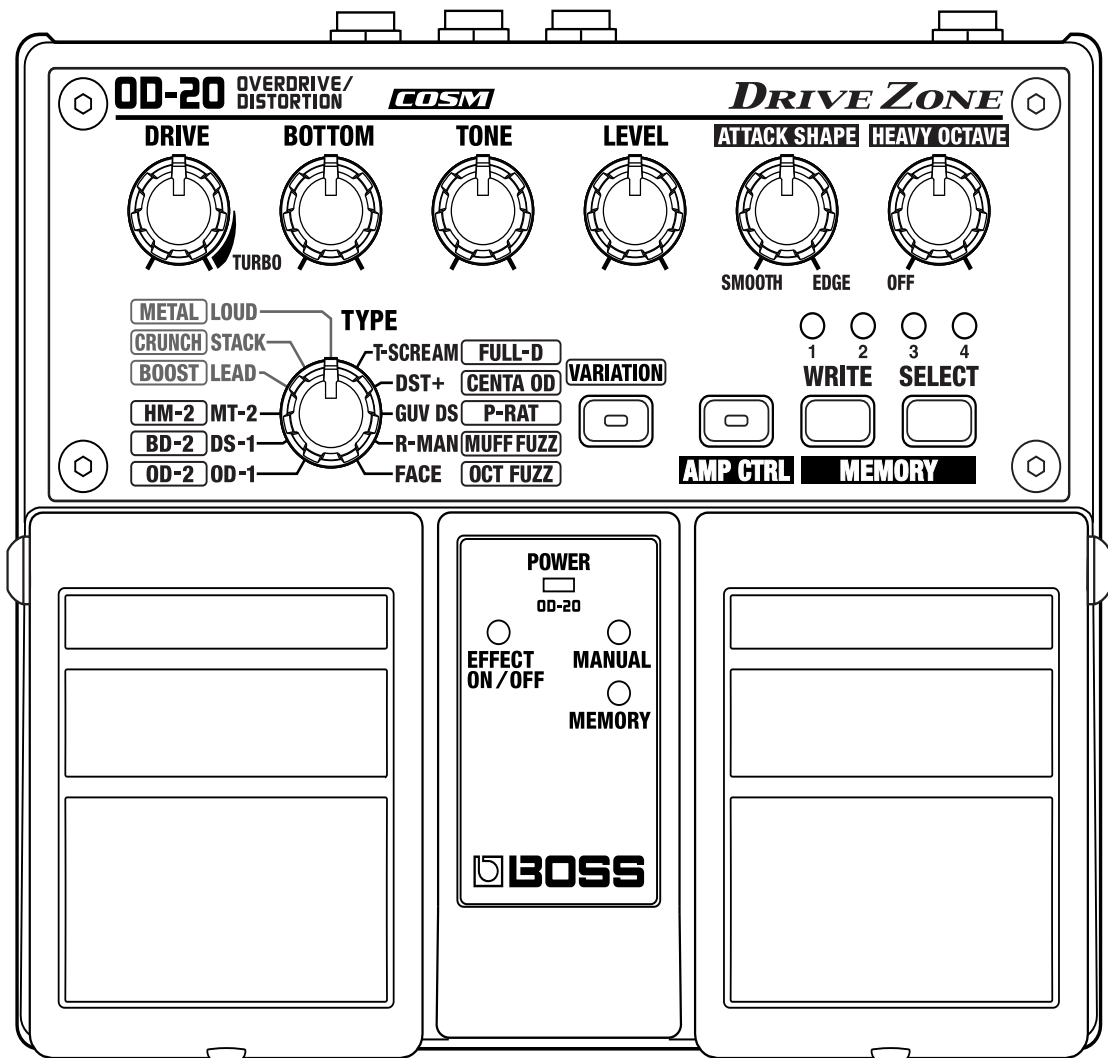


OD-20(T) OVERDRIVE/ DISTORTION

SERVICE NOTES *Issued by RJA*

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SPECIFICATIONS

OD-20: Overdrive/Distortion

Nominal Input Level

-20 dBu

Input Impedance

1 M Ω

Nominal Output Level

-20 dBu

Output Impedance

1 k Ω

Recommended Load Impedance

10 k Ω or greater

Dynamic Range

102 dB (IHF-A typ.)

Controls

EFFECT ON/OFF Pedal
MANUAL/MEMORY Pedal
DRIVE Knob
BOTTOM Knob
TONE Knob
LEVEL Knob
ATTACK SHAPE Knob
HEAVY OCTAVE Knob
TYPE Knob
VARIATION Button
AMP CTRL (amp control) Button
MEMORY WRITE Button
MEMORY SELECT Button

Indicators

POWER Indicator (serves also as battery check indicator)
EFFECT ON/OFF Indicator
MANUAL Indicator
MEMORY Indicator
VARIATION Indicator
AMP CTRL (amp control) Indicator
MEMORY Number Indicator (1-4)

Connectors

INPUT Jack
AMP CTRL (amp control) Jack
LINE OUT/PHONES Jack
OUTPUT Jack
AC Adaptor Jack (DC 9 V)

Power Supply

DC 9 V: Dry Battery (R6/LR6 (AA) type) x 6
AC Adaptor

Current Draw

85 mA (9 V max.)

* *Expected battery life under continuous use:*

Carbon: 8 hours
Alkaline: 20 hours

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

Dimensions

173 (W) x 158 (D) x 57 (H) mm
6-13/16 (W) x 6-1/4 (D) x 2-1/4 (H) inches
Weight
1.1 kg / 2 lbs 7 oz (including batteries)

Accessories

Owner's Manual

English :G6017351

Japanese :G6017350

Leaflet ("USING THE UNIT SAFELY," "IMPORTANT NOTES," and "Information");(*****)

Dry battery (LR6 (AA) type) x 6:(*****)

* *We recommend that alkaline batteries be used when replacing the batteries.*

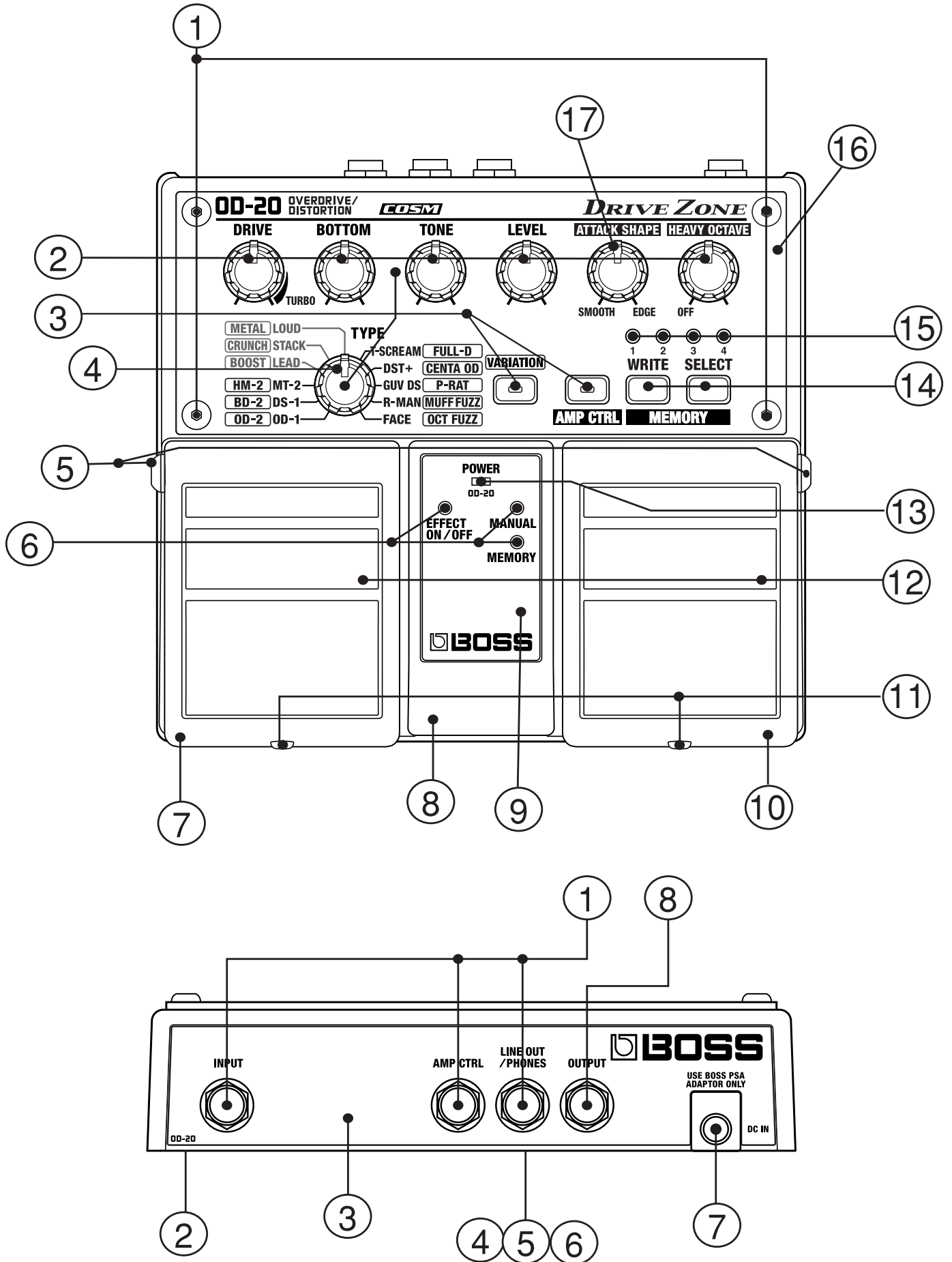
Options

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

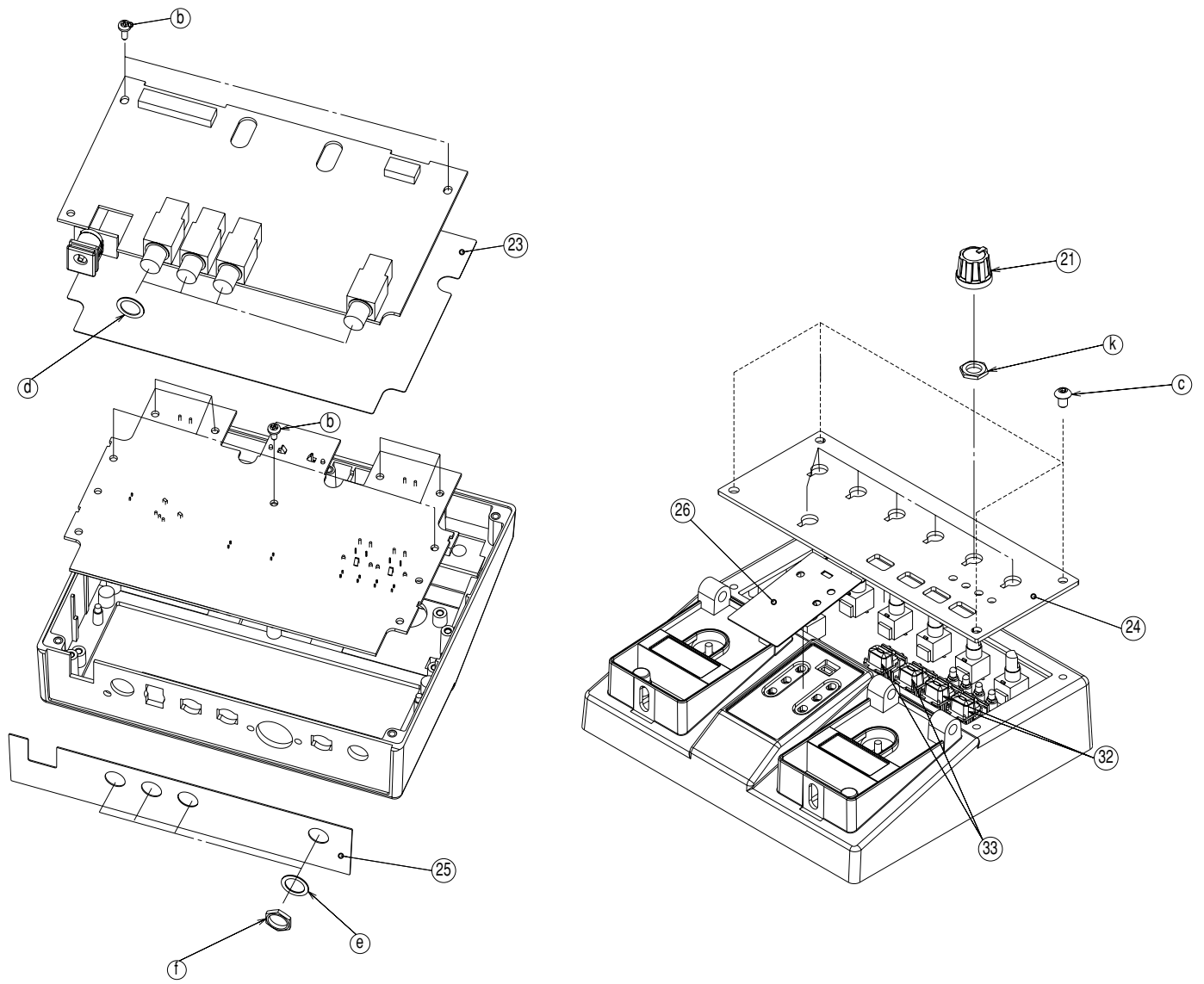
[Front]

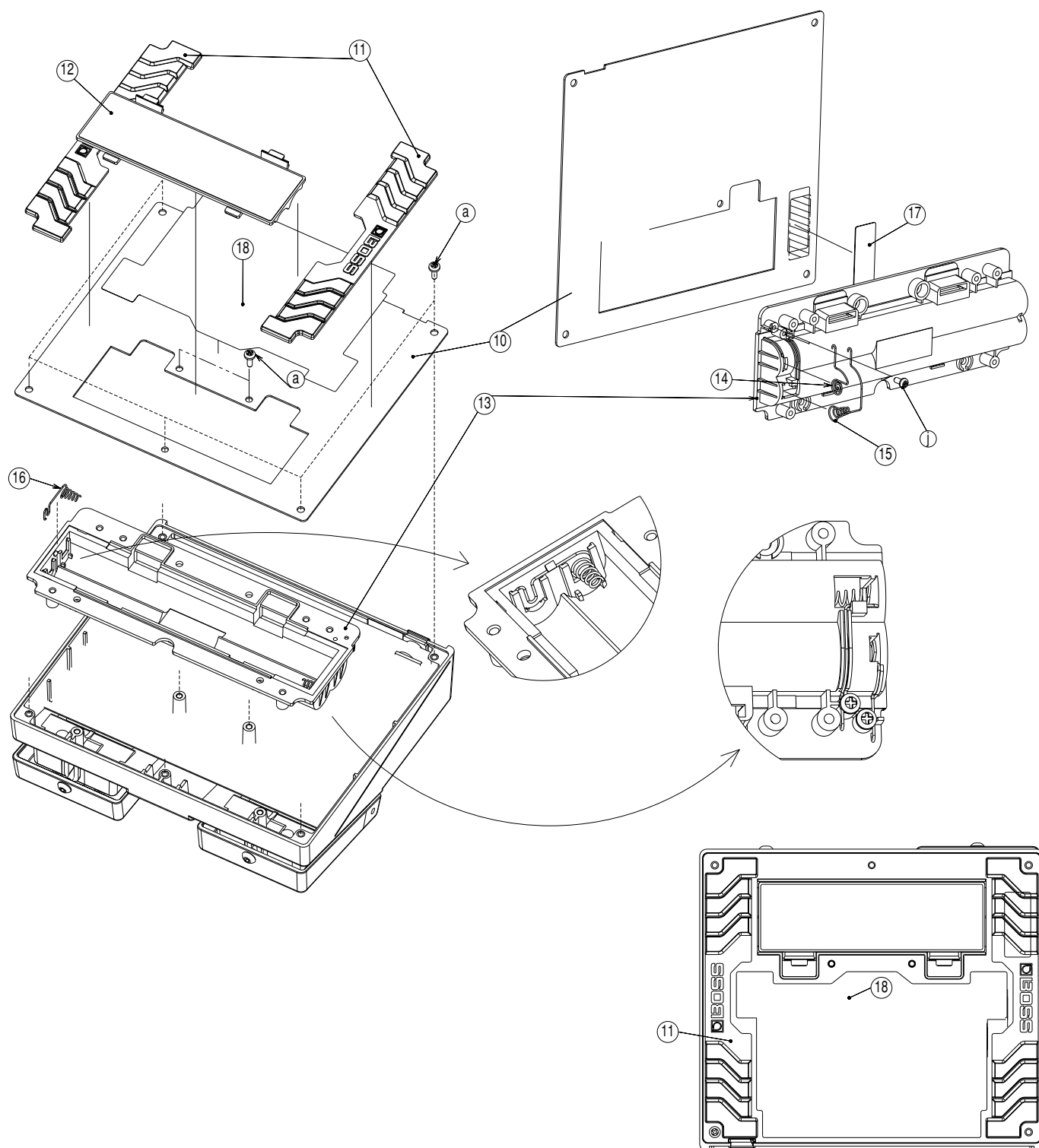
No.	PART CODE	PART NAME	DESCRIPTION	Q'TY
1	H5029855	SCREW M4X8	HEXAGON BUTTON HEAD	4
2	G2477122	R-KNOB		5
	F3279802	POTENTIOMETERNO CLICK 50KB	RD901-40-125F-B54-00D	5
3	G247751001	VGA KEYTOP S BLACK WITH LENS		2
4	G2477122	R-KNOB		1
	F3279803	POTENTIOMETER 11 CLICKS 50KB	RD901-40-125F-B54-11D	1
5	H5029851	PEDAL SHAFT		1
6	1502928100	LED (RED)	L-34HDSL	3
7	G2187540	PEDAL L		1
8	G2017180	CASE		1
9	G2217171	LED PANEL		1
10	G2187541	PEDAL R		1
11	H5029852	SCREW 4M3 FEBZC	HEXAGON SOCKET BUTTON HEAD	2
12	G2357116	PEDAL PLATE	62X53	2
13	F5029126	POWER LED	L-113GDT	1
14	G247751301	VGA KEYTOP S WITHOUT LENS		2
15	1502928100	LED (RED)	L-34HDSL	4
16	G2217170	PANEL		1
17	G2477122	R-KNOB		1
	F3279819	POTENTIOMETER CENTER CLICK 50KB	RD901-40-125F-B54-0CD	1

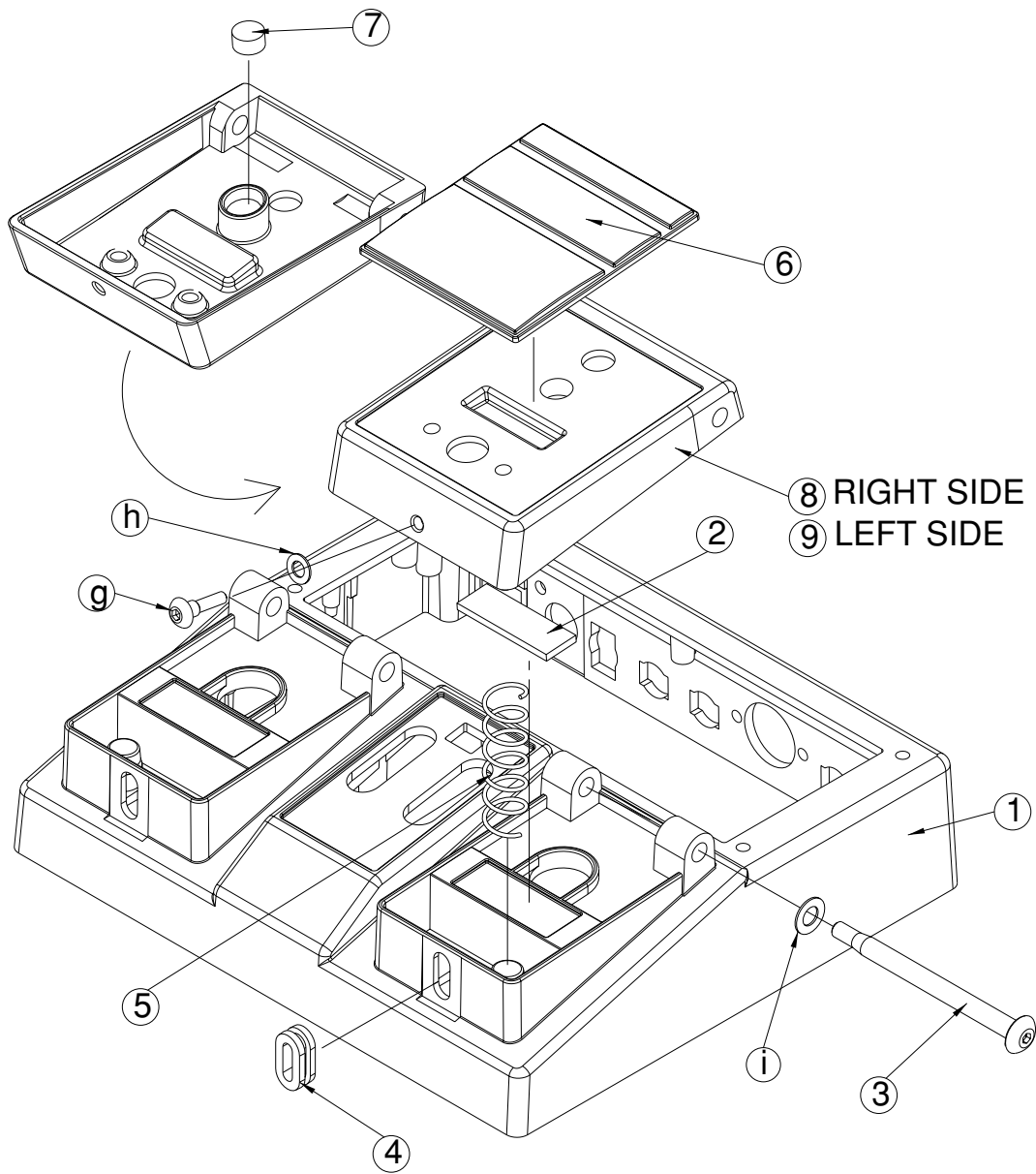
[Rear]

No.	PART CODE	PART NAME	DESCRIPTION	Q'TY
1	13449150MF	PHONE JACK (STEREO)	HTJ-064-12D	3
2	G2537552	LABEL CAUTION		1
3	G2217172	REAR PANEL		1
4	G2017621	BATTERY COVER		1
5	G2017148	BOTTOM COVER		1
6	G2357118	BOTTOM FOOT		1
7	F3449415	ADAPTOR JACK	KM02009AB	1
8	13449155MF	PHONE JACK (MONO)	HTJ-064-12I	1

EXPLODED VIEW







EXPLODED VIEW PARTS LIST

[Part]

No.	PART CODE	PART NAME	DESCRIPTION	Q'TY
1	G2017180	CASE		1
2	G2357111	CUSHION R		2
3	H5029851	PEDAL SHAFT		2
4	2215770201	PEDAL GUIDE BUSH	215-702	2
5	2217710900	COIL SPRING	214-109	2
6	G2357116	PEDAL PLATE	62X53	2
7	G2357115	PEDAL FOOT	M8	2
8	G2187541	PEDAL R		1
9	G2187540	PEDAL L		1
10	G2017148	BOTTOM COVER		1
11	G2357118	BOTTOM FOOT		2
12	G2017621	BATTERY COVER		1
13	G2017620	BATTERY CASE		1
14	G2177308	BATTERY TERMINAL(+)		1
15	G2177309	BATTERY TERMINAL(-)		1
16	G2177307	BATTERY TERMINAL(+/-)		1
17	G2257130	BATTERY INSULATING SHEET		1
18	G2537552	LABEL CAUTION QUICK MANUAL		1
21	G2477122	R-KNOB		7
23	G2257129	INSULATING SHEET		1
24	G2217170	PANEL		1
25	G2217172	REAR PANEL		1
26	G2217171	LED PANEL		1
32	G247751301	VGA KEYPAD S WITHOUT LENS		2
33	G247751001	VGA KEYPAD S BLACK WITH LENS		2

[Screw]

No.	PART CODE	PART NAME	DESCRIPTION	Q'TY
a	H5029115	SCREW 3X8	PAN TAPTITE-2 FEBZC	7
b	H5019110	SCREW M3X6	PAN TAPTITE-2 FEZC	9
c	H5029855	SCREW M4X8	HEXAGON SOCKET BUTTON HEAD FENI	4
d	H5039205	WASHER 12.5X9.5X0.5/0.9	INTERNAL TOOTH FENI	4
e	H5039112	WASHER M9		4
f	H5039510	NUT M9X12X2	FENI	4
g	H5029852	SCREW 4M3 FEBZC	HEXAGON SOCKET BUTTON HEAD	2
h	H5039413	NYLON WASHER M4.1X7.5X0.5	BLACK	2
i	H5039414	NYLON WASHER M5.1X9.5X0.5	BLACK	2
j	H5019430	SCREW M2.6X5	BINDING HEAD TAPTITE FEZC	2
k	H5039521	VR ACCESSORY NUT M7		7

PARTS LIST

SAFETY PRECAUTIONS:

The parts marked Δ have safety-related characteristics. Use only listed parts for replacement.

CONSIDERATION ON PARTS ORDRING

When ordering any parts listed in the parts list, please specify the following items in the order sheet.

	QTY	PART NUMBER	DESCRIPTION	MODEL NUMBER
Ex.	10	22575241	Sharp Key	C-20/50
	15	2247017300	Knob (orange)	DAC-15D

Failure to completely fill the above items with correct number and description will result in delayed or even undelivered replacement.

NOTE: The parts marked # are new. (initial parts)

CASING

	G2357116	PEDAL PLATE	62X53		2
	G2017620	BATTERY CASE			1
	G2017621	BATTERY COVER			1
	G2017148	BOTTOM COVER			1
	G2357118	BOTTOM FOOT			2
#	G2017180	CASE			1
#	G2217171	LED PANEL			1
#	G2217170	PANEL			1
#	G2187541	PEDAL R			1
#	G2187540	PEDAL L			1
	H5029851	PEDAL SHAFT			2
#	G2217172	REAR PANEL			1

"KNOB,BUTTON"

	G2477122	R-KNOB			7
	G247751001	VGA KEYTOP S BLACK WITH LENS			2
	G247751301	VGA KEYTOP S WITHOUT LENS			2

SWITCH

	01780101	SKQKAB	TACT SWITCH	SW3, SW4, SW5, SW6 on PB	4
	13129778	SKQKAH	TACT SWITCH	SW1, SW2 on PB	2

JACK,EXT TERMINAL

	13449150MF	HTJ-064-12D	PHONE JACK (STEREO)	JK1, JK2, JK3 on JB	3
	13449155MF	HTJ-064-12I	PHONE JACK (MONO)	JK4 on JB	1
	F3449415	KM02009AB	ADAPTOR JACK	JK5 on JB	1

PWB ASSY

#	E	75D693P000	JACK PWB ASSY		
#		75D693M000	PANEL PWB ASSY		

IC

#		02897545	MN101C30AHD OD-20 VER1.00	IC(CPU 8BIT)	IC6 on JB	1
#		F5209123	S-80930ALMP-DAT-T2	IC (REST)	IC7 on JB	1
		F5179604	CAT24WC02J	IC (EEPROM)	IC4 on JB	1
		02565501	TC220CCA0AF-B01(MR3)	IC (DSP)	IC5 on JB	1
#		F5179125	S-8520E33MC-BJS-T2	IC (DC-DC)	IC8 on JB	1
		15289109	M5216FP-600D	IC (BIPOLAR OP AMP)	IC10, IC11 on JB	2
		15189261	M5218AFP-600E	IC (BIPOLAR OP AMP)	IC3 on JB	1
		00346445	NJM2100M(TE3)	IC (BIPOLAR OP AMP)	IC1 on JB	1
		02451434	AK4552VT	IC (AD/DA)	IC2 on JB	1

TRANSISTOR

		00679045	2SA1298-Y(TE85R)	TRANSISTOR	Q5 on JB	1
		15309104	2SA1586-GR(TE85R)	TRANSISTOR	Q4 on JB	1
		15319108	2SC-3324GR-TE85R	TRANSISTOR	Q3, Q12 on JB	2
		00562012	2SC3265-Y(TE85R)	TRANSISTOR	Q7 on JB	1
		15319107	2SC4116-GR(TE85R)	TRANSISTOR	Q6, Q9, Q10 on JB	3
		F5139608	IRF7606	POWER MOS FET	Q11 on JB	1
#		F5329530	2SK879Y	FET TRANSISTOR	Q2, Q8 on JB	2
		15329103	2SK880GR-TE85R	FET TRANSISTOR	Q1 on JB	1

DIODE

		02562878	02DZ5.1-Y(TPH3)	ZENER DIODE	D8 on JB	1
		01019534	1SS355 TE-17	SWITCHING DIODE	D1, D4, D6, D10 on JB	4
		F5029126	L-113GDT	POWER LED	LED2 on PB	1

DIODE					
	1502928100	L-34HDSL	LED (RED)	LED3, 4, 5, 8, 9, 10, 11 on PB	7
	F5029117	L-312LRD	LED	LED6, 7 on PB	2
	15339119	1SS-352	DIODE	D2 on JB	1
	00783034	1SS294(TE85L)	DIODE	D3 on JB	1
	15339120	1SS302	DIODE	DA3 on JB	1
	F5339137	SS14 VF=0.45V	DIODE	D5, D7 on JB	2
RESISTOR					
	F5419707	CRN34101J	RESISTOR ARRAY	RA5,6 on JB	2
#	F5399951	68(1/2W) CHIP	RESISTOR (1/2W)	R64, R68 on JB	2
#	F2569127	MINISMDC075	POLY SWITCH	R48 on JB	1
	00566867	RPC05T 100 J	MTL.FILM RESISTOR	R37, R76, R77, R79 on JB	4
	00567023	RPC05T 101 J	MTL.FILM RESISTOR	R51 on JB	1
	00567156	RPC05T 102 J	MTL.FILM RESISTOR	R6, R61 on JB	2
	00567289	RPC05T 103 J	MTL.FILM RESISTOR	R1, R7, R11, R12, R13, R14, R15, R17, R19,	25
	00567412	RPC05T 104 J	MTL.FILM RESISTOR	R10, R28, R45, R67, R75, R78, R82, R83, R86	12
	00567556	RPC05T 105 J	MTL.FILM RESISTOR	R2, R3, R5, R27, R29, R44, R60 on JB	7
	00567290	RPC05T 123 J	MTL.FILM RESISTOR	R25, R34 on JB	12
	00567301	RPC05T 153 J	MTL.FILM RESISTOR	R23, R36 on JB	2
	00567190	RPC05T 222 J	MTL.FILM RESISTOR	R57 on JB	1
	00567334	RPC05T 273 J	MTL.FILM RESISTOR	R59 on JB	1
	00566934	RPC05T 330 J	MTL.FILM RESISTOR	R54 on JB	1
	00567089	RPC05T 331 J	MTL.FILM RESISTOR	R62, R69, R82 on JB	3
	00567367	RPC05T 393 J	MTL.FILM RESISTOR	R30 on JB	1
	00567245	RPC05T 472 J	MTL.FILM RESISTOR	R9, R66, R88 on JB	3
	00567378	RPC05T 473 J	MTL.FILM RESISTOR	R8, R16, R21, R26, R31, R41, R47, R52, R53,	11
	00567501	RPC05T 474 J	MTL.FILM RESISTOR	R4, R74 on JB	2
	00567134	RPC05T 681 J	MTL.FILM RESISTOR	R72 on JB	1
#	F3829270	27(2W)	METAL OXIDE RESISTOR	R18, 22 on JB	2
	F5429365	10K OHM F RANK (1%)	CHIP RESISTOR	R24 on JB	1
	F5429386	150K F (1608TYPE)	CHIP RESISTOR	R20 on JB	1
#	F5419740	CRN34473J CHIP	ARRAY RESISTOR	RA4 on JB	1
#	F5419741	CRN34681J CHIP	ARRAY RESISTOR	RA2,3 on JB	2
POTENTIOMETER					
#	F3279819	RD901-40-125F-B54-0CD 50KB	ROTARY POT. W/CENTER CLICK	VR2 on PB	1
	F3279802	RD901-40-125F-B54-00D	POTENTIOMETERNO CLICK 50KB	VR1, VR3, VR4, VR5, VR6 on PB	5
	F3279803	RD901-40-125F-B54-11D	POTENTIOMETER 11 CLICKS 50KB	VR7 on PB	1
CAPACITOR					
	02341489	ECPU1C474MA5	MYLAR CAPACITOR(SUBMI-CRON)		1
#	F5349704	ECPU1C474MA5	MYLAR CAPACITOR (SUBMI-CRON)	C1 on JB	1
#	F5359732	GRM39B102J50PT	CHIP CAPACITOR (1608 TYPE)	C80 on JB	1
	F5359780	GRM39B103K50PT	CHIP CAPACITOR (1608 TYPE)	C55, C56, C57, C58, C59, C60, C61, C72 on J	8
#	F5359382	GRM39B182J50PT	CHIP CAPACITOR (1608 TYPE)	C89, C95 on JB	2
	F5359740	GRM39B222K50PT	CHIP CAPACITOR (1608 TYPE)	C5, C9 on JB	2
#	F5359812	GRM39B473J50PT	CHIP CAPACITOR (1608 TYPE)	C17, C33 on JB	2
#	F5359372	GRM39B683J50PT	CHIP CAPACITOR (1608 TYPE)	C67 on JB	1
	F5359720	GRM39CH101J50PT	CHIP CAPACITOR (1608 TYPE)	C6 on JB	1
#	F5359803	GRM39CH151J50PT	CHIP CAPACITOR (1608 TYPE)	C83, C85, C88, C90 on JB	4
#	F5359370	GRM39CH180J50PT	CHIP CAPACITOR (1608 TYPE)	C69 on JB	1
	F5359704	GRM39CH220J50PT	CHIP CAPACITOR (1608 TYPE)	C68, C70, C71 on JB	3
#	F5359373	GRM39CH271J50PT	CHIP CAPACITOR (1608 TYPE)	C12, C13, C22 on JB	3
	F5359800	GRM39F104Z25PT	CHIP CAPACITOR (1608 TYPE)	C11, C21, C24, C26, C30, C32, C35, C36, C37	30
#	F3629692	0.22/50V	CAPACITOR	C87 on JB	1
#	F3629695TS	1/50V	CAPACITOR	C2, C3, C19, C29, C91, C94 on JB	6
#	F3629678TS	10/16V	CAPACITOR	C4, C7, C8, C10, C14, C15, C16, C18, C20, C	14
#	13629550KM	100/16V	CAPACITOR	C31, C49, C52, C54, C76, C78, C81, C86, C92	9
#	13629509KM	47/16V	CAPACITOR	C34, C74 on JB	2
INDUCTOR,COIL,FILTER					
	F2449216	SLF7045T-151MR40	SMD COIL	L3 on JB	1
	02563478	NFM4516P13C204F	EMI FILTER	C48 on JB	1
	F2449210	SLF7032T-4R7M1R7-2(4.7UH)	COIL	L2 on JB	1
CRYSTAL,RESONATOR					
	02673278	CX-49G 11.2896MHZ	CRYSTAL	X2 on JB	1
	F5299108	HC-49SM 8MHZ	CRYSTAL	X1 on JB	1
CONNECTOR					
	F3439160	53015-0210 2P P=2MM	CONNECTOR	CN4 on JB	1
	F3439165	A2001WR2-10P	CONNECTOR	CN1 on JB	1
#	F3439200	A2001WR2-15P	CONNECTOR	CN2 on JB	1

WIRING,CABLE

	G3487163	WIRING BATTERY	L=80MM 2P		1
#	G3467251	WIRING 15P	L=52MM P=2MM	CN2 on PB	1
#	G3487421	WIRING 10P	L=40MM P=2MM	CN1 on PB	1
	G3477146	RIBBON CABLE	3P L=40X5X5 MM P=2MM	CN3 on JB	1

SCREWS

	H5019110	SCREW M3X6	PAN TAPPING-2 FEZC		10
	H5029115	SCREW 3X8	PAN TAPPING-2 FEBZC		7
	H5039205	WASHER 12.5X9.5X0.5/0.9	INTERNAL TOOTH FENI		4
	H5029852	SCREW 4M3 FEBZC	HEXAGON SOCKET BUTTON HEAD		2
#	H5029855	SCREW M4X8	HEXAGON BUTTON HEAD		4
	H5039510	NUT M9X12X2	FENI		4
	H5039413	NYLON WASHER M4.1X7.5X0.5	BLACK		2
	H5039414	NYLON WASHER M5.1X9.5X0.5	BLACK		2
	H5019430	SCREW M2.6X5	BINDING HEAD TAPTITE FEZC		2
	H5039521	VR ACCESSORY NUT M7			7
	H5039112	WASHER M9			4

PACKING

#	G2627250	PACKING CASE			1
	G2607212	PACKING CASE LOWER			1
	G2237614	REAR PAD			1
	G2237613	SIDE PAD			1

MISCELLANEOUS

	G2357115	PEDAL FOOT	M8		2
	H2369427	LED SPACER	H=8MM		4
	2215770201	PEDAL GUIDE BUSH	215-702		2
	2217710900	COIL SPRING	214-109		2
	G2257130	BATTERY INSULATING SHEET			1
	G2177308	BATTERY TERMINAL(+)			1
	G2177307	BATTERY TERMINAL(+/-)			1
	G2177309	BATTERY TERMINAL(-)			1
	G2357111	CUSHION R			2
	G2257129	INSULATING SHEET CENTER			1
#	G2537552	LABEL CAUTION			1
	G2197126	LED GUIDE			1

ACCESSORIES (Standard)

#	G6017350	OWNER'S MANUAL	JAPANESE		1
#	*****	ALKALINE BATTERY	LR6SG-P2		3
#	G6017351	OWNER'S MANUAL	ENGLISH		1

CHECKING THE VERSION NUMBER

After you enter test mode, perform step 5.

1. Turn all knobs to MIN (all the way to the left).
2. While holding down the left pedal and the right pedal, insert the 9V plug into DC IN.
At this time, only the POWER LED will light.
3. Release the left and right pedals. The EFFECT ON/OFF LED will blink.
4. Within four seconds, press the left pedal and then the right pedal.
If you were successful in entering test mode, the EFFECT ON/OFF LED, MANUAL LED, and MEMORY LED will light.

5. Set the TYPE volume to METAL/LOUD.

. The version number will be indicated as follows.

For Ver1.00, only the MEMORY 2 LED will light.

(The integer portion is indicated by the MEMORY 1 and 2 LEDs)

- 1: MEMORY 1 LED: dark MEMORY 2 LED: lit
- 2: MEMORY 1 LED: lit MEMORY 2 LED: dark
- 3: MEMORY 1 LED: lit MEMORY 2 LED: lit

The first decimal place is indicated by the MEMORY 3 and 4 LEDs

- 0: MEMORY 3 LED: dark MEMORY 4 LED: dark
- 1: MEMORY 3 LED: dark MEMORY 4 LED: lit
- 2: MEMORY 3 LED: lit MEMORY 4 LED: dark
- 3: MEMORY 3 LED: lit MEMORY 4 LED: lit

The second decimal place is indicated by the MANUAL LED and MEMORY LED

- 0: MANUAL LED: dark MEMORY LED: dark
- 1: MANUAL LED: dark MEMORY LED: lit
- 2: MANUAL LED: lit MEMORY LED: dark
- 3: MANUAL LED: lit MEMORY LED: lit

RESTORING THE FACTORY SETTINGS

Returning Settings to Their Factory Defaults

You can restore the memories (1-4), pedal mode settings, and the MEMORY Number Indication to their original factory values.

Memory Settings

- Memory 1 LOUD
- Memory 2 LEAD
- Memory 3 OD-1
- Memory 4 STACK

Pedal Mode

- 1 (MANUAL -> MEMORY 1 -> MEMORY 2 -> MEMORY 3 -> MEMORY 4 -> MANUAL)

MEMORY Number Indication

Lighting Pattern 1(Only the indicator for the selected memory lights up.)

Carrying out the following procedure completely clears the content currently stored in the memories (1-4).

1. Switch off the power.
Disconnect the connection plug from the INPUT jack.
2. While holding down the WRITE button, switch on the power.
Insert the connection plug into the INPUT jack.
When you release the button, the MEMORY Number indicators blink.
3. Press the MEMORY WRITE button.
After the MEMORY Number indicators begin blinking rapidly, the setting is stored in memory and the unit returns to its ordinary state.

* To cancel the setting change, operate the EFFECT ON/OFF pedal or the MANUAL/MEMORY pedal before pressing the MEMORY WRITE button.
The unit will return to its ordinary state.

TEST MODE

Required items

1. Oscillator
2. Noise meter
3. Oscilloscope
4. Monitor amp (e.g., MA-12)
5. Guitar amp (with a channel-switching jack)
6. Stereo plug
7. 47kΩ short plug

1. How to enter test mode

1. Turn all knobs to MIN (all the way to the left).
Connect a short plug (47kΩ) to INPUT.
2. While holding down the left pedal and right pedal, insert the 9V plug into DC IN.
At this time, only the POWER LED will light.
3. Release the left and right pedals. The EFFECT ON/OFF LED will blink.
4. Within four seconds, press the left pedal and then the right pedal.
If you were successful in entering test mode, the EFFECT ON/OFF LED, MANUAL LED, and MEMORY LED will light.

2. List of test items

1. IC check
2. Switching noise / shock noise check
3. Residual noise check
4. SW and LED check
5. AMP control check
6. VR Check
7. DAC check (includes FET SW (EFFECT) inspection)
8. DSP thru check
9. Analog mute check (FET SW (DIRECT) inspection)
10. Version check

3. Test contents

1. IC check

1. When you enter test mode, the DSP(IC5) and EEPROM(IC4) check will begin automatically.
2. If no problem is found, the EFFECT ON/OFF LED, MANUAL LED, and MEMORY LED will light.
3. If a problem is found, the LEDs will indicate the problem as follows.
ON/OFF LED blinking: EEPROM error
MANUAL LED blinking: DSP(PRAM) error
MEMORY LED blinking: DSP(IRAM) error
If a problem is found, the unit will remain in this state, and it will not be possible to carry out the remaining tests.

2. Switching noise / shock noise check

1. With the EFFECT ON/OFF LED, MANUAL LED, and MEMORY LED lit, connect a short plug (47kΩ) to INPUT, and a monitor speaker to OUTPUT.
2. Press the EFFECT ON/OFF switch several times, and verify that no abnormal switching noise occurs.
3. Press the EFFECT ON/OFF switch to make the EFFECT ON/OFF LED go dark (ANALOG BYPASS), and drop the unit from a height of approximately 10 cm to subject it to physical shock. Verify that no abnormal noise occurs.
4. Press the EFFECT ON/OFF switch to make the EFFECT ON/OFF LED light (DSP THRU), and drop the unit from a height of approximately 10 cm to subject it to physical shock. Verify that no abnormal noise occurs.

3. Residual noise check

1. Connect a noise meter to the OUTPUT.
2. Press the EFFECT ON/OFF switch to make the EFFECT ON/OFF LED light (DSP THRU), and measure the residual noise.
Verify that the value detected by the noise meter is below -73 dBm (IHF-A).
3. Press the EFFECT ON/OFF switch to make the EFFECT ON/OFF LED go dark (BYPASS), and measure the residual noise.
Verify that the value detected by the noise meter is below -104 dBm (IHF-A).

4. SW and LED check

1. Press the VARIATION switch, and you will proceed to the switch and LED check.
First verify that only the VARIATION LED is lit.
The other LEDs will be dark.

Press the switches in the following order, and verify that in a similar way, only one LED at a time is lit.

2. Press the AMP CTRL switch, and verify that only the AMP CTRL LED is lit.
3. Press the MEMORY WRITE switch, and verify that only the EFFECT ON/OFF LED is lit.
4. Press the MEMORY WRITE switch, and verify that only the MANUAL LED is lit.
5. Press the MEMORY WRITE switch, and verify that only the MEMORY LED is lit.
6. Press the MEMORY SELECT switch, and verify that only the MEMORY 1 LED is lit.
7. Press the MEMORY SELECT switch, and verify that only the MEMORY 2 LED is lit.
8. Press the MEMORY SELECT switch, and verify that only the MEMORY 3 LED is lit.
9. Press the MEMORY SELECT switch, and verify that only the MEMORY 4 LED is lit.
(It is not possible to proceed to other test items before you have finished the above procedure.)

5. AMP control check

1. Connect the AMP CTRL jack to the channel switching jack of the guitar amp.
2. Verify that the guitar amp channel is switched each time you press the AMP CTRL SW.

6. VR check

1. Turn the DRIVE volume from MIN to MAX, and verify that the MEMORY 1-4 LEDs are all dark when the volume is at MIN (the instant you begin turning the volume), and light correspondingly as you turn the volume, so that all LEDs are lit when you reach MAX.
(Each VR you operate here must be left at the MAX position so that you will be able to proceed to the next test item.)
In the same way, perform this test in the following order for the other VR's.
2. BOTTOM volume
3. TONE volume
4. LEVEL volume
5. ATTACK SHAPE volume
6. HEAVY OCTAVE volume
7. With the TYPE volume turned all the way to the left, turn it toward the right one click at a time, and verify that the LEDs change as follows.
(TABLE A)

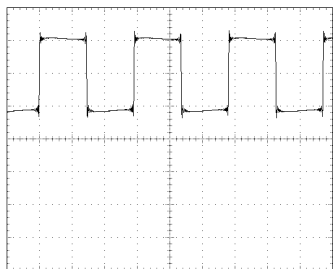
○ dark ● lit

TYPE	EFFECT	MANUAL	MEMORY	VARI	AMPCTRL	MEM1	MEM2	MEM3	MEM4
0 (OD-2/OD-1)	○	○	○	○	○	○	○	○	○
1 (BD-2/DS-1)	●	○	○	○	○	○	○	○	○
2 (HM-2/MT-2)	●	●	○	○	○	○	○	○	○
3 (BOOST/LEAD)	●	●	●	○	○	○	○	○	○
4 (CRUNCH/STACK)	●	●	●	●	○	○	○	○	○
5 (METAL/LOUD)	●	●	●	●	●	○	○	○	○
6 (T-SCREAM/FULL-D)	●	●	●	●	●	●	○	○	○
7 (DST+/CENTA OD)	●	●	●	●	●	●	●	○	○
8 (GUV DS/P-RAT)	●	●	●	●	●	●	●	●	○
9 (R-MAN/MUFF FUZZ)	●	●	●	●	●	●	●	●	●
10 (FACE/OCT FUZZ)	●	●	●	○	○	○	○	○	○

(TABLE A)

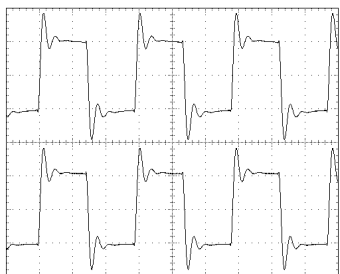
7. DAC check

1. Set the TYPE volume to BD-2/DS-1.
2. Connect an oscilloscope to OUTPUT, and check the output waveform (DSP oscillation).



(200mV/div, 1msec)

3. Press MEMORY SELECT. The MEMORY 4 LED will go dark, and the output signal will be muted. Verify that the signal is less than -67 dBm (IHF-A).
4. Connect an oscilloscope to LINE OUT/PHONES, and check the L and R output waveform (DSP oscillation).

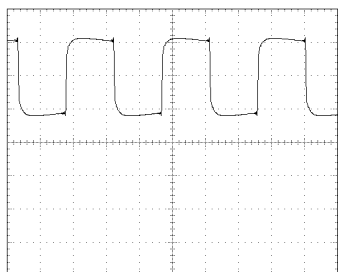


(200mV/div, 1msec)

5. Press MEMORY SELECT. The MEMORY 4 LED go dark, and the output signal will be muted. Verify that the noise for L and R is less than -68 dBm (IHF-A).

8. DSP thru check

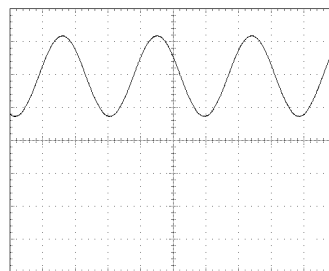
1. Set the TYPE volume to HM-2/MT-2.
2. Connect an oscillator to INPUT, and input a 344 Hz, 50 mVp-p square wave.
3. Connect an oscilloscope to OUTPUT, and check the output waveform.



(500mV/div, 1msec)

9. Analog mute check

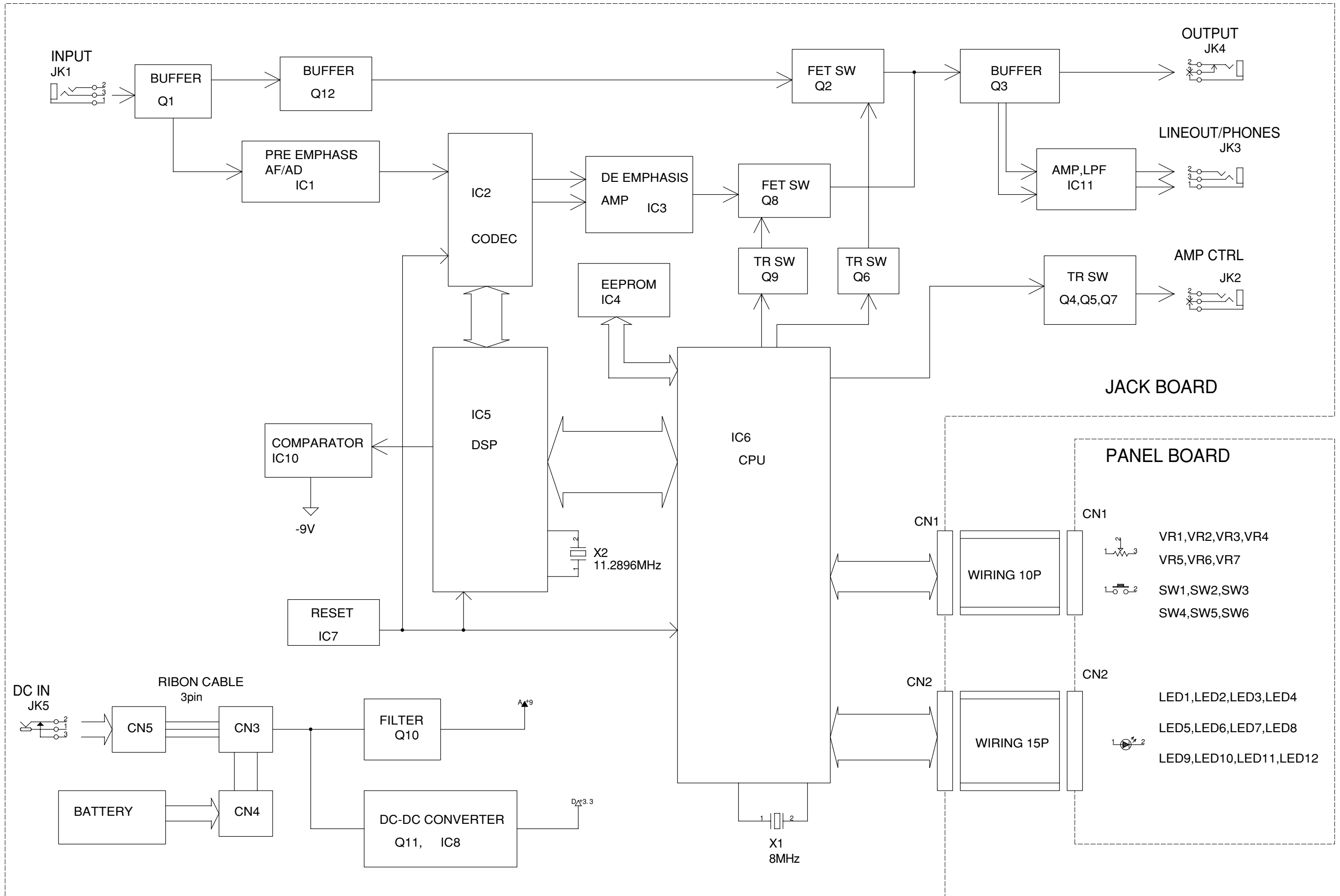
1. Set the TYPE volume to BOOST/LEAD.
2. Connect an oscillator to INPUT, and input a 344 Hz, 50 mVp-p sine wave.
3. Connect an oscilloscope to OUTPUT, and check the output waveform.



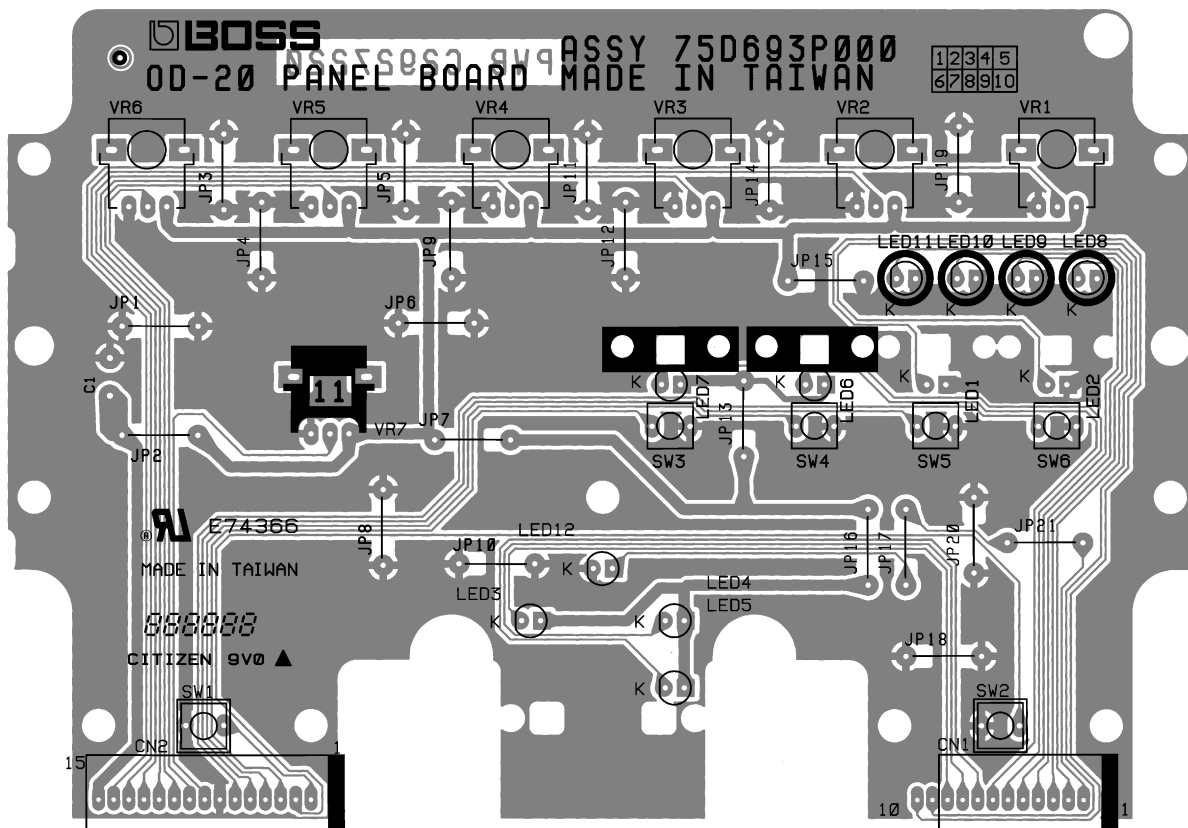
(20mV/div, 1msec)

4. Press MEMORY SELECT. The MEMORY 4 LED will go dark, and the output signal will be muted. Verify that its level is less than -77 dBm (IHF-A).

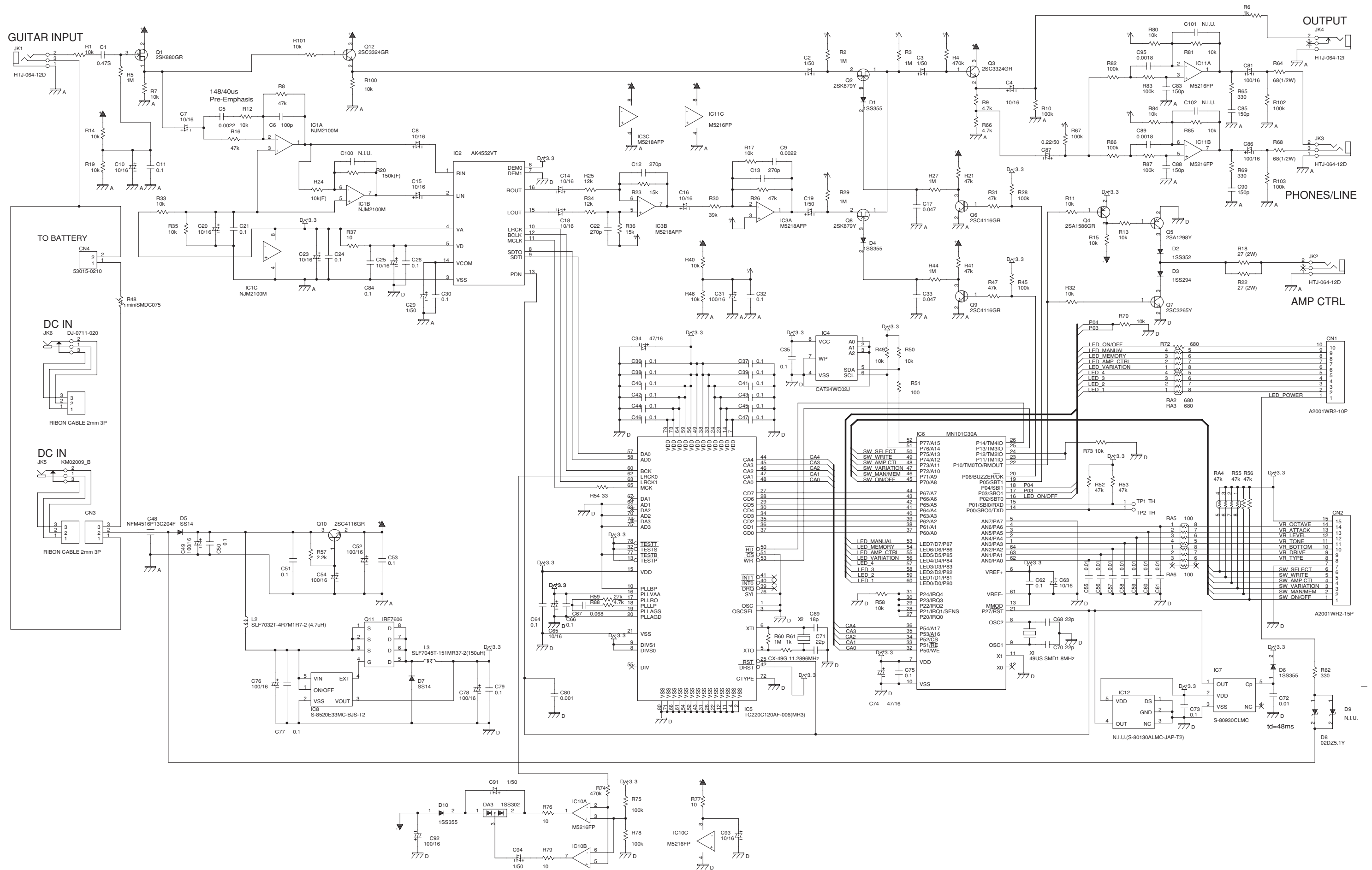
BLOCK DIAGRAM



CIRCUIT BOARD(PANEL)



CIRCUIT DIAGRAM(JACK)



CIRCUIT DIAGRAM(PANEL)

