MZ-R410

SERVICE MANUAL

AEP Model
UK Model

Ver 1.0 2002. 11

Photo: Silver

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Model Name Using Similar Mechanism	NEW
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 MQW
Wavelength: λ = 790 nm
Emission duration: continuous
Laser output: less than 44.6 µW
(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 stereo

Revolutions
Approx. 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

Modulation system
EFM (Eight to Fourteen Modulation)

Number of channels
2 stereo channels
1 monaural channel

Frequency response
20 to 20,000 Hz ± 3 dB

Wow and Flutter
Below measurable limit

Inputs
Line in: stereo mini-jack, minimum input level 49 mV
Optical (Digital) in: optical (digital) mini-jack

Outputs
🎧: stereo mini-jack, maximum output level 5 mW + 5 mW, load impedance 16 ohm

General

Power requirements
Sony AC Power Adaptor (supplied) connected at the DC IN 3 V jack (country model in parentheses):
230 V AC, 50/60 Hz (Continental Europe)
230 - 240 V AC, 50 Hz (UK)
LR6 (size AA) alkaline dry battery

Battery operation time
The battery life may be shorter due to operating conditions, the temperature of the location, and varieties of batteries.

(Unit: approx.hours)(JEITA[1])

LR6 (SG) Sony alkaline dry battery[2]	SP Stereo	LP2 Stereo	LP4 Stereo
When recording[3]	8	13	19
When playing	37	46	51

[1] Measured in accordance with the JEITA (Japan Electronics and Information Technology Industries Association) standard.
[2] When using a Sony LR6 (SG) "STAMINA" alkaline dry battery (produced in Japan).
[3] To prevent interrupted recording due to draind battery, use a new battery for recording operations.

Dimensions
Approx. 81 × 27.9 × 74.4 mm (w/h/d) (3 1/4 × 1 1/8 × 3 in.) without projections.

Mass
Approx. 101 g (3.6 oz) the recorder only

Supplied accessories
· AC power adaptor (1)
· Headphones/earphones (1)
· Optional cable (1)

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Design and specifications are subject to change without notice.

PORTABLE MINIDISC RECORDER

9-874-250-01
2002K1600-1

Sony Corporation
Personal Audio Company
Published by Sony Engineering Corporation

SONY®

On power sources

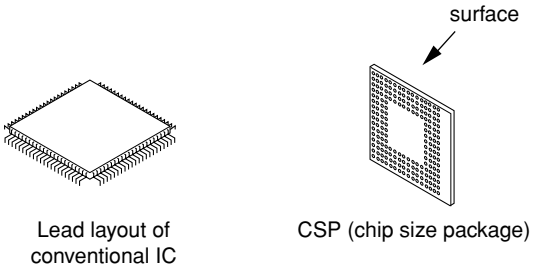
- Use house current, LR6 (size AA) battery, or car battery.
- For use in your house: Use the AC power adaptor supplied with this recorder. Do not use any other AC power adaptor since it may cause the recorder to malfunction.

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 immidiately.
- 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, or car battery cord). To remove the AC power adaptor from the wall outlet, grasp the adaptor plug itself; never pull the cord.

* Replacement of IC801 used in this set requires a special tool.
- The voltage and waveform of CSP (chip size package) cannot be measured, because its lead layout is different from that of conventional IC.

- Lead layouts



Lead layout of conventional IC

CSP (chip size package)

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.

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.

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.

CAUTION

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

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ 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.

TABLE OF CONTENTS

SECTION 1
SERVICING NOTE

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

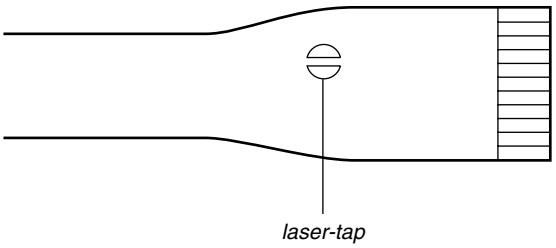
The laser diode in the optical pick-up block may suffer electrostatic break-down because of the potential difference generated by the charged electrostatic load, etc. on clothing and the human body.
During repair, pay attention to electrostatic break-down and also use the procedure in the printed matter 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.

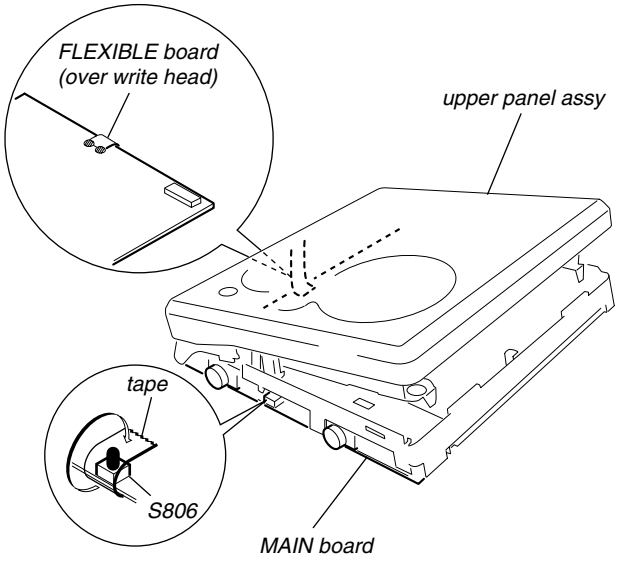
NOTES ON HANDLING THE OPTICAL PICK-UP BLOCK (LCX-5R)

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.

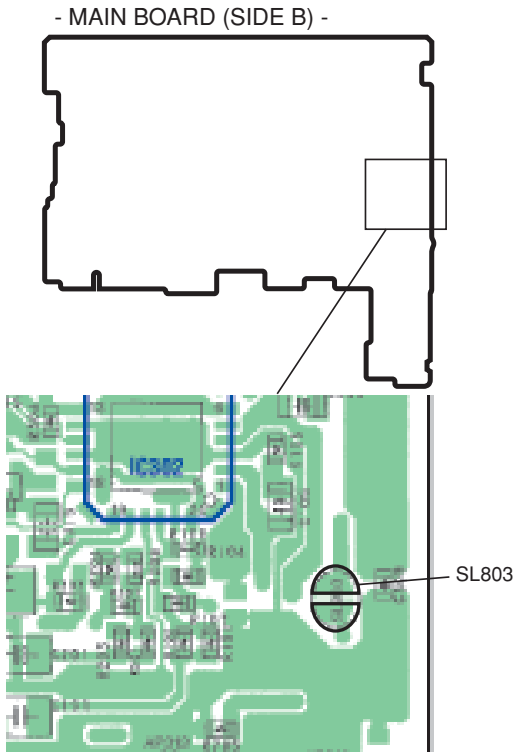


OPTICAL PICK-UP FLEXIBLE BOARD

- 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, fix a convex part of the open/close detect switch (S806 on MAIN board) with a tape in advance.
  Handle the FLEXIBLE board (overwrite 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 (overwrite head) and the MAIN board with the lead wires in advance. (See page 7)



There is the method of short-circuiting SL803 on the MAIN board in addition to the above-mentioned method.

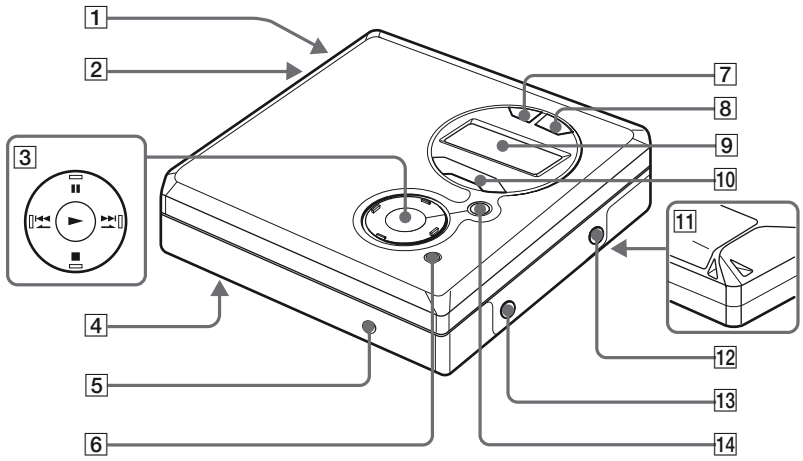


- Replacement of CXD2674-221GA (IC801) used in this set requires a special tool.

- Some adjusted values were set in the manual mode at the shipment, but these data will be cleared when the NV is reset.
  Therefore, change the adjusted values following the Change of Adjusted Values immediately after the NV was reset. (See page 18)

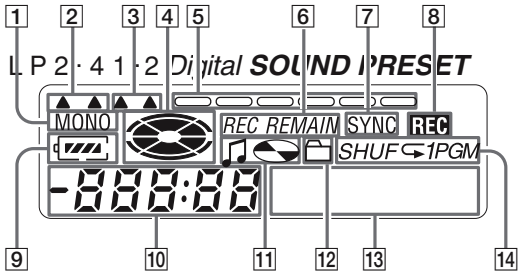
Looking at the controls

The recorder



1 OPEN button
2 Battery compartment
3 5-position control key
► *(play)
❚❚ (pause)
■ (stop)
⏮ ⏭ (search, AMS)
* The ► has a tactile dot.
4 HOLD switch
5 DC IN 3V jack
6 MENU/ENTER button
7 GROUP/CANCEL button
8 END SEARCH button
9 Display window
10 VOL +, – button
The VOL + button has a tactile dot.
11 Handstrap hole
Use the hole to attach your own strap.
12 LINE IN (OPTICAL) jack
13 🎧 (headphones/earphones) jack
14 REC/T MARK button

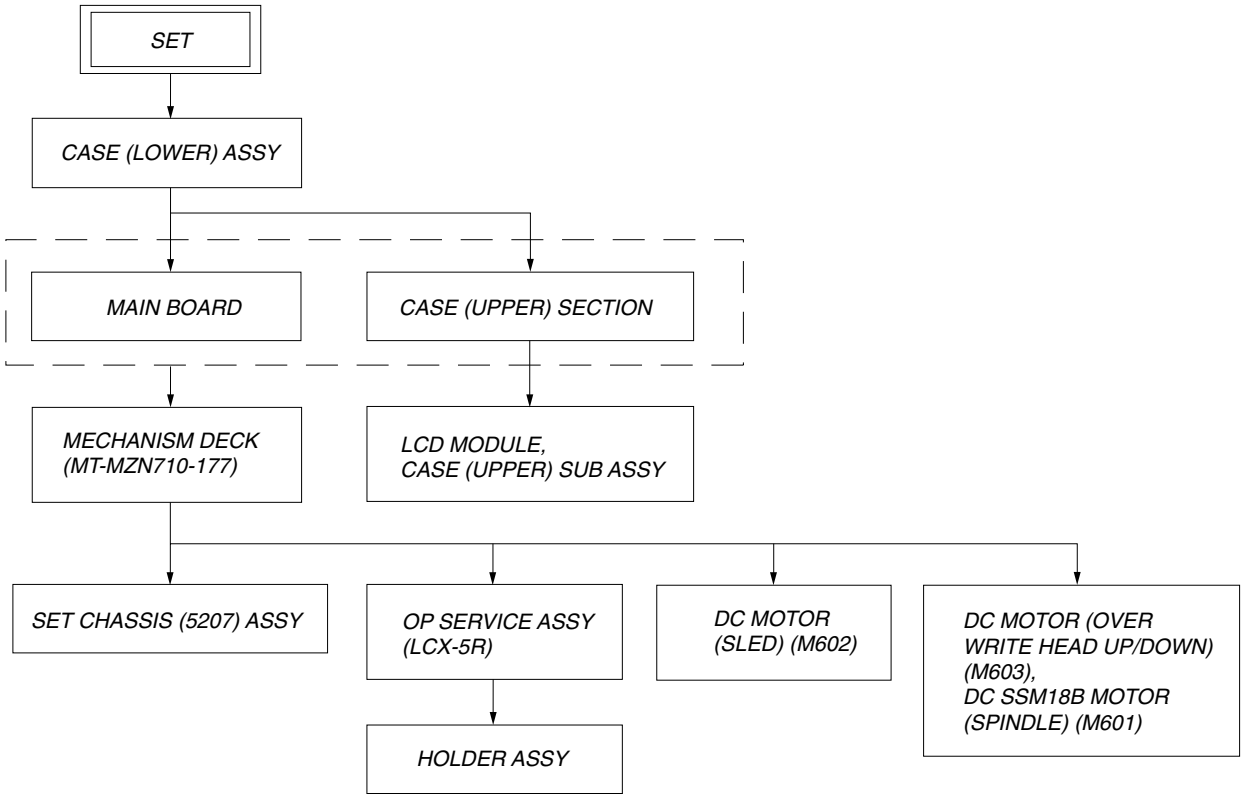
The display window of the recorder



1 MONO (monaural) indication
2 LP mode indication
3 Sound indication
4 Disc indication
Shows that the disc is rotating for recording, playing or editing an MD.
5 Level meter
Shows the volume of the MD being played or recorded.
6 REC REMAIN/REMAIN (remaining time/tracks) indication
Lights up along with the remaining time of the track, the remaining time of the MD, or the remaining number of tracks.
7 SYNC (synchro-recording) indication
8 REC indication
Lights up while recording. When flashing, the recorder is in record standby mode.
9 Battery indication
Shows approximate battery condition.
10 Time display
11 Disc name/track name indication
Lights up when labeling a disc or a track.
12 Group indication
Lights up when group mode is on.
13 Character information display
Displays the disc and track names, error messages, track numbers, etc.
14 Play mode indication
Shows play mode of the MD.

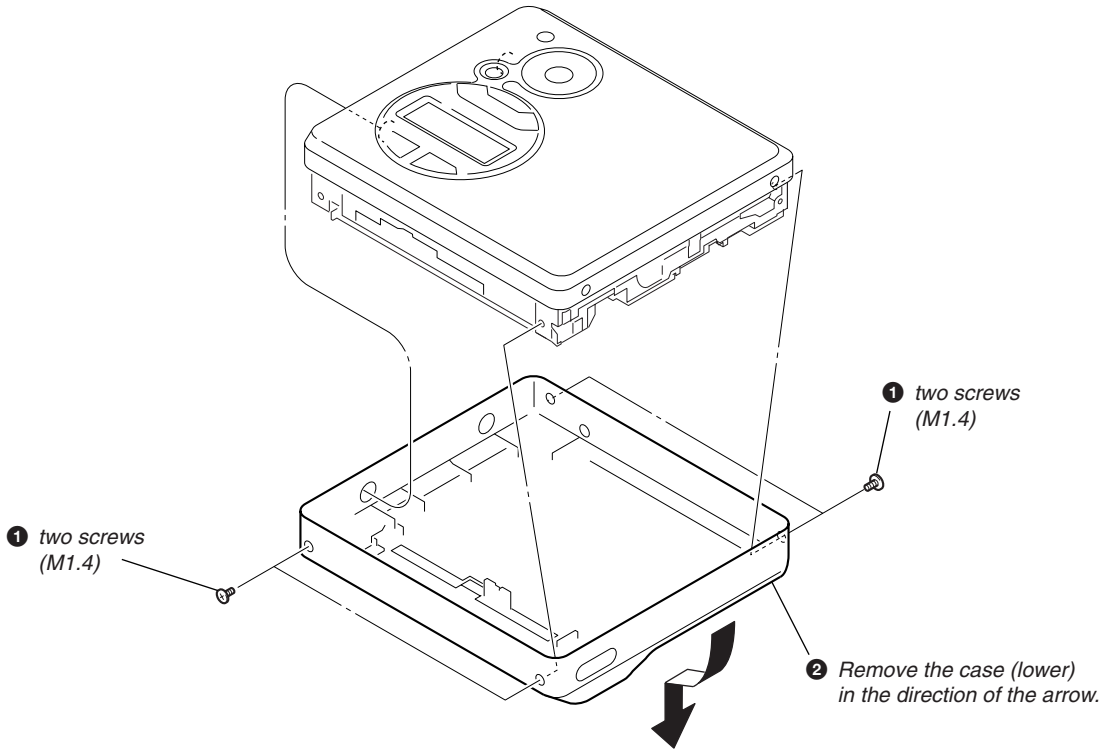
SECTION 3
DISASSEMBLY

Note : This set can be disassemble according to the following sequence.
The dotted square with arrow (⬚–) prompts you to move to the next job when all of the works within the dotted square (⬚) are completed.

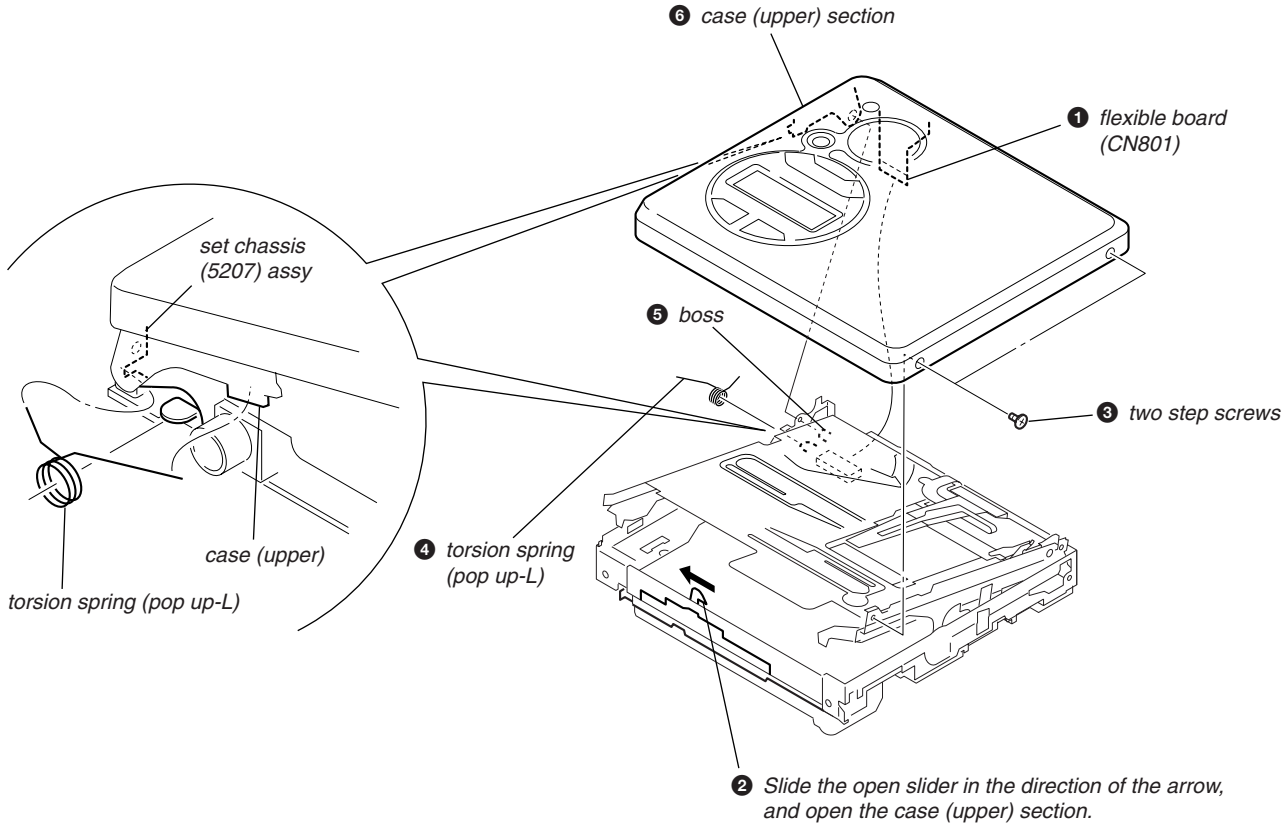


Note : Follow the disassembly procedure in the numerical order given.

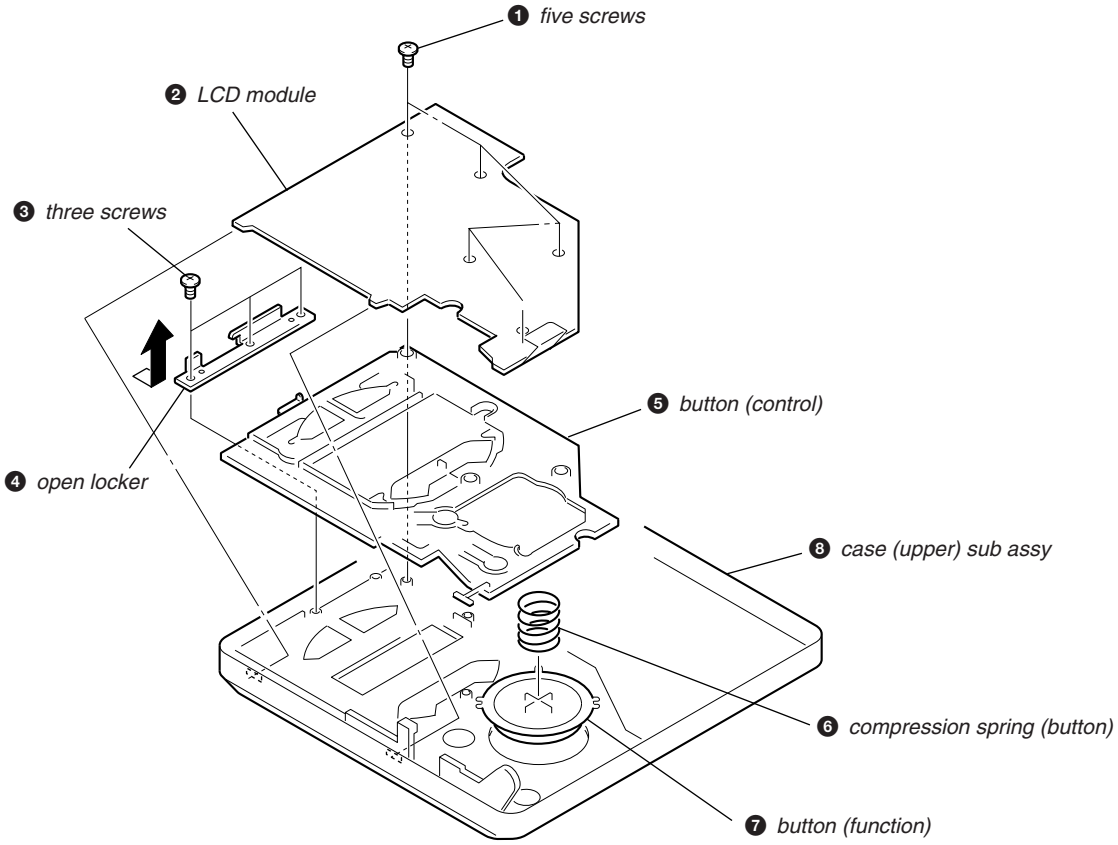
3-1. Case (Lower) Assy



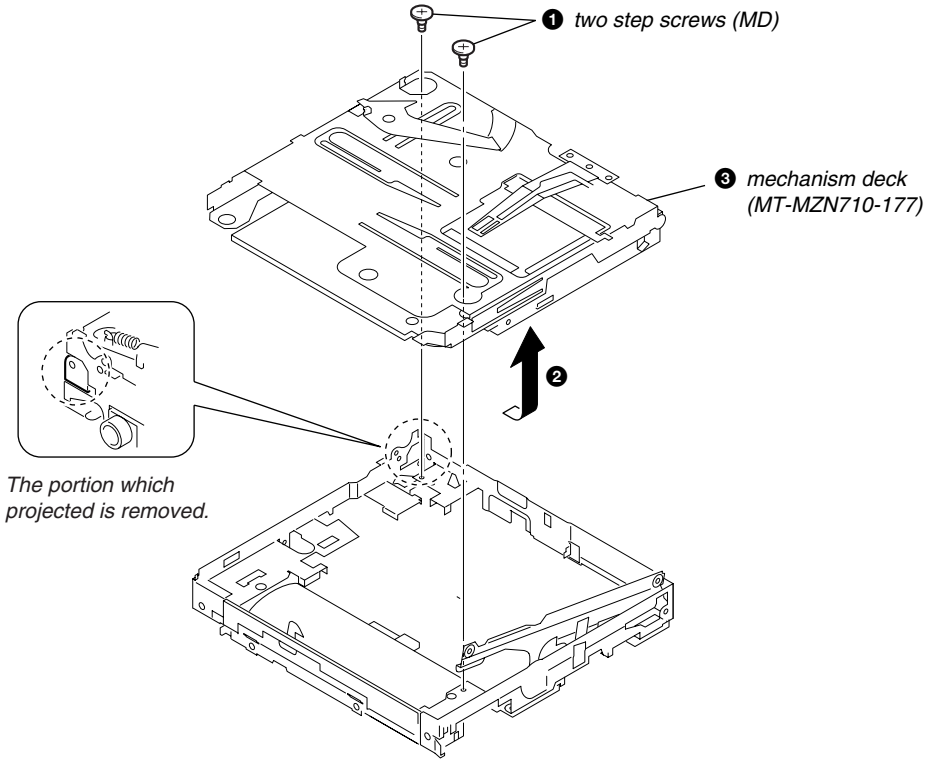
3-2. Case (Upper) Section



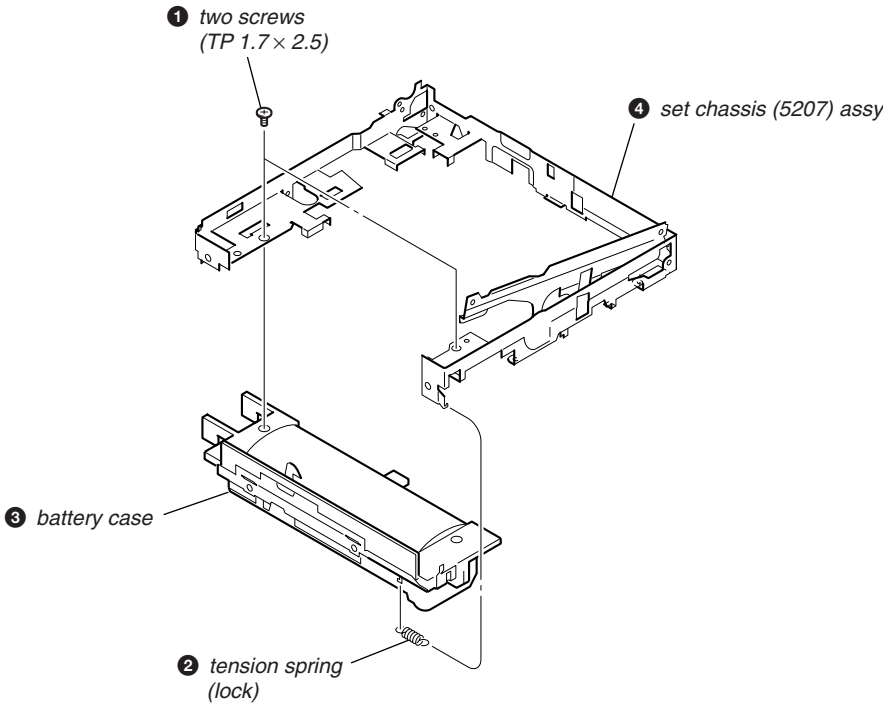
3-3. LCD Module, Case (Upper) Sub Assy



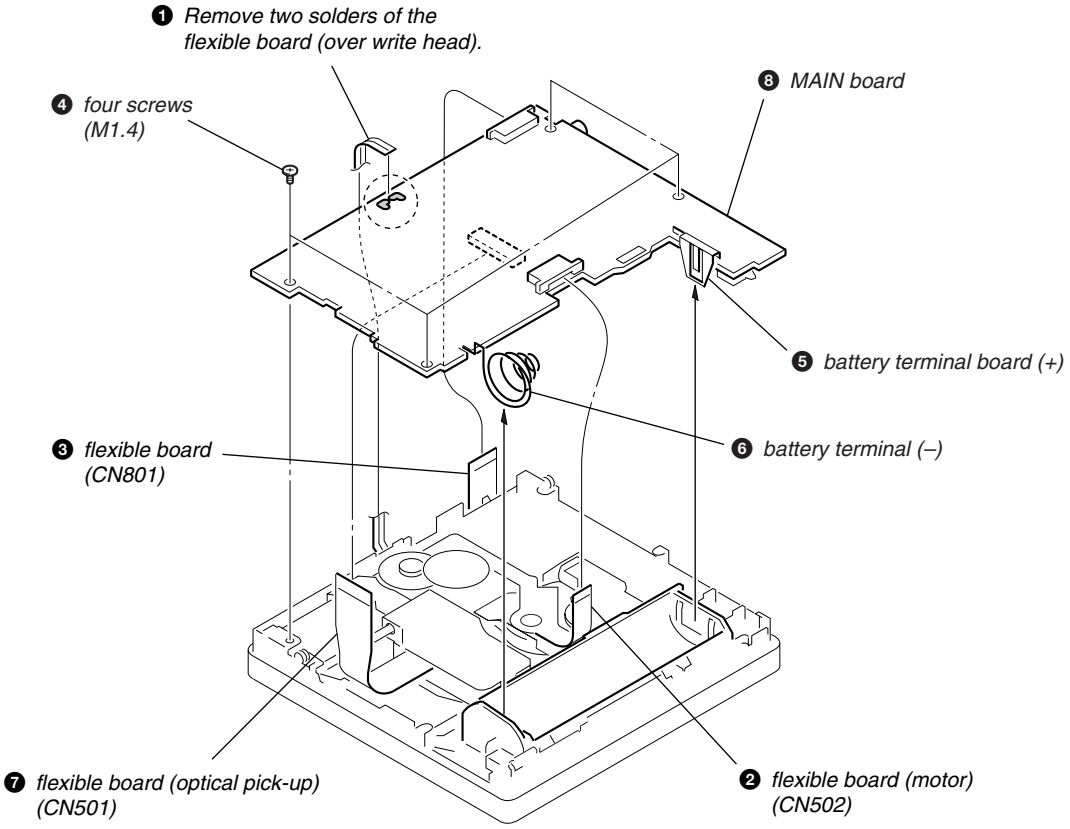
3-4. Mechanism Deck (MT-MZN710-177)



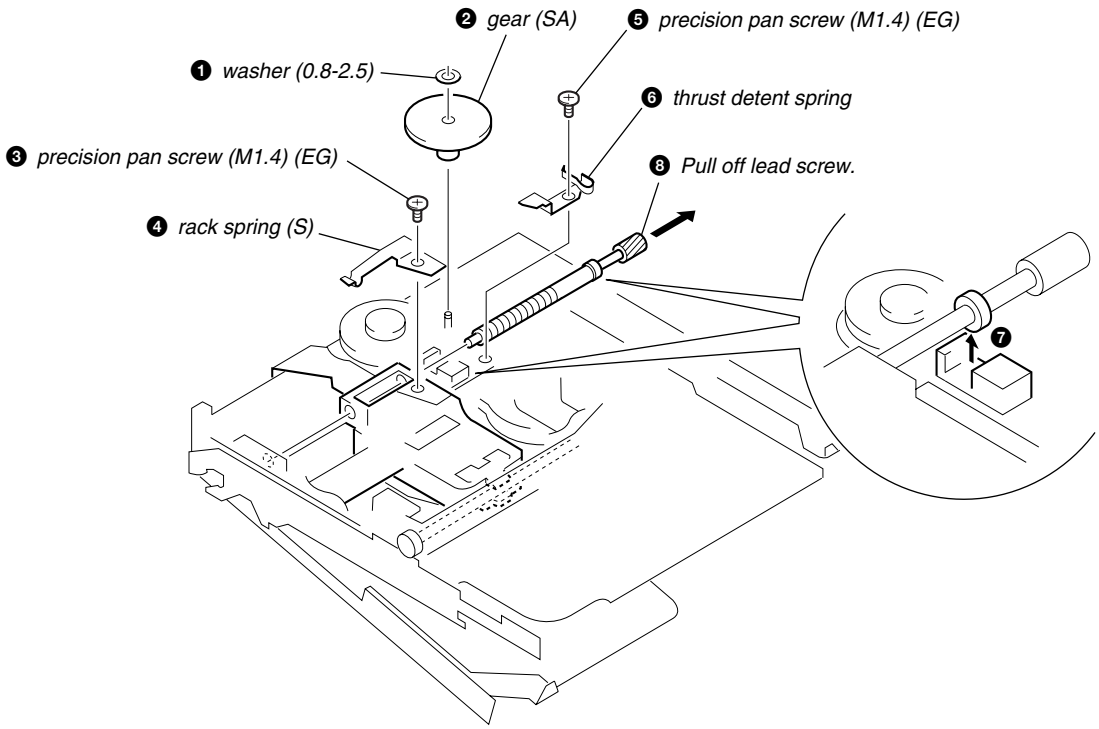
3-5. Set Chassis (5207) Assy

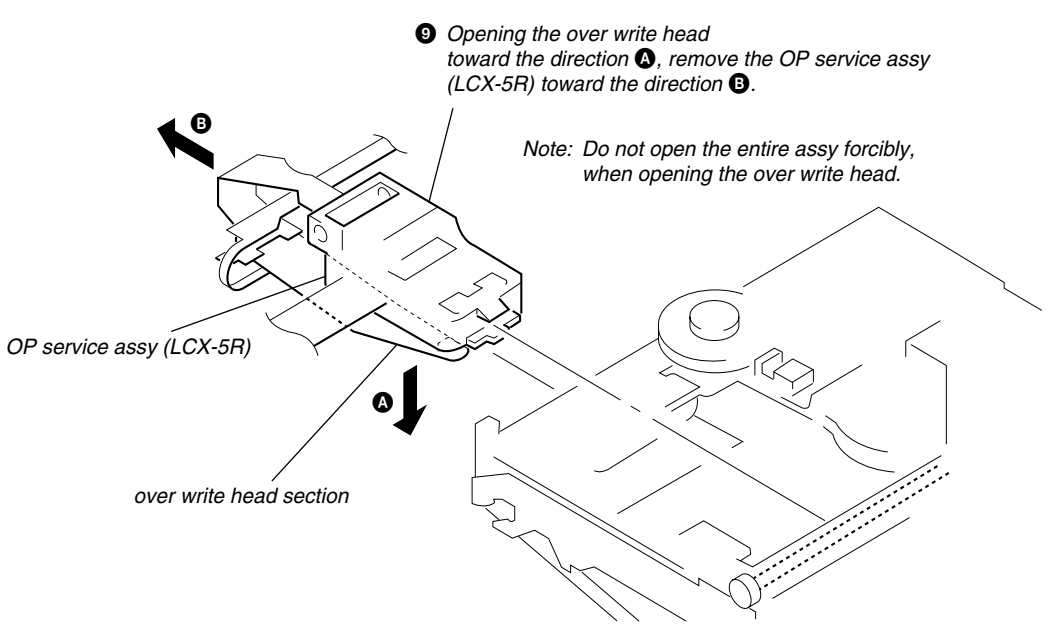


3-6. MAIN Board

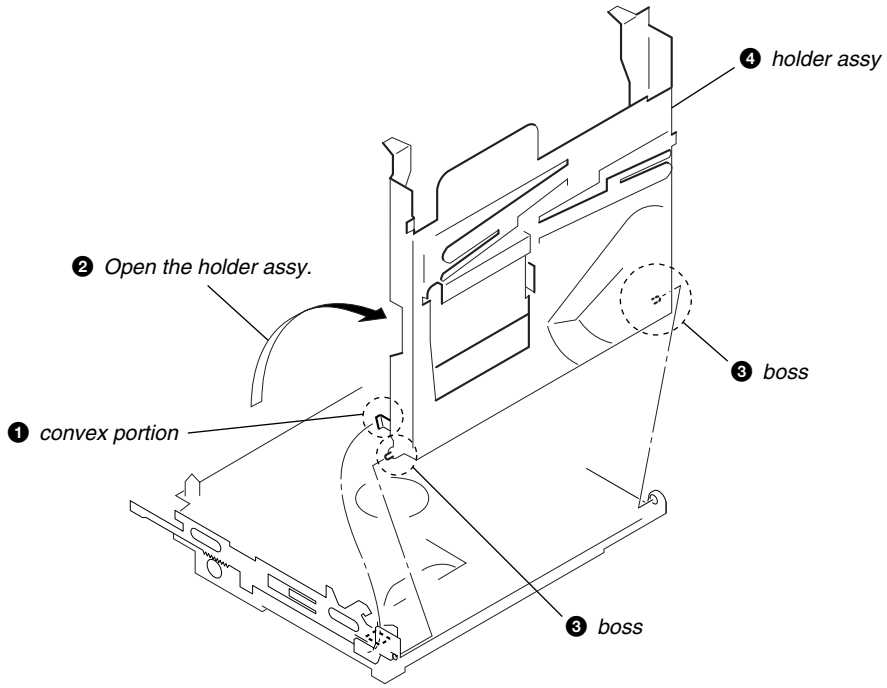


3-7. OP Service Assy (LCX-5R)

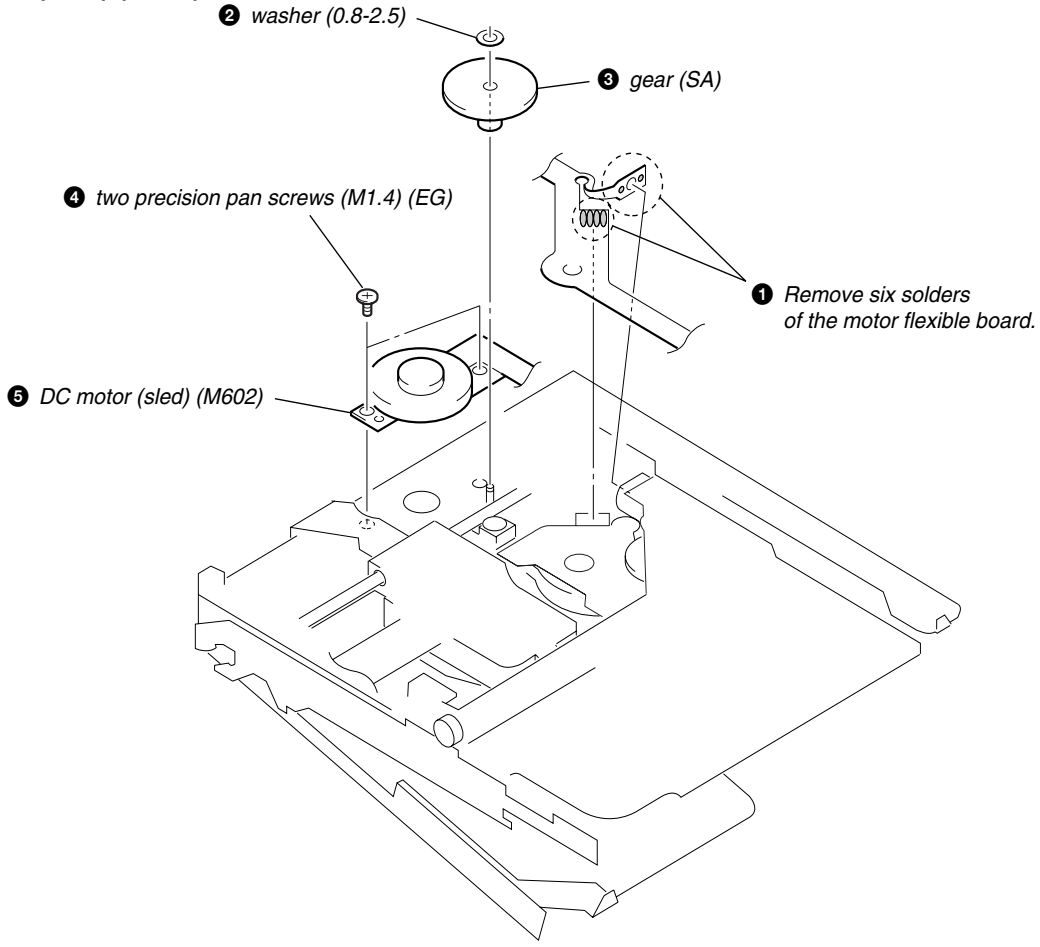




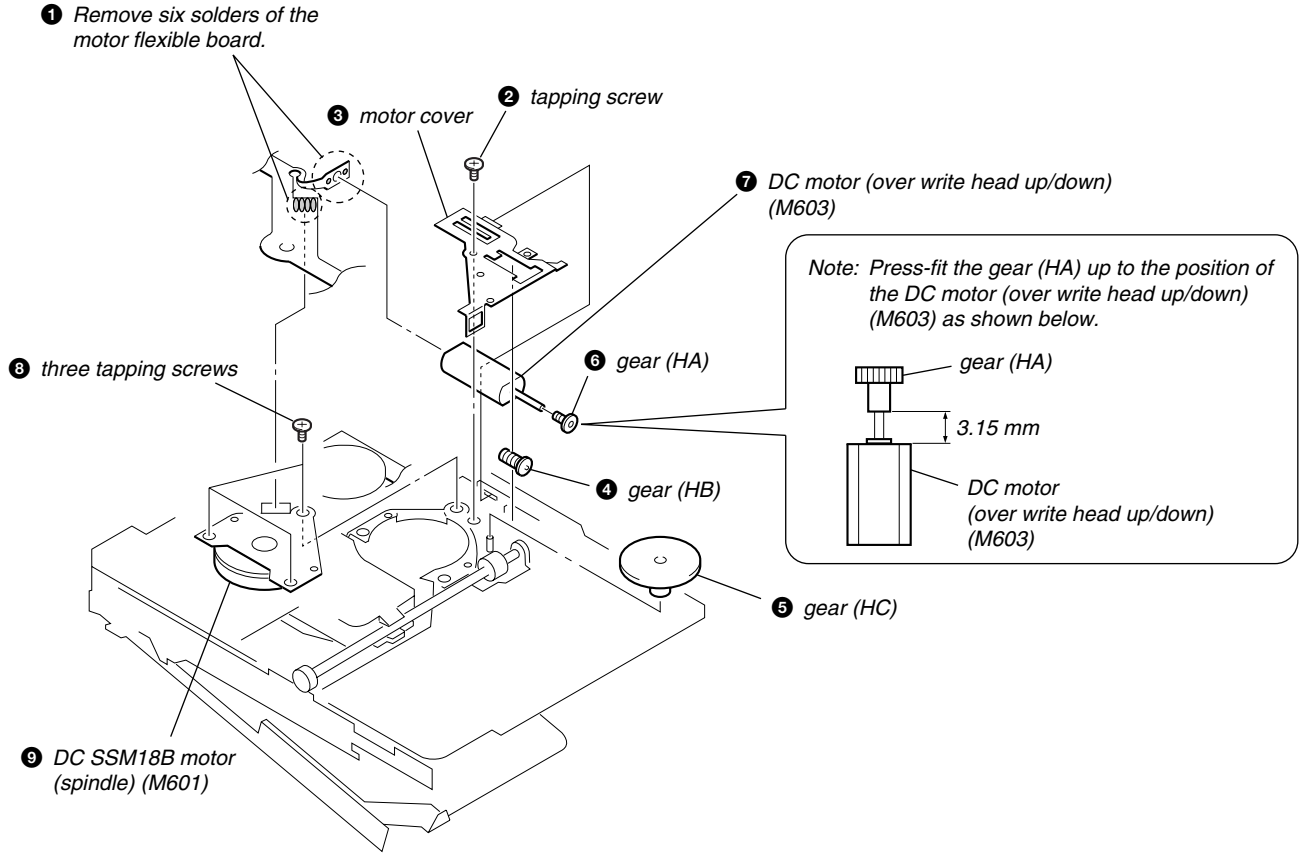
3-8. Holder Assy



3-9. DC Motor (Sled) (M602)



3-10. DC Motor (Over Write Head Up/Down) (M603), DC SSM18B Motor (Spindle) (M601)



SECTION 4
TEST MODE

4-1. Outline

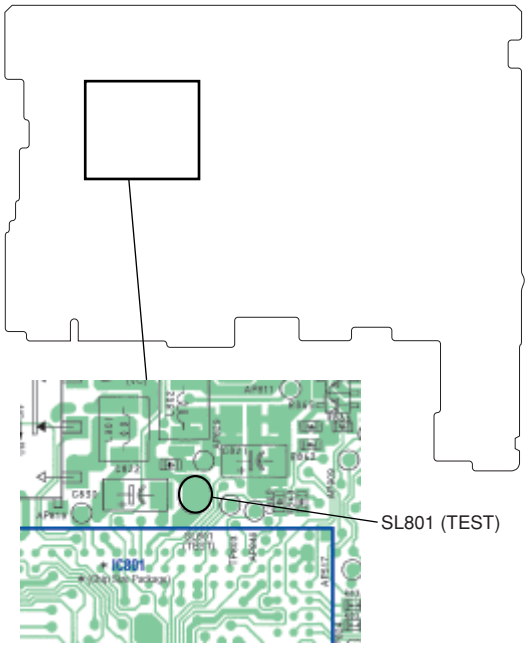
- This set provides the Overall adjustment mode that allows CD and MO discs to be automatically adjusted when in the test mode. In this overall adjustment mode, the disc is discriminate between CD and MO, and each adjustment is automatically executed in order. If a fault is found, the system displays its location. Also, the manual mode allows each individual adjustment to be automatically adjusted.

4-2. Setting Method of Test Mode

There are two different methods to set the test mode:

① Short SL801 (TEST) on the MAIN board with a solder bridge (connect pin ㉒ of IC801 to the ground). Then, turn on the power.

[MAIN Board] (SIDE B)

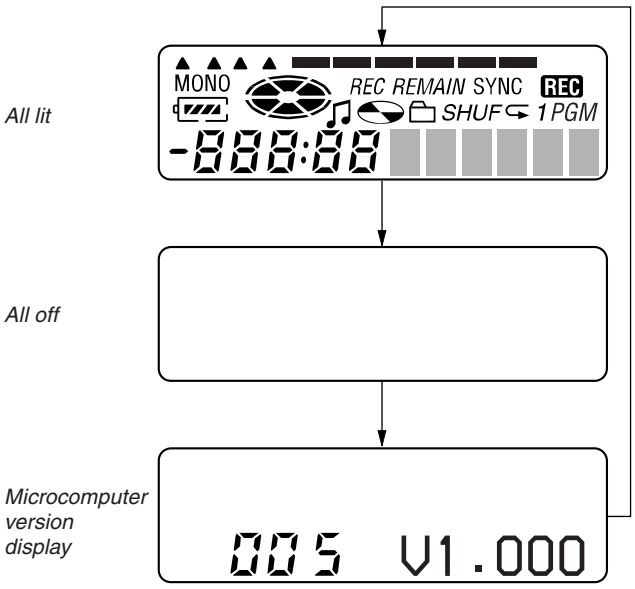


② In the normal mode, turn on the [HOLD] switch. While pressing the [VOL –] key press the following order:

[▶▶|] → [▶▶|] → [|◀◀] → [|◀◀] → [▶▶|] →
[|◀◀] → [▶▶|] → [|◀◀] → [▮▮] → [▮▮]

4-3. 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.



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

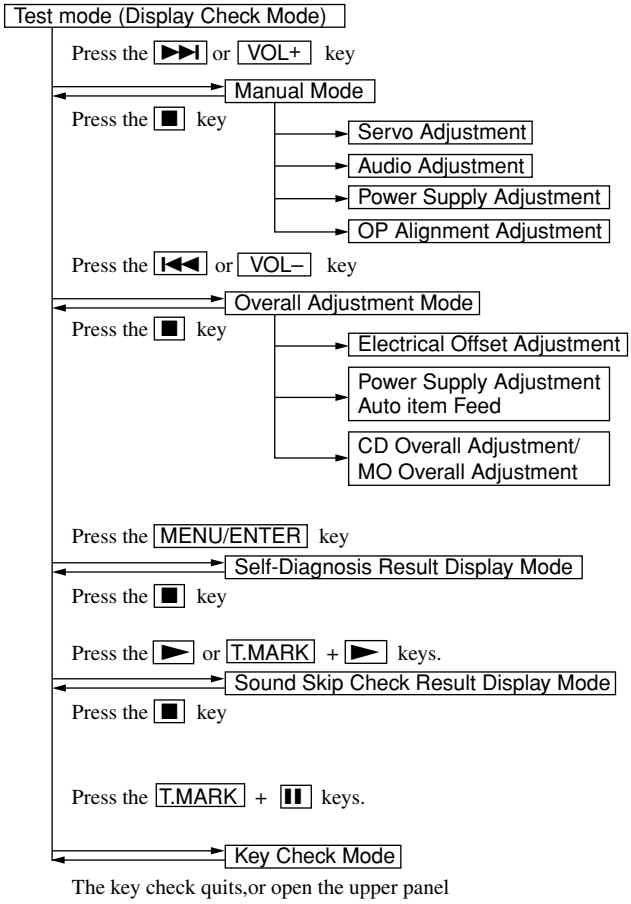
4-4. Releasing the Test Mode

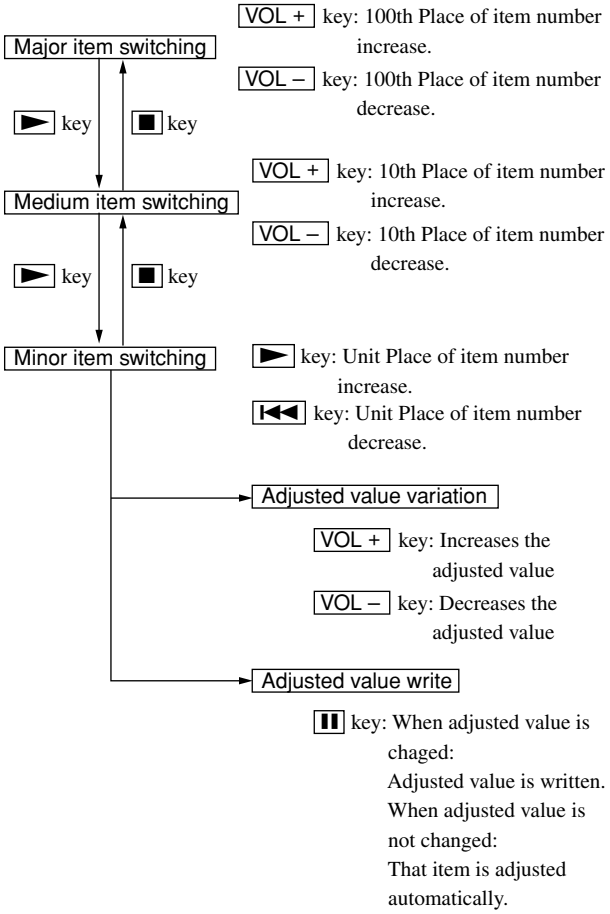
For test mode set with the method ①:
Turn off the power and open the solder bridge on SL801 (TEST) on the MAIN board.

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

For test mode set with the method ②:
Turn off the power.

4-5. Configuration of Test Mode





4-6. 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.

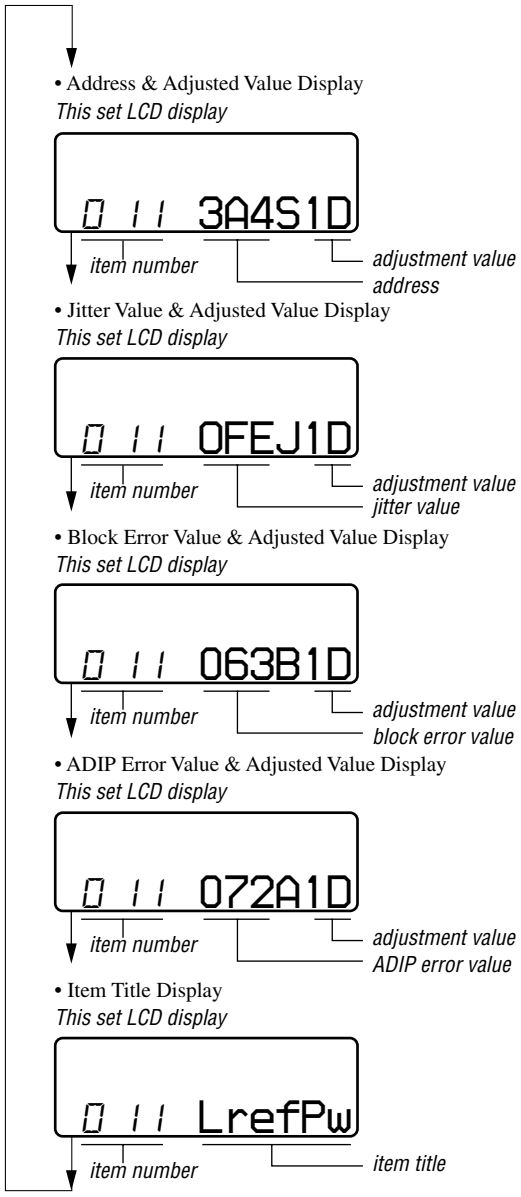
• Transition method in Manual Mode

1. Setting the test mode (see page 13).
2. Press the ▶▶I or VOL+ key activates the manual mode where the LCD display as shown below.

This set LCD display

3. During each test, the optical pick-up moves outward or inward while the ▶▶I or I◀◀ 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 a shown below each time the ENTER key on the set is pressed.



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

6. Quit the manual mode, and press the ■ key to return to the test mode (display check mode).

4-7. Overall Adjustment Mode

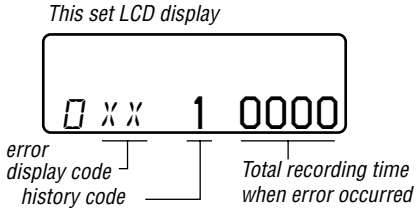
Mode to adjust the servo automatically in all items.
Normally, automatic adjustment is executed in this mode at the repair.
For further information, refer to "Section 5 Electrical Adjustments" (see page 18).

4-8. Self-Diagnosis Result Display Mode

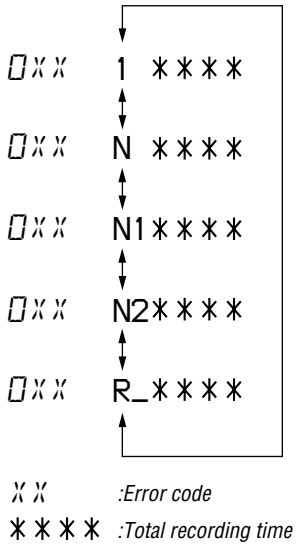
This set uses the self-diagnostic function system in which if an error occurred during the recording or playing, the mechanism control block and the power supply control block in the microcomputer detect it and record its cause as history in the nonvolatile memory.
By checking this history in the test mode, you can analyze a fault and determine its location.
Total recording time is recorded as a guideline of how long the optical pickup 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 pickup was replaced.

• Self-Diagnosis Result Display Mode Setting Method

1. Setting the test mode (see page 13).
2. In the display check mode, press the MENU/ENTER 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.



4. Quit the self-diagnosis result display mode, and press the ■ 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
	03	Focus error	Fcus	Disordered focus
	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
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

• 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

4-9. Reset the error display code

After servicing, reset the error display code.

• Setting method of Reset the Error Display Code

1. Setting the test mode (see page 13).
2. Press [MENU/ENTER] key activates the self-diagnosis result display mode.
3. To reset the error display code, press the [II] key (2 times) when the code is displayed (except "R_✱✱✱✱").
   (All the data on the 1, N, N1, and N2 will be reset)

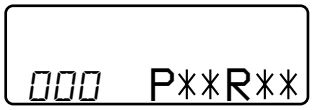
4-10. Sound Skip Check Result Display Mode

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 [►] key or [T.MARK] + [►] keys, and the playing or recording sound skip result display mode becomes active respectively where the LCD displays the following.

This set LCD display



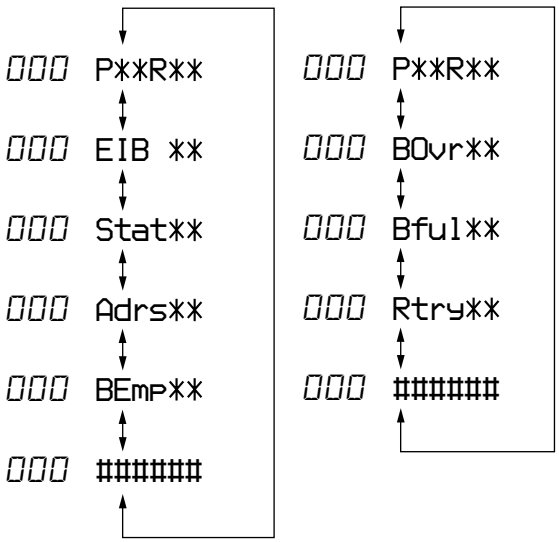
Total count of play system errors(hex.)

Total count record system errors(hex.)

3. When the [►] key is pressed, total error count is displayed on the LCD, and each time the [►►I] key is pressed, the display item moves down by one as shown below. Also, if the [I◄◄] key is pressed, the display item moves up by one, then if the [T.MARK] + [►] keys is pressed, the display in the record mode appears.
   When the [T.MARK] + [►] keys is pressed, total error count is displayed on the LCD, and each time the [►►I] key is pressed, the display item moves down by one as shown below. Also, if the [I◄◄] key is pressed, the display item moves up by one, then if the [►] 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 [■] key.

4-11. Key Check Mode

This set can check if the set function normally.

• Setting Method of Key Check Mode

1. Setting the test mode (see page 13).
2. Press the [T.MARK] + [II] keys activates the key check mode.

This set LCD display

3. When each key on the set is pressed, its name is displayed on the LCD. (The operated position is displayed for 4 seconds after the slide switch is operated. If any other key is pressed during this display.)

Example 1: When [►►I] key on the set is pressed:

This set LCD display

4. 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

5-1. Outline

- In this set, automatic adjustment of CD and MO can be performed by entering the test mode (see page 13).
  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.
- For the LCD display, the LCD display on the set is shown.

5-2. Precautions for Adjustment

1. Adjustment must be done in the test mode only.
   After adjusting, release the test mode.
2. 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)
3. Unless specified otherwise, supply DC 3V from the DC IN 3V jack (J601).
4. Switch position
   HOLD switch ..... OFF

5-3. Adjustment Sequence

1. NV Reset(Memory clear) } Manual Mode
↓
2. Power Supply Manual Adjustment } Overall Mode
↓
3. Temperature Correction(item number:014) } Manual Mode
↓
4. Laser Power Check
↓
5. Electrical offset Adjustment } Overall Mode

Caution: This adjustment must be made with no disc loaded.

↓
6. CD Overall Adjustment
↓
7. MO Overall Adjustment
↓
8. RESUME Clear } Manual Mode

5-4. NV Reset

Caution: In this set, certain adjustment values are set in the manual mode at the factory. NV Reset will cause these data to be cleared. So, the adjustment values should be set again just after NV Reset is made.

• Setting method of NV reset

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

This set LCD display

2. Press the [▶] key.

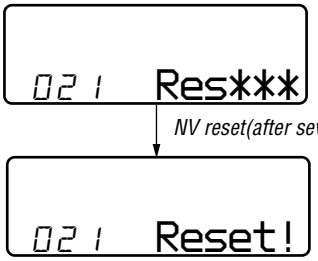
This set LCD display

3. Press the [❚❚] key.

This set LCD display

4. Press the [❚❚] key once more.

This set LCD display



5. Press the [■] key to quit the manual mode, and activate the test mode (display check mode).

5-5. Power Supply Manual Adjustment

• Adjustment sequence

Adjustment must be done with the following steps.

1. Vc PWM Duty (L) adjustment (item number 762)
↓
2. Vc PWM Duty (H) adjustment (item number 763)
↓
3. Vl PWM Duty adjustment (item number 764)
↓
4. Vrec PWM Duty (L) adjustment (item number 765)

• Setting method of power supply manual adjustment

1. Make sure that the power supply voltage is 3V.
2. Set the test mode (see page 13).
3. Press the [⏮] or [VOL–] key to activate the overall adjustment mode.

This set LCD display

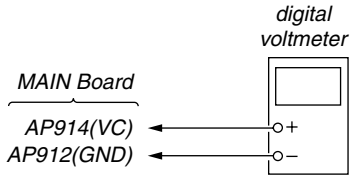
4. Press the [END SEARCH] key. (the [END SEARCH] key causes the item number to be switched to 762.)

• Adjustment method of Vc PWM Duty (L) (item number: 762)

This set LCD display

**:Adjusted value*

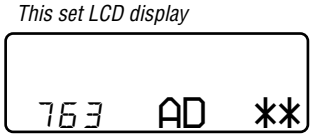
1. Connect a digital voltmeter to the AP914 (VC) on the MAIN board, and adjust [VOL +] key (voltage up) or [VOL –] key (voltage down) so that the voltage becomes 2.40 ± 0.01 V.



2. Press the [II] key to write the adjusted value.
(The item number changes to 763 when [II] key is pressed)

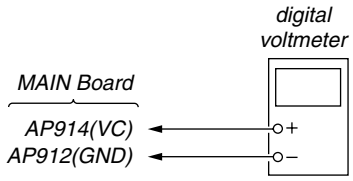
Adjustment and Connection Location: MAIN Board
(see page 20)

- **Adjustment method of Vc PWM Duty (H) (item number: 763)**



**:Adjusted value

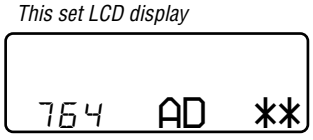
1. Connect a digital voltmeter to the AP914 (VC) on the MAIN board, and adjust [VOL +] key (voltage up) or [VOL –] key (voltage down) so that the voltage becomes 2.5 ± 0.01 V.



2. Press the [II] key to write the adjusted value.
(The item number changes to 764 when [II] key is pressed)

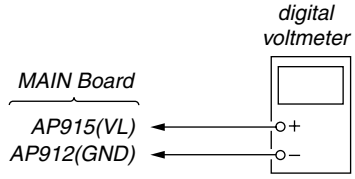
Adjustment and Connection Location: MAIN Board
(see page 20)

- **Adjustment method of Vl PWM Duty (item number: 764)**

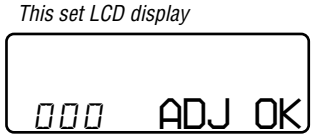


**:Adjusted value

1. Connect a digital voltmeter to the AP915 (VL) on the MAIN Board, and adjust [VOL +] key (voltage up) or [VOL –] key (voltage down) so that the voltage becomes 2.30 ± 0.01 V.

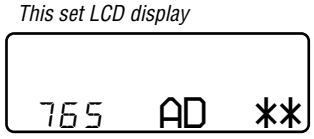


2. When press the [II] key to write the adjusted value, LCD displays as follows and power supply manual adjustment has completed.



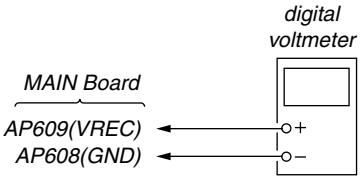
Adjustment and Connection Location: MAIN Board
(see page 20)

- **Adjustment method of Vrec PWM Duty (item number: 765)**



**:Adjusted value

1. Connect a digital voltmeter to the AP609 (VL) on the MAIN board, and adjust [VOL +] key (voltage up) or [VOL –] key (voltage down) so that the voltage becomes 0.9 ± 0.01 V.



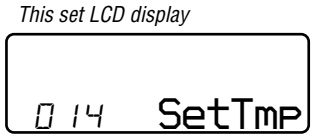
2. Press the [II] key to write the adjusted value.

Adjustment and Connection Location: MAIN Board
(see page 20)

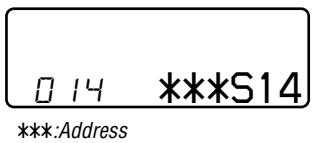
5-6. Temperature Correction

- **Adjustment Method of temperature correction**

1. Select the manual mode of test mode, and set the mode number 014 (see page 14).



2. Measure the ambient temperature.
3. Adjust with [VOL +], [VOL –] key so that the adjusted value (hexadecimal value) becomes the ambient temperature.
(Initial value: 14h = 20 °C, Adjusting range: 80h to 7fh (–128 °C to +127 °C)

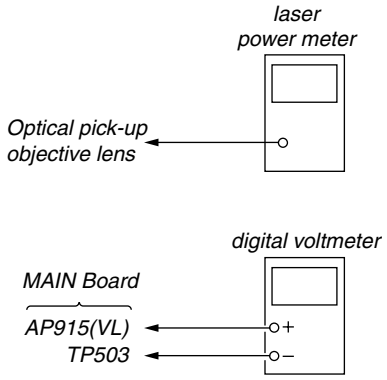


***:Address
14:Adjusted value

4. Press the [II] key to write the adjusted value.

5-7. Laser Power Check

Connection :



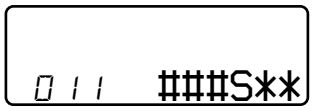
Checking Method :

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

This 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 adjustment mode (item number 011).

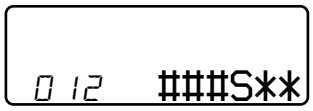
This set LCD display



###:Address
***:Adjusted value*

5. Check that the laser power meter reading is 0.81 ± 0.08 mW.
6. Check that the voltage between AP915 (VL) and TP503 (both ends of resistor R521) at this time is below 22 mV.
7. Press the [►] key, and set the laser CD read adjustment mode (item number 012).

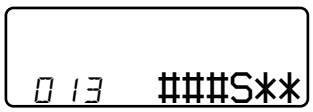
This set LCD display



###:Address
***:Adjusted value*

8. Check that the laser power meter reading is 0.97 ± 0.10 mW.
9. Check that the voltage between AP915 (VL) and TP503 (both ends of resistor R521) at this time is below 22 mV.
10. Press the [►] key, and set the laser MO write adjustment mode (item number 013).

This set LCD display



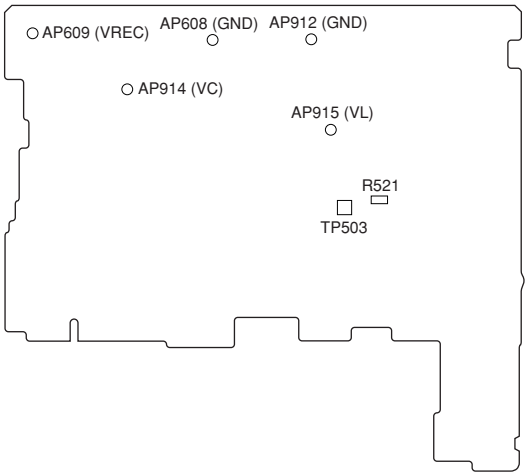
###:Address
***:Adjusted value*

11. Check that the laser power meter reading is 4.95 ± 0.50 mW.
12. Check that the voltage between AP915 (VL) and TP503 (both ends of resistor R521) at this time is below 40 mV.
13. Press the [■] key to quit the manual mode, and activate the test mode (display check mode).

Checking and Connection Location: MAIN board

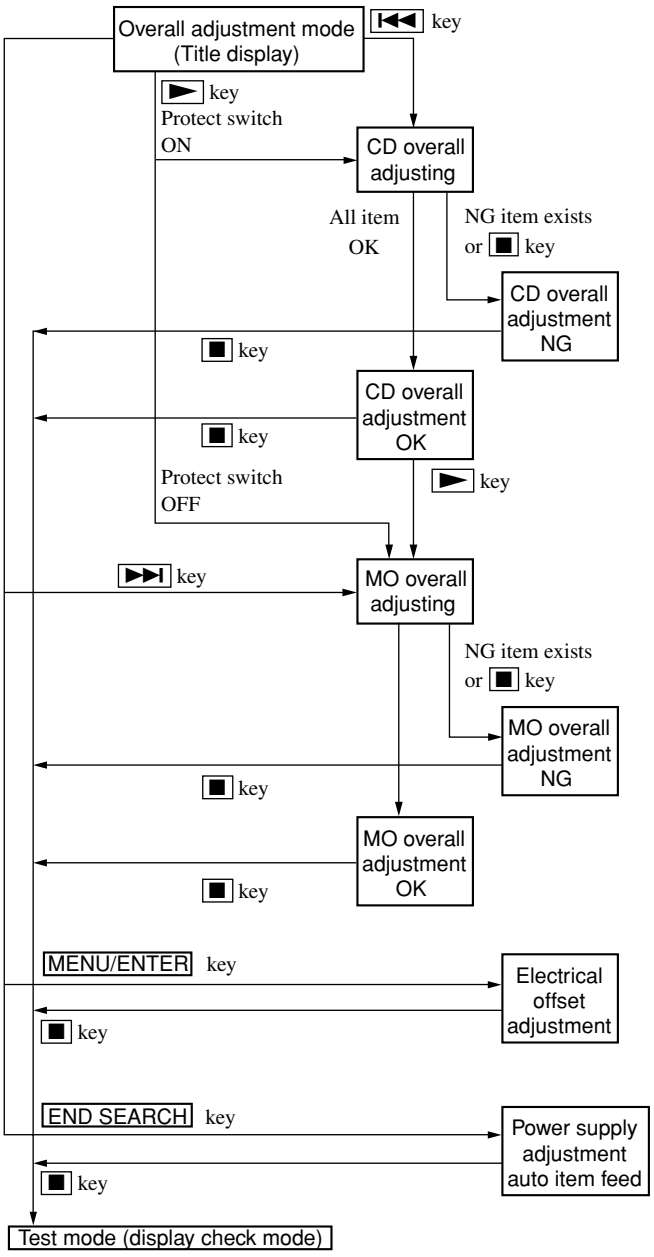
Adjustment/checking and Connection Location:

MAIN Board (Side B)



5-8. Overall Adjustment Mode

• Configuration of overall adjustment



Note: Adjust the CD first, when performing adjustment.

• Overall Adjustment Mode (Title Display)

This set LCD display

✱: (Disc mark) At end power supply adjustment:Outside lit
At end of electrical offset adj.:inside 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

• Electrical Offset Adjusting Method

Caution: The electrical offset adjustment must be made with no disc loaded.

1. Make sure that the power supply voltage is 3V.
2. Set the test mode (see page 13).
3. Press the ⏮ or VOL– key to activate the overall adjustment mode.

This set LCD display

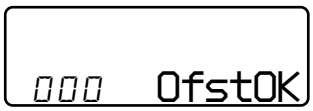
4. Press the ENTER key.

This set LCD display

✱✱:Adjusted value

5. Electrical offset adjustment is over, if the following display appears.

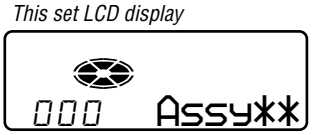
This set LCD display



• Adjustment Method of Overall CD and MO Adjustment Mode

1. Setting the test mode (see page 13).
2. Press the ⏮ or VOL – key activates the overall adjustment mode.

This set LCD display



3. Insert CD disc in the set, and press the ⏮ key to set the Overall CD Adjustment mode. Automatic adjustments are made.

This set LCD display

x x x :Item number for which on adjustment is being executed.

4. In case of CD overall adjustment NG, reset the NV (see page 18), then readjust from the temperature correction (see page 19).

This set LCD display

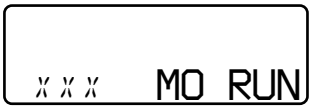
****:NG item number*

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

This set LCD display

6. Insert MO disc in the set, and press the ▶▶| key to set the Overall MO Adjustment mode. Automatic adjustments are made.

This set LCD display



xxx:Item number for which on adjustment is being executed.

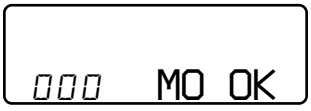
7. In case of MO overall adjustment NG, reset the NV (see page 18), then readjust from the temperature correction (see page 19).

This set LCD display

****:NG item number*

8. If OK through the overall MO adjustments, press the ■ key to return to the test mode and terminate the Overall Adjustment mode.

This set LCD display



- **Overall CD and MO adjustment items**

1. Overall CD adjustment items

Item No.	Description
312 313 314	CD electrical offset adjustment
321	CD tracking error gain adjustment
328	CD TWPP gain adjustment
324 332	CD tracking error offset adjustment
336	CD ABCD gain adjustment
344	CD focus gain adjustment
345	CD tracking gain adjustment
521 522	CD two-axis sensitivity adjustment

2. Overall MO adjustment items

Item No.	Description
112 113 114 118	MO electrical offset adjustment
221	Low reflective CD tracking error gain adjustment
224 232	Low reflective CD tracking error offset adjustment
236	Low reflective CD ABCD level adjustment
244	Low reflective CD focus gain adjustment
245	Low reflective CD tracking gain adjustment
121	MO tracking error gain adjustment
122	MO TON offset adjustment
134	MO TWPP gain adjustment
131 132	MO double speed read TWPP offset adjustment
136	MO ABCD gain adjustment
144	MO focus gain adjustment
145	MO tracking gain adjustment
434	MO write TWPP gain adjustment
431	MO write TWPP offset adjustment
432	MO tracking error offset adjustment
436	MO write ABCD gain adjustment
445	MO write tracking gain adjustment
411	MO normal speed read TWPP offset adjustment
412	MO tracking error offset adjustment
448	20 sec full recording

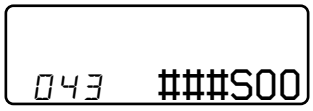
5-9. Resume Clear

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).

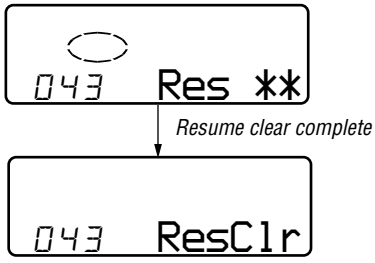
This set LCD display



###:Address

2. Press the ▮▮ key.

This set LCD display



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

SECTION 6
DIAGRAMS

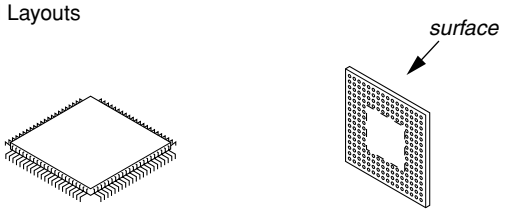
Common note on Printed Wiring Board:
- ——— : parts extracted from the conductor side.
- ▬ : Pattern from the side which enables seeing.
  (The other layer's patterns are not indicated.)

Caution:	
Pattern face side: (Side B)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Side A)	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 IC801 on main board requires a special tool.

- Lead Layouts



Lead layout of conventional IC CSP (chip size package)

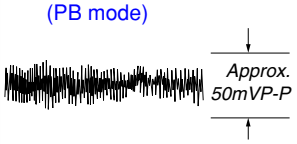
Common note on Schematic Diagram:
- All capacitors are in μF unless otherwise noted. pF: μμF
  50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4 W or less unless otherwise specified.
- % : indicates tolerance.
- ▭ : panel designation.

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

- ▬ : B+ Line.
- Total current is measured with Minidisc installed.
- Power voltage is dc 3V and fed with regulated dc power supply from external power voltage jack.
- Voltage and waveforms are dc with respect to ground under no-signal conditions.
  no mark : PB
  ( ) : REC
  ＊ : Impossible to measure
- Voltages are taken with a VOM (Input impedance 10 MΩ).
  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.
  ▷ : PB
  ▶▶ : REC (ANALOG)
  ▶▶▶ : REC (DIGITAL)
- Abbreviation
  4CED : French, German and Dutch model

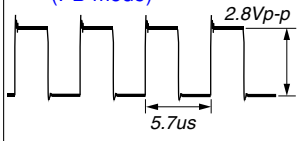
• Waveforms

① IC501 ① (TE) (PB mode)



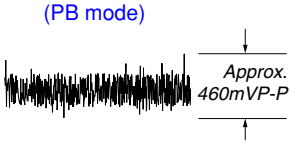
20mV/DIV, 400ns/DIV

⑤ IC601 ④ (CLK) (PB mode)



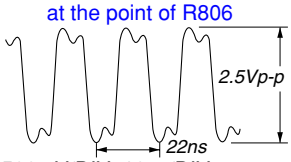
500mV/DIV, 2us/DIV

② IC501 ㊷ (FE) (PB mode)



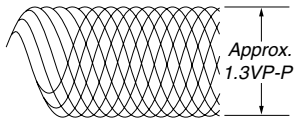
100mV/DIV, 400ns/DIV

⑥ IC801 ㉕ (OSCO)(PB mode) at the point of R806



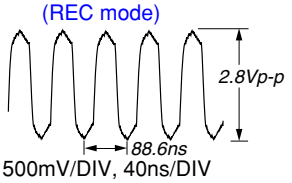
500mV/DIV, 10ns/DIV

③ IC501 ㉝ (RF OUT) (PB mode)



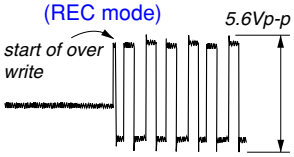
500mV/DIV, 400ns/DIV

⑦ IC301 ⑪ (MCLK) (REC mode)



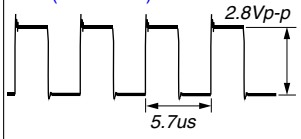
500mV/DIV, 40ns/DIV

④ IC601 ㉝ (HA) (REC mode)



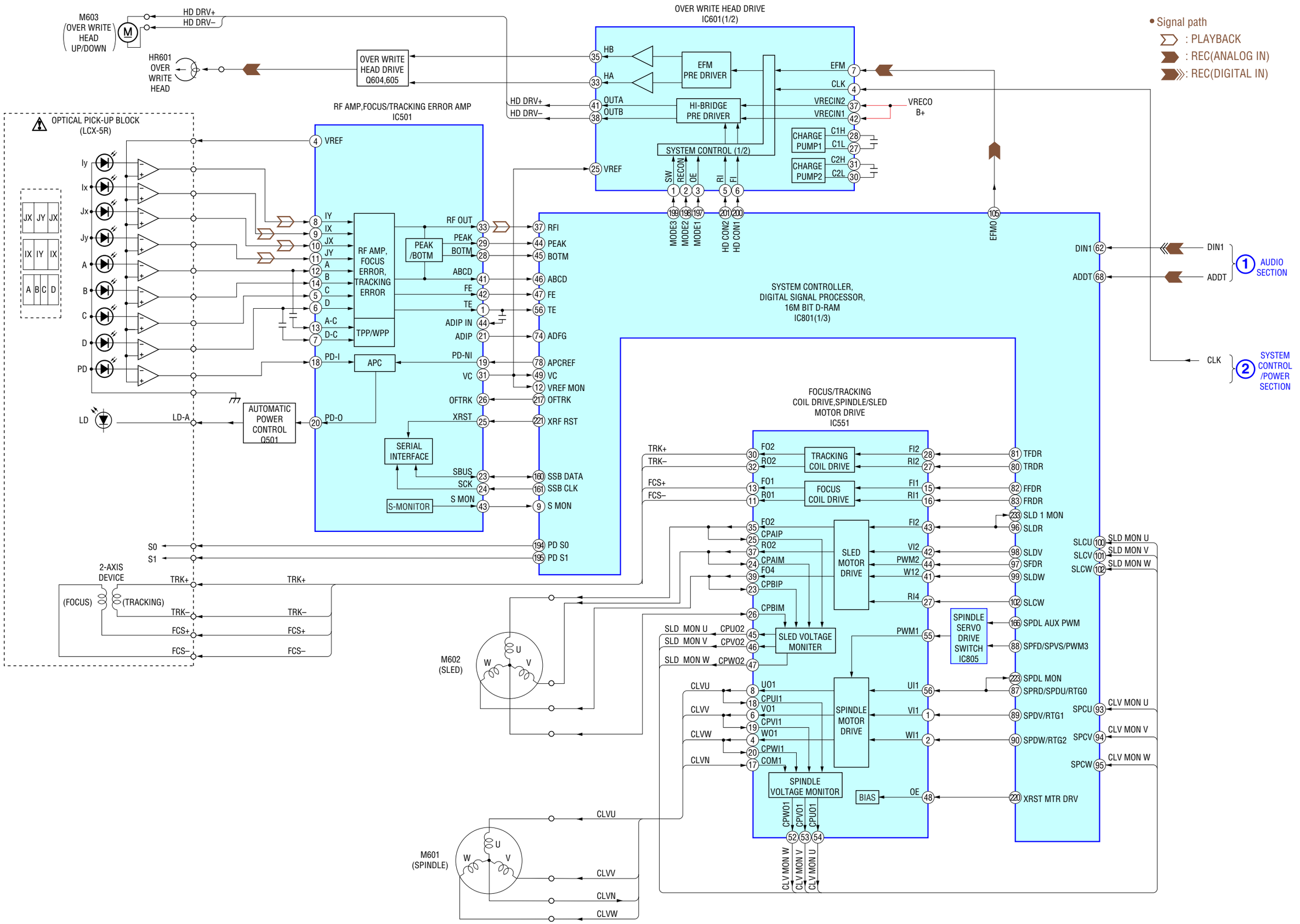
2V/DIV, 4us/DIV

⑧ IC901 ㊺ (CLK) (PB mode)



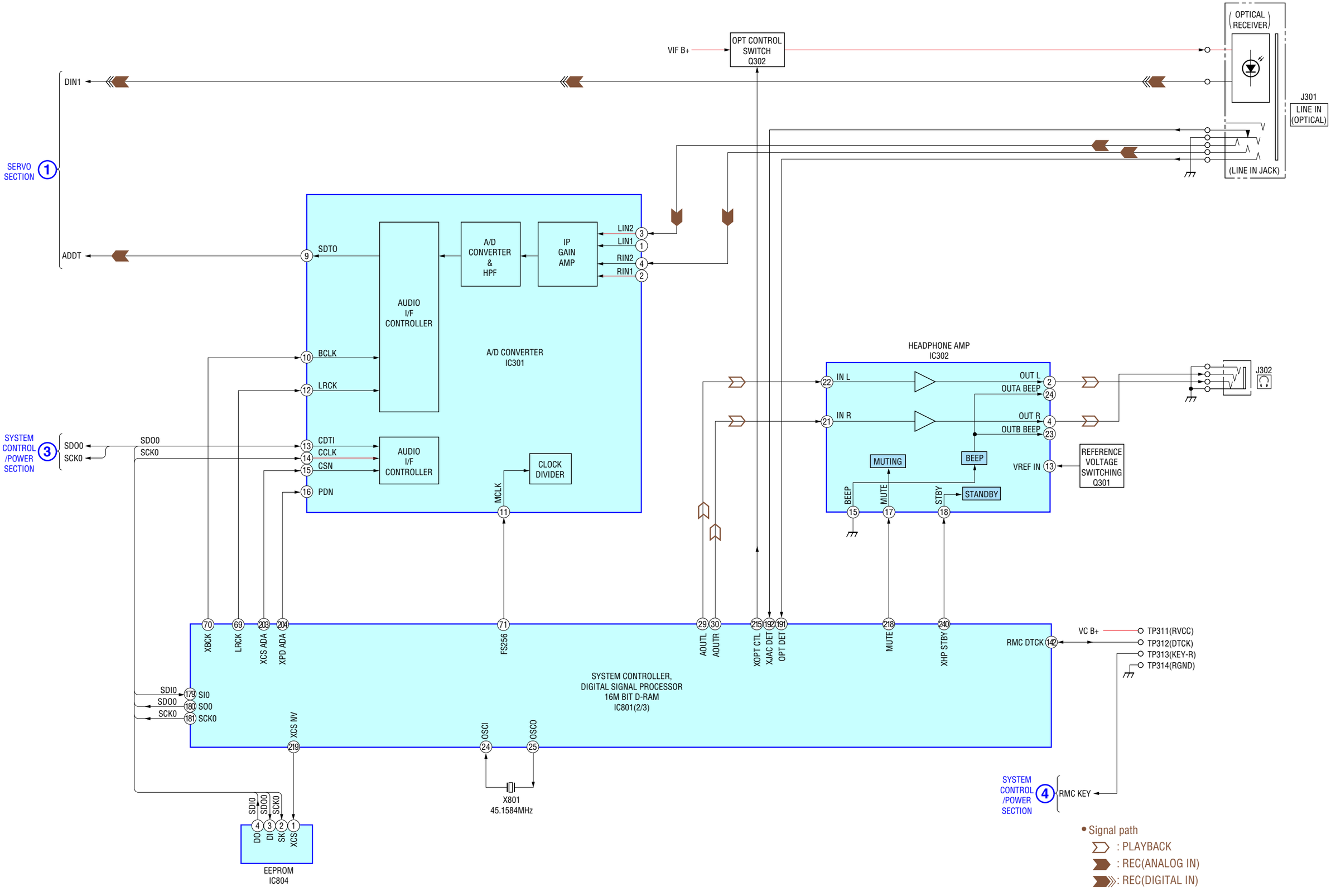
500mV/DIV, 2us/DIV

6-1. Block Diagrams — Servo Section —

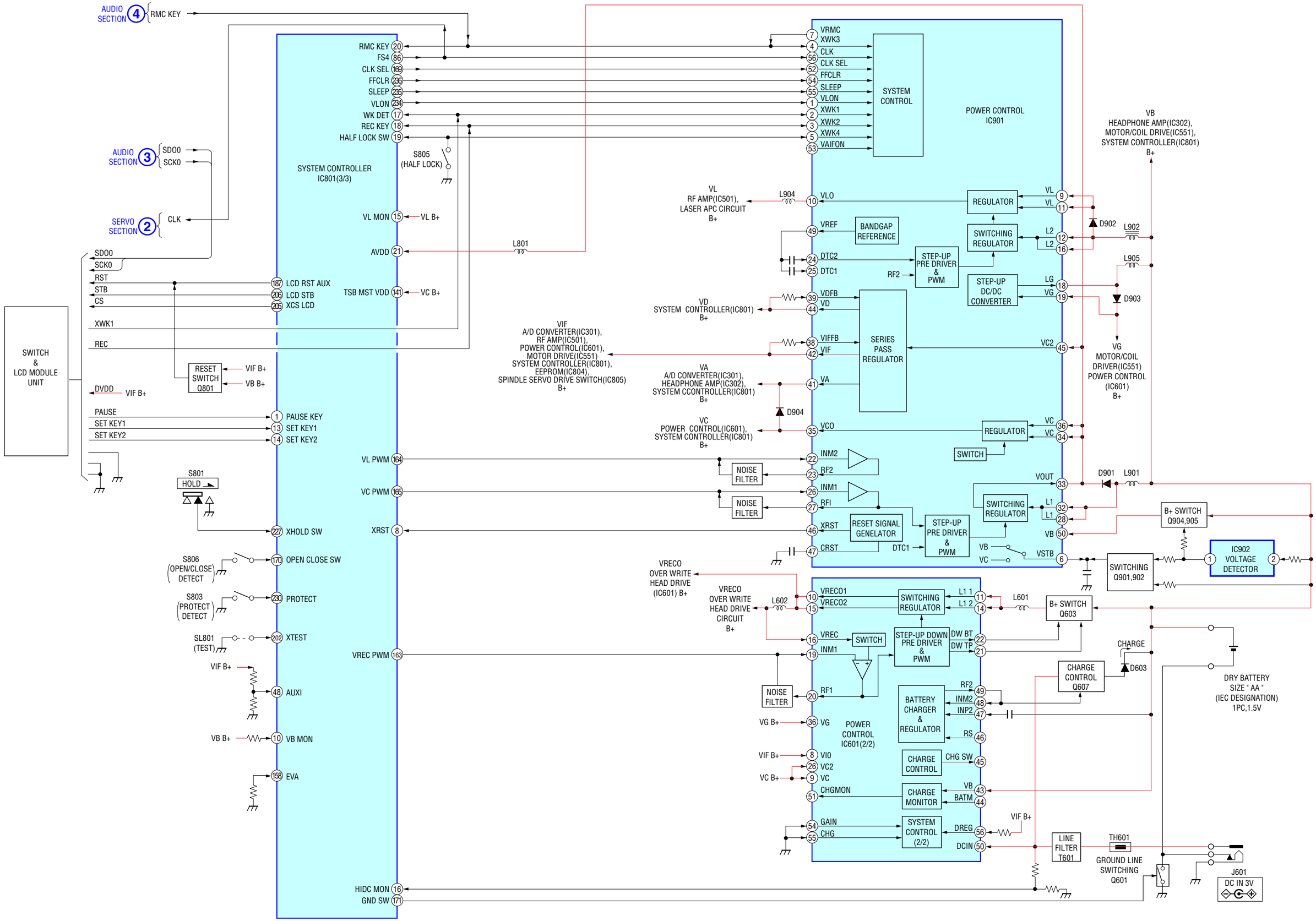


MZ-R410

— Audio Section —

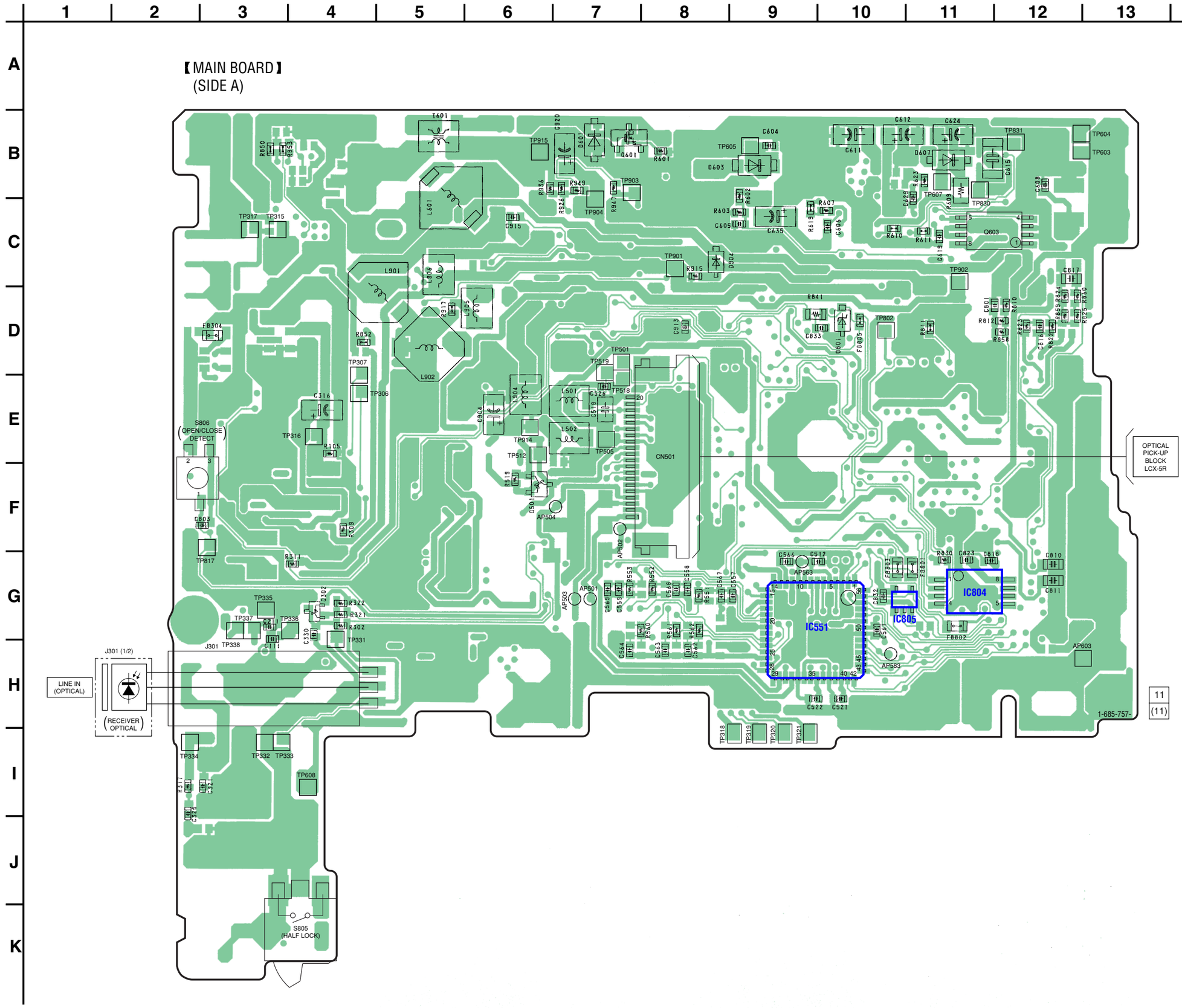


— System Contorol Section —



6-2. Printed Wiring Boards — MAIN Board (Side A) —• : Uses unleaded solder.

【MAIN BOARD】
(SIDE A)

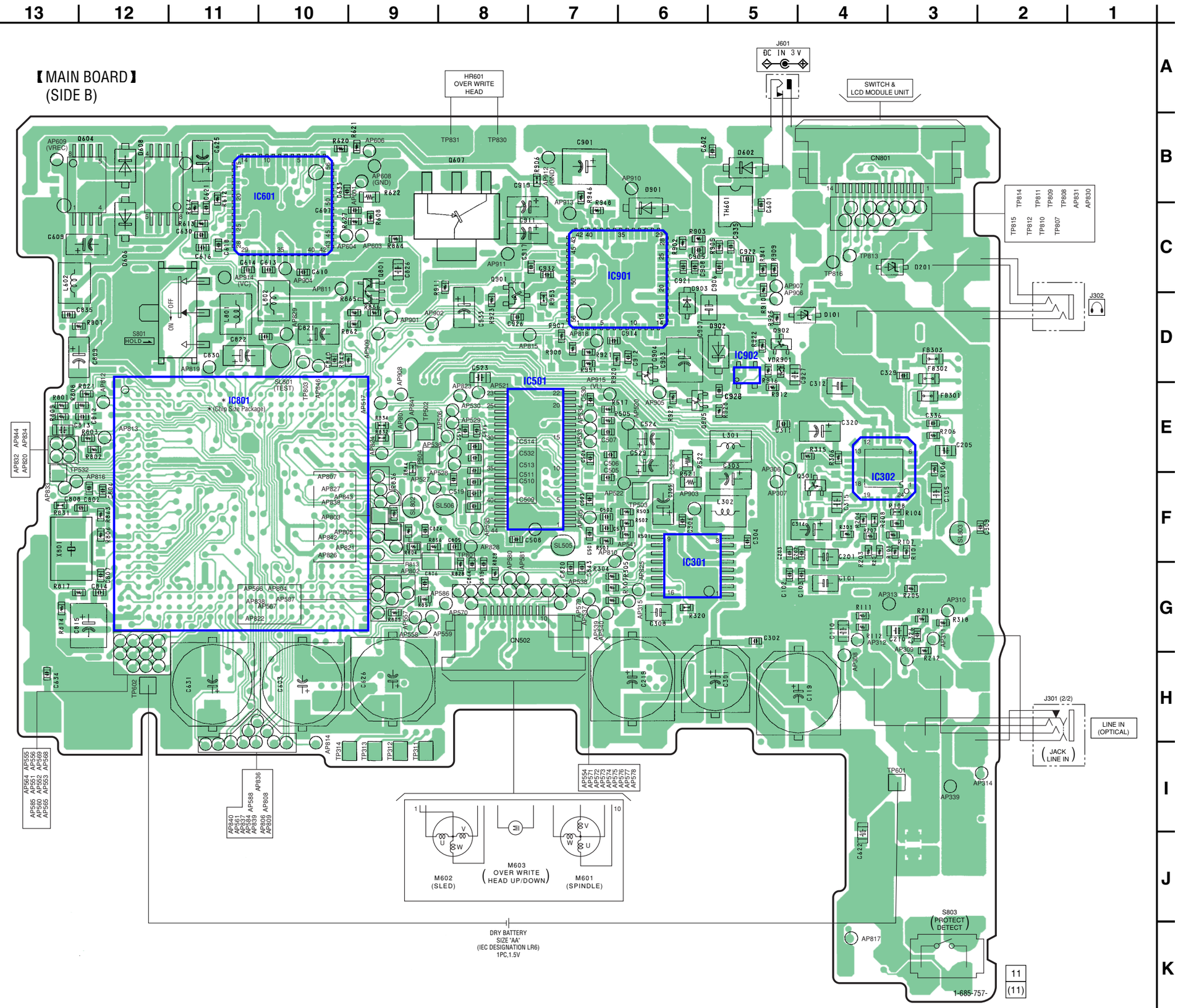


• **Semiconductor Location (SIDE A)**

Ref. No.	Location
D601	B-7
D603	B-9
D607	B-11
D801	D-10
D904	C-8
IC551	G-9
IC804	G-11
IC805	G-10
Q302	G-4
Q501	F-6
Q601	B-7
Q603	C-11

— MAIN Board (Side B) — • : Uses unleaded solder.

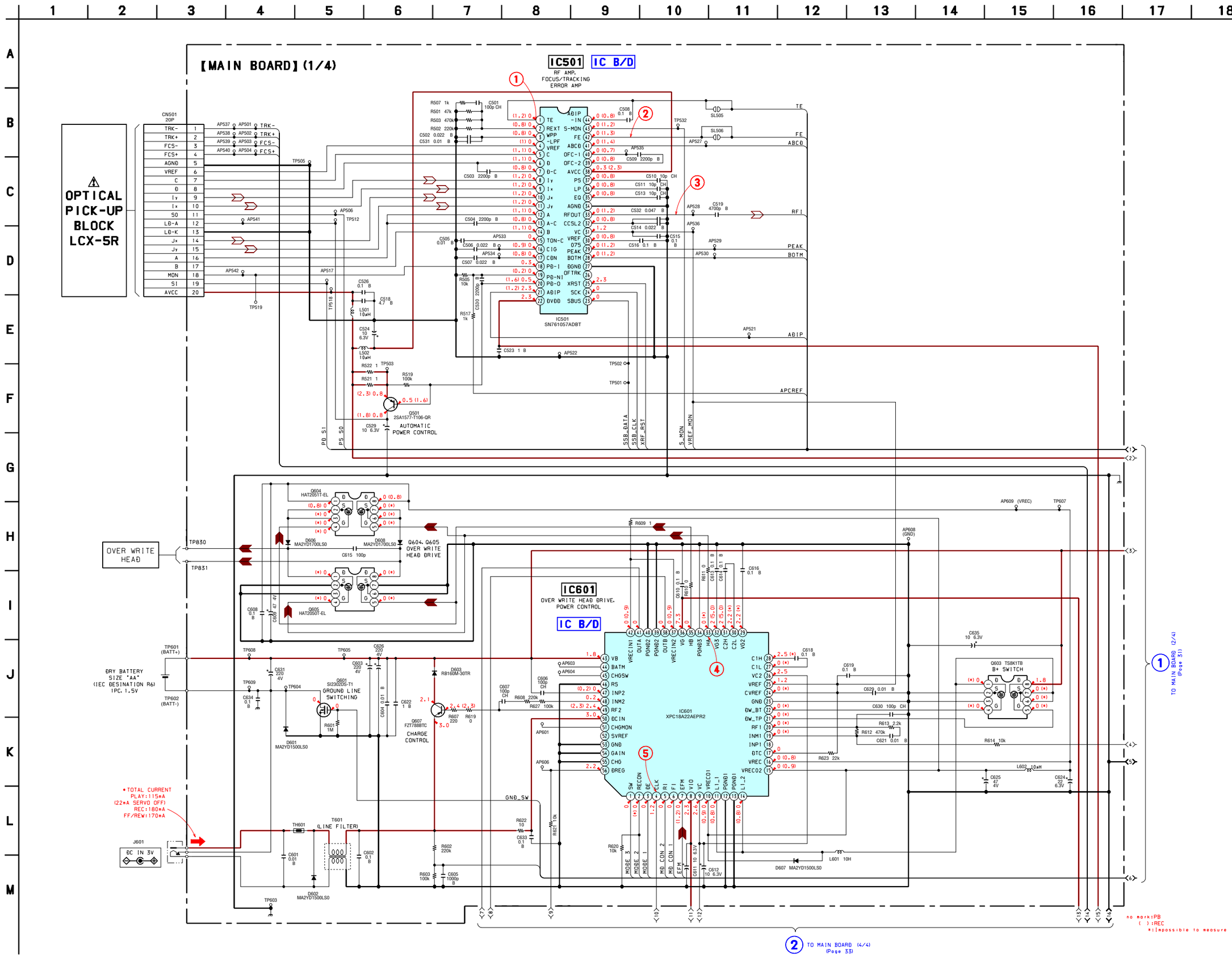
【MAIN BOARD】
(SIDE B)



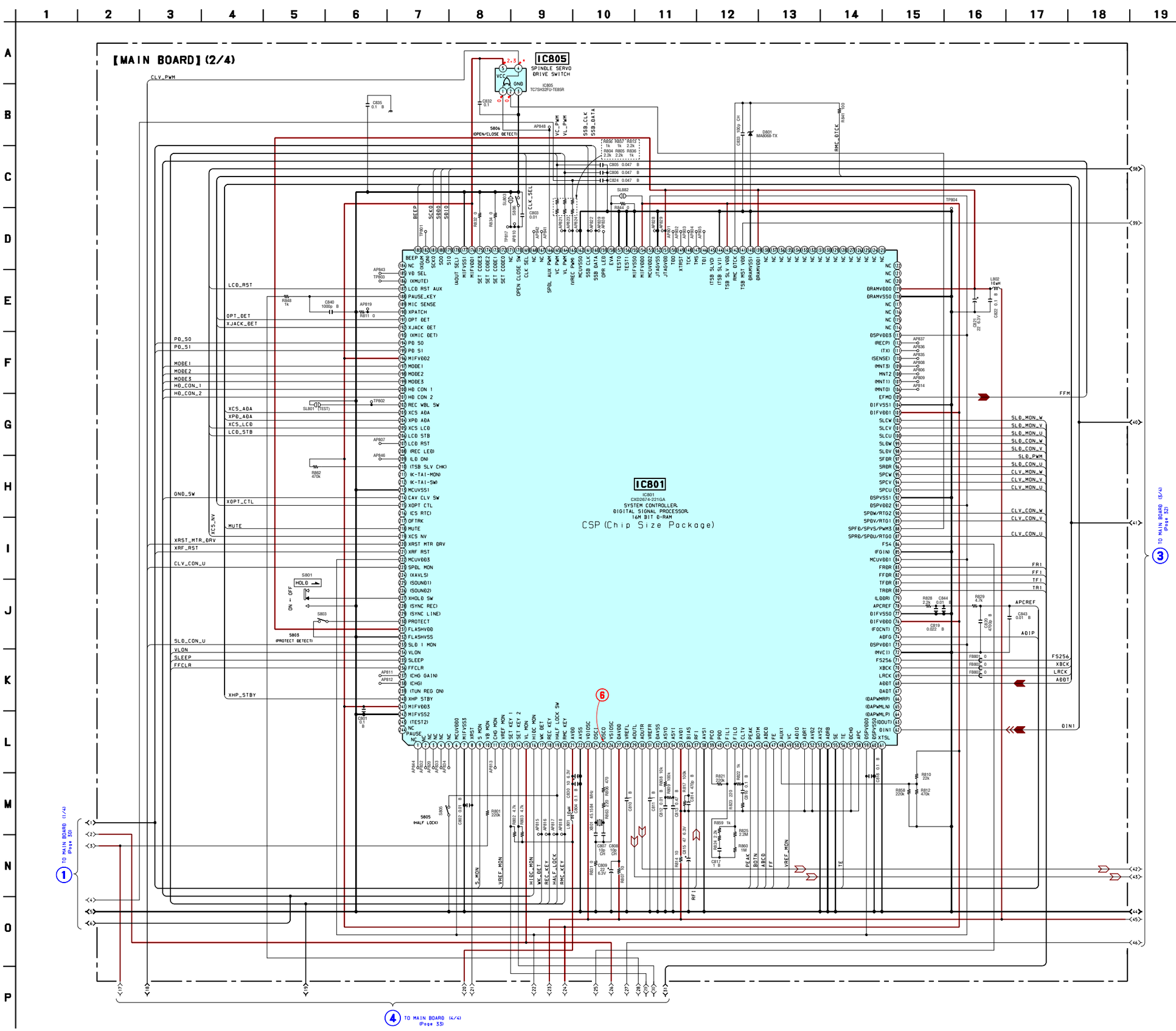
• Semiconductor Location (SIDE B)

Ref. No.	Location
D101	D-4
D201	C-3
D602	B-5
D606	C-12
D608	B-12
D901	C-6
D902	D-5
D903	D-6
IC301	G-6
IC302	E-4
IC501	E-7
IC601	B-10
IC801	E-10
IC901	C-6
IC902	C-5
Q301	F-4
Q604	B-12
Q605	B-12
Q607	C-8
Q801	C-9
Q901	D-8
Q902	D-5
Q904	D-6
Q905	E-6

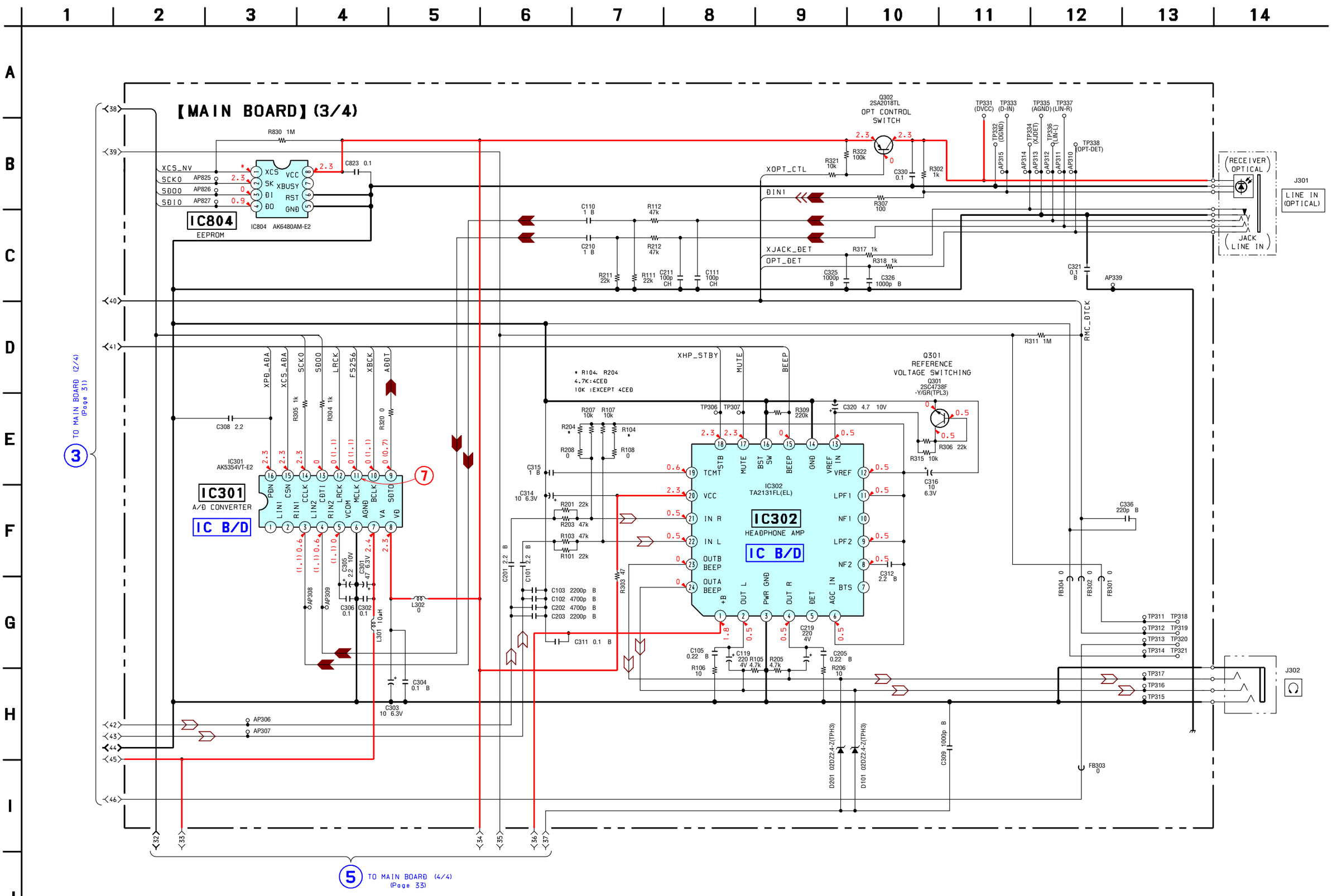
6-3. Schematic Diagrams — MAIN Board (1/4) — • See page 24 for Waveforms. • See page 34, 36 for IC Block Diagram. • See page 37 for IC Pin Function Description.



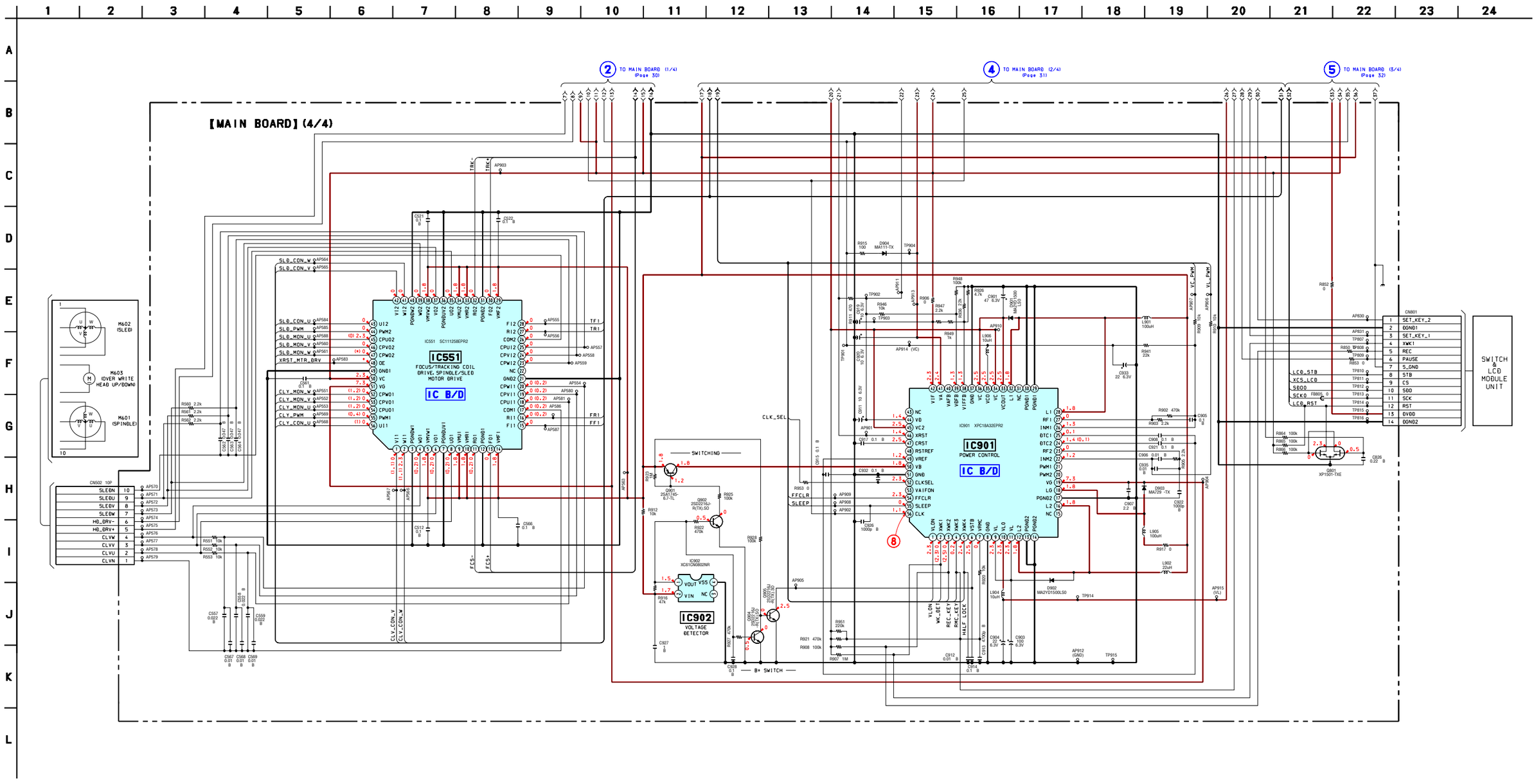
— MAIN Board (2/4) — • See page 24 for Waveforms. • See page 38 for IC Pin Function Description.



— MAIN Board (3/4) — • See page 24 for Waveforms. • See page 34 for IC Block Diagram.

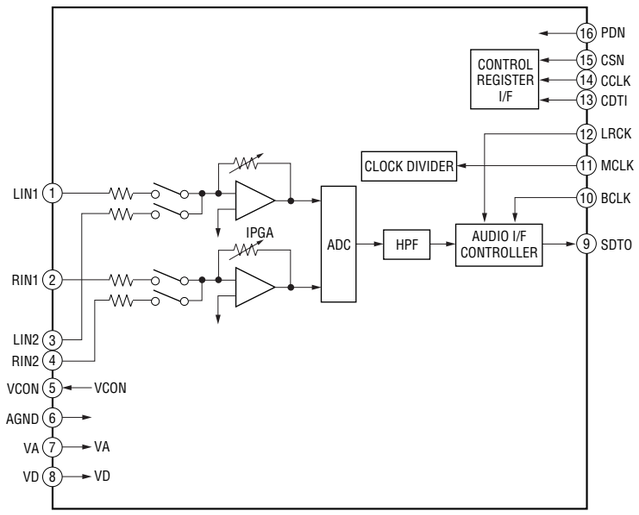


— MAIN Board (4/4) — • See page 24 for Waveforms. • See page 35, 36 for IC Block Diagram.

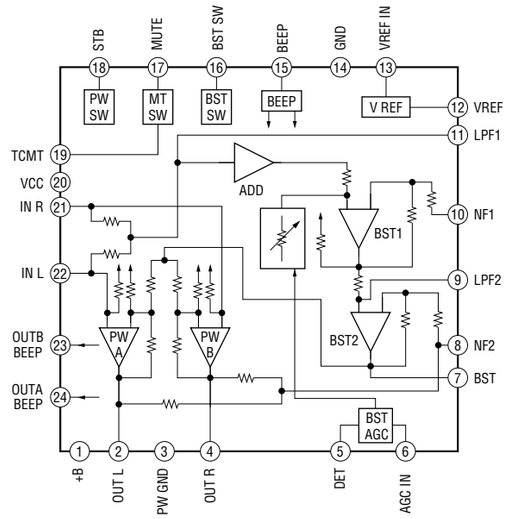


6-4. IC Block Diagram

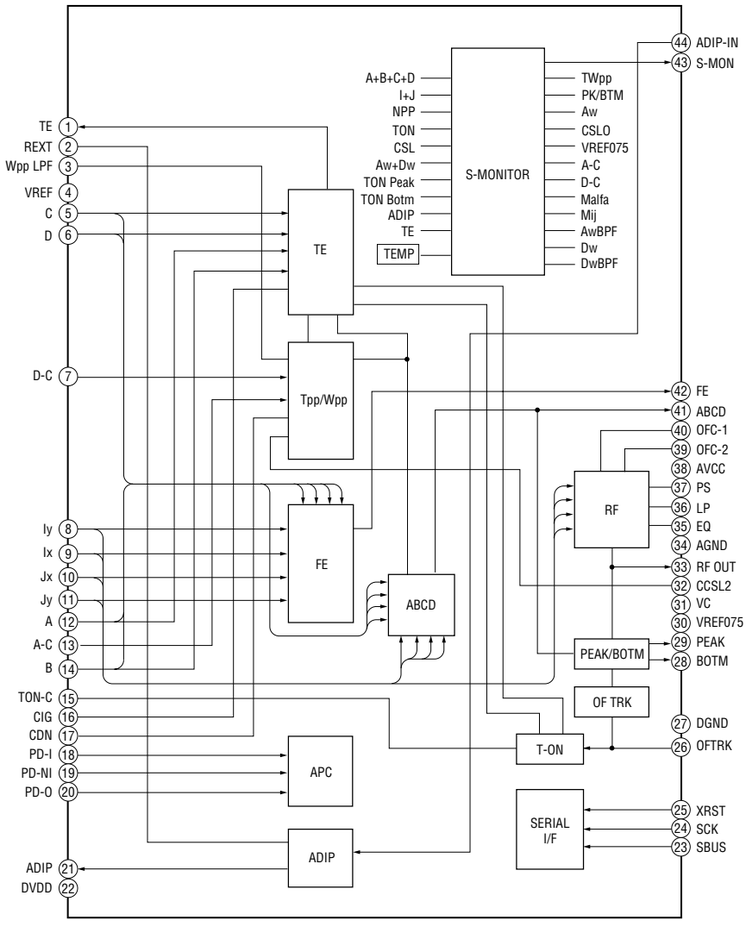
IC301 AK5354VT-E2



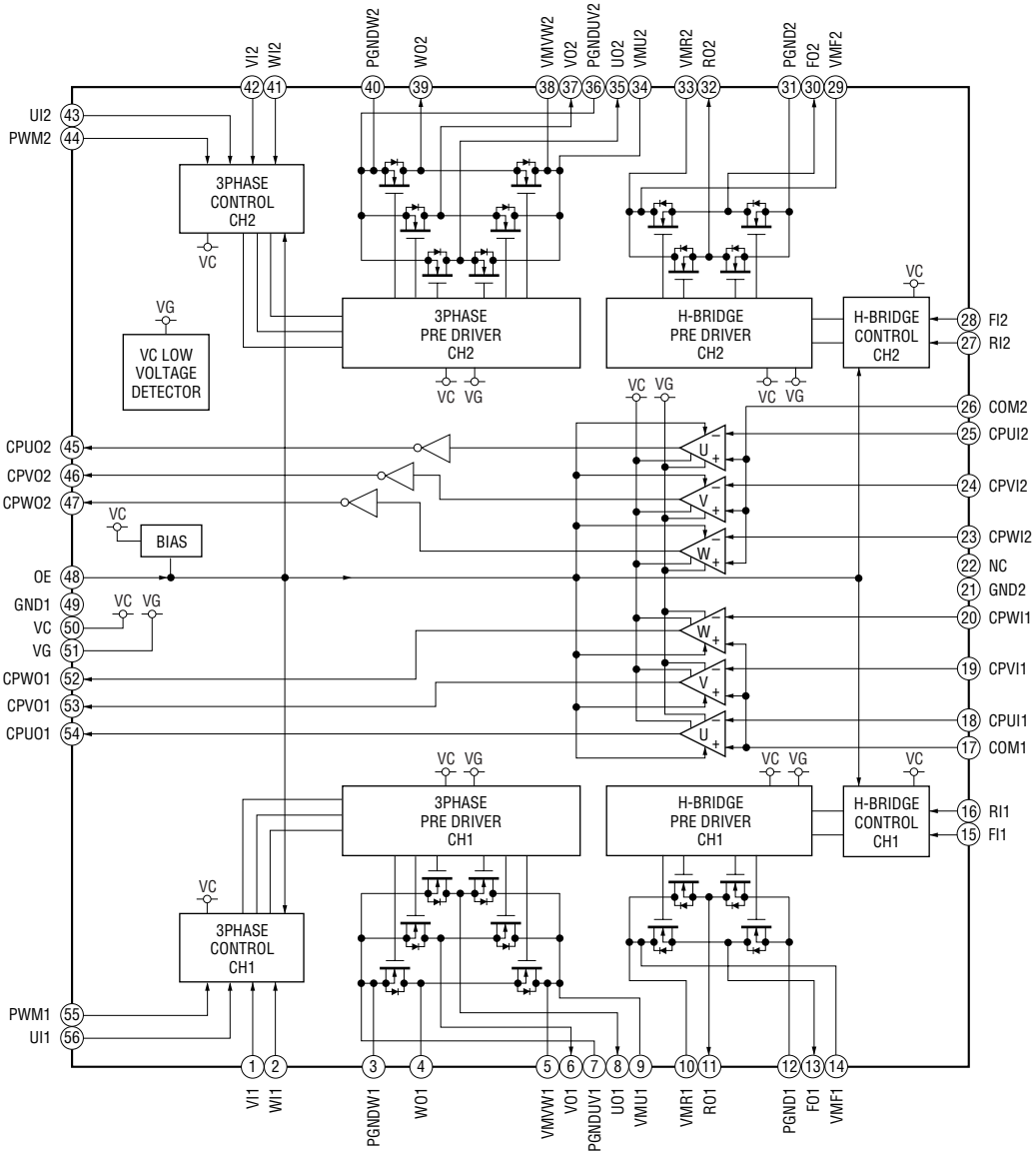
IC302 TA2131FL (EL)



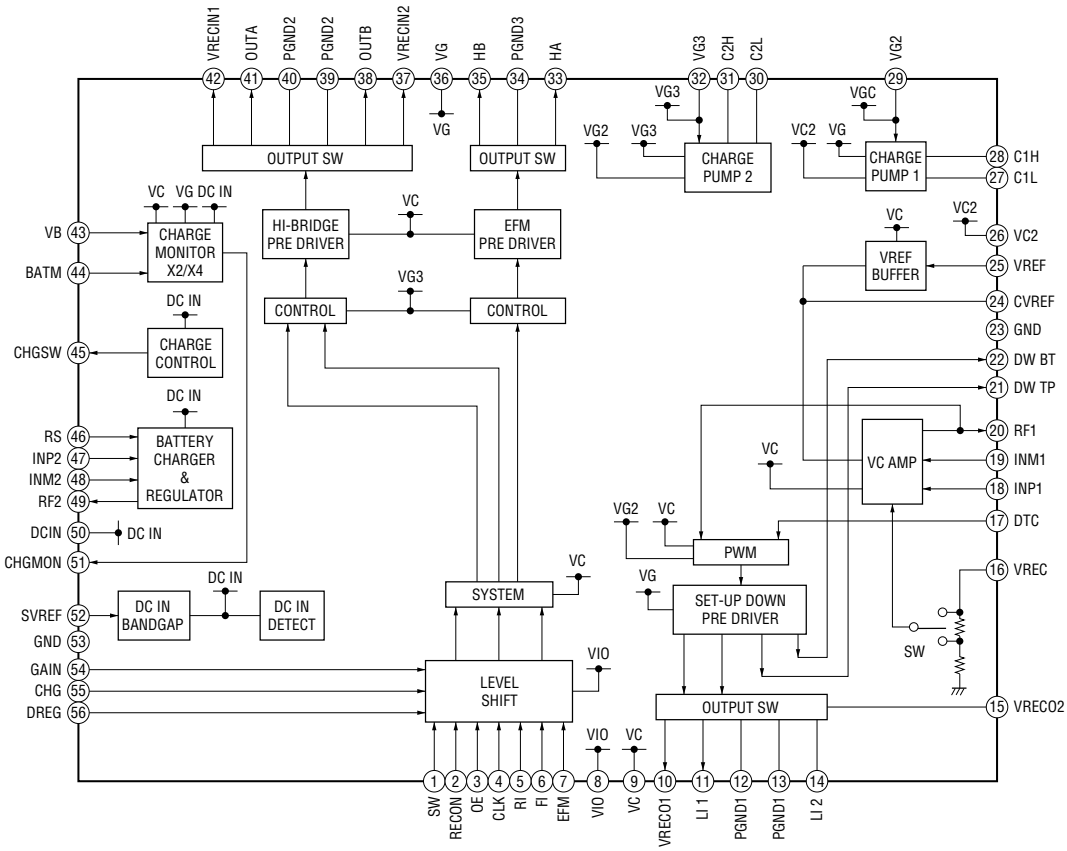
IC501 SN761057ADBT



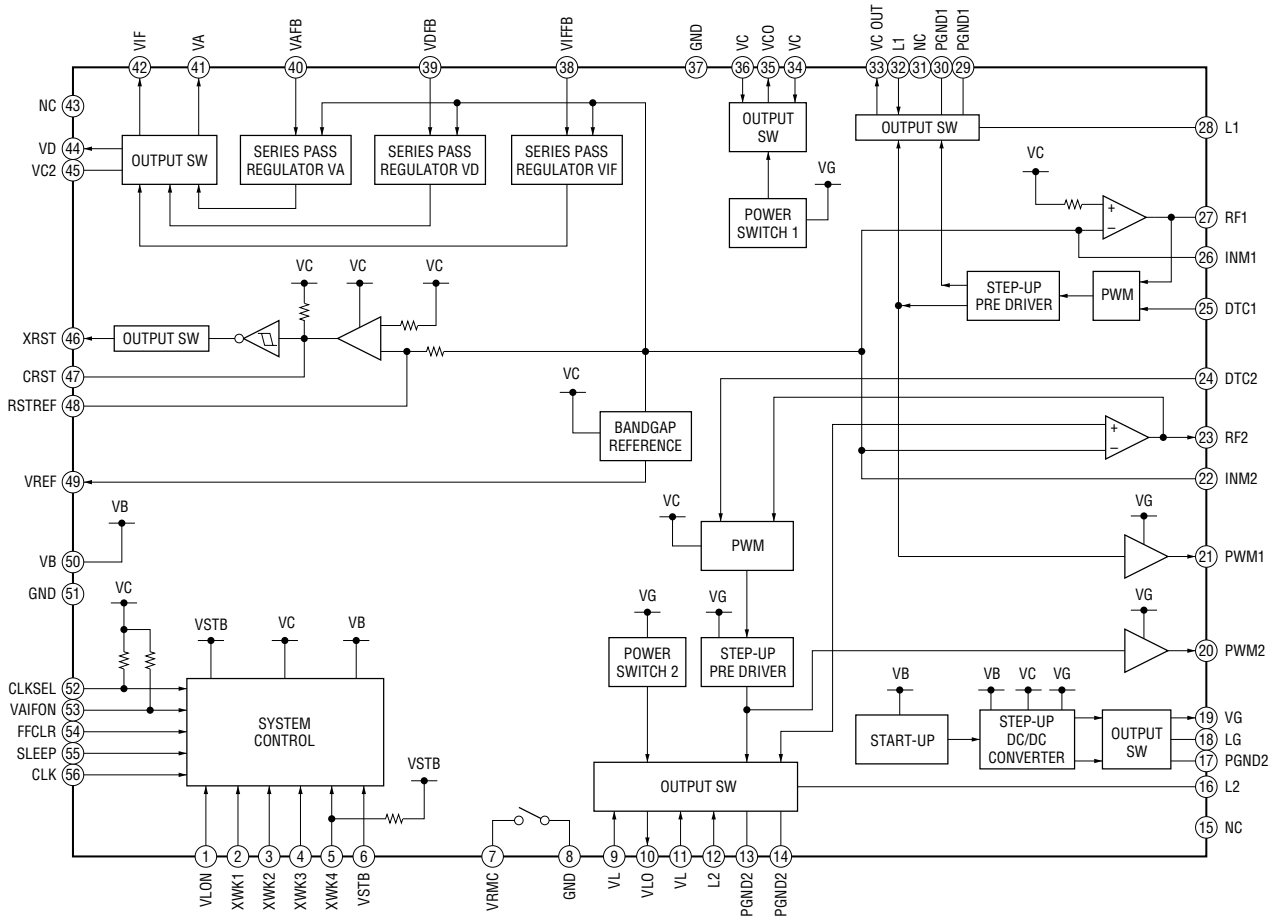
IC551 SC111258EPR2



IC601 XPC18A22AEPR2



IC901 XPC18A32EPR2



6-5. IC Pin Function Description

• IC501 SN761057ADBT (RF AMP, FOCUS/TRACKING ERROR AMP)

Pin No.	Pin Name	I/O	Description
1	TE	O	Tracking error signal output to the system controller (IC801)
2	REXT	—	Connect terminal to the external resistor for ADIP amp control
3	WPPLPF	—	Connect terminal to the external capacitor for TPP/WPP low-pass filter
4	VREF	O	Reference voltage output terminal (+1 V)
5	C	I	Signal (C) input from the optical pickup detector
6	D	I	Signal (D) input from the optical pickup detector
7	D-C	I	Signal (D) input from the optical pickup detector (AC input)
8	IY	I	I-V converted RF signal (IY) input from the optical pickup detector
9	IX	I	I-V converted RF signal (IX) input from the optical pickup detector
10	JX	I	I-V converted RF signal (JX) input from the optical pickup detector
11	JY	I	I-V converted RF signal (JY) input from the optical pickup detector
12	A	I	Signal (A) input from the optical pickup detector
13	A-C	I	Signal (A) input from the optical pickup detector (AC input)
14	B	I	Signal (B) input from the optical pickup detector
15	TON-C	—	Connect terminal to the external capacitor for TON hold
16	CIG	—	Connect terminal to the external capacitor for the low-pass filter of NPP divider denominator
17	CDN	—	Connect terminal to the external capacitor for the low-pass filter of CSL divider denominator
18	PD-I	I	Light amount monitor input terminal (invert input)
19	PD-NI	I	Light amount monitor input terminal (non-invert input)
20	PD-O	O	Light amount monitor output terminal
21	ADIP	O	ADIP duplex FM signal (22.05 kHz ± 1 kHz) output to the system controller (IC801)
22	DVDD	—	Power supply terminal (+2.3 V) (digital system)
23	SBUS	I/O	SSB serial data input/output with the system controller (IC801)
24	SCK	I	SSB serial clock signal input from the system controller (IC801)
25	XRST	I	Reset signal input from the system controller (IC801) “L”: reset
26	OFTRK	I	Off track signal input from the system controller (IC801)
27	DGND	—	Ground terminal (digital system)
28	BOTM	O	Bottom hold signal output of the light amount signal (RF/ABCD) to the system controller (IC801)
29	PEAK	O	Peak hold signal output of the light amount signal (RF/ABCD) to the system controller (IC801)
30	VREF075	—	Connect terminal to the external capacitor for the internal reference voltage
31	VC	O	Middle point voltage (+1.2 V) generation output terminal
32	CCSL2	—	Connect terminal to the external capacitor for TPP/WPP low-pass filter
33	RF OUT	O	Playback EFM RF signal output to the system controller (IC801)
34	AGND	—	Ground terminal (analog system)
35 to 37	EQ, LP, PS	—	Connect terminal to the external capacitor for the RF equalizer
38	AVCC	—	Power supply terminal (analog system) (+2.3 V)
39, 40	OFC-2, OFC-1	—	Connect terminal to the external capacitor for RF AC coupling
41	ABCD	O	Light amount signal (ABCD) output to the system controller (IC801)
42	FE	O	Focus error signal output to the system controller (IC801)
43	S-MON	O	Servo signal monitor output to the system controller (IC801)
44	ADIP-IN	I	ADIP duplex FM signal (22.05 kHz ± 1 kHz) input terminal

• IC801 CXD2674-221GA (SYSTEM CONTROLLER, DIGITAL SIGNAL PROCESSOR, 16M BIT D-RAM)

Pin No.	Pin Name	I/O	Description
1	PAUSE KEY	I	Set key input terminal (▮▮ key input)
2	(MIC SENSE)	O	Control signal output to the microphone amp "H": HIGH, "L": LOW, normally: "H" Not used (open)
3	XTEST	I	Input terminal for the test mode set up "L": test mode (normally fixed at "H")
4, 5	NC	O	Not used (open)
6	MCUVDD0	—	Power supply terminal (for microcomputer block) (+1.5 V)
7	MIFVSS3	—	Ground terminal (for microcomputer I/F)
8	XRST	I	System reset signal input terminal from the power control (IC901) "L": reset
9	S MON	I	Servo signal monitor input terminal (A/D input) from RF amp (IC501)
10	VB MON	I	Voltage monitor input terminal of UNREG power supply (A/D input)
11	CHG MON	I	Charge voltage monitor input terminal (A/D input) Not used (open)
12	VREF MON	I	Clear reference voltage input terminal (A/D input) from RF amp (IC501)
13, 14	SET KEY 1, SET KEY 2	I	Set key input terminal (A/D input)
15	VL MON	I	VL voltage monitor input terminal (A/D input)
16	HIDC MON	I	HIGH DC voltage monitor input terminal (A/D input)
17	WK DET	I	Set key start switching detection signal input terminal (A/D input)
18	REC KEY	I	REC key input terminal (A/D input)
19	HALF LOCK SW	I	Open button detection switch (S805) input terminal (A/D input) "L": when normal position, "H": when locked
20	RMC KEY	I	Key input terminal (A/D input) of the remote commander attached headphone
21	AVDD	—	Power supply terminal (for the analog circuit block) (+2.8 V)
22	AVSS	—	Ground terminal (for the analog circuit block)
23	VDIOSC	—	Power supply terminal (for OSC cell) (+2.4 V)
24	OSCI	I	System clock (45.1584 MHz) input terminal
25	OSCO	O	System clock (45.1584 MHz) output terminal
26	VSIOSC	—	Ground terminal (for OSC cell)
27	DAVDD	—	Power supply terminal (for the built-in D/A converter) (+2.4 V)
28	VREFL	I	Reference voltage input terminal (for the internal D/A converter L-CH)
29	AOUTL	O	Built-in D/A converter (L-CH) output terminal
30	AOUTR	O	Built-in D/A converter (R-CH) output terminal
31	VREFR	I	Reference voltage input terminal (for the built-in D/A converter R-CH)
32	DAVSS	—	Ground terminal (for the built-in D/A converter)
33	ASYO	O	Playback EFM duplex signal output terminal
34	ASYI	I	Playback EFM comparison slice level input terminal
35	AVD1	—	Ground terminal (for the analog) (+2.4 V)
36	BIAS	I	Bias input for the playback EFM comparison
37	RFI	I	Playback EFM RF signal input from RF amp (IC501)
38	AVS1	—	Ground terminal (for the analog)
39	PCO	O	Phase comparison output for the master clock of playback EFM system master PLL
40	PDO	O	Phase comparison output for the analog PLL Not used (open)
41	FILI	I	Filter input for the master clock of the playback EFM system master PLL
42	FILO	O	Filter output for the master clock of the playback EFM system master PLL
43	CLTV	I	Internal VCO control voltage input for the playback EFM system master PLL
44	PEAK	I	Peak hold signal input of the light amount signal (RF/ABCD) from RF amp (IC501)
45	BOTM	I	Bottom hold signal input of the light amount signal (RF/ABCD) from RF amp (IC501)
46	ABCD	I	Light amount signal (ABCD) input from RF amp (IC501)
47	FE	I	Focus error signal input from RF amp (IC501)
48	AUX1	I	Support signal (I_3 signal/temperature signal) input terminal (A/D input)
49	VC	I	Middle point voltage (+1.2 V) input terminal
50	ADIO	O	Monitor output of A/D converter input signal Not used (open)
51	ADRT	I	A/D converter the upper limit voltage input (fixed at "H" in this set)

Pin No.	Pin Name	I/O	Description
52	AVD2	—	Power supply terminal (for the analog) (+2.4 V)
53	AVS2	—	Ground terminal (for the analog)
54	ADRB	I	A/D converter the lower limit voltage input (fixed at "L" in this set)
55	SE	I	Sled error signal input terminal Not used (fixed at "L")
56	TE	I	Tracking error signal input from RF amp (IC501)
57	DCHG	—	Connecting analog power supply of the low impedance (fixed at "H" in this set)
58	APC	I	Error signal input for the laser automatic power control Not used (fixed at "H")
59	DSPVDD0	—	Power supply terminal (for DSP block) (+1.5 V)
60	DSPVSS0	—	Ground terminal (for DSP block)
61	XTSL	I	Input terminal for the frequency set up of the system clock "L": 45.1584 MHz, "H": 22.5792 MHz (fixed at "L" in this set)
62	DIN1	I	Input terminal of the record system digital audio signal
63	(DOUT)	O	Output terminal of the playback system digital audio signal Not used (open)
64	(DAPWMLP)	O	D/A converter PWM output (L-CH right phase) Not used (open)
65	(DAPWMLN)	O	D/A converter PWM output (L-CH reverse phase) Not used (open)
66	(DAPWMRP)	O	D/A converter PWM output (R-CH right phase) Not used (open)
67	DADT	O	Audio data output Not used (open)
68	ADDT	I	Data signal input from the external A/D converter (IC301)
69	LRCK	O	L/R sampling block signal (44.1 kHz) output to the external A/D converter (IC301)
70	XBCK	O	Bit clock signal (2.8224 MHz) output to the external A/D converter (IC301)
71	FS256	O	11.2896 MHz clock signal output to the external A/D converter (IC301)
72	(MVCI)	I	Vibrate input for the digital in PLL from the external VCO Not used (fixed at "L")
73	DSPVDD1	—	Power supply terminal (for DSP block) (+1.5 V)
74	ADFG	I	ADIP duplex FM signal (20.05 ± 1 kHz) input from RF amp (IC501)
75	(F0CNT)	O	Filter cut off control signal output Not used (open)
76	DIFVDD0	—	Power supply terminal (for DSP I/F) (+2.3 V)
77	DIFVSS0	—	Ground terminal (for DSP I/F)
78	APCREF	O	Control signal output to the reference voltage generation circuit for the laser automatic power control
79	(LDDR)	O	PWM signal output for the laser automatic power control Not used (open)
80	TRDR	O	Tracking servo drive PWM signal output (–) to the motor driver (IC701)
81	TFDR	O	Tracking servo drive PWM signal output (+) to the motor driver (IC701)
82	FFDR	O	Focus servo drive PWM signal output (+) to the motor driver (IC701)
83	FRDR	O	Focus servo drive PWM signal output (–) to the motor driver (IC701)
84	MCUVDD1	—	Power supply terminal (for the microcomputer block) (+1.5 V)
85	(FGIN)	I	FG signal input terminal for the spindle servo Not used (open)
86	FS4	O	176.4 MHz clock signal output to the power control (IC601, IC901)
87	SPRD/SPDU/RTG0	O	Spindle servo drive PWM signal output terminal (–) to the motor driver (IC701)
88	SPFD/SPVS/PWM3	O	Spindle servo drive PWM signal output (+)
89	SPDV/RTG1	O	Spindle motor drive control signal output (V)/RTG output 1 to the motor driver (IC701)
90	SPDW/RTG2	O	Spindle motor drive control signal output (W)/RTG output 2 to the motor driver (IC701)
91	DSPVDD2	—	Power supply terminal (for DSP block) (+1.5 V)
92	DSPVSS1	—	Ground terminal (for DSP block)
93	SPCU	I	Spindle motor drive comparison signal input (U) from the motor driver (IC701)
94	SPCV	I	Spindle motor drive comparison signal input (V) from the motor driver (IC701)
95	SPCW	I	Spindle motor drive comparison signal input (W) from the motor driver (IC701)
96	SRDR	O	Sled servo drive PWM signal output (–) to the motor driver (IC701)
97	SFDR	O	Sled servo drive PWM signal output (+) to the motor driver (IC701)
98	SLDV	O	Sled motor drive signal output (V) to the motor driver (IC701)/drive control signal output (1–)

Pin No.	Pin Name	I/O	Description
99	SLDW	O	Sled motor drive signal output (W) to the motor driver (IC701)/drive control signal output (2+)
100	SLCU	I	Spindle motor drive comparison signal input (U) from the motor driver (IC701)
101	SLCV	I	Spindle motor drive comparison signal input (V) from the motor driver (IC701)
102	SLCW	I	Spindle motor drive comparison signal input (W) from the motor driver (IC701)
103	DIFVDD1	—	Power supply terminal (for DSP I/F) (+2.3 V)
104	DIFVSS1	—	Ground terminal (for DSP I/F)
105	EFMO	O	EFM encode data output for the record to the over write head drive (IC601)
106	(MNT0)	O	Internal DSP monitor output (0) terminal Not used (open)
107	(MNT1)	O	Internal DSP monitor output (1) terminal Not used (open)
108	MNT2	O	Internal DSP monitor output (2) terminal Not used (open)
109	(MNT3)	O	Internal DSP monitor output (3) terminal Not used (open)
110	(SENSE)	O	Internal DSP (SENS) monitor output terminal Not used (open)
111	(TX)	O	Record data output enable signal output monitor terminal of the internal DSP Not used (open)
112	(RECP)	O	Laser power changeover signal output monitor terminal Not used (open)
113	DAPVDD3	—	Power supply terminal (for DSP block) (+1.5 V)
114 to 117	NC	O	Output terminal for the external D-RAM Not used (open)
118	DRAMVSS0	—	Ground terminal (for the external D-RAM)
119	DRAMVDD0	—	Power supply terminal (for the external D-RAM) (+2.4 V)
120 to 138	NC	O	Output terminal for the external D-RAM Not used (open)
139	DRAMVDD1	—	Power supply terminal (for the external D-RAM) (+2.4 V)
140	DRAMVSS1	—	Ground terminal (for the external D-RAM)
141	TSB MST VDD	—	Power supply terminal (for TSB master communication) (+2.8 V)
142	RMC DTCK	I/O	TSB serial data input/output with the remote commander attached headphone
143	TSB SLV VDD	—	Power supply terminal (for I/F to TSB slave communication) (+2.3 V)
144	(TSB SLVI)	I	TSB slave signal input from the remote commander attached headphone (fixed at “L”)
145	(TSB SLVO)	O	TSB slave signal output from the remote commander attached headphone Not used (open)
146	TDI	I	Data input terminal for JTAG Not used (open)
147	TMS	I	Test mode control input terminal for JTAG Not used (open)
148	TCK	I	Clock input terminal for JTAG Not used (open)
149	XTRST	I	Reset input terminal for JTAG Not used (open)
150	TDO	O	Data output terminal for JTAG Not used (open)
151	JTAGVDD	—	Power supply terminal (for JTAG) (+2.4 V)
152	JTAGVSS	—	Ground terminal (for JTAG)
153	MCUVDD2	—	Power supply terminal (for the microcomputer block) (+1.5 V)
154	MIFVDD0	—	Power supply terminal (for the microcomputer I/F block) (+2.3 V)
155	MIFVSS0	—	Ground terminal (for the microcomputer I/F block)
156, 157	TEST1, TEST0	I	Input terminal for the main test (normally fixed at “L”)
158	EVA	I	EVA/FLASH chip discrimination terminal “L”: FLASH chip, “H”: EVA chip
159	OPR LED	O	Not used (open)
160	SSB DATA	I/O	Input/output of SSB serial data with RF amp (IC501)
161	SSB CLK	O	SSB serial clock output to RF amp (IC501)
162	MCUVSS0	—	Ground terminal (for the microcomputer block)
163	(VREC PWM)	O	Over write head control spare terminal Not used (open)
164	VL PWM	O	PWM for the laser automatic power supply voltage control signal output to the power control (IC901)
165	VC PWM	O	PWM signal output for the system power supply voltage control to the power control (IC901)
166	SPDL AUX PWM	O	PWM signal output for the spindle support to the motor driver (IC701)
167	XPD ADAAUX	O	Not used (open)
168	NC	O	Not used (open)

Pin No.	Pin Name	I/O	Description
169	CLK SEL	O	System clock select signal output to the power control (IC901)
170	OPEN CLOSE SW	I	Open/close detection switch (S806) of the upper panel input terminal (A/D input) "L": when upper panel close
171	GND SW	O	Control signal output to the ground (GND) changeover switch
172	SET CODE0	O	Input terminal for the set (fixed at "L" in this set)
173, 174	SET CODE1, 2	O	Input terminal for the set (open in this set)
175	SET CODE3	O	Input terminal for the set (fixed at "L" in this set)
176	MIFVDD1	—	Power supply terminal (for the microcomputer I/F block) (+2.3 V)
177	MIFVSS1	—	Ground terminal (for the microcomputer I/F block)
178	(AOUT SEL)	O	HP/LINE changeover signal output Not used (open)
179	SI0	I	Serial data input from the nonvolatile memory (IC804) and liquid crystal display element module
180	SO0	O	Serial data output to the nonvolatile memory (IC804), A/D converter (IC301) and liquid crystal display element module
181	SCK0	O	Serial clock signal output to the nonvolatile memory (IC804), A/D converter (IC301) and liquid crystal display element module
182	(XGUM ON)	I	Battery pack detection switch input terminal for the charge "L": there is battery pack for the charge Not used (open)
183	BEEP	O	Beep sound control signal output Not used (open)
184	NC	O	Not used (open)
185	VD SEL	O	VD power supply changeover signal output terminal Not used (open)
186	(XMUTE)	O	Analog muting control signal output terminal "L": muting ON Not used (open)
187	LCD RST AUX	O	Reset control signal output terminal to the liquid crystal display element "L": reset
188, 189	NC	O	Not used (open)
190	XPATCH	I	Patch function detection input terminal "L": patch function Fixed at "L" in this set
191	OPT DET	I	DIN plug detection signal input terminal
192	XJACK DET	I	LINE IN plug detection signal input terminal
193	(XMIC DET)	I	Microphone plug detection signal input terminal Not used (open)
194, 195	PD S0, PD S1	O	PD IC mode changeover signal output to the optical pick up
196	MIFVDD2	—	Power supply terminal (for the microcomputer I/F block) (+2.3 V)
197 to 199	MODE1 to 3	O	Power supply control signal output (for the over write head drive) to the over write head drive (IC601)
200, 201	HD CON 1, 2	O	Over write head control signal output to the over write head drive (IC601)
202	REC WBL SW	O	LPF changeover switch input terminal when REC/PB control Not used (open)
203	XCS ADA	O	Chip select signal output to A/D converter (IC301)
204	XPD ADA	O	Power supply control signal output for the drive to A/D converter (IC301)
205	XCS LCD	O	Chip select signal output to the liquid crystal display element
206	LCD STB	O	Strobe signal output to the the liquid crystal display element
207	LCD RST	O	Reset control signal output to the liquid crystal display element Not used (open)
208	(REC LED)	O	LED ON/OFF control signal output for REC display Not used (open)
209	(LD ON)	O	ON/OFF control signal output terminal of the laser diode Not used (open)
210	(TSB SLV CHK)	I	TSB slave detection signal input terminal
211, 212	(K-TAI-MON), (K-TAI-SW)	I	Not used (open)
213	MCUVSS1	—	Ground terminal (for the microcomputer block)
214	CAV CLV SW	O	CAV/CLV changeover control signal output Not used (open)
215	XOPT CTL	O	Power supply ON/OFF control signal output for DIN PD drive
216	(CS RTC)	O	Chip select signal output to the clock IC Not used (open)
217	OFTRK	I	Off track signal input from RF amp (IC501)
218	MUTE	O	Analog muting control signal output "H": muting ON
219	XCS NV	O	Chip select signal output to EEPROM (IC804)
220	XRST MTR DRV	O	Reset control signal output to the motor driver (IC701)
221	XRF RST	O	Reset control signal output to RF amp (IC501)
222	MCUVDD3	—	Power supply terminal (for the microcomputer block) (+1.5 V)

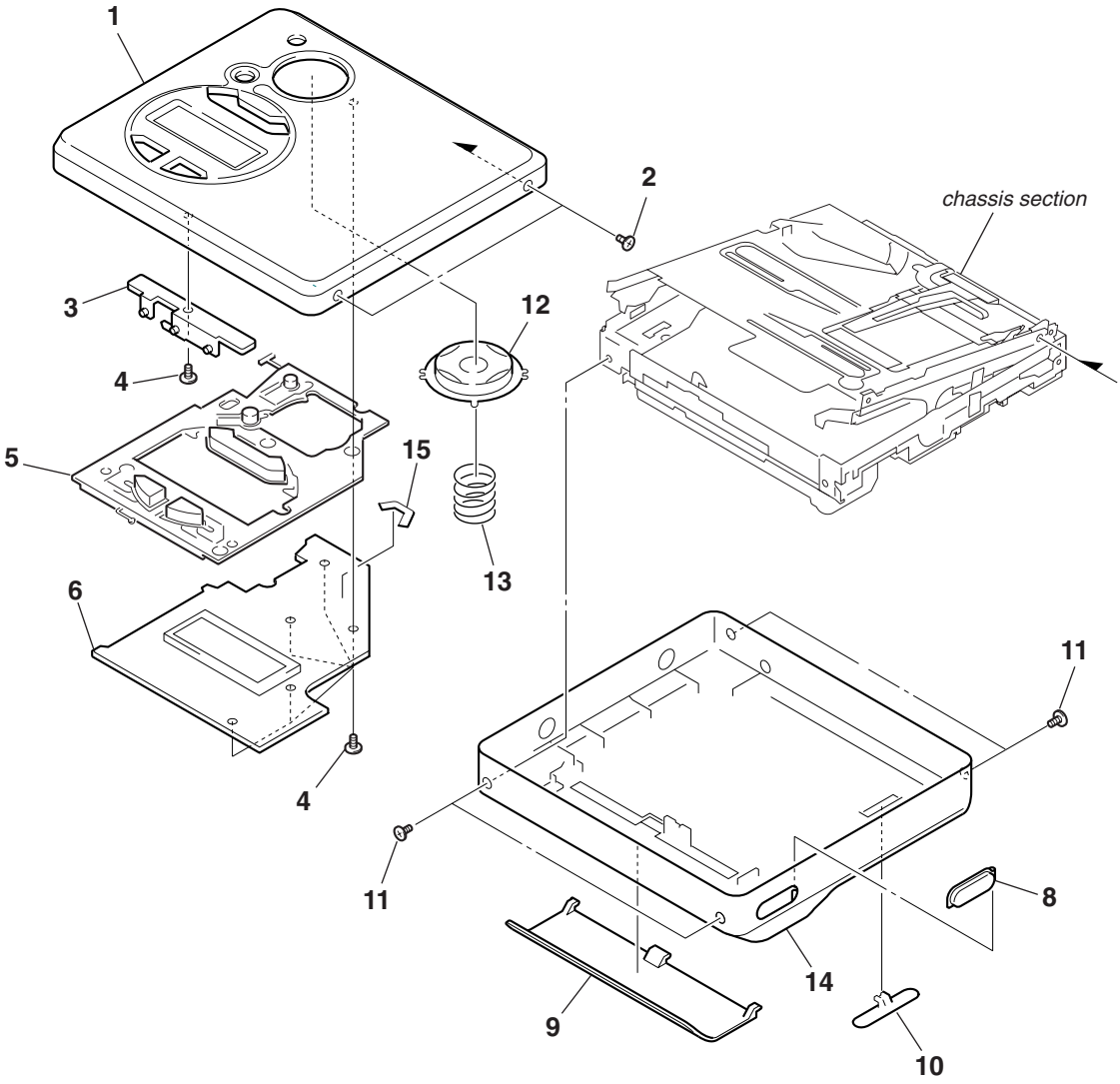
Pin No.	Pin Name	I/O	Description
223	SPDL MON	I	Spindle servo monitor signal input
224 to 226	(XAVLS), (SOUND 1, 2)	I	Not used (open)
227	XHOLD SW	I	HOLD switch (SW801) input terminal "L": hold ON, "H": hold OFF
228	(SYCN REC)	I	SYNCHRO REC switch input terminal "L": OFF, "H": ON Not used (open)
229	(SYNC LEVEL)	O	Not used (open)
230	PROTECT	I	Detection input terminal of the record check claw from the protect detection switch (S803) "L": recording possible condition, "H": protect
231	FLASHVDD	—	Power supply terminal (for the internal FLASH ROM) (+2.4 V)
232	FLASHVSS	—	Ground terminal (for the internal FLASH ROM)
233	SLD 1 MON	I	Sled servo monitor signal input
234	VLON	O	Power supply control signal output for the laser diode drive to the power control (IC901)
235	SLEEP	O	System sleep control signal coutput to the power control (IC901) "H": sleep ON
236	FFCLR	O	Input latch output for the start switching to the power control (IC901)
237	(CHG GAIN)	O	Charge gain control signal output Not used (open)
238	(CHG)	O	Charge ON/OFF control signal output "H": charge ON Not used (open)
239	(TUN REG ON)	O	Not used (open)
240	XHP STBY	O	Headphone standby signal output to the headphone amp (IC302)
241	MIFVDD3	—	Power supply terminal (for the microcomputer I/F block) (+2.3 V)
242	MIFVSS2	—	Ground terminal (for the microcomputer I/F block)
243	(TEST2)	O	Input terminal for the main test (normally open)
244	NC	—	Not used (open)

SECTION 7
EXPLODED VIEWS

NOTE:
- The mechanical parts with no reference number in the exploded views are not supplied.
- Abbreviation
  4CED : French, German, and Datch model
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- Color Indication of Appearance Parts
  Example :
  KNOB, BALANCE (WHITE) ... (RED)
  ↑ ↑
  Parts Color Cabinet's Color

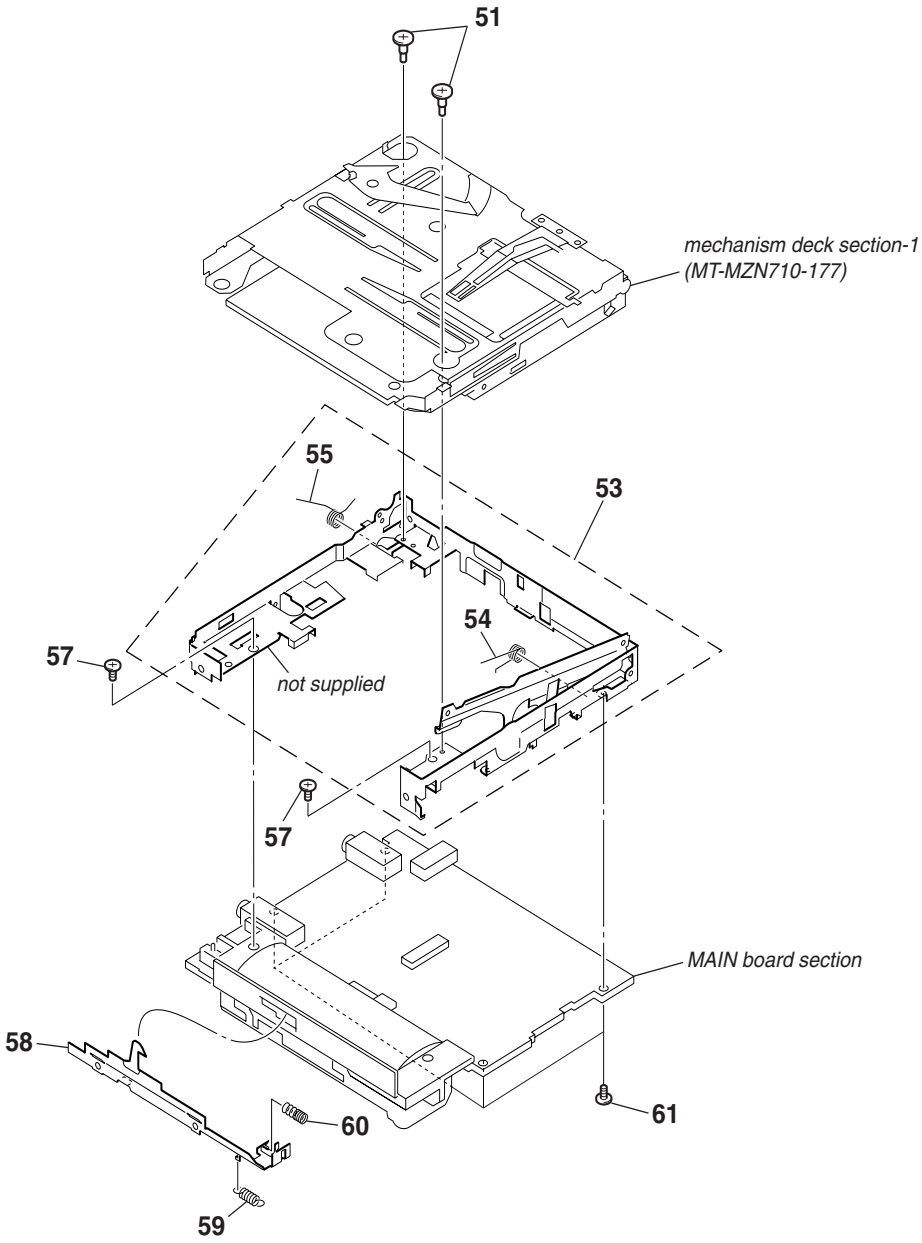
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

7-1. Case Section



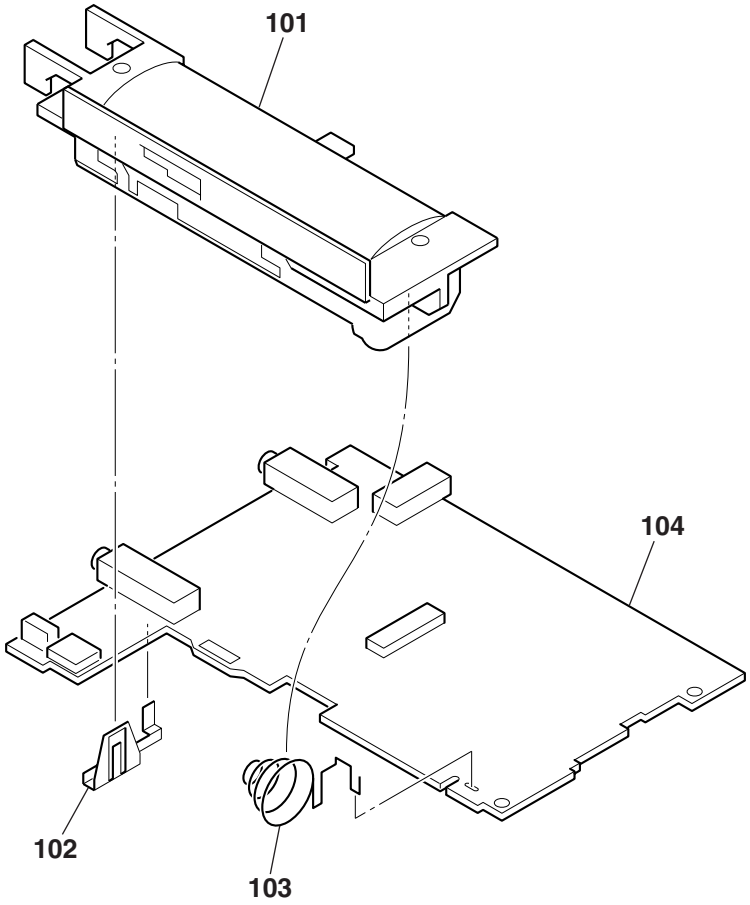
Ref. No.	Part No.	Description	Remark
1	X-3383-076-1	CASE (UPPER) SVX ASSY (BLUE)	
1	X-3383-077-1	CASE (UPPER) SVX ASSY (SILVER)	
2	3-241-529-01	SCREW, STEP	
3	3-237-097-01	LOCKER, OPEN	
4	3-375-114-61	SCREW	
5	3-244-554-01	BUTTON (CONTROL)	
6	1-804-833-11	LCD MODULE	
8	3-237-099-01	BUTTON (OPEN)	
9	3-225-636-51	LID, BATTERY CASE (4CED)	
9	3-225-636-71	LID, BATTERY CASE (EXCEPT 4CED)	
10	3-244-550-11	KNOB (HOLD)	
11	3-234-449-19	SCREW (M1.4)	
12	3-244-556-01	BUTTON (FUNCTION)	
13	3-237-094-01	SPRING (BUTTON), COMPRESSION	
14	X-3383-078-1	CASE (LOWER) SVX ASSY	
15	3-248-625-01	SHEET (GROUND) (LCD)	

7-2. Chassis Section



Ref. No.	Part No.	Description	Remark
51	3-237-072-11	SCREW (MD), STEP	
53	X-3382-642-1	CHASSIS (5207) ASSY, SET	
54	3-237-083-01	SPRING (POP UP-R), TORSION	
55	3-237-075-01	SPRING (POP UP-L), TORSION	
57	3-318-382-91	SCREW (1.7X2.5), TAPPING	
58	3-246-245-01	SLIDER, OPEN	
59	3-237-082-01	SPRING (LOCK), TENSION	
60	3-237-081-01	SPRING (LIMITTER), COMPRESSION	
61	3-225-995-91	SCREW (M1.4) (EG),TOOTHED LOCK	

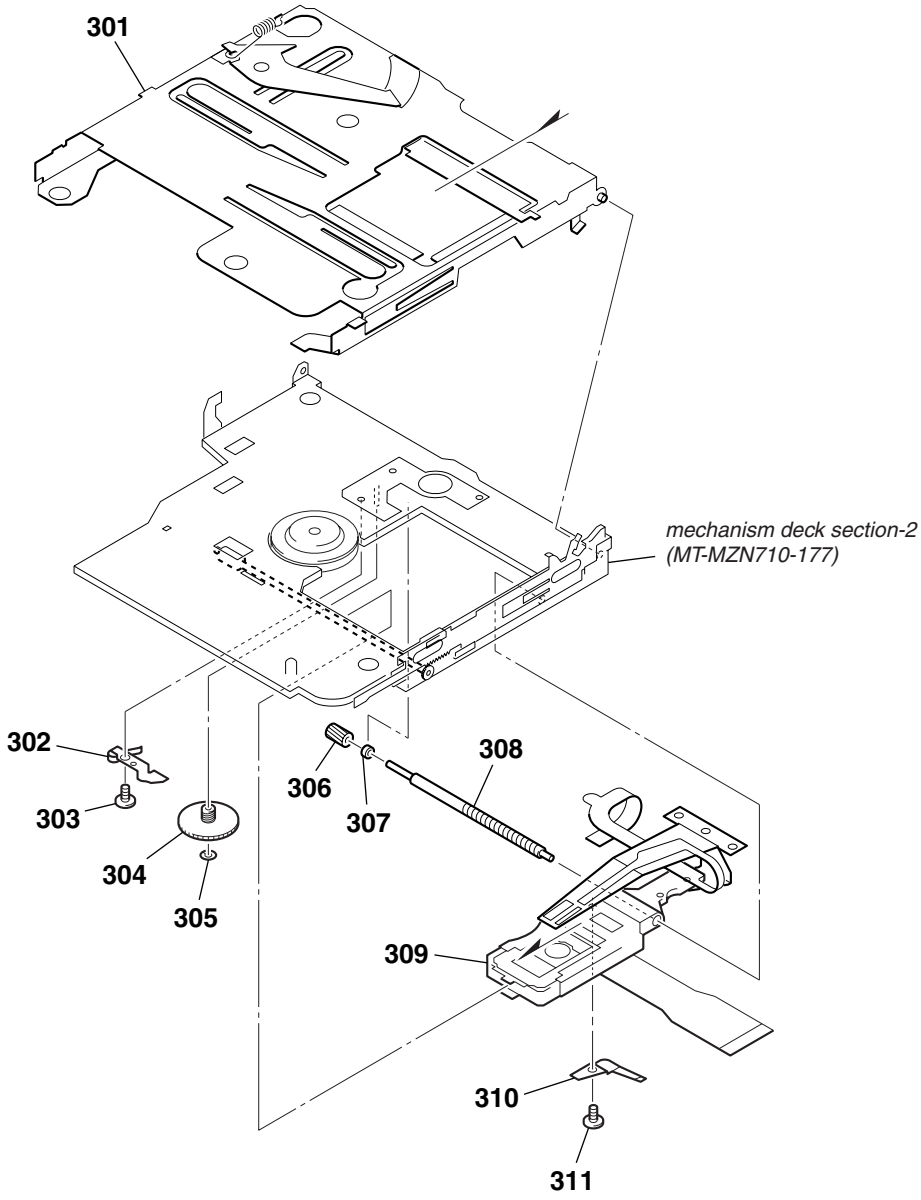
7-3. MAIN Board Section



Ref. No.	Part No.	Description	Remark
101	3-246-247-01	CASE, BATTERY	
102	3-237-073-01	TERMINAL BOARD (+), BATTERY	
103	3-237-074-01	TERMINAL (-), BATTERY	

Ref. No.	Part No.	Description	Remark
* 104	A-3178-958-A	MAIN BOARD, COMPLETE(EXCEPT 4CED)	
* 104	A-3331-607-A	MAIN BOARD, COMPLETE(4CED)	

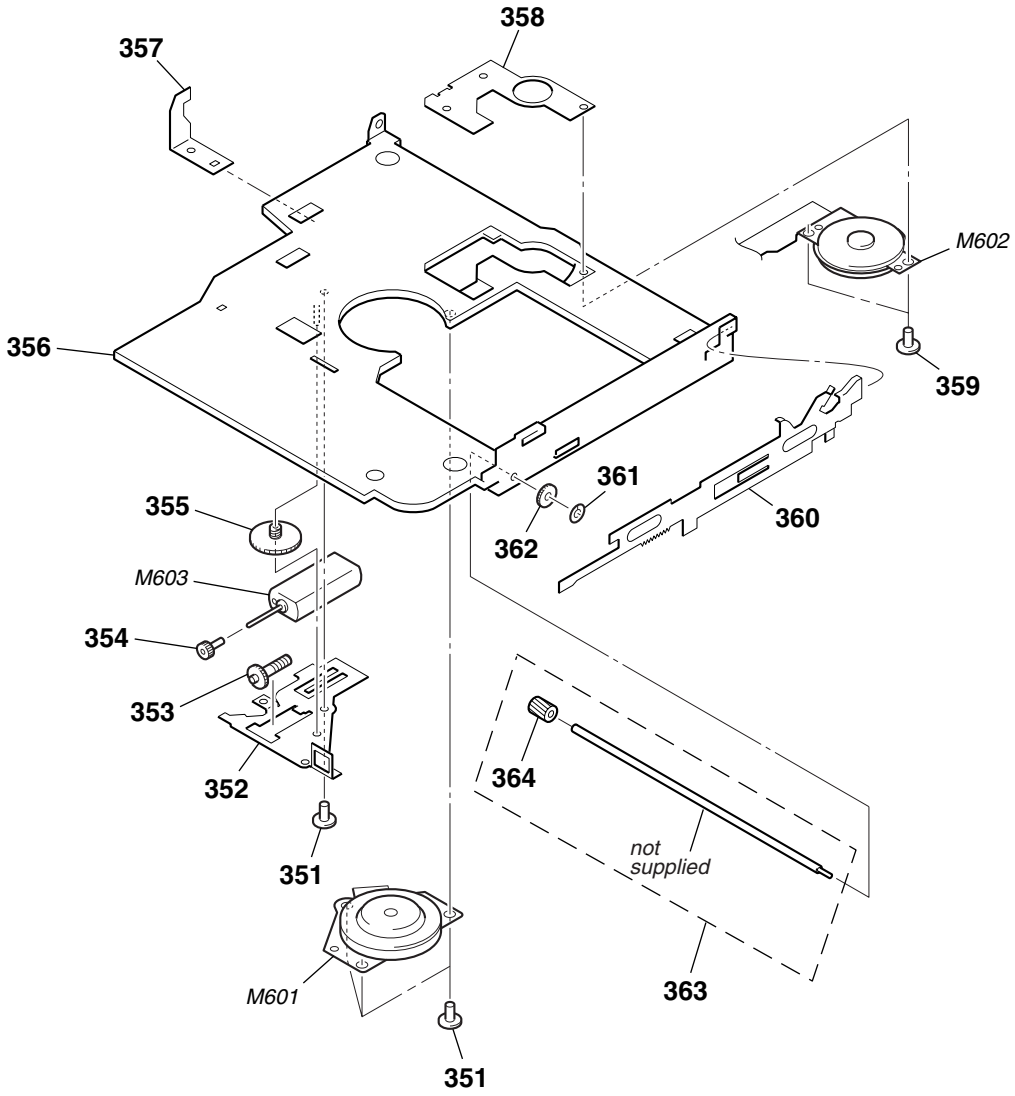
7-4. Mechanism Deck Section-1 (MT-MZN710-177)



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

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

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



Ref. No.	Part No.	Description	Remark
351	3-225-278-12	SCREW, TAPPING	
352	3-235-838-01	COVER, MOTOR	
353	3-235-836-01	GEAR (HB)	
354	3-222-544-01	GEAR (HA)	
355	3-235-835-01	GEAR (HC)	
356	3-235-834-01	CHASSIS	
357	3-235-830-01	PLATE, RATCHET	
358	X-3379-529-1	BASE ASSY, MOTOR	
359	3-225-996-07	SCREW (M1.4)(EG),PRECISION PAN	

Ref. No.	Part No.	Description	Remark
360	3-235-839-01	LEVER (RACK)	
361	3-338-645-31	WASHER (0.8-2.5)	
362	4-222-222-01	GEAR (RACK)	
363	A-3174-089-A	SHAFT BLOCK ASSY, SUB	
364	4-222-218-01	GEAR (HD)	
M601	8-835-744-21	MOTOR, DC SSM18B/C-NP (SPINDLE)	
M602	1-763-727-11	MOTOR, DC (SLED)	
M603	1-763-400-21	MOTOR, DC (OVER WRITE HEAD UP/DOWN)	

MAIN

SECTION 8
ELECTRICAL PARTS LIST

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, -X mean standardized parts, so they may have some difference from the original one.
- CAPACITORS:
  uF: µF
- RESISTORS
  All resistors are in ohms.
  METAL: metal-film resistor
  METAL OXIDE: Metal Oxide-film resistor
  F: nonflammable
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- COILS
  uH: µH
- Abbreviation
  3CED : Spanish, Swedish, Portuguese and Finnish model
  4CED : French, German and Dutch model
  EE : East European model
- Accessories are given in the last of this parts list.
- SEMICONDUCTORS
  In each case, u: µ, for example:
  uA...: µA... , uPA... , µPA... , uPB... , µPB... , uPC... , µPC... , uPD..., µPD...

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

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

Ref. No.	Part No.	Description			Remark
*	A-3178-958-A	MAIN BOARD, COMPLETE (EXCEPT 4CED)			
		**********			
*	A-3331-607-A	MAIN BOARD, COMPLETE (4CED)			
		**********			
		< CAPACITOR >			
C101	1-125-838-11	CERAMIC CHIP	2.2uF	10%	6.3V
C102	1-164-941-11	CERAMIC CHIP	0.0047uF	10.00%	16V
C103	1-164-939-11	CERAMIC CHIP	0.0022uF	10.00%	50V
C105	1-115-467-11	CERAMIC CHIP	0.22uF	10.00%	10V
C110	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C111	1-164-874-11	CERAMIC CHIP	100PF	5.00%	50V
C119	1-126-246-11	ELECT CHIP	220uF	20%	4V
C201	1-125-838-11	CERAMIC CHIP	2.2uF	10%	6.3V
C202	1-164-941-11	CERAMIC CHIP	0.0047uF	10.00%	16V
C203	1-164-939-11	CERAMIC CHIP	0.0022uF	10.00%	50V
C205	1-115-467-11	CERAMIC CHIP	0.22uF	10.00%	10V
C210	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C211	1-164-874-11	CERAMIC CHIP	100PF	5.00%	50V
C219	1-126-246-11	ELECT CHIP	220uF	20%	4V
C301	1-126-205-11	ELECT CHIP	47uF	20%	6.3V
C302	1-107-820-11	CERAMIC CHIP	0.1uF		16V
C303	1-135-259-11	TANTAL. CHIP	10uF	20.00%	6.3V
C304	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C305	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V
C306	1-107-820-11	CERAMIC CHIP	0.1uF		16V
C308	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C309	1-164-937-11	CERAMIC CHIP	0.001uF	10.00%	50V
C311	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C312	1-125-838-11	CERAMIC CHIP	2.2uF	10%	6.3V
C314	1-135-259-11	TANTAL. CHIP	10uF	20.00%	6.3V
C315	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C316	1-135-259-11	TANTAL. CHIP	10uF	20.00%	6.3V
C320	1-135-210-11	TANTALUM CHIP	4.7uF	20%	10V
C321	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C325	1-164-937-11	CERAMIC CHIP	0.001uF	10.00%	50V
C326	1-164-937-11	CERAMIC CHIP	0.001uF	10.00%	50V
C330	1-107-820-11	CERAMIC CHIP	0.1uF		16V
C336	1-164-933-11	CERAMIC CHIP	220PF	10.00%	50V
C501	1-164-874-11	CERAMIC CHIP	100PF	5.00%	50V
C502	1-107-819-11	CERAMIC CHIP	0.022uF	10.00%	16V
C503	1-164-939-11	CERAMIC CHIP	0.0022uF	10.00%	50V
C504	1-164-939-11	CERAMIC CHIP	0.0022uF	10.00%	50V
C505	1-164-943-11	CERAMIC CHIP	0.01uF	10.00%	16V
C506	1-107-819-11	CERAMIC CHIP	0.022uF	10.00%	16V
C507	1-107-819-11	CERAMIC CHIP	0.022uF	10.00%	16V
C508	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C509	1-164-939-11	CERAMIC CHIP	0.0022uF	10.00%	50V
C510	1-164-850-11	CERAMIC CHIP	10PF	0.50PF	50V
C511	1-164-850-11	CERAMIC CHIP	10PF	0.50PF	50V
C512	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C513	1-164-850-11	CERAMIC CHIP	10PF	0.50PF	50V
C514	1-107-819-11	CERAMIC CHIP	0.022uF	10.00%	16V
C515	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C516	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C518	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C519	1-164-941-11	CERAMIC CHIP	0.0047uF	10.00%	16V
C521	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C522	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C523	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C524	1-135-259-11	TANTAL. CHIP	10uF	20.00%	6.3V
C526	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C529	1-165-851-91	TANTAL. CHIP	10uF	20%	6.3V
C530	1-164-939-11	CERAMIC CHIP	0.0022uF	10.00%	50V
C531	1-164-943-11	CERAMIC CHIP	0.01uF	10.00%	16V
C532	1-119-923-81	CERAMIC CHIP	0.047uF	10.00%	10V
C557	1-107-819-11	CERAMIC CHIP	0.022uF	10.00%	16V
C558	1-107-819-11	CERAMIC CHIP	0.022uF	10.00%	16V
C559	1-107-819-11	CERAMIC CHIP	0.022uF	10.00%	16V
C561	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C562	1-119-923-81	CERAMIC CHIP	0.047uF	10.00%	10V
C563	1-119-923-81	CERAMIC CHIP	0.047uF	10.00%	10V
C564	1-119-923-81	CERAMIC CHIP	0.047uF	10.00%	10V
C566	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C567	1-164-943-11	CERAMIC CHIP	0.01uF	10.00%	16V
C568	1-164-943-11	CERAMIC CHIP	0.01uF	10.00%	16V
C569	1-164-943-11	CERAMIC CHIP	0.01uF	10.00%	16V
C601	1-164-943-11	CERAMIC CHIP	0.01uF	10.00%	16V
C602	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C603	1-126-246-11	ELECT CHIP	220uF	20%	4V
C604	1-164-943-11	CERAMIC CHIP	0.01uF	10.00%	16V
C605	1-164-937-11	CERAMIC CHIP	0.001uF	10.00%	50V
C606	1-164-874-11	CERAMIC CHIP	100PF	5.00%	50V
C607	1-164-874-11	CERAMIC CHIP	100PF	5.00%	50V
C608	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C609	1-131-862-91	TANTAL. CHIP	47uF	20%	4V
C610	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C611	1-135-259-11	TANTAL. CHIP	10uF	20.00%	6.3V

Ref. No.	Part No.	Description			Remark
C612	1-135-259-11	TANTAL. CHIP	10uF	20.00%	6.3V
C613	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C614	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C615	1-137-760-91	CAP-CHIP	100PF	5%	100V
C616	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C618	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C619	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C621	1-164-943-11	CERAMIC CHIP	0.01uF	10.00%	16V
C622	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C624	1-119-750-11	TANTAL. CHIP	22uF	20.00%	6.3V
C625	1-131-862-91	TANTAL. CHIP	47uF	20%	4V
C626	1-126-246-11	ELECT CHIP	220uF	20%	4V
C629	1-164-943-11	CERAMIC CHIP	0.01uF	10.00%	16V
C630	1-164-874-11	CERAMIC CHIP	100PF	5.00%	50V
C631	1-126-246-11	ELECT CHIP	220uF	20%	4V
C633	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C634	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C635	1-135-259-11	TANTAL. CHIP	10uF	20.00%	6.3V
C801	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C802	1-164-943-11	CERAMIC CHIP	0.01uF	10.00%	16V
C803	1-164-943-11	CERAMIC CHIP	0.01uF	10.00%	16V
C804	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C805	1-119-923-81	CERAMIC CHIP	0.047uF	10.00%	10V
C806	1-119-923-81	CERAMIC CHIP	0.047uF	10.00%	10V
C807	1-164-850-11	CERAMIC CHIP	10PF	0.50PF	50V
C808	1-164-850-11	CERAMIC CHIP	10PF	0.50PF	50V
C809	1-119-750-11	TANTAL. CHIP	22uF	20.00%	6.3V
C810	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C811	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C812	1-164-943-11	CERAMIC CHIP	0.01uF	10.00%	16V
C813	1-125-891-11	CERAMIC CHIP	0.47uF	10.00%	10V
C814	1-164-935-11	CERAMIC CHIP	470PF	10.00%	50V
C815	1-110-569-11	TANTAL. CHIP	47uF	20.00%	6.3V
C816	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C817	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C818	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C819	1-107-819-11	CERAMIC CHIP	0.022uF	10.00%	16V
C820	1-164-941-11	CERAMIC CHIP	0.0047uF	10.00%	16V
C821	1-119-750-11	TANTAL. CHIP	22uF	20.00%	6.3V
C822	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C823	1-107-820-11	CERAMIC CHIP	0.1uF		16V
C824	1-119-923-81	CERAMIC CHIP	0.047uF	10.00%	10V
C826	1-115-467-11	CERAMIC CHIP	0.22uF	10.00%	10V
C830	1-135-259-11	TANTAL. CHIP	10uF	20.00%	6.3V
C832	1-107-820-11	CERAMIC CHIP	0.1uF		16V
C833	1-164-874-11	CERAMIC CHIP	100PF	5.00%	50V
C835	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C840	1-164-937-11	CERAMIC CHIP	0.001uF	10.00%	50V
C843	1-164-943-11	CERAMIC CHIP	0.01uF	10.00%	16V
C844	1-164-943-11	CERAMIC CHIP	0.01uF	10.00%	16V
C901	1-110-569-11	TANTAL. CHIP	47uF	20.00%	6.3V
C903	1-128-964-91	TANTAL. CHIP	100uF	20%	6.3V
C904	1-119-750-11	TANTAL. CHIP	22uF	20.00%	6.3V
C905	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C906	1-164-943-11	CERAMIC CHIP	0.01uF	10.00%	16V
C907	1-125-889-91	CERAMIC CHIP	2.2uF	10%	10V
C908	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C911	1-135-259-11	TANTAL. CHIP	10uF	20.00%	6.3V

Ref. No.	Part No.	Description			Remark
C912	1-164-943-11	CERAMIC CHIP	0.01uF	10.00%	16V
C913	1-164-941-11	CERAMIC CHIP	0.0047uF	10.00%	16V
C914	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C915	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C917	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C919	1-135-259-11	TANTAL. CHIP	10uF	20.00%	6.3V
C920	1-135-259-11	TANTAL. CHIP	10uF	20.00%	6.3V
C921	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C922	1-164-937-11	CERAMIC CHIP	0.001uF	10.00%	50V
C926	1-164-937-11	CERAMIC CHIP	0.001uF	10.00%	50V
C927	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C928	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C932	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C933	1-119-750-11	TANTAL. CHIP	22uF	20.00%	6.3V
C935	1-164-943-11	CERAMIC CHIP	0.01uF	10.00%	16V
		< CONNECTOR >			
CN501	1-573-360-21	CONNECTOR, FFC/FPC 20P			
CN502	1-573-350-11	CONNECTOR, FFC/FPC 10P			
CN801	1-573-354-11	CONNECTOR, FFC/FPC 14P			
		< DIODE >			
D101	8-719-056-72	DIODE 02DZ2.4-Z(TPH3)			
D201	8-719-056-72	DIODE 02DZ2.4-Z(TPH3)			
D601	8-719-081-33	DIODE MA2YD1500LS0			
D602	8-719-081-33	DIODE MA2YD1500LS0			
D603	8-719-081-34	DIODE RB160M-30TR			
D606	8-719-081-35	DIODE MA2YD1700LS0			
D607	8-719-081-33	DIODE MA2YD1500LS0			
D608	8-719-081-35	DIODE MA2YD1700LS0			
D801	8-719-017-58	DIODE MA8068-TX			
D901	8-719-081-33	DIODE MA2YD1500LS0			
D902	8-719-081-33	DIODE MA2YD1500LS0			
D903	8-719-420-51	DIODE MA729-TX			
D904	8-719-404-50	DIODE MA111-TX			
		< FERRITE BEAD >			
FB301	1-216-864-11	METAL CHIP	0	5%	1/10W
FB302	1-216-864-11	METAL CHIP	0	5%	1/10W
FB303	1-216-864-11	METAL CHIP	0	5%	1/10W
FB304	1-216-864-11	METAL CHIP	0	5%	1/10W
FB801	1-216-864-11	METAL CHIP	0	5%	1/10W
FB802	1-216-864-11	METAL CHIP	0	5%	1/10W
FB803	1-216-864-11	METAL CHIP	0	5%	1/10W
FB805	1-218-990-11	SHORT CHIP	0		
		< IC >			
IC301	8-759-694-88	IC AK5354VT-E2			
IC302	8-759-598-15	IC TA2131FL(EL)			
IC501	6-701-391-01	IC SN761057ADBT			
IC551	6-702-786-01	IC SC111258EPR2			
IC601	6-702-782-01	IC XPC18A22AEPR2			
@ IC801	8-753-000-71	IC CXD2674-221GA			
IC804	8-759-445-94	IC AK6480AM-E2			
IC805	8-759-196-97	IC TC7SH32FU-TE85R			

@ Replacement of CXD2674-221GA (IC801) used in this set requires a special tool.
Therefore, it cannot be replaced.

MAIN

Ref. No.	Part No.	Description			Remark
IC901	6-702-783-01	IC XPC18A32EPR2			
IC902	6-701-978-01	IC XC61CN0802NR			
		< JACK >			
J301	1-815-950-12	JACK (LINE IN (OPTICAL))			
J302	1-794-084-31	JACK (🎧)			
J601	1-785-383-11	JACK,DC(POLARITY UNIFIED TYPE) (DC IN 3V)			
		< COIL >			
L301	1-414-398-11	INDUCTOR	10uH		
L302	1-216-296-11	SHORT CHIP	0		
L501	1-414-398-11	INDUCTOR	10uH		
L502	1-414-398-11	INDUCTOR	10uH		
L601	1-428-912-21	INDUCTOR	10uH		
L602	1-414-398-11	INDUCTOR	10uH		
L801	1-414-398-11	INDUCTOR	10uH		
L802	1-414-398-11	INDUCTOR	10uH		
L901	1-419-953-21	INDUCTOR	100uH		
L902	1-419-949-21	INDUCTOR	22uH		
L904	1-414-398-11	INDUCTOR	10uH		
L905	1-469-426-21	INDUCTOR	100uH		
L906	1-469-367-21	INDUCTOR	10uH		
		< TRANSISTOR >			
Q301	8-729-037-52	TRANSISTOR	2SC4738F-Y/GR(TPL3)		
Q302	8-729-051-23	TRANSISTOR	2SA2018TL		
Q501	8-729-922-10	TRANSISTOR	2SA1577-T106-QR		
Q601	8-729-046-45	TRANSISTOR	SI2302DS-T1		
Q603	8-729-053-71	TRANSISTOR	TS8K1TB		
Q604	8-729-046-43	TRANSISTOR	HAT2051T-EL		
Q605	8-729-046-42	TRANSISTOR	HAT2050T-EL		
Q607	8-729-042-81	TRANSISTOR	FZT788BTC		
Q801	8-729-429-44	TRANSISTOR	XP1501-TXE		
Q901	8-729-034-59	TRANSISTOR	2SA1745-6.7-TL		
Q902	8-729-037-92	TRANSISTOR	2SD2216J-R(TX).SO		
Q904	8-729-037-92	TRANSISTOR	2SD2216J-R(TX).SO		
Q905	8-729-037-92	TRANSISTOR	2SD2216J-R(TX).SO		
		< RESISTOR >			
R101	1-218-969-11	RES-CHIP	22K	5%	1/16W
R103	1-218-973-11	RES-CHIP	47K	5%	1/16W
R104	1-218-965-11	RES-CHIP	10K	5%	1/16W (EXCEPT 4CED)
R104	1-218-961-11	RES-CHIP	4.7K	5%	1/16W (4CED)
R105	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R106	1-208-635-11	RES-CHIP	10	5%	1/16W
R107	1-218-965-11	RES-CHIP	10K	5%	1/16W
R108	1-218-990-11	SHORT CHIP	0		
R111	1-208-715-11	METAL CHIP	22K	0.5%	1/16W
R112	1-208-927-11	METAL CHIP	47K	0.5%	1/16W
R201	1-218-969-11	RES-CHIP	22K	5%	1/16W
R203	1-218-973-11	RES-CHIP	47K	5%	1/16W
R204	1-218-965-11	RES-CHIP	10K	5%	1/16W (EXCEPT 4CED)
R204	1-218-961-11	RES-CHIP	4.7K	5%	1/16W (4CED)
R205	1-218-961-11	RES-CHIP	4.7K	5%	1/16W

Ref. No.	Part No.	Description			Remark
R206	1-208-635-11	RES-CHIP	10	5%	1/16W
R207	1-218-965-11	RES-CHIP	10K	5%	1/16W
R208	1-218-990-11	SHORT CHIP	0		
R211	1-208-715-11	METAL CHIP	22K	0.5%	1/16W
R212	1-208-927-11	METAL CHIP	47K	0.5%	1/16W
R302	1-218-953-11	RES-CHIP	1K	5%	1/16W
R303	1-218-937-11	RES-CHIP	47	5%	1/16W
R304	1-218-953-11	RES-CHIP	1K	5%	1/16W
R305	1-218-953-11	RES-CHIP	1K	5%	1/16W
R306	1-218-969-11	RES-CHIP	22K	5%	1/16W
R307	1-218-941-81	RES-CHIP	100	5%	1/16W
R309	1-218-981-11	RES-CHIP	220K	5%	1/16W
R311	1-218-989-11	RES-CHIP	1M	5%	1/16W
R315	1-218-965-11	RES-CHIP	10K	5%	1/16W
R317	1-218-953-11	RES-CHIP	1K	5%	1/16W
R318	1-218-953-11	RES-CHIP	1K	5%	1/16W
R320	1-218-990-11	SHORT CHIP	0		
R321	1-218-965-11	RES-CHIP	10K	5%	1/16W
R322	1-218-977-11	RES-CHIP	100K	5%	1/16W
R501	1-218-973-11	RES-CHIP	47K	5%	1/16W
R502	1-218-981-11	RES-CHIP	220K	5%	1/16W
R503	1-218-985-11	RES-CHIP	470K	5%	1/16W
R505	1-208-707-11	METAL CHIP	10K	0.5%	1/16W
R507	1-218-953-11	RES-CHIP	1K	5%	1/16W
R517	1-208-683-11	METAL CHIP	1K	0.5%	1/16W
R519	1-218-977-11	RES-CHIP	100K	5%	1/16W
R521	1-218-446-11	METAL CHIP	1	5%	1/10W
R522	1-218-446-11	METAL CHIP	1	5%	1/10W
R551	1-218-965-11	RES-CHIP	10K	5%	1/16W
R552	1-218-965-11	RES-CHIP	10K	5%	1/16W
R553	1-218-965-11	RES-CHIP	10K	5%	1/16W
R560	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R561	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R562	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R601	1-218-989-11	RES-CHIP	1M	5%	1/16W
R602	1-218-981-11	RES-CHIP	220K	5%	1/16W
R603	1-218-977-11	RES-CHIP	100K	5%	1/16W
R607	1-218-945-11	RES-CHIP	220	5%	1/16W
R608	1-218-981-11	RES-CHIP	220K	5%	1/16W
R609	1-219-724-11	METAL CHIP	1	1%	1/4W
R610	1-218-990-11	SHORT CHIP	0		
R611	1-218-990-11	SHORT CHIP	0		
R612	1-218-985-11	RES-CHIP	470K	5%	1/16W
R613	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R614	1-218-965-11	RES-CHIP	10K	5%	1/16W
R619	1-218-990-11	SHORT CHIP	0		
R620	1-218-965-11	RES-CHIP	10K	5%	1/16W
R621	1-218-965-11	RES-CHIP	10K	5%	1/16W
R622	1-216-797-11	METAL CHIP	10	5%	1/10W
R623	1-218-969-11	RES-CHIP	22K	5%	1/16W
R627	1-218-977-11	RES-CHIP	100K	5%	1/16W
R801	1-218-981-11	RES-CHIP	220K	5%	1/16W
R802	1-208-699-11	METAL CHIP	4.7K	0.5%	1/16W
R803	1-208-699-11	METAL CHIP	4.7K	0.5%	1/16W
R804	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R805	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R806	1-218-949-11	RES-CHIP	470	5%	1/16W
R807	1-208-635-11	RES-CHIP	10	5%	1/16W

Ref. No.	Part No.	Description			Remark
R808	1-218-965-11	RES-CHIP	10K	5%	1/16W
R809	1-218-977-11	RES-CHIP	100K	5%	1/16W
R810	1-208-715-11	METAL CHIP	22K	0.5%	1/16W
R811	1-218-990-11	SHORT CHIP	0		
R812	1-218-985-11	METAL CHIP	470K	0.5%	1/16W
R813	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R814	1-208-635-11	RES-CHIP	10	5%	1/16W
R817	1-218-977-11	RES-CHIP	100K	5%	1/16W
R821	1-218-981-11	RES-CHIP	220K	5%	1/16W
R822	1-218-953-11	RES-CHIP	1K	5%	1/16W
R823	1-218-945-11	RES-CHIP	220	5%	1/16W
R824	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R825	1-220-804-11	RES-CHIP	2.2M	5%	1/16W
R828	1-208-691-11	METAL CHIP	2.2K	0.5%	1/16W
R829	1-208-699-11	METAL CHIP	4.7K	0.5%	1/16W
R830	1-218-989-11	RES-CHIP	1M	5%	1/16W
R831	1-218-990-11	SHORT CHIP	0		
R832	1-218-990-11	SHORT CHIP	0		
R834	1-218-990-11	SHORT CHIP	0		
R836	1-218-953-11	RES-CHIP	1K	5%	1/16W
R841	1-216-809-11	METAL CHIP	100	5%	1/10W
R844	1-218-990-11	SHORT CHIP	0		
R848	1-218-953-11	RES-CHIP	1K	5%	1/16W
R850	1-218-990-11	SHORT CHIP	0		
R852	1-218-990-11	SHORT CHIP	0		
R853	1-218-990-11	SHORT CHIP	0		
R856	1-218-953-11	RES-CHIP	1K	5%	1/16W
R857	1-218-953-11	RES-CHIP	1K	5%	1/16W
R858	1-208-943-11	METAL CHIP	220K	0.5%	1/16W
R859	1-218-953-11	RES-CHIP	1K	5%	1/16W
R860	1-218-989-11	RES-CHIP	1M	5%	1/16W
R862	1-218-985-11	RES-CHIP	470K	5%	1/16W
R863	1-218-945-11	RES-CHIP	220	5%	1/16W
R864	1-218-977-11	RES-CHIP	100K	5%	1/16W
R865	1-218-977-11	RES-CHIP	100K	5%	1/16W
R866	1-218-977-11	RES-CHIP	100K	5%	1/16W
R902	1-218-985-11	RES-CHIP	470K	5%	1/16W
R903	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R905	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R906	1-218-990-11	SHORT CHIP	0		
R907	1-218-989-11	RES-CHIP	1M	5%	1/16W
R908	1-218-977-11	RES-CHIP	100K	5%	1/16W
R909	1-218-965-11	RES-CHIP	10K	5%	1/16W
R910	1-218-965-11	RES-CHIP	10K	5%	1/16W
R911	1-218-949-11	RES-CHIP	470	5%	1/16W
R912	1-208-707-11	METAL CHIP	10K	0.5%	1/16W
R915	1-218-941-81	RES-CHIP	100	5%	1/16W
R916	1-208-927-11	METAL CHIP	47K	0.5%	1/16W
R917	1-218-990-11	SHORT CHIP	0		
R920	1-208-707-11	METAL CHIP	10K	0.5%	1/16W
R921	1-218-985-11	RES-CHIP	470K	5%	1/16W
R922	1-218-985-11	RES-CHIP	470K	5%	1/16W
R923	1-218-989-11	RES-CHIP	1M	5%	1/16W
R925	1-218-977-11	RES-CHIP	100K	5%	1/16W
R926	1-208-699-11	METAL CHIP	4.7K	0.5%	1/16W
R927	1-218-985-11	RES-CHIP	470K	5%	1/16W
R928	1-218-977-11	RES-CHIP	100K	5%	1/16W
R936	1-208-715-11	METAL CHIP	22K	0.5%	1/16W
R941	1-218-969-11	RES-CHIP	22K	5%	1/16W
R946	1-208-707-11	METAL CHIP	10K	0.5%	1/16W
R947	1-208-691-11	METAL CHIP	2.2K	0.5%	1/16W
R948	1-208-935-11	METAL CHIP	100K	0.5%	1/16W
R949	1-208-683-11	METAL CHIP	1K	0.5%	1/16W
R951	1-218-981-11	RES-CHIP	220K	5%	1/16W
R953	1-218-990-11	SHORT CHIP	0		
		< SWITCH >			
S801	1-762-078-11	SWITCH, SLIDE (HOLD ➘)			
S803	1-771-867-11	SWITCH, PUSH (1 KEY)			
S805	1-762-946-12	SWITCH, PUSH (1 KEY)			
S806	1-762-805-21	SWITCH, PUSH (1 KEY)			
		< TRANSFORMER >			
T601	1-416-405-21	FERRITE	0UH		
		< THERMISTOR >			
TH601	1-804-616-21	THERMISTOR, POSITIVE			
		< VIBRATOR >			
X801	1-795-024-11	VIBRATOR, CRYSTAL 45.1584MHz			

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		MISCELLANEOUS
		**********
6	1-804-833-11	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)
M603	1-763-400-21	MOTOR, DC (OVER WRITE HEAD UP/DOWN)
		ACCESSORIES
		**********
⚠	1-477-565-11	ADAPTOR, AC (AC-ES305K) (3CED,4CED,EE)
⚠	1-477-566-11	ADAPTOR, AC (AC-ES305K) (UK)
	1-816-206-11	CONNECTOR, LIGHT
	3-247-012-11	MANUAL, INSTRUCTION (ENGLISH)
	3-247-012-21	MANUAL, INSTRUCTION (FRENCH) (4CED)
	3-247-012-31	MANUAL, INSTRUCTION (GERMAN) (4CED)
	3-247-012-41	MANUAL, INSTRUCTION (SPANISH) (3CED)
	3-247-012-51	MANUAL, INSTRUCTION (DUTCH) (4CED)
	3-247-012-61	MANUAL, INSTRUCTION (SWEDISH) (3CED)
	3-247-012-71	MANUAL, INSTRUCTION (ITALIAN) (4CED)
	3-247-012-81	MANUAL, INSTRUCTION (PORTUGUESE) (3CED)
	3-247-012-91	MANUAL, INSTRUCTION (FINNISH) (3CED)
	3-247-014-11	MANUAL, INSTRUCTION (CZECH) (EE)
	3-247-014-21	MANUAL, INSTRUCTION (HUNGARIAN) (EE)
	3-247-014-31	MANUAL, INSTRUCTION (POLISH) (EE)
	3-247-014-41	MANUAL, INSTRUCTION (SLOVAK) (EE)
	3-247-014-51	MANUAL, INSTRUCTION (RUSSIAN) (EE)
	8-954-008-92	RECEIVER, EAR MDR-E808LP/C SET

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

REVISION HISTORY

Clicking the version allows you to jump to the revised page.
Also, clicking the version at the upper on the revised page allows you to jump to the next revised page.

Ver.	Date	Description of Revision
1.0	2002.11	New