Flanger

BF-3(T)

BF-3A

SERVICE NOTES

Issued by RJA

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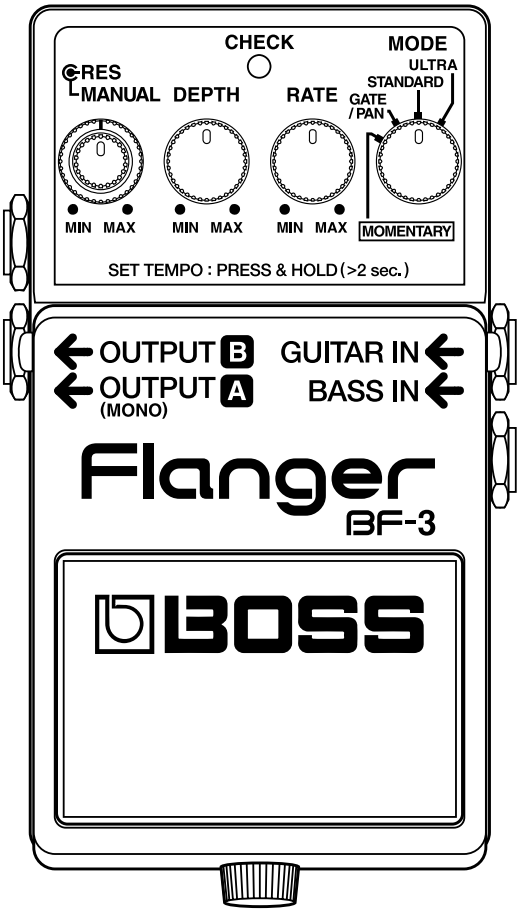


Identifying the BF-3(T)

The BF-3(T) exists in two types that have different circuit structures. In this Service Notes, the older type is called the **BF-3**, and the newer type is called the **BF-3A**. Both have **Flanger BF-3** inscribed on the pedal and appear at a glance to be completely identical, but they can be distinguished as indicated in the following table.

	BF-3	BF-3A
Production number	Up through H**8559	H**8560 and after
Style of component mounting on the circuit board	Single-side mounting	Double-side mounting
System version	Version 1.00	Version 2.00 or later

After identifying the type of the product being serviced, refer to the corresponding Service Notes for information on required parts and test methods.

BF-3: SERVICE NOTES (#17058043E0)

BF-3A: SERVICE NOTES 2ND EDITION (#17058043E1)

This version of Service Notes is for the BF-3A.

Cautionary Notes

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

User Data Cannot Be Backed Up

The setting for the sleep mode is saved on the Main Board even when the power has been switched off, but neither verification of its status (ON or OFF) nor backing up the setting is possible. When the Main Board has been replaced, the sleep mode is returned to its default (ON). For more information about the sleep mode, refer to **About Sleep Mode** (Owner's Manual, p. 14). No user data other than the setting for the sleep mode is saved.

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.

Specifications

BF-3: Flanger (BF-3A)

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

Delay Time

0.3 mS–14.4 mS (GUITAR IN)
0.3 mS–6.3 mS (BASS IN)

LFO Speed

100 mS–18 S

Residual Noise

-95 dBu (IHF-A Typ.)

Controls

Pedal Switch
MANUAL Knob
RES (resonance) Knob
DEPTH Knob
RATE Knob
MODE Knob

Indicator

CHECK Indicator (Serves also as tempo and battery check indicator)

Connectors

GUITAR IN Jack
BASS IN Jack
OUTPUT A (MONO) Jack
OUTPUT B Jack
AC adaptor Jack (DC 9 V)

Power Supply

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

Current Draw

40 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

435 g /1 lb (including Battery)

Accessories

Owner's Manual (#5100021063)
Leaflet ("USING THE UNIT SAFELY," "IMPORTANT NOTES," and "Information") (#********)
Dry battery/9 V type (6F22) (#********)

* *The battery that was supplied with the unit is for temporary use intended primarily for testing its operation.*

Options

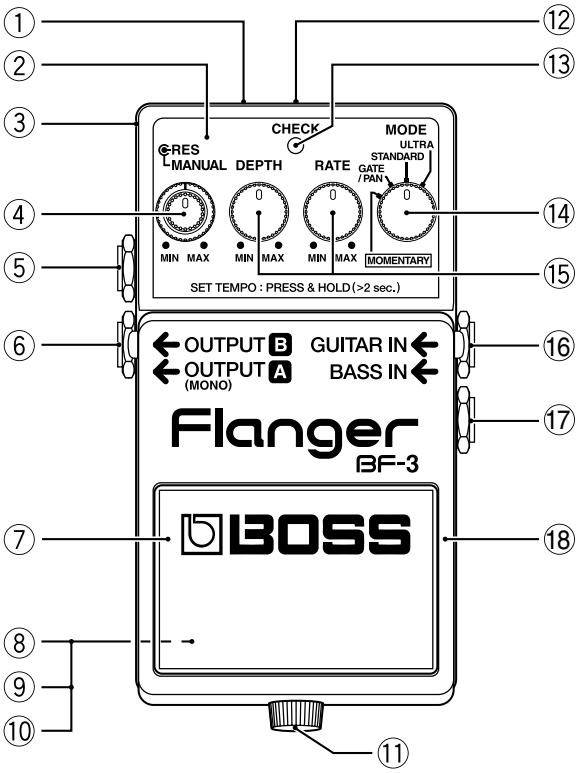
AC Adaptor PSA-series

* *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.*

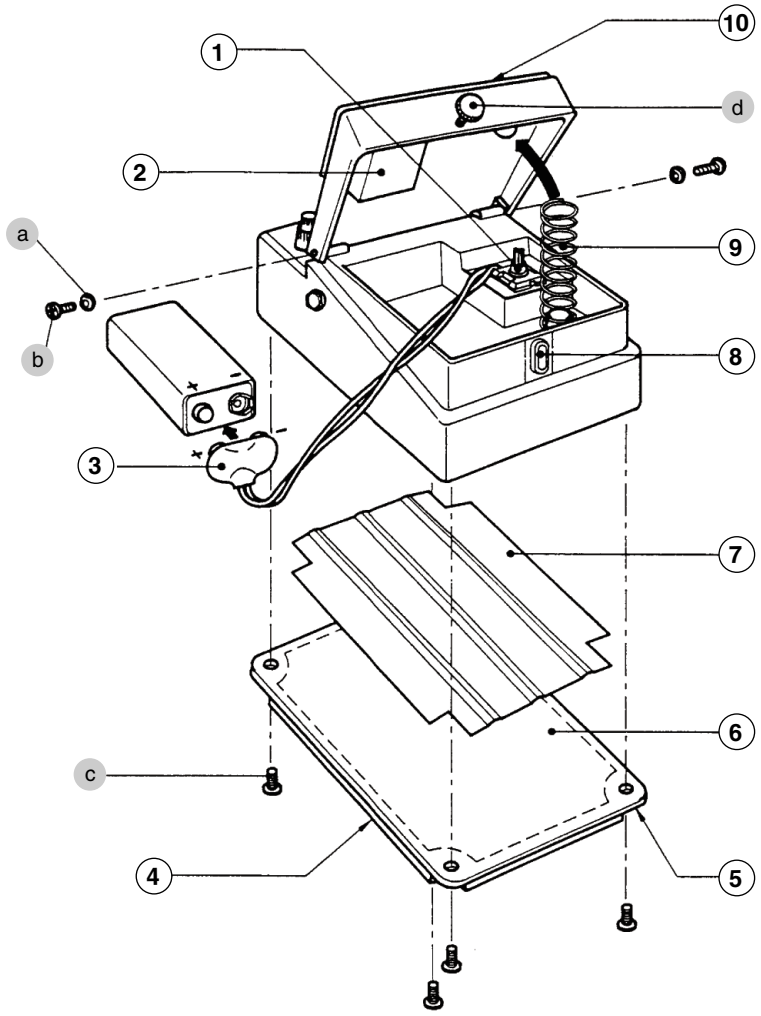
* *In the interest of product improvement, the specifications and/or appearance of this unit are subject to change without prior notice.*

Location of Controls



No.	Part Code	Part Name	Description	Q'ty
1	5100014487	COMPACT PSA LABEL	(22537538R0)	1
2	5100021036	PANEL		1
3	5100021031	CASE		1
4	22480220	P R-KNOB (INTERNAL)	(SS) BF BLK/LCG	1
	22480221	P O-KNOB (EXTERNAL)	(OUTER) S BLK/LCG	1
	5100018911	ROTARY POT(F3229220R0)	RD912DF-20-20FWH-B50K-60009A2	1
	40128923	HEX NUT M7		1
5	5100001341	6.5MM JACK	HTJ-064-12DMP (13449150R1)	1
	5100003926	PLAIN WASHER 9X13.5X0.5T	NI(H5039158R0)	1
	5100008086	INT TOOTH WASHER 9.5X12.5X0.5	NI RTC(H5039205R0)	1
	5100003918	JACK NUT M9X12X2	NI RTC(H5039510R0)	1
	5100015893	PLAIN WASHER 9.2X14X1.6	NI (H5039104R0)	1
	5100015900	PLAIN WASHER 9.6X14XW11X1.0	AL (22137709R0)	1
6	13449105R0	6.5MM JACK	HTJ-064-14I	1
	5100003926	PLAIN WASHER 9X13.5X0.5T	NI(H5039158R0)	1
	5100008086	INT TOOTH WASHER 9.5X12.5X0.5	NI RTC(H5039205R0)	1
	5100003918	JACK NUT M9X12X2	NI RTC(H5039510R0)	1
7	5100008294	PEDAL PLATE	(22357304R0)	1
8	5100006632	BOTTOM COVER	(22027851R0)	1
9	5100006633	BOTTOM FOOT	(22357305R0)	1
10	5100006631	CAUTION SEAL	PSA (FCC/EMI)(G2537516R2)	1
11	5100007512	THUMB SCREW	(H5029820R0)	1
12	F3439875R0	ADAPTOR JACK	KM02018ABM1P	1
13	F5029423R0	LED	L-3VEGW	1
	5100002339	LED SPACER	304	1
14	04567601	P R-KNOB	MF BLK/LCG(22480260R0)	1
	5100014193	R.POTENTIOMETER (F3279853R0)	RD901F-20-15FB-B50K-04	1
	40128923	HEX NUT M7		1
15	04567601	P R-KNOB	MF BLK/LCG(22480260R0)	2
	F3279852R0	POTENTIOMETER	RD901-20-15FW-B54-006	2
	40128923	HEX NUT M7		2
16	5100020609	6.5MM JACK	SCJ614M2NCS3B11G	1
	5100003926	PLAIN WASHER 9X13.5X0.5T	NI(H5039158R0)	1
	5100008086	INT TOOTH WASHER 9.5X12.5X0.5	NI RTC(H5039205R0)	1
	5100003918	JACK NUT M9X12X2	NI RTC(H5039510R0)	1
17	5100006457	6.5MM JACK	HTJ-064-14D(13449140R0)	1
	5100003926	PLAIN WASHER 9X13.5X0.5T	NI(H5039158R0)	1
	5100008086	INT TOOTH WASHER 9.5X12.5X0.5	NI RTC(H5039205R0)	1
	5100003918	JACK NUT M9X12X2	NI RTC(H5039510R0)	1
18	5100021035	PEDAL		1

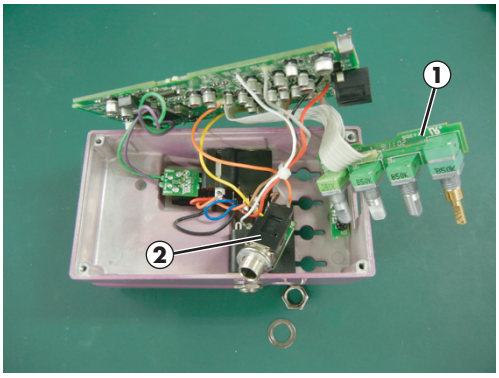
Exploded View



No.	Part Code	Part Name	Description	Q'ty
1	13129710R0	SWITCH(PUSH)	JM-0404	1
2	5100007503	BATTERY CUSHION	(22267333R0)	1
3	5100007872	BATTERY CONNECTOR	006P BATTERY SNAP (F3419102R0)	1
4	5100006631	CAUTION SEAL	PSA (FCC/EMI)(G2537516R2)	1
5	5100006633	BOTTOM FOOT	(22357305R0)	1
6	5100006632	BOTTOM COVER	(22027851R0)	1
7	5100022073	INSULATING SHEET		1
8	5100007505	PEDAL GUIDE BUSH	(22157702R0)	1
9	5100007504	COIL SPRING	(22177109R0)	1
10	5100008294	PEDAL PLATE	(22357304R0)	1
a	5100008092	PLAIN WASHER 3X6X0.5	RESIN RTC(H5039708R0)	2
b	40010267	SCREW M3X10	BINDING MACHINE FE BZC	2
c	5100007965	SCREW 3X6(H5029325R0)	PAN TAPPING B1 BZC	4
d	5100007512	THUMB SCREW	(H5029820R0)	1

Disassembly Procedure

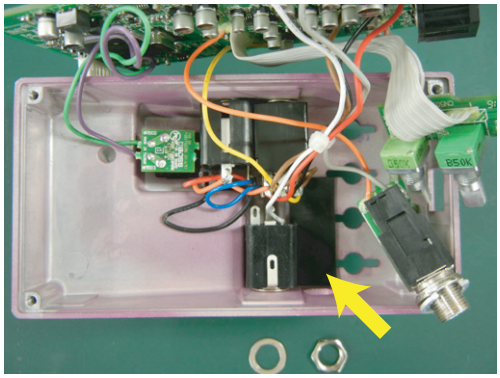
1. Remove No. 6 Bottom Cover, and No. 7 Insulating Sheet.
2. Lift the Main Sheet Assy.
3. Remove the VR Board (**1**), and then the OUTPUT B jack (**2**).



Conversion to the BF-3A

When converting from the BF-3 (older type) to the BF-3A (new type), replace the components shown in the following chart.

BF-3				BF-3A		
Part Code	**Part Name**	**Description**		**Part Code**	**Part Name**	**Description**
75D6439001	MAIN BOARD ASSY			5100020562	MAIN SHEET ASSY	
********	MAIN BOARD			********	MAIN BOARD	
********	VR BOARD		->	********	VR BOARD	
********	LED BOARD			********	LED BOARD	
********	SW BOARD			********	SW BOARD	
75D643O000	OUT JACK ASSY			********	OUTPUT B BOARD	
G2167301	INSULATION SPACER		->	5100022073	INSULATING SHEET	(for insulating the bottom)
********	INSULATING SHEET		->	5100023214	INSULATING SHEET	36X14X0.5 (for insulating OUTPUT B)
G6017304	OWNER'S MANUAL	JAPANESE	->	5100021062	OWNER'S MANUAL	JAPANESE
G6017305	OWNER'S MANUAL	ENGLISH	->	5100021063	OWNER'S MANUAL	ENGLISH



5100023214 INSULATING SHEET 36X14X0.5

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					
	5100021031	CASE			1
	5100021036	PANEL			1
	5100021035	PEDAL			1
	5100006632	BOTTOM COVER	(22027851R0)		1
CHASSIS					
	5100008294	PEDAL PLATE	(22357304R0)		1
KNOB, BUTTON					
	04567601	P R-KNOB	MF BLK/LCG(22480260R0)		3
	22480220	P R-KNOB (INTERNAL)	(SS) BF BLK/LCG		1
	22480221	P O-KNOB (EXTERNAL)	(OUTER) S BLK/LCG		1
SWITCH					
	13129710R0	SWITCH(PUSH)	JM-0404(13129710R0)	SW500 (SW Board)	1
JACK, EXT TERMINAL					
#	5100020609	6.5MM JACK	SCJ614M2NCS3B11G	JK500 (Guitar In)	1
	5100006457	6.5MM JACK	HTJ-064-14D(13449140R0)	JK501 (Bass In)	1
	5100001341	6.5MM JACK	HTJ-064-12DMP (13449150R1)	JK502 (OUTPUT B)	1
	13449105R0	6.5MM JACK	HTJ-064-14I	JK503 (OUTPUT A)	1
	F3439875R0	ADAPTOR JACK	KM02018ABM1P		1
PWB ASSY					
#	5100020562	MAIN SHEET ASSY			1
	* *This unit includes the following parts.*				
	********	MAIN BOARD			1
	********	VR BOARD			1
	********	LED BOARD			1
	********	SW BOARD			1
	********	OUTPUT B BOARD			1
DIODE					
	F5029423R0	LED	L-3VEGW	LED500 on LED Board	1
POTENTIOMETER					
	5100018911	ROTARY POT(F3229220R0)	RD912DF-20-20FWH-B50K-60009A2	VR500 (RES, MANUAL)	1
	5100014193	R.POTENTIOMETER (F3279853R0)	RD901F-20-15FB-B50K-04	VR503 (MODE)	1
	F3279852R0	POTENTIOMETER	RD901-20-15FW-B54-006	VR501, VR502 (DEPTH, RATE)	2
WIRING, CABLE					
	5100021030	WIRING	W2(3PIN)		1
	5100021029	WIRING	W1(7PIN)		1
SCREWS					
	40010267	SCREW M3X10	BINDING MACHINE FE BZC		2
	5100007965	SCREW 3X6(H5029325R0)	PAN TAPPING B1 BZC		5
	5100007512	THUMB SCREW	(H5029820R0)		1
	40128923	HEX NUT M7			4
	5100003918	JACK NUT M9X12X2	NI RTC(H5039510R0)		4
	5100008086	INT TOOTH WASHER 9.5X12.5X0.5	NI RTC(H5039205R0)		4
	5100008092	PLAIN WASHER 3X6X0.5	RESIN RTC(H5039708R0)		2
	5100003926	PLAIN WASHER 9X13.5X0.5T	NI(H5039158R0)		4
	5100015893	PLAIN WASHER 9.2X14X1.6	NI (H5039104R0)		1
	5100015900	PLAIN WASHER 9.6X14XW11X1.0	AL (22137709R0)		1

MISCELLANEOUS

	5100007872	BATTERY CONNECTOR	006P BATTERY SNAP (F3419102R0	1
	5100007503	BATTERY CUSHION	(22267333R0)	1
	5100006633	BOTTOM FOOT	(22357305R0)	1
	5100006631	CAUTION SEAL	PSA (FCC/EMI)(G2537516R2)	1
	5100007504	COIL SPRING	(22177109R0)	1
	5100014487	COMPACT PSA LABEL	(22537538R0)	1
#	5100020413	EARTH TERMINAL		2
#	5100023214	INSULATING SHEET	36X14X0.5	1
	5100022073	INSULATING SHEET		1
	5100007870	INSULOCK TIE	YJ-80 V2 (H5319102R0)	2
	5100002339	LED SPACER	304	1
	5100007505	PEDAL GUIDE BUSH	(22157702R0)	1

ACCESSORIES (Standard)

#	5100021062	OWNER'S MANUAL	JAPANESE	1
#	5100021063	OWNER'S MANUAL	ENGLISH	1

Verifying the Version

1. Turn down all controls completely counterclockwise (to **MIN** or **MOMENTARY**).
2. Hold down the pedal and connect the AC adaptor to the **DC IN** jack.
   The **CHECK** LED lights up and the unit enters the Test Mode.
   After approximately 2 seconds, the **CHECK** LED lights up or flashes, indicating the version as shown below.
   Examples: Illuminated orange: Version 1.00
   2 flashes: Version 2.00

   * *Version 1.00 is the BF-3 (older type), and version 2.00 is the BF-3A (new type).*

   After the version information is displayed, execution changes to **1. DSP and CPU Check**.
3. Release the pedal.

Data Backup and Restore Operations

The setting for the sleep mode is saved on the Main Board even when the power has been switched off, but neither verification of its status (ON or OFF) nor backing up the setting is possible. When the Main Board has been replaced, the sleep mode is returned to its default (ON). For more information about the sleep mode, refer to **About Sleep Mode** (Owner's Manual, p. 14).
No user data other than the setting for the sleep mode is saved.

Performing a Factory Reset

This product has no factory-reset feature.

Updating the System

A system update cannot be performed for this product. If an update is required, replace with an updated circuit board. Updates can be accomplished only at the factory.

Test Mode

Items Required

- AC adaptor (PSA-series device)
- Amp-equipped monitor speaker x 1
- Signal generator x 1
- Oscilloscope x 1
- Noise meter x 1
- Stabilized power supply x 1
- 47-kΩ dummy plug x 1

Test Items

1. DSP and CPU Check (p. 10)
2. Volume Check (p. 10)
3. CODEC (DAC) Check (p. 10)
4. CODEC (ADC) L-channel Check (p. 11)
5. CODEC (ADC) R-channel Check (p. 11)
6. Battery Operation Check (p. 11)
7. Noise Check (p. 11)

* ***6. Battery Operation Check*** *is carried out in the normal mode, and not in the Test Mode.* ***7. Noise Check*** *is carried out in its own mode.*

Entering the Test Mode

1. Turn down all controls completely counterclockwise (to **MIN** or **MOMENTARY**).
2. Hold down the pedal and connect the AC adaptor to the **DC IN** jack.
   The **CHECK** LED lights up and the unit enters the Test Mode.
3. Release the pedal.

* *The unit cannot enter the Test Mode unless all controls are turned down to minimum. If the minimum value is not detected for all volume controls due to a problem such as a defective volume control, the Test Mode cannot be entered.*

Quitting the Test Mode

Depress the pedal.

* *If an error occurred in* ***1. DSP and CPU Check****, depressing the pedal does not quit the mode. In such cases, disconnect the AC adaptor to switch off the power.*

* *At* ***5. CODEC (ADC) R-channel Check****, depressing the pedal does not quit the mode. In this case, either adjust the* ***MODE*** *control to any setting other than* ***ULTRA*** *and depress the pedal, or disconnect the AC adaptor to switch off the power.*

Selecting a Test Item

1. Enter the Test Mode.
2. After the version information is displayed, **1. DSP and CPU Check** is carried out automatically, and if no error occurs, the **CHECK** LED lights up green.
3. Use the **MODE** control to select the desired test item.
   MOMENTARY: 2. Volume Check
   GATE/PAN: 3. CODEC (DAC) Check
   STANDARD: 4. CODEC (ADC) L-channel Check
   ULTRA: 5. CODEC (ADC) R-channel Check

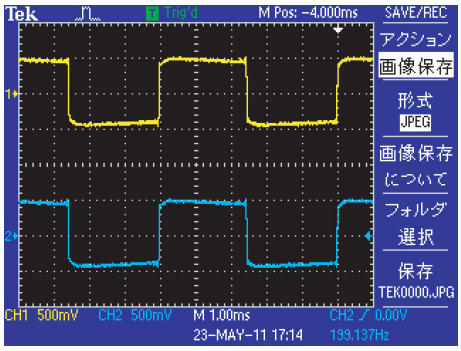
1. DSP and CPU Check

The DSP and CPU check is carried out automatically. The **CHECK** LED lights up green if no problem occurs and flashes red in the event of a defect.

* *If the LED flashes red, operation stops and execution cannot advance to the next test item. Possible causes include a fault in the peripheral circuitry for the DSP or CPU, or a soldering defect. Detach the AC adaptor to switch off the power to the unit.*

If the **CHECK** LED lights up green, follow the procedure below to carry out a DSP throughput check.

1. Connect the oscilloscope to the **OUTPUT A** and **B** jacks.
2. Connect the signal generator to the **GUITAR IN** jack and input a signal like the following.
   200-Hz rectangular wave at 1 Vp-p
3. Verify that a signal like the following (the same as the input signal) is output from **OUTPUT A** and **B**.
   200-Hz rectangular wave at 1 Vp-p



500 mV/div. and 1 ms/div

2. Volume Check

Verify that the **MODE** control is set to **MOMENTARY**.

* *The volume check can be executed only in this sequence:* ***RES*** -> ***MANUAL*** -> ***DEPTH*** -> ***RATE*** -> ***MODE***.

RES Volume Check

Slowly turn the **RES** control from **MIN** to center, and then to **MAX**, and verify that the **CHECK** LED changes in this sequence: green -> orange -> green -> orange -> green.

MANUAL Volume Check

Slowly turn the **MANUAL** control from **MIN** to center, and then to **MAX**, and verify that the **CHECK** LED changes in this sequence: green -> orange -> green -> orange -> green.

DEPTH Volume Check

Slowly turn the **DEPTH** control from **MIN** to center, and then to **MAX**, and verify that the **CHECK** LED changes in this sequence: green -> orange -> green -> orange -> green.

RATE Volume Check

Slowly turn the **RATE** control from **MIN** to center, and then to **MAX**, and verify that the **CHECK** LED changes in this sequence: green -> orange -> green -> orange -> green.

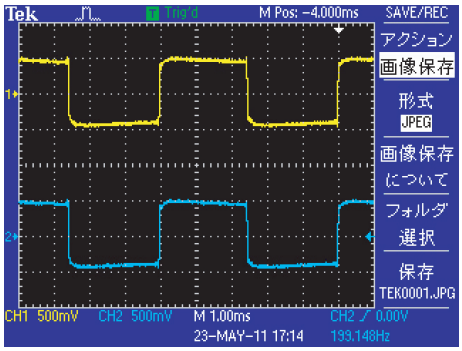
MODE Volume Check

Turn the **MODE** control clockwise by one click at a time, and verify that the **CHECK** LED changes in this sequence: green (**MOMENTARY**) -> orange (**GATE/PAN**) -> red (**STANDARD**) -> green (**ULTRA**).

3. CODEC (DAC) Check

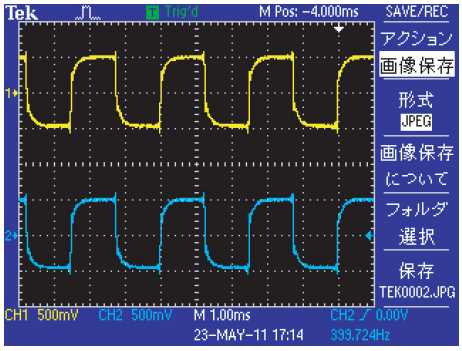
1. Set the **MODE** control to **GATE/PAN**.
2. Verify that the **CHECK** LED is lighted up orange.
3. Connect the oscilloscope to the **OUTPUT A** and **B** jacks.
4. Connect a plug to the **GUITAR IN** jack.

   * *A waveform is output even when no signal is input.*
5. Verify that a signal like the following is output from **OUTPUT A** and **B**.
   200-Hz rectangular wave at 1 Vp-p



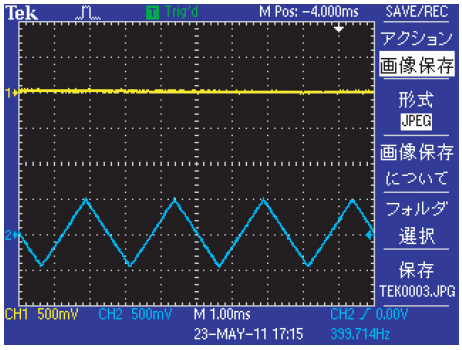
500 mV/div. and 1 ms/div.

6. Disconnect the plug from the **GUITAR IN** jack and connect it to the **BASS IN** jack.
7. Verify that a signal like the following is output from **OUTPUT A** and **B**.
   400-Hz rectangular wave at 1 Vp-p



500 mV/div. and 1 ms/div.

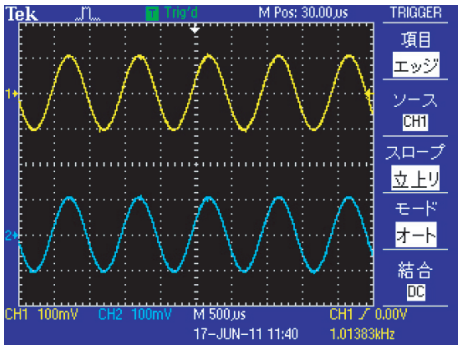
8. Disconnect the plug from the **OUTPUT B** jack.
9. Verify that a signal like the following (delta wave) is output from **OUTPUT A**.



500 mV/div. and 1 ms/div.

4. CODEC (ADC) L-channel Check

1. Set the **MODE** control to **STANDARD**.
2. Verify that the **CHECK** LED is lighted up red.
3. Connect the oscilloscope to the **OUTPUT A** and **B** jacks.
4. Connect the signal generator to the **BASS IN** jack and input a signal like the following.
   1-kHz sine wave at -20 dBm
5. Verify that signals like the following are output from **OUTPUT A** and **B**.

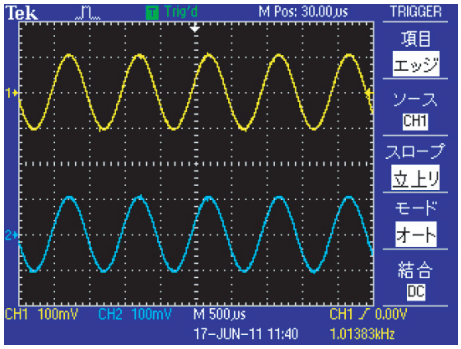


OUTPUT A: 100 mV/div. and 500 µs/div.
OUTPUT B: 100 mV/div. and 500 µs/div.

6. Connect the noise meter to the **OUTPUT A** and **B** jacks.
7. Verify that the level of each signal at **OUTPUT A** and **B** is at the values shown below.
   -22.5 to **-20.5 dBm** (JIS-A)
   -22.5 to **-20.5 dBm** (DIN-Audio)

5. CODEC (ADC) R-channel Check

1. Set the **MODE** control to **ULTRA**.
2. Verify that the **CHECK** LED is lighted up green.
3. Connect the oscilloscope to the **OUTPUT A** and **B** jacks.
4. Connect the signal generator to the **BASS IN** jack and input a signal like the following.
   1-kHz sine wave at -20 dBm
5. Verify that signals like the following are output from **OUTPUT A** and **B**.



OUTPUT A: 100 mV/div. and 500 µs/div.
OUTPUT B: 100 mV/div. and 500 µs/div.

6. Connect the noise meter to the **OUTPUT A** and **B** jacks.
7. Verify that the level of each signal at **OUTPUT A** and **B** is at the values shown below.
   -22.5 to **-20.5 dBm** (JIS-A)
   -22.5 to **-20.5 dBm** (DIN-Audio)

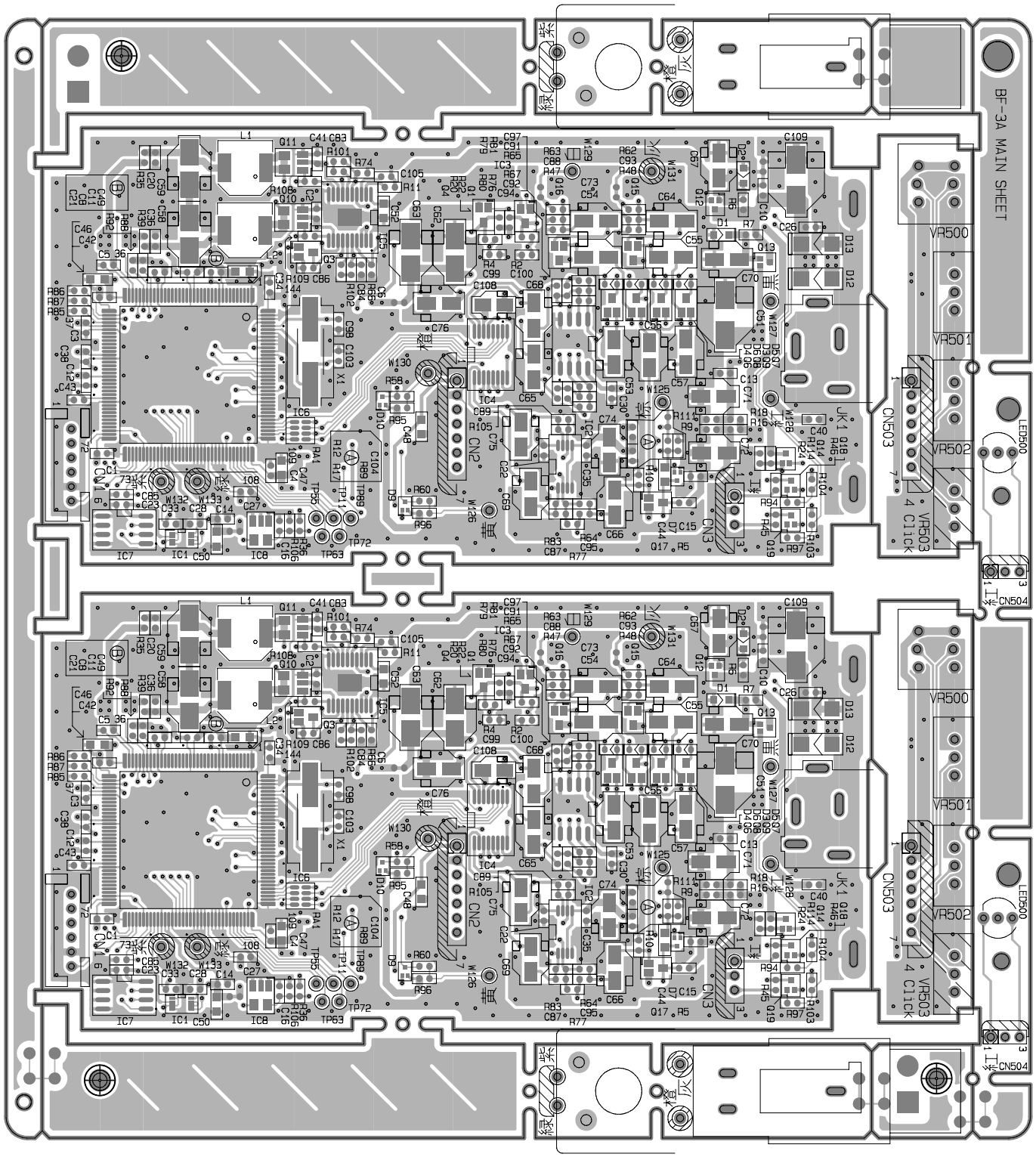
6. Battery Operation Check

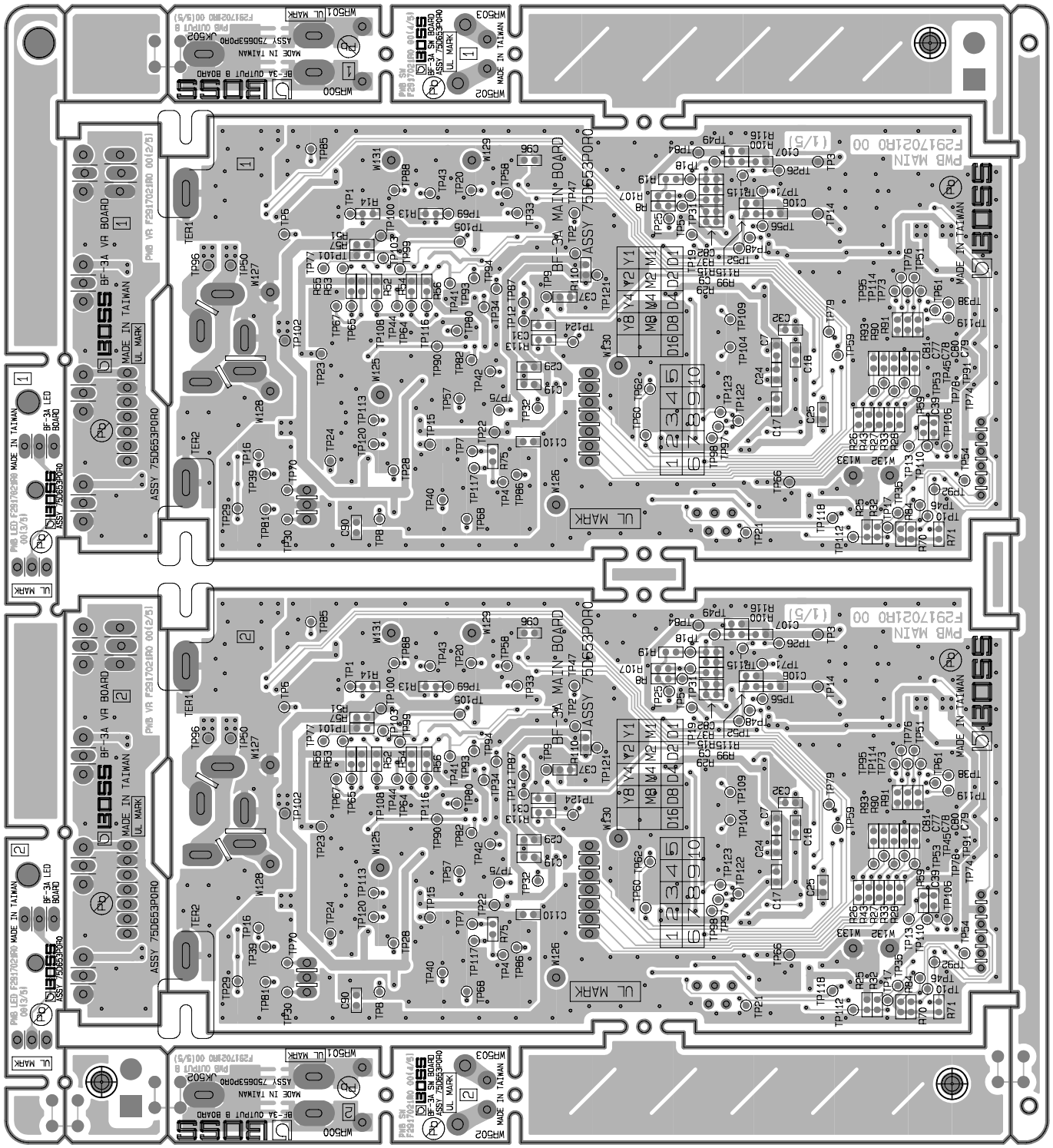
1. Set the **MODE** control to a setting other than **MOMENTARY**.
2. Connect the stabilized power supply to the **DC IN** jack, then insert the plug into the **GUITAR IN** jack.
3. Set the output voltage of the stabilized power supply to **9.0 V**.
4. Depress the pedal to make the **CHECK** LED light up.
5. Set the output voltage of the stabilized power supply to **7.5 V**.
6. Verify that the **CHECK** LED dims.
7. Detach the plug from the **DC IN** jack to disconnect the stabilized power supply.
8. Verify that the **CHECK** LED lights up brightly.
   * *Be sure to insert new batteries.*
9. Depress the pedal several times, and verify that the **CHECK** LED repeatedly lights up and goes dark.
10. While the **CHECK** LED is illuminated, disconnect the plug from the **GUITAR IN** jack.
11. Verify that the **CHECK** LED goes dark.

7. Noise Check

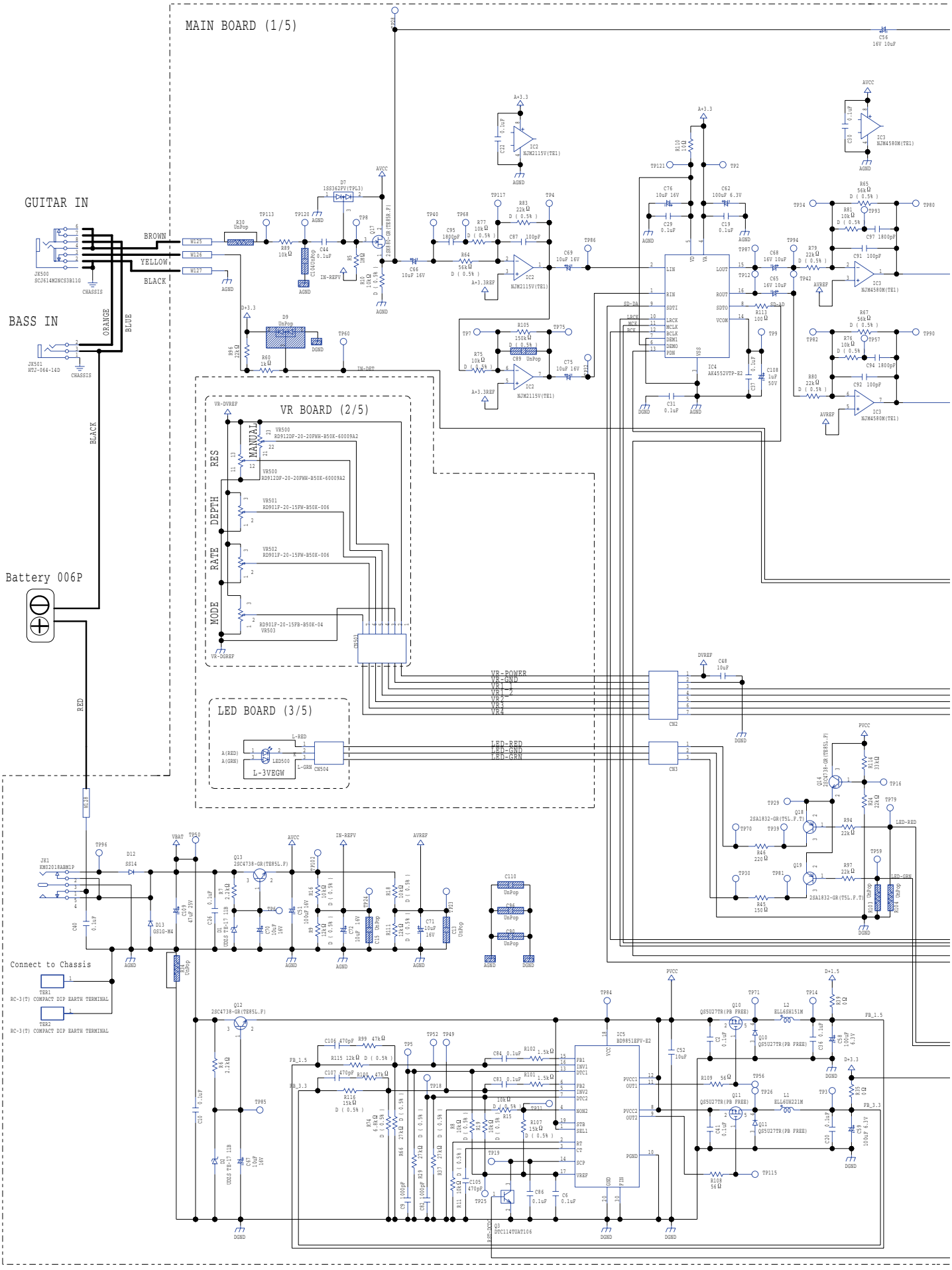
1. Turn all controls all the way clockwise (to **MAX** or **ULTRA**).
2. Hold down the pedal and connect the AC adaptor to the **DC IN** jack.
3. Verify that the **CHECK** LED is lighted up orange.
4. Release the pedal.
5. Connect the 47-kΩ dummy plug to the **GUITAR IN** jack.
6. Connect the amp-equipped monitor speaker to the **OUTPUT A** and **B** jacks.
7. Drop from a height of about 10 centimeters, and verify that no abnormal noise is produced.
8. Connect the noise meter to the **OUTPUT A** and **B** jacks.
9. Verify that each noise level at **OUTPUT A** and **B** is at the value shown below.
   -67 dBm or lower (JIS-A) or **-65 dBm** or lower (DIN-Audio)
10. Set the **MODE** control to **MOMENTARY**.
11. Verify that each noise level at **OUTPUT A** and **B** is at the value shown below.
    -98 dBm or lower (JIS-A) or **-95 dBm** or lower (DIN-Audio)
12. Depress the pedal to make the **CHECK** LED go dark (bypass state).
13. Verify that each noise level at **OUTPUT A** and **B** is at the values shown below.
    -103 dBm or lower (JIS-A) or **-100 dBm** or lower (DIN-Audio)
14. Connect the amp-equipped monitor speaker to the **OUTPUT A** and **B** jacks.
15. Switch the pedal on and off and turn the respective controls, and verify that no abnormal noise occurs.

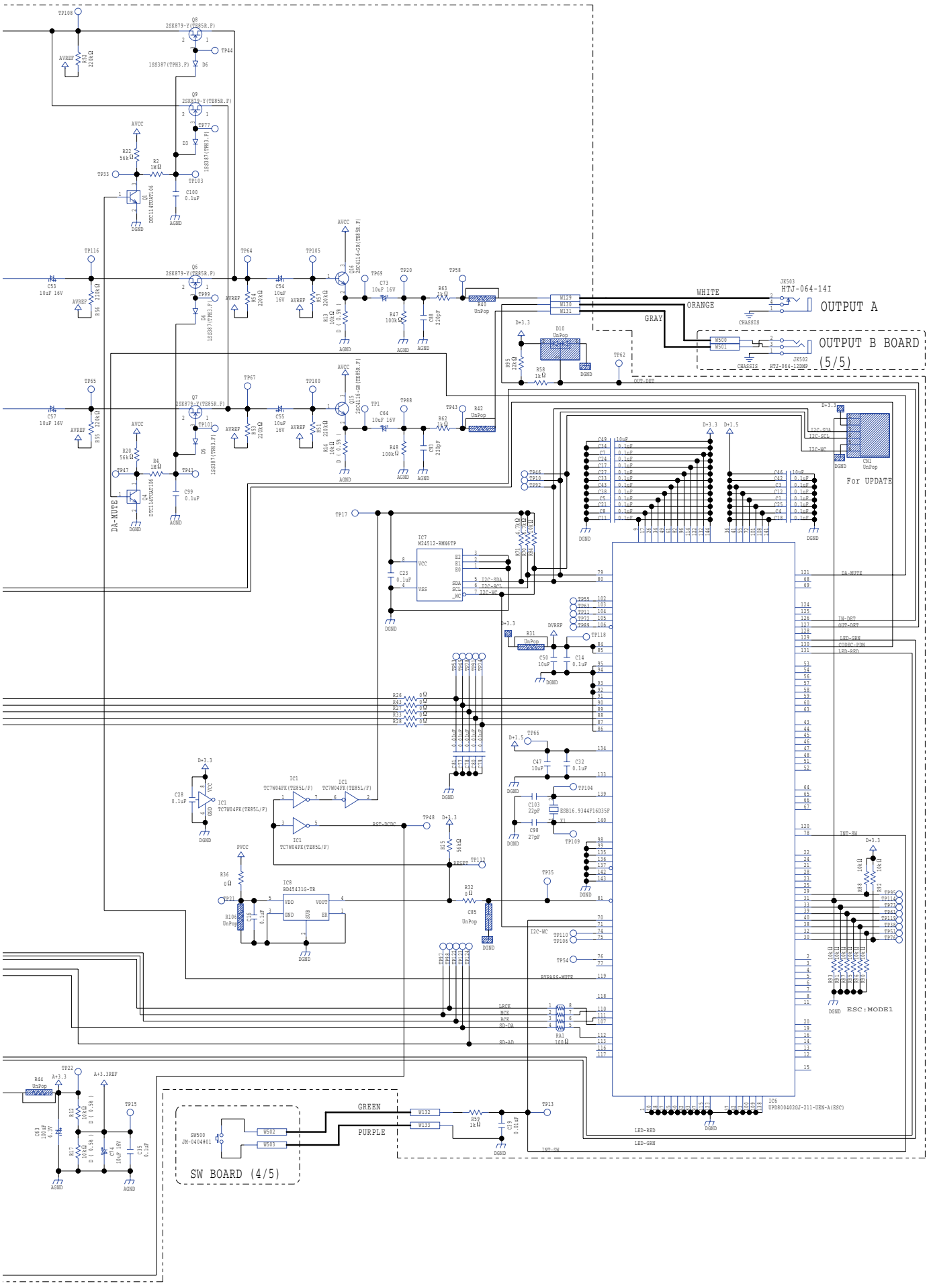
Circuit Board (Main, VR, LED, SW, Output B Board)





Circuit Diagram (Main, VR, LED, SW, Output B Board)




OUTPUT A
WHITE
ORANGE
GRAY
JK503
HTJ-064-14I
CHASSIS
OUTPUT B BOARD (5/5)
JK502
HTJ-064-12DMP
For UPDATE
DA-MUTE
SW BOARD (4/5)
GREEN
PURPLE
SW500
JM-0404401
ESC:MODE1
LED-RED
LED-GRN
INT-SW
OUT-DET
RST-DCDC
RESET
BYPASS-MUTE
I2C-SDA
I2C-SCL
I2C-WC
LRCK
MCK
BCK
SD-DA
SD-AD