Service Manual
Minidisc Deck
SJ-MD100

Colour
(K)...... Black Type
Areas
(E)....... Europe.
(EB)..... Great Britain.
(EG)..... Germany.

Specifications

System: Minidisc digital audio system
Recording: Magnetic field modulation direct overwrite
Reading: Non-contact optical system with
Semiconductor laser (λ=780 nm)
Sampling frequency: 44.1 kHz
Coding system: ATRAC
Channel: 2 channels, stereo
Frequency response: 5 – 20,000 Hz (-0.3 dB)
S/N (Play): 99 dB
Dynamic range (Play): 97 dB
Wow and flutter: Below measurable limit
Input:
- Analog input (Level/Impedance): 500 mV/47 kΩ
- Digital input (OPTICAL IN 1, OPTICAL IN 2)
  - Wavelength: 660 nm
Output:
- Analog output (Level/Impedance): 2.0 V/600 Ω
- Digital output (OPTICAL);
  - Rated output: -17 dBm
  - Wavelength: 660 nm
Headphone output level: 15 mW max. 32 Ω (adjustable)

General

Power supply: AC 230 V – 240 V, 50 Hz
Power consumption: 13 W
Dimensions (W × H × D): 430 × 300 × 103 mm
Weight: 3.4 kg
Notes:
Specifications are subject to change without notice.
Weight and dimensions are approximate.

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■ Accessories

AC power supply cord
For (EB) area (RJA0044-C) ........................................ 1
For (E),(EG) areas (RJA0043-C) ........................... 1

Optical-fiber cable
(RJL1X007908) ................................................... 1

Stereo connection cables
(RJL2P004B08) ................................................... 1

Remote control transmitter
(EUR645272) .................................................... 1

Batteries
(R6/LR6,UM-3) .................................................. 2

Note: There are available on sales route.

The illustration shows an AC power supply cord for (EB) area.

■ Handling Precautions for MD Unit

The laser diode in the MD unit (optical pickup) may break down due to potential difference caused by static electricity of clothes or human body. So, be careful of electrostatic breakdown during repair of the MD unit (optical pickup).

- Handling of MD unit (optical pickup)
  1. Do not subject the MD unit (optical pickup) to static electricity as it is extremely sensitive to electrical shock.
  2. To prevent the breakdown of the laser diode, an anti-static shorting pin is inserted into the flexible board (FFC board).
     When removing or connecting the short pin, finish the job in as short time as possible.
  3. Take care not to apply excessive stress to the flexible board (FFC board).

- Grounding for electrostatic breakdown prevention
  1. Human body grounding
     Use the anti-static wrist strap to discharge the static electricity from your body.
  2. Work table grounding
     Put a conductive material (sheet) or steel sheet on the area where the traverse deck (optical pickup) is placed, and ground the sheet.

Caution:
The static electricity of your clothes will not be grounded through the wrist strap. So, take care not to let your clothes touch the traverse deck (optical pickup).
Precaution of Laser Diode

CAUTION: This product utilizes a laser diode with the unit turned "on", invisible laser radiation is emitted from the pick up lens. Wave length: 780 nm
Maximum output radiation power from pick up: 4.9 μW/VDE

Laser radiation from the pick up unit is safety level, but be sure the followings:
1. Do not disassemble the pick up unit, since radiation from exposed laser diode is dangerous.
2. Do not look at the focus lens using optical instruments.
3. Recommend not to look at pick up lens for a long time.

ACHTUNG: Dieses produkt enthält eine Laserdiode. Im eingeschalteten zustand wird unsichtbare laserstrahlung von der lasereinheit ausgestrahlt.
Wellenlänge: 780 nm
Maximale strahlungsleistung der laserinheit: 4.9 μW/VDE

Die strahlung an der lasereinheit ist ungefährlich, wenn folgende punkte beachtet werden:
1. Die lasereinheit nicht zerlegen, da die strahlung an der freigelegten laserdiode gefährlich ist.
2. Nicht mit optischen instrumenten in die fokusierlinse blicken.
3. Nicht über längere zeit in die fokusierlinse blicken.

CLASS 1 LASER PRODUCT

DANGER INVISIBLE LASER RADIATION WHEN OPEN AND INTERLOCK DEFARAD, AVOID DIRECT EXPOSURE TO BEAM.

ADVARSEL ULYSKELIG LASERSTRÅLING NAR ÅBNET OG SIKRINGSLYDEN ÅBEN. UNDÁR Á ÜDSETTE FOR STRÅLING.

VARO! AVATTAESSA JA ODAMPUITTUWINA ON ÖLET ALTITRA KÄYNÖMÄINÄLÄ LASEREITTYMÄLLÄ, ÄLÄ KATSO SÄTEILEHIN.

VARNING OSYNLIG LASERSTRÅLING NÄR DENNA DÖRSÅN ÄR ÖPPNAD OCH SÄKERHETSSLYNIG ÄR LINDEN. UNDÅR ÖDSETTE FOR STRÅLEN.

ADVARSEL OSYNLIG LASERSTRÅLING NÄR DEåSEL. ÄPPLER OCH SÄKERHETSGLAS DRYTES. UNDÅR ÖDSETTE FOR STRÅLEN.

VORSICHT UNSICHTBARE LASERSTRahlUNG, WENN ABDECKUNG GEÖFFNET UND SICHERHEITSGEPLATZ ÖFFNET. NICHT DEM STRAHL AUSSETZEN.

(Inside of product)
Caution for AC Mains Lead

(For United Kingdom)

("EB" area code model only)

For your safety, please read the following text carefully.

This appliance is supplied with a moulded three pin mains plug for your safety and convenience. A 5-ampere fuse is fitted in this plug. Should the fuse need to be replaced please ensure that the replacement fuse has a rating of 5-ampere and that it is approved by ASTA or BSI to BS1362. Check for the ASTA mark ☞ or the BSI mark ☞ on the body of the fuse.

If the plug contains a removable fuse cover you must ensure that it is refitted when the fuse is replaced. If you lose the fuse cover the plug must not be used until a replacement cover is obtained. A replacement fuse cover can be purchased from your local dealer.

CAUTION!

IF THE FITTED MOULDED PLUG IS UNSUITABLE FOR THE SOCKET OUTLET IN YOUR HOME THEN THE FUSE SHOULD BE REMOVED AND THE PLUG CUT OFF AND DISPOSED OF SAFELY. THERE IS A DANGER OF SEVERE ELECTRICAL SHOCK IF THE CUT OFF PLUG IS INSERTED INTO ANY 13-AMPERE SOCKET.

If a new plug is to be fitted please observe the wiring code as shown below. If in any doubt please consult a qualified electrician.

IMPORTANT

The wires in this mains lead are coloured in accordance with the following code:
Blue: Neutral, Brown: Live.
As these colours may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows:
The wire which is coloured Blue must be connected to the terminal which is marked with the letter N or coloured Black or Blue.
The wire which is coloured Brown must be connected to the terminal which is marked with the letter L or coloured Brown or Red.

WARNING: DO NOT CONNECT EITHER WIRE TO THE EARTH TERMINAL WHICH IS MARKED WITH THE LETTER E, BY THE EARTH SYMBOL ☞ OR COLOURED GREEN OR GREEN/YELLOW.

THIS PLUG IS NOT WATERPROOF—KEEP DRY.

Before use

Remove the connector cover.

How to replace the fuse

The location of the fuse differ according to the type of AC mains plug (figures A and B). Confirm the AC mains plug fitted and follow the instructions below. Illustrations may differ from actual AC mains plug.

1. Open the fuse cover with a screwdriver.

Figure A

2. Replace the fuse and close or attach the fuse cover.

Figure A

Fuse (5 ampere)

Figure B

Fuse (5 ampere)
Connections

This example shows the unit connected to an amplifier through the ANALOG IN/OUT terminals, and to digital equipment (CD player, MD player, DAT, etc.) through the DIGITAL OPTICAL IN/OUT terminals.

Before making connections, turn off all the components.

ANALOG IN / OUT terminals

Connect the ANALOG OUT terminals to PLAY IN terminals on an amplifier to play through speakers connected to the amplifier.

Connect the ANALOG IN terminals to the REC OUT terminals on an amplifier to record sounds from other components connected to the amplifier.

Stereo connection cable

white (L) red (R)

DIGITAL OPTICAL terminals

Remove the dust-protection caps (○) before connecting the optical fiber cables.

Connect IN 1 and IN 2 to OPTICAL OUT terminals on other playback components for digital recording to this unit.

Connect OUT to OPTICAL IN terminals on other recording components to record from this unit.

Note

DIGITAL OPTICAL terminals not in use should be covered by a dust protection cap.

FOR UNITED KINGDOM ONLY
BE SURE TO READ THE CAUTION FOR THE AC MAINS LEAD BEFORE CONNECTION.

AC IN connector

The AC IN connector is connected to an electrical outlet (○) in your home.

Insertion of Connector

Even when the connector is perfectly inserted, depending on the type of inlet used, the front part of the connector may jut out as shown in the drawing. However, there is no problem using the unit.
Front Panel Controls

1. Unit on/off button ( ■  ○  □ /) and remote standby indicator ( ■ )
   Use this button to turn the unit on and off.
   ■ (off): The unit is in standby mode.
   ■ (on): The unit is on. The unit can be turned on and off with the remote control. When the unit is turned off with the remote control it is in remote standby and the indicator lights.
   The unit is still using a small amount of power in the standby and remote standby conditions. Standby uses less power.

2. Remote control signal sensor
3. MD slot
4. Eject button ( ▲ EJECT)
5. Search buttons ( ▲▲  ▼▼  SEARCH)
6. Editing mode button (EDIT)
7. Enter button used in editing (ENTER)
8. Track mark mode select / Character skip button (TRACK MARK / CHARA SKIP)
9. JOG/skip dial (JOG/PUSH SET ▲▲▲▲  ▼▼▼▼)
10. Display mode select / Character select button (DISP/CHARA)

11. Headphones jack (PHONES)
12. Headphones level control (LEVEL)
13. Timer selector ( ▲ TIMER)
14. Display
15. Record button ( ●)
16. Stop button ( ■)
17. Pause button ( ■■)
18. Playback mode selector (PLAY MODE)
19. Synchro-record button (SYNCHRO REC)
20. Playback/recoding start button ( ▲ )
21. Recording level control (REC LEVEL)
22. Recording mode selector (REC MODE)
23. Input selector (INPUT)
24. Panel open button (PUSH OPEN)

Press this button to open the transparent panel.
Close the panel by hand.

Note
The transparent panel is open in all explanations in this manual.
Remote control

<table>
<thead>
<tr>
<th>No.</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Unit on/off button (●)</td>
</tr>
<tr>
<td></td>
<td>Use this button to turn the unit on and off when the unit's [●, ○, ●, ○/■] button is on (●).</td>
</tr>
<tr>
<td>2</td>
<td>Numeric buttons (1 - 0, ≥ 10)</td>
</tr>
<tr>
<td>3</td>
<td>Program button (PROGRAM)</td>
</tr>
<tr>
<td>4</td>
<td>Program clear button (CLEAR)</td>
</tr>
<tr>
<td>5</td>
<td>A-B repeat button (A-B REPEAT)</td>
</tr>
<tr>
<td>6</td>
<td>Repeat button (REPEAT)</td>
</tr>
<tr>
<td>7</td>
<td>Editing mode button (EDIT)</td>
</tr>
<tr>
<td>8</td>
<td>Enter button used in editing (ENTER)</td>
</tr>
<tr>
<td>9</td>
<td>Search buttons (◄◄SEARCH ►►)</td>
</tr>
<tr>
<td>10</td>
<td>Record button (● REC)</td>
</tr>
<tr>
<td>11</td>
<td>Stop button (■)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>No.</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>Scroll button (SCROLL)</td>
</tr>
<tr>
<td>13</td>
<td>Display select button (DISPLAY)</td>
</tr>
<tr>
<td>14</td>
<td>Track mark select button (TRACK MARK)</td>
</tr>
<tr>
<td>15</td>
<td>Recall button (RECALL)</td>
</tr>
<tr>
<td>16</td>
<td>Synchro-record button (SYNCHRO REC)</td>
</tr>
<tr>
<td>17</td>
<td>Random play button (RANDOM)</td>
</tr>
<tr>
<td>18</td>
<td>Eject button (▲ EJECT)</td>
</tr>
<tr>
<td>19</td>
<td>Skip buttons (◄◄SKIP ►►)</td>
</tr>
<tr>
<td>20</td>
<td>Pause button (■)</td>
</tr>
<tr>
<td>21</td>
<td>Playback/recording start button (►)</td>
</tr>
</tbody>
</table>
Before operation
Turn on the unit you are recording from and prepare it for play.

1. Press [ ■ □ □ ■ ].
2. Insert the MD for recording.
The MD is pulled into the unit after it is push in part of the way.
The message “TOC Reading” flashes on the display and then
any text information about the disc is shown.

3. Select the input terminals to be used with
[INPUT].
OPT 1: When using DIGITAL OPTICAL IN 1 terminal
OPT 2: When using DIGITAL OPTICAL IN 2 terminal
ANALOG: When using ANALOG IN terminal

4. Select the recording mode with
[REC MODE].
STEREO: This is the normal recording mode.
MONO: Twice the amount of material can be recorded in this
mode, compared to the STEREO mode.

5. Select the marking mode with
[TRACK MARK/CHARA SKIP].
Each time the button is pressed: AUTO ↔ off
AUTO: Track marks are automatically inserted.
Off: If track marks are unnecessary or when you want to
insert them manually.

6. Press [ ■ ].
The unit goes to recording standby.
If you selected ANALOG in step 3:
Adjust the recording level.

7. Press [►] to start recording and start play
back of the sound source.

To stop recording
Press [■].
Recording has finished when the message “UTOC Writing” disapp-"
To pause recording
Press [II].
A track mark is added if the marking mode has been set to AUTO.
Press again to resume recording.

To eject the MD
Press [EJECT].

Note
Recording starts from where the last recording ended so it is not necessary to look for a blank section.
You cannot record over tracks.
If a track is no longer required and you need to make space on the disc, use the editing functions.

Your attention is drawn to the fact that recording pre-recorded tapes or discs or other published or broadcast material may infringe copyright laws.

Auto tracking
When set to AUTO, track marks are inserted as they are received from a digital source, or after three seconds of silence when analog recording.

Track marks may not be inserted correctly while analog recording in the following cases:
If the space between tracks is short;
If there is noise between tracks;
If there are parts of the track that play at an extremely low level;
If recording is started partly through a track (the first silent section after recording begins is not registered).
Use the editing functions after recording is finished to correct the track marks.

How to adjust the recording level

Necessary when recording is analog
① Playback the source to be recorded.
② Turn [REC LEVEL] to select the right level.
Set the dial so that highest level on the source pushes the peak level meters just up to 0 dB. (A red indicator lights if the level is too high.)

③ Stop the source.
Now begin recording.
1. Press [■ ◯ □ □ /].
   The unit comes on.

2. Insert the MD.
   The MD is pulled into the unit after it is push in part of the way.
   The message "TOC Reading" flashes on the display and then any text information about the disc is shown.
   ① Total number of tracks
   ② Total play time

3. Press [►].

   | To skip tracks | backward  |  |  |  | forward |
   | To find a specific point | backward  |  |  |  | forward |
   | The disc is played at high speed until the button is released. |

   To stop play
   Press [■].

   To pause play
   Press [II].
   Press again to resume play.

   To eject the MD
   Press [▲ EJECT].

Reference
The unit automatically plays stereo and monaural MDs.
Functions to Assist Recording

Synchronized recording

Recording starts as soon as sound input is detected.

1. Insert an MD, select the source, recording and marking modes.
   If you have selected analog input, press [●], adjust the recording level and press [■].

2. Press [SYNCHRO REC].
   "SYNCHRO" appears on the display.

3. Press [●].
   The unit goes to recording standby.

4. Start playback of the source.
   Recording starts as soon as sound is detected.

To stop recording
Press [■].
Recording has finished when the message "UTOC Writing" disappears from the display.

To pause recording
Pause or stop the sound source and this unit pauses after 4 seconds of silence. Recording resumes when the source is stated again. [■] on this unit doesn't work while this function is on.

This unit is paused when playback is finished.
Press [■] to cancel the function.

Note
Recording quality can be affected if a track begins with extremely low volume or if there are almost silent parts during the track. Do not use this function if the source you are recording contains such tracks. (Track marks can be added with the editing function after recording.)

Adding track marks during recording

Add track marks where you want.
During recording
Press [JOG/PUSH SET].
A track mark is added each time the button is pressed and the number of tracks increases.

Reference
Up to 254 track marks can be inserted.
Other Playback modes

Direct play (remote control only)

Enter a number to play a track.

Either while stopped or during play

1 Press the numeric buttons.
   The selected track starts playing.
   Play then continues to the final track.

To select a track numbered 1 to 9
Press the corresponding numeric button.

To select a two digit number (10 to 99)
First press [≥10] then the corresponding numeric buttons.
   e.g. Track 10: [≥10] [1] [0]

To select a three digit number (100 to 254)
First press [≥10] twice then the corresponding numeric buttons.
   e.g. Track 235: [≥10] [≥10] [2] [3] [5]

Random play

Randomly plays all the tracks on the MD.

On the main unit
While stopped

1 Press [PLAY MODE] so “RANDOM” appears on the display.
   Each time the button is pressed: PRGM → RANDOM → off

2 Press [▶].
   All tracks play once each in random order.

On the remote control
While stopped
Press [RANDOM].
Random play begins immediately.

To cancel random play
Press [■]. (Press twice if the unit is playing.)

Note
During random play, you cannot skip back to tracks that have been played, or search backward or forward between tracks.
Program play

This function allows you to playback up to 24 tracks in a selected order.

On the main unit
While stopped

1. Press [PLAY MODE] so "PRGM" appears on the display.
Each time the button is pressed: PRGM → RANDOM → off

2. Turn [JOG/PUSH SET] then press when the required track number appears on the display.
Repeat this step to program all the required tracks in order.

"FULL" appears on the display when there is no space left in the program.

3. Press [▶].
The selected program begins.

On the remote control A
While stopped
① Press [PROGRAM].
② Select the tracks in the required order with the numeric buttons.
③ Press [▶].

To cancel program play
Press [ ■ ]. (Press twice if the unit is playing.)
"CLEAR" appears on the display for a second and "PRGM" is cleared.
The programmed contents are also cleared.

Note
The program remains intact even if the unit is turned off and on again.

To clear particular tracks from the program (remote control only)
1. Press [RECALL] successively until the track to be cleared appears on the display.
2. Press [CLEAR] while "RECALL" is on the display.
"CLEAR" appears on the display and the track is removed from the program.

It is not necessary to press [RECALL] if you want to clear the last track from the program. The last track is removed each time [CLEAR] is pressed.
**Repeat play [remote control only]**

**Repeating one or all of the tracks**

Press [REPEAT] so either “○” or “1○” appears on the display.
Each time the button is pressed: ○ → 1○ → off

○: all tracks played repeatedly
This mode also functions during random and program play.
Press [REPEAT] so “○” appears on the display before or after play is started.
1○: one track played repeatedly
If activated during play, the current track is played repeatedly.
If activated before play, the first track is played repeatedly after play starts.
Select another track by skipping or selecting it directly with the numeric buttons.

**Canceling repeat play**
Press [■]. (Press twice if unit is playing.)
The mode is also cleared if [REPEAT] is pressed to clear “○” or “1○” from the display.

**Repeating a particular section - A-B repeat**

During play

1. Press [A-B REPEAT] at the point repeating is to start.
2. Press [A-B REPEAT] again at the point repeating is to finish.
The chosen section plays repeatedly.

**To cancel A-B repeat**
Press [A-B REPEAT].

It is also cleared if play is stopped.
### Convenient Functions

#### Changing the display

Press [DISP/CHARA].
Different information appears on the display each time the button is pressed. The information shown depends on the condition of the unit.

**Example**

**During play**
1. Name of track and elapsed time
2. Track number and remaining time

**While recording**
1. Track number and elapsed time for that track
2. Remaining time on MD

**While stopped**
1. Title of disc, total number of tracks and total play time of the disc
2. Remaining available time on the disc

**Reference**
Text over 12 letters long scrolls whenever that display is returned to.

#### Scrolling the display (remote control only)

When the title of a disc or the names of tracks are too long to fit on the display at one time, the unit automatically scrolls that information across the screen once when the information is first accessed. This operation allows you to see the information in full again.

While the disc title or track name are being displayed

Press [SCROLL]
The information scrolls from right to left across the display.

#### Using headphones

1. Plug the headphones (not included) into the [PHONES] jack.
2. Plug type: Large stereo
3. Turn [LEVEL] to adjust the volume.

**Note**
Avoid listening for prolonged periods of time to prevent hearing damage.

#### Monitor function

Input from units connected to this unit's input terminals can be sent to units connected to this unit's output terminals.
The signal is output through the OPTICAL OUT and ANALOG OUT terminals. This unit converts digital and analog signals automatically so you can, for example, send digital input directly to an analog amplifier.

1. Press [▲ EJECT] if an MD is in the unit. (This function will not work if an MD is in the unit.)
2. Press [●]. ("Monitor" appears on the display.)
3. Select the source with [INPUT].
Begin play on the selected source and the sound is output automatically.
Press [■] to cancel.
Editing MDs

Titleing tracks and discs

Each title can have up to 100 letters.
A single MD can hold about 1700 letters worth of text information.
You can not add titles to prerecorded MDs.

Make sure the disc is record enabled.

While stopped

1. Press [EDIT] to select "TRACK TITLE?" or "DISC TITLE?"
Each time the button is pressed: TRACK TITLE? → DISC TITLE? → MOVE? → COMBINE? → TRACK ERASE? → ALL ERASE? → current display

2. When titling a track
   Turn [JOG/PUSH SET] to select the track.

3. Press [ENTER].
   The text input mode is activated.

4. Press [DISP/CHARA] to select the kind of text.
   Each time the button is pressed: CAPITALS/symbols → lower case/symbols → numerals

5. Turn [JOG/PUSH SET] to select the letter (0).
   Five letters are shown on the right hand side of the display at one time.
   Turn [JOG/PUSH SET] or press [TRACK MARK/CHARA SKIP] to show the next group of five letters.

6. Press [JOG/PUSH SET].
   The selected letter is now shown on the left hand side of the display and the cursor marks the place where the next character will go.

7. Repeat steps 4, 5 and 6 to complete the title.

8. Press [ENTER].
   "UTOC Writing" appears on the display.
   When this message disappears the title has been entered.

Stopping part way through
After step 1 or 2: Press [■].
After steps 3 to 7: Press [EDIT] then [■].

-16-
Characters available for titles

<table>
<thead>
<tr>
<th>Text mode</th>
<th>Character</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAPITALS / symbol</td>
<td>ABCDE FGHIJ KLMNO PQRST UVWXY Z space !&quot;#$%&amp;'() *+,.- /;:;&lt;=&gt;?&gt;@_'</td>
</tr>
<tr>
<td>lower case / symbol</td>
<td>abcde fghij klmno pqrst uvwxy z space !&quot;#$%&amp;'() *+,.- /;:;&lt;=&gt;?&gt;@_'</td>
</tr>
<tr>
<td>Numerals</td>
<td>01234 56789</td>
</tr>
</tbody>
</table>

Editing text

Press [◄◄] or [►►] to move the cursor.

Erasing letters
Move the cursor so it covers the letter to be erased and press [■]. The letter is erased and the other letters move to fill the space.

Inserting a letter or space
Move the cursor to the letter to the right of the place where the new letter or space is to go. Now select and enter the new letter with [JOG/PUSH SET].

Changing letters
1. Erase the old letter.
2. Insert the new letter.

Making corrections to a title
1. Select the title to be corrected
2. Use the above editing techniques to correct the title.
3. Press [ENTER].
While recording is in process

1. Press [EDIT].
   "TRACK TITLE?" appears on the screen.

2. Press [ENTER].

3. Enter the title.
   This can be continued even if the track changes during recording.

4. Press [ENTER].
   The previous display is restored and the title is displayed.

The title is entered after recording finishes and "UTOC Writing" disappears from the display.

To cancel part way through
Press [EDIT] until the normal display is restored.

---

While track is playing

1. Press [EDIT] to select "TRACK TITLE?".
   Each time the button is pressed: TRACK TITLE? → DIVIDE? → MOVE? → COMBINE? → TRACK ERASE? → current display

2. Press [ENTER].

3. Enter the title.
   The track is played repeatedly.

4. Press [ENTER].
   The previous display is restored and the title is displayed.

The title is entered after play stops and "UTOC Writing" disappears from the display.

To cancel part way through
Press [EDIT] until the normal display is restored.
Dividing tracks - DIVIDE

This function allows you to manually add track marks. This means you can edit a radio program you recorded, or divide symphony into its separate movements.

Make sure the disc is record enabled.

While the track you want to divide is playing:

1. **Press [EDIT] to select "DIVIDE?"**
   Each time the button is pressed: TRACK TITLE? → DIVIDE → MOVE? → COMBINE? → TRACK ERASE? → current display.

2. **Press [ENTER].**
   If the point you want to put the track mark at has already gone past, turn [JOG/PUSH SET] to return to the beginning of the track.
   You can also select a different track at this point.

3. **At the point you want to add the track mark:**
   **Press [JOG/PUSH SET].**
   A four second segment of the track, beginning at the selected point, is played repeatedly.

4. **Turn [JOG/PUSH SET] adjust the point.**
   Adjustment can be made between −128 and +127, approximately 8 seconds either side of the original point.

5. **Press [ENTER].**
   "DIVIDE OK?" appears on the display.
   If you wish to cancel press [■] now.

6. **Press [ENTER].**
   "UTOC Writing" appears on the display.
   When this message disappears the track mark has been entered.
   Play stops.

---

Stopping part way through

Press [■].

To remove the dividing track mark

Use the combine function.

**Note**

If a titled track is divided, the latter half becomes untitled.
There is no interruption to sound even if a track mark is added.
Moving tracks - MOVE

This function allows you to permanently change the order tracks are played in.

Make sure the disc is record enabled.

While stopped

1. Press [EDIT] to select “MOVE?”
   Each time the button is pressed: TRACK TITLE? → DISC TITLE? → MOVE? → COMBINE? → TRACK ERASE? → ALL ERASE? → current display

2. Turn [JOG/PUSH SET] select the track to be moved.

3. Press [ENTER].

4. Turn [JOG/PUSH SET] select the position (track number) the track is to be moved to.
   To move the track to position 5, track number "5" should be on the display.

5. Press [ENTER].
   A message confirming your selection appears on the display. If you wish to cancel press [■] now.

6. Press [ENTER].
   The move is confirmed after "UTOC Writing" disappears from the display.

To move a track while it is being played

This is useful when you want to make sure of the track you are moving.

While playing the track to be moved.

1. Press [EDIT] to select “MOVE?”
   Each time the button is pressed: TRACK TITLE? → DIVIDE? → MOVE? → COMBINE? → TRACK ERASE? → current display

2. Press [ENTER].

3. Turn [JOG/PUSH SET] select the position (track number) the track is to be moved to.

   The move is confirmed after "UTOC Writing" disappears from the display and play stops.

To cancel part way through

Press [■].

To return the track to its original position

Repeat the above steps, selecting the track's original position in step 4.
Combining tracks - COMBINE

This function removes a track mark so the two tracks either side of it effectively become one track. This is useful to remove track marks that were unnecessarily added during recording.

Make sure the disc is record enabled.

While stopped

1 Press [EDIT] to select "COMBINE?"
   Each time the button is pressed: TRACK TITLE? → DISC TITLE? → MOVE? → COMBINE? → TRACK ERASE? → ALL ERASE? → current display

2 Press [ENTER].

3 Turn [JOG/PUSH SET] select the two tracks to be combined.

4 Press [ENTER].
   A message confirming your selection appears on the display.
   If you wish to cancel press [■] now.

5 Press [ENTER].
   "UTOC Writing" appears on the display.
   When this message disappears the track mark has been erased.

Combining tracks during play

This is useful to confirm the tracks you want to combine.

While playing the latter track

1 Press [EDIT] to select "COMBINE?"
   Each time the button is pressed: TRACK TITLE? → DIVIDE? → MOVE? → COMBINE? → TRACK ERASE? → current display

2 Press [ENTER] three times.
   "UTOC Writing" appears on the display.
   When this message disappears the track mark has been erased.
   Play stops.

To cancel part way through

Press [■].

To divide the tracks again

Use DIVIDE.

Note

A track recorded in stereo mode and a track recorded in mono mode cannot be combined.

If the two tracks both had titles, only the title of the first track remains after they are combined.
Erasing tracks

Unneeded tracks can be erased and the available recording time can be increased.

Make sure the disc is record enabled.

While stopped

1. Press [EDIT] to select "TRACK ERASE?"
   Each time the button is pressed: TRACK TITLE? → DISC TITLE? → MOVE? → COMBINE? → TRACK ERASE? → ALL ERASE? → current display

2. Turn [JOG/PUSH SET] select the track to be erased.

3. Press [ENTER].
   The amount of recording time available after the track is erased is shown on the display.

4. Press [ENTER].
   A message confirming your selection appears on the display.
   If you wish to cancel press [■] now.

5. Press [ENTER].
   "UTOC Writing" appears on the display.
   When this message disappears the track has been erased.

Erasing a track while it is being played

This is useful to check that the right track is erased.

While the track to be erased is being played.

1. Press [EDIT] to select "TRACK ERASE?"
   Each time the button is pressed: TRACK TITLE? → DIVIDE? → MOVE? → COMBINE? → TRACK ERASE? → current display

2. Press [ENTER] three times.
   "UTOC Writing" appears on the display.
   When this message disappears the track has been erased.
   Play stops.

To cancel part way through

Press [■]
Erasing an entire MD

This operation creates a blank disc.

Make sure the disc is record enabled.

While stopped

1. Press [EDIT] to select “ALL ERASE?”
   Each time the button is pressed: TRACK TITLE? → DISC TITLE? → MOVE? → COMBINE? → TRACK ERASE? → ALL ERASE? → current display

2. Press [ENTER].
   A message confirming your selection appears on the display.
   If you wish to cancel press [■] now.

3. Press [ENTER].
   “UTOC Writing” appears on the display.
   When this message disappears the MD has been erased.

To cancel part way through
Press [■]
# Timer Recording and Playback

Use this unit in conjunction with an audio timer (not included) to record radio programs or start play a selected time. The explanations refer to the connection example in the illustration. See the operating instructions of the other equipment for more information.

## Timer recording

First turn all the equipment on. Set the tuner and amplifier up so the radio station you want to record is played.

1. **Prepare this unit for recording.**
   - Do steps 1 to 6 on Basic Recording Operations and press [■].

2. **Set the timer.**
   - The equipment connected to the timer goes off.
   - Set it to come on at least 30 seconds before recording is to begin and to go off at least 30 seconds after recording is to end.

3. **Select “REC” with [(timer)]**
   - This unit comes on and starts recording when the timer comes on.

**Note**

There will be a small delay between the timer coming on and the start of recording.

## Timer playback

Turn on this unit and the amplifier and set them up so the MD you want to hear is played.

1. **Insert an MD.**
   - If you want to play particular tracks when the timer comes on, program them.

2. **Set the timer.**
   - The equipment connected to the timer goes off.

3. **Select “PLAY” with [timer]**
   - This unit comes on and starts playing when the timer comes on.

**Note**

There will be a small delay between the timer coming on and the start of play.

**Important**

Make sure “OFF” is selected with [timer] when the timer is not being used.
Operation Checks and Component Replacement Procedures

NOTE 1. This section describes procedures for checking the operation of the major printed circuit boards and replacing the main components.

2. For reassembly after operation checks or replacement, reverse the respective procedures. Special reassembly procedures are described only when required.

3. Select item from the following index when checks or replacement are required.

• Contents
  ■ Checking Procedures for each P.C.B.
  5. Checking for the MD servo P.C.B. 27,28.

  ■ Main Component Replacement Procedures
  1. Replacement for the magnetic head and optical pickup. 29–31.
  2. Replacement for the belt and loading motor ass’y. 31,32.
  3. Replacement for the traverse motor ass’y. 32,33.

■ Checking Procedures for each P.C.B.
1. Checking for the main P.C.B.

Step 1
Remove the top cabinet.

Step 2

Step 3
Remove the top cabinet.

Step 4

Step 5
Release the 2 claws, and then remove the rear panel.

Step 6
Remove the read wire from cord clamer.

Step 7

- Check the main P.C.B. as shown below.
2. Checking for the FL P.C.B. and operation (1) P.C.B.
   - Follow the Step 1 ~ Step 3 of the item 1 in checking procedure for each P.C.B. on page 25.

   **Step 1**
   - Remove the 3 connectors and FFC.

   **Step 2**
   - Release the 2 claws, and then remove the front panel ass'y.

   **Step 4**
   - Release the 2 claws, and then remove the operation (2) P.C.B.

   **Step 5**
   - Remove the holder.

   **Step 6**
   - Release the claw, and then remove the operation (1) P.C.B.

   **Step 7**
   - Remove the job/push enter knob and nut.

   **Step 8**
   - Release the 3 claws, and then remove the FL P.C.B.

3. Removal of the FL P.C.B., operation (1) P.C.B. and operation (2) P.C.B.
   - Follow the Step 1 ~ Step 3 of the item 1 in checking procedure for each P.C.B. on page 25.
   - Follow the Step 1 ~ Step 2 of the item 2 in checking procedure for each P.C.B. on page 26.
4. Removal of the power switch P.C.B. and sensor P.C.B.
- Follow the Step 1 ~ Step 3 of the item 1 in checking procedure for each P.C.B. on page 25.
- Follow the Step 1 ~ Step 2 of the item 2 in checking procedure for each P.C.B. on page 26.

**Step 1**
Release the 2 screws (a) and claw (A), and then remove the power switch P.C.B.

**Step 2**
Release the screw (b) and claw (B), and then remove the sensor P.C.B.

5. Checking for the MD servo P.C.B.
- Follow the Step 1 ~ Step 3 of the item 1 in checking procedure for each P.C.B. on page 25.

**Checking procedure for the MD servo P.C.B. (side B)**

- Two types of procedures for checking MD servo P.C.B. are as follows:
  1. Use the test points on the side A of MD servo P.C.B.
     (Only the IC1 can be checked correctly.)
  2. With the extension cables, check the side B of MD servo P.C.B.

1. Checking procedure for MD servo P.C.B. (side A) by using the test points.

<table>
<thead>
<tr>
<th>Pin No. of IC1</th>
<th>Test point</th>
<th>Pin No. of IC1</th>
<th>Test point</th>
</tr>
</thead>
<tbody>
<tr>
<td>2PIN</td>
<td>Left side of R8</td>
<td>32PIN</td>
<td>TP52</td>
</tr>
<tr>
<td>5PIN</td>
<td>TP54</td>
<td>36PIN</td>
<td>Equivalent for pin 16 of IC3</td>
</tr>
<tr>
<td>11PIN</td>
<td>TP55</td>
<td>37PIN</td>
<td>TP35</td>
</tr>
<tr>
<td>16PIN</td>
<td>TP57</td>
<td>38PIN</td>
<td>TP44</td>
</tr>
<tr>
<td>21PIN</td>
<td>TP56</td>
<td>39PIN</td>
<td>TP37</td>
</tr>
<tr>
<td>26PIN</td>
<td>TP36</td>
<td>40PIN</td>
<td>TP38</td>
</tr>
<tr>
<td>27PIN</td>
<td>TP150</td>
<td>41PIN</td>
<td>TP43</td>
</tr>
<tr>
<td>28PIN</td>
<td>TP149</td>
<td>44PIN</td>
<td>TP42</td>
</tr>
<tr>
<td>29PIN</td>
<td>TP148</td>
<td>45PIN</td>
<td>TP40</td>
</tr>
<tr>
<td>30PIN</td>
<td>TP123</td>
<td>46PIN</td>
<td>TP29</td>
</tr>
<tr>
<td>31PIN</td>
<td>TP122</td>
<td>47PIN</td>
<td>TP41</td>
</tr>
</tbody>
</table>

(The waveforms are noted on the schematic diagram.)
2. Checking procedure for MD servo P.C.B. (side B) by using the extension cables.

Extension cable kit. [RFKZM/D100E9K]

NOTE
Take care not to lose the spring when removing the angle.

Step 1
Pull out the FFC.

Step 2
B x 4

Step 3
Remove the angle.

Step 4

Step 5
Unsolder the motor terminals (6 points).

Step 6
Release the 4 claws.

Step 7
Remove the connector, and then open the MD servo P.C.B. in the direction of arrow.

Step 8
Solder the clip with lead wire to the motor terminal foil.

Step 9
Connect the clip to the motor terminals. (6 points)

NOTE
Handle with care the polarity to connect the terminal when installing the motor.

· Check the MD servo P.C.B. (side B) as shown below.
Main Component Replacement Procedures

1. Replacement for the magnetic head and optical pickup

- Follow the Step 1 ~ Step 3 of the item 1 in checking procedure for each P.C.B. on page 25.

Step 1
- Pull out the FFC from the connector.

Step 2
- Remove the MD mechanism unit.

Step 3
- Remove the 2 FFCs from the connector.

NOTE
- Insert a short pin into the traverse unit FFC board.
  (Refer to "Handling Precautions for Traverse deck" on page 2.)

Step 4
- Release the 2 claws, and then lift up the holder ass'y.

Step 5
- Remove the pressure spring from latch.

NOTE
- When installing the holder ass'y, the pressure spring should be latched correctly.

Step 6
- Pull out the holder ass'y.

NOTE
- When installing the holder ass'y, align the lock lever pin with the main rack slot.

Step 7
- Set the holder ass'y and MD mechanism unit at a 60 degree angle.

Step 8
- Remove the magnetic head [RED0047-1].

NOTE
- 1. Take care not to damage the magnetic head.
   2. Do not tighten the set screw in excessive torque.
   (The parts may be damaged.)
Step 11
Spread the lugs of head shifter, and then release the lugs from boss.

Step 12
Release the 2 claws, and then remove the REF basement.

Step 13
Remove the thrust spring.

Step 14
Remove the nut plate spring and nut plate.

Step 15
Remove the drive shaft.

Step 16
Remove the optical pickup ass'y.

Step 17
Pull out the main shaft.

NOTE
1. Use care to prevent damage the optical pickup, due to the precision construction.
2. Do not apply the grease on the lens of optical pickup.
3. Do not touch the lens of the optical pickup.
2. Replacement for the belt and loading motor ass'y

- Follow the Step 1 ~ Step 3 of the item 1 in checking procedure for each P.C.B. on page 25.

   **Step 1**
   Pull out the FFC from the connector.

   **Step 2**
   Remove the MD mechanism unit.

   **Step 3**
   Pull out the FFC from the connector.

   **Step 4**
   Unsolder the motor terminals (6 points).

   **Step 5**
   Remove the 2 FFCs from the connector.

   **Step 6**
   Insert a short pin into the traverse unit FFC borad. (Refer to "Handling Precautions for Traverse deck" on page 2.)

   **Step 7**
   Release the 4 claws.

   **Step 8**
   Remove the connector, and then remove the MD servo P.C.B.
Step 10
Release the 2 claws, and then lift up the holder ass'y.

Step 9
Remove the pressure spring from latch.

Step 11
Set the holder ass'y and MD mechanism unit at a 60 degree angle.

Step 12
Pull out the holder ass'y.

NOTE
When installing the holder ass'y, align the lock lever pin with the main rack slot.

Step 14
Remove the belt [RDV0055].

Step 13
Loading motor [REM0078]

Notice for installing the loading motor ass'y

- Align the hole of loading motor ass'y with the boss of mechanism chassis, and then install the loading motor ass'y

3. Replacement for the traverse motor ass'y

- Follow the Step 1 ~ Step 3 of the item 1 in checking procedure for each P.C.B. on page 25.
- Follow the Step 1 ~ Step 11 of the item 2 in main component replacement procedures on pages 31 and 32.

Step 1
Remove the magnetic head [RED0047-1].

NOTE
1. Take care not to damage the magnetic head.
2. Do not tighten the set screw (3) in excessive torque. (The parts may be damaged.)
Notice for installing the traverse motor ass'y

- Align the hole of traverse motor ass'y with the boss of mechanism chassis, and then install the traverse motor ass'y

Step 3
Spread the lugs of head shifter, and then release the lugs from boss.

Step 4

Step 5
Release the 2 claws, and then remove the REF basement.

Step 6

Traverse motor ass'y [REM0077]
Self-Diagnostic Function

This unit is equipped with a self-diagnostic function which, in the event of a malfunction, automatically display a code indicating the nature of the malfunction. Use this self-diagnostic function when servicing the unit.

Switching to the Self-Diagnostic Mode

1. Turn the power on.
2. Press and hold the STOP button (■) for at least 2 seconds. and while still pressing the STOP button (■), press the FWD SEARCH button (►►) for at least 2 seconds. (Shown in Fig.1) The unit enters Self-Diagnostic Mode and is displayed "MD TEST". Then an error code is displayed, if any. For details of the error codes, see Table 1.
3. If more than one error exists, the display will sequentially show the respective error codes each time the FWD SEARCH button (►►) is pressed.

Canceling the Self-Diagnostic Mode

1. The Self-Diagnostic Mode can be canceled by pressing the POWER button (POWER) to turn the system off. And then pressing the power button again to turn it again.

Clearing the Self-Diagnostic Mode

1. The contents of abnormality display are stored in memory. In order to clear the memory, continue to press the STOP button (■) for at least 5 seconds while in the Self-Diagnostic Mode. The memory will clear. Always be sure to clear this memory after completing repair.

<table>
<thead>
<tr>
<th>Error Code</th>
<th>Symptom</th>
<th>Possible Cause</th>
</tr>
</thead>
<tbody>
<tr>
<td>F15</td>
<td>Interval till MD starts playing is too long.</td>
<td>• Pickup home position sense switch (S8) is defective; check and replace if necessary.</td>
</tr>
<tr>
<td>F26</td>
<td>MD is loaded but cannot be played.</td>
<td>• Communications error between the servoprocessor IC and the microprocessor IC (system control). Check if the flexible circuit board is disconnected. • Displayed when the disc is scratched too.</td>
</tr>
<tr>
<td>F28</td>
<td>MD cannot be loaded.</td>
<td>• Confirm that the disc is not catching on anything. • The connection (flexible circuit board or connector cable) between the MD unit and the MD servo circuit board is disconnected or damaged; check and replace if necessary. • The MD unit may be malfunctioning; replace it.</td>
</tr>
<tr>
<td>F29</td>
<td>MD cannot be ejected.</td>
<td>• Confirm that the disc is not catching on anything. • The connection (flexible circuit board or connector cable) between the MD unit and the MD servo circuit board is disconnected or damaged; check and replace if necessary. • The MD unit may be malfunctioning; replace it.</td>
</tr>
</tbody>
</table>

Table 1
Self Check Function

This unit is equipped with a self check function which can detect a part of malfunction. Use this function before servicing the unit and check the item as shown below.

- Setting to the Self Check Function

1. Turn the power on.
2. Press and hold the STOP button (■) for at least 2 seconds. and while still pressing the STOP button (■), press the REV. SEARCH button (←→) for at least 2 seconds. Then the unit enters Self Check Function.

- Checking the operation switches

1. When the unit enters the Self Check Function, the FL display turn off.
2. Press the buttons on the unit except the POWER button, it displays "-" mark adapted each buttons. (Fig. 2 and 3 is shown about a allotment.)

- Checking the FL display

1. All buttons works normally except the POWER button, FL display and LED turns on and off at 0.5 second interval. (See the fig. 4, 5)

The Self Check Function can be canceled by pressing the POWER button (POWER) or pressing and holding the STOP button (■) for at least 2 seconds.
Schematic Diagram

- This schematic diagram may be modified at any time with the development of new technology.

Notes:
- S1 : Write protect tab detect switch.
- S2 : ROM/RAM Disc detect switch.
- S3 : PLAY+REG/PLAY mode detect switch.
- S4 : DISC IN detect switch.
- S5 : PLAY/REC mode detect switch.
- S6 : PLAY mode detect switch.
- S7 : Disc loading detect switch.
- S8 : Start detect switch.
- S901,902 : Search (S901:------ S902:►►) switch. (◄◄,►► SEARCH)
- S903 : Editing mode switch. (EDIT)
- S904 : Enter switch used in editing. (ENTER)
- S905 : Track mark mode select/Character skip switch. (TRACK MARK/CHARA SKIP)
- S906 : Display mode select/Character select switch. (DISP/CHARA)
- S907 : Eject switch. ( ▲ EJECT)
- S908 : Stop switch. (■)
- S909 : Pause switch. (II)
- S910 : Playback/recording start switch. (►)
- S911 : Record switch. (●)
- S912 : Syncro-record switch. (SYNCRO REC)
- S913 : Playback mode select switch. (PLAY MODE)
- S251 : Unit on/off switch. (III/○/II)
- S901A : Timer mode select switch. (© TIMER)
- S902A : Input mode select switch. (INPUT)
- S903A : Recording mode select switch. (REC MODE)
- VR1 : Laser power adjustment VR.
- VR801 : Headphones level control VR. (PHONES LEVEL)
- VR851 : Recording level control VR. (REC LEVEL)
- VR901 : JOG/skip VR. (JOG/PUSH. SET ▼▼▼)

- Indicated voltage values are the standard values for the unit measured by the DC electronic circuit tester (high-impedance) with the chassis taken as standard. Therefore, there may exist some errors in the voltage values, depending on the internal impedance of the DC circuit tester.

No mark : MD STOP
( ) : MD PLAY
< > : MD REC

Important safety notice:
Components identified by ▲ mark have special characteristics important for safety.
Furthermore, special parts which have purposes of fire-retardant (resistors), high-quality sound (capacitors), low-noise (resistors), etc. are used.
When replacing any of components, be sure to use only manufacturer’s specified parts shown in the parts list.

Caution!
IC and LSI are sensitive to static electricity.
Secondary trouble can be prevented by taking care during repair.
Cover the parts boxes made of plastics with aluminum foil.
Ground the soldering iron.
Put a conductive mat on the work table.
Do not touch the legs of IC or LSI with the fingers directly.

Voltage and signal line

- : Positive voltage line
- ►► : Negative voltage line
- : MD play signal line
- : MD rec signal line
Printed Circuit Board Diagram

- This circuit board diagram may be modified at any time with the development of new technology.

---

ELECTRICAL PARTS LOCATION

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>S1</td>
<td>2F</td>
<td>S4</td>
<td>2F</td>
<td>S7</td>
<td>2D</td>
</tr>
<tr>
<td>S2</td>
<td>2F</td>
<td>S5</td>
<td>3C</td>
<td>S8</td>
<td>3D</td>
</tr>
<tr>
<td>S3</td>
<td>2E</td>
<td>S6</td>
<td>3E</td>
<td>C86</td>
<td>2E</td>
</tr>
</tbody>
</table>

---

- SWITCH P.C.B.
- FL P.C.B.
### Type Illustration of IC's Transistors and Diodes

<table>
<thead>
<tr>
<th>Type</th>
<th>Part Number</th>
<th>PINs</th>
</tr>
</thead>
<tbody>
<tr>
<td>AK4516VF-E2</td>
<td>24PIN</td>
<td></td>
</tr>
<tr>
<td>AK4520AVF-F1</td>
<td>28PIN</td>
<td></td>
</tr>
<tr>
<td>LB1530MS-TLM</td>
<td>10PIN</td>
<td></td>
</tr>
<tr>
<td>M5218AFPE3</td>
<td>6PIN</td>
<td></td>
</tr>
<tr>
<td>RN5RG33AA-TL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RN5RZ268BA-TR</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AN8772FHO</td>
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<td>RAD9~0</td>
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<td>DRAM data input/output terminal</td>
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<td>NRAS</td>
<td>O</td>
<td>DRAM row address strobe output terminal</td>
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<td>NCAS</td>
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<td>DRAM column address strobe output terminal</td>
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<td>NWE</td>
<td>O</td>
<td>DRAM write enable output terminal</td>
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<td>50</td>
<td>NRST</td>
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<td>Reset signal input</td>
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<td>MSP/MDA, I/F address select input terminal (&quot;H&quot;: Address)</td>
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<td>SSCK</td>
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<td>MSP/MDA, I/F clock input terminal</td>
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<td>MSP/MDA, I/F write data input terminal</td>
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<td>Leader synchronous signal output</td>
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<td>ADIP synchronous noise output terminal</td>
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<td>TX</td>
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<td>Digital audio interface signal output terminal</td>
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<td>Function</td>
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<td>Reserved (Not used, connected to GND)</td>
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<td>RFCK</td>
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<td>RF serial clock output</td>
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<td>NRFLD</td>
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<td>RF serial load output</td>
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<td>I</td>
<td>Off-track signal input terminal</td>
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<td>Laser power PWM output</td>
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<td>EXFMCK</td>
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<td>External FM clock input (Not used, connected to GND via resistor)</td>
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<td>EFMREF</td>
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<td>EFM PLL reference current input</td>
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• Adjustment procedure

Note: There are two methods of adjusting the player, either by using a laser power meter or by using a cartridge type laser power meter.

1. With no MD loaded in the player, press "1" on the player's remote control. "RAM LASER" will be displayed to indicate the read power adjustment mode.

2. If using a laser power meter, slide open the sensor cover (see Fig. 1).

3. If using a laser power meter, position the sensor directly above the optical pickup (see Fig. 2).
   If using a cartridge type laser power meter, load the cartridge into the MD mechanism (see Fig. 3).

4. Confirm that the reading of the laser power meter or cartridge type laser power meter is within the specified range. If it is not within the specified range, adjust by turning VR1 (see Fig. 4).

<table>
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<td>• Proceeding on to the subsequent adjustment procedure with the read power exceeding 600 µW will result in damage to the optical pickup.</td>
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5. Press "2" on the player's remote control. "WRITE LASER" will be displayed to indicate the write power adjustment mode.

6. Confirm that the reading of the laser power meter or cartridge type laser power meter is within the specified range. If it is not within the specified range, adjust by turning VR1 (see Fig. 4).

<table>
<thead>
<tr>
<th>Specified range (write power): 4.8±0.1 mW</th>
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<tbody>
<tr>
<td>Caution:</td>
</tr>
<tr>
<td>• Do not allow the write power to even momentarily reach or exceed 5.5 mW. Doing so will result in damage to the optical pickup.</td>
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7. Press "3" on the player's remote control. "ROM LASER" will be displayed to indicate the ROM data confirmation mode.

8. Confirm that the reading of the laser power meter or cartridge type laser power meter is within the specified range.

   | Specified range (ROM data laser power): 540 ~ 660 µW |

9. Press "1" on the player's remote control. "RAM LASER" will be displayed to indicate the RAM data confirmation mode.

10. Confirm that the reading of the laser power meter or cartridge type laser power meter is within the specified range.

   | Specified range (RAM data laser power): 540 ~ 660 µW |

* If the reading in either step 8 or 10 above is not within the specified range, first switch off the power, and then reset the unit to the adjustment mode and repeat the adjustment procedure.
## Replacement Parts List

**Notes:**
- Important safety notice: Components identified by ▲ mark have special characteristics important for safety. Furthermore, special parts which have purposes of fire (resistors), etc. are used. When replacing any of components, be sure to use only manufacturer's specified parts shown in the parts list.
- The parenthesized indications in the Remarks columns specify the areas. (Refer to the cover page for area.)
- All parts are supplied by MESA.
- (MAVD) indicates in Remarks columns parts that are supplied by MAVD.
- The <IA>, <IB>, <IC>, <ID>, <IE> marks in Remarks indicate language of instruction manual.
- <IA>: English, Spanish, Swedish
- <IB>: German, Italian, French
- <IC>: English
- <ID>: Russian, Polish, Czech
- <IE>: Dutch, Danish

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<th>Remarks</th>
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<td>TOP CABINET</td>
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<td>XT853+101F2</td>
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<td>RXK0945</td>
<td>WIRE ASSY</td>
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<td>RK640142-K</td>
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