Acoustic Simulator

AC-3

SERVICE NOTES
Issued by RJA

Table of Contents

Roland
17058403E0
Printed in Japan (0500) (SC-KWS)

Cautionary Notes

Before beginning the procedure, please read through this document.

No User Data

This product cannot save user data. Backing up user data during servicing is not required.

Parts List

A component whose part code is ******* cannot be supplied as a service part because one of the following reasons applies.

- Because it is supplied as an assembled part (under a different part code).
- Because a number of circuit boards are grouped together and supplied as a single circuit board (under a different part code).
- Because supply is prohibited due to copyright restrictions.
- Because reissuance is restricted.
- Because the part is made to order (at current market price).

Part Replacement

When replacing components near the power-supply circuit or a heat-generating circuit (such as a circuit provided with a heat sink or including a cement resistor), carry out the procedure according to the instructions with respect to the part number, direction, and attachment position (mounting so as to leave an air gap between the component and the circuit board, etc.).

Circuit Diagram

In the circuit diagram, 'NIU' is an abbreviation for 'NOT IN USE'. The circuit board and circuit-board diagram show silkscreened indications, but no components are mounted.

Specifications

AC-3: Acoustic Simulator

Nominal Input Level

20 dBu

Input Impedance

1 MΩ

Nominal Output Level

20 dBu

Output Impedance

1 kΩ

Recommended Load Impedance

10 kΩ or greater

Controls

Pedal switch, LEVEL knob, REVERB knob, BODY knob, TOP knob, MODE knob

Indicators

CHECK indicator (Serves also as battery check indicator)

Connectors

INPUT jack, LINE OUT jack, G.AMP OUT jack, AC adaptor jack (DC 9 V)

Power Supply

DC 9 V: Dry battery/9 V type (6F22 (carbon), 6LR61 (alkaline)), AC Adaptor (PSA-series: optional)

Current Draw

39 mA (DC 9 V)

* *Expected battery life under continuous use:*
Carbon: 3 hours, Alkaline: 10 hours
These figures will vary depending on the actual conditions of use.

Dimensions

73 (W) x 129 (D) x 59 (H) mm
2-7/8 (W) x 5-1/8 (D) x 2-3/8 (H) inches

Weight

440 g /1 lb (including battery)

Accessories

Owner's Manual English (#G6027114R0)
Leaflet ("USING THE UNIT SAFELY," "IMPORTANT NOTES," and "Information") (#*******)
Dry battery/9 V type (6LR61) (#*******)

* *The battery that was supplied with the unit is for temporary use intended primarily for testing its operation. We also suggest replacing this with an alkaline dry cell.*

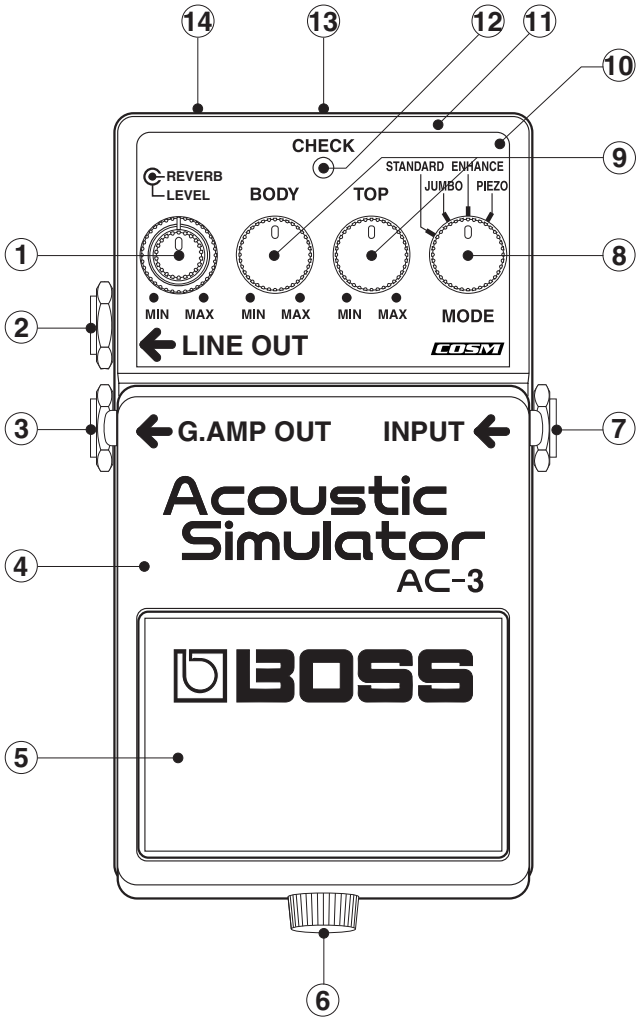
Option

AC Adaptor (PSA-series)

* *0 dBu = 0.775 Vrms*

* *In the interest of product improvement, the specifications and/or appearance of this unit are subject to change without prior notice.*

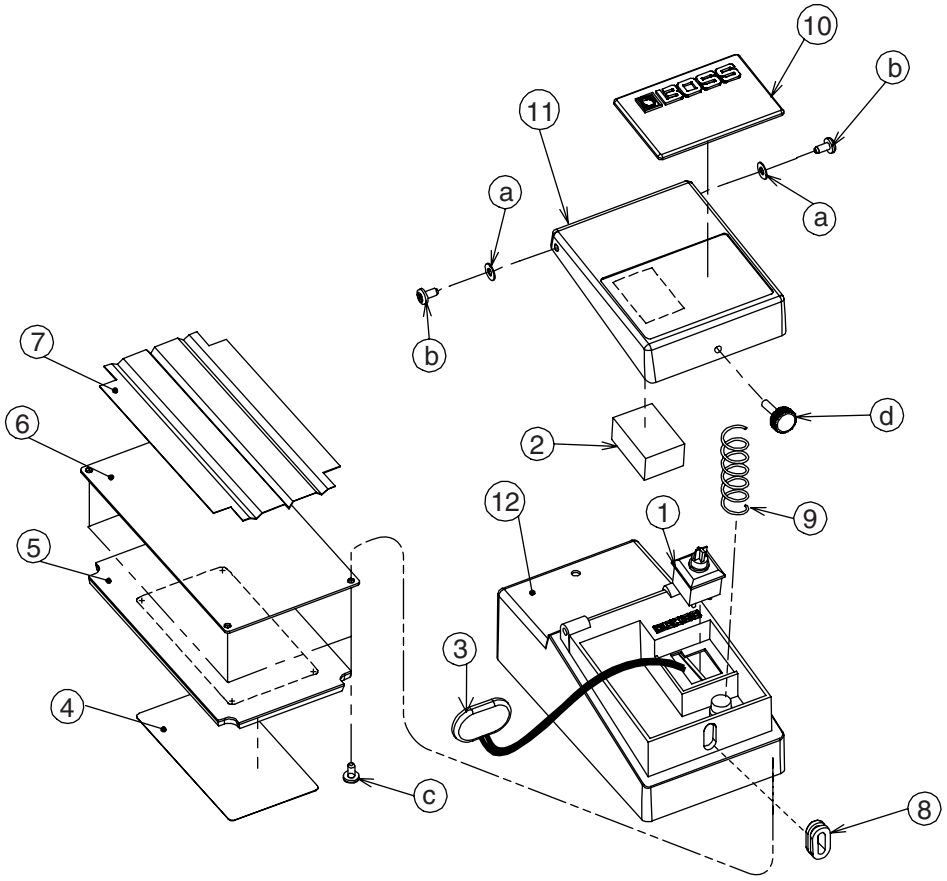
Location of Controls



Location of Controls Parts List

No.	Part Code	Part Name	Description	Q'ty
1	22480220R0	P R-KNOB	BF BLK/LCG (INTERNAL)	1
	22480221R0	P R-KNOB	S BLK/LCG (EXTERNAL)	1
	F3279854R0	POTENTIOMETER	RD912D-20-20FWH-B54-6009	1
	H5039521R0	NUT M7		4
2	F3449707R0	LINE OUT JACK	HTJ-064-12DS	1
	H5039510R0	NUT M9X12X2T NI		4
	H5039112R0	WASHER 9X14X0.5	NI	4
3	13449140R0	JACK (STEREO)	HTJ-064-14D	1
	H5039510R0	NUT M9X12X2T NI		4
	H5039112R0	WASHER 9X14X0.5	NI	4
4	75D932T0R0	PEDAL		1
5	22357304R0	PEDAL PLATE		1
6	H5029820R0	THUMB SCREW 3X10	FEBC	1
7	13449104R0	INPUT JACK	HTJ-064-13D	1
	H5039510R0	NUT M9X12X2T NI		4
	H5039112R0	WASHER 9X14X0.5	NI	4
8	F3279853R0	POTENTIOMETER	RD901-20-15FP-B54K-04	1
	22480260R0	P R-KNOB	MF BLK/LCG	3
	H5039521R0	NUT M7		4
9	F3279852R0	POTENTIOMETER	RD901-20-15FW-B54-006	2
	22480260R0	P R-KNOB	MF BLK/LCG	3
	H5039521R0	NUT M7		4
10	G2217758R0	PANEL		1
11	75D933C0R0	CASE		1
12	15029281R0	LED	L-34HDSL	1
13	13449717R0	ADAPTOR JACK	HEC2392-01-150	1
14	22537538R0	PSA LABEL	8X13	1

Exploded View



Exploded View Parts List

No.	Part Code	Part Name	Description	Q'ty
1	13129710R0	SWITCH (PUSH)	JM-0404	1
2	22267333R0	CUSHION		1
3	F3419102R0	BATTERY CONNECTOR	006P BATTERY SNAP	1
4	G2537516R0	PSA CAUTION	CE 9V N225	1
5	22357305R0	BOTTOM BASE		1
6	22027851R0	BOTTOM COVER		1
7	G2167301R0	INSULATING SHEET		1
8	22157702R0	PEDAL GUIDE BUSH		1
9	22177109R0	COIL SPRING		1
10	22357304R0	PEDAL PLATE		1
11	75D932T0R0	PEDAL		1
12	75D933C0R0	CASE		1
a	H5039401R0	NYLON WASHER M3X6X0.5		2
b	H5019413R0	SCREW M3X10	BINDING MACHINE FEBC	2
c	H5029325R0	SCREW 3X6	B1FEBC	4
d	H5029820R0	THUMB SCREW 3X10	FEBC	1

Parts List

SAFETY PRECAUTIONS:
The parts marked ⚠ have safety-related characteristics. Use only listed parts for replacement.

Due to one or more of the following reasons, parts with parts code ******** cannot be supplied as service parts.

- Part supplied only as a component in a complete assembly
- Copyright does not permit the part to be supplied
- Part is sold commercially

NOTE: The parts marked # are new. (initial parts) The description "Q'TY" means a necessary number of the parts per one product.

CASING

#	22357305R0	BOTTOM BASE			1
#	22027851R0	BOTTOM COVER			1
#	75D933C0R0	CASE			1
#	G2217758R0	PANEL			1
#	75D932T0R0	PEDAL			1
#	22357304R0	PEDAL PLATE			1

KNOB, BUTTON

#	22480221R0	P R-KNOB	S BLK/LCG (EXTERNAL)		1
#	22480260R0	P R-KNOB	MF BLK/LCG		3
#	22480220R0	P R-KNOB	BF BLK/LCG (INTERNAL)		1

SWITCH

#	13129710R0	SWITCH (PUSH)	JM-0404	SW1	1

JACK, EXT TERMINAL

	13449140R0	JACK (STEREO)	HTJ-064-14D		1
#	13449104R0	INPUT JACK	HTJ-064-13D		1
#	F3449707R0	LINE OUT JACK	HTJ-064-12DS	JK4	1
#	13449717R0	ADAPTOR JACK	HEC2392-01-150	JK6	1

PWB ASSY

#	75D933P0R0	PWB ASSY			1
#	22917496R0	PWB LED#496			1

IC

#	F5289709R0	BD45301G	IC (RESEST)	IC8	1
#	15189261	M5218AFP-600E	IC (OP AMP)	IC1, IC3, IC4	3
#	F5289101R0	NJM2100M	IC (OP AMP)	IC2	1
#	F5259710R0	TC7W04FK	IC (LOGIC)	IC10	1
#	F5259708R0	UPD800402GJ-211-UEN-A (0401099	IC (ESC)	IC7	1
#	F5279884R0	HN58X24512I (04231223)	IC (EEPROM)	IC6	1
#	F5269707R0	DC-DC BD9851EFV	IC (DC-DC)	IC9	1
#	F5209129R0	AK4552VT 24BIT	IC (CODEC)	IC5	1

HYBRID

#	F5329540R0	QS5U27	FET AND DIODE	Q15, Q16	2

TRANSISTOR

#	F5309603R0	2SA1832GR (TE85L F)	TRANSISTOR	Q13	1
#	F5129405R0	2SC4738GR (TE85L F)	TRANSISTOR	Q7, Q8, Q9, Q10, Q11, Q12, Q17	7
#	F5329530R0	2SK879Y-TE85R	FET	Q1, Q2, Q4, Q5	4
#	15329103R0	2SK880GR-TE85R	FET	Q3	1

DIODE

#	15029281R0	L-34HDSL	LED		1
#	F5339505R0	1SS387 (TPH3 F)	DIODE	D1, D2, D3, D4	4
#	F5339201R0	GS1G	DIODE	D6	1
#	F5339137R0	SS14 VF 0.45V	DIODE	D5	1

RESISTOR

#	F5399101R0	0J (1608TYPE)	MTL.FILM RESISTOR	R22, R92, R94, R132, R133, R134, R135, R136	8
#	F5399115R0	100J (1608TYPE)	MTL.FILM RESISTOR	R26, R48, R138, R139, R140	5
#	F5399170R0	100KJ (1608TYPE)	MTL.FILM RESISTOR	R14, R34, R51, R52, R53, R55, R95	7
#	F5399104R0	10J (1608TYPE)	MTL.FILM RESISTOR	R23	1
#	F5429365R0	10KF 1PCT (1608TYPE) F-RANK	MTL.FILM RESISTOR	R29, R47, R60, R74, R114, R115, R119, R121	8
#	F5399140R0	10KJ (1608TYPE)	MTL.FILM RESISTOR	R15, R19, R87, R88, R91, R98, R99, R100, R102, R126, R127, R128, R129	13

RESISTOR

#	F5399918R0	12KF 1PCT (1608TYPE) F-RANK	MTL.FILM RESISTOR	R77	1
#	F5429386R0	150KF 1PCT (1608TYPE) F-RANK	MTL.FILM RESISTOR	R39	1
#	F5429366R0	15KF 1PCT (1608TYPE) F-RANK	MTL.FILM RESISTOR	R117	1
#	F5399147R0	15KJ (1608TYPE)	MTL.FILM RESISTOR	R12, R16, R36	3
#	F5429371R0	18KF 1PCT (1608TYPE) F-RANK	MTL.FILM RESISTOR	R108	1
#	F5399128R0	1KJ (1608TYPE)	MTL.FILM RESISTOR	R11, R31, R58, R69, R73, R96	6
#	F5399200R0	1M J (1608TYPE)	MTL.FILM RESISTOR	R1, R13, R18, R20, R33, R49, R54, R56, R57	9
#	F5399130R0	2.2KJ (1608TYPE)	MTL.FILM RESISTOR	R75	1
#	F5429373R0	22KF 1PCT (1608TYPE) F-RANK	MTL.FILM RESISTOR	R112	1
#	F5399152R0	22KJ (1608TYPE)	MTL.FILM RESISTOR	R3, R7, R25, R43, R59, R80, R144	7
#	F5429372R0	27KF 1PCT (1608TYPE) F-RANK	MTL.FILM RESISTOR	R122, R116	2
#	F5429346R0	3.3KF 1PCT (1608TYPE) F-RANK	MTL.FILM RESISTOR	R103	1
#	F5399141R0	3.9KJ (1608TYPE)	MTL.FILM RESISTOR	R142	1
#	F5399294R0	39J (1608TYPE)	MTL.FILM RESISTOR	R105	1
#	F5399157R0	39KJ (1608TYPE)	MTL.FILM RESISTOR	R79	1
#	F5399133R0	4.7KJ (1608TYPE)	MTL.FILM RESISTOR	R2, R5, R9, R21, R24, R27, R143	7
#	F5429375R0	47KF 1PCT (1608TYPE) F-RANK	MTL.FILM RESISTOR	R107, R113	2
#	F5399158R0	47KJ (1608TYPE)	MTL.FILM RESISTOR	R4, R6, R28, R35, R106, R109, R111, R118	8
#	F5429350R0	5.6KF 1PCT (1608TYPE) F-RANK	MTL.FILM RESISTOR	R104	1
#	F5399108R0	56J (1608TYPE)	MTL.FILM RESISTOR	R120, R110	2
#	F5399160R0	56KJ (1608TYPE)	MTL.FILM RESISTOR	RR8, R17, R32, R44, R45, R46, R50, R61, R62, R63, R64, R76, R123	13

POTENTIOMETER

#	F3279853R0	RD901-20-15FP-B54K-04	POTENTIOMETER	VR4	1
#	F3279852R0	RD901-20-15FW-B54-006	POTENTIOMETER	VR2, VR3	2
#	F3279854R0	RD912D-20-20FWH-B54-6009	POTENTIOMETER	VR1	1

CAPACITOR

#	F5349704R0	ECPU1E474KB5 (04013567)	MYLAR CAPACITOR	C12	1
#	F5379004R0	10UF GRM31MF51A106ZA01L	CHIP CAPACITOR (3216TYPE)	C1, C6, C9, C11, C15, C17, C24, C28, C29, C33, C35, C39, C123	13
#	F5359732R0	0.001UF GRM39B102K50PT	CHIP CAPACITOR (1608TYPE)	C87, C92, C114, C115, C118, C119	6
#	F5359740R0	0.0022UF GRM39B222K50PT	CHIP CAPACITOR (1608TYPE)	C4, C7, C19	3
#	F5350780R0	0.01UF	CHIP CAPACITOR (1608TYPE)	C57, C58, C59, C60, C61, C122	6
#	F5359800R0	0.1UF GRM39F104Z25PT	CHIP CAPACITOR (1608TYPE)	C3, C13, C16, C20, C22, C26, C37, C38, C40, C41, C42, C43, C45, C51, C52, C54, C64, C75, C76, C77, C78, C79, C80, C81, C83, C84, C85, C88, C89, C91, C93, C94, C95, C96, C97, C98, C99, C101, C102, C103, C104, C107, C113, C120, C121	45
#	F5359725R0	150P ECJ1VC1H151J	CHIP CAPACITOR (1608TYPE)	C2, C5, C8, C14, C18, C23	6
#	F5359821R0	1U	CHIP CAPACITOR (1608TYPE)	C67, C36	2
#	F5359704R0	22P GRM39CH220J 50PT	CHIP CAPACITOR (1608TYPE)	C65, C68, C73, C116, C117	5
#	F5359805R0	470P J	CHIP CAPACITOR (1608TYPE)	C90	1
#	F5359827R0	68P J	CHIP CAPACITOR (1608TYPE)	C71, C72, C109, C110	4
#	F5369616R0	CSM100M1CC05W 10U/16V	CHEMICAL CAPACITOR	C21	1
#	F5369613R0	CSM101M0JD05W 100U/6.3V 5X5.	CHEMICAL CAPACITOR	C53, C63, C74, C82, C86, C100, C105, C106	8
#	F5369614R0	CSM101M1CE05W 100U/16V 6.3X5.	CHEMICAL CAPACITOR	C44, C46, C70	3
#	F5369615R0	CSM470M1CD05W 47U/16V 5X5.3	CHEMICAL CAPACITOR	C10, C25, C27, C47, C48	5

INDUCTOR, COIL, FILTER

#	F5409148R0	ELL6SH151	SMD COIL	L6	1
#	F5409147R0	ELL6SH820	SMD COIL	L5	1
#	F2449239R0	BA-0F601-20057001	INDUCTOR	L1, L3, L4	3
#	F5409131R0	QT04-60	COIL	L2	1

CRYSTAL, RESONATOR

#	F5299525R0	HC49SM 16.9344MHZ	CRYSTAL	X1	1

CONNECTOR

#	F3439865R0	B6B-PH-K-S	CONNECTOR	CN1	1

WIRING, CABLE

#	H4009683R0	WIRING 1007	YELLOW 135X3X3		1
#	H4009408R0	WIRING 1007	WHITE 85X6X3		1
#	H4009498R0	WIRING 1007	PURPLE 160X6EX6E		1
#	H4009307R0	WIRING 1007	ORANGE 80X3X6		1
#	H4009319R0	WIRING 1007	GREEN 80X3X6		1
#	H4009499R0	WIRING 1007	GREEN 160X6EX6E		1
#	H4019406R0	WIRING 1007	GRAY 100X3X3		1
#	H4009596R0	WIRING 1007	BROWN 110X6X3		1
#	H4009597R0	WIRING 1007	BROWN 105X6X3		1

WIRING, CABLE

#	H4009595R0	WIRING 1007	BLUE 110X6X3		1
#	H4009689R0	WIRING 1007	BLACK 105X6X3		1
#	G3487434R0	FLAT CABLE	9P L=90MM	CN2, CN5	1

SCREWS

#	H5039112R0	WASHER 9X14X0.5	NI		4
#	H5029820R0	THUMB SCREW 3X10	FEBC		1
#	H5019413R0	SCREW M3X10	BINDING MACHINE FEBC		2
#	H5029325R0	SCREW 3X6	B1FEBC		5
#	H5039104R0	WASHER 9.2X14X1.6	AL		1
	H5039521R0	NUT M7			4
	H5039510R0	NUT M9X12X2T NI			4
#	H5039401R0	NYLON WASHER M3X6X0.5			2
	H5039205R0	TOOTH WASHER 9.1X13			3
#	22137709R0	WASHER 9.6X14X1.0		FOR JACK	1

PACKING

	G2627738R0	INNER BOX			1
#	G2607509R0	PACKING CASE			1

MISCELLANEOUS

#	G2257314R0	INSULATING SHEET	PVC T=0.5 + Y525		1
#	H5319102R0	INSULOK TIE	LCT-80 (3S) YJ-80 WHITE		2
#	G2537516R0	PSA CAUTION	CE 9V N225		1
#	22537538R0	PSA LABEL	8X13		1
#	F3419102R0	BATTERY CONNECTOR	006P BATTERY SNAP		1
#	H2369402R0	POLYCA PIPE	#306 3X6X6		1
#	22177109R0	COIL SPRING			1
#	22267333R0	CUSHION			1
#	22257257R0	EARTH TERMINAL		ET1, ET2	2
#	G2167301R0	INSULATING SHEET			1
#	22157702R0	PEDAL GUIDE BUSH			1

ACCESSORIES (Standard)

#	G6017460R0	OWNER'S MANUAL	JAPANESE		1
#	G6027114R0	OWNER'S MANUAL	ENGLISH		1
#	*******	BATTERY	GP1604A 006P 9V		1

Checking Version Number

1. Connect an AC adaptor.
2. Adjust the REVERB, LEVEL, BODY and TOP knobs to **MIN**.
3. Adjust the MODE knob to **STANDARD**.
4. While holding down the pedal, connect a plug to the INPUT jack.
5. When the CHECK indicator turns off, release the pedal.
   The CHECK indicator blinks and turns off.
6. Then, count the number of times the CHECK indicator blinks.
   Examples) Blinks one time: Ver. 1.00
   Blinks two times: Ver. 1.01
   After showing the version number like this, the test program advances to the next test item.

Test Mode

Required Items

- Oscillator
- Oscilloscope
- Noise Meter
- 47-kΩ short plug
- Monitor Speaker

Test Items

1. CPU, DSP Check (p. 9)
2. DC Leakage Check (p. 9)
3. REVERB Volume Check (p. 9)
4. LEVEL Volume Check (p. 9)
5. BODY Volume Check (p. 9)
6. TOP Volume Check (p. 10)
7. FET Through, DAC Check (p. 10)
8. Maximum Input/Output Level Check (p. 10)
9. AF/AD Check (p. 11)
10. MODE Switching Check (p. 11)
11. Cross Talk Check (p. 11)
12. Residual Noise Check (p. 12)
13. Noise Check (p. 12)
14. Power and Battery Check (p. 12)

How to Enter Test Mode

Test items are divided into the next three groups, and starting (entering) method of each test item is different.

Test Mode A: DC Leakage Check (2)–MODE Switching Check (10)
Test Mode B: Cross Talk Check (11)
Test Mode C: Residual Noise Check (12)

MEMO

Even what test mode you enter, **14. Power and Battery Check** (p. 12) is always executed first.

MEMO

To execute **13. Noise Check** (p. 12) or **14. Power and Battery Check** (p. 12), turn on the power in normal play mode.

The next section explains how to enter each test mode.

Test Mode A (2. DC Leakage Check–10. MODE Switching Check)

1. Connect an AC adaptor.
2. Adjust all of the REVERB, LEVEL, BODY and TOP knobs to **MIN**.
3. Adjust the MODE knob to **STANDARD**.
4. Hold down the pedal and connect an oscillator to the INPUT jack.
5. When the CHECK indicator turns off, release the pedal.

* *If there are any knobs which aren't adjusted to **MIN**, you won't be able to enter the test mode A. And if there are any knobs which minimum values aren't detected because of some poor parts, you won't be able to enter the test mode.*

* *If you pull out the plug connected to the INPUT jack, the power is turned off. Then enter test mode again.*

* *If the CHECK indicator doesn't turn on, its LED might have some troubles. Then, confirm the indicator is turned on or off when pressing the pedal in normal play mode. If the indicator continues to blink, refer to **1. CPU, DSP Check** (p. 9).*

Test Mode B (11. Cross Talk Check)

1. Connect an AC adaptor.
2. Adjust all of the REVERB, LEVEL, BODY and TOP knobs to **MAX**.
3. Adjust the MODE knob to **ENHANCE**.
4. Hold down the pedal and connect an oscillator to the INPUT jack.
5. When the CHECK indicator turns off, release the pedal.

Test Mode C (12. Residual Noise Check)

1. Connect an AC adaptor.
2. Adjust all of the REVERB, LEVEL, BODY and TOP knobs to **MAX**.
3. Adjust the MODE knob to **PIEZO**.
4. Hold down the pedal and connect a 47-kΩ short plug to the INPUT jack.
5. When the CHECK indicator turns off, release the pedal.

How to Exit Test Mode

Press the pedal.

Skip in Test Mode A

After entering Test Mode A, you can select the desired test item, and execute it. Follow the next procedure.

1. Enter Test Mode A. Refer to **Test Mode A (2. DC Leakage Check–10. MODE Switching Check)** (p. 8).
   While the CHECK indicator lights, **1. CPU, DSP Check** (p. 9) is executed. If there is no problem, the CHECK indicator blinks and turns off.
2. Select the desired test item by the MODE knob.

MODE knob	Test Item
STANDARD	3. REVERB, 4. LEVEL, 5. BODY, 6. TOP Volume Check
JUMBO	7. FET Through, DAC Check
ENHANCE	8. Maximum Input/Output Level Check
PIEZO	9. AF/AD Check

* *Tests of 3. REVERB, 4. LEVEL, 5. BODY and 6. TOP Volume Check (when the MODE knob is adjusted to STANDARD) is always executed in this order.*

Details of Test Items

1. CPU, DSP Check

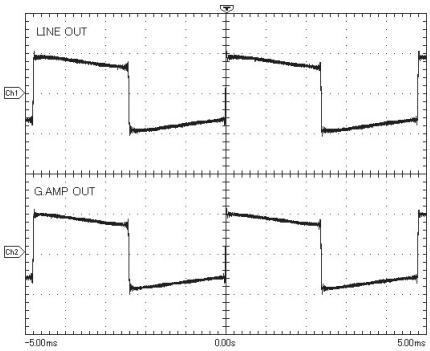
1. Enter Test Mode A. Refer to **Test Mode A (2. DC Leakage Check–10. MODE Switching Check)** (p. 8).
   While the CHECK indicator lights, CPU and DSP are tested automatically.
   If there is no problem, the CHECK indicator blinks and turns off.

NOTE

If the CHECK indicator continues blinking, there might be some troubles of CPU, DSP or soldering around them. Unplug the AC adaptor to turn off the power.

By the following steps, you can check whether you've entered the test mode successfully or not.

1. Connect an oscilloscope to **both** of the LINE OUT jack and the G.AMP OUT jack.
2. Connect an oscillator to the INPUT jack.
3. Input the rectangular wave of 200 Hz, 100 mV p-p to INPUT.
4. Confirm the output waves of LINE OUT and G.AMP OUT are as follows.



<< 50 mV/DIV, 1 ms/DIV >>

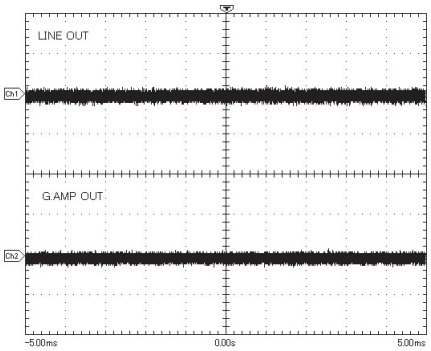
2. DC Leakage Check

1. Connect an oscilloscope to **both** of the LINE OUT jack and the G.AMP OUT jack.
2. Keep the connection to the INPUT jack, then cut the signal to the INPUT.

NOTE

If you pull out the plug connected to the INPUT jack, AC-3 exits the test mode and turns off the power.

3. Confirm the DC level from the LINE OUT and G.AMP OUT are 50 mV or less.



<< 50 mV/DIV, 1 ms/DIV >>

3. REVERB Volume Check

1. Rotate the REVERB knob clockwise from MIN to center and MAX.
2. Confirm the CHECK indicator turns on, off (at the position of eleven o'clock), on (one o'clock) and off (MAX).
   When the maximum value is detected at the MAX position, the CHECK indicator turns off and the test is advanced to LEVEL Volume Check.

4. LEVEL Volume Check

* *If the maximum value of REVERB volume isn't detected, the LEVEL Volume Check won't be executed.*

1. Rotate the LEVEL knob clockwise from MIN to center and MAX.
2. Confirm the CHECK indicator turns on, off (eleven o'clock), on (one o'clock) and off (MAX).
   When the maximum value is detected at the MAX position, the CHECK indicator turns off and the test is advanced to BODY Volume Check.

5. BODY Volume Check

* *If the maximum value of LEVEL volume isn't detected, the BODY Volume Check won't be executed.*

1. Rotate the BODY knob clockwise from MIN to center and MAX.
2. Confirm the CHECK indicator turns on, off (eleven o'clock), on (one o'clock) and off (MAX).
   When the maximum value is detected at the MAX position, the CHECK indicator turns off and the test is advanced to TOP Volume Check.

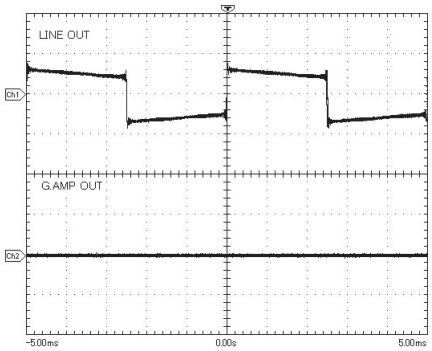
6. TOP Volume Check

* *If the maximum value of BODY volume isn't detected, the TOP Volume Check won't be executed.*

1. Rotate the TOP knob clockwise from MIN to center and MAX.
2. Confirm the CHECK indicator turns on, off (eleven o'clock), on (one o'clock) and off (MAX).

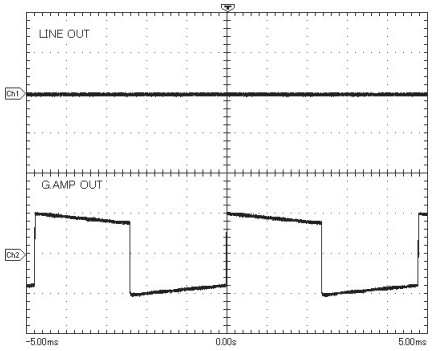
7. FET Through, DAC Check

1. Adjust the MODE knob to **JUMBO**.
   The CHECK indicator turns on.
2. Connect an oscilloscope to **both** of the LINE OUT jack and G.AMP OUT jack. (Or, confirm they have been connected.)
3. Input the rectangular wave of 200 Hz, 100 mV p-p to INPUT.
4. Confirm the output waves of LINE OUT and G.AMP OUT are as follows.



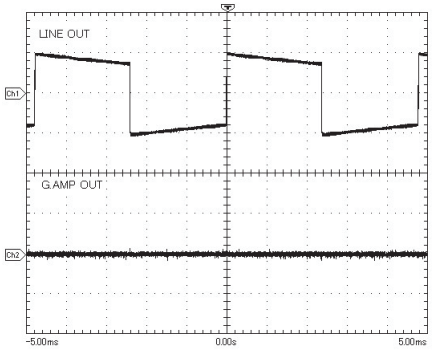
<< 50 mV/DIV, 1 ms/DIV >>

5. Adjust the REVERB knob to MIN.
   The CHECK indicator turns off.
6. Confirm the output waves of LINE OUT and G.AMP OUT are as follows.



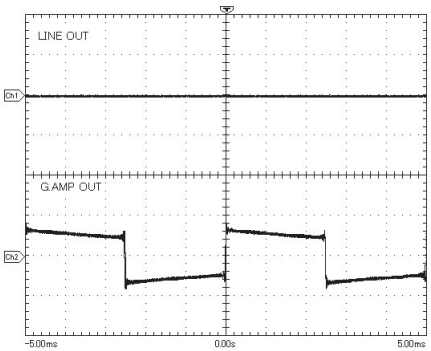
<< 50 mV/DIV, 1 ms/DIV >>

7. Remove the connection of the G.AMP OUT jack.
8. Confirm the output waves of LINE OUT and G.AMP OUT are as follows.



<< 50 mV/DIV, 1 ms/DIV >>

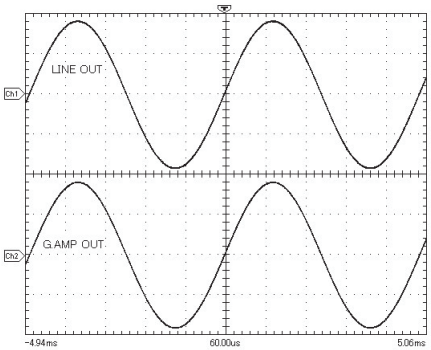
9. Remove the connection of the LINE OUT jack, and connect an oscilloscope to the G.AMP OUT jack.
10. Confirm the output waves of LINE OUT and G.AMP OUT are as follows.



<< 50 mV/DIV, 1 mS/DIV >>

8. Maximum Input/Output Level Check

1. Adjust the MODE knob to **ENHANCE**.
   The CHECK indicator turns off.
2. Connect an oscilloscope to **both** of the LINE OUT jack and G.AMP OUT jack. (Or, confirm they have been connected.)
3. Input the rectangular wave of 200 Hz, +5 dBm [FLAT] to INPUT.
4. Confirm the output waves of LINE OUT and G.AMP OUT are as follows.

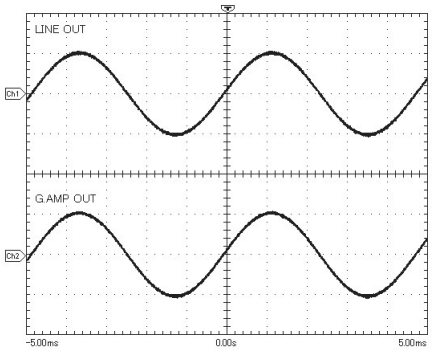


<< 1 V/DIV, 1 ms/DIV >>

5. Connect an noise meter to the LINE OUT jack and the G.AMP OUT jack.
6. Confirm the output level of LINE OUT and G.AMP OUT are +3–+6 dBm [FLAT].

9. AF/AD Check

1. Adjust the MODE knob to **PIEZO**.
   The CHECK indicator turns on.
2. Connect an oscilloscope to **both** of the LINE OUT jack and G.AMP OUT jack. (Or, confirm they have been connected.)
3. Input the rectangular wave of 200 Hz, +5 dBm [FLAT] to INPUT.
4. Confirm the output waves of LINE OUT and G.AMP OUT are as follows.



<< 50 mV/DIV, 1 ms/DIV >>

10. MODE Switching Check

1. Adjust the REVERB knob to MAX.
2. Adjust the MODE knob to PIEZO, ENHANCE, JUMBO, STANDARD, JUMBO, ENHANCE and PIEZO in this order, and confirm the CHECK indicator is as follows.

MODE knob	CHECK indicator
PIEZO	turns on
ENHANCE	turns off
JUMBO	turns on
STANDARD	turns off

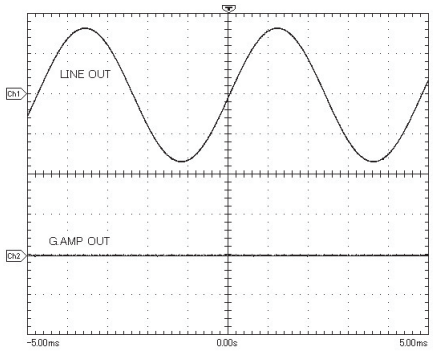
11. Cross Talk Check

1. Enter Test Mode B. Refer to **Test Mode B (11. Cross Talk Check)** (p. 8).
   While the CHECK indicator lights, CPU and DSP are tested automatically.
   If there is no problem, the CHECK indicator blinks and turns off.

NOTE

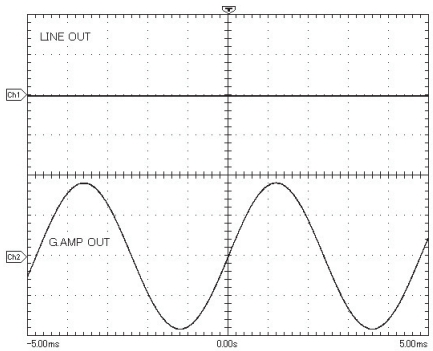
If the CHECK indicator continues blinking, there might be some troubles of CPU, DSP or soldering around them. Unplug the AC adaptor to turn off the power.

2. Connect an oscilloscope to **both** of the LINE OUT jack and G.AMP OUT jack. (Or, confirm they have been connected.)
3. Input the rectangular wave of 200 Hz, +5 dBm [FLAT] to INPUT.
4. Confirm the output waves of LINE OUT and G.AMP OUT are as follows.



<< 1 V/DIV, 1 ms/DIV >>

5. Remove the connection of the G.AMP OUT jack, and connect an noise meter to it.
6. Confirm the output level of G.AMP OUT is -90 dBm [JIS-A] or less.
7. Remove the connection of the G.AMP OUT jack, and connect the oscilloscope again.
8. Adjust the REVERB knob to MIN.
   The CHECK indicator turns on.
9. Confirm the output waves of LINE OUT and G.AMP OUT are as follows.



<< 1 V/DIV, 1 ms/DIV >>

10. Remove the connection of the LINE OUT jack, and connect a noise meter to it.
11. Confirm the output level of LINE OUT is -90 dBm [JIS-A] or less.

12. Residual Noise Check

1. Enter Test Mode C. Refer to **Test Mode C (12. Residual Noise Check)** (p. 8).

NOTE

In Test Mode C, you need to connect a 47-kΩ short plug to the INPUT jack, not a normal plug.

While the CHECK indicator lights, CPU and DSP are tested automatically.
If there is no problem, the CHECK indicator blinks and turns off.

NOTE

If the CHECK indicator continues blinking, there might be some troubles of CPU, DSP or soldering around them. Unplug the AC adaptor to turn off the power.

2. Adjust the REVERB knob to MIN.
3. Connect a noise meter to the LINE OUT jack and G.AMP OUT jack. (Or, confirm it has been connected.)
4. Confirm the output level of LINE OUT is -92 dBm [JIS-A] or less and the output level of G.AMP OUT is also -92 dBm [JIS-A] or less.

13. Noise Check

From here, execute the following tests in normal play mode.

NOTE

Wait for a while after turning on the power, and then execute this test.

1. Connect a noise meter to the LINE OUT jack and G.AMP OUT jack. (Or, confirm it has been connected.)
2. Connect a 47-kΩ short plug to the INPUT jack.
3. Adjust all of the REVERB, LEVEL, BODY and TOP knobs to **MAX**.
4. Adjust the MODE knob to **PIEZO**.
5. Confirm the output level of LINE OUT is -92 dBm [JIS-A] or less and the output level of G.AMP OUT is also -92 dBm [JIS-A] or less.
6. Remove the connections of the LINE OUT jack and the G.AMP OUT jack, then connect a monitor speaker to the LINE OUT jack.
7. Drop the AC-3 twice from the height of about 10 cm to shock its body.
8. Confirm no abnormal noise sounds from the speaker.
9. Remove the plug connected to the LINE OUT jack, and connect the monitor speaker to the G.AMP OUT jack.
10. Drop the AC-3 twice from the height of about 10 cm to shock its body.
11. Confirm no abnormal noise sounds from the speaker.
12. Confirm no switching noises sounds when the pedal is pressed to switch on and off.

14. Power and Battery Check

NOTE

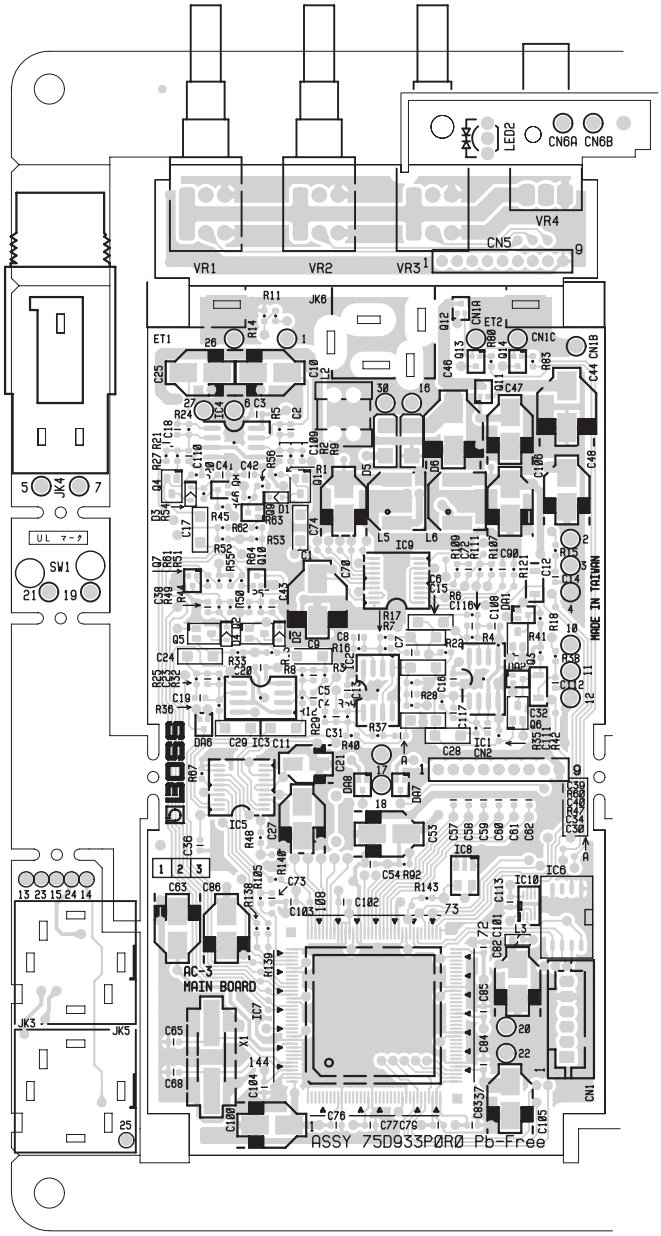
Install a battery and connect an AC adaptor, then start this test.

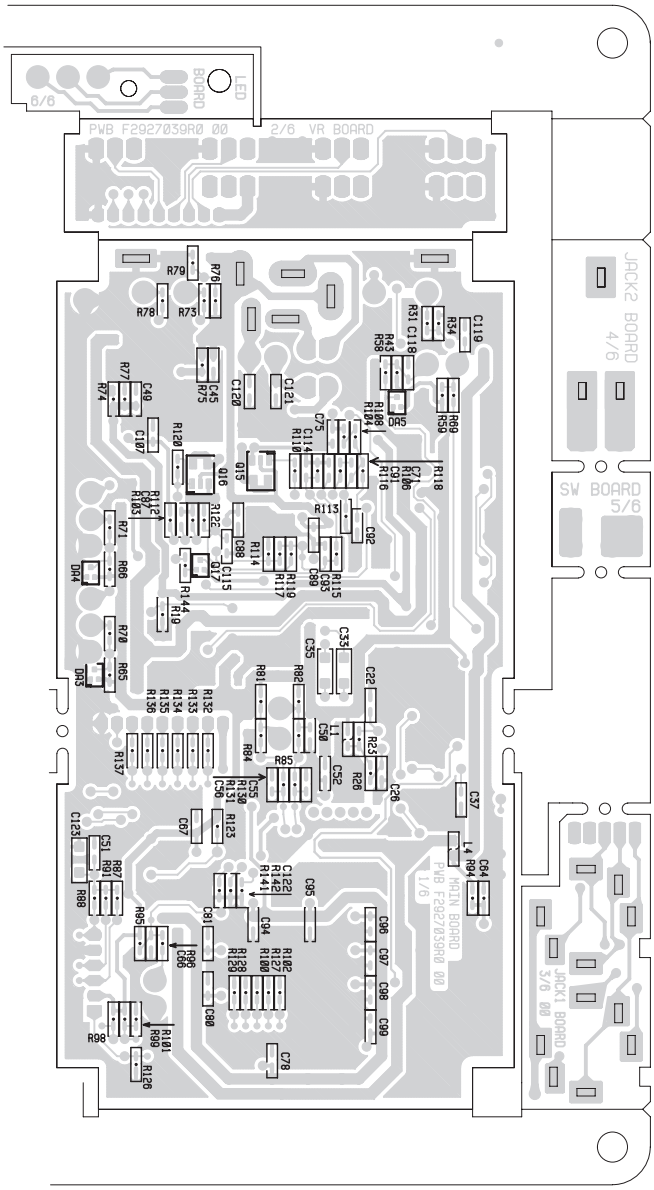
1. Connect a plug to the INPUT jack. (Or, confirm it has been connected.)
2. Press the pedal, and confirm the CHECK indicator turns on.
3. Remove the AC adaptor's plug.
4. Press the pedal, and confirm the CHECK indicator turns on.

MEMO

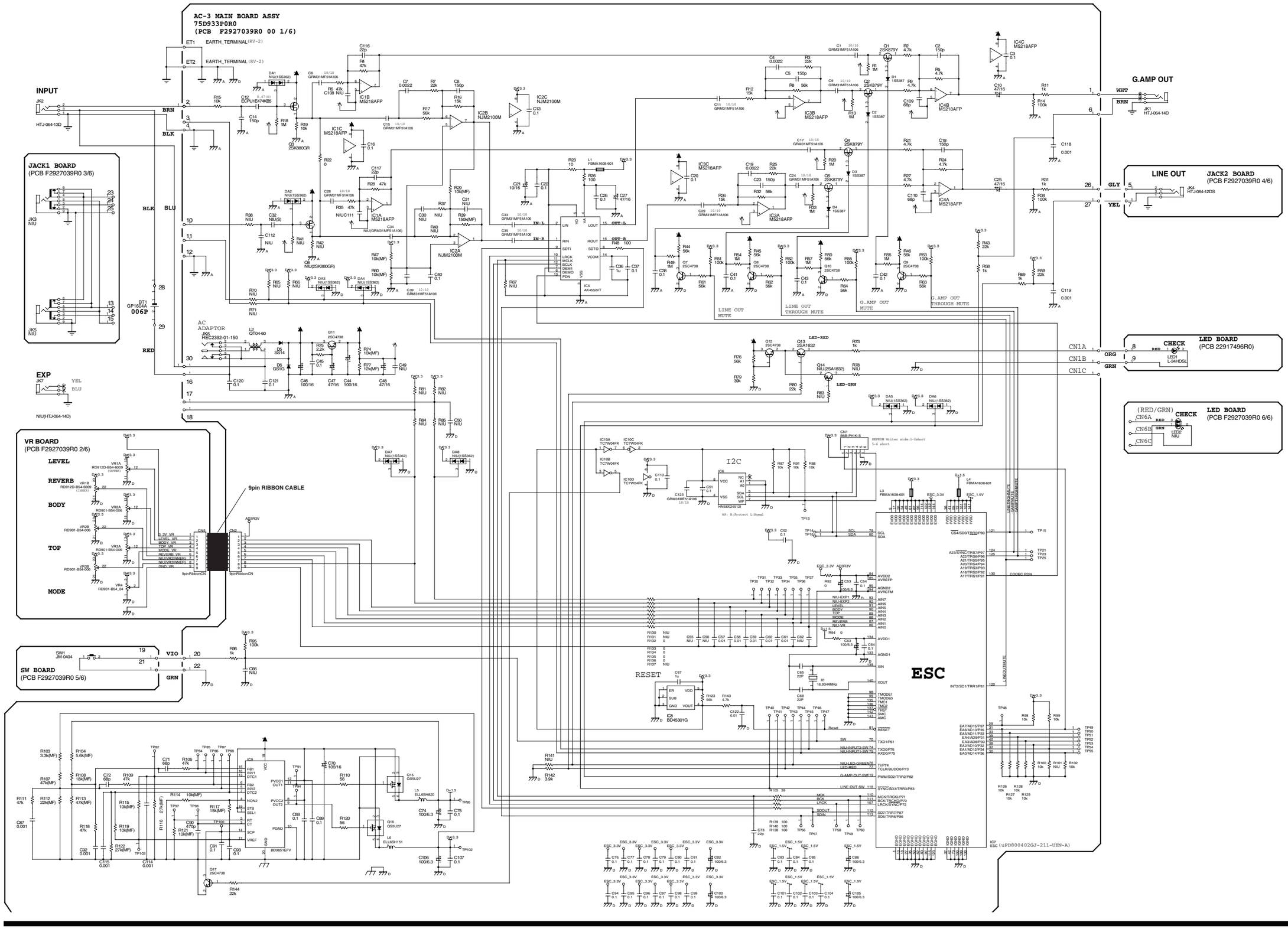
If the CHECK indicator gets dark, power of battery is consumed.

Circuit Board





Circuit Diagram



MEMO