

# MZ-NF610

## SERVICE MANUAL

Ver 1.0 2003.03

US Model  
Canadian Model



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|                                    |               |
|------------------------------------|---------------|
| Model Name Using Similar Mechanism | MZ-R410       |
| Mechanism Type                     | MT-MZN710-177 |
| Optical Pick-up Name               | LCX-5R        |

### SPECIFICATIONS

MD recorder

#### Audio playing system

MiniDisc digital audio system

#### Laser diode properties

Material: GaAlAs

Wavelength:  $\lambda = 790 \text{ nm}$

Emission duration: continuous

Laser output: less than  $44.6 \mu\text{W}$

(This output is the value measured at a distance of 200 mm from the lens surface on the optical pick-up block with 7 mm aperture.)

#### Recording and playback time (when using MDW-80)

Maximum 160 min. in monaural

Maximum 320 min. in LP4 stereo

#### Revolutions

380 rpm to 2,700 rpm (CLV)

#### Error correction

ACIRC (Advanced Cross Interleave Reed

Solomon Code)

#### Sampling frequency

44.1 kHz

#### Sampling rate converter

Input: 32 kHz/44.1 kHz/48 kHz

#### Coding

ATRAC (Adaptive TRansform Acoustic

Coding)

ATRAC3 — LP2/LP4

— Continued on next page —

## PORTABLE MINIDISC RECORDER

9-877-144-01  
2003C167800-1  
© 2003.03

**Sony Corporation**  
Personal Audio Company  
Published by Sony Engineering Corporation

**SONY**®

# MZ-NF610

## Modulation system

EFM (Eight to Fourteen Modulation)

## Frequency response

20 to 20,000 Hz  $\pm$  3 dB

## Inputs<sup>1)</sup>

Line in:

- stereo mini-jack for analog input (minimum input level 49 mV)
- optical (digital) mini-jack for optical (digital) input

## Outputs

⌚: stereo mini-jack

## Maximum output level

USA model:

5mW + 5mW; load impedance 24 $\Omega$

Canadian model:

5mW + 5mW; load impedance 16 $\Omega$

## Radio

### Frequency range

USA model:

FM: 87.5-108 MHz

AM: 530-1,710 kHz (10 kHz step)

531-1,710 kHz (9 kHz step)

TV: 2-13 CH

WEATHER: 1-7 CH

Canadian model:

FM: 87.5-108 MHz

AM: 530-1,710 kHz (10 kHz step)

531-1,710 kHz (9 kHz step)

## Antenna

FM/TV/WEATHER:

Headphones/earphones cord antenna

AM:

Built-in ferrite bar antenna

## General

### Power requirements

Sony AC Power Adaptor connected at the DC

IN 3V jack:

120 V AC, 60 Hz (Models for USA, Canada, Mexico, and Taiwan)

230 V AC, 50/60 Hz (Models for continental Europe and Chili)

240 V AC, 50 Hz (Model for Australia)

220 V AC, 50 Hz (Model for China)

230 V AC, 50 Hz (Models for U.K. and Hong Kong)

220 V AC, 60 Hz (Model for Korea)

100 - 120 V/220 - 240 V AC, 50/60 Hz (Other models)

The recorder:

Nickel metal hydride rechargeable battery

NH-7WMAA 1.2V 700 mAh (MIN) Ni-MH

LR6 (size AA) alkaline battery

## Dimensions

Approx. 81.0  $\times$  27.7  $\times$  74.4 mm (w/h/d)

(3<sup>1</sup>/<sub>4</sub>  $\times$  1<sup>1</sup>/<sub>8</sub>  $\times$  3 in.)

## Mass

Approx. 103 g (3.6 oz) the recorder only

<sup>1)</sup>The LINE IN (OPTICAL) jack is used to connect either a digital (optical) cable or a line (analog) cable.

<sup>2)</sup>The ⌚ jack connects either headphones/earphones or a line cable.

<sup>3)</sup>Measured in accordance with JEITA.

## Supplied accessories

AC power adaptor (1)

NH-7WMAA Nickel metal hydride rechargeable battery (1)

Headphones with a remote control (1)

(for USA model)

Earphones with a remote control (1)

(for Canadian model)

Dedicated USB cable (1)

Battery carrying case (1)

CD-ROM (SonicStage Ver. 1.5) (1)\*

\*Do not play a CD-ROM on an audio CD player.

US and foreign patents licensed from Dolby Laboratories.

Design and specifications are subject to change without notice.

## Battery life

The battery life may be shorter due to operating conditions, the temperature of the location, or alkaline dry battery you use.

## When recording

(Unit: approx.hours)(JEITA<sup>1)</sup>)

| Batteries   | SP Stereo | LP2 Stereo | LP4 Stereo |
|---|-----------|------------|------------|
| Nickel metal hydride rechargeable battery <sup>2)</sup> | 5.5       | 8          | 9          |
| LR6 Sony alkaline dry battery <sup>3)</sup>             | 9         | 12         | 16         |

<sup>1)</sup> Measured in accordance with the JEITA (Japan Electronics and Information Technology Industries Association) standard.

<sup>2)</sup> When using a 100% fully charged nickel metal hydride rechargeable battery (NH-7WMAA).

<sup>3)</sup> When using a Sony LR6 (SG) "STAMINA" alkaline dry battery (produced in Japan).

## When playing

(Unit: approx.hours)(JEITA)

| Batteries                                 | SP Stereo | LP2 Stereo | LP4 Stereo |
|---|-----------|------------|------------|
| Nickel metal hydride rechargeable battery | 14.5      | 15.5       | 17.5       |
| LR6 Sony alkaline dry battery             | 36        | 42.5       | 48         |

## When using the radio

(Unit: approx.hours)(JEITA)

| Batteries                                 | FM/AM | TV/Wb (weather) (USA model only) |
|---|-------|----------------------------------|
| Nickel metal hydride rechargeable battery | 7.5   | 7                                |
| LR6 Sony alkaline dry battery             | 18.5  | 17                               |

## Note

When you use the radio, it is recommended that you use a fully charged rechargeable battery or a new dry battery since more power is consumed by the radio than by MD playback.

## SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK  $\triangle$  OR DOTTED LINE WITH MARK  $\triangle$  ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

## ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE  $\triangle$  SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

**CAUTION**

Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

**On power sources**

- Use house current, nickel metal hydride rechargeable battery, LR6 (size AA) battery, or car battery.
- For use in your house: Do not use any other AC power adaptor since it may cause the recorder to malfunction.

**Polarity of the plug**



- Connect the AC power adaptor to an easily accessible AC outlet. Should you notice an abnormality in the AC power adaptor, disconnect it from the AC outlet immediately.
- The recorder is not disconnected from the AC power source (mains) as long as it is connected to the wall outlet, even if the recorder itself has been turned off.
- If you are not going to use this recorder for a long time, be sure to disconnect the power supply (AC power adaptor, dry battery, rechargeable battery, or car battery cord). To remove the AC power adaptor from the wall outlet, grasp the adaptor plug itself; never pull the cord.

**Notes on chip component replacement**

- Never reuse a disconnected chip component.
- Notice that the minus side of a tantalum capacitor may be damaged by heat.

**Flexible Circuit Board Repairing**

- Keep the temperature of the soldering iron around 270 °C during repairing.
- Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
- Be careful not to apply force on the conductor when soldering or unsoldering.

**UNLEADED SOLDER**

Boards requiring use of unleaded solder are printed with the lead-free mark (LF) indicating the solder contains no lead. (Caution: Some printed circuit boards may not come printed with the lead free mark due to their particular size)



**: LEAD FREE MARK**

Unleaded solder has the following characteristics.

- Unleaded solder melts at a temperature about 40 °C higher than ordinary solder.  
Ordinary soldering irons can be used but the iron tip has to be applied to the solder joint for a slightly longer time. Soldering irons using a temperature regulator should be set to about 350 °C .  
Caution: The printed pattern (copper foil) may peel away if the heated tip is applied for too long, so be careful!
- Strong viscosity  
Unleaded solder is more viscous (sticky, less prone to flow) than ordinary solder so use caution not to let solder bridges occur such as on IC pins, etc.
- Usable with ordinary solder  
It is best to use only unleaded solder but unleaded solder may also be added to ordinary solder.

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## SECTION 1 SERVICING NOTES

### NOTES ON HANDLING THE OPTICAL PICK-UP BLOCK OR BASE UNIT

The laser diode in the optical pick-up block may suffer electrostatic break-down because of the potential difference generated by the charged electrostatic load, etc. on clothing and the human body.

During repair, pay attention to electrostatic break-down and also use the procedure in the printed matter which is included in the repair parts.

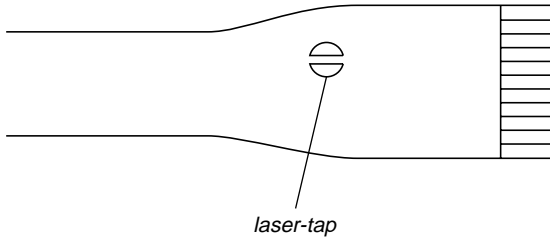
The flexible board is easily damaged and should be handled with care.

### NOTES ON LASER DIODE EMISSION CHECK

Never look into the laser diode emission from right above when checking it for adjustment. It is feared that you will lose your sight.

### NOTES ON HANDLING THE OPTICAL PICK-UP BLOCK (LCX-5R)

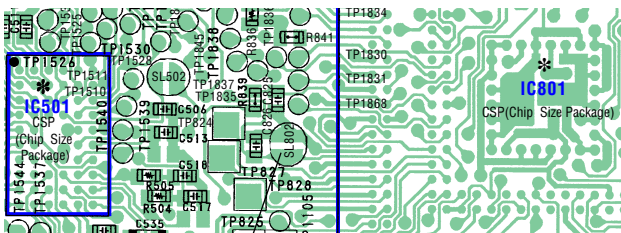
The laser diode in the optical pick-up block may suffer electrostatic break-down easily. When handling it, perform soldering bridge to the laser-tap on the flexible board. Also perform measures against electrostatic break-down sufficiently before the operation. The flexible board is easily damaged and should be handled with care.



**OPTICAL PICK-UP FLEXIBLE BOARD**

- In performing the repair with the power supplied to the set, removing the MAIN board causes the set to be disabled. In such a case, make a solder bridge to short SL802 (OPEN/CLOSE) on the MAIN board.

– MAIN Board (Side B) –



SL802  
(OPEN/CLOSE)

### System requirements

The following hardware and software are required in order to use the SonicStage software for the Net MD.

|                  |   |
|------------------|---|
| Computer         | IBM PC/AT or Compatible   |
|                  | CPU: Pentium II 400 MHz or higher (Pentium III 450 MHz or higher is recommended.)<br>Hard disk drive space <sup>1)</sup> : 120 MB or more<br>RAM: 64 MB or higher (128 MB or higher is recommended) |
| Operating System | Others  |
|                  | CD-ROM drive (capable of digital playback by WDM)<br>Sound Board<br>USB port (supports USB 2.0 Full Speed (previously USB 1.1))   |
| Display          | Factory installed:<br>Windows XP Home Edition/Windows XP Professional/Windows Millennium Edition/Windows 2000 Professional/Windows 98 Second Edition  |
| Others           | Internet access: for Web registration and EMD services<br>Windows Media Player (version 7.0 or higher) installed for playing WMA files  |

#### <sup>1)</sup> Note on hard disk drive space

120 MB or more free space on the hard disk drive is required. If your computer does not have enough space, the software will not be properly installed. The required free space differs according to the version of your Windows OS, or the amount of audio files that you handle.

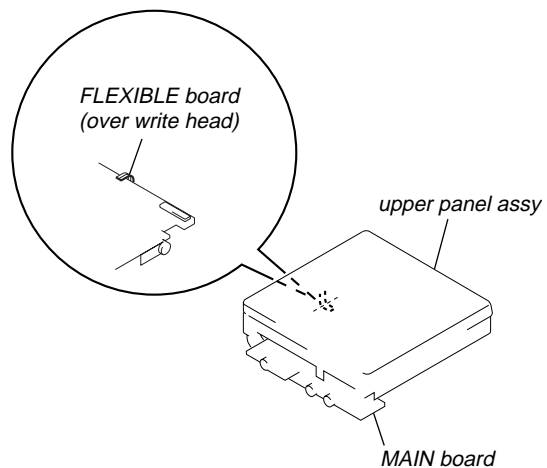
This software is not supported by the following environments:

- Macintosh
- Windows XP versions other than Home Edition or Professional
- Windows 2000 versions other than Professional
- Windows 98 versions other than Second Edition
- Windows NT
- Windows 95
- Personally constructed PCs or operating systems
- An environment that is an upgrade of the original manufacturer-installed operating system
- Multi-boot environment
- Multi-monitor environment

#### Notes

- We do not ensure trouble-free operation on all computers that satisfy the system requirements.
- We do not ensure trouble-free operation of the system suspend, sleep, or hibernation function on all computers.

- Handle the FLEXIBLE board (over write head) with care, as it has been soldered directly to the MAIN board. In repairing the component side of MAIN board, connect the FLEXIBLE board (over write head) and the MAIN board with the lead wires in advance.



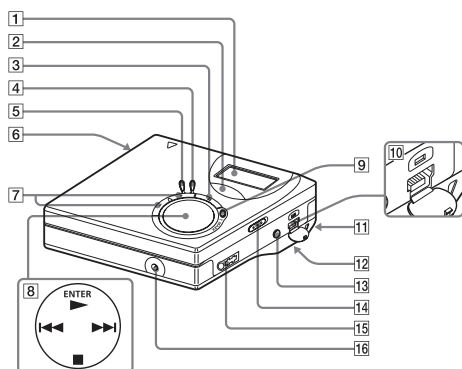
- This set requires the patch data in the nonvolatile memory (IC851) to be rewritten using the application, when the MAIN board was replaced. (See page 31)

## SECTION 2 GENERAL

This section is extracted from instruction manual.

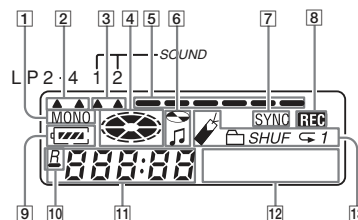
### Looking at controls

#### The recorder



- |  |  |
|--|--|
| <p><b>1</b> Display window</p> <p><b>2</b> GROUP button</p> <p><b>3</b> <b>  </b> (pause) button</p> <p><b>4</b> END SEARCH button</p> <p><b>5</b> MENU button</p> <p><b>6</b> OPEN button</p> <p><b>7</b> VOL +, - button<br/>* VOL + has a tactile dot.</p> <p><b>8</b> 4-way control key<br/>ENTER • ►*<br/>◀◀ • ►► (search/AMS)<br/>■ • CANCEL/CHG (stop/cancel/charge)<br/>* ► has a tactile dot.</p> | <p><b>9</b> REC (record) • T MARK button</p> <p><b>10</b> USB connecting jack</p> <p><b>11</b> Handstrap hole<br/>Use the hole to attach your own strap.</p> <p><b>12</b> Battery compartment (at the bottom)</p> <p><b>13</b> LINE IN (OPTICAL) jack</p> <p><b>14</b> HOLD switch<br/>To prevent the buttons from being accidentally operated when you carry the recorder, use this function.</p> <p><b>15</b> ◯ (headphones/earphones) jack</p> <p><b>16</b> DC IN 3V jack</p> |
|--|--|

#### The display window of the recorder

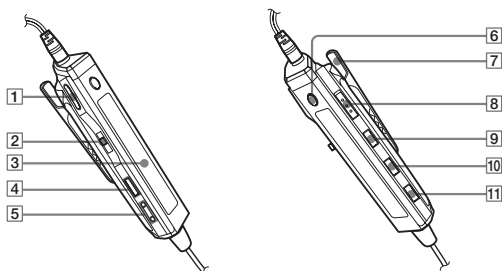


- |  |  |
|--|--|
| <p><b>1</b> MONO (monaural) indication</p> <p><b>2</b> LP mode indication</p> <p><b>3</b> Sound indications</p> <p><b>4</b> Disc indication<br/>Shows that the disc is rotating for recording or playing an MD.</p> <p><b>5</b> Level meter<br/>Shows the volume of the MD being played or recorded.</p> <p><b>6</b> Disc name/track name indication<br/>Lights up when labeling a disc or a track.</p> <p><b>7</b> SYNC (synchro-recording) indication</p> <p><b>8</b> REC indication<br/>Lights up while recording. When flashing, the recorder is in record standby mode.</p> | <p><b>9</b> Battery indication<br/>Shows approximate battery condition.</p> <p><b>10</b> <b>—</b> : Indication for remaining playing time of the current track or of the disc<br/><b>⏱</b> : Indication for remaining recordable time of the disc</p> <p><b>11</b> Time display</p> <p><b>12</b> Character information display<br/>Displays the disc and track names, error messages, track numbers, etc.</p> <p><b>13</b> Play mode indications<br/>Shows the play mode (shuffle play, repeat play, group play, bookmark play, etc.) of the MD.</p> |
|--|--|

14

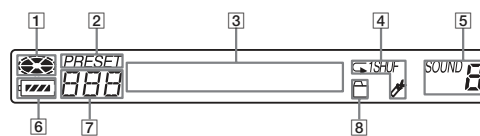
15

#### The headphones/earphones with a remote control



- |  |  |
|--|--|
| <p><b>1</b> VOL +, - buttons<br/>Press to adjust the volume.</p> <p><b>2</b> Jog lever (◀◀ • ►►/ENT • ►►, TUNE - • BAND • TUNE +)<br/>►►/ENT (to press): play, pause, enter<br/>◀◀ (to slide towards): REW<br/>►► (to slide towards): FF<br/>BAND (to press): select a band<br/>TUNE - (to slide towards): tune backward<br/>TUNE + (to slide towards): tune forward</p> <p><b>3</b> Display window</p> <p><b>4</b> ■ (stop) button</p> <p><b>5</b> ◻ (group) +, - buttons</p> | <p><b>6</b> RADIO ON/OFF button<br/>Press to turn on or off the radio.</p> <p><b>7</b> Clip</p> <p><b>8</b> HOLD switch<br/>To prevent the buttons from being accidentally operated when you carry the recorder, use this function.</p> <p><b>9</b> DISPLAY button</p> <p><b>10</b> P-MODE/ ◁ button</p> <p><b>11</b> SOUND button</p> |
|--|--|

#### The display window of the remote control



- |   |  |
|---|--|
| <p><b>1</b> Disc indication</p> <p><b>2</b> PRESET indication</p> <p><b>3</b> Character information display</p> <p><b>4</b> Play mode indication</p> <p><b>5</b> SOUND indication</p> | <p><b>6</b> Battery level indication</p> <p><b>7</b> Track number/Band/Pre-set number display</p> <p><b>8</b> Group indication</p> |
|---|--|

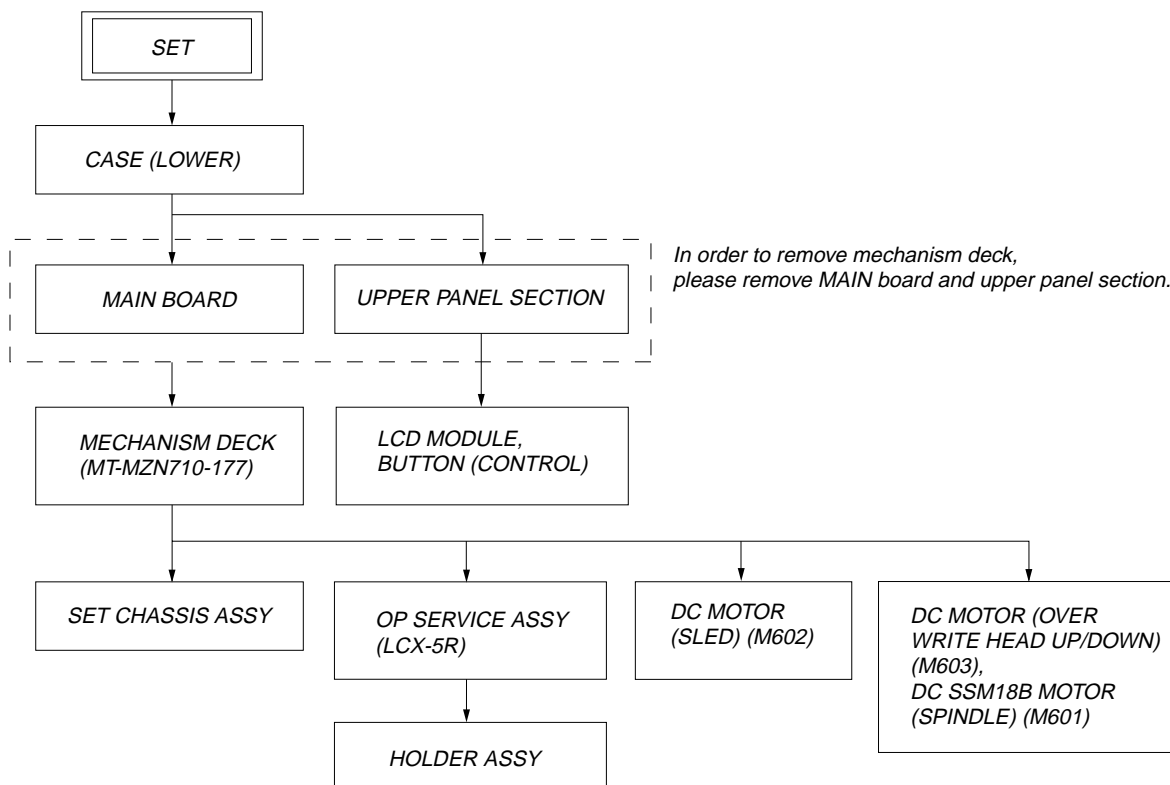
16

17

## SECTION 3 DISASSEMBLY

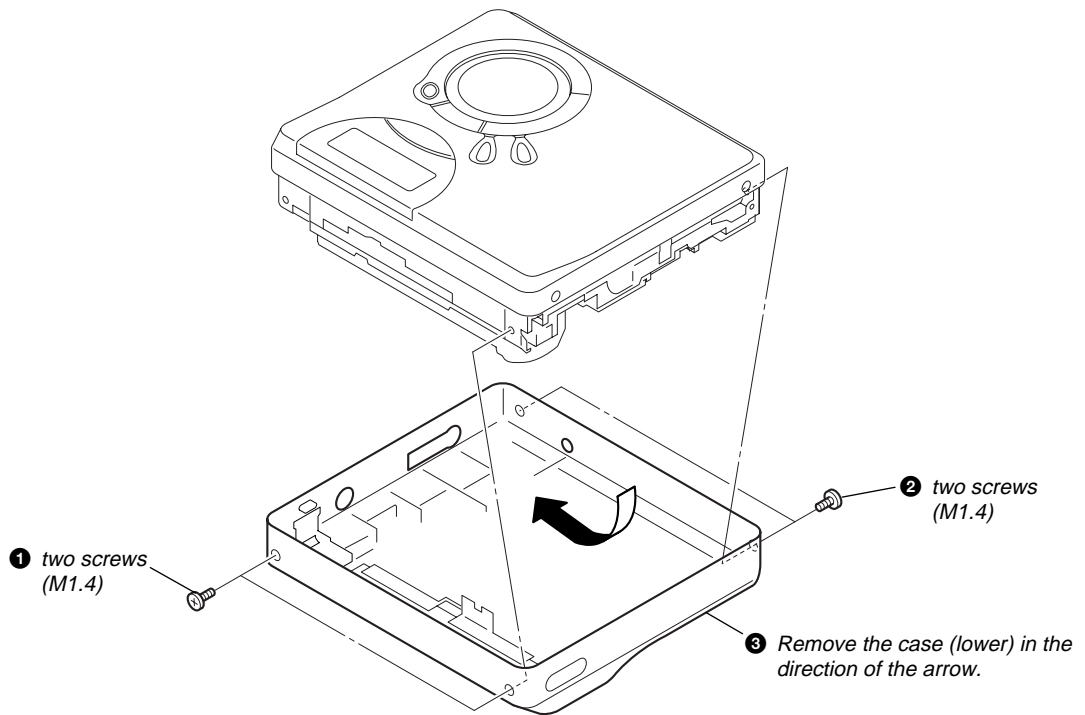
• This set can be disassembled in the order shown below.

### 3-1. Disassembly Flow

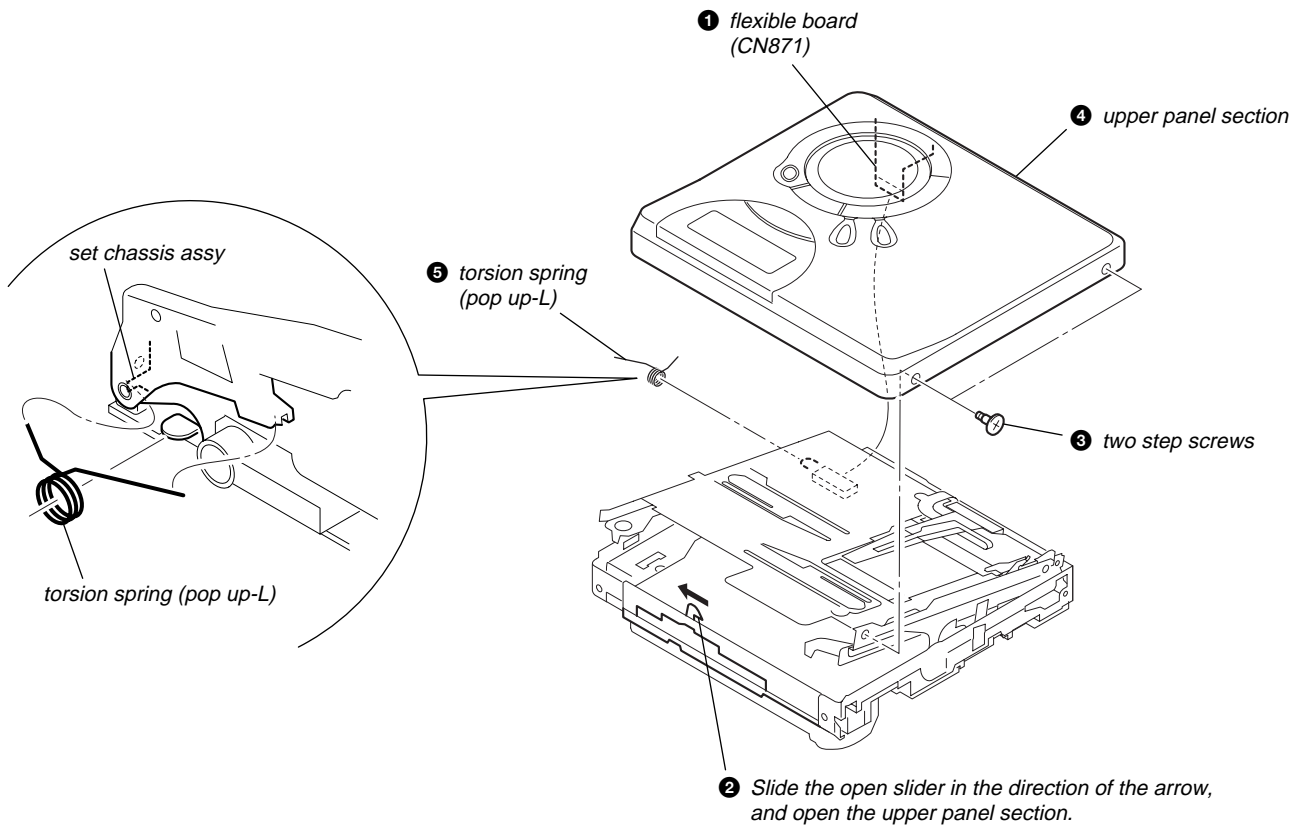


**Note:** Follow the disassembly procedure in the numerical order given.

**3-2. Case (Lower)**

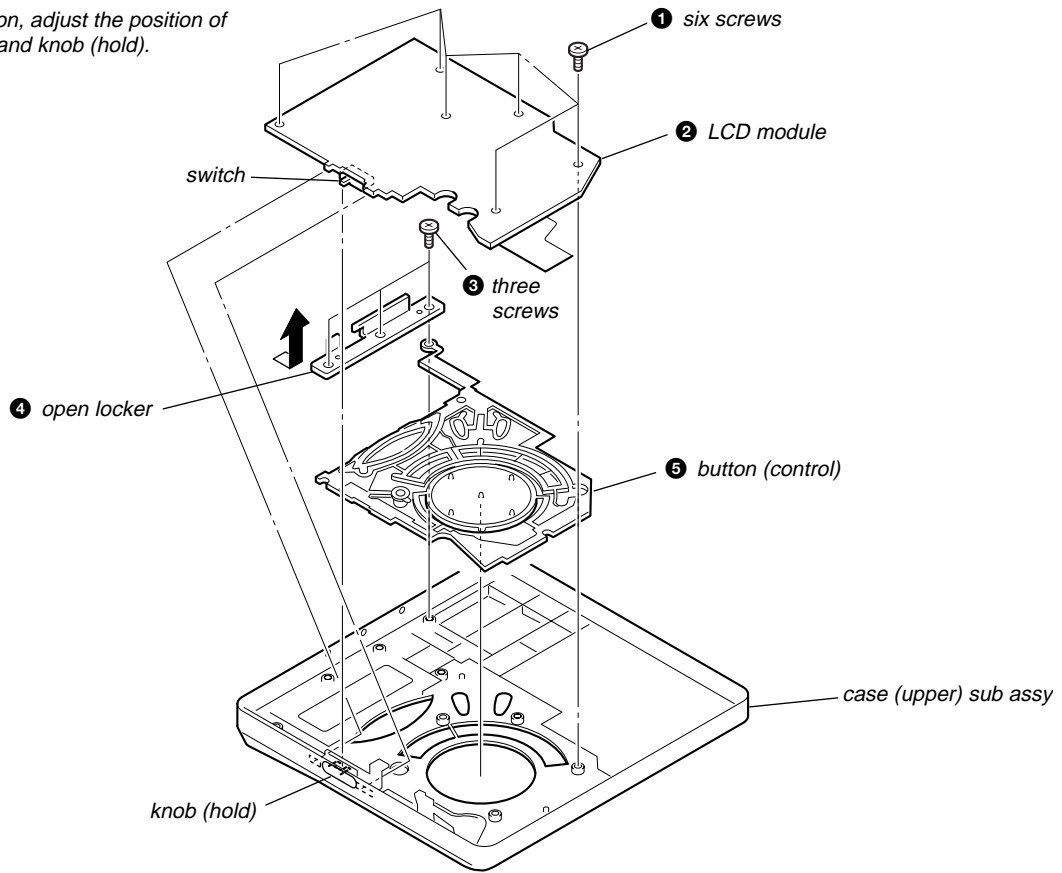


**3-3. Upper Panel Section**

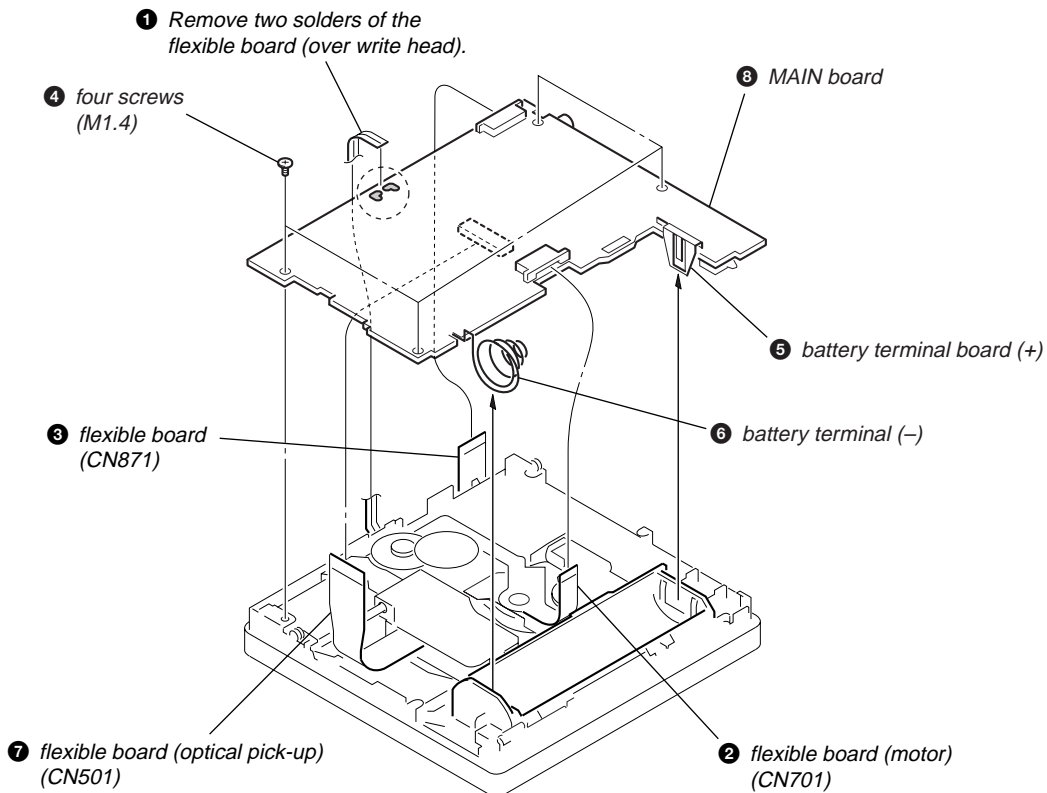


3-4. LCD Module, Button (Control)

Note: On installation, adjust the position of both switch and knob (hold).

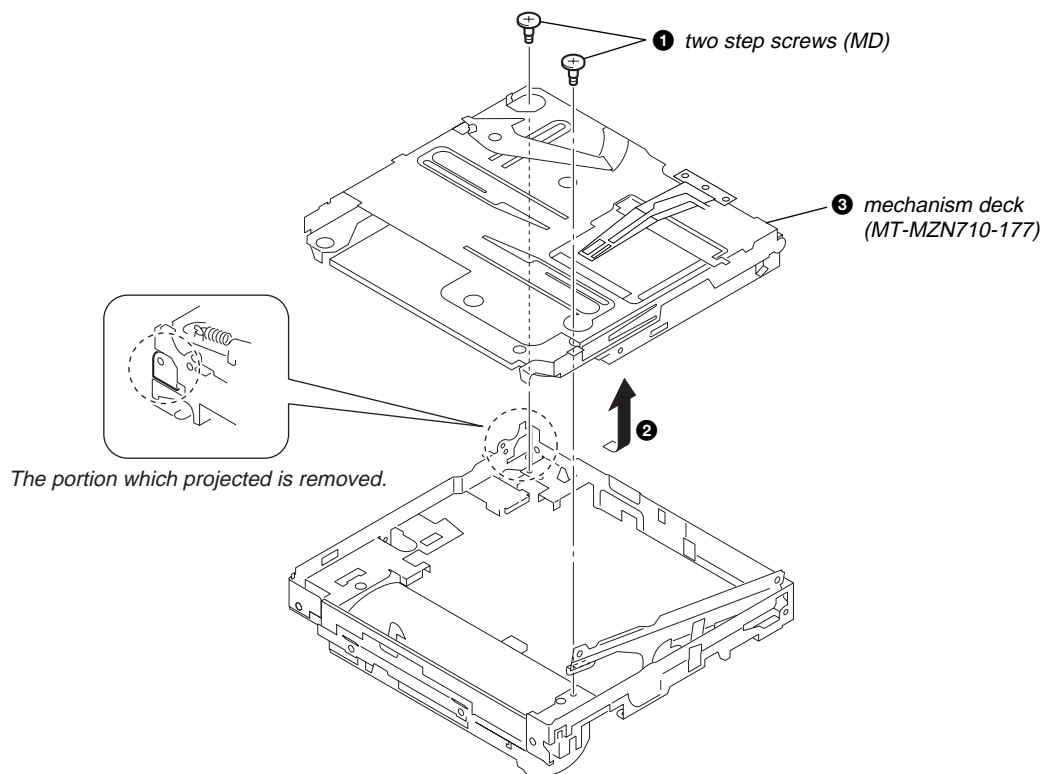


3-5. MAIN Board

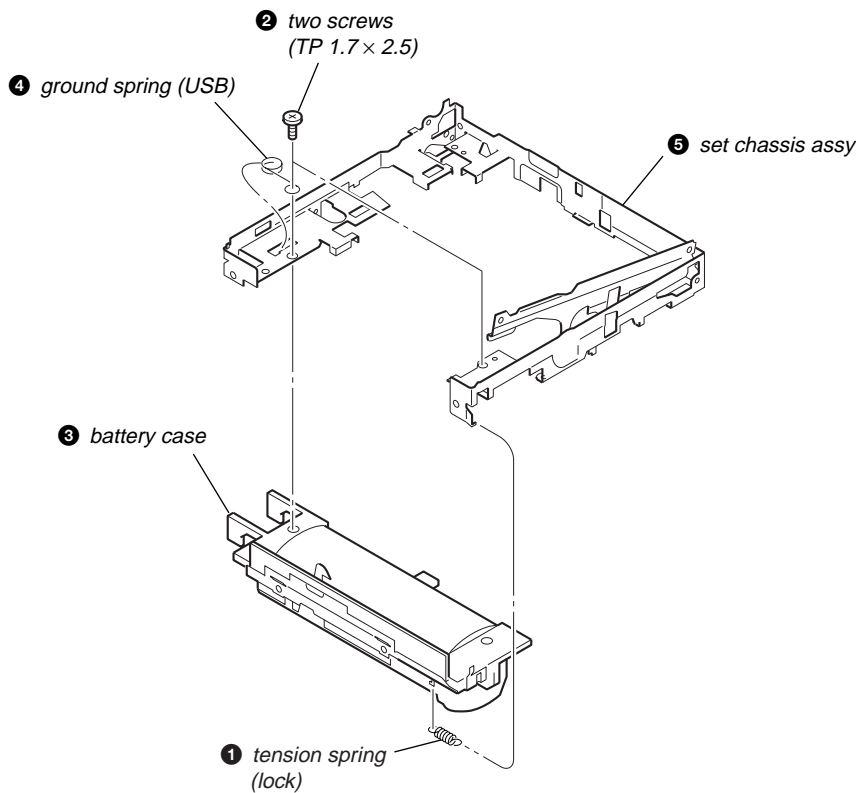




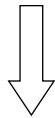
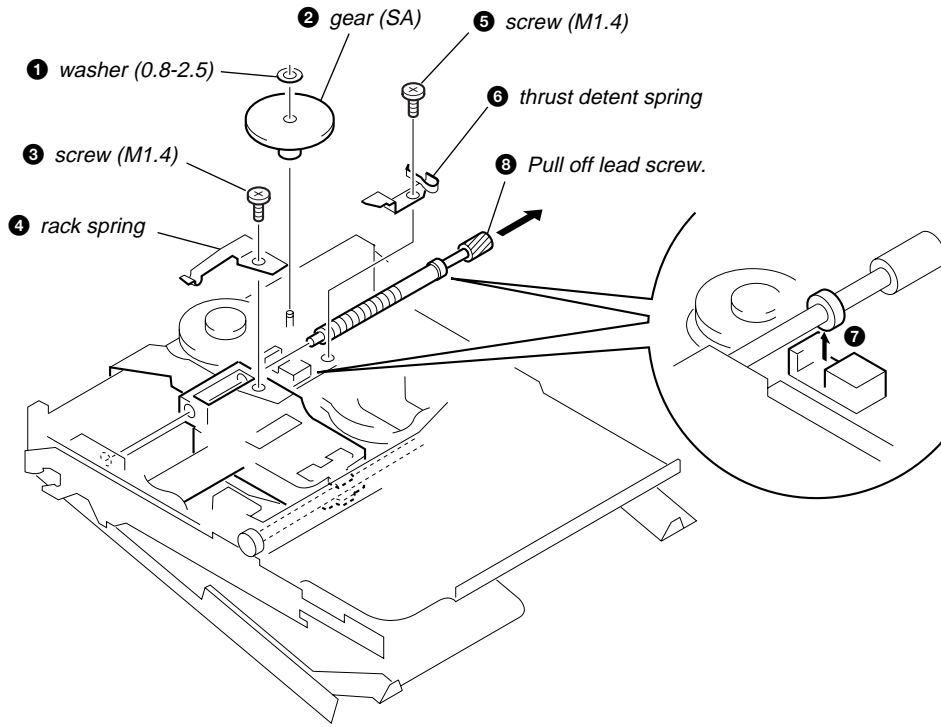
3-6. Mechanism Deck (MT-MZN710-177)



3-7. Set Chassis Assy

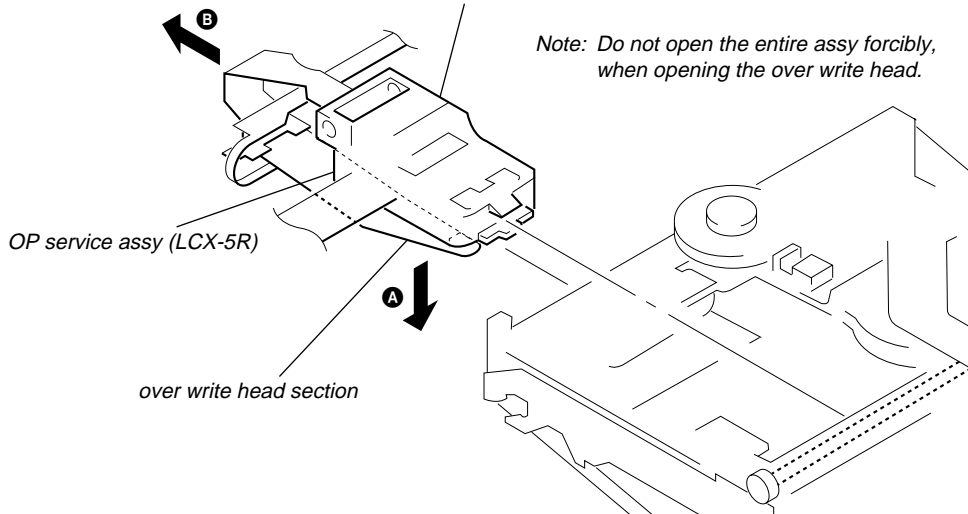


3-8. OP Service Assy (LCX-5R)

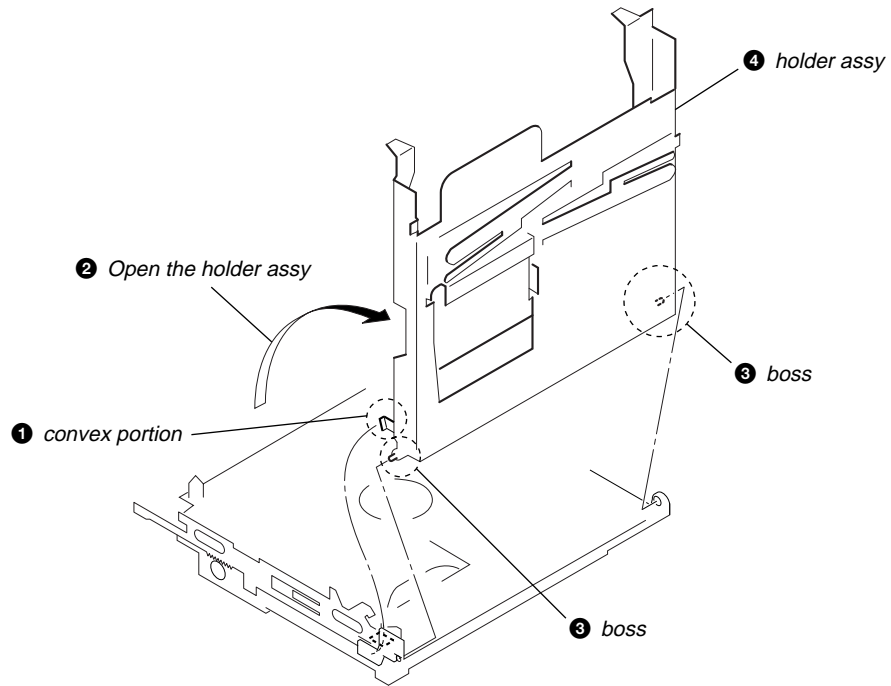


9 Opening the over write head toward the direction **A**, remove the OP service assy (LCX-5R) toward the direction **B**.

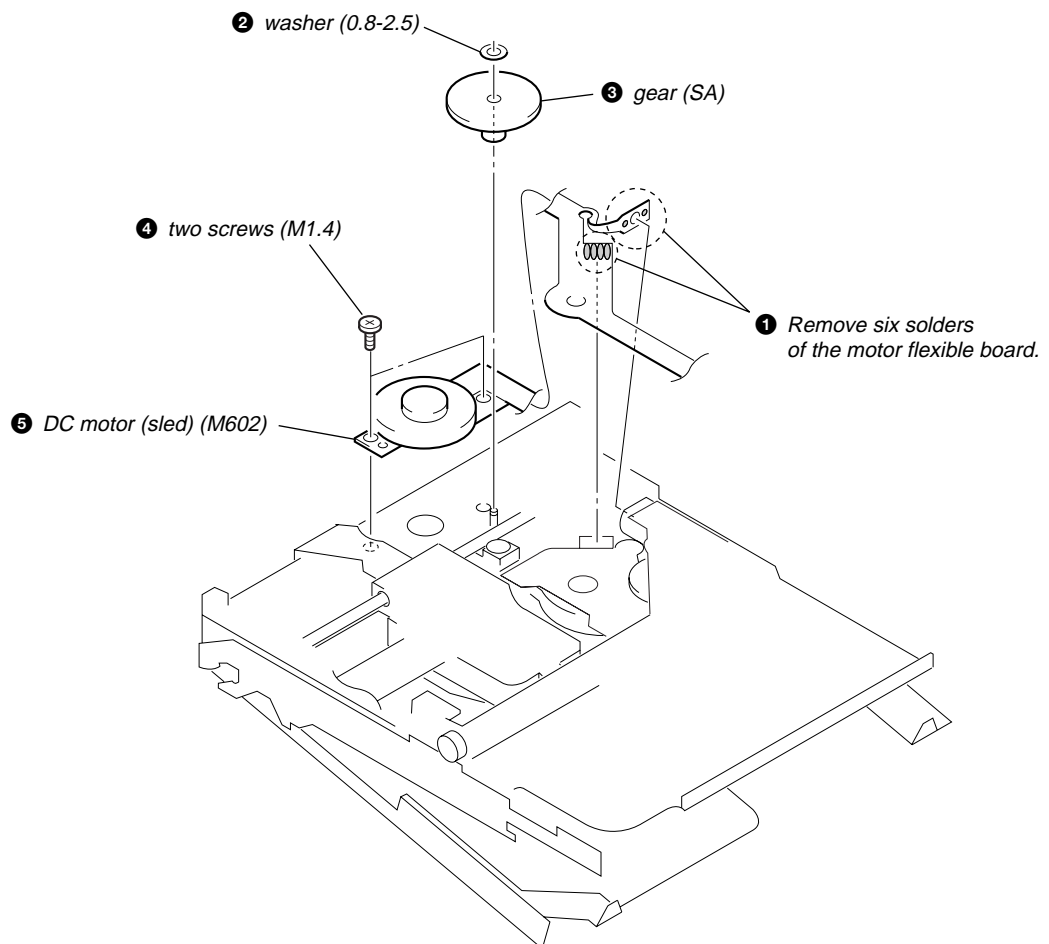
Note: Do not open the entire assy forcibly, when opening the over write head.



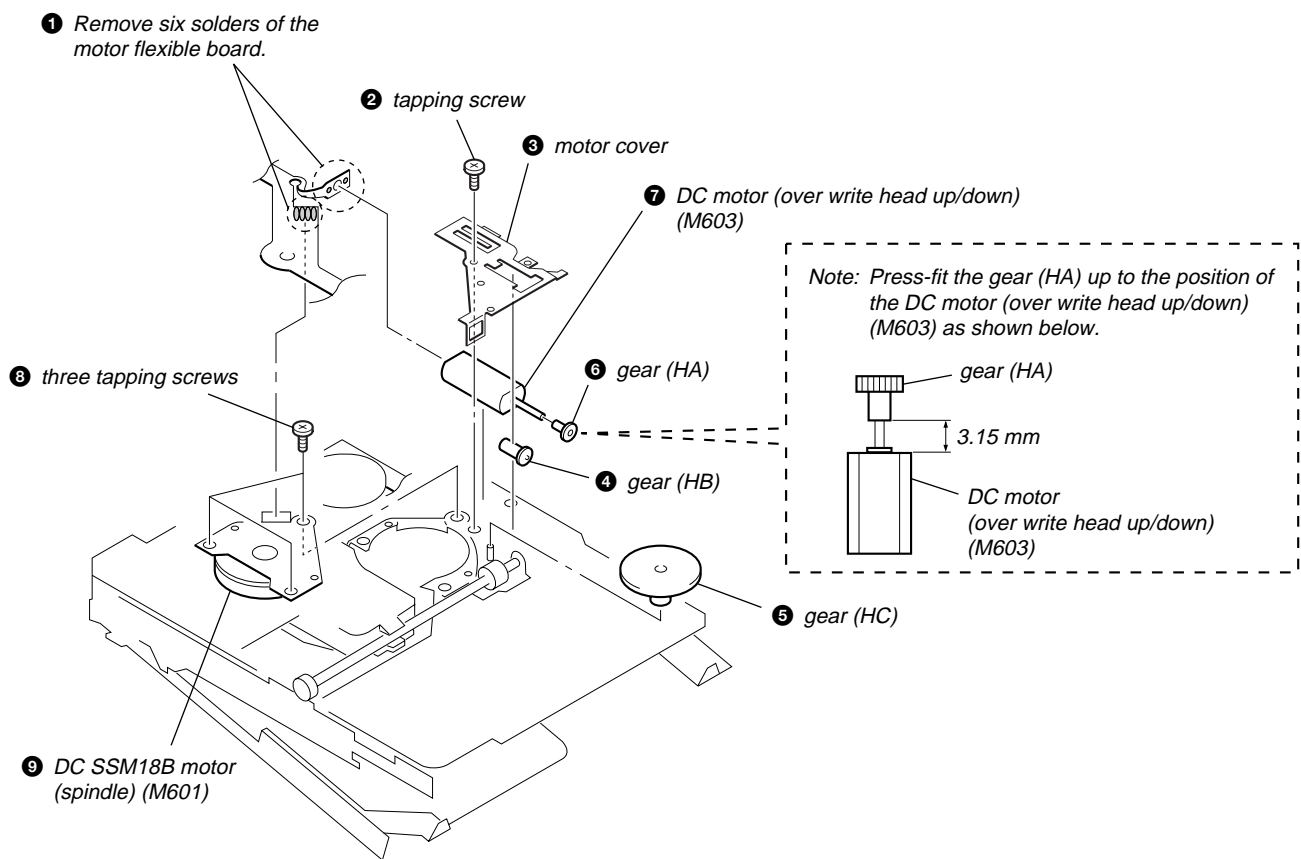
3-9. Holder Assy



3-10. DC Motor (Sled) (M602)



3-11. DC Motor (Over Write Head Up/Down) (M603), DC SSM18B Motor (Spindle) (M601)



## SECTION 4 TEST MODE

### Outline

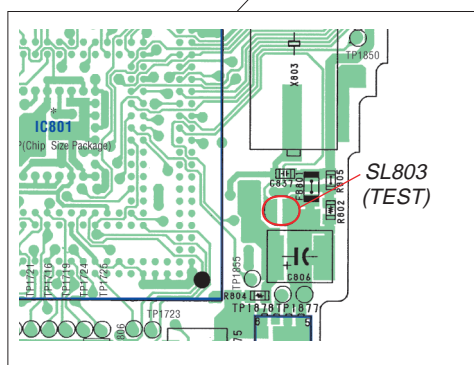
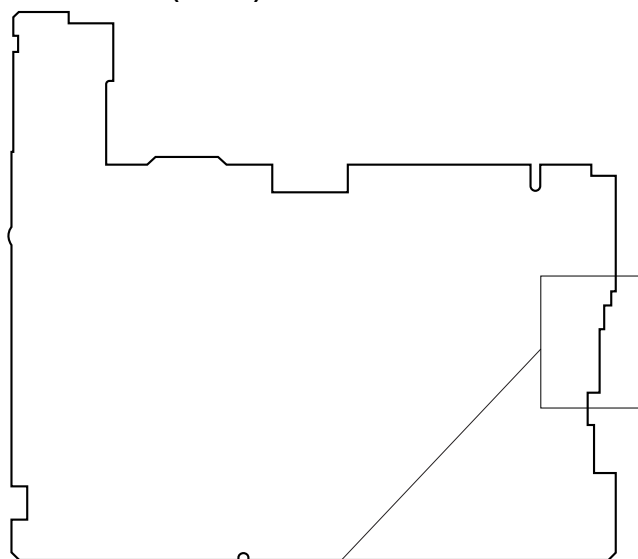
- This set provides the Overall adjustment mode that allows CD and MO discs to be automatically adjusted when in the test mode. In this overall adjustment mode, the disc is discriminated between CD and MO, and each adjustment is automatically executed in order. If a fault is found, the system displays its location. Also, the manual mode allows each individual adjustment to be automatically adjusted.
- Operation in the test mode is performed with the set. A key having no particular description in the text, indicates a set key.

### Setting Method of Test Mode

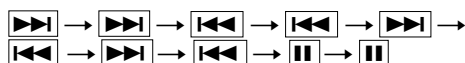
There are three different methods to set the test mode:

- ① Short SL803 (TEST) on the MAIN board with a solder bridge (connect pin ② of IC801 to the ground). Then, turn on the power.

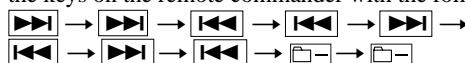
#### – MAIN Board (Side B) –



- ② In the normal mode, turn on the **[HOLD]** switch. While pressing the **[GROUP]** key press the following order:



- ③ In the normal mode, turn on the **[HOLD]** switch on the set. While pressing the **[CANCEL/CHG]** key on the set, press the keys on the remote commander with the following order :

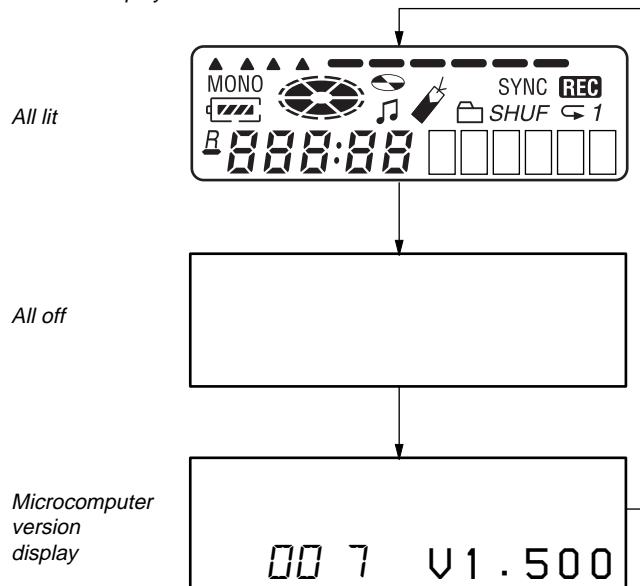


**Note:** If electrical adjustment (CD and MO overall adjustment) has not been finished completely, "ERROR" is displayed on LCD of the set.

### Operation in Setting the Test Mode

- When the test mode becomes active, first the display check mode is selected.
- Other mode can be selected from the display check mode.
- When the test mode is set, the LCD repeats the following display.

Set LCD display



- When the **[HOLD]** key is pressed and hold down, the display at that time is held so that display can be checked.

### Releasing the Test Mode

For test mode set with the method ①:

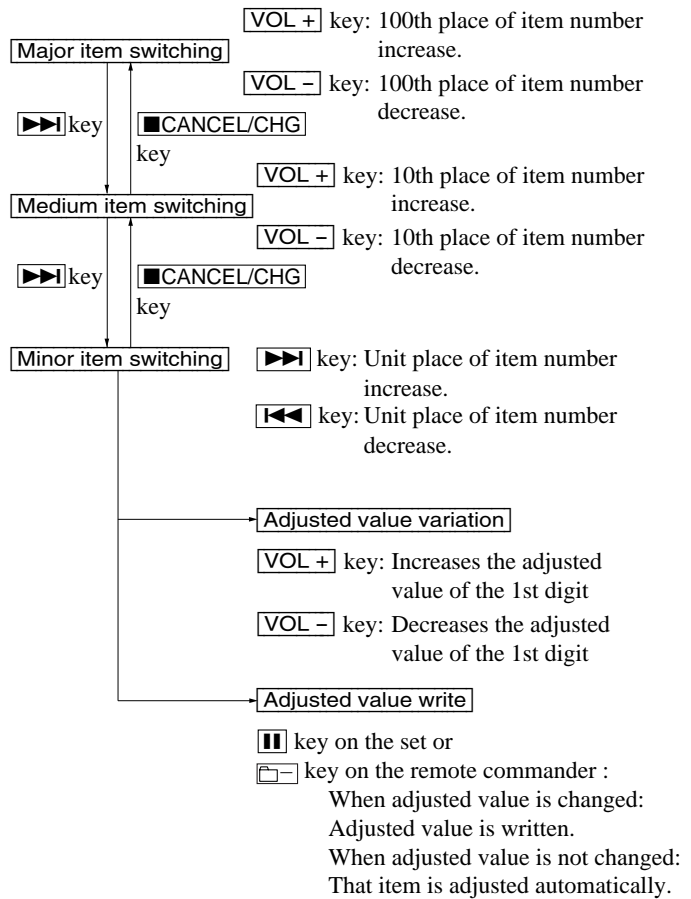
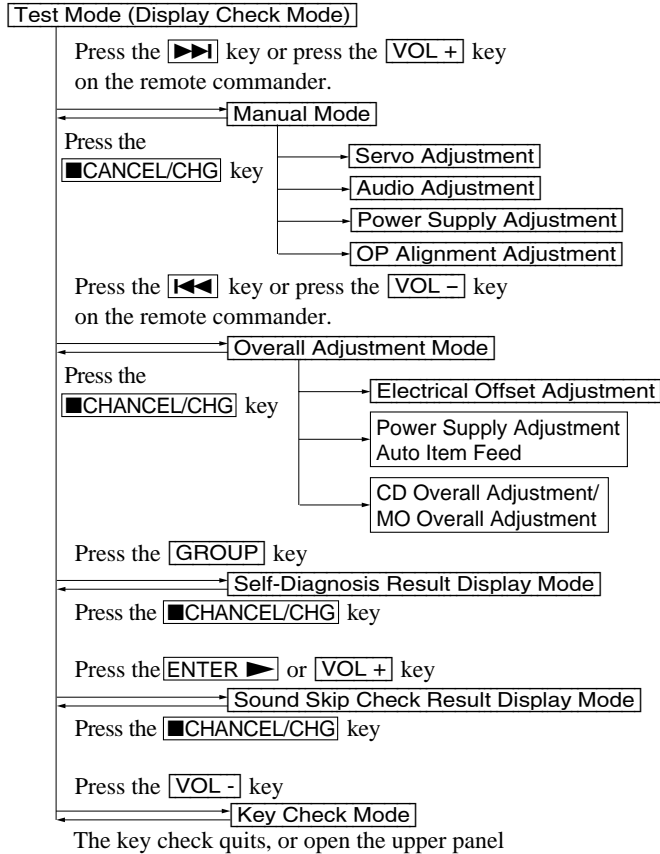
Turn off the power and open the solder bridge on SL803 (TEST) on the MAIN board.

**Note:** Remove the solders completely. Remaining could be shorted with the chassis, etc.

For test mode set with the method ② or ③:

Turn off the power.

**Configuration of Test Mode**



**Manual Mode**

Mode to adjust or check the operation of the set by function. Normally, the adjustment in this mode is not executed. However, the Manual mode is used to clear the memory, power supply adjustment, and laser power check before performing automatic adjustments in the Overall Adjustment mode.

**• Transition Method in Manual Mode**

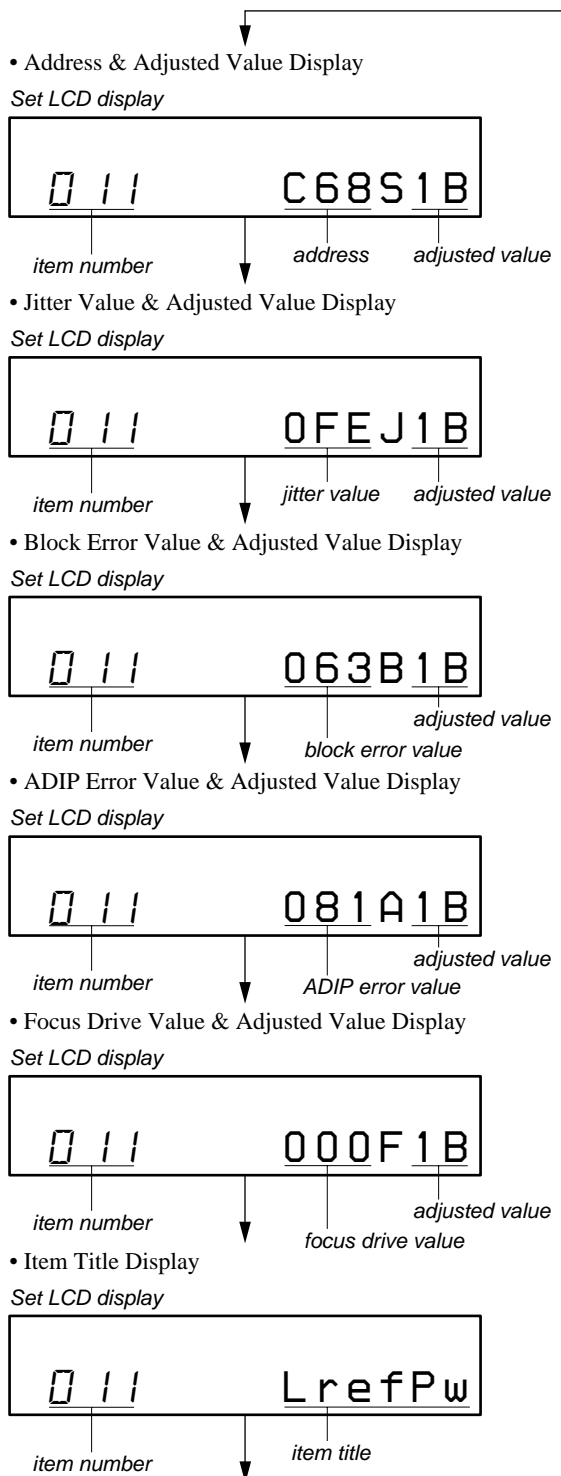
1. Set the test mode (see page 13).
2. Press the **▶▶▶** or press the **[VOL +]** key on the remote commander activates the manual mode where the LCD display as shown below.

Set LCD display



3. During each test, the optical pick-up moves outward or inward while the **▶▶▶** or **◀◀◀** key is pressed for several seconds respectively.
4. Each test item is assigned with a 3-digit item number; 100th place is a major item, 10th place is a medium item, and unit place is a minor item. The values adjusted in the test mode are written to the nonvolatile memory (for the items where adjustment was made).

5. The display changes as shown below each time the **END** **SEARCH** key is pressed.



However in the power mode (item number 700's), only the item is displayed.

6. Quit the manual mode, and press the **CANCEL/CHG** key to return to the test mode (display check mode).

### Overall Adjustment Mode

Mode to adjust the servo automatically in all items. Normally, automatic adjustment is executed in this mode at the repair.

For further information, refer to "SECTION 5 ELECTRICAL ADJUSTMENTS" (see page 19).

### Self-Diagnosis Result Display Mode

This set uses the self-diagnostic function system in which if an error occurred during the recording or playing, the mechanism control block and the power supply control block in the microcomputer detect it and record its cause as history in the nonvolatile memory.

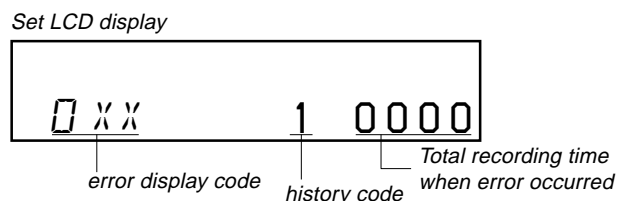
By checking this history in the test mode, you can analyze a fault and determine its location.

Total recording time is recorded as a guideline of how long the optical pick-up has been used, and by comparing it with the total recording time at the time when an error occurred in the self-diagnosis result display mode, you can determine when the error occurred.

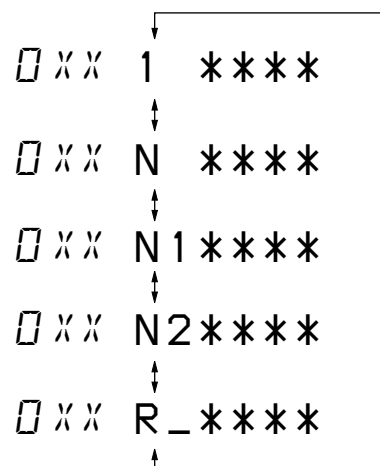
Clear both self-diagnosis history data and total recording time, if the optical pick-up was replaced.

#### • Self-Diagnosis Result Display Mode Setting Method

1. Set the test mode (see page 13).
2. In the display check mode, press the **GROUP** key activates the self-diagnosis result display mode where the LCD display as shown below.



3. Then, each time the **▶▶** key is pressed, LCD display descends by one as shown below. Also, the LCD display ascends by one when the **◀◀** key is pressed.



XX : Error code  
\*\*\*\* : Total recording time

If the **GROUP** key is pressed with this display, the LCD switches to the simple display mode.

4. Quit the self-diagnosis result display mode, and press the **CANCEL/CHG** key to return to the test mode (display check mode).

## • Description of Error Indication Codes

| Problem                   | Indication code | Meaning of code                             | Simple display | Description                                 |
|---------------------------|-----------------|---|----------------|---|
| No error                  | 00              | No error                                    | ---            | No error                                    |
| Servo system error        | 01              | Illegal access target address was specified | Adrs           | Attempt to access an abnormal address       |
|                           | 02              | High temperature                            | Temp           | High temperature detected                   |
|                           | 03              | Focus error                                 | Fcus           | Disordered focus or can not read an address |
|                           | 04              | Spindle error                               | Spdl           | Abnormal rotation of disc                   |
| TOC error                 | 11              | TOC error                                   | TOC            | Faulty TOC contents                         |
|                           | 12              | Data reading error                          | Data           | data could not be read at SYNC              |
|                           | 13              | TOC address error                           | Tadr           | TOC address data error                      |
| Power supply system error | 22              | Low battery                                 | LBat           | Momentary interruption detected             |
| Offset system error       | 31              | Offset error                                | Ofst           | Offset error                                |
|                           | 32              | Focus error ABCD offset error               | ABCD           | Focus error ABCD offset error               |
|                           | 33              | Tracking error Offset error                 | TE             | Tracking error Offset error                 |
|                           | 34              | X1 tracking error Offset error              | X1TE           | X1 tracking error Offset error              |
|                           | 35              | MD DATA 2 disc error                        | MD2            | MD DATA 2 disc error                        |
|                           | 36              | Mirror error                                | Mirr           | Mirror retry over                           |

## • Description of Indication History

| History code number | Description                 |
|---------------------|-----------------------------|
| 1                   | The first error             |
| N                   | The last error              |
| N1                  | One error before the last.  |
| N2                  | Two errors before the last. |
| R_                  | Total recording time        |

## Reset the Error Display Code

After servicing, reset the error display code.

### • Setting Method of Reset the Error Display Code

1. Set the test mode (see page 13).
2. Press the **[GROUP]** key activates the self-diagnosis result display mode.
3. To reset the error display code, press the **[II]** key (twice) when the code is displayed (except "R\_\*\*\*").  
(All the data on the 1, N, N1, and N2 will be reset)



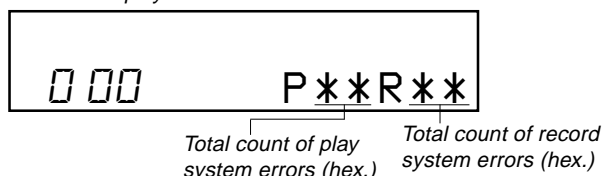
### Sound Skip Check Result Display Mode

This set can display the count of errors that occurred during the recording/playing for checking.

#### • Setting Method of Sound Skip Check Result Display Mode

1. Set the test mode (see page 13).
2. Press the **[ENTER▶]** key or **[VOL+]** key, and the playing or recording sound skip result display mode becomes active respectively where the LCD displays the following.

Set LCD display

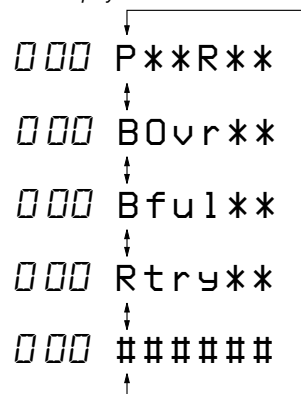


3. When the **[ENTER▶]** key is pressed, total error count is displayed on the LCD, and each time the **[▶▶]** key is pressed, the display item moves down by one as shown below. Also, if the **[◀◀]** key is pressed, the display item moves up by one, then if the **[VOL+]** key is pressed, the display in the record mode appears. When the **[VOL+]** key is pressed, total error count is displayed on the LCD, and each time the **[▶▶]** key is pressed, the display item moves down by one as shown below. Also, if the **[◀◀]** key is pressed, the display item moves up by one, then if the **[ENTER▶]** key is pressed, the display in the play mode appears.

Playing sound skip result display



Recording sound skip result display



P\*\*R\*\* : Total play/record errors (hex.)  
 \*\* : Counter of sound skip check each item (hex.)  
 ##### : 6-digit address where sound was skipped last (hex.)

#### • Cause of Sound Skip Error

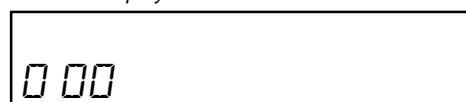
|        | Cause of error | Description of error  |
|--------|----------------|---|
| Play   | EIB            | Sound error correction error                                |
|        | Stat           | Decoder status error  |
|        | Adrs           | Address access error  |
|        | BEmp           | Buffer is empty   |
| Record | BOvr           | Buffer is full, and sounds were dumped                      |
|        | Bful           | Buffer capacity becomes less, and forcible writing occurred |
|        | Rtry           | Retry times over  |

4. To quit the sound skip check result display mode and to return to the test mode (display check mode), press the **[CANCEL/CHG]** key.

#### • Setting Method of Key Check Mode

1. Set the test mode (see page 13).
2. Press the **[VOL-]** key activates the key check mode.

Set LCD display



3. When each key on the set and on remote commander is pressed, its name is displayed on the set LCD. (Operated position is displayed for 4 seconds after the slide switch is operated.)

Example1: When the **[▶▶]** key on the set is pressed:

Set LCD display



Example2: When the **[▶||/ENT]** key on the remote commander is pressed:

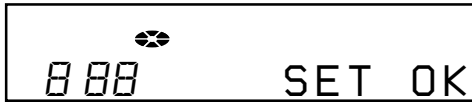
Set LCD display



4. When all the keys on the set and on the remote commander are considered as OK, the following displays are shown.

Example1: When the keys on the set are considered as OK:

*Set LCD display*



Example2: When the keys on the remote commander are considered as OK:

*Set LCD display*



5. When all keys were checked or if the upper panel is opened, the key check mode quits and the test mode (display check mode) comes back.

## SECTION 5 ELECTRICAL ADJUSTMENTS

### Outline

- In this set, automatic adjustment of CD and MO can be performed by entering the test mode. However, before starting automatic adjustment, the memory clear, power supply adjustment, and laser power check must be performed in the manual mode.
- A key having no particular description in the text, indicates a set key.

### Precautions for Adjustment

- Adjustment must be done in the test mode only. After adjusting, release the test mode.
- Use the following tools and measuring instruments.
  - Test CD disc TDYS-1 (Part No. : 4-963-646-01)
  - SONY MO disc available on the market
  - Digital voltmeter
  - Laser power meter LPM-8001 (Part No. : J-2501-046-A)
  - Thermometer (using the Temperature Correction)
  - Personal computer
  - USB cable
- Unless specified otherwise, supply DC 3V from the DC IN 3V jack (J951).
- Switch position  
HOLD switch ..... ON

### Adjustment Sequence

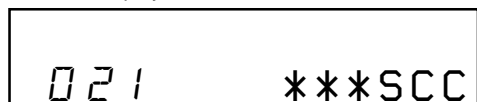
- NV Reset (item number: 021)  
(EEPROM clear)
  - Temperature Correction (item number: 015)
  - Power Supply Manual Adjustment
  - Laser Power Check
  - CD Overall Adjustment (item number: 031)
  - MO Overall Adjustment (item number: 034)
  - RESUME Clear (item number 043)
  - Rewriting the Patch Data  
(at replacement of the MAIN board)
  - Rewriting the NV values
- Manual Mode: 1-4  
 Overall Mode: 5-6  
 Manual Mode: 7-9

### NV Reset

#### Setting Method of NV Reset

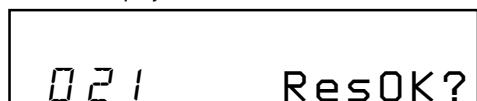
- Select the manual mode of the test mode, and set item number 021 NV Reset (see page 14).

Set LCD display



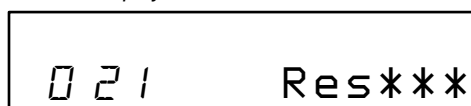
- Press the **[ ]** key.

Set LCD display

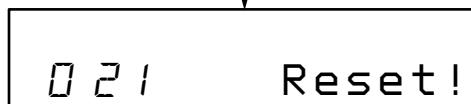


- Press the **[ ]** key once more.

Set LCD display



NV reset (after several seconds)



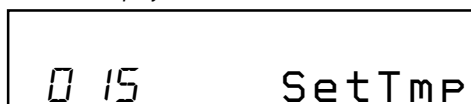
- Press the **[CANCEL/CHG]** key to quit the manual mode, and return to the test mode (display check mode).

### Temperature Correction

#### Adjustment Method of Temperature Correction

- Select the manual mode of the test mode, and set the item number 015 (see page 14).

Set LCD display



- Measure the ambient temperature.
- Adjust with **[VOL+]** or **[VOL-]** key so that the adjusted value (hexadecimal value) becomes the ambient temperature. (Initial value : 19h = 25°C, Adjusting range : 80h to 7fh (-128°C to +127°C))
- Press the **[ ]** key or press the **[ ]** key on the remote commander to write the adjusted value.

### Power Supply Manual Adjustment

#### Adjustment sequence

- Adjustment must be done with the following steps.
- VC1\_LOW (PB) adjustment (item number : 741)
  - VC1\_HIGH (REC) adjustment (item number : 742)
  - VC2\_LOW adjustment (item number : 743)
  - VC2\_HIGH adjustment (item number : 744)
  - REG1 adjustment (item number : 745)
  - REG3\_LOW1 adjustment (item number : 747)
  - REG3\_LOW2 adjustment (item number : 748)
  - REG3\_HIGH adjustment (item number : 749)
  - VREC\_LOW (X2 speed) adjustment (item number : 751)
  - VREC\_MIDDLE (X4 speed) adjustment (item number : 752)
  - VREC\_HIGH (HEAD MOTOR) adjustment (item number : 753)
  - CHGV\_LOW adjustment (item number : 755)
  - CHGV\_HIGH adjustment (item number : 756)
  - CHGI\_LOW (current) adjustment (item number : 757)
  - CHGI\_HIGH (current) adjustment (item number : 758)

#### Setting Method of Power Supply Manual Adjustment

- Make sure that the power supply voltage is 3V.
- Select the manual mode of the test mode (see page 14).
- Set item number.

**Note1:** BATT- terminal is not GND when AC adaptor is used.

**Note2:** Power supply adjustment auto item feed mode (page 25) is available to perform the temperature Correction and Power Supply Adjustment without entering the manual mode.

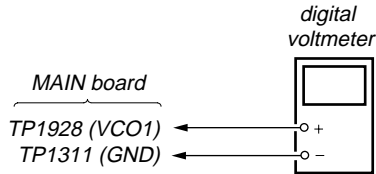
• **Adjustment Method of VC1\_LOW (PB)**  
(item number: 741)

Set LCD display



\*\* : Adjusted value

1. Connect a digital voltmeter to the TP1928 (VCO1) on the MAIN board, and adjust **[VOL+]** key (voltage up) or **[VOL-]** key (voltage down) so that the voltage becomes  $2.35 \pm 0.05V$ .



2. Press the **[M]** key on the set or the **[M]** key on the remote commander to write the adjusted value.

**Adjustment and Connection Location:** MAIN board  
(see page 24)

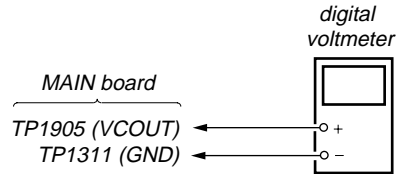
• **Adjustment Method of VC2\_LOW**  
(item number: 743)

Set LCD display



\*\* : Adjusted value

1. Connect a digital voltmeter to the TP1905 (VCOUT) on the MAIN board, and adjust **[VOL+]** key (voltage up) or **[VOL-]** key (voltage down) so that the voltage becomes  $2.30 \pm 0.01V$ .



2. Press the **[M]** key on the set or the **[M]** key on the remote commander to write the adjusted value.

**Adjustment and Connection Location:** MAIN board  
(see page 24)

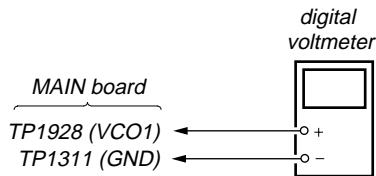
• **Adjustment Method of VC1\_HIGH (REC)**  
(item number: 742)

Set LCD display



\*\* : Adjusted value

1. Connect a digital voltmeter to the TP1928 (VCO1) on the MAIN board, and adjust **[VOL+]** key (voltage up) or **[VOL-]** key (voltage down) so that the voltage becomes  $2.50 \pm 0.05V$ .



2. Press the **[M]** key on the set or the **[M]** key on the remote commander to write the adjusted value.

**Adjustment and Connection Location:** MAIN board  
(see page 24)

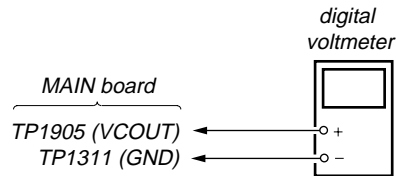
• **Adjustment Method of VC2\_HIGH**  
(item number: 744)

Set LCD display



\*\* : Adjusted value

1. Connect a digital voltmeter to the TP1905 (VCOUT) on the MAIN board, and adjust **[VOL+]** key (voltage up) or **[VOL-]** key (voltage down) so that the voltage becomes  $2.55 \pm 0.01V$ .

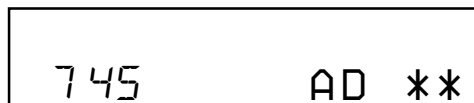


2. Press the **[M]** key on the set or the **[M]** key on the remote commander to write the adjusted value.

**Adjustment and Connection Location:** MAIN board  
(see page 24)

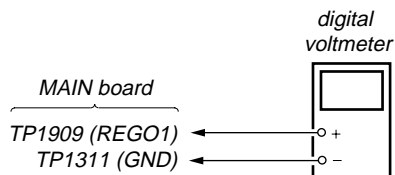
• **Adjustment Method of REG1**  
(item number: 745)

Set LCD display



\*\* : Adjusted value

1. Connect a digital voltmeter to the TP1909 (REGO1) on the MAIN board, and adjust [VOL+] key (voltage up) or [VOL-] key (voltage down) so that the voltage becomes  $2.05 \pm 0.01V$ .

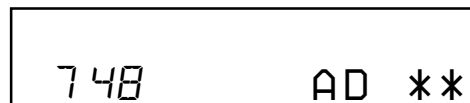


2. Press the [MUTE] key on the set or the [MUTE] key on the remote commander to write the adjusted value.

**Adjustment and Connection Location:** MAIN board  
(see page 24)

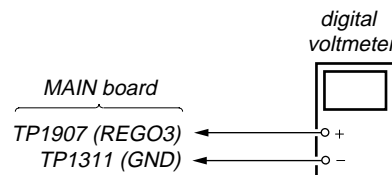
• **Adjustment Method of REG3\_LOW2**  
(item number: 748)

Set LCD display



\*\* : Adjusted value

1. Connect a digital voltmeter to the TP1907 (REGO3) on the MAIN board, and adjust [VOL+] key (voltage up) or [VOL-] key (voltage down) so that the voltage becomes  $1.25 \pm 0.01V$ .

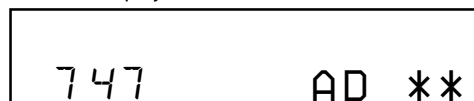


2. Press the [MUTE] key on the set or the [MUTE] key on the remote commander to write the adjusted value.

**Adjustment and Connection Location:** MAIN board  
(see page 24)

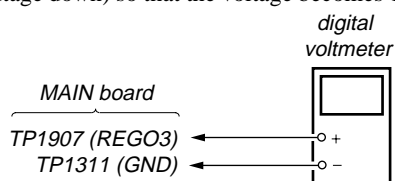
• **Adjustment Method of REG3\_LOW1**  
(item number: 747)

Set LCD display



\*\* : Adjusted value

1. Connect a digital voltmeter to the TP1907 (REGO3) on the MAIN board, and adjust [VOL+] key (voltage up) or [VOL-] key (voltage down) so that the voltage becomes  $1.25 \pm 0.01V$ .



2. Press the [MUTE] key on the set or the [MUTE] key on the remote commander to write the adjusted value.

**Adjustment and Connection Location:** MAIN board  
(see page 24)

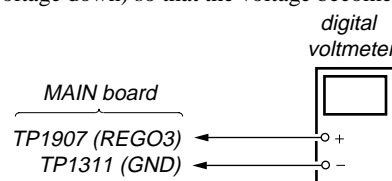
• **Adjustment Method of REG3\_HIGH**  
(item number: 749)

Set LCD display



\*\* : Adjusted value

1. Connect a digital voltmeter to the TP1907 (REGO3) on the MAIN board, and adjust [VOL+] key (voltage up) or [VOL-] key (voltage down) so that the voltage becomes  $1.25 \pm 0.01V$ .



2. Press the [MUTE] key on the set or the [MUTE] key on the remote commander to write the adjusted value.

**Adjustment and Connection Location:** MAIN board  
(see page 24)

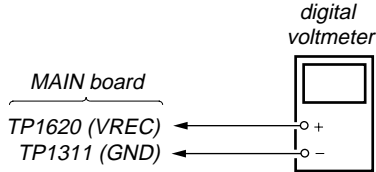
- **Adjustment Method of VREC\_LOW (X2 speed)**  
(item number: 751)

Set LCD display



\*\* : Adjusted value

1. Connect a digital voltmeter to the TP1620 (VREC) on the MAIN board, and adjust **[VOL +]** key (voltage up) or **[VOL -]** key (voltage down) so that the voltage becomes  $1.20 \pm 0.02V$ .



2. Press the **[M]** key on the set or the **[M]** key on the remote commander to write the adjusted value.

**Adjustment and Connection Location:** MAIN board  
(see page 24)

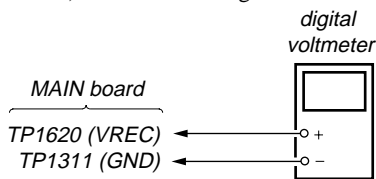
- **Adjustment Method of VREC\_MIDDLE (X4 speed)**  
(item number: 752)

Set LCD display



\*\* : Adjusted value

1. Connect a digital voltmeter to the TP1620 (VREC) on the MAIN board, and adjust **[VOL +]** key (voltage up) or **[VOL -]** key (voltage down) so that the voltage becomes  $1.20 \pm 0.02V$ .



2. Press the **[M]** key on the set or the **[M]** key on the remote commander to write the adjusted value.

**Adjustment and Connection Location:** MAIN board  
(see page 24)

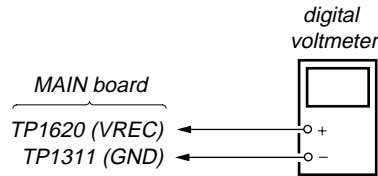
- **Adjustment Method of VREC\_HIGH (HEAD MOTOR)**  
(item number: 753)

Set LCD display



\*\* : Adjusted value

1. Connect a digital voltmeter to the TP1620 (VREC) on the MAIN board, and adjust **[VOL +]** key (voltage up) or **[VOL -]** key (voltage down) so that the voltage becomes between 1.65V and 1.75V.



2. Press the **[M]** key on the set or the **[M]** key on the remote commander to write the adjusted value.

**Adjustment and Connection Location:** MAIN board  
(see page 24)

- **Adjustment Method of CHGV\_LOW**  
(item number: 755)

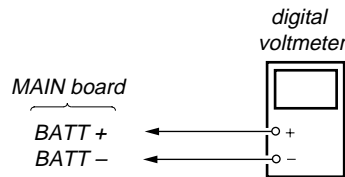
Set LCD display



\*\* : Adjusted value

**Note:** Remove the rechargeable battery.

1. Connect a digital voltmeter to the BATT+ and BATT- on the MAIN board, and adjust **[VOL +]** key (voltage up) or **[VOL -]** key (voltage down) so that the voltage becomes  $1.35 \pm 0.01V$ .

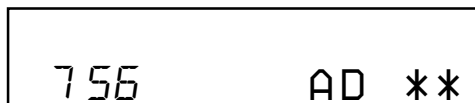


2. Press the **[M]** key on the set or the **[M]** key on the remote commander to write the adjusted value.

**Adjustment and Connection Location:** MAIN board  
(see page 24)

• **Adjustment Method of CHGV\_HIGH**  
(item number: 756)

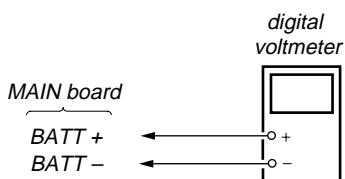
Set LCD display



\*\* : Adjusted value

**Note:** Remove the rechargeable battery.

1. Connect a digital voltmeter to the BATT + and BATT – on the MAIN board, and adjust [VOL+] key (voltage up) or [VOL-] key (voltage down) so that the voltage becomes  $1.80 \pm 0.015V$ .

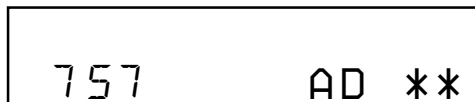


2. Press the [ ] key on the set or the [ ] key on the remote commander to write the adjusted value.

**Adjustment and Connection Location:** MAIN board  
(see page 24)

• **Adjustment Method of CHGI\_LOW (Charge current)**  
(item number: 757)

Set LCD display

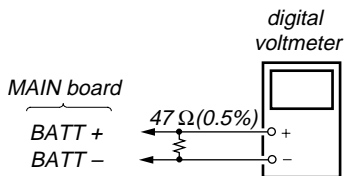


\*\* : Adjusted value

**Note:** Remove the rechargeable battery.

Connect the resistor (47 ) (0.5%) between terminals of BATT + and BATT –.

1. Connect a digital voltmeter to the BATT + and BATT – on the MAIN board, and adjust [VOL+] key (voltage up) or [VOL-] key (voltage down) so that the voltage becomes  $1.41 \pm 0.015V$ .

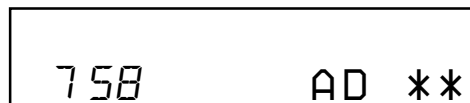


2. Press the [ ] key on the set or the [ ] key on the remote commander to write the adjusted value.

**Adjustment and Connection Location:** MAIN board  
(see page 24)

• **Adjustment Method of CHGI\_HIGH (Charge current)**  
(item number: 758)

Set LCD display

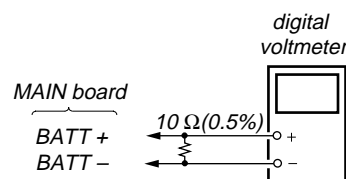


\*\* : Adjusted value

**Note:** Remove the rechargeable battery.

Connect the resistor (10 ) (0.5%) between terminals of BATT + and BATT –.

1. Connect a digital voltmeter to the BATT + and BATT – on the MAIN board, and adjust [VOL+] key (voltage up) or [VOL-] key (voltage down) so that the voltage becomes  $1.40 \pm 0.015V$ .

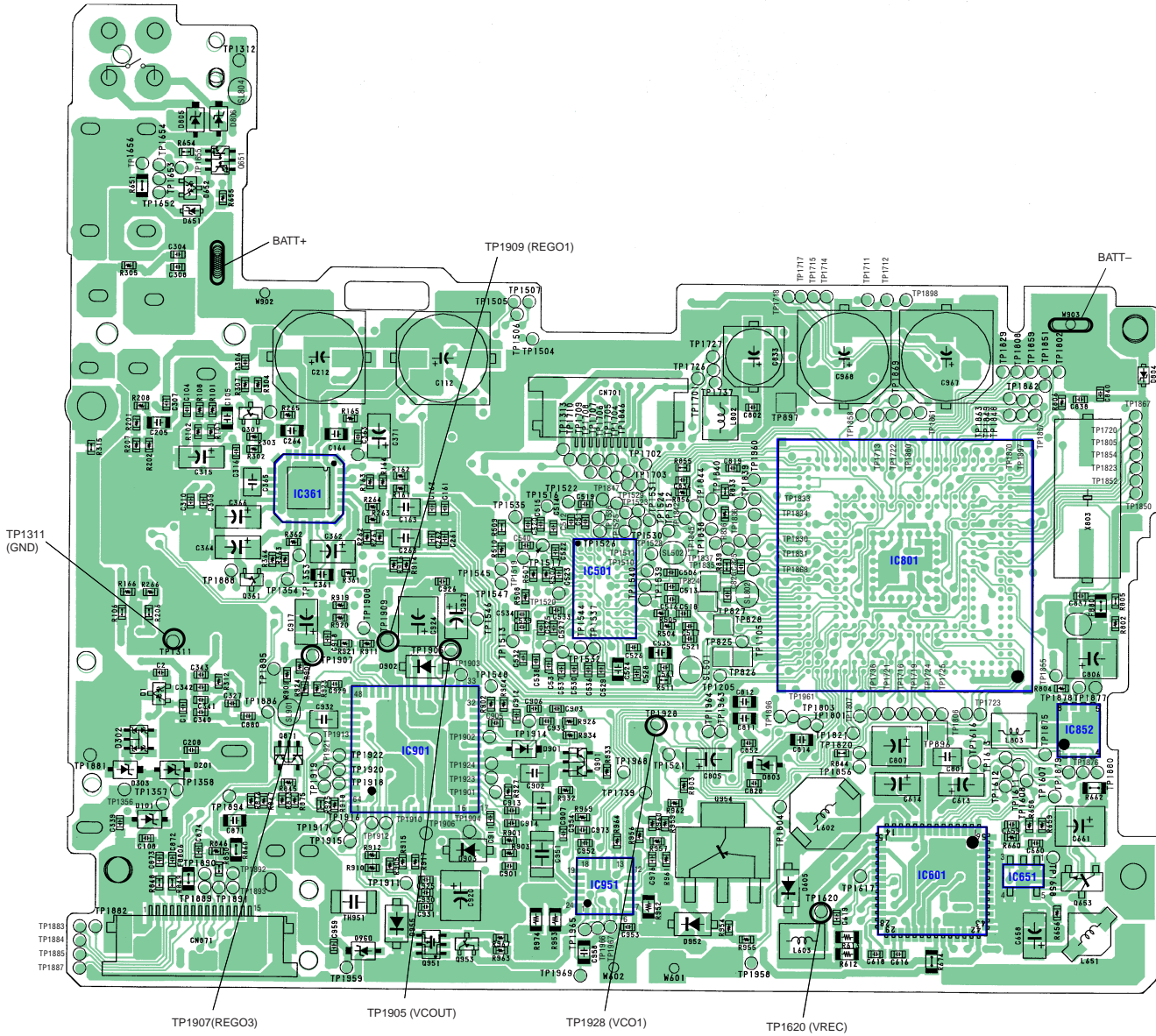


2. Press the [ ] key on the set or the [ ] key on the remote commander to write the adjusted value.

**Adjustment and Connection Location:** MAIN board  
(see page 24)

Adjustment/checking and Connection Location:

[MAIN BOARD] (SIDE B)



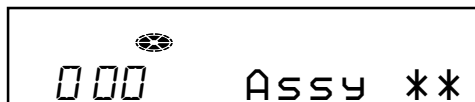


### Power Supply Adjustment Auto Item Feed

**Note:** This mode is available to perform the temperature correction and power supply adjustment without entering the manual mode.

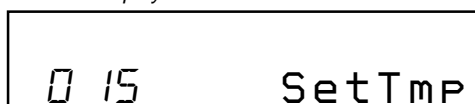
- Setting method of power supply adjustment auto item feed mode.
  - Set the test mode (see page 13)
  - Press the **◀◀** key or press the **[VOL-]** key on the remote commander to activate the overall adjustment mode.

Set LCD display



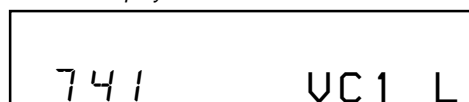
- Press the **[END SEARCH]** key to set the temperature correction mode.

Set LCD display



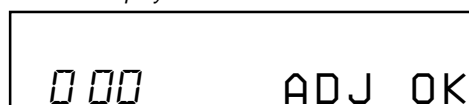
- To change the initial value (not displayed) adjust with the **[VOL+]** or **[VOL-]** key. Press the **||** key to write the adjusted value, and the item number increases automatically. When not writing the adjusted value, press the **▶▶** key to move to the next item.

Set LCD display



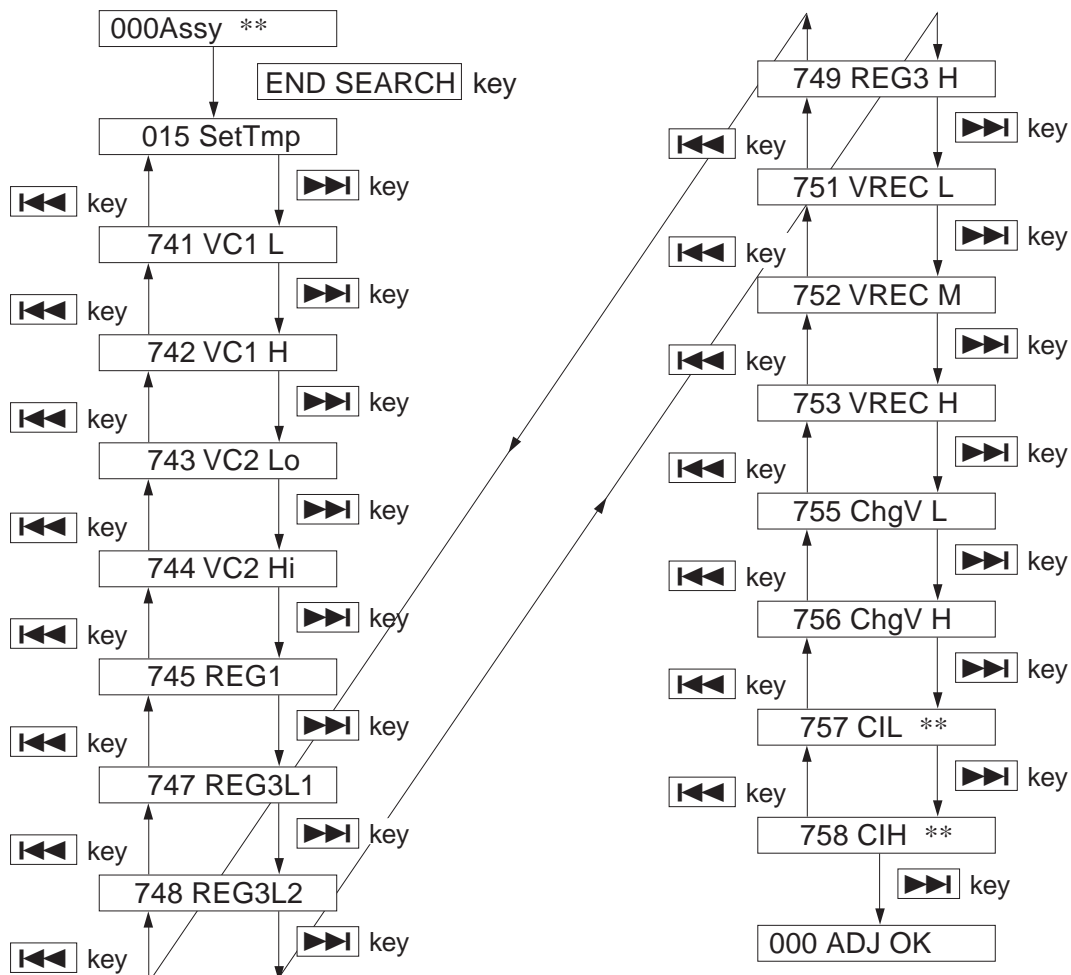
- Connect a digital voltmeter to the measuring points on the MAIN board, and adjust the voltage with the **[VOL+]** or **[VOL-]** key. (see page 19 to 23) Press the **||** key to write the adjusted value, and the item number increases automatically.
- When not writing the adjusted value, press the **▶▶** key to move to the next item. The **◀◀** key is available to back to the last item.
- The following message is displayed after all power supply adjustments finish.

Set LCD display



- Press the **[CANCEL/CHG]** key to return the test mode (display check mode).

### • Configuration of power supply adjustment auto item feed

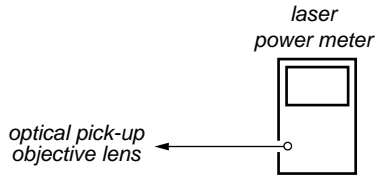


**Laser Power Check**

**Note:** If result of measurement of the laser power does not satisfy the specification, either replace the OP (optical pick-up unit) or check whether the laser circuit block is working correctly.

When the result of laser power measurement does not satisfy the specification even though the laser circuit block is confirmed to be working correctly, replace the OP (optical pick-up unit).

• **Connection**



• **Checking method**

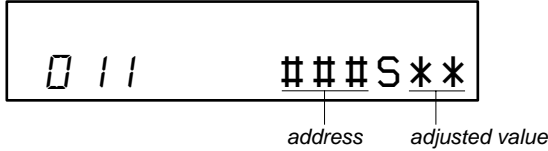
1. Select the manual mode of test mode (see page 14), and set the laser power checking mode (item number 010).

Set LCD display



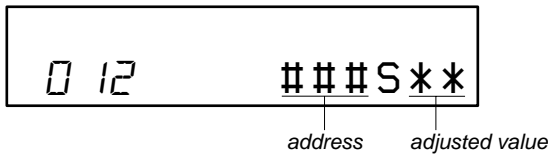
2. Press the [◀◀] key continuously until the optical pick-up moves to the most inward track.
3. Open the cover and set the laser power meter on the objective lens of the optical pick-up.
4. Press the [▶▶] key, and set the laser MO read check mode (item number 011).

Set LCD display



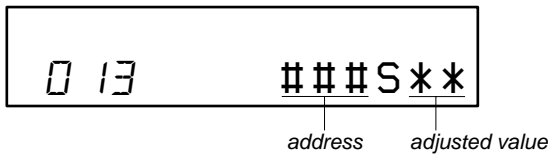
5. Check that the laser power meter reading is  $0.800 \pm 0.10$  mW.
6. Press the [▶▶] key, and set the laser CD read check mode (item number 012).

Set LCD display



7. Check that the laser power meter reading is  $0.910 \pm 0.11$  mW.
8. Press the [▶▶] key, and set the laser MO (X2 speed) write check mode (item number 013).

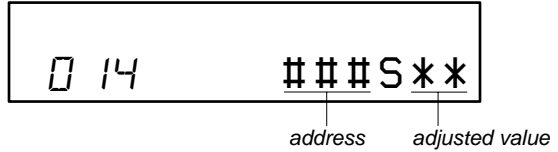
Set LCD display



9. Check that the laser power meter reading is  $4.95 \pm 0.59$  mW.

10. Press the [▶▶] key, and set the laser MO (X4 speed) write check mode (item number 014).

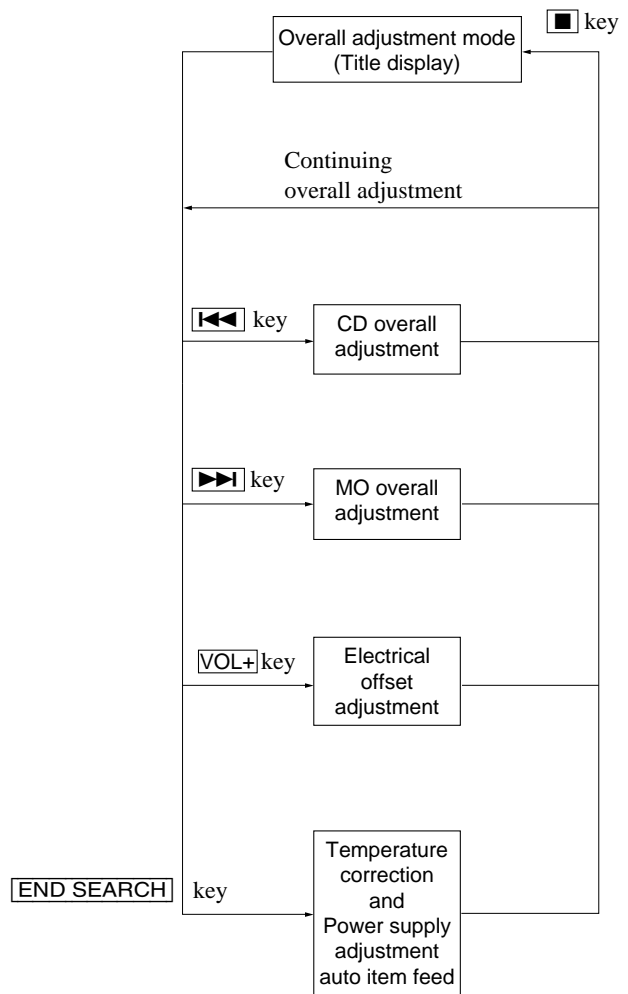
Set LCD display



11. Check that the laser power meter reading is  $5.93 \pm 0.71$  mW.
12. Press the [■] CANCEL/CHG key to quit the manual mode, and activate the test mode (display check mode).

**Overall Adjustment Mode**

• **Configuration of Overall Adjustment Mode**



- Overall Adjustment Mode (Title Display)

Set LCD display



☉: (Disc mark) At end of power supply adjustment: Outside lit

\*\* : Left side = MO overall adjustment information

F\* : MO overall adjustment completed

1\* : Manual adjustment exists (overall adj. not completed)

0\* : Not adjusted

Right side = CD overall adjustment information

\*F : CD overall adjustment completed

\*1 : Manual adjustment exists (overall adj. not completed)

\*0 : Not adjusted

**Note:** Adjust the CD first, when performing adjustment.

• **Adjustment Method of CD and MO Overall Adjustment Mode**

1. Set the test mode (see page 13).
2. Press the **◀◀** key or press **[VOL-]** on the remote commander key to activate the overall adjustment mode.

Set LCD display



3. Insert CD disc in the set, and press the **◀◀** key to set the CD overall adjustment mode. Automatic adjustments are made.

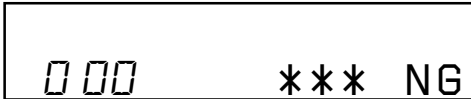
Set LCD display



X X X : Item number for which an adjustment is being executed.

4. In case of CD overall adjustment NG, readjust from the NV reset (see page 19), The temperature correction (see page 19) may be omitted.

Set LCD display



\*\* : NG item number.

5. If OK through the CD overall adjustments, then perform MO overall adjustments.

Set LCD display



6. Insert MO disc in the set, and press the **▶▶** key to set the MO overall adjustment mode. Automatic adjustments are made.

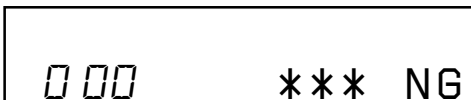
Set LCD display



X X X : Item number for which an adjustment is being executed.

7. In case of MO overall adjustment NG, readjust from the NV reset (see page 19). The temperature correction (see page 19) may be omitted.

Set LCD display



\*\* : NG item number.

8. If OK through the MO overall adjustments, press the **[CANCEL/CHG]** key to return to the test mode and terminate the overall adjustment mode.

Set LCD display



• **Overall Adjustment error message**

The following message will be displayed if adjustment procedure is mistaken in the CD and MO overall adjustment.

| Message | Display timing  | Description   |
|---------|---|---|
| CLOSE!  | During CD/MO/DISC automatic distinction overall adjustment                          | DISC is not inserted.   |
| Set CD! | During MO/DISC automatic distinction overall adjustment<br>During offset adjustment | <ul style="list-style-type: none"> <li>• CD overall adjustment is not completed in the MO overall adjustment.</li> <li>• CD and MO overall adjustment is not completed in the offset adjustment.</li> </ul> |
| Set MO! | During offset adjustment  | MO overall adjustment is not completed in the offset adjustment   |
| NoTmp!  | During CD/MO/DISC automatic distinction overall adjustment                          | Temperature correction (item number 015) is not finished.   |
| NoChg!  | During CD/MO/DISC automatic distinction overall adjustment                          | Charge voltage adjustments (item number 755 and 756) are not finished.  |

• **CD and MO Overall Adjustment Items**

1. CD overall adjustment items

| Item No.                                     | Description                           |
|--|---------------------------------------|
| 761  | VC,VR power supply H/L selection      |
| 300  | HPIT setting . servo OFF              |
| 561  | SLED inward movement                  |
| 562  | SLED outward movement                 |
| High reflection electrical offset adjustment |                                       |
| 312  | Laser ON . Focus UP . vc correction   |
| ALFA offset adjustment                       |                                       |
| 313  | IJ offset adjustment                  |
| 314  | FE offset adjustment                  |
| HPIT adjustment                              |                                       |
| 320  | Focus servo ON                        |
| 324  | TE offset adjustment 1                |
| 321  | TE gain adjustment                    |
| 328  | TWPP gain adjustment                  |
| 324  | TE offset adjustment 1                |
| 332  | TE offset adjustment 2                |
| 330  | Tracking servo ON                     |
| 336  | ABCD gain adjustment                  |
| 337  | KF gain correction                    |
| 338  | RF gain adjustment                    |
| 344  | FCS gain adjustment                   |
| 345  | TRK gain adjustment                   |
| 521  | Two-axis sensitivity (inner position) |

| Item No. | Description                           |
|----------|---------------------------------------|
| 522      | Two-axis sensitivity (outer position) |
| 300      | HPIT setting . servo OFF              |

## 2. MO overall adjustment items

| Item No.                                    | Description                       |
|---|-----------------------------------|
| 716   | VC,VR power supply H/L selection  |
| 100   | R_GRV setting . servo OFF         |
| Low reflection electrical offset adjustment |                                   |
| 112   | Laser ON . Focus UP vc correction |
| ALFA offset adjustment                      |                                   |
| 113   | IJ offset adjustment              |
| 114   | FE offset adjustment              |
| 118   | Wpp denominator offset adjustment |
| LPIT adjustment                             |                                   |
| 200   | LPIT setting . servo OFF          |
| 561   | SLED inward movement              |
| 220   | Focus servo ON                    |
| 224   | TE offset adjustment 1            |
| 221   | TE gain adjustment                |
| 224   | TE offset adjustment 1            |
| 232   | TE offset adjustment 2            |
| 230   | Tracking servo ON                 |
| 236   | ABCD gain adjustment              |
| 237   | KF gain correction                |
| 238   | RF gain adjustment                |
| 244   | Focus gain adjustment             |
| 245   | Tracking gain adjustment          |
| READ GRV adjustment 1                       |                                   |
| 100   | R_GRV setting . servo OFF         |
| 562   | SLED outward movement             |
| 120   | Focus servo ON                    |
| 122   | TON offset adjustment             |
| 121   | TE gain adjustment                |
| 122   | TON offset adjustment             |
| 123   | TEIN offset adjustment            |
| 124   | TWPP offset adjustment 1          |
| 130   | Tracking servo ON                 |
| 131   | TWPP offset adjustment 1          |
| 136   | ABCD gain adjustment              |
| 137   | KF gain correction                |
| 139   | ADIP BPF f0 adjustment            |
| 144   | Focus gain adjustment             |
| 145   | Tracking gain adjustment          |
| 134   | TWPP gain adjustment              |
| 131   | TWPP offset adjustment 1          |
| 132   | TWPP offset adjustment 2          |
| 149   | TWPP OP offset adjustment         |
| WRITE GRV adjustment                        |                                   |
| 410   | HEAD DOWN . GRV servo ON          |
| 420   | READ → WRITE selection            |
| 421   | TE gain adjustment                |
| 423   | TEIN offset adjustment            |
| 430   | Tracking servo ON                 |
| 431   | TWPP offset adjustment 1          |
| 436   | ABCD gain adjustment              |

| Item No.              | Description                       |
|-----------------------|-----------------------------------|
| 444                   | Focus gain adjustment             |
| 445                   | Tracking gain adjustment          |
| 434                   | TWPP gain adjustment              |
| 431                   | TWPP offset adjustment 1          |
| 432                   | TE offset adjustment 2            |
| 449                   | TWPP OP offset adjustment         |
| 410                   | READ → WRITE selection            |
| 411                   | TWPP offset adjustment 1          |
| 412                   | TE offset adjustment 2            |
| 418                   | TWPP OP offset adjustment         |
| 490                   | HCLV LCLV selection process       |
| 450                   | HEAD DOWN . GRV servo ON          |
| 460                   | READ → WRITE selection            |
| 461                   | TE gain adjustment                |
| 463                   | TEIN offset adjustment            |
| 470                   | Tracking servo ON                 |
| 471                   | TWPP offset adjustment 1          |
| 476                   | ABCD gain adjustment              |
| 484                   | Focus gain adjustment             |
| 485                   | Tracking gain adjustment          |
| 451                   | TWPP offset adjustment 1          |
| 452                   | TE offset adjustment 2            |
| 460                   | READ → WRITE selection            |
| 470                   | Tracking servo ON                 |
| 474                   | TWPP gain adjustment              |
| 471                   | TWPP offset adjustment 1          |
| 472                   | TE offset adjustment 2            |
| 489                   | TWPP OP offset adjustment         |
| 450                   | WRITE → READ selection            |
| 451                   | TWPP offset adjustment 1          |
| 452                   | TE offset adjustment 2            |
| 458                   | TWPP OP offset adjustment         |
| 448                   | 30 sec continuous REC             |
| 400                   | GRV setting . servo OFF . HEAD UP |
| READ GRV adjustment 2 |                                   |
| 120                   | Focus servo ON                    |
| 130                   | Tracking servo ON                 |
| 138                   | RF gain adjustment                |
| 141                   | FOCUS_BIAS                        |
| 035                   | Stray light offset measurement    |
| 100                   | R_GRV setting . servo OFF         |

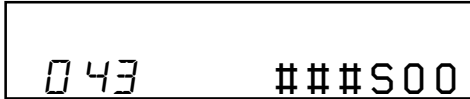
## Remuse Clear

Perform the Resume clear when all adjustments completed.


### • Resume Clear Setting Method

1. Select the manual mode of the test mode, and set item number 043 (see page 14).

*Set LCD display*



###: Address


2. Press the  key.

*Set LCD display*



*Resume clear complete*



3. Press the  key to return to the test mode (display check mode).

## Rewriting the Patch Data at Replacement of Main Board

This set requires the patch data in the nonvolatile memory (IC852) to be rewritten using the application, when the MAIN board was replaced.

**Caution:** The application that meets the microcomputer version in this set must be used when rewriting the patch data. Rewriting the patch data using the application not suitable for the microcomputer version could cause the set to malfunction.  
For a checking method of the microcomputer version, see “SECTION 4 TEST MODE” (page 13).

### • Preparation

1. USB cable (attached to the set)
2. Personal computer in which the Net MD Driver has been installed. (For further information, see “System requirements” (page 4) in “SECTION 1 SERVICING NOTES”)
3. Application “USB\_PatchWriter” for patch data rewriting

### • How to Get the Application “USB\_PatchWriter” for Patch Data Rewriting

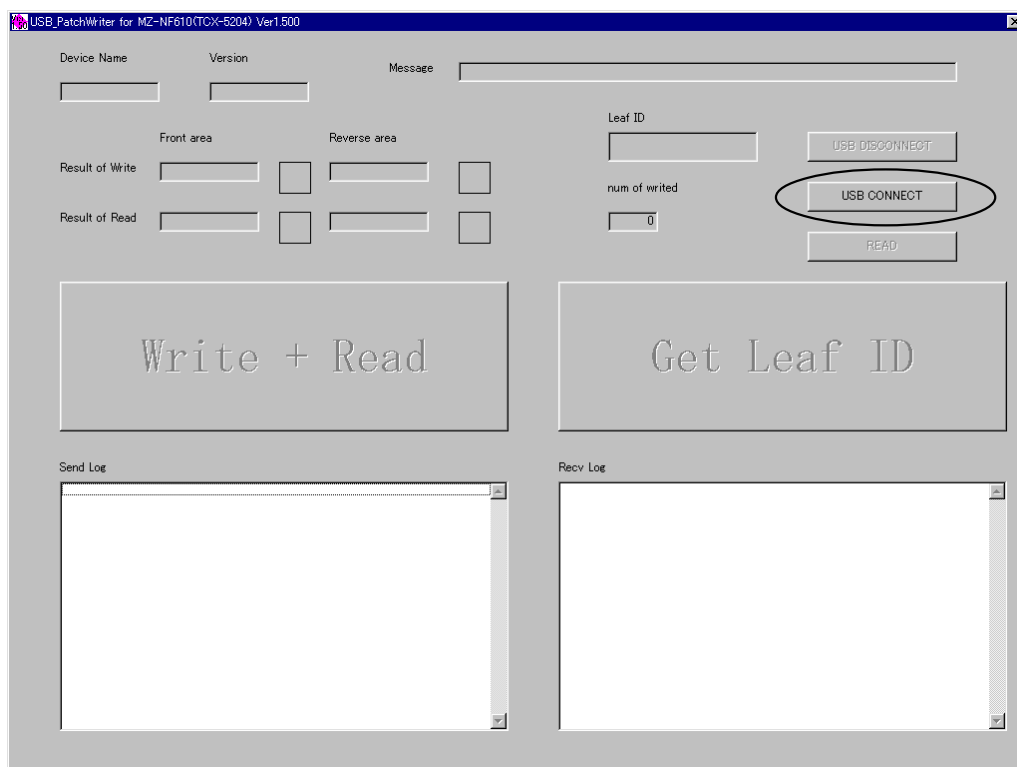
Contact our service technical support division to get the application.

### • Pre-check

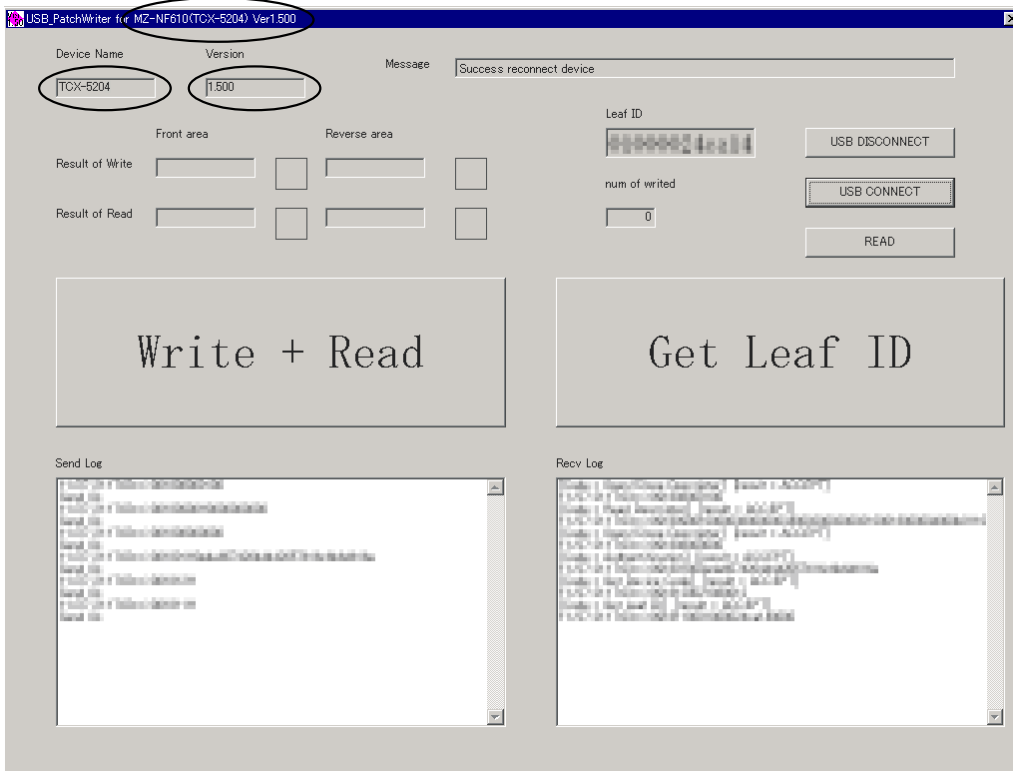
1. Check the microcomputer version in this set. (For a checking method of the microcomputer version, see “SECTION 4 TEST MODE” (page 13).)
2. Check that the Net MD Driver has been installed in the personal computer.
3. Make sure that the set is in the Normal mode.  
**Note:** Do not rewrite the patch data in the Test mode.

### • Rewriting the Patch Data

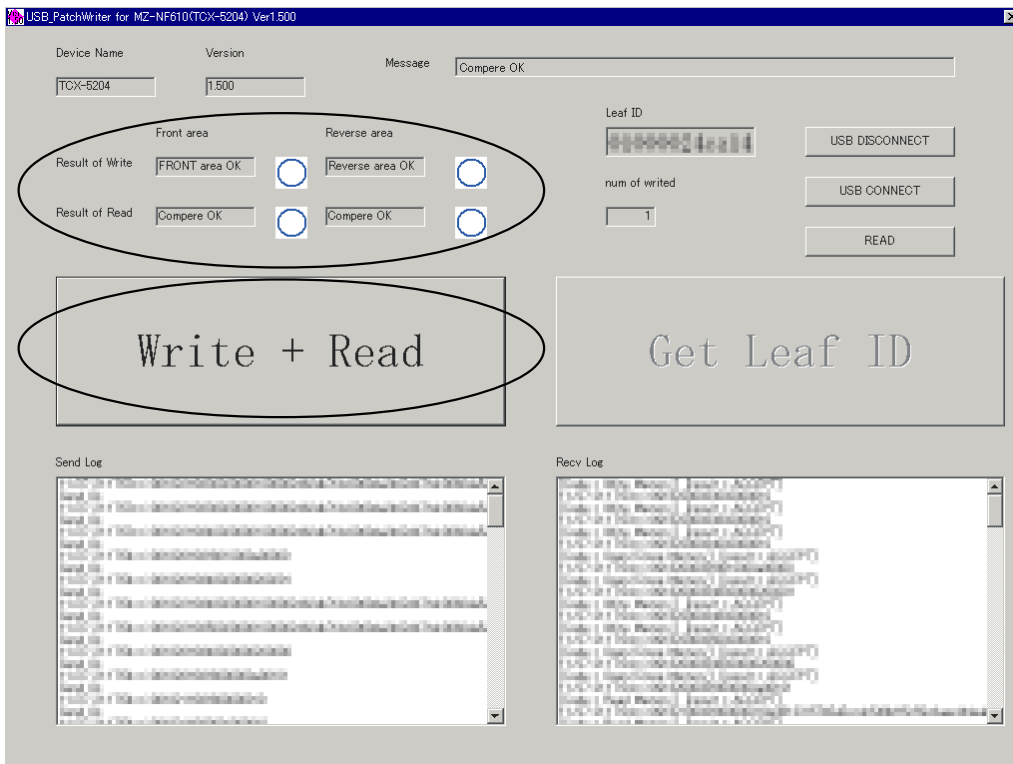
1. Connect the set to the personal computer with the USB cable.
2. Start the application “USB\_PatchWriter”.
3. Make sure that the following window opens.
4. Click the [USB CONNECT] button.



5. Confirm that the model and version indicated on the title bar coincide with the codes displayed in the Device Name block and the Version block in the window.



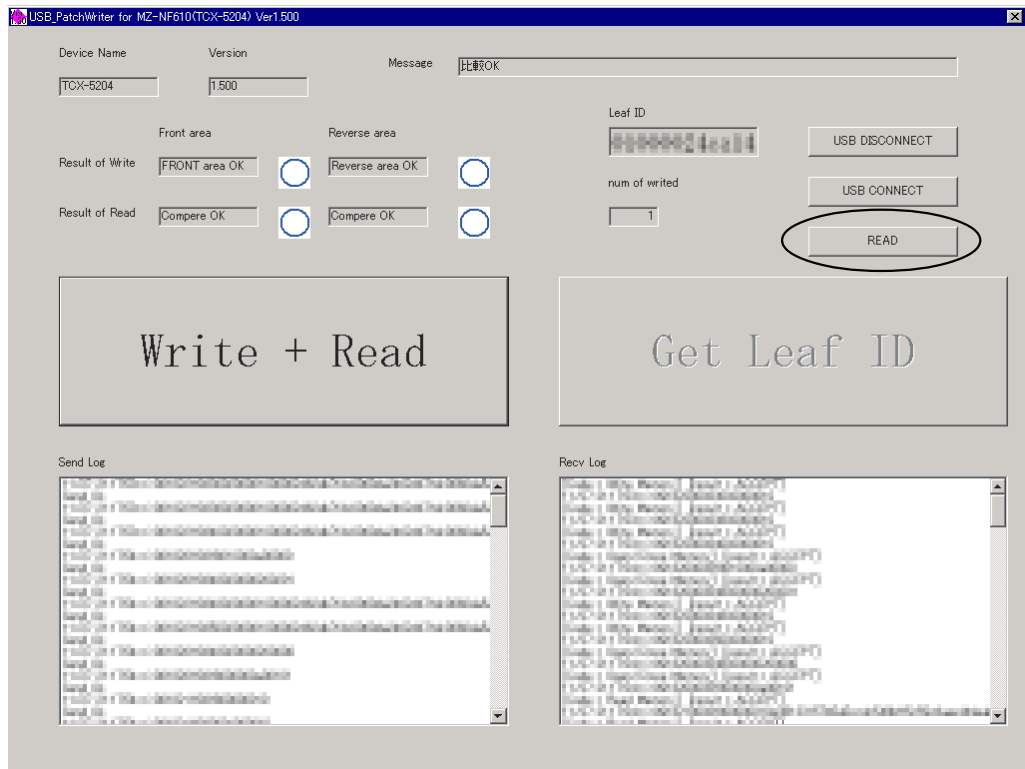
6. Click the [Write + Read] button.  
The patch data writing and the verify processing will be executed automatically in the following order:
  - 1) Writing to patch area (front area)
  - 2) Writing to patch area (reverse area)
  - 3) Verifying patch area (front area)
  - 4) Verifying patch area (reverse area)
7. The operation will terminate with the ○ (blue) mark given to all areas.  
If the × (red) mark is given to any area, the nonvolatile memory will be faulty.



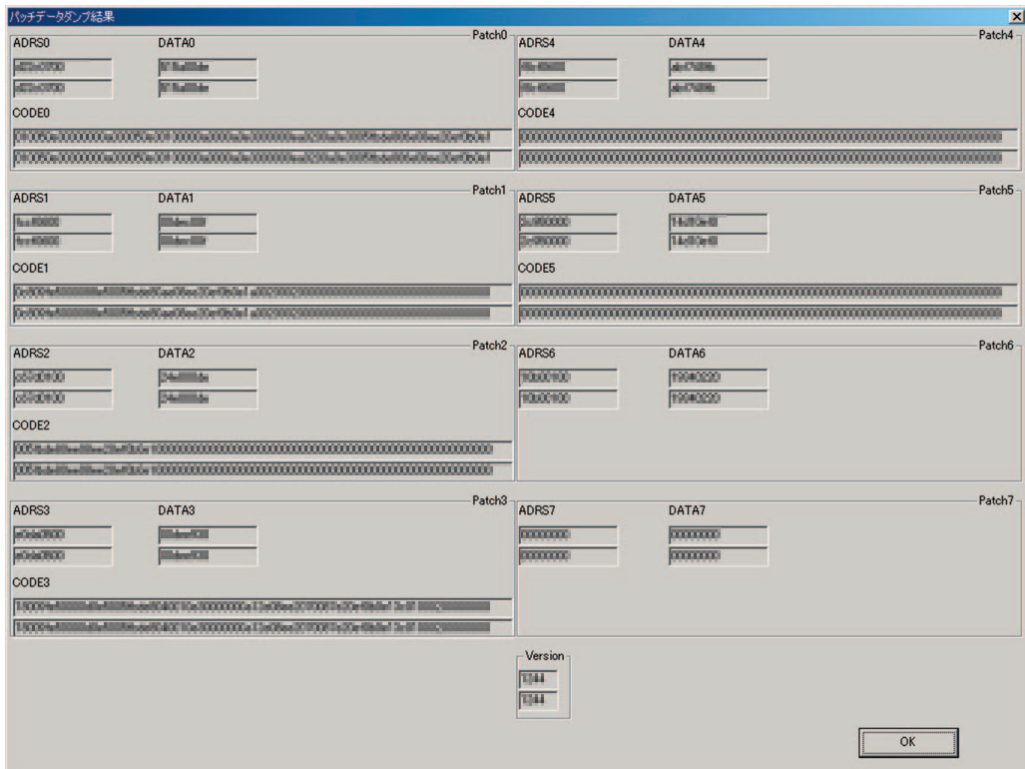


• Confirmation of contents of the patch data rewritten

1. Click the [READ] button to confirm the contents of the patch data rewritten.



2. The application reads out the front and reverse patch areas and displays the results in the edit box. Confirm that the upper column coincides with the lower column as the following window.
3. Click the [OK] button to close the window.



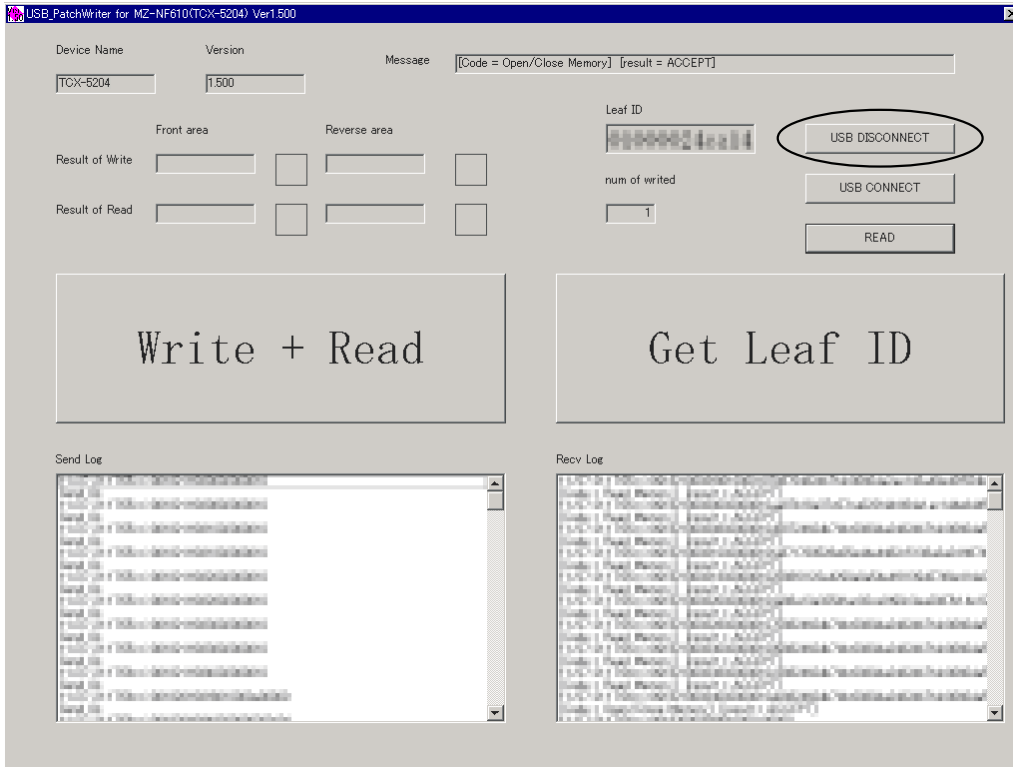
# MZ-NF610

- Disconnecting the USB cable

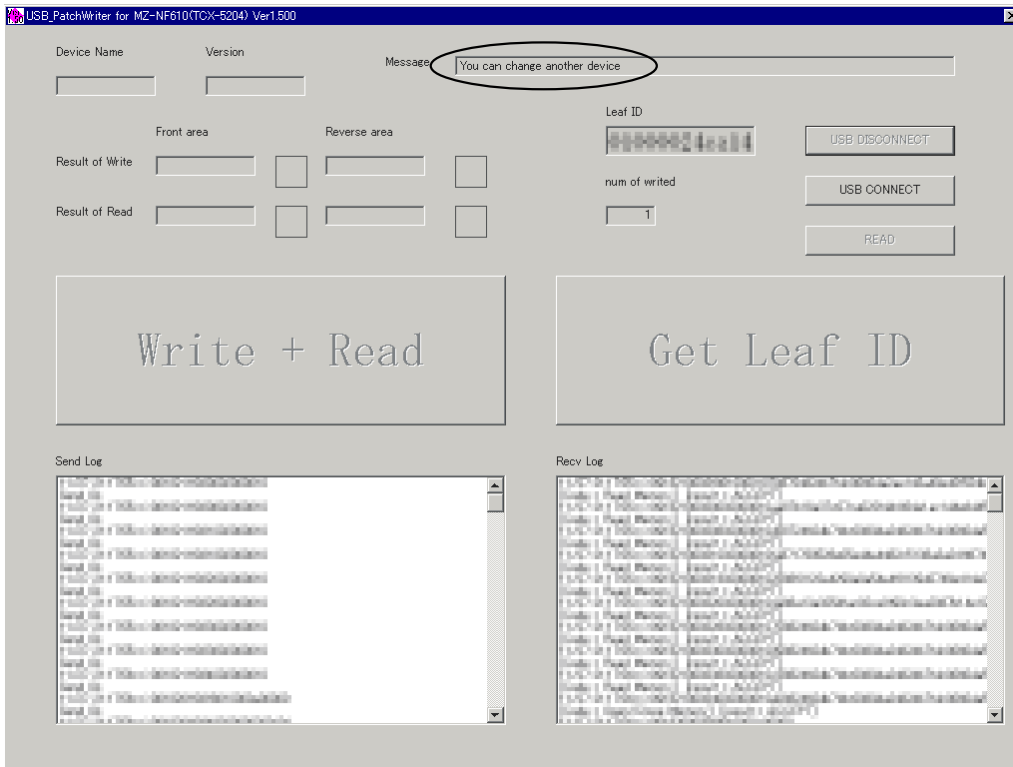
Disconnect the USB cable as the following procedure after rewriting the patch data and confirmation.

**Note :** When the following procedure is not completed but USB cable is extracted, the application does not recognize the set at exchanging of the set.

1. Click the [USB DISCONNECT] button.



2. Confirm that "You can change another device" is displayed in the message block.



3. Disconnect the USB cable from the personal computer and the set.

## Rewriting the NV values

**Caution:** The application that meets the microcomputer version in this set must be used when rewriting the NV values. Rewriting the NV values using the application not suitable for the microcomputer version could cause the set to malfunction.  
For a checking method of the microcomputer version, see “SECTION 4 TEST MODE” (page 13).

### • Preparation

1. USB cable (attached to the set)
2. Personal computer in which the Net MD Driver has been installed. (For further information, see “System requirements” (page 4) in “SECTION 1 SERVICING NOTES”)
3. Application “NVWriter” for NV values rewriting

### • How to get the application “NVWriter” for NV values rewriting

Contact our service technical support division to get the application.

### • Pre-check

1. Check the microcomputer version in this set. (For a checking method of the microcomputer version, see “SECTION 4 TEST MODE” (page 13).)
2. Check that the Net MD Driver has been installed in the personal computer.
3. Make sure that the set is in the Normal mode.

**Note:** Do not rewrite the NV values in the Test mode.

### • Rewriting the NV values

1. Connect the set to the personal computer with the USB cable.
2. Start the application “NVWriter”.
3. Make sure that the following window opens.
4. Click the [USB CONNECT] button.

NVWriter for MZ-N610(TCX-5204) Ver1.500

| Device Name          | Version              | Message              |
|----------------------|----------------------|----------------------|
| <input type="text"/> | <input type="text"/> | <input type="text"/> |

|        | ADDRESS(Front)                       | ADDRESS(Reverse)                     | A write-in result    | LeafID               |
|--------|--------------------------------------|--------------------------------------|----------------------|----------------------|
| Servo1 | <input type="text" value="0000038"/> | <input type="text" value="00000a0"/> | <input type="text"/> | <input type="text"/> |
| Servo2 | <input type="text" value="ffffff"/>  | <input type="text" value="ffffff"/>  | <input type="text"/> |                      |
| Power1 | <input type="text" value="0000058"/> | <input type="text" value="0000060"/> | <input type="text"/> |                      |
| Power2 | <input type="text" value="00000c0"/> | <input type="text" value="00000c8"/> | <input type="text"/> |                      |
| System | <input type="text" value="ffffff"/>  | <input type="text" value="ffffff"/>  | <input type="text"/> |                      |

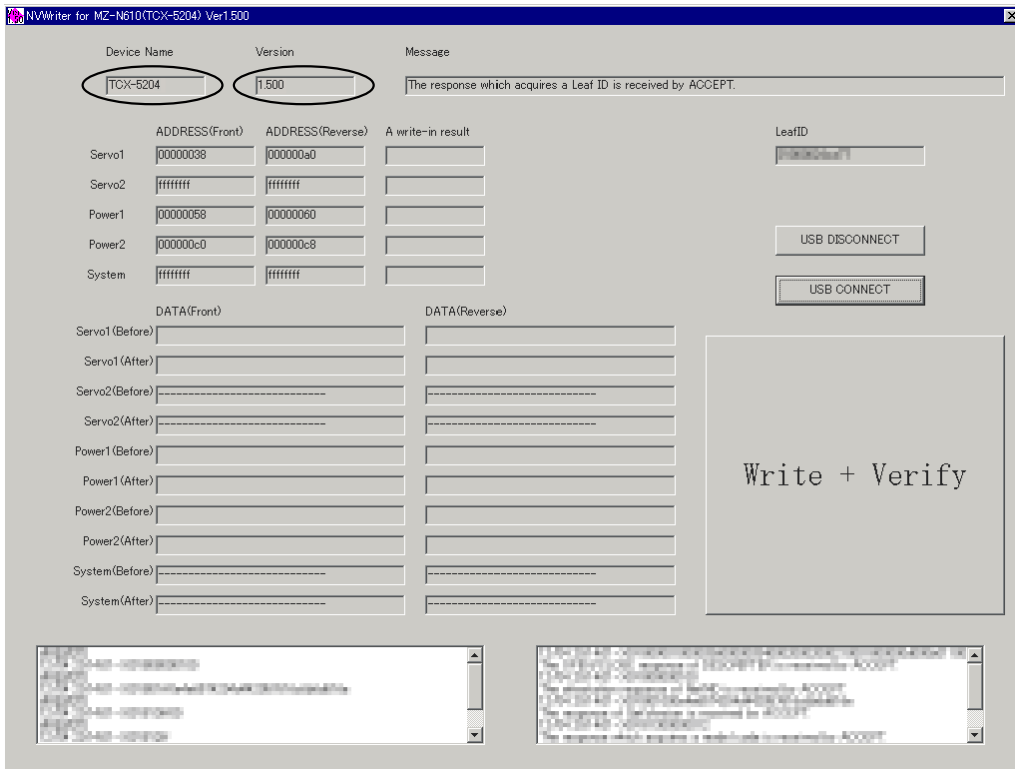
|                 | DATA(Front)          | DATA(Reverse)        |
|-----------------|----------------------|----------------------|
| Servo1 (Before) | <input type="text"/> | <input type="text"/> |
| Servo1 (After)  | <input type="text"/> | <input type="text"/> |
| Servo2 (Before) | <input type="text"/> | <input type="text"/> |
| Servo2 (After)  | <input type="text"/> | <input type="text"/> |
| Power1 (Before) | <input type="text"/> | <input type="text"/> |
| Power1 (After)  | <input type="text"/> | <input type="text"/> |
| Power2 (Before) | <input type="text"/> | <input type="text"/> |
| Power2 (After)  | <input type="text"/> | <input type="text"/> |
| System (Before) | <input type="text"/> | <input type="text"/> |
| System (After)  | <input type="text"/> | <input type="text"/> |

Write + Verify

USB DISCONNECT

USB CONNECT

- Confirm that the model and version indicated on the title bar coincide with the codes displayed in the Device Name block and the Version block in the window.

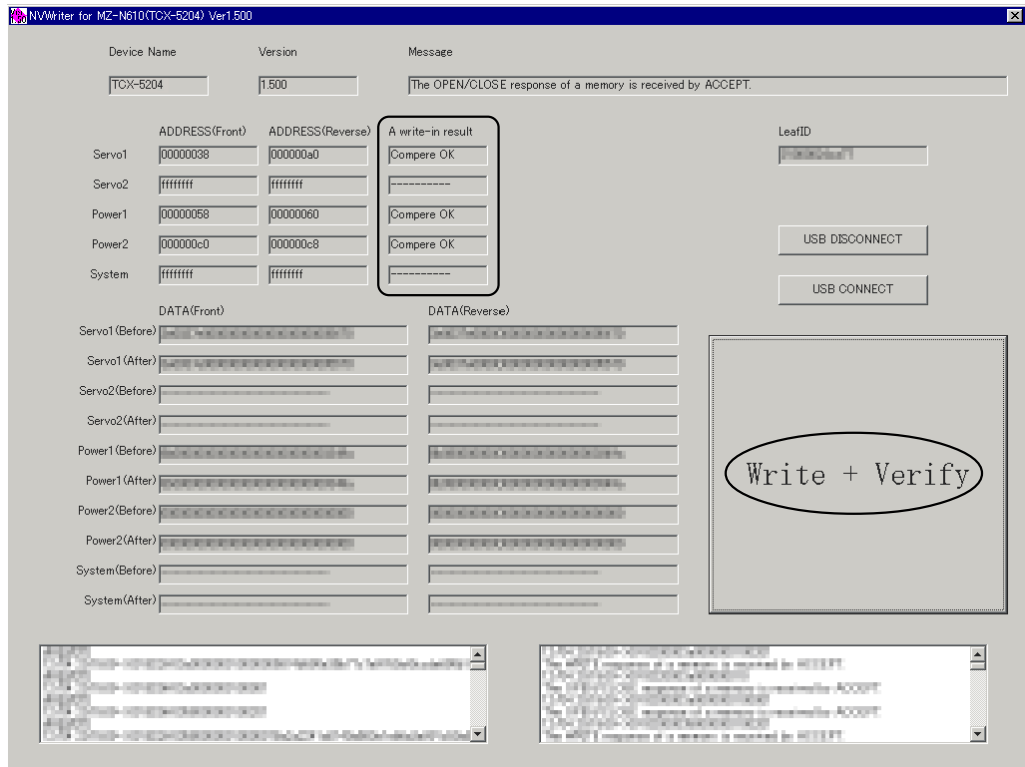


- Click the [Write + Verify] button.

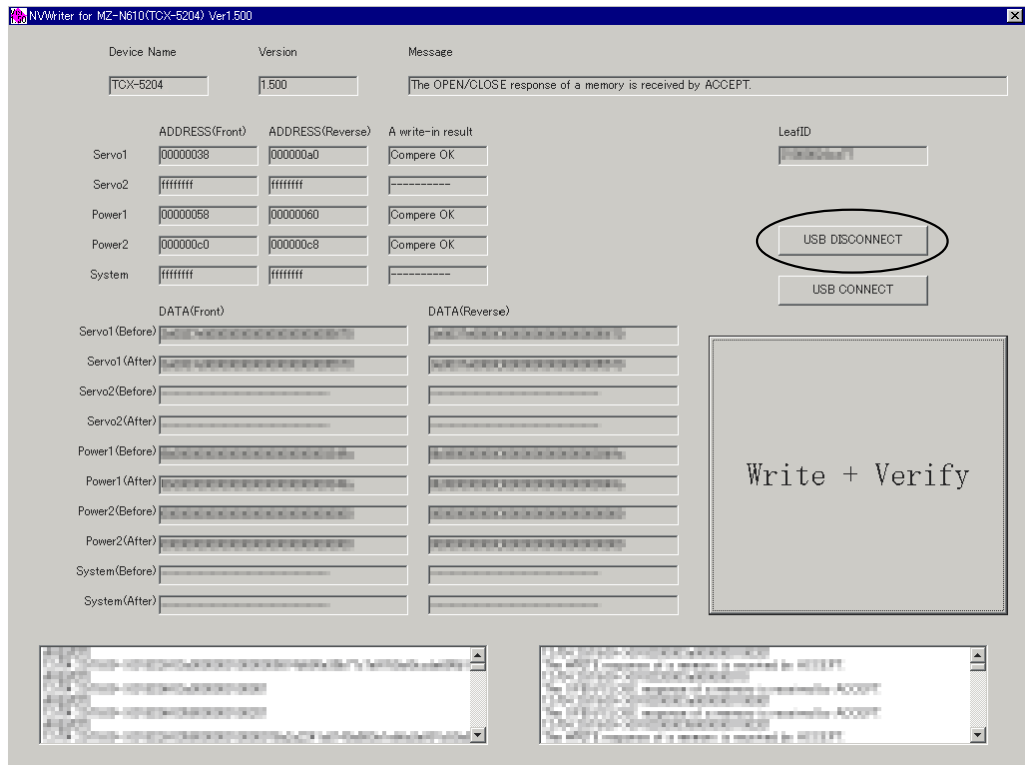
The NV values writing and the verify processing will be executed automatically in the following order:

- Writing to Servo 1 area (front area)
- Writing to Servo 1 area (reverse area)
- Writing to Power Supply 1 area (front area)
- Writing to Power Supply 1 area (reverse area)
- Writing to Power Supply 2 area (front area)
- Writing to Power Supply 2 area (reverse area)
- Verifying to Servo 1 area (front area)
- Verifying to Servo 1 area (reverse area)
- Verifying to Power Supply 1 area (front area)
- Verifying to Power Supply 1 area (reverse area)
- Verifying to Power Supply 2 area (front area)
- Verifying to Power Supply 2 area (reverse area)

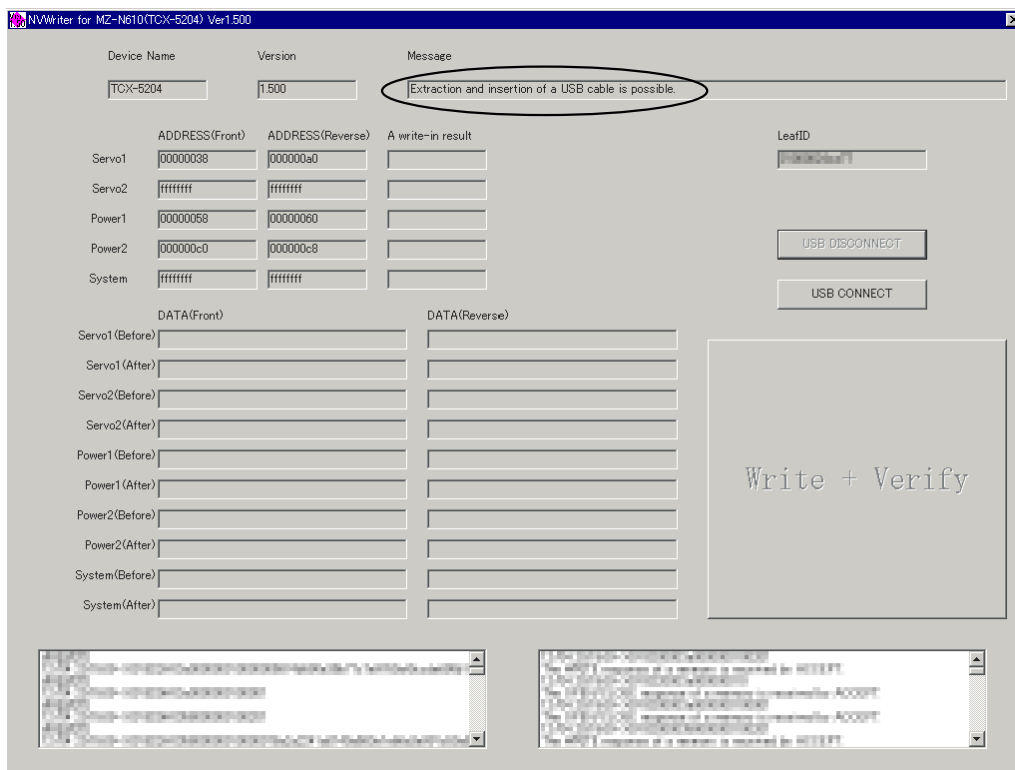
- The operation will terminate with “Compere OK” given to all areas.  
If “Compere NG” is given to any area, the nonvolatile memory will be faulty.



- Click the [USB DISCONNECT] button.



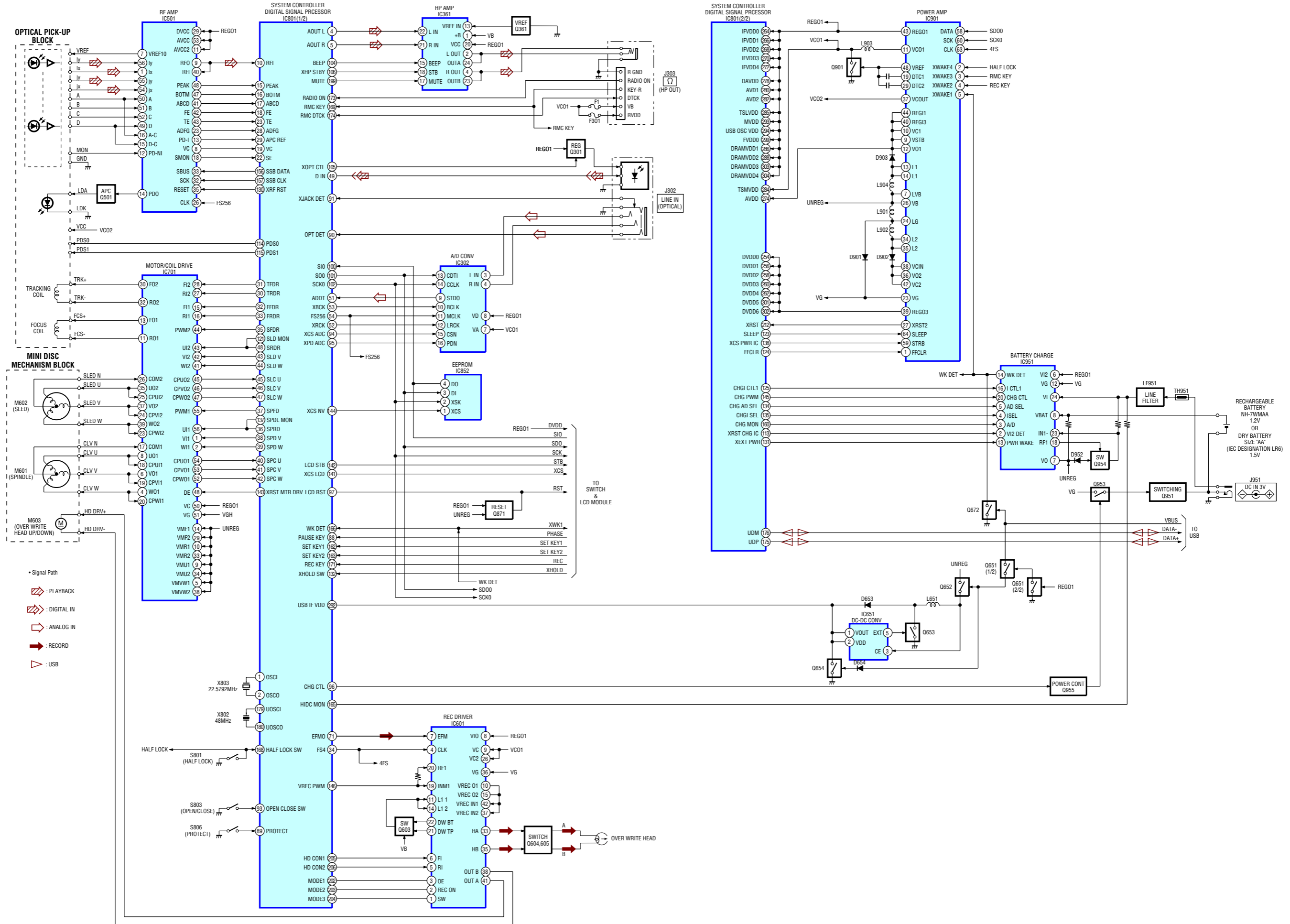
9. Confirm that the window becomes as shown below where the [Write + Verify] button is inactive.



10. Disconnect the USB cable from the personal computer and the set.

# SECTION 6 DIAGRAMS

## 6-1. Block Diagram



6-2. Note For Printed Wiring Board And Schematic Diagrams

Note on Printed Wiring Board:

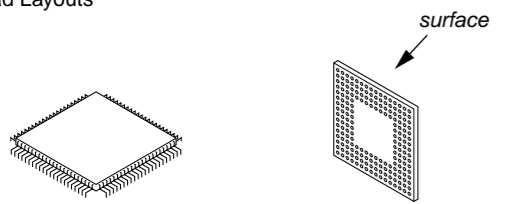
- : parts extracted from the component side.
- : parts extracted from the conductor side.
- : Pattern from the side which enables seeing. (The other layers' patterns are not indicated.)

Caution:  
 Pattern face side: Parts on the pattern face side seen from the pattern face are indicated.  
 Parts face side: Parts on the parts face side seen from the parts face are indicated.

- MAIN board is four-layer printed board. However, the patterns of layers 2 and 3 have not been included in this diagrams.

\* Replacement of IC501, IC801 on MAIN board requires a special tool.

Lead Layouts



Lead layout of conventional IC      CSP (chip size package)

☆ When IC852 is damaged, replace the MAIN board.

Note on Schematic Diagram:

- All capacitors are in  $\mu\text{F}$  unless otherwise noted.  $\text{pF}$ :  $\mu\text{F}$  50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in  $\Omega$  and  $1/4\text{ W}$  or less unless otherwise specified.
- % : indicates tolerance.
- $\Delta$  : internal component.
- : panel designation.

Note:  
 The components identified by mark  $\Delta$  or dotted line with mark  $\Delta$  are critical for safety. Replace only with part number specified.

Note:  
 Les composants identifiés par une marque  $\Delta$  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

- : B+ Line.
- Total current is measured with MD installed.
- Power voltage is dc 3 V and fed with regulated dc power supply from DC IN 3 V jack (J951).
- Voltages and waveforms are dc with respect to ground in playback mode.
- no mark : PLAYBACK
- ( ) : REC
- \* : Impossible to measure
- Voltages are taken with a VOM (Input impedance 10 M $\Omega$ ). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path.
- ⇒ : PLAYBACK
- ⇒ : DIGITAL IN
- ⇒ : ANALOG IN
- ⇒ : RECORD
- ▷ : USB

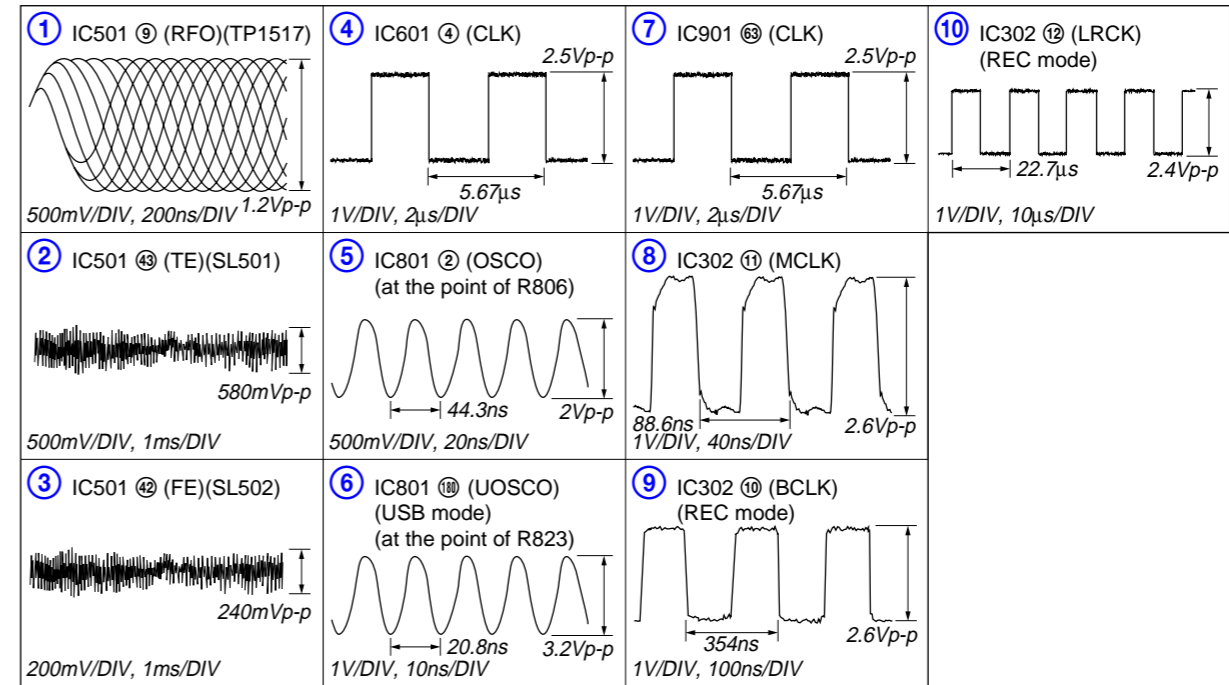
The voltage and waveform of CSP (chip size package) cannot be measured, because its lead layout is different form that of conventional IC.

\* Replacement of IC501, IC801 on MAIN board requires a special tool.

☆ When IC852 is damaged, replace the MAIN board.

- Abbreviation
- CND : Canadian model

Waveforms

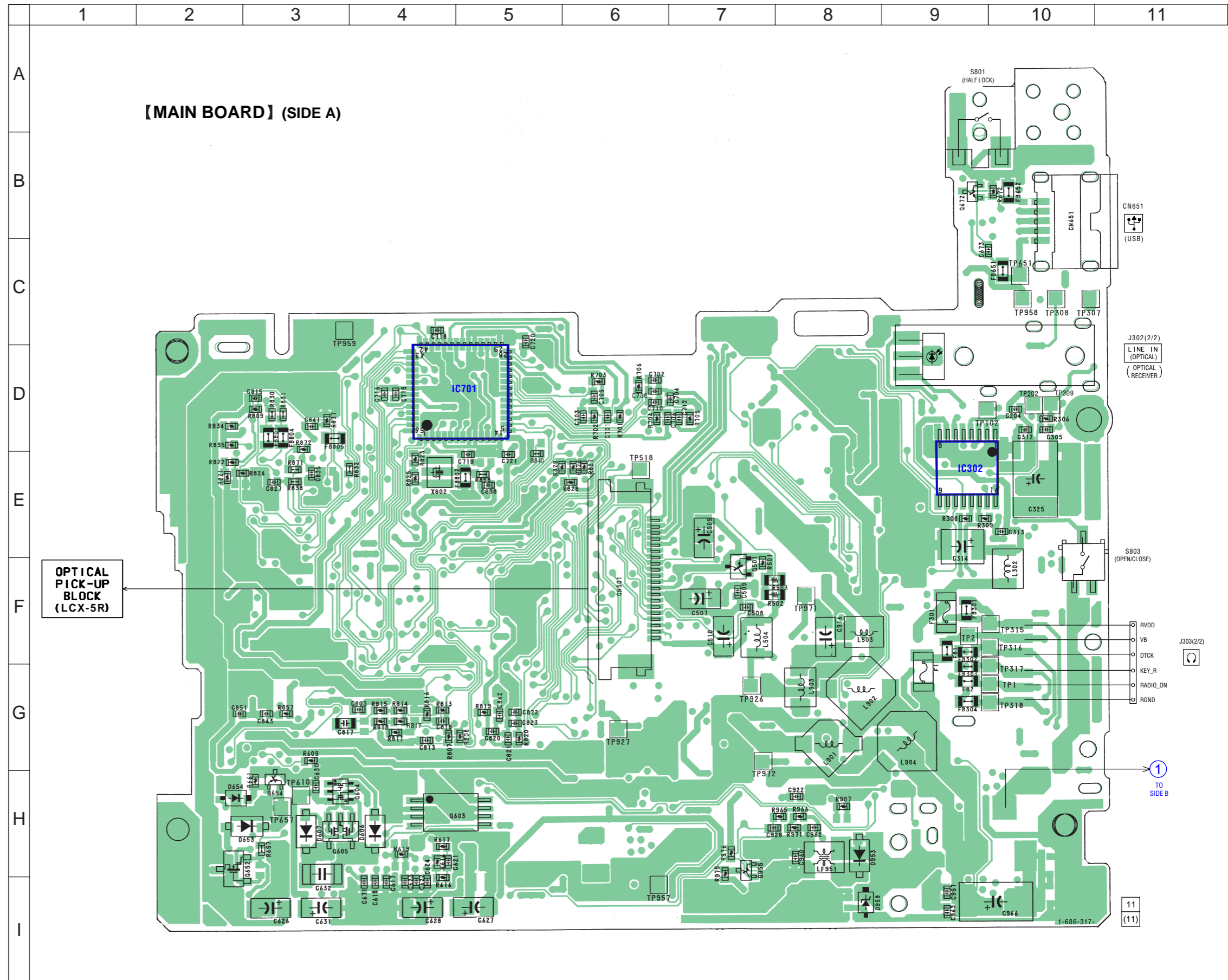




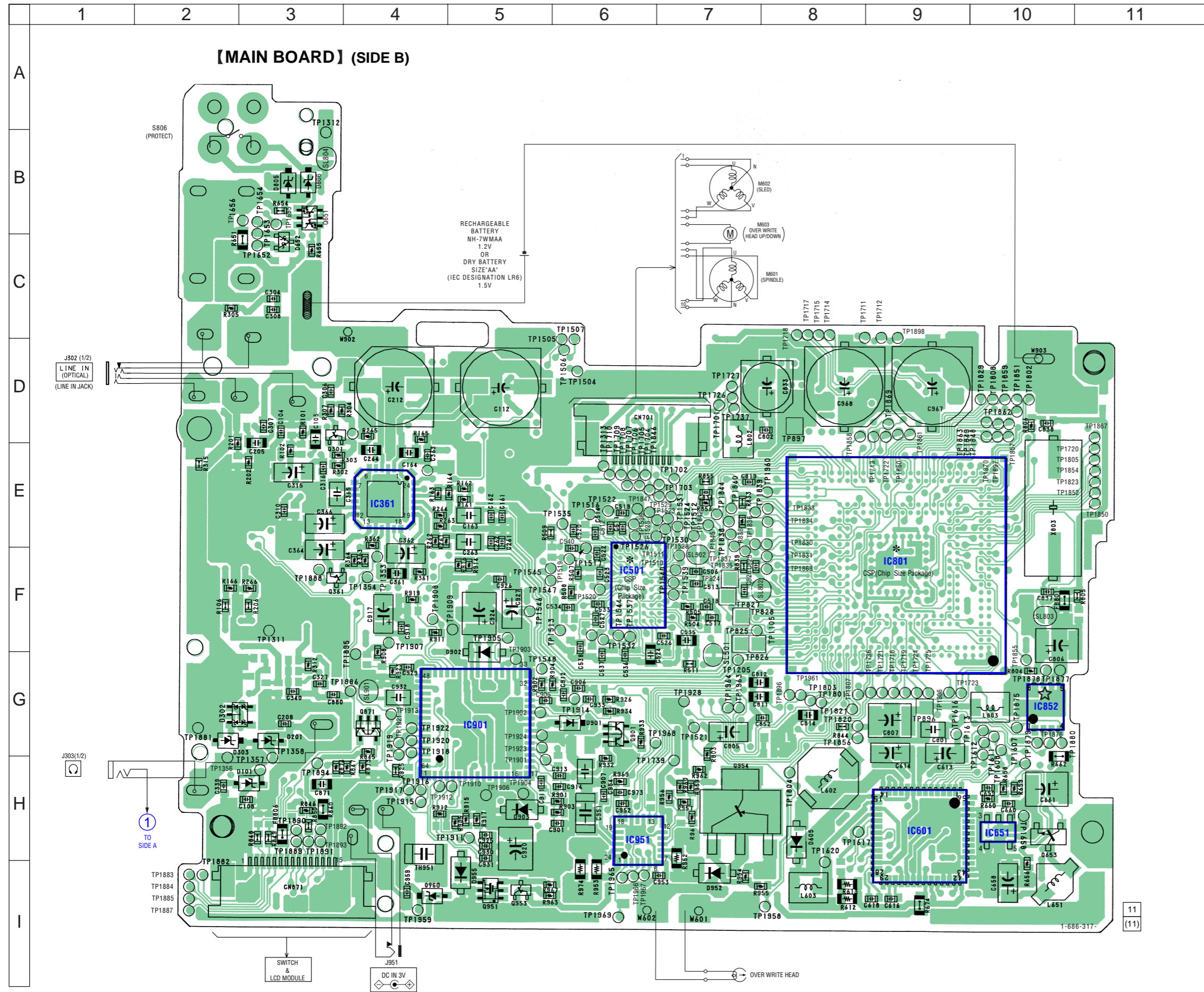
6-3. Printed Wiring Board – MAIN Board (Side A) –  :Uses unleaded solder.

• Semiconductor Location

| Ref. No. | Location |
|----------|----------|
| D606     | H-4      |
| D607     | H-3      |
| D653     | H-2      |
| D654     | H-2      |
| D953     | H-8      |
| D958     | I-8      |
| IC302    | E-9      |
| IC701    | D-5      |
| Q501     | F-7      |
| Q603     | H-4      |
| Q604     | H-4      |
| Q605     | H-3      |
| Q652     | H-2      |
| Q654     | H-3      |
| Q672     | B-9      |
| Q955     | I-7      |



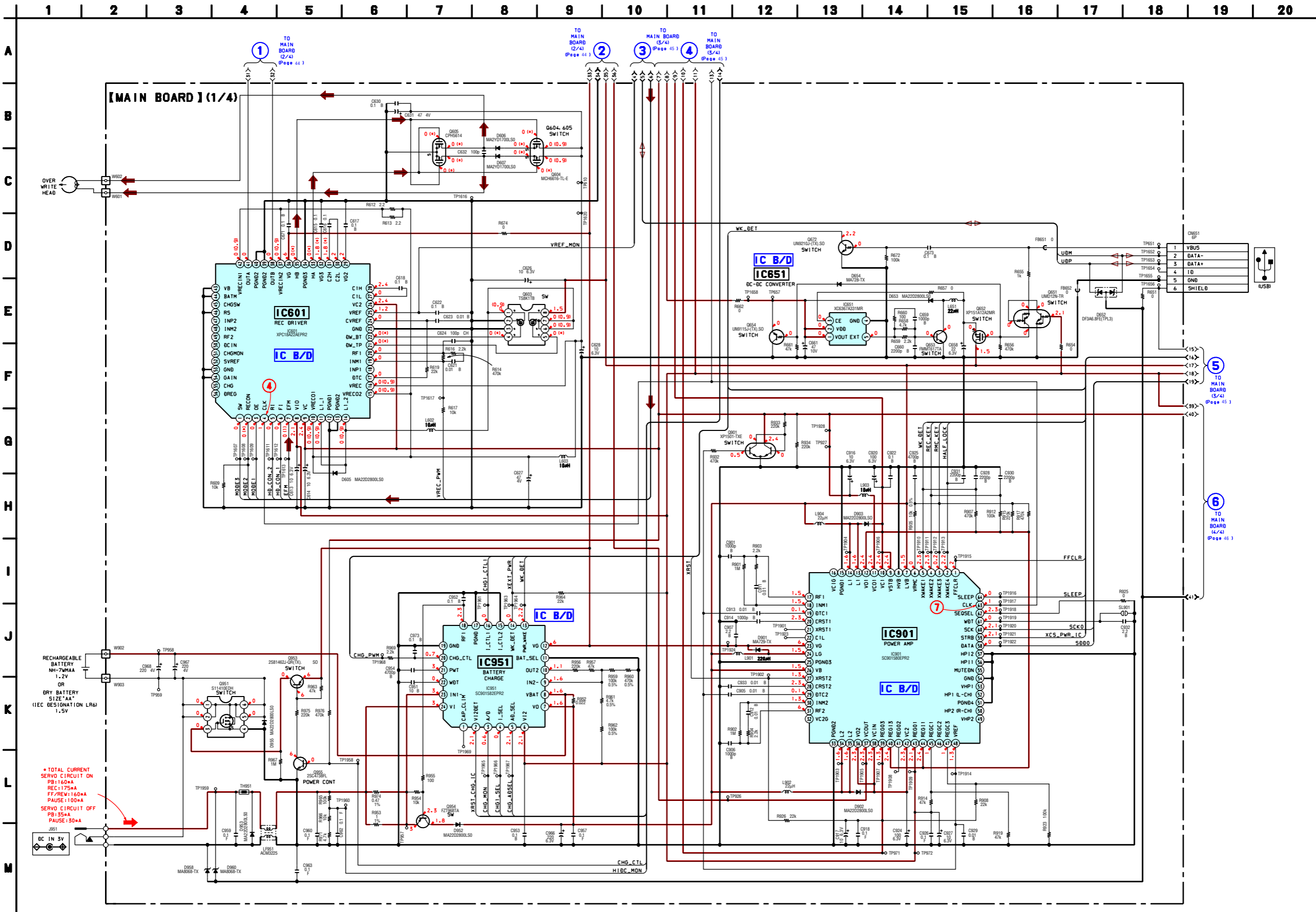
6-4. Printed Wiring Board – MAIN Board (Side B) –  : Uses unleaded solder.



• Semiconductor Location

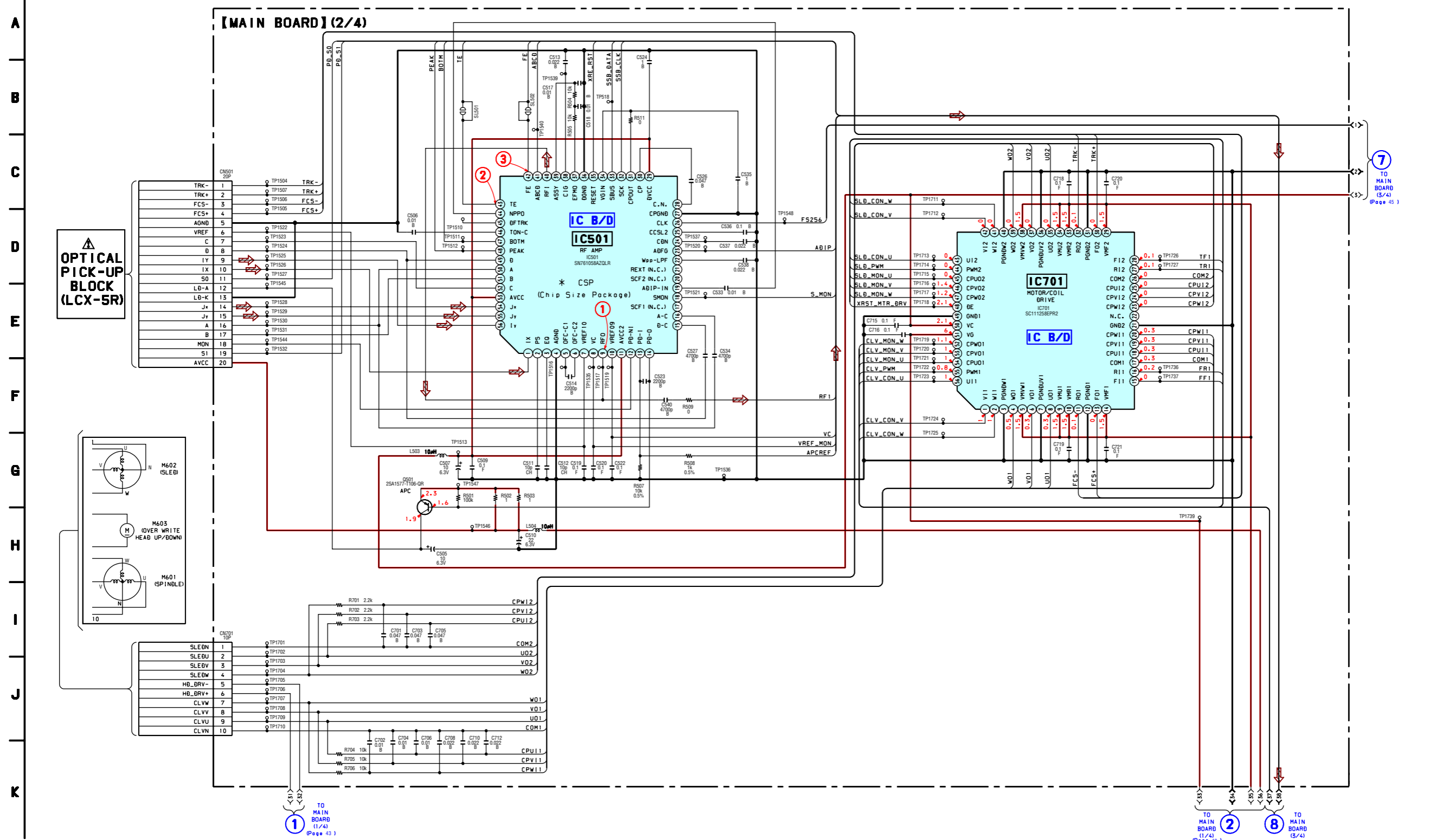
| Ref. No. | Location |
|----------|----------|
| D101     | H-3      |
| D201     | G-3      |
| D302     | G-2      |
| D303     | G-2      |
| D605     | H-8      |
| D652     | C-3      |
| D901     | G-6      |
| D902     | G-5      |
| D903     | H-5      |
| D952     | I-7      |
| D955     | I-5      |
| D960     | I-4      |
| IC361    | E-4      |
| IC501    | F-6      |
| IC601    | H-9      |
| IC651    | H-10     |
| IC801    | E-9      |
| IC852    | G-10     |
| IC901    | G-5      |
| IC951    | H-6      |
| Q301     | E-3      |
| Q361     | F-3      |
| Q651     | B-3      |
| Q653     | H-10     |
| Q871     | G-4      |
| Q901     | G-6      |
| Q951     | I-5      |
| Q953     | I-5      |
| Q954     | H-7      |

6-5. Schematic Diagram – MAIN Board (1/4) – • See page 40 for Waveforms. • See page 49 and 51 for IC Block Diagrams.

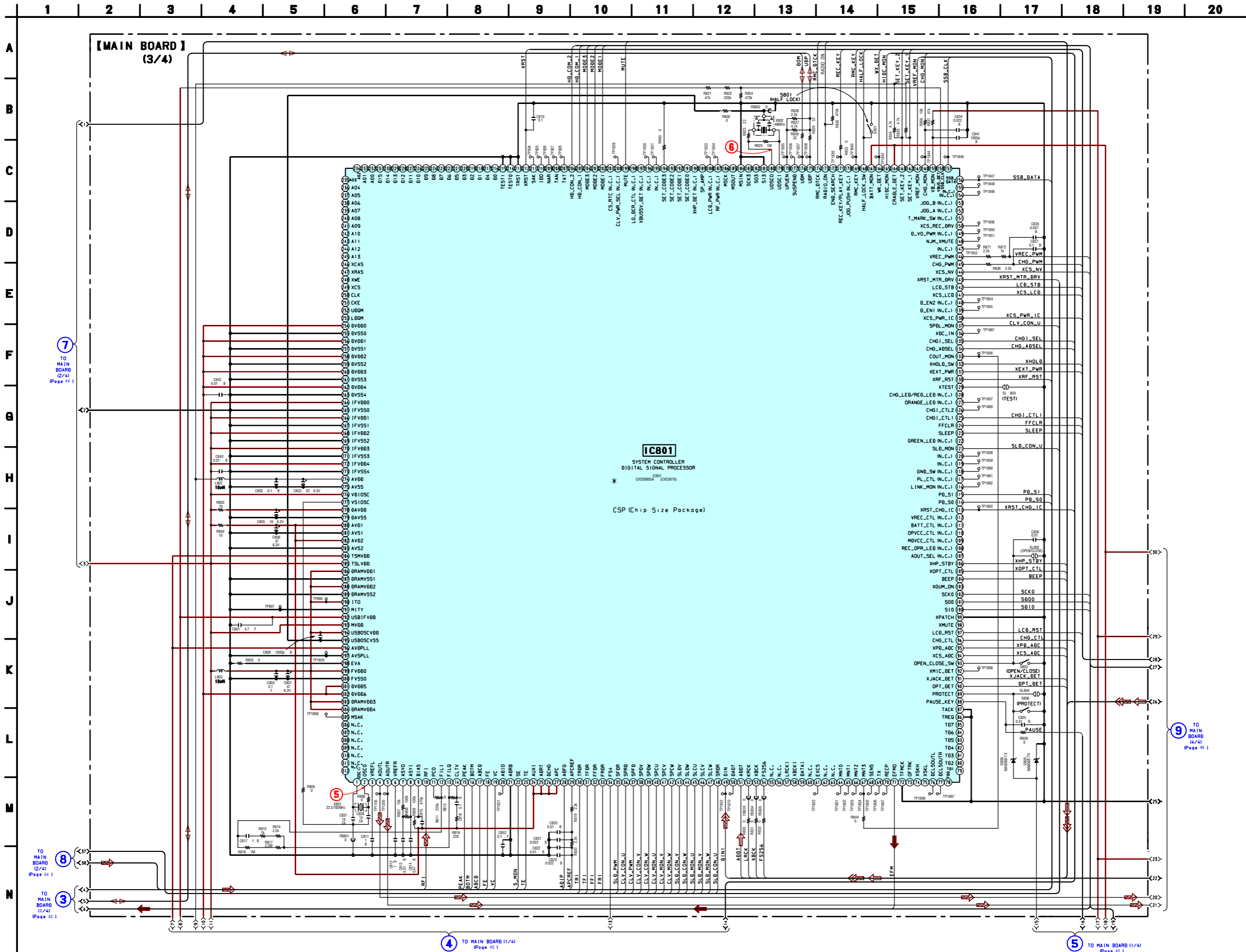


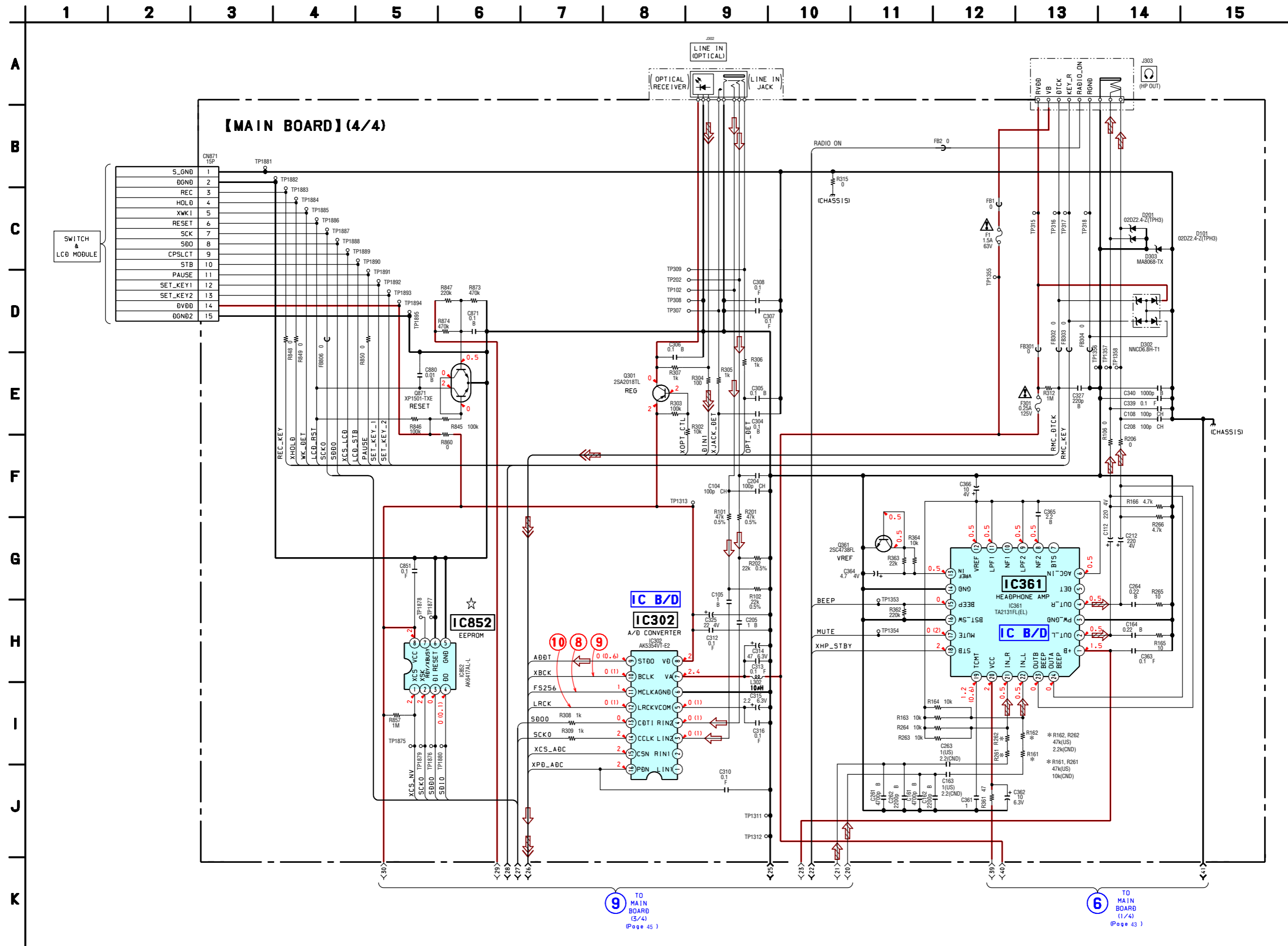
6-6. Schematic Diagram – MAIN Board (2/4) – • See page 40 for Waveform. • See page 48 and 50 for IC Block Diagrams.

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19



6-7. Schematic Diagram – MAIN Board (3/4) – • See page 40 for Waveforms. • See page 52 for IC Pin Function Description.



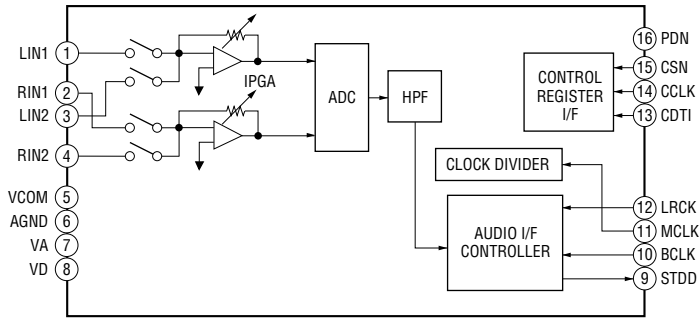


9 TO MAIN BOARD (3/4) (Page 45)

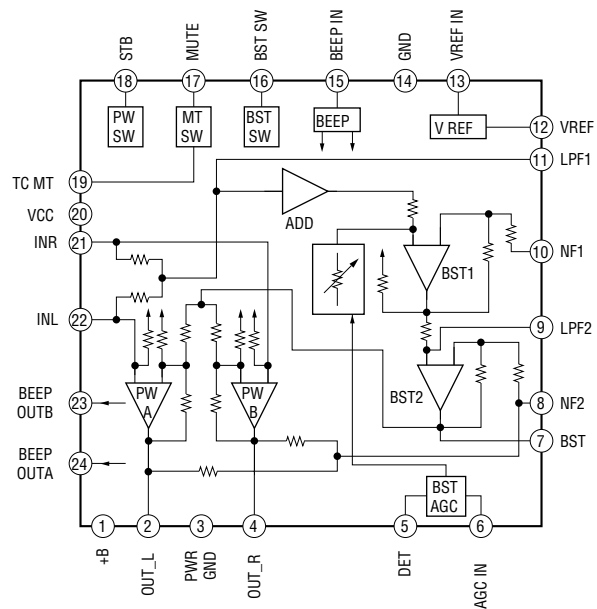
6 TO MAIN BOARD (1/4) (Page 43)

• IC Block Diagrams

IC302 AK5354VT-E2

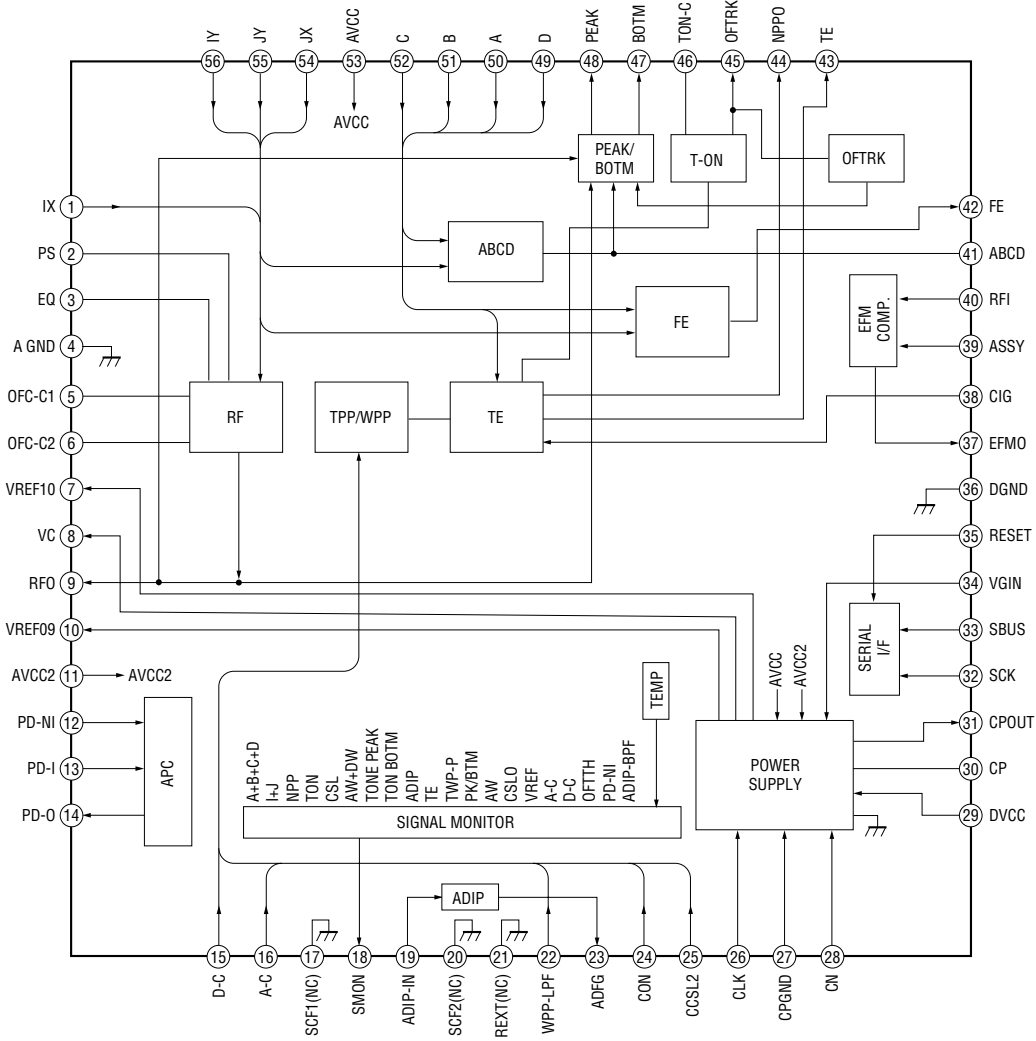


IC361 TA2131FL (EL)



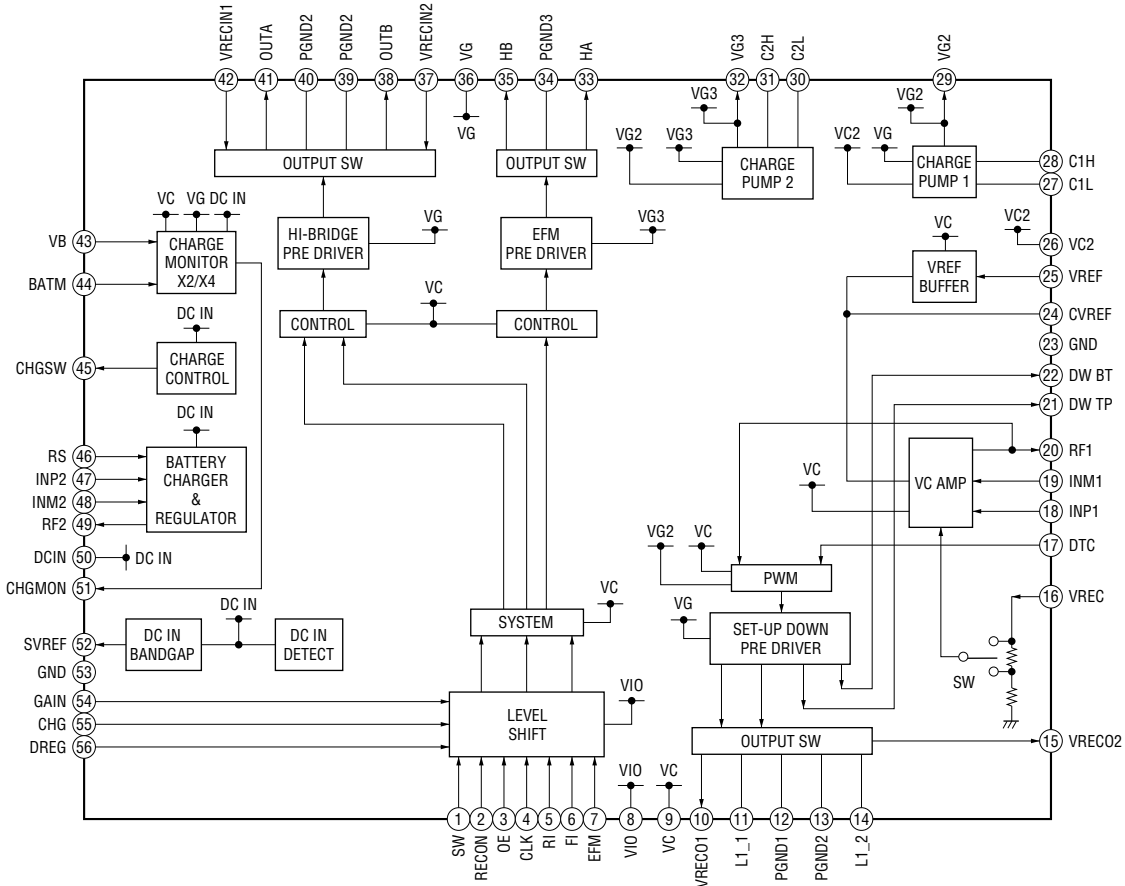
# MZ-NF610

## IC501 SN761058AZQLR

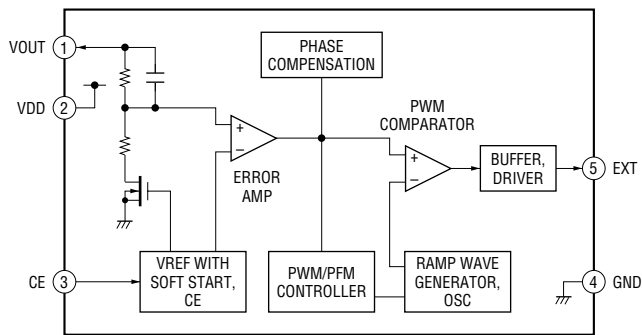


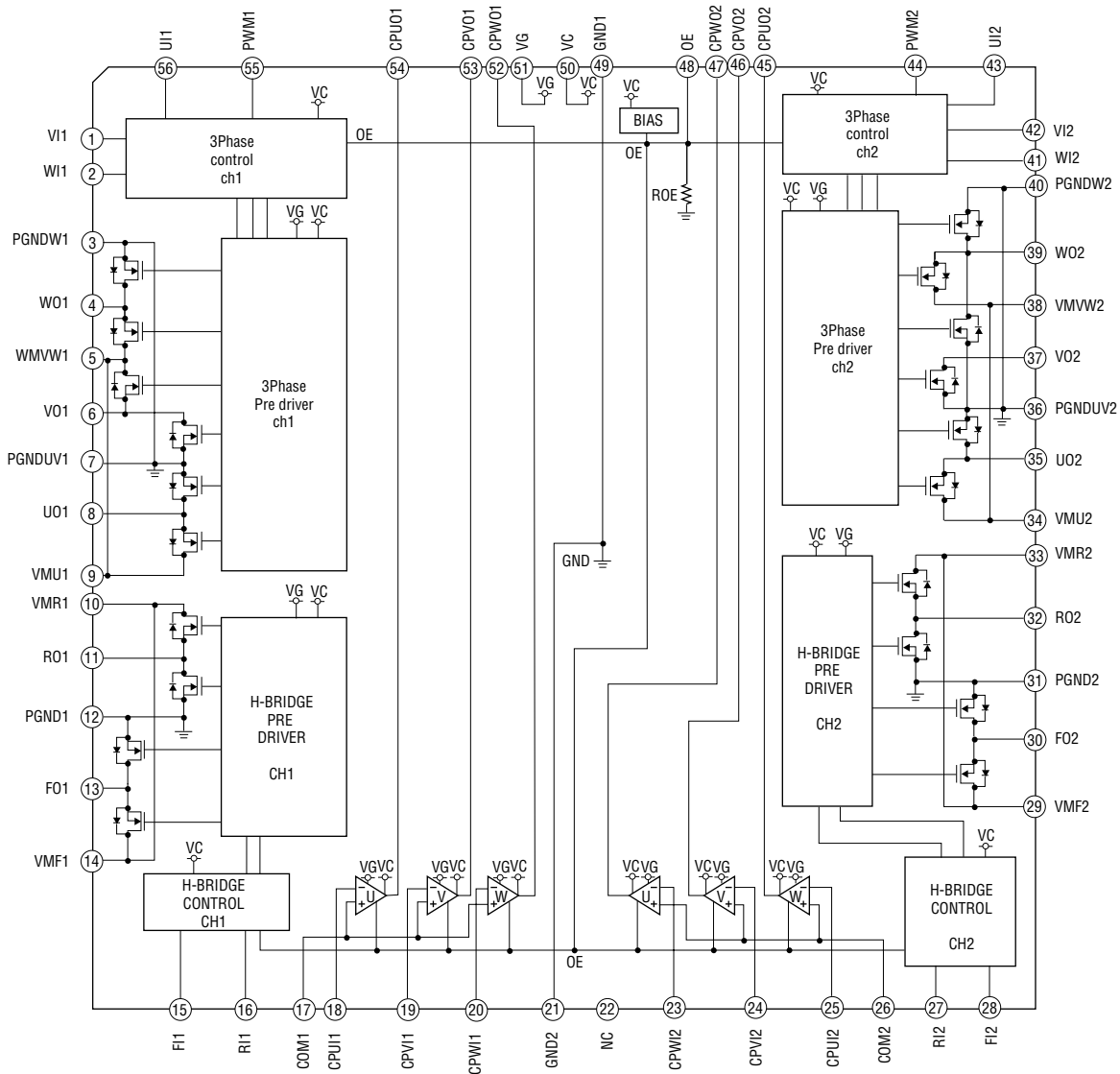


IC601 XPC18A22AEPR2

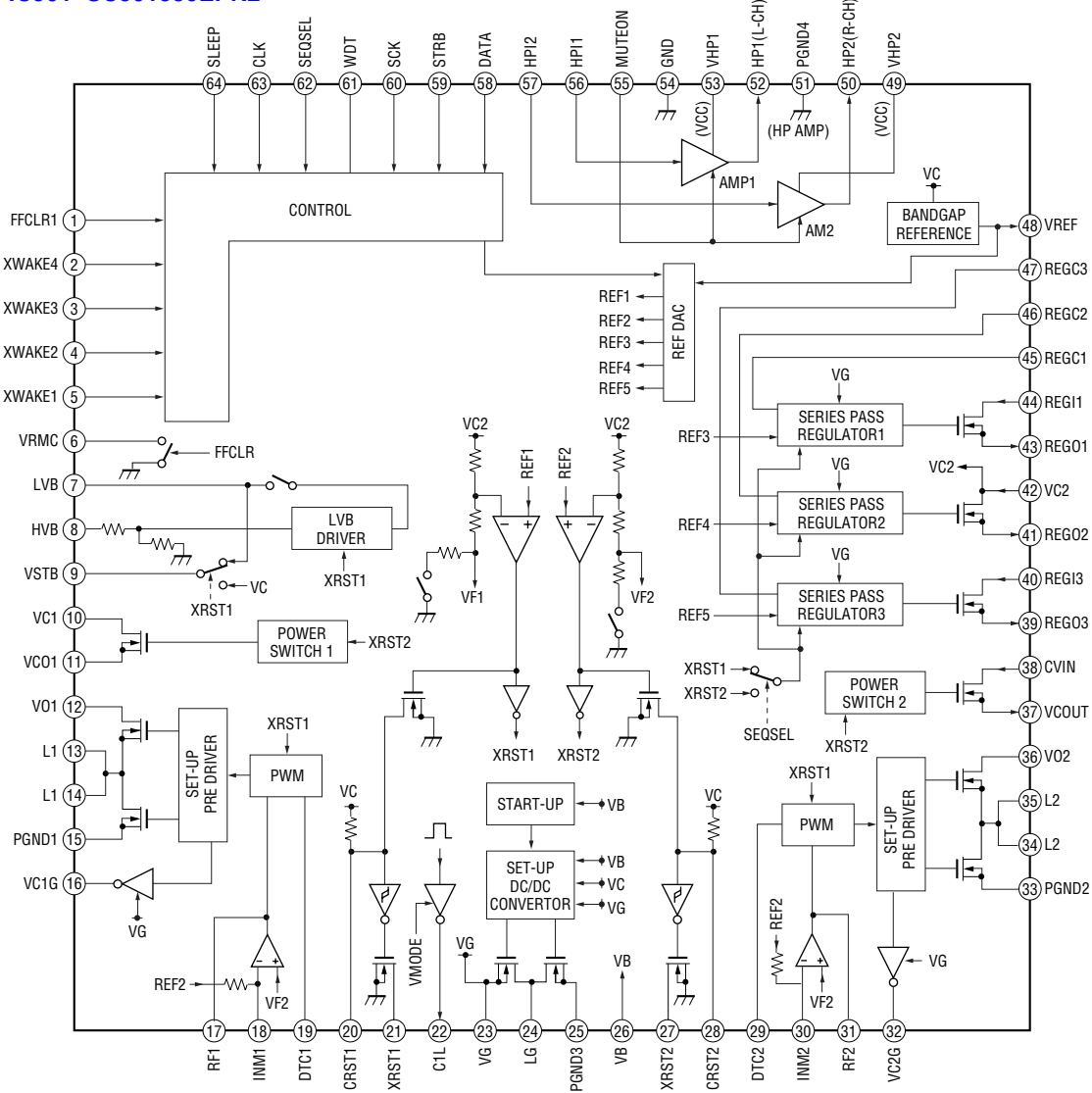


IC651 XC6367A331MR

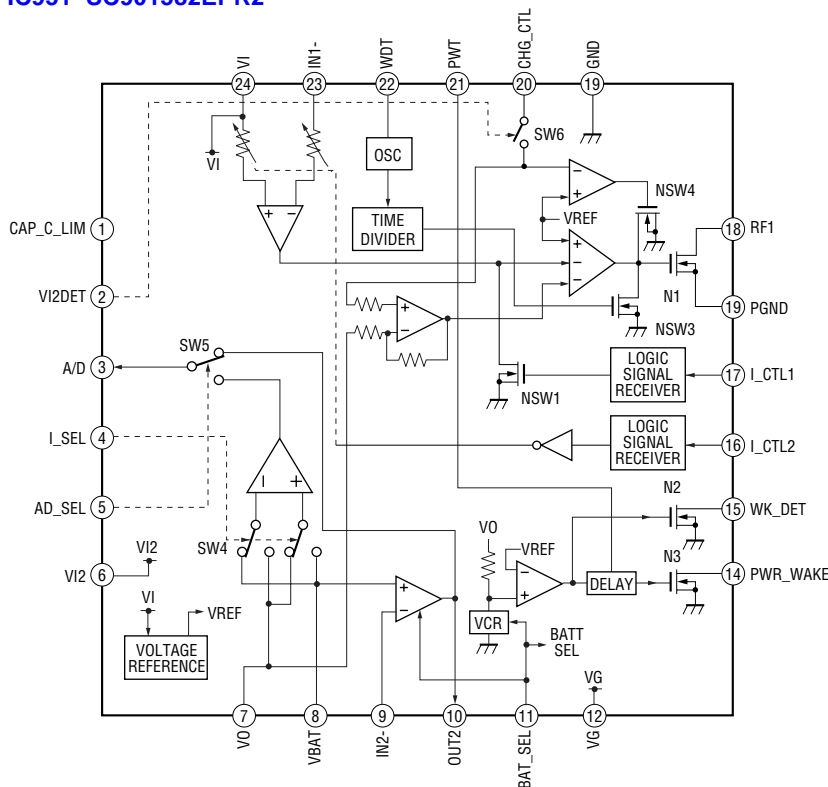




IC901 SC901580EPR2



IC951 SC901582EPR2



## 6-9. IC Pin Function Description

## • IC801 CXD2680-203GA (SYSTEM CONTROLLER, DIGITAL SIGNAL PROCESSOR)

| Pin No. | Pin Name | I/O | Description  |
|---------|----------|-----|--|
| 1       | OSCI     | I   | Resonator connection terminal for the system clock (22.5792MHz)                              |
| 2       | OSCO     | O   | Resonator connection terminal for the system clock (22.5792MHz)                              |
| 3       | VREFL    | O   | Reference voltage terminal connected to the capacitor (for the built-in D/A converter L-CH)  |
| 4       | AOUTL    | O   | Built-in D/A converter L-CH signal output  |
| 5       | AOUTR    | O   | Built-in D/A converter R-CH signal output  |
| 6       | VREFR    | O   | Reference voltage terminal connected to the capacitor (for the built-in D/A converter R-CH)  |
| 7       | ASYO     | O   | Playback EFM duplex signal output  |
| 8       | ASYI     | I   | Playback EFM comparator slice level input  |
| 9       | BIAS     | I   | Bias current input terminal for the playback EFM comparator                                  |
| 10      | RFI      | I   | Playback EFM RF signal input from the RF amplifier   |
| 11      | PCO      | O   | Phase comparison output terminal for the playback EFM system master PLL                      |
| 12      | FILI     | I   | Filter input terminal for the playback EFM system master PLL                                 |
| 13      | FILO     | O   | Filter output terminal for the playback EFM system master PLL                                |
| 14      | CLTV     | I   | Internal VCO control voltage input terminal for the playback EFM system master PLL           |
| 15      | PEAK     | I   | Peak hold signal input of the light amount signal (RF/ABCD) from the RF amplifier            |
| 16      | BOTM     | I   | Bottom hold signal input of the light amount signal (RF/ABCD) from the RF amplifier          |
| 17      | ABCD     | I   | Light amount signal (ABCD) input from the RF amplifier                                       |
| 18      | FE       | I   | Focus error signal input from the RF amplifier   |
| 19      | VC       | I   | Middle point voltage input from the RF amplifier   |
| 20      | ADIO     | O   | Monitor output terminal of A/D converter input signal Not used (open)                        |
| 21      | ADRB     | I   | The lower limit voltage of A/D converter input terminal (connected to the ground)            |
| 22      | SE       | I   | Sled error signal input from the RF amplifier  |
| 23      | TE       | I   | Tracking error signal input from the RF amplifier  |
| 24      | AUX1     | I   | Auxiliary A/D input (fixed at "H" in this set)   |
| 25      | ADRT     | I   | The upper limit voltage of A/D converter input terminal (fixed at "H" in this set)           |
| 26      | DCHG     | I   | Connecting terminal with the analog power supply of low impedance (fixed at "H" in this set) |
| 27      | APC      | I   | Error signal input for the laser automatic power control (fixed at "H" in this set)          |
| 28      | ADFG     | I   | ADIP duplex FM signal (22.05±1kHz) input from the RF amplifier                               |
| 29      | APCREF   | O   | Reference PWM signal output for the laser automatic power control to the RF amplifier        |
| 30      | TRDR     | O   | Tracking servo drive PWM signal output (-) to the coil driver                                |
| 31      | TFDR     | O   | Tracking servo drive PWM signal output (+) to the coil driver                                |
| 32      | FFDR     | O   | Focus servo drive PWM signal output (+) to the coil driver                                   |
| 33      | FRDR     | O   | Focus servo drive PWM signal output (-) to the coil driver                                   |
| 34      | FS4      | O   | 176.4kHz clock signal output   |
| 35      | SFDR     | O   | Sled servo drive PWM signal output to the motor driver                                       |
| 36      | SPRD     | O   | Spindle motor drive control signal output (U) to the motor driver                            |
| 37      | SPFD     | O   | Spindle servo drive PWM signal output to the motor driver                                    |
| 38      | SPDV     | O   | Spindle motor drive control signal output (V) to the motor driver                            |
| 39      | SPDW     | O   | Spindle motor drive control signal output (W) to the motor driver                            |
| 40      | SPCU     | I   | Spindle motor drive comparison signal input (U) from the motor driver                        |
| 41      | SPCV     | I   | Spindle motor drive comparison signal input (V) from the motor driver                        |
| 42      | SPCW     | I   | Spindle motor drive comparison signal input (W) from the motor driver                        |
| 43      | SLDV     | O   | Sled motor drive control signal output (V) to the motor driver                               |
| 44      | SLDW     | O   | Sled motor drive control signal output (W) to the motor driver                               |
| 45      | SLCU     | I   | Sled motor drive comparison signal input (U) from the motor driver                           |
| 46      | SLCV     | I   | Sled motor drive comparison signal input (V) from the motor driver                           |
| 47      | SLCW     | I   | Sled motor drive comparison signal input (W) from the motor driver                           |
| 48      | SRDR     | O   | Sled motor drive control signal output (U) to the motor driver                               |
| 49      | DIN      | I   | Digital audio signal input   |
| 50      | DADT     | O   | Audio data output terminal Not used (open)   |

| Pin No.  | Pin Name      | I/O | Description   |
|----------|---------------|-----|---|
| 51       | ADDT          | I   | Data input from the external A/D converter  |
| 52       | KRCK          | O   | L/R sampling clock (44.1KHz) output to the external A/D converter   |
| 53       | XBCK          | O   | Bit clock (2.8224MHz) output to the external A/D converter  |
| 54       | FS256         | O   | 11.2896MHz clock output   |
| 55       | NC            | O   | Filter cutoff control signal output Not used (open)   |
| 56       | NC            | I   | Clock input from the external VCO Not used (open)   |
| 57       | LRCKI         | I   | Input terminal for the PCM data I/F/ ATRAC data I/F Not used (open)   |
| 58       | XBCKI         | I   | Input terminal for the PCM data I/F/ ATRAC data I/F Not used (open)   |
| 59       | DATAI         | I   | Input terminal for the PCM data I/F/ ATRAC data I/F Not used (open)   |
| 60       | NC            | —   | Not used (open)   |
| 61       | EXCS          | O   | Chip select signal output terminal for the external SDRAM Not used (open)                                     |
| 62, 63   | NC            | —   | Not used (open)   |
| 64 to 66 | MNT0 to 2     | O   | DSP monitor (0) to (2) output terminal Not used (open)  |
| 67       | MNT3          | O   | DSP monitor (3) output terminal   |
| 68       | SENS          | O   | DSP internal status (DSP SENS monitor) signal output terminal Not used (open)                                 |
| 69       | TX            | O   | Record data output enable signal output Not used (open)   |
| 70       | RECP          | O   | Laser power changeover signal output Not used (open)  |
| 71       | EFMO          | O   | EFM encode data output for the record to the REC driver   |
| 72       | TFMCK         | I   | FMCK signal input Not used (connected to the ground)  |
| 73       | OFTRK         | I/O | Tracking signal input/output Not used (open)  |
| 74       | XSKH          | O   | L circuit signal output Not used (open)   |
| 75       | XSKL          | O   | K-SHOCK circuit signal output Not used (open)   |
| 76       | DCLSOUTL      | O   | PWM modulator signal output for the D class headphone amplifier Not used (open)                               |
| 77       | DCLSOUTR      | O   | PWM modulator signal output for the D class headphone amplifier Not used (open)                               |
| 78 to 85 | TD0 to 7      | —   | TigerI/F data 0 to 7 terminal Not used (open)   |
| 86       | TREQ          | —   | TigerI/F REQUEST terminal Not used (connected to the ground)  |
| 87       | TACK          | —   | TigerI/F ACK terminal Not used (connected to the ground)  |
| 88       | PAUSE_KEY     | I   | Pause key detection input terminal from the switch & liquid crystal display module                            |
| 89       | PROTECT       | I   | Detection signal input terminal of the record check claw from the protect detection switch “H”: protect       |
| 90       | OPT_DET       | I   | DIN plug detection signal input “H”: DIN plug detect  |
| 91       | XJACK_DET     | I   | LINE IN plug detection signal input “L”: LINE or OPT plug detect  |
| 92       | XMIC_DET      | I   | Microphone plug detection signal input “L”: microphone plug detect Not used (open)                            |
| 93       | OPEN_CLOSE_SW | I   | Open/close detection switch of the upper panel input terminal “L”: when upper panel close                     |
| 94       | XCS_ADC       | O   | Chip select signal output to the A/D converter  |
| 95       | XPD_ADC       | O   | Power supply control signal output to the A/D converter   |
| 96       | CHG_CTL       | O   | Charge ON/OFF control signal output   |
| 97       | LCD_RST       | O   | Reset control signal output to the liquid crystal display module  |
| 98       | XMUTE         | O   | Analog muting control signal output to the headphone amplifier “L”: muting ON Not used (open)                 |
| 99       | XPATCH        | I   | Patch function detection terminal “L”: patch function (fixed at “L” in this set)                              |
| 100      | SI0           | I   | Serial data input from the nonvolatile memory and liquid crystal display module                               |
| 101      | SO0           | O   | Serial data output to the nonvolatile memory, A/D converter, liquid crystal display module and power control  |
| 102      | SCK0          | O   | Serial clock output to the nonvolatile memory, A/D converter, liquid crystal display module and power control |
| 103      | XGUM_ON       | I   | Rechargeable battery detection switch input terminal “L”: rechargeable battery in detect Not used (open)      |
| 104      | BEEP          | O   | Beep sound control signal output to the headphone amplifier   |
| 105      | XOPT_CTL      | O   | Power supply ON/OFF control signal output for the DIN PD drive  |
| 106      | XHP_STBY      | O   | Power supply control signal output to the headphone amplifier   |
| 107      | AOUT_SEL      | O   | HP/LINE changeover signal output to the headphone amplifier Not used (open)                                   |
| 108      | REC_OPR_LED   | O   | LED ON/OFF control signal output for the REC display Not used (open)  |
| 109      | MDVCC_CTL     | O   | Power supply control signal output for the OP modulation Not used (open)                                      |
| 110      | OPVCC_CTL     | O   | Power supply control signal output for the OP laser Not used (open)   |

| Pin No.  | Pin Name     | I/O | Description   |
|----------|--------------|-----|---|
| 111      | BATT_CTL     | O   | Control signal output for the voltage step up circuit in the external battery case Not used (open)        |
| 112      | VREC_CTL     | O   | VREC voltage control signal output Not used (open)  |
| 113      | XRST_CHG_IC  | O   | Reset signal output to the battery charge control IC  |
| 114, 115 | PD_S0_1      | O   | PD IC mode changeover signal output to the optical pick up  |
| 116      | LINK_MON     | O   | Linking area monitor signal output Not used (open)  |
| 117      | PL_CTL       | O   | Plunger control signal output Not used (open)   |
| 118      | GND_SW       | O   | Ground changeover switch control signal output Not used (open)  |
| 119, 120 | NC           | O   | Not used (open)   |
| 121      | SLD_MON      | I   | Sled servo monitor signal input   |
| 122      | NC           | O   | Not used (open)   |
| 123      | SLEEP        | O   | System sleep control signal output to the power control   |
| 124      | FFCLR        | O   | Input latch output for the start switching to the power control   |
| 125      | CHGI_CTL1    | O   | Charge current limit ON/OFF control signal output at the time of adaptor use                              |
| 126      | CHGI_CTL2    | O   | Charge current limit value changeover control signal output at the time of adaptor use Not used (open)    |
| 127      | ORANGE_LED   | O   | Orange LED ON/OFF control signal output Not used (open)   |
| 128      | CHG_LED      | O   | LED ON/OFF control signal output for CHG (charge display) Not used (open)                                 |
| 129      | XTEST        | I   | Terminal for the test mode setting (normally open) "L": test mode   |
| 130      | XRF_RST      | O   | Reset control signal output to the RF amplifier "L": reset  |
| 131      | XEXT_PWR     | I   | External power supply (AC adaptor/charging stand) detection signal input                                  |
| 132      | XHOLD_SW     | I   | HOLD switch input terminal "L": hold ON   |
| 133      | COUT_MON     | I   | Traverse count measurement monitor input  |
| 134      | CHG_ADSEL    | O   | A/D terminal of the battery charge control IC output selection signal output                              |
| 135      | CHGI_SEL     | O   | Charge/discharge changeover control signal output for the current sense amplifier                         |
| 136      | XDC_IN       | I   | DC plug detection signal input Not used (open)  |
| 137      | SPDL_MON     | I   | Spindle servo monitor signal input  |
| 138      | XCS_PWR_IC   | O   | Chip select signal output to the power control  |
| 139, 140 | D_EN1_2      | O   | Control signal output for the D class headphone amplifier Not used (open)                                 |
| 141      | XCS_LCD      | O   | Chip select signal output to the liquid crystal display module  |
| 142      | LCD_STB      | O   | Strobe signal output to the liquid crystal display module   |
| 143      | XRST_MTR_DRV | O   | Reset control signal output to the motor driver "L": reset  |
| 144      | XCS_NV       | O   | Chip select signal output to the nonvolatile memory   |
| 145      | CHG_PWM      | O   | Output voltage control signal output to the battery charge control  |
| 146      | VREC_PWM     | O   | PWM signal output for the Over write head drive power supply voltage control to the REC driver            |
| 147      | NC           | O   | PWM signal output for the laser power supply voltage control to the power control Not used (open)         |
| 148      | NJM_XMUTE    | O   | Muting control signal to the headphone amplifier (NJM type made by JRC) Not used (open)                   |
| 149      | D_VO_PWM     | O   | Power supply control signal output for the D class headphone amplifier Not used (open)                    |
| 150      | XCS_REC_DRV  | O   | Chip select signal output to the REC driver Not used (open)   |
| 151      | T_MARK_SW    | I   | T MARK (track mark) switch input terminal "L": track mark detection Not used (open)                       |
| 152      | JOG_A        | I   | Jog dial pulse input from the switch & liquid crystal display module Not used (open)                      |
| 153      | JOG_B        | I   | Jog dial pulse input from the switch & liquid crystal display module Not used (open)                      |
| 154, 155 | NC           | O   | Not used (open)   |
| 156      | SSB_DATA     | I/O | SSB data input/output with the RF amplifier   |
| 157      | SSB_CLK      | O   | SSB clock output to the RF amplifier  |
| 158      | VBUS_DET     | I   | USB power supply voltage detection terminal   |
| 159      | VB_MON       | I   | Voltage monitor input terminal (A/D input) of the UNREG power supply                                      |
| 160      | CHG_MON      | I   | Decrement of voltage detection and charge/discharge current monitor input from the battery charge control |
| 161      | VREF_MON     | I   | Reference voltage monitor input (A/D input) from the RF amplifier   |
| 162, 163 | SET_KEY_1, 2 | I   | Key input (A/D input) from the switch & liquid crystal display module                                     |
| 164      | CRADLE_DET   | I   | USB cradle or battery case detection signal input Not used (connected to the ground)                      |
| 165      | HIDC_MON     | I   | HIGH DC voltage monitor input (A/D input)   |

| Pin No.    | Pin Name         | I/O | Description   |
|------------|------------------|-----|---|
| 166        | WK_DET           | I   | Set key WAKE detection signal input   |
| 167        | BATT_MON         | I   | External battery voltage monitor input Not used (connected to the ground)               |
| 168        | HALF_LOCK_SW     | I   | Open button detection switch input (A/D input) "L" : the open button is pressed         |
| 169        | RMC_KEY          | I   | Key input (A/D input) from the remote commander   |
| 170        | JOG_PUSH         | I   | Jog dial push detection signal input Not used (open)                                    |
| 171        | REC_KEY/PLAY_KEY | I   | REC key input (A/D input)   |
| 172        | END_SEARCH       | I   | END SEARCH key input (A/D input) Not used (open)  |
| 173        | RADIO_ON         | I   | RADIO ON detection signal input   |
| 174        | RMC_DTCK         | I/O | TSB master data clock input/output or SSB data input/output                             |
| 175        | UDP              | I/O | USB data (+) input terminal   |
| 176        | UDM              | I/O | USB data (-) input terminal   |
| 177        | SUSPEND          | O   | USB suspend signal output Not used (open)   |
| 178        | UPUEN            | O   | USB pull-up resistor connection control output terminal                                 |
| 179        | UOSCI            | I   | Resonator (48MHz) connection terminal for the USB oscillation circuit                   |
| 180        | UOSCO            | O   | Resonator (48MHz) connection terminal for the USB oscillation circuit                   |
| 181        | SI3              | I   | Not used (connected to the ground)  |
| 182        | SO3              | O   | Not used (open)   |
| 183        | SCK3             | I/O | Not used (open)   |
| 184        | MSIN             | I   | Not used (connected to the ground)  |
| 185        | MSOUT            | O   | Not used (open)   |
| 186        | MSCK             | I/O | Not used (open)   |
| 187        | RF_PWR           | O   | Power supply control signal output to the RF amplifier Not used (open)                  |
| 188        | LCD_PWR          | O   | Power supply control signal output to the liquid crystal display module Not used (open) |
| 189        | SP_AMP           | O   | Built-in speaker control signal output "H": activate Not used (open)                    |
| 190        | XHP_DET          | I   | Headphone jack detection signal input Not used (open)                                   |
| 191        | SET_CODE0        | I   | Input terminal for the set (open in this set)   |
| 192        | SET_CODE1        | I   | Input terminal for the set (open in this set)   |
| 193        | SET_CODE2        | I   | Input terminal for the set (open in this set)   |
| 194        | SET_CODE3        | I   | Input terminal for the set (fixed at "L" in this set)                                   |
| 195, 196   | NC               | O   | Not used (open)   |
| 197        | VBUS5V_DET       | I   | USB power supply voltage detection terminal 2 Not used (open)                           |
| 198        | LG_DCR_CTL       | O   | LG DCR control signal output Not used (open)  |
| 199        | MUTE             | O   | Analog muting control signal output to the headphone amplifier "H": muting ON           |
| 200        | CLV_PWR_SEL      | O   | CLV motor power supply selection control signal output Not used (open)                  |
| 201        | CS_RTC           | O   | Chip select signal output to the real time clock Not used (open)                        |
| 202 to 204 | MODE1 to 3       | O   | Power supply control signal output for the over write head to the REC driver            |
| 205, 206   | HD_CON_1, 2      | O   | Over write head control signal output to the REC driver                                 |
| 207        | TAT              | I   | Not used (open)   |
| 208        | TAN              | I   | Not used (open)   |
| 209        | NAR              | I   | Not used (open)   |
| 210        | IOD              | I   | Not used (open)   |
| 211        | SAK              | O   | Not used (open)   |
| 212        | XRST             | I   | System reset signal input from the power control "L": reset                             |
| 213        | TRST             | I   | Terminal for the test mode setting (normally fixed at "L")                              |
| 214, 215   | TEST0, 1         | I   | Input terminal for the main test (normally fixed at "L")                                |
| 216 to 231 | D0 to 15         | —   | DRAM data0 to 15 terminal Not used (open)   |
| 232 to 245 | A00 to 13        | —   | DRAM address0 to 13 terminal Not used (open)  |
| 246        | XCAS             | —   | DRAM CAS terminal Not used (open)   |
| 247        | XRAS             | —   | DRAM RAS terminal Not used (open)   |
| 248        | XWE              | —   | DRAM write enable terminal Not used (open)  |

| Pin No. | Pin Name  | I/O | Description   |
|---------|-----------|-----|---|
| 249     | XCS       | —   | DRAM chip select terminal Not used (open)                   |
| 250     | CLK       | —   | DRAM clock terminal Not used (open)                         |
| 251     | CKE       | —   | DRAM clock enable terminal Not used (open)                  |
| 252     | UDQM      | —   | DRAM byte mask terminal Not used (open)                     |
| 253     | LDQM      | —   | DRAM byte mask terminal Not used (open)                     |
| 254     | DVDD0     | —   | Power supply terminal                                       |
| 255     | DVSS0     | —   | Ground terminal   |
| 256     | DVDD1     | —   | Power supply terminal                                       |
| 257     | DVSS1     | —   | Ground terminal   |
| 258     | DVDD2     | —   | Power supply terminal                                       |
| 259     | DVSS2     | —   | Ground terminal   |
| 260     | DVDD3     | —   | Power supply terminal                                       |
| 261     | DVSS3     | —   | Ground terminal   |
| 262     | DVDD4     | —   | Power supply terminal                                       |
| 263     | DVSS4     | —   | Ground terminal   |
| 264     | IFVDD0    | —   | Power supply terminal (for the microcomputer I/F block)     |
| 265     | IFVSS0    | —   | Ground terminal (for the microcomputer I/F block)           |
| 266     | IFVDD1    | —   | Power supply terminal (for the microcomputer I/F block)     |
| 267     | IFVSS1    | —   | Ground terminal (for the microcomputer I/F block)           |
| 268     | IFVDD2    | —   | Power supply terminal (for the microcomputer I/F block)     |
| 269     | IFVSS2    | —   | Ground terminal (for the microcomputer I/F block)           |
| 270     | IFVDD3    | —   | Power supply terminal (for the microcomputer I/F block)     |
| 271     | IFVSS3    | —   | Ground terminal (for the microcomputer I/F block)           |
| 272     | IFVDD4    | —   | Power supply terminal (for the microcomputer I/F block)     |
| 273     | IFVSS4    | —   | Ground terminal (for the microcomputer I/F block)           |
| 274     | AVDD      | —   | Power supply terminal (for the microcomputer analog)        |
| 275     | AVSS      | —   | Ground terminal (for the microcomputer analog)              |
| 276     | VDIOSC    | —   | Power supply terminal (for the OSC cell)                    |
| 277     | VSIOSC    | —   | Ground terminal (for the OSC cell)                          |
| 278     | DAVDD     | —   | Power supply terminal (for the built-in D/A converter)      |
| 279     | DAVSS     | —   | Ground terminal (for the built-in D/A converter)            |
| 280     | AVD1      | —   | Power supply terminal (for the DSP asymmetry system analog) |
| 281     | AVS1      | —   | Ground terminal (for the DSP asymmetry system analog)       |
| 282     | AVD2      | —   | Power supply terminal (for the DSP servo system analog)     |
| 283     | AVS2      | —   | Ground terminal (for the DSP servo system analog)           |
| 284     | TSMVDD    | —   | Power supply terminal (for the TSB master communication)    |
| 285     | TSLVDD    | —   | Power supply terminal (for the TSB slave I/F)               |
| 286     | DRAMVDD1  | —   | Power supply terminal (for DRAM)                            |
| 287     | DRAMVSS1  | —   | Ground terminal (for DRAM)                                  |
| 288     | DRAMVDD2  | —   | Power supply terminal (for DRAM)                            |
| 289     | DRAMVSS2  | —   | Ground terminal (for DRAM)                                  |
| 290     | ITO       | —   | Power supply terminal (for writing the flash memory)        |
| 291     | MITY      | —   | Ground terminal (for writing the flash memory)              |
| 292     | USBIFVDD  | —   | Power supply terminal (for USB I/F)                         |
| 293     | MVDD      | —   | Power supply terminal (for the microcomputer I/F block)     |
| 294     | USBOSCVDD | —   | Power supply terminal (for the USB oscillation circuit)     |
| 295     | USBOSCVSS | —   | Ground terminal (for the USB oscillation circuit)           |
| 296     | AVDPLL    | —   | Power supply terminal (for PLL)                             |
| 297     | AVSPLL    | —   | Ground terminal (for PLL)                                   |
| 298     | EVA       | I   | EVA terminal (fixed at "L" in this set)                     |



| Pin No.    | Pin Name    | I/O | Description   |
|------------|-------------|-----|---|
| 299        | FVDD0       | —   | Power supply terminal (for the built-in flash memory) |
| 300        | FVSS0       | —   | Ground terminal (for the built-in flash memory)       |
| 301, 302   | DVDD5, 6    | —   | Power supply terminal                                 |
| 303, 304   | DRAMVDD3, 4 | —   | Power supply terminal (for DRAM)                      |
| 305        | MSAK        | —   | Not used (open)                                       |
| 306 to 312 | NC          | —   | Not used (open)                                       |

## SECTION 7 EXPLODED VIEWS

**NOTE:**

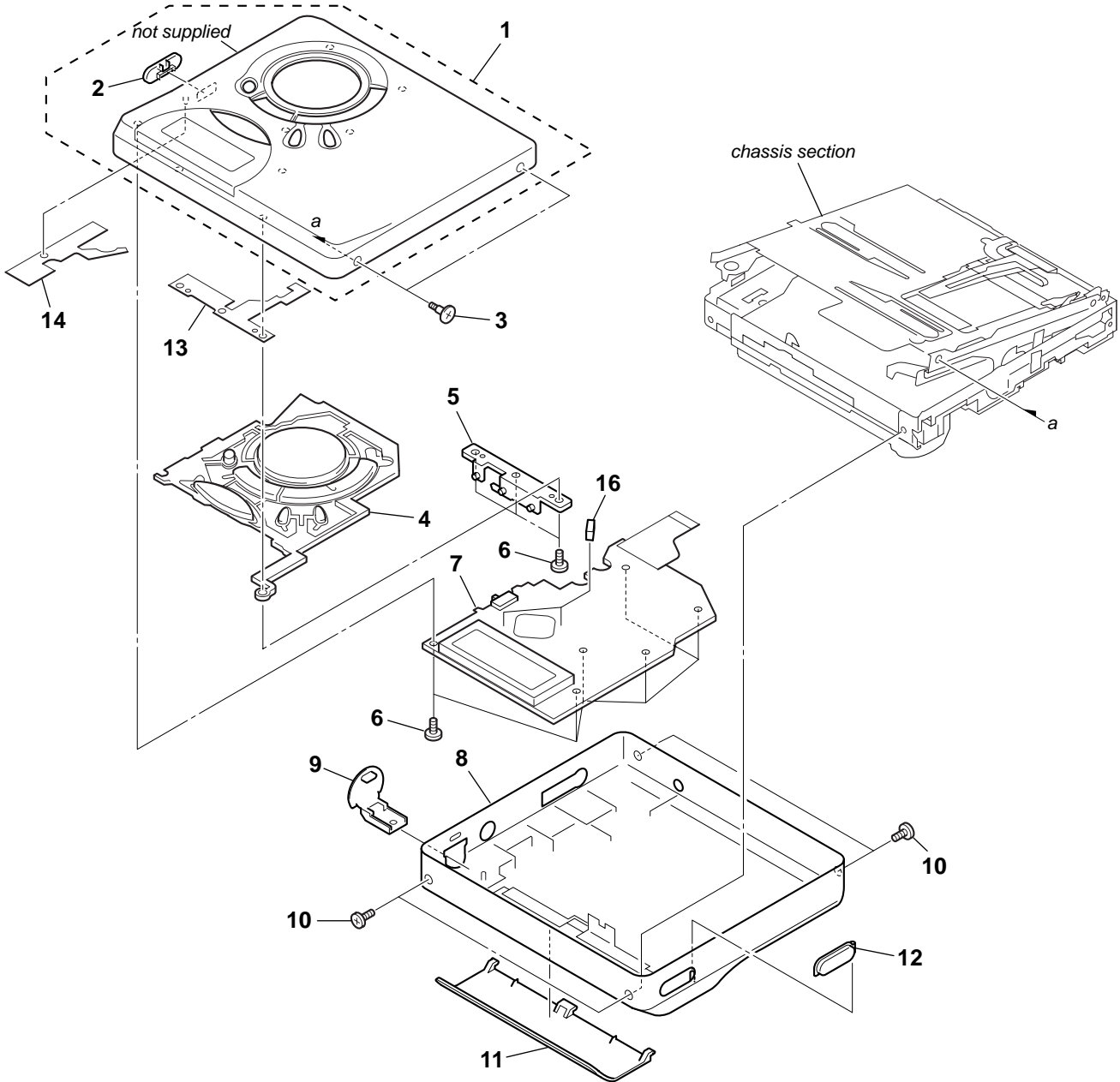
- -XX and -X mean standardized parts, so they may have some difference from the original one.

- Items marked “\*” are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Abbreviation  
CND : Canadian model

The components identified by mark  $\triangle$  or dotted line with mark  $\triangle$  are critical for safety. Replace only with part number specified.

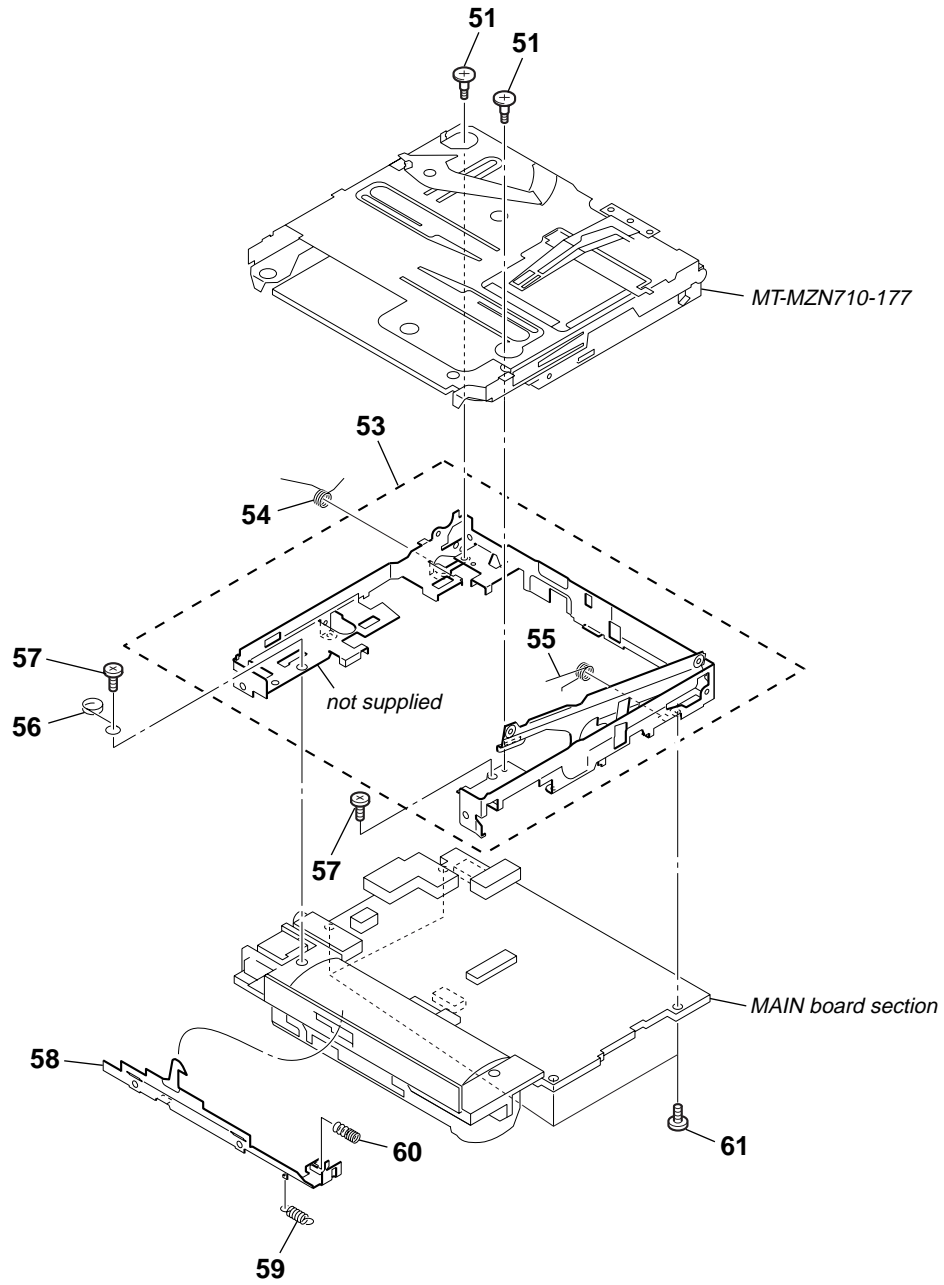
Les composants identifiés par une marque  $\triangle$  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

**7-1. Case Section**



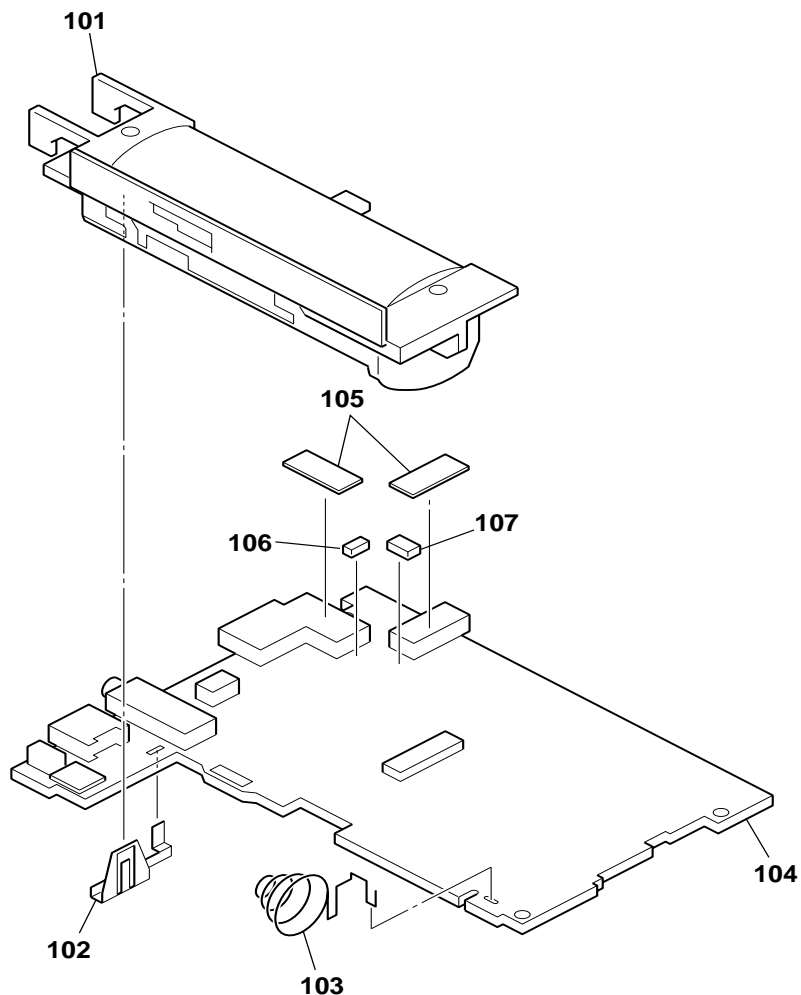
| Ref. No. | Part No.     | Description                 | Remark | Ref. No. | Part No.     | Description            | Remark |
|----------|--------------|-----------------------------|--------|----------|--------------|------------------------|--------|
| 1        | X-3383-521-1 | CASE (UPPER) SUB ASSY (CND) |        | 8        | 3-246-243-51 | CASE (LOWER)           |        |
| 1        | X-3383-522-1 | CASE (UPPER) SUB ASSY (US)  |        | 9        | 3-246-248-01 | CAP (USB)              |        |
| 2        | 3-249-687-31 | KNOB (HOLD)                 |        | 10       | 3-234-449-19 | SCREW (M1.4)           |        |
| 3        | 3-241-529-01 | SCREW, STEP                 |        | 11       | 3-249-688-01 | LID, BATTERY CASE      |        |
| 4        | 3-246-238-01 | BUTTON (CONTROL)            |        | 12       | 3-237-099-31 | BUTTON (OPEN)          |        |
| 5        | 3-237-097-01 | LOCKER, OPEN                |        | 13       | 3-250-624-01 | PAPER (O/L), GROUND    |        |
| 6        | 3-375-114-71 | SCREW                       |        | 14       | 3-253-357-01 | PAPER (BUTTON), GROUND |        |
| 7        | 1-804-989-11 | LCD MODULE                  |        | 16       | 3-253-762-01 | CUSHION (PAUSE)        |        |

7-2. Chassis Section



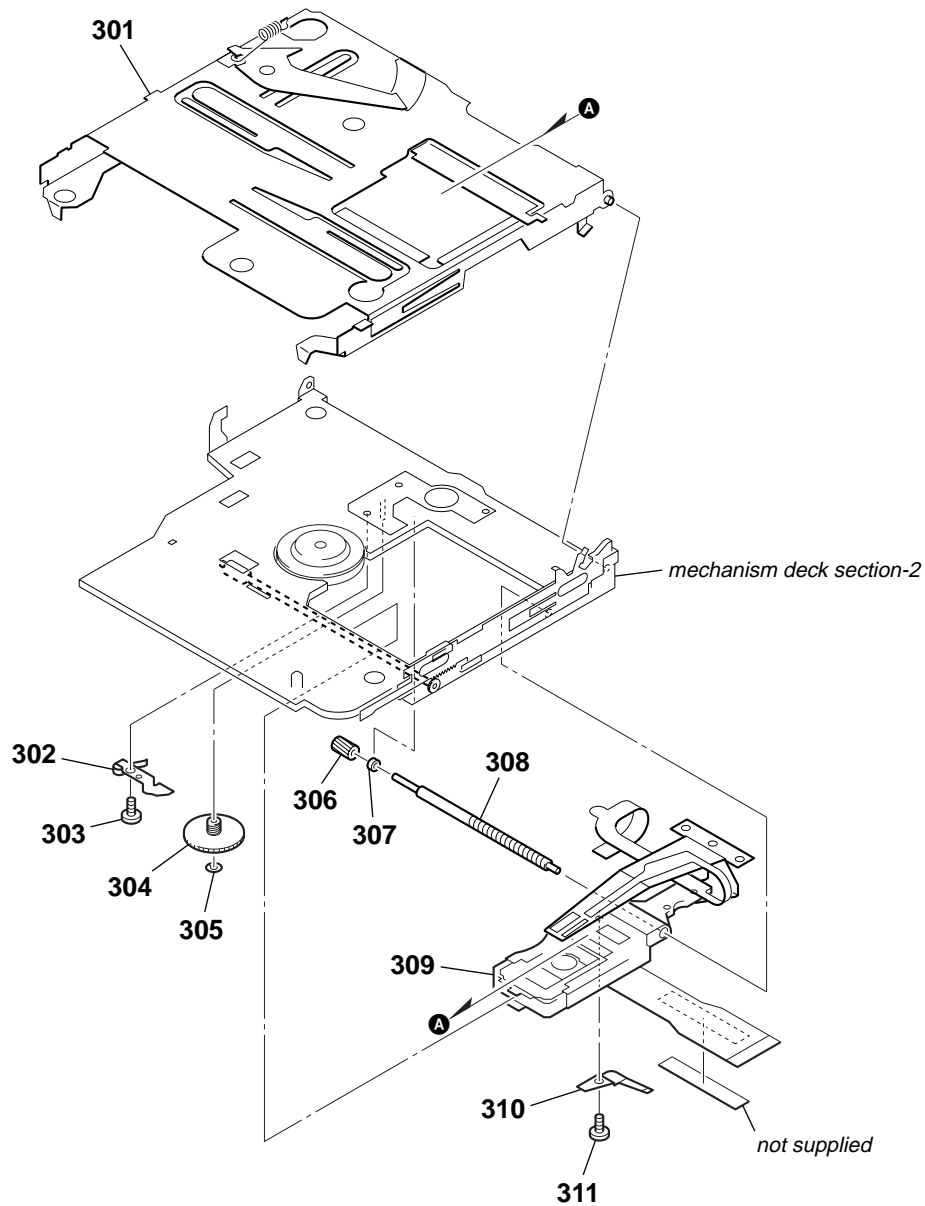
| Ref. No. | Part No.     | Description                | Remark | Ref. No. | Part No.     | Description                     | Remark |
|----------|--------------|----------------------------|--------|----------|--------------|---------------------------------|--------|
| 51       | 3-237-072-01 | SCREW (MD), STEP           |        | 57       | 3-318-382-91 | SCREW (1.7X2.5), TAPPING        |        |
| 53       | X-3382-628-1 | CHASSIS ASSY, SET          |        | 58       | 3-246-245-01 | SLIDER, OPEN                    |        |
| 54       | 3-249-532-01 | SPRING (POP UP-L), TORSION |        | 59       | 3-237-082-01 | SPRING (LOCK), TENSION          |        |
| 55       | 3-237-083-01 | SPRING (POP UP-R), TORSION |        | 60       | 3-237-081-01 | SPRING (LIMITTER), COMPRESSION  |        |
| 56       | 3-250-692-01 | SPRING (USB), GROUND       |        | 61       | 3-225-995-91 | SCREW (M1.4) (EG), TOOTHED LOCK |        |

7-3. MAIN Board Section



| <u>Ref. No.</u> | <u>Part No.</u> | <u>Description</u>          | <u>Remark</u> | <u>Ref. No.</u> | <u>Part No.</u> | <u>Description</u> | <u>Remark</u> |
|-----------------|-----------------|-----------------------------|---------------|-----------------|-----------------|--------------------|---------------|
| 101             | 3-246-247-01    | CASE, BATTERY               |               | 105             | 3-253-535-01    | SHEET (DC-IN)      |               |
| 102             | 3-237-073-01    | TERMINAL BOARD (+), BATTERY |               | 106             | 3-253-534-01    | CUSHION (H/J)      |               |
| 103             | 3-237-074-11    | TERMINAL (-), BATTERY       |               | 107             | 3-253-533-01    | CUSHION (DC-IN)    |               |
| * 104           | A-3683-780-B    | MAIN BOARD, COMPLETE (US)   |               |                 |                 |                    |               |
| * 104           | A-3683-783-B    | MAIN BOARD, COMPLETE (CND)  |               |                 |                 |                    |               |

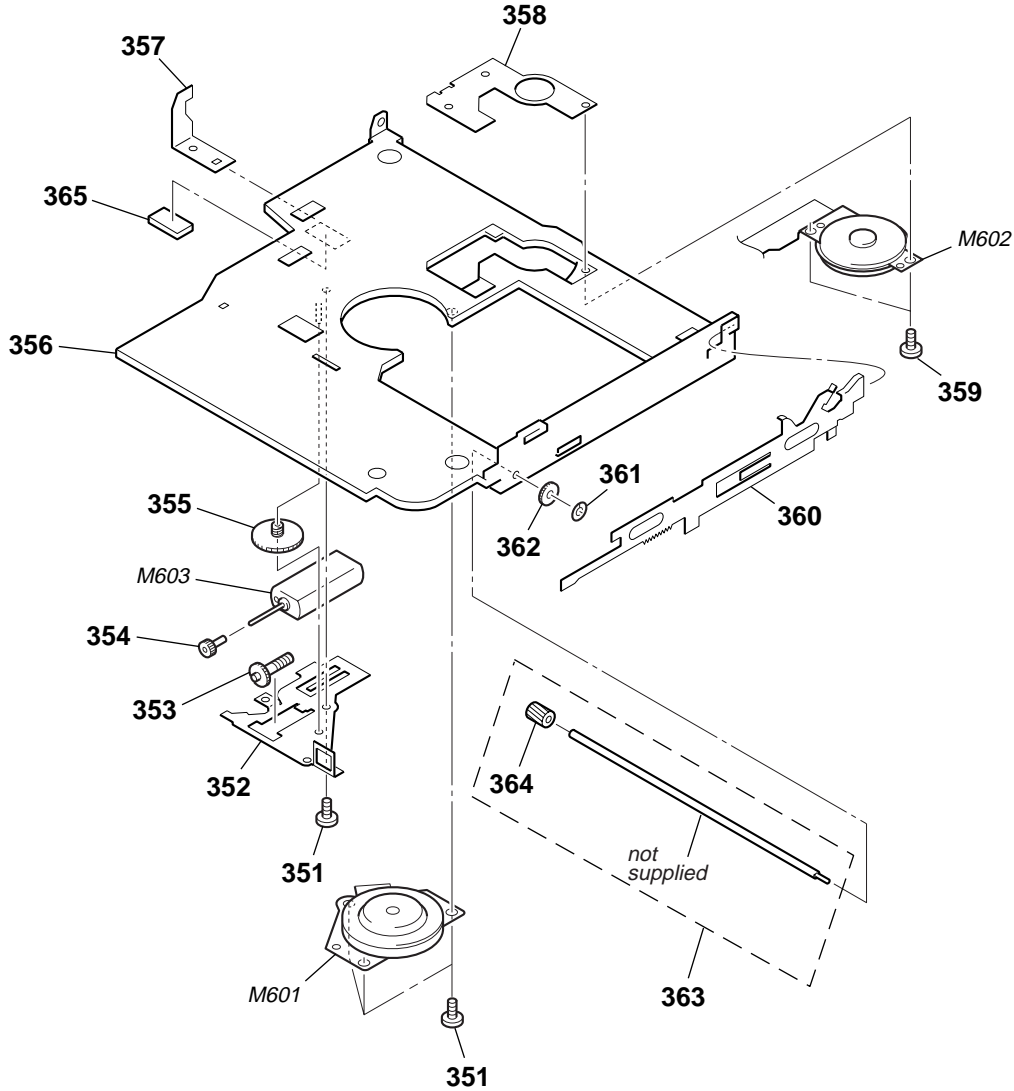
7-4. Mechanism Deck Section-1  
(MT-MZN710-177)



| Ref. No. | Part No.     | Description                      | Remark | Ref. No. | Part No.     | Description                      | Remark |
|----------|--------------|----------------------------------|--------|----------|--------------|----------------------------------|--------|
| 301      | X-3381-219-1 | HOLDER ASSY                      |        | 307      | 3-043-237-02 | BEARING (N)                      |        |
| 302      | 3-224-779-02 | SPRING, THRUST DETENT            |        | 308      | 4-222-203-02 | SCREW, LEAD                      |        |
| 303      | 3-225-996-01 | SCREW (M1.4) (EG), PRECISION PAN |        | △309     | X-3382-953-1 | SERVICE ASSY, OP (LCX-5R)        |        |
| 304      | 4-222-216-01 | GEAR (SA)                        |        | 310      | 3-049-336-03 | SPRING (S), RACK                 |        |
| 305      | 3-338-645-31 | WASHER (0.8-2.5)                 |        | 311      | 3-225-996-06 | SCREW (M1.4) (EG), PRECISION PAN |        |
| 306      | 4-222-208-01 | GEAR (SB)                        |        |          |              |                                  |        |

|   |   |
|---|---|
| <p>The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.</p> | <p>Les composants identifiés par une marque △ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.</p> |
|---|---|

7-5. Mechanism Deck Section-2  
(MT-MZN710-177)



| Ref. No. | Part No.     | Description                      | Remark | Ref. No. | Part No.     | Description                         | Remark |
|----------|--------------|----------------------------------|--------|----------|--------------|-------------------------------------|--------|
| 351      | 3-225-278-12 | SCREW, TAPPING                   |        | 361      | 3-338-645-31 | WASHER (0.8-2.5)                    |        |
| 352      | 3-235-838-01 | COVER, MOTOR                     |        | 362      | 4-222-222-01 | GEAR (RACK)                         |        |
| 353      | 3-235-836-01 | GEAR (HB)                        |        | 363      | A-3174-089-A | SHAFT BLOCK ASSY, SUB               |        |
| 354      | 3-222-544-01 | GEAR (HA)                        |        | 364      | 4-222-218-02 | GEAR (HD)                           |        |
| 355      | 3-235-835-01 | GEAR (HC)                        |        | 365      | 3-253-536-01 | SPACER (H/J)                        |        |
| 356      | 3-235-834-01 | CHASSIS                          |        | M601     | 8-835-744-21 | MOTOR, DC SSM18B/C-NP (SPINDLE)     |        |
| 357      | 3-235-830-01 | PLATE, RATCHET                   |        | M602     | 1-763-727-11 | MOTOR, DC (SLED) (WITH GEAR)        |        |
| 358      | X-3379-529-4 | BASE ASSY, MOTOR                 |        | M603     | 1-763-400-21 | MOTOR, DC (OVER WRITE HEAD UP/DOWN) |        |
| 359      | 3-225-996-07 | SCREW (M1.4) (EG), PRECISION PAN |        |          |              |                                     |        |
| 360      | 3-235-839-01 | LEVER (RACK)                     |        |          |              |                                     |        |

## SECTION 8 ELECTRICAL PARTS LIST

MAIN

**NOTE:**

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS  
All resistors are in ohms.  
METAL: Metal-film resistor.  
METAL OXIDE: Metal oxide-film resistor.  
F: nonflammable
- CAPACITORS  
uF:  $\mu$ F

- COILS  
uH:  $\mu$ H
- Abbreviation  
CND : Canadian model
- Items marked "\*" are not stocked since they are seldom required for routine service.  
Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS  
In each case, u:  $\mu$ , for example:  
uA. . :  $\mu$ A. .      uPA. . :  $\mu$ PA. .  
uPB. . :  $\mu$ PB. .    uPC. . :  $\mu$ PC. .  
uPD. . :  $\mu$ PD. .

When indicating parts by reference number, please include the board name.

The components identified by mark  $\Delta$  or dotted line with mark  $\Delta$  are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque  $\Delta$  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

| Ref. No. | Part No.     | Description                | Remark      | Ref. No. | Part No.     | Description           | Remark      |
|----------|--------------|----------------------------|-------------|----------|--------------|-----------------------|-------------|
| *        | A-3683-780-B | MAIN BOARD, COMPLETE (US)  |             | C363     | 1-107-820-11 | CERAMIC CHIP 0.1uF    | 16V         |
| *        | A-3683-783-B | MAIN BOARD, COMPLETE (CND) |             | C364     | 1-135-151-21 | TANTALUM CHIP 4.7uF   | 20% 4V      |
|          |              | *****                      |             | C365     | 1-125-889-91 | CERAMIC CHIP 2.2uF    | 10% 10V     |
|          | 3-242-558-01 | SPACER (LINE IN)           |             | C366     | 1-135-201-11 | TANTALUM CHIP 10uF    | 20% 4V      |
|          |              | < CAPACITOR >              |             | C505     | 1-165-851-91 | TANTAL. CHIP 10uF     | 20% 6.3V    |
| C104     | 1-164-874-11 | CERAMIC CHIP 100PF         | 5.00% 50V   | C506     | 1-164-943-11 | CERAMIC CHIP 0.01uF   | 10.00% 16V  |
| C105     | 1-125-837-91 | CERAMIC CHIP 1uF           | 10% 6.3V    | C507     | 1-135-259-11 | TANTAL. CHIP 10uF     | 20.00% 6.3V |
| C108     | 1-164-874-11 | CERAMIC CHIP 100PF         | 5.00% 50V   | C509     | 1-107-820-11 | CERAMIC CHIP 0.1uF    | 16V         |
| C112     | 1-126-246-11 | ELECT CHIP 220uF           | 20% 4V      | C510     | 1-119-750-11 | TANTAL. CHIP 22uF     | 20.00% 6.3V |
| C161     | 1-164-941-11 | CERAMIC CHIP 0.0047uF      | 10.00% 16V  | C511     | 1-164-850-11 | CERAMIC CHIP 10PF     | 0.50PF 50V  |
| C162     | 1-164-939-11 | CERAMIC CHIP 0.0022uF      | 10.00% 50V  | C512     | 1-164-850-11 | CERAMIC CHIP 10PF     | 0.50PF 50V  |
| C163     | 1-109-982-11 | CERAMIC CHIP 1uF           | 10.00% 10V  | C513     | 1-107-819-11 | CERAMIC CHIP 0.022uF  | 10.00% 16V  |
| C163     | 1-125-889-91 | CERAMIC CHIP 2.2uF         | 10% 10V     | C514     | 1-164-939-11 | CERAMIC CHIP 0.0022uF | 10.00% 50V  |
| C164     | 1-115-467-11 | CERAMIC CHIP 0.22uF        | 10.00% 10V  | C517     | 1-164-943-11 | CERAMIC CHIP 0.01uF   | 10.00% 16V  |
| C204     | 1-164-874-11 | CERAMIC CHIP 100PF         | 5.00% 50V   | C518     | 1-164-943-11 | CERAMIC CHIP 0.01uF   | 10.00% 16V  |
| C205     | 1-125-837-91 | CERAMIC CHIP 1uF           | 10% 6.3V    | C519     | 1-107-820-11 | CERAMIC CHIP 0.1uF    | 16V         |
| C208     | 1-164-874-11 | CERAMIC CHIP 100PF         | 5.00% 50V   | C520     | 1-107-820-11 | CERAMIC CHIP 0.1uF    | 16V         |
| C212     | 1-126-246-11 | ELECT CHIP 220uF           | 20% 4V      | C522     | 1-107-820-11 | CERAMIC CHIP 0.1uF    | 16V         |
| C261     | 1-164-941-11 | CERAMIC CHIP 0.0047uF      | 10.00% 16V  | C523     | 1-164-939-11 | CERAMIC CHIP 0.0022uF | 10.00% 50V  |
| C262     | 1-164-939-11 | CERAMIC CHIP 0.0022uF      | 10.00% 50V  | C524     | 1-125-837-91 | CERAMIC CHIP 1uF      | 10% 6.3V    |
| C263     | 1-109-982-11 | CERAMIC CHIP 1uF           | 10.00% 10V  | C526     | 1-119-923-81 | CERAMIC CHIP 0.047uF  | 10.00% 10V  |
| C263     | 1-125-889-91 | CERAMIC CHIP 2.2uF         | 10% 10V     | C527     | 1-164-941-11 | CERAMIC CHIP 0.0047uF | 10.00% 16V  |
| C264     | 1-115-467-11 | CERAMIC CHIP 0.22uF        | 10.00% 10V  | C533     | 1-164-943-11 | CERAMIC CHIP 0.01uF   | 10.00% 16V  |
| C304     | 1-125-777-11 | CERAMIC CHIP 0.1uF         | 10.00% 10V  | C534     | 1-164-941-11 | CERAMIC CHIP 0.0047uF | 10.00% 16V  |
| C305     | 1-125-777-11 | CERAMIC CHIP 0.1uF         | 10.00% 10V  | C535     | 1-125-837-91 | CERAMIC CHIP 1uF      | 10% 6.3V    |
| C306     | 1-125-777-11 | CERAMIC CHIP 0.1uF         | 10.00% 10V  | C536     | 1-125-777-11 | CERAMIC CHIP 0.1uF    | 10.00% 10V  |
| C307     | 1-107-820-11 | CERAMIC CHIP 0.1uF         | 16V         | C537     | 1-107-819-11 | CERAMIC CHIP 0.022uF  | 10.00% 16V  |
| C308     | 1-107-820-11 | CERAMIC CHIP 0.1uF         | 16V         | C538     | 1-107-819-11 | CERAMIC CHIP 0.022uF  | 10.00% 16V  |
| C310     | 1-107-820-11 | CERAMIC CHIP 0.1uF         | 16V         | C540     | 1-164-941-11 | CERAMIC CHIP 0.0047uF | 10.00% 16V  |
| C312     | 1-107-820-11 | CERAMIC CHIP 0.1uF         | 16V         | C613     | 1-135-259-11 | TANTAL. CHIP 10uF     | 20.00% 6.3V |
| C313     | 1-107-820-11 | CERAMIC CHIP 0.1uF         | 16V         | C614     | 1-135-259-11 | TANTAL. CHIP 10uF     | 20.00% 6.3V |
| C314     | 1-110-569-11 | TANTAL. CHIP 47uF          | 20.00% 6.3V | C615     | 1-125-777-11 | CERAMIC CHIP 0.1uF    | 10.00% 10V  |
| C315     | 1-135-149-21 | TANTALUM CHIP 2.2uF        | 20% 10V     | C616     | 1-125-777-11 | CERAMIC CHIP 0.1uF    | 10.00% 10V  |
| C316     | 1-107-820-11 | CERAMIC CHIP 0.1uF         | 16V         | C617     | 1-125-777-11 | CERAMIC CHIP 0.1uF    | 10.00% 10V  |
| C325     | 1-128-015-11 | ELECT CHIP 22uF            | 20.00% 4V   | C618     | 1-125-777-11 | CERAMIC CHIP 0.1uF    | 10.00% 10V  |
| C327     | 1-164-933-11 | CERAMIC CHIP 220PF         | 10.00% 50V  | C621     | 1-164-943-11 | CERAMIC CHIP 0.01uF   | 10.00% 16V  |
| C339     | 1-107-820-11 | CERAMIC CHIP 0.1uF         | 16V         | C622     | 1-125-777-11 | CERAMIC CHIP 0.1uF    | 10.00% 10V  |
| C340     | 1-164-937-11 | CERAMIC CHIP 0.001uF       | 10.00% 50V  | C623     | 1-164-943-11 | CERAMIC CHIP 0.01uF   | 10.00% 16V  |
| C361     | 1-125-837-91 | CERAMIC CHIP 1uF           | 10% 6.3V    | C624     | 1-164-874-11 | CERAMIC CHIP 100PF    | 5.00% 50V   |
| C362     | 1-135-259-11 | TANTAL. CHIP 10uF          | 20.00% 6.3V | C626     | 1-135-259-11 | TANTAL. CHIP 10uF     | 20.00% 6.3V |
|          |              |                            |             | C627     | 1-131-862-91 | TANTAL. CHIP 47uF     | 20% 4V      |
|          |              |                            |             | C628     | 1-165-851-91 | TANTAL. CHIP 10uF     | 20% 6.3V    |
|          |              |                            |             | C630     | 1-125-777-11 | CERAMIC CHIP 0.1uF    | 10.00% 10V  |
|          |              |                            |             | C631     | 1-131-862-91 | TANTAL. CHIP 47uF     | 20% 4V      |
|          |              |                            |             | C632     | 1-137-760-91 | CAP-CHIP 100PF        | 5% 100V     |





| Ref. No. | Part No.     | Description                               | Remark     | Ref. No. | Part No.     | Description    | Remark              |
|----------|--------------|---|------------|----------|--------------|----------------|---------------------|
|          |              | < FUSE >                                  |            |          |              | < TRANSISTOR > |                     |
| △ F1     | 1-576-462-21 | FUSE (SMD)                                | 1.5A 63V   | Q301     | 8-729-051-23 | TRANSISTOR     | 2SA2018TL           |
| △ F301   | 1-576-439-21 | FUSE (SMD)                                | 0.25A 125V | Q361     | 8-729-037-52 | TRANSISTOR     | 2SC4738F-Y/GR(TPL3) |
|          |              | < CONDUCTOR >                             |            | Q501     | 8-729-922-10 | TRANSISTOR     | 2SA1577-T106-QR     |
| FB1      | 1-216-864-11 | METAL CHIP                                | 0 5% 1/10W | Q603     | 8-729-053-71 | TRANSISTOR     | TS8K1TB             |
| FB2      | 1-216-864-11 | METAL CHIP                                | 0 5% 1/10W | Q604     | 6-550-356-01 | TRANSISTOR     | MCH6616-TL-E        |
| FB301    | 1-216-864-11 | METAL CHIP                                | 0 5% 1/10W | Q605     | 6-550-357-01 | TRANSISTOR     | CPH5614-TL-E        |
| FB302    | 1-216-864-11 | METAL CHIP                                | 0 5% 1/10W | Q651     | 8-729-047-48 | TRANSISTOR     | UMD12N-TR           |
| FB303    | 1-216-864-11 | METAL CHIP                                | 0 5% 1/10W | Q652     | 8-729-053-03 | TRANSISTOR     | XP151A12A2MR        |
| FB304    | 1-216-864-11 | METAL CHIP                                | 0 5% 1/10W | Q653     | 8-729-041-51 | TRANSISTOR     | FMMT617TA           |
| FB651    | 1-216-864-11 | METAL CHIP                                | 0 5% 1/10W | Q654     | 8-729-037-63 | TRANSISTOR     | UN9115J-(TX).SO     |
| FB652    | 1-216-864-11 | METAL CHIP                                | 0 5% 1/10W | Q672     | 8-729-037-71 | TRANSISTOR     | UN9210J-(TX).SO     |
| FB801    | 1-216-864-11 | METAL CHIP                                | 0 5% 1/10W | Q871     | 8-729-429-44 | TRANSISTOR     | XP1501-TXE          |
| FB802    | 1-216-864-11 | METAL CHIP                                | 0 5% 1/10W | Q901     | 8-729-429-44 | TRANSISTOR     | XP1501-TXE          |
| FB803    | 1-216-864-11 | METAL CHIP                                | 0 5% 1/10W | Q951     | 6-550-353-01 | TRANSISTOR     | SI1410EDH-T1        |
| FB804    | 1-216-864-11 | METAL CHIP                                | 0 5% 1/10W | Q953     | 8-729-037-53 | TRANSISTOR     | 2SB1462J-QR(TX).SO  |
| FB805    | 1-216-864-11 | METAL CHIP                                | 0 5% 1/10W | Q954     | 6-550-326-01 | TRANSISTOR     | FZT968TA            |
| FB806    | 1-216-864-11 | METAL CHIP                                | 0 5% 1/10W | Q955     | 8-729-037-52 | TRANSISTOR     | 2SC4738F-Y/GR(TPL3) |
|          |              | < IC >                                    |            |          |              | < RESISTOR >   |                     |
| IC302    | 8-759-694-88 | IC AK5354VT-E2                            |            | R101     | 1-208-927-11 | METAL CHIP     | 47K 0.5% 1/16W      |
| IC361    | 8-759-598-15 | IC TA2131FL(EL)                           |            | R102     | 1-208-715-11 | METAL CHIP     | 22K 0.5% 1/16W      |
| @ IC501  | 6-703-946-01 | IC SN761058AZQLR                          |            | R106     | 1-218-990-11 | SHORT CHIP     | 0                   |
| IC601    | 6-702-782-01 | IC XPC18A22AEPR2                          |            | R161     | 1-218-961-11 | RES-CHIP       | 4.7K 5% 1/16W (US)  |
| IC651    | 8-759-569-80 | IC XC6367A331MR                           |            | R161     | 1-218-965-11 | RES-CHIP       | 10K 5% 1/16W (CND)  |
| IC701    | 6-702-786-01 | IC SC111258EPR2                           |            | R162     | 1-218-957-11 | RES-CHIP       | 2.2K 5% 1/16W (CND) |
| @ IC801  | 8-753-000-77 | IC CXD2680-203GA                          |            | R162     | 1-218-961-11 | RES-CHIP       | 4.7K 5% 1/16W (US)  |
| ☆ IC852  | -----        | IC AK6417AL-L                             |            | R163     | 1-218-965-11 | RES-CHIP       | 10K 5% 1/16W        |
| IC901    | 6-702-865-01 | IC SC901580EPR2                           |            | R164     | 1-218-965-11 | RES-CHIP       | 10K 5% 1/16W        |
| IC951    | 6-702-867-01 | IC SC901582EPR2                           |            | R165     | 1-208-635-11 | RES-CHIP       | 10 5% 1/16W         |
|          |              | < JACK >                                  |            | R166     | 1-218-961-11 | RES-CHIP       | 4.7K 5% 1/16W       |
| J302     | 1-815-950-12 | JACK (LINE IN (OPTICAL))                  |            | R201     | 1-208-927-11 | METAL CHIP     | 47K 0.5% 1/16W      |
| J303     | 1-816-954-21 | JACK (⊘)                                  |            | R202     | 1-208-715-11 | METAL CHIP     | 22K 0.5% 1/16W      |
| J951     | 1-785-383-11 | JACK,DC(POLARITY UNIFIED TYPE) (DC IN 3V) |            | R206     | 1-218-990-11 | SHORT CHIP     | 0                   |
|          |              | < COIL >                                  |            | R261     | 1-218-961-11 | RES-CHIP       | 4.7K 5% 1/16W (US)  |
| L302     | 1-414-398-11 | INDUCTOR                                  | 10uH       | R261     | 1-218-965-11 | RES-CHIP       | 10K 5% 1/16W (CND)  |
| L503     | 1-414-398-11 | INDUCTOR                                  | 10uH       | R262     | 1-218-957-11 | RES-CHIP       | 2.2K 5% 1/16W (CND) |
| L504     | 1-414-398-11 | INDUCTOR                                  | 10uH       | R262     | 1-218-961-11 | RES-CHIP       | 4.7K 5% 1/16W (US)  |
| L602     | 1-400-058-21 | INDUCTOR                                  | 10uH       | R263     | 1-218-965-11 | RES-CHIP       | 10K 5% 1/16W        |
| L603     | 1-414-398-11 | INDUCTOR                                  | 10uH       | R264     | 1-218-965-11 | RES-CHIP       | 10K 5% 1/16W        |
| L651     | 1-456-218-21 | COIL, CHOKE                               |            | R265     | 1-208-635-11 | RES-CHIP       | 10 5% 1/16W         |
| L802     | 1-414-398-11 | INDUCTOR                                  | 10uH       | R266     | 1-218-961-11 | RES-CHIP       | 4.7K 5% 1/16W       |
| L803     | 1-414-398-11 | INDUCTOR                                  | 10uH       | R302     | 1-218-965-11 | RES-CHIP       | 10K 5% 1/16W        |
| L901     | 1-456-219-21 | COIL, CHOKE                               | 220uH      | R303     | 1-218-977-11 | RES-CHIP       | 100K 5% 1/16W       |
| L902     | 1-419-949-21 | INDUCTOR                                  | 22uH       | R304     | 1-218-941-81 | RES-CHIP       | 100 5% 1/16W        |
| L903     | 1-414-398-11 | INDUCTOR                                  | 10uH       | R305     | 1-218-953-11 | RES-CHIP       | 1K 5% 1/16W         |
| L904     | 1-419-949-21 | INDUCTOR                                  | 22uH       | R306     | 1-218-953-11 | RES-CHIP       | 1K 5% 1/16W         |
|          |              | < LINE FILTER >                           |            | R307     | 1-218-953-11 | RES-CHIP       | 1K 5% 1/16W         |
| LF951    | 1-416-405-21 | FERRITE                                   | 0uH        | R308     | 1-218-953-11 | RES-CHIP       | 1K 5% 1/16W         |
|          |              |   |            | R309     | 1-218-953-11 | RES-CHIP       | 1K 5% 1/16W         |

@ Replacement of IC501 and IC801 used in this set requires a special tool.

☆ When IC852 is damaged, replace the MAIN board.

The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque △ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

# MZ-NF610

## MAIN

| Ref. No. | Part No.     | Description |      |      | Remark | Ref. No. | Part No.     | Description |       |      | Remark |
|----------|--------------|-------------|------|------|--------|----------|--------------|-------------|-------|------|--------|
| R312     | 1-218-989-11 | RES-CHIP    | 1M   | 5%   | 1/16W  | R825     | 1-218-989-11 | RES-CHIP    | 1M    | 5%   | 1/16W  |
| R315     | 1-218-990-11 | SHORT CHIP  | 0    |      |        | R826     | 1-218-957-11 | RES-CHIP    | 2.2K  | 5%   | 1/16W  |
| R361     | 1-218-937-11 | RES-CHIP    | 47   | 5%   | 1/16W  | R827     | 1-218-961-11 | RES-CHIP    | 4.7K  | 5%   | 1/16W  |
| R362     | 1-218-981-11 | RES-CHIP    | 220K | 5%   | 1/16W  | R828     | 1-218-933-11 | RES-CHIP    | 22    | 5%   | 1/16W  |
| R363     | 1-218-969-11 | RES-CHIP    | 22K  | 5%   | 1/16W  | R829     | 1-218-933-11 | RES-CHIP    | 22    | 5%   | 1/16W  |
| R364     | 1-218-965-11 | RES-CHIP    | 10K  | 5%   | 1/16W  | R830     | 1-218-990-11 | SHORT CHIP  | 0     |      |        |
| R501     | 1-218-977-11 | RES-CHIP    | 100K | 5%   | 1/16W  | R831     | 1-218-990-11 | SHORT CHIP  | 0     |      |        |
| R502     | 1-218-446-11 | METAL CHIP  | 1    | 5%   | 1/10W  | R832     | 1-218-990-11 | SHORT CHIP  | 0     |      |        |
| R503     | 1-218-446-11 | METAL CHIP  | 1    | 5%   | 1/10W  | R833     | 1-218-990-11 | SHORT CHIP  | 0     |      |        |
| R504     | 1-218-965-11 | RES-CHIP    | 10K  | 5%   | 1/16W  | R834     | 1-208-699-11 | METAL CHIP  | 4.7K  | 0.5% | 1/16W  |
| R505     | 1-218-965-11 | RES-CHIP    | 10K  | 5%   | 1/16W  | R835     | 1-208-699-11 | METAL CHIP  | 4.7K  | 0.5% | 1/16W  |
| R507     | 1-208-707-11 | METAL CHIP  | 10K  | 0.5% | 1/16W  | R836     | 1-218-985-11 | RES-CHIP    | 470K  | 5%   | 1/16W  |
| R508     | 1-208-683-11 | METAL CHIP  | 1K   | 0.5% | 1/16W  | R837     | 1-218-973-11 | RES-CHIP    | 47K   | 5%   | 1/16W  |
| R509     | 1-218-990-11 | SHORT CHIP  | 0    |      |        | R838     | 1-218-957-11 | RES-CHIP    | 2.2K  | 5%   | 1/16W  |
| R511     | 1-218-990-11 | SHORT CHIP  | 0    |      |        | R839     | 1-218-990-11 | SHORT CHIP  | 0     |      |        |
| R609     | 1-218-965-11 | RES-CHIP    | 10K  | 5%   | 1/16W  | R840     | 1-218-990-11 | SHORT CHIP  | 0     |      |        |
| R612     | 1-216-789-11 | METAL CHIP  | 2.2  | 5%   | 1/10W  | R844     | 1-218-990-11 | SHORT CHIP  | 0     |      |        |
| R613     | 1-216-789-11 | METAL CHIP  | 2.2  | 5%   | 1/10W  | R845     | 1-218-977-11 | RES-CHIP    | 100K  | 5%   | 1/16W  |
| R614     | 1-218-985-11 | RES-CHIP    | 470K | 5%   | 1/16W  | R846     | 1-218-977-11 | RES-CHIP    | 100K  | 5%   | 1/16W  |
| R616     | 1-218-957-11 | RES-CHIP    | 2.2K | 5%   | 1/16W  | R847     | 1-218-981-11 | RES-CHIP    | 220K  | 5%   | 1/16W  |
| R617     | 1-218-965-11 | RES-CHIP    | 10K  | 5%   | 1/16W  | R848     | 1-218-990-11 | SHORT CHIP  | 0     |      |        |
| R619     | 1-218-969-11 | RES-CHIP    | 22K  | 5%   | 1/16W  | R849     | 1-218-990-11 | SHORT CHIP  | 0     |      |        |
| R651     | 1-216-864-11 | METAL CHIP  | 0    | 5%   | 1/10W  | R850     | 1-218-990-11 | SHORT CHIP  | 0     |      |        |
| R654     | 1-218-990-11 | SHORT CHIP  | 0    |      |        | R855     | 1-218-990-11 | SHORT CHIP  | 0     |      |        |
| R655     | 1-218-953-11 | RES-CHIP    | 1K   | 5%   | 1/16W  | R856     | 1-218-965-11 | RES-CHIP    | 10K   | 5%   | 1/16W  |
| R656     | 1-218-985-11 | RES-CHIP    | 470K | 5%   | 1/16W  | R857     | 1-218-989-11 | RES-CHIP    | 1M    | 5%   | 1/16W  |
| R657     | 1-218-990-11 | SHORT CHIP  | 0    |      |        | R858     | 1-218-990-11 | SHORT CHIP  | 0     |      |        |
| R658     | 1-218-961-11 | RES-CHIP    | 4.7K | 5%   | 1/16W  | R860     | 1-216-864-11 | METAL CHIP  | 0     | 5%   | 1/10W  |
| R659     | 1-218-957-11 | RES-CHIP    | 2.2K | 5%   | 1/16W  | R871     | 1-218-957-11 | RES-CHIP    | 2.2K  | 5%   | 1/16W  |
| R660     | 1-218-941-81 | RES-CHIP    | 100  | 5%   | 1/16W  | R872     | 1-218-953-11 | RES-CHIP    | 1K    | 5%   | 1/16W  |
| R661     | 1-218-973-11 | RES-CHIP    | 47K  | 5%   | 1/16W  | R873     | 1-218-985-11 | RES-CHIP    | 470K  | 5%   | 1/16W  |
| R662     | 1-216-864-11 | METAL CHIP  | 0    | 5%   | 1/10W  | R874     | 1-218-985-11 | RES-CHIP    | 470K  | 5%   | 1/16W  |
| R672     | 1-218-977-11 | RES-CHIP    | 100K | 5%   | 1/16W  | R901     | 1-218-989-11 | RES-CHIP    | 1M    | 5%   | 1/16W  |
| R674     | 1-216-864-11 | METAL CHIP  | 0    | 5%   | 1/10W  | R902     | 1-218-989-11 | RES-CHIP    | 1M    | 5%   | 1/16W  |
| R701     | 1-218-957-11 | RES-CHIP    | 2.2K | 5%   | 1/16W  | R903     | 1-218-957-11 | RES-CHIP    | 2.2K  | 5%   | 1/16W  |
| R702     | 1-218-957-11 | RES-CHIP    | 2.2K | 5%   | 1/16W  | R904     | 1-218-957-11 | RES-CHIP    | 2.2K  | 5%   | 1/16W  |
| R703     | 1-218-957-11 | RES-CHIP    | 2.2K | 5%   | 1/16W  | R905     | 1-208-707-11 | METAL CHIP  | 10K   | 0.5% | 1/16W  |
| R704     | 1-218-965-11 | RES-CHIP    | 10K  | 5%   | 1/16W  | R907     | 1-218-985-11 | RES-CHIP    | 470K  | 5%   | 1/16W  |
| R705     | 1-218-965-11 | RES-CHIP    | 10K  | 5%   | 1/16W  | R908     | 1-218-969-11 | RES-CHIP    | 22K   | 5%   | 1/16W  |
| R706     | 1-218-965-11 | RES-CHIP    | 10K  | 5%   | 1/16W  | R912     | 1-218-977-11 | RES-CHIP    | 100K  | 5%   | 1/16W  |
| R803     | 1-208-635-11 | RES-CHIP    | 10   | 5%   | 1/16W  | R914     | 1-218-973-11 | RES-CHIP    | 47K   | 5%   | 1/16W  |
| R804     | 1-208-635-11 | RES-CHIP    | 10   | 5%   | 1/16W  | R915     | 1-218-981-11 | RES-CHIP    | 220K  | 5%   | 1/16W  |
| R805     | 1-218-990-11 | SHORT CHIP  | 0    |      |        | R917     | 1-218-985-11 | RES-CHIP    | 470K  | 5%   | 1/16W  |
| R806     | 1-218-990-11 | SHORT CHIP  | 0    |      |        | R919     | 1-218-973-11 | RES-CHIP    | 47K   | 5%   | 1/16W  |
| R807     | 1-218-965-11 | RES-CHIP    | 10K  | 5%   | 1/16W  | R923     | 1-218-977-11 | RES-CHIP    | 100K  | 5%   | 1/16W  |
| R808     | 1-218-977-11 | RES-CHIP    | 100K | 5%   | 1/16W  | R925     | 1-218-990-11 | SHORT-CHIP  | 0     |      |        |
| R809     | 1-218-977-11 | RES-CHIP    | 100K | 5%   | 1/16W  | R926     | 1-218-969-11 | RES-CHIP    | 22K   | 5%   | 1/16W  |
| R811     | 1-218-981-11 | RES-CHIP    | 220K | 5%   | 1/16W  | R932     | 1-218-985-11 | RES-CHIP    | 470K  | 5%   | 1/16W  |
| R813     | 1-218-953-11 | RES-CHIP    | 1K   | 5%   | 1/16W  | R933     | 1-218-981-11 | RES-CHIP    | 220K  | 5%   | 1/16W  |
| R814     | 1-218-957-11 | RES-CHIP    | 2.2K | 5%   | 1/16W  | R934     | 1-218-981-11 | RES-CHIP    | 220K  | 5%   | 1/16W  |
| R815     | 1-218-953-11 | RES-CHIP    | 1K   | 5%   | 1/16W  | R952     | 1-245-454-21 | METAL       | 0.022 | 1%   | 1/5W   |
| R816     | 1-218-945-11 | RES-CHIP    | 220  | 5%   | 1/16W  | R953     | 1-245-456-21 | METAL       | 1     | 1%   | 1/5W   |
| R817     | 1-220-804-11 | RES-CHIP    | 2.2M | 5%   | 1/16W  | R954     | 1-218-965-11 | RES-CHIP    | 10K   | 5%   | 1/16W  |
| R818     | 1-218-989-11 | RES-CHIP    | 1M   | 5%   | 1/16W  | R955     | 1-218-941-81 | RES-CHIP    | 100   | 5%   | 1/16W  |
| R819     | 1-208-691-11 | METAL CHIP  | 2.2K | 0.5% | 1/16W  | R956     | 1-208-943-11 | METAL CHIP  | 220K  | 0.5% | 1/16W  |
| R820     | 1-208-691-11 | METAL CHIP  | 2.2K | 0.5% | 1/16W  | R957     | 1-208-927-11 | METAL CHIP  | 47K   | 0.5% | 1/16W  |
| R821     | 1-218-973-11 | RES-CHIP    | 47K  | 5%   | 1/16W  | R959     | 1-208-935-11 | METAL CHIP  | 100K  | 0.5% | 1/16W  |
| R822     | 1-218-981-11 | RES-CHIP    | 220K | 5%   | 1/16W  | R960     | 1-218-985-11 | METAL CHIP  | 470K  | 0.5% | 1/16W  |
| R823     | 1-218-933-11 | RES-CHIP    | 22   | 5%   | 1/16W  | R961     | 1-208-699-11 | METAL CHIP  | 4.7K  | 0.5% | 1/16W  |
| R824     | 1-218-985-11 | RES-CHIP    | 470K | 5%   | 1/16W  | R962     | 1-208-935-11 | METAL CHIP  | 100K  | 0.5% | 1/16W  |

| Ref. No. | Part No.     | Description      | Remark  |
|----------|--------------|------------------|---------|
| R963     | 1-218-973-11 | RES-CHIP 47K 5%  | 1/16W   |
| R965     | 1-218-977-11 | RES-CHIP 100K 5% | 1/16W   |
| R966     | 1-218-965-11 | RES-CHIP 10K 5%  | 1/16W   |
| R967     | 1-218-989-11 | RES-CHIP 1M 5%   | 1/16W   |
| R969     | 1-218-957-11 | RES-CHIP 2.2K 5% | 1/16W   |
| R971     | 1-218-961-11 | RES-CHIP 4.7K 5% | 1/16W   |
| R974     | 1-245-455-21 | METAL 0.47       | 1% 1/5W |
| R975     | 1-218-981-11 | RES-CHIP 220K 5% | 1/16W   |
| R976     | 1-218-985-11 | RES-CHIP 470K 5% | 1/16W   |

&lt; SWITCH &gt;

|      |              |                                   |
|------|--------------|-----------------------------------|
| S801 | 1-762-946-12 | SWITCH, PUSH (1 KEY) (HALF LOCK)  |
| S803 | 1-762-805-21 | SWITCH, PUSH (1 KEY) (OPEN/CLOSE) |
| S806 | 1-786-437-11 | SWITCH, PUSH (2 KEY) (PROTECT)    |

&lt; THERMISTOR &gt;

|       |              |                      |
|-------|--------------|----------------------|
| TH951 | 1-805-064-11 | THERMISTOR, POSITIVE |
|-------|--------------|----------------------|

&lt; VIBRATOR &gt;

|      |              |                                |
|------|--------------|--------------------------------|
| X802 | 1-795-727-21 | VIBRATOR, CERAMIC (48MHz)      |
| X803 | 1-795-778-11 | VIBRATOR, CRYSTAL (22.5792MHz) |

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## MISCELLANEOUS

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|       |              |                                     |
|-------|--------------|-------------------------------------|
| 7     | 1-804-989-11 | LCD MODULE                          |
| △ 309 | X-3382-953-1 | SERVICE ASSY, OP (LCX-5R)           |
| M601  | 8-835-744-21 | MOTOR, DC SSM18B/C-NP (SPINDLE)     |
| M602  | 1-763-727-11 | MOTOR, DC (SLED) (WITH GEAR)        |
| M603  | 1-763-400-21 | MOTOR, DC (OVER WRITE HEAD UP/DOWN) |

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## ACCESSORIES

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|   |              |                                      |
|---|--------------|--------------------------------------|
|   | 1-477-530-11 | REMOCON UNIT (RM-MC36LT) (CND)       |
|   | 1-477-530-51 | REMOCON UNIT (WITH TUNER) (US)       |
| △ | 1-477-737-11 | ADAPTOR, AC (AC-ET305K)              |
|   | 1-756-317-31 | BATTERY, NICKEL HYDROGEN             |
|   | 1-794-451-11 | CONNECTOR, LIGHT                     |
|   | 1-823-519-11 | CORD, CONNECTION                     |
|   | 3-223-571-01 | CASE, BATTERY CARRYING               |
|   | 3-253-608-11 | MANUAL, INSTRUCTION (ENGLISH)        |
|   | 3-253-608-21 | MANUAL, INSTRUCTION (FRENCH) (CND)   |
|   | 3-254-263-11 | MANUAL, INSTRUCTION (ENGLISH)        |
|   | 3-254-263-21 | MANUAL, INSTRUCTION (FRENCH) (CND)   |
|   | 8-954-007-94 | HEADPHONE MDR-027SP/S SET (US)       |
|   | 8-954-008-90 | RECEIVER, EAR MDR-E808SP/C SET (CND) |
|   | X-3383-268-1 | CD-ROM (APPLICATION) ASSY            |

The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque △ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

