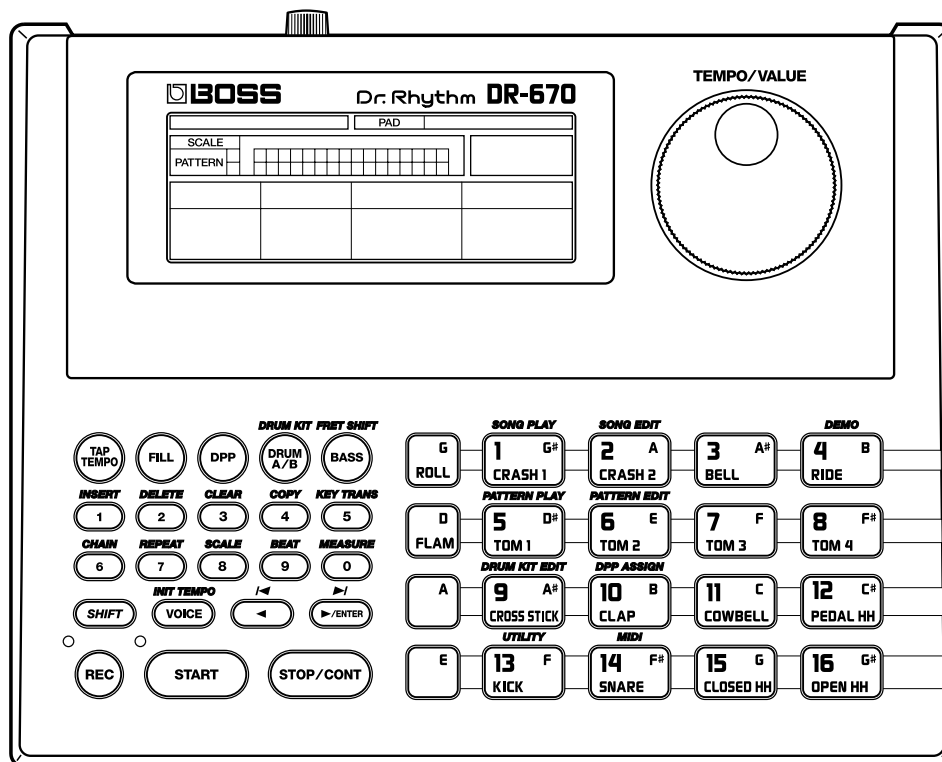


# Dr. Rhythm DR-670

## SERVICE NOTES *Issued by RJA*

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## SPECIFICATIONS

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DR-670 : Dr.Rhythm

### Maximum Polyphony

20 voices

\* Depending on the instruments and drum kits used, maximum polyphony may be lower.

### Instruments

Drum : 256

Bass : 16

### Rhythm Patterns

User Patterns : 200

Preset Patterns : 200

### Songs

Songs : 100

Song Length : Maximum 250 patterns for a song

Total Patterns for all songs : approx. 3,000

### Maximum Note Storage

approx. 8,000 notes

### Resolution

Per quarter note : 96

### Tempo

Quarter note : 20 - 260 bpm

### Recording Method

Realtime / Step

### Pads

20

### Display

Custom LCD

### Connectors

Output Jacks L(MONO)/R

Headphones Jack (stereo miniature phone type)

Foot Switch Jack (stereo 1/4 inch phone type)

MIDI Connectors IN/OUT

AC Adaptor Jack (DC 9 V)

### Power Supply

DC 9V : Dry Battery x6, AC Adaptor (PSA series)

### Power Consumption

200 mA or less

\* Expected battery life under continuous use:

Carbon : approx. 2.5 hours

Alkaline : approx. 6 hours

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

### Dimensions

213 (W) x 169 (D) x 53 (H) mm

8-7/16 (w) x 6-11/16 (D) x 2-1/8 (H) inches

### Weight

750 g / 1 lb 11 oz (excluding dry batteries)

### Accessories

Owner's Manual English (#G6017449)

Alkaline Dry Battery LR6 (AA) type x6 (#\*\*\*\*\*)

### Options

AC Adaptor : PSA series

Foot Switch : FS-5U

Foot Switch cable : PCS-31 (Roland)

(1/4 inches Phone Plug (stereo) - 1/4 inches Phone Plug (mono) x 2)

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



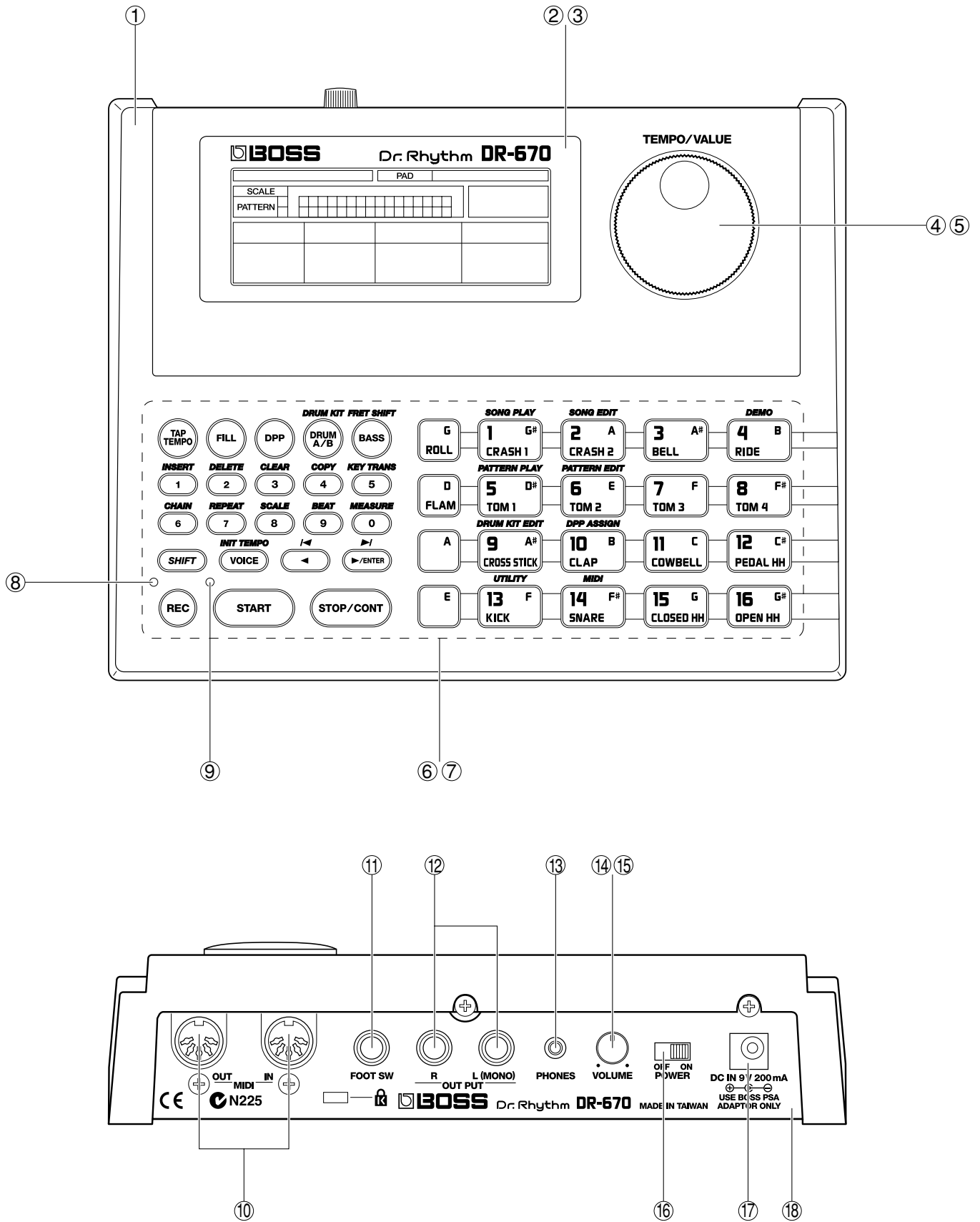
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## LOCATION OF CONTROLS PARTS LIST

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No.	Part Code	Part Name
1	G2817161	TOP CASE
2	G2567111	DISPLAY COVER
3	F5029411	LCD LMD-STC2K0802DRG
4	F2477101	DR-KNOG GT-3
5	02671212	ROTARY ENCODER EVE GB1 F15 24B
6	G2567112	RUBBER SWITCH for PAD
7	02564267	PRESSURE SHEET SENSOR
8	F5029131	LED (RED) L-1394ID
9	F5029132	LED (GREEN) L-1394GD
10	13429825	MIDI CONNECTOR YKF51-5054 2PZ
11	F3449120	6.5MM JACK HTJ-064-10D
12	F3449106	6.5MM JACK HTJ064-10I
13	F3449401	3.6MM JACK HTJ-035-09DB
14	01340412	P R-KNOB SF-A BLK/LCG
15	01676523	9M/M ROTARY POT. RK09K12A0 10KAx2
16	F3159109	SWITCH(SLIDE) HSW-2022-01
17	13449717	ADAPTOR JACK HEC2392-01-150
18	G2817159	BOTTOM CHASSIS

# LOCATION OF CONTROLS

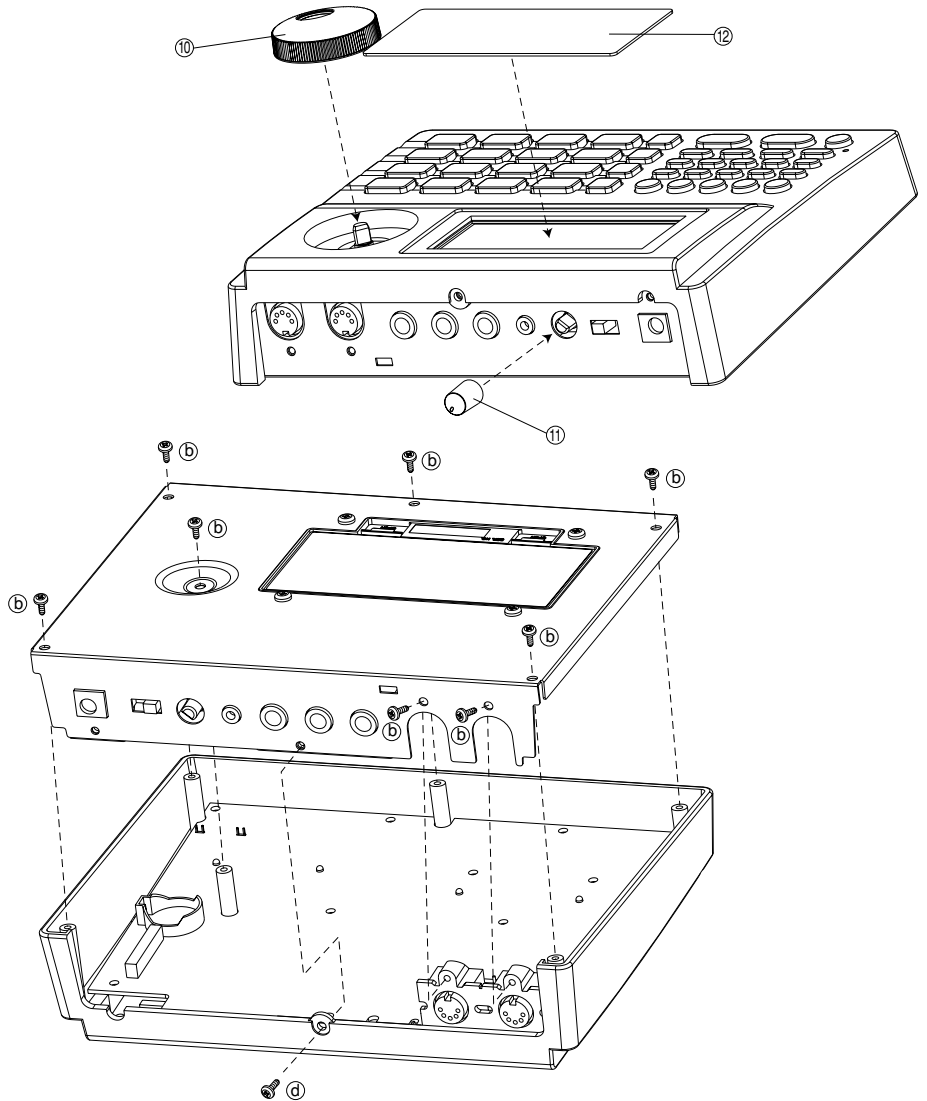


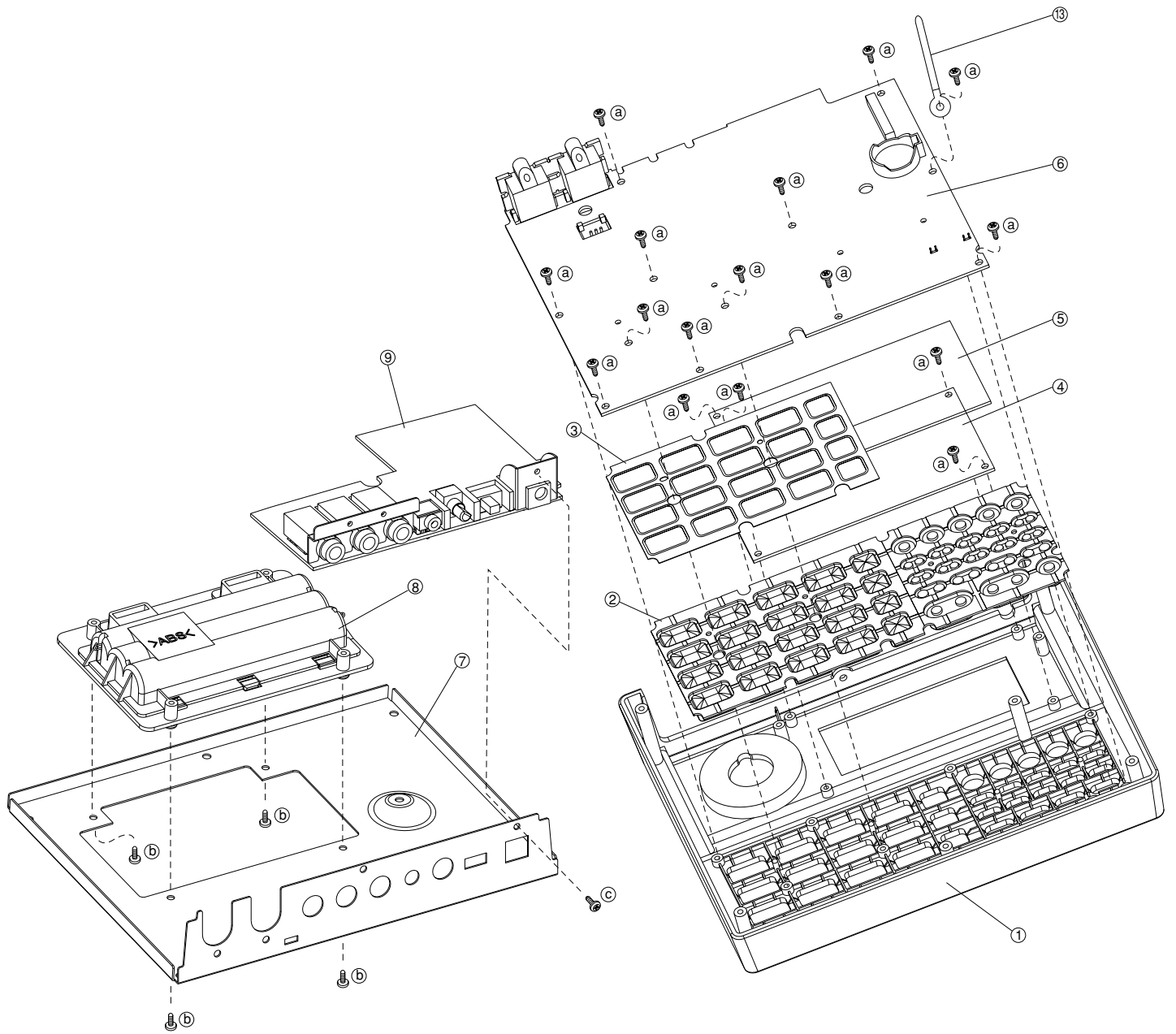
**EXPLODED VIEW PARTS LIST**

**EXPLODED VIEW**

No.	Part Code	Part Name	Q'ty
1	G2817161	TOP CASE	1
2	G2567112	RUBBER SWITCH for PAD	1
3	02564267	PRESSURE SHEET SENSOR	1
4	F5029411	LCD LMD-STC2K0802DRG	1
5	G2257134	LCD ISOLATION SHEET	1
6	75D462000	MAIN BOARD	1
7	G2817159	BOTTOM CHASSIS	1
8	G2017617	BATTERY CASE	1
9	75D4621000	JACK BOARD	1
10	F2477101	DR-KNOG GT-3	1
11	01340412	P R-KNOB SF-A BLK/LCG	1
12	G2567111	DISPLAY COVER	1
13	F2369405	COATING CLIP	1

No.	Part Code	Part Name	Q'ty
a	40011267	SCREW 3x6 BINDING TAPTITE P ZC	16
b	40011312	SCREW 3x8 BINDING TAPTITE P BZC	12
c	40012534	SCREW 3x6 BINDING TAPTITE S BZC	1
d	40019123	SCREW 3x8 BINDING TAPTITE S BZC	1





# PARTS LIST

**SAFETY PRECAUTIONS:**

The parts marked  $\Delta$  have safety-related characteristics. Use only listed parts for replacement.

**SAFETY PRECAUTIONS:**

The parts marked  $\Delta$  have safety-related characteristics. Use only listed parts for replacement.

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)

NOTE: Consider about the natural environment carefully before through the old lithium battery away when you exchange to the new one.

MB -> MAIN BOARD ASSY, JB -> JACK BOARD ASSY

**CASING**

#	G2567111	DISPLAY COVER		1
#	G2817161	TOP CASE		1

**CHASSIS**

#	G2817159	BOTTOM CHASSIS		1
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**KNOB, BUTTON**

#	F2477101	DR-KNOG	GT-3	1
	01340412	P R-KNOB	SF-A BLK/LCG	1
#	G2567112	RUBBER SWITCH	for PAD	1

**SWITCH**

#	F3159109	SWITCH(SLIDE)	HSW-2022-01	SW1 on JB	1
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**JACK, EXT TERMINAL**

	F3449401	HTJ-035-09DB	3.6MM JACK	JK5 on JB	1
#	F3449120	HTJ-064-10D	6.5MM JACK	JK4 on JB	1
	F3449106	HTJ064-10I	6.5MM JACK	JK2, JK3 on JB	2
	13429825	YKF51-5054 2PZ	MIDI CONNECTOR	JK1 on MB	1
	13449717	HEC2392-01-150	ADAPTOR JACK	JK1 on JB	1

**DISPLAY UNIT**

#	F5029411	LCD	LMD-STC2K0802DRG	INC. WIRING A2001H02-14P	1
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NOTE: Replacement LCD LMD-STC2K0802DRG should be made on a unit base.

**PCB ASSY**

#	75D4620000	MAIN BOARD ASSY		1
	75D4621000	JACK BOARD ASSY	INC. WIRING A2001H02-8P	1

**IC**

#	02564290	UPD703106AGJ-054-UEN	IC (CPU)	IC4 on MB	1
	01340789	BU9480F	IC (D/A CONVERTER)	IC13 on MB	1
	01906156	S-8520E33MC-BJS-T2	IC (DC-DC REGULATOR)	IC11 on MB	1
	01783123	LH28F400BVE-BL85	IC (FLASH MEMORY /BLANK)	IC5 on MB	1
#	02564289	LC24134B-UF2	IC (GATE ARRAY)	IC3 on MB	1
#	F5229806	MX23L6410TC-12	IC (MASK ROM)	IC2 on MB	1
#	F5289604	A62S6316-55S	IC (SRAM)	IC7 on MB	1
	F5259701	TC74HC04AFN	IC (CMOS)	IC1 on MB	1
	15249104	TC7S04F(TE85L)	IC (CMOS)	IC9 on MB	1
	15259885	TC7S32F(TE85L)	IC (CMOS)	IC8 on MB	1
	15189209	BA15218	IC (OP AMP)	IC1 on JB	1
#	02346123	NJM4556AD	IC (OP AMP)	IC2 on JB	1
	00458034	TC75S51F TE85R	IC (OP AMP)	IC12 on MB	1
	15289124	PC-400	IC (PHOTO COUPLER)	IC6 on MB	1
	15199955	M51957BFP	IC (RESET IC)	IC10 on MB	1

**TRANSISTOR**

	15119132	2SA1015-GR(TPE2)	TRANSISTOR	Q5 on JB	1
	15129113	2SC1740SR	TRANSISTOR	Q1 on JB	1
#	02567101	2SJ278	TRANSISTOR	Q2 on MB	1
	15329518	DTA114TKAT146	TRANSISTOR	Q3, Q4 on MB	2
	15129204	DTC343TS TP	TRANSISTOR	Q2, Q3, Q4, Q6 on JB	4



**TRANSISTOR**

00898201	RN2421(TE85L)	TRANSISTOR	Q1 on MB	1
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**DIODE**

	F5019203	1N4004	DIODE	D1, D2 on JB	2
	15339119T0	1SS-352	DIODE	D1, D3 on MB	2
#	02783023	RB500V-40	DIODE	D4 on MB	1
	01780045	RB051L-40	SCHOTTKY DIODE	D2 on MB	1
	15019126	1SS133 T-77	SWITCHING DIODE	D3, D4 on JB	2
	15339108	DA204K T146	DIODE ARRAY	DA12, DA13 on MB	2
	15339109	DAP202K T146	DIODE ARRAY	DA1, DA2, DA3, DA4, DA5, DA6, DA7, DA8, DA9, DA10, DA11	11
#	F5029132	L-1394GD	LED (GREEN)	LED2 on MB	1
#	F5029131	L-1394ID	LED (RED)	LED1 on MB	1

**RESISTOR**

	F5429385	100K OHM F RANK (1%)	CHIP RESISTOR	R42 on MB	1
#	F5429411	1MF 1%	CHIP RESISTOR	R35 on MB	1
#	F5429346	3.3KF 1%	CHIP RESISTOR	R25 on MB	1
#	F5429376	39KF 1%	CHIP RESISTOR	R56 on MB	1
#	F5429349	4.7KF 1%	CHIP RESISTOR	R24 on MB	1
#	F5429480	4.7MK 1%	CHIP RESISTOR	R38 on MB	1
	00566867	RPC05T 100 J	MTL.FILM RESISTOR	R2, R37 on MB	2
	00567023	RPC05T 101 J	MTL.FILM RESISTOR	R6, R64, R65, R66 on MB	4
	00567156	RPC05T 102 J	MTL.FILM RESISTOR	R4 on MB	1
	00567289	RPC05T 103 J	MTL.FILM RESISTOR	R1, R5, R8, R9, R22, R28, R36 on MB	7
	00567412	RPC05T 104 J	MTL.FILM RESISTOR	R27, R29, R30, R31, R33, R34, R39, R43, R44, R45, R47, R50, R51, R52, R53, R54, R59, R60, R61, R62 on MB	20
	00567034	RPC05T 121 J	MTL.FILM RESISTOR	R7 on MB	1
	00567045	RPC05T 151 J	MTL.FILM RESISTOR	R63 on MB	1
	00567434	RPC05T 154 J	MTL.FILM RESISTOR	R26, R32, R46, R57 on MB	4
	00567056	RPC05T 181 J	MTL.FILM RESISTOR	R58 on MB	1
	00566934	RPC05T 330 J	MTL.FILM RESISTOR	R3 on MB	1
	00566967	RPC05T 470 J	MTL.FILM RESISTOR	R10, R11, R12, R13, R14, R15, R16, R17, R18, R19, R20, R21 on MB	12
	00567245	RPC05T 472 J	MTL.FILM RESISTOR	R23 on MB	1
	00567378	RPC05T 473 J	MTL.FILM RESISTOR	R48, R49 on MB	2
	13749797T0	SR25TRE 102 J	RESISTOR	R11, R12, R23, R24, R26, R29 on JB	6
	13749821T0	SR25TRE 103 J	RESISTOR	R1, R3, R4, R8, R9, R10, R16, R20, R21, R22 on JB	10
	13749845T0	SR25TRE 104 J	RESISTOR	R14, R27, R33, R34, R35 on JB	5
	13749823T0	SR25TRE 123 J	RESISTOR	R5, R17 on JB	2
	13749757T0	SR25TRE 220 J	RESISTOR	R30, R32 on JB	2
	13749805T0	SR25TRE 222 J	RESISTOR	R2 on JB	1
	13749853T0	SR25TRE 224 J	RESISTOR	R31 on JB	1
	13749785T0	SR25TRE 331 J	RESISTOR	R13, R25 on JB	2
	13749837T0	SR25TRE 473 J	RESISTOR	R6, R7, R18, R19 on JB	4
	13749839T0	SR25TRE 563 J	RESISTOR	R15, R28 on JB	2
	F5419707	CRN34 101J	RESISTOR ARRAY	RA13, RA14 on MB	2
#	F5419717	CRN34 560J	RESISTOR ARRAY	RA1, RA2, RA3, RA4, RA5 on MB	5
	F5419715	CRN34 680J	RESISTOR ARRAY	RA7, RA8, RA9, RA11 on MB	4
#	F5419718	YC-15 103 J	RESISTOR ARRAY	RA6, RA10, RA12 on MB	3

**POTENTIOMETER**

01676523	RK09K12A0 10KAx2	9M/M ROTARY POT.	VR1 on JB	1
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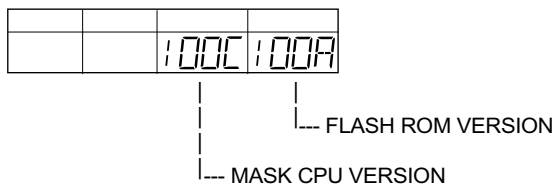
**CAPACITOR**

#	F5369602	0.33/50V	ALUMINIUM ELECTROLYTIC CAPACITOR	C38 on MB	1
	F5367542	10/16V	ALUMINIUM ELECTROLYTIC CAPACITOR	C4, C7, C27 on MB	4
	F5367546	100/16V	ALUMINIUM ELECTROLYTIC CAPACITOR	C44, C46 on MB	2
	F5367545	47/16V	ALUMINIUM ELECTROLYTIC CAPACITOR	C53, C62 on MB	2
	13519621M0	1H101K5	CERAMIC CAPACITOR	C30, C31, C35, C36 on JB	4
	13519628	DD104-989B331K50	CERAMIC CAPACITOR	C15, C27 on JB	2
	13519617M0	ECCR1H470J5	CERAMIC CAPACITOR	C6, C8, C19, C20 on JB	4
	01674556	ECJ1VB1H472K	CERAMIC CAPACITOR	C60, C61 on MB	2
	13519623M0	ECKR1H151KB5	CERAMIC CAPACITOR	C17, C29 on JB	2
	13519627M0	ECKR1H271KB5	CERAMIC CAPACITOR	C16, C28 on JB	2
	13519631M0	ECKR1H561KB5	CERAMIC CAPACITOR	C14, C26 on JB	2
	01675167	GRM39CH100D50PT	CERAMIC CAPACITOR	C14, C19 on MB	2
	01675190	GRM39CH220J50PT	CERAMIC CAPACITOR	C68, C69, C70, C71, C72, C73, C74, C75, C76, C77, C78, C79, C80 on MB	13
	01675312	GRM39CH221J50PT	CERAMIC CAPACITOR	C39, C40, C41, C42, C43, C48, C49, C50, C51, C52, C55, C56, C57, C58, C59, C63, C64, C65, C66, C67 on MB	20
	00567978	GRM39F104Z25PT	CERAMIC CAPACITOR	C2, C3, C6, C8, C9, C11, C12, C13, C15, C16, C17, C18, C20, C21, C22, C23, C24, C25, C26, C28, C29, C30, C31, C32, C33, C34, C35, C36, C37, C45, C47, C54 on MB	32
#	F3519652	0.1U	CHEMICAL CAPACITOR	C3, C37, C38 on JB	3

<b>CAPACITOR</b>					
#	13629150	100/16V	CHEMICAL CAPACITOR	C1, C2 on JB	2
	F3629700	10/16V (H=7MM)	CHEMICAL CAPACITOR	C7, C10, C11, C12, C13, C18, C21, C23, C24, C25, C34, C39 on JB	12
#	F3629504	47/16V	CHEMICAL CAPACITOR	C4, C5, C32, C33 on JB	4
	13549313M0	ECQ-B1H472KF3	POLYEST CAPACITOR	C9, C22 on JB	2
<b>INDUCTOR, COIL, FILTER</b>					
#	F2449218	SLF12575T151M1R5 150UH	COIL	L5 on MB	1
#	F2449219	SLF7045T-4R7M2R0 4.7UH	COIL	L6 on MB	1
#	F5409116	BCB809535-600	EMI FILTER	L1, L2, L3, L4, L5, L6 on JB	6
#	F5409115	MB-20129-0600NR	EMI FILTER	L1, L2, L3, L4, L7 on MB	5
<b>CRYSTAL, RESONATOR</b>					
#	F5299114	HC-49SM 5MHZ	CRYSTAL	X1 on MB	1
<b>ENCODER</b>					
	02671212	EVE GB1 F15 24B	ROTARY ENCODER	EN1 on MB	1
<b>CONNECTOR</b>					
#	F3439174	CONNECTOR	A2001WV2-2P	CN1 on JB	1
#	F3439173	CONNECTOR	A2001WV2-8P	CN3 on MB	1
#	F3439175	CONNECTOR	A2001WV2-14P	CN2 on MB	1
<b>WIRING, CABLE</b>					
#	G3487424	WIRING	2P L=230 A2001H02-2P	CN1 on JB to BATTERY CASE	1
<b>PICKUP, SENSOR</b>					
#	02564267	PRESSURE SHEET SENSOR			1
<b>SCREW</b>					
	40011267	SCREW 3x6	BINDING TAPTITE P FE ZC		16
	40012534	SCREW 3x6	BINDING TAPTITE S FE BZC		1
	40011312	SCREW 3x8	BINDING TAPTITE P BZC		12
	40019123	SCREW 3x8	BINDING TAPTITE S BZC		1
<b>PACKING</b>					
#	G260721301	PACKING CASE			1
#	G2237618	PAD BATTERY			1
#	G2237615	PAD L			1
#	G2237617	PAD R			1
<b>MISCELLANEOUS</b>					
	G2017617	BATTERY CASE			1
	G2027602	BATTERY COVER			1
	G2177306	BATTERY TERMINAL (-)			1
	G2177305	BATTERY TERMINAL (+)			1
	G2177304	BATTERY TERMINAL (+/-)			2
#	F2369405	COATING CLIP			1
	12569249	CR2032 220MAH/3V	LITHIUM BATTERY		1
#	G2147127	DC JACK HOLDER			1
#	G2357119	FOOT			4
#	G2257134	LCD ISOLATION SHEET			1
#	H2369430	LED SPACER	LEDS-1.5		2
#	F2569111	LITHIUM BATTERY HOLDER	TACT383-009	BT1 on MB	1
#	G2257133	MAIN BOARD SHIELD SHEET			1
#	G2147126	PHONE JACK HOLDER			1
<b>ACCESSORIES (STANDARD)</b>					
#	G6017448	OWNER'S MANUAL SET	JAPANESE		1
#	G6017449	OWNER'S MANUAL SET	ENGLISH		1
	*****	ALKALINE DRY BATTERY LR6 (AA) TYPE			6
	NOTE : The above part (ALKALINE DRY BATTERY LR6) does not supply as replacement parts,because it is options.				
	40232389	WARRANTY CARD	(JAPAN ONLY)		1

# IDENTIFYING THE VERSION NUMBER

While holding down [REC] and [6] buttons, turn on the DR-670's power. The following message will appear on the LCD display. The mask CPU (IC4 on Main Board) version is shown. The flash memory (IC5 on Main Board) can be updated from the external MIDI device. "100A" means Version 1.00A.



# SAVEING USER DATA & RELOADING SAVED DATA

Saving your DR-670 data in a MIDI sequencer or another DR-670 is known as "Bulk Dump." Conversely, returning data saved in the MIDI sequencer back to the DR-670, or receiving data transmitted from another DR-670 is called "Bulk Load." Perform Bulk Dump and Bulk Load in the MIDI mode. To select the MIDI mode, stop the performance first. Then, hold down [SHIFT] and press Key pad [14](MIDI) buttons.



	PARAMETER	VALUE
MIDI	SYNCAUTO	

## Setting the Device ID

Patterns, drum kits and other device-specific data are transmitted and received as "Exclusive messages" during Bulk Dump or Bulk Load. You must assign correct device identification numbers (Device IDs) so that the devices can recognize them.

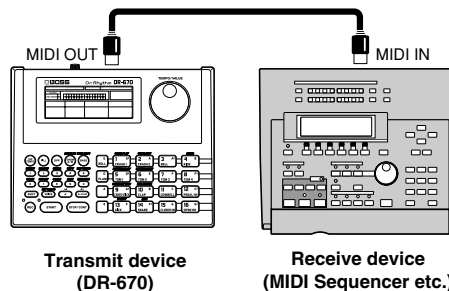
Set device ID by performing the following operation in the MIDI mode.

1. Press [ ◀ ] and [ ▶/ENTER ] buttons and select "DEV."
2. Rotate the [TEMPO/VALUE] handle and set the device ID.

	PARAMETER	VALUE
MIDI	DEV	17

Setting values: 17 to 32

# Saving the DR-670's data (Bulk Dump)



To carry out Bulk Dump, select the MIDI mode (by holding down [SHIFT] and pressing Keypad [14] (MIDI) buttons) and proceed as follows:

1. Press [ ◀ ] and [ ▶/ENTER ] buttons to select "TX BULK."

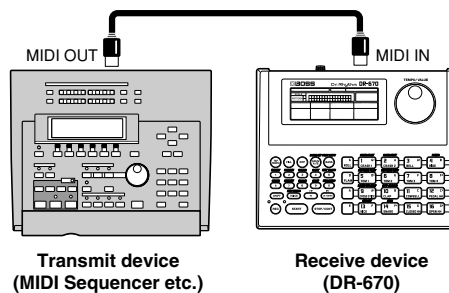
	PARAMETER	VALUE
MIDI	TX BULK	ALL

2. Select the data you want to transmit by rotating the [TEMPO/VALUE] control.
  - ALL: All of the DR-670's data
  - SEQ: Data recorded in User patterns and Songs
  - UTIL: Utility mode, MIDI mode, and DPP assignment data
  - KIT: All of the User drum kits
3. Press [START] button.

Bulk Dump starts, and the Tempo indicator lights up. After a few moments, the Temp indicator will go out and Bulk Dump is completed.

\* If you select "ALL" for Bulk Dump, the memory of the receiving device may become full and further dumping may be rejected. If this occurs, select the SEQ, UTIL or KIT option and repeat Bulk Dump.

# Returning Saved Data to the DR-670 (Bulk Load)



To carry out Bulk Load, select the MIDI mode (by holding down [SHIFT] and pressing Keypad [14] (MIDI) buttons) and proceed as follows:

1. Press [ ◀ ] and [ ▶/ENTER ] buttons to select "RX BULK."

	PARAMETER	VALUE
MIDI	RX BULK	-----

2. Transmit the saved data from the connected MIDI device. Bulk Load starts, and the REC indicator lights up. After a few moments, the REC indicator will go out and Bulk Load is completed.

# TEST MODE

## Equipment items

- 1.AC Adaptor PSA series
- 2.MIDI Cable
- 3.Foot Switch x2pcs. (FS-5U x2)
- 4.Foot Switch Cord PCS-31 (Stereo Phone Jack <--> Phone Jack x2)
- 5.Oscilloscope
- 6.Noise Meter
- 7.Headphones
- 8.Monitor Amp (Stereo)

## Test items

- 1.Version / Power Voltage
- 2.Lithium Battery
- 3.Gate Array
- 4.Mask ROM
- 5.SRAM
- 6.Flash Memory
- 7.MIDI
- 8.LED
- 9.LCD
- 10.Switch
- 11.Pad
- 12.Encoder
- 13.Foot SW
- 14.Output
- 15.Factory Reset
- 16.Normal operation check
- 17.PAD test
- 18.Battery operation check

Cautions: The Test programs are executed in the flash memory.  
 Items 1 to 15 are executed in the Test mode.  
 During these tests, all user memory data are LOST.  
 Save your data by Bulk Dump before starting the tests.

## Preparation

- Power supply : Plug the PSA series Power Adapter (optional) into the DR-670.  
 FOOT SW : Connect two FS-5Us via PCS-31.  
 Set the POLARITY switch to "Jack side" on each FS-5U.  
 MIDI : Loop the IN and OUT terminals.

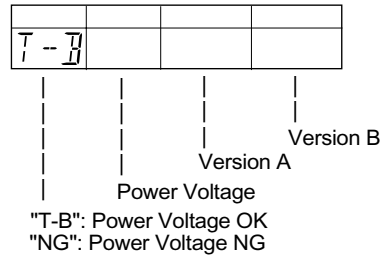
## Selecting the Test Mode

While holding down [REC] and [6] buttons, turn on the DR-670's power.  
 The power voltage and version A/B will appear on the display.

## Selecting Test Items

You can select the desired test item by rotating the Encoder control.

### 1. Version/Power Voltage



Power Voltage (x100)  
 Version A: CPU Mask Program Version (w/minor version)  
 Version B: Flash program Version (w/minor version)

ex:  
 Power Voltage  
 830: 8.30 V

Version A/B  
 123D: Ver.1.23D  
 100C: ver.1.00C

Test: Supply 9.0 V ± 0.1 V to TEST DC IN JACK, and check if "T-B" is displayed on the LCD.

The source voltage supplied to the DR-670's main board (via the CN3 connector with +9V pin 1 and GND pin 2) is measured by the CPU and indicated on the display.

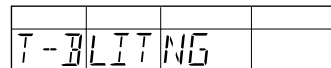
When 9.0V power is supplied to the DC IN jack, the Power Voltage of 750 to 893 (7.50 to 8.93V) is indicated due to a slight voltage drop in the jack board circuit or a device error.

The LCD display shows the "T-B" within this range.

A precise 9.0-volt reading may not be output due to the PSA series adapter used for the test.

However, you can perform other tests normally even if power voltage "NG" is shown.

### 2. Lithium Battery

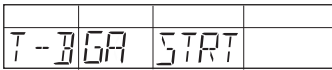


The Lithium battery voltage is shown.  
 "OK" (Normal) or "NG" (Low voltage) is displayed.

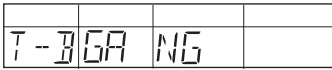
Operation : You can select another test by rotating the Encoder control.

Test : Make sure that "OK" is displayed.  
 "OK" means that the current Lithium battery voltage is 2.70 to 3.70V (270 to 370).  
 You can select another test by rotating the Encoder control regardless of the voltage test result.

3. Gate Array

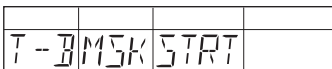


Operation : Press [START] button to start the Gate Array test.  
 If the result is "OK," you can select another test by rotating the Encoder control.  
 If "NG," the test has failed. You cannot start another test.

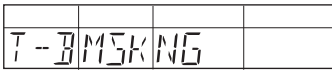


The readout is displayed during error.  
 "OK" (Normal) or "NG" (Test failure) is displayed.

4. Mask ROM

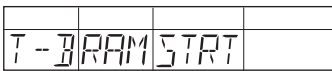


Operation : Press [START] button to start the Mask ROM test.  
 If the result is "OK," you can select another test by rotating the Encoder control.  
 If "NG," the test has failed. You cannot start another test.

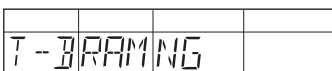


The error count is displayed during error.  
 "OK" (Normal) or "NG" (Test failure) is displayed.

5. SRAM

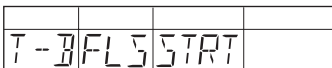


Operation : Press [START] button to start the SRAM test.  
 If the result is "OK," you can select another test by rotating the Encoder control.  
 If "NG," the test has failed.  
 You cannot start another test.

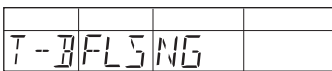


The error address is displayed during error.  
 "OK" (Normal) or "NG" (Test failure) is displayed.

6. Flash Memory

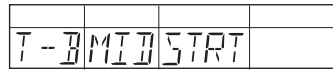


Operation : Press [START] button to start the Flash Memory test.  
 If the result is "OK," you can select another test by rotating the Encoder control.  
 If "NG," the test has failed. You cannot start another test.

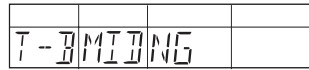


The checksum result is displayed.  
 "OK" (Normal) or "NG" (Test failure) is displayed.

7. MIDI



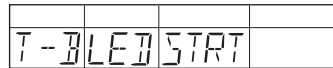
Operation : Press [START] button to start the MIDI test.  
 If the result is "OK," you can select another test by rotating the Encoder control.  
 If "NG," the test has failed.  
 You cannot start another test.



The error code is displayed.  
 "OK" (Normal) or "NG" (Test failure) is displayed.

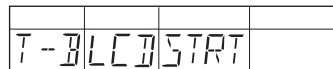
Error codes 0000 to 0007 : Receive status error  
 1000 : Tx Buffer Full Error  
 2000 : Verify Error  
 3000 : Data Number Error (Too much data exists.)  
 4000 : Rx Buffer Full Error  
 5000 : Data Number Error (Very little data exists.)

8. LEDs



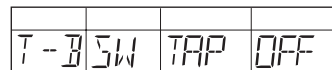
Operation : Press [START] button to start the LED test.  
 You can select another test by rotating the Encoder control.  
 Test : The red and green LEDs light alternately each time you press [START] button.  
 Visually check the lit LED positions and their brightness. (A click must be heard from OUTPUT JACK.)

9. LCD Panel



Operation : Press [START] button to start the LCD Panel test.  
 You can select another test by rotating the Encoder control.  
 Test : Divide the display dots into 16 groups, and check the on/off switching of each group.  
 The dot groups are switched and displayed one after the other when you press [START] button.  
 When the 16-th group of dots come on, all dots turn on when you press [START] button.  
 Then, all dots go out when you press [START] button again.  
 Visually check each one for a missing dots, and uneven or intensity error display. (A click must be heard from OUTPUT JACK.)

10. Switches

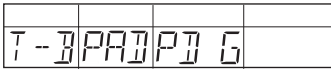


"ON," "OFF" or "NG" is displayed.

The name and status of the operated switch are shown.

Operation : The switch "ON" or "OFF" status appears when you turn it on or off.  
 Turn all switches on and off one after the other, and make sure that their correct names and "ON" or "OFF" state appear.  
 If you operate two switches simultaneously, "NG" is displayed.  
 You can select another test by rotating the Encoder control.

11. Pad



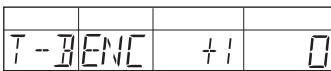
Your padding force is indicated within 0 to 100  
"NG" is displayed.

The pressed pad is shown.

Operation : When a pad name is displayed, press it.  
Your padding force will be shown within 0 to 100.  
The test starts from the left upper end [G] pad.  
Press the pads one after the other, and check their display values.  
Check the following points.

1. The display value increases or decreases according to your padding force.
2. The display value reaches the limit ("100") when you press strongly.  
If you press two pads simultaneously, "NG" is displayed.  
You can select another test by rotating the Encoder control.

12. Encoder

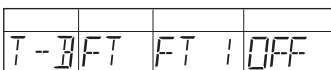


Accumulation result is shown.

The readout increases or decreases by 1  
when you rotate the control slowly.

Operation : 1. Press [START] button to start the Encoder test.  
2. Check the display by rotating the Encoder control.  
The value must increase when you rotate the control clockwise (CW), and decrease when rotate it counterclockwise (CCW).  
3. Press [STOP] button to stop the Encoder test.  
You can select another test by rotating the Encoder control.

13. Foot Switch

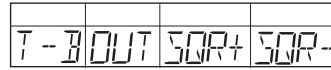


"ON," "OFF" or "NG" is displayed.

The name and status of the operated switch are shown.

Operation : The name and "ON" or "OFF" status of foot switch appear when you operate it.  
Operate the foot switches one after the other, and check for their name and on/off status appear.  
If you operate two switches simultaneously, "NG" is displayed.  
You can select another test by rotating the Encoder control.

14. Output



Rch: "SQR-", "SIN-", "MUTE"  
Lch: "SQR+", "SIN+", "MUTE"

Operation : (1) [1] button 1k Hz square waves are output on L channel, but they are delayed 90 degrees on R channel.  
(2) [2] button 1k Hz sine waves are output in the same phase on both L and R channels.  
(3) [3] button Mute  
(1) Check the waveforms and their phases.  
(2) Check the waveforms. The OUTPUT level of both L and R channels must be +3 dB +/- 1 dB (FLAT) when the Amplitude control is at the "MAX" position.  
(3) Shake the DR-670 and make sure that no abnormal sounds are heard.  
\* Accurate frequency of output waveforms: 1.0173k Hz

15. Factory Reset



Operation : Press [START] button to start "Factory Reset."

16. Normal operation check

Turn on the DR-670's power again, and press [START] button.  
Check the pattern playback sounds.  
Rotate the sound control and make sure that the sound level changes smoothly.  
Press [STOP] button to stop playback.  
Connect the headphones and check the playback sound and volume change of the pattern with the operation mentioned above.  
Place the control at the 'MAX' position, and measure the residual noise using a noise meter.  
(The noise level of both L and R channels must be -85 dBm (JIS-A).)  
Increase the sound level of the playback amp, and check for sound control noise.  
Place the control at the 'MAX' position, and check for noise and howling.

17. PAD test

Press [BASS] button to select the BASS sound mode.  
Beat each pad by changing the force, and make sure that the base sound level changes.  
Below indicates failure:

- No sound is output.
- Sound is too short.
- Sound continues without stopping.
- Noise is generated.

18. Battery operation check

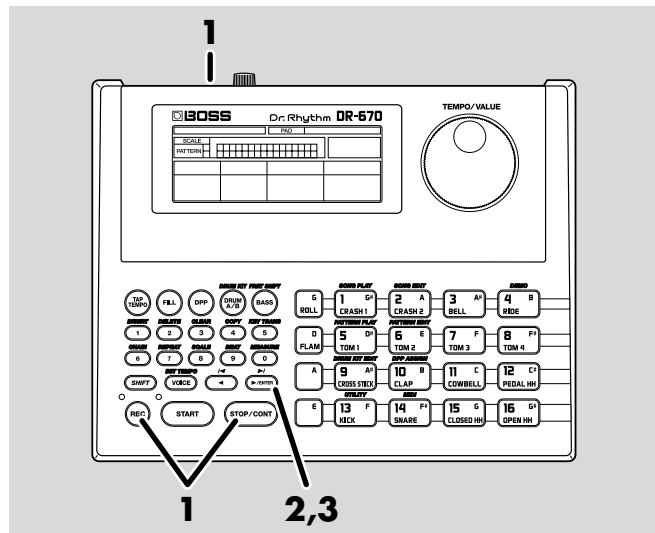
Unplug the AC adapter from the DR-670, and insert six dry cells into the battery box.  
Turn on the DR-670's power and make sure that it operates normally.  
If the output voltage of the six dry cells is below 7 Vdc, the "DRY BATTERY LOW" message is displayed.

# RESET TO DEFAULT FACTORY SETTINGS (FACTORY RESET)

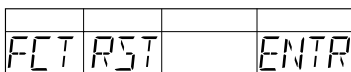
Caution : When Factory Reset is carried out, all data stored in the DR-670 are LOST.

The unit is returned to the settings in effect when it was shipped from the factory.

If you already have important data stored in the DR-670, save it to an external MIDI device (such as a MIDI sequencer) by Bulk Dump before starting Factory Reset.

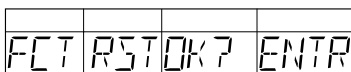


1. While holding down [REC] and [STOP/CONT] buttons, turn on the DR-670's power.



2. Press [▶/ENTER] button.

The "FCT RST OK?" confirmation message appears.



To cancel Factory Rest, just turn off the power.

3. Press [▶/ENTER] button once more.

Factory Reset is completed, and "DONE" appears.

4. Turn off the DR-670's power.

# PROCEDURE FOR UPDATING THE SOFTWARE

## Equipment items

- 1. MIDI Sequencer
- 2. Update SMF 2HD Disk Set (#17041070)

## Connection

Plug one end the MIDI cable into MIDI IN of the DR-670, and the other end into MIDI OUT of the MIDI sequencer.

## Operation

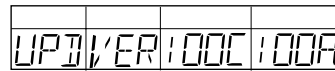
Cautions : All user data are LOST during updating.

Before starting updating, save your data by following the "Saving or Loading Data" procedure.

Data updating takes approximately 10 minutes.

1. Save the user data by following the "Saving or Loading Data" procedure.
2. While holding down [REC] and [0] buttons, turn on the DR-670's power.

The following message will appear.

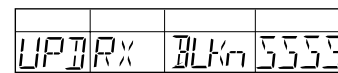


--- FLASH ROM VERSION  
--- MASK CPU VERSION

"100A" means Version 1.00A.

Only the Flash Memory contents can be updated from the external MIDI device.

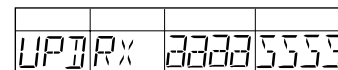
3. Insert the "SMF Update" disk into the drive of the MIDI sequencer, and start updating.
4. The red LED will flash or light when updating starts.



BLKn : The block number being received ("n" is 1 to 8).

ssss : The checksum of each block. It shows the checksum of the previously received block.

5. Block reception is completed when the following message appears:



aaaa : Checksum of all blocks

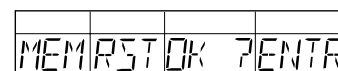
ssss : Checksum of the last block

\* Check the "aaaa" checksum value of all blocks.

6. Turn off the DR-670's power.

7. Turn on the DR-670's power again without pressing any key.

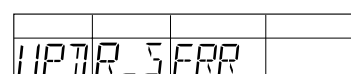
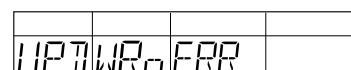
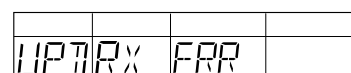
When the following message appears, press [▶/ENTER] button to initialize the user data.



8. Load the saved user data.

Note: When the following is displayed in Bulk Load with products of serial numbers earlier than ZO95000, remove the 10/16V (C5) capacitor on the main board. (C5 part will not be implemented.)

Then perform Bulk Load again.



## ERROR MESSAGE LIST

Incorrect operation or operation failure causes an error message to appear. The following lists the possible error messages and actions to be taken.

DRY BATTERY LOW

The DR-670's dry cells (batteries) are running low. Use the AC adapter, or replace the cells. Press [STOP/CLEAR] button to clear the message.

If you continue to use the DR-670 at low voltage, sounds may be distorted or the unit may not operate correctly.

BACK BATTERY LOW

The service life of DR-670's memory backup battery has almost expired. (This message appears when the power is turned on.) Replace the battery as soon as possible.

Consult the Roland Service Center for backup battery replacement.

Caution: Although you can clear the message by pressing [STOP/CONT] button and continue to operate the DR-670, recorded patterns and songs may be lost when you turn off the power.

MEMRSTOK ?ENTER

Data stored in the DR-670 has been corrupted. You need to reset the data. (This message appears when the power is turned on.) Press [▶/ENTER] button to restore the factory settings.

MEM FULL

Memory is full. No more patterns or songs can be recorded. Press [STOP/CONT] button. To continue recording, first delete unnecessary patterns or songs.

PTN FULL

The number of patterns recorded in the song exceeded 250. Press the [STOP/CONT] button. You cannot record any further to the song currently being edited. To continue, create a new song, then use Song Chain.

DATAEMPT

When trying to copy or clear a pattern or song, no data to be copied or cleared has been recorded in the copy source and pattern and song. Check the pattern and song numbers of the copy source or data to be cleared.

ACTV SENS

A MIDI Active Sensing error has occurred. The devices or cables connected to the MIDI IN port have failed. Check the connected devices and cables.

ERR MIDI FULL

The DR-670's processing capacity was exhausted as it received too much MIDI data. Press [STOP/CONT] button. Reduce the amount of MIDI data and send again from the MIDI device to the DR-670.

TIMEOUT

Reception of data during Bulk Load was cancelled before the operation was completed. Press the [STOP/CONT] button, then try carrying out Bulk Load again.

ERR CHECKSUM

MIDI Exclusive messages could not be received correctly. Press [STOP/CONT] button and retry the operation.

ERR TOO BUSY

The system failed to process data as it tried to concurrently process an abnormally large amount of data. Press [STOP/CONT] button. Make sure that the unit is not being forced to handle an excessive amount of data (in patterns or MIDI message reception) at a time, and try to reduce the amount of data to be processed.

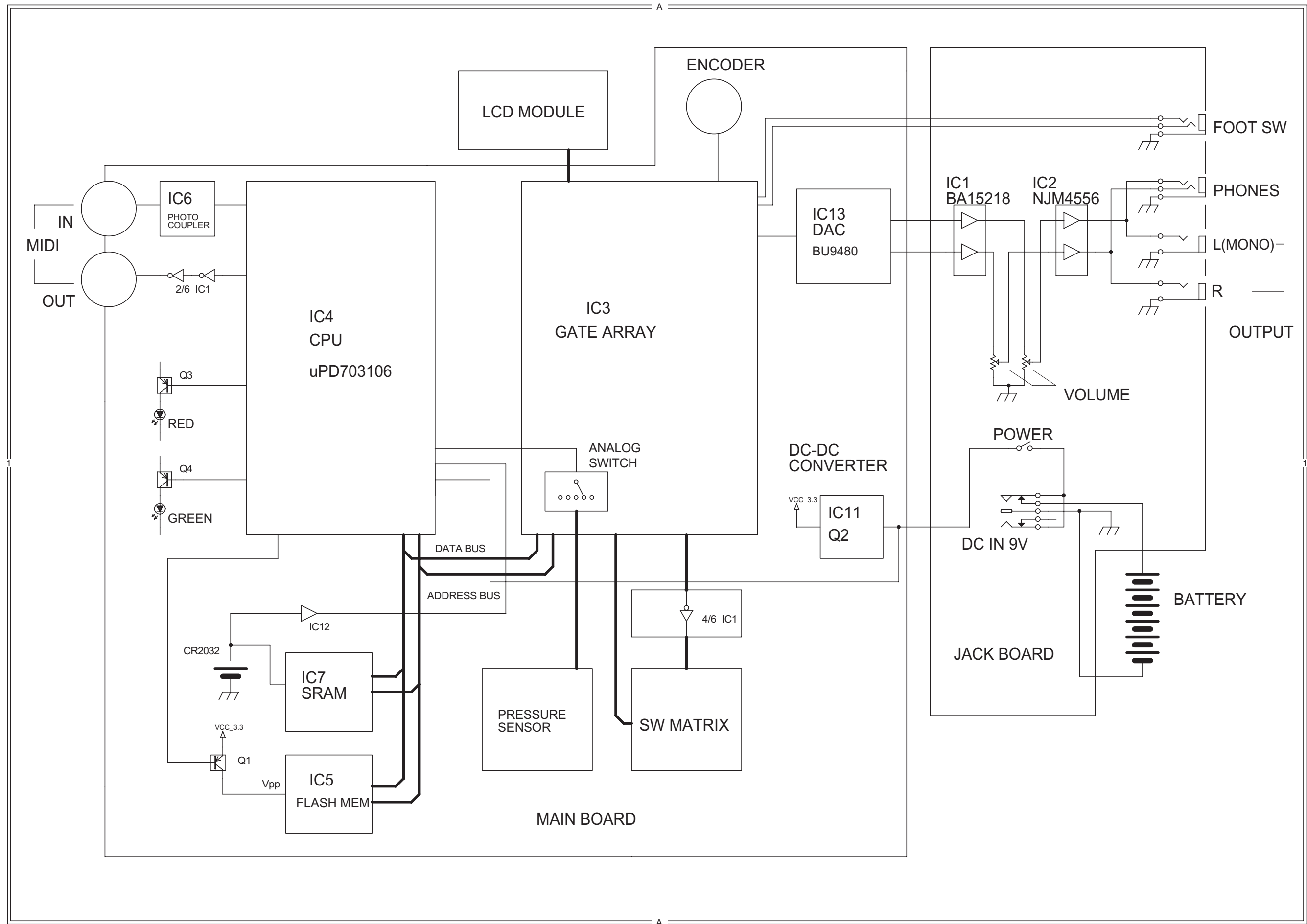
ERR SYSTEM ?

An unidentifiable error has occurred in the system. Shut down the DR-670 immediately.

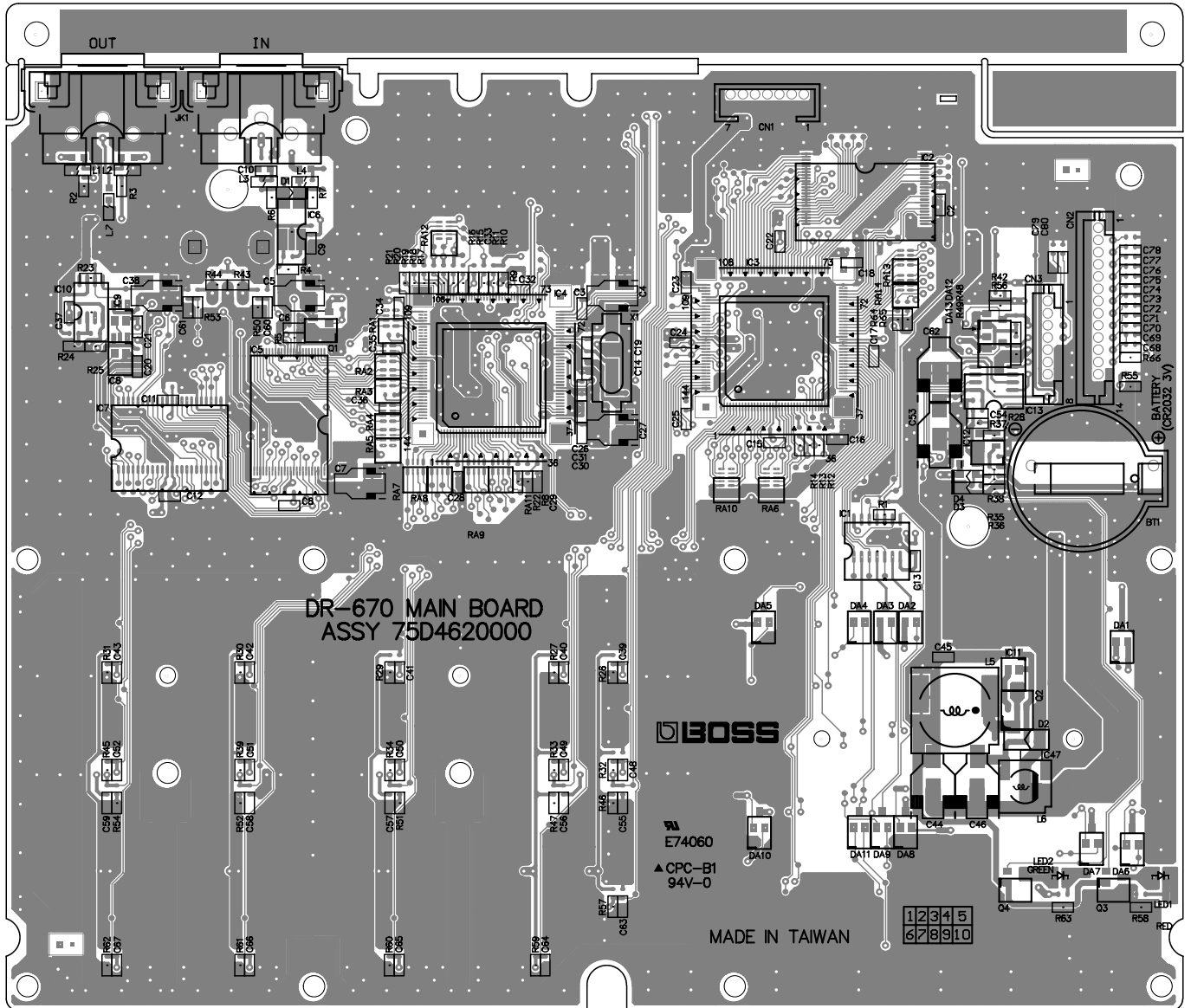




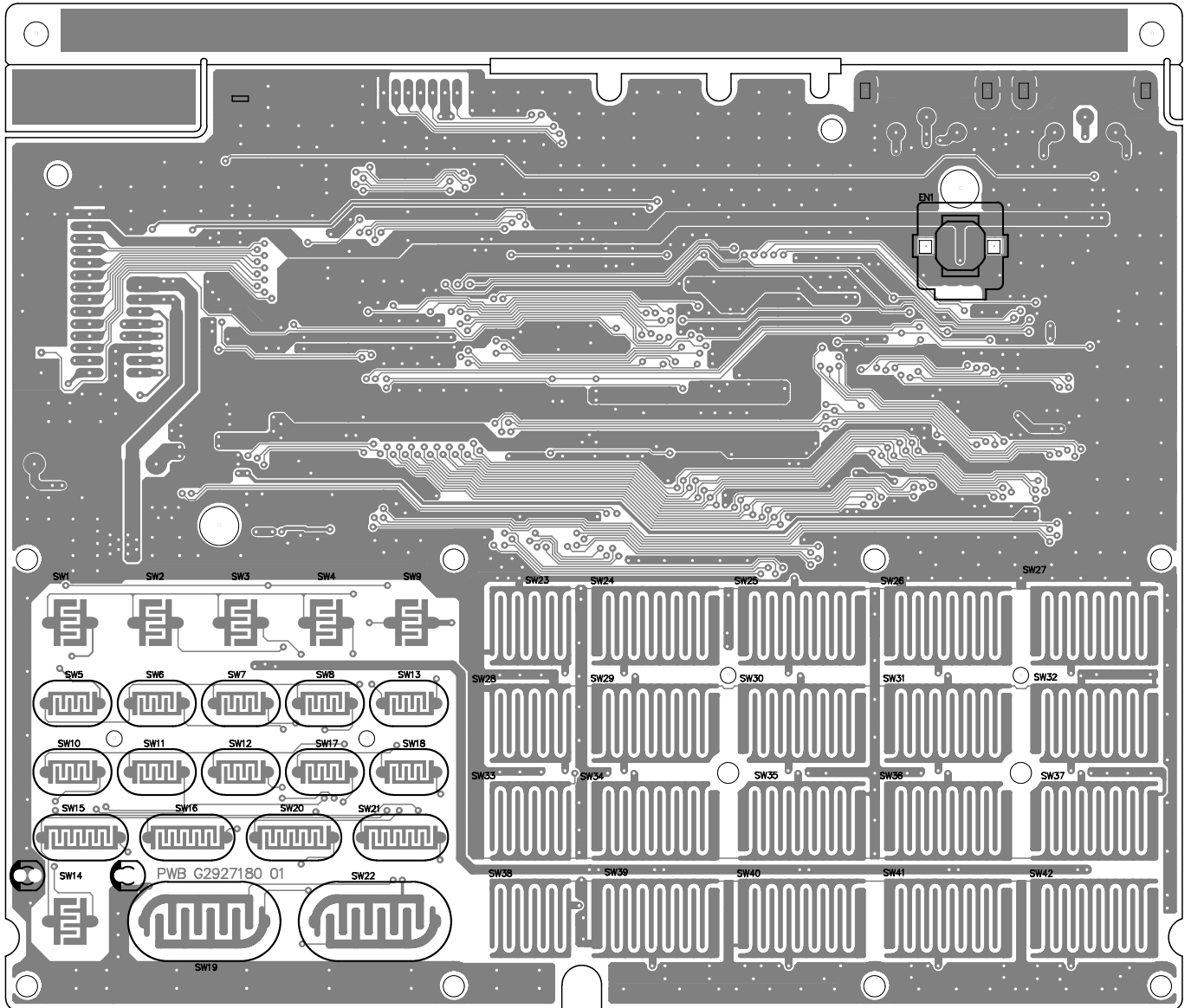
# BLOCK DIAGRAM



# CIRCUIT BOARD (MAIN)

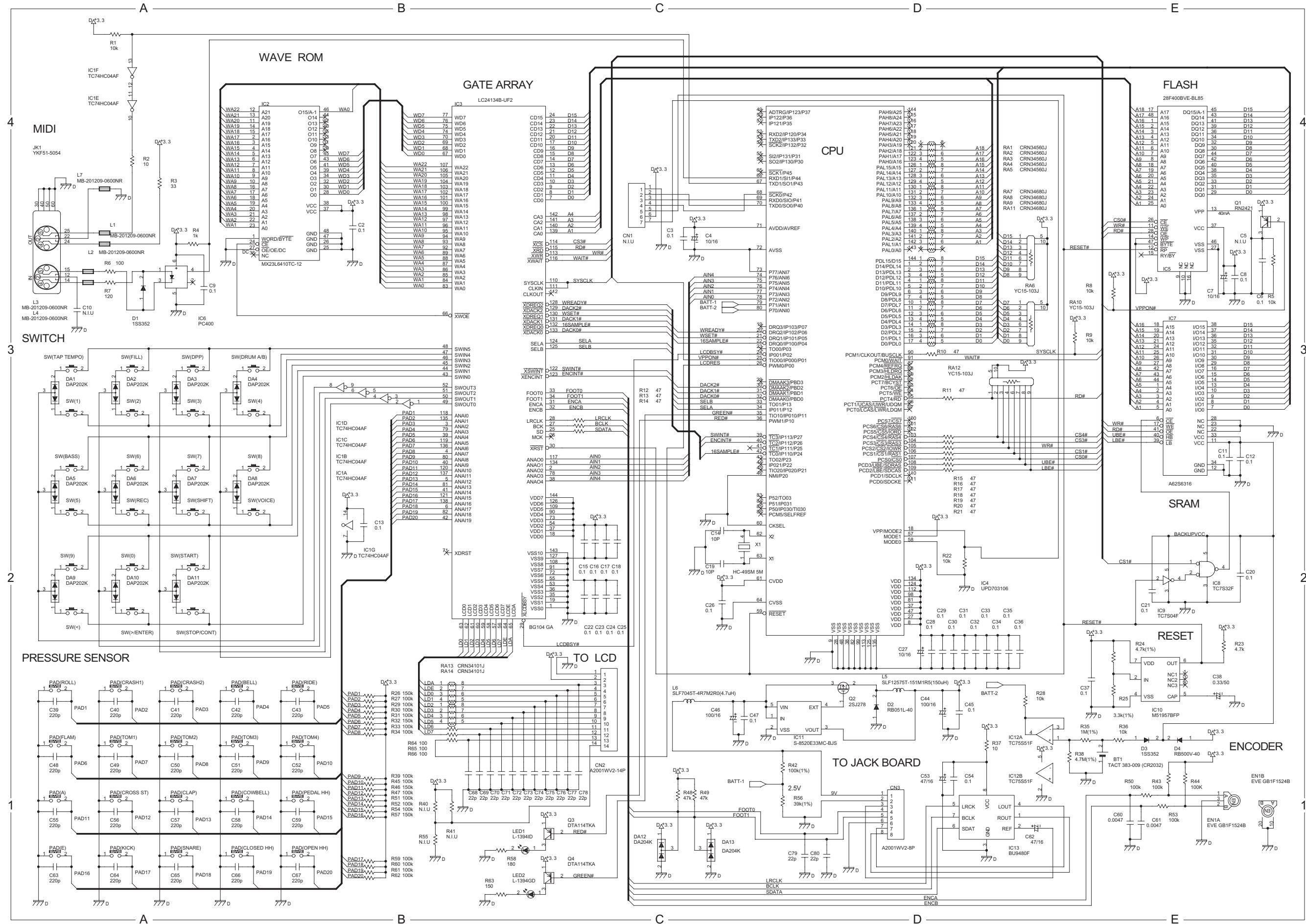


View from components side

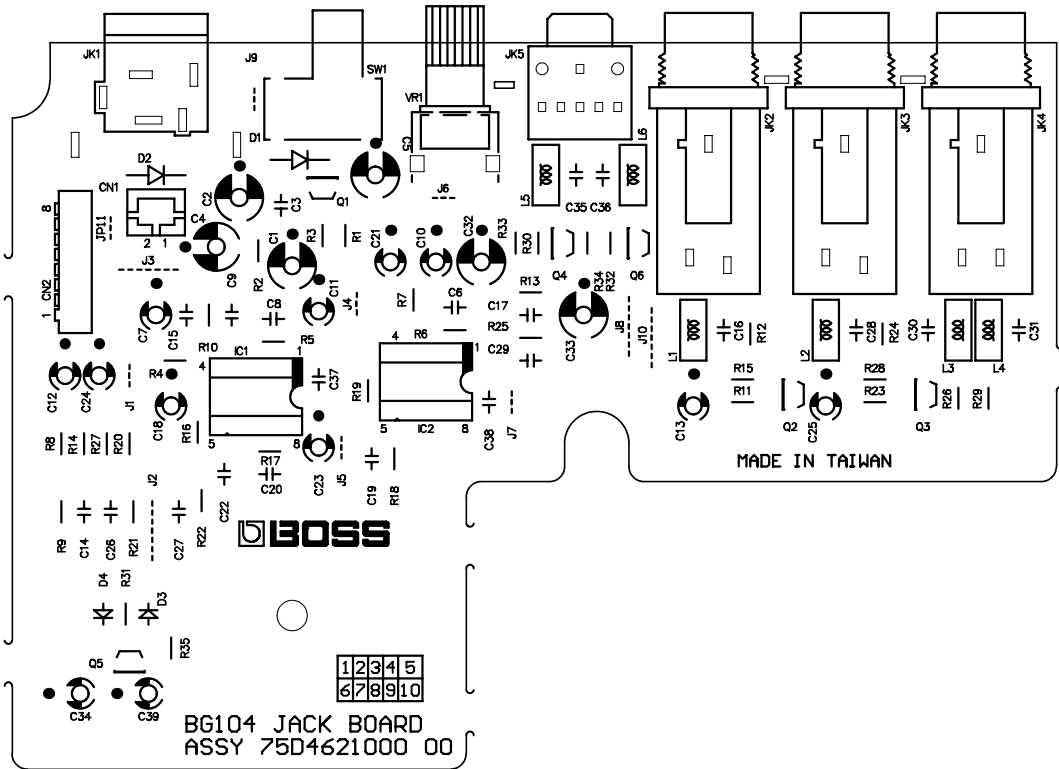


View from fiol side

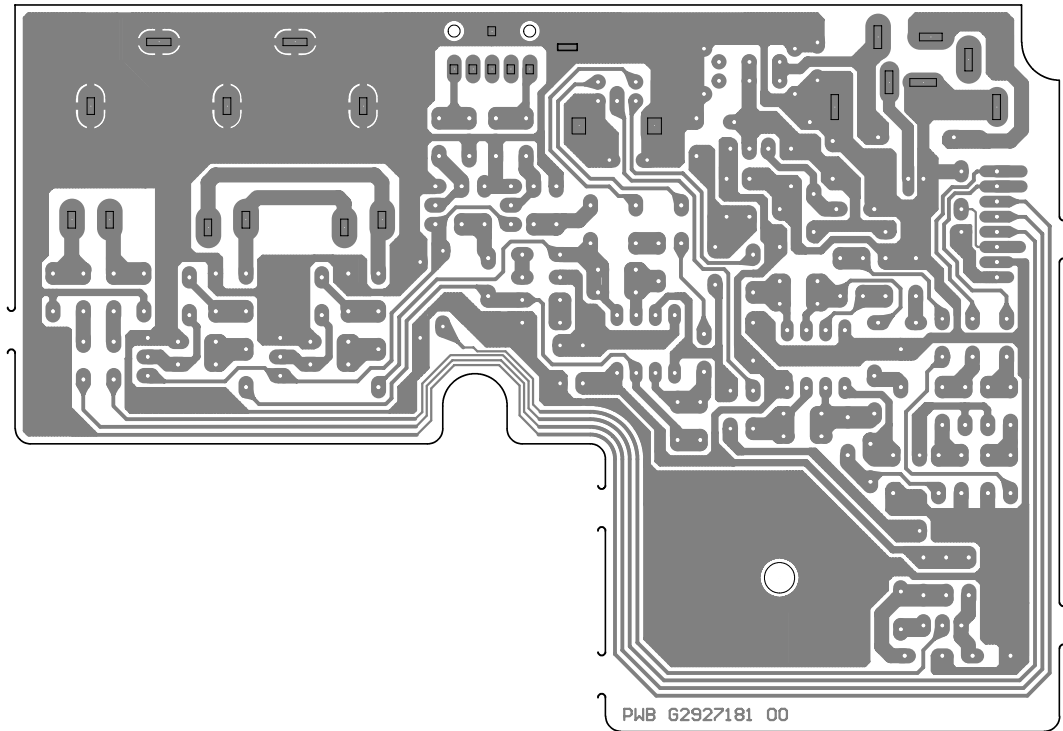
# CIRCUIT DIAGRAM (MAIN)



# CIRCUIT BOARD (JACK)

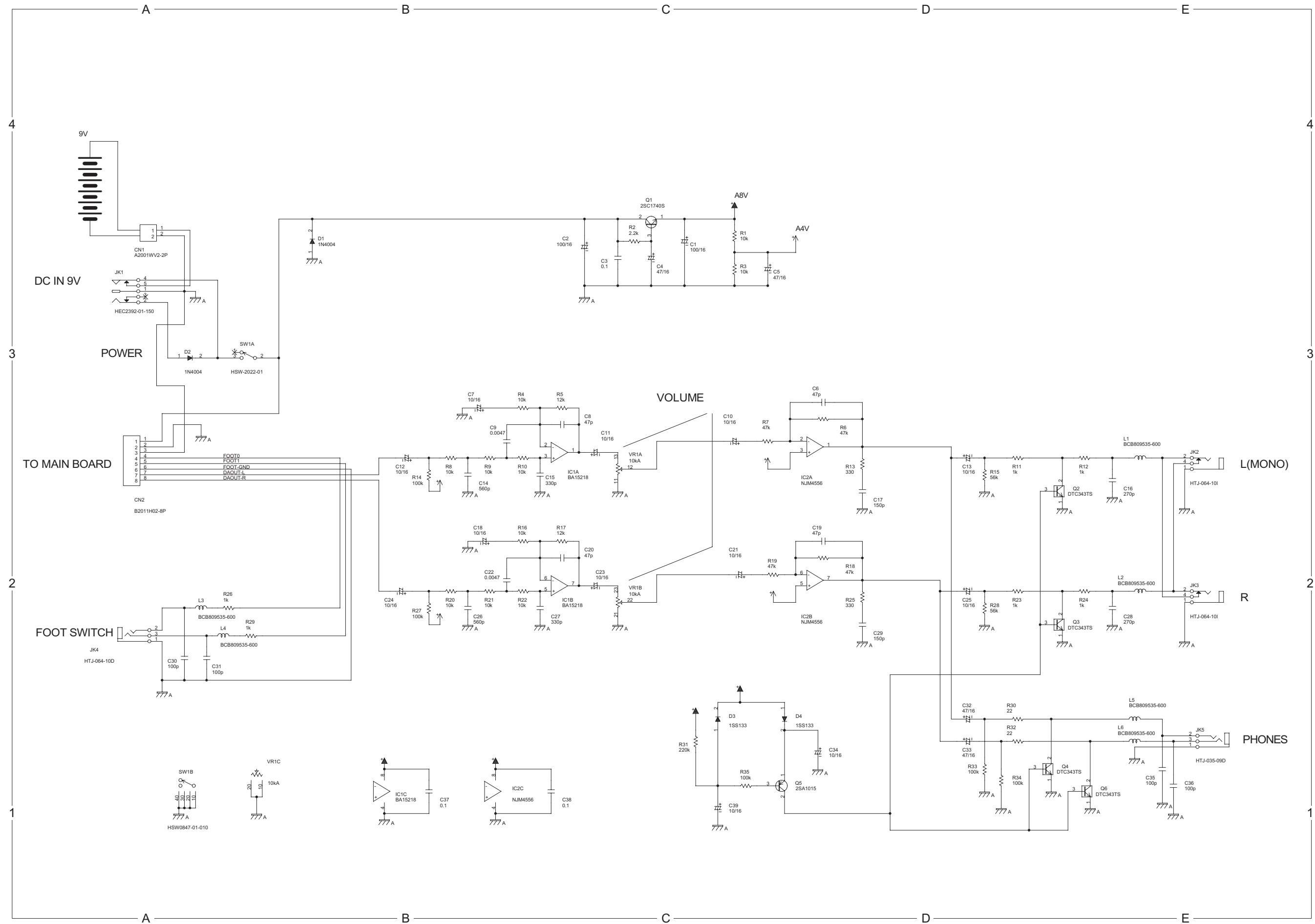


View from components side



**View from fiol side**

# CIRCUIT DIAGRAM (JACK)





For Nordic Countries

**Apparatus containing Lithium batteries****ADVARSEL!**

Lithiumbatteri - Eksplosionsfare ved fejlagtig håndtering.  
Udskiftning må kun ske med batteri af samme fabrikat og type.  
Levér det brugte batteri tilbage til leverandøren.

**ADVARSEL!**

Lithiumbatteri - Eksplosjonsfare.  
Ved utskifting benyttes kun batteri som anbefalt av apparatfabrikanten.  
Brukt batteri returneres apparatleverandøren.

**CAUTION**

Danger of explosion if battery is incorrectly replaced.  
Replace only with the same or equivalent type recommended by manufacturer.  
Discard used batteries according to the manufacturer's instructions.

**VARNING!**

Explosionsfara vid felaktigt batteribyte.  
Använd samma batterityp eller en ekvivalent typ som rekommenderas av apparattillverkaren.  
Kassera använt batteri enligt fabrikantens instruktion.

**VAROITUS!**

Paristo voi räjähtää, jos se on virheellisesti asennettu.  
Vaihda paristo ainoastaan laitevalmistajan suosittelemaan tyyppiin. Hävitä käytetty paristo valmistajan ohjeiden mukaisesti.