

MZ-E90

SERVICE MANUAL

Ver 1.1 2000.02



(Photo: Silver)

*US Model
AEP Model
UK Model
E Model
Australian Model
Tourist Model*

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Model Name Using Similar Mechanism	NEW
MD Mechanism Type	MT-MZE90-166
Optical Pick-up Mechanism Type	LCX-2E

SPECIFICATIONS

System

Audio playing system
MiniDisc digital audio system
Laser diode properties
Material: GaAlAs
Wavelength: $\lambda = 790 \text{ nm}$
Emission duration: continuous
Laser output: less than $44.6 \mu\text{W}$
(This output is the value measured at a distance of 200 mm from the objective lens surface on the optical pick-up block with 7 mm aperture.)
Revolutions
600 rpm to 2250 rpm
Error correction
Advanced Cross Interleave Reed Solomon Code (ACIRC)
Sampling frequency
44.1 kHz
Coding
Adaptive TRansform Acoustic Coding (ATRAC)
Modulation system
EFM (Eight to Fourteen Modulation)
Number of channels
2 stereo channels
1 monaural channel
Frequency response
20 to 20,000 Hz $\pm 3 \text{ dB}$
Wow and Flutter
Below measurable limit
Outputs
Headphones: stereo mini-jack, maximum output level 5 mW + 5 mW, load impedance 16 ohm

General

Power requirements
Nickel metal hydride rechargeable battery
NH-14WM (supplied)
One LR6 (size AA) battery (not supplied)
Sony AC Power Adaptor AC-E15L* (not supplied) connected to the DC IN 1.5V jack
Battery operation time
Battery life*

Batteries	Playback
Ni-MH rechargeable battery (NH-14WM)	Approx. 21 hours**
One LR6 (size AA) alkaline battery	Approx. 31 hours
One LR6 (size AA) alkaline battery and a Ni-MH rechargeable battery (NH-14WM)	Approx. 56 hours**

* The battery life may be shorter depending on operating conditions and the temperature of the location.

** With a fully charged battery

– Continued on next page –

PORTABLE MINIDISC PLAYER



SONY®

Dimensions

Approx. 78.4 × 13.5 × 71.5 mm (w/h/d)
(3 1/8 × 9/16 × 2 7/8 in.) not including projecting parts and controls

Mass

Approx. 70 g (2.5 oz.) the player only

Approx. 113 g (4.0 oz.) incl. a mastered MD and a nickel metal hydride rechargeable battery NH-14WM

Supplied accessories

Battery Charger (1)

Rechargeable battery (1)

Rechargeable battery carrying case (1)

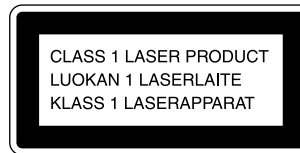
Headphones with a remote control (1)

Dry battery case (1)

Carrying pouch (1)

AC Plug Adaptor (1) (World model only)

Design and specifications are subject to change without notice.



This MiniDisc player is classified as a CLASS 1 LASER product.

The CLASS 1 LASER PRODUCT label is located on the bottom exterior.

IN NO EVENT SHALL SELLER BE LIABLE FOR ANY DIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES OF ANY NATURE, OR LOSSES OR EXPENSES RESULTING FROM ANY DEFECTIVE PRODUCT OR THE USE OF ANY PRODUCT.

“MD WALKMAN” is a trademark of Sony Corporation.

CAUTION

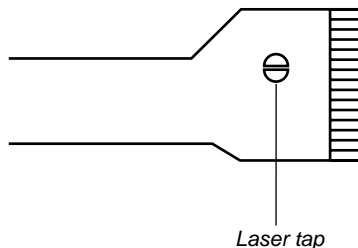
Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

Precautions for Laser Diode Emission Check

When checking the emission of the laser diode during adjustments, never view directly downwards as this may lead to blindness.

Precautions for Using Optical Pick-up (LCX-2E)

As the laser diode inside the optical pick-up damages by static electricity easily, solder the laser tap of the Optical pick-up flexible board when handling. Also take the necessary measures to prevent damages by static electricity. Handle the Optical pick-up flexible board with care as it breaks easily.



Optical Pick-up flexible board

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.

SAFETY-RELATED COMPONENT WARNING!!

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

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!!

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

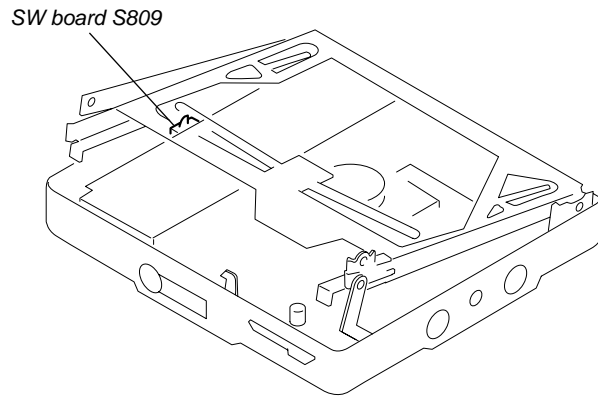
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SECTION 1 SERVICING NOTE

- 1) When repairing this device with the power on, if you remove the main board or open the upper panel assy, this device stops working.

In this case, you can work without the device stopping by fastening the hook of the OPEN/CLOSE switch (SW board S809) with tape.



- 2) This set is designed to perform automatic adjustment for each adjustment and write its value to EEPROM. Therefore, when EEPROM (SYSTEM board IC802) has been replaced in service, be sure to perform automatic adjustment and write resultant values to the new EEPROM.
Refer to section 5 Test Mode (page 11) for details.
- 3) Replacement of CXD2661GA-2 (IC601) and CXR701080-006GA (IC801) used in this set requires a special tool. Therefore, they cannot be replaced.

SECTION 2 GENERAL

This section is extracted from instruction manual.

Playing an MD right away!

Charge the supplied rechargeable battery, before using it for the first time. Other choices are a dry battery and house current. For details, see "Power Sources".

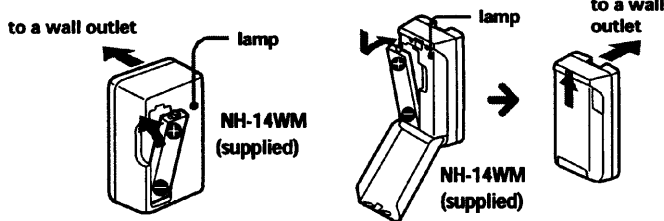
Stereo or monaural playback is automatically selected, depending on the sound source.

1 Charge the rechargeable battery.

After about 1.5 hours, charging ends and the lamp on the charger turns off. (To get maximum performance from battery, continue charging it for another hour after the lamp turns off.)

• Model for USA, Canada and continental Europe (Full charging takes 80 minutes.)

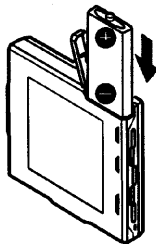
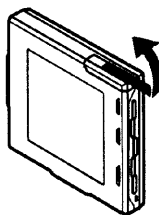
• World model and model for other countries (Full charging takes 120 minutes.)



2 Insert the rechargeable battery.

① Slide open the battery compartment as shown in the illustration.

② Insert the battery.

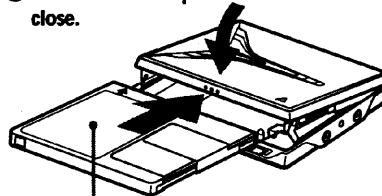


Make sure the + and - terminals are correctly oriented.

3 Insert an MD.

① Slide OPEN.

② Insert an MD and press the lid down to close.



With label facing upward, insert disc in direction of the arrow.

To	Do this (Beeps in the headphones)
Pause	Press II on the remote control. (Continuous short beeps) Press II on the remote control again to resume play.*1
Find the beginning of the current track	Press II once. Press the control towards II on the remote control. (Three short beeps)
Find the beginning of the previous tracks	Press II repeatedly. Press the control towards II on the remote control repeatedly. (Continuous three short beeps)
Find the beginning of the next track	Press III once. Press the control towards III on the remote control. (Two short beeps)
Go backwards while playing*1	Hold down II . Press and hold the control towards II on the remote control.
Go forward while playing*1	Hold down III . Press and hold the control towards III on the remote control.
Remove the MD	Press II , and then slide OPEN.*2

If playback does not start
Make sure the player is not locked. For details, see "To lock the controls (HOLD)".

For models supplied with the AC plug adaptor
If the battery charger does not fit the wall outlet, use the AC plug adaptor.

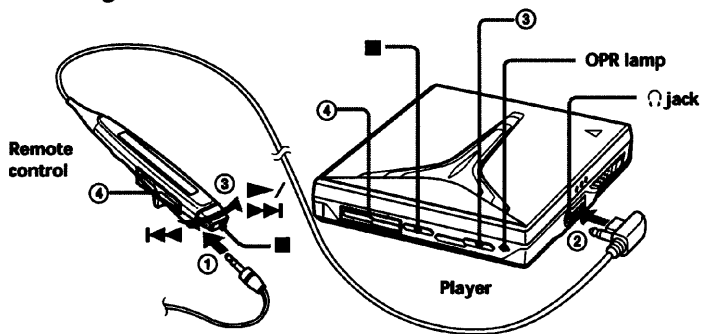
Display window while playing back
For details, see "To know the track name and time".





Track name** or elapsed time of the track being played



Track number

4 Play an MD.





- ① **Connect the headphones to the remote control.**
Plug it in firmly all the way.
- ② **Connect the headphones with the remote control to the  jack.**
- ③ **Press  (or press the control towards  or  on the remote control).**
The OPR lamp on the player lights up and the player starts to play the first track. When using the remote control, a short beep sounds in the headphones.
- ④ **Press VOLUME +/- (or press VOL +/- on the remote control) to adjust the volume.**
The volume indicator appears on the remote control to allow you to check the volume.

To stop play, press .

The OPR lamp on the player goes off. The display on the remote control disappears after a while. When using the remote control, a long beep sounds in the headphones.

Tips







- The OPR lamp on the player lights up on the player during playback. When you press , the lamp goes off.
- The display on the remote control disappears after a while after you have pressed .

Note

Do not slide OPEN during playback. If you do, the lid opens and playback stops.

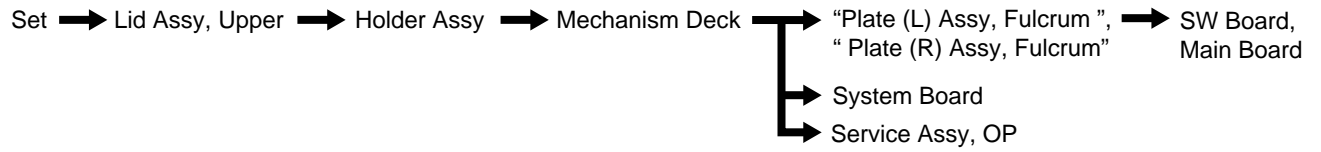
When using optional headphones

Use headphones with a stereo-miniplug. You cannot use headphones with a microplug.

- *1 When you press  or  on the player during pause (||), the player resumes playback. If you hold down  or  on the player (or press and hold the control towards  or  on the remote control) during pause (||), you can fast forward/rewind without listening to the playback sound.
- *2 Once you open the lid, the point to start playback will change to the beginning of the first track.
- *3 Appears only with MDs that have been electronically labeled.

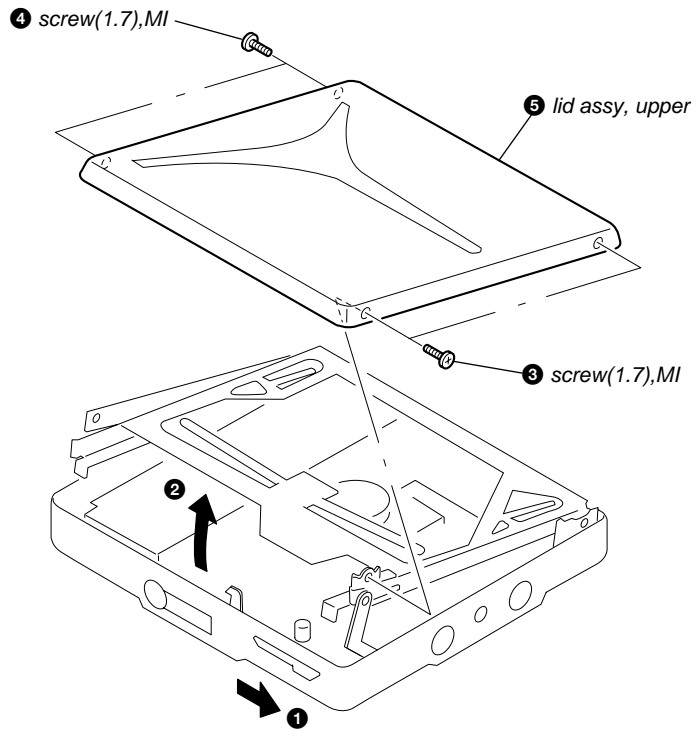
SECTION 3 DISASSEMBLY

Note : This set can be disassemble according to the following sequence.

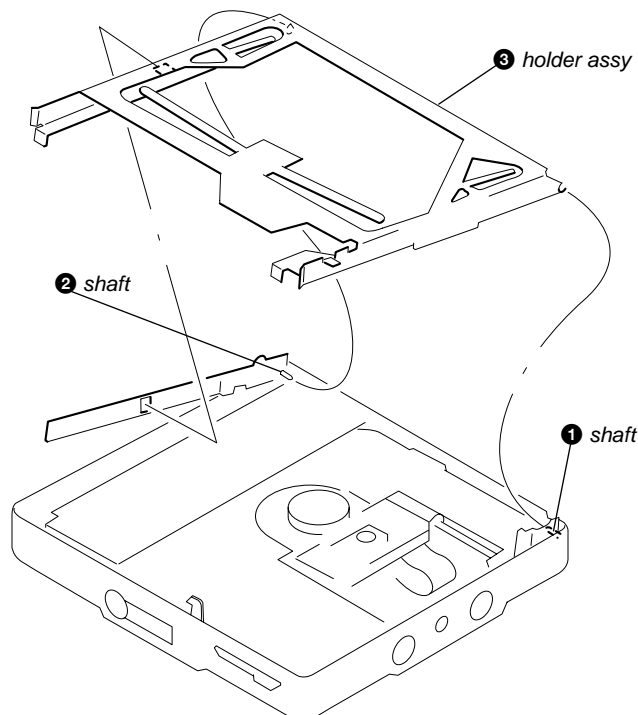


Note : Follow the disassembly procedure in the numerical order given.

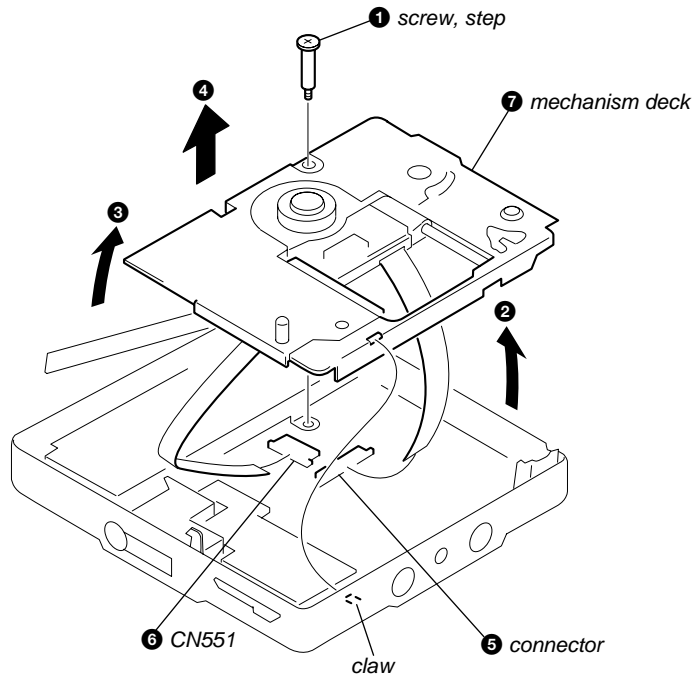
3-1. LID ASSY, UPPER



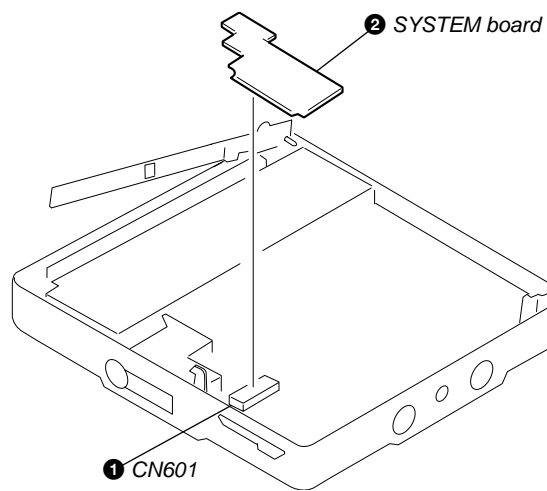
3-2. HOLDER ASSY



3-3. MECHANISM DECK

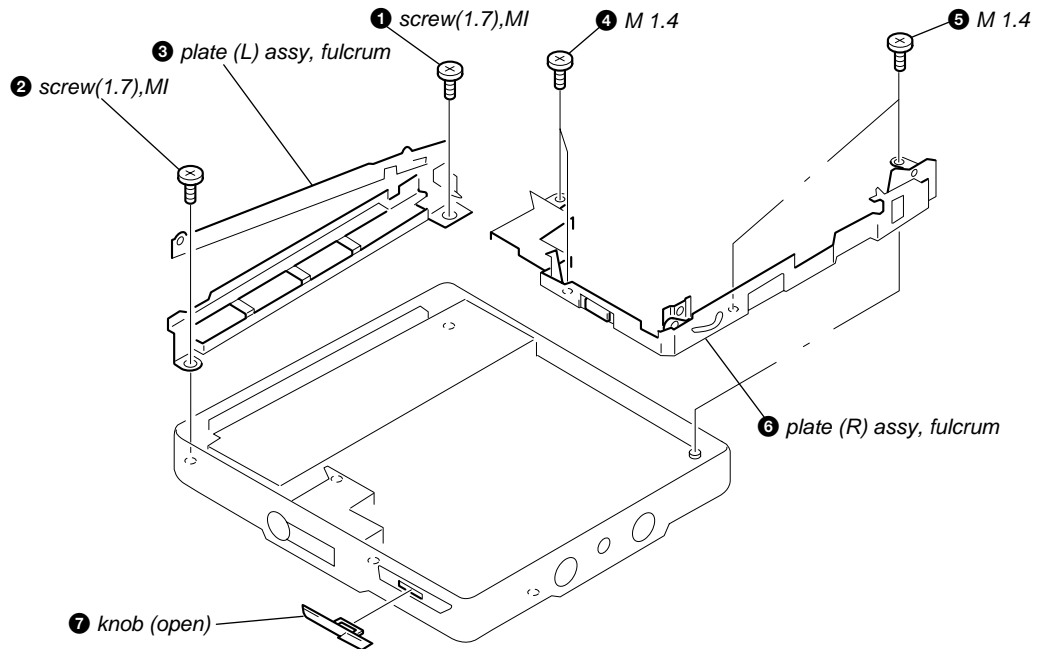


3-4. SYSTEM BOARD



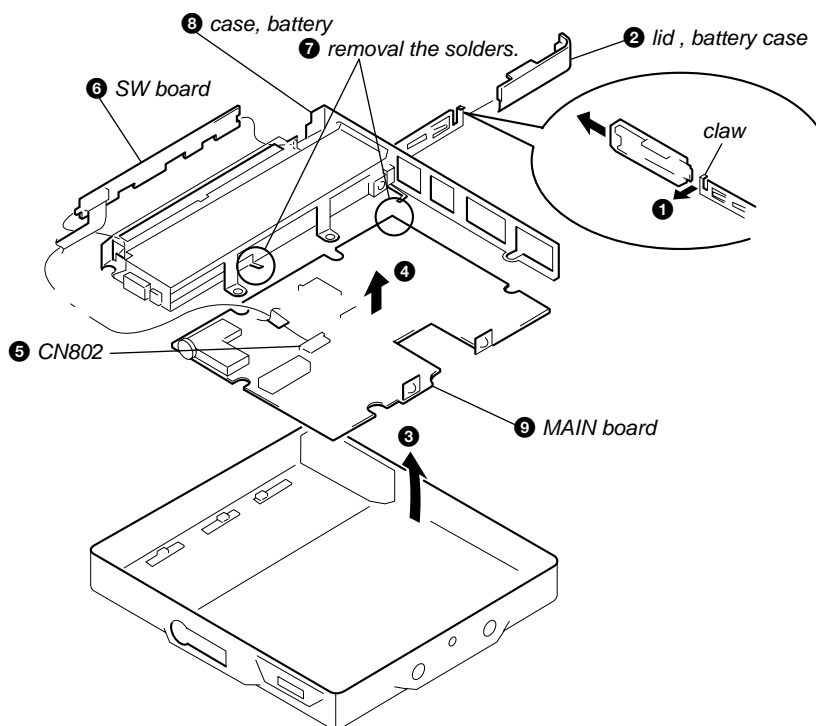
3-5. "PLATE (L) ASSY, FULCRUM", "PLATE (R) ASSY, FULCRUM"

Note: When installing, fit the knob (OPEN).

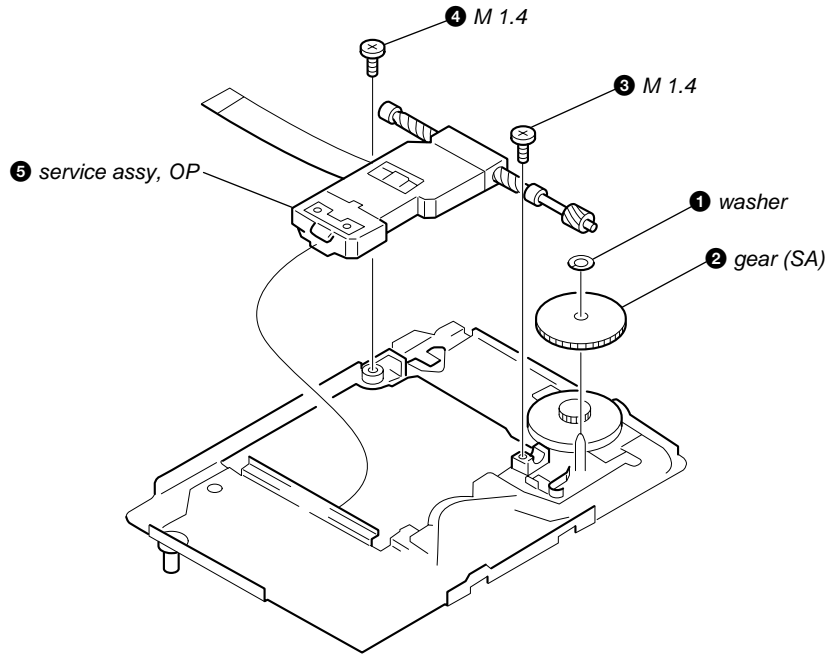


3-6. SW BOARD, MAIN BOARD

Note: When installing, fit the knobs (HOLD, MB, AVLS).



3-7. SERVICE ASSY, OP



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, 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.

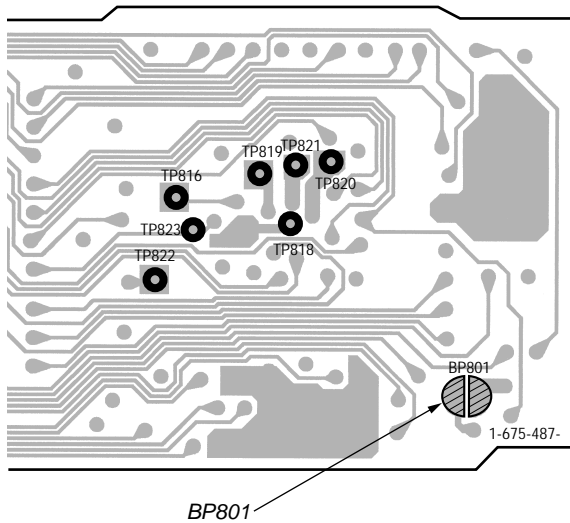
4-2. SETTING THE TEST MODE

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

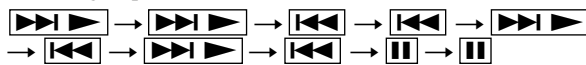
To set the TEST MODE, two methods are available.

- ① Solder bridge and short BP801 (TEST) on the system board. Then turn on the power.

【SYSTEM BOARD】 (SIDE A)



- 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, press the keys on the remote control in the following sequence:

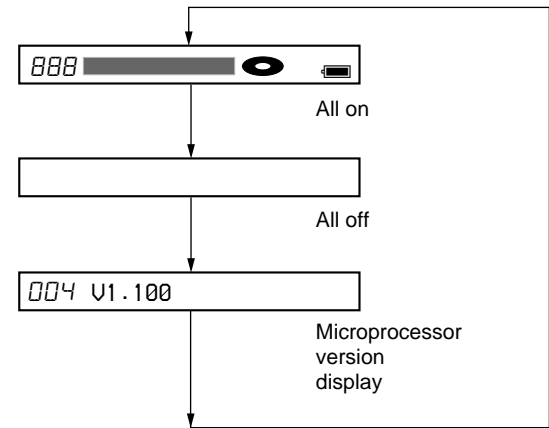


4-2-2. Operations when the TEST MODE is set

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 ■ 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 BP801 on the system board.

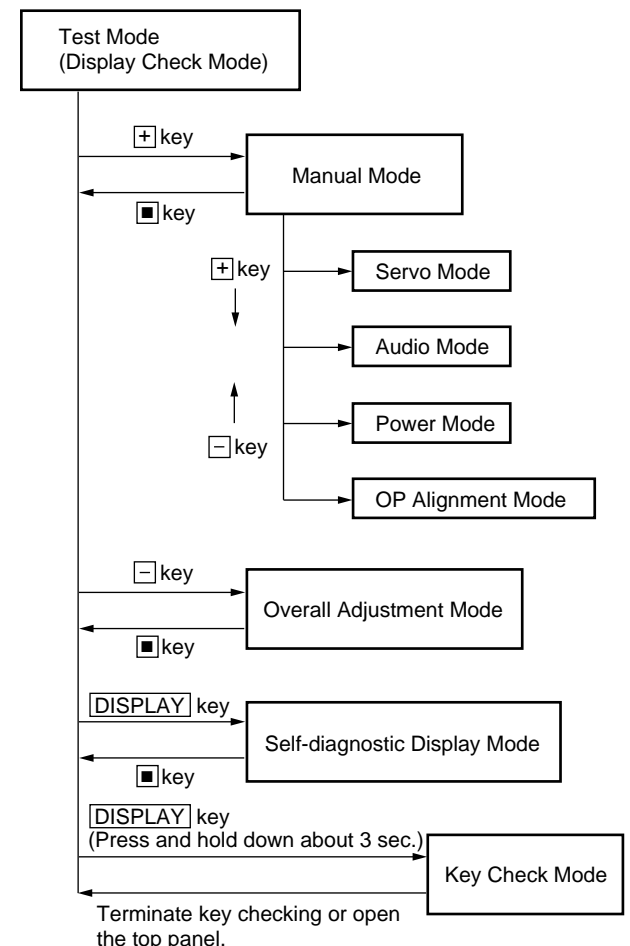
Note: The solder should be removed clean. The remaining solder may make a short with the chassis and other part.

When method ② was used:

Turn off the power.

Note: If electrical adjustment (see page 15) has not been finished completely, always start in the test mode. (The set cannot start in normal mode.)

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.

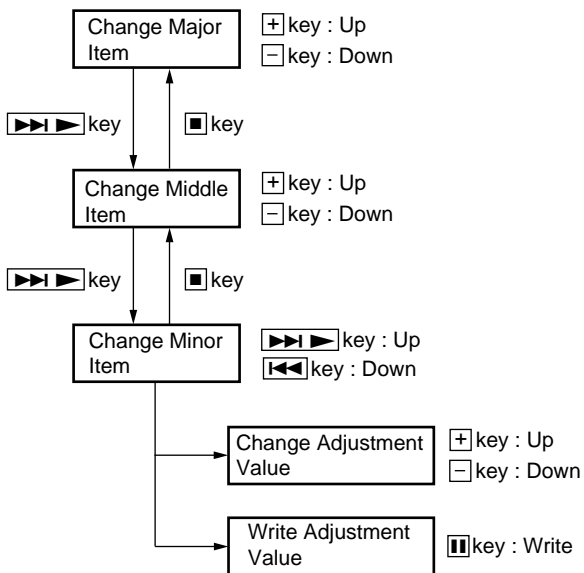
4-4-2. How to set the Manual mode

1. Set the TEST MODE and press **[+]** key to set the Manual mode.

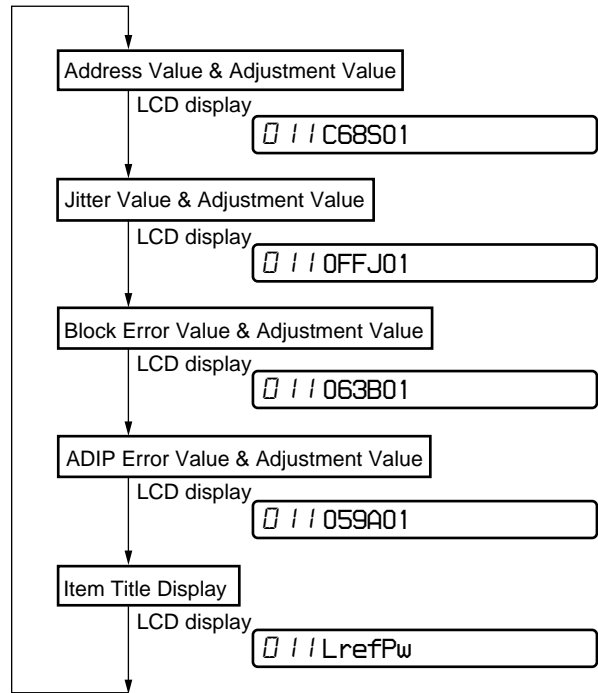
Remote control LCD display

888 Manual

2. Each test item is assigned with a three-digit item number. The third digit stands for a major item, the second digit for a middle item, and the first digit for a minor item.



3. 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.

4. During each test, press and hold down **[▶▶▶]** key or **[◀◀◀]** key for a while to move the optical pickup on the sled outer or inner perimeter.
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 (page 15).

4-6. SELF-DIAGNOSTIC DISPLAY MODE

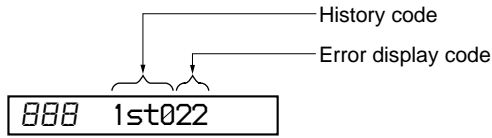
4-6-1. Outline of the function

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.

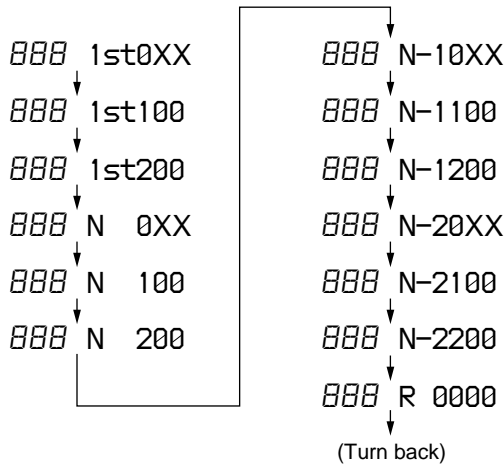
This history, which can be viewed in the TEST MODE, provides the means of locating the fault in troubleshooting.

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 the Self-diagnostic mode is entered.



3. Hereinafter, each time **▶▶▶▶** key is pressed, the reference information display changes as follows:



- Press **◀◀◀◀** key to go back to the previous display.

• Description of the error display codes

Contents of fault	Display code	Meaning of code	Description
No error	00	No error	
Servo system error	01	Access target address illegally specified	An attempt to access an abnormal address.
	02	HIGH TEMP	HIGH TEMP
	03	FOCUS ERROR	Focus off-center.
	04	SPINDLE ERROR	Abnormal rotation of disc
AUDIO error	11		
	12		
	13		
Power system error	21	INIT LOWBATT	Abnormal voltage during initialization
	22	LOWBATT	Instantaneous interruption detected.
	23	LOWBATT NI	Instantaneous interruption detected (NiMH).
	24	LOWBATT AM	Instantaneous interruption detected (AM).

• Contents of the history codes

History code number	Contents
1st 0	The first error that occurred.
1st 1	Displays 00.
1st 2	
N 0	The last error that occurred.
N 1	Displays 00.
N 2	
N-1 0	The first error from the last one.
N-1 1	Displays 00.
N-1 2	
N-2 0	The second error from the last one.
N-2 1	Displays 00.
N-2 2	
REC	Total recording time (0000 is displayed for MZ-E90.)

4-6-3. Clearing the error display code

After servicing, reset the error display code.

1. Set the TEST MODE. (See page 11)
2. To reset the error display code (except for **R0000** display), press **■** key on the remote control when the code is displayed.
(All the data on the 1st, N, N-1 and N-2 will be reset.)

4-7. KEY CHECK MODE

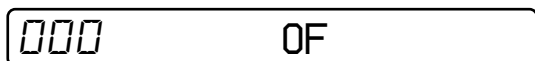
4-7-1. Outline of the function

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

4-7-2. 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.

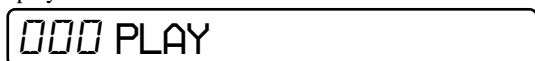
LCD display




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.)

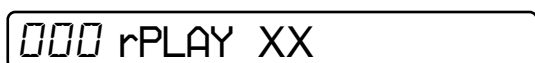
Example: When  key on the set is pressed:

LCD display



Example: When  key on the remote control is pressed:

LCD display

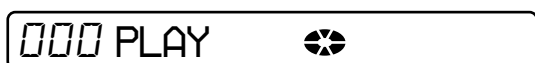


XX: AD value of the remote control key (hexadecimal 00 to FF)

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.)

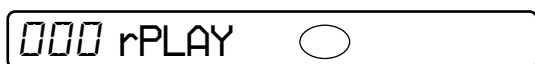
Example: When the keys on the set are considered as OK:

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.

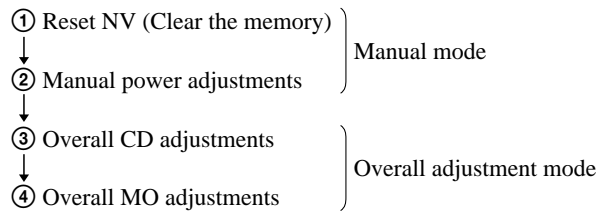
5-2. NOTES FOR ADJUSTMENT

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

5-2-2. Adjustment sequence

The adjustments should be always performed in the following sequence:



5-2-3. Power

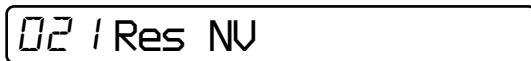
The power is supplied with 1.5 V DC from the DC IN jack.

5-3. RESET NV

5-3-1. How to reset NV

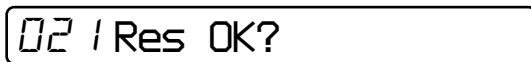
1. Set the TEST MODE. (See page 11)
2. Set the Manual mode and set the item No. 021, Reset NV. (See page 12)

LCD display



3. Press **[M]** key on the remote control.

LCD display

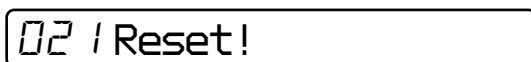


4. Press **[M]** key on the remote control again.

LCD display



↓
After reset is completed.



5. Press **[M]** 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 Vrem PWN duty (L) adjustment (item No.:764)
- ↓
- ③ Vc PWM duty (H) adjustment (item No.:765)
- ↓
- ④ Vrem PWM Duty (H) adjustment (item No.:766)

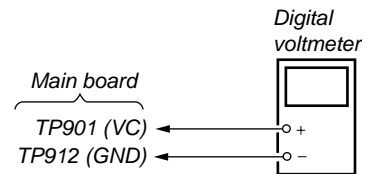
5-4-2. Vc PWM Duty (L) adjustment method

1. Confirm that the power voltage is at 1.5 V DC.
2. Set the TEST MODE. (See page 11)
3. Set the Manual mode and set the item No. to 762. (See page 12)

LCD display



4. Connect a digital voltmeter to TP901 on the main board and adjust **[+]** key (voltage up) and **[-]** key (voltage down) on the remote control so that the voltage is at 2.32V ^{+5 mV}/_{-10 mV}.

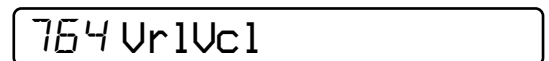


5. Press **[M]** key to write the adjustment value.
- Note :** Do not Press the **[M]** key if the adjustment value is already set.

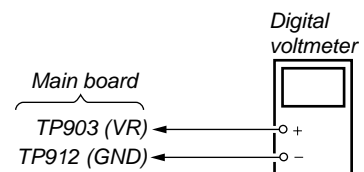
5-4-3. Vrem PWM Duty (L) adjustment method

1. Set the Manual mode and set the item No. to 764. (See page 12)

LCD display



2. Connect a digital voltmeter to TP903 on the main board and adjust **[+]** key and **[-]** key on the remote control so that the voltage is at 2.25V ^{+5 mV}/_{-10 mV}.

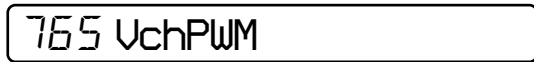


3. Press **[M]** key to write the adjustment value.
- Note :** Do not Press the **[M]** key if the adjustment value is already set.

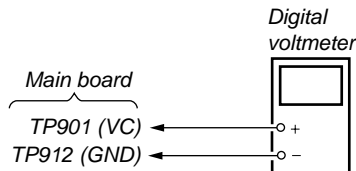
5-4-4. Vc PWM Duty (H) adjustment method

1. Set the Manual mode and set the item No. to 765. (See page 12)

LCD display



2. Connect a digital voltmeter to TP901 on the main board and adjust $\boxed{+}$ key and $\boxed{-}$ key on the remote control so that the voltage is at $2.75V \pm 15$ mV.



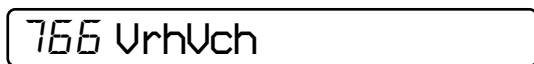
3. Press $\boxed{\text{II}}$ key to write the adjustment value.

Note : Do not Press the $\boxed{\text{II}}$ key if the adjustment value is already set.

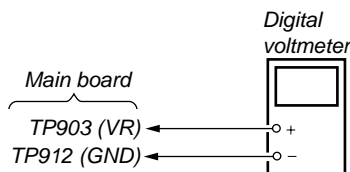
5-4-5. Vrem PWM Duty (H) adjustment method

1. Set the Manual mode and set the item No. to 766. (See page 12)

LCD display



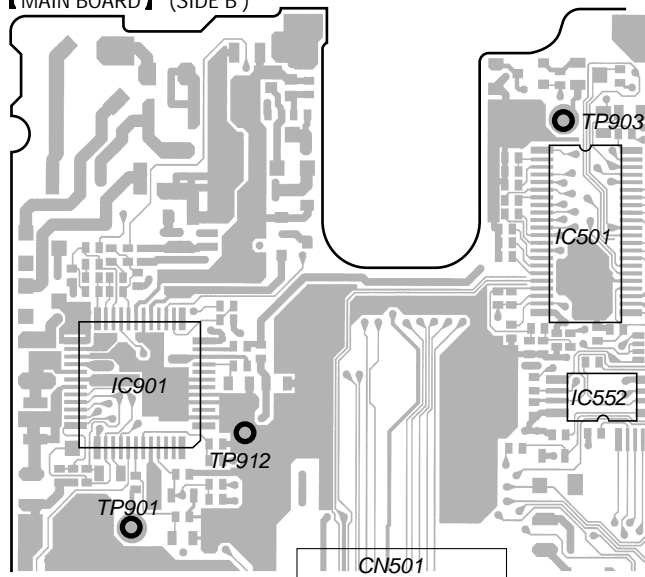
2. Connect a digital voltmeter to TP903 on the main board and adjust $\boxed{+}$ key and $\boxed{-}$ key on the remote control so that the voltage is at 2.6 ± 15 mV.



3. Press $\boxed{\text{II}}$ key to write the adjustment value.

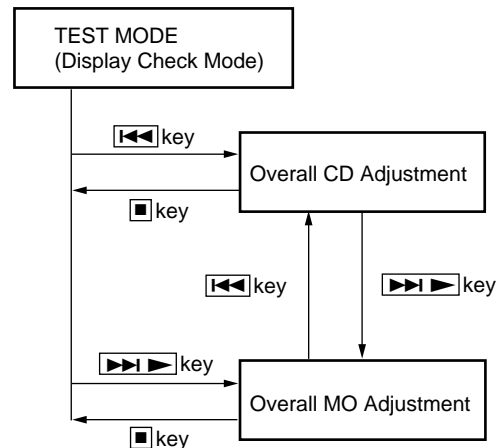
Note : Do not Press the $\boxed{\text{II}}$ key if the adjustment value is already set.

【MAIN BOARD】 (SIDE B)



5-5. OVERALL ADJUSTMENT MODE

5-5-1. Overall adjustment mode structure

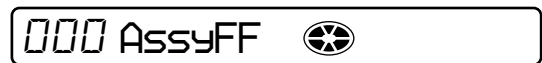


Note: The overall adjustments should be always performed in the sequence of CD → MD adjustments.

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

1. Set the TEST MODE (see page 11) and press $\boxed{-}$ key to set the Overall Adjustment mode.

LCD display



2. Insert CD disc in the set, and press $\boxed{\leftarrow\leftarrow}$ key to set the Overall CD Adjustment mode. Automatic adjustments are made.

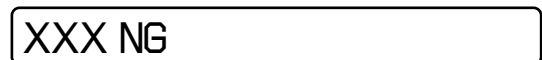
LCD display



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

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

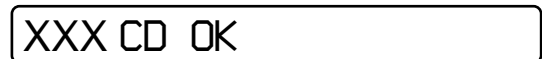
LCD display



XXX: NG item No.

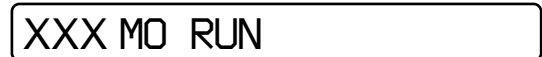
4. If OK through the overall CD adjustments, then perform overall MO adjustments.

LCD display



5. Insert MO disc in the set, and press $\boxed{\rightarrow\rightarrow}$ key to set the Overall MO Adjustment mode. Automatic adjustments are made.

LCD display



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

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

XXX MO OK

5-5-3. Overall CD and MO adjustment items

1. Overall CD adjustment items

Item No.	Contents
312	CD electrical offset adjustment
313	
314	
328	CD TWPP gain adjustment
321	CD TE gain adjustment
323	CD TE offset adjustment
332	
336	CD ABCD level adjustment
344	CD focus gain adjustment
345	CD tracking gain adjustment
521	CD two-axis sensitivity adjustment
522	
341	CD focus bias adjustment

2. Overall MO adjustment items

Item No.	Contents
112	MO electrical offset adjustment
113	
114	
118	
221	Low reflective CD TE gain adjustment
223	Low reflective CD TE offset adjustment
232	
236	Low reflective CD ABCD level adjustment
244	Low reflective CD focus gain adjustment
245	Low reflective CD tracking gain adjustment
121	MO TE gain adjustment
122	MO TE offset adjustment
134	MO TWPP gain adjustment
131	MO TWPP offset adjustment
132	
136	MO ABCD level adjustment
144	MO focus gain adjustment
145	MO tracking gain adjustment
141	MO focus bias adjustment

SECTION 6 DIAGRAMS

6-1. IC PIN DESCRIPTION

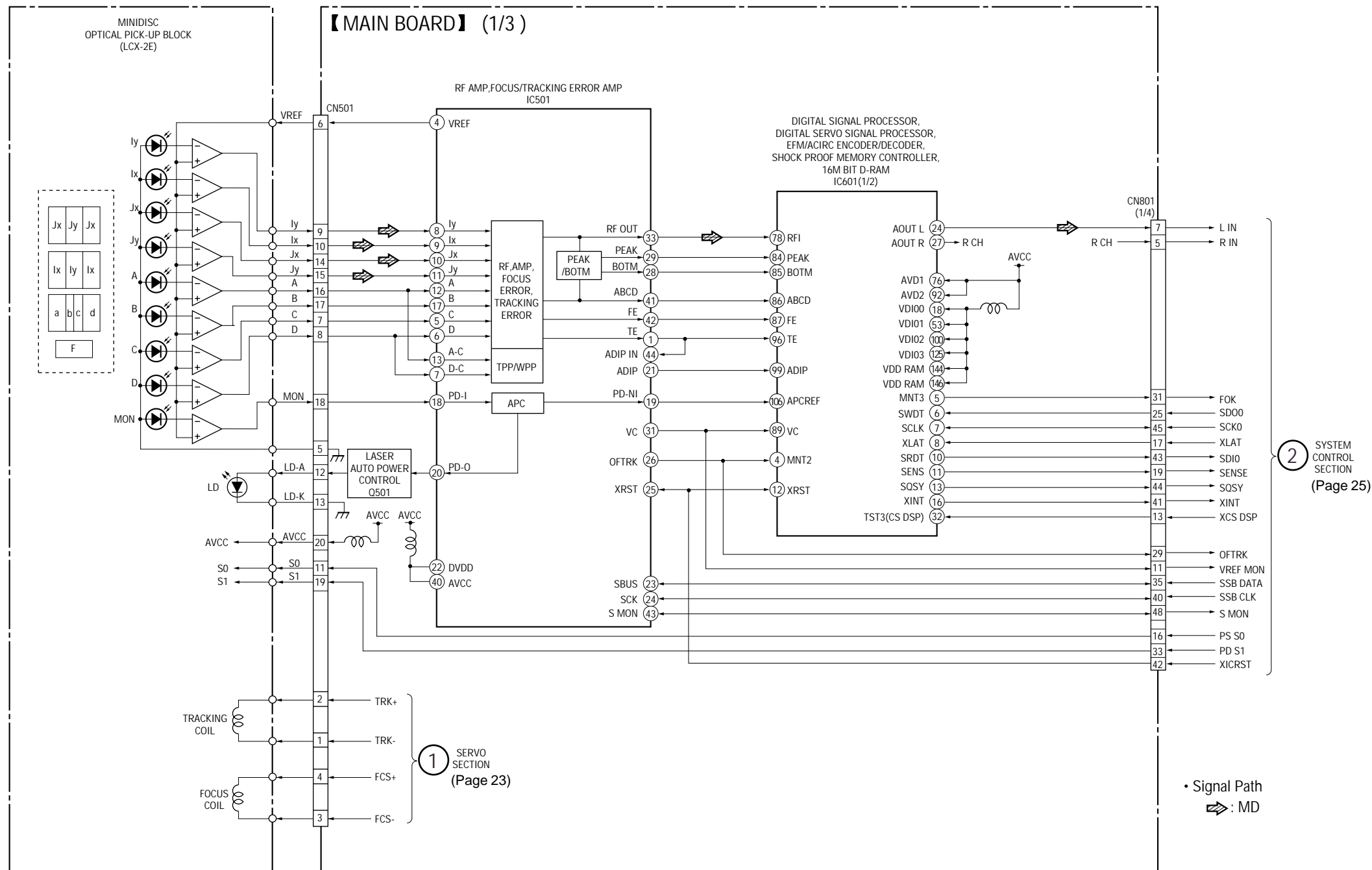
6-1-1. IC801 CXR701080-006GA (SYSTEM CONTROL)

Pin No.	Pin name	I/O	Pin Description
1	NC	—	Not used. (Open)
2	OFTRK	I	OFTRK DLY signal input
3 – 5	NC	—	Not used. (Open)
6	SENSE	I	DSP SENS monitor signal input
7	NC	—	Not used. (Open)
8	XLAT	O	DSP latch signal output
9	XCS DSP	O	DSP chip select signal output
10	NC	—	Not used. (Open)
11	SI0	I	Serial data signal input
12	SO0	O	Serial data signal output
13	SCK0	I/O	Serial clock signal input/output
14	NC	—	Not used. (Open)
15	VSS	—	Ground
16	VDD	I	Power supply pin
17	NC	—	Not used. (Open)
18	BEEP	O	BEEP control signal output
19	RMC DTCK	I/O	TSB data signal input/output
20 – 22	NC	—	Not used. (Open)
23	XHP STBY	O	HP amp power control signal output
24	CLV U	I/O	CLV control/monitor signal input/output
25	CLV V	I/O	CLV control/monitor signal input/output
26	CLV W	I/O	CLV control/monitor signal input/output
27 – 32	NC	—	Not used. (Open)
33	LD ON	O	Not used.
34	NC	I	Not used. (Fix to VDD.)
35	SLD MON1	I	SLED monitor signal input
36	PD S0	O	PD IC mode select signal output
37	REG CTL CLK	O	Not used.
38	PD S1	O	PD IC mode select signal output
39	FFCLR	O	Start signal input latch output
40	SLEEP	O	SLEEP signal output
41	NC	I	Not used. (Fix to ground.)
42	NC	—	Not used. (Open)
43	XRST	I	Reset signal input (L: RESET)
44	VSS	—	Ground
45	XTAL	O	Main oscillation/internal clock frequency connect pin
46	EXTAL	I	Main oscillation/internal clock frequency connect pin
47	VDD	I	Power supply pin
48	NC	—	Not used. (Open)
49	SPDL START SW	O	SPDL start select signal output
50	NC	—	Not used. (Open)
51	NC	I	Not used. (Fix to VDD.)
52	FOK	I	FOK signal detect input.
53	SQSY	I	Sub Q SYNC detect signal input
54	NC	I	Not used. (Fix to VDD.)
55	XINT	I	SFSY, AISY, DISY detect signal input
56 • 57	NC	—	Not used. (Open)

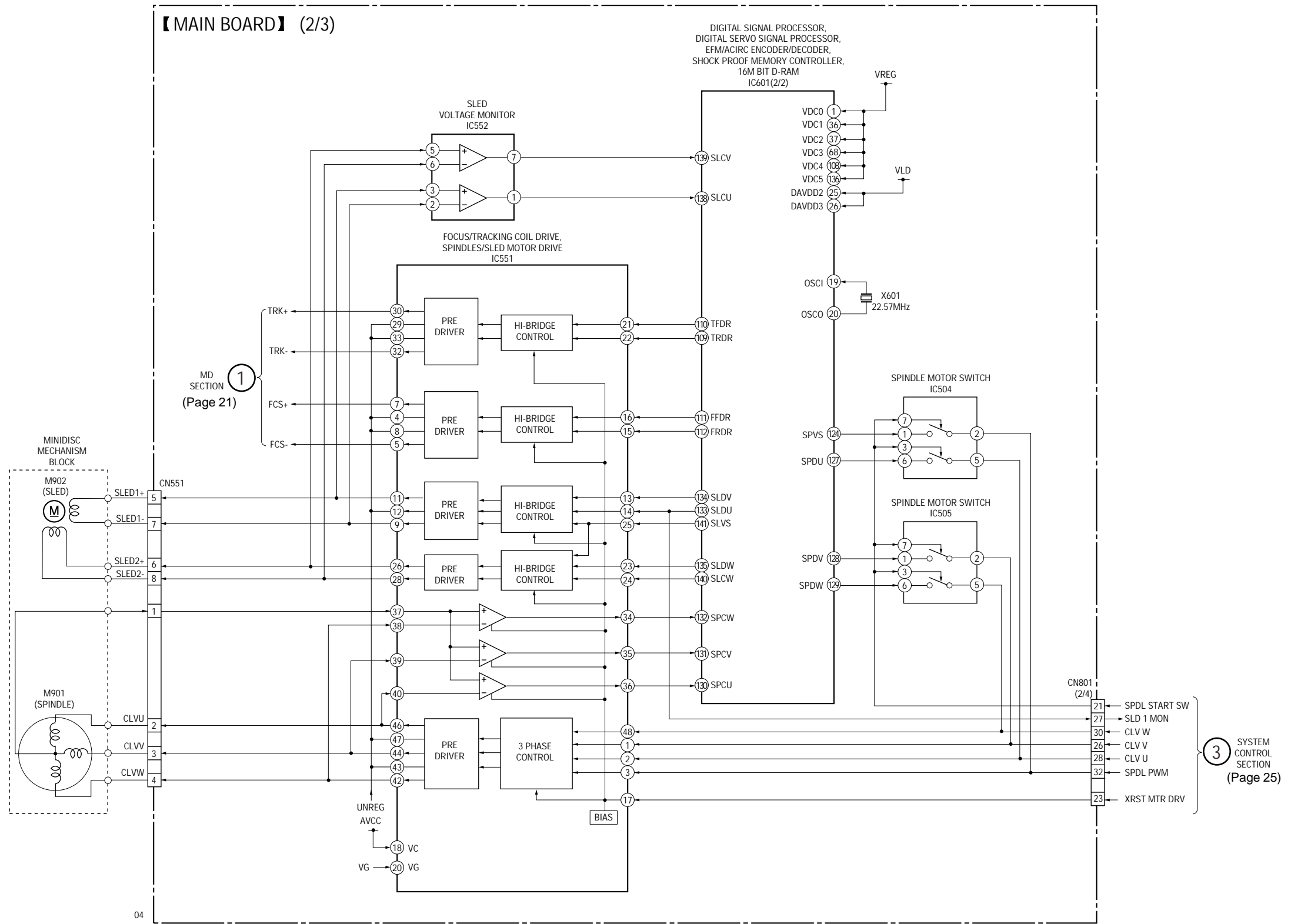
Pin No.	Pin name	I/O	Pin Description
58	SERON	O	Series power control signal output
59	NC	—	Not used. (Open)
60	X TEST	I	Test mode detect signal input
61	SET CODE0	I	Destination pin (Fix to ground.)
62	SET CODE1	I	Destination pin (Fix to ground.)
63	SET CODE2	I	Destination pin (Open)
64	REG CTL PWM	O	Synchronization external clock signal output
65	VRM PWM	I	VREM power voltage control PWM signal input
66	VC PWM	I	System power voltage control PWM signal input
67	SPDL PWM	O	SPDL start control PWM signal output
68	XIC RST	O	Reset signal output
69	OPR LED	O	OPR LED light control signal
70	NC	I	Not used. (Fix to “L”.)
71 • 72	NC	—	Not used. (Open)
73	X HOLD SW	I	HOLD SW detect signal input
74	VDD	—	Power supply pin
75 • 76	NC	—	Not used. (Open)
77	VSS	—	Ground
78	VBKAN	I	Sub power supply pin
79	S MON	I	Servo signal monitor input
80	VB MON	I	UNREG power voltage monitor input
81	NC	—	Not used. (Fix to “L”.)
82	VREF MON	I	CLEA reference voltage monitor signal input
83	WK DET	I	KEY WAKE detect signal input
84	OPEN CLOSE SW	I	OPEN SW detect signal input
85	RMC KEY	I	Remote control key detect signal input
86	SET KEY1	I	This set key detect 1 signal input
87	DBB SW	I	DBB SW detect signal input
88	NC	I	Not used. (Fix to “H”.)
89	VRM MON	I	VREM voltage monitor signal input
90	NC	I	Not used. (Fix to “L”.)
91	AVSS	—	Ground
92	AVREF	—	AD reference voltage
93	AVDD	—	Power supply pin
94	TEST0	—	Test pin (Fix to “L”.)
95	TEST1	—	Test pin (Fix to “L”.)
96	TDI	—	Not used. (JTAG pin)
97	TMS	—	Not used. (JTAG pin)
98	TCX	—	Not used. (JTAG pin)
99	TEST	—	Not used. (JTAG pin)
100	TDO	—	Not used. (JTAG pin)
101	NC	—	Not used. (Open) (TSB clock control signal output)
102	SSB DATA	I/O	SSB data signal input/output
103	SSB CLK	I/O	SSB clock signal input/output
104	FLASH WR EN	I	FLASH write enable signal input (H: Write)
105	VDD	—	Power supply pin
106	VSS	—	Ground
107 – 109	NC	—	Not used. (Fix to “H”.)
110 • 111	NC	—	Not used. (Open)

Pin No.	Pin name	I/O	Pin Description
112	XRST MTR DRV	O	Reset signal output. (L: Reset)
113 • 114	NC	—	Not used. (Open)
115	XAVLS	I	AVLS SW detect signal input (L: ON)
116	NC	—	Not used. (Open)
117	MUTE	O	Analog mute signal output (H: MUTE)
118	NC	—	Not used. (Open)
119	XCS NV	O	EEPROM chip select signal output
120	NC	—	Not used. (Open)

6-2. BLOCK DIAGRAMS
6-2-1. MD BLOCK DIAGRAM

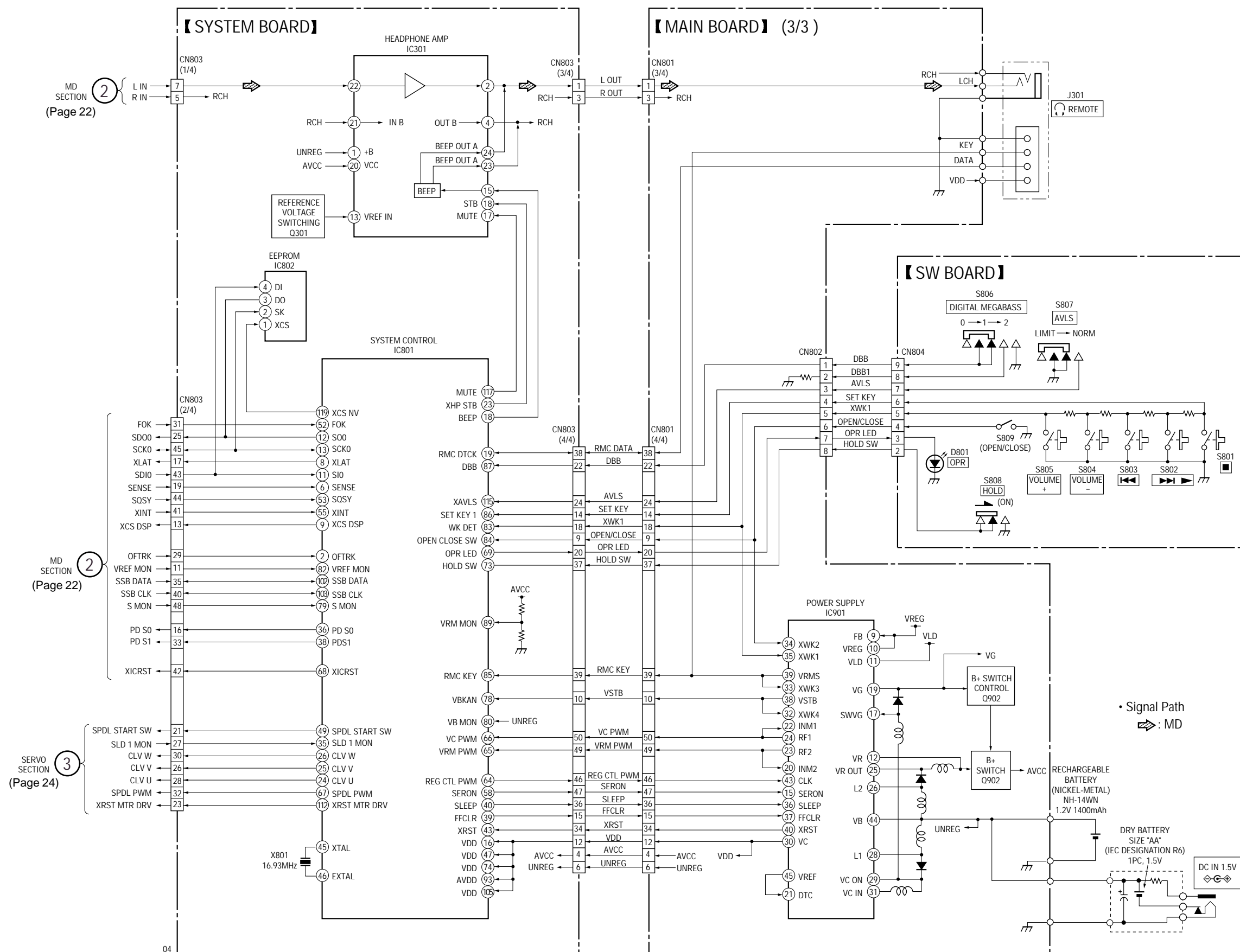


6-2-2. SERVO BLOCK DIAGRAM



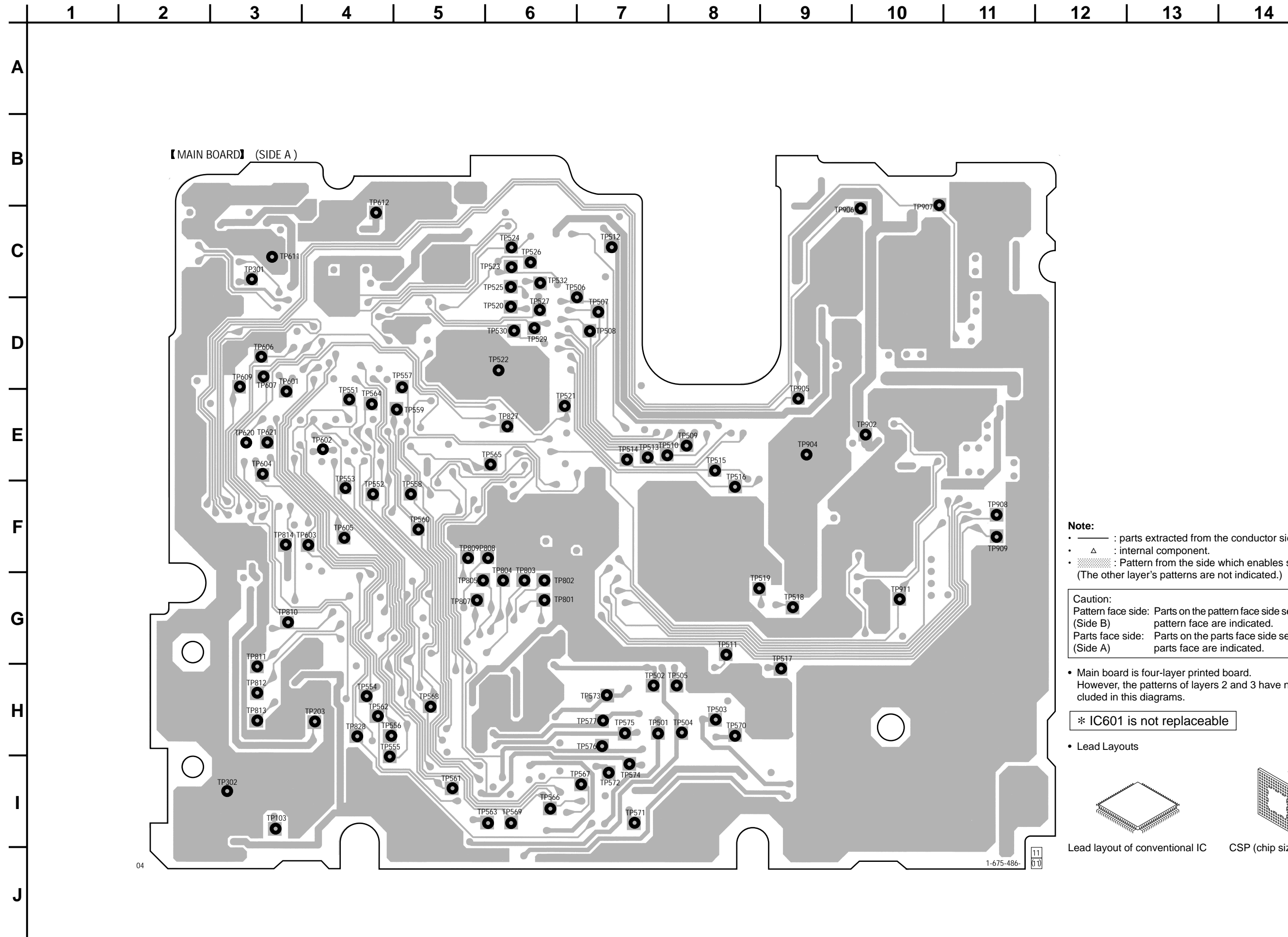
04

6-2-3. SYSTEM CONTROL BLOCK DIAGRAM



6-3. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

6-3-1. PRINTED WIRING BOARD — MAIN BOARD —



Note:

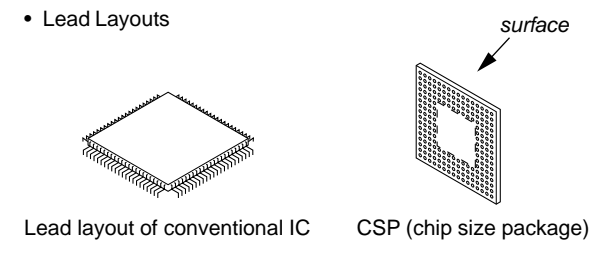
- : parts extracted from the conductor side.
- △ : internal component.
- ▨ : Pattern from the side which enables seeing. (The other layer's patterns are not indicated.)

Caution:

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

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

*** IC601 is not replaceable**



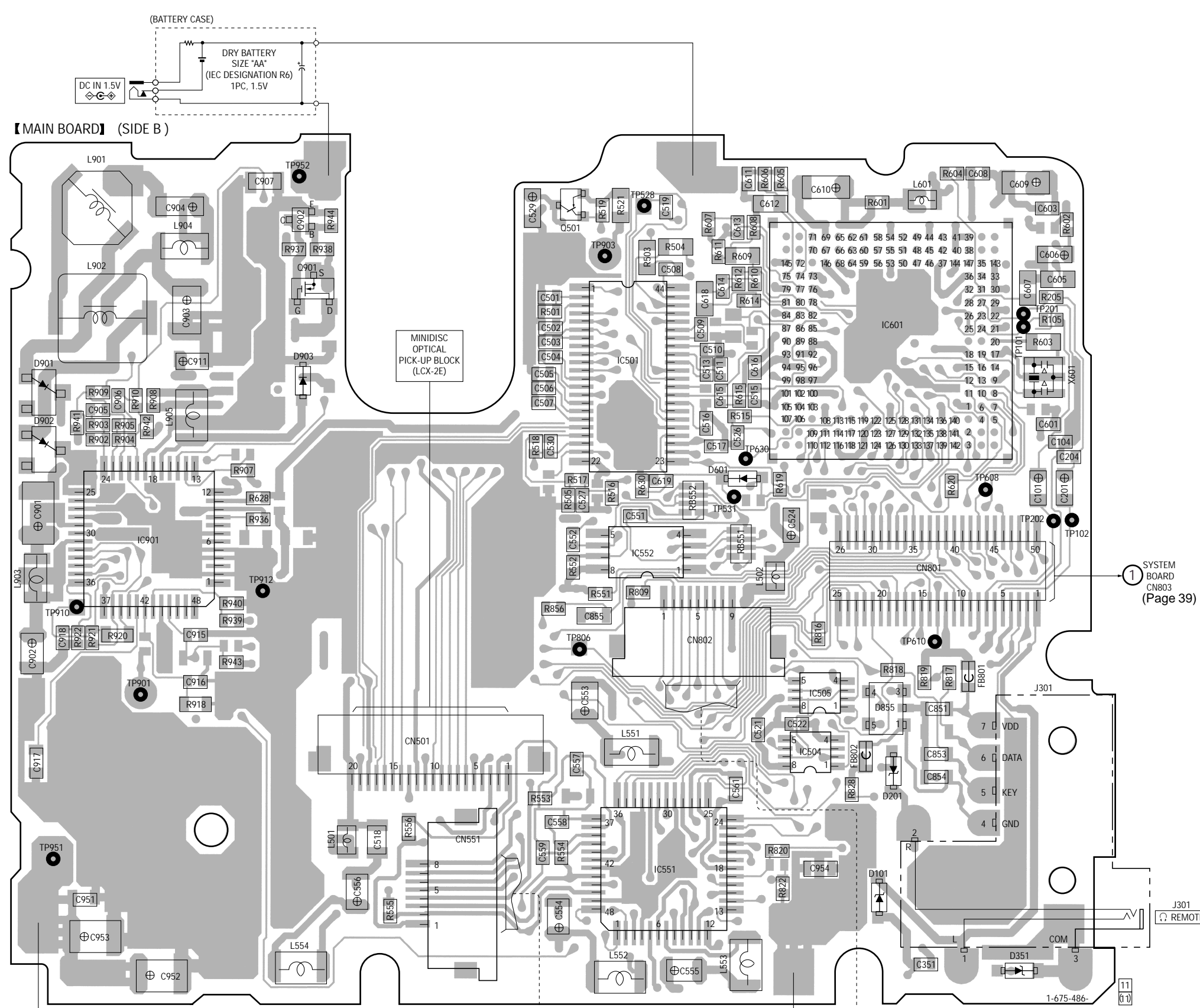
04

1-675-486-11
11
11

14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1

• Semiconductor Location

Ref. No.	Location
D101	I-4
D201	H-4
D351	I-3
D601	E-5
D855	G-4
D901	D-12
D902	D-12
D903	D-9
IC501	D-6
IC504	H-5
IC505	G-4
IC551	I-6
IC552	F-6
IC601	D-4
IC901	E-11
Q501	C-7
Q901	C-9
Q902	C-9



A

B

C

D

E

F

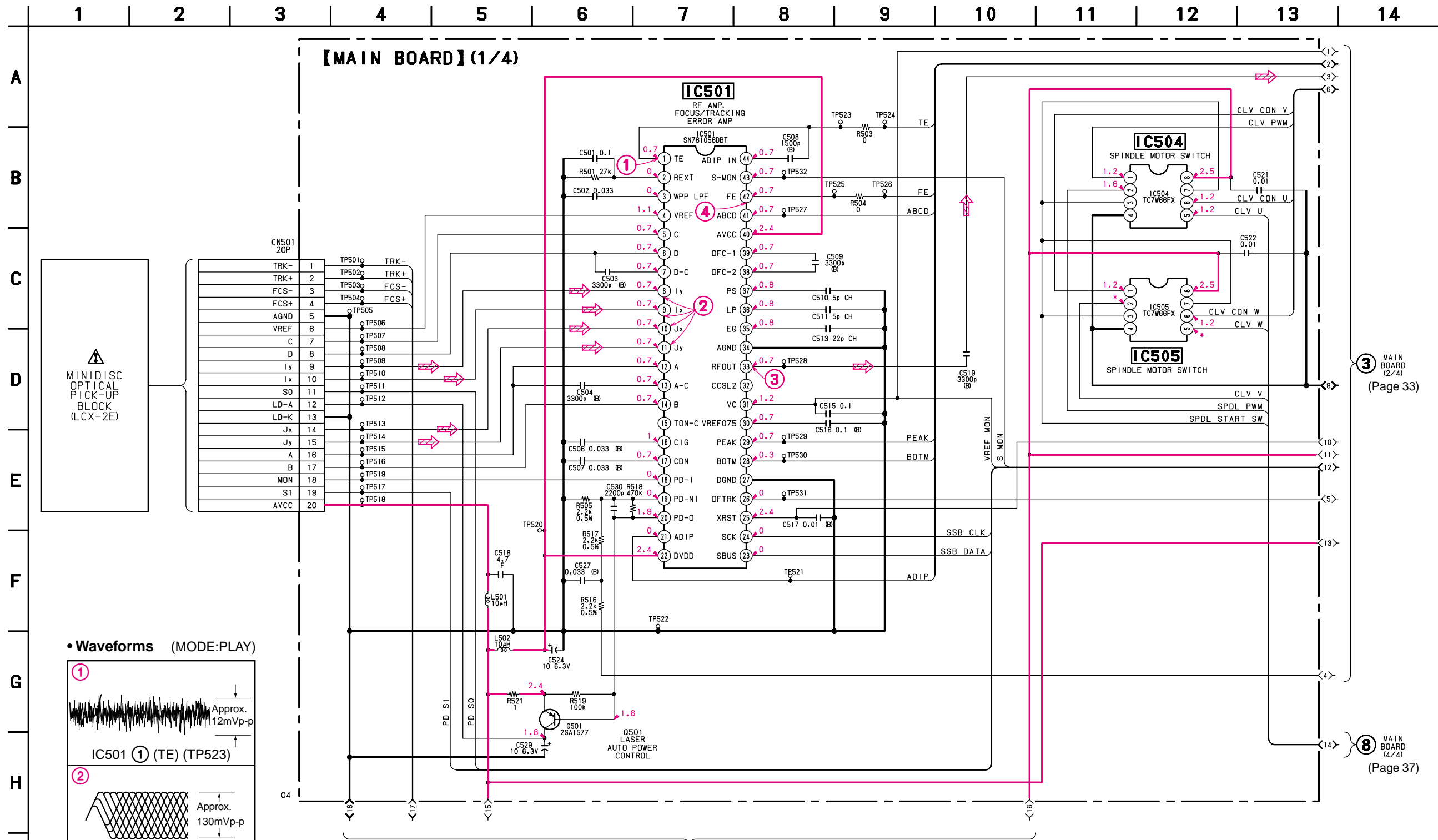
G

H

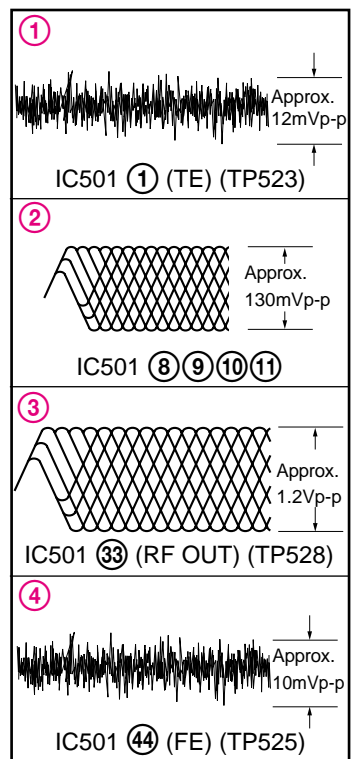
I

J

6-3-2. SCHEMATIC DIAGRAM — MAIN BOARD (1/4) — • Refer to page 46 for IC Block Diagrams.



• Waveforms (MODE:PLAY)



Note:

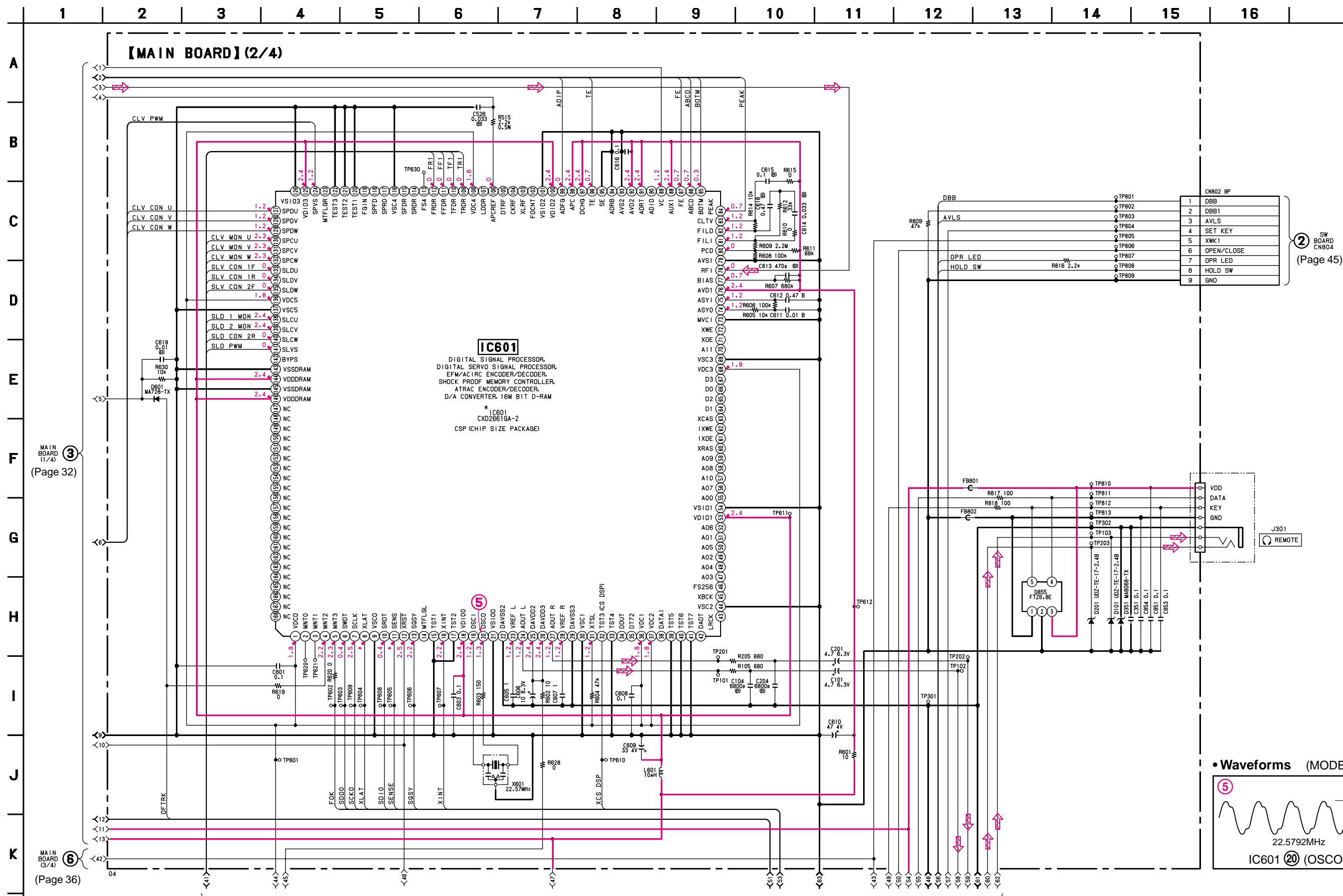
- All capacitors are in μF unless otherwise noted. pF: μF 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and $1/4\text{W}$ or less unless otherwise specified.
- % : indicates tolerance.

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

- — : B+ Line.
- Power voltage is dc 1.5 V and fed with regulated dc power supply from battery terminal.
- Voltage and waveforms are dc with respect to ground under no-signal conditions.
- no mark : PB
- * : Impossible to measure
- Voltages are taken with a VOM (Input impedance 10 M Ω). Voltage variations may be noted due to normal production tolerances.

- Waveforms are taken with an oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path.
- \Rightarrow : PB

6-3-3. SCHEMATIC DIAGRAM — MAIN BOARD (2/4) —



MAIN BOARD (1/4)
③
(Page 32)

MAIN BOARD (3/4)
⑥
(Page 36)

MAIN BOARD (4/4) (Page 37, 38)

Note:

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

- — : B+ Line.
- — : Power voltage is dc 1.5 V and fed with regulated dc power supply from battery terminal.
- — : Voltage and waveforms are dc with respect to ground under no-signal conditions.
- — : Impossible to measure

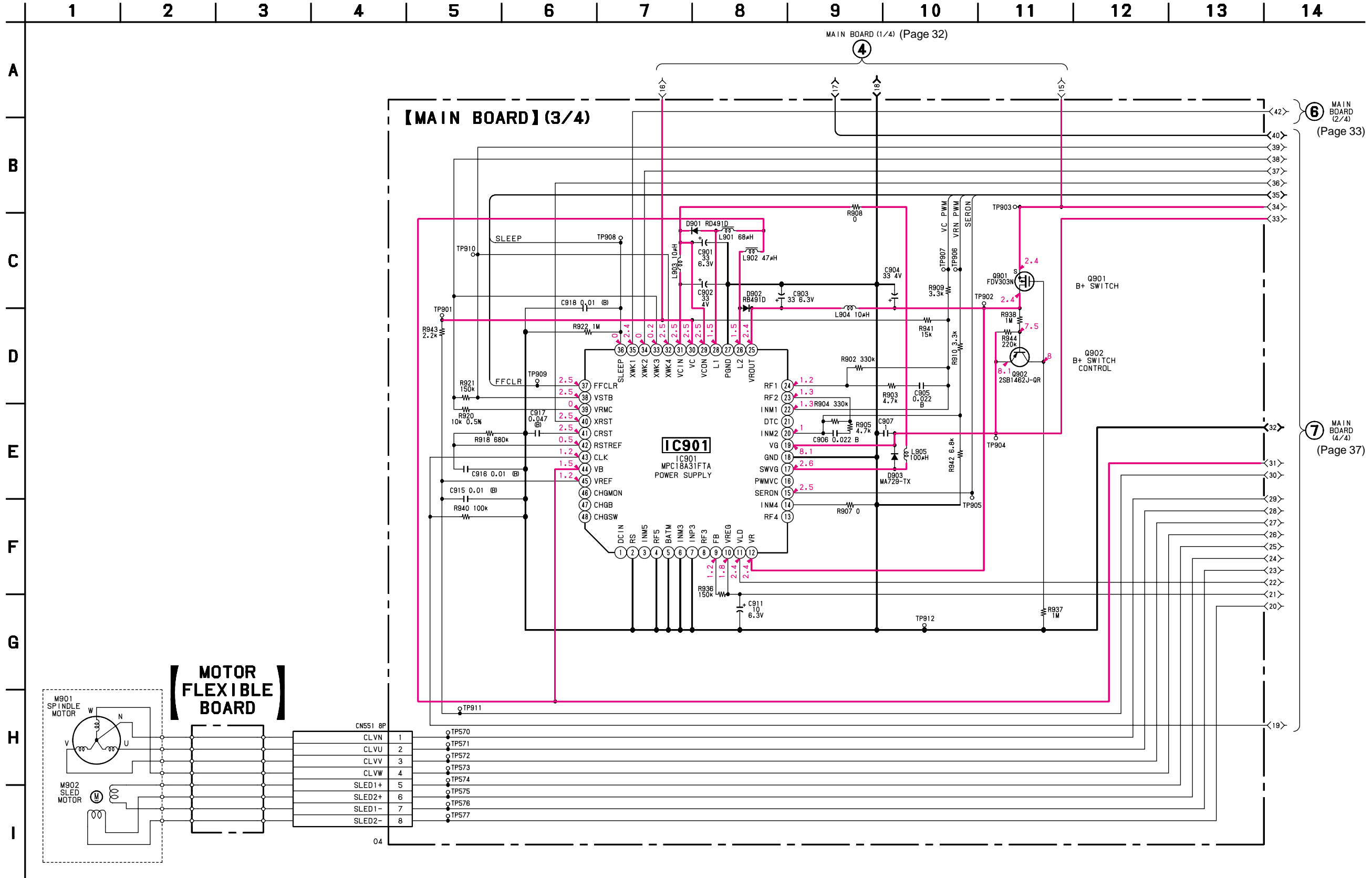
- Voltages are taken with a VOM (Input impedance 10 M Ω). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with an oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.

- Signal path.
- — : PB

* IC601 is not replaceable

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

6-3-4. SCHEMATIC DIAGRAM — MAIN BOARD (3/4) — • Refer to page 48 for IC Block Diagrams.



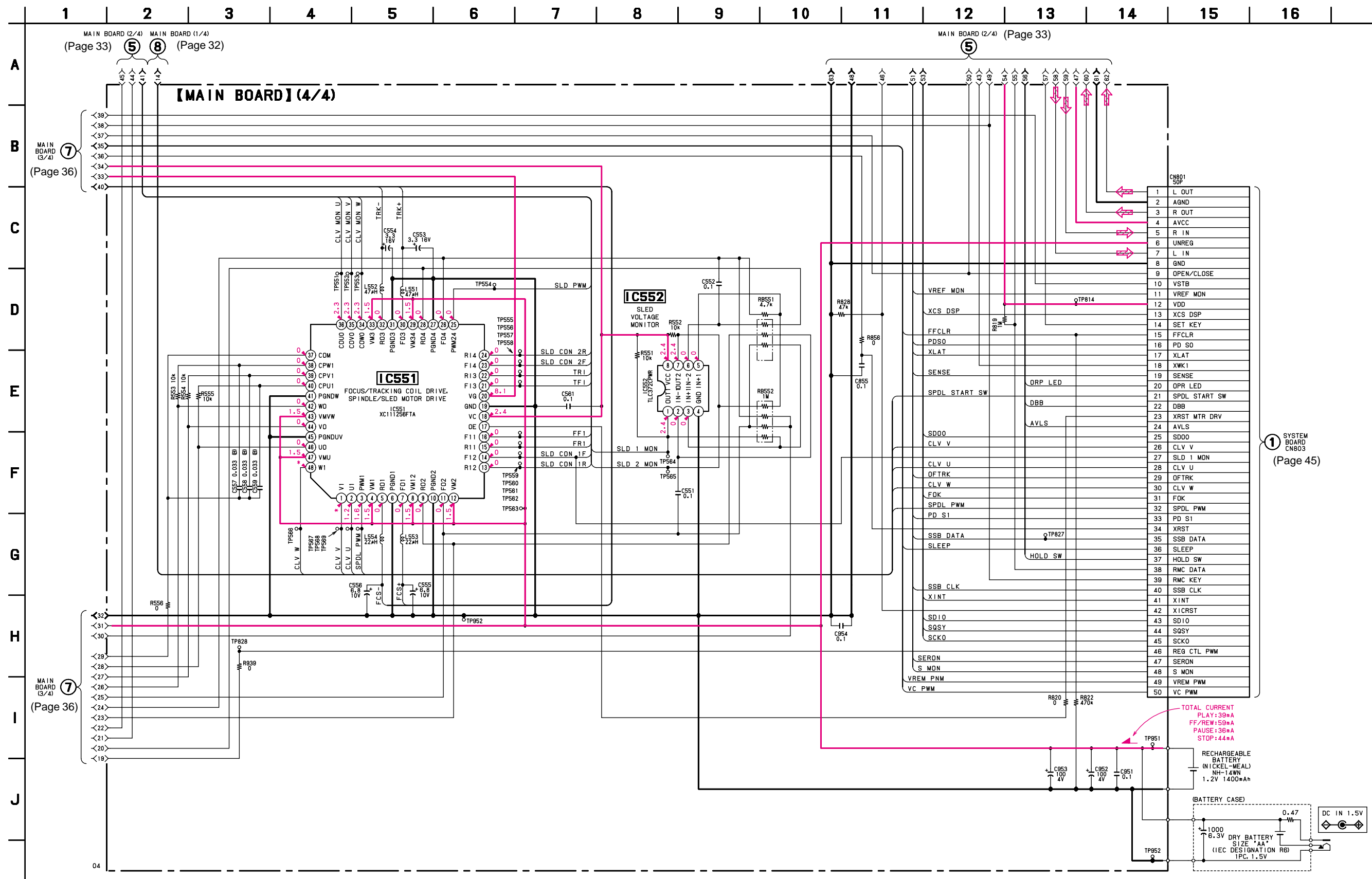
Note:

- All capacitors are in μF unless otherwise noted. pF: μpF 50 W or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and $\frac{1}{4}\text{W}$ or less unless otherwise specified.
- % : indicates tolerance.

- — : B+ Line.
- Power voltage is dc 1.5 V and fed with regulated dc power supply from battery terminal.
- Voltage is dc with respect to ground under no-signal condition.
 - no mark : PB
 - * : Impossible to measure

- Voltages are taken with a VOM (Input impedance 10 M Ω). Voltage variations may be noted due to normal production tolerances.
- Signal path.
- ↔ : PB

6-3-5. SCHEMATIC DIAGRAM — MAIN BOARD (4/4) — • Refer to page 47 for IC Block Diagrams.



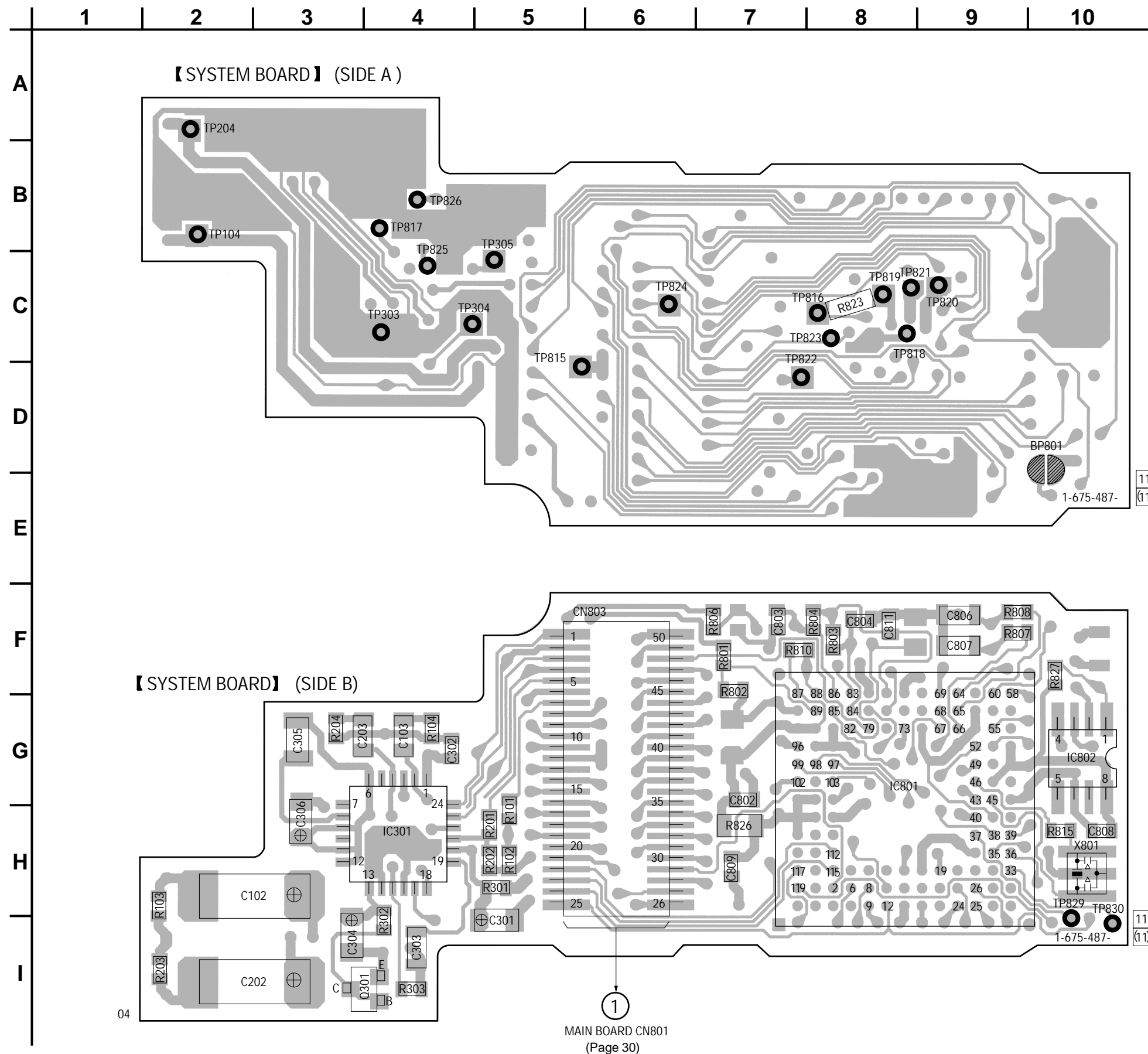
Note:

- All capacitors are in μF unless otherwise noted. pF : μpF 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and $1/4\text{W}$ or less unless otherwise specified.
- % : indicates tolerance.

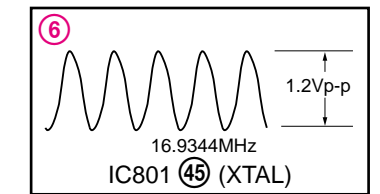
- — : B+ Line.
- Total current is measured with minidisc installed.
- Power voltage is dc 1.5 V and fed with regulated dc power supply from battery terminal.
- Voltage is dc with respect to ground under no-signal condition.
- no mark : PB
- * : Impossible to measure

- Voltages are taken with a VOM (Input impedance 10 M Ω). Voltage variations may be noted due to normal production tolerances.
- Signal path.
- ⇒ : PB

6-3-6. PRINTED WIRING BOARD — SYSTEM BOARD —



• Waveforms (MODE:PLAY)



• Semiconductor Location

Ref. No.	Location
IC301	H-4
IC801	G-8
IC802	G-10
Q301	I-3

Note:

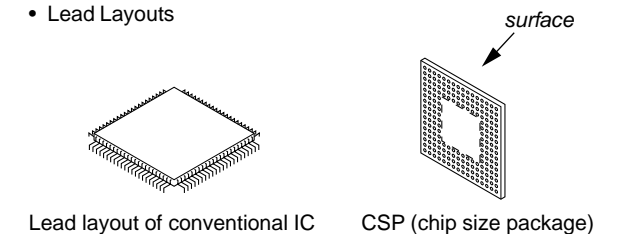
- Δ : internal component.
- : Pattern from the side which enables seeing. (The other layer's patterns are not indicated.)

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

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

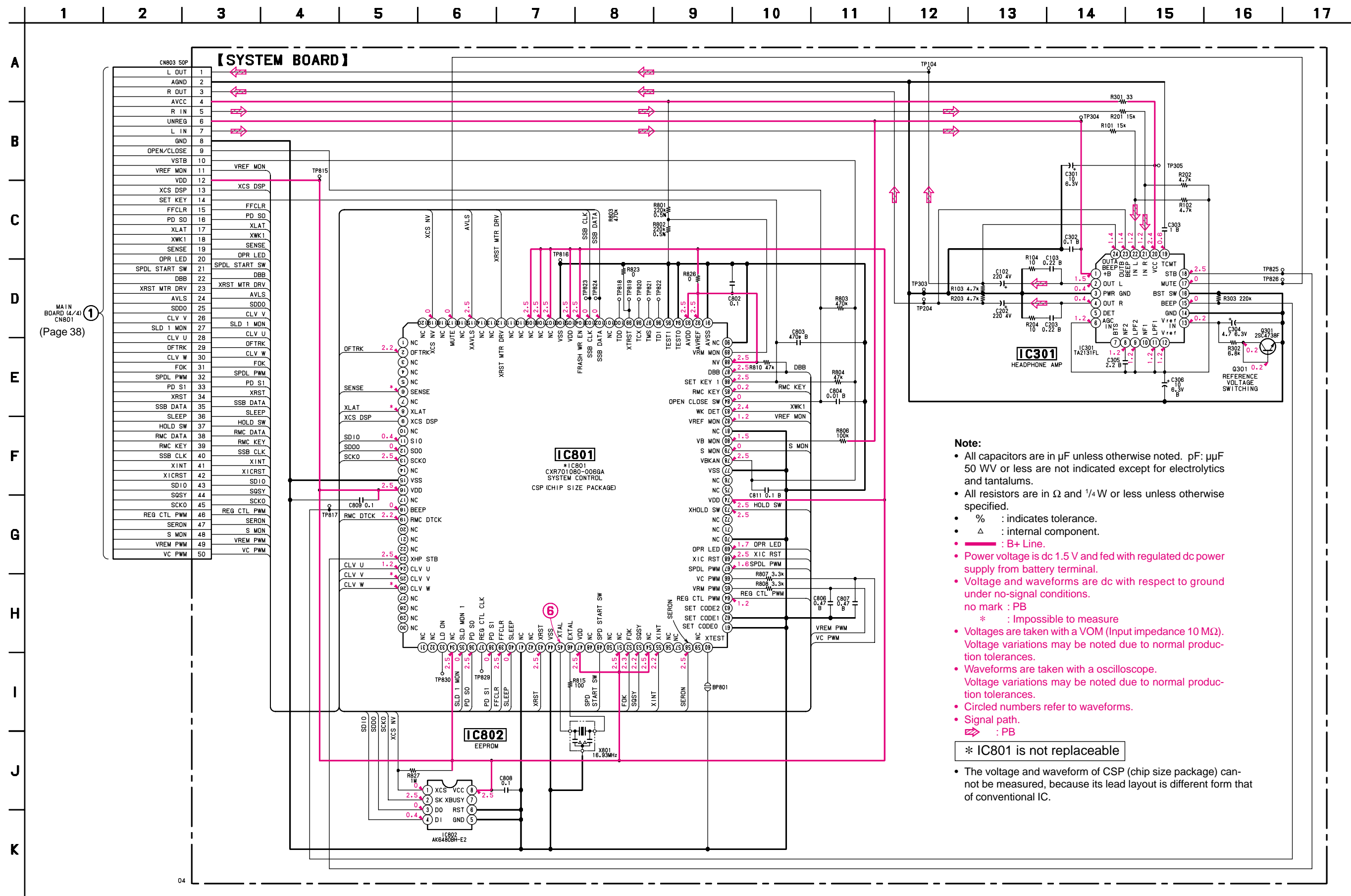
* IC801 is not replaceable

• Lead Layouts



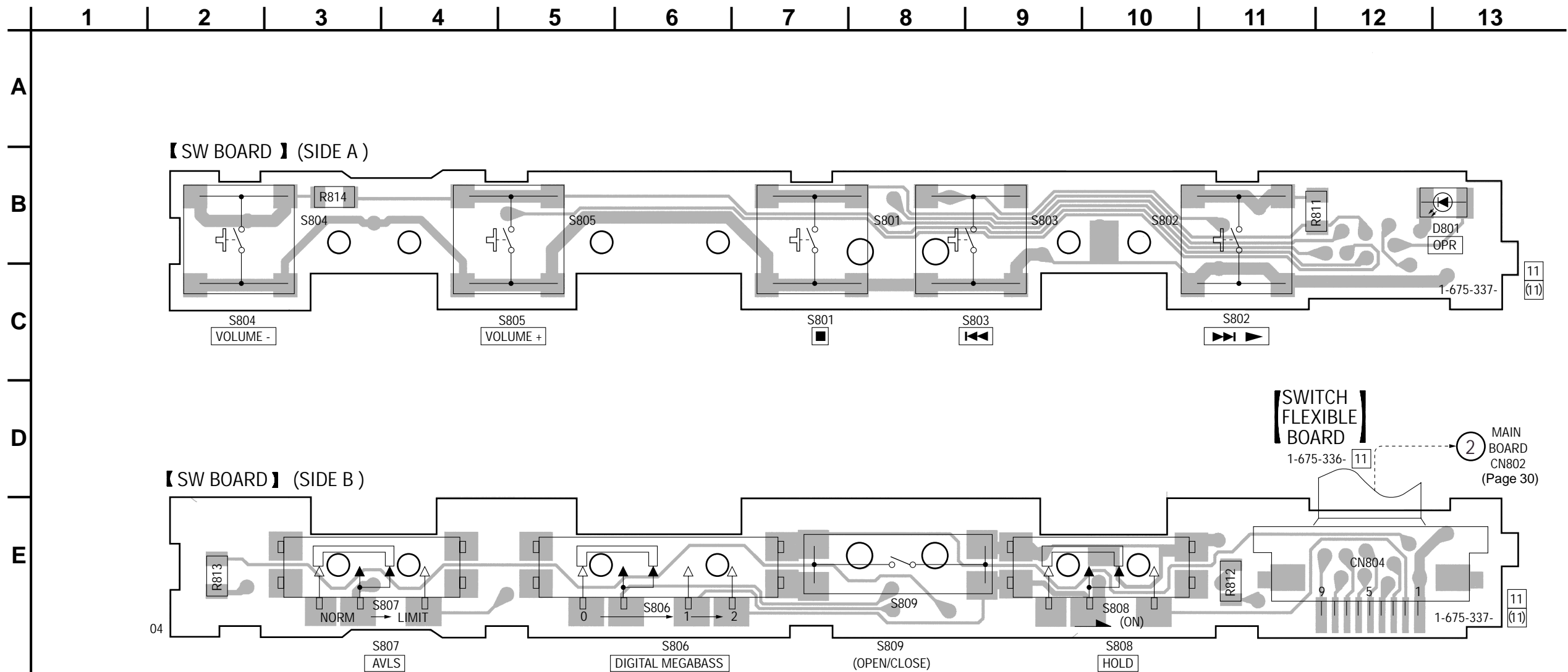
Lead layout of conventional IC CSP (chip size package)

6-3-7. SCHEMATIC DIAGRAM — SYSTEM BOARD — • Refer to page 46 for IC Block Diagrams. • Refer to page 40 for Waveform.




- Note:**
- All capacitors are in μF unless otherwise noted. pF : μF 50 WV or less are not indicated except for electrolytics and tantalums.
 - All resistors are in Ω and $1/4\text{ W}$ or less unless otherwise specified.
 - % : indicates tolerance.
 - Δ : internal component.
 - — : B+ Line.
 - Power voltage is dc 1.5 V and fed with regulated dc power supply from battery terminal.
 - Voltage and waveforms are dc with respect to ground under no-signal conditions.
 - no mark : PB
 - * : Impossible to measure
 - Voltages are taken with a VOM (Input impedance 10 M Ω). Voltage variations may be noted due to normal production tolerances.
 - Waveforms are taken with an oscilloscope. Voltage variations may be noted due to normal production tolerances.
 - Circled numbers refer to waveforms.
 - Signal path
 - \Rightarrow : PB
- * IC801 is not replaceable**
- The voltage and waveform of CSP (chip size package) cannot be measured, because its lead layout is different form that of conventional IC.

6-3-8. PRINTED WIRING BOARD — SW BOARD —

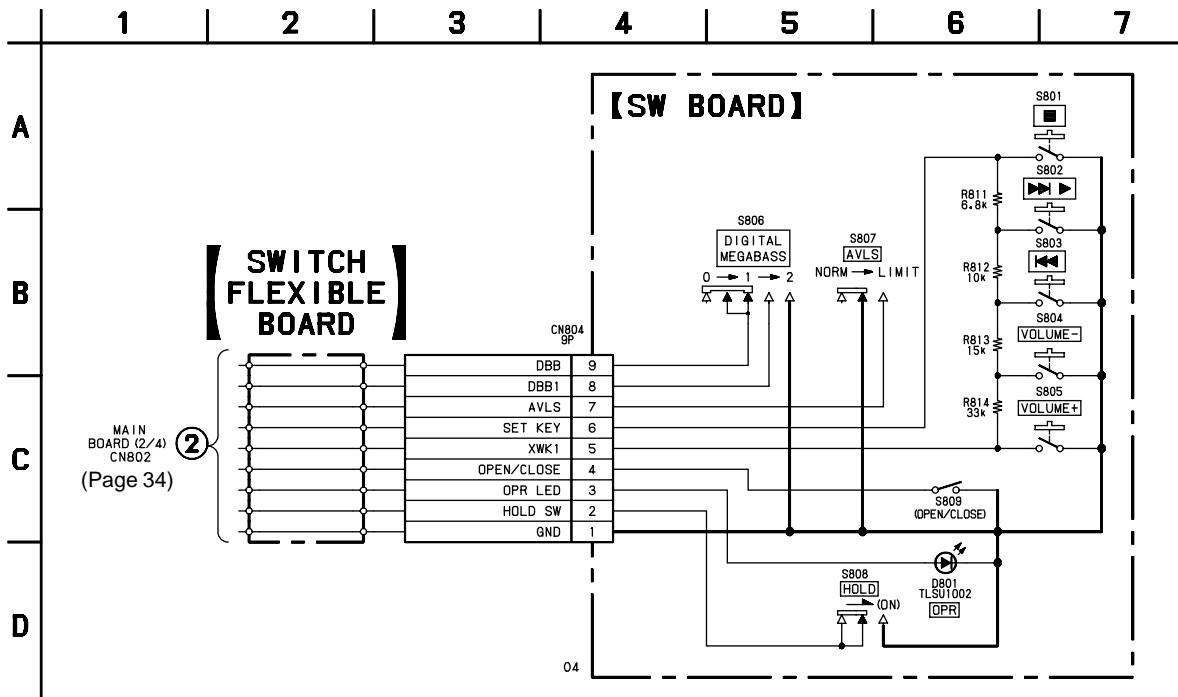


Note:

-  : Pattern from the side which enables seeing.
(The other layer's patterns are not indicated.)

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

6-3-9. SCHEMATIC DIAGRAM — SW BOARD —

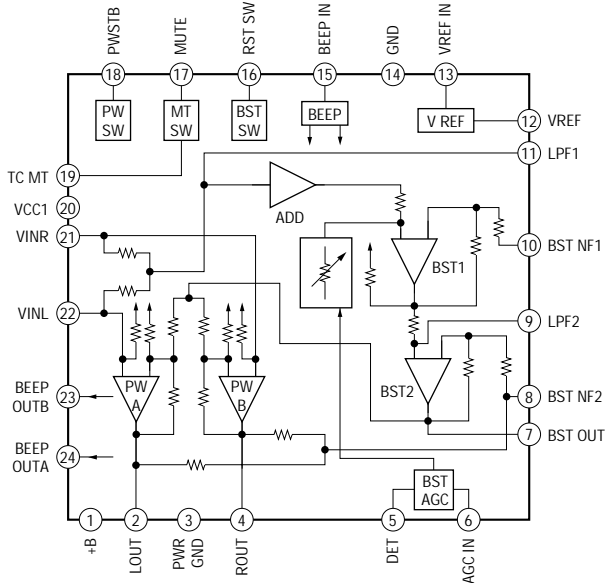


Note:

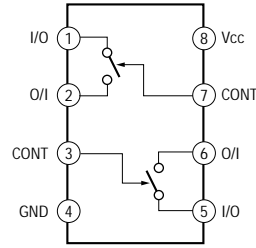
- All capacitors are in μF unless otherwise noted. pF : $\mu\mu\text{F}$
50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and $1/4\text{ W}$ or less unless otherwise specified.
- % : indicates tolerance.
- : panel designation.

6-4. IC BLOCK DIAGRAM

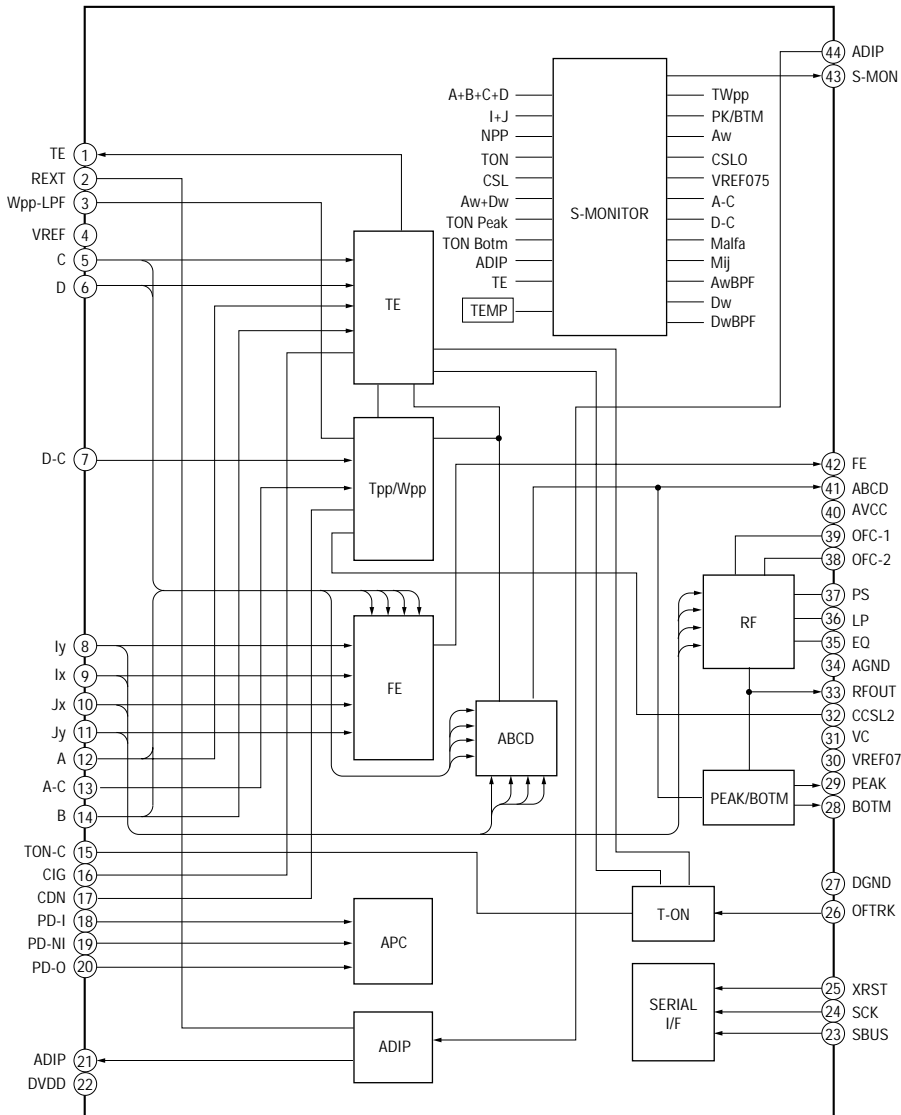
IC301 TA2131FL



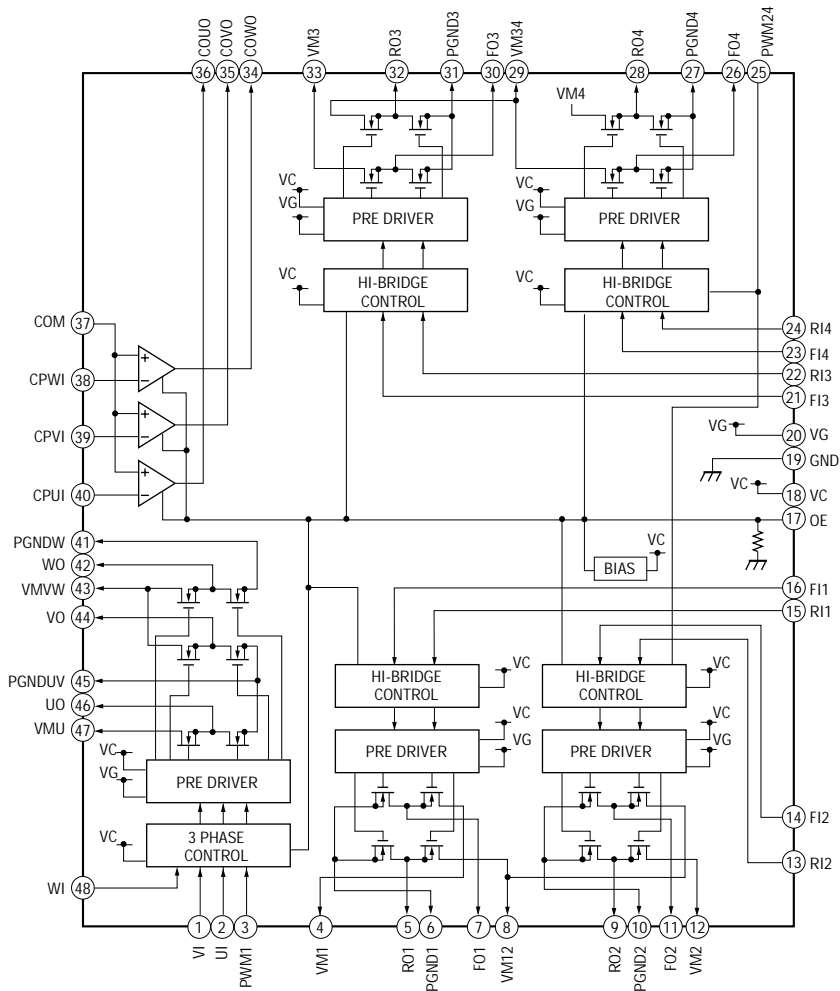
IC504, 505 TC7W66FK



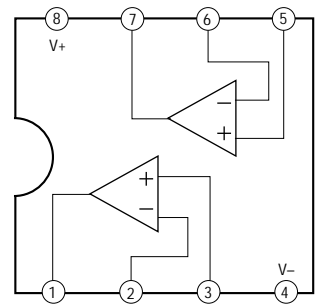
IC501 SN761056DBT



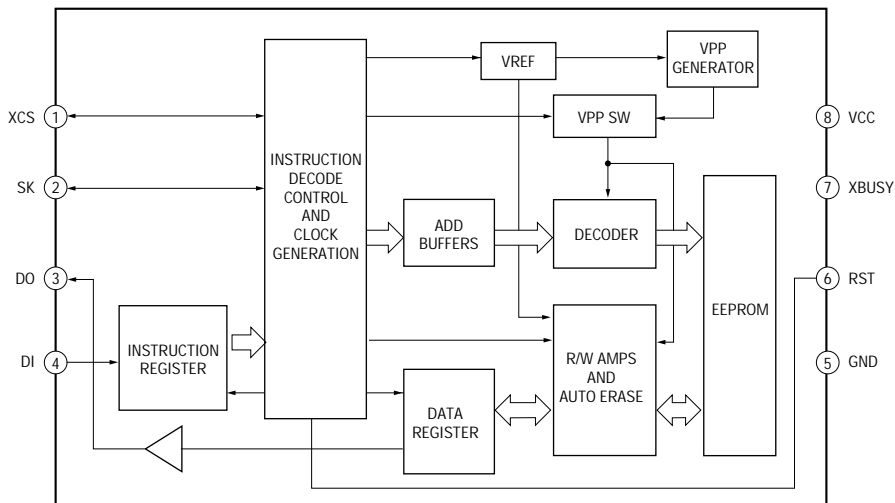
IC551 XC111256FTA



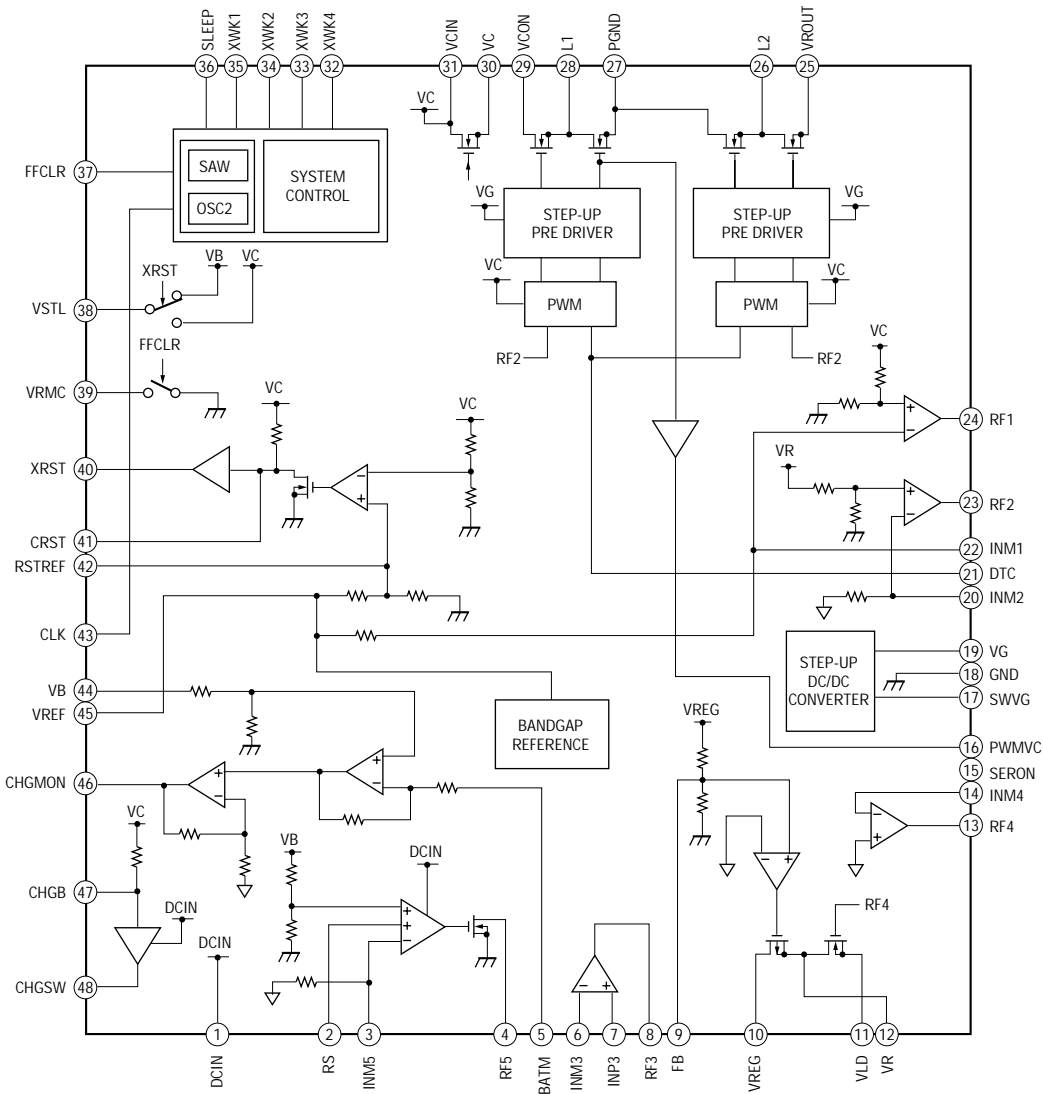
IC552 TLC372CPWR



IC802 AK6480BH-E2



IC901 MPC18A31FTA



SECTION 7 EXPLODED VIEWS

NOTE:

- The mechanical parts with no reference number in the exploded views are not supplied.
- 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 :

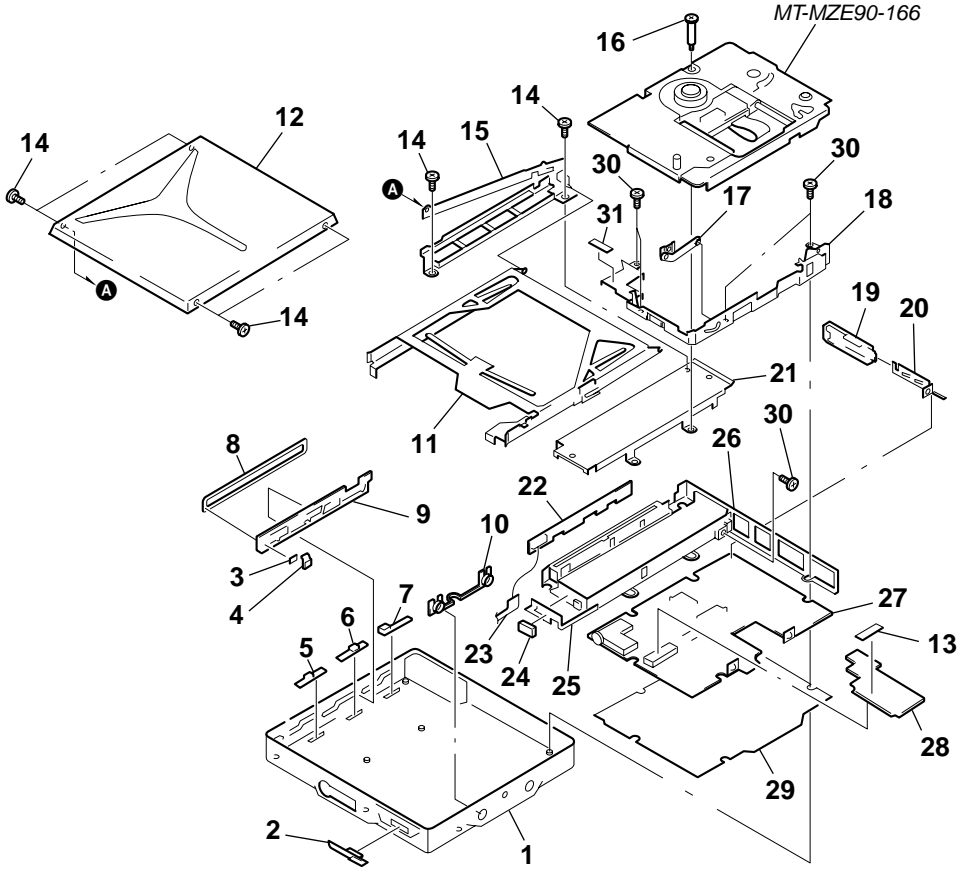
↑
↑

 KNOB, BALANCE (WHITE) ... (RED)
 Parts Color Cabinet's Color
- Accessories and packing materials are given in the last of this parts list.

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

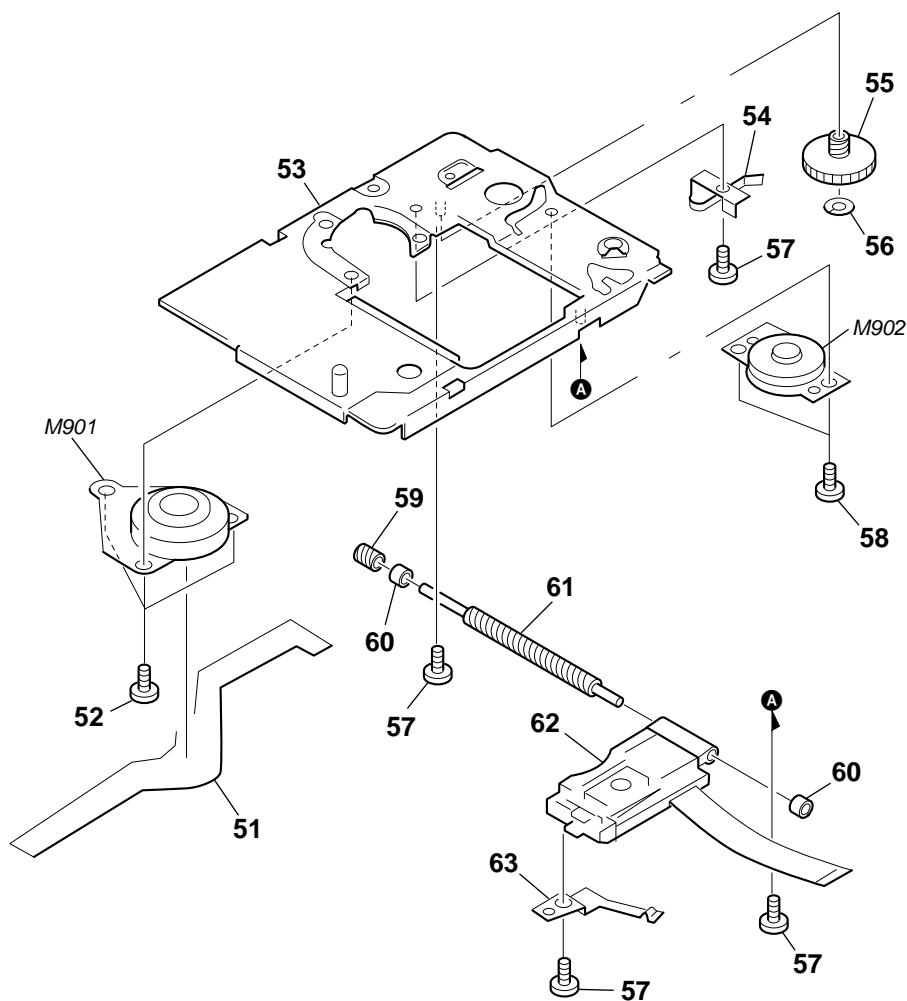
Les composants identifiés par une marque Δ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

7-1. MAIN UNIT SECTION



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
1	4-223-908-01	PANEL, BOTTOM (SILVER)...(SILVER)		16	4-223-906-01	SCREW, STEP	
1	4-223-908-11	PANEL, BOTTOM (WHITE)...(WHITE)		17	X-4952-178-1	BRACKET (STOP) ASSY	
1	4-223-908-21	PANEL, BOTTOM (RED)...(RED)		18	X-4952-177-1	PLATE (R) ASSY, FULCRUM	
2	4-223-915-01	KNOB (OPEN)		19	4-223-907-01	LID, BATTERY CASE (SILVER)...(SILVER)	
3	4-223-912-01	SHEET (WINDOW LED), ADHESIVE		19	4-223-907-11	LID, BATTERY CASE (WHITE)...(WHITE)	
4	4-223-911-01	WINDOW (LED)		19	4-223-907-21	LID, BATTERY CASE (RED)...(RED)	
5	4-223-925-01	KNOB (HOLD)		20	X-4952-176-1	TERMINAL ASSY, BATTERY	
6	4-223-916-01	KNOB (MB)		* 21	4-223-919-01	COVER (BATT)	
7	4-223-917-01	KNOB (AVLS)		22	A-3322-300-A	SW BOARD, COMPLETE	
8	4-224-072-01	SHEET (CONTROL BUTTON), ADHESIVE		23	1-675-336-11	SWITCH FLEXIBLE BOARD	
9	4-223-910-01	BUTTON, CONTROL		24	4-214-158-01	DAMPER (-)	
10	4-212-869-01	ESCUTCHEON		25	4-223-920-01	TERMINAL BOARD (MINUS)	
11	X-4951-947-1	HOLDER ASSY		26	4-223-918-01	CASE, BATTERY (WHITE)...(WHITE/SILVER)	
12	X-3378-308-1	LID ASSY, UPPER (S) (SILVER)...(SILVER)		26	4-223-918-11	CASE, BATTERY (BLACK)...(RED)	
12	X-3378-309-1	LID ASSY, UPPER (W) (WHITE)...(WHITE)		27	A-3323-347-A	MAIN BOARD, COMPLETE	
12	X-3378-310-1	LID ASSY, UPPER (R) (RED)...(RED)		28	A-3322-302-A	SYSTEM BOARD, COMPLETE	
13	3-042-755-01	SPACER (SYSTEM PC BOARD)		29	4-223-909-01	INSULATING SHEET	
14	4-218-233-05	SCREW (1.7), MI		30	4-963-883-21	SCREW (M1.4), PRECISION PAN	
15	X-4952-175-1	PLATE (L) ASSY, FULCRUM		31	3-044-461-01	SPACER	

**7-2. MECHANISM DECK SECTION
(MT-MZE90-166)**



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

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

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
51	1-675-668-11	MOTOR FLEXIBLE BOARD		59	4-222-208-01	GEAR (SB)	
52	4-963-883-42	SCREW (M1.4), PRECISION PAN		60	3-043-237-01	BEARING (N)	
53	X-4951-926-1	CHASSIS ASSY		61	4-222-203-01	SCREW, LEAD	
54	4-222-206-01	SPRING, THRUST		\triangle 62	X-4952-387-1	SERVICE ASSY, OP (LCX-2E)	
55	4-222-216-01	GEAR (SA)		63	4-222-205-01	SPRING, RACK	
56	3-338-645-31	WASHER (0.8-2.5)		M901	8-835-666-01	MOTOR, DC SSM-01C14A/C-NP (SPINDLE)	
57	4-963-883-31	SCREW (M1.4), PRECISION PAN		M902	1-763-399-11	MOTOR, DC (SLED) (WITH PULLEY GEAR)	
58	3-349-825-21	SCREW					

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
- Abbreviation
HK : Hong Kong model
JE : Tourist model
FR : French model
AUS : Australian model

- Items marked “*” are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
In each case, u : μ , for example:
uA.. : μ A.. uPA.. : μ PA..
uPB.. : μ PB.. uPC.. : μ PC.. uPD.. : μ PD..
- CAPACITORS
uF : μ F
- COILS
uH : μ H

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

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

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

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
	A-3323-347-A	MAIN BOARD, COMPLETE *****		C603	1-107-820-11	CERAMIC CHIP 0.1uF	16V
	4-212-901-11	TERMINAL		C605	1-115-156-11	CERAMIC CHIP 1uF	10V
		< CAPACITOR >		C606	1-117-919-11	TANTAL. CHIP 10uF	20% 6.3V
C101	1-125-926-11	TANTAL. CHIP 4.7uF	20% 6.3V	C607	1-115-156-11	CERAMIC CHIP 1uF	10V
C104	1-164-942-11	CERAMIC CHIP 0.0068uF	10% 16V	C608	1-107-820-11	CERAMIC CHIP 0.1uF	16V
C201	1-125-926-11	TANTAL. CHIP 4.7uF	20% 6.3V	C609	1-119-749-11	TANTAL. CHIP 33uF	20% 4V
C204	1-164-942-11	CERAMIC CHIP 0.0068uF	10% 16V	C610	1-131-862-11	TANTAL. CHIP 47uF	20% 4V
C351	1-107-820-11	CERAMIC CHIP 0.1uF	16V	C611	1-164-943-11	CERAMIC CHIP 0.01uF	10% 16V
C501	1-125-777-11	CERAMIC CHIP 0.1uF	10% 6.3V	C612	1-125-891-11	CERAMIC CHIP 0.47uF	10% 10V
C502	1-127-772-11	CERAMIC CHIP 0.033uF	10% 10V	C613	1-164-935-11	CERAMIC CHIP 470PF	10% 16V
C503	1-164-940-11	CERAMIC CHIP 0.0033uF	10% 16V	C614	1-127-772-11	CERAMIC CHIP 0.033uF	10% 10V
C504	1-164-940-11	CERAMIC CHIP 0.0033uF	10% 16V	C615	1-125-777-11	CERAMIC CHIP 0.1uF	10% 6.3V
C506	1-127-772-11	CERAMIC CHIP 0.033uF	10% 10V	C616	1-107-820-11	CERAMIC CHIP 0.1uF	16V
C507	1-127-772-11	CERAMIC CHIP 0.033uF	10% 10V	C618	1-125-891-11	CERAMIC CHIP 0.47uF	10% 10V
C508	1-164-938-11	CERAMIC CHIP 0.0015uF	10% 16V	C619	1-164-943-11	CERAMIC CHIP 0.01uF	10% 16V
C509	1-164-940-11	CERAMIC CHIP 0.0033uF	10% 16V	C851	1-164-156-11	CERAMIC CHIP 0.1uF	25V
C510	1-164-845-11	CERAMIC CHIP 5PF	0.25PF 16V	C853	1-164-156-11	CERAMIC CHIP 0.1uF	25V
C511	1-164-845-11	CERAMIC CHIP 5PF	0.25PF 16V	C854	1-164-156-11	CERAMIC CHIP 0.1uF	25V
C513	1-164-858-11	CERAMIC CHIP 22PF	5% 16V	C855	1-164-156-11	CERAMIC CHIP 0.1uF	25V
C515	1-107-820-11	CERAMIC CHIP 0.1uF	16V	C901	1-104-752-11	TANTAL. CHIP 33uF	20% 6.3V
C516	1-125-777-11	CERAMIC CHIP 0.1uF	10% 6.3V	C902	1-107-810-11	TANTAL. CHIP 33uF	20% 4V
C517	1-164-943-11	CERAMIC CHIP 0.01uF	10% 16V	C903	1-104-752-11	TANTAL. CHIP 33uF	20% 6.3V
C518	1-117-720-11	CERAMIC CHIP 4.7uF	10V	C904	1-119-749-11	TANTAL. CHIP 33uF	20% 4V
C519	1-164-940-11	CERAMIC CHIP 0.0033uF	10% 16V	C905	1-107-819-11	CERAMIC CHIP 0.022uF	10% 16V
C521	1-164-943-11	CERAMIC CHIP 0.01uF	10% 16V	C906	1-107-819-11	CERAMIC CHIP 0.022uF	10% 16V
C522	1-164-943-11	CERAMIC CHIP 0.01uF	10% 16V	C907	1-109-982-11	CERAMIC CHIP 1uF	10% 10V
C524	1-117-919-11	TANTAL. CHIP 10uF	20% 6.3V	C911	1-117-919-11	TANTAL. CHIP 10uF	20% 6.3V
C526	1-127-772-11	CERAMIC CHIP 0.033uF	10% 10V	C915	1-164-943-11	CERAMIC CHIP 0.01uF	10% 16V
C527	1-127-772-11	CERAMIC CHIP 0.033uF	10% 10V	C916	1-164-943-11	CERAMIC CHIP 0.01uF	10% 16V
C529	1-117-919-11	TANTAL. CHIP 10uF	20% 6.3V	C917	1-165-176-11	CERAMIC CHIP 0.047uF	10% 16V
C530	1-164-939-11	CERAMIC CHIP 0.0022uF	10% 16V	C918	1-164-943-11	CERAMIC CHIP 0.01uF	10% 16V
C551	1-125-777-11	CERAMIC CHIP 0.1uF	10% 6.3V	C951	1-164-156-11	CERAMIC CHIP 0.1uF	25V
C552	1-125-777-11	CERAMIC CHIP 0.1uF	10% 6.3V	C952	1-127-569-11	TANTAL. CHIP 100uF	20% 4V
C553	1-107-765-11	TANTAL. CHIP 3.3uF	20% 16V	C953	1-127-569-11	TANTAL. CHIP 100uF	20% 4V
C554	1-107-765-11	TANTAL. CHIP 3.3uF	20% 16V	C954	1-164-156-11	CERAMIC CHIP 0.1uF	25V
C555	1-135-238-21	TANTAL. CHIP 6.8uF	20% 10V			< CONNECTOR >	
C556	1-135-238-21	TANTAL. CHIP 6.8uF	20% 10V	* CN501	1-778-168-11	CONNECTOR, FFC/FPC (ZIF) 20P	
C557	1-127-772-11	CERAMIC CHIP 0.033uF	10% 10V	* CN551	1-793-124-21	CONNECTOR, FPC (ZIP) 8P	
C558	1-127-772-11	CERAMIC CHIP 0.033uF	10% 10V	* CN801	1-793-607-21	CONNECTOR, BOARD TO BOARD 50P	
C559	1-127-772-11	CERAMIC CHIP 0.033uF	10% 10V	* CN802	1-785-219-22	CONNECTOR, FPC (ZIF) 9P	
C561	1-164-156-11	CERAMIC CHIP 0.1uF	25V			< DIODE >	
C601	1-107-820-11	CERAMIC CHIP 0.1uF	16V	D101	8-719-056-72	DIODE UDZ-TE-17-2.4B	
				D201	8-719-056-72	DIODE UDZ-TE-17-2.4B	

MAIN

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
D351	8-719-017-58	DIODE MA8068		R518	1-218-985-11	RES,CHIP 470K	5% 1/16W
D601	8-719-421-27	DIODE MA728		R519	1-218-977-11	RES,CHIP 100K	5% 1/16W
D855	8-719-066-17	DIODE FTZ6.8E-T148		R521	1-218-446-11	METAL CHIP 1	5% 1/16W
D901	8-719-066-16	DIODE RB491D-T146		R551	1-218-965-11	RES,CHIP 10K	5% 1/16W
D902	8-719-066-16	DIODE RB491D-T146		R552	1-218-965-11	RES,CHIP 10K	5% 1/16W
D903	8-719-420-51	DIODE MA729		R553	1-218-965-11	RES,CHIP 10K	5% 1/16W
		< FERRITE BEAD >		R554	1-218-965-11	RES,CHIP 10K	5% 1/16W
FB801	1-414-228-11	FERRITE BEAD INDUCTOR		R555	1-218-965-11	RES,CHIP 10K	5% 1/16W
FB802	1-414-228-11	FERRITE BEAD INDUCTOR		R556	1-216-864-11	METAL CHIP 0	5% 1/16W
		< IC >		R601	1-218-929-11	RES,CHIP 10	5% 1/16W
IC501	8-759-641-94	IC SN761056DBT		R602	1-218-929-11	RES,CHIP 10	5% 1/16W
IC504	8-759-647-75	IC TC7W66FK(TE85R)		R603	1-216-811-11	METAL CHIP 150	5% 1/16W
IC505	8-759-647-75	IC TC7W66FK(TE85R)		R604	1-218-973-11	RES,CHIP 47K	5% 1/16W
IC551	8-759-660-29	IC XC111256FTA		R605	1-218-965-11	RES,CHIP 10K	5% 1/16W
IC552	8-759-358-40	IC TLC372CPW-E20		R606	1-218-977-11	RES,CHIP 100K	5% 1/16W
@ IC601	8-752-400-59	IC CXD2661GA-2		R607	1-218-987-11	RES,CHIP 680K	5% 1/16W
IC901	8-759-642-13	IC MPC18A31FTA		R608	1-218-977-11	RES,CHIP 100K	5% 1/16W
		< JACK >		R609	1-216-861-11	METAL CHIP 2.2M	5% 1/16W
J301	1-779-867-61	JACK (♁ REMOTE)		R610	1-218-990-11	SHORT 0	
		< COIL >		R611	1-218-975-11	RES,CHIP 68K	5% 1/16W
L501	1-469-570-21	INDUCTOR 10uH		R612	1-218-971-11	RES,CHIP 33K	5% 1/16W
L502	1-469-570-21	INDUCTOR 10uH		R614	1-218-965-11	RES,CHIP 10K	5% 1/16W
L551	1-414-402-31	INDUCTOR CHIP 47uH		R615	1-218-990-11	SHORT 0	
L552	1-414-402-31	INDUCTOR CHIP 47uH		R619	1-218-990-11	SHORT 0	
L553	1-414-400-41	INDUCTOR 22uH		R620	1-218-990-11	SHORT 0	
L554	1-414-400-41	INDUCTOR 22uH		R628	1-218-990-11	SHORT 0	
L601	1-469-570-21	INDUCTOR 10uH		R630	1-218-965-11	RES,CHIP 10K	5% 1/16W
L901	1-419-258-21	INDUCTOR 68uH		R809	1-218-973-11	RES,CHIP 47K	5% 1/16W
L902	1-419-368-21	INDUCTOR 47uH		R816	1-218-957-11	RES,CHIP 2.2K	5% 1/16W
L903	1-469-525-91	INDUCTOR 10uH		R817	1-218-941-11	RES,CHIP 100	5% 1/16W
L904	1-414-398-11	INDUCTOR 10uH		R818	1-218-941-11	RES,CHIP 100	5% 1/16W
L905	1-414-404-41	INDUCTOR 100uH		R819	1-218-989-11	RES,CHIP 1M	5% 1/16W
		< TRANSISTOR >		R820	1-218-990-11	SHORT 0	
Q501	8-729-922-10	TRANSISTOR 2SA1577-QR		R822	1-218-985-11	RES,CHIP 470K	5% 1/16W
Q901	8-729-046-48	FET FDV303N		R828	1-218-973-11	RES,CHIP 47K	5% 1/16W
Q902	8-729-037-53	TRANSISTOR 2SB1462J-QR(TX).SO		R856	1-218-990-11	SHORT 0	
		< RESISTOR >		R902	1-218-983-11	RES,CHIP 330K	5% 1/16W
R105	1-218-951-11	RES,CHIP 680	5% 1/16W	R903	1-218-961-11	RES,CHIP 4.7K	5% 1/16W
R205	1-218-951-11	RES,CHIP 680	5% 1/16W	R904	1-218-983-11	RES,CHIP 330K	5% 1/16W
R501	1-218-970-11	RES,CHIP 27K	5% 1/16W	R905	1-218-961-11	RES,CHIP 4.7K	5% 1/16W
R503	1-216-864-11	METAL CHIP 0	5% 1/16W	R907	1-218-990-11	SHORT 0	
R504	1-216-864-11	METAL CHIP 0	5% 1/16W	R908	1-218-990-11	SHORT 0	
R505	1-208-691-11	METAL CHIP 2.2K	0.50% 1/16W	R909	1-218-959-11	RES,CHIP 3.3K	5% 1/16W
R515	1-208-691-11	METAL CHIP 2.2K	0.50% 1/16W	R910	1-218-959-11	RES,CHIP 3.3K	5% 1/16W
R516	1-208-691-11	METAL CHIP 2.2K	0.50% 1/16W	R918	1-216-855-11	METAL CHIP 680K	5% 1/16W
R517	1-208-691-11	METAL CHIP 2.2K	0.50% 1/16W	R920	1-218-871-11	METAL CHIP 10K	0.50% 1/16W
				R921	1-218-979-11	RES,CHIP 150K	5% 1/16W
				R922	1-218-989-11	RES,CHIP 1M	5% 1/16W
				R936	1-218-979-11	RES,CHIP 150K	5% 1/16W
				R937	1-218-989-11	RES,CHIP 1M	5% 1/16W
				R938	1-218-989-11	RES,CHIP 1M	5% 1/16W
				R939	1-218-990-11	SHORT 0	
				R940	1-218-977-11	RES,CHIP 100K	5% 1/16W

@ Replacement of CXD2661GA-2 (IC601) used in this set requires a special tool. Therefore, it cannot be replaced.

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
R941	1-218-967-11	RES,CHIP 15K 5%	1/16W	C802	1-107-820-11	CERAMIC CHIP 0.1uF	16V
R942	1-218-963-11	RES,CHIP 6.8K 5%	1/16W	C803	1-164-935-11	CERAMIC CHIP 470PF	10% 16V
R943	1-218-957-11	RES,CHIP 2.2K 5%	1/16W	C804	1-164-943-11	CERAMIC CHIP 0.01uF	10% 16V
R944	1-218-981-11	RES,CHIP 220K 5%	1/16W	C806	1-125-891-11	CERAMIC CHIP 0.47uF	10% 10V
		< NETWORK RESISTOR >		C807	1-125-891-11	CERAMIC CHIP 0.47uF	10% 10V
RB551	1-233-965-11	RES, NETWORK (CHIP TYPE) 4.7K		C808	1-107-820-11	CERAMIC CHIP 0.1uF	16V
RB552	1-233-979-11	RES, NETWORK (CHIP TYPE) 1M		C809	1-107-820-11	CERAMIC CHIP 0.1uF	16V
		< VIBRATOR >		C811	1-107-820-11	CERAMIC CHIP 0.1uF	16V
X601	1-781-654-21	VIBRATOR, CERAMIC (22.57MHz)				< CONNECTOR >	
*****				* CN803	1-793-608-21	CONNECTOR, BOARD TO BOARD 50P	
	A-3322-300-A	SW BOARD, COMPLETE				< IC >	
		*****		IC301	8-759-598-15	IC TA2131FL-EL	
		< CONNECTOR >		@ IC801	8-752-912-55	IC CXR701080-006GA	
				IC802	8-759-566-18	IC AK6480BH-E2	
CN804	1-793-606-21	CONNECTOR, FFC/FPC (ZIF) 9P				< TRANSISTOR >	
		< DIODE >		Q301	8-729-037-52	TRANSISTOR 2SD2216J-QR(TX).SO	
D801	8-719-061-82	LED TLSU1002(TPX1.SONY) (OPR)				< RESISTOR >	
		< RESISTOR >		R101	1-218-967-11	RES,CHIP 15K 5%	1/16W
R811	1-216-831-11	METAL CHIP 6.8K 5%	1/16W	R102	1-218-961-11	RES,CHIP 4.7K 5%	1/16W
R812	1-216-833-11	RES,CHIP 10K 5%	1/16W	R103	1-218-961-11	RES,CHIP 4.7K 5%	1/16W
R813	1-216-835-11	METAL CHIP 15K 5%	1/16W	R104	1-218-929-11	RES,CHIP 10 5%	1/16W
R814	1-216-839-11	METAL CHIP 33K 5%	1/16W	R201	1-218-967-11	RES,CHIP 15K 5%	1/16W
		< SWITCH >		R202	1-218-961-11	RES,CHIP 4.7K 5%	1/16W
S801	1-771-138-21	SWITCH, KEY BOARD (■)		R203	1-218-961-11	RES,CHIP 4.7K 5%	1/16W
S802	1-771-138-21	SWITCH, KEY BOARD (▶▶▶▶)		R204	1-218-929-11	RES,CHIP 10 5%	1/16W
S803	1-771-138-21	SWITCH, KEY BOARD (◀◀◀◀)		R301	1-218-935-11	RES,CHIP 33 5%	1/16W
S804	1-771-138-21	SWITCH, KEY BOARD (VOLUME -)		R302	1-218-963-11	RES,CHIP 6.8K 5%	1/16W
S805	1-771-138-21	SWITCH, KEY BOARD (VOLUME +)		R303	1-218-981-11	RES,CHIP 220K 5%	1/16W
S806	1-692-605-31	SWITCH, SLIDE (DIGITAL MEGABASS)		R801	1-208-943-11	METAL CHIP 220K 0.50%	1/16W
S807	1-572-922-11	SWITCH, SLIDE (AVLS)		R802	1-208-943-11	METAL CHIP 220K 0.50%	1/16W
S808	1-572-922-11	SWITCH, SLIDE (HOLD)		R803	1-218-985-11	RES,CHIP 470K 5%	1/16W
S809	1-771-483-61	SWITCH, PUSH (1 KEY) (OPEN/CLOSE)		R804	1-218-973-11	RES,CHIP 47K 5%	1/16W
*****				R806	1-218-977-11	RES,CHIP 100K 5%	1/16W
	A-3322-302-A	SYSTEM BOARD, COMPLETE		R807	1-218-959-11	RES,CHIP 3.3K 5%	1/16W
		*****		R808	1-218-959-11	RES,CHIP 3.3K 5%	1/16W
		< CAPACITOR >		R810	1-218-973-11	RES,CHIP 47K 5%	1/16W
C102	1-125-899-11	TANTAL. CHIP 220uF 20%	4V	R815	1-218-941-11	RES,CHIP 100 5%	1/16W
C103	1-115-467-11	CERAMIC CHIP 0.22uF 10%	10V	R823	1-216-295-00	CONNECTOR,CHIP (2012)	
C202	1-125-899-11	TANTAL. CHIP 220uF 20%	4V	R826	1-216-864-11	METAL CHIP 0 5%	1/16W
C203	1-115-467-11	CERAMIC CHIP 0.22uF 10%	10V	R827	1-218-989-11	RES,CHIP 1M 5%	1/16W
C301	1-117-919-11	TANTAL. CHIP 10uF 20%	6.3V			< VIBRATOR >	
C302	1-107-820-11	CERAMIC CHIP 0.1uF	16V	X801	1-781-575-11	VIBRATOR, CERAMIC (16.9344MHz)	
C303	1-125-837-11	CERAMIC CHIP 1uF 10%	6.3V	*****			
C304	1-125-926-11	TANTAL. CHIP 4.7uF 20%	6.3V				
C305	1-125-838-11	CERAMIC CHIP 2.2uF 10%	6.3V				
C306	1-117-919-11	TANTAL. CHIP 10uF 20%	6.3V				

@ Replacement of CXR701080-006GA (IC801) used in this set requires a special tool. Therefore, it cannot be replaced.

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Remark</u>
		MISCELLANEOUS *****	
23	1-675-336-11	SWITCH FLEXIBLE BOARD	
51	1-675-668-11	MOTOR FLEXIBLE BOARD	
M901	8-835-666-01	MOTOR, DC SSM-01C14A/C-NP (SPINDLE)	
M902	1-763-399-11	MOTOR, DC (SLED) (WITH PULLEY GEAR)	

		ACCESSORIES & PACKING MATERIALS *****	
	1-418-493-51	REMOTE CONTROL UNIT (RM-MZ25) (SILVER)...(SILVER)	
	1-418-493-61	REMOTE CONTROL UNIT (RM-MZ25) (CLEAR)...(WHITE,RED) (HK)	
△	1-528-580-21	BATTERY CHARGER (BC-7HT) (E,JE)	
△	1-528-865-11	BATTERY CHARGER (BC-9HY2) (AEP,FR)	
△	1-528-866-11	BATTERY CHARGER (BC-9HP2) (UK,HK)	
△	1-528-867-11	BATTERY CHARGER (BC-9HG2) (AUS)	
△	1-528-891-12	BATTERY CHARGER (BC-9HU2) (US)	
	1-528-918-11	BATTERY CASE	
△	1-569-007-11	ADAPTOR, CONVERSION 2P (E,JE)	
	1-756-036-11	BATTERY, NICKEL HYDROGEN (NH-14WM)	
	3-043-060-01	CASE, CHARGE (C/D)	
	3-045-575-01	CASE, CARRYING	
	3-868-188-11	MANUAL, INSTRUCTION (SPANISH,TRADITIONAL CHINESE) (AEP,E,HK,JE)	
	3-868-188-21	MANUAL, INSTRUCTION (ENGLISH,FRENCH)	
	3-868-188-31	MANUAL, INSTRUCTION (GERMAN,ITALIAN) (AEP)	
	3-868-188-41	MANUAL, INSTRUCTION (DUTCH,PORTUGUESE) (AEP)	
	3-868-188-51	MANUAL, INSTRUCTION (SWEDISH,FINNISH) (AEP)	
	3-868-188-61	MANUAL, INSTRUCTION (RUSSIAN) (AEP)	
	3-868-188-71	MANUAL, INSTRUCTION (JAPANESE,KOREAN) (JE)	
	8-953-278-90	HEADPHONE MDR-A34SP (US)	
	8-953-304-90	RECEIVER MDR-E805SP (EXCEPT US)	

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