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Cautionary Notes

Before beginning the procedure, please read through this document. The matters described may differ according to the model.

Back Up User Data!

Executing a Factory Reset returns the following settings to their factory defaults. These cannot be backed up. Note them down on paper as required.

- Tuning settings (Owner’s Manual p. 17)
- Metronome tone (Owner’s Manual p. 47)
- Count sound settings (Owner’s Manual p. 48)
- Lyrics-display language setting (Owner’s Manual p. 49)
- Track Assign settings (Owner’s Manual p. 50)
- Setting the Type and Timing of CD to be Played Back (Owner’s Manual p. 51)
- USB memory settings (Owner’s Manual p. 52)
- USB driver settings (Owner’s Manual p. 52)

Part Replacement

When replacing components near the power-supply circuit or a heat-generating circuit (such as a circuit provided with a heat sink or including a cement resistor), carry out the procedure according to the instructions with respect to the part number, direction, and attachment position (mounting so as to leave an air gap between the component and the circuit board, etc.).

Parts List

A component whose part code is ******** cannot be supplied as a service part because one of the following reasons applies.

- Because it is supplied as an assembled part (under a different part code).
- Because a number of circuit boards are grouped together and supplied as a single circuit board (under a different part code).
- Because supply is prohibited due to copyright restrictions.
- Because reissuance is restricted.
- Because the part is made to order (at current market price).

Circuit Diagram

In the circuit diagram, “NIU” is an abbreviation for “Not in Use,” and “UnPop” is an abbreviation for “Unpopulated.” They both mean non-mounted components. The circuit board and circuit board diagram show silk-screened indications, but no components are mounted.

In the Main Board Circuit Diagram (p. 24), red parts on the PDF and gray parts on paper media service notes mean non-mounted components. The circuit board and circuit diagram show silk-screened indications, but no components are mounted.

Main Specifications

MT-90U: Music Player

Playback Composer

External Memory

- USB Memory (sold separately)
- Floppy Disk
  * Read only
  * USB 3.5 in. floppy disk drive (FD-01 series) required (sold separately)
- CD-ROM
- Audio CD
  * Read only
  * Commercial USB CD drive required

Supported Data

- Standard MIDI Files (format 0/1)
- Roland Original Format
- Audio files (WAV; 44.1 kHz, 16 bit linear format)
- MP3 files (44.1 kHz, 32 to 320 kbps)
- Audio CD
  * Commercial USB CD drive required

Tracks

16 tracks

Control

Reset, Stop, Play, Bwd, Fwd, Repeat, Marker, Song, Tempo, [+], [-], Track Selection, Count In, Metronome (MIDI only), Center Cancel (audio only)

Tempo

Quarter note = 10 to 500 (MIDI only)
75 to 125% (audio only)

Resolution

120 ticks per quarter note (MIDI only)

Transpose

-6 to +5 (semitones)

Demo Songs

14 songs
### Sound Generator

**Max. Polyphony**
128 voices (MIDI only)

**Tones**
348 tones (including 8 drum sets, 1 effects set)

**Internal Sounds**
Conforms to GM2 system/GS format/XGlite supported

**Master Tuning**
415.3 Hz to 466.2 Hz (0.1 Hz units)

**Effects**
- Reverb (MIDI only)
- Chorus (MIDI only)
- Sound Control: Sharp, Clear, Power

### Sequencer

**Metronome**
- Time Signatures: 2/2, 0/4, 2/4, 3/4, 4/4, 5/4, 6/4, 7/4, 3/8, 6/8, 9/8, 12/8
- Volume: 11 levels
- Pattern: 11 patterns

### Other Functions
- Infrared Transmission
- Mic Echo
- Song List
- Floppy Disk Backup

### Others

**Display**
- Beat Indicator
- 122 x 32 dot, Graphic LCD (with backlight)

**Language**
- Japanese (song title, lyrics), English

**Lyric Display**
- Yes (LCD display)

**Rated Power Output**
- 5 W

**Speakers**
- 10 cm x 1

**Connectors**
- External memory connector: USB type A
- USB connector: USB type B
- Output jack (R/L): RCA pin type
- Microphone jack (Mono): Standard type
- Headphones jack: Stereo, mini type
- MIDI In connector
- Start/Stop jack

**Power Supply**
- DC9V

**Current Draw**
- 2000 mA

**Dimensions**
- 165 (W) x 186 (D) x 270 (H) mm
- 6-1/2 (W) x 7-3/8 (D) x 10-11/16 (H) inches

**Weight**
- 2.5 Kg / 5 lbs 9 oz

**Accessories**
- AC Adaptor (#04236101)
- Power Code
  - for 120 V (#02562456)
  - for 220 V CN (#51000010564)
  - for 230 V E (#5100001115)
  - for 230 V EL (#01903356)
  - for 240 V A (#03785590)
- Remote Control (#04898434)
- Lithium Battery (CR2025) (#***)
- Owner’s Manual English (#04787745)

**Options**
- USB Memory (M-UFLGB)
- Floppy Disk Drive (FD-01 series)
- Roland Microphone (DR-10/20)
- Pedal Switch (DP-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 (Front Panel) Parts List

<table>
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<th>No.</th>
<th>Part Code</th>
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### Exploded View (1) Parts List

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| f   | 03904456    | SCREW 3X6  | B-TITE BIND BZC           | 8   |

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Important Notes on Assembly

To prevent damage to the wiring, cover edges using acetate tape.

To prevent screeching (unpleasant noise caused by vibration), apply acetate tape having a width of 10 mm to the front case.
To prevent dust entry, apply cushion tape to the LCD unit. Do not peel off the backing paper.

To prevent light leakage by the LCD backlight from the speaker grille, apply acetate tape having a width of 12 mm.

Secure the LCD wiring in place on the back of the front case using acetate tape.

Secure the IrDA cover in place using double-sided adhesive tape having a width of 5 mm.
As a measure to prevent electromagnetic interference (EMI), attach Wiring J-2 to the Volume Board. Be careful to attach at the correct angle.

Twist the 9-pin wiring connecting the Jack Board and Volume Board 3 turns.

Also secure the 9-pin wiring and 3-pin wiring using a sub-tie.

Apply cushion tape for protecting the wiring to the Jack Board. Take care not to cover the screw hole.

To keep the volume control from coming loose, apply double-sided adhesive tape having a width of 5 mm to the volume shaft.
# SAFETY PRECAUTIONS: 
The parts marked △ have safety-related characteristics. Use only listed parts for replacement.

Due to one or more of the following reasons, parts with parts code ******* cannot be supplied as service parts.

• Part supplied only as a component in a complete assembly
• Copyright does not permit the part to be supplied
• Part is sold commercially

NOTE: The parts marked # are new. (initial parts) The description "Q'TY" means a necessary number of the parts per one product.

## CASING
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<td>JACK BOARD ASSY</td>
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<td>USB BOARD ASSY</td>
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<td>IR BOARD ASSY</td>
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<td>VOLUME BOARD ASSY</td>
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<td>SW BOARD ASSY</td>
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<td>PANEL BOARD ASSY</td>
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## IC
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<th>Description</th>
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<td>INFRARED TRANSCEIVER MODULE</td>
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<td>RTD-10511</td>
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## DIODE
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<tr>
<td>LED (GREEN)</td>
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<tr>
<td>LED (RED)</td>
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<tr>
<td>LED LENS 4P</td>
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<tr>
<td>LED LENS 1P</td>
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<tr>
<td>LED LENS 5P</td>
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<tr>
<td>RADIAL LED (2COLOR RED/GREEN)</td>
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**POTENTIOMETER**

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<thead>
<tr>
<th>#</th>
<th>04890223</th>
<th>9MM VOLUME</th>
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<th>VR1, VR2 on Jack Board</th>
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<tr>
<td></td>
<td>05017756</td>
<td>14MM ROTARY VOLUME (STEREO)</td>
<td>F14KH-1 B10K L15 FCX7</td>
<td>VR301 on Volume Board</td>
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**WIRING, CABLE**

<table>
<thead>
<tr>
<th>#</th>
<th>04894134</th>
<th>WIRING</th>
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<td>05012456</td>
<td>WIRING J-2</td>
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**SCREWS**

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<td>PAN MACHINE W/SW+PW ZC</td>
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**MISCELLANEOUS**

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<tr>
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**ACCESSORIES (Standard)**

<table>
<thead>
<tr>
<th>#</th>
<th>04999434</th>
<th>REMOTE CONTROL UNIT</th>
<th>PSB-1U(S) UNIVERSAL</th>
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<tr>
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<td>#</td>
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<td>AC CORD SET PSE</td>
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<td>#</td>
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<td>#</td>
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<td>WARRANTY CARD</td>
<td>MOCHIKOMI JAPAN ONLY</td>
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</table>
Verifying the Version Number

1. Hold down the [1] button and the [ ] button and switch on the power. The version number appears on the screen.
2. After carrying out verification, switch off the power.

Performing a Factory Reset

Executing a Factory Reset returns the following settings to their factory defaults. These cannot be backed up. Note them down on paper as required.

- Tuning settings (Owner’s Manual p. 17)
- Metronome tone (Owner’s Manual p. 47)
- Count sound settings (Owner’s Manual p. 48)
- Lyrics-display language setting (Owner’s Manual p. 49)
- Track Assign settings (Owner’s Manual p. 51)
- USB memory settings (Owner’s Manual p. 52)
- USB driver settings (Owner’s Manual p. 52)

1. Hold down [ ] and press [4].
2. Press [ ] or [ ] to display a screen like the one shown below.
3. Press [+] to display the screen shown below and the [ ] light flashes.
4. Pressing [ ] executes the Factory Reset.
5. Turn the power off, then back on.

Updating the System

1. Unarchive the update file, then copy all files and folders to the root folder on a USB memory device.
2. Load the USB memory device in the MT-90U.
3. Hold down the [ ] and [ ] buttons and switch on the power.
   The update starts automatically.
   * Never switch off the power while the update is in progress.

   When the message Complete appears, the update has finished.
4. Switch off the power and detach the USB memory device.
5. Execute a Factory Reset.

Test Mode

Items Required
- MT-90U
- AC Adapter: PSB-1U and power cord (included)
- Remote Controller for the MT-90U (included)
- Headphones
- MIDI Keyboard
- Microphone
- Monitor Speaker (with amp)
- Noise Meter
- Pedal Switch
- USB Memory Device (128 MB or larger, containing an MP3 file)

Entering the Test Mode

Hold down the [R] and [ ] buttons and switch on the power.

Quitting the Test Mode

Switch off the power.

Selecting Test Items

1. Hold down the [ ] button and press the [ ] button. The Test menu appears.
2. Use [ ] and [ ] to choose the test item you want to execute.
3. Press [ ].

Test Items

1. Version (p. 19)
2. Device Test (p. 19)
3. USB Test (p. 19)
4. IrDA Test (p. 19)
5. Switch Test (p. 19)
6. Red LED Test (p. 19)
7. Green LED Test (p. 19)
8. LCD Test (p. 19)
9. Volume Test (p. 20)
10. MIDI Test (p. 20)
11. Noise Test (p. 20)
12. Mic Test (p. 20)
13. Phase Test (p. 20)
14. Echo Test (p. 20)
15. Factory Reset (p. 20)

Test Items Outside the Test Mode

Speaker Test (p. 21)
Headphones Test (p. 21)
External Speaker Test (p. 21)
1. Version

Verify the version of the system.

1. Hold down the [R] and [ ] buttons and switch on the power. The Test mode is enabled.

2. Verify that [SYS] has been selected and press the [ ] button.

![Version]

3. Verify that the unit is at the latest version.

4. Press the [ ] button to advance to the next item.

2. Device Test

This automatically checks the operation of the Wave ROM.

![Device Test]

When OK is displayed, press the [ ] button to advance to the next item.

3. USB Test

This performs a USB connection check.

1. Using a USB cable, connect the USB connector on the front panel to the USB connector on the rear panel.

2. Verify that the message displayed on the LCD screen changes from Disconnected to Connected.

![USB Test]

If no problem is found, execution automatically advances to the next item.

4. IrDA Test

This performs testing of infrared communication.

* Outside Japan, this test is not required. Press the [ ] button to advance to the next item.

![IrDA Test]

5. Switch Test

This tests switch operation.

1. Press the [ ], [ ], [ ], [ ], and [ ] buttons on the front panel in sequence, one at a time, and verify that each button name is displayed on the LCD screen.

2. Connect the pedal switch to the Start/Stop jack on the rear panel.

3. Depress the pedal and verify that the message Pedal is displayed on the LCD screen.

![Switch Test]

When verification for all switches has finished, execution automatically advances to the next item.

6. Red LED Test

This tests illumination of the red LEDs.

1. Press the [ ], [ ], [ ], and [ ] buttons in sequence, one at a time.

2. Verify that the corresponding LED for each lights up.

3. Press the [ ] button.

4. Verify that the Beat LED (to the left of the LCD screen) lights up.

When verification for all red LEDs has finished, execution automatically advances to the next item.

7. Green LED Test

This tests illumination of the green LEDs.

1. Press the [ ], [ ], [ ], [ ], [ ], and [ ] buttons in sequence, one at a time.

2. Verify that the corresponding LED for each lights up.

3. Press the [ ] button.

4. Verify that the Beat LED (to the left of the LCD screen) lights up.

When verification for all green LEDs has finished, execution automatically advances to the next item.

8. LCD Test

This tests the display of the LCD screen.

![LCD Test]

1. Verify that pressing the [ ] button makes the entire screen go dark and that pressing the [ ] button makes the entire screen light up.

2. Press the buttons just described in alternation and verify that no dot drop-out is present.

3. Press the [ ] button to advance to the next item.
9. Volume Test

This tests the volume controls.

1. Turn the Mic Echo control on the rear panel and verify that the value of Echo displayed on the LCD screen changes from 0 to 127.

2. Turn the Mic Volume control and verify that the value of Mic displayed on the LCD screen changes from 0 to 127.

3. Turn the Volume control on the front panel and verify that the value of Master displayed on the LCD screen changes from 0 to 127.

When verification for all volume controls has finished, execution automatically advances to the next item.

10. MIDI Test

1. Connect the MIDI keyboard to MIDI IN on the rear panel, play the keyboard, and verify that the MT-90U produces sound.

2. Press the [ ] button to advance to the next item.

11. Noise Test

1. Connect the noise meter to the Output jack on the rear panel.

2. Make settings like those shown below, then measure the noise level on both the left and right.
   - Volume: Max
   - Mic Volume: Min
   - Mic Echo: Min
   - Noise meter: DIN AUDIO

   The noise levels are acceptable if at -80 dBm or lower on both the left and right.

3. Press the [ ] button to advance to the next item.

12. Mic Test

1. Connect the microphone to Mic In and make settings like those shown below.
   - Volume: Max
   - Mic Volume: Max

2. Input vocals via the microphone and verify that sound is heard from the speaker.

3. Press the [ ] button to advance to the next item.

13. Phase Test

This test is required only at the time of shipment from the factory. Press the [ ] button to advance to the next item.

14. Echo Test

1. Connect the microphone to Mic In and make settings like those shown below.
   - Volume: Middle position
   - Mic Volume: Middle position

2. Input vocals via the microphone and verify that no echo is applied.

3. Increase the Echo level to Max.

4. Input vocals via the microphone and verify that echo is applied.

5. Press the [ ] button to advance to the next item.

15. Factory Reset

1. Press the [ ] button to select OK, then press [ ].
   A factory Reset is executed.

   After a short interval, the message Completed appears, then the message End is displayed.

2. Switch off the power.
Speaker Test
1. Adjust Volume to maximum and switch on the power.
2. Verify that the built-in speaker does not produce a large amount of noise when the power is switched on.
3. Press [ ] to play the built-in demo song, and verify that the music playback from the built-in speaker is free of distortion.
4. Operate the Volume control and verify that the volume level changes smoothly.
5. Shake the unit from front to back and from side to side, and verify that music can be played back without interruption or sound drop-out.

Headphones Test
1. While continuing to play back the demo song, connect the headphones.
2. Verify that the built-in speaker stops producing sound.
3. Verify that the music is played back through the headphones without distortion.
4. Operate the Volume control and verify that the volume level changes smoothly.
5. Switch off the power, wait 5 seconds, then switch the power on again.
6. Verify that the headphones do not produce a large amount of noise when the power is switched on.

External Speaker Test
1. Connect the external speaker to the Output jack.
2. Play back the demo song and verify that sound is heard from both the built-in speaker and the external speaker.
3. Set the Speaker switch on the rear panel to Off.
4. Verify that the built-in speaker stops producing sound.
5. Verify that the music is played back through the external speaker without distortion.
6. Operate the Volume control and verify that the volume level changes smoothly.
7. Switch off the power, wait 5 seconds, then switch the power on again.
8. Verify that the external speaker does not produce a large amount of noise when the power is switched on.
9. Disconnect the external speaker and set the Speaker switch to On.
10. Connect the USB memory device containing the MP3 file to the USB connector on the front panel.
11. While playing back the MP3 file, shake the unit from front to back and from side to side, and verify that no interruption or drop-out of the sound occurs.
* No components are mounted on gray parts (or red parts on PDF).
* No components are mounted on gray parts (or red parts on PDF).
* No components are mounted on gray parts (or red parts on PDF).
Circuit Diagram (Main Board: 4/4)

* No components are mounted on gray parts (or red parts on PDF).
Circuit Diagram (Panel Board)
SP_MUTE

MASTER_VOL

IC4A
KIA358F

R11
220

ECHO

IC4B
KIA358F

R12
N1u

C11
0.1u

IC4C
KIA358F

To Volume Board

1 2 3 4 5 6 7 8 9

HP_L HP_R HP_SENS

MASTER_VOL_JB

CK3
B9B-PH-K-S(PB-FREE)
Circuit Diagram (IR Board)

Circuit Diagram (USB Board)
Circuit Diagram (Power SW Board)

CN401

PWL-2P1TL-6SASTC-001
SW401

B2B-XH-A