**SERVICE NOTES**

First Edition

Issued by RES

**TABLE OF CONTENTS**

<table>
<thead>
<tr>
<th>SPECIFICATIONS</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>DISASSEMBLY</td>
<td>1</td>
</tr>
<tr>
<td>LOCATION OF CONTROLS</td>
<td>2</td>
</tr>
<tr>
<td>EXPLODED VIEW N.1</td>
<td>3</td>
</tr>
<tr>
<td>EXPLODED VIEW N.2</td>
<td>4</td>
</tr>
<tr>
<td>PARTS LIST</td>
<td>5</td>
</tr>
<tr>
<td>TEST MODE (EQUIPMENT REQUIRED, ENTERING TEST MODE, MEMORY TEST, PANEL TEST, CONTROLS TEST, KEYBOARD TEST, SCSI/FLOPPY DISK DRIVER TEST, ANALOG BOARD TEST)</td>
<td>6/11</td>
</tr>
<tr>
<td>WAVE MEMORY EXPANSION, HOW TO INSERT THE TWO SIMM</td>
<td>12/13</td>
</tr>
<tr>
<td>BLOCK DIAGRAM</td>
<td>14</td>
</tr>
<tr>
<td>DIGITAL PCB ASSY</td>
<td>15</td>
</tr>
<tr>
<td>CIRCUIT DIAGRAM (DIGITAL PCB ASSY)</td>
<td>17</td>
</tr>
</tbody>
</table>

**ATTENTION:** The DJ-70MKII is different from DJ-70 only in some details such as digital boards, top and bottom cabinet, etc.

In this manual we have only listed the differences between the two instruments. It is really necessary to refer to the DJ-70 Service Notes (RJA code : 17059654) for a deep knowledge of this instrument.

In the Parts List (pag.5) this symbol " # " will help you to find the new parts used for the DJ-70MKII Sampling Workstation.

**SPECIFICATIONS**

- **KEYBOARD:** 37 Keys with velocity
- **MAX POLYPHONY:** 24 Voices
- **INPUT IMPEDANCE:** 10K ohm
- **INPUT LEVEL:** +4 dB to -50 dBm continuous variance.
- **OUTPUT IMPEDANCE:** 200 ohm (stereo, out, R, L)
- **RESIDUAL NOISE:** More than -80 dBm.
  (Volume : Max., Input shared, IHF-A type)
- **INTERFACE:** SCSI Connector

- **Sampling System:**
  - **SAMPLING RATE:** 44.1KHz, 22.05kHz
  - **DATA FORMAT:** 16 bit Linear with DI method.
  - **A/D:** 16 bit
  - **D/A:** 20 bit
  - **SOUND MEMORY:** Standard : 2M byte
    (Fully expanded : 32M byte by 8/16 Mbyte 72 pins SIMMs)
  - **SIGNAL PROCESSING:** TVF (LPF, BPF, HFP, RING), TVA on 24 bit
  - **FREQUENCY RESPONSE:** 20 Hz to 20kHz (+0/-3dB)
  - **DYNAMIC RANGE:** More than 87 dB (1 Voice at rated output)
  - **TOTAL HARMONIC DISTORSION:** Less than 0.01% (A/D + D/A)

- **Disk Drive System:**
  - **FLOPPY DISK DRIVER:** FDD-FZ-357 338F1DR

- **Display System:**
  - **DISPLAY:**
    - **POWER CONSUMPTION:** 25W (110V)
    - **DIMENSIONS:** 37W (230V, 230VE, 240VA)
    - **WEIGHT:** 18lbs 15 oz. / 8.6 Kg.
    - **ACCESSORIES (STANDARD):**
      - Owners Manual (E) (K60182125)
      - Owners Manual (l/E/D/F) (K60182226)
      - Demo Disk (K2378105)
      - Compact Disk w/Sample Sound (K2378102)

**DISASSEMBLY**

Silkscreened Bottom Cabinet Assy removal screw A x 11 pcs
A : 35x18 mm Self top. screw T10CP8Z

---

**COPYRIGHT © 1996 BY ROLAND CORPORATION**
EXPLODED VIEW N.1

N. PARTS NAME           PARTS N.  
1. POT POT. 1KB  - RKB122F0    152369357  
2. POT POT. 1KB  - RKB122G0    152369356  
3. PITCH BENDER W/SENSOR + CABLE  K32780G3  
4. LED ASSY + CONNECTOR  7697680000  
5. ENCODER EVO-MOK F15+24B  J3191901  
6. S/S SCREENED FLEXOGLASS  7697670000  
7. LED PCB ASSY  7853280000  
8. BLACK KNOB F/ENCODER  224703989  
9. SCRATCH ASSY  7695280000  
10. SC/RSC. TOP CABINET ASSY  7697803000  
11. CONTROLS PCB ASSY  7953030000  
12. RACK OUTER KNOB - BLACK  22485140  
13. RACK ROUND KNOB - BLACK  22485148  
14. POTENTIOMETER PCB ASSY  7855304000  

SCREW  
A. SELF TAP SCREW 3.6x8 TCEPBKZ  J2289125  
B. SELF TAP SCREW 3.6x8 TCEPBKZ  J2289125  
C. SELF TAP SCREW 3.6x8 TCE  J2289125  
D. SELF LOCK SCREW M3X8 TCE KLS  J2289129  
E. SELF LOCK SCREW M3X8 TCE KB  J2289129  

Jun, 1996
DJ-70MKII
** DJ-70MKII TEST MODE **

** Equipment required:**
- Foot switch (DP2 or equivalent).
- Midi cable.
- 2 SIMM memory modules.
- A formatted DD or HD floppy disk.
- A monitor speaker.
- A stereo headphone.
- An oscilloscope.

** Entering TEST MODE **

While pressing the "^" button on the front panel, turn the power on.
The LCD display will show:

```
** DJ70MKII TEST MODE **
VER XX.XX  MM/DD/YY
Program DRAM OK
```

VER = Release Number of TEST MODE S/W

Program DRAM Test is automatically run and the result is displayed.
If nothing is displayed any problem on Program DRAM may be present and the test program cannot be run.

After 5/6 seconds the display will show:

```
** MAIN MENU **
A = MEMORY     D = KEYBOARD
B = PANEL      E = FLOPPY DD
C = CONTROLS   F = ANALOG BOARD
TURN OFF THE INSTRUMENT TO EXIT
```

This is the TEST MAIN MENU.

** Exiting TEST MODE **

Turn the power off.

** MEMORY TEST **

Pressing the "A" button of the front panel while the TEST MAIN MENU is shown, the display will show:

```
** MEMORY MENU **
A = BOOT ROM       C = WAVE DRAM SHORT
B = EEPROM        D = WAVE DRAM LONG
PRESS EXIT TO MAIN MENU
```

This is the MEMORY TEST MENU.

Pressing "EXIT" you will come back to the MAIN MENU.

** Memory Menu - A **

Pressing "A" the display will show:

```
** BOOT ROM TEST **
Ic22 = xxxxx
PRESS EXIT TO MEMORY MENU
```

XXXXXX = OK (In case of normal condition)
XXXXXX = ERROR (In case of Error condition)

Pressing "EXIT" you will come back to the MEMORY TEST MENU.
Memory Menu - B

Pressing "B" the display will show:

```
** EEPROM TEST **
DATA WILL BE CLEARED
ARE YOU SURE?
YES=S1      NO=EXIT
```

Pressing "EXIT" this TEST will be aborted and you will come back to the MEMORY TEST MENU.

Pressing "S1" the display will show:

```
** EEPROM TEST **
Ic21 = XXXXX
PRESS EXIT TO MEMORY MENU
```

XXXXX = OK (In case of normal condition)
XXXXX = ERROR (In case of Error condition)

Pressing "EXIT" you will come back to the MEMORY TEST MENU.

Memory Menu - C/D

Pressing "C" or "D" the display will show:

```
** WAVE MEMORY MENU **
A = MEMORY TYPE
B = MEMORY CHECK
C = MEMORY VERIFY
PRESS EXIT TO MEMORY MENU
```

This is the WAVE MEMORY TEST MENU.

If "D" is pressed in the Memory Menu, the Wave Memory Check and/or Verify will be more accurate but longer in time. In most of cases, short wave test ("C" in the Memory Menu) will be sufficient.

Pressing "EXIT" you will come back to the MEMORY TEST MENU.

Wave Memory Menu - A

Pressing "A" the display will show:

```
** WAVE MEMORY TYPE **
TYPE = ttttttttttttttttttt
ADDRESS = sssssh-eeeeeeeh
PRESS EXIT TO WAVE MEMORY MENU
```

ttttttttttttttttttt is the description of wave memory configuration.
sssssh is the wave memory start address (hex)
eeeeeeh is the wave memory end address (hex)

Pressing "EXIT" you will come back to the WAVE MEMORY TEST MENU.

Wave Memory Menu - B

Pressing "B" the display will show:

```
** WAVE MEMORY CHECK
WRITE ADDRESS = wwwwwh wwwwh
READ ADDRESS = rrrrrr rrrrr
ERROR ADDRESS = eeeeee eeee
PRESS EXIT TO WAVE MEMORY MENU
```

wwwwwwh wwwwh is the running wave memory write address and data (hex)
rrrrrr rrrrr is the running wave memory read address and data (hex)
eeeeee eeee is the wave memory error address and data (hex) (if any)

Pressing "EXIT" you will come back to the WAVE MEMORY TEST MENU.
Wave Memory Menu - C
Pressing “C” the display will show:

** WAVE MEMORY VERIFY **
WRITE ADDRESS = 
READ ADDRESS = rrrrrh rrrrh
ERROR ADDRESS = eeeeee eeeeh
PRESS EXIT TO WAVE MEMORY TEST MENU

rrrrh rrrrh is the running wave memory read address and data (hex)
eeenee eeeeh is the wave memory error address and data (hex) (if any)
Pressing “EXIT” you will come back to the WAVE MEMORY TEST MENU.

Panel Menu - B

XXrrrrrrrrrrrr = Name of the pressed button.
OOO = ON (if pressed) / OFF (if released)
Pressing together “SHIFT” and “EXIT” you will come back to the PANEL TEST MENU.

Panel Menu - C
Pressing “B” the display will show:

** LEDS TEST **
PRESS EXIT TO PANEL MENU

This is the LEDS TEST MENU.
All leds are lighted ON sequentially and, at the end of the sequence, all leds will light simultaneously.
Pressing “EXIT” you will come back to the PANEL TEST MENU.

Panel Menu - A
Pressing “A” the display will show:

** PANEL TEST MENU **
A = SWITCHES B = LED C = LCD
PRESS EXIT TO MAIN MENU

This is the PANEL TEST MENU.
Pressing “EXIT” you will come back to the MAIN MENU.

Panel Menu - C
Pressing “C” the display will show:

** LCD TEST **
A = LCD ON D = CROSS DOTS 2
B = LCD OFF E = CROSS DOTS 3
C = CROSS DOTS 1 F = RETURN
PRESS EXIT TO PANEL MENU

This is the LCD TEST MENU.
Pressing “A” all dots are turned ON (SOLID BLACK)
Pressing “B” all dots are turned OFF (SOLID WHITE)
Pressing “C” dots are turned ON/OFF alternatively
Pressing “D” characters are turned ON/OFF alternatively
Pressing “E” characters are turned ON/OFF alternatively (opposite way of previous)
Pressing “F” you will come back to the LCD TEST MENU
Pressing “EXIT” you will come back to the PANEL TEST MENU.
** CONTROLS TEST **

Pressing the "B" button of the front panel while the TEST MAIN MENU is shown, the display will show:

** CONTROLS TEST MENU **

A = PANEL CONTROLS  B = MIDI

PRESS EXIT TO MAIN MENU

This is the CONTROLS TEST MENU

** MIDI TEST **

CONNECT MIDI OUT TO MIDI IN
AND PRESS SI BUTTON TO START
MIDI = XXXX
PRESS EXIT TO CONTROLS MENU

XXXXX = OK (In case of normal condition) / ERROR (In case of error condition)

Pressing "EXIT" you will come back to the CONTROLS TEST MENU.

** KEYBOARD TEST **

Pressing the "D" button of the front panel while the TEST MAIN MENU is shown, the display will show:

** PANEL CONTROLS MENU **

MOD  BEND  ENCODER  SCRATCH  FOOTSW
MMM  BBBB  EEE  SSS  FFF

PRESS EXIT TO CONTROLS MENU

MMM = Modulation value from 0 to 127
BBBB = Pitch Bender value from -127 to +127
EEE = Alpha Dial value from 0 to 127
SSS = Scratch Wheel value from 0 to 127
FFF = ON (if DP2 pressed) / OFF (if DP2 not pressed)

NOTE: Connect the DP2 Footswitch to the FOOTSWITCH jack.

Pressing "EXIT" you will come back to the MAIN MENU.

** KEYBOARD TEST MENU **

HIT ANY KEY
KEY = KKK  VELOCITY = VVV
PRESS EXIT TO MAIN MENU

KKK = Key name from C3 to C6
VVV = Velocity value from 0 to 127

NOTE: When any key is released VVV = 0; if more than one key is pressed or released, the last will be recognized.

Pressing "EXIT" you will come back to the MAIN MENU.

** SCSI/FLOPPY DISK DRIVER TEST **

Pressing the "E" button of the front panel while the TEST MAIN MENU is shown, the display will show:

** SCSI/FLOPPY DISK DRIVER MENU **

A = SCSI (ID=0)  B = FLOPPY
PRESS EXIT TO MAIN MENU
This is the SCSI/FLOPPY TEST MENU.

SCSI/Floppy Menu - A
Pressing "A" the display will show:

*** SCSI TEST ***

MMMM = SCSI TEST OK (all is OK)
SCSI Connection Error (Error during device connection)
SCSI Device Error (Error reading Disk ID)

NOTE: Be sure to set ID Number of external SCSI device to ID=0.

Pressing "EXIT" you will come back to the SCSI/FLOPPY TEST MENU.

SCSI/Floppy Menu - B
Pressing "B" the display will show:

** FLOPPY DISK TEST **

DISK XX TESTING
TRACK = TT  SECTOR = SS  OOOOOO

MMMM = DISK TEST OK (all is OK)
DISK TEST ERROR (floppy disk error)
NO DISK / (no disk into drive or cables disconnected)
NOT FORMATTED

Pressing "EXIT" you will come back to the SCSI/FLOPPY TEST MENU.

This test writes data to the floppy disk and then reads it. However if the write protect slides of the inserted floppy disk is ON, the display will show "protected", and the test will not be executed. In this case, set the write protect slider OFF, and execute the test. When the test is executed, Save, Load and Verify operations will be automatically performed at three locations on the disk: track 1 sector 1, track 40 sector 8 and track 79 sector 16. If all operations are ok, the test will be exited automatically. If an error occurs, testing will halt.

Pressing "EXIT" you will come back to the SCSI/FLOPPY TEST MENU.

ANALOG BOARD TEST

Pressing the "F" button of the front panel while the TEST MAIN MENU is shown, the display will show:

** ANALOG BOARD TEST **

A = D/A MSB ADJUST
B = D/A CHECK
C = A/D OFFSET ADJUST

Press exit to MAIN MENU

This is ANALOG BOARD TEST MENU

Pressing "EXIT" you will come back to the MAIN MENU.

Analog Board Menu - A

Pressing "A" the display will show:

** D/A MSB ADJUST **

INSERT STEREO PHONES ON PHONES JACK
& SET PHONES VOLUME TO MAX

A=VOICE START  EXIT=RETURN

This test allows you to adjust the MSB of the D/A converter. Before entering this test, connect a stereo phones to the PHONES jack and set phones volume to maximum position.

When you press "A" a continous tone will be output from the PHONES jack.

Adjust the trimmer potentiometer (VR1) on the analog board to reduce the continous tone to the lowest possible volume.
When you press "B" the continuous tone will be stopped.

When you have completed the operation press "EXIT" to exit to return to ANALOG BOARD TEST MENU.

Analog Board Menu - B

Pressing "B" the display will show:

```
** SINE D/A CHECK **
OUT LEFT  = 880Hz    PHONES = 440Hz
OUT RIGHT = 1760Hz
LEVEL = XX  (S1=DEC : S2 = INC)
A=VOICE START  EXIT=RETURN
```

XX = 1 - 13

This test checks the operations of the D/A converter.
Before you enter this test, connect a monitor speaker and an oscilloscope (1V/div., 0.2mS/div.) to the rear panel STEREO OUT L (mono) jack, and set the front panel VOLUME knob to maximum (MAX).
Use the panel switches, "S1" to decrement and "S2" to increment, to adjust the displayed level over the range 1-13, and the level of the continuous tone, being output from OUT will change accordingly.
The level will double for each increment and, at the maximum (13), it will be equal to ~4 Vpp.
Connect the oscilloscope to the PHONES jack, set the PHONES volume to MAX and decrement the displayed level to 12 using "S1" button.
The level of the continuous tone will be equal to ~13 Vpp.

Pressing "EXIT" you will come back to the ANALOG BOARD TEST MENU.

Analog Board Menu - C

Pressing "C" the display will show:

```
** D/A OFFSET ADJUST **
VR3 _ _ _ _ _ _ _ _ _ _ _ _
+----
VR2 _ _ _ _ _ _ _ _ _ _ _ _
EXIT TO RETURN
```

This test allows you to adjust the offset of the A/D converter input.
While viewing the bar graph display in the LCD, rotate the trimmer potentiometer in the analog board (VR2 for the left channel, VR3 for the right channel) so that the "+" mark is at the center (+).

When you have completed the operation press "EXIT" to return to the ANALOG BOARD TEST MENU.
WAVE MEMORY EXPANSION - (SIM72-8 / SIM72-16)

SIM72-8 8 Mbyte SIMM
SIM72-16 16 Mbyte SIMM

These SIMMs are 72 pin type, 1.27 mm pitch, and not interchangeable with 30 pin type SIMMs, 2.54 mm pitch (OMS-770, OMS-750, SIM-8, SIM-2).

Allowed combinations

Do not use them in any other combinations then listed above.

<table>
<thead>
<tr>
<th>Standard (2M)</th>
<th>Socket IC32</th>
<th>Socket IC33</th>
<th>Total Memory</th>
<th>Mono Sampling Time (44.1KHz)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>empty</td>
<td>empty</td>
<td>2 M</td>
<td>22.5 sec</td>
</tr>
<tr>
<td>0</td>
<td>SIM72-8</td>
<td>empty</td>
<td>10 M</td>
<td>113.5 sec</td>
</tr>
<tr>
<td>0</td>
<td>SIM72-16</td>
<td>empty</td>
<td>18 M</td>
<td>204.6 sec</td>
</tr>
<tr>
<td>0</td>
<td>SIM72-8</td>
<td>SIM72-16</td>
<td>26 M</td>
<td>295.6 sec</td>
</tr>
<tr>
<td>X</td>
<td>SIM72-16</td>
<td>SIM72-16</td>
<td>32 M</td>
<td>363.8 sec</td>
</tr>
</tbody>
</table>

Tab 1

Installing procedure

![Diagram of installation procedure]

CAUTION!
No.1: Remove the screws (11pcs) as indicated by "A" arrows to open cabinet of DJ-70 MKII, and rotate top cover (see fig1).

No.2: Remove the screws (5pcs) as indicated by "B" arrows to take out the keyboard (see fig2)

No.3: Install the SIMMs (Tab.1) into the sockets as shown in Fig.3 and press them until you hear a click.

No.4: Verify the expanded memory capacity by following the procedure shown below. Turn on DJ-70MKII and the LCD will read the amount of currently operative memory immediately after the initial screen. In this case, the value should be as shown in Tab1.

Testing Wave Memory

While pressing the "**" button on the front panel, turn the power on. The LCD display will show:

```
** DJ70MKII TEST MODE **

VER XX.XX MM/DD/YY

Program DRAM OK
```

VER = Release Number of TEST MODE S/W

After 5/6 seconds the display will show:

```
** MAIN MENU **

A = MEMORY       D = KEYBOARD
B = PANEL        E = FLOPPY DD
C = CONTROLS     F = ANALOG BOARD

TURN OFF THE INSTRUMENT TO EXIT
```

Pressing the "A" button of the front panel the display will show:

```
** MEMORY MENU **

A = BOOT ROM     C = WAVE DRAM SHORT
B = EEPROM       D = WAVE DRAM LONG

PRESS EXIT TO MAIN MENU
```

Pressing "C" or "D" the display will show:

```
** WAVE MEMORY MENU **

A = MEMORY TYPE
B = MEMORY CHECK
C = MEMORY VERIFY

PRESS EXIT TO MEMORY MENU
```
Pressing "A" the display will show:

```
** WAVE MEMORY TYPE **
TYPE = [ttttttttttttttttt]
ADDRESS = ssssssh-eeeeeeeh
PRESS EXIT TO WAVE MEMORY MENU
```

`ttttttttttttt` is the description of wave memory configuration

<table>
<thead>
<tr>
<th>Configuration</th>
<th>Total Memory</th>
<th>Mono Sampling Time (44.1 kHz)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2M+0M+0M</td>
<td>2 M bytes</td>
<td>22.5 sec</td>
</tr>
<tr>
<td>2M+8M+0M</td>
<td>10 M bytes</td>
<td>113.5 sec</td>
</tr>
<tr>
<td>2M+16M+0M</td>
<td>18 M bytes</td>
<td>204.6 sec</td>
</tr>
<tr>
<td>2M+8M+16M</td>
<td>26 M bytes</td>
<td>295.6 sec</td>
</tr>
<tr>
<td>0M+16M+16M</td>
<td>32 M bytes</td>
<td>363.8 sec</td>
</tr>
</tbody>
</table>

`sssssh` is the wave memory start address (hex)
`eeeeeeeh` is the wave memory end address (hex)

**NOTE:**
If `0M + 16M + 0M` is displayed when one SIM72-8 and one SIM72-16 are installed, check connection of SIM72-8 at Socket IC32.
If `0M + 16M + 0M` is displayed when one SIM72-16 is installed, remove the SIM72-16 from Socket IC33 and insert it into Socket IC32.
When two SIM72-16s are installed, the display should show `0M + 16M + 16M`, indicating that available wave memory is 32 Mbytes (standard memory is not used).

Turn off the instrument to exit from test mode.

**Replacements**

SIM72-8 and SIM72-16 are not available as spare parts but as commercial products.

**Guarantee**

A label bearing the Roland logo is attached on the SIM72-8 and SIM72-16.
Roland Corp. will not assure proper performance if a SIM72-8 or SIM72-16 having no Roland label is used.

**SIMMs having no Roland label**

The SIMMs listed below may be used with the DJ-70 mkII but Roland will not assure correct performance of the SIMMs and DJ-70 mkII.

- **8 Mbyte SIMM**
  - 72 pin, 2 Mword x 32 bits D-RAM module
  - 4 Mbit D-RAM x 16
  - Access time 80 ns or better
  - Suggested: THM322020AS-70

- **16 Mbyte SIMM**
  - 72 pin, 4 Mword x 32 bits D-RAM module
  - 16 Mbit D-RAM x 8
  - Access time 80 ns or better
  - Suggested: THM324000BSG-70

**NOTE:**
OMS-770, OMS-750, SIM-8 and SIM-2 cannot be used with the DJ-70 mkII.
16 Mbyte SIMMs with 32 4-Mbit D-RAMs cannot be used with the DJ-70 mkII.
BLOCK DIAGRAM

DIGITAL BOARD

CPU

DEFERRED ARRAY

SWITCHING POWER SUPPLY

A/D CONVERT.

MULTIPLEXER

PHONES BOARD

PHONES
DIGITAL PCB ASSY
ASSY 7697801000