

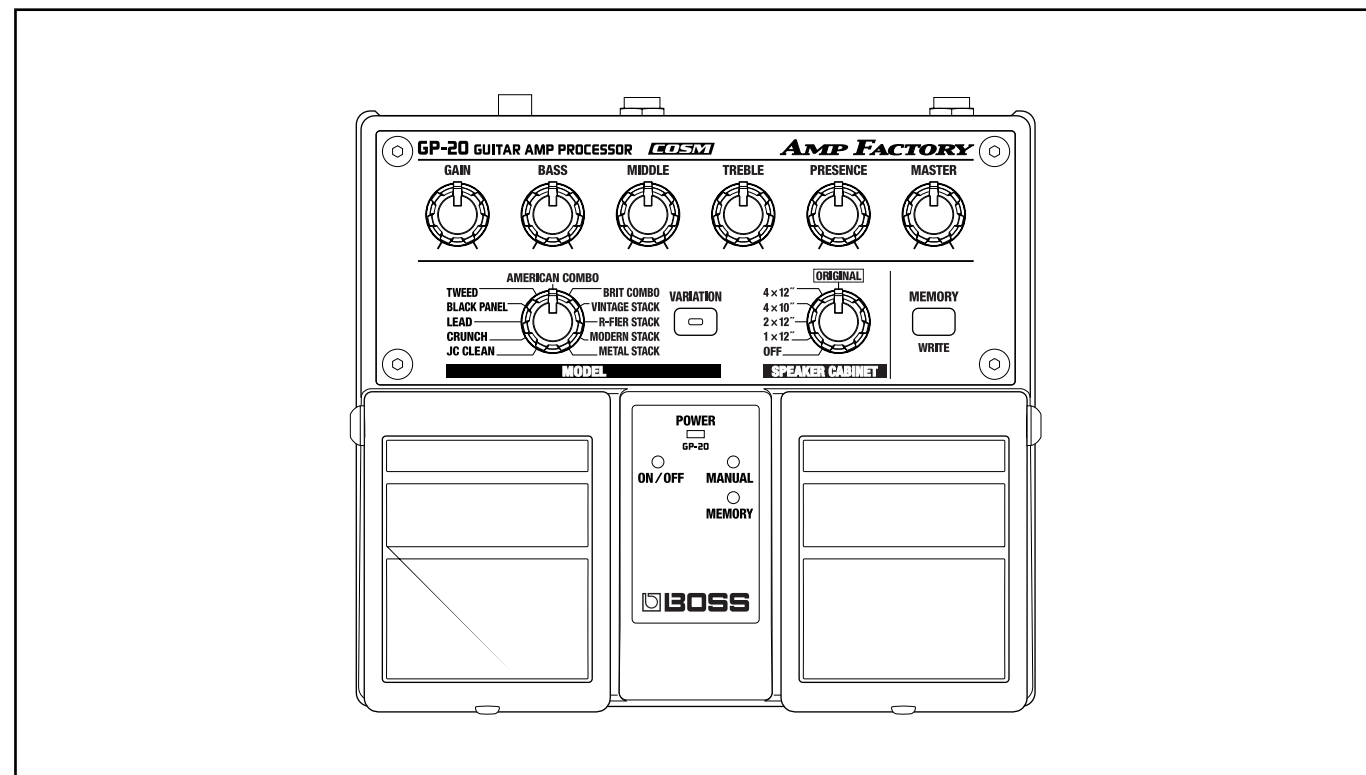
GP-20

GUITAR AMP PROCESSOR

SERVICE NOTES

First Edition
Issued by RJA

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SPECIFICATIONS

GP-20: Guitar Amp Processor

- **Nominal Input Level**
INPUT -20 dBu
- **Input Impedance**
1 M ohm
- **Nominal Output Level**
OUTPUT -20 dBu
- **Output Impedance**
1 k ohm
- **Recommended Load Impedance**
10 k ohm or greater
- **Dynamic Range**
108 dB (IHF-A typ.)
- **Controls**
ON/OFF Pedal
MANUAL/MEMORY Pedal
GAIN Knob
BASS Knob
MIDDLE Knob
TREBLE Knob
PRESENCE Knob
MASTER Knob
MODEL Knob
SPEAKER CABINET Knob
VARIATION Button
MEMORY/WRITE Button
OUTPUT Select Switch
- **Indicators**
POWER Indicator (serves also as battery check indicator)
ON/OFF Indicator
MANUAL Indicator
MEMORY Indicator
VARIATION Indicator
- **Connectors**
INPUT Jack (Normal type)
OUTPUT Jack (Normal type)
DIGITAL OUT Jack (RCA PIN type)
AC Adaptor Jack
- **Power**
DC 9V: Dry battery (AA type) x 6, AC Adaptor
- **Power Consumption**
85 mA (9 V max.)
- * Expected battery life under continuous use:
Carbon: 9 hours
Alkaline: 25 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 (#G6017290)
Dry battery (AA type) x 6 (#*****)
- **Options**
AC Adaptor (PSA-series)

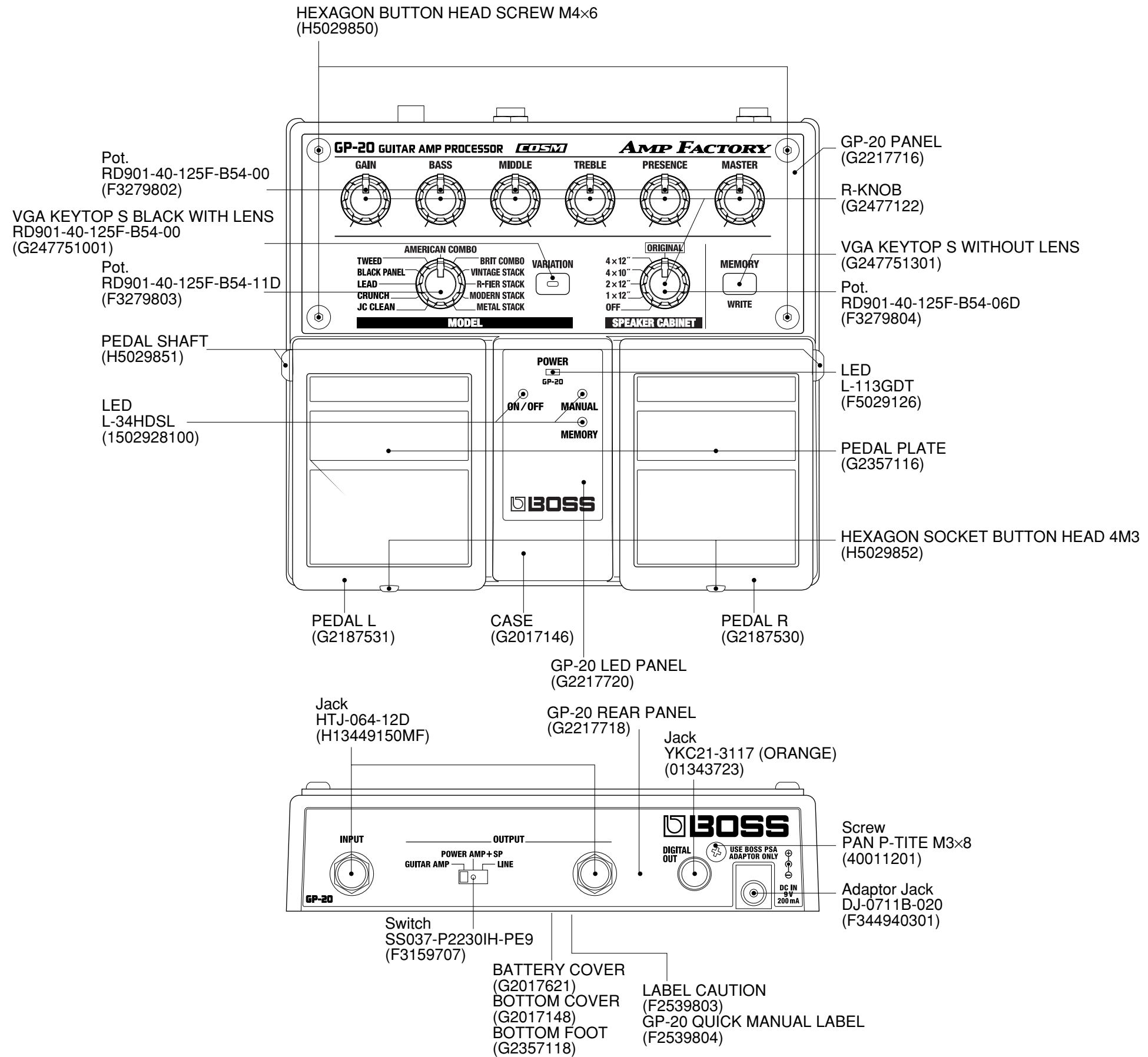
* 0 dBu = 0.775 Vrms

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

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A LOCATION OF CONTROLS

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A EXPLODED VIEW

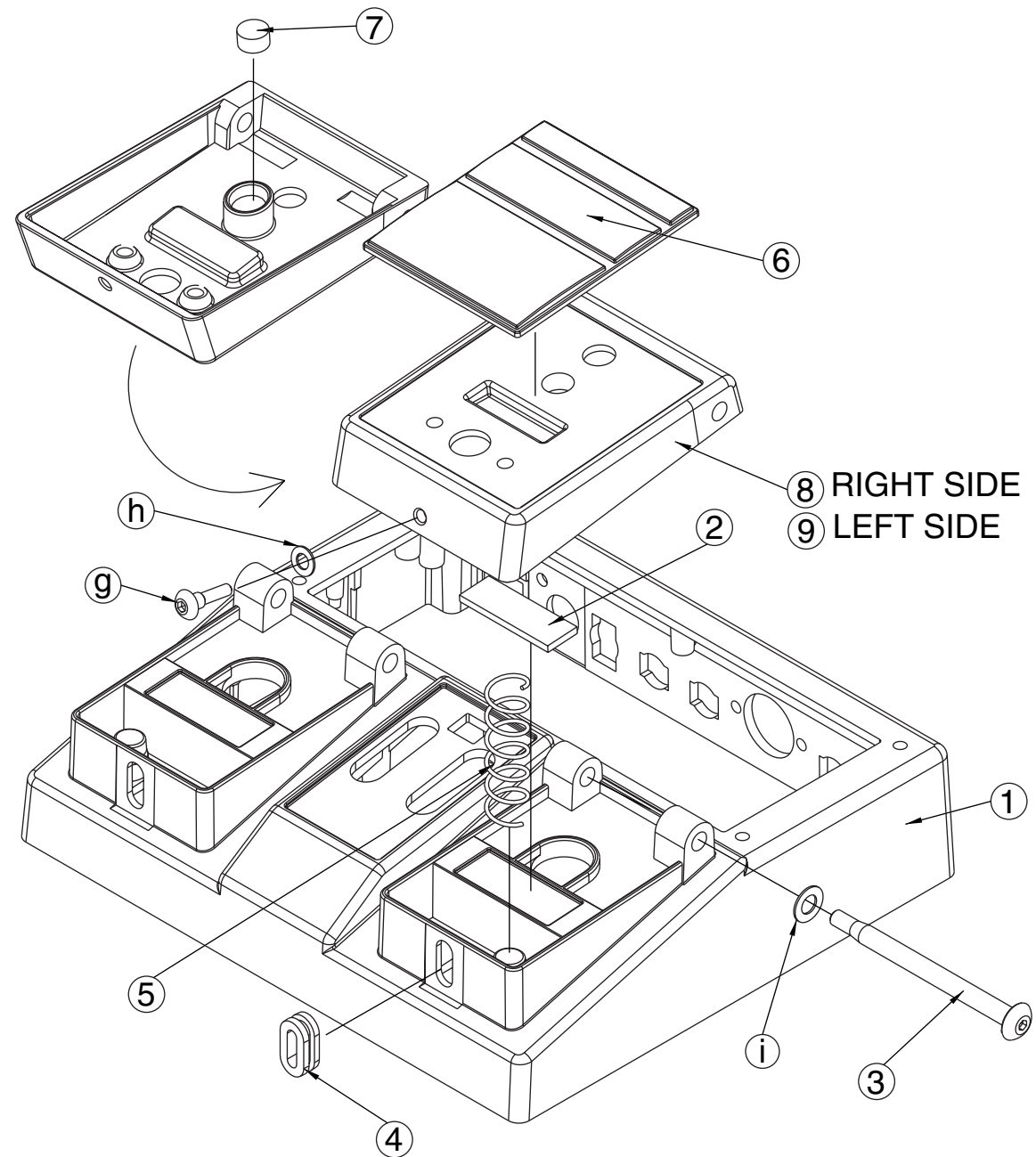
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[Parts]

No.	Part Code	Part Name	Q'ty
1	G2017146	CASE	1
2	G2357111	CUSHION R	2
3	H5029851	PEDAL SHAFT	2
4	2215770201	PEDAL GUIDE BUSH	2
5	2217710900	COIL SPRING	2
6	G2357116	PEDAL PLATE	2
7	G2357115	PEDAL FOOT	2
8	G2187530	PEDAL R	1
9	G2187531	PEDAL L	1
10	G2017148	BOTTOM COVER	1
11	G2357118	BOTTOM FOOT	2
12	G2017621	BATTERY COVER	1
13	G2017620	BATTERY CASE V6	1
14	G2177308	BATTERY TERMINAL(+)	1
15	G2177309	BATTERY TERMINAL(-)	1
16	G2177307	BATTERY TERMINAL(+/-)	1
17	G2257130	BATTERY INSULATING SHEET	1
18	F2539803	LABEL CAUTION	1
19	F2539804	QUICK MANUAL LABEL	1
21	G2477122	R-KNOB	8
23	G2257131	INSULATING SHEET BOTTOM	1
24	G2217716	PANEL	1
25	G2217718	REAR PANEL	1
26	G2217720	LED PANEL	1
32	G247751301	KEYTOP S WITHOUT LENS	1
33	G247751001	KEYTOP S BLACK WITH LENS	1

[Screws]

No.	Part Code	Part Name	Q'ty
a	H5019115	SCREW 3x8 PAN HEAD TAPTITE-2 BZC	2
b	H5019110	SCREW 3x6 PAN HEAD TAPTITE-2 FEZC	7
c	H5029850	SCREW M4x6 HEXAGON SOCKET BUTTON HEAD FENI	4
d	40011923	INTERNAL TOOTH WASHER M9.5x12.5x0.5 FENI	2
e	40016467	JACK WASHER M9.2x14x0.5 FENI	2
f	40123545	JACK NUT M9x11x2 NI	2
g	H5029852	SCREW 4M3 HEXAGON SOCKET BUTTON HEAD FEBZC	2
h	H5039413	NYLON WASHER M4.1x7.5x0.5 BLACK	2
i	H5039414	NYLON WASHER M5.1x9.5x0.5 BLACK	2
j	H5019430	SCREW 2.6x5 BINDNG HEAD TAPTITE P FEZC	2
k	H5039521	VR ACCESSORY NUT M7	8
l	40011201	SCREW 3x8 PAN TAPTITE P BZC	1
m	H5029325	SCREW 3x6 PAN HEAD TAPTITE-2 BZC	5

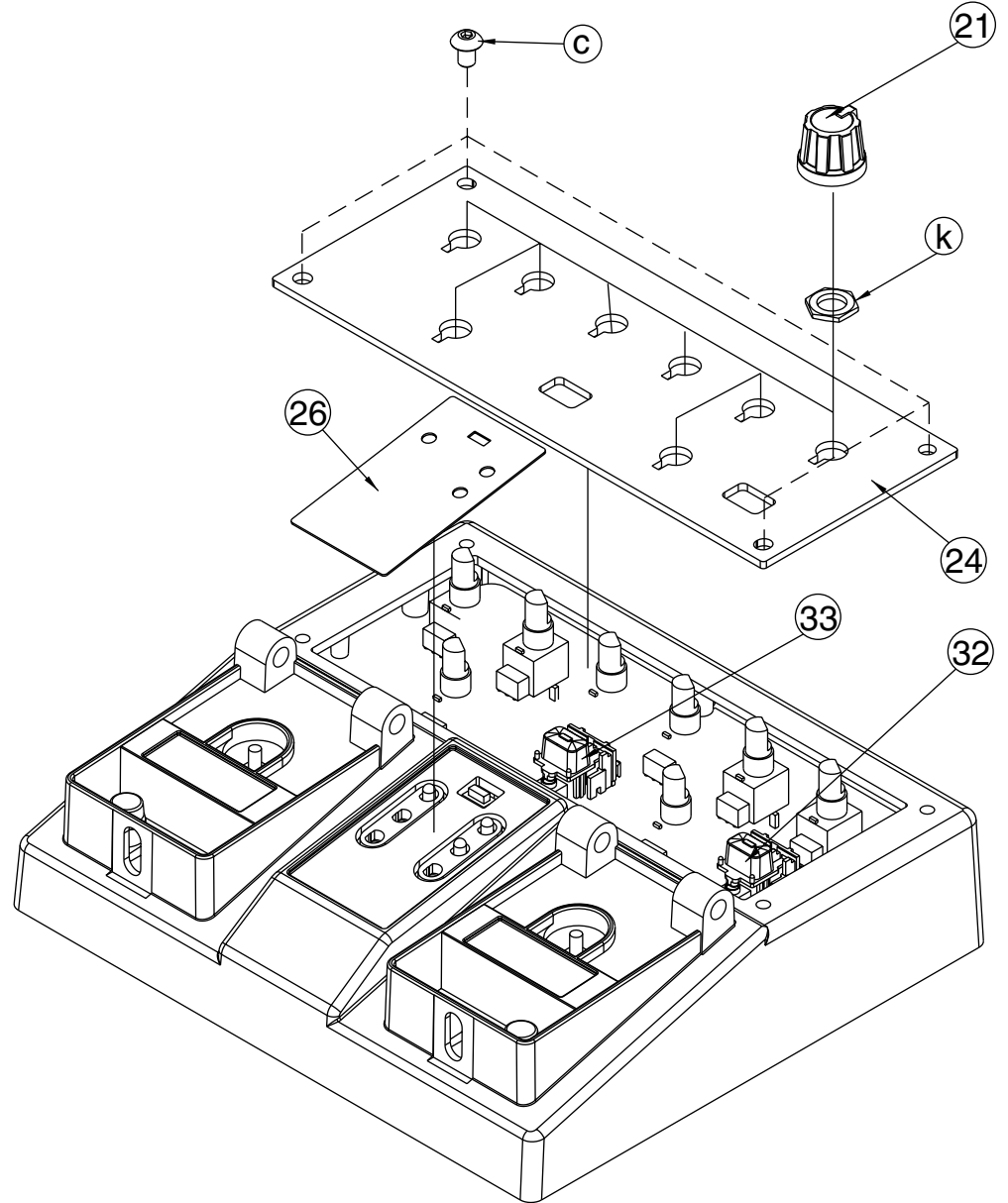
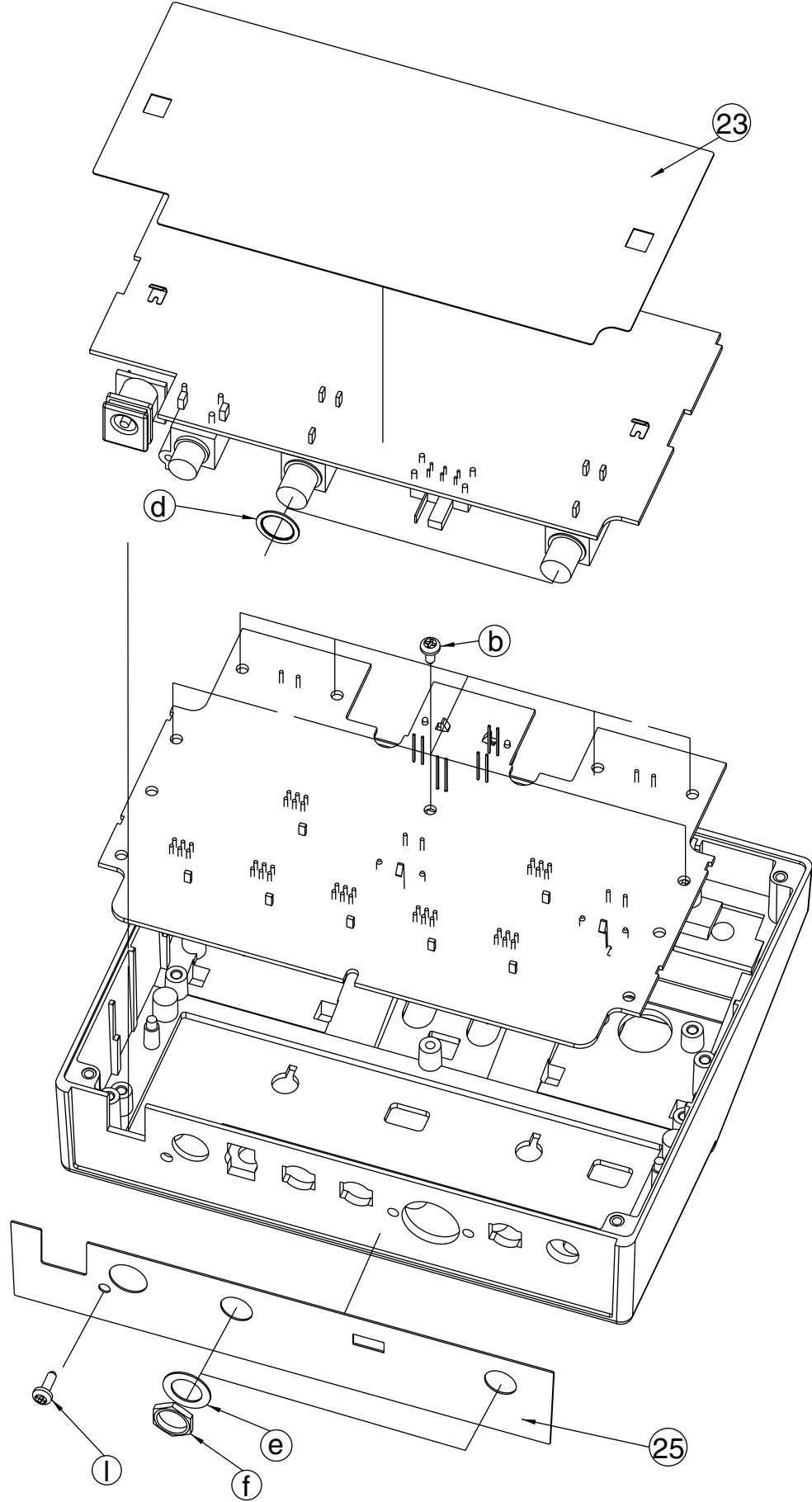


CAUTION
 An M2.5 hex wrench is required for assembly and disassembly.
 Use caution not to scratch the LED during assembly or disassembly.

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A EXPLODED VIEW

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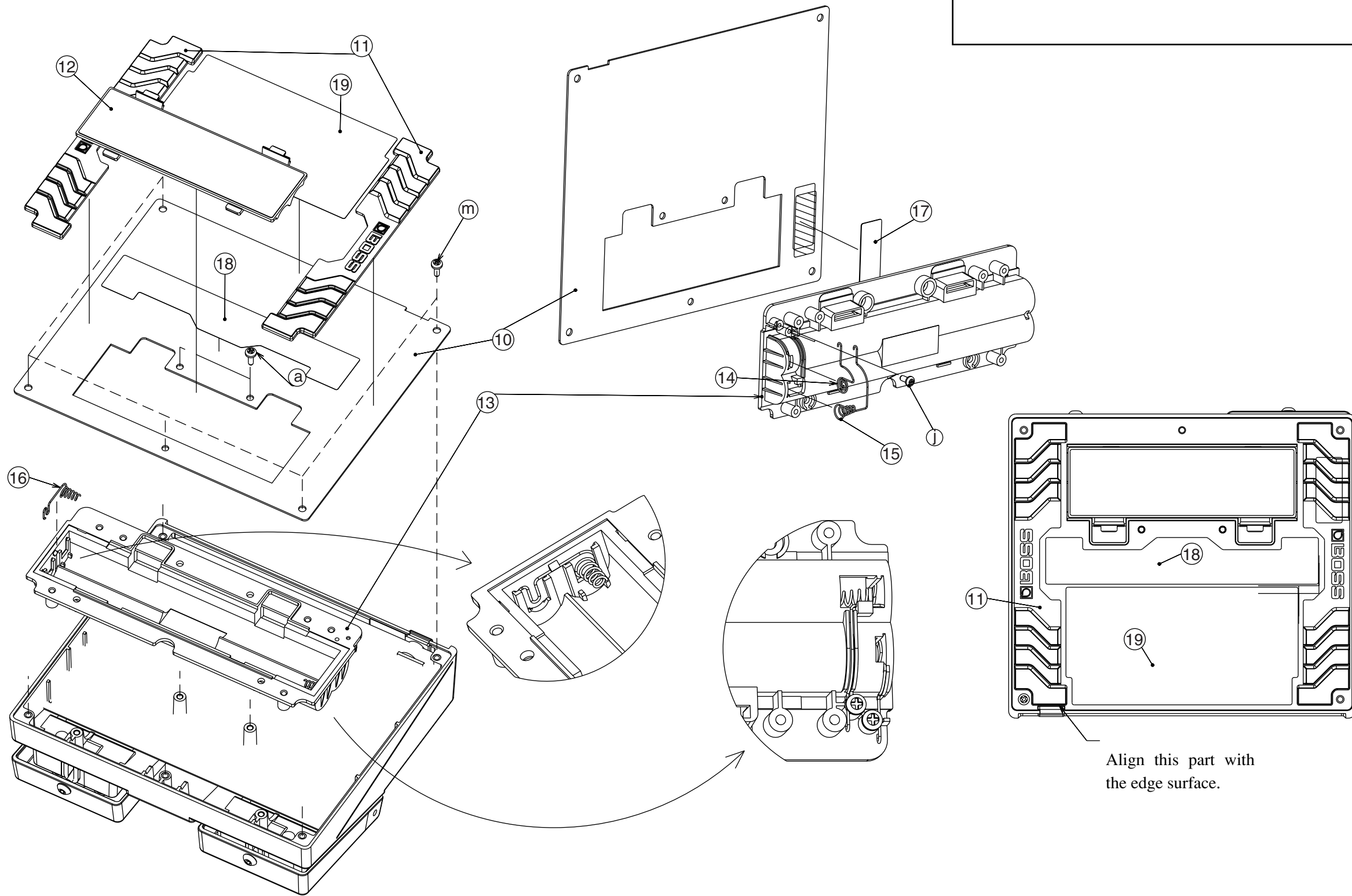
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A EXPLODED VIEW

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*** IMPORTANT CAUTION ITEMS**

- Be sure to connect the battery terminals securely.
- Use caution not to pinch the battery terminal wires between the bottom cover and the case.



PARTS LIST

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

The parts marked # are new (initial parts).

CONSIDERATIONS ON PARTS ORDERING

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.

JB -> JACK PWB ASSY,
PB -> PANEL PWB ASSY

CASING					Q'ty
#	G2017620	BATTERY CASE V6			1
#	G2017621	BATTERY COVER			1
#	G2017148	BOTTOM COVER			1
#	G2357118	BOTTOM FOOT			2
#	G2017146	CASE			1
#	G2217720	LED PANEL			1
#	G2217716	PANEL			1
#	G2187531	PEDAL L			1
#	G2357116	PEDAL PLATE	62x53		2
#	G2187530	PEDAL R			1
#	H5029851	PEDAL SHAFT	M5		2
#	G2217718	REAR PANEL			1
KNOB, BUTTON					
#	G2477122	R-KNOB			8
#	G247751001	KEYTOP S BLACK WITH LENS			1
#	G247751301	KEYTOP S WITHOUT LENS			1
SWITCH					
	01780101	SKQKAB	TACT SWITCH	SW1,SW2 on PB	2
	13129778	SKQKAH	TACT SWITCH	SW3,SW4 on PB	2
#	F3159707	SS037-P223OIH-PE9	SWITCH	SW5 on JB	1
JACK, EXT TERMINAL					
#	F344940301	DJ-0711B-020	ADAPTOR JACK	JK4 on JB	1
	13449150MF	HTJ-064-12D	PHONE JACK (STEREO)	JK1,JK2 on JB	2
	01343723	YKC21-3117(ORANGE)	RCA(PIN) JACK	JK3 on JB	1
PWB ASSY					
#	\square 75D4130100	JACK PWB ASSY	(EXG)		1
#	75D4130200	PANEL PWB ASSY			1
IC					
#	02455067	MN101C427 VER1.00	IC (8BIT CPU)	IC9 on JB	1
	01235190	TC203C040AF-001(FP)	IC (MR2 CHIP)	IC7 on JB	1
#	F5179127	TLC320AD77C	IC (CODEC)	IC5 on JB	1
#	F5179604	CAT24WC02J	IC (EEPROM)	IC11 on JB	1
	15189210	BA15218F-T2	IC (OP AMP)	IC3 on JB	1
	00452301	NJM2100M	IC (OP AMP)	IC1,IC2 on JB	2
#	02455056	S-80930ALMP-DAT-T2	IC (RESET)	IC13 on JB	1
	01906156	S-8520E33MC-BJS-T2	IC (DC-DC REGULATOR)	IC12 on JB	1
	15169569	TC74HC4053AP	IC (ANALOG MULTIPLEXER)	IC100 on PB	1
	15249104	TC7S04F(TE85L)	IC (CMOS)	IC6 on JB	1
	01785178	TC9271FS	IC	IC4 on JB	1
TRANSISTOR					
	15309110	2SA1312GR(TE85R)	TRANSISTOR	Q7 on JB	1
	15319108	2SC3324GR(TE85R)	TRANSISTOR	Q3,Q4 on JB	2
	15319107	2SC4116GR(TE85R)	TRANSISTOR	Q10 on JB	1
#	F5139607	2SJ278	FET TRANSISTOR	Q12 on JB	1
	15329103T0	2SK880GR(TE85R)	FET TRANSISTOR	Q1,Q2,Q5 on JB	3
	15329521	RN1307(TE85R)	TRANSISTOR	Q6,Q8 on JB	2

DIODE

	15339119T0	1SS352(TPH3)	SWITCHING DIODE	D1,D2,D5 on JB	3
	F5339137	SS14 VF=0.45V	DIODE	D3,D4 on JB	2
	15019523	RD-5.1EB-3	ZENER DIODE	D6 on JB	1
	F5029117	L-312LRD	LED	LED1 on PB	1
#	F5029126	L-113GDT	LED	LED2 on PB	1
	1502928100	L-34HDSL	LED (RED)	LED3-LED5 on PB	3

RESISTOR

#	F5429365	10KF	CHIP RESISTOR(1608TYPE)	R43 on JB	1
	F5429386	150K F	CHIP RESISTOR(1608TYPE)	R36 on JB	1
	00566867	RPC05T 100 J	CHIP RESISTOR(1608TYPE)	R50,R52 on JB	2
	00567023	RPC05T 101 J	CHIP RESISTOR(1608TYPE)	R49,R68,R71 on JB	3
	00567156	RPC05T 102 J	CHIP RESISTOR(1608TYPE)	R7 on JB	1
	00567289	RPC05T 103 J	CHIP RESISTOR(1608TYPE)	R1,R3,R11,R69,R70 on JB	5
	00567412	RPC05T 104 J	CHIP RESISTOR(1608TYPE)	R6,R12 on JB	2
	00567556	RPC05T 105 J	CHIP RESISTOR(1608TYPE)	R2,R4,R5,R31,R34,R47,R60 on JB	7
	00567290	RPC05T 123 J	CHIP RESISTOR(1608TYPE)	R8,R10,R13-R16,R19,R22,R23,R25-R27, R29,R30,R37-R42,R44 on JB	21
	00567301	RPC05T 153 J	CHIP RESISTOR(1608TYPE)	R18,R35 on JB	2
	00567190	RPC05T 222 J	CHIP RESISTOR(1608TYPE)	R62 on JB	1
	00567334	RPC05T 273 J	CHIP RESISTOR(1608TYPE)	R28 on JB	1
	00567089	RPC05T 331 J	CHIP RESISTOR(1608TYPE)	R57 on JB	3
	00567345	RPC05T 333 J	CHIP RESISTOR(1608TYPE)	R17,R20,R32,R48,R58,R61,R66,R67 on JB	8
	00567112	RPC05T 471 J	CHIP RESISTOR(1608TYPE)	R9,R21,R33,R45 on JB	4
	00567389	RPC05T 563 J	CHIP RESISTOR(1608TYPE)	R24,R46 on JB	2
	00567134	RPC05T 681 J	CHIP RESISTOR(1608TYPE)	R53-R56 on JB	4
	00567001	RPC05T 750 J	CHIP RESISTOR(1608TYPE)	R51 on JB	1

POTENTIOMETER

#	F3279802	RD901-40-125F-B54-00D	ROTARY POT. 50KB	VR1-VR6 on PB	6
#	F3279804	RD901-40-125F-B54-06D	ROTARY POT. 50KB W/6 CLICKS	VR8 on PB	1
#	F3279803	RD901-40-125F-B54-11D	ROTARY POT. 50KB W/11 CLICKS	VR7 on PB	1

CAPACITOR

	02341489	ECPU1C474MA5	MYLAR CAPACITOR(SUBMICRON)	C1 on JB	1
	F5367546	100/16V	CHIP CAPACITOR	C49,C51,C55,C76,C88 on JB	5
	F5367542	10/16V	CHIP CAPACITOR	C4,C8,C10,C14,C15,C23,C29,C32, C39,C43,C44 on JB	11
	F5367503	47/6.3V	CHIP CAPACITOR	C34,C36,C66,C70 on JB	4
#	01674312	ECUV1H820JCV	CHIP CAPACITOR(1608TYPE)	C27 on JB	1
#	01674112	ECUV1H050CCV	CHIP CAPACITOR(1608TYPE)	C46,C47 on JB	2
#	F5369601	1/50V	CHIP CAPACITOR	C2,C3,C16 on JB	3
#	F5367504	100/6.3V	CHIP CAPACITOR	C78 on JB	1
	13519641	DD308-959F104Z50	CERAMIC CAPACITOR	C100 on PB	1
	01674701	ECJ1VF1E104Z 0.1UF/16VK	CHIP CAPACITOR(1608TYPE)	C11,C22,C24,C28,C30,C31,C33,C35,C37, C38,C41,C42,C45,C50,C52,C67,C68, C71-C75,C77,C79-C82,C84-C87 on JB	31
	01674534	ECJ1VB1H332K	CHIP CAPACITOR(1608TYPE)	C5,C9,C60-C64 on JB	7
	01674478	ECJ1VB1H122K	CHIP CAPACITOR(1608TYPE)	C20 on JB	1
	01674467	ECUV1H102JCV	CHIP CAPACITOR(1608TYPE)	C7,C18,C25 on JB	3
	01674390	ECUV1H271JCV	CHIP CAPACITOR(1608TYPE)	C12,C17,C21,C26,C83 on JB	5
	01674378	ECUV1H181JCV	CHIP CAPACITOR(1608TYPE)	C13 on JB	1
	01674334	ECUV1H101JCV	CHIP CAPACITOR(1608TYPE)	C6,C19 on JB	2
	01674212	ECUV1H220JCV	CHIP CAPACITOR(1608TYPE)	C65,C69 on JB	2

INDUCTOR, COIL, FILTER

#	02563478	NFM4516P13C204F	EMI FILTER	L5 on JB	1
	12449384	SBT-0115W	EMI FILTER	L1 on JB	1
	F2449210	SLF7032T-4R7M1R7-2(4.7UH)	SMD COIL	L2 on JB	1
#	F2449216	SLF7045T-151MR40	SMD COIL	L3 on JB	1

CRYSTAL, RESONATOR

	02560445	CX-16F 33.8688MHZ	CRYSTAL	X1 on JB	1
	F5299108	49US SMD 8MHZ	CRYSTAL	X2 on JB	1

CONNECTOR

#	F3439160	53015-0210 2P P=2MM	CONNECTOR	CN1 on JB	1
#	F3439158	A2001WV2-10P P=2MM	CONNECTOR	CN20 on JB	1
#	F3439159	A2001WV2-9P P=2MM	CONNECTOR	CN10 on JB	1

WIRING, CABLE

#	G3477146	RIBBON CABLE	3P L=40X5X5 MM P=2MM	CN30 on MB to CN31 on JB	1
#	G3487161	WIRING 10P	L=65MM P=2MM	CN21 on PB to CN20 on JB	1
#	G3487162	WIRING 9P	L=65MM P=2MM	CN11 on PB to CN10 on JB	1
#	G3487163	WIRING BATTERY	L=80MM 2P		1

TRANSFORMER

#	02563501	PT-10 (2280-T008)	PULSE TRANS	TR1 on JB	1
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SCREWS

#	H5019430	SCREW 2.6x5	BINDNG HEAD TAPTITE P FEZC		2
#	H5019110	SCREW 3x6	PAN HEAD TAPTITE-2 FEZC		7
	H5029325	SCREW 3x6	PAN HEAD TAPTITE-2 BZC		5
	40011201	SCREW 3x8	PAN TAPTITE P BZC		1
#	H5019115	SCREW 3x8	PAN HEAD TAPTITE-2 BZC		2
#	H5029850	SCREW M4x6	HEXAGON SOCKET BUTTON HEAD FENI		4
#	H5029852	SCREW 4M3	HEXAGON SOCKET BUTTON HEAD FEBZC		2
	40123545	JACK NUT M9x11x2	NI		2
	H5039521	VR ACCESSORY NUT M7			8
	40016467	JACK WASHER M9.2x14x0.5	FENI		2
	40011923	WASHER M9.1x13	INTERNAL TOOTH		2
#	H5039413	NYLON WASHER M4.1x7.5x0.5	BLACK		2
#	H5039414	NYLON WASHER M5.1x9.5x0.5	BLACK		2

PACKING

#	G2607212	PACKING CASE LOWER			1
#	G2627135	PACKING CASE UPPER			1
#	H2679505	POLYETHYLENE BAG	220x340x0.03		1
#	G2237614	REAR PAD			1
#	G2237613	SIDE PAD			1

MISCELLANEOUS

#	G2257130	BATTERY INSULATING SHEET			1
#	G2177308	BATTERY TERMINAL(+)			1
#	G2177307	BATTERY TERMINAL(+/-)			1
#	G2177309	BATTERY TERMINAL(-)			1
	2217710900	COIL SPRING			2
	G2357111	CUSHION R			2
#	G2257131	INSULATING SHEET BOTTOM			1
#	F2539803	LABEL CAUTION	FCC/CE/C-TICK/EMC		1
	02123845	LEAF A			2
#	G2197126	LED GUIDE			1
#	G2357115	PEDAL FOOT	M8		2
	2215770201	PEDAL GUIDE BUSH	215-702		2
#	F2539804	QUICK MANUAL LABEL			1

ACCESSORIES (Standard)

#	G6017292	OWNER'S MANUAL	JAPANESE		1
#	G6017290	OWNER'S MANUAL	ENGLISH		1
#	*****	ALKALINE BATTERY GP15A			3

TEST MODE**Test items**

1. DSP and EEPROM check (and LED check)
2. Version check
3. Residual noise check
4. Switch check
5. Volume check
6. DSP Thru check (and SPEAKER CABINET volume check)
7. DAC check (and SPEAKER CABINET volume check)
8. AFAD Low check (and SPEAKER CABINET volume check)
9. AFAD High check (and SPEAKER CABINET volume check)
10. DAC Lch check (and SPEAKER CABINET volume check)
11. DAC Rch check (and SPEAKER CABINET volume check)
12. Analog switch check
13. Switching noise and shock noise check
14. Battery operation check

Required equipment

- Oscillator
- Oscilloscope
- Noise meter
- 47k ohm short plug
- Monitor speaker

Entering Test mode

- Turn all VRs to the far left.
- Set the rear panel OUTPUT SELECT switch to "POWER AMP+SP."
- While pressing the left pedal (ON/OFF) and right pedal (MANUAL/MEMORY), connect the +9V DC PLUG to the ADAPTOR JACK.
- Only the POWER LED will light.



- Release the left pedal and right pedal.
- Within four seconds, press the left pedal and then the right pedal.
- The GP-20 will enter Test mode, and all LEDs will either be lit or blinking.

Note : When the GP-20 enters Test mode, it will automatically perform a DSP and EEPROM check. The state of the LEDs when Test mode begins will depend on the result of this check. For details refer to "1. DSP and EEPROM check," below.

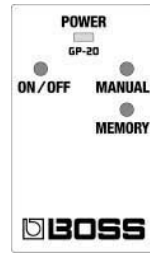
Note : It is not possible to enter Test mode unless all volumes are turned to the minimum position.

Note : For details on how to skip to a specific test item, refer to "Skipping to a specific test item," which follows the details of each test item.

Details of each test item**1. DSP and EEPROM check (and LED check)**

- Enter Test mode.
- When you enter Test mode, the DSP and EEPROM will be checked automatically.
- Verify that the VARIATION LED is lit.
- If there are no problems, the ON/OFF LED, MANUAL LED, and MEMORY LED will light.

If there is a problem, it will be indicated by the following states of the LEDs.



ON/OFF LED blinking: DSP (PRAM) error

MANUAL LED blinking: DSP (IRAM) error

MEMORY LED blinking: EEPROM error

Note : If an LED is dark whether or not there is a problem, that LED may be defective or may have a faulty solder joint.

2. Version check

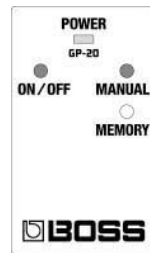
- Press the right pedal.
- Verify that only the ON/OFF LED is blinking (version 1.00).
- Press the right pedal to return to the previous state.

3. Residual noise check

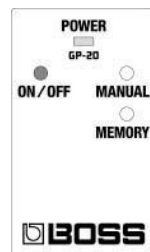
- Verify that all LEDs are lit.
- Connect a 47k ohm short plug to the INPUT, and a noise meter to the OUTPUT.
- Verify that the measured value (JIS-A) of the noise meter is -97 dBu or less.

4. Switch check

- Press the VARIATION switch.
- Verify that the VARIATION LED is dark.
- Press the WRITE switch.
- Verify that the MEMORY LED is dark.



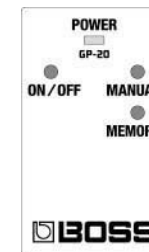
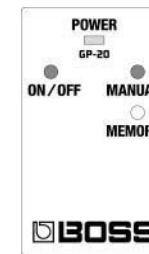
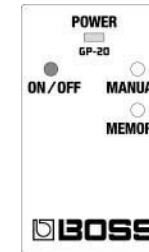
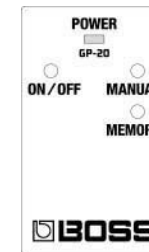
- Set the OUTPUT SELECT switch to "LINE."
- Verify that the MANUAL LED is dark.



- Set the OUTPUT SELECT switch to "GUITAR AMP."
- Verify that all LEDs are lit.

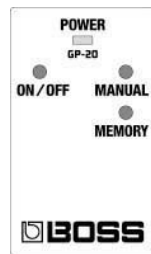
5. Volume check

- Turn the GAIN volume from the far left (minimum) to far right (maximum), and verify that the LEDs change in the following order.

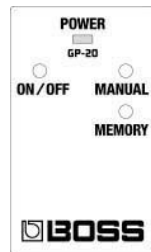


- Turn the BASS volume from the far left (minimum) to the far right (maximum), and verify that the LEDs change in the same way.
- Turn the MIDDLE volume from the far left (minimum) to the far right (maximum), and verify that the LEDs change in the same way.
- Turn the TREBLE volume from the far left (minimum) to the far right (maximum), and verify that the LEDs change in the same way.
- Turn the PRESENCE volume from the far left (minimum) to the far right (maximum), and verify that the LEDs change in the same way.
- Turn the MASTER volume from the far left (minimum) to the far right (maximum), and verify that the LEDs change in the same way.
- Turn the MODEL volume one click at a time toward the right, and verify that the LEDs change in the following way.

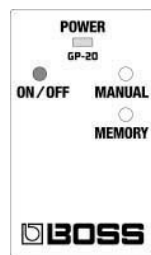
"JC CLEAN"



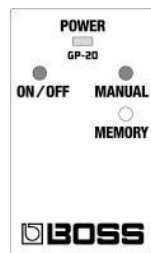
↓
"CRUNCH"



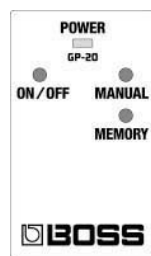
↓
"LEAD"



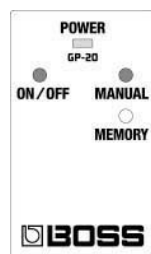
↓
"BLACK PANEL"



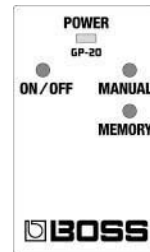
↓
"TWEED"



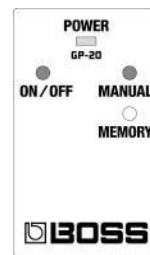
↓
"AMERICAN COMBO"



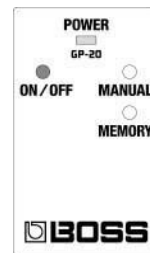
"METAL STACK"



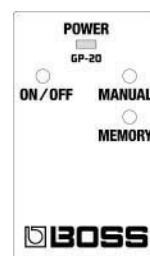
↑
"MODERN STACK"



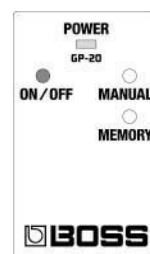
↑
"R-FIER STACK"



↑
"VINTAGE STACK"



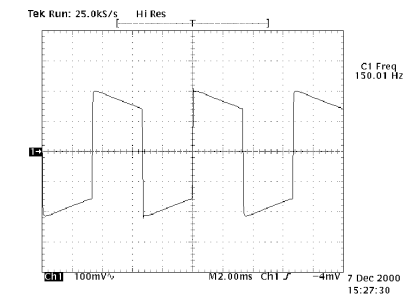
↑
"BRIT COMBO"



- After turning to "METAL STACK," verify that the VARIATION LED is lit.

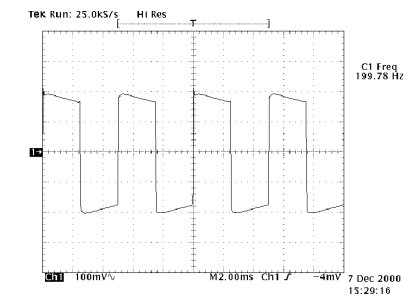
6. DSP Thru check (and SPEAKER CABINET volume check)

- Set the SPEAKER CABINET volume to 'OFF'.
- Connect an oscillator to INPUT, and input a 150 Hz, 400 mVp-p square wave.
- Connect an oscilloscope to OUTPUT.
- Verify that the output waveform is as shown in the illustration.



7. DAC check (and SPEAKER CABINET volume check)

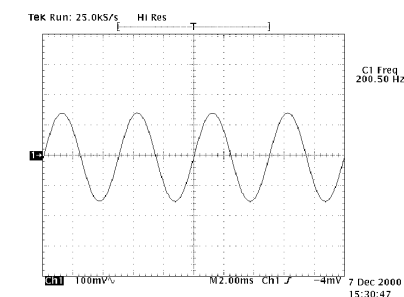
- Set the SPEAKER CABINET volume to '1x12'".
- Verify that the output waveform is as shown in the illustration.



Note : The waveform is output without regard to the input signal.

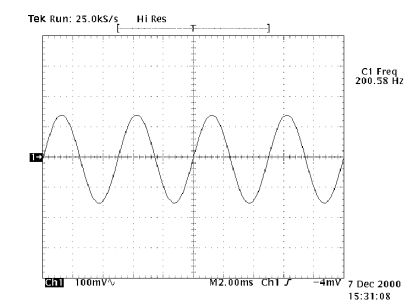
8. AFAD Low check (and SPEAKER CABINET volume check)

- Set the SPEAKER CABINET volume to '2x12'".
- Input a 200 Hz, 300 mVp-p sine wave to INPUT.
- Verify that the output waveform is as shown in the illustration.



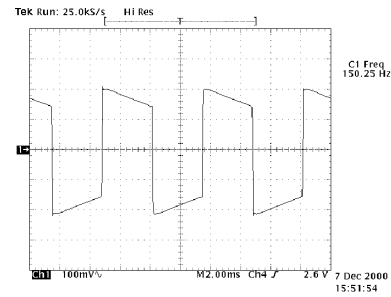
9. AFAD High check (and SPEAKER CABINET volume)

- Set the SPEAKER CABINET volume to '4x10'".
- Input a 200 Hz, 300 mVp-p sine wave to INPUT.
- Verify that the output waveform is as shown in the illustration, and is the same as the AFAD Low output waveform.

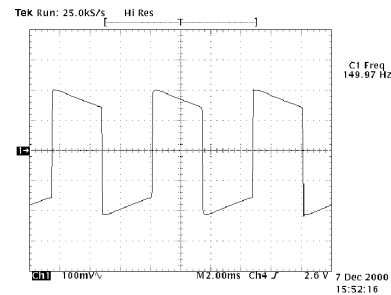


10.DAC Lch check (and SPEAKER CABINET volume check)

- Set the SPEAKER CABINET volume to '4x12"'.
- Input a 150 Hz, 800 mVp-p square wave to INPUT.
- Obtain the oscilloscope trigger from the synchronization output of the oscillator.
- Verify that the output waveform is as shown in the illustration.

**11.DAC Rch check (and SPEAKER CABINET volume check)**

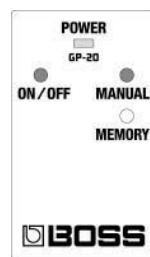
- Set the SPEAKER CABINET volume to 'ORIGINAL'.
- Verify that the VARIATION LED is lit.
- Input a 150 Hz, 800 mVp-p square wave to INPUT.
- Obtain the oscilloscope trigger from the synchronization output of the oscillator.
- Verify that the output waveform is as shown in the illustration, and that the phase is inverted in comparison to DAC Lch.



Note : Test items 6--11 also include a SPEAKER CABINET volume check. If the desired output waveform is not obtained in test items 6--11, it is also possible that the SPEAKER CABINET volume is defective.

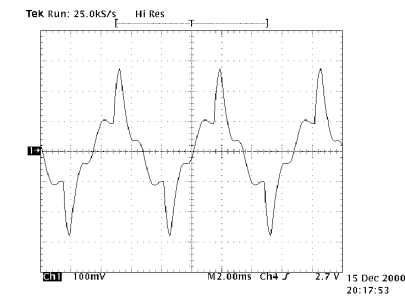
12.Analog switch check

- Press the left pedal. (You will exit Test mode.)
- Verify that the ON/OFF LED and MANUAL LED are lit. (EFFECT ON)

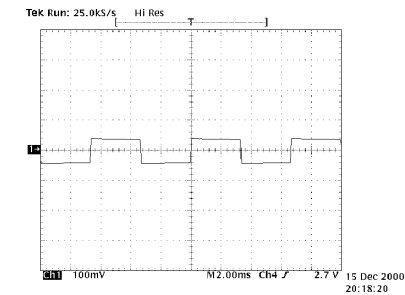


- Turn all VRs to the center position.
 Note : The MODEL volume will be at 'AMERICAN COMBO,' and the SPEAKER CABINET volume will be at 'ORIGINAL'.
- Input a 150 Hz, 80 mVp-p square wave to INPUT.

- Verify that the output waveform is as shown in the illustration.



- Press the left pedal. (EFFECT OFF)
- Verify that the output waveform is as shown in the illustration.

**13.Switching noise and shock noise check**

- Connect a 47k ohm short plug to INPUT.
- Connect a monitor speaker to OUTPUT.
- Repeatedly press the left pedal to switch between the EFFECT ON and EFFECT OFF states.
- Verify that no abnormal switching noise is heard.
- Press the left pedal to make the ON/OFF LED go dark (EFFECT OFF), drop the unit from a height of 10 cm to apply a physical shock to it, and verify that no abnormal noise is heard.
- Press the left pedal to make the ON/OFF LED light (EFFECT ON), drop the unit from a height of 10 cm to apply a physical shock to it, and verify that no abnormal noise is heard.

14.Battery operation check

Put the battery in the battery compartment and insert the plug into the INPUT jack.

Check that power is turned on.

Check that the unit is operating normally.

Note : Always check the battery after repairing or servicing the product.

Skipping to a specific test item

- Enter Test mode.
- Perform the desired test item.

Note : "12. Analog switch check" and "13. Switching noise and shock noise check" "14. Battery operation check" are not test items within the Test mode program. Perform these tests in normal operating mode without entering Test mode.

Exiting Test mode

If the VARIATION LED is lit, you can press the left pedal to exit Test mode. Otherwise, exit Test mode by disconnecting the DC PLUG from the ADAPTOR JACK to turn off the power.

Caution

After repairing or servicing the GP-20, you must be sure to check all items.

RESTORING THE FACTORY SETTINGS

Returning Settings to Their Factory Defaults

* You can return the settings in memories and noise suppressor to their factory defaults.

When this operation is carried out, everything that is now in memory is lost.

1. Switch off the power.

When running on battery power: Disconnect the connection plug from the INPUT jack.

When running on power from an AC adaptor: Disconnect the plug from the AC ADAPTOR jack.

2. While holding down the [WRITE] button, switch on the power.

When running on battery power: Insert the connection plug into the INPUT jack.

When running on power from an AC adaptor: Insert the AC adaptor plug into the AC ADAPTOR jack.

When you release the button, the "MEMORY" indicator flashes.

* To cancel the operation, press the left or right pedal.

3. Press the [WRITE] button.

The "MEMORY" indicator flashes more rapidly, then goes out when the settings return to their factory defaults.

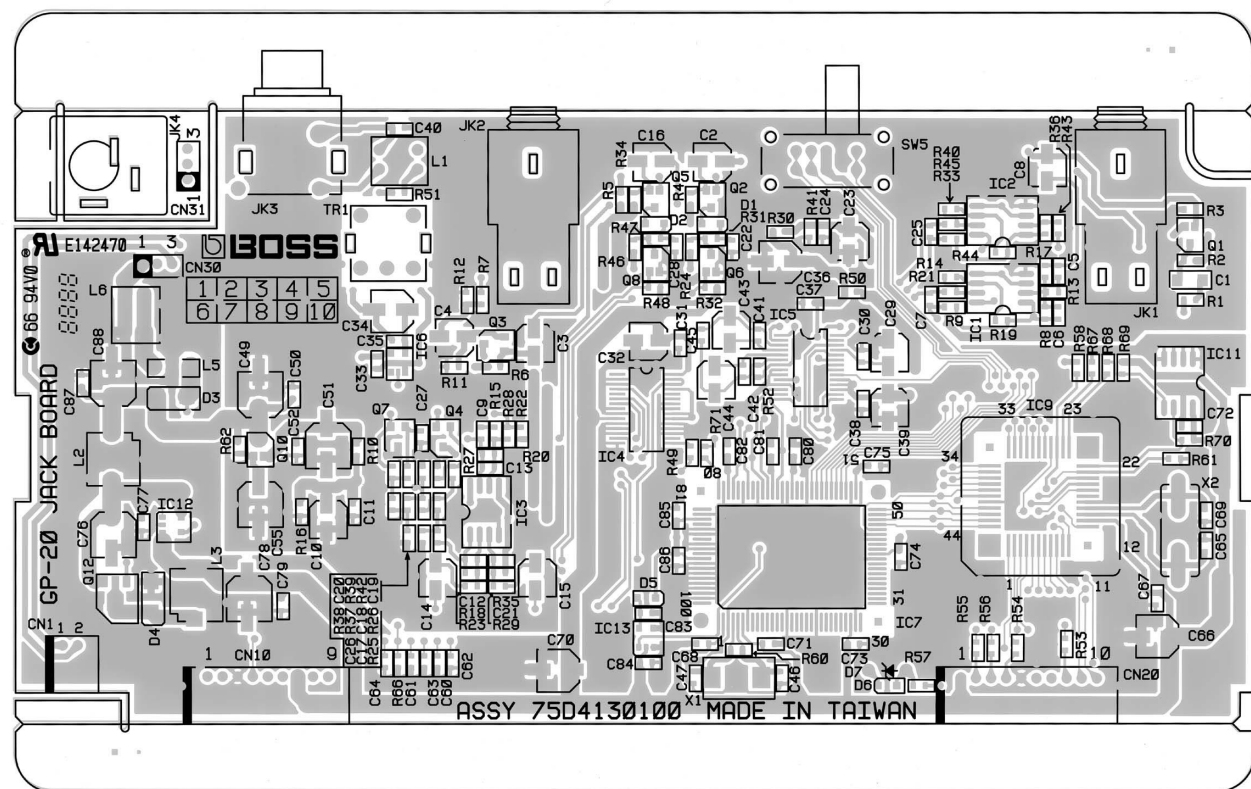
Memory: "R-FIER STACK (Factory-default memory settings)" (p. 17)

Noise Suppressor: On

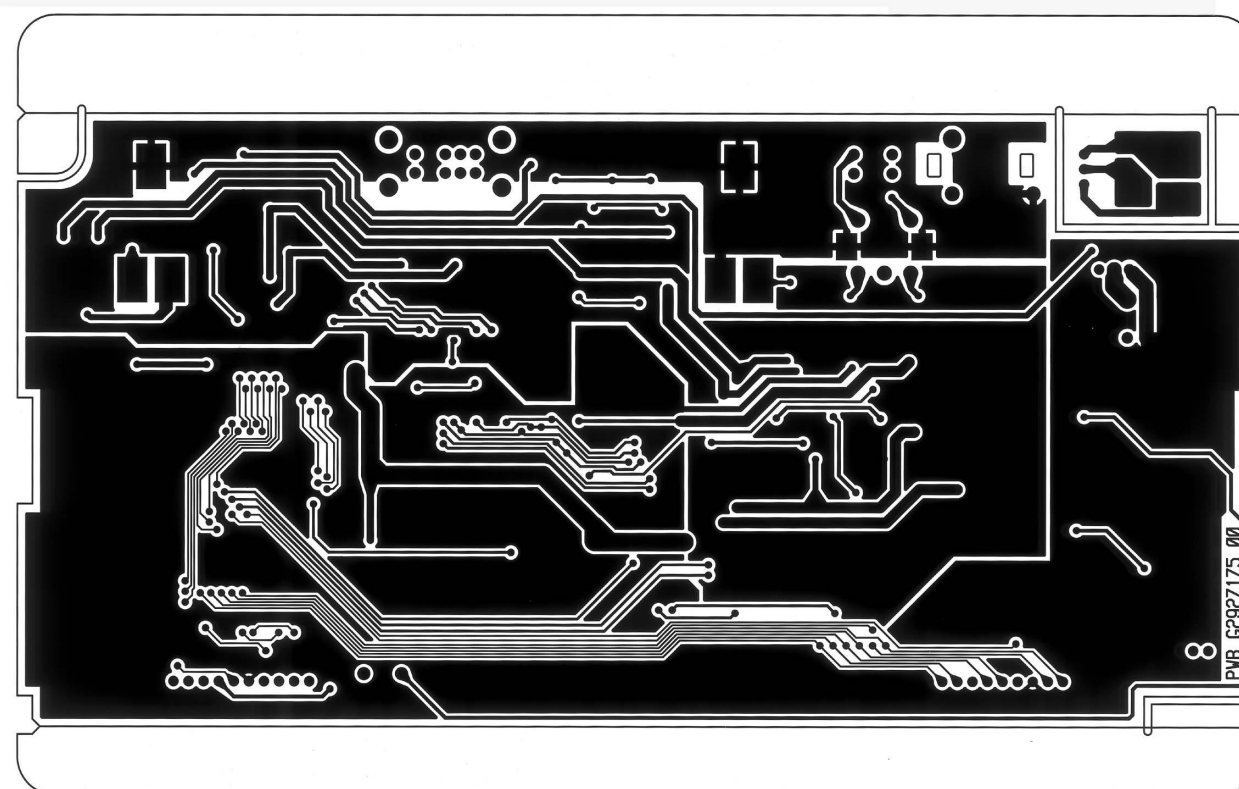
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40

A CIRCUIT BOARD (JACK)

B
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D
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I
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View from component side

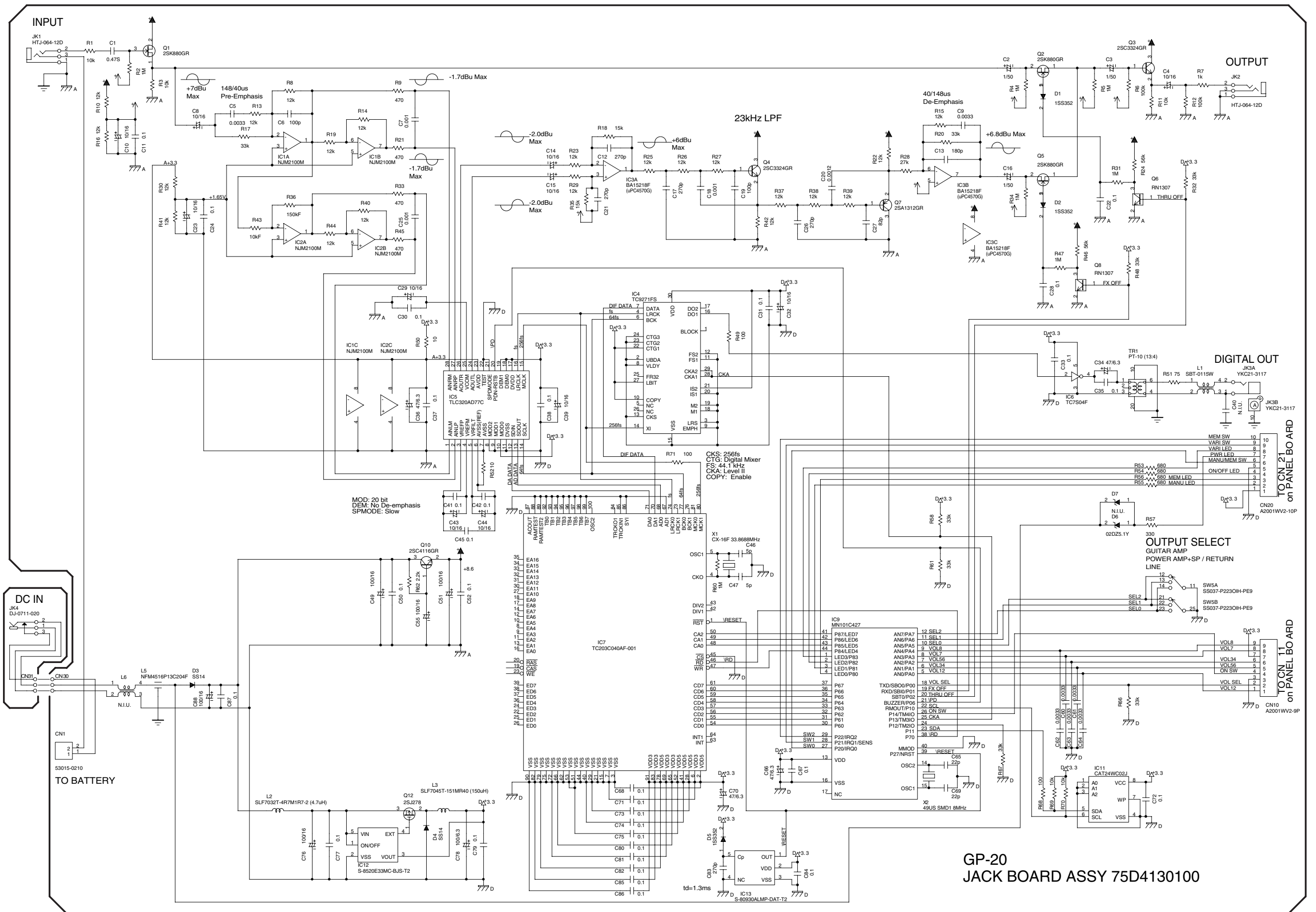


View from foil side

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40

A CIRCUIT DIAGRAM (JACK)

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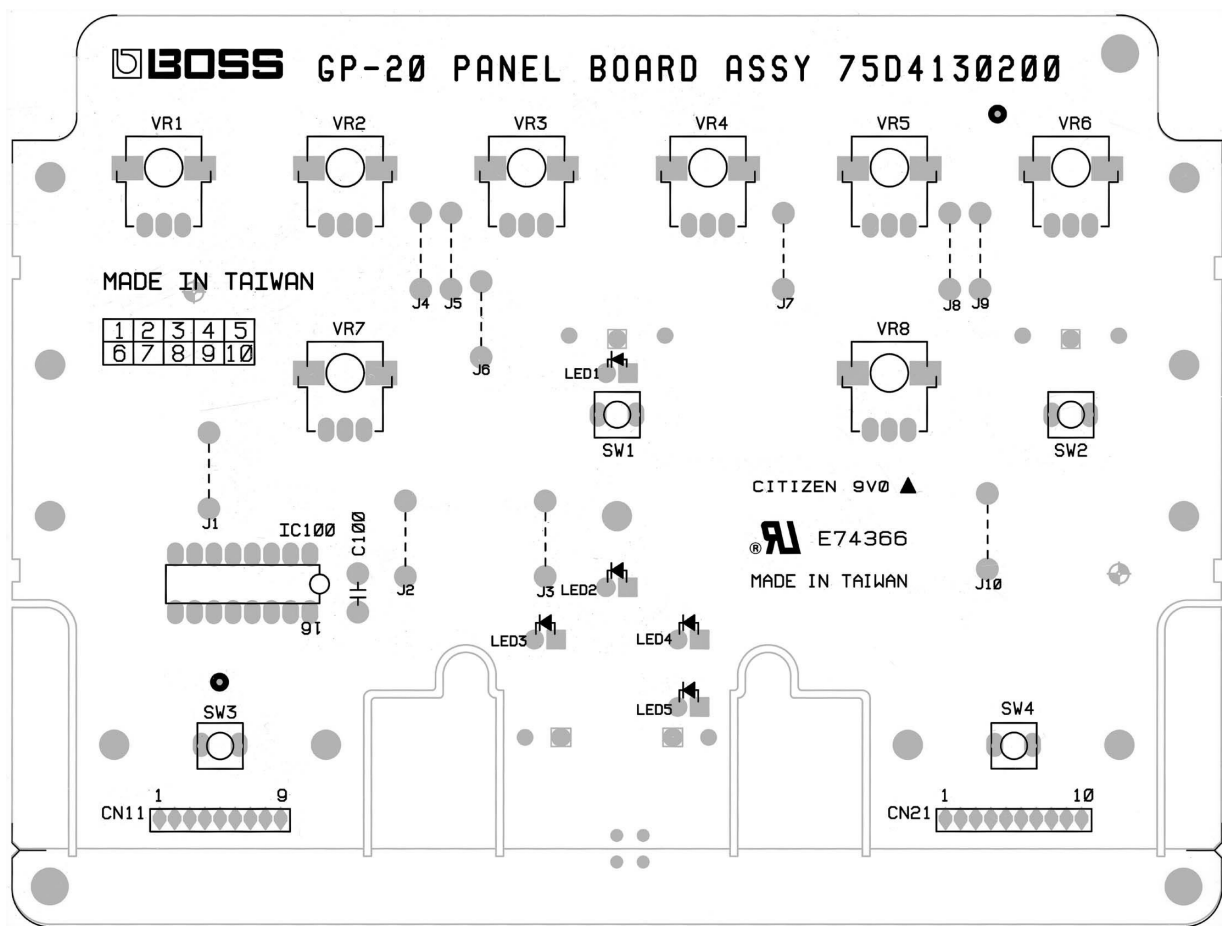


GP-20 JACK BOARD ASSY 75D4130100

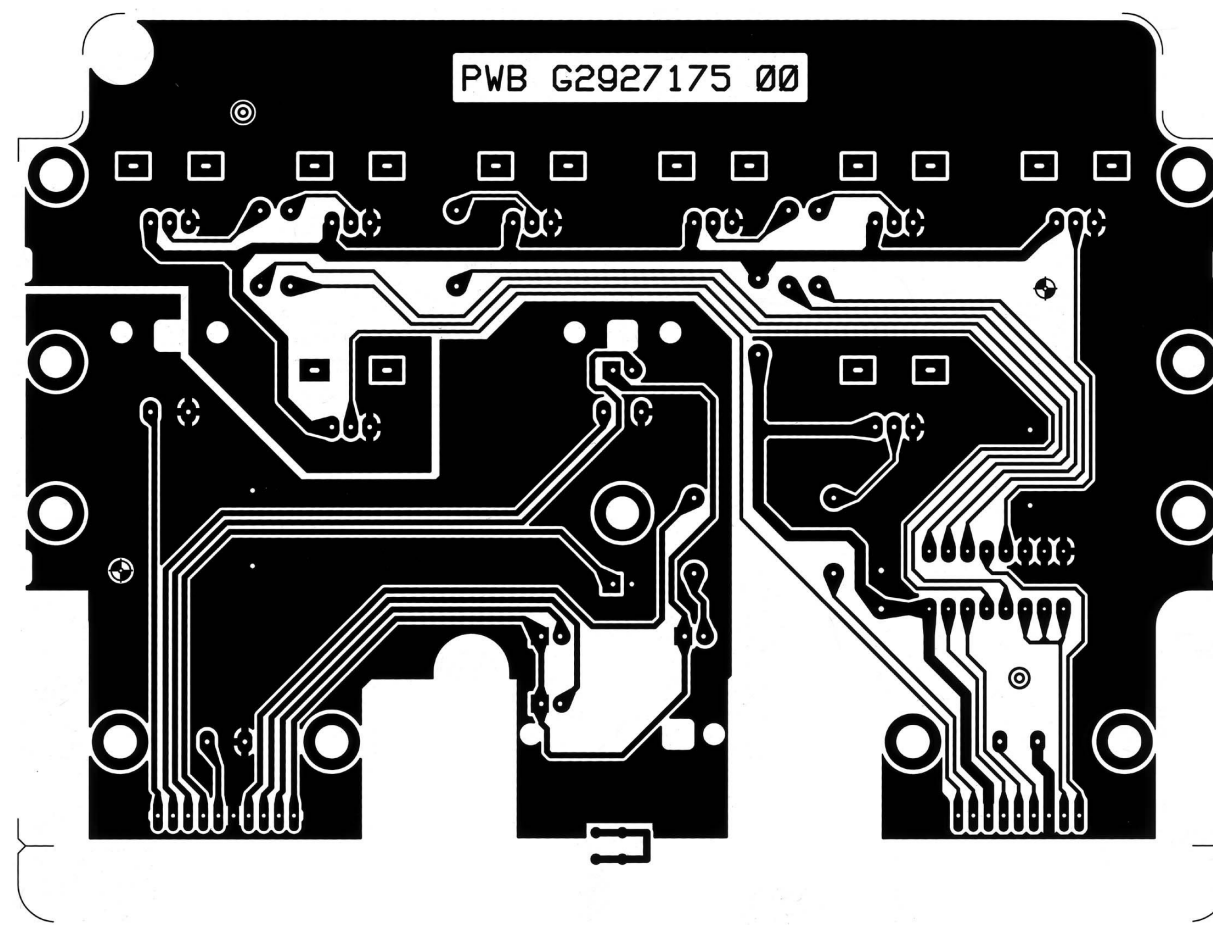
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40

A CIRCUIT BOARD (PANEL)

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View from component side

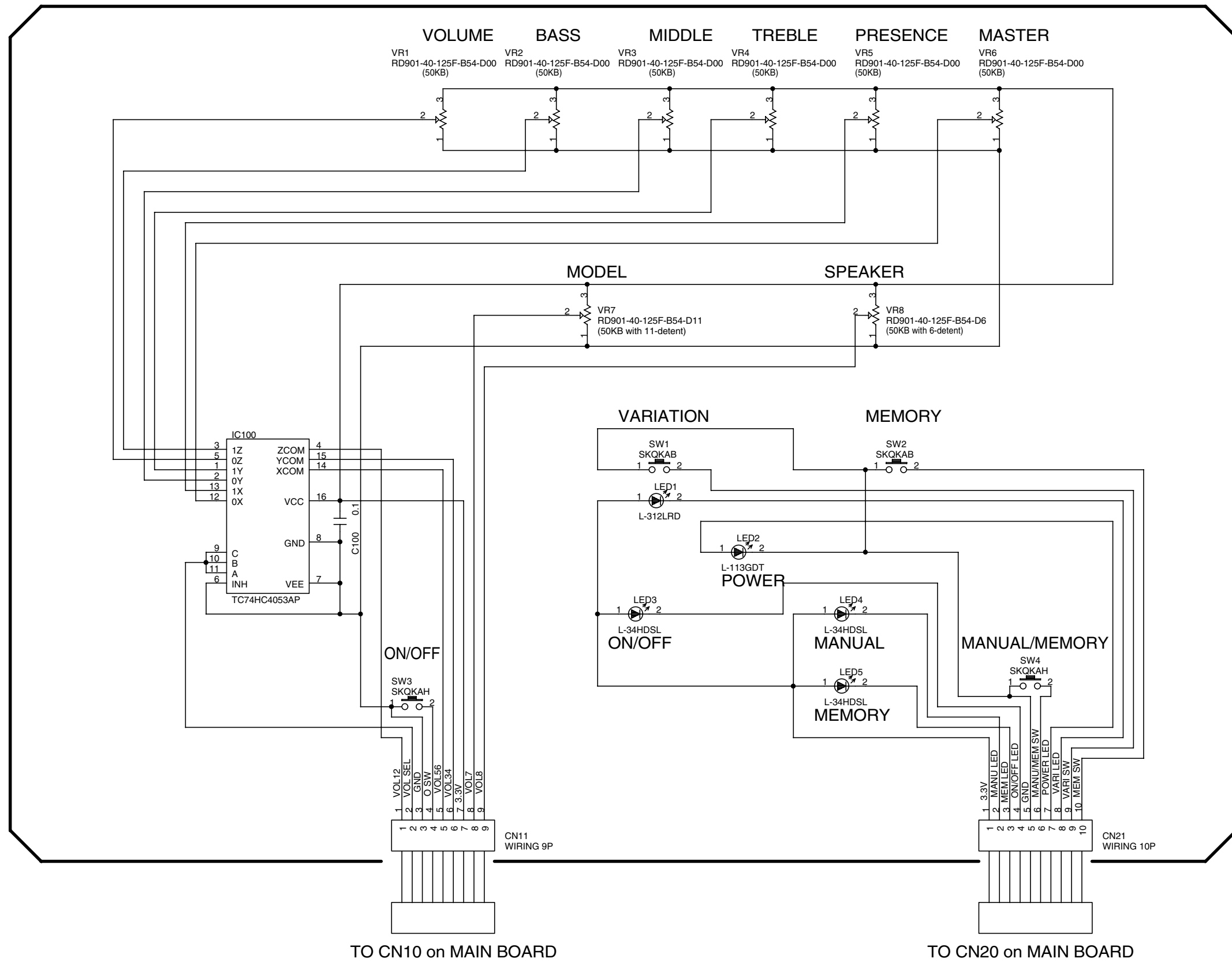


View from foil side

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40

A CIRCUIT DIAGRAM (PANEL)

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GP-20
PANEL BOARD ASSY 75D4130200