

MZ-E33

SERVICE MANUAL

Ver 1.1 1999. 01

*US Model
Canadian Model
AEP Model
E Model*



US and foreign patents licensed from Dolby Laboratories Licensing Corporation.

Model Name Using Similar Mechanism	MZ-E55
MD Mechanism Type	MT-MZE55-150
Optical Pick-up Mechanism Type	ODX-1A/1B

SPECIFICATIONS

System

Audio playing system

MiniDisc digital audio system

Laser diode properties

Material : GaAlAs

Wavelength : $\lambda = 790$ nm

Emission duration : continuous

Laser output : less than 44.6 μ 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

400 rpm to 900 rpm (CLV)

Error correction

Advanced Cross Interleave Reed Solomon Code (ACIRC)

Sampling frequency

44.1kHz

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 dB

Wow and Flutter

Below measurable limit

Outputs

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

General

Power requirements

One LR6 (size AA) alkaline battery (not supplied)

Ni-MH rechargeable battery NH-9WM/NH-14WM (not supplied)

R-6 sized Ni-MH rechargeable battery NH-MDAA (supplied)

Sony AC Power Adaptor AC-MZR55 (supplied) connected at the DC IN 3V jack

Battery operation time

Batteries	Playback
LR6 (SG) (size AA) Sony alkaline battery	Approx. 9.5 hours
R-6 sized Ni-MH rechargeable battery NH-MDAA	Approx. 8 hours
Chewing gum type Ni-MH rechargeable battery NH-14WM	Approx. 7 hours
Chewing gum type Ni-MH rechargeable battery NH-9WM (N)	Approx. 6.5 hours

Dimensions

Approx. 80 \times 17.3 \times 92 mm (w/h/d)

(3 1/4 \times 11/16 \times 3 5/8 in.)

not including projecting parts and controls

– Continued on next page –

PORTABLE MINIDISC PLAYER



SONY®

Mass

Approx. 113 g (4.0 oz.) the player only

Approx. 155 g (5.5 oz.) incl. a premastered MD and a Sony alkaline LR6 (SG) battery

Supplied accessories

AC power adaptor AC-MZR55 (1)

R-6 sized Ni-MH rechargeable battery NH-MDAA (1)

Rechargeable battery carrying case (1)

Headphones with a remote control

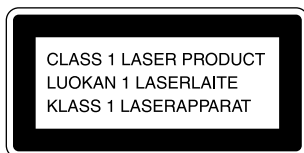
MDR-A34SP + RM-MZE33 (1) (US model)

MDR-E805SP + RM-MZE33 (1) (Canadian, AEP, E model)

MDR-E838SP + RM-MZE33 (1) (Hong Kong model)

Carrying pouch (1)

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.

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.

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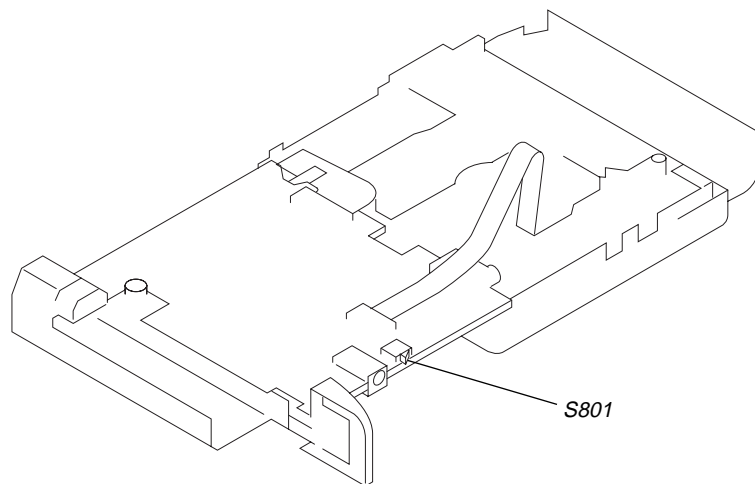
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ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!!

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.

SECTION 1 SERVICING NOTE

1. When repairing this device with the power on, if you remove the main board, this device stops working. In this case, you work without the device stopping by fastening the hook of the DOOR OPEN/CLOSE switch (S801) with tape.



2. The electrical components differ according to the version of the system control IC (IC801). When replacing the IC801, check its model name and add or remove D1001 and/or R1001 as shown below. For detailed information, see the Printed Wiring Board on page 18 and the Schematic Diagram on page 21.
RU6815MF-0004 (Ver. 3.0).... Add D1001 and R1001
RU6815MF-0005 (Ver. 3.2) and later.... Remove D1001 and R1001

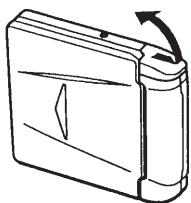
This section is extracted from instruction manual.

Playing an MD right away! **A**

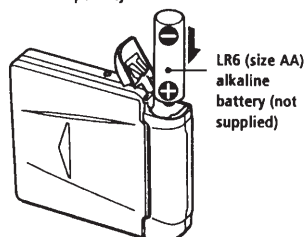
Prepare one LR6 (size AA) alkaline battery. You can also use this player on a rechargeable batteries or house current (see "Power sources"). Playback will switch automatically between stereo and monaural according to the sound source.

1 Insert a battery or a rechargeable battery.

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

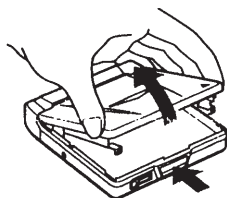


② Insert the battery with correct polarity.

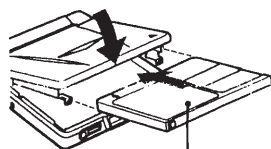


Charge rechargeable batteries before using them (see "Using on a rechargeable battery").

2 Insert an MD.



① Push OPEN and open the lid.

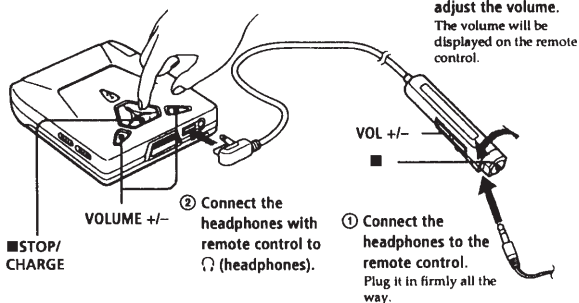


② Insert an MD with the label facing up and press the lid down to close.

3 Play an MD.

③ Press **▶▶▶▶** (turn the control to **▶▶▶▶** on the remote control).

The player starts to play the first track. When using the remote control, a short beep sounds in the headphones. The OPR/CHG lamp on the main unit will light up.



② Connect the headphones with remote control to (headphones).

VOL +/-

① Connect the headphones to the remote control. Plug it in firmly all the way.

To	Press (Beeps in the headphones)
Pause	 on the remote control (Continuous short beeps) Press again to resume play.
Find the beginning of the current track	⏮ or turn the control to ⏮ on the remote control once (Three short beeps)
Find the beginning of the next track	▶▶▶▶ or turn the control to ▶▶▶▶ on the remote control once (Two short beeps)
Go backwards while playing ¹⁾	keep pressing ⏮ or keep the control turned to ⏮ on the remote control
Go forward while playing ¹⁾	keep pressing ▶▶▶▶ or keep the control turned to ▶▶▶▶ on the remote control
Remove the MD	■ and push OPEN to open the lid. ²⁾

When using the headphones

Wear the "L" marked side to the left ear and the "R" marked side to the right ear.

If playback does not start

Make sure the player is not locked. See "To lock the controls."

Display window while playing back

Track name³⁾ or elapsed time of the track being played



Track number

Tips

- The OPR/CHG lamp will light up on the main unit during playback. It will go off when **■** is pressed.
- The display on the remote control will disappear after a few seconds after you have pressed **■**.

Note

Do not push OPEN during playback. If you do, the lid opens and playback will stop.

When using optional headphones

Use the headphones that have stereo-miniplug. You cannot use other types of headphones (microplug).

- 1) If you press **⏮** or **▶▶▶▶** during pause, the player will resume playback. If you keep pressing **⏮** or **▶▶▶▶** during pause (keep the control turned to **⏮** or **▶▶▶▶** on the remote control), you can fast forward/rewind without listening to the playback sound.
- 2) Once you open the lid, the point to start play will change to the beginning of the first track.
- 3) Appears only with MDs that have been electronically labeled.

To stop play, press **■**.

When using the remote control, a short beep sounds in the headphones. The OPR/CHG lamp on the main unit will go off. The display on the remote control will disappear after a while.

SECTION 3 DISASSEMBLY

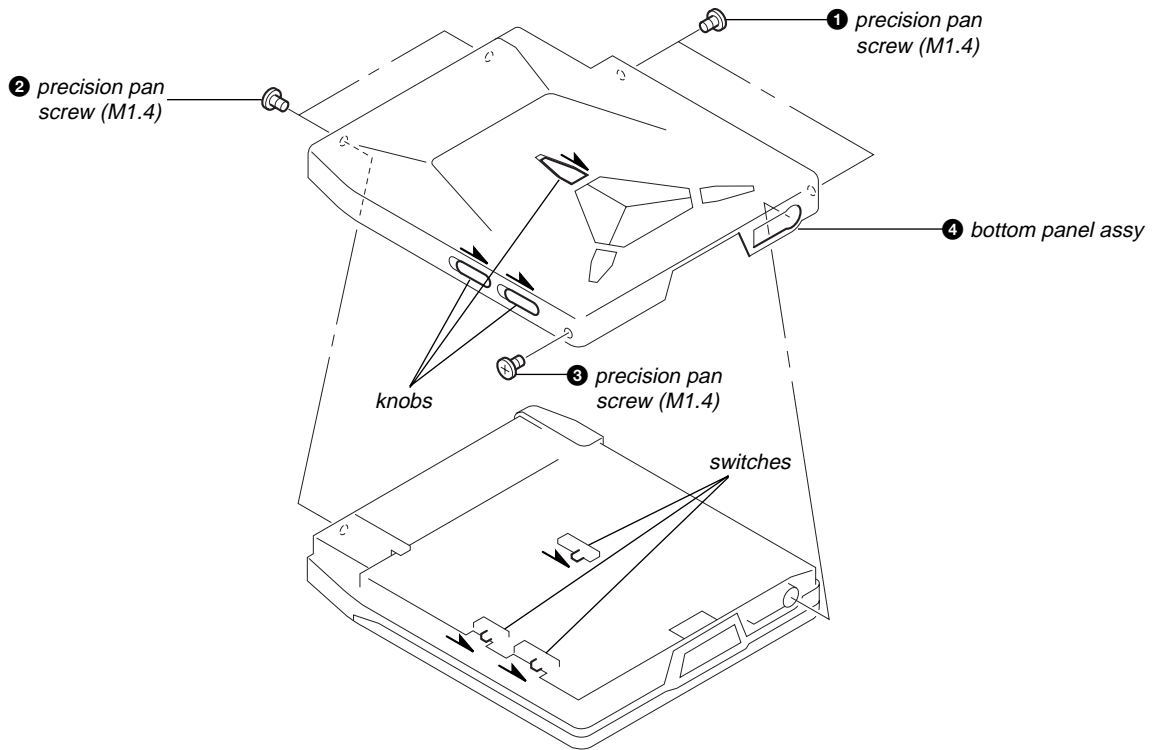
- The equipment can be removed using the following procedure.

Bottom panel assy → Main board
Upper panel assy → Main board → MD assy → OP service assy

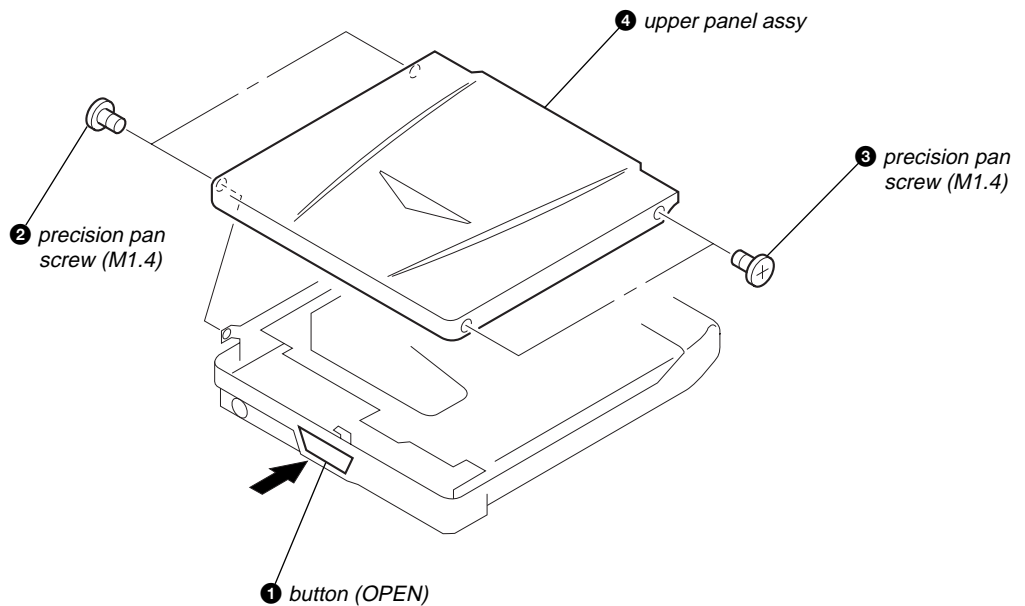
Note : Follow the disassembly procedure in the numerical order given.

3-1. BOTTOM PANEL ASSY

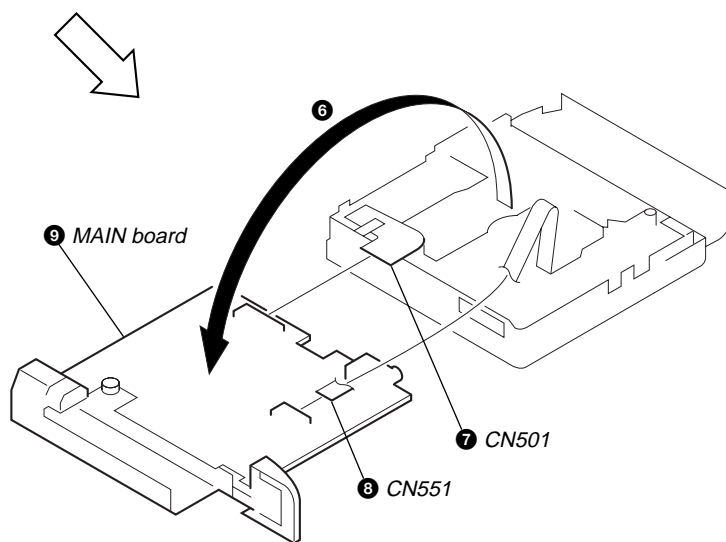
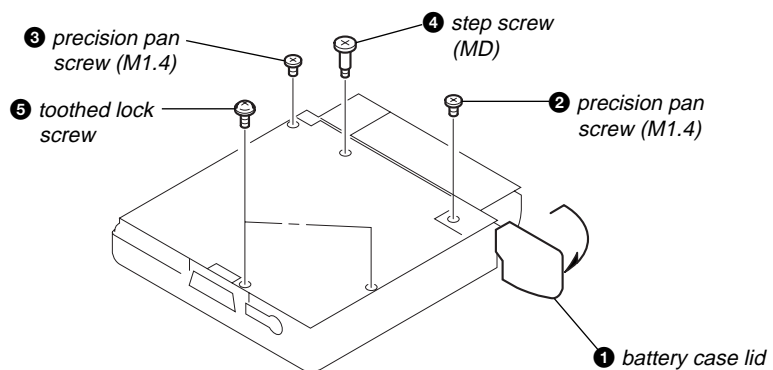
Note : When installing, fit the knobs and switches.



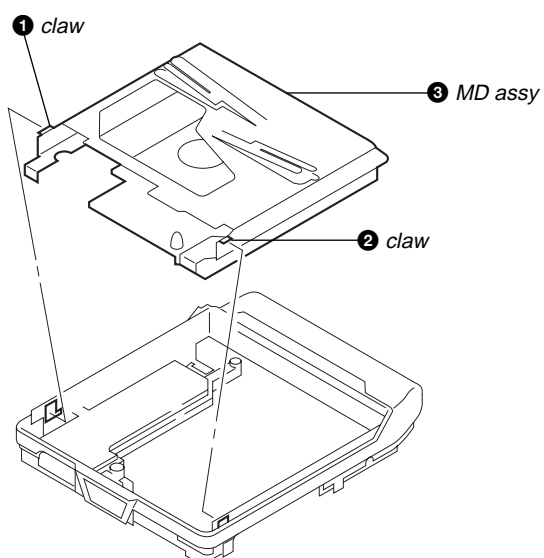
3-2. UPPER PANEL ASSY



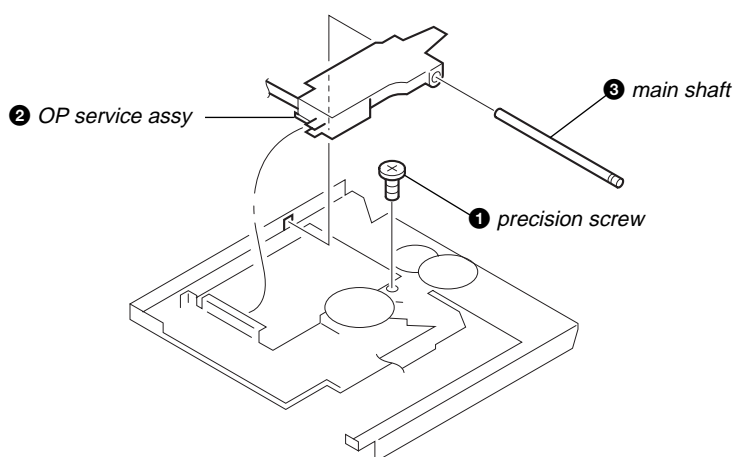
3-3. MAIN BOARD



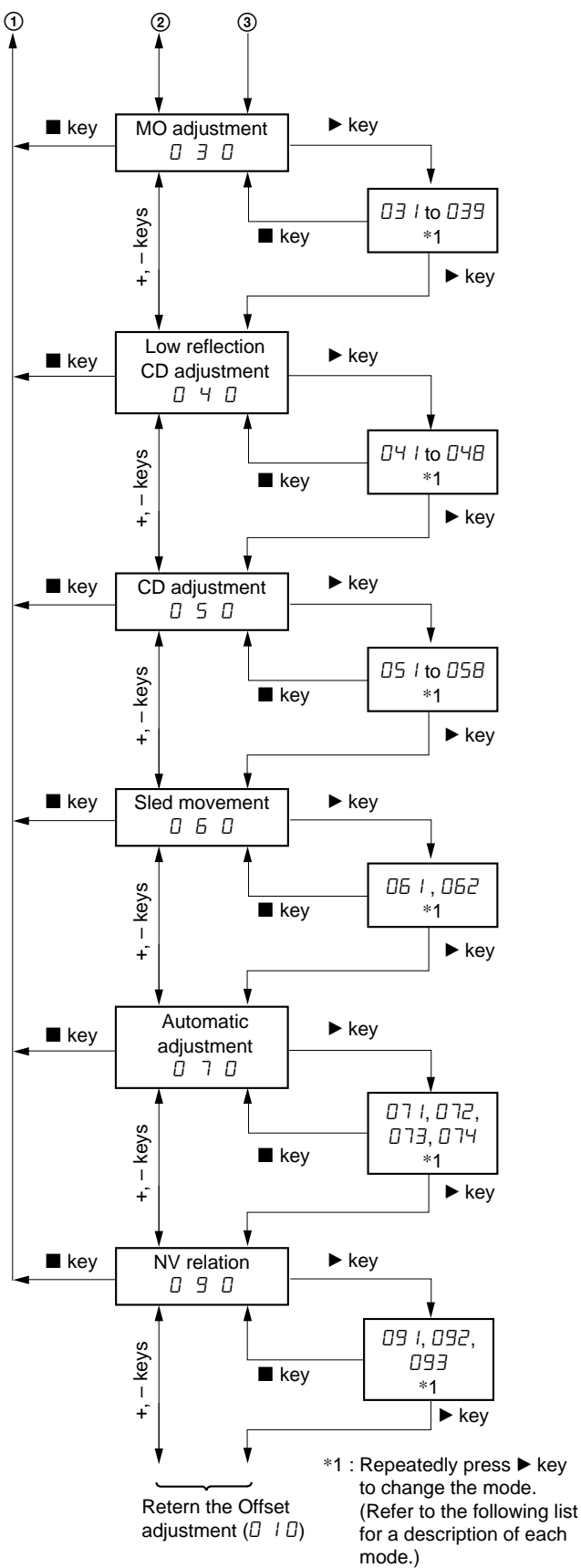
3-4. MD ASSY



3-5. OP SERVICE ASSY



(See page 7.)



2. Description of Each Mode

0 1 0 Offset adjustment

Mode	Description
0 1 1	FE offset
0 1 2	TE offset
0 1 3	All servo ON

0 2 0 Laser power adjustment

Mode	Description
0 2 1	MO power A
0 2 2	MO power E
0 2 3	CDL power
0 2 4	CD power

0 3 0 MO adjustment

Mode	Description
0 3 1	MO FE balance
0 3 2	MO FE gain
0 3 3	MO ABCD gain
0 3 4	MO focus gain
0 3 5	MO tracking gain
0 3 6	MO RF gain
0 3 7	MO ADIP gain
0 3 8	MO focus bias E
0 3 9	CD focus bias A

0 4 0 Lower reflection CD adjustment

Mode	Description
0 4 1	Lower reflection CD FE balance
0 4 2	Lower reflection CD FE gain
0 4 3	Lower reflection CD ABCD gain
0 4 4	Lower reflection CD focus gain
0 4 5	Lower reflection CD tracking gain
0 4 6	Lower reflection CD RF offset
0 4 7	Lower reflection CD RF gain
0 4 8	Lower reflection CD focus bias

0 5 0 CD adjustment

Mode	Description
0 5 1	CD FE balance
0 5 2	CD FE gain
0 5 3	CD ABCD gain
0 5 4	CD focus gain
0 5 5	CD tracking gain
0 5 6	CD RF offset
0 5 7	CD RF gain
0 5 8	CD focus bias

060 Sled movement

Mode	Description
061	Sled in
062	Sled out 5

070 Automatic adjustment

Mode	Description
071	Focus search
072	Access 32
073	ADER check
074	Tracking sensitivity adjust

090 NV relation

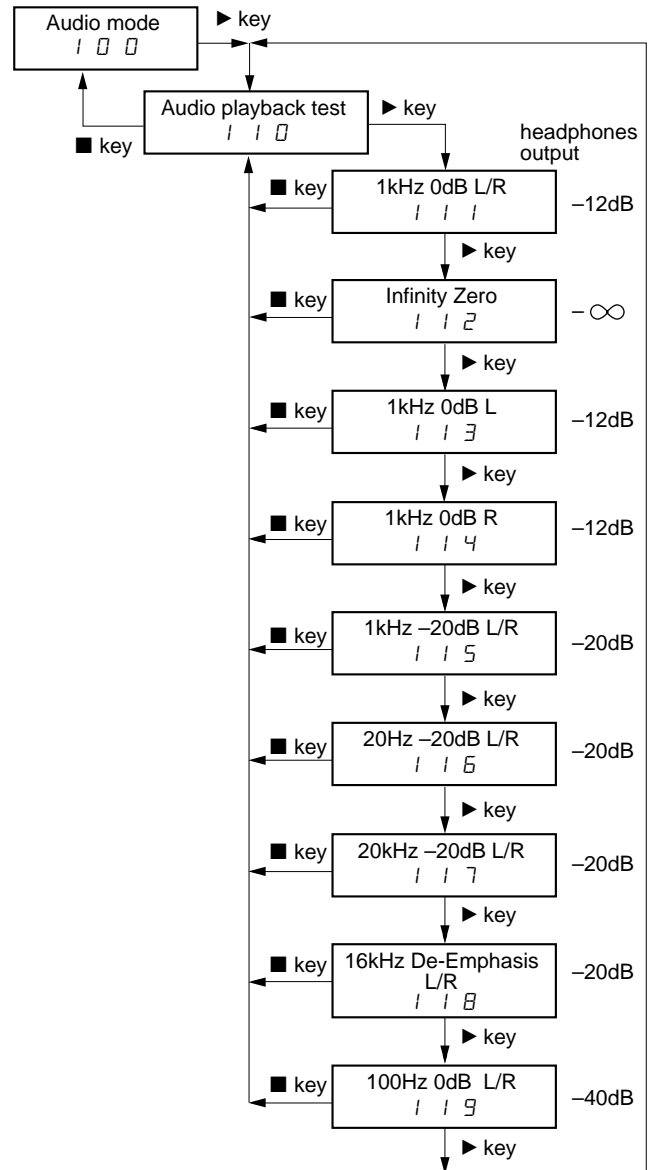
Mode	Description
091	NV clear
092	Power OFF
093	Function code change

Audio Mode

- Enter the test mode and press the VOL-key. Then, press the key and the VOL+key in this turn to enter audio mode.
- When entering another mode, refer to the configuration of test mode.

1. Structure of Audio Mode

- The mode No. 111 is for S/N and cross talk. The mode No. 115



is for distortion factor and frequency characteristics.

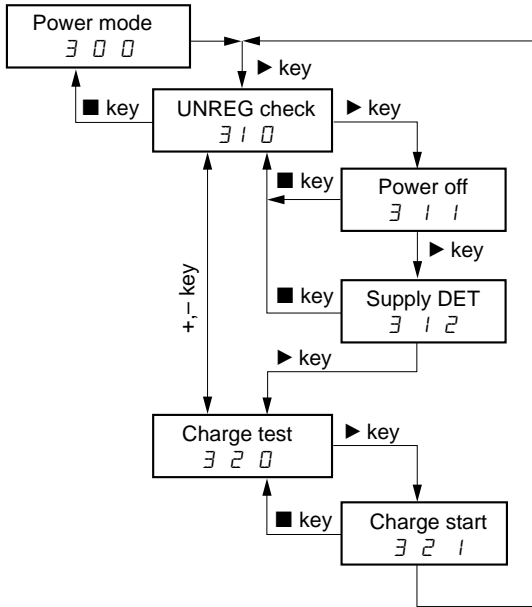
- When the VOL+/-key is pressed in any mode, the volume of the headphones is changed (increased/decreased) in units of one step. When the ►◄◄◄key is pressed, the volume of the headphones is maximized/minimized.
- For the volume value, any changed value remains as it is basically.

However, when the volume is switched from 114 to 115 or 118 to 119, it returns the default volume.

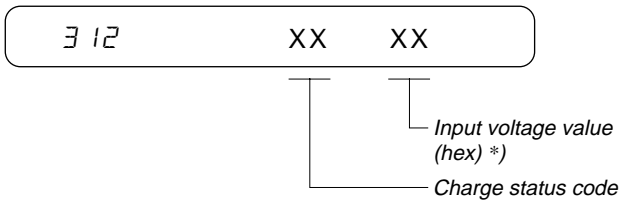
Power Mode

- Enter the test mode and press the VOL-key. Then, press the key and the VOL-key in this turn to enter power mode.
- When entering another mode, refer to the configuration of test mode.

1. Power Mode Structure



- Press the key to disconnect the power in mode No. 311.
- To display power information in mode No. 312.



- *1) Input voltage value = Display voltage value (hex) divided by 256 and multiplied by 9.016

Example:

With display of 50 (hex), 50 (hex) = 80 (dec)

Input voltage = 80 divided by 256 and multiplied by 9.016 = 2.8175 V

Charge status code (second digit)

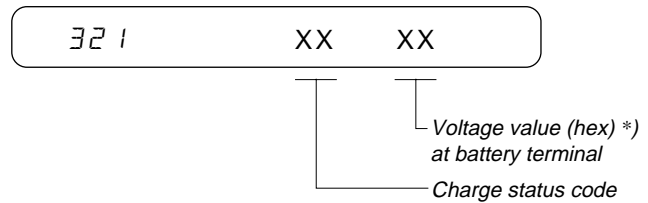
Code	Description
0	Unable to charge (No adaptor attached, or no power if present)
8	Chargeable *1)
A	Servo system stopped/chargeable *1)

- *1) Chargeable: AC adaptor attached and AA battery available, or AC adaptor attached and gum type battery available.

Charge status code (first digit)

Code	Description
1	Gum type battery not detected (AA battery available or no battery)
2	Description Gum type battery detected
4	AC adaptor detected
5	Gum type battery not detected/AC adaptor detected
6	Gum type battery detected/AC adaptor detected

- When in mode No. 321, the system automatically tries to detect the AC adaptor and the battery. If chargeable, it starts charging. (No charge display and no LED flashing during this mode.)



- *1) Battery terminal voltage = Display voltage value (hex) divided by 256 and multiplied by 2.8

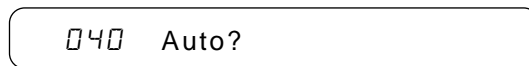
Example:

With display of A0 (hex), A0 (hex) = 160 (dec)

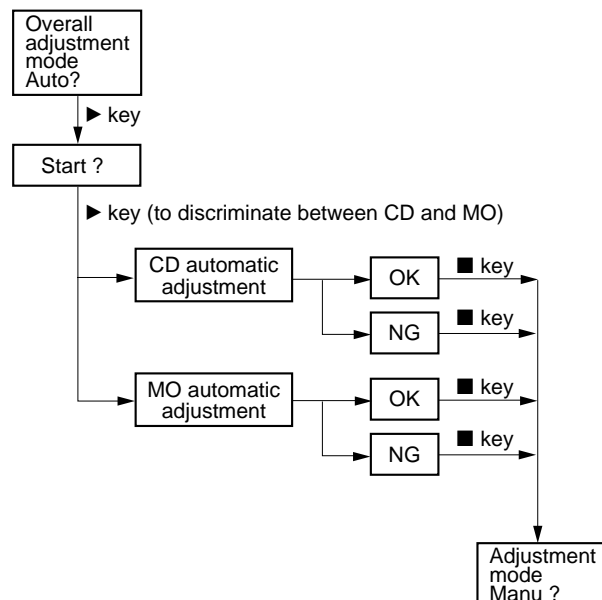
Terminal voltage = 160 divided by 256 and multiplied by 2.8 = 1.75 V

Overall Adjustment Mode

- Enter the test mode and press the VOL+key to enter overall adjustment mode.
- When entering another mode, refer to the configuration of test mode.
- When the overall adjustment mode is entered, the LCD on the remote commander display the following:



1. Structure of Overall Adjustment Mode



SECTION 5

ELECTRICAL ADJUSTMENTS

Notes for Adjustment

- In this set, automatic adjustment of CD and MO can be performed by entering the test mode.
- Adjustments are performed in the overall adjustment mode. If an item is determined as NG, the item is readjusted in servo mode.

Adjustment Method in Overall Adjustment Mode

- Enter the test mode and press the VOL+ key to enter overall adjustment mode.
- Insert the test CD (TGYS-1) or SONY MO disk (recorded) commercially available.
- Press the key twice. The disc is determined whether it is CD or MO and each adjustment mode is set. Automatic adjustments are performed in the order of the items listed below.

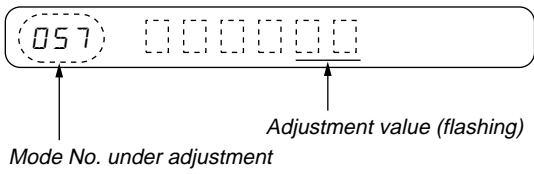
In CDA Automatic Adjustment Mode

No.	Mode	Description
1	061	Sled in
2	071	Focus search
3	062	Sled out 5
4	051	CD FE balance
5	052	CD FE gain
6	051	CD FE balance
7	053	CD ABCD gain
8	054	CD focus gain
9	055	CD tracking gain
10	056	CD RF offset
11	057	CD RF gain
12	056	CD RF offset
13	058	CD Focus bias

In MO Automatic Adjustment Mode

No.	Mode	Description
1	061	Sled in
2	071	Focus search
3	062	Sled out
4	031	MO FE balance
5	032	MO FE gain
6	031	MO FE balance
7	033	MO ABCD gain
8	034	MO focus gain
9	035	MO tracking gain
10	036	MO RF gain
11	037	MO ADIP gain
12	039	MO focus bias A
13	073	ADER check
14	071	Focus search
15	031	MO FE balance
16	032	MO FE gain
17	031	MO FE balance
18	033	MO ABCD gain
19	034	MO focus gain
20	035	MO tracking gain
21	036	MO RF gain
22	037	MO ADIP gain
23	039	MO focus bias A
24	073	ADER check
25	061	Sled in
26	071	Focus search
27	041	Low reflection CD FE balance
28	042	Low reflection CD FE gain
29	041	Low reflection CD FE balance
30	043	Low reflection CD ABCD gain
31	044	Low reflection CD focus gain
32	045	Low reflection CD tracking gain
33	046	Low reflection CD RF offset
34	047	Low reflection CD RF gain
35	061	Sled in
36	071	Focus search
37	041	Low reflection CD FE balance
38	042	Low reflection CD FE gain
39	041	Low reflection CD FE balance
40	043	Low reflection CD ABCD gain
41	044	Low reflection CD focus gain
42	045	Low reflection CD tracking gain
43	046	Low reflection CD RF offset
44	047	Low reflection CD RF gain

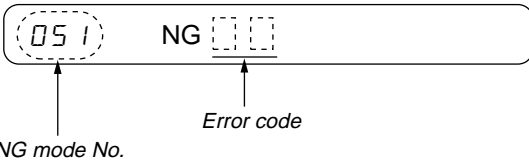
*Remote commander display during automatic adjustment



4. If result of automatic adjustment is OK, the following display appears.



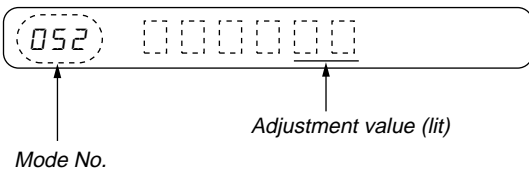
5. If result of automatic adjustment is NG, the following display appears.



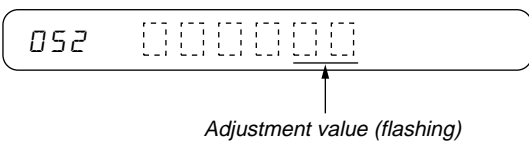
* If NG, enter servo mode to perform automatic adjustment of the item determined as NG.

Adjustment in Servo Mode Method

1. When each adjustment mode is set according to the structure of servo mode, the lower two digits of the mode No. and the adjustment value written in EEPROM are displayed and lit on the LCD on the remote commander .

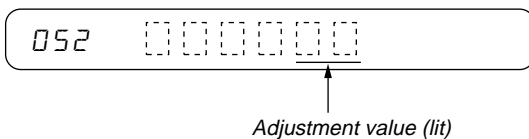


2. When the **■**key is pressed, the following display appears and the automatic adjustment is performed.



Note) Although the VOL +/- keys can be used to change the adjustment value to any value, they should not be used where verpossible.

3. When the automatic adjustment is completed, the flashing adjustment value is lit.



SECTION 6 DIAGRAMS

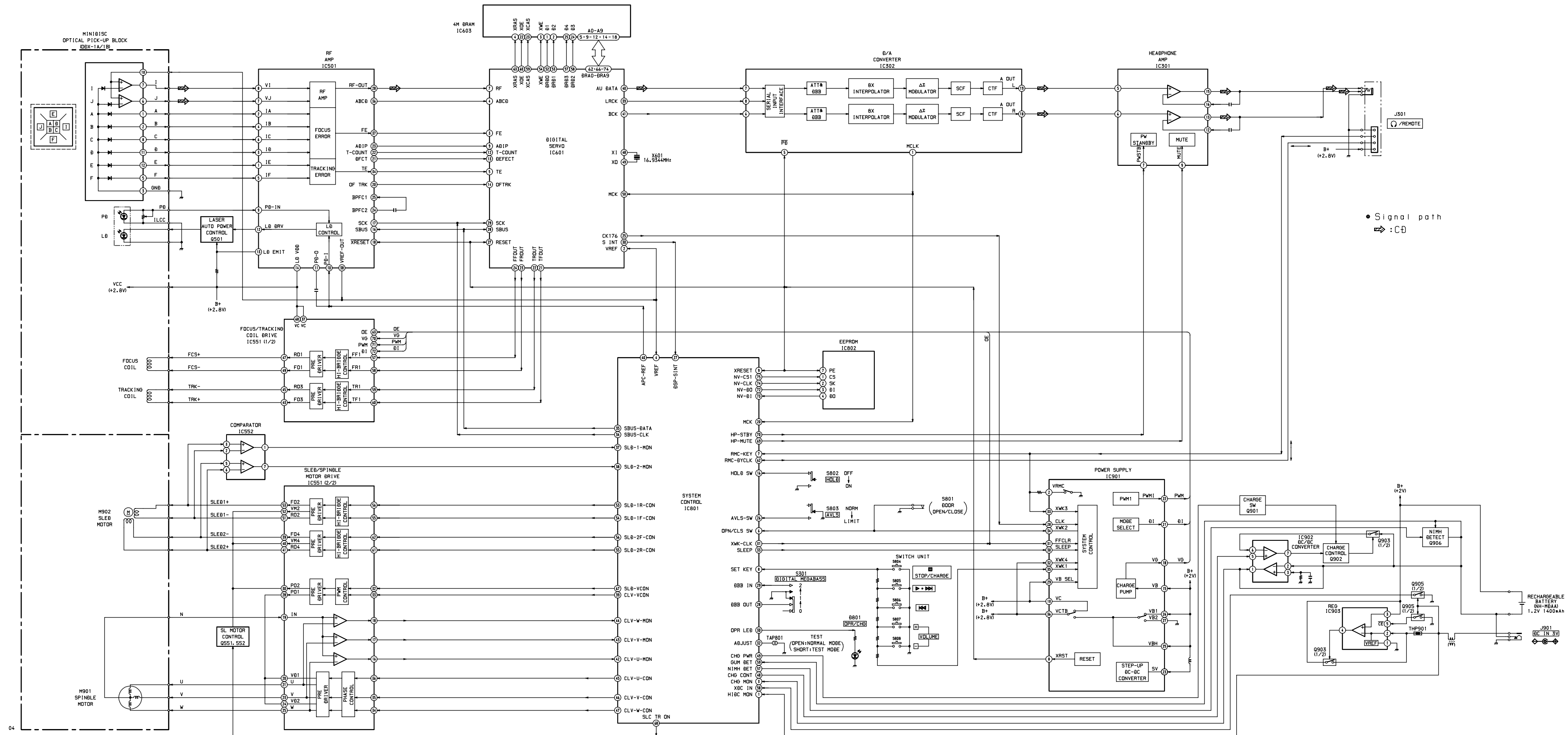
6-1. IC PIN DESCRIPTION

• IC801 RU6815MF-0004 (SYSTEM CONTROL)

Pin No.	Pin Name	I/O	Pin Description
1	HIDC MON	I	HIDC voltage monitor input.
2	UREG MON	I	Unreg voltage monitor input.
3	CHG MON	I	CHG voltage monitor input.
4	VREF	I	Reference voltage for power supply voltage adjustment.
5	PLAY KEY	I	Set PLAY key input.
6	OPEN CLS SW	I	DOOR OPEN/CLOSE switch input. L : Close
7	RMC KEY	I	Remote commander key input.
8	SET KEY	I	Set key input.
9	XRESET	I	System reset input (At reset : "L").
10	AVDD	—	A/D converter power supply (+2.8V).
11	AVSS	—	A/D converter Ground.
12	TYPE 0	I	Model discrimination terminal (Fixed at "L").
13	TYPE 1	I	Model discrimination terminal (Fixed at "H").
14	TYPE 2	I	Model discrimination terminal (Fixed at "L").
15	TYPE 3	I	Model discrimination terminal (Fixed at "L").
16	HOLD SW	I	Set HOLD switch input.
17	VREG CON	O	2.5V voltage on/off switch (Sub terminal) (not used).
18		—	Not used (Open).
19		—	Not used (Open).
20	MCK	I	Master clock input.
21		—	Not used (Open).
22	VDD	—	Digital power supply (+2.8V).
23	VSS	—	Digital Ground.
24		—	Not used (Open).
25	VSS	—	Digital Ground.
26	AVLS SW	I	Set AVLS switch input.
27	DSP SINT	I	Interrupt input from DSP.
28	DBB 0	I	DIGITAL MEGABASS switch input (MID).
29	DBB 1	I	DIGITAL MEGABASS switch input (MAX).
30	OPR LED	O	LED drive output.
31	XWK CLR	O	Power IC wakeup factor latch clear output and motor driver IC control signal output.
32	ADJUST	I	"Normally" Test mode select input ("L" : Test mode)
33	SLEEP	O	Power supply circuit OFF signal output.
34	SBUS CLK	O	SBB serial clock output.
35	SBUS DATA	O	SBB serial data output.
36		—	Not used (Open).
37	SLD 1 MON	I	Sled servo timing signal input.
38	SLD 2 MON	I	Sled servo timing signal input.
39	CLV VCON	O	Spindle servo drive voltage control output.
40	APC REF	O	Laser power control output.
41	V28-CON	O	Power voltage (+2.8V) correction control output.
42	CLV U MON	I	Spindle servo timing signal input.
43	CLV V MON	I	Spindle servo timing signal input.
44	CLV W MON	I	Spindle servo timing signal input.
45	CLV U CON	O	Spindle servo drive signal output.
46	CLV V CON	O	Spindle servo drive signal output.
47	CLV W CON	O	Spindle servo drive signal output.

Pin No.	Pin Name	I/O	Pin Description
48	CHG CONT	O	CHG control signal output.
49	CHG PWR	O	CHG power supply voltage control signal output.
50	VDD	—	Digital power supply (+2.8V).
51	VPP	—	Power for on board light.
52	VSS	—	Digital ground.
53	SLD 1R CON	O	Sled motor control signal output.
54	SLD 1F CON	O	Sled motor control signal output.
55	SLD 2R CON	O	Sled motor control signal output.
56	SLD 2F CON	O	Sled motor control signal output.
57	NIMH DET	I	NIMH detect signal input.
58	XDC IN	I	Power supply voltage input sense signal input.
59	GUM DET	I	Battery detect signal input.
60		—	Not used (Open).
61	SPCK	O	Serial clock output for Remote control communication. Not used (Open).
62	RMC DTCLK	I/O	Serial data input/output for Remote control communication.
63 – 66		—	Not used (Open).
67	SLD VCON	O	Sled servo outer voltage control output.
68	SLD PWR-UP	O	Baypass transistor control output for sled drive power supply.
69	HP MUTE	O	Headphone amplifier mute output.
70	HP STBY	O	Headphone amplifier standby output.
71	RMC SEL	O	TSB/SSB selection signal output to remote commander terminal. Not used (Open).
72	NV D0	O	Serial data signal output for NVRAM.
73	NV D1	I	Serial data signal input from NVRAM.
74	NV CLK	O	Serial clock signal output for NVRAM.
75	NV CS1	O	Chip select signal output for NVRAM.
76	VDD	—	Digital power supply (+2.8V).
77 – 79	LCD VL2 – 0	I	LCD drive level power supply (Connected ground).
80	VSS	—	Digital ground.
81 – 87		—	Not used (Open).
88 – 96	LCD SEG0 – 8	—	LCD Segment terminal. Not used (Open).
97 – 100	LCD COM0 – 3	—	LCD common terminal. Not used (Open).

6-2. BLOCK DIAGRAM



6-3. PRINTED WIRING BOARD

• Semiconductor Location

Ref. No.	Location
D351	H-11
D352	H-11
D801	D-16
D841	F-8
D901	F-5
D902	H-14
D903	H-4
D905	H-3
D1001	H-16
IC301	F-7
IC302	E-8
IC501	B-13
IC551	G-14
IC552	H-12
IC601	C-15
IC603	B-16
IC801	F-16
IC802	C-16
IC901	F-15
IC902	G-17
IC903	G-4
Q501	C-13
Q551	F-14
Q552	F-13
Q901	F-3
Q902	G-16
Q903	H-16
Q905	G-3
Q906	F-17

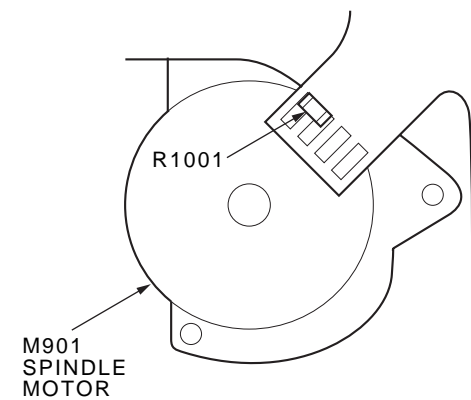
Note:

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

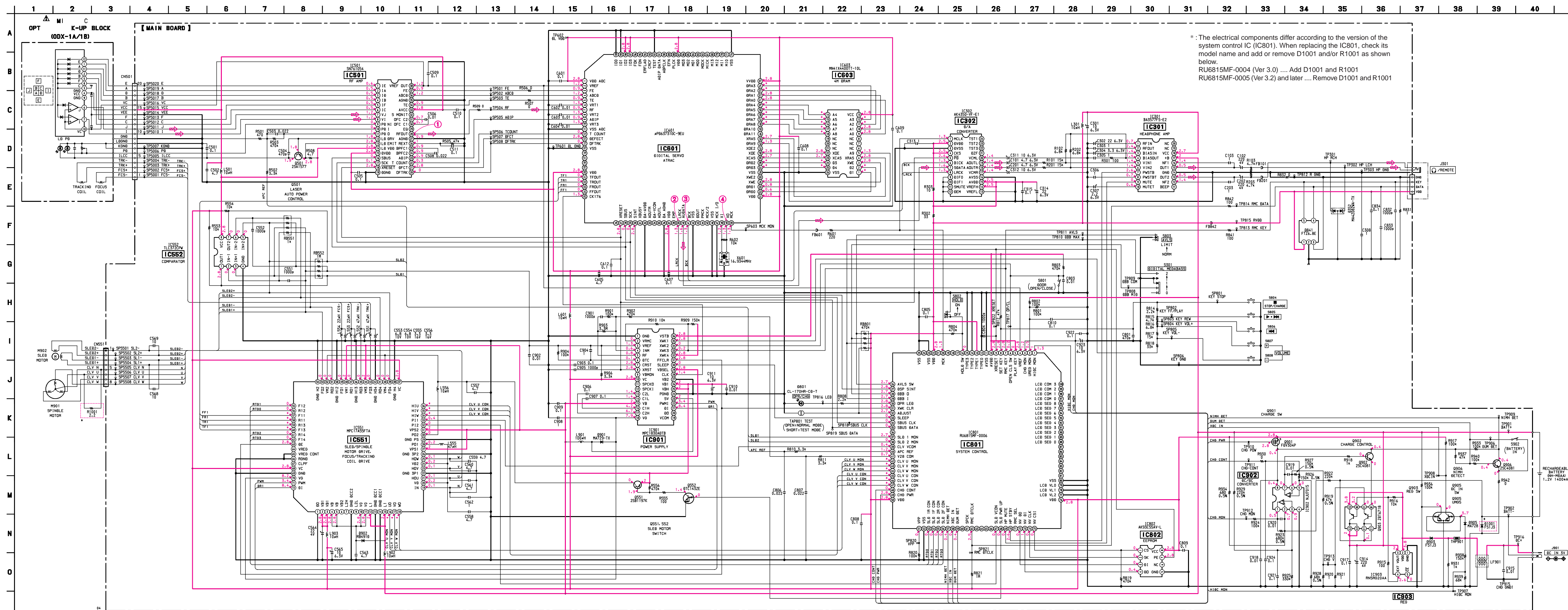
Caution:
 Pattern face side: Parts on the pattern face side seen from the (Side B) pattern face are indicated.
 Parts face side: Parts on the parts face side seen from the (Side A) parts face are indicated.

* : The electrical components differ according to the version of the system control IC (IC801). When replacing the IC801, check its model name and add or remove D1001 and/or R1001 as shown below.
 RU6815MF-0004 (Ver 3.0) Add D1001 and R1001
 RU6815MF-0005 (Ver 3.2) and later Remove D1001 and R1001

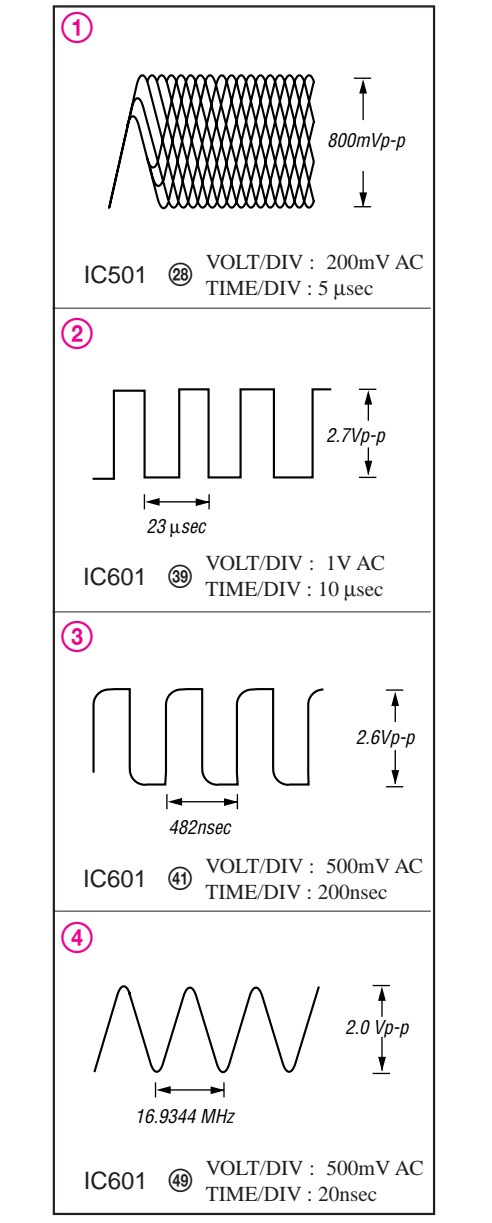
• R1001 mounting position



6-4. SCHEMATIC DIAGRAM • Refer to page 25 for IC Block Diagrams.



• Waveforms (MODE:PLAY)



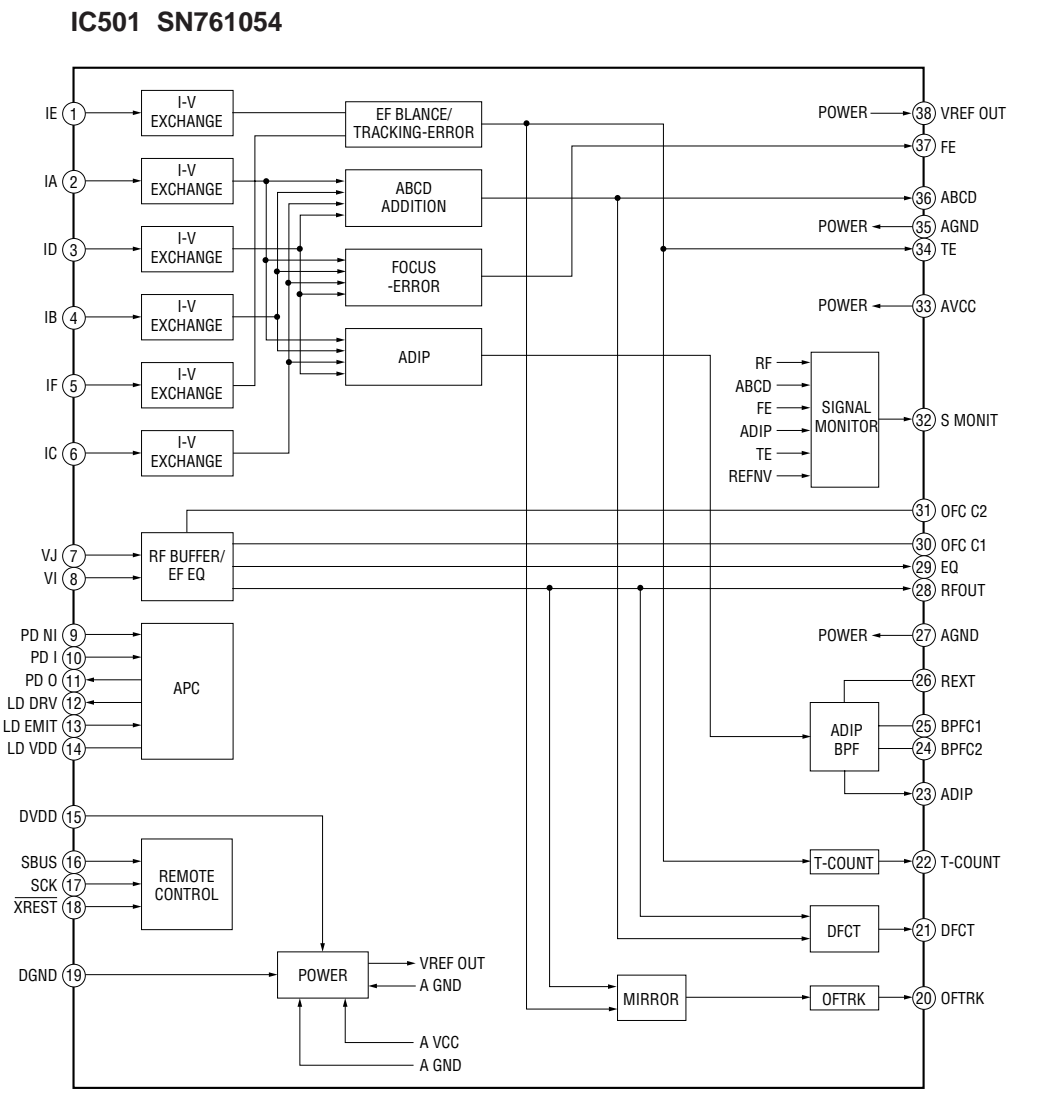
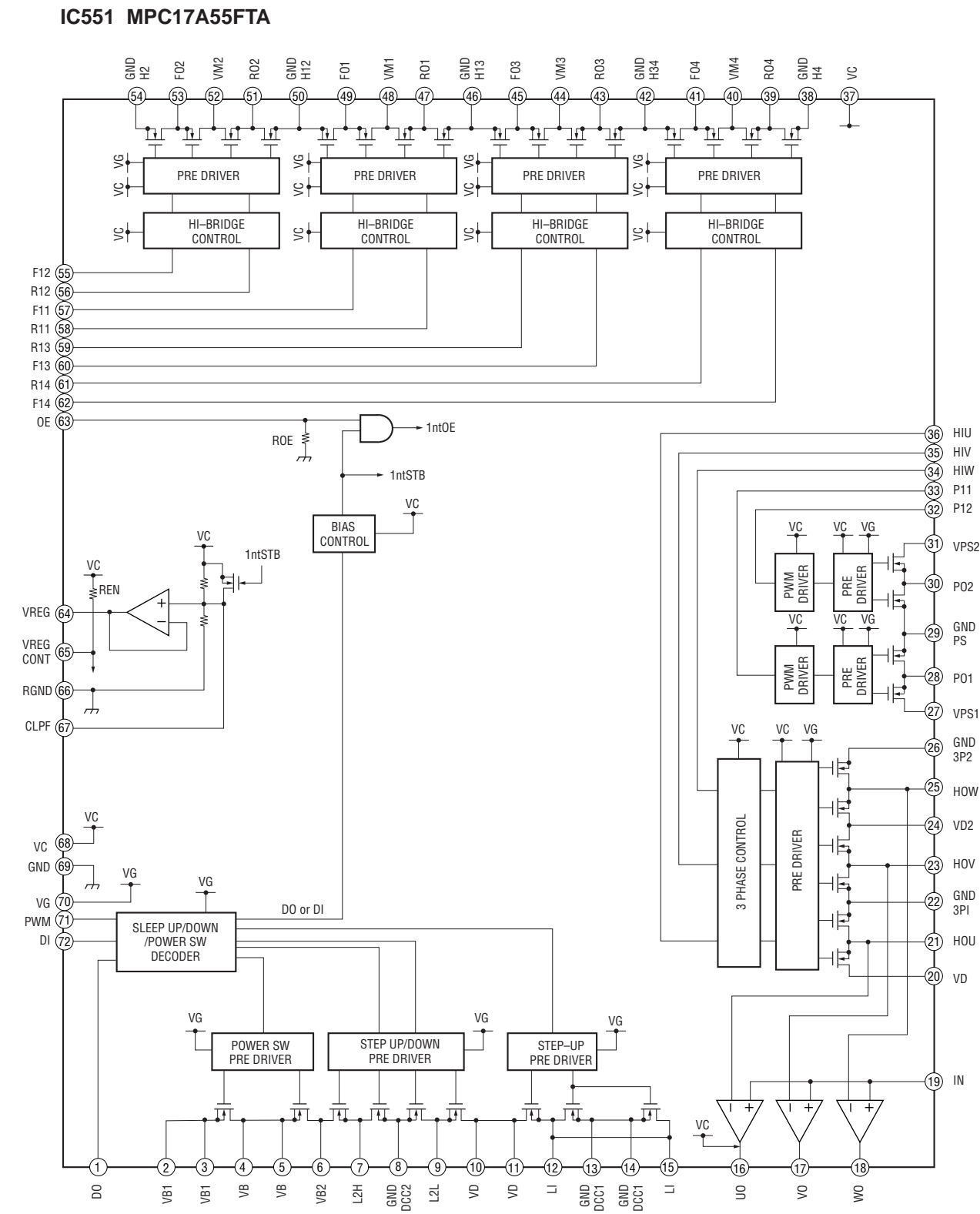
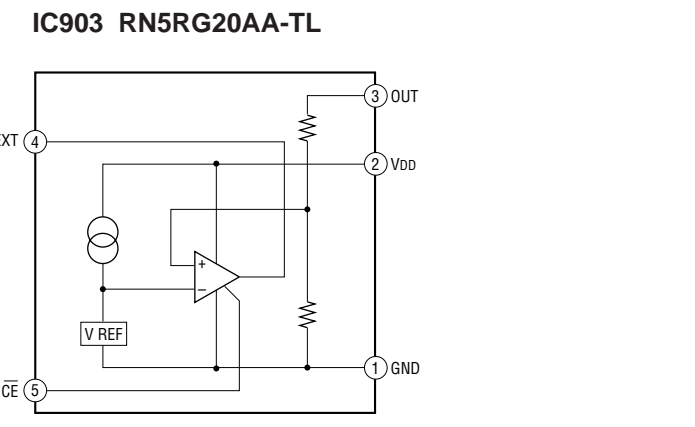
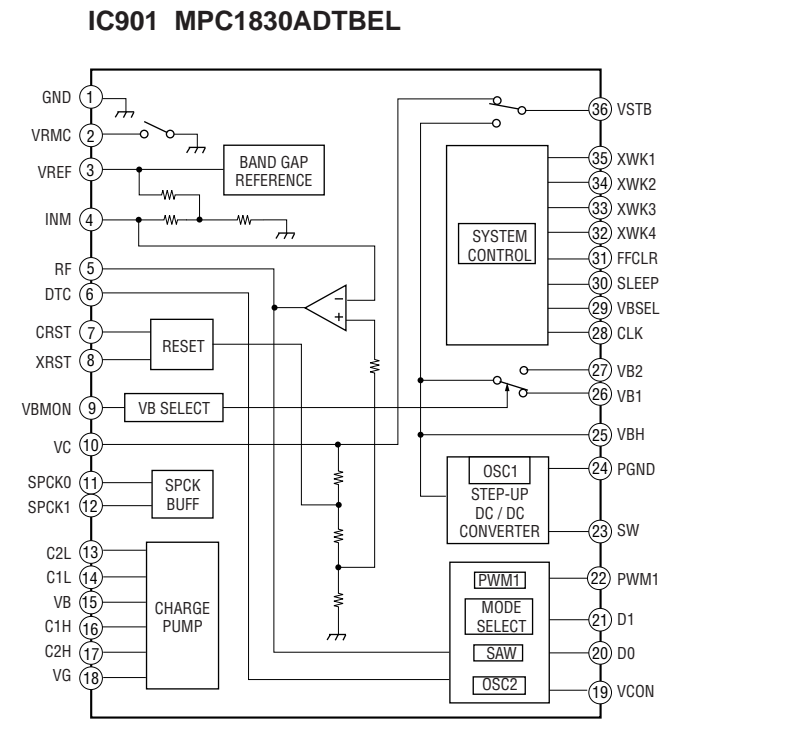
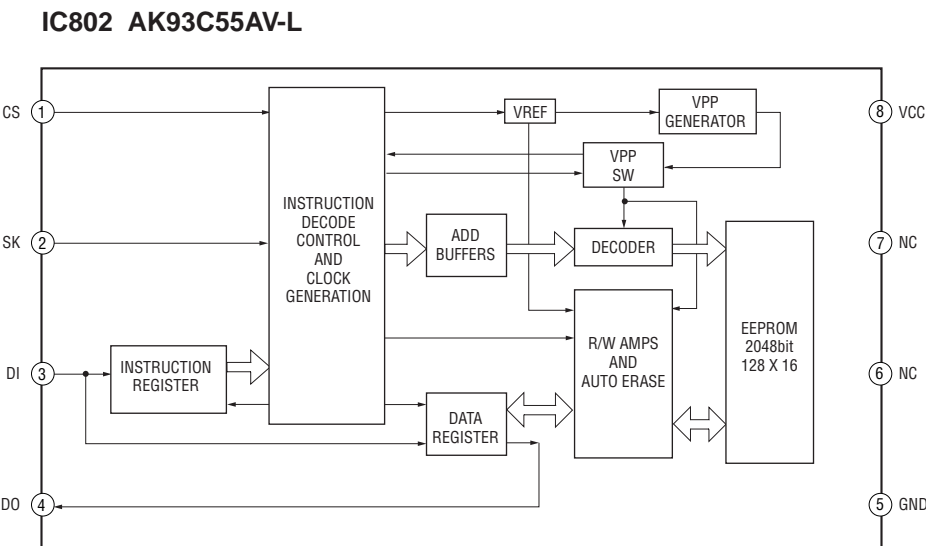
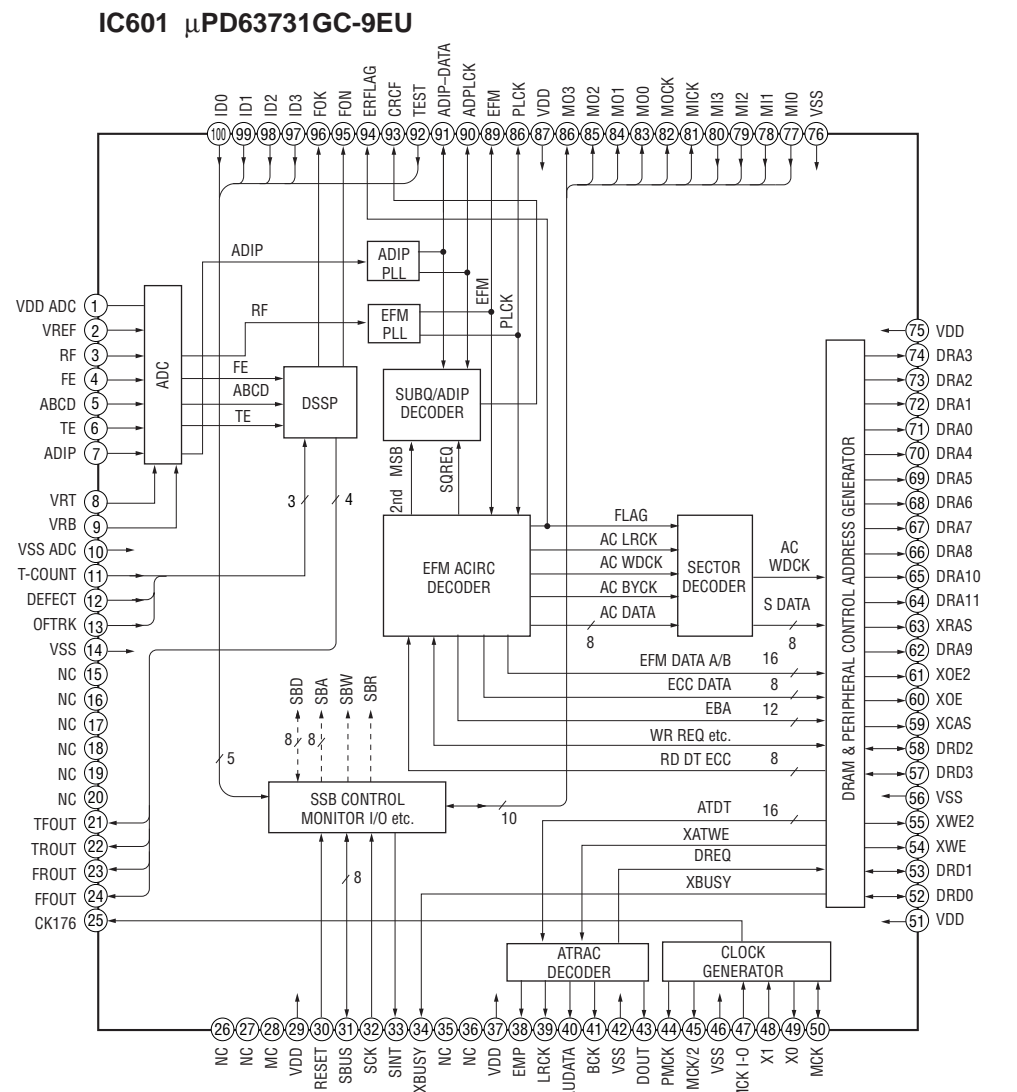
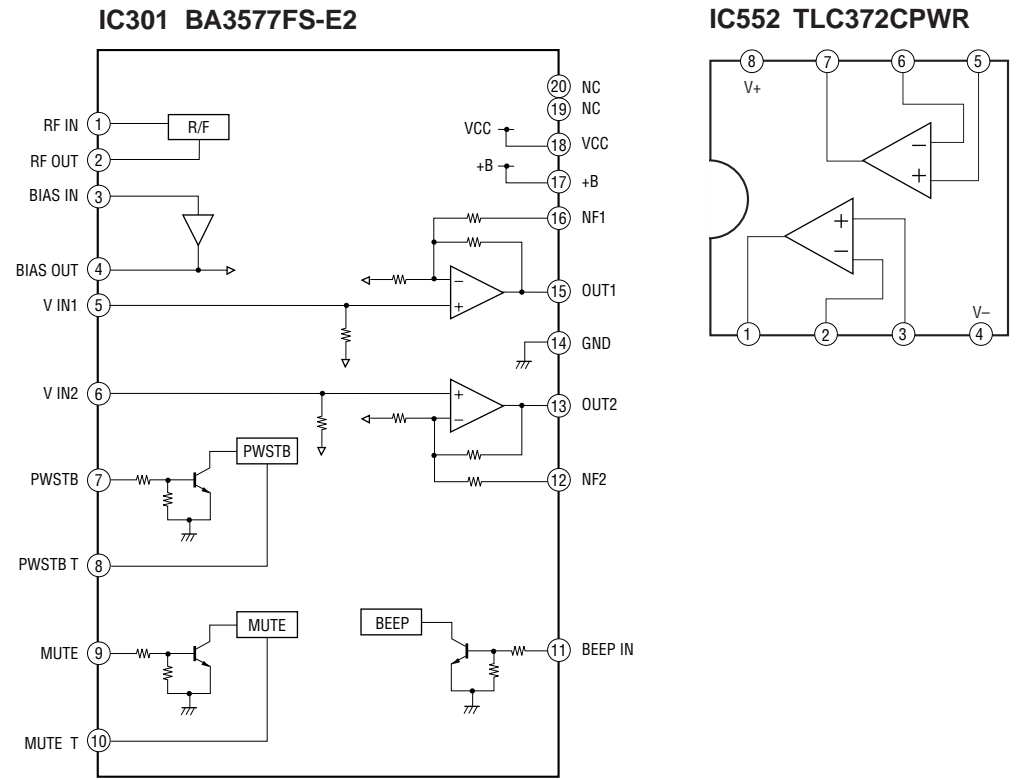
Note:

- 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 W or less unless otherwise specified.

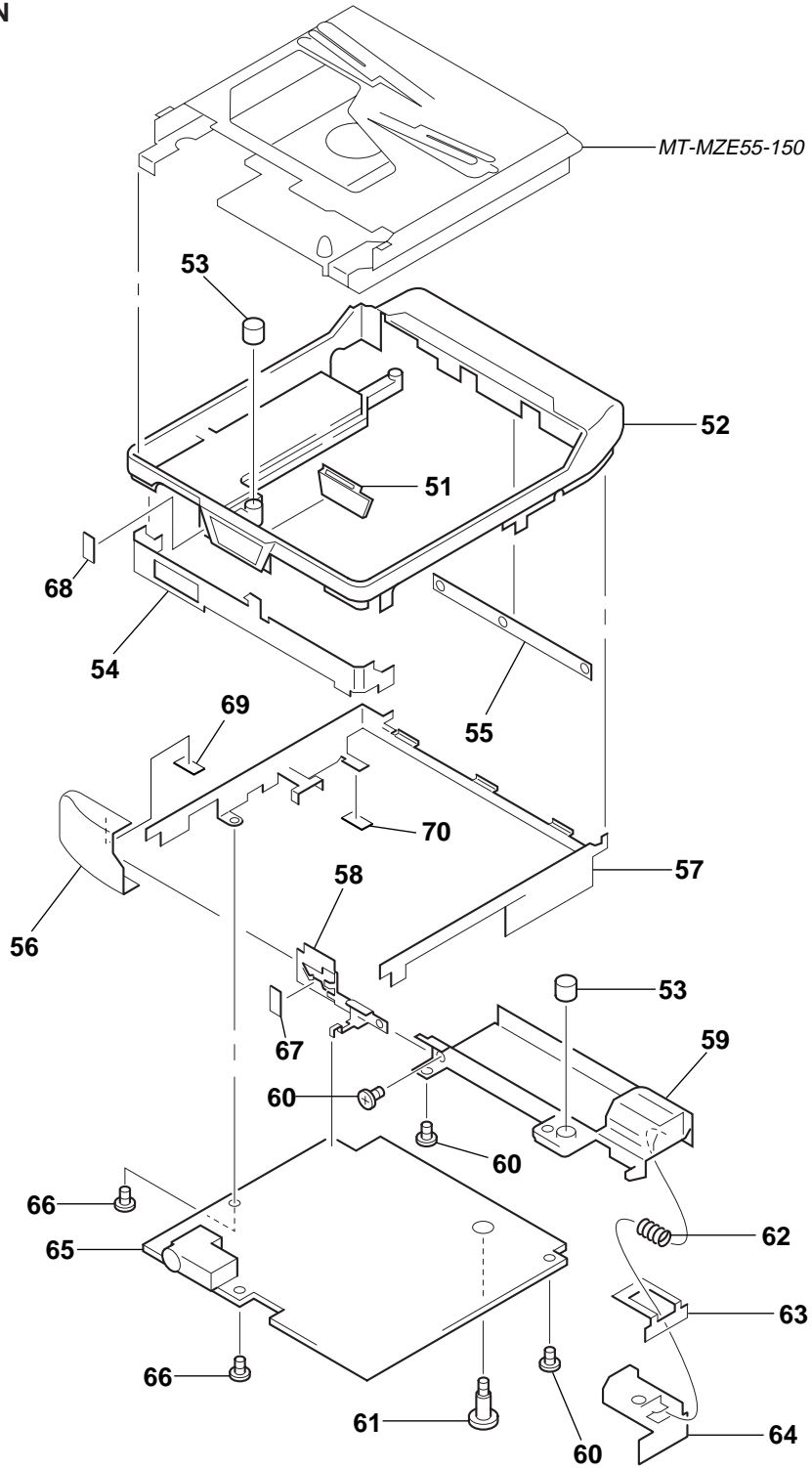
Note: The components identified by mark Δ or dotted line with mark Δ are critical for safety. Replace only with part number specified.

- : B+ Line.
- Power voltage is dc 3 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 : MD PLAY
- Voltages are taken with a VOM (Input impedance 10 MΩ). 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.
- Signal path.
- MD

• IC Block Diagrams

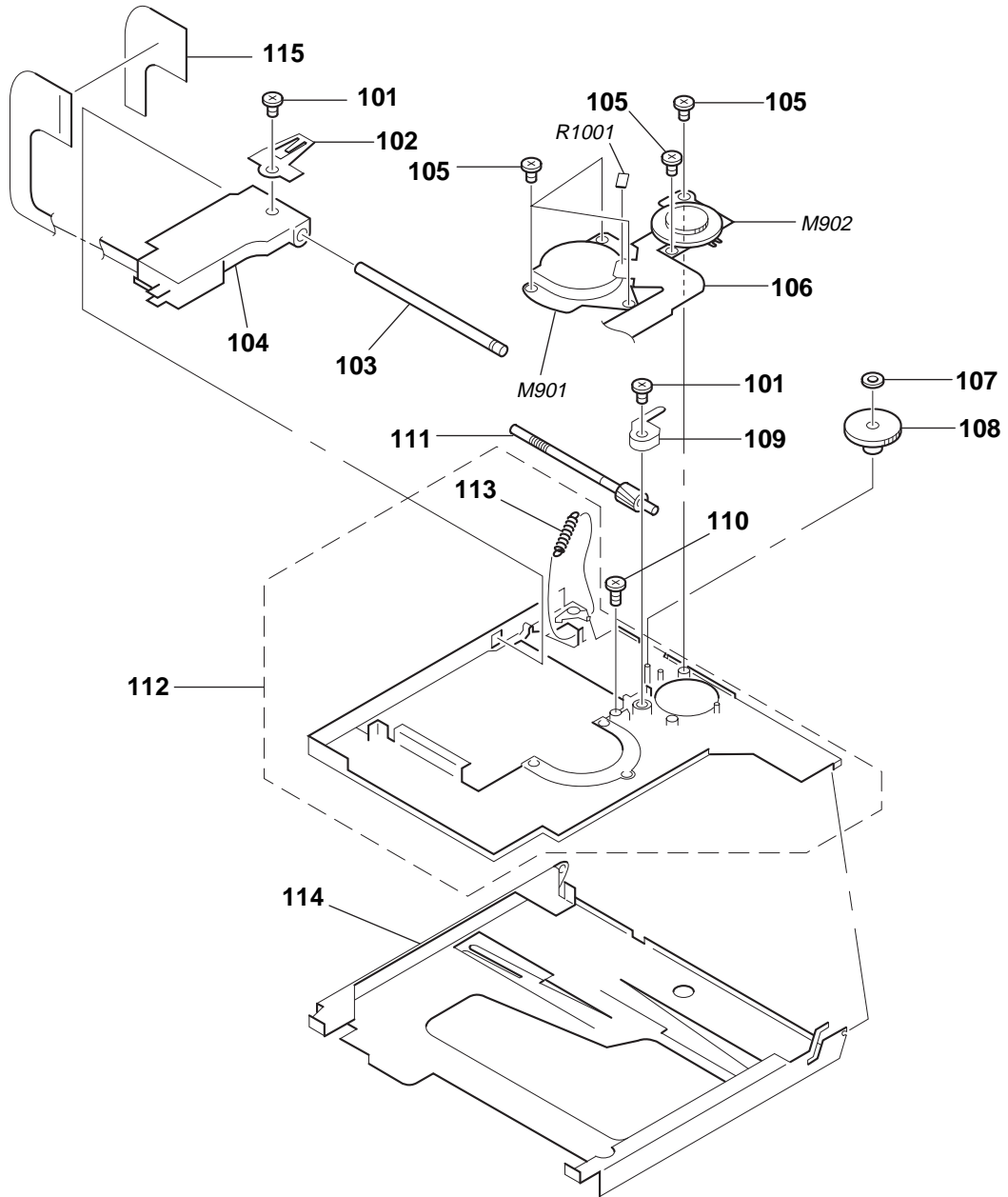


7-2. MAIN BOARD SECTION



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
51	4-212-361-02	BUTTON(OPEN)		57	X-4950-351-1	BRACKET(B)ASSY	
52	X-4950-429-1	STRIPASSY(B), ORNAMENT	AL(BLACK)(US)	58	X-4950-354-1	TERMINALASSY ,BATTERY	
52	X-4950-503-1	STRIPASSY(N), ORNAMENT	AL(GOLD)	59	4-212-366-01	CASE, BATTERY	
52	X-4950-504-1	STRIPASSY(L), ORNAMENT	AL(BLUE)	60	4-963-883-21	SCREW(M1.4), PRECISION PAN	
			(AEP,E,H,K)	61	4-994-886-01	SCREW(MD),STEP	
52	X-4951-428-1	STRIPASSY(Y), ORNAMENT	AL(YELLOW)				
			(AEP)	62	4-214-232-01	SPRING(BATTERY),COMPRESSION	
53	4-982-418-01	DAMPER		63	4-212-369-01	TERMINALPLATE(PLUS)	
54	X-4950-350-1	BRACKET(A)ASSY		64	4-212-367-01	HOLDER(TERMINALPLATE)	
* 55	4-212-363-01	BRACKET(C)		65	A-3323-069-A	MAINBOARD,COMPLETE	
56	4-212-364-02	LID,BATTERYCASE(BLACK)(US)		66	3-335-797-01	SCREW(M1.4X2),TOOTHEDLOCK	
56	4-212-364-12	LID,BATTERYCASE(GOLD)					
56	4-212-364-22	LID,BATTERYCASE(BLUE)(AEP,E,H,K)		67	3-315-454-01	SPACER(E)	
56	4-212-364-31	LID,BATTERYCASE(YELLOW)(AEP)		68	4-217-658-01	SPACER(K)	
				69	4-216-847-01	SPACER(BATTERY)	
				70	4-218-050-01	SPACER(B)	

**7-3. MECHANISM DECK SECTION
(MT-MZE55-150)**



<p>The components identified by mark Δ or dotted line with mark Δ are critical for safety. Replace only with part number specified.</p>	<p>Les composants identifiés par une marque Δ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.</p>
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Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
101	4-963-883-61	SCREW(M1.4), PRECISIONP AN		110	3-349-825-82	SCREW ,PRECISION	
102	4-982-561-11	SPRING,RACK		111	X-4948-793-1	REEDASSY	
103	4-214-478-01	SHAFT ,MAIN		112	X-4950-414-3	CHASSISASSY	
Δ 104	X-4949-164-1	SER VICEASSY ,OP		113	4-986-811-01	SPRING(EJECT),TENSION	
105	4-963-883-21	SCREW(M1.4), PRECISIONP AN		114	4-212-896-04	HOLDER	
106	1-670-707-11	CL VFLEXIBLEBO ARD		115	4-214-207-01	SHEET(OP)	
107	4-965-893-01	WASHER, GEAR(A)ST OPPER		M901	8-835-594-01	MOTOR,DCSSM-01C03AJ-S(SPINDLE)	
108	4-982-555-01	GEAR(A)		M902	1-698-764-21	MOTOR,SLED(INCLUDINGGEAR)	
109	4-212-899-01	SPRING,THRUST		R1001	1-216-789-11	MET ALCHIP	2.2 5% 1/16W

SECTION 8 ELECTRICAL PARTS LIST

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX 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
CND : Canadian model
HK : Hong Kong 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-3323-069-A	MAINBOARD, COMPLETE *****		C562	1-109-982-11	CERAMICCHIP 1uF 10%	10V
		<CAP ACIT OR>		C563	1-117-720-11	CERAMICCHIP 4.7uF	10V
C101	1-135-181-21	TANT ALUMCHIP 4.7uF	20% 6.3V	C564	1-117-232-11	TANT ALLUM 22uF	20% 4V
C102	1-125-899-11	TANT AL CHIP 220uF	20% 4V	C565	1-117-919-11	TANT AL CHIP 10uF	20% 6.3V
C103	1-115-156-11	CERAMICCHIP 1uF	10V	C568	1-117-370-11	CERAMICCHIP 10uF	10V
C201	1-135-181-21	TANT ALUMCHIP 4.7uF	20% 6.3V	C569	1-117-370-11	CERAMICCHIP 10uF	10V
C202	1-125-899-11	TANT AL CHIP 220uF	20% 4V	C601	1-164-156-11	CERAMICCHIP 0.1uF	25V
C203	1-115-156-11	CERAMICCHIP 1uF	10V	C602	1-162-970-11	CERAMICCHIP 0.01uF	10% 25V
C301	1-117-919-11	TANT AL CHIP 10uF	20% 6.3V	C603	1-162-970-11	CERAMICCHIP 0.01uF	10% 25V
C302	1-119-750-11	TANT AL CHIP 22uF	20% 6.3V	C604	1-162-970-11	CERAMICCHIP 0.01uF	10% 25V
C303	1-109-982-11	CERAMICCHIP 1uF	10% 10V	C605	1-117-720-11	CERAMICCHIP 4.7uF	10V
C304	1-127-690-21	TANT AL CHIP 3.3uF	20% 6.3V	C607	1-164-156-11	CERAMICCHIP 0.1uF	25V
C305	1-109-982-11	CERAMICCHIP 1uF	10% 10V	C608	1-164-156-11	CERAMICCHIP 0.1uF	25V
C306	1-109-982-11	CERAMICCHIP 1uF	10% 10V	C609	1-164-156-11	CERAMICCHIP 0.1uF	25V
C307	1-135-149-21	TANT ALUMCHIP 2.2uF	20% 10V	C612	1-107-826-11	CERAMICCHIP 0.1uF	10% 16V
C308	1-115-156-11	CERAMICCHIP 1uF	10% 10V	C801	1-162-962-11	CERAMICCHIP 470PF	10% 50V
C311	1-127-688-21	TANT AL CHIP 10uF	20% 6.3V	C803	1-162-970-11	CERAMICCHIP 0.01uF	10% 25V
C312	1-127-688-21	TANT AL CHIP 10uF	20% 6.3V	C804	1-162-964-11	CERAMICCHIP 0.001uF	10% 50V
C313	1-115-156-11	CERAMICCHIP 1uF	10% 10V	C805	1-164-156-11	CERAMICCHIP 0.1uF	25V
C314	1-119-750-11	TANT AL CHIP 22uF	20% 6.3V	C806	1-164-227-11	CERAMICCHIP 0.022uF	10% 25V
C315	1-164-156-11	CERAMICCHIP 0.1uF	25V	C807	1-164-227-11	CERAMICCHIP 0.022uF	10% 25V
C501	1-107-826-11	CERAMICCHIP 0.1uF	10% 16V	C808	1-164-156-11	CERAMICCHIP 0.1uF	25V
C502	1-117-720-11	CERAMICCHIP 4.7uF	10V	C809	1-164-156-11	CERAMICCHIP 0.1uF	25V
C503	1-164-227-11	CERAMICCHIP 0.022uF	10% 25V	C810	1-107-826-11	CERAMICCHIP 0.1uF	10% 16V
C504	1-162-962-11	CERAMICCHIP 470PF	10% 50V	C832	1-162-964-11	CERAMICCHIP 0.001uF	10% 50V
C505	1-164-156-11	CERAMICCHIP 0.1uF	25V	C833	1-162-964-11	CERAMICCHIP 0.001uF	10% 50V
C506	1-162-970-11	CERAMICCHIP 0.01uF	10% 25V	C834	1-164-156-11	CERAMICCHIP 0.1uF	25V
C508	1-164-227-11	CERAMICCHIP 0.022uF	10% 25V	C901	1-162-964-11	CERAMICCHIP 0.001uF	10% 50V
C509	1-164-156-11	CERAMICCHIP 0.1uF	25V	C902	1-162-970-11	CERAMICCHIP 0.01uF	10% 25V
C510	1-164-156-11	CERAMICCHIP 0.1uF	25V	C903	1-107-826-11	CERAMICCHIP 0.1uF	10% 16V
C511	1-107-826-11	CERAMICCHIP 0.1uF	10% 16V	C904	1-109-982-11	CERAMICCHIP 1uF	10% 10V
C551	1-162-964-11	CERAMICCHIP 0.001uF	10% 50V	C905	1-162-964-11	CERAMICCHIP 0.001uF	10% 50V
C552	1-162-964-11	CERAMICCHIP 0.001uF	10% 50V	C906	1-107-826-11	CERAMICCHIP 0.1uF	10% 16V
C553	1-127-689-21	TANT AL CHIP 6.8uF	20% 10V	C907	1-107-826-11	CERAMICCHIP 0.1uF	10% 16V
C554	1-127-689-21	TANT AL CHIP 6.8uF	20% 10V	C908	1-109-982-11	CERAMICCHIP 1uF	10% 10V
C555	1-127-691-21	TANT AL CHIP 3.3uF	20% 16V	C909	1-107-826-11	CERAMICCHIP 0.1uF	10% 16V
C556	1-127-691-21	TANT AL CHIP 3.3uF	20% 16V	C910	1-162-970-11	CERAMICCHIP 0.01uF	10% 25V
C557	1-117-720-11	CERAMICCHIP 4.7uF	10V	C911	1-127-688-21	TANT AL CHIP 10uF	20% 6.3V
C558	1-117-720-11	CERAMICCHIP 4.7uF	10V	C914	1-125-899-11	TANT AL CHIP 220uF	20% 4V
C559	1-115-566-11	CERAMICCHIP 4.7uF	10% 10V	C915	1-162-970-11	CERAMICCHIP 0.01uF	10% 25V
C560	1-115-566-11	CERAMICCHIP 4.7uF	10% 10V	C917	1-107-826-11	CERAMICCHIP 0.1uF	10% 16V
C561	1-115-566-11	CERAMICCHIP 4.7uF	10% 10V	C918	1-162-970-11	CERAMICCHIP 0.01uF	10% 25V
				C919	1-162-970-11	CERAMICCHIP 0.01uF	10% 25V
				C920	1-162-970-11	CERAMICCHIP 0.01uF	10% 25V
				C921	1-107-826-11	CERAMICCHIP 0.1uF	10% 16V

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
C922	1-107-826-11	CERAMICCHIP	0.1uF 10% 16V	L902	1-416-668-11	CHOKECOIL	10uH
C923	1-127-688-21	TANT AL. CHIP	10uF 20% 6.3V	L903	1-414-410-21	INDUCTOR	10uH
C924	1-164-156-11	CERAMICCHIP	0.1uF 25V			<FIL TER>	
		<CONNECTOR>		LF901	1-416-405-21	FIL TER, CHIPEMI (COMMONMODE)	
CN501	1-573-360-21	CONNECTOR,FPC/FPC20P				<TRANSISTOR>	
* CN551	1-785-218-21	CONNECTOR,FPC (ZIF)8P		Q501	8-729-922-10	TRANSISTOR 2SA1577-OR	
		<DIODE>		Q551	8-729-904-87	TRANSISTOR 2SB1197K-R	
D352	8-719-045-87	DIODE MA4Z082W A-TX		Q552	8-729-929-11	TRANSISTOR DTC143ZE-TL	
D801	8-719-051-01	LED CL-170HR-CD-T (OPR/CHG)		Q901	8-729-046-49	FET FDV304P	
D841	8-719-066-17	DIODE FTZ6.8E-T148		Q902	8-729-905-35	TRANSISTOR 2SC4081-R	
D901	8-719-420-51	DIODE MA729		Q903	8-729-046-44	TRANSIST OR ZDT6718T A	
D902	8-719-066-16	DIODE RB491D-T146		Q905	8-729-929-67	TRANSISTOR UMG5-TL	
D903	8-719-072-26	DIODE FS1J3-TP		Q906	8-729-905-35	TRANSISTOR 2SC4081-R	
D905	8-719-421-27	DIODE MA728				<RESISTOR>	
D1001	8-719-072-26	DIODE FS1J3-TP		R101	1-216-835-11	MET ALCHIP	15K 5% 1/16W
		<FERRITEBEAD>		R102	1-216-831-11	MET ALCHIP	6.8K 5% 1/16W
FB101	1-414-760-21	FERRITE (SMD),EMI		R103	1-216-829-11	MET ALCHIP	4.7K 5% 1/16W
FB201	1-414-760-21	FERRITE (SMD),EMI		R201	1-216-835-11	MET ALCHIP	15K 5% 1/16W
FB601	1-414-760-21	FERRITE (SMD),EMI		R202	1-216-831-11	MET ALCHIP	6.8K 5% 1/16W
FB842	1-414-228-11	FERRITEBEADINDUCTOR		R203	1-216-829-11	MET ALCHIP	4.7K 5% 1/16W
		<IC >		R301	1-216-809-11	MET ALCHIP	100 5% 1/16W
IC301	8-759-431-56	IC BA3577FS-E2		R302	1-216-803-11	MET ALCHIP	33 5% 1/16W
IC302	8-759-541-32	IC AK4350-VF-E1		R303	1-216-797-11	MET ALCHIP	10 5% 1/16W
IC501	8-759-538-56	IC SN761054		R501	1-216-817-11	MET ALCHIP	470 5% 1/16W
IC551	8-759-390-25	IC MPC17A55FT A		R502	1-216-827-11	MET ALCHIP	3.3K 5% 1/16W
IC552	8-759-358-40	IC TLC372CPWR		R503	1-216-853-11	MET ALCHIP	470K 5% 1/16W
IC601	8-759-538-55	IC uPD63731GC-9EU		R505	1-216-841-11	MET ALCHIP	47K 5% 1/16W
IC603	8-759-565-50	IC MN41X4400TT -10TIL		R506	1-216-864-11	MET ALCHIP	0 5% 1/16W
IC801	8-759-580-35	IC RU6815MF-0006		R507	1-216-864-11	MET ALCHIP	0 5% 1/16W
IC802	8-759-449-23	IC AK93C55A V-L		R508	1-216-793-11	RES,CHIP	4.7 5% 1/16W
IC901	8-759-538-57	IC MPC1830ADTBEL		R509	1-216-864-11	MET ALCHIP	0 5% 1/16W
IC902	8-759-559-89	IC NJU7015R-TE2		R553	1-216-833-11	MET ALCHIP	10K 5% 1/16W
IC903	8-759-460-35	IC RN5RG20AA-TL		R554	1-216-833-11	MET ALCHIP	10K 5% 1/16W
		<JACK>		R555	1-216-809-11	MET ALCHIP	100 5% 1/16W
J301	1-778-368-11	JACK,HEADPHONE(()REMOTE)		R556	1-216-853-11	MET ALCHIP	470K 5% 1/16W
J901	1-779-080-11	JACK,DC (POLARITYUNIFIEDTYPE)	(DC IN 3V)	R601	1-216-813-11	MET ALCHIP	220 5% 1/16W
		<COIL>		R602	1-216-833-11	MET ALCHIP	10K 5% 1/16W
L301	1-414-754-11	INDUCTOR	10uH	R801	1-216-845-11	MET ALCHIP	100K 5% 1/16W
L501	1-414-754-11	INDUCTOR	10uH	R802	1-216-845-11	MET ALCHIP	100K 5% 1/16W
L551	1-412-031-11	INDUCTORCHIP	47uH	R803	1-216-853-11	MET ALCHIP	470K 5% 1/16W
L552	1-412-031-11	INDUCTORCHIP	47uH	R804	1-216-853-11	MET ALCHIP	470K 5% 1/16W
L553	1-414-400-11	INDUCTOR	22uH	R808	1-216-825-11	MET ALCHIP	2.2K 5% 1/16W
L554	1-414-400-11	INDUCTOR	22uH	R810	1-216-827-11	MET ALCHIP	3.3K 5% 1/16W
L555	1-412-031-11	INDUCTORCHIP	47uH	R811	1-216-827-11	MET ALCHIP	3.3K 5% 1/16W
L556	1-414-410-21	INDUCTOR	10uH	R812	1-216-841-11	MET ALCHIP	47K 5% 1/16W
L601	1-414-754-11	INDUCTOR	10uH	R814	1-216-825-11	MET ALCHIP	2.2K 5% 1/16W
L901	1-412-032-11	INDUCTORCHIP	100uH	R815	1-216-829-11	MET ALCHIP	4.7K 5% 1/16W
				R816	1-216-831-11	MET ALCHIP	6.8K 5% 1/16W
				R817	1-216-835-11	MET ALCHIP	15K 5% 1/16W

MAIN

Ref. No.	Part No.	Description	Remark
R818	1-216-839-11	MET ALCHIP 33K	5% 1/16W
R819	1-216-853-11	MET ALCHIP 470K	5% 1/16W
R820	1-216-845-11	MET ALCHIP 100K	5% 1/16W
R821	1-216-857-11	MET ALCHIP 1M	5% 1/16W
R831	1-216-864-11	MET ALCHIP 0	5% 1/16W
R832	1-216-864-11	MET ALCHIP 0	5% 1/16W
R841	1-216-809-11	MET ALCHIP 100	5% 1/16W
R842	1-216-809-11	MET ALCHIP 100	5% 1/16W
R901	1-216-845-11	MET ALCHIP 100K	5% 1/16W
R902	1-216-853-11	MET ALCHIP 470K	5% 1/16W
R903	1-216-863-11	RES,CHIP 3.3M	5% 1/16W
R904	1-216-845-11	MET ALCHIP 100K	5% 1/16W
R906	1-216-827-11	MET ALCHIP 3.3K	5% 1/16W
R909	1-216-847-11	MET ALCHIP 150K	5% 1/16W
R910	1-218-871-11	RES,CHIP 10K	0.50% 1/16W
R915	1-216-809-11	MET ALCHIP 100	5% 1/16W
R916	1-216-833-11	MET ALCHIP 10K	5% 1/16W
R917	1-216-845-11	MET ALCHIP 100K	5% 1/16W
R918	1-216-821-11	MET ALCHIP 1K	5% 1/16W
R919	1-218-887-11	RES,CHIP 47K	0.50% 1/16W
R920	1-217-671-11	MET ALCHIP 1	5% 1/10W
R921	1-217-671-11	MET ALCHIP 1	5% 1/10W
R922	1-216-849-11	MET ALCHIP 220K	5% 1/16W
R923	1-218-915-11	RES,CHIP 680K	0.50% 1/16W
R924	1-216-845-11	MET ALCHIP 100K	5% 1/16W
R925	1-216-851-11	MET ALCHIP 330K	5% 1/16W
R926	1-218-899-11	RES,CHIP 150K	0.50% 1/16W
R927	1-218-899-11	RES,CHIP 150K	0.50% 1/16W
R928	1-218-891-11	RES,CHIP 68K	0.50% 1/16W
R929	1-218-903-11	RES,CHIP 220K	0.50% 1/16W
R930	1-216-864-11	MET ALCHIP 0	5% 1/16W
R931	1-216-821-11	MET ALCHIP 1K	5% 1/16W
R933	1-216-845-11	MET ALCHIP 100K	5% 1/16W
R934	1-218-915-11	RES,CHIP 680K	0.50% 1/16W
R936	1-216-845-11	MET ALCHIP 100K	5% 1/16W
R937	1-216-841-11	MET ALCHIP 47K	5% 1/16W
R938	1-216-847-11	MET ALCHIP 150K	5% 1/16W
R939	1-216-843-11	MET ALCHIP 68K	5% 1/16W
R940	1-216-845-11	MET ALCHIP 100K	5% 1/16W
R942	1-216-864-11	MET ALCHIP 0	5% 1/16W
<NETWORK RESISTOR>			
RB551	1-233-961-11	RES,NETWORK(CHIPTYPE) 1K	
RB552	1-233-979-11	RES,NETWORK(CHIPTYPE) 1M	
RB801	1-233-977-11	RES,NETWORK(CHIPTYPE) 470K	
<SWITCH>			
S301	1-762-079-11	SWITCH, SLIDE(DIGIT ALMEGAB ASS)	
S801	1-771-326-11	SWITCH,PUSH LEVER(1KEY)	(DOOR OPEN/CLOSE)
S802	1-762-078-11	SWITCH,SLIDE(HOLD)	
S803	1-762-078-11	SWITCH, SLIDE(A VLS)	
S804	1-771-053-21	SWITCH,KEYBOARD(■STOP/CHARGE)	

Ref. No.	Part No.	Description	Remark
S805	1-771-053-21	SWITCH,KEYBOARD(▶▶▶▶)	
S806	1-771-053-21	SWITCH,KEYBOARD(◀◀◀◀)	
S807	1-771-053-21	SWITCH,KEYBOARD(VOLUME+)	
S808	1-771-053-21	SWITCH,KEYBOARD(VOLUME-)	
S902	1-771-483-21	SWITCH, PUSH(1KEY)(B ATTER Y INDET)	
<THERMISTOR(POSITIVE)>			
THP901	1-771-075-21	THERMISTOR,POSITIVE	
<VIBRA TOR>			
X601	1-767-621-11	VIBRA TOR, CERAMIC(16.9344MHz)	

MISCELLANEOUS			

△104	X-4949-164-1	SER VICE ASSY ,OP	
106	1-670-707-11	CL V FLEXIBLE BOARD	
M901	8-835-594-01	MOTOR,DC SSM-01C03AVJ-S(SPINNLE)	
M902	1-698-764-21	MOTOR,SLED(INCLUDING GEAR)	
R1001	1-216-789-11	MET ALCHIP 2.2	5% 1/16W

ACCESSORIES & PACKING MATERIALS			

△	1-418-049-11	ADAPTOR,AC(AC-MZR55)(HK)	
	1-475-831-62	REMOTE CONTROL UNIT(RM-MZE33)	
	1-528-947-11	BATTERY PACK(NH-MD AA)(HK)	
	3-864-830-11	MANUAL, INSTRUCTION(SP ANISH,CHINESE)	(AEP E)
	3-864-830-21	MANUAL, INSTRUCTION(ENGLISH,FRENCH)	(US,CND)
	3-864-830-31	MANUAL, INSTRUCTION(GERMAN,DUTCH)	(AEP)
	3-864-830-41	MANUAL, INSTRUCTION(IT ALIAN, POR TUGUESE)	(AEP)
	3-864-830-51	MANUAL, INSTRUCTION(SWEDISH,FINNISH)	(AEP)
	3-864-830-61	MANUAL, INSTRUCTION(ENGLISH,CHINESE)	(AEP HK)
	3-864-830-71	MANUAL, INSTRUCTION(FRENCH,RUSSIAN)	(AEP)
	4-972-888-01	CASE, CARR YING	
	8-953-218-90	HEADPHONE MDR-E838SP/KSET(HK)	
	8-953-278-90	HEADPHONE MDR-A34SPSET(US)	
	8-953-304-90	RECEIVER MDR-E805SPSET(CND)	(AEP E)

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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