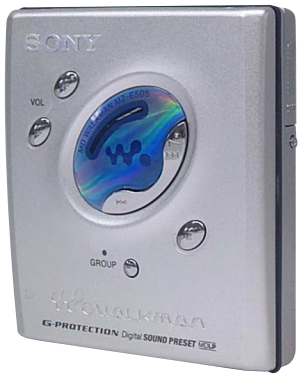
MZ-E505

SERVICE MANUAL

E Model

Ver 1.0 2002. 02



US and foreign patents licensed from Dolby Laboratories.

Model Name Using Similar Mechanism	NEW
Mechanism Type	MT-MZE505-176
Optical Pick-up Name	LCX-4E

SPECIFICATIONS

Audio playing system
MiniDisc digital audio system
Laser diode properties
Material: GaAlAs
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 objective lens surface on the optical pick-up block with 7 mm aperture.
Revolutions
Approx. 300 rpm to 2,700 rpm
Error correction
ACIRC (Advanced Cross Interleave Reed Solomon Code)
Sampling frequency
44.1 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 limits
Outputs
Headphones/earphones: stereo mini-jack, maximum output level
5 mW + 5 mW load impedance 16 Ω
Power requirements
Player:
Nickel metal hydride rechargeable battery
One NH-14WM(A) (supplied): 1.2V, 1,350 mAh
One LR6 (size AA) battery (not supplied)
Battery charging stand:
AC power adaptor DC 3V, AC 100V, 50/60Hz
Dimensions
Approx. 74.5 × 81.0 × 17.6 mm (w/h/d)
(3 × 3 1/4 × 23/32 in.)
(not including projecting parts and controls)
Mass
Approx. 73 g (2.6 oz) (the player only)
Supplied accessories
Headphones/earphones (1)
Battery charging stand (1)
AC power adaptor (for the supplied battery charging stand) (1)
Rechargeable battery (1)
Rechargeable battery carrying case (1)
Dry battery case (1)
Carrying pouch (1)

– Continued on next page –

PORTABLE MINIDISC PLAYER

9-873-487-01
2002B0500-1

Sony Corporation
Personal Audio Company
Published by Sony Engineering Corporation

SONY®

Battery life [1]

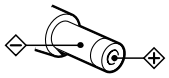
(Unit: Approx. hours) (JEITA [2]***)***

Batteries	SP Stereo (normal)	LP2 Stereo	LP4 Stereo
Ni-MH rechargeable battery NH-14WM(A) [3]	33	37	43
LR6 (SG) Sony Alkaline dry battery [4]	49	54	64
LR6 (SG) [4] and NH-14WM(A) [3]	87	97	120

[1] Measured with the power save function on (see "Preserving battery power") is on.
[2] Measured in accordance with the JEITA (Japan Electronics and Information Technology Industries Association) standard (using a Sony MDW-series Mini-disc).
[3] With a fully charged battery
[4] When using a Sony LR6 (SG) "STAMINA" alkaline dry battery (produced in Japan).

On the AC power adaptor (for the supplied battery charging stand)

- For use in your house: Use the supplied AC power adaptor. Do not use any other AC power adaptor since it may cause the player to malfunction.



Polarity of the plug

Design and specifications are subject to change without notice.

TABLE OF CONTENTS

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.

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

SECTION 1
SERVICING NOTES

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

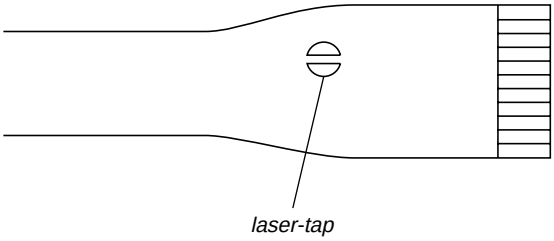
The laser diode in the optical pick-up block may suffer electrostatic break-down because of the potential difference generated by the charged electrostatic load, etc. on clothing and the human body.
During repair, pay attention to electrostatic break-down and also use the procedure in the printed matter which is included in the repair parts.
The flexible board is easily damaged and should be handled with care.

NOTES ON LASER DIODE EMISSION CHECK

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

NOTES ON HANDLING THE OPTICAL PICK-UP BLOCK (LCX-4E)

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.



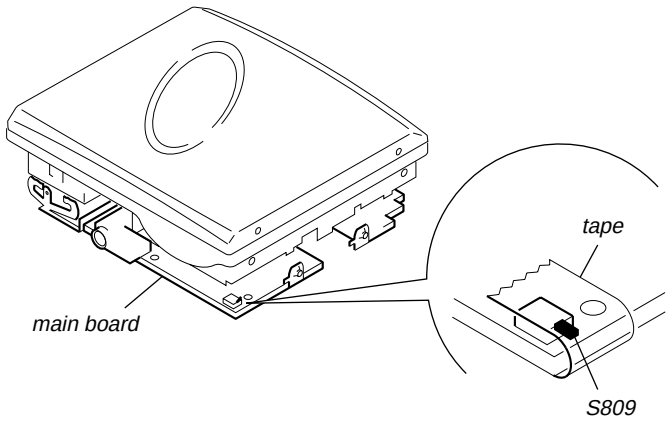
OPTICAL PICK-UP FLEXIBLE BOARD

Notes on chip component replacement

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

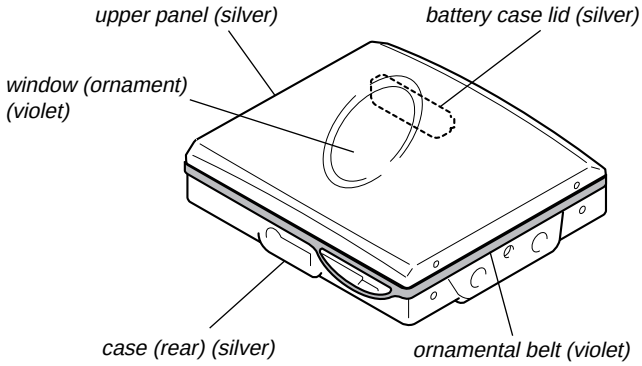
Flexible Circuit Board Repairing

- Keep the temperature of the soldering iron around 270 ˚C during repairing.
- Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
- Be careful not to apply force on the conductor when soldering or unsoldering.
- 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 (S809 on MAIN board) with a tape in advance.



ABOUT VIOLET-COLOR-TYPE

Not a whole set of the violet-color-type is colored violet, but only the ornamental belt and window (ornament) is violet, and the upper panel, the case (rear) and the battery case lid are colored silver.



COLOR VARIATION

	SILVER	BLUE	PINK	VIOLET
E	○	–	–	–
Hong Kong	○	○	○	○

- Replacement of CXD2671-210GA (IC601) used in this set requires a special tool.

UNLEADED SOLDER

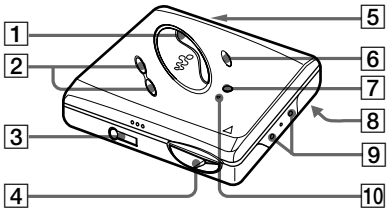
Boards requiring use of unleaded solder are printed with the lead-free mark (LF) indicating the solder contains no lead.
(Caution: Some printed circuit boards may not come printed with the lead free mark due to their particular size)

SECTION 2
GENERAL

This section is extracted from instruction manual.

Parts and controls

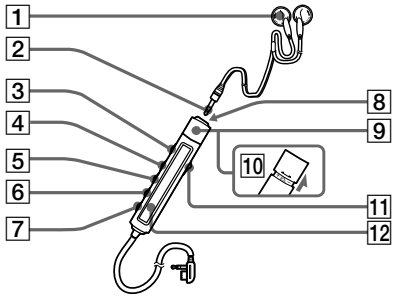
The Player



1 ⏮ / ▶▶⏭* button
2 VOL +*/– button
3 🎧 (earphones) jack
4 OPEN switch
5 Battery compartment
6 GROUP button
7 ■ button
8 HOLD (Locking the control) switch
9 Terminals for charging stand/ dry battery case (at the bottom)
10 3 Color Info-LED

* The ▶▶⏭ and VOL + buttons have tactile dots.

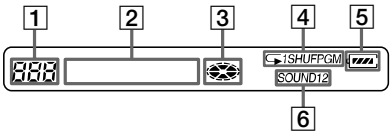
The earphones with a remote control



1 Headphones/earphones
2 Stereo mini plug
3 ❚❚ (pause) button
4 SOUND button
5 RPT/ENT (Repeat/Enter) button
6 PLAYMODE button
7 DISPLAY button
8 ■ (stop) button**
9 Control (⏮ / ▶▶⏭)
10 Control VOL +/–
Pull and turn to adjust the volume.
11 HOLD (Locking the control) switch
12 Display window

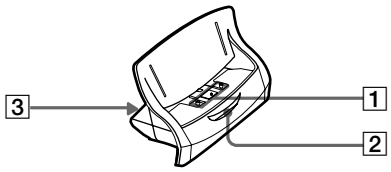
** The stop button also operates as the enter button, depending on the function.

The display window of the remote control



1 Track number display
2 Charactor information display
3 Disc indication
4 Play mode indication
5 Battery level indication
6 SOUND indication

The battery charging stand

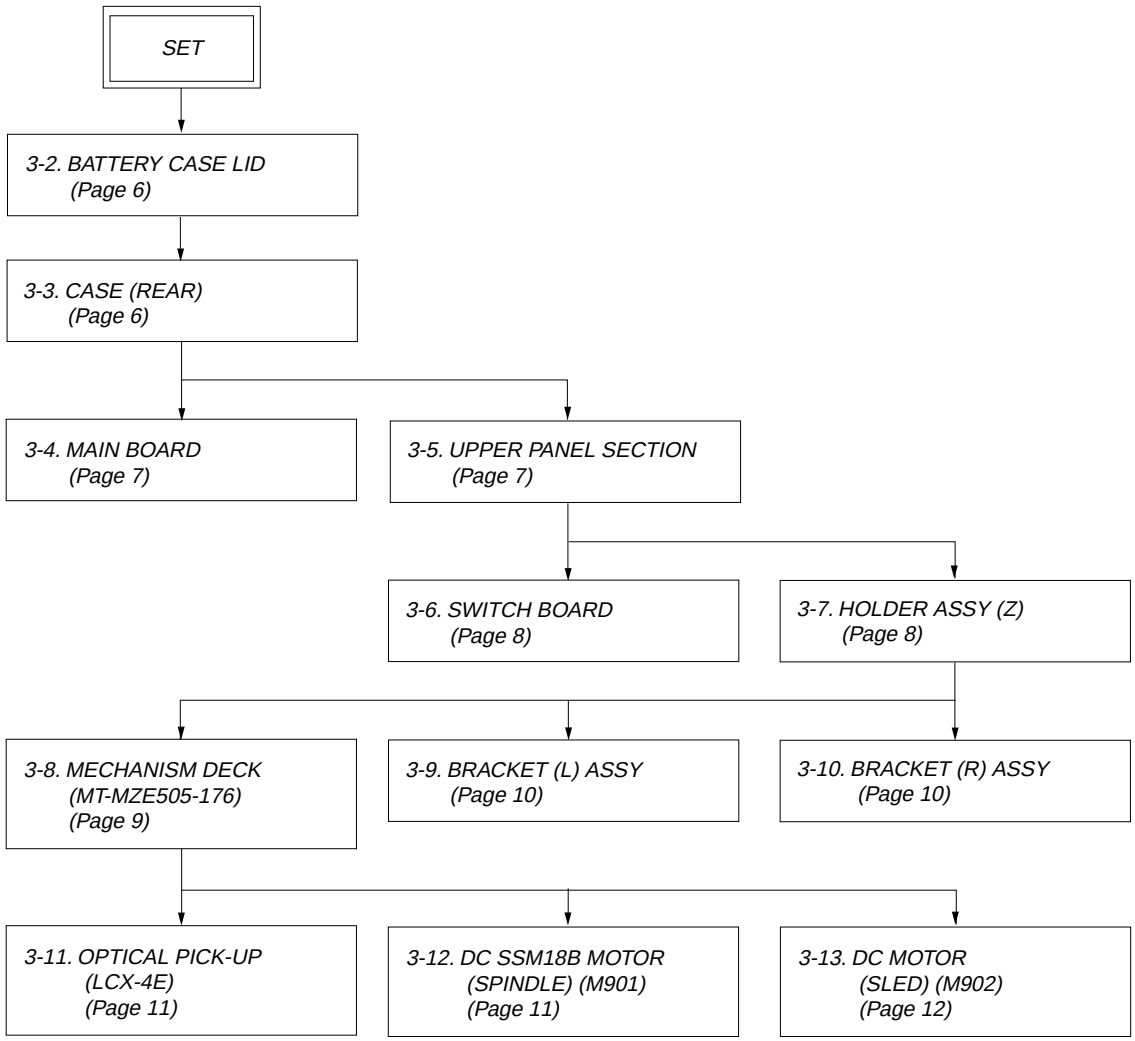


1 Terminals for charging
2 CHARGE lamp
3 DC IN 3V jack (at the rear)

SECTION 3
DISASSEMBLY

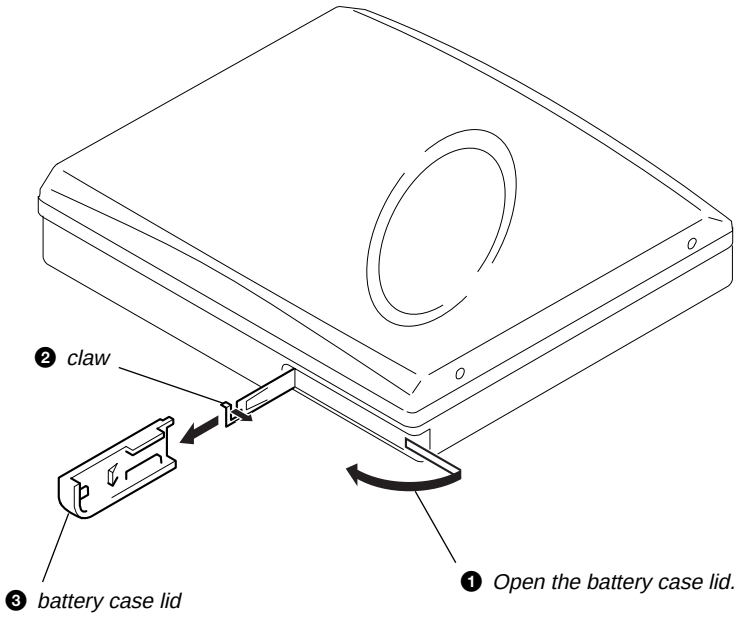
• This set can be disassembled in the order shown below.

3-1. DISASSEMBLY FLOW

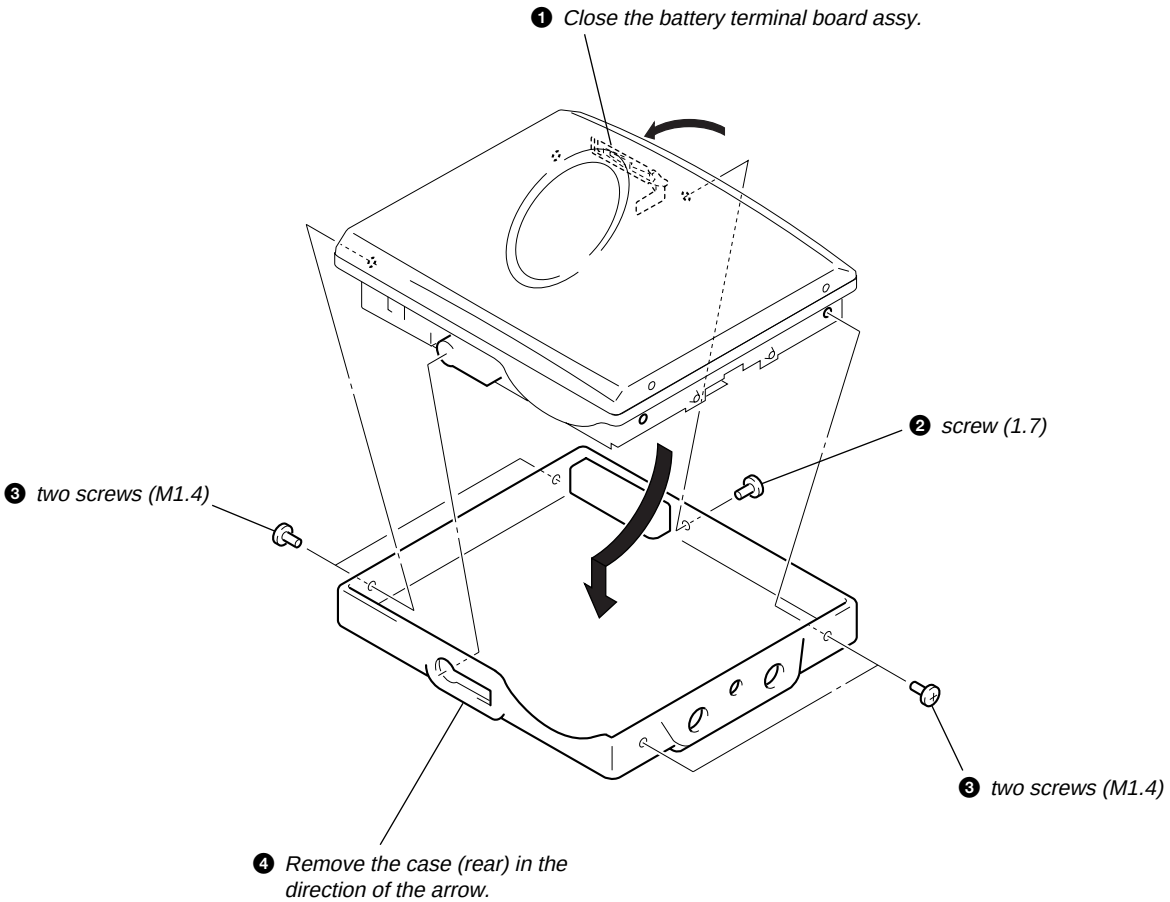


Note: Follow the disassembly procedure in the numerical order given.

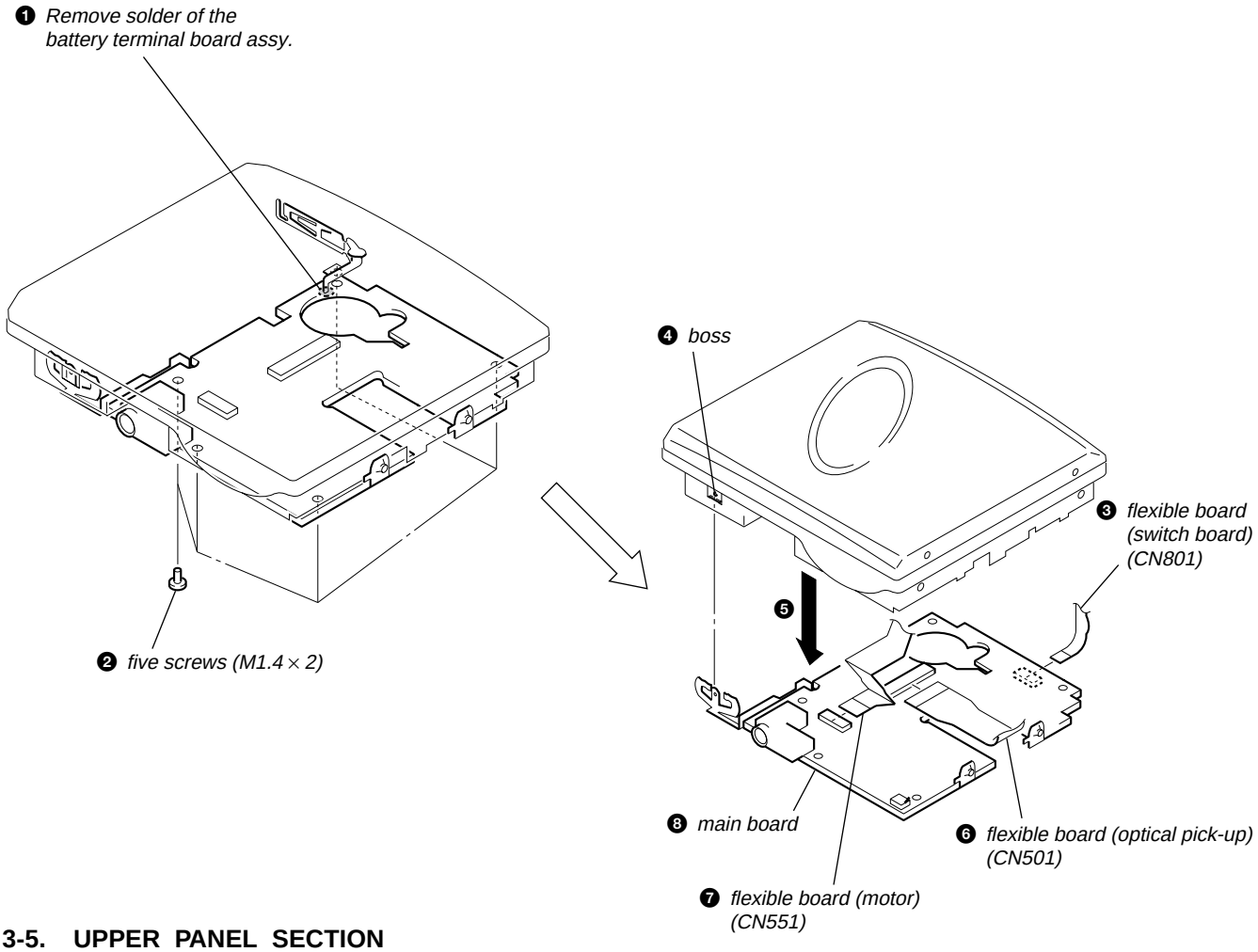
3-2. BATTERY CASE LID



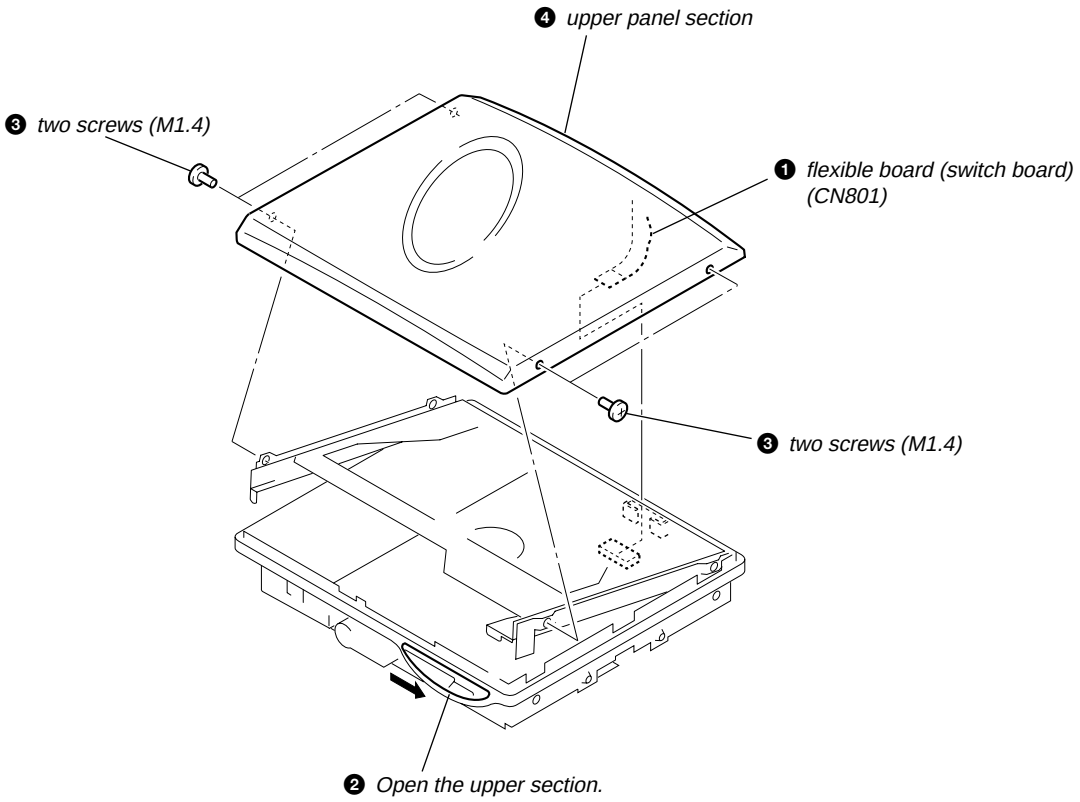
3-3. CASE (REAR)



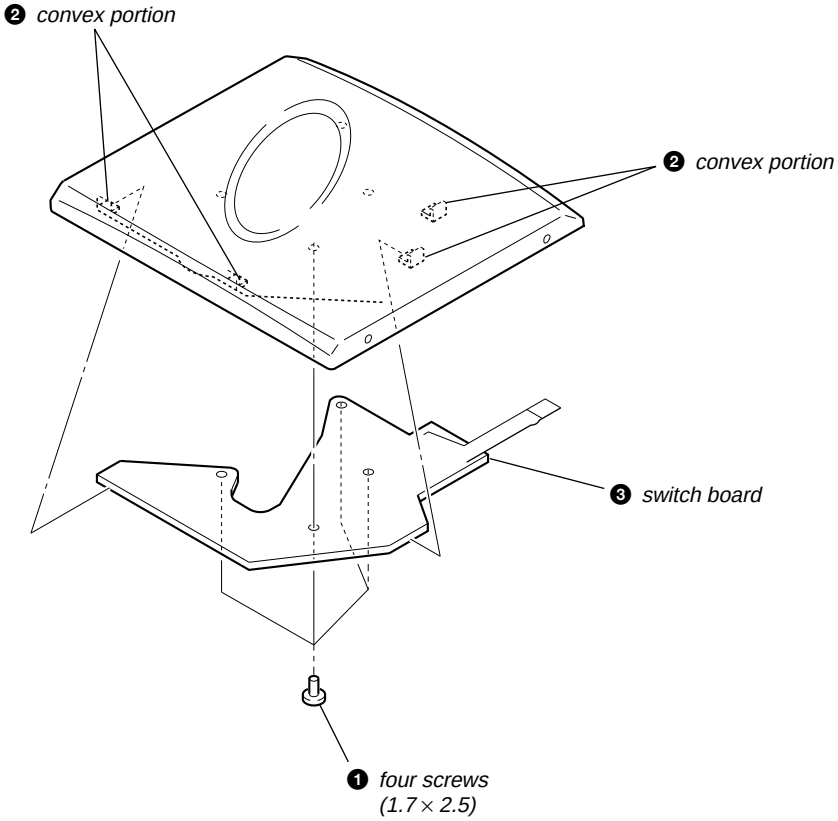
3-4. MAIN BOARD



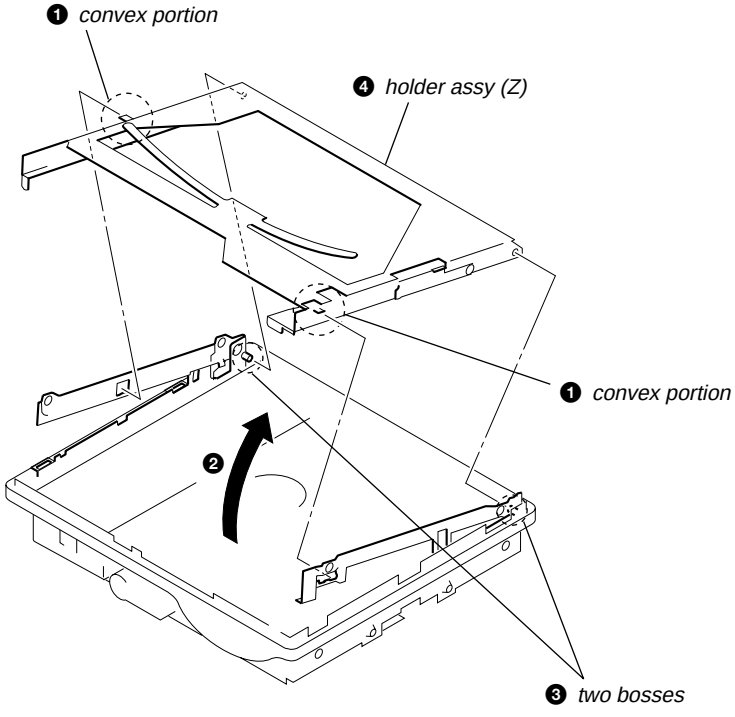
3-5. UPPER PANEL SECTION



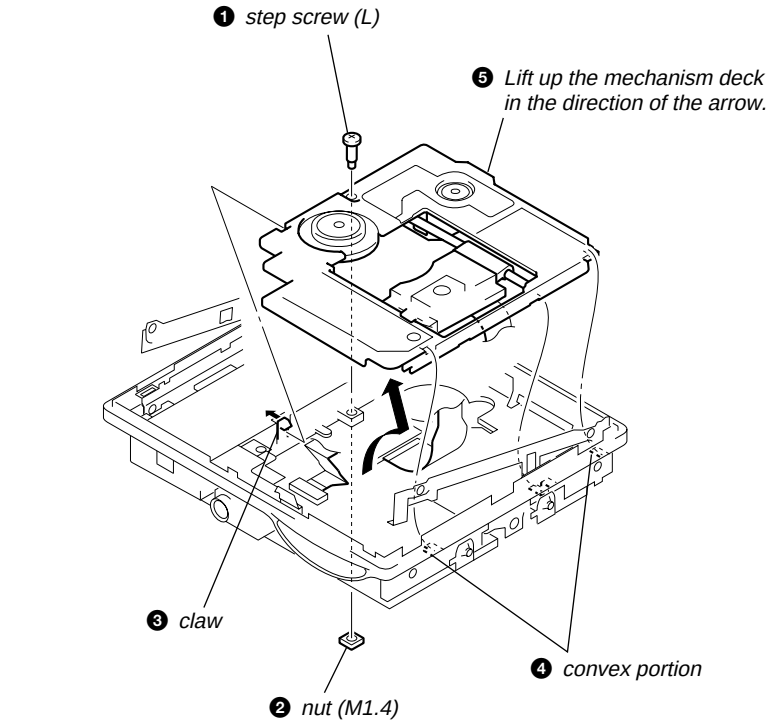
3-6. SWITCH BOARD

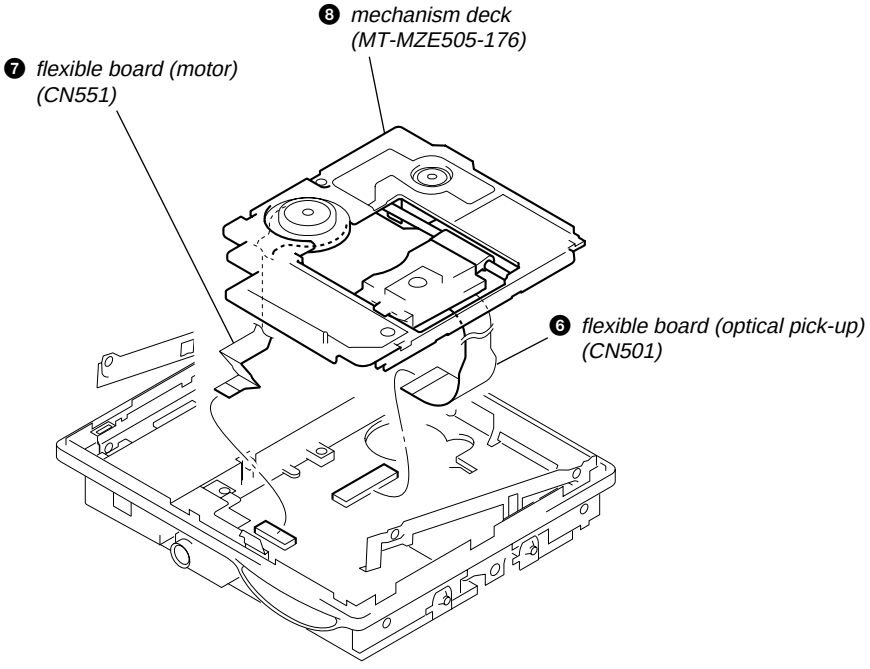


3-7. HOLDER ASSY (Z)

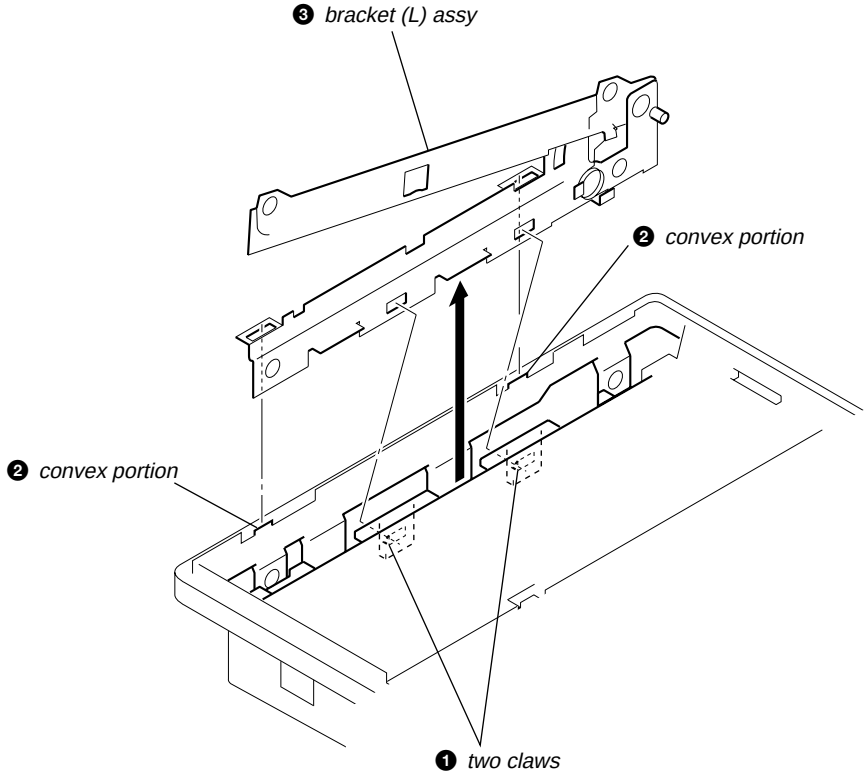


3-8. MECHANISM DECK (MT-MZE505-176)

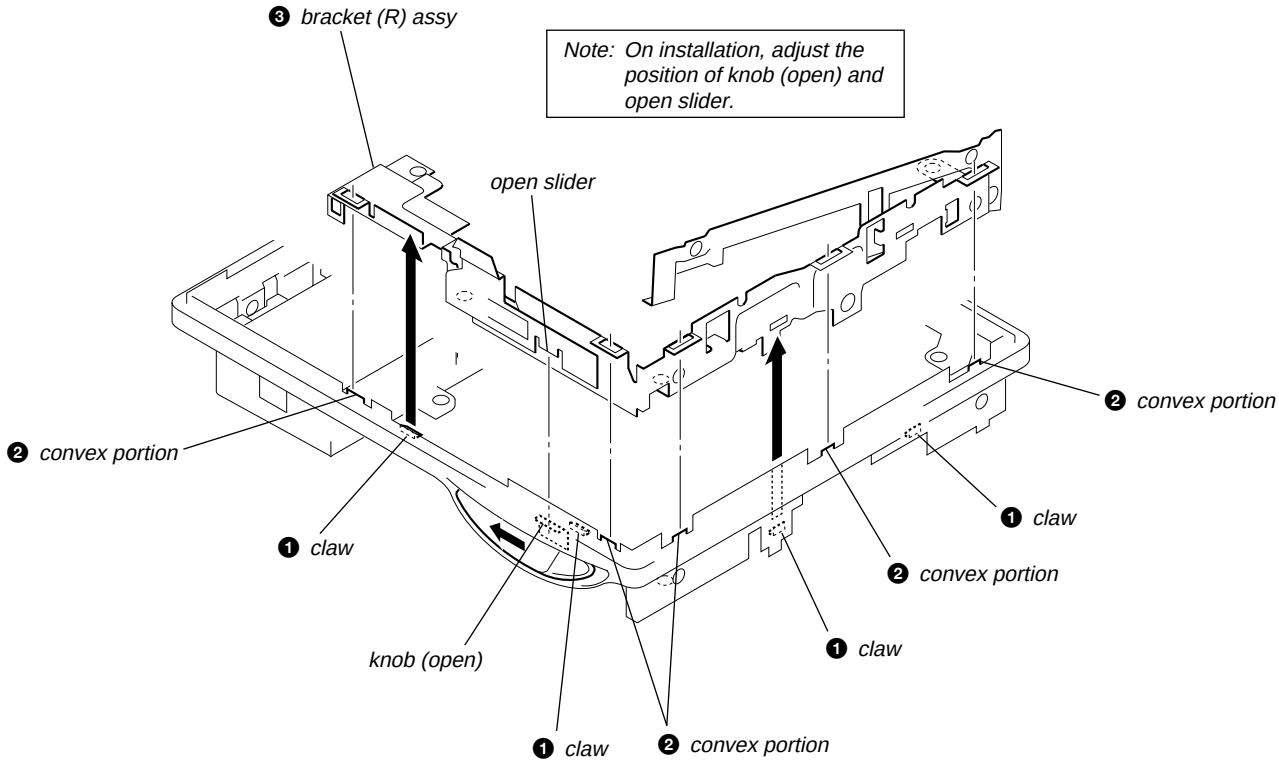




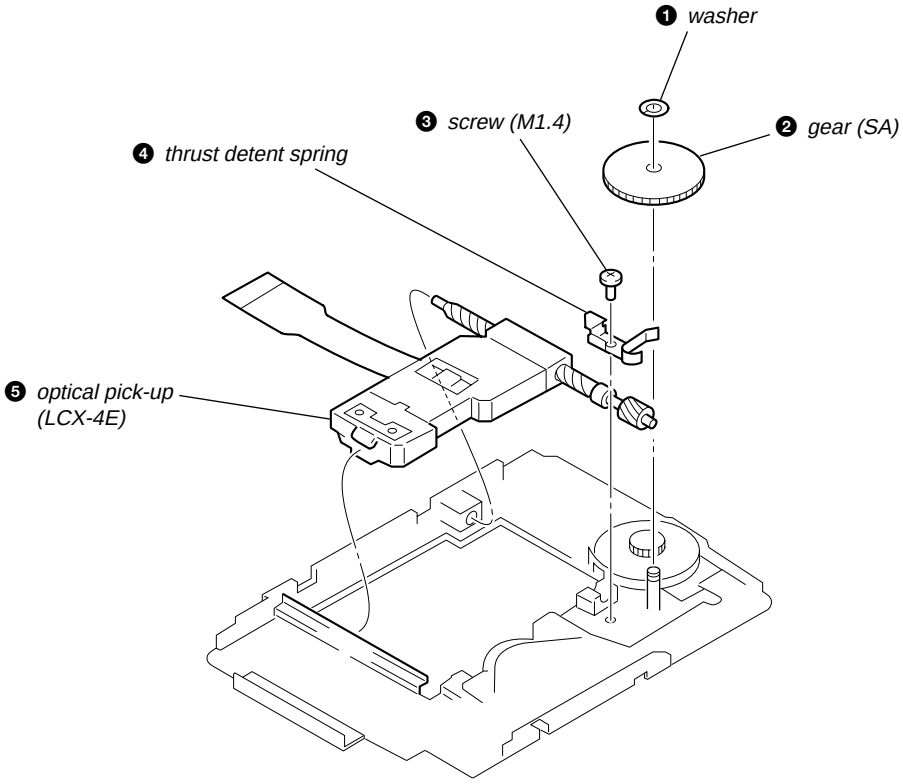
3-9. BRACKET (L) ASSY



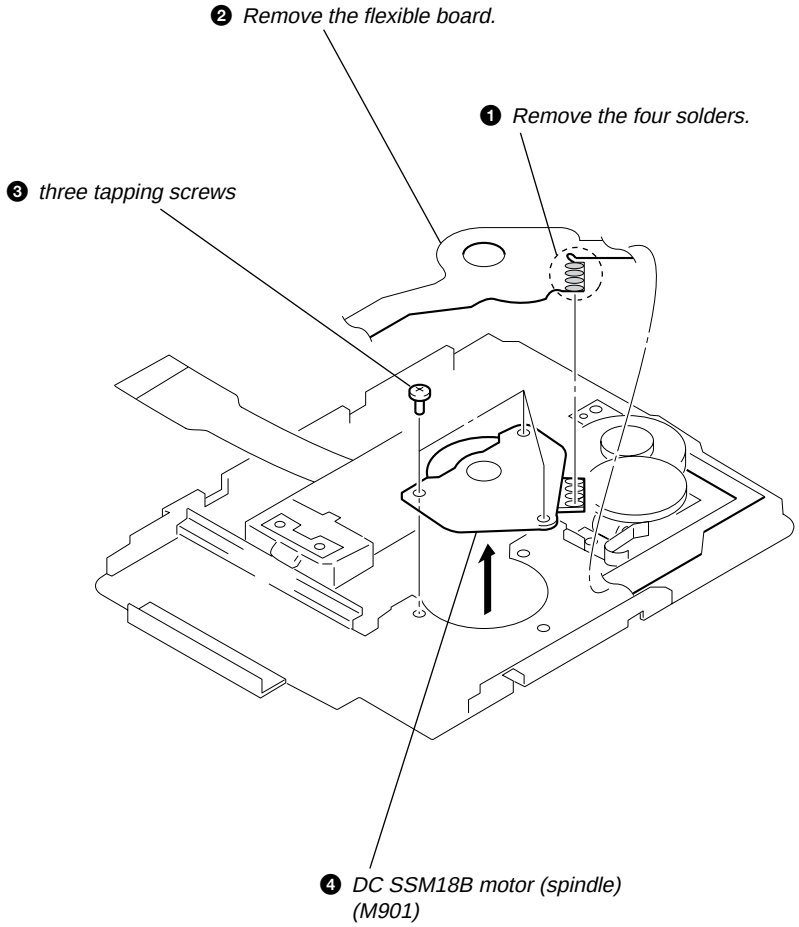
3-10. BRACKET (R) ASSY



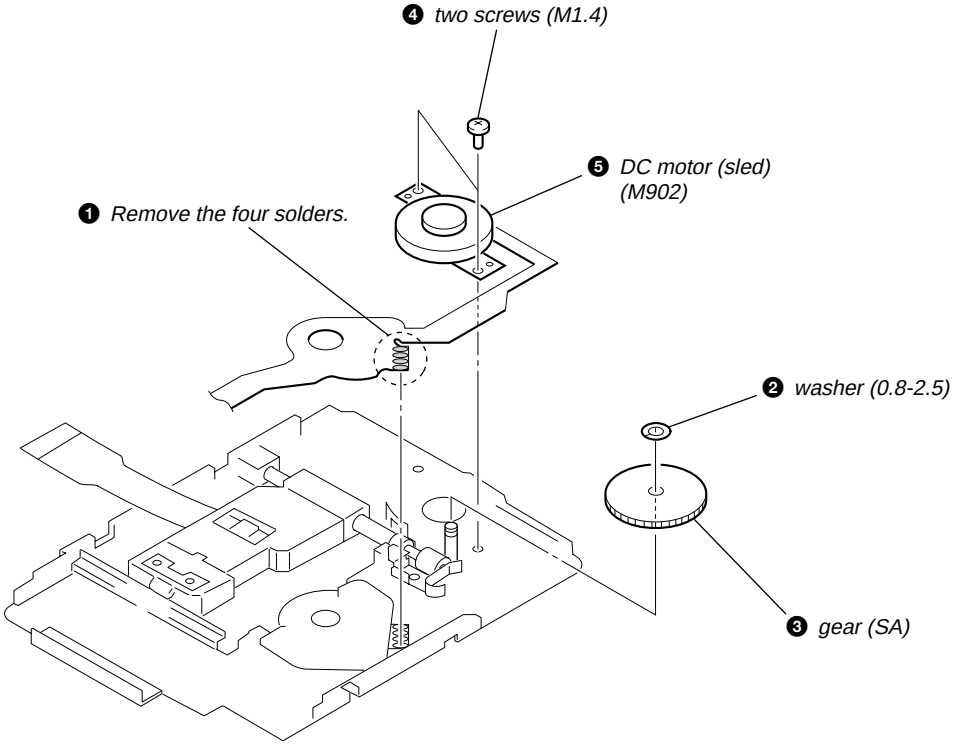
3-11. OPTICAL PICK-UP (LCX-4E)



3-12. DC SSM18B MOTOR (SPINDLE) (M901)



3-13. DC MOTOR (SLED) (M902)



SECTION 4
TEST MODE

4-1. GENERAL

- When entered in the TEST MODE, this set provides the Overall Adjustment mode which allows CD and MO discs to be automatically adjusted. In the Overall Adjustment mode, the system discriminates between CD and MO discs, performs adjustments in sequence automatically, and displays the faulty location if any fault is found. In the Manual mode, selected adjustments can be performed automatically.
- The attached remote control is used to operate the TEST MODE. Unless otherwise specified in the text, the key means that on the remote control.

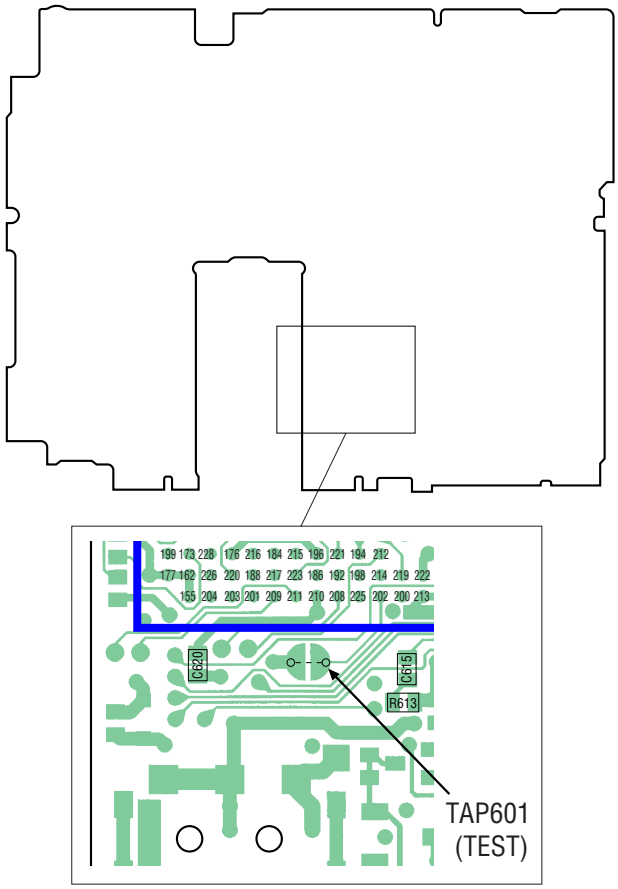
4-2. SETTING THE TEST MODE

4-2-1. How to set the TEST MODE

To set the TEST MODE, two methods are available.

① Solder bridge and short TAP601 (TEST) on the main board. Then turn on the power.

– MAIN BOARD (Component Side) –



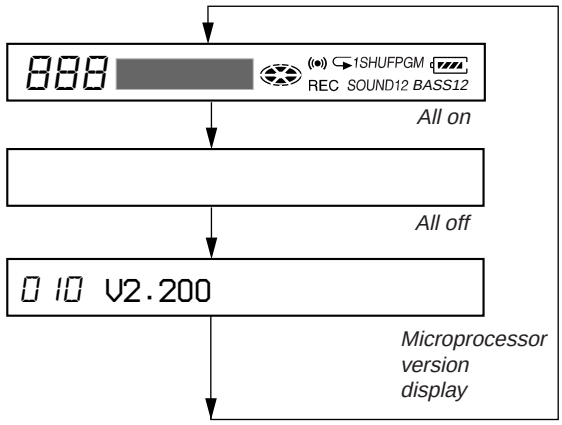
② In the normal mode, operate the keys on the set and those on the remote control as specified below:
Turn on HOLD switch on the set. Holding down ■ (STOP) key on the set, enter the keys on the remote control in the following sequence:

▶▶| ▶ → ▶▶| ▶ → |◀◀ → |◀◀ → ▶▶| ▶
→ |◀◀ → ▶▶| ▶ → |◀◀ → ❚❚ → ❚❚

4-2-2. Operations when the TEST MODE is set

When the TEST MODE is entered, the system switches to the display check mode within the TEST MODE. From this mode, the other Test modes can be accessed.
When the TEST MODE is set, the LCD repeats a cycle of the following displays:

Remote control LCD



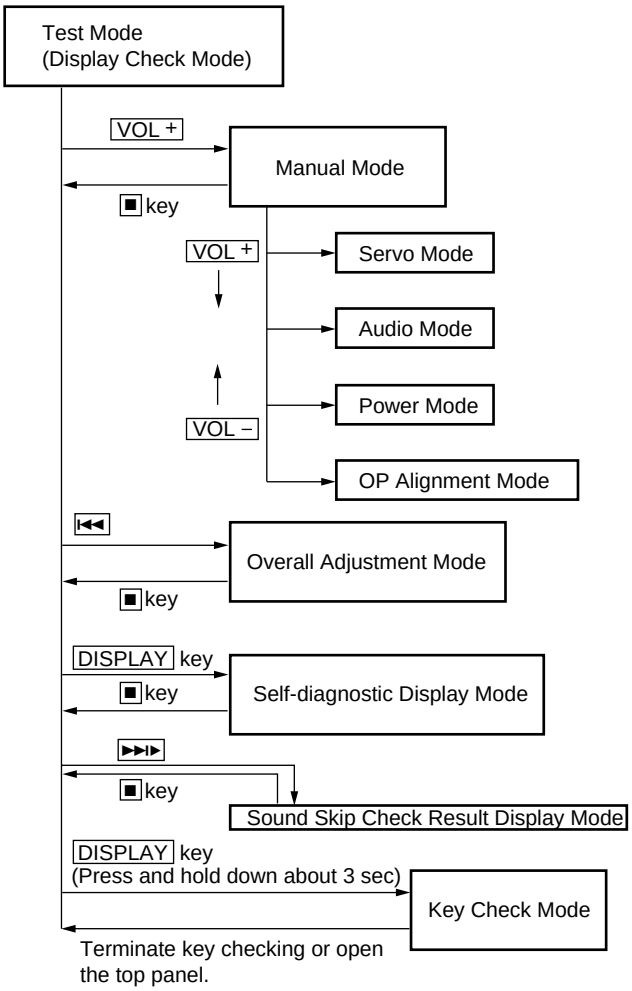
- Press and hold down ❚❚ key to hold the current display while the key is being pressed.

4-2-3. How to release the TEST MODE

When method ① was used:
Turn off the power and open the solder bridge on TAP601 on the main board.
Note: The solder should be removed clean. The remaining solder may make a short with the chassis and other part.
When method ② was used:
Turn off the power.

Note: When the power supply is switched on in the state where all electrical adjustments have not finished, it is displayed on LCD as “NV Error” and the usual operation can’t be performed.
When a power supply is accidentally turn off in the middle of electrical adjustments, it is again set as test mode and electrical adjustments is mode to complete.

4-3. TEST MODE STRUCTURE



4-4. MANUAL MODE

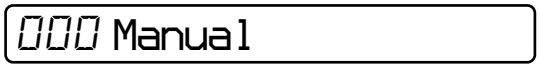
4-4-1. Outline of the function

The Manual mode is designed to perform adjustments and operational checks on the set's operation according to each individual function.
Usually, no adjustments are made in this mode.
However, the Manual mode is used to clear the memory before performing automatic adjustments in the Overall Adjustment mode.

4-4-2. How to set the Manual mode

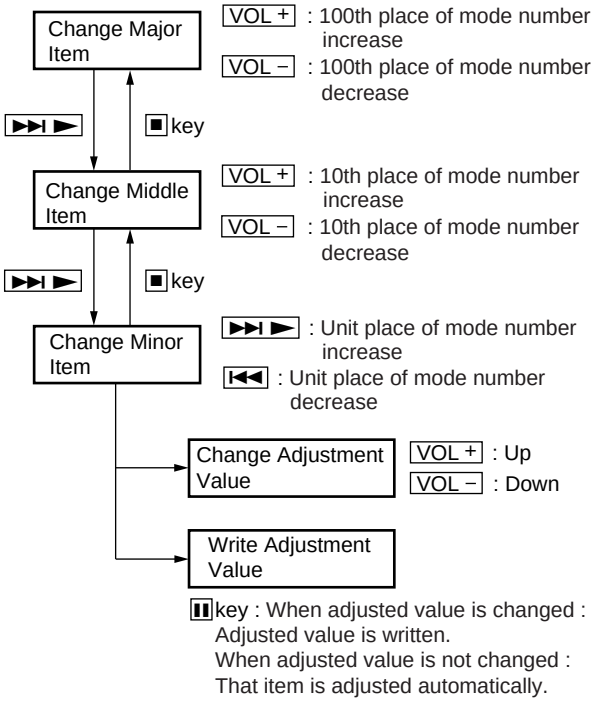
1. Set the TEST MODE and turn the control towerd VOL + to set the Manual mode.

   Remote control LCD display

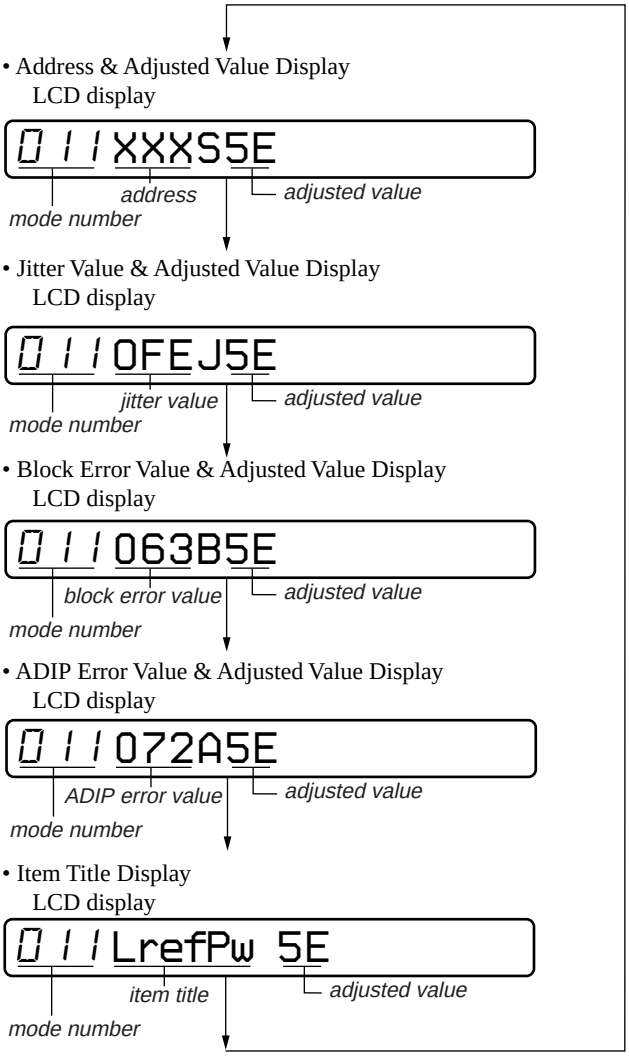
   

2. During each test, turn and hold the control towerd ⏭⏵ or ⏮ for a while to move the optical pickup on the sled outer or inner perimeter.

3. Each test item is assigned with a three-digit item number. The 100th place is a major item, 10th place is a middle item, and unit place is a minor item.



4. During each test mode, the display is changed from one to another each time DISPLAY key is pressed.



Note: In the Power mode, the item title display is only displayed.

5. To terminate the Manual mode and return to the TEST MODE, press [■] key.

4-5. OVERALL ADJUSTMENT MODE

4-5-1. Outline of the function

This mode is designed to adjust the servo system automatically by going through all the adjustment items.
Usually, this mode is used to perform automatic adjustments when servicing the set.

For further information, refer to section 5. ELECTRICAL ADJUSTMENTS. (See page 18)

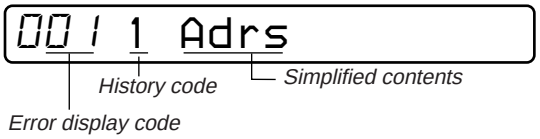
4-6. SELF-DIAGNOSTIC DISPLAY MODE

4-6-1. Outline of the function

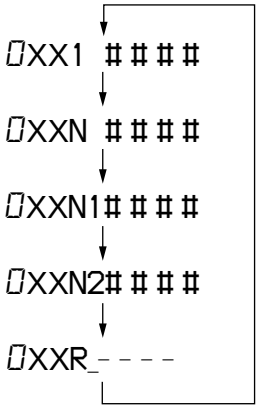
The Self-diagnostic system is used in this set. If an error occurs during playback, this system detects the fault through the microprocessor's mechanism and power control blocks and stores the cause in EEPROM in a history format.
This history, which can be viewed in the TEST MODE, provides the means of locating the fault in troubleshooting.

4-6-2. Self-diagnostic mode

1. Set the TEST MODE.
2. With all the LCD display segments blinking on the set, press [DISPLAY] key and turn the control towards [▶▶I▶], the Self-diagnostic mode is entered.



3. Hereinafter, each time [▶▶I ▶] is turned the control towards, the reference information display changes as follows:



- Turn the control towards [I◀◀] to go back to the previous display.

• Contents of the history codes

History code number	Contents
1	The first error that occurred.
N	The last error that occurred.
N1	The first error from the last one.
N2	The second error from the last one.
R_	Total recording time (– – – – is displayed for this set)

• Description of the error display codes

Contents of fault	Display code	Meaning of code	Simplified contents	Description
No error	00	No error	– – – –	No error
Servo system error	01	Access target address illegally specified	Adrs	An attempt to access an abnormal address.
	02	HIGH TEMP	Temp	HIGH TEMP
	03	FOCUS ERROR	Fcus	Focus off-center.
	04	SPINDLE ERROR	Spdl	Abnormal rotation of disc
TOC error	11	TOC ERROR	TOC	
	12	READ DATA ERROR	Data	
Power system error	22	LOWBATT	LBat	Instantaneous interruption detected.
Offset error	31	OFFSET ERROR	Ofst	Offset error
	32	FE_ABCD_OFFSET_ERR	ABCD	FE ABCD Offset error
	33	TE_ABCD_OFFSET_ERR	TE	TE ABCD Offset error
	34	X1_TE_OFFSET_ERR	X1TE	X1 TE ABCD Offset error

4-6-3. Clearing the error display code

After servicing, reset the error display code.

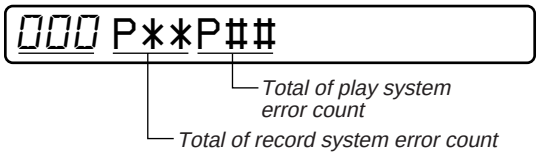
1. Set the TEST MODE.
2. Press the DISPLAY key on the remote control activates the self-diagnosis display mode.
3. To reset the error display code press ▮▮ key on the remote control when the code is displayed.(except for R_ - - - - display) (All the data on the 1, N, N1 and N2 will be reset)
4. Press ▮▮ key on the remote control again.

4-7. SOUND SKIP CHECK RESULT DISPLAY MODE

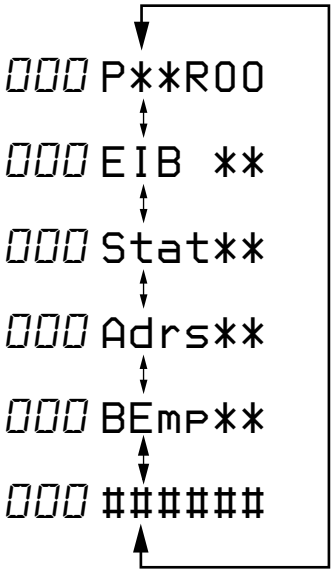
This set can display and check the error count occurring during play.

- Setting method of Sound Skip Check Result Display Mode

1. Setting the test mode.
2. Turn the control towards ⏭ ► activates the sound skip check result display mode where the LCD displays as shown below.
   LCD display



3. When ⏭ ► is turned the control towards, the total of error count is displayed on the LCD, and each time the ⏭ ► is turned the control towards, the error count descents one by one as shown below. Also, when ⏮ is turned the control towards, the error count ascends by one.



P**R00 : Total of play system error and record system error count
** : Sound skip check items counter (hexadecimal)
: 6-digit address (hexadecimal) where a sound skipped

Error code

	Cause of error	Description of error
Playback	EIB	Sound error correction error
	Stat	Decorder status error
	Adrs	Cannot access the address
	BEmp	Buffer becomes empty

4. Quit the sound skip check result display mode, and press the ■ key to return to the test mode. (display check mode)

4-8. KEY CHECK MODE

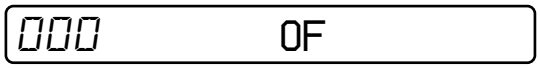
4-8-1. Outline of the function

This mode is used to check to make sure that each of the keys (including the slide switch) on the set operates normally.

4-8-2. Setting the Key Check mode

1. Set the TEST MODE. Press and hold down DISPLAY key (for more than 3 sec) to set the Key Check mode.

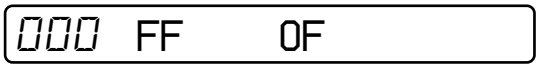
   LCD display



2. When each key on the set and on remote control is pressed, its name is displayed on the LCD. (The operated position is displayed for 4 sec after the slide switch is operated. If any other key is pressed during this display, the LCD switches to its name display)

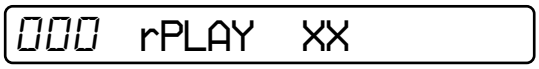
   Example: When ⏭ ► key on the set is pressed:

   LCD display



   Example: When ⏭ ► on the remote control is turned the control towards:

   LCD display



   XX: AD value of the remote control key (hexadecimal 00 to FF)

3. When all the keys on the set and on the remote control are considered as OK, the following displays are shown for 2 sec.
   (The key pressed to enter the Key Check mode has been checked even if it is not pressed in this mode)

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

   LCD display

   Example: When the keys on the remote control are considered as OK:

   LCD display

4. When all the key have been checked or when the top panel is opened during this checking, the system terminates the Key Check mode and return to the TEST MODE.

SECTION 5
ELECTRICAL ADJUSTMENTS

5-1. GENERAL

In this set, CD and MO discs can be automatically adjusted by setting the Overall Adjustment mode within the TEST MODE, Before performing these automatic adjustments, it is necessary to clear the memory and adjust the power in the Manual mode.

5-2. NOTES FOR ADJUSTMENT

5-2-1. Jigs

- CD disc TDYS-1 (part code: 4-963-646-01)
- MO disc PTDM-1 (part code: J-2501-054-A)
  or commercially available MO disc (recorded)
- Digital voltmeter
- Ammeter

5-2-2. Adjustment sequence

The adjustments should be always performed in the following sequence:

① Reset NV (Clear the memory) ┐ Manual mode
↓ ┘
② Manual power adjustments
↓
③ Electrical offset adjustments ┐
(Do not enter the disc) │
↓ │
④ Overall CD adjustments │
↓ │ Overall adjustment mode
⑤ Overall MO adjustments │
↓ │
⑥ RESUME clear │
↓ │
⑦ Rewrite the NV value ┘

5-2-3. Power

The power is supplied with 1.5 V DC from the battery case.

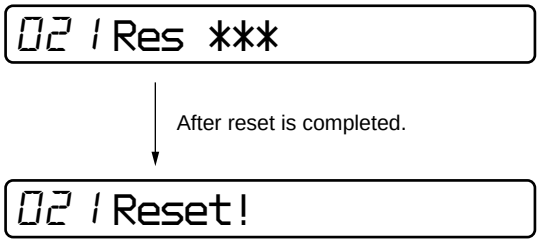
5-3. RESET NV

5-3-1. How to reset NV

1. Set the TEST MODE.
2. Set the Manual mode and set the item No. 021, Reset NV.
   LCD display

3. Press [II] key on the remote control.
   LCD display

4. Press [II] key on the remote control again.
   LCD display



5. Press [■] key to terminate the Manual mode and return to the TEST MODE.

5-4. MANUAL POWER ADJUSTMENTS

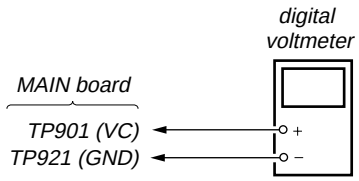
5-4-1. Adjustment sequence

The adjustments should be always performed in the following sequence:

① Vc PWM Duty (L) adjustment (item No.:762)
↓
② Vl PWM Duty adjustment (item No.:764)
↓
③ Vb A/D value check (item No.:731)

5-4-2. Vc PWM Duty (L) adjustment

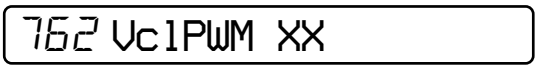
Connection:



Procedure:

1. Confirm that the power voltage is at 1.5 V DC.
2. Set the TEST MODE.
3. Set the overall adjustment mode and press [PLAYMODE] key, item No. will change to 762.

   LCD display



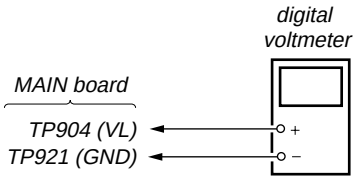
4. Connect a digital voltmeter to TP901 (VC) and TP921 (GND) on the main board and adjust [VOL +] (voltage up) and [VOL –] (voltage down) on the remote control.

Adjustment value:2.35V
Standard value:2.34 to 2.355V

5. Press [II] key to write the adjustment value.

5-4-3. VI PWM Duty adjustment

Connection:



Procedure:

1. Set the Manual mode and set the item No. to 764.

   LCD display

   764 V1PWM XX

2. Connect a digital voltmeter to TP904 (VL) and TP921 (GND) on the main board and adjust [VOL +] (Voltage up) and [VOL –] (Voltage down) on the remote control.
   Adjustment value:2.23V
   Standard value:2.22 to 2.235V
3. Press [II] key to write the adjustment value.

5-4-4. Vb A/D value check

1. Set the Manual mode and set the item No. to 731.

   LCD display

   731 Vb_AD XX

2. Confirm the A/D value is 73 to 87 hex.
3. Confirm the power supply consumiption current is 120 mA or less.

5-4-5.Electrical offset adjustment method

Note: Doing adjustment by the state that a disc does not enter.

1. Confirm the power voltage is 1.5V.
2. Set to the test mode.
3. Turn the control towards [VOL –] activates the overall adjustment mode.
   LCD display

   000 Assy11

4. Press the DISPLAY key.
   LCD display

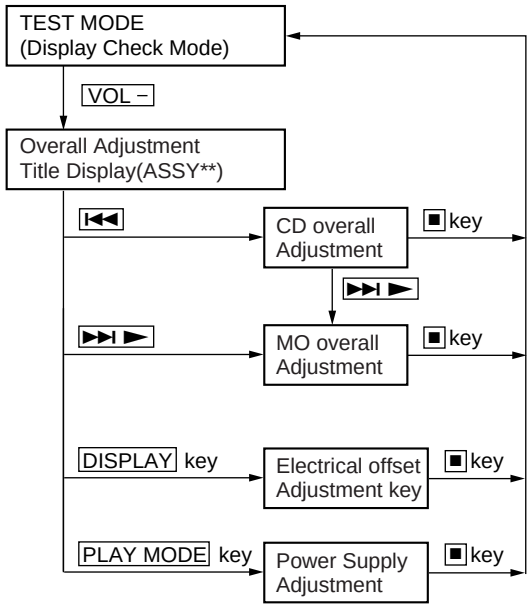
   035 Ofst**

5. If result of electrical offset adjustment is OK,the following display appears.
   LCD display

   000 OfstOK

5-5. OVERALL ADJUSTMENT MODE

5-5-1. Overall adjustment mode structure



Note: The overall adjustments should be always performed in the sequence of CD ⟶ MO adjustments.

5-5-2. Overall CD and MO adjustment method

1. Set the TEST MODE and turn the control towards [VOL –] to set the Overall Adjustment mode.

   LCD display

   000 Assy11

2. Insert CD disc in the set, and turn the control towards [I◄◄] to set the Overall CD Adjustment mode.
   Automatic adjustments are made.

   LCD display

   XXX CD RUN

   XXX: Item No. for which an adjustment is being executed.

3. If NG in the overall CD adjustments, return to Reset NV and perform from the electrical offset adjustment again.

   LCD display

   000 XXX NG

   XXX: NG item No.

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

   LCD display

   000 CD OK

5. Insert MO disc in the set, and turn the control towards [►►I] to set the Overall MO Adjustment mode. Automatic adjustments are made.

   LCD display

   XXX MO RUN

   XXX: Item No. for which an adjustment is being executed.

6. If NG in the overall MO adjustments, return to Reset NV and perform the adjustment again.

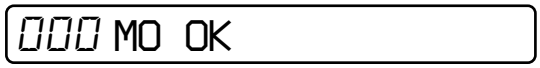
   LCD display

   XXX: NG item No.

7. If OK through the overall MO adjustments, press ■ key to return to the TEST MODE and terminate the Overall Adjustment mode.

   LCD display

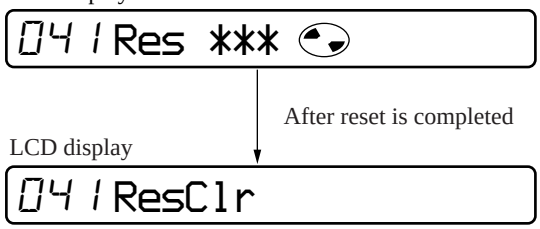
   

5-5-3.Resume clear method

1. Setting the testmode.
2. Set the Manual mode and set the item No.041 (NoClock).
   LCD display

3. Press the ❚❚ key.
   LCD display

5-5-4. Rewrite the NV value

After resume clear, rewrite the NV value.

Item NO.	NV value
861	0F (h)
862	0B (h)
863	C7 (h)
864	01 (h)
865	64 (h)
866	10 (h)
867	65 (h)
868	05 (h)

5-5-5. Overall CD and MO adjustment items

1. Overall offset adjustment

Item No.	Contents
030	GRV setting • Sarvo OFF • Head UP
035	Laser ON/OFF electrical offset difference measurement
Completed	

2. Overall CD adjustment items

Item No.	Contents
761	VC,VR power voltage High/Low selection
300	HPIT setting • Sarvo OFF
561	SLED move to inside
562	SLED move to outside
High reflection CD electrical offset adjustment	
312	Laser ON • Focus UP • VC correction ALFA offset adjustment
313	IJ offset adjustment
314	FE offset adjustment
HPIT adjustment	
320	Focus servo ON
324	TE offset adjustment 1
321	TE gain adjustment
328	TWPP gain adjustment
324	TE offset adjustment 1
332	TE offset adjustment 2
330	Tracking servo ON
336	ABCD gain adjustment
337	KF gain correction
338	RF gain adjustment
344	CD focus gain adjustment
345	CD tracking gain adjustment
521	CD two-axis sensitivity adjustment (inside)
522	CD two-axis sensitivity adjustment (outside)
300	HPIT setting • servo OFF
completed	

3. Overall MO adjustment items

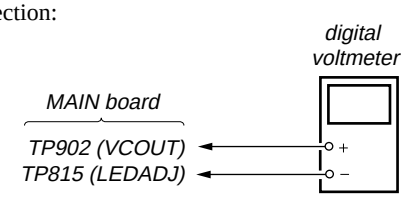
Item No.	Contents
761	VC,VR power voltage High/Low selection
100	G RV setting
Low reflect MO offset adjustment	
112	Laser ON • Focus UP • EVC correction ALFA offset adjustment
113	IJ offset adjustment
114	FE offset adjustment
118	Wpp denominator adjustment
HPIT adjustmet	
200	LPIT setting • servo OFF
561	SLED move to inside
220	Focus servo ON
224	TE offset adjustment 1
221	TE gain adjustment
224	TE offset adjustment 1
232	TE offset adjustment 2

Item No.	Contents
230	Tracking servo ON
236	ABCD gain adjustment
237	KF gain adjustment
238	RF gain adjustment
244	FCS gain adjustment
245	TRK gain adjustment
	READ GRV adjustment 1
100	R GRV setting
562	SLED move to outside
120	Focus servo OFF
122	TON offset adjustment
121	TE gain adjustment
122	TON offset adjustment
123	TEIN offset adjustment
124	TWPP offset adjustment
130	Tracking servo ON
131	TWPP offset adjustment
136	ABCD gain adjustment
137	KF gain adjustment
139	ADIP BPF fo adjustment
144	FCS gain adjustment
145	TRK gain adjustment
134	TWPP gain adjustment
131	TWPP offset adjustment 1
132	TWPP offset adjustment 2
149	TWPP OP offset adjustment
138	RF gain adjustment
100	R GRV setting • Servo OFF

5-6. LED VOLTAGE ADJUSTMENTS

5-6-1. LED voltage check

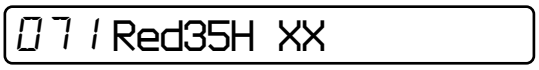
Connection:



Procedure:

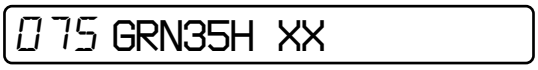
1. Confirm the power voltage is at 1.5 V.
2. Set to the test mode.
3. Set the Manual mode and set the item No. to 071.
   Connect a digital voltmeter to TP902 (VCOUT) and TP815 (LEDADJ) on the MAIN board and confirm the voltage (high luminosity RED voltage value).

   LCD display

   XXX: A/D value.
4. Turn the control towards VOL + four times to change the item No. to 075.
   Connect a digital voltmeter to TP902 (VCOUT) and TP815 (LEDADJ) on the MAIN board and confirm the voltage (high luminosity GREEN voltage value).

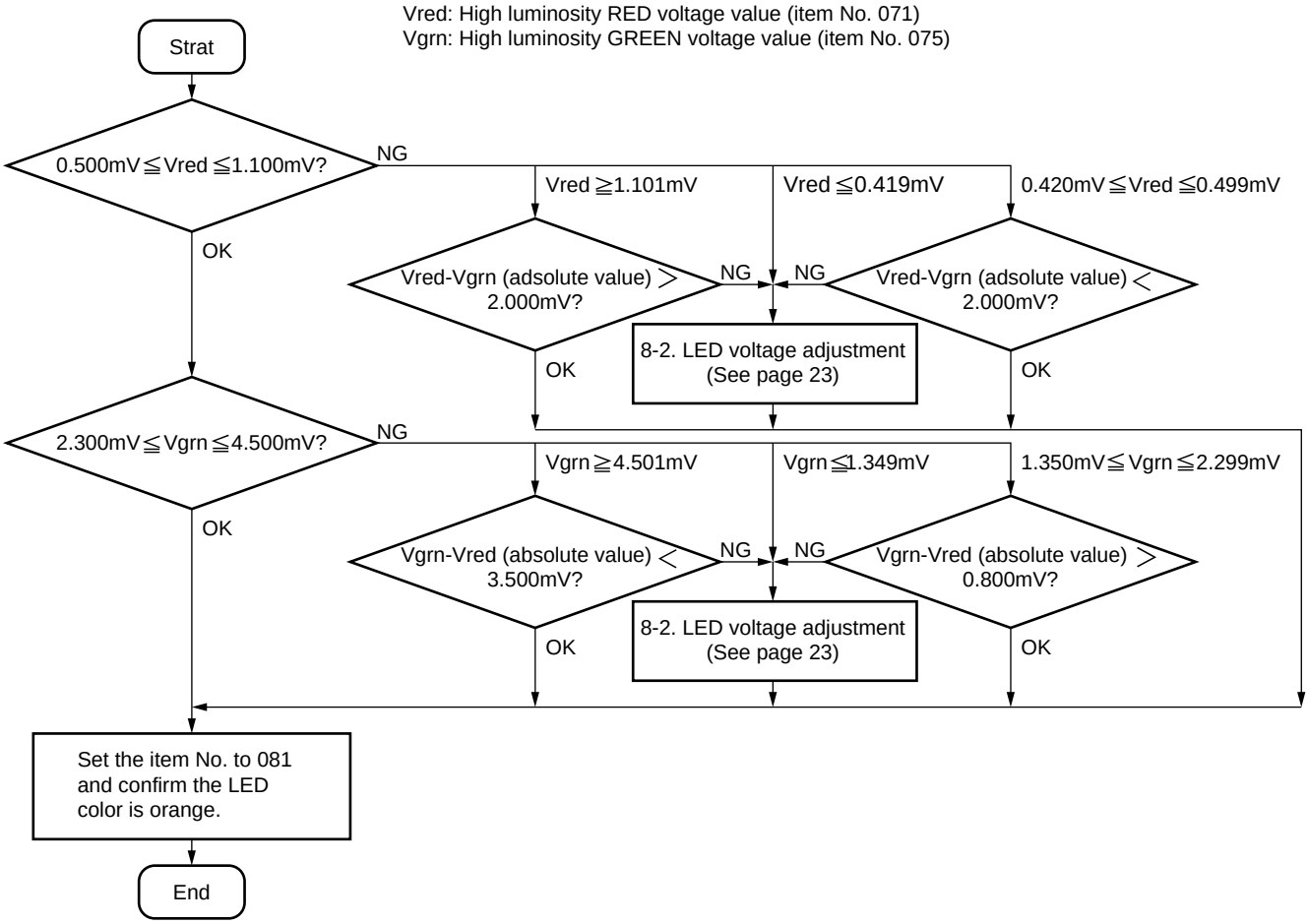
   LCD display

   XXX: A/D value.

5. Judge LED voltage value is OK or NG by using the voltage value confirmed at step 3 and 4.
   IN case of jadgment result is NG, adjust the LED voltage (See page 23).

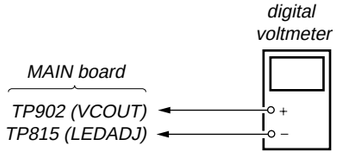
   flow chart of judging LED voltage is OK or NG:



5-6-2. LED voltage adjustment

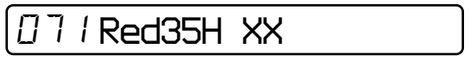
Note: This adjustment performed only when the judgment result of judging LED voltage value is OK or NG is NG (See page 22).

Connection:

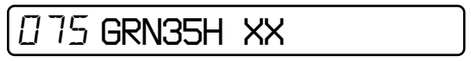


Procedure:

1. Set the Manual mode and set the item No. to 071.
   LCD display

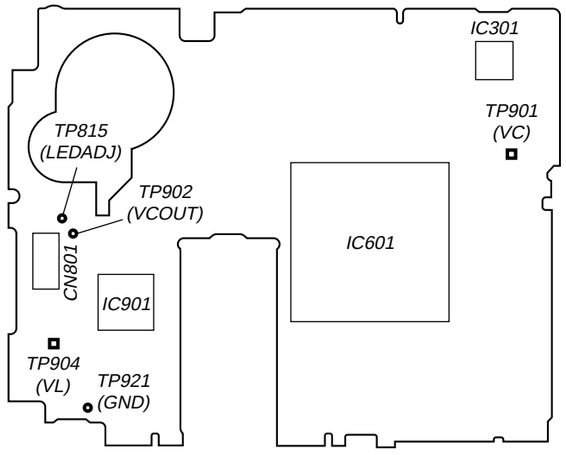
   XXX: A/D value.
2. Connect a digital voltmeter to TP902 (VCOUT) and TP815 (LEDADJ) on the MAIN board and adjust with VOL + (Voltage up) and VOL – (Voltage down) so that the voltage becomes standard value.
   Standard value: 0.500 to 1.100 mV
3. Press ▮▮ key to write the adjustment value.
4. Set the Manual mode and set the item No. to 075.
   LCD display

   XXX: A/D value.
5. Connect a digital voltmeter to TP902 (VCOUT) and TP815 (LEDADJ) on the MAIN board and adjust with VOL + (Voltage up) and VOL – (Voltage down) so that the voltage becomes standard value.
   Standard value: 2.300 to 4.500 mV
6. Press ▮▮ key to write the adjustment value.

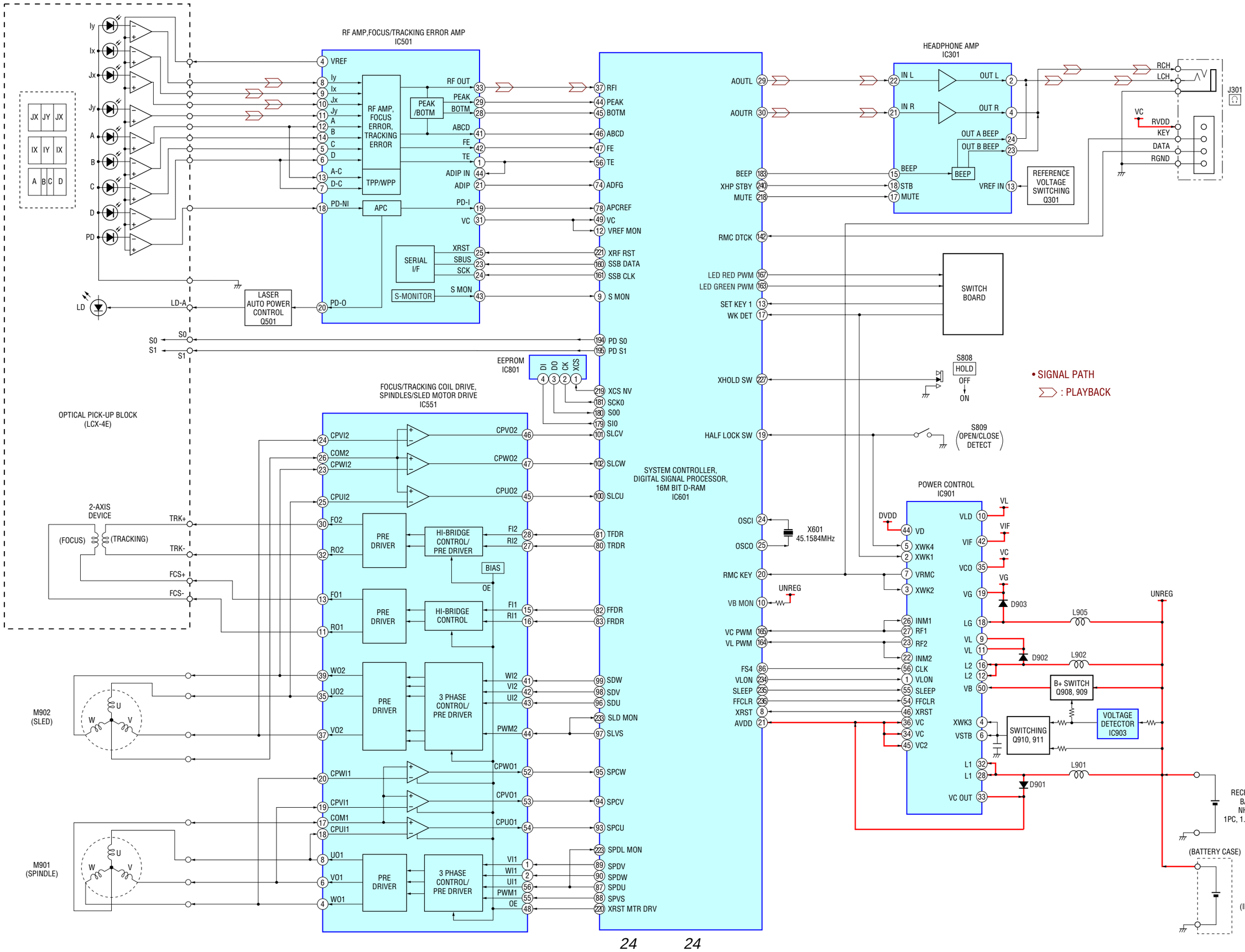
Connecting Location:

– MAIN BOARD (Component Side) –



SECTION 6
DIAGRAMS

6-1. BLOCK DIAGRAM



6-2. NOTE FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

Note on Printed Wiring Board:

- ○——— : parts extracted from the component side.
- ——— : parts extracted from the conductor side.
- ▬ : Pattern from the side which enables seeing.

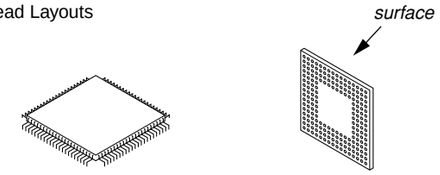
(The other layers' patterns are not indicated.)

Caution:	
Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component Side)	Parts on the parts face side seen from the parts face are indicated.

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

* Replacement of IC601 used in this set requires a special tool.

- Lead Layouts



Lead layout of conventional IC　　CSP (chip size package)

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.
- ▭ : panel designation.
- ▬ : B+ Line.

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

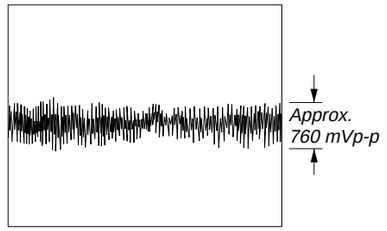
- Total current is measured with MD installed.
- Power voltage is dc 3 V and fed with regulated dc power supply from external power voltage jack.
- Voltages and waveforms are dc with respect to ground in playback mode (servo circuit ON).
  no mark : PLAYBACK
  * : Impossible to measure
- Voltages are 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.
  Σ : PLAYBACK

* Replacement of IC601 used in this set requires a special tool.

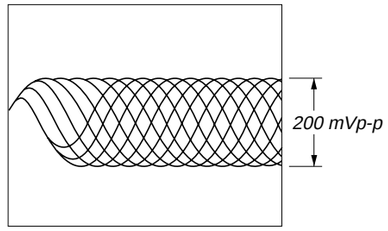
- The voltage and waveform of CSP (chip size package) cannot be measured, because its lead layout is different form that of conventional IC.

- **Waveforms**

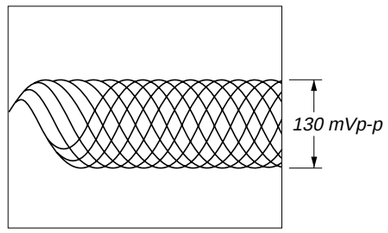
❶ IC501 ① (TE)
200 mV/DIV, 1 µs/DIV



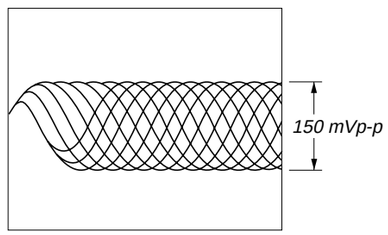
❷ IC501 ⑧ (Iy)
100 mV/DIV, 1 µs/DIV



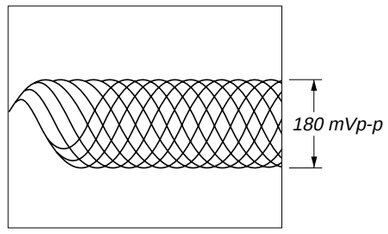
❸ IC501 ⑨ (Ix)
100 mV/DIV, 1 µs/DIV



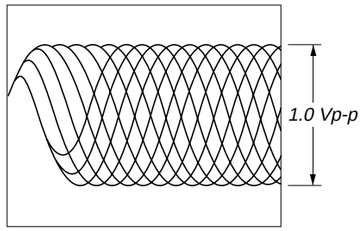
❹ IC501 ⑩ (Jx)
100 mV/DIV, 1 µs/DIV



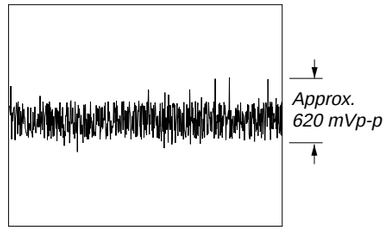
❺ IC501 ⑪ (Jy)
100 mV/DIV, 1 µs/DIV



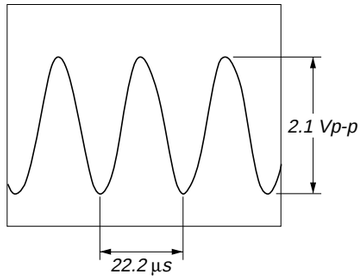
❻ IC501 ㉝ (RF OUT)
500 mV/DIV, 500 ns/DIV



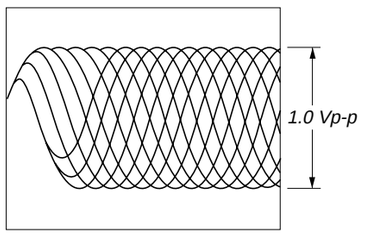
❼ IC501 ㊷ (FE)
200 mV/DIV, 1 µs/DIV



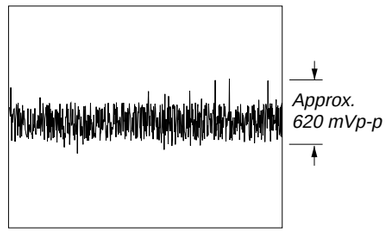
❽ IC601 ㉕ (OSCO)
500 mV/DIV, 10 µs/DIV



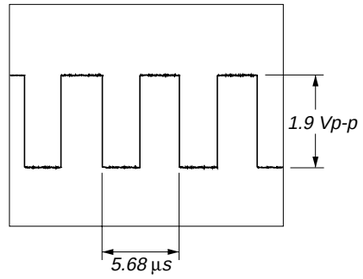
❾ IC601 ㊲ (RFI)
500 mV/DIV, 500 ns/DIV



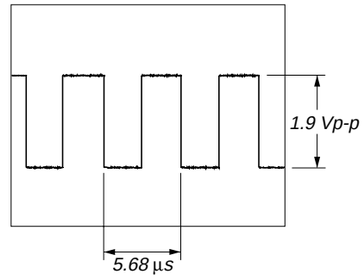
❿ IC601 ㊼ (FE)
200 mV/DIV, 1 µs/DIV



⓬ IC601 ㊽ (FS4)
500 mV/DIV, 2 µs/DIV



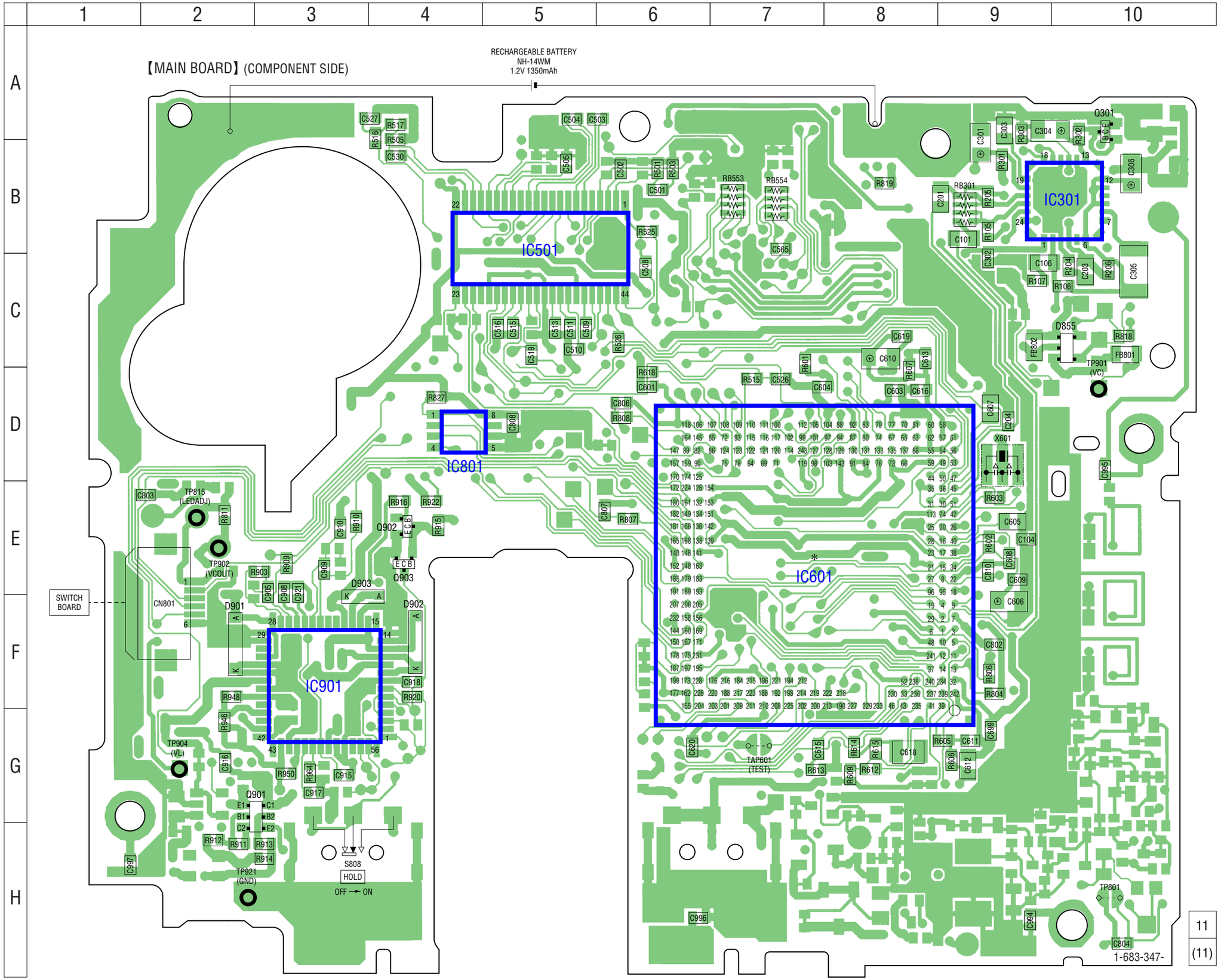
⓭ IC901 ㊻ (CLK)
500 mV/DIV, 2 µs/DIV



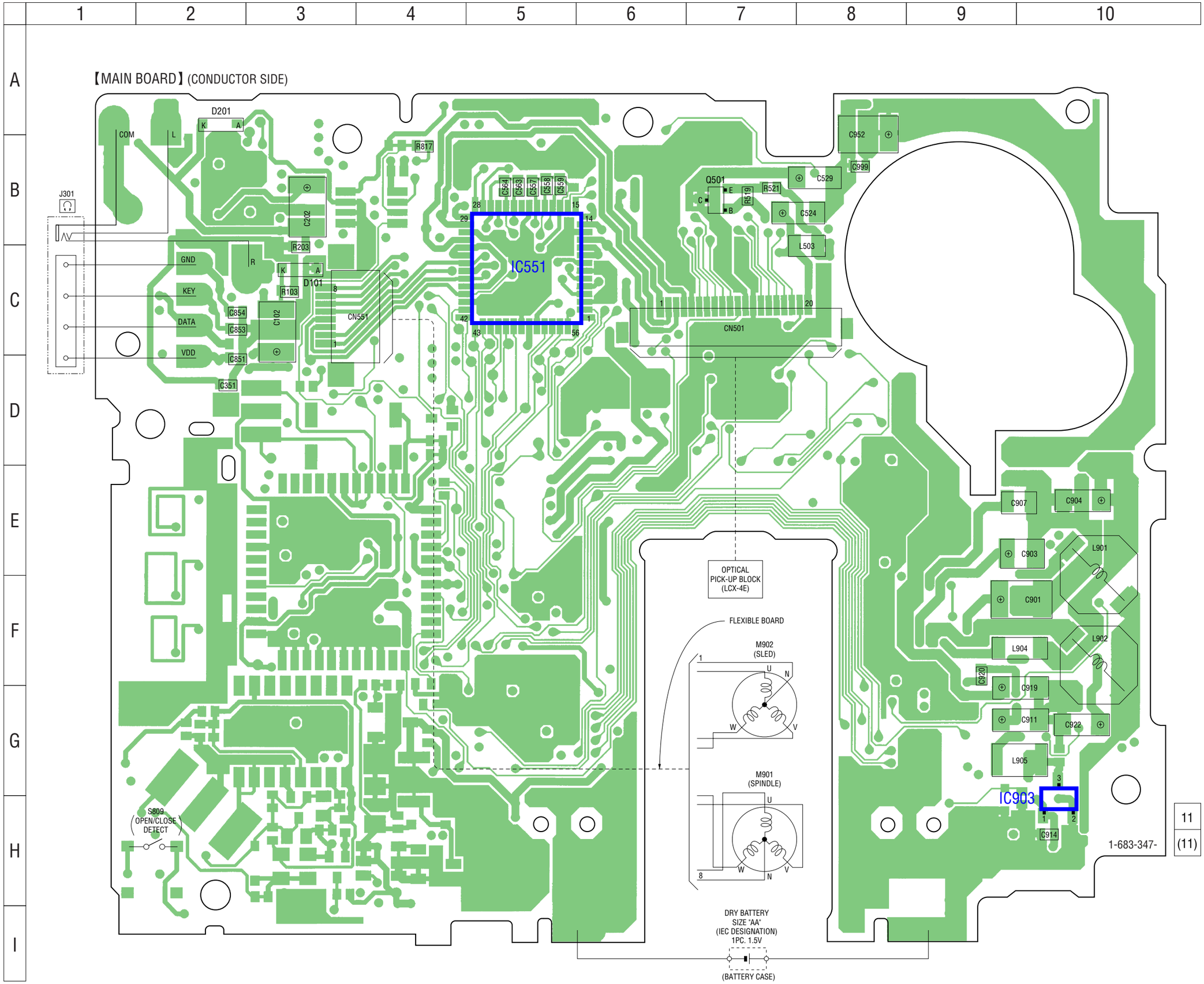
6-3. PRINTED WIRING BOARD – MAIN board (Component Side) –

- **Semiconductor Location**

Ref. No.	Location
D855	C-10
D901	F-2
D902	F-4
D903	F-3
IC301	B-10
IC501	B-5
IC601	E-7
IC801	D-4
IC901	F-3
Q301	A-10
Q901	G-3
Q902	E-4
Q903	E-4



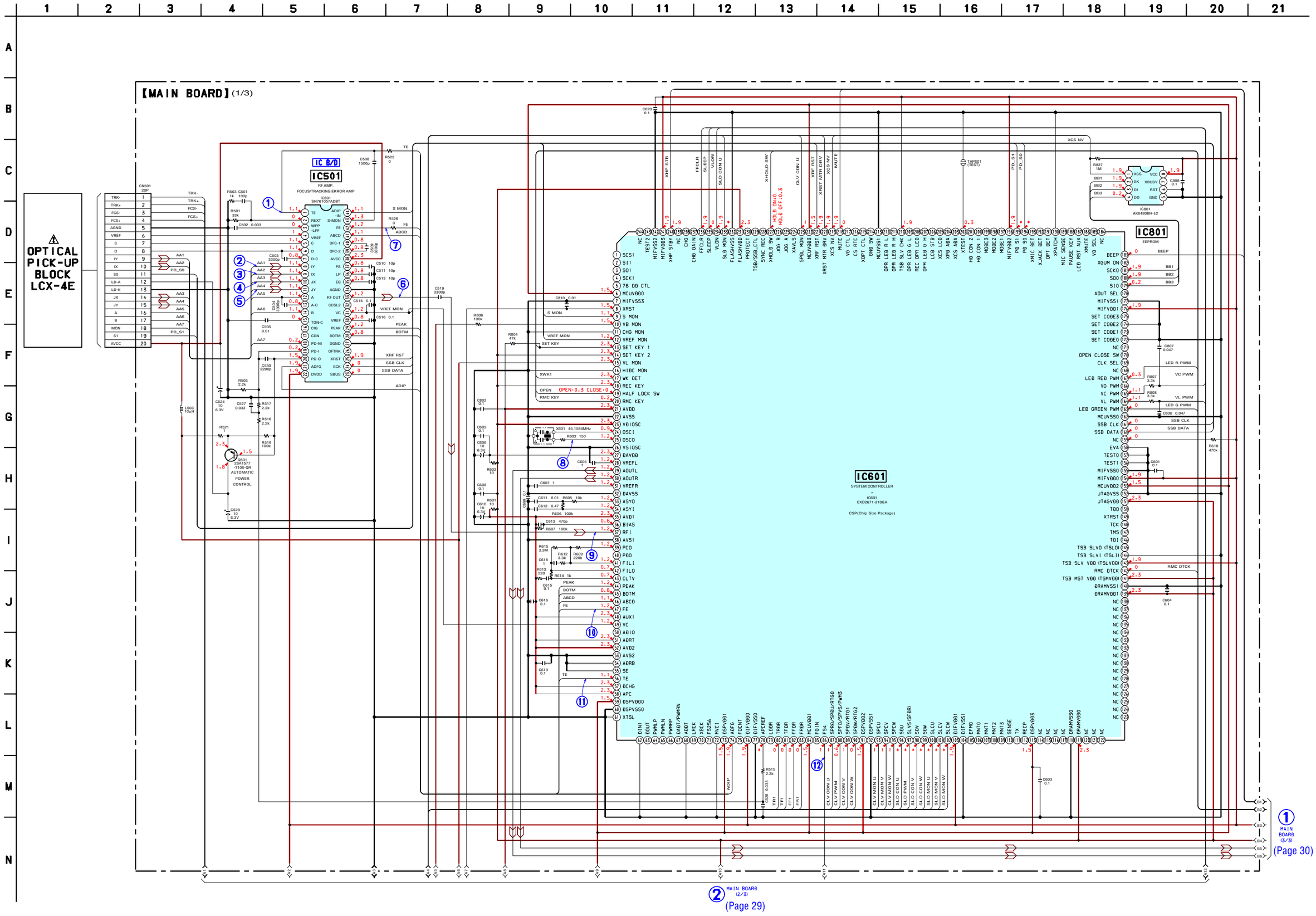
6-4. PRINTED WIRING BOARD – MAIN board (Conductor Side) –



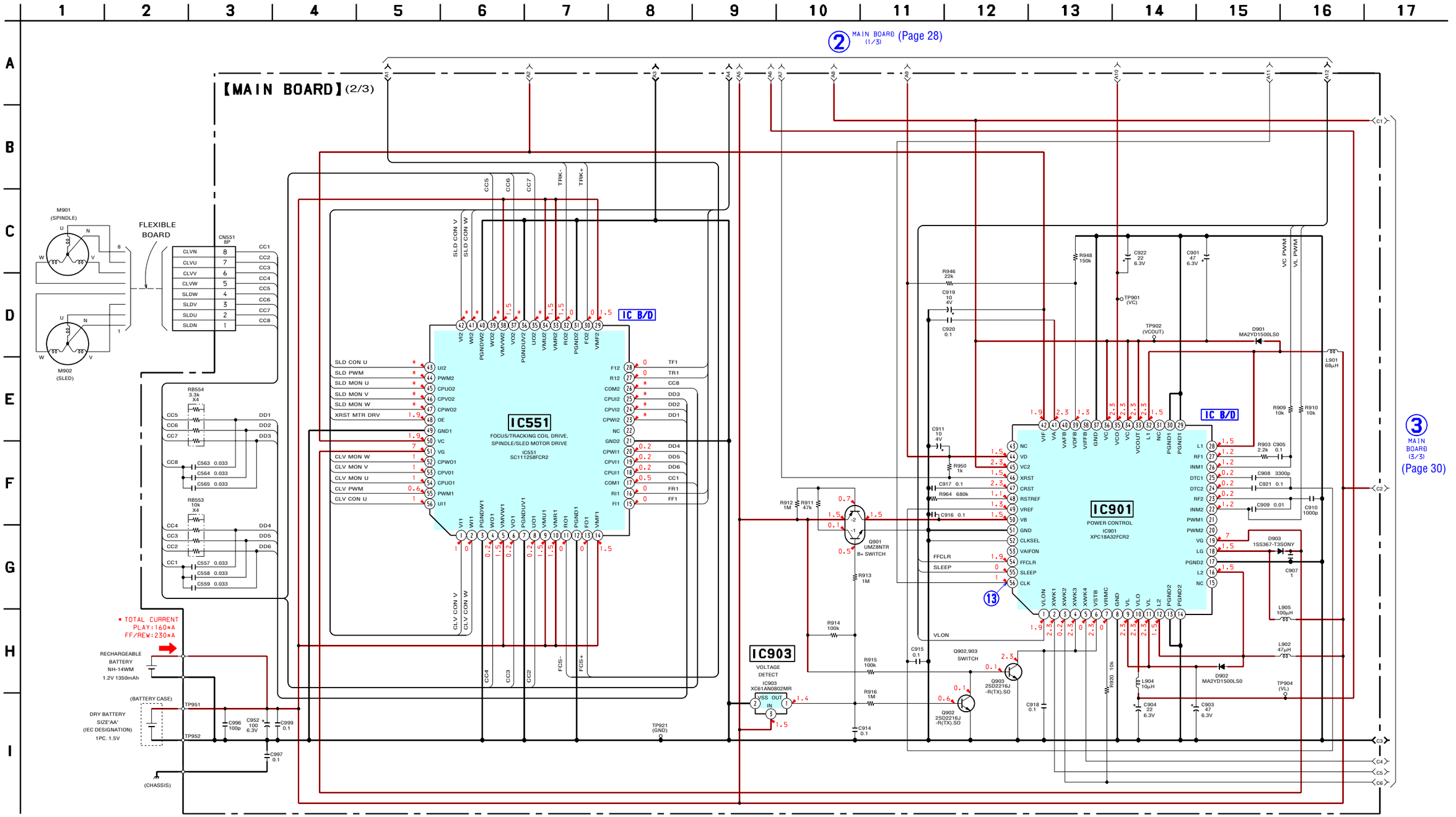
- **Semiconductor Location**

Ref. No.	Location
D101	C-3
D201	A-2
IC551	C-5
IC903	H-10
Q501	B-7

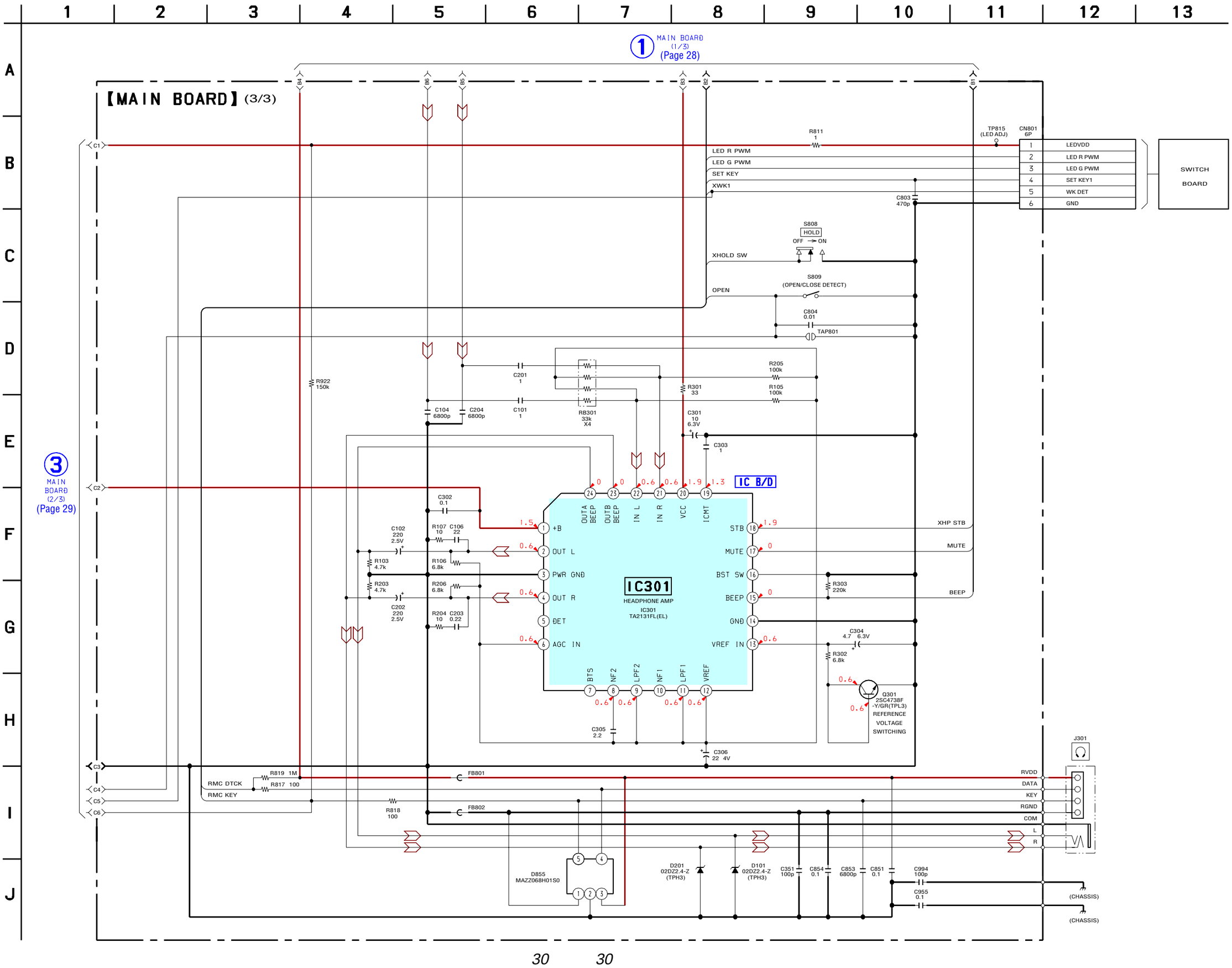
6-5. SCHEMATIC DIAGRAM – MAIN Board (1/3) – • See page 25 for Waveform. • See page 31 for IC Block Diagrams.



6-6. SCHEMATIC DIAGRAM – MAIN Board (2/3) – • See page 25 for Waveform. • See page 31 for IC Block Diagrams.

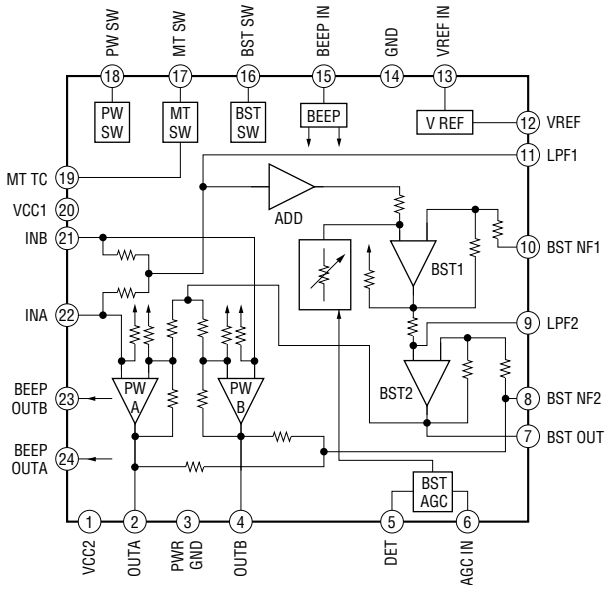


6-7. SCHEMATIC DIAGRAM – MAIN Board (3/3) – • See page 25 for Waveform. • See page 31 for IC Block Diagrams.

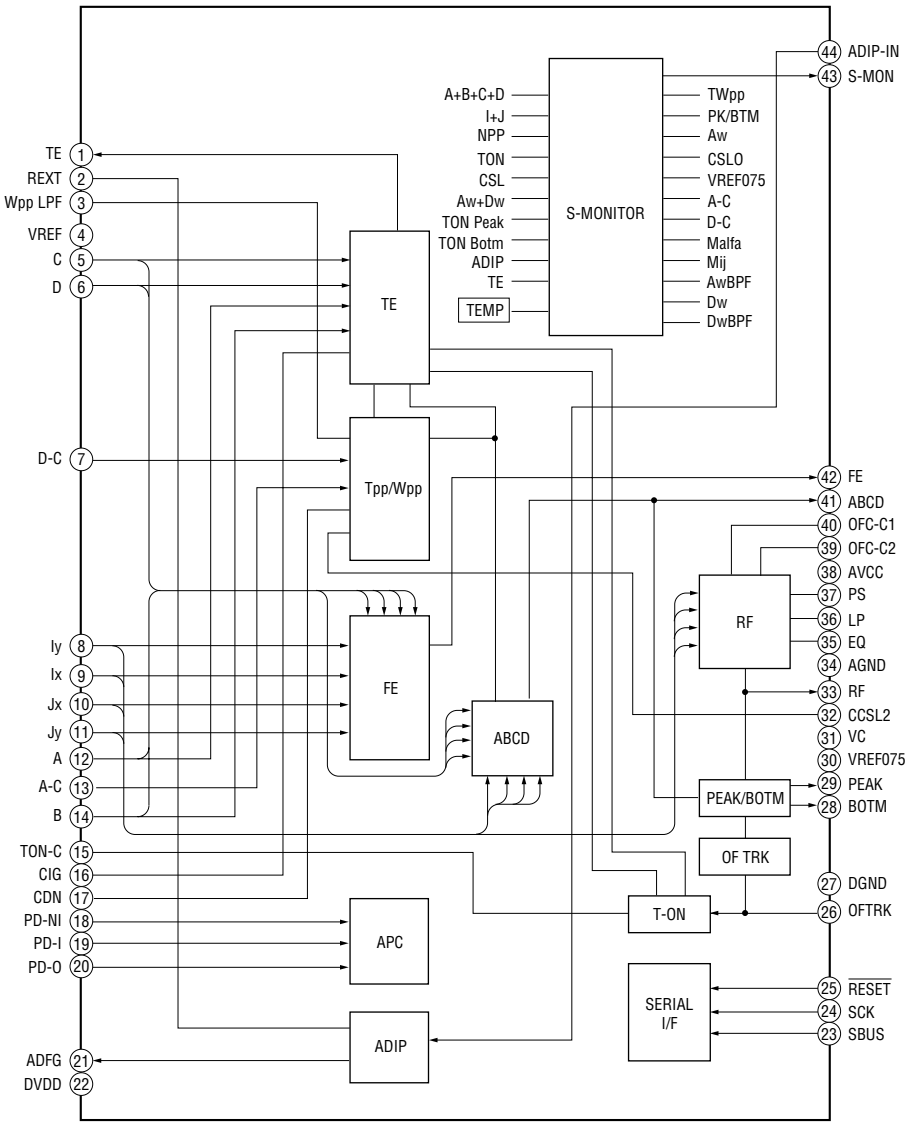


- **IC Block Diagrams**

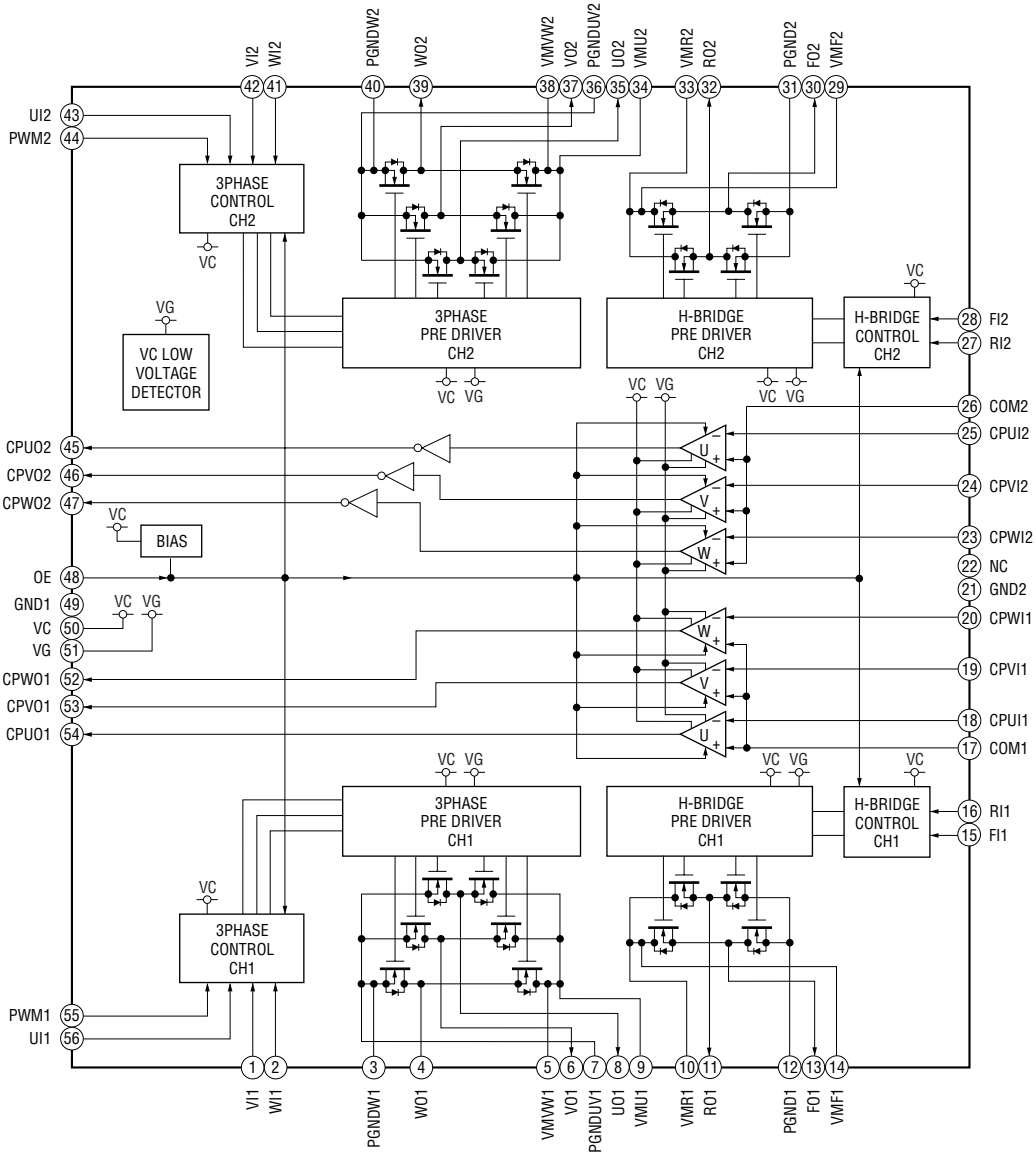
IC301 TA2131FL (EL)



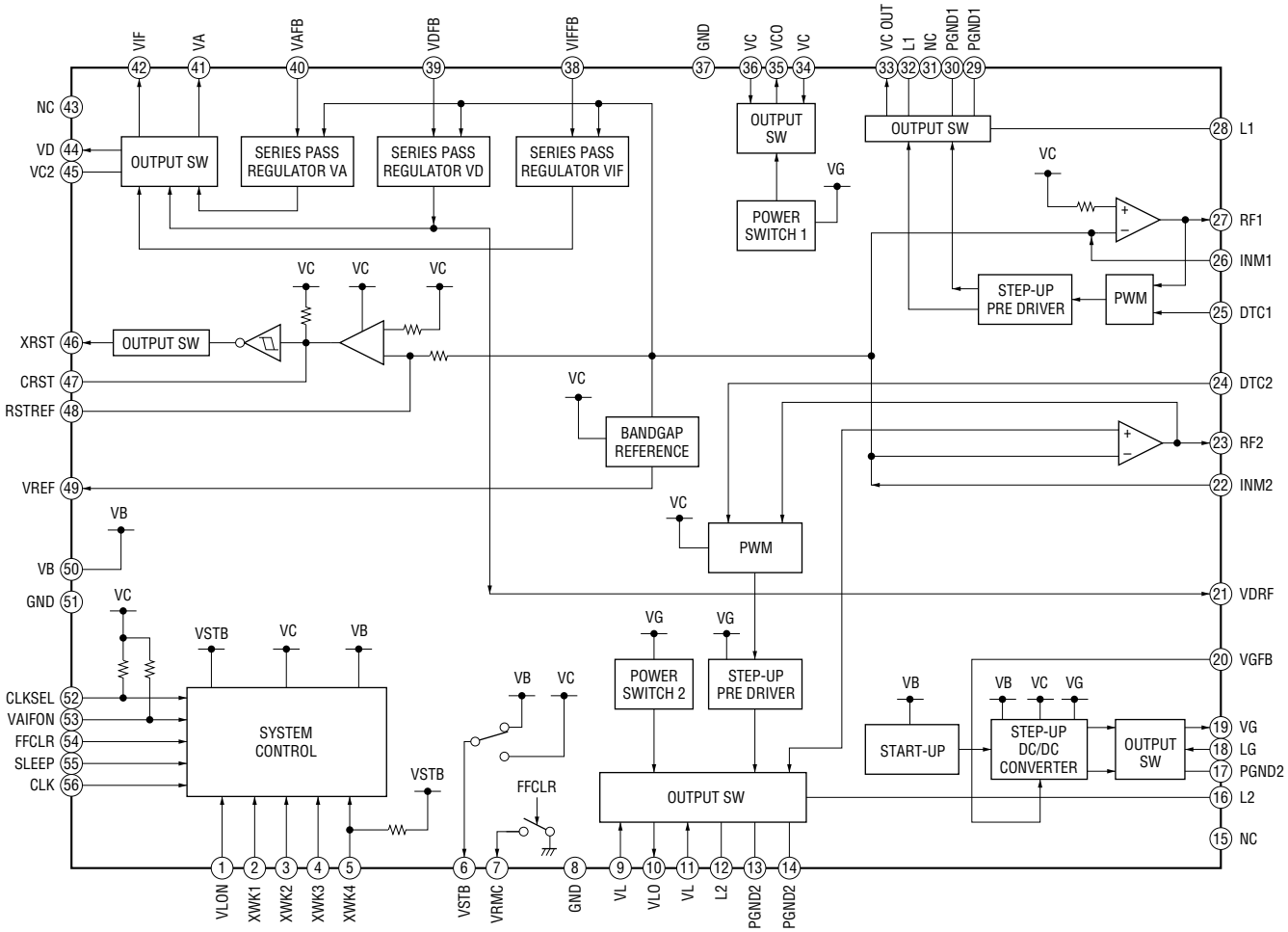
IC501 SN761057ADBT



IC551 SC111258FCR2



IC901 XPC18A32FCR2



6-8. 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
2	REXT	—	Connect terminal to the external resistor for ADIP amp control
3	WPP-LPF	—	Connect terminal to the external capacitor for TPP/WPP low-pass filter
4	VREF	O	Reference voltage output terminal
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 Not used
17	CDN	—	Connect terminal to the external capacitor for the low-pass filter of CSL divider denominator Not used
18	PD-NI	I	Light amount monitor input terminal (non-invert input)
19	PD-I	I	Reference PWM signal input for the laser automatic power control from the system controller
20	PD-O	O	Light amount monitor output terminal
21	ADFG	O	ADIP duplex FM signal (22.05kHz ± 1kHz) output to the system controller
22	DVDD	—	Power supply terminal (+1.9V) (digital system)
23	SBUS	I/O	SSB serial data input/output with the system controller
24	SCK	I	SSB serial clock signal input from the system controller
25	XRST	I	Reset signal input from the system controller “L”: reset
26	OFTRK	I	Off track signal input terminal Not used
27	DGND	—	Ground terminal (digital system)
28	BOTM	O	Bottom hold signal output of the light amount signal (RF/ABCD) to the system controller
29	PEAK	O	Peak hold signal output of the light amount signal (RF/ABCD) to the system controller
30	VREF	—	Connect terminal to the external capacitor for the internal reference voltage
31	VC	O	Middle point voltage (+1.2V) 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
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 (+2.3V) (analog system)
39, 40	OFC2, OFC-1	—	Connect terminal to the external capacitor for RF AC coupling
41	ABCD	O	Light amount signal (ABCD) output to the system controller
42	FE	O	Focus error signal output to the system controller
43	S-MON	O	Servo signal monitor output to the system controller
44	ADIP-IN	I	ADIP duplex FM signal (22.05kHz ± 1kHz) input terminal Not used

• **IC801 CXD2671-210GA (SYSTEM CONTROLLER, DIGITAL SIGNAL PROCESSOR, 16M BIT D-RAM)**

Pin No.	Pin Name	I/O	Description
1	SCS1	—	Not used
2	SI1	—	Not used
3	SO1	—	Not used
4	SCK1	—	Not used
5	78 DD CTL	—	Not used
6	MCUVDD0	—	Power supply terminal (for microcomputer block) (+1.5V)
7	MIFVSS3	—	Ground terminal (for microcomputer I/F)
8	XRST	I	System reset signal input terminal from the power control "L": reset
9	S MON	I	Servo signal monitor input terminal (A/D input) from RF amp
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
12	VREF MON	I	Clear reference monitor voltage input terminal (A/D input) from RF amp
13	SET KEY 1	I	Key input terminal from the switch & LCD module (A/D input)
14	SET KEY 2	I	Key input terminal (A/D input) Not used
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) Not used
18	REC KEY	I	REC key input terminal (A/D input) Not used
19	HALF LOCK SW	I	Open/close detection switch of the upper panel input terminal "L": when upper panel close
20	RMC KEY	I	Key input terminal (A/D input) from the remote commander attached headphone
21	AVDD	—	Power supply terminal (for the analog circuit block) (+2.3V)
22	AVSS	—	Ground terminal (for the analog circuit block)
23	VDIOSC	—	Power supply terminal (for OSC cell) (+2.3V)
24	OSCI	I	System clock (45.1584MHz) input terminal
25	OSCO	O	System clock (45.1584MHz) output terminal
26	VSIOSC	—	Ground terminal (for OSC cell)
27	DAVDD	—	Power supply terminal (for the built-in D/A converter) (+2.3V)
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) (+2.3V)
36	BIAS	I	Bias current input terminal for the playback EFM comparison
37	RFI	I	Playback EFM RF signal input from RF amp
38	AVS1	—	Ground terminal (for the analog)
39	PCO	O	Phase comparison output terminal for the playback EFM system master PLL
40	PDO	O	Phase comparison output terminal for the analog PLL Not used
41	FILI	I	Filter input terminal for the playback EFM system master PLL
42	FILO	O	Filter output terminal for 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

Pin No.	Pin Name	I/O	Description
45	BOTM	I	Bottom hold signal input of the light amount signal (RF/ABCD) from RF amp
46	ABCD	I	Light amount signal (ABCD) input from RF amp
47	FE	I	Focus error signal input from RF amp
48	AUX1	I	Support signal (I_3 signal/temperature signal) input terminal (A/D input) Not used
49	VC	I	Middle point voltage (+1.2V) input terminal
50	ADIO	O	Monitor output terminal of A/D converter input signal Not used
51	ADRT	I	A/D converter the upper limit voltage input terminal (fixed at "H" in this set)
52	AVD2	—	Power supply terminal (for the analog) (+2.3V)
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
56	TE	I	Tracking error signal input from RF amp
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
59	DSPVDD0	—	Power supply terminal (for DSP block) (+1.5V)
60	DSPVSS0	—	Ground terminal (for DSP block)
61	XTSL	I	Input terminal for the frequency set up of the system clock "L": 45.1584MHz, "H": 22.5792MHz (fixed at "L" in this set)
62	DIN1	I	Input terminal of the record system digital audio signal Not used
63	DOUT	O	Output terminal of the playback system digital audio signal Not used
64	DAPWMLP	O	D/A converter PWM output terminal (L-CH right phase) Not used
65	DAPWMLN	O	D/A converter PWM output terminal (L-CH reverse phase) Not used
66	DAPWMRP	O	D/A converter PWM output terminal (R-CH right phase) Not used
67	DADT	O	Audio data output terminal Not used
68	ADDT	I	Data input terminal Not used
69	LRCK	O	L/R sampling clock signal (44.1KHz) output terminal Not used
70	XBCK	O	Bit clock signal (2.8224MHz) output terminal Not used
71	FS256	O	11.2896MHz clock signal output terminal Not used
72	MVCI	I	Clock signal input terminal Not used
73	DSPVDD1	—	Power supply terminal (for DSP block) (+1.5V)
74	ADFG	I	ADIP duplex FM signal (20.05±1kHz) input from RF amp
75	F0CNT	O	Filter cut off control signal output terminal Not used
76	DIFVDD0	—	Power supply terminal (for DSP I/F) (+1.9V)
77	DIFVSS0	—	Ground terminal (for DSP I/F)
78	APCREF	O	Reference PWM signal output for the laser automatic power control to RF amp
79	LDDR	O	PWM signal output for the laser automatic power control Not used
80	TRDR	O	Tracking servo drive PWM signal output (–) to the motor driver
81	TFDR	O	Tracking servo drive PWM signal output (+) to the motor driver
82	FFDR	O	Focus servo drive PWM signal output (+) to the motor driver
83	FRDR	O	Focus servo drive PWM signal output (–) to the motor driver
84	MCUVDD1	—	Power supply terminal (for the microcomputer block) (+1.5V)
85	FGIN	I	FG signal input terminal for the spindle CAV servo Not used
86	FS4	O	176.4kHz clock signal output to the power control
87	SPDU	O	Spindle motor drive control signal output (U) to the motor driver
88	SPVS	O	Spindle servo drive PWM signal output to the motor driver
89	SPDV	O	Spindle motor drive control signal output (V) to the motor driver

Pin No.	Pin Name	I/O	Description
90	SPDW	O	Spindle motor drive control signal output (W) to the motor driver
91	DSPVDD2	—	Power supply terminal (for DSP block) (+1.5V)
92	DSPVSS1	—	Ground terminal (for DSP block)
93	SPCU	I	Spindle motor drive comparison signal input (U) from the motor driver
94	SPCV	I	Spindle motor drive comparison signal input (V) from the motor driver
95	SPCW	I	Spindle motor drive comparison signal input (W) from the motor driver
96	SDU	O	Sled motor drive signal output (U) to the motor driver
97	SLVS	O	Sled servo drive PWM signal output to the motor driver
98	SDV	O	Sled motor drive signal output (V) to the motor driver
99	SDW	O	Sled motor drive signal output (W) to the motor driver
100	SLCU	I	Sled motor drive comparison signal input (U) from the motor driver
101	SLCV	I	Sled motor drive comparison signal input (V) from the motor driver
102	SLCW	I	Sled motor drive comparison signal input (W) from the motor driver
103	DIFVDD1	—	Power supply terminal (for DSP I/F) (+1.9V)
104	DIFVSS1	—	Ground terminal (for DSP I/F)
105	EFMO	O	EFM encode data output terminal for the record Not used
106	MNT0	O	Internal DSP monitor output (0) terminal Not used
107	MNT1	O	Internal DSP monitor output (1) terminal Not used
108	MNT2	O	Internal DSP monitor output (2) terminal Not used
109	MNT3	O	Internal DSP monitor output (3) terminal Not used
110	SENSE	O	Internal DSP (SENS) monitor output terminal Not used
111	TX	O	Record data output enable signal output monitor terminal of the internal DSP Not used
112	RECP	O	Laser power changeover signal output monitor terminal Not used
113	DSPVDD3	—	Power supply terminal (for DSP block) (+1.5V)
114 to 117	NC	O	Output terminal for the external D-RAM Not used
118	DRAMVSS0	—	Ground terminal (for the external D-RAM)
119	DRAMVDD0	—	Power supply terminal (for the external D-RAM) (+2.3V)
120 to 138	NC	O	Output terminal for the external D-RAM Not used
139	DRAMVDD1	—	Power supply terminal (for the external D-RAM) (+2.3V)
140	DRAMVSS1	—	Ground terminal (for the external D-RAM)
141	TSB MST VDD	—	Power supply terminal (for TSB master communication) (+1.9V)
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) (+1.9V)
144	TSB SLVI	I	TSB slave signal input terminal Not used
145	TSB SLVO	O	TSB slave signal output terminal Not used
146	TDI	I	Data input terminal for JTAG Not used
147	TMS	I	Test mode control input terminal for JTAG Not used
148	TCK	I	Clock input terminal for JTAG Not used
149	XTRST	I	Reset input terminal for JTAG Not used
150	TDO	O	Data output terminal for JTAG Not used
151	JTAGVDD	—	Power supply terminal (for JTAG) (+2.3V)
152	JTAGVSS	—	Ground terminal (for JTAG)
153	MCUVDD2	—	Power supply terminal (for the microcomputer block) (+1.5V)
154	MIFVDD0	—	Power supply terminal (for the microcomputer I/F block) (+1.9V)
155	MIFVSS0	—	Ground terminal (for the microcomputer I/F block)

Pin No.	Pin Name	I/O	Description
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	NC	—	Not used
160	SSB DATA	I/O	Input/output of SSB data with RF amp
161	SSB CLK	O	SSB clock output to RF amp
162	MCUVSS0	—	Ground terminal (for the microcomputer block)
163	LED GREEN PWM	O	
164	VL PWM	O	PWM signal output for the laser power supply voltage control to the power control
165	VC PWM	O	PWM signal output for the system power supply voltage control to the power control
166	VG PWM	O	Not used
167	LED RED PWM	O	
168	NC	O	Not used
169	CLK SEL	O	System clock select signal output terminal Not used
170	OPEN CLOSE SW	I	Not used
171	NC	O	Not used
172	SET CODE0	I	Input terminal for the set (fixed at “L” in this set)
173	SET CODE1	I	Input terminal for the set (open in this set)
174	SET CODE2	I	Input terminal for the set (fixed at “L” in this set)
175	SET CODE3	I	Input terminal for the set (open in this set)
176	MIFVDD1	—	Power supply terminal (for the microcomputer I/F block) (+1.9V)
177	MIFVSS1	—	Ground terminal (for the microcomputer I/F block)
178	AOUT SEL	O	HP/LINE changeover signal output terminal Not used
179	SI0	I	Serial data input from the nonvolatile memory
180	SO0	O	Serial data output to the nonvolatile memory
181	SCK0	O	Serial clock signal output to the nonvolatile memory
182	XGUM ON	I	Rechargeable battery detection switch input terminal “L”: there is rechargeable battery Not used
183	BEEP	O	Beep sound control signal output to the headphone amp
184	NC	O	Not used
185	VD SEL	O	VD power supply changeover signal output terminal Not used
186	XMUTE	O	Analog muting control signal output “L”: muting ON Not used
187	LCD RST AUX	O	Reset control signal output terminal “L”: reset Not used
188	PAUSE KEY	I	Pause key input terminal Not used
189	MIC SENSE	O	Mic sense control signal output “L”: Low sensitivity “H”: High sensitivity Not used
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 Not used
192	XJACK DET	I	LINE IN plug detection signal input terminal Not used
193	XMIC DET	I	Microphone plug detection signal input terminal Not used
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) (+1.9V)
197 to 199	MODE1 to 3	O	Power supply control signal output terminal (for the over write head drive) Not used
200, 201	HD CON 1, 2	O	Over write head control signal output terminal Not used
202	XTEST	I	Terminal for test mode set (nomally: open) “L”: test mode
203	XCS ADA	O	Chip select signal output terminal Not used

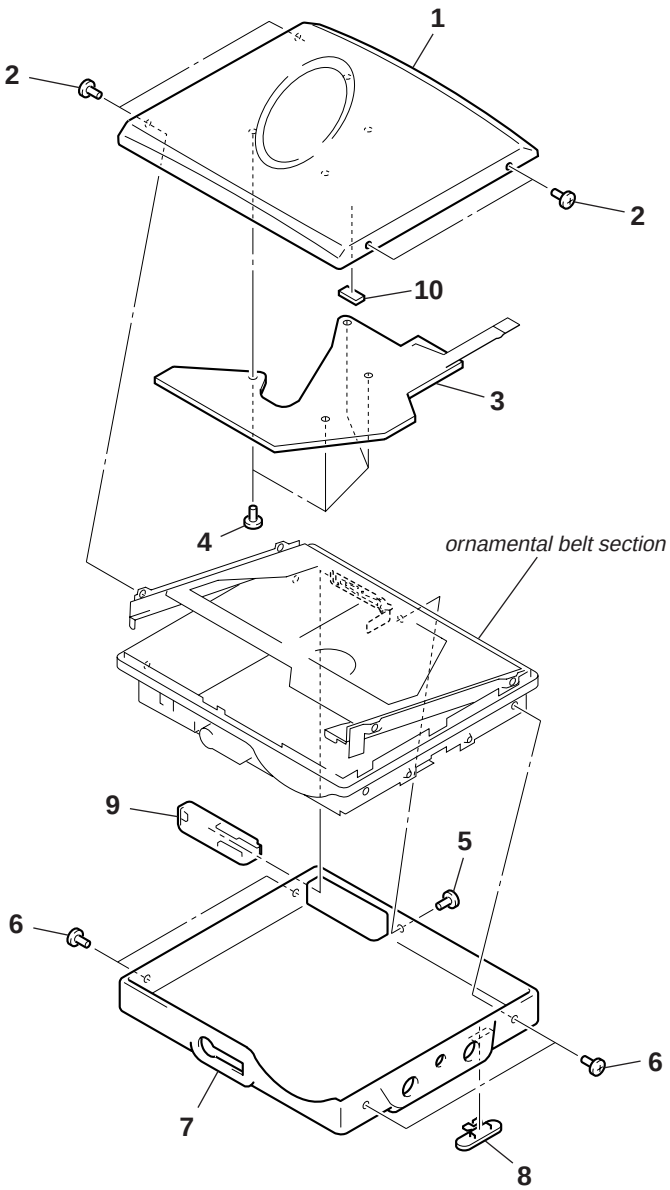
Pin No.	Pin Name	I/O	Description
204	XPD ADA	O	Power supply control signal output terminal Not used
205	XCS LCD	O	Chip select signal output terminal Not used
206	LCD STB	O	Strobe signal output terminal Not used
207	OPR LED G H	O	Not used
208	REC OPR LED	O	LED ON/OFF control signal output terminal for REC display Not used
209	OPR LED G L	O	Not used
210	TSB SLV CHK	O	TSB slave detection signal output terminal Not used
211	OPR LED R H	O	Not used
212	OPR LED R L	O	Not used
213	MCUVSS1	—	Ground terminal (for the microcomputer block)
214	GND SW	O	GND changeover control signal output terminal Not used
215	XOPT CTL	O	Power supply ON/OFF control signal output terminal for DIN PD drive Not used
216	CS RTC	O	Chip select signal output terminal Not used
217	VG CTL	O	Not used
218	MUTE	O	Analog muting control signal output to the headphone amp “H”: muting ON
219	XCS NV	O	Chip select signal output to EEPROM
220	XRST MTR DRV	O	Reset control signal output to the motor driver
221	XRF RST	O	Reset control signal output to RF amp
222	MCUVDD3	—	Power supply terminal (for the microcomputer block) (+1.5V)
223	SPDL MON	I	Spindle servo monitor signal input from the motor driver
224	XAVLS	I	Input terminal for AVLS switch detection signal Not used
225, 226	JOG A, B	I	Jog dial pulse input terminal Not used
227	XHOLD SW	I	HOLD switch input terminal “L”: hold ON, “H”: hold OFF
228	SYNC REC	I	SYNCHRO REC switch input terminal “L”: OFF, “H”: ON Not used
229	TSB SSB CTL	O	TSB/SSB changeover control signal output terminal Not used
230	PROTECT	I	Detection input terminal of the record check claw “L”: recording possible condition, “H”: protect Not used
231	FLASHVDD	—	Power supply terminal (for the internal FLASH ROM) (+2.3V)
232	FLASHVSS	—	Ground terminal (for the internal FLASH ROM)
233	SLD MON	I	Sled servo monitor signal input from the motor driver
234	VLON	O	Power supply control signal output for the laser diode drive to the power control
235	SLEEP	O	System sleep control signal output to the power control “H”: sleep ON
236	FFCLR	O	Input latch output for the start switching to the power control
237	CHG GAIN	O	Charge gain control signal output terminal Not used
238	CHG	O	Charge ON/OFF control signal output terminal “H”: charge ON Not used
239	NC	O	Not used
240	XHP STBY	O	Power supply control signal output for the headphone amp
241	MIFVDD3	—	Power supply terminal (for the microcomputer I/F block) (+1.9V)
242	MIFVSS2	—	Ground terminal (for the microcomputer I/F block)
243	TEST2	I	Input terminal for the main test (normally open)
244	NC	—	Not used

SECTION 7
EXPLODED VIEWS

NOTE:
- -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
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Accessories are given in the last of the electrical parts list.
- Refer to "Section 1. SERVICING NOTES" (page 3) for color variation.

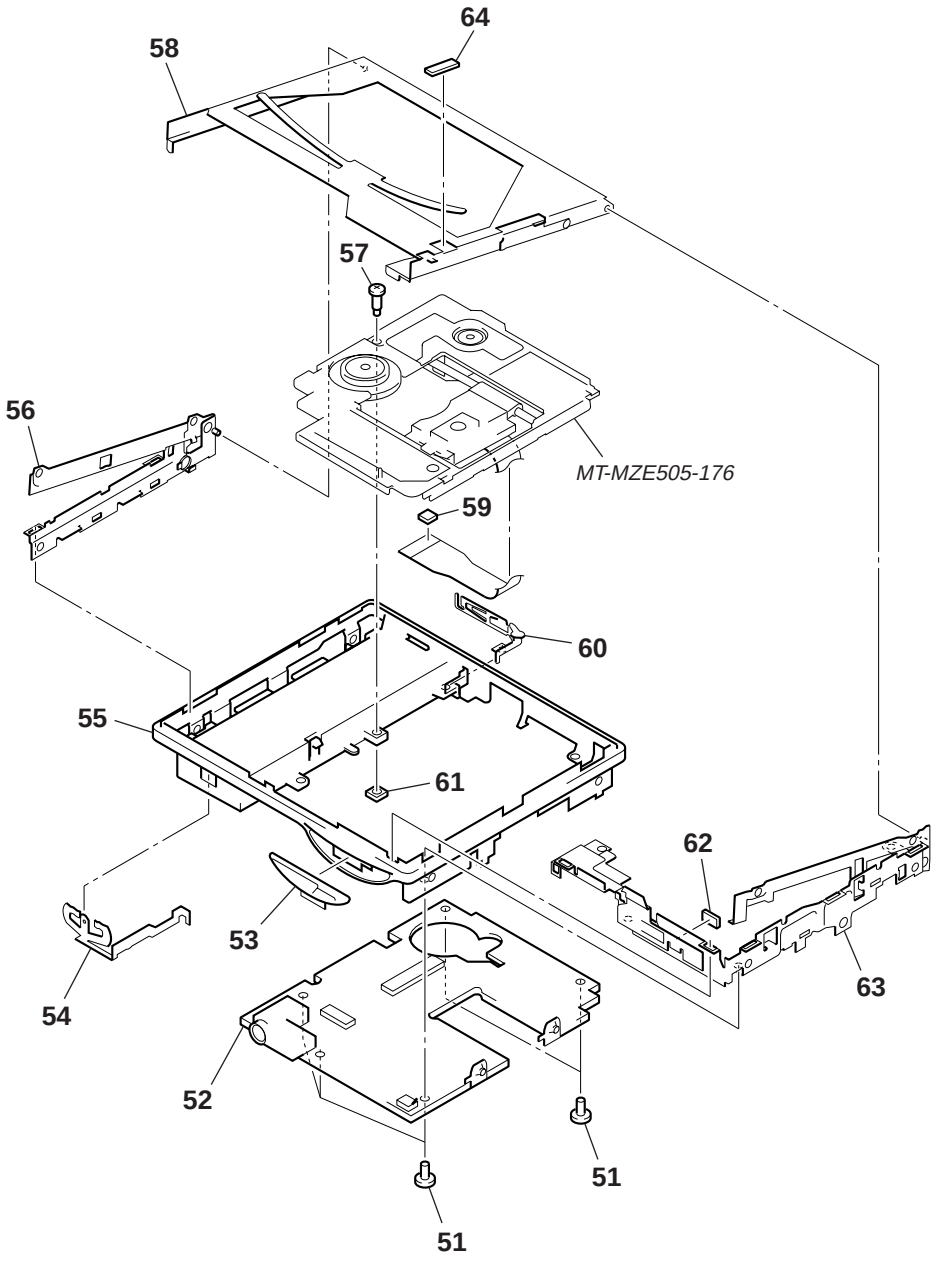
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

7-1. UPPER PANEL, CASE (REAR) SECTION



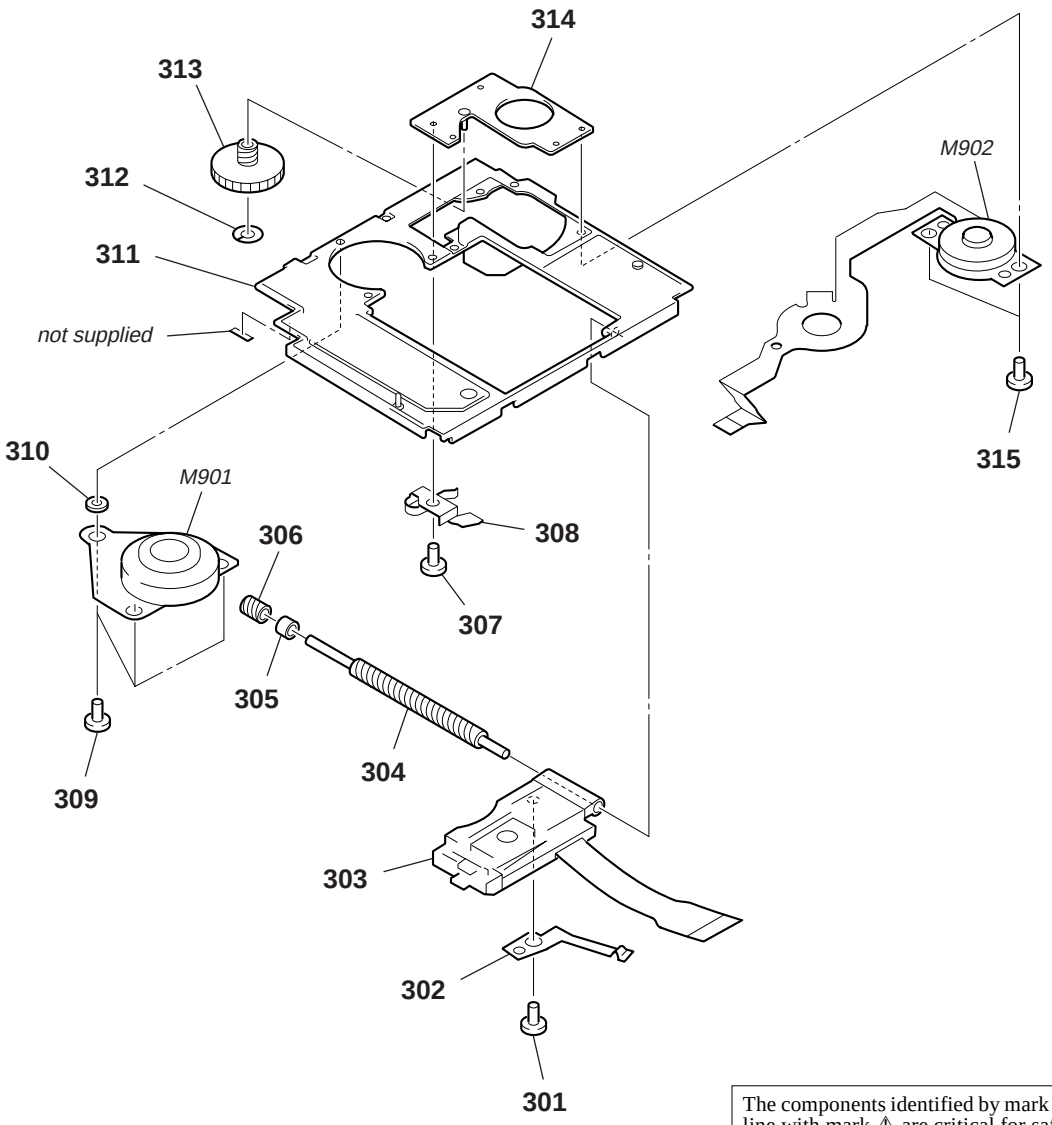
Ref. No.	Part No.	Description	Remark
1	X-3381-936-1	UPPER PANEL ASSY (S) SVX (SILVER)	
1	X-3381-937-1	UPPER PANEL ASSY (L) SVX (BLUE)	
1	X-3381-939-1	UPPER PANEL ASSY (P) SVX (PINK)	
1	X-3381-942-1	UPPER PANEL ASSY (V) SVX (VIOLET)	
2	3-225-873-13	SCREW (M1.4)	
* 3	A-3021-677-A	SWITCH BOARD, COMPLETE	
4	3-318-382-91	SCREW (1.7X2.5), TAPPING	
5	4-984-017-31	SCREW (1.7), TAPPING	
6	3-225-873-29	SCREW (M1.4)	
7	3-237-190-31	CASE (REAR) (SILVER)...(SILVER, VIOLET)	
7	3-237-190-41	CASE (REAR) (BLUE)	
7	3-237-190-51	CASE (REAR) (PINK)	
8	3-235-225-01	KNOB (WIRELESS)	
9	3-235-211-31	LID, BATTERY CASE (SILVER)...(SILVER, VIOLET)	
9	3-235-211-41	LID, BATTERY CASE (BLUE)	
9	3-235-211-51	LID, BATTERY CASE (PINK)	
10	3-242-080-01	SPACER (BUTTON)	

7-2. ORNAMENTAL BELT SECTION



Ref. No.	Part No.	Description	Remark
51	3-335-797-01	SCREW (M1.4X2), TOOTHED LOCK	
* 52	A-3021-679-A	MAIN BOARD, COMPLETE	
53	3-235-193-01	KNOB (OPEN)	
54	3-235-223-01	TERMINAL BOARD (MINUS)	
55	3-235-192-32	BELT, ORNAMENTAL (SILVER)	
55	3-235-192-42	BELT, ORNAMENTAL (BLUE)	
55	3-235-192-52	BELT, ORNAMENTAL (PINK)	
55	3-235-192-62	BELT, ORNAMENTAL (VIOLET)	
56	X-3381-107-2	BRACKET (L) ASSY	
57	3-231-313-01	SCREW (L), STEP	
58	X-3380-986-1	HOLDER ASSY (Z)	
59	3-241-133-01	SHEET (CONNECTOR)	
60	X-3381-109-1	TERMINAL BOARD ASSY, BATTERY	
61	3-221-591-01	NUT (M1.4)	
62	3-240-873-01	SPACER	
63	X-3381-108-4	BRACKET (R) ASSY	
64	3-242-079-01	SPACER (HOLDER)	

7-3. MECHANISM DECK SECTION (MT-MZE505-176)



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

Ref. No.	Part No.	Description	Remark
301	3-222-392-01	SCREW (M1.4), TAPPING	
302	3-222-391-01	SPRING (M), RACK	
⚠303	X-3379-869-1	OPTICAL PICK-UP (LCX-4E)	
304	4-222-203-02	SCREW, LEAD	
305	3-043-237-02	BEARING (N)	
306	4-222-208-01	GEAR (SB)	
307	3-225-996-01	SCREW (M1.4) (EG), PRECISION PAN	
308	3-224-779-02	SPRING, THRUST DETENT	
309	3-225-278-11	SCREW, TAPPING	
310	4-997-677-11	WASHER	

Ref. No.	Part No.	Description	Remark
311	3-223-833-01	CHASSIS	
312	3-338-645-31	WASHER (0.8-2.5)	
313	4-222-216-01	GEAR (SA)	
314	X-3379-529-4	BASE ASSY, MOTOR	
315	3-225-996-07	SCREW (M1.4) (EG), PRECISION PAN	
M901	8-835-744-01	MOTOR, DC SSM18B (SPINDLE) (WITH TURN TABLE)	
M902	1-763-727-21	MOTOR, DC (SLED) (WITH PULLY GEAR, MOTOR FLEXIBLE BOARD)	

SECTION 8
ELECTRICAL PARTS LIST

MAIN

NOTE:
- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms.
  METAL: Metal-film resistor.
  METAL OXIDE: Metal oxide-film resistor.
  F: nonflammable
- Items marked "*" are not stocked since they are seldom required for routine service.
  Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u: µ, for example:
  uA. . : µA. . uPA. . : µPA. .
  uPB. . : µPB. . uPC. . : µPC. .
  uPD. . : µPD. .
- CAPACITORS
  uF: µF
- COILS
  uH: µH

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.

Ref. No.	Part No.	Description			Remark
*	A-3021-679-A	MAIN BOARD, COMPLETE			
		**********			
		< CAPACITOR >			
C101	1-125-837-11	CERAMIC CHIP	1uF	10%	6.3V
C102	1-135-868-11	TANTALUM CHIP	220uF	20%	2.5V
C104	1-164-942-11	CERAMIC CHIP	0.0068uF	10%	16V
C106	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
C201	1-125-837-11	CERAMIC CHIP	1uF	10%	6.3V
C202	1-135-868-11	TANTALUM CHIP	220uF	20%	2.5V
C203	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
C204	1-164-942-11	CERAMIC CHIP	0.0068uF	10%	16V
C301	1-117-919-11	TANTALUM CHIP	10uF	20%	6.3V
C302	1-107-820-11	CERAMIC CHIP	0.1uF		16V
C303	1-125-837-11	CERAMIC CHIP	1uF	10%	6.3V
C304	1-125-926-11	TANTALUM CHIP	4.7uF	20%	6.3V
C305	1-115-565-11	CERAMIC CHIP	2.2uF	10%	10V
C306	1-127-895-11	TANTALUM CHIP	22uF	20%	4V
C351	1-164-931-11	CERAMIC CHIP	100PF	10%	50V
C501	1-164-931-11	CERAMIC CHIP	100PF	10%	50V
C502	1-127-772-11	CERAMIC CHIP	33000PF	10%	10V
C503	1-164-940-11	CERAMIC CHIP	0.0033uF	10%	16V
C504	1-164-940-11	CERAMIC CHIP	0.0033uF	10%	16V
C505	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C508	1-164-938-11	CERAMIC CHIP	0.0015uF	10%	50V
C509	1-164-940-11	CERAMIC CHIP	0.0033uF	10%	16V
C510	1-164-850-11	CERAMIC CHIP	10PF	0.5PF	50V
C511	1-164-850-11	CERAMIC CHIP	10PF	0.5PF	50V
C513	1-164-850-11	CERAMIC CHIP	10PF	0.5PF	50V
C515	1-107-820-11	CERAMIC CHIP	0.1uF		16V
C516	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C519	1-164-940-11	CERAMIC CHIP	0.0033uF	10%	16V
C524	1-135-259-11	TANTALUM CHIP	10uF	20%	6.3V
C526	1-127-772-11	CERAMIC CHIP	33000PF	10%	10V
C527	1-127-772-11	CERAMIC CHIP	33000PF	10%	10V
C529	1-135-259-11	TANTALUM CHIP	10uF	20%	6.3V
C530	1-164-939-11	CERAMIC CHIP	0.0022uF	10%	50V
C557	1-127-772-11	CERAMIC CHIP	33000PF	10%	10V
C558	1-127-772-11	CERAMIC CHIP	33000PF	10%	10V
C559	1-127-772-11	CERAMIC CHIP	33000PF	10%	10V
C563	1-127-772-11	CERAMIC CHIP	33000PF	10%	10V
C564	1-127-772-11	CERAMIC CHIP	33000PF	10%	10V
C565	1-127-772-11	CERAMIC CHIP	33000PF	10%	10V
C601	1-107-820-11	CERAMIC CHIP	0.1uF		16V
C603	1-107-820-11	CERAMIC CHIP	0.1uF		16V
C604	1-107-820-11	CERAMIC CHIP	0.1uF		16V
C605	1-115-156-11	CERAMIC CHIP	1uF		10V
C606	1-117-919-11	TANTALUM CHIP	10uF	20%	6.3V
C607	1-115-156-11	CERAMIC CHIP	1uF		10V
C608	1-107-820-11	CERAMIC CHIP	0.1uF		16V
C609	1-107-820-11	CERAMIC CHIP	0.1uF		16V
C610	1-117-919-11	TANTALUM CHIP	10uF	20%	6.3V
C611	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C612	1-117-863-11	CERAMIC CHIP	0.47uF	10%	6.3V
C613	1-164-935-11	CERAMIC CHIP	470PF	10%	50V
C615	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C616	1-107-820-11	CERAMIC CHIP	0.1uF		16V
C618	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C619	1-107-820-11	CERAMIC CHIP	0.1uF		16V
C620	1-107-820-11	CERAMIC CHIP	0.1uF		16V
C699	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C802	1-107-820-11	CERAMIC CHIP	0.1uF		16V
C803	1-164-935-11	CERAMIC CHIP	470PF	10%	50V
C804	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C806	1-119-923-11	CERAMIC CHIP	0.047uF	10%	10V
C807	1-119-923-11	CERAMIC CHIP	0.047uF	10%	10V
C808	1-107-820-11	CERAMIC CHIP	0.1uF		16V
C810	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C851	1-107-820-11	CERAMIC CHIP	0.1uF		16V
C853	1-164-942-11	CERAMIC CHIP	0.0068uF	10%	16V
C854	1-107-820-11	CERAMIC CHIP	0.1uF		16V
C901	1-110-569-11	TANTALUM CHIP	47uF	20%	6.3V
C903	1-135-989-11	TANTALUM CHIP	47uF	20%	6.3V
C904	1-119-750-11	TANTALUM CHIP	22uF	20%	6.3V
C905	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C907	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C908	1-164-940-11	CERAMIC CHIP	0.0033uF	10%	16V
C909	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C910	1-164-937-11	CERAMIC CHIP	0.001uF	10%	50V
C911	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C914	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C915	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C916	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C917	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C918	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C919	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C920	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C921	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V

MAIN

Ref. No.	Part No.	Description			Remark
C922	1-119-750-11	TANTALUM CHIP	22uF	20%	6.3V
C952	1-128-964-11	TANTALUM CHIP	100uF	20%	6.3V
C994	1-164-931-11	CERAMIC CHIP	100PF	10%	50V
C995	1-107-820-11	CERAMIC CHIP	0.1uF		16V
C996	1-164-931-11	CERAMIC CHIP	100PF	10%	50V
C997	1-107-820-11	CERAMIC CHIP	0.1uF		16V
C999	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
		< CONNECTOR >			
* CN501	1-794-772-21	CONNECTOR, FPC (ZIF) 20P			
* CN551	1-778-156-11	CONNECTOR, FFC/FPC (ZIF) 8P			
* CN801	1-816-180-21	CONNECTOR, FPC (ZIF) 6P			
		< DIODE >			
D101	8-719-056-72	DIODE 02DZ2.4-Z (TPH3)			
D201	8-719-056-72	DIODE 02DZ2.4-Z (TPH3)			
D855	8-719-077-43	DIODE MAZZ068H01S0			
D901	8-719-081-33	DIODE MA2YD1500LS0			
D902	8-719-081-33	DIODE MA2YD1500LS0			
D903	8-719-049-09	DIODE 1SS367-T3SONY			
		< FERRITE BEAD >			
FB801	1-414-228-11	FERRITE	0uH		
FB802	1-414-228-11	FERRITE	0uH		
		< IC >			
IC301	8-759-598-15	IC TA2131FL (EL)			
IC501	6-701-391-01	IC SN761057ADBT			
IC551	6-700-680-01	IC SC111258FCR2			
@ IC601	8-753-000-18	IC CXD2671-210GA			
IC801	8-759-566-18	IC AK6480BH-E2			
IC901	8-759-698-61	IC XPC18A32FCR2			
IC903	8-759-186-89	IC XC61AN0802MR			
		< JACK >			
J301	1-793-288-62	JACK (🎧)			
		< COIL >			
L503	1-469-570-21	INDUCTOR	10uH		
L901	1-419-258-21	INDUCTOR	68uH		
L902	1-419-646-21	INDUCTOR	47uH		
L904	1-414-398-11	INDUCTOR	10uH		
L905	1-412-032-11	INDUCTOR CHIP	100uH		
		< TRANSISTOR >			
Q301	8-729-037-52	TRANSISTOR	2SC4738F-Y/GR (TPL3)		
Q501	8-729-922-10	TRANSISTOR	2SA1577-T106-QR		
Q901	6-550-075-01	TRANSISTOR	UMZ8NTR		
Q902	8-729-037-92	TRANSISTOR	2SD2216J-R (TX).SO		
Q903	8-729-037-92	TRANSISTOR	2SD2216J-R (TX).SO		
		< RESISTOR >			
R103	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R105	1-218-977-11	RES-CHIP	100K	5%	1/16W
R106	1-218-963-11	RES-CHIP	6.8K	5%	1/16W
R107	1-208-635-11	RES-CHIP	10	5%	1/16W
R203	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R204	1-208-635-11	RES-CHIP	10	5%	1/16W
R205	1-218-977-11	RES-CHIP	100K	5%	1/16W
R206	1-218-963-11	RES-CHIP	6.8K	5%	1/16W
R301	1-218-935-11	RES-CHIP	33	5%	1/16W
R302	1-218-963-11	RES-CHIP	6.8K	5%	1/16W
R303	1-218-981-11	RES-CHIP	220K	5%	1/16W
R501	1-218-971-11	RES-CHIP	33K	5%	1/16W
R503	1-218-953-11	RES-CHIP	1K	5%	1/16W
R505	1-208-691-11	METAL CHIP	2.2K	0.5%	1/16W
R515	1-208-691-11	METAL CHIP	2.2K	0.5%	1/16W
R516	1-208-691-11	METAL CHIP	2.2K	0.5%	1/16W
R517	1-208-691-11	METAL CHIP	2.2K	0.5%	1/16W
R519	1-218-977-11	RES-CHIP	100K	5%	1/16W
R521	1-242-967-11	RES-CHIP	1	5%	1/16W
R525	1-218-990-11	SHORT	0		
R526	1-218-990-11	SHORT	0		
R601	1-208-635-11	RES-CHIP	10	5%	1/16W
R602	1-208-635-11	RES-CHIP	10	5%	1/16W
R603	1-218-943-11	RES-CHIP	150	5%	1/16W
R605	1-218-965-11	RES-CHIP	10K	5%	1/16W
R606	1-218-977-11	RES-CHIP	100K	5%	1/16W
R607	1-218-977-11	RES-CHIP	100K	5%	1/16W
R609	1-218-981-11	RES-CHIP	220K	5%	1/16W
R612	1-218-959-11	RES-CHIP	3.3K	5%	1/16W
R613	1-218-945-11	RES-CHIP	220	5%	1/16W
R614	1-218-953-11	RES-CHIP	1K	5%	1/16W
R615	1-202-974-11	RES-CHIP	3.3M	5%	1/16W
R618	1-218-985-11	RES-CHIP	470K	5%	1/16W
R804	1-218-973-11	RES-CHIP	47K	5%	1/16W
R806	1-218-977-11	RES-CHIP	100K	5%	1/16W
R807	1-218-959-11	RES-CHIP	3.3K	5%	1/16W
R808	1-218-959-11	RES-CHIP	3.3K	5%	1/16W
R811	1-242-967-11	RES-CHIP	1	5%	1/16W
R817	1-218-941-11	RES-CHIP	100	5%	1/16W
R818	1-218-941-11	RES-CHIP	100	5%	1/16W
R819	1-218-989-11	RES-CHIP	1M	5%	1/16W
R827	1-218-989-11	RES-CHIP	1M	5%	1/16W
R903	1-218-957-11	RES-CHIP	2.2K	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	1-218-973-11	RES-CHIP	47K	5%	1/16W
R912	1-218-989-11	RES-CHIP	1M	5%	1/16W
R913	1-218-989-11	RES-CHIP	1M	5%	1/16W
R914	1-218-977-11	RES-CHIP	100K	5%	1/16W
R915	1-218-977-11	RES-CHIP	100K	5%	1/16W
R916	1-218-989-11	RES-CHIP	1M	5%	1/16W
R920	1-208-707-11	METAL CHIP	10K	0.5%	1/16W
R922	1-218-979-11	RES-CHIP	150K	5%	1/16W
R946	1-208-715-11	METAL CHIP	22K	0.5%	1/16W
R948	1-208-939-11	METAL CHIP	150K	0.5%	1/16W
R950	1-218-953-11	RES-CHIP	1K	5%	1/16W
R964	1-218-987-11	RES-CHIP	680K	5%	1/16W

@ Replacement of CXD2671-210GA (IC601) used in this set requires a special tool.

Ref. No.	Part No.	Description	Remark
		< COMPOSITION CIRCUIT BLOCK >	
RB301	1-233-970-21	RES, NETWORK (CHIP TYPE) 33K	
RB553	1-233-967-11	RES, NETWORK (CHIP TYPE) 10K	
RB554	1-233-964-21	RES, NETWORK (CHIP TYPE) 3.3K	
		< SWITCH >	
S808	1-762-078-11	SWITCH, SLIDE (HOLD)	
S809	1-786-101-12	SWITCH, DETECTION (OPEN/CLOSE DETECT)	
		< VIBRATOR >	
X601	1-795-002-21	VIBRATOR, CERAMIC (45.1584MHz)	
**********			
*	A-3021-677-A	SWITCH BOARD, COMPLETE **********	
For the parts on the SWITCH board, replace the entire mounted board.			
**********			
		MISCELLANEOUS **********	
⚠303	X-3379-869-1	OPTICAL PICK-UP (LCX-4E)	
M901	8-835-744-01	MOTOR, DC SSM18B (SPINDLE) (WITH TURN TABLE)	
M902	1-763-727-21	MOTOR, DC (SLED) (WITH PULLY GEAR, MOTOR FLEXIBLE BOARD)	
**********			
		ACCESSORIES **********	
	1-251-895-11	BATTERY CASE	
	1-476-210-22	REMOTE CONTROL UNIT (RM-MC11EL/B)	
	1-476-763-15	CHARGE UNIT	
⚠	1-476-858-11	ADAPTOR, AC (AC-ES305) (Hong Kong)	
⚠	1-	ADAPTOR, AC ( ) (E)	
	1-756-194-21	BATTERY, NICKEL HYDROGEN (NH-14WM (A))	
⚠	3-008-521-01	CASE, BATTERY CHARGE	
	3-220-749-01	CASE, CARRYING	
	3-235-224-31	ATTACHMENT (SILVER)	
	3-235-224-41	ATTACHMENT (BLUE)	
	3-235-224-51	ATTACHMENT (PINK)	
	3-235-224-61	ATTACHMENT (VIOLET)	
	3-238-528-11	MANUAL, INSTRUCTION (ENGLISH)	
	3-238-528-31	MANUAL, INSTRUCTION (TRADITIONAL CHINESE)	
	3-238-528-41	MANUAL, INSTRUCTION (KOREAN) (E)	
	8-954-008-91	RECEIVER, EAR MDR-E808SP	

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 right on the revised page allows you to jump to the next revised page.

Ver.	Date	Description of Revision
1.0	2002.02	New