GT-1

GUITAR
EFFECTS PROCESSOR

SERVICE NOTES
Issued by RJA

Table of Contents

Revise Information

Dec. 7, 2016	p. 20	Corrected an error.
Nov. 17, 2016	p. 20	Added a test item.
Mar. 24, 2017	p. 20	Added a caution.

Cautionary Notes

Before beginning the procedure, please read through this document. The matters described may differ according to the model.

Back Up User Data!

User data may be lost during the course of the procedure. Refer to **Data Backup and Restore Operations** (p. 15) in the Service Notes and save the data. After completing the procedure, restore the backed-up data to the product.

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.).

Parts List

A component whose part code is ******** will not 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).
- Because it is carried in electronic data on the Roland web site.
- Because it is a package or an accessory irrelevant to the function maintenance of the main body.
- Because it can be replaced with an article on the market. (battery or etc.)

Circuit Diagram

In the circuit diagram, “NIU” is an abbreviation for “Not in Use,” and “UnPop” is an abbreviation for “Unpopulated.” They both mean non-mounted components. The circuit board and circuit board diagram show silk-screened indications, but no components are mounted.

Roland Japan Warranty

Please send the problem report with followings when the defect occurred within one year from production and within one month from the first customer’s purchase.

- Model name:
- Serial number:
- Version:
- Purchase date by the first customer: yyyy/mm/dd
- Symptom:
- Frequency: always, sometimes or seldom
- Confirmed the symptom at your service dept: Yes/No

Please send the problem report to rjasc@roland.co.jp.

Specifications

BOSS GT-1: Guitar Effects Processor

Sampling Frequency

44.1 kHz

AD Conversion

24 bits + AF method

* *AF method (Adaptive Focus method) is a proprietary method from Roland & BOSS that vastly improves the signal-to-noise (SN) ratio of the AD and DA converters.*

DA Conversion

24 bits

Effects

108 types

Patches

99 (User) + 99 (Preset)

Phrase Loop

32 sec.

Nominal Input Level

INPUT: -10 dBu, AUX IN: -20 dBu

Maximum Input Level

INPUT: -7 dBu, AUX IN: 0 dBu

Input Impedance

INPUT: 1 MΩ, AUX IN: 27 kΩ

Nominal Output Level

OUTPUT (L/MONO, R): -10 dBu, PHONES: -10 dBu

Output Impedance

OUTPUT (L/MONO, R): 1 kΩ, PHONES: 44 Ω

Recommended Load Impedance

OUTPUT (L/MONO, R): 10 kΩ or greater, PHONES: 44 Ω or greater

Controls

DOWN switch, UP switch CTL1 switch
EASY SELECT button, EASY EDIT button, FX1/COMP button, OD/DS button, PREAMP button, FX2/MOD button, DELAY button, REVERB button, MEMORY EDIT button, EXIT button, ENTER button, MENU button
1 knob, 2 knob, 3 knob
Expression pedal

Display

Graphic LCD (132 x 32 dots, backlit LCD)

Connectors

INPUT jack, OUTPUT (L/MONO, R) jacks: 1/4-inch phone type
CTL2, 3/EXP2 jack: 1/4-inch TRS phone type
AUX IN jack: Stereo miniature phone type
USB COMPUTER port: USB type B
DC IN jack

Power Supply

Alkaline battery (AA, LR6) x 4, AC adaptor (sold separately)

Current Draw

200 mA

Expected battery life under continuous use

Alkaline: Approx. 7 hours

* *These figures will vary depending on the actual conditions of use.*

Dimensions

305 (W) x 152 (D) x 56 (H) mm
12-1/16 (W) x 6 (D) x 2-1/4 (H) inches
Maximum height:
305 (W) x 152 (D) x 74 (H) mm
12-1/16 (W) x 6 (D) x 2-15/16 (H) inches

Weight (including battery)

1.3 kg
2 lbs 14 oz

Accessories

Owner's manual (#5100051784)
Leaflet "USING THE UNIT SAFELY"(#********)
Alkaline battery (AA, LR6) (#********) x 4

Options (sold separately)

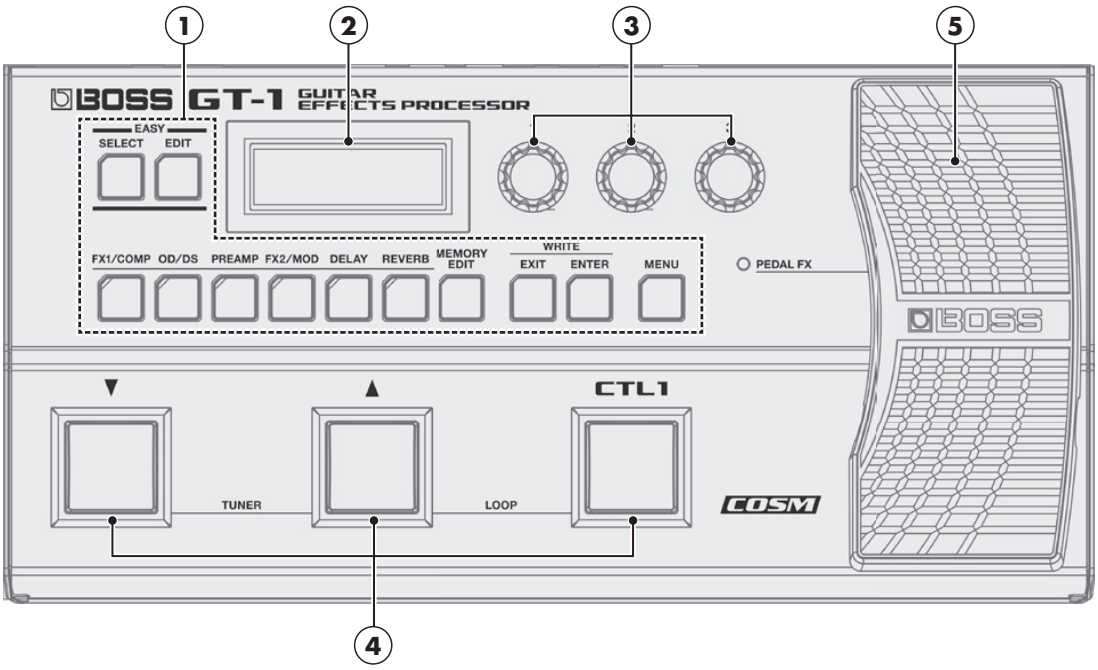
AC adaptor: PSA series
Footswitch: FS-5U, FS-5L, FS-6, FS-7
Expression Pedal: FV-500L, FV-500H, Roland EV-5

* *0 dBu = 0.775 Vrms*

* *Printed matters will not be supplied after the end of the production. Then, download the electronic file from the Roland web site.*

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

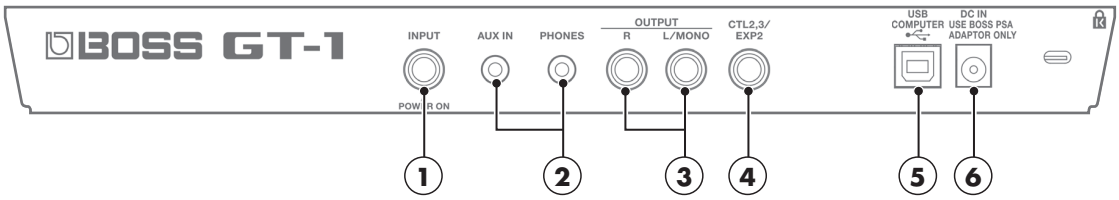
Location of Controls (Top)



Location of Controls Parts List (Top)

No.	Part Code	Part Name	Description		Q'ty
1	5100051758	KEY UNIT			1
	5100051446	SWITCH	EVPAWCD2A		12
2	5100051759	DISPLAY COVER			1
	5100053348	LCD	QFG13232-30-PTDSOS-R		1
	5100051760	DISPLAY CUSHION			1
3	5100051761	R-KNOB			3
	*******	NUT		attached to VR	3
	5100053342	ROTARY POTENTIOMETER	R1132G6JV1O203FC50F9		3
4	5100051751	SWITCH PEDAL			3
	5100051753	SWITCH PEDAL SW SPRING			3
	5100051766	SWITCH PEDAL TACT SPRING			3
	5100051752	SWITCH PEDAL ESCUTCHEON			3
	01780101	TACT SWITCH	SKQKABD010		3
5	01016167	11M/M ROTARY POTENTIOMETER	RK11K1140AFG 10KX1		1

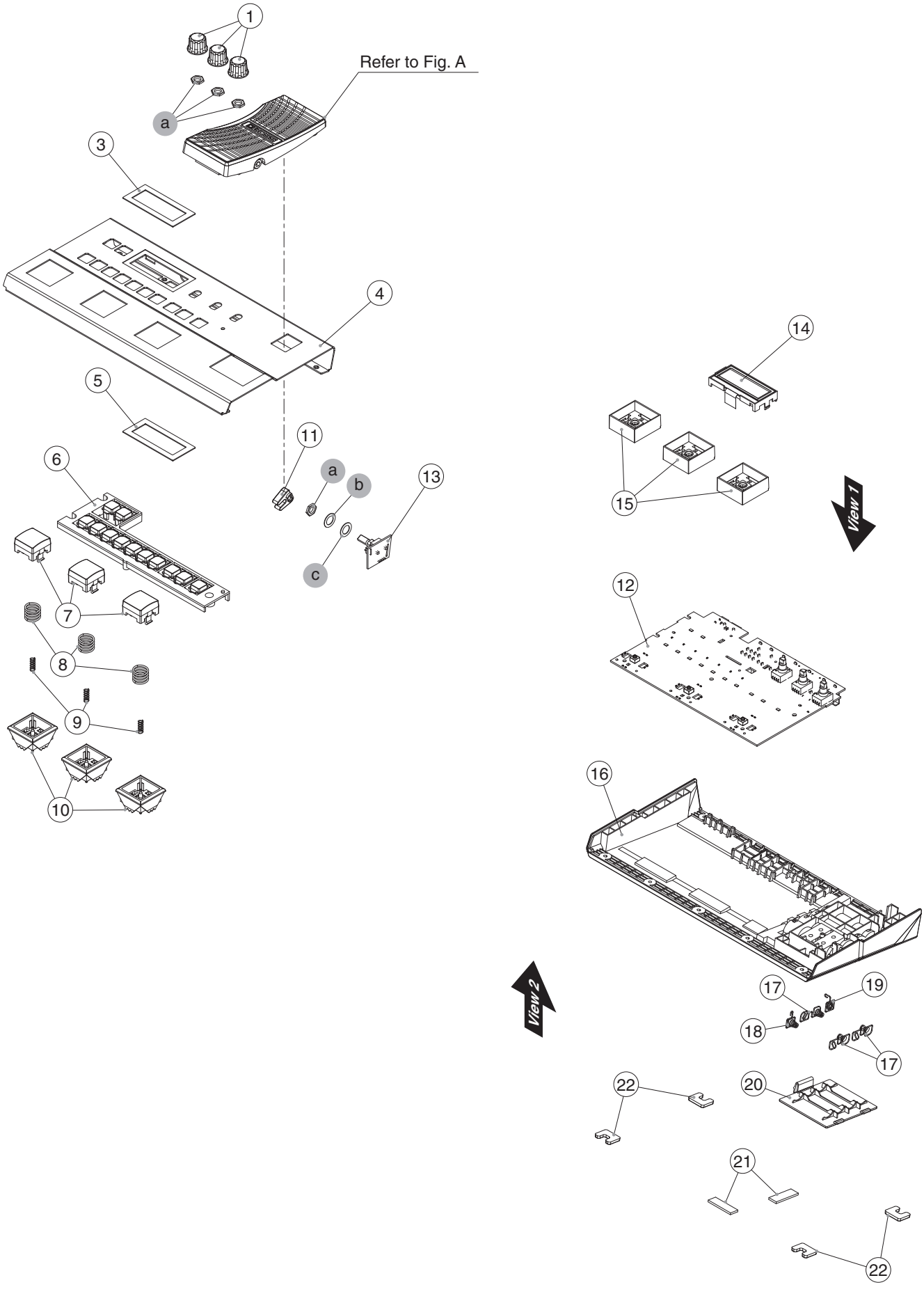
Location of Controls (Rear)



Location of Controls Parts List (Rear)

No.	Part Code	Part Name	Description	Q'ty
1	02897334	6.5MM JACK	HTJ-064-10D	1
2	5100028016	3.5MM JACK	HTJ-035-10ABPP1	2
3	02341712	6.5MM JACK	HTJ-064-10I(F3449106R0)	2
4	02341645	6.5MM JACK	HTJ-064-04A	1
5	5100047083	USB CONNECTOR	U7F04D-B1NB	1
6	13449720	DC JACK	HEC2305-016250	1

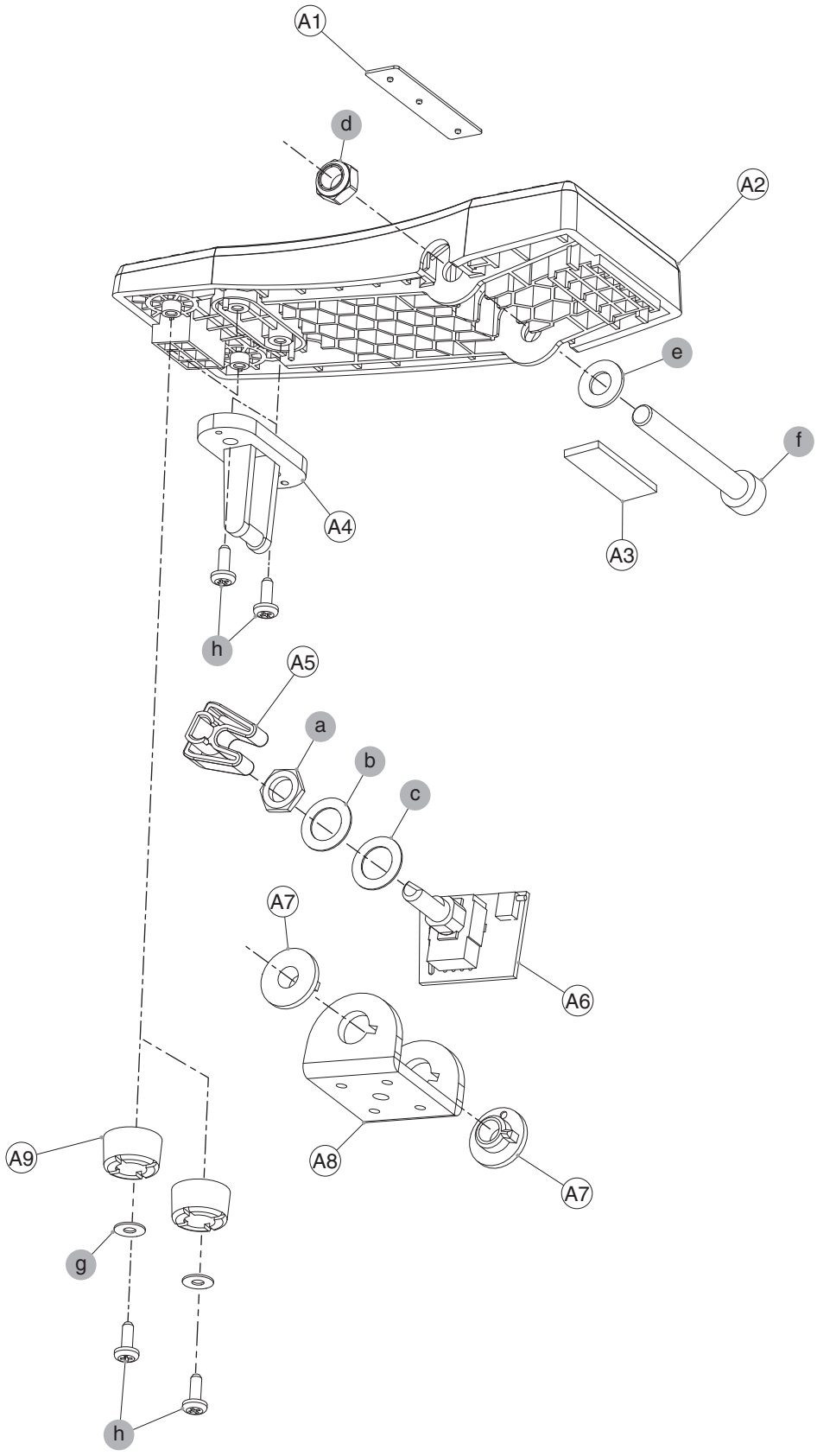
Exploded View



Exploded View Parts List

No.	Part Code	Part Name	Description		Q'ty
1	5100051761	R-KNOB			3
3	5100051759	DISPLAY COVER			1
4	5100051748	TOP COVER			1
5	5100051760	DISPLAY CUSHION			1
6	5100051758	KEY UNIT			1
7	5100051751	SWITCH PEDAL			3
8	5100051753	SWITCH PEDAL SW SPRING			3
9	5100051766	SWITCH PEDAL TACT SPRING			3
10	5100051752	SWITCH PEDAL ESCUTCHEON			3
11	5100051756	STAY			1
	5100051442	MAIN BOARD ASSY			1
	* *This unit includes the following parts.*				
12	********	MAIN BOARD			1
13	********	EXP PEDAL BOARD			1
14	5100053348	LCD	QFG13232-30-PTDSOS-R		1
15	5100052212	SWITCH PEDAL HOLDER			3
16	5100051749	BOTTOM COVER			1
17	5100047009	BATTERY TERMINAL	±		3
18	5100053384	BATTERY TERMINAL	-		1
19	5100053383	BATTERY TERMINAL	+		1
20	5100051750	BATTERY COVER			1
21	5100051763	VR PEDAL CUSHION	HEEL		2
22	5100051765	RUBBER FOOT			4
a	********	NUT		attached to VR	4
b	********	WASHER		attached to VR	1
c	5100046938	PLAIN WASHER 9.1X14X0.5	ZC		1

Exploded View (Fig. A)

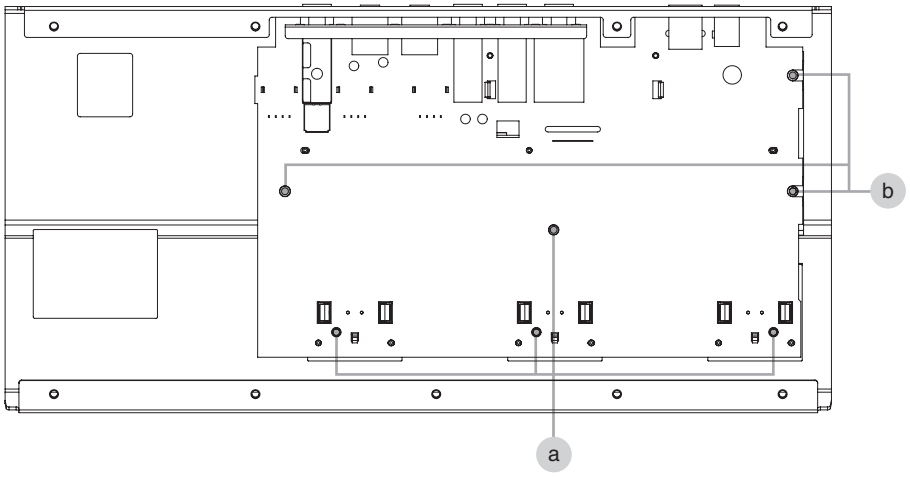


Exploded View Parts List (Fig. A)

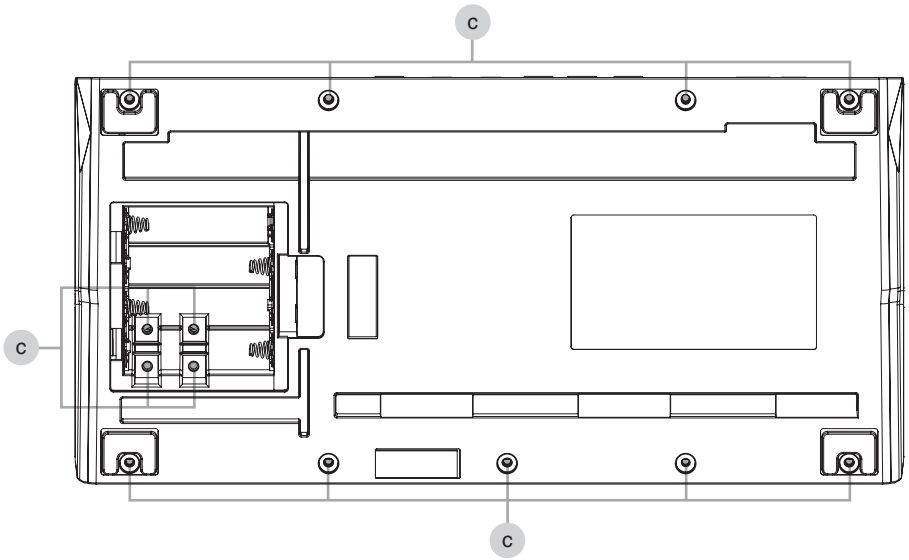
No.	Part Code	Part Name	Description		Q'ty
A1	5100053334	BOSS BADGE			1
A2	5100051754	VR PEDAL			1
A3	5100051763	VR PEDAL CUSHION	HEEL		1
A4	5100051757	PIN STAY			1
A5	5100051756	STAY			1
	5100051442	MAIN BOARD ASSY			1
	* *This unit includes the following parts.*				
A6	********	EXP PEDAL BOARD			1
	********	MAIN BOARD		Refer to **Exploded View** (p. 6).	1
A7	5100051764	VR PEDAL BOLT HOLDER			2
A8	5100051755	VR PEDAL HOLDER			1
A9	5100051762	VR PEDAL CUSHION	TOE		2
a	********	NUT		attached to VR	1
b	********	WASHER		attached to VR	1
c	5100046938	PLAIN WASHER 9.1X14X0.5	ZC		1
d	5100052791	U NUT M6	BZC		1
e	5100052792	PLAIN WASHER 6.5X12.8X1.0	BZC		1
f	5100052795	SCREW M6X50	HEXSOCKET MACHINE BZC		1
g	40127023	PLAIN WASHER 3X8X0.5	ZC		2
h	40011278	SCREW 3X8	BINDING TAPTITE P FE ZC		4

Plain View

View 1



View 2



View 1

No.	Part Code	Part Name	Description	Q'ty
a	40011278	SCREW 3X8	BINDING TAPTITE P FE ZC	4
b	40012867	SCREW M3X8	PAN MACHINE W/SW+PW ZC	3

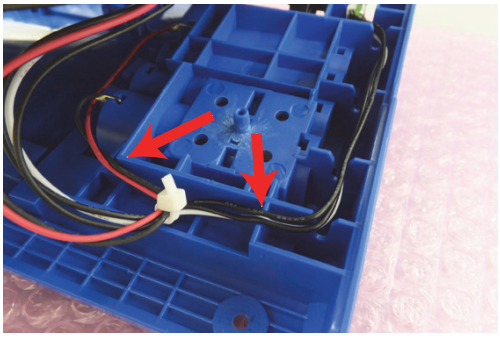
View 2

No.	Part Code	Part Name	Description	Q'ty
c	40019123	SCREW 3X8	BINDING TAPTITE S BZC	13

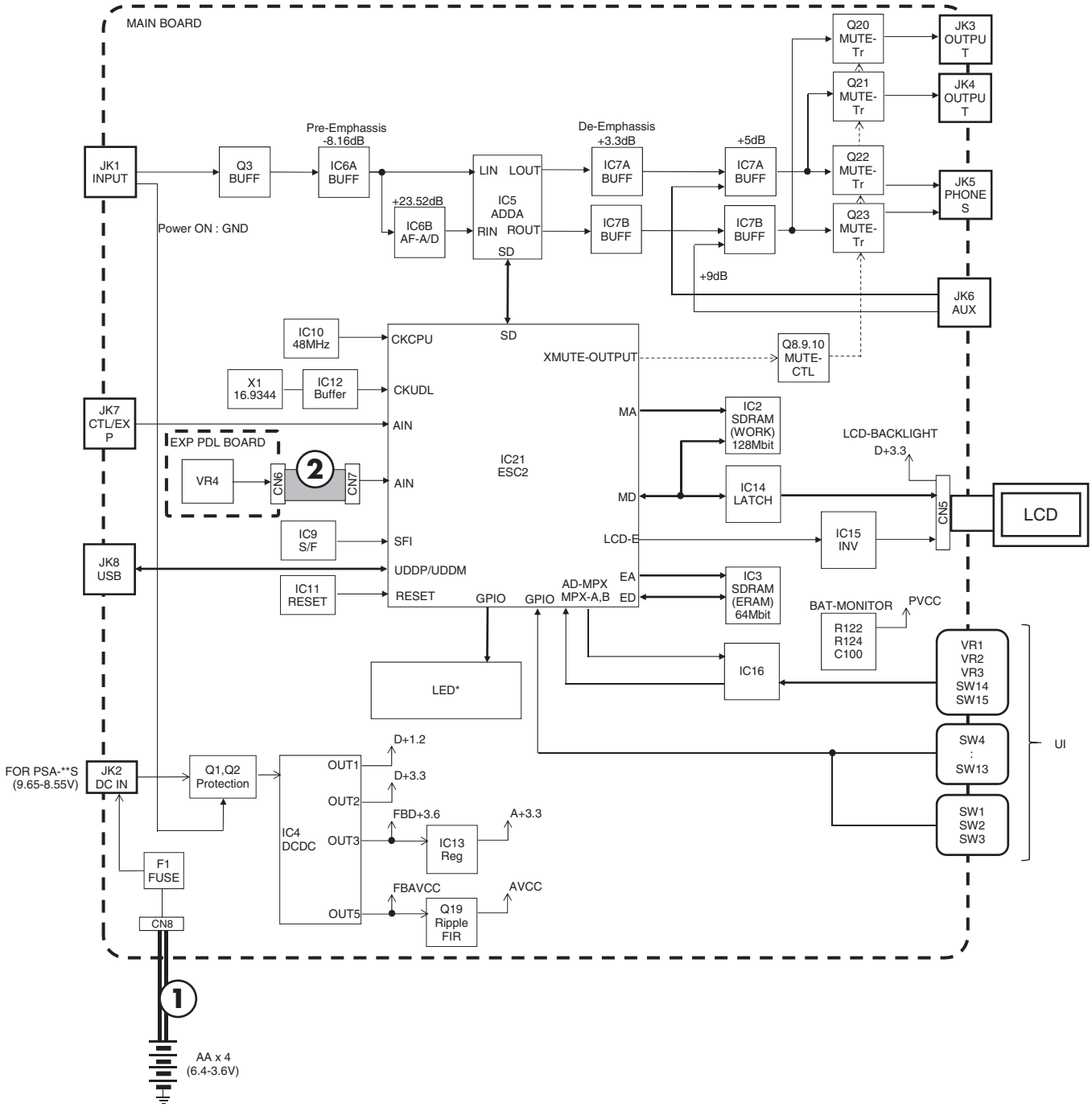
Disassembly Procedure

1. Remove the battery cover and take out the battery.
2. Remove the screws (x 4) in the battery case.
3. Detach the pedal.
4. Remove the knobs (x 3) and VR nuts (x 3).
5. Remove all screws (x 9) on the bottom.
6. Lift the bottom cover gently and disconnect the connectors (x 2) on the main board.
7. Detach the bottom case.
8. Disconnect the flat cable (x 1) and wiring (x 1) connecting the main board to the LCD.
9. Remove the screws (x 7) securing the main board.
10. Detach the main board.

* *Give attention to ensure that the wirings do not ride up on the rib and are not pinched by the upper and lower cases when assembling.*



Block Diagram/Wiring Diagram



No.	Part Code	Part Name	Description	Q'ty
1	5100052119	WIRING W1	(BATTERY)	1
2	5100052120	WIRING W2	1007#26 3X230	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.
- Supply is prohibited due to copyright restrictions.
- It is carried in electronic data on the Roland web site.
- The part is made to order (at current market price).
- It can be replaced with an article on the market. (battery or etc.)
- It is a package or an accessory irrelevant to the function maintenance of the main body.
- A number of circuit boards are grouped together and supplied as a single circuit board (under a different part code).
- Reissuance is restricted.
- It is supplied as an assembled part (under a different part code).

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

CASING

#	5100051748	TOP COVER		1
#	5100051754	VR PEDAL		1
#	5100051751	SWITCH PEDAL		3
#	5100051752	SWITCH PEDAL ESCUTCHEON		3
#	5100051750	BATTERY COVER		1
#	5100051749	BOTTOM COVER		1

CHASSIS

#	5100051767	JACK HOLDER		1
#	5100052212	SWITCH PEDAL HOLDER		3
#	5100051764	VR PEDAL BOLT HOLDER		2
#	5100051755	VR PEDAL HOLDER		1
#	5100051757	PIN STAY		1
#	5100051756	STAY		1

KNOB, BUTTON

#	5100051758	KEY UNIT		1
#	5100051761	R-KNOB		3

SWITCH

#	5100051446	SWITCH	EVPAWCD2A	12
	01780101	TACT SWITCH	SKQKABD010	3

JACK, EXT TERMINAL

	5100028016	3.5MM JACK	HTJ-035-10ABPP1	2
	02341712	6.5MM JACK	HTJ-064-10I(F3449106R0)	2
	02897334	6.5MM JACK	HTJ-064-10D	1
	02341645	6.5MM JACK	HTJ-064-04A	1
	13449720	DC JACK	HEC2305-016250	1
	5100047083	USB CONNECTOR	U7F04D-B1NB	1

DISPLAY UNIT

#	5100053348	LCD	QFG13232-30-PTDSOS-R	1

PWB ASSY

#	5100051442	MAIN BOARD ASSY		1
	* *This unit includes the following parts.*			
	********	MAIN BOARD		1
	********	EXP PEDAL BOARD		1

POTENTIOMETER

	01016167	11M/M ROTARY POTENTIOMETER	RK11K1140AFG 10KX1	1
#	5100053342	ROTARY POTENTIOMETER	R1132G6JV1O203FC50F9	3

WIRING, CABLE

#	5100052119	WIRING W1	(BATTERY)	1
#	5100052120	WIRING W2	1007#26 3X230	1

SCREWS

	40012867	SCREW M3X8	PAN MACHINE W/SW+PW ZC	3
#	5100052795	SCREW M6X50	HEXSOCKET MACHINE BZC	1
	40019123	SCREW 3X8	BINDING TAPTITE S BZC	13
	40011278	SCREW 3X8	BINDING TAPTITE P FE ZC	8
#	5100052791	U NUT M6	BZC	1
	40127023	PLAIN WASHER 3X8X0.5	ZC	2
#	5100052792	PLAIN WASHER 6.5X12.8X1.0	BZC	1
	5100046938	PLAIN WASHER 9.1X14X0.5	ZC	1

MISCELLANEOUS

#	5100053383	BATTERY TERMINAL	+	1
#	5100053384	BATTERY TERMINAL	-	1
	5100047009	BATTERY TERMINAL	±	3
#	5100053334	BOSS BADGE		1
#	5100051759	DISPLAY COVER		1
#	5100051765	RUBBER FOOT		4
#	5100053354	SHIELD COVER		1
	5100018712	JACK SHIELD		1
#	5100051760	DISPLAY CUSHION		1
#	5100051762	VR PEDAL CUSHION	TOE	2
#	5100051763	VR PEDAL CUSHION	HEEL	3
#	5100051753	SWITCH PEDAL SW SPRING		3
#	5100051766	SWITCH PEDAL TACT SPRING		3
	5100027814	LOCKING CABLE	TIE CV-100V0K	1

ACCESSORIES (Standard)

#	5100051784	OWNER'S MANUAL	MULTILANGUAGE	1

Virus Check

Before repair or inspection, carry out a virus check on the GT-1. Follow steps **1** and **2** of **System Update Procedure** (p. 16) and start up, and then make a USB connection to the computer by the appropriate method of the virus check.

If it has been infected by a virus, format it after obtaining permission from the end user. For the formatting procedure, refer to **Performing a Factory Reset** (p. 15).

Verifying the Version

1. Hold down **ENTER** and connect a plug into the **INPUT** jack.
2. When the BOSS logo on the display, release your fingers.
   The version information is displayed.
3. Disconnect the plug.
   The power is switched off.

Data Backup and Restore Operations

Items Required

- Computer
- USB cable

- MIDI sequence program (Cakewalk Sonar LE or etc.)

* *Install this to the computer above.*

- GT-1 driver

* *Obtain this from the following web pages, and install it on the computer just described.*
http://www.roland.co.jp/
http://www.roland.com/

Data Backup Operations

1. Connect the computer to the **USB COMPUTER** connector.
2. Start the MIDI sequence program on the computer and set the MIDI input device to the **GT-1**.
3. Create two MIDI tracks (track 1 and track 2) and input the following two kinds of SysEx data into the track 1.
   F0 41 7F 00 00 00 30 11 00 00 00 00 00 00 02 00 00 7E F7
   F0 41 7F 00 00 00 30 11 10 00 00 00 00 00 63 00 00 0D F7
4. Set the track 2 in standby for recording and start recording and playback.
   The SysEx data on step **3** is sent to the GT-1, and then the GT-1 which received this data sends the system setting and all patch data (**U01** to **U99**) to the MIDI sequence program.
   When the recording and playback starts, **BULK DATA SENDING...** appears on the screen of the GT-1 and the display returns to the initial screen in about 1 second, but the data is sending from the GT-1 continuously. After the sending is completed, stop the sequence program. It takes about 40 to 50 seconds to complete the sending.
5. Delete the track 1 in the MIDI sequence program and let the track 2 standby for playback, then save it.
   This completes the backup procedure.
6. Disconnect the USB cable.

Data Restore Operations

1. Connect the computer to the **USB COMPUTER** connector.
2. Start the MIDI sequence program on the computer and set the MIDI output device to the **GT-1**.
3. Load the SysEx data which has been backed up to the track and send it to the GT-1.
   BULK DATA RECEIVING... is displayed on the screen of the GT-1 while sending is in progress and the display returns to the initial screen when the sending is completed.
   This completes the restore procedure.
4. Disconnect the USB cable.

Performing a Factory Reset

1. Press **MENU**.
   The **MENU** screen appears.
2. Turn the knob (**1**, **2** or **3**; whatever possible) to highlight **F.RESET** and press **ENTER**.
   The **FACTORY RESET** screen appears.
3. Turn the knob **1** counterclockwise to set **FROM** to **SYSTEM** and turn the knob **3** clockwise to set **TO** to **U99**.
   Now, the unit was set as the system parameter and all user patches (**U01** to **U99**) are reset.
4. To execute the factory reset, press **ENTER**. To cancel it, press **EXIT**.
   Pressing **ENTER** displays a confirmation screen.
5. To execute the factory reset, turn the knob (**1**, **2** or **3**; whatever possible) to highlight **OK** and press **ENTER**. To cancel it, highlight **CANCEL** and press **ENTER**, or press **EXIT**.
   EXECUTING... is displayed while the factory reset is in progress.
   When the procedure is finished, the initial screen returns.

System Update Procedure

Items Required

- Computer
- USB cable
- Dummy plug

- Update program (obtained via Service Net)

* *The update program is made up of the following two files.*
GT-1ROM.BIN
ROMINFO.TXT

Procedure

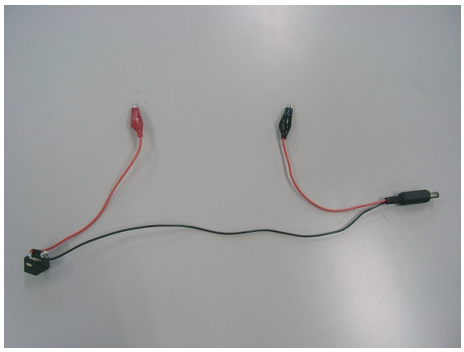
1. Prepare the update program to any folder on the computer.
2. Hold down **EXIT** and connect a dummy plug to the **INPUT** jack.
3. When **GT-1 Updater** appears on the screen of the GT-1, release your fingers.
4. Connect the computer to the **USB COMPUTER** connector.
   USB Connected. appears on the screen of the **GT-1** and the **BOSS_GT-1** drive appears on the screen of the computer.
5. Copy the update programs (two files) to the **BOSS_GT-1** drive.
6. End the USB connection and detach the USB cable.
   Push [ENTER] to start. is displayed on the screen of the GT-1.
7. Press **ENTER**.
   The update starts.
   When **Completed.** is displayed, the update has finished.
8. Disconnect the dummy plug from the **INPUT** jack.
   The power is switched off.

Test Mode

Items Required

- AC adaptor (PSA-series device)
- Computer
- Amp-equipped monitor speakers
- Signal generator
- Oscilloscope
- Noise meter
- Tester
- Expression pedal (EV-5)
- USB cable
- Dummy plug
- 1/4-inch mono phone plug with 47-kΩ load resister
- 1/4-inch stereo phone plug
- Miniature stereo phone plug

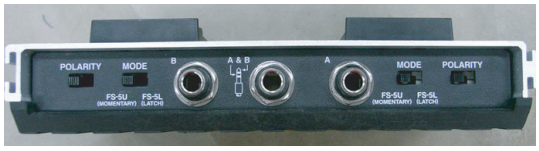
- Current-consumption measurement tool



- Foot switch (FS-5U x 2 or FS-6 x 1)

* *Set the POLARITY switch and the MODE switch on the foot switch as shown below.*

FS-5U



FS-6

- Y cable (having one 1/4-inch stereo phone plug and two 1/4-inch monaural phone plugs) or 1/4-inch stereo phone cable

- GT-1 driver

* *Obtain this from the following web pages, and install it on the computer just described.*
http://www.roland.co.jp/
http://www.roland.com/

Test Items

* *Test items **6**, **11**, **13**, **15**, and **16** are not required at the service.*

Entering the Test Mode

1. Connect the AC adaptor and hold down **PREAMP**, **REVERB** and **MEMORY EDIT** and connect a 1/4-inch mono phone plug into the **INPUT** jack.

* *To execute **3. CURRENT** (p. 17), connect the AC adaptor using the current-consumption measurement tool.*

* *To execute **12. NOISE** (p. 19), connect a 1/4-inch mono phone plug with 47 kΩ load resistor to the **INPUT** jack. Other test items can be carried out by the dummy plug.*

2. When the BOSS logo appears on the display, release your fingers.
Entering the Test Mode displays the **TEST MENU**.

Selecting Test Items

In the **TEST MENU**, turn the knob (**1**, **2** or **3**; whatever possible) to select a test item and press **ENTER**.

To return to the **TEST MENU**, press **EXIT**.

* *It is impossible to return from **5. SW/LED** to the **TEST MENU** until all buttons have been pressed.*

Quitting the Test Mode

Disconnect the plug from the **INPUT** jack to switch off the power.

1. VERSION

This verifies the version.

1. In the **TEST MENU**, select **1. VERSION** and press **ENTER**.
Version information is displayed under the **VER** text at the top left of the screen.

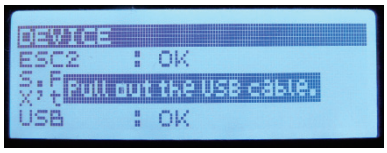
* *Ignore other displays.*

2. Press **EXIT** to return to the **TEST MENU**.

2. DEVICE

This verifies the operation of each device.

1. Connect the computer to the **USB COMPUTER** connector.
2. In the **TEST MENU**, select **2. DEVICE** and press **ENTER**.
Each device is checked automatically, and if no problems are found, **Pull out the USB cable.** appears.



3. Disconnect the USB cable.
4. Press **EXIT** to return to the **TEST MENU**.

3. CURRENT

This measures the current consumption.

1. Use the current-consumption measurement tool to connect the AC adaptor.
2. Enter the Test Mode, select **3. CURRENT** in the **TEST MENU** and press **ENTER**.
3. Verify that the current-consumption is from **165** to **195 mA**.
4. Press **EXIT** to return to the **TEST MENU**.

4. JACK SW

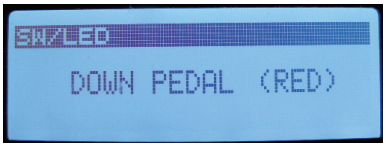
This verifies the sensing operation of jacks.

1. Connect the 1/4-inch stereo phone plug to the **CTL2,3/EXP2** jack and the miniature stereo phone plug to the **PHONES** jack.
2. In the **TEST MENU**, select **4. JACK SW** and press **ENTER**.
   A screen like the one shown below is displayed.
   `[CTL]  EJECT`
   `[PHONES] EJECT`
3. Disconnect the plug from the **CTL2,3/EXP2** jack.
   A screen like the one shown below is displayed.
   `[CTL]  INSERT`
   `[PHONES] EJECT`
4. Connect the plug to the **CTL2,3/EXP2** jack again.
   A screen like the one shown below is displayed.
   `[CTL]  OK`
   `[PHONES] EJECT`
5. Disconnect the plug from the **PHONES** jack.
   A screen like the one shown below is displayed.
   `[CTL]  OK`
   `[PHONES] INSERT`
6. Connect the plug to the **PHONES** jack again.
   A screen like the one shown below is displayed.
   `[CTL]  OK`
   `[PHONES] OK`
7. Detach the both plugs.
8. Press **EXIT** to return to the **TEST MENU**.

5. SW/LED

This verifies the switch operation.

1. In the **TEST MENU**, select **5. SW/LED** and press **ENTER**.
   LEDs of ▲ , ▼ , **CTL1** and from **FX1/COMP** to **REVERB** light up red.
   A screen like the one shown below is displayed.



2. Press ▼ .
   The ▼ LED lights up blue.
3. Press ▼ .
   The ▼ LED goes off.
4. In the same way, press respectively ▲ and **CTL1** twice.
5. Press the button displayed on the screen in sequence.
6. After pressing buttons until **MENU**, press **EXIT** to return to the **TEST MENU**.

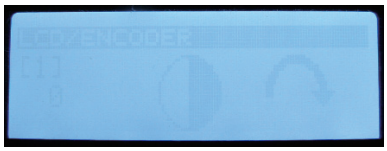
6. LCD/ENCODER (DEV)

This item is not required at the service.

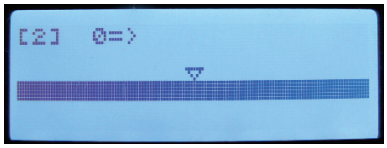
7. LCD/ENCODER

This verifies the display of the LCD screen.

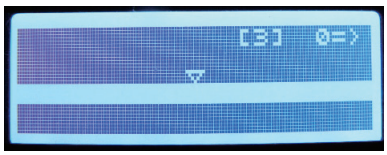
1. In the **TEST MENU**, select **7. LCD/ENCODER** and press **ENTER**.



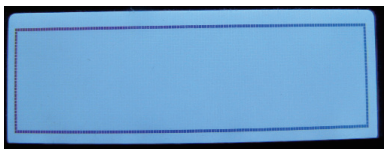
2. Slowly turn the knob **1** clockwise.
   The value displayed on the screen increases by one unit at a time and the contrast grows darker.
   * *If the knob is turned in the opposite direction or the wrong knob is turned, a black band appears at the bottom area of the screen. In this case, turn the knob **1** clockwise and continue to the test.*
3. When the value displayed on the screen reaches **24**, turn the knob counterclockwise slowly.
   The value displayed on the screen decreases by one unit at a time and the contrast grows fainter.
   When the value displayed on the screen reaches **1**, and the knob is turned counterclockwise further, a screen like the one shown below is displayed.



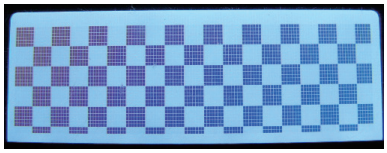
4. Slowly turn the knob **2** clockwise.
   The value displayed on the screen increases by one unit at a time and the display of the bar advances to the right.
5. When the value displayed on the screen reaches **24**, turn the knob counterclockwise slowly.
   The value displayed on the screen decreases by one unit at a time and the display of the bar advances to the right further.
   When the value displayed on the screen reaches **1**, and the knob is turned counterclockwise further, a screen like the one shown below is displayed.



6. Test the knob **3** in the same way.
   When the value displayed on the screen reaches **1**, and the knob is turned counterclockwise further, a screen like the one shown below is displayed.



7. Verify that the black frame around the screen have no missing dots, then press **ENTER**.
   A screen like the one shown below is displayed.



8. Press **EXIT** to return to the **TEST MENU**.

8. INTERNAL EXP1 (CALIBRATION)

This performs calibration for the pedal of the unit.

1. In the **TEST MENU**, select **8. INTERNAL EXP1** and press **ENTER**.
2. Depress the heel side of the pedal all the way and press **MENU**.
   The minimum value offset is saved to the unit.
3. Depress the toe side of the pedal all the way and press **MENU**.
   The maximum value offset is saved to the unit.
4. Forcefully depress the toe.
   The **PEDAL FX** LED next to the pedal lights up.
5. Forcefully depress the toe again.
   The LED goes dark.
6. Press **EXIT** to return to the **TEST MENU**.

9. CTL

This verifies the operation of the **CTL2,3/EXP2** jack.

1. Connect the foot switch (FS-5U x 2, or FS-6 x 1) to the **CTL2,3/EXP2** jack.
2. In the **TEST MENU**, select **9. CTL** and press **ENTER**.
3. While depressing the foot switch connected to the tip side, verify that **[CTL1]** on the screen is displayed as **ON**.
4. While depressing the foot switch connected to the ring side, verify that **[CTL2]** on the screen is displayed as **ON**.
5. Detach the foot switch.
6. Press **EXIT** to return to the **TEST MENU**.

10. EXT EXP2

This verifies the operation for the expression of the **CTL2,3/EXP2** jack.

1. Connect the expression pedal (EV-5) to the **CTL2,3/EXP2** jack (TRS).
2. In the **TEST MENU**, select **10. EXT EXP2** and press **ENTER**.
3. Depress the heel side of the expression pedal all the way and verify that the value of **[EXP]** displayed on the screen is **4** or less.
4. In the same way, depress the toe side of the expression pedal all the way and verify that the value displayed on the screen is **630** or higher.
5. Detach the expression pedal.
6. Press **EXIT** to return to the **TEST MENU**.

* *Ignore the display of **AD SW.***

11. AUDIO SELF

This item is not required at the service.

12. NOISE

This measures residual noise.

1. Connect the 1/4-inch mono phone plug with 47 kΩ load resistor to the **INPUT** jack and enter the Test Mode.
2. In the **TEST MENU**, select **12. NOISE** and press **ENTER**.
3. Connect the amp-equipped monitor speakers to the **OUTPUT L/MONO** and **R** jacks.
4. Drop the unit from a height of about 5 centimeters and verify that no abnormal noise is produced.
5. Disconnect the amp-equipped monitor speakers and connect the noise meter to the **OUTPUT L/MONO** and **R** jacks.
6. Verify that the residual noises are as the following values.
   OUTPUT L: -60 dBm or less (DIN-Audio)
   OUTPUT R: -60 dBm or less (DIN-Audio)
7. Detach the noise meter.
8. Connect the amp-equipped monitor speakers to the **PHONES** jack (L, R).
9. Drop the unit from a height of about 5 centimeters and verify that no abnormal noise is produced.
10. Disconnect the amp-equipped monitor speakers and connect the noise meter to the **OUTPUT L/MONO** and **R** jacks.
11. Verify that the residual noises are as the following values.
    OUTPUT L: -60 dBm or less (DIN-Audio)
    OUTPUT R: -60 dBm or less (DIN-Audio)
12. Detach the noise meter.
13. Press **EXIT** to return to the **TEST MENU**.

13. AUDIO OUTPUT

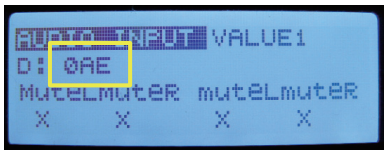
This item is not required at the service.

14. AUDIO INPUT

This verifies the input and output of the audio signal.

Input Test

1. Connect the signal generator to the **INPUT** jack and the unit enters the Test Mode.
2. In the **TEST MENU**, select **14. AUDIO INPUT** and press **ENTER**.
3. Connect the oscilloscope to the **OUTPUT L/MONO** and **R** jacks.
4. Input a signal like the following to the **INPUT** jack.
   INPUT: 200-Hz sine wave at 5.0 Vpp
5. Turn the knob **1** to set the value shown in the figure below to **0AE**.

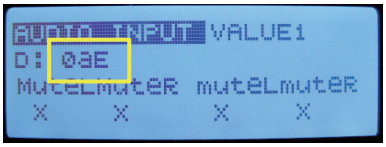


6. Verify that signals like the following are output from the **OUTPUT L/MONO** and **R** jacks
   OUTPUT L: 200-Hz sine wave at 4.8 to 5.4 Vpp
   OUTPUT R: 200-Hz sine wave at 4.8 to 5.4 Vpp
7. Change the connection of the oscilloscope to the **PHONES** jack and verify that signals like the following are output.
   PHONES L: 200-Hz sine wave at 4.8 to 5.4 Vpp
   PHONES R: 200-Hz sine wave at 4.8 to 5.4 Vpp

Input Test (AFAD)

8. Input a signal like the following to the **INPUT** jack.
INPUT: 200-Hz sine wave at 0.218 Vpp (-20 dBm)

9. Turn the knob **1** to set the value shown in the figure below to **0aE**.



10. Verify that signals like the following are output from the **PHONES** jack.
PHONES L: 200-Hz sine wave at 200 to 300 mVpp
PHONES R: 200-Hz sine wave at 3.4 to 3.8 Vpp

11. Connect the oscilloscope to the **OUTPUT L/MONO** and **R** jacks and verify that signals like the following are output.
OUTPUT L: 200-Hz sine wave at 200 to 300 mVpp
OUTPUT R: 200-Hz sine wave at 3.4 to 3.8 Vpp

* *If you verify the each level of L and R channels one by one, measure it with a plug being connected to another jack.*

12. Detach the signal generator and the oscilloscope.

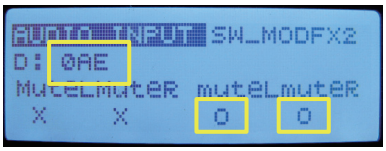
Residual Noise Test

13. Connect the 1/4-inch mono phone plug with 47 kΩ load resistor to the **INPUT** jack and enter the Test Mode.

14. In the **TEST MENU**, select **14. AUDIO INPUT** and press **ENTER**.

15. Connect the noise meters to the **OUTPUT L/MONO** and **R** jacks.

16. Turn the knob **1** to set the value shown in the figure below to **0AE**. Also press **PREAMP** to set **muteL** to **o** and press **FX2/MOD** to set **muteR** to **o**.



17. Verify that the residual noises are as the following values.
OUTPUT L: -93 dBm or lower (DIN-Audio)
OUTPUT R: -93 dBm or lower (DIN-Audio)

18. Change the connection of the noise meter to the **PHONES** jack.

19. Verify that the residual noises are as the following values.
PHONES L: -93 dBm or lower (DIN-Audio)
PHONES R: -93 dBm or lower (DIN-Audio)

20. Detach the noise meter.

AUX Test

21. Connect the oscilloscope to the **OUTPUT L/MONO** and **R** jacks.

22. Connect the signal generator to the **AUX IN** jack (L, R) and input signals like the following.
AUX IN L: 200-Hz sine wave at 2.0 Vp-p
AUX IN R: 200-Hz sine wave at 2.0 Vp-p

23. Press **PREAMP** to set **muteL** to **x** and press **FX2/MOD** to set **muteR** to **x**.

24. Verify that signals like the following are output from the **OUTPUT L/MONO** and **R** jacks.
OUTPUT L: 200-Hz sine wave at 4.7 to 5.3 Vpp
OUTPUT R: 200-Hz sine wave at 4.7 to 5.3 Vpp

25. Change the connection of the oscilloscope to the **PHONES** jack and verify that signals like the following are output.
PHONES L: 200-Hz sine wave at 4.7 to 5.3 Vpp
PHONES R: 200-Hz sine wave at 4.7 to 5.3 Vpp

26. Detach the oscilloscope.

27. Press **EXIT** to return to the **TEST MENU**.

15. FACTORY RESET

~~This item is not required at the service.~~ Do not execute this item. Follow the procedure in **Performing a Factory Reset** (p. 15) to execute a factory reset.

16. AD NOISE

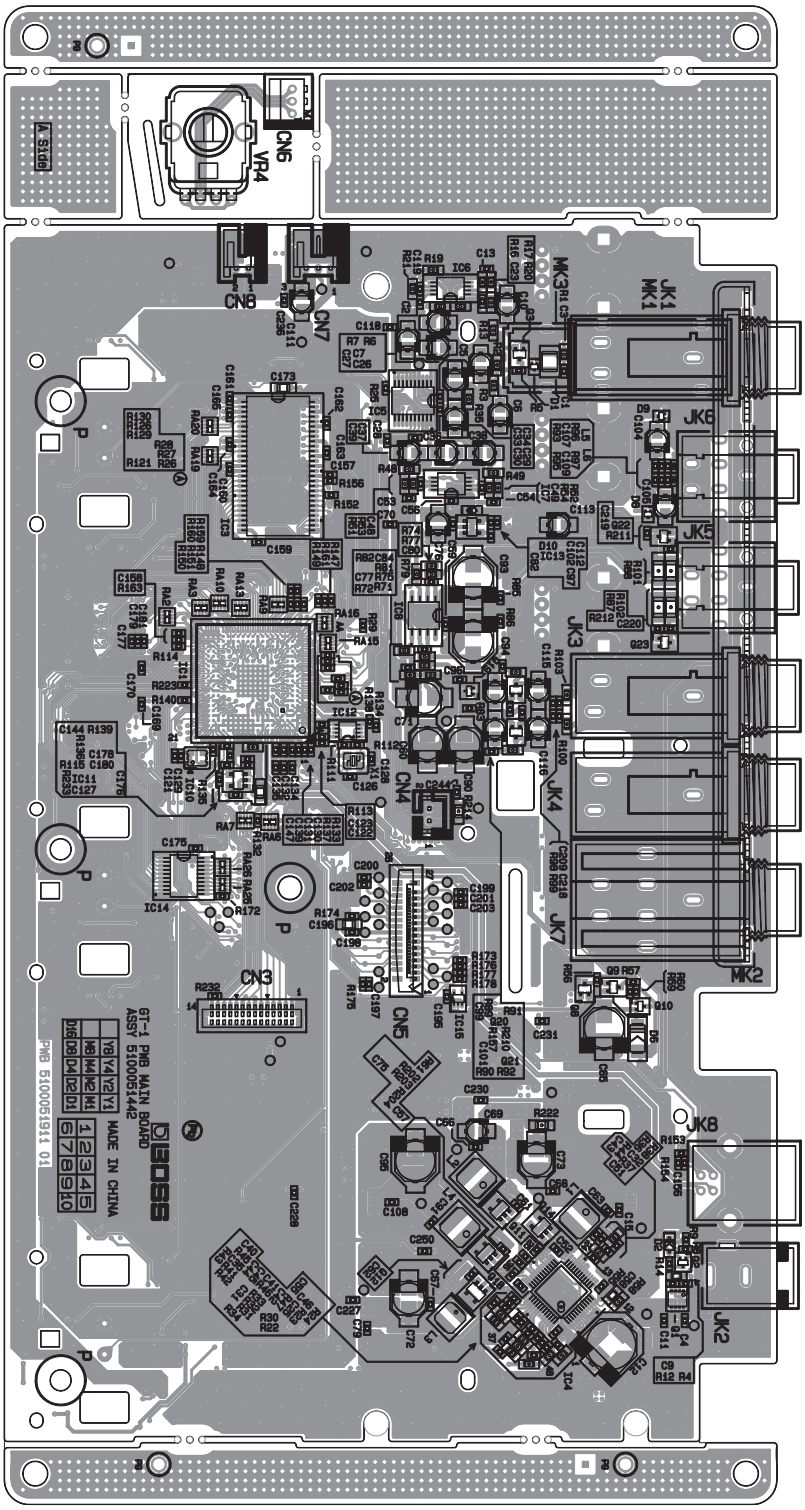
This item is not required at the service.

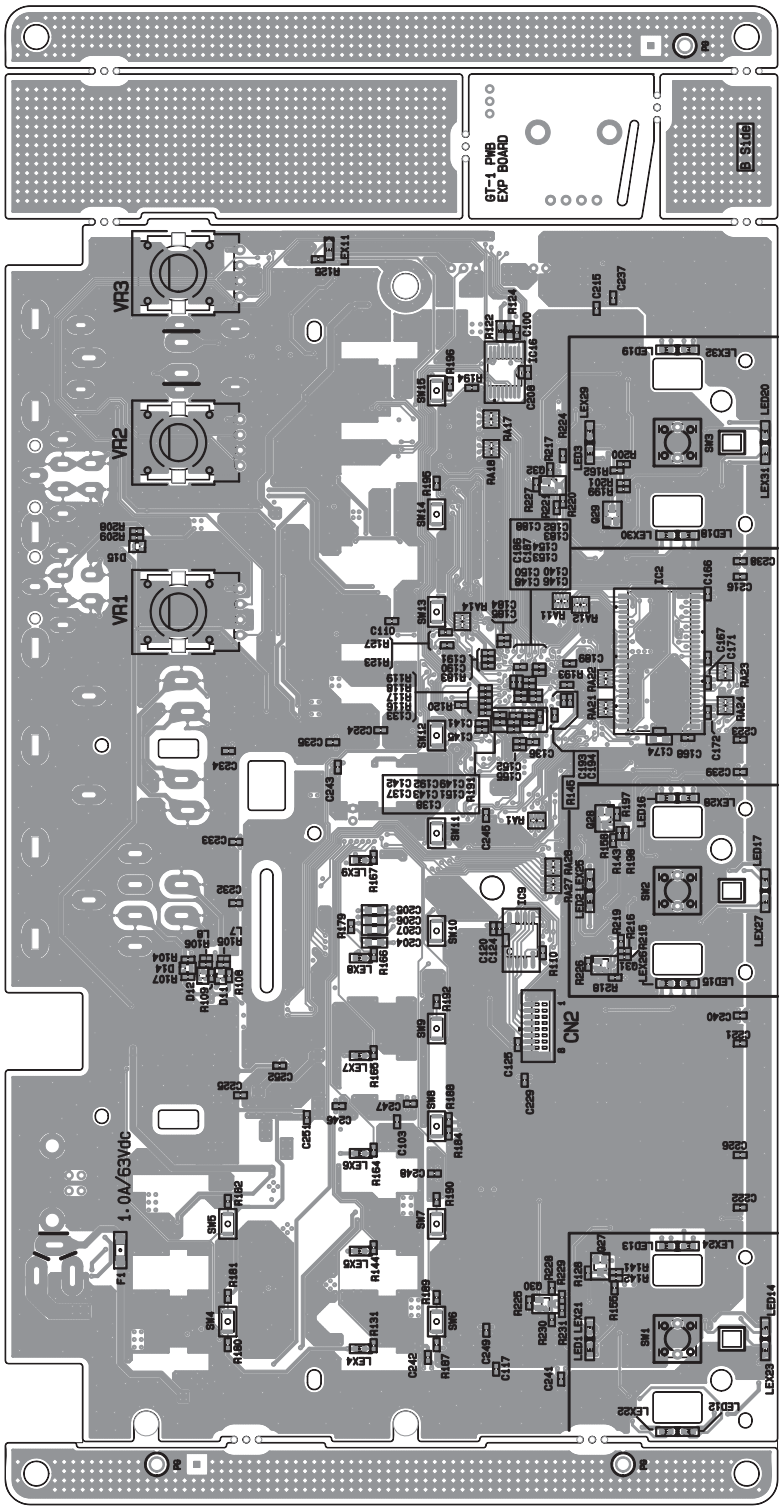
17. ENCODER DEVICE

This item is not required at the service.

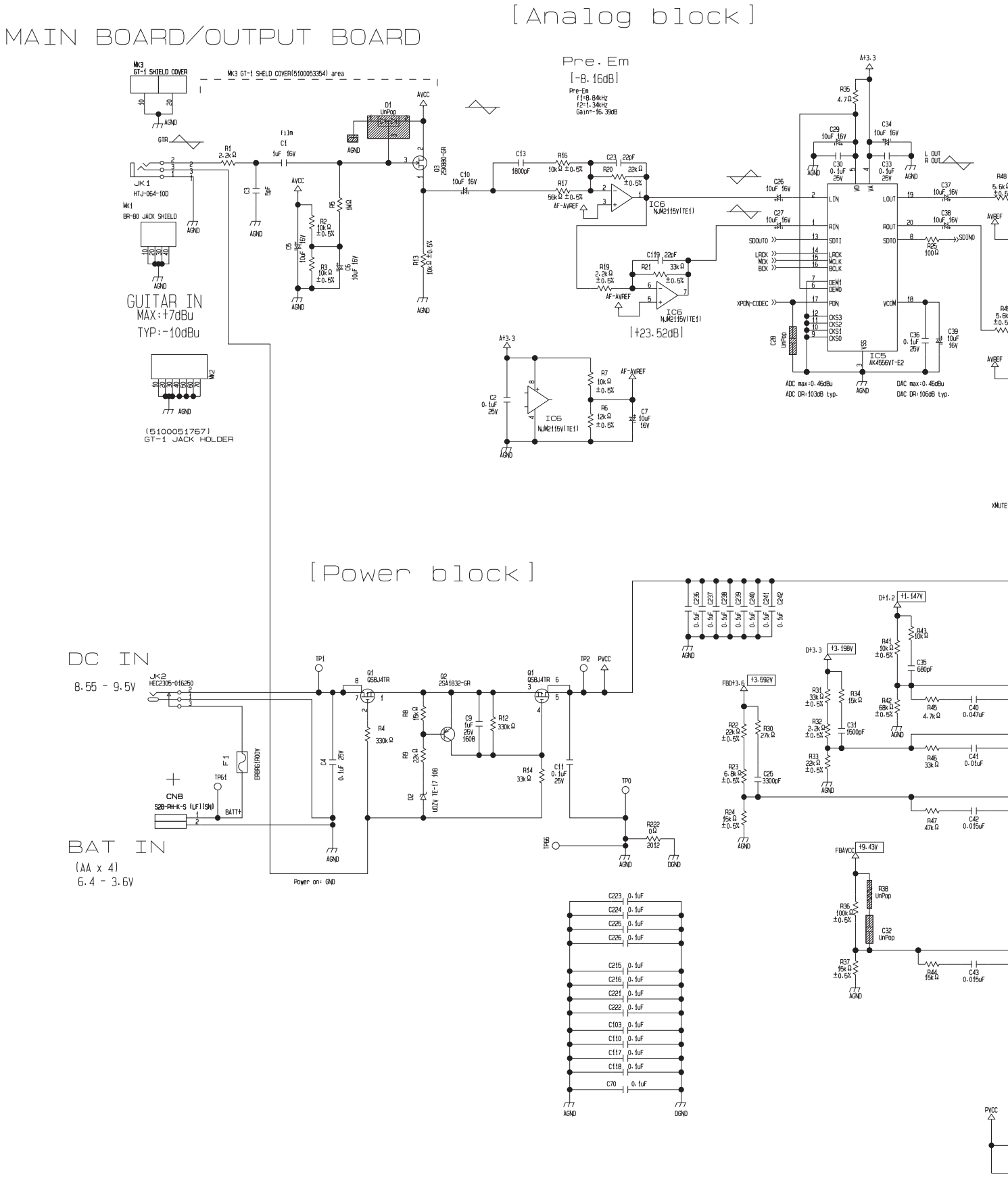
* *This item is added from ver. 1.06.*

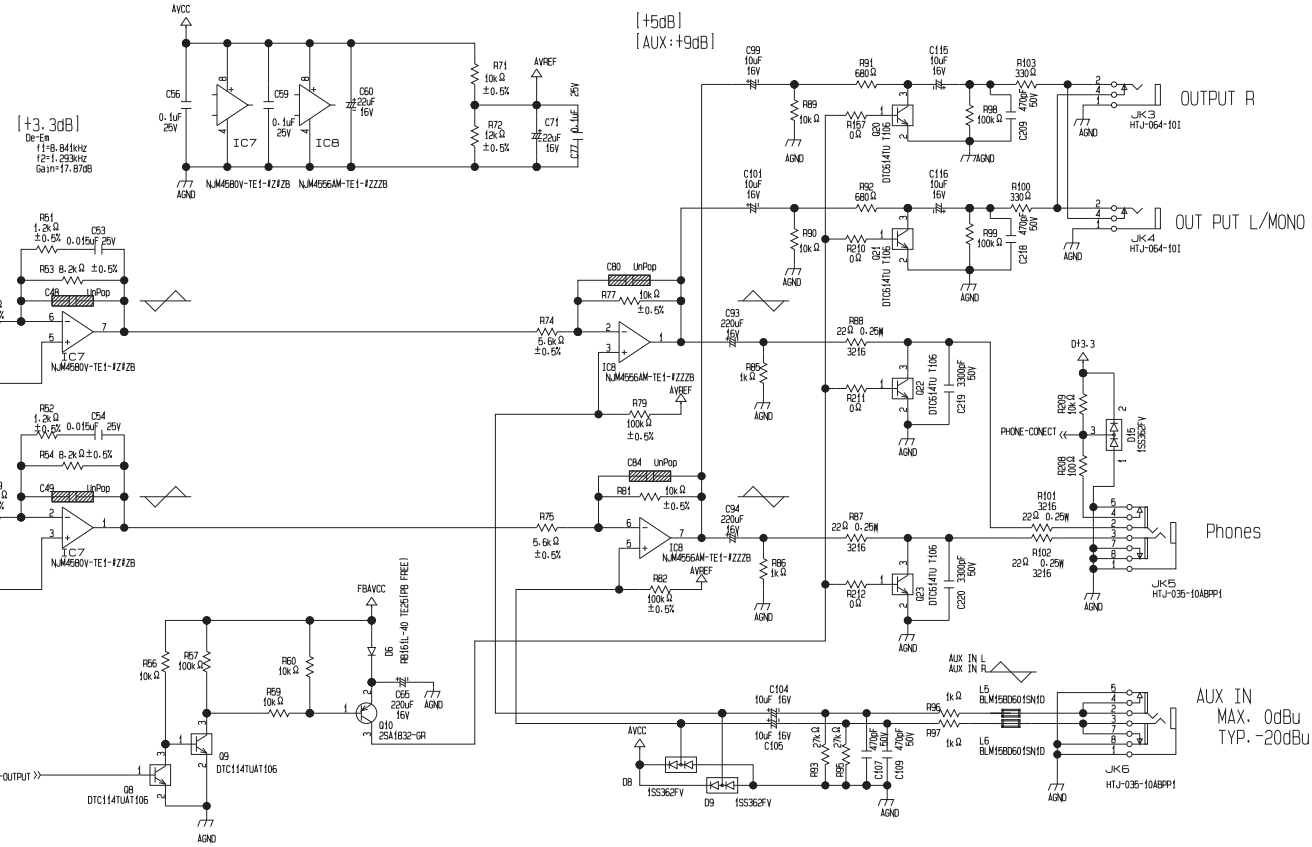
Circuit Board (Main, Exp Pedal Board)

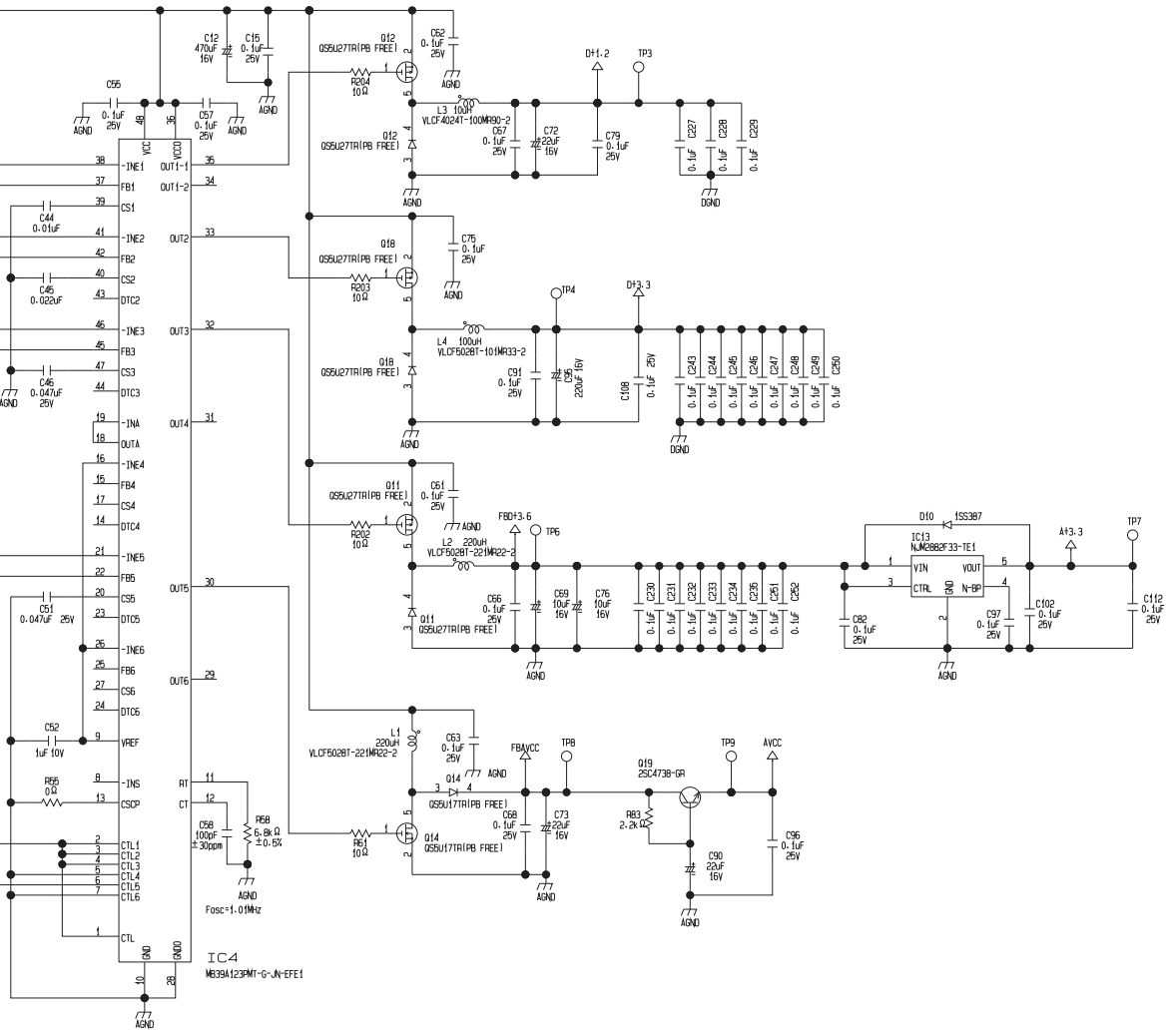



GT-1 PWB
EXP BOARD
B Side
VR3
VR2
VR1
CN2
1.0A/63Vdc

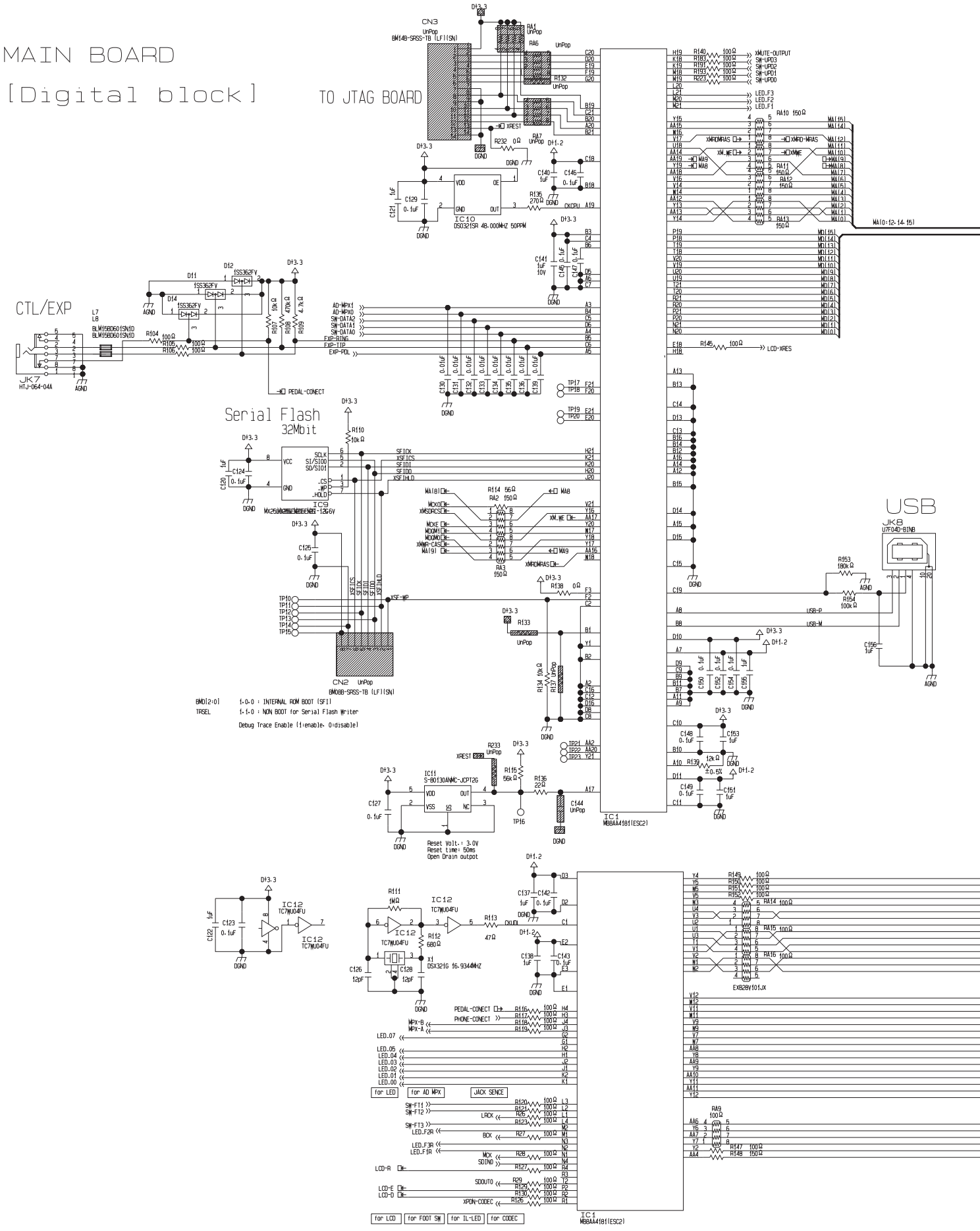
Circuit Diagram (Main Board: 1/3)

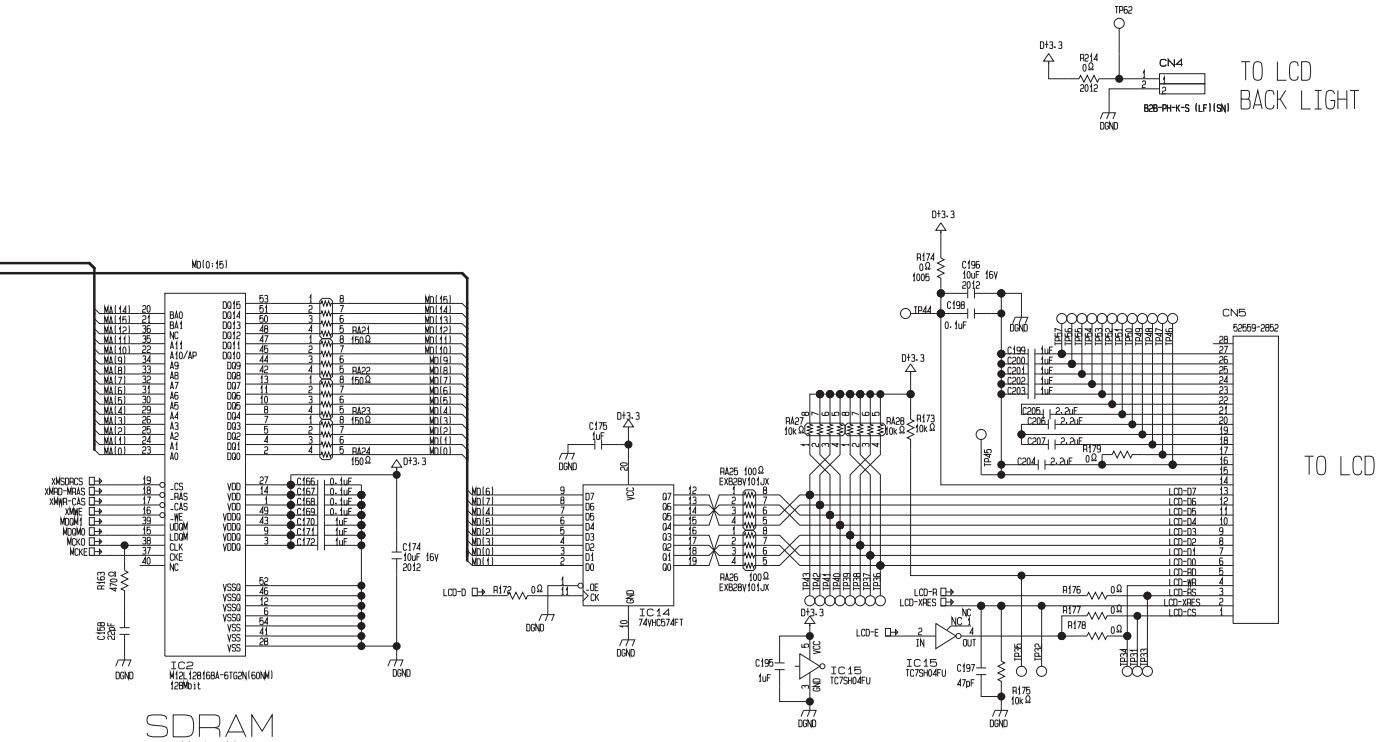


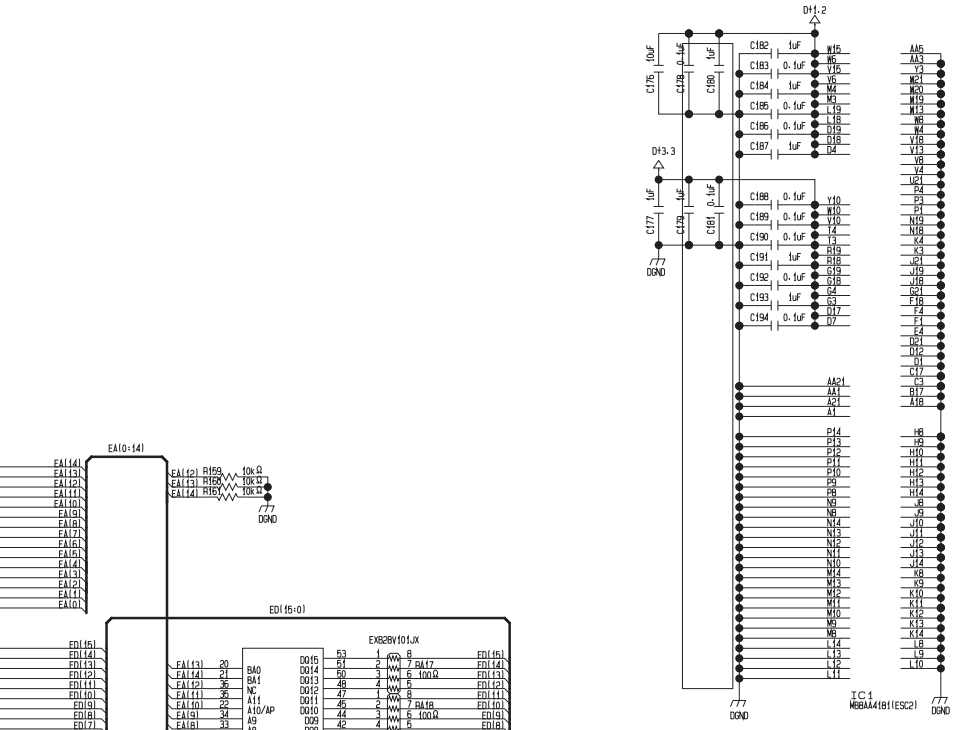

[+3.3dB]
De-Em
f1=8.841kHz
f2=1.293kHz
Gain=17.87dB
[+5dB]
[AUX:+9dB]
OUTPUT R
OUT PUT L/MONO
Phones
AUX IN
MAX. 0dBu
TYP.-20dBu
PHONE-CONECT
IC7
IC8
NJM4580V-TE1-#ZZZB
NJM4556AM-TE1-#ZZZB
AVCC
AVREF
AGND
FBAVCC
DGND

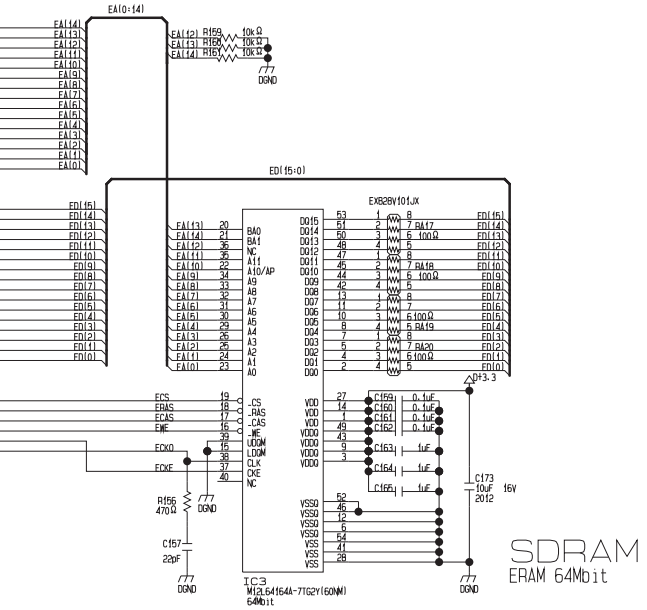

IC4
MB39A123FMT-G-JN-EFE1
Fosc=1.01MHz
D+3.3
D+1.2
A+3.3
FBD+3.6
TP3
TP4
TP5
TP6
TP7
TP9
TPB
DGND
AGND

Circuit Diagram (Main Board: 2/3)

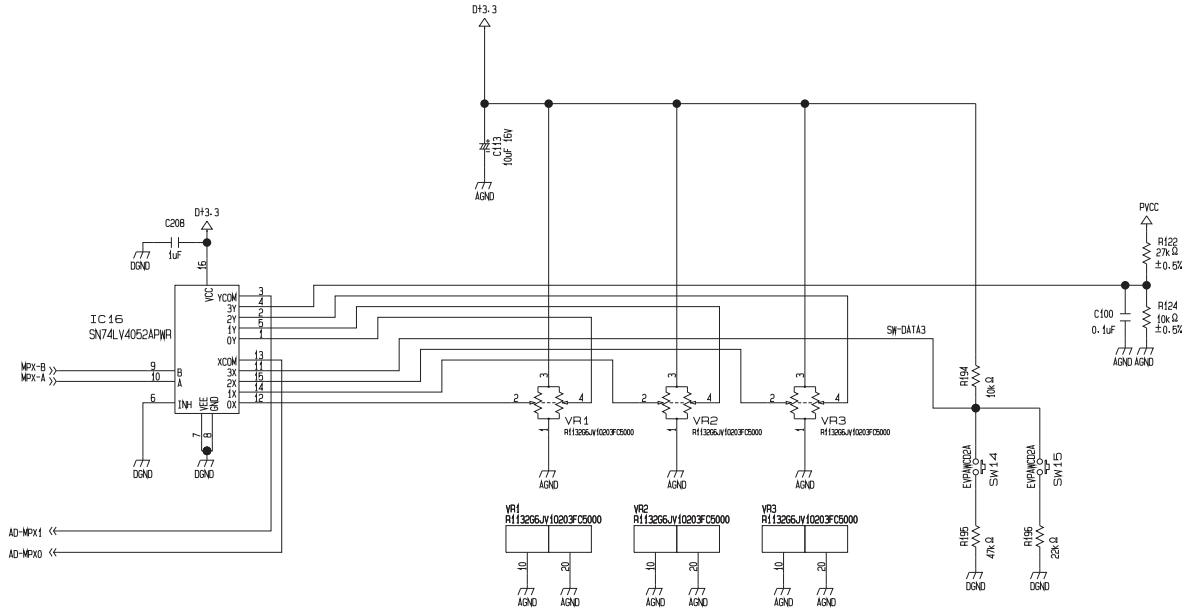


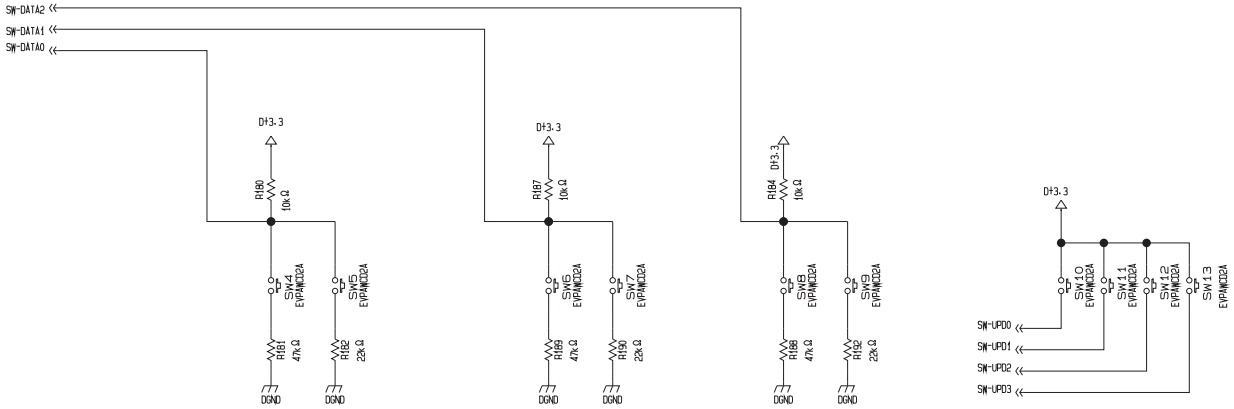

TP62
D+3.3
R214
0Ω
2012
CN4
B2B-PH-K-S (LF)(SN)
TO LCD
BACK LIGHT
DGND
MD[0:15]
IC2
M12L128168A-6TG2N(60NM)
128Mbit
SDRAM
WRAM 128Mbit
IC14
74VHC574FT
IC15
TC7SH04FU
CN5
52559-2852
TO LCD
LCD-D0
LCD-D1
LCD-D2
LCD-D3
LCD-D4
LCD-D5
LCD-D6
LCD-D7
LCD-R
LCD-E
LCD-XRES
LCD-CS
LCD-RS
LCD-WR
LCD-RD

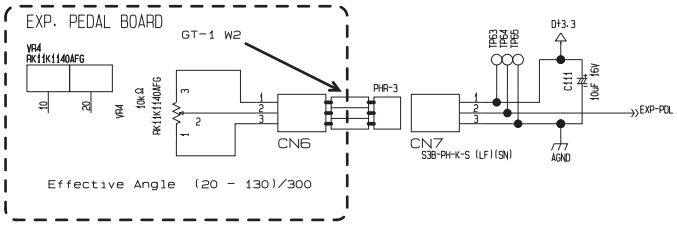

D+1.2
D+3.3
DGND
IC1
M68AA41B1(ESC2)

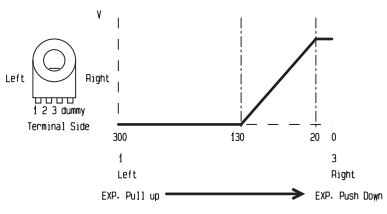

EA[0:14]
ED[15:0]
EXB28V101JX
IC3
M12L64164A-7TG2Y(60NM)
64Mbit
SDRAM
ERAM 64Mbit
DGND
D+3.3

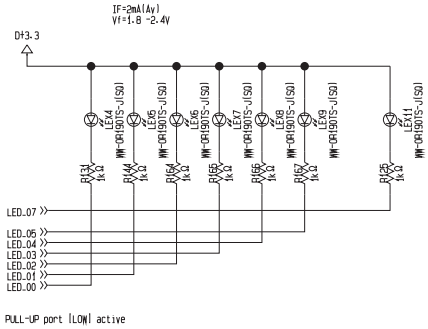
Circuit Diagram (Main, Exp Pedal Board: 3/3)



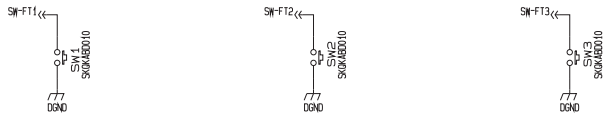




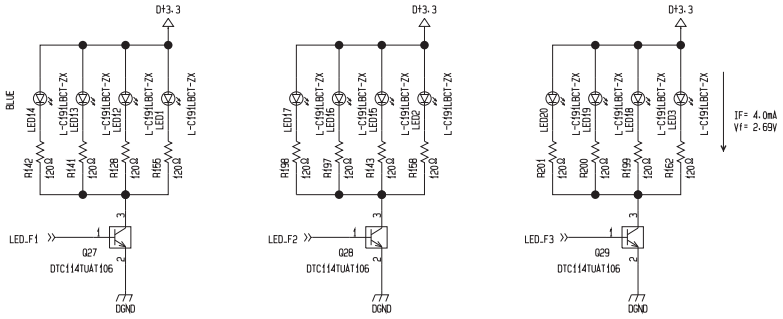




FOOT SWITCH



FOOT BLUE LAMP



FOOT RED LAMP