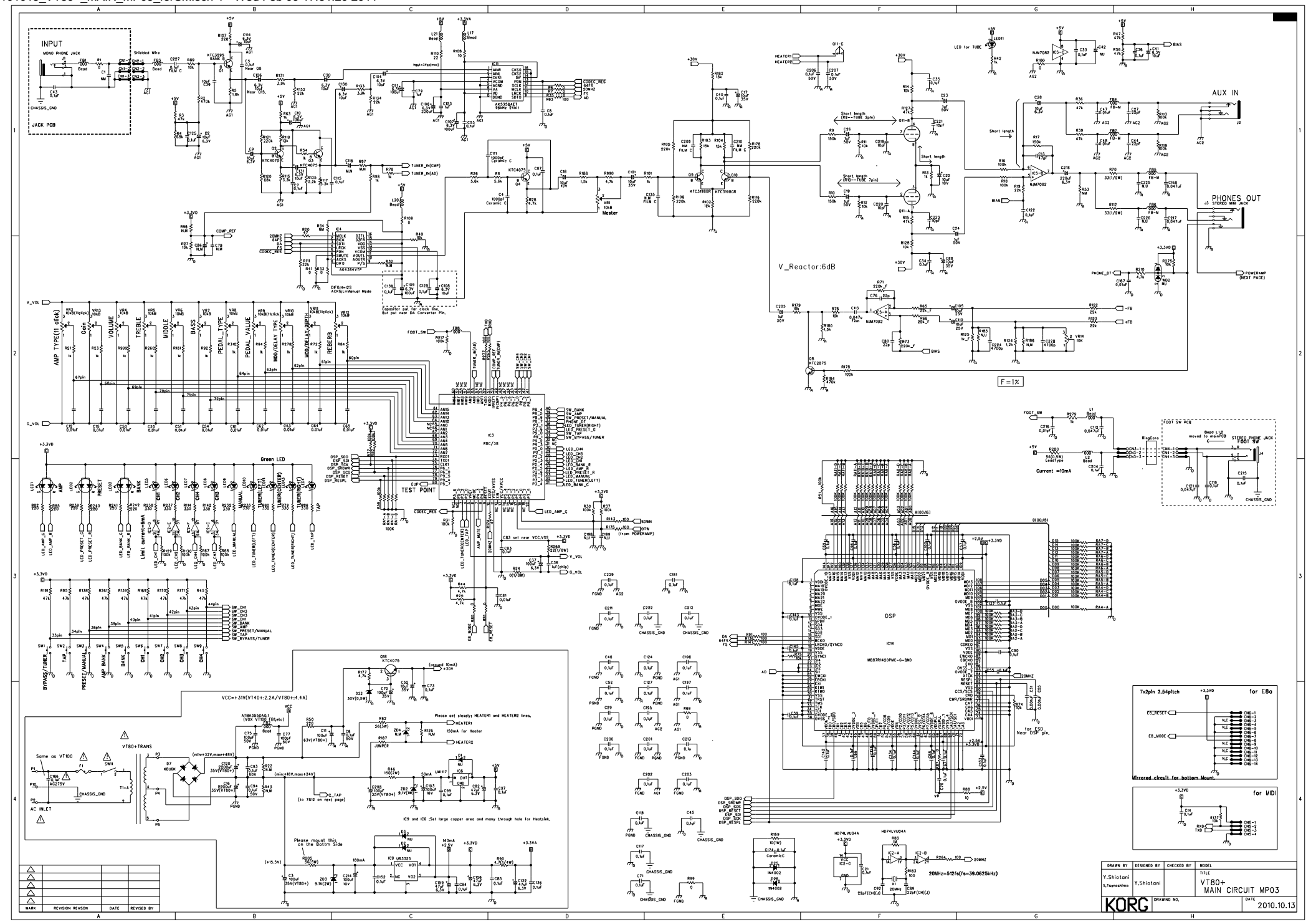


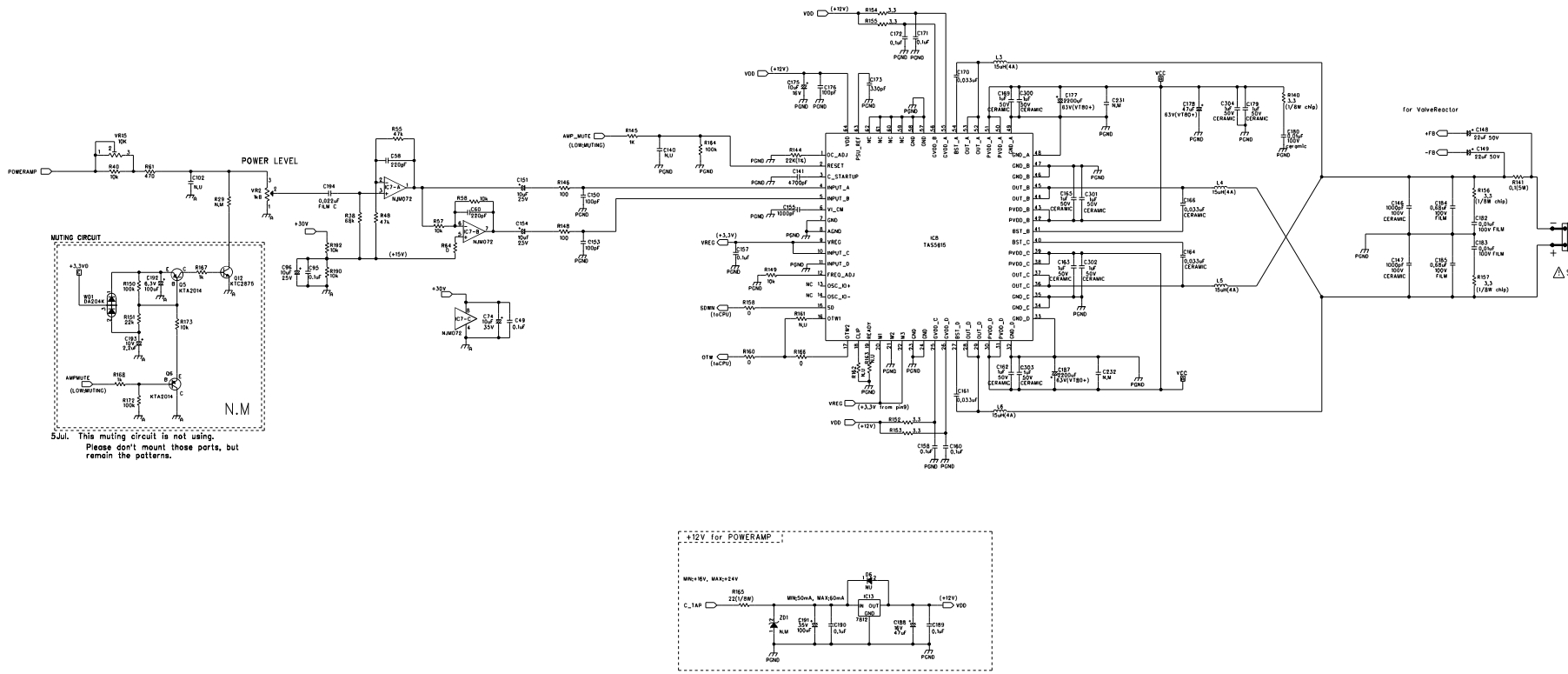
POWER SUPPLY



MARK	REVISION REASON	DATE	REVISED BY
△			
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△			
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DRAWN BY	DESIGNED BY	CHECKED BY	MODEL VOX VT80+
S.TSUNASHIMA			TITLE BlockDiagram
KORG	DRAWING NO.		DATE 6.Jan,2011


INPUT
MONO PHONE JACK
JACK PCB
CHASSIS_GND
AUX IN
PHONES OUT
STEREO MINI JACK
POWERAMP (NEXT PAGE)
V_Reactor:6dB
F=1%
Master
TUNER_IN(CMP)
TUNER_IN(AD)
COMP_REF
CODEC_RES
AK4384VTP
RBC/38
DSP
MB87M1420PMC-G-BND
TEST POINT
Green LED
AMP TYPE(11 click)
VOLUME
TREBLE
MIDDLE
BASS
PEDAL_TYPE
PEDAL_VALUE
MOD/DELAY TYPE
MOD/DELAY DEPTH
REBERB
V_VOL
G_VOL
FOOT_SW
FOOT SW PCB
Current =10mA
VCC=+31V(VT40+:2.2A/VT80+:4.4A)
VT80+TRANS
AC INLET
AC275V
Please mount this on the Bottm Side
IC9 and IC6 :Set large copper area and many through hole for Heatsink.
Please set closely HEATER1 and HEATER2 lines.
7x2pin 2.54pitch
for E8a
Mirrored circuit for bottom Mount.
for MIDI
for ESD Near DSP pin.
20MHz=512fs(fs=39.0625kHz)
DRAWN BY
DESIGNED BY
CHECKED BY
MODEL
Y.Shiotani
S.Tsunashima
Y.Shiotani
VT80+
MAIN CIRCUIT MP03
KORG
DRAWING NO.
DATE
2010.10.13
MARK
REVISION REASON
DATE
REVISED BY



MARK	REVISION REASON	DATE	REVISED BY

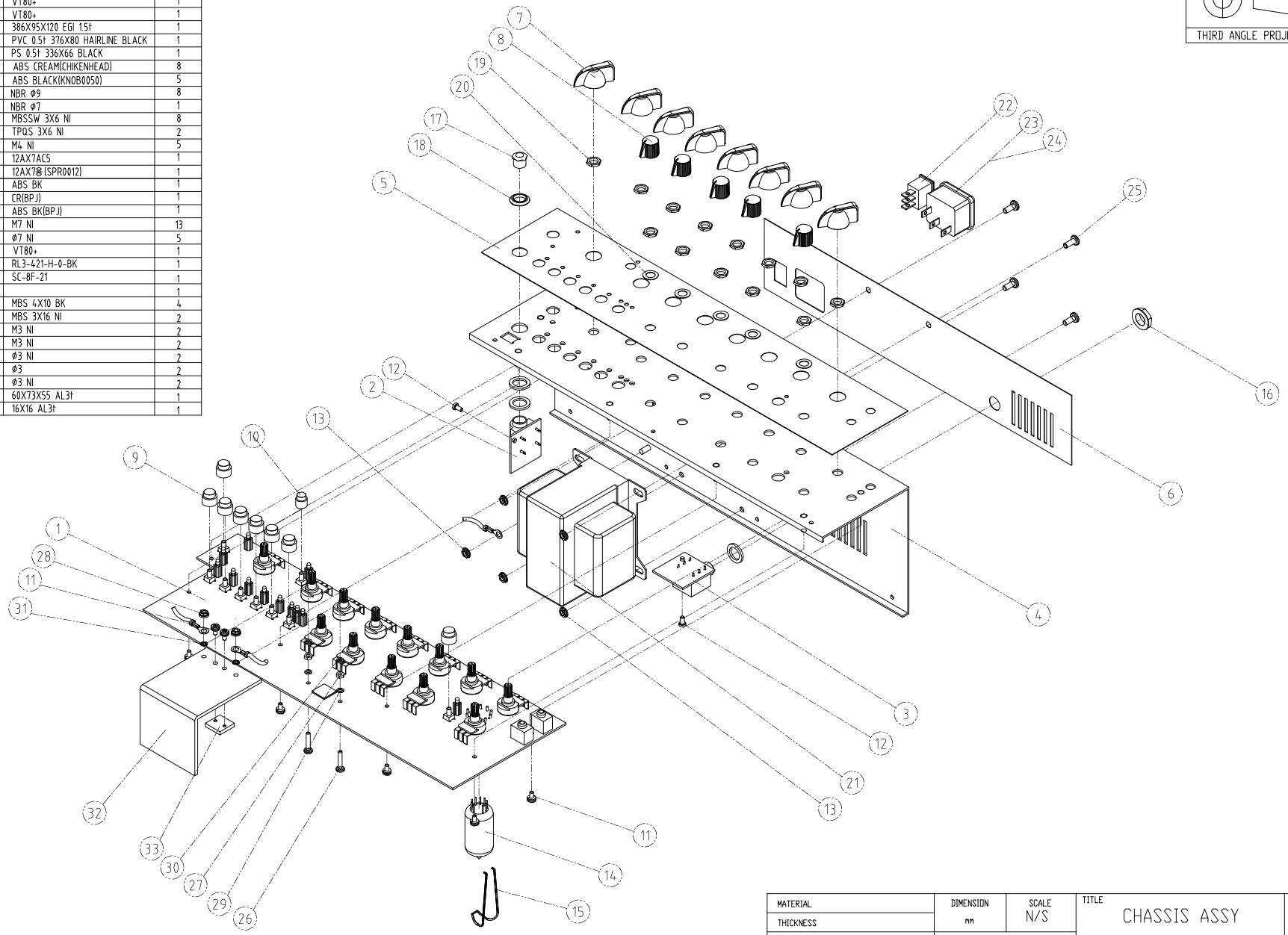
DRAWN BY	DESIGNED BY	CHECKED BY	MODEL
S.Tsurushima	S.Tsurushima		TITLE: VT80+ MAIN CIRCUIT MP03

KORG | DRAWING NO. | DATE '10.10.13

DWG.NO. ASSY0290-01

NO	DESCRIPTION	SPECIFICATION	Q'TY
1	MAIN PCB ASS'Y	VT80+	1
2	JACK PCB ASS'Y	VT80+	1
3	FOOT S/W PCB ASS'Y	VT80+	1
4	MAIN CHASSIS	386X95X120 EGI 1.5t	1
5	FRONT PANEL	PVC 0.5t 376X80 HAIRLINE BLACK	1
6	REAR PANEL	PS 0.5t 336X66 BLACK	1
7	VOLUME KNOB	ABS CREAM(CHIKENHEAD)	8
8	VOLUME KNOB-SMALL	ABS BLACK(KNOB0050)	5
9	TACK KNOB "A"	NBR ø9	8
10	TACK KNOB "B"	NBR ø7	1
11	SCREW	MBSSW 3X6 NI	8
12	SCREW	TPQS 3X6 NI	2
13	FRANGE NUT	M4 NI	5
14	TUBE	12AX7AC5	1
15	TUBE RETAINER	12AX7용 (SPR0012)	1
16	JACK NUT	ABS BK	1
17	JACK NUT	CR(BPJ)	1
18	JACK WASHER	ABS BK(BPJ)	1
19	VOLUME NUT	M7 NI	13
20	VOLUME WASHER	ø7 NI	5
21	TRANS	VT80+	1
22	POWER SWITCH	RL3-421-H-0-BK	1
23	INLET	SC-8F-21	1
24	FUSE		1
25	SCREW	MBS 4X10 BK	4
26	SCREW	MBS 3X16 NI	2
27	NUT	M3 NI	2
28	FRANGE NUT	M3 NI	2
29	SPRING WASHER	ø3 NI	2
30	FIBER WASHER	ø3	2
31	INTERNAL TOOTH WASHER	ø3 NI	2
32	HEATSINK	60X73X55 AL3t	1
33	HEATSINK	16X16 AL3t	1

THIRD ANGLE PROJECTION



REV NO.	REV DATE	DESCRIPTIONS OF REVISION
C		
B		
A		

TOLERANCE UNLESS NOTE
DIMENSIONAL ±
HOLE CENTERS ±
DIAMETERS ±
ANGULAR ±

MATERIAL	DIMENSION mm	SCALE N/S
THICKNESS		
FINISH	MODEL VT80+	
	DRAWN S.Y. OH	DATE 2010.10.08
	CHECKED	DATE
	APPROVED	DATE

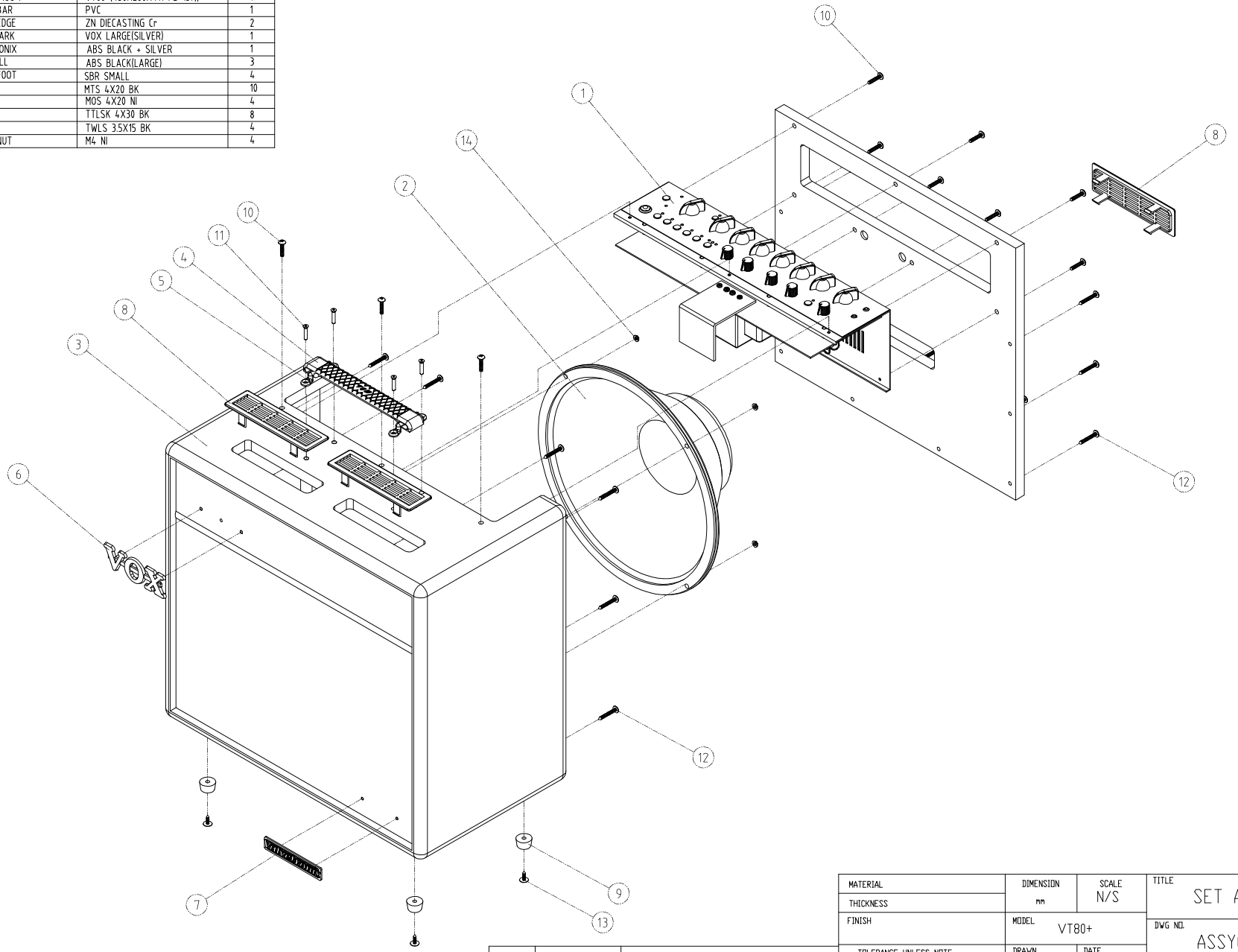
TITLE: CHASSIS ASSY
SHEET: 1OF1
DWG NO.: ASSY0291-01
VER.: A

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DWG.NO. ASSY0294-02

NO	DESCRIPTION	SPECIFICATION	Q'TY
1	CHASSIS ASS'Y	VT80+	1
2	SPEAKER	TSL300G0989-1	1
3	CABINET ASS'Y	VT80+(450X260X411 PB 15t))	1
4	HANDLE BAR	PVC	1
5	HANDLE EDGE	ZN DIECASTING Cr	2
6	BRAND MARK	VOX LARGE(SILVER)	1
7	VALVETRONIX	ABS BLACK + SILVER	1
8	VENT GRILL	ABS BLACK(LARGE)	3
9	RUBBER FOOT	SBR SMALL	4
10	SCREW	MTS 4X20 BK	10
11	SCREW	MOS 4X20 NI	4
12	SCREW	TTLSK 4X30 BK	8
13	SCREW	TWLS 3.5X15 BK	4
14	FRANGE NUT	M4 NI	4

THIRD ANGLE PROJECTION



REV NO.	REV DATE	DESCRIPTIONS OF REVISION
C		
B		
A		

MATERIAL	DIMENSION	SCALE
THICKNESS	mm	N/S
FINISH	MODEL	VT80+
TOLERANCE UNLESS NOTE	DRAWN	DATE
DIMENSIONAL ±	S.Y. OH	2010.11.01
HOLE CENTERS ±	CHECKED	DATE
DIAMETERS ±	APPROVED	DATE
ANGULAR ±		

TITLE	SHEET
SET ASSY	1OF1
DWG NO.	VER.
ASSY0294-02	A

KIMANSON
Kimanson Instruments CO., Ltd.

VOX VT20+/40+/80+/120+ testing instruction

Nov 15, 2010 fushimi@korg.co.jp

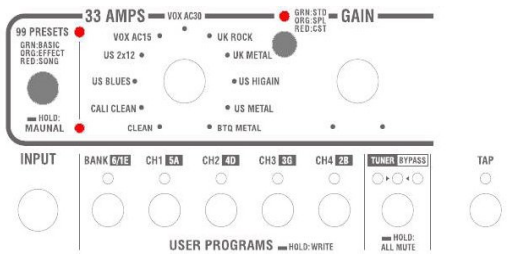
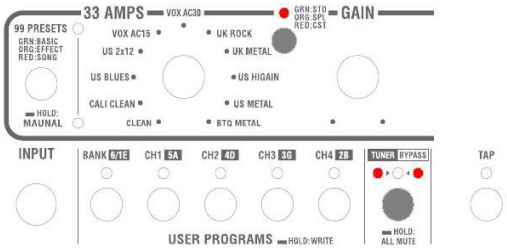
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2. Test mode

2.1. How to boot

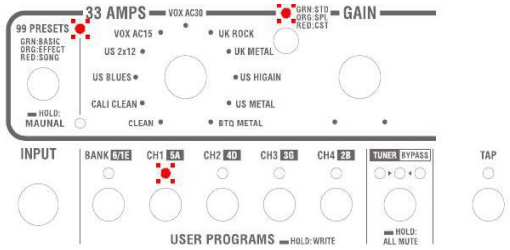
Power on with switch indicated below being pushed to enter respective mode.
Release all switches after confirming the mode to be tested is correctly selected. Then enter the mode.

Modes	Switch to boot (, Initial status (:lit, : blink)
Internal test->Control surface test.	
Audio test	

2.2. Internal test

In order to do switch test, connect VFS5 optional footswitch before boot the mode.

Item(s) below automatically will be inspected.
When NG occured, LEDs lit/blink as below.

Test item	NG Indication (:lit, :blink)
CPU-DSP I/F	

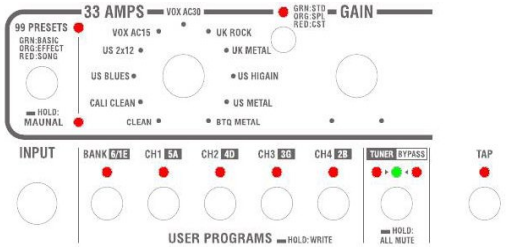
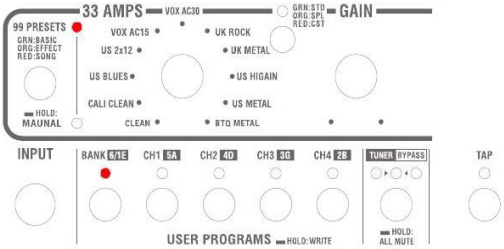
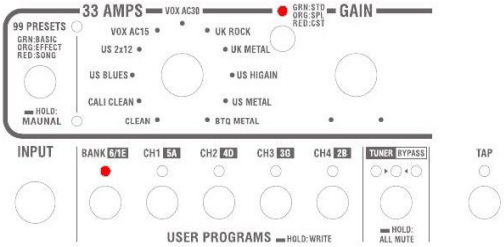
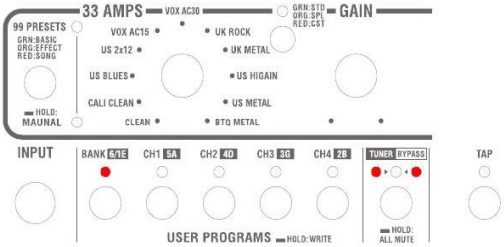
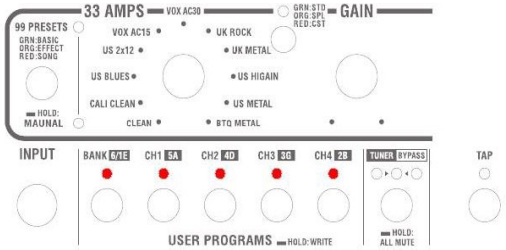
Press PRESET SW and BANK SW together to check an NG item again after NG occured.
Press PRESET SW and TUNER/BYPASS SW together to skip NG item and enter to next mode.
When internal test finished, mode shifts to control surface test mode automatically.

2.2.1. CPU-DSP I/F

CPU reads DSP register data to check wiring between CPU and DSP.

2.3. Control surface test

Control surface and indicators are checked as below order.
Audio loop will be tested along with PHONES jack switch in test item 4.

	Test item	Initial status (:lit、 : blink)
1	Switch & LED	
2	11-clicks VR	
3	VR (non-click)	
4	PHONES Jack, Audio Loop	
5	Reload (DATA FLASH Initialization)	

---- Remarks ----

- In the initial status of switch & LED test, status of VFS5 is indicated on BANK, CH1～4 LED.
- Press BANK or TUNER SW when unit is initial status to choose each test mode.
- DSP will be muted except in test mode4.

2.3.1. Switch & LED

Check all LEDs are lilting (except green LEDs on PRESET, AMP, BANK)
Press TAP SW to check other switches and LEDs.

---- Remarks ----

- When BANK LED is blinking, BANK LED on VFS5 is green.
  Then press BANK SW on VFS5 to make LED turn red.
- When either CH1,CH2,CH3,CH4 LEDs is blinking, CH SW on VFS5 is being pushed.
  Release switches and make CH1～4 LEDs lit.

Check functions of all LEDs and switches in order.

1. Check LEDs in below chart lit correctly (others must not)
2. LED pattern change by pushing respective switch as below.

When all tests finished, enter to the next test automatically.

LED	Switch
PRESET(RED)	PRESET
PRESET(GREEN)	PRESET
MANUAL	PRESET
AMP(RED)	AMP
AMP(GREEN)	AMP
BANK(RED)	BANK
BANK(GREEN)	BANK
CH1	CH1
CH2	CH2
CH3	CH3
CH4	CH4
TUNER(LEFT)	TUNER/BYPASS
TUNER(GREEN)	TUNER/BYPASS
TUNER(RIGHT)	TUNER/BYPASS
TAP	TAP
BANK(RED), TAP	VFS5 BANK
BANK(GREEN), TAP	VFS5 BANK
CH1, TAP	VFS5 CH1
CH2, TAP	VFS5 CH2
CH3, TAP	VFS5 CH3
CH4, TAP	VFS5 CH4

---- Remarks ----

- All LED will blink when AMP TYPE knob turned during the test.
  Press TAP switch to back to initial status of switch & LED test.

2.3.2. 11-clicks VR

Check all click point on VR knob(w/click) as following order.

1. AMP TYPE (33 AMPS)
2. PEDAL TYPE
3. MOD/DELAY TYPE

Start test of knobs from their max position (rightmost).
If knob was set max initially, move the knob and set max again.
After checking min(leftmost) test on next knob starts automatically.
(Next test starts after MOD/DELAY test completed)

1. Stop knob at click point. (make sure knob is set on the point)
2. Go to next click after checking TUNER(GREEN) LED lit.

---- Remarks ----

- CH1～CH4 LED status changes according to A/D value of target knob(simple meter).
- If click point that was to be tested was skipped mistakenly before TUNER(GREEN) LED lit, TUNER(LEFT/RIGHT) LED will blink.
  Back to the click point to be tested then LED will go out and test can be re-started.
- If A/D value of other knob varied accidentally, error occurs and test stops with PRESET, BANK LED blink.
  Press TAP to cancel error status and re-start test.

2.3.3. VR (non-click)

Check A/D value of each VR (non-click)in the following order.

1. GAIN
2. VOLUME
3. TREBLE
4. MIDDLE
5. BASS
6. VALUE (PEDAL)
7. DEPTH (MOD/DELAY)
8. REVERB

Do test with each knob.
When all knob tests finished, next test starts automatically.

1. Turn knob to max (rightmost), (If knob was set max initially, move the knob and set max again).
2. Make sure TUNER(GREEN) LED lit.
3. Turn knob to MIN(leftmost), (when MIN is detected, TUNER(GREEN) LED turn off and goes to next step).

---- Remarks ----

- CH1～CH4 LED status changes according to A/D value of target knob(simple meter).
- If A/D value of other knob varied accidentally, error occurs and test stops with AMP, BANK LED blink.
  Press TAP to cancel error status and re-start test.

2.3.4. PHONES Jack、Audio Loop

CPU checks PHONES jack status. Signal level back to input by sending 1kHz sine wave from DSP will be checked.

1. Set "MASTER" max.
2. Connect PHONES jack and INPUT jack via mono cable.
   Check TAP LED lit when INPUT jack was connected to PHONES jack.
3. Press TAP switch (level check start).

When level check completed, next test will start automatically.

Output and input level (OK range) on each channel is a following.
(Each value corresponds to the one, when max signal input/output to/from DSP is set 1.0.

Test items	Output Ch (output level)	Input Ch(OK range)
DSP SI1R (Clean Ch)	DSP SO1L (0.015478)	DSP SI1R (0.35+-7dB)
DSP SI1L (Gain Ch)	DSP SO1L (0.001949)	DSP SI1L (0.35+-7dB)

---- Remarks ----

- When error occurs, PRESET, BANK, TUNER(LEFT/RIGHT) LED all blink and the test stops.
  PRESET LED color indicated which channel is causing error.
  (GREEN: Clean Ch, RED: Gain Ch).
  Press TAP switch to cancel error status and re-start test.

2.3.5. Reload (DATA FLASH Initialization)

Initialize all data such as USER PROGRAM and data on DATA FLASH.

Press TAP switch to start initialize. (BANK LED changes to green).
When initialize succeed, a unit will be goes to normal mode automatically.

---- Remarks ----

- When initialize failed, BANK, CH1-4 LED blink.
  Press tap switch to back to first step of "Reload".

2.4. Audio test

This is a bypass mode to through INPUT signal and output directly.

DSP input channel can be switched by pressing PRESET switch.
Power amp mute On/Off(AMP_MUTE L/H) can be switched by pressing AMP switch.
Status of PHONES jack, VFS5 switch are shown on TAP LED, BANK,CH1-4 respectively.

Switch	Function	LED	Status
PRESET	DSP input L/R switch	PRESET=RED	L (Gain Ch)
		PRESET=GREEN	R (Clean Ch)
AMP	AMP_MUTE L/H switch	AMP=GREEN	High
		AMP=RED (Blink)	Low
PHONES Jack	PHONES jack status	TAP Off	Open (not connected)
		TAP On	Close (connected)
VFS5	VFS5 status	BANK=RED	BANK LED on VFS5 = RED
		BANK=GREEN	BANK LED on VFS5 = GREEN
		CH1 On	CH1 is pushed
		CH2 On	CH2 is pushed
		CH3 On	CH3 is pushed
		CH4 On	CH4 is pushed

KORG VT80+ Parts List

⚠ = SAFETY CRITICAL COMPONENT.

EXP=EXPLODED VIEW Item No

Part Number	Category	Part Name	Location	EXP	Reference	QTY
530000001116	WAFER	WAFER LWL0640 3P	JACK		CN1	1
530000001945	PHONE JACK	BPJ-BNB-P, 8MM	JACK		J1	1
530000000797	PHONE JACK	PHONE JACK EPJ-BBB-P(8) STEREO	FOOT SW		J4	1
530000001094	OP-AMP	NJM072 (SMT)	MAIN		IC7	1
530000000194	OP-AMP	IC NJU7082	MAIN		IC5	1
530000002347	IC	POWER IC TAS5615	MAIN		IC8	1
500324018020	DAC	AK4384ET-E2	MAIN		IC4	1
500324018021	ADC	AK5358AET-E2	MAIN		IC11	1
530000000179	IC	IC 74LVU04DB	MAIN		IC2	1
530000001098	REGULATOR	UTC UR3325	MAIN		IC9	1
530000002307	REGULATOR	REGULATOR LM1117 5V	MAIN		IC6	1
530000002348	REGULATOR	REGULATOR KIA78L12F	MAIN		IC13	1
530000000279	TRANSISTOR	TR KTC4075	MAIN		Q2,Q3,Q4,Q18	4
530000002493	DIODE	ZENER DIODE 1N5256B (1/2W 30V)	MAIN		D22	1
530000002350	DIODE	ZENER DIODE 1N4739 (1W 9.1V)	MAIN		ZD2	1
530000002494	DIODE	ZENER DIODE 2EZ9.1D5(2W 9.1V)	MAIN		ZD3	1
530000001103	LED	3O4HD-7	MAIN		LED11	1
530000000208	LED	LED RED 3M/M DLL-B5131Q	MAIN		LED4,LED5,LED6,LED7,LED8, LED9,LED10,LED13	8
530000002196	LED	DLL-B2131Q(G124)	MAIN		LED14	1
530000001102	LED	3RG9HW-2-A	MAIN		LED1,LED2,LED3	3
530000000141	DIODE	BRIDGE DIODE KBU6K	MAIN		D7	1
530000002309	CRYSTAL	CRYSTAL 20MHZ	MAIN		X1	1
530000002495	RESISTOR	METAL OXIDE RESISTOR 2W 150	MAIN		R46	1
530000002496	RESISTOR	METAL OXIDE RESISTOR 3W 56	MAIN		R62	1
530000002358	RESISTOR	WIRE WOUMD 5W 0.1 OHM	MAIN		R141	1
530000002497	RESISTOR	CEMENT RESISTOR 5W 56(SQP)	MAIN		R205	1
530000002318	VOLUME	SEMI VOLUME KVSF689AC103 (10K)	MAIN		VR14,VR15	2
530000000288	VOLUME	VR RV160-40-15S-B10K-C0	MAIN		VR1,VR4,VR5,VR6,VR7, VR9,VR11,VR12,VR13	9
530000002319	VOLUME	VOLUME VR RV160-40-15S-B1K-C0)	MAIN		VR2	1
530000000289	VOLUME	VR RV160-40-15S-B10K-C11 (11C)	MAIN		VR3,VR8,VR10	3
530000000265	SWITCH	TACK SW ATS-1230B (K=9.5MM)	MAIN		SW1,SW2,SW3,SW4,SW5, SW6,SW7,SW8,SW9	9
530000001101	TUBE SOCKET	GZC9-A	MAIN		Q11	1
530000002320	JACK	STEREO JACK CKX3.5-69	MAIN		J2,J3	2
530000002498	PCB ASS'Y	MAIN PCB ASS'Y(VT80+)	CHASSIS	1		1
530000002323	PCB ASS'Y	JACK PCB ASS'Y VT20+	CHASSIS	2		1
530000002324	PCB ASS'Y	FOOT S/W PCB ASS'Y VT20+	CHASSIS	3		1
530000002499	CHASSIS	MAIN CHASSIS(VT80+)	CHASSIS	4	CHA0339	1
530000002500	PANEL	FRONT PANEL(VT80+)	CHASSIS	5	FPN0220	1
530000002501	PANEL	REAR PANEL(VT80+ 100V)	CHASSIS	6	RPN0284	1
530000002502		REAR PANEL(VT80+ 120V)				
530000002503		REAR PANEL(VT80+ 230V)				
530000002504		REAR PANEL(VT80+ 240V)				
530000001126	KNOB	VOLUME KNOB CHIKEN HEAD CREAM	CHASSIS	7		8
530000001127	KNOB	ROUND KNOB	CHASSIS		KNOB0050	5
530000001124	KNOB	TACT KNOB "A" NBR 9PIE	CHASSIS	9	KNOB0047	8
530000001125	KNOB	TACT KNOB "B" NBR 7PIE	CHASSIS	10	KNOB0048	1
510465500501	TUBE	12AX7AC5HG	CHASSIS	14		1

530000001117	TUBE RETAINER	TUBE RETAINER	CHASSIS	15	SPR0012	1
530000002505 ⚠	TRANS	TRANS 100V = 086-VT80+J	CHASSIS	21		1
530000002506 ⚠		TRANS 120V = 086-VT80+U				
530000002507 ⚠		TRANS 230V = 086-VT80+E				
530000002508 ⚠		TRANS 240V = 086-VT80+EF				
530000000761 ⚠	SWITCH	POWER SW RL3-421	CHASSIS	22		1
530000000199 ⚠	Inlet	INLET/FUSE HOLDER SC-8F-21	CHASSIS	23		1
530000002509 ⚠	FUSE	FUSE 100/120V = T4A L 250V	CHASSIS	24		1
530000000808 ⚠		FUSE T2.0AL 250V				
530000002510 ⚠	CHASSIS ASS'Y	CHASSIS ASS'Y(VT80+ 100V)	SET	1		1
530000002511 ⚠		CHASSIS ASS'Y(VT80+ 120V)				
530000002512 ⚠		CHASSIS ASS'Y(VT80+ 230V)				
530000002513 ⚠		CHASSIS ASS'Y(VT80+ 240V)				
530000002514 ⚠	SPEAKER	SPEAKER TSL300G0989-1(VT80+)	SET	2		1
530000002515 ⚠		CABINET ASS'Y(VT80+)	SET	3	CAB0410	1
530000000313 ⚠		HANDLE ASS'Y	SET	4,5		2
530000000283		VENT GRILL ABS	SET	8		3
530000000252		RUBBER FOOT SBR SMALL	SET	9		4
530000002516		BAFFLE ASSY(VT80+)	SET			1
530000000138		BRAND MARK VOX (LARGE) SILVER	SET	6		1
530000000854		BRAND MARK VALVETRONICS SILVER	SET	7		1
500600006508 ⚠	AC CORD	LY100JPVCTFLY35LY37(JP)	PACKING			1
530000000123 ⚠		AC CORD 120V = KKP30-16A				
530000000124 ⚠		AC CORD 230V = KKP4819R-16A				
530000000125 ⚠		AC CORD 230V = KKP650-16A				
530000000126 ⚠		AC CORD 240V = KKP550-16A				