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SPECIFICATIONS

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 9 V : 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.
## LOCATION OF CONTROLS
## PARTS LIST

<table>
<thead>
<tr>
<th>No.</th>
<th>Part Code</th>
<th>Part Name</th>
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<tbody>
<tr>
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<td>DISPLAY COVER</td>
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<td>F5029411</td>
<td>LCD LMD-STC2K0802DRG</td>
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<td>KNOG GT-3</td>
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<td>ROTARY ENCODER EVE GB1 F15 24B</td>
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<td>18</td>
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LOCATION OF CONTROLS
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<td>b</td>
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<td>c</td>
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## PARTS LIST

### SAFETY PRECAUTIONS:
The parts marked \( \Delta \) have safety-related characteristics. Use only listed parts for replacement.

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The parts marked \( \Delta \) have safety-related characteristics. Use only listed parts for 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

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<td>LH284F008BVE-BL85</td>
<td>IC (FLASH MEMORY/BLANK)</td>
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<td>LC24134B-UF2</td>
<td>IC (GATE ARRAY)</td>
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### CAPACITOR

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### INDUCTOR, COIL, FILTER

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### CRYSTAL, RESONATOR

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### PICKUP, SENSOR

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### ACCESSORIES (STANDARD)

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NOTE: The above part (ALKALINE DRY BATTERY LR6) does not supply as replacement parts, because it is options.
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.

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.

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.”
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
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.”
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.

Preparing
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

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<td>V</td>
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Version B

Version A

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

| T | B | L | I | T | NG |

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.

```
T-GBA START
```

If "NG," the test has failed. You cannot start another test.

```
T-GBA NG
```

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.

```
T-BMK START
```

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.

```
T-SRAM START
```

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.

```
T-BFLS START
```

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.

```
T-PMID START
```

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.

```
T-LED START
```

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.

```
T-LED START
```

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

**Operation:** The switch "ON" or "OFF" status appears when you turn it on or off.

```
T-SSW START
```

"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.

```
T-SSH START
```

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

![Pad illustration]

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

![Encoder illustration]

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).
You can select another test by rotating the Encoder control.

13. Foot Switch

![Foot Switch illustration]

"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

![Output illustration]

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

![Factory Reset illustration]

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.

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.

“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.

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

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.

| UPDRWR | ERR |
| UPDR | ERR |
| UPDR_S | ERR |
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.

**BAK 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.

**MEM RST OK**

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 [ ] 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.

**DATATRIPT**

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.

**ACT/SENSE**

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 CHKSUM**

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 7**

An unidentifiable error has occurred in the system.
Shut down the DR-670 immediately.
CIRCUIT BOARD (MAIN)

View from components side
CIRCUIT BOARD (JACK)

View from components side
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.

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.

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