

MZ-E44/E45

SERVICE MANUAL

Ver 1.1 1999.01



Photo : MZ-E44 (SILVER)



Photo : MZ-E45 (GRAY)

US Model
AEP Model
UK Model
Australian Model
Tourist Model
MZ-E44
E Model
MZ-E44/E45

US and foreign patents licensed from Dolby Laboratories Licensing Corporation

Model Name Using Similar Mechanism	NEW
MD Mechanism Type	MT-MZE44-140
Optical Pick-up Mechanism Type	ODX-1A/1B

SPECIFICATIONS

MD Section

- 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 7mm 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 ± 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
 - Rechargeable battery (supplied)
 - Nickel metal hydride rechargeable battery NH-9WM (N)
 - One LR6 (size AA) alkaline battery (not supplied)
 - Sony AC Power Adaptor AC-E15L (not supplied) connected at the DC IN 1.5V jack
- Battery operation time

Batteries	Playback
Nickel metal hydride	Approx.
Rechargeable battery (NH-9WM (N))	5.5 hours
One LR6 (size AA)	Approx.
Sony alkaline dry batteries	8.5 hours
Nickel metal hydride (NH-9WM (N)) +	Approx.
One LR6 (size AA)	16 hours
- Dimensions
 - Approx. 87 x 17.8 x 91.5 mm (w/h/d)
 - (3 1/2 x 23/32 x 3 5/8 in) not including projecting parts and controls
- Mass
 - Approx. 115 g (4.1 oz.) the player only
 - Approx. 155 g (5.5 oz.) incl. a premastered MD and a nickel metal hydride rechargeable battery NH-9WM (N)
- Supplied accessories
 - Battery charger (1)
 - Rechargeable battery (1)
 - Rechargeable battery carrying case (1)
 - Headphones with a remote control (1)
 - Dry battery case (1)
 - Handstrap (1)
 - Carrying pouch (1)
 - LR6 (size AA) alkaline battery (1) (Tourist model only)

Design and specifications are subject to change without notice.

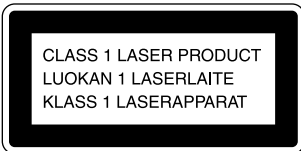
PORTABLE MINIDISC PLAYER



SONY®

TABLE OF CONTENTS

Specifications	1
1. SERVICING NOTE	2
2. GENERAL	
Location and Function of Controls	3
3. DISASSEMBLY	
3-1. Upper Panel Assy	4
3-2. Bottom Panel Assy	4
3-3. Main board	4
3-4. Belt Assy, Front Panel Assy	5
3-5. Mechanism Deck Section	5
3-6. Optial Pick-up Block Assy	6
4. TEST MODE	7
5. ELECTRICAL ADJUSTMENTS	10
6. DIAGRAMS	
6-1. Explanation of IC Terminals	13
6-2. Block Diagram	15
6-3. Printed Wiring Boards	18
6-4. Schematic Diagram	21
7. EXPLODED VIEWS	
7-1. Panel Section	28
7-2. Main Section	29
7-3. Mechanism Deck Section	30
8. ELECTRICAL PARTS LIST	31



This Mini Disc 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

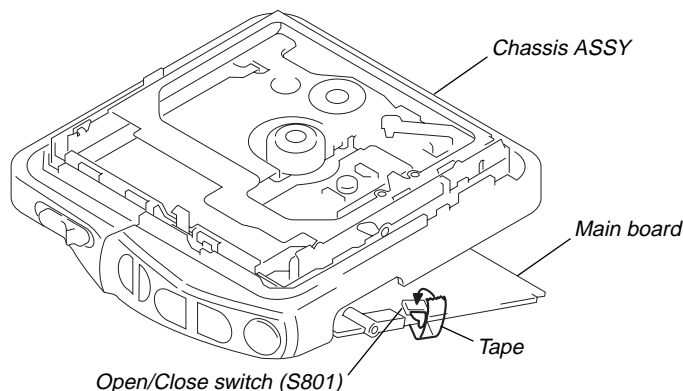
- Never reuse a disconnected chip component.
- Notice that the minus side of a tantalum capacitor may be damaged by heat.

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.

SECTION 1 SERVICING NOTE

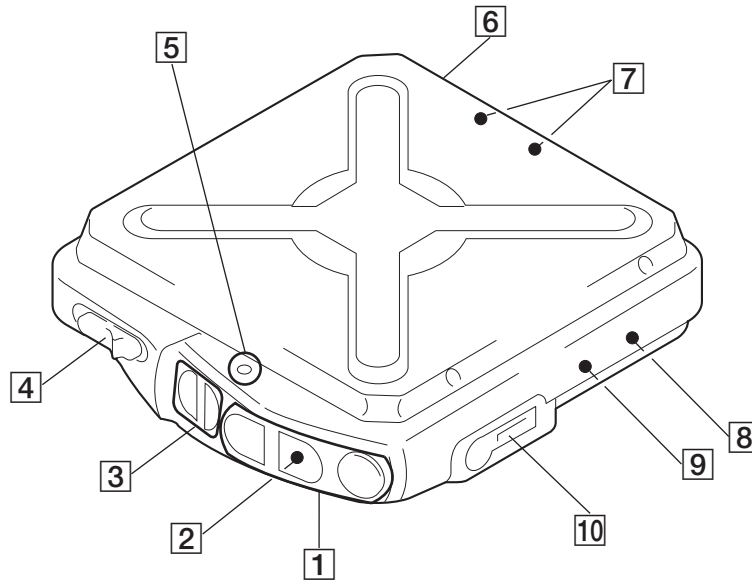
When repairing this device with the power on, if you remove the main board, this device stops working. In this case, you work without the device stopping by fastening the hook of the Open/Close detection switch (S801) with tape.



SECTION 2 GENERAL

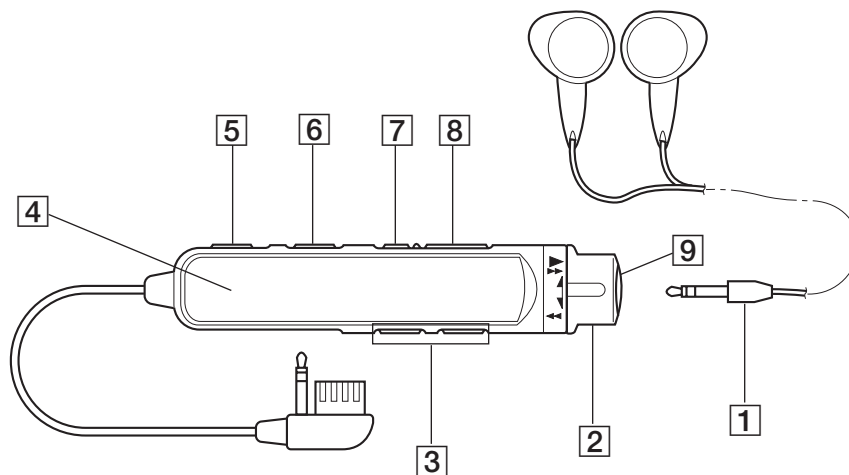
LOCATION AND FUNCTION OF CONTROLS

Main Unit



- | | |
|---|--|
| <p>1 MD operate buttons
▶•▶▶ (PLAY • FF)
◀◀ (REW)
■ (STOP)</p> <p>2 HOLD switch</p> <p>3 VOLUME +/- buttons</p> <p>4 EJECT button</p> | <p>5 OPERATE lamp</p> <p>6 Battery compartment</p> <p>7 External battery terminal (+/-)</p> <p>8 DIGITAL MEGA BASS switch</p> <p>9 AVLS switch</p> <p>10 Ⓞ / REMOTE jack</p> |
|---|--|

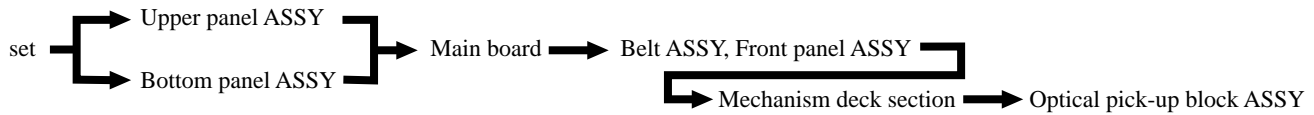
Headphones with Remote Control



- | |
|---|
| <p>1 Headphones</p> <p>2 MD operate switch and buttons
▶•▶▶ (PLAY • FF)
◀◀ (REW)
■ (STOP)</p> <p>3 VOL +/- button</p> <p>4 Display indicator</p> <p>5 DISPLAY button</p> <p>6 PLAYMODE button</p> <p>7 (PAUSE) button</p> <p>8 HOLD → switch</p> <p>9 ■ (STOP) button</p> |
|---|

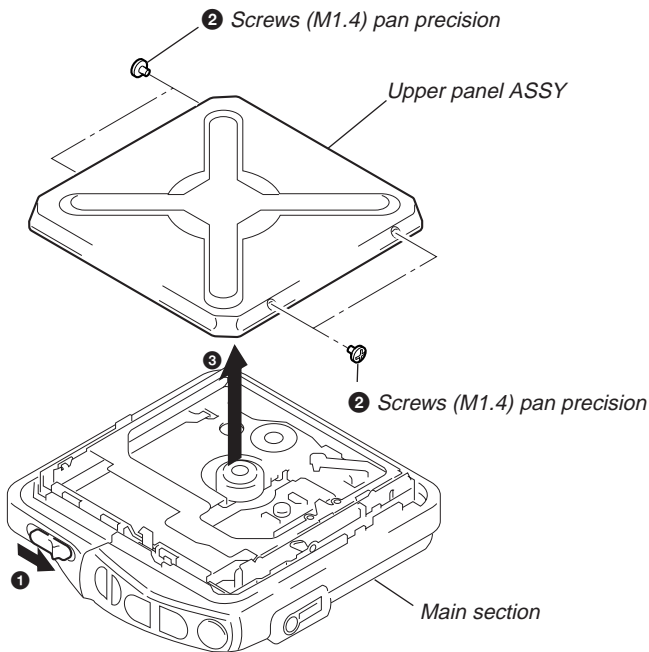
SECTION 3 DISASSEMBLY

• The equipment can be removed using the following procedure.

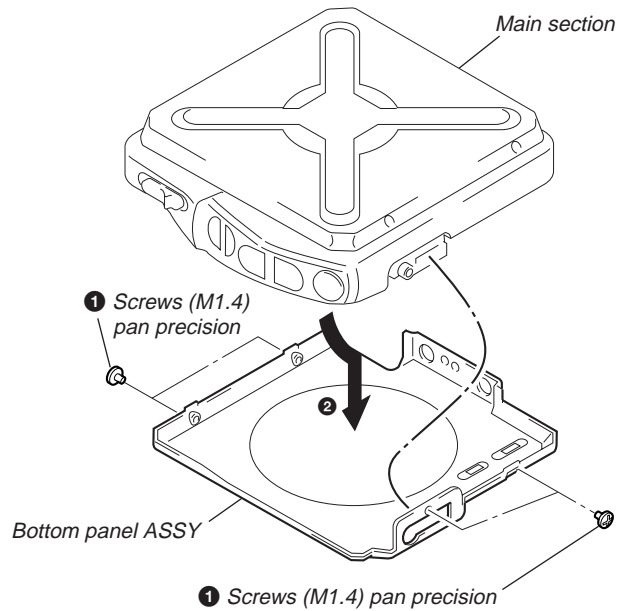


Note : Follow the disassembly procedure in the numerical order given.

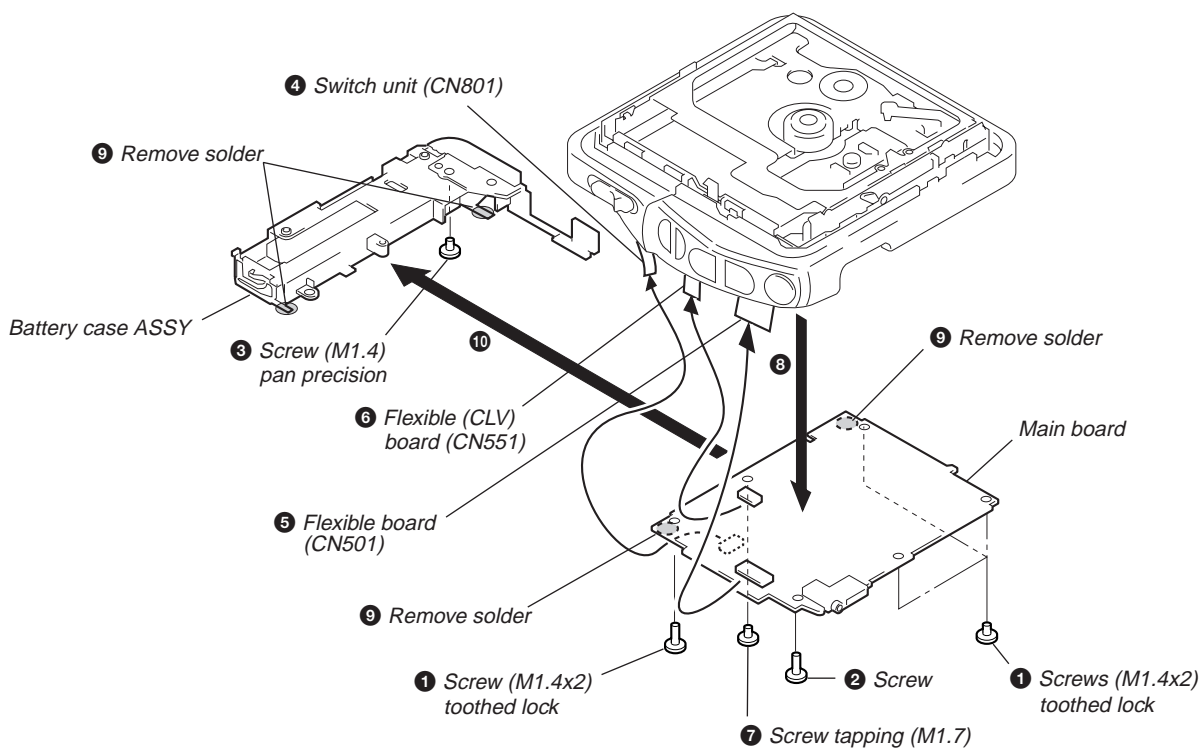
3-1. UPPER PANEL ASSY



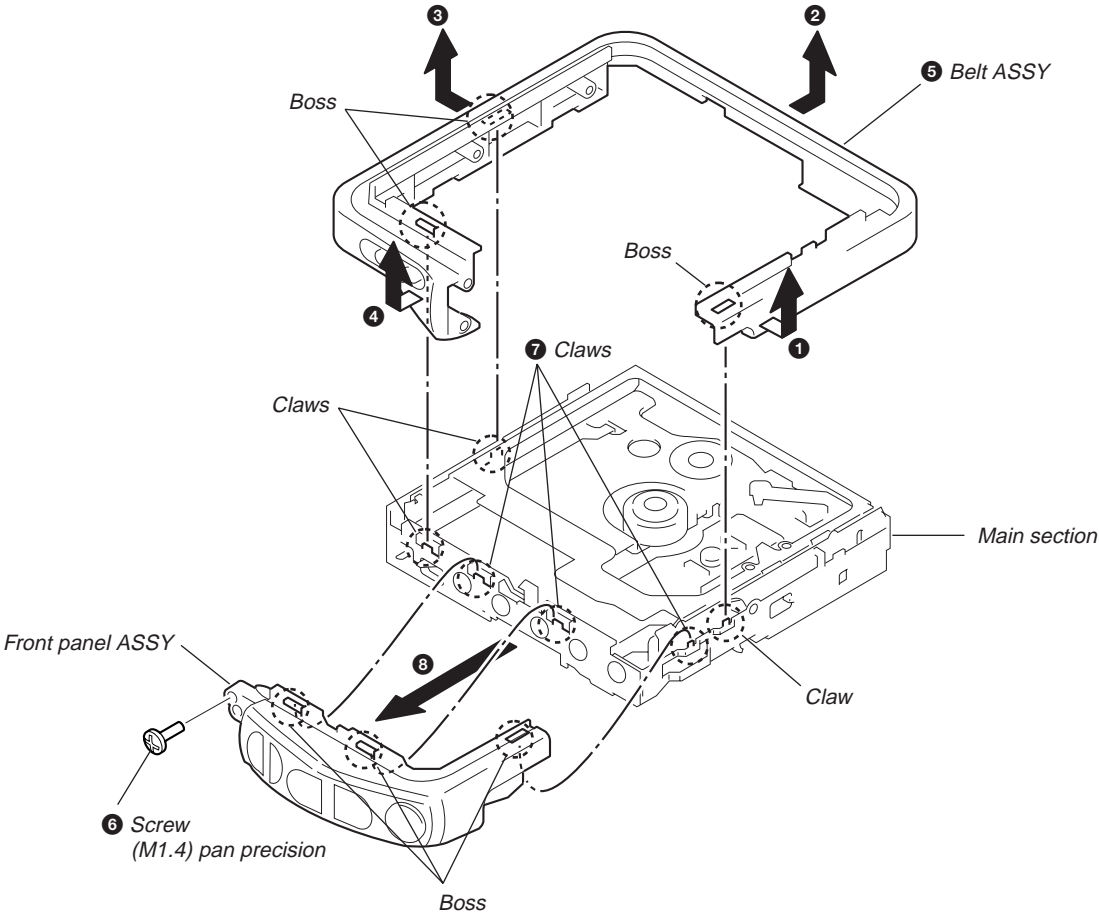
3-2. BOTTOM PANEL ASSY



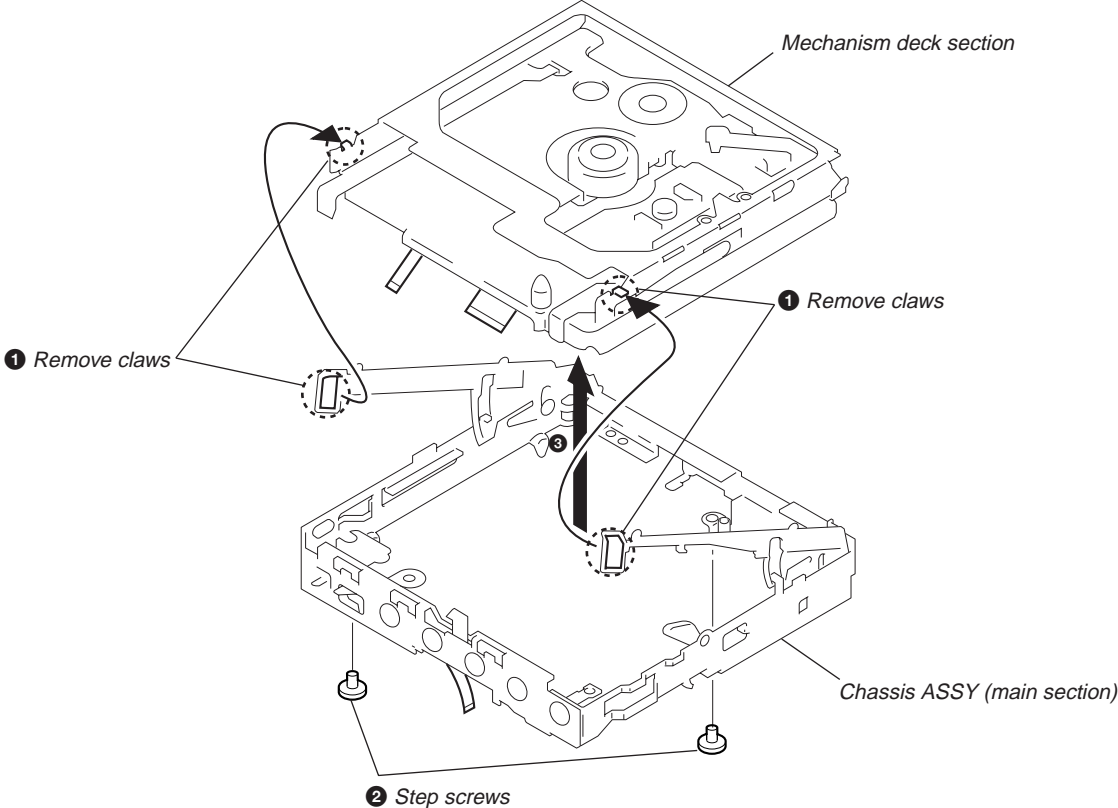
3-3. MAIN BOARD



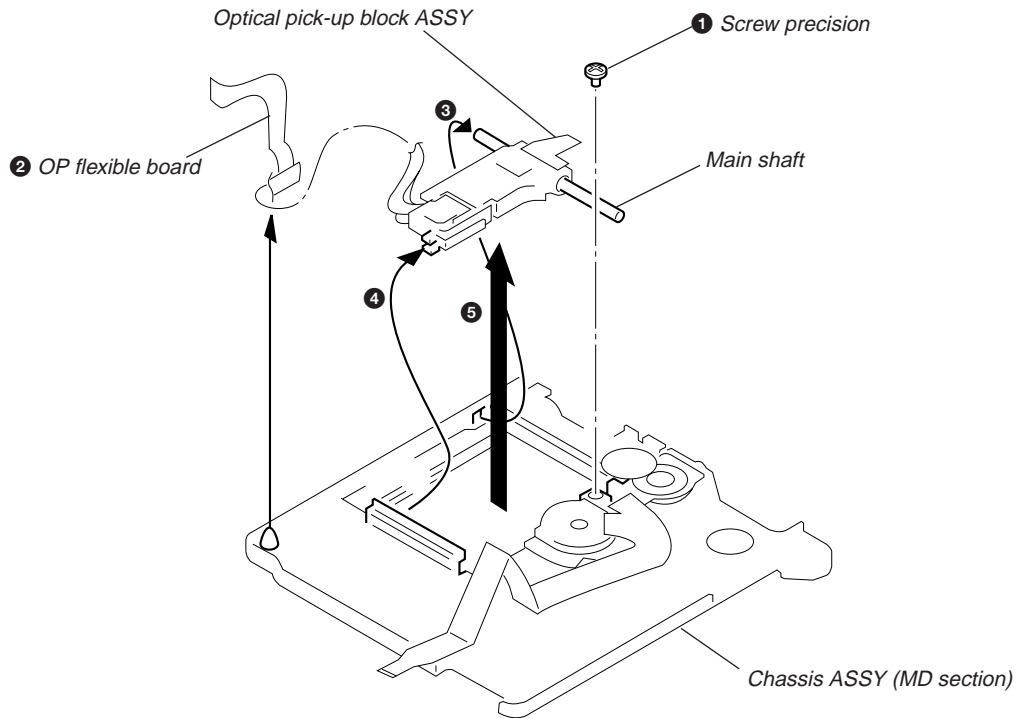
3-4. BELT ASSY, FRONT PANEL ASSY



3-5. MECHANISM DECK SECTION



3-6. OPTICAL PICK-UP BLOCK ASSY

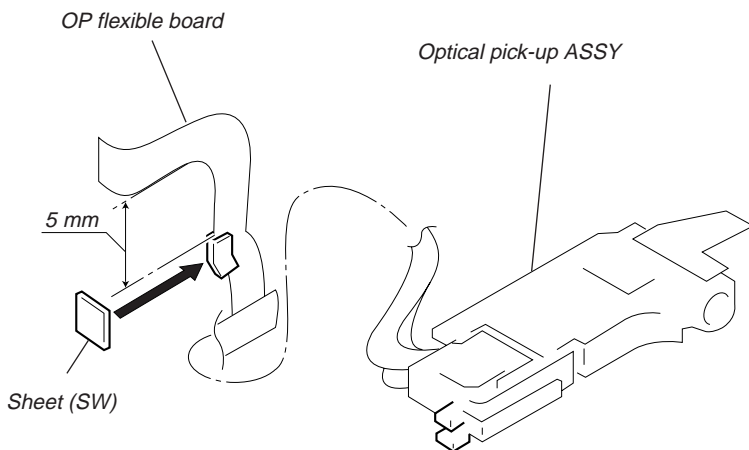


● NOTE

When replacing the optical block, the OP flexible board protective sheet (SW) is necessary.
Before replacing, check where the sheet (SW) is pasted onto the old OP flexible board and paste it on the new OP flexible board in the same way.

Pasting on the sheet (SW) :

Paste on aligning the sheet (SW) center section with the edge of the OP flexible board as in the figure and folding the excess over onto the opposite side.



SECTION 4 TEST MODE

Outline

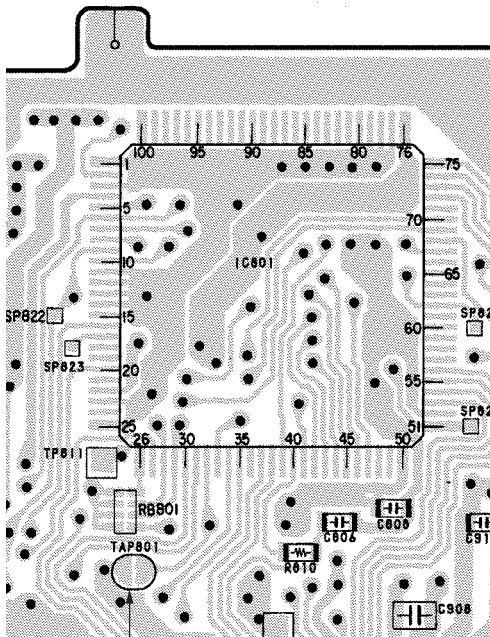
- In this set, overall adjustment mode is made available by entering test mode to perform automatic adjustment of CD and MO. In the overall adjustment mode, the disc is determined whether it is CD or MO and adjustments are performed in sequence. If a fault is found, the location of the fault is displayed. Also, in servo mode, each adjustment can be automatically made.

Setting the Test Mode

To enter the test mode, two methods are available :

- Entering method with key input.
Turn on the HOLD switch on the set. While holding down the ■ key on the set, press the following remote commander keys in the following order :
▶▶▶▶▶ ▶▶▶▶▶ ◀◀◀◀◀ ◀◀◀◀◀ ▶▶▶▶▶ ◀◀◀◀◀ ▶▶▶▶▶
◀◀◀◀◀ || → ||
- Entering method by shorting the test point
Solder bridge the test point TAP801 (TEST) on the main board (connect IC801 pin ② to GND), and turn on the POWER.

[MAIN BOARD] (Conductor side)



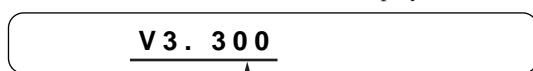
Test mode
(Short : Test mode
Open : Normal mode)

Releasing the Test Mode

- When test mode was entered with key input, turn off the POWER.
- When test mode was entered by shorting the test point, turn off the POWER and open the solder bridge of TAP801 (TEST MODE) on the main board.

Operation of Setting on Test Mode

When the test mode is set, the LCD displays the following :

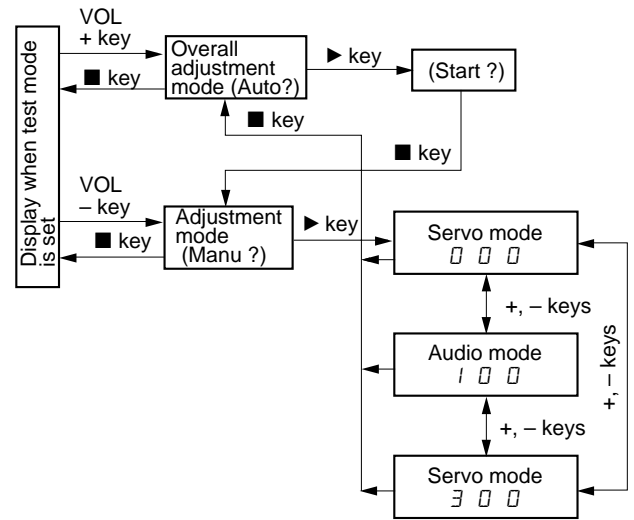


LCD on remote commander

- The cycle - the above ROM version display →All lit →All off - is repeated.
(The ROM version is constantly displayed.)
- When the PLAY MODE key is pressed and hold down, the display at that time is held so that display can be checked.

Configuration of Test Mode

The test mode has the configuration given below.

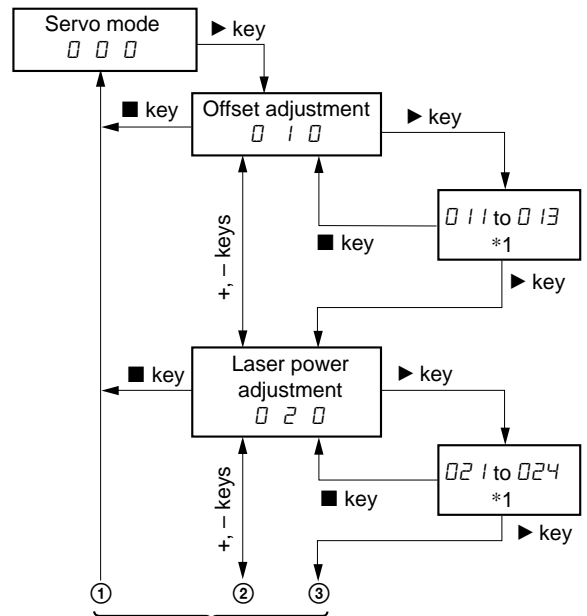


Displays of the LCD on the remote commander are shown in parentheses.

Servo Mode

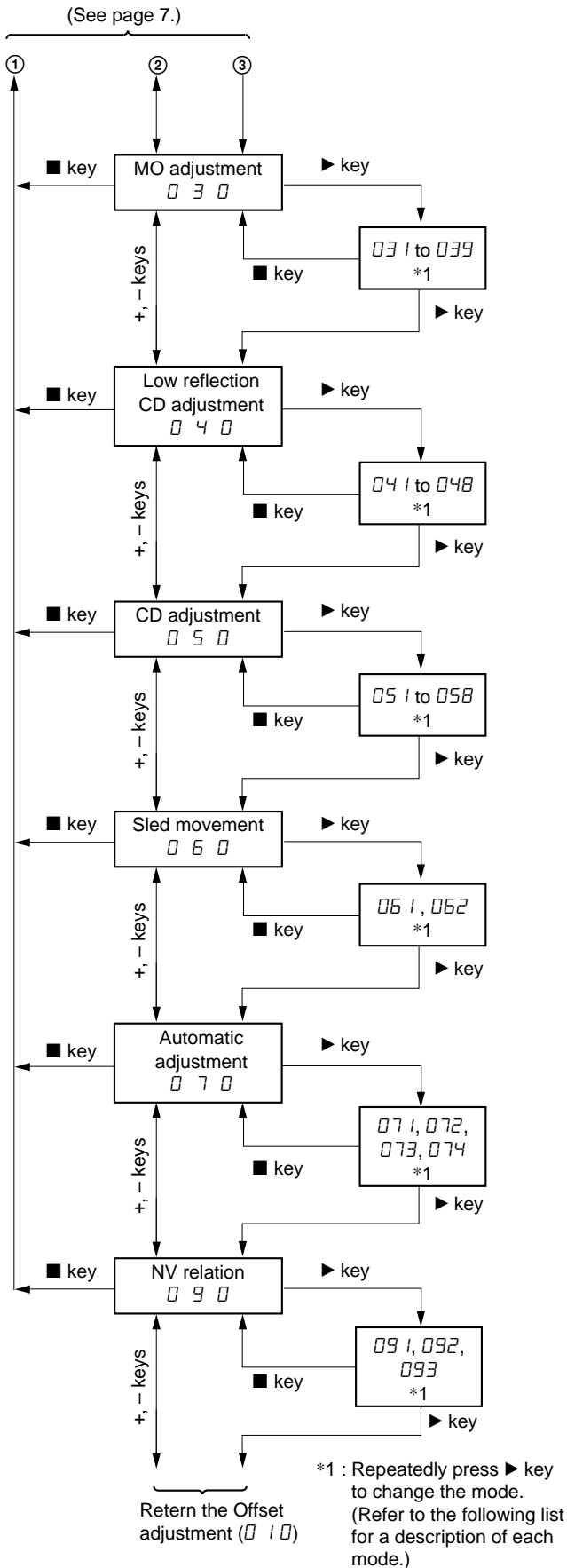
- Set the test mode, press the VOLUME – key and use the ▶ key to set the servo mode.
- When the servo mode is set, use the ▶ key and the ◀ key to move the optical pick-up to the outer circumference and to the inner circumference respectively.
- When entering another mode, refer to the configuration of test mode.

1. Structure of Servo Mode



(See page 8)

*1 Repeatedly press ▶ key to change the mode.
(Refer to the following list for a description of each mode.)



2. Description of Each Mode

010 Offset adjustment

Mode	Description
011	FE offset
012	TE offset
013	All servo ON

020 Laser power adjustment

Mode	Description
021	MO power A
022	MO power E
023	CDL power
024	CD power

030 MO adjustment

Mode	Description
031	MO EF balance
032	MO EF gain
033	MO ABCD gain
034	MO focus gain
035	MO tracking gain
036	MO RF gain
037	MO ADIP gain
038	MO focus bias E
039	CD focus bias A

040 Lower reflection CD adjustment

Mode	Description
041	Lower reflection CD EF balance
042	Lower reflection CD EF gain
043	Lower reflection CD ABCD gain
044	Lower reflection CD focus gain
045	Lower reflection CD tracking gain
046	Lower reflection CD RF offset
047	Lower reflection CD RF gain
048	Lower reflection CD focus bias

050 CD adjustment

Mode	Description
051	CD EF balance
052	CD EF gain
053	CD ABCD gain
054	CD focus gain
055	CD tracking gain
056	CD RF offset
057	CD RF gain
058	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

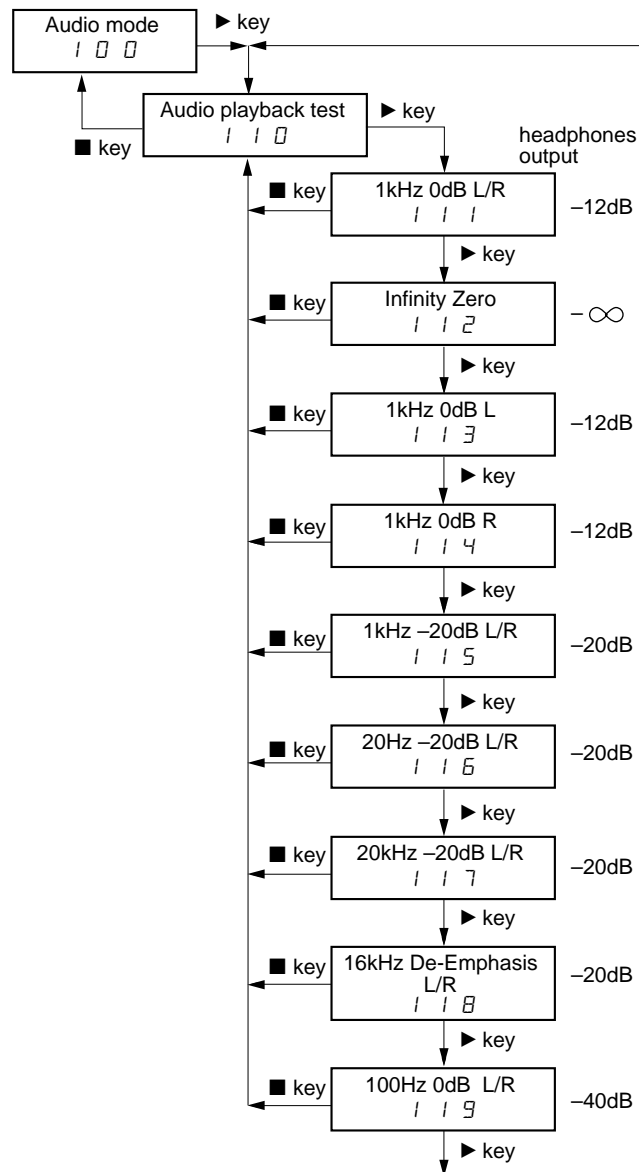
090 NV relation

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

Audio Mode

- Enter the test mode and press the VOLUME – key. Then, press the **▶** key and the VOLUME + 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 crosstalk. The mode No. 115 is for distortion factor and frequency characteristics.
- When the VOLUME +/- keys is pressed in any mode, the volume of the headphones is changed (increased/decreased) in units of one step. When the **▶▶▶◀◀◀** keys 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 value.

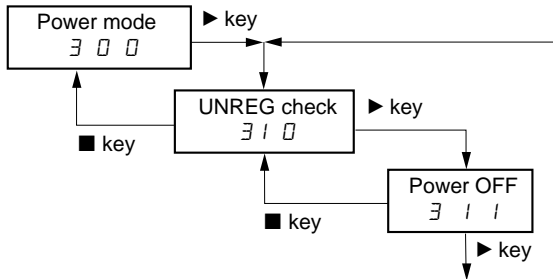
SECTION 5

ELECTRICAL ADJUSTMENTS

Power Mode

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

1. Structure of Power Mode

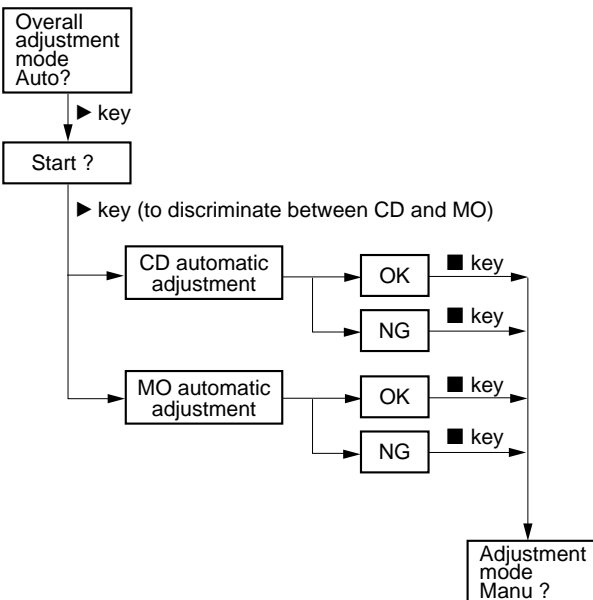


Overall Adjustment Mode

- Enter the test mode and press the VOLUME + 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 :

040 Auto?

1. Structure of Overall Adjustment Mode



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

1. Enter the test mode and press the VOLUME + key to enter overall adjustment mode.
2. Insert the CD test disc (TGYS-1) or SONY MO disc (recorded) commercially available.
3. 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.

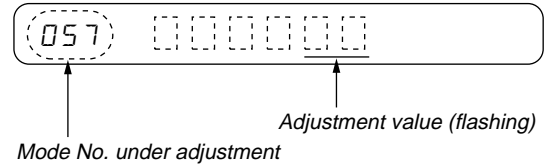
• In CD Automatic adjustment Mode

No.	Mode	Description
1	06 1	Sled in
2	07 1	Focus search
3	06 2	Sled out 5
4	05 1	CD EF balance
5	05 2	CD EF gain
6	05 1	CD EF balance
7	05 3	CD ABCD gain
8	05 4	CD focus gain
9	05 5	CD tracking gain
10	05 6	CD RF offset
11	05 7	CD RF gain
12	05 6	CD RF offset
13	05 8	CD Focus bias

• In MO Automatic adjustment Mode

No.	Mode	Description
1	06 1	Sled in
2	07 1	Focus search
3	062	Sled out
4	03 1	MO EF balance
5	032	MO EF gain
6	03 1	MO EF 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	07 1	Focus search
15	03 1	MO EF balance
16	032	MO EF gain
17	03 1	MO EF 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	06 1	Sled in
26	07 1	Focus search
27	04 1	Low reflection CD EF balance
28	042	Low reflection CD EF gain
29	04 1	Low reflection CD EF 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	06 1	Sled in
36	07 1	Focus search
37	04 1	Low reflection CD EF balance
38	042	Low reflection CD EF gain
39	04 1	Low reflection CD EF 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

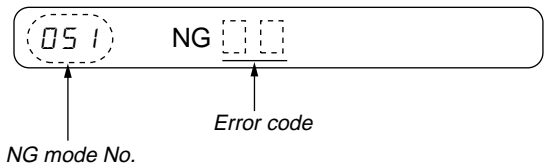
* Remote commander display during automatic adjustment



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



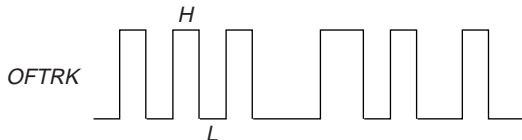
5. If result of automatic adjustment is NG, the following display appears.



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

Adjusting the OFF-track threshold

- Perform only for Ver. 1.000.
 - Only for MO (use AU-1 disk).
 - Use the following procedure.
 - Monitor (adjust) with a storage oscilloscope.
1. Set in Test mode (Manual mode).
 2. Press the PLAYMODE key per 030.
(2.6 volt operating mode Two battery marks light up.)
 3. Check that the OP is at the center (not the outermost or innermost circumference) and then play the AU-1 disk (031 → 032 → 033).
 4. Press the PAUSE key at 033 and adjust the MO ABCD gain.
 5. Press the STOP key (030), monitor the OFTRK (SP508) signal and set the focus ON at 031 with the PLAY key.



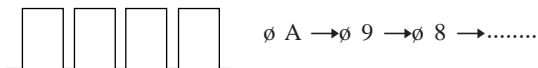
6. The adjustment is okay when the periods for "H" and "L" of the OFTRK is about equal.
7. Perform an overall adjustment without turning off the power.
8. Perform the following operation when the periods for "H" and "L" of the OFTRK are not equal.

Press the DISPLAY key 6 times per "030" to set in Memory mode.

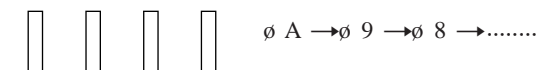
[5C 0] is displayed. Press the remote control key 6 times and use the key 9 times to align at [629].

Shift the figure with the remote control keys per the "629" address and press PAUSE < set > (reset value "0A").

- (1) This figure is small when "H" is long.



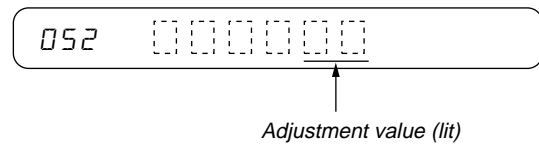
- (2) This figure is large when "L" is long.



Press the DISPLAY key one time to return to [030].

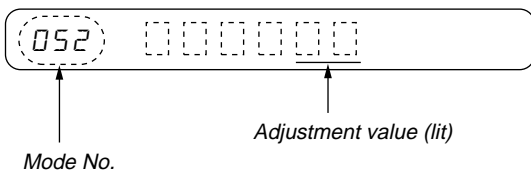
9. Return to 5. Press the PLAY key (remote control key) again to set to 031 (Focus ON).

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

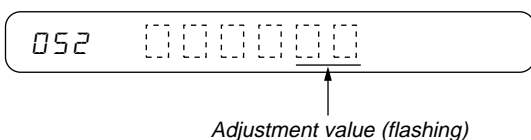


Adjustment in Servo Mode Method

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 VOLUME +/- keys can be used to change the adjustment value to any value, they should not be used whenever possible.

SECTION 6 DIAGRAMS

6-1. EXPLANATION OF IC TERMINALS

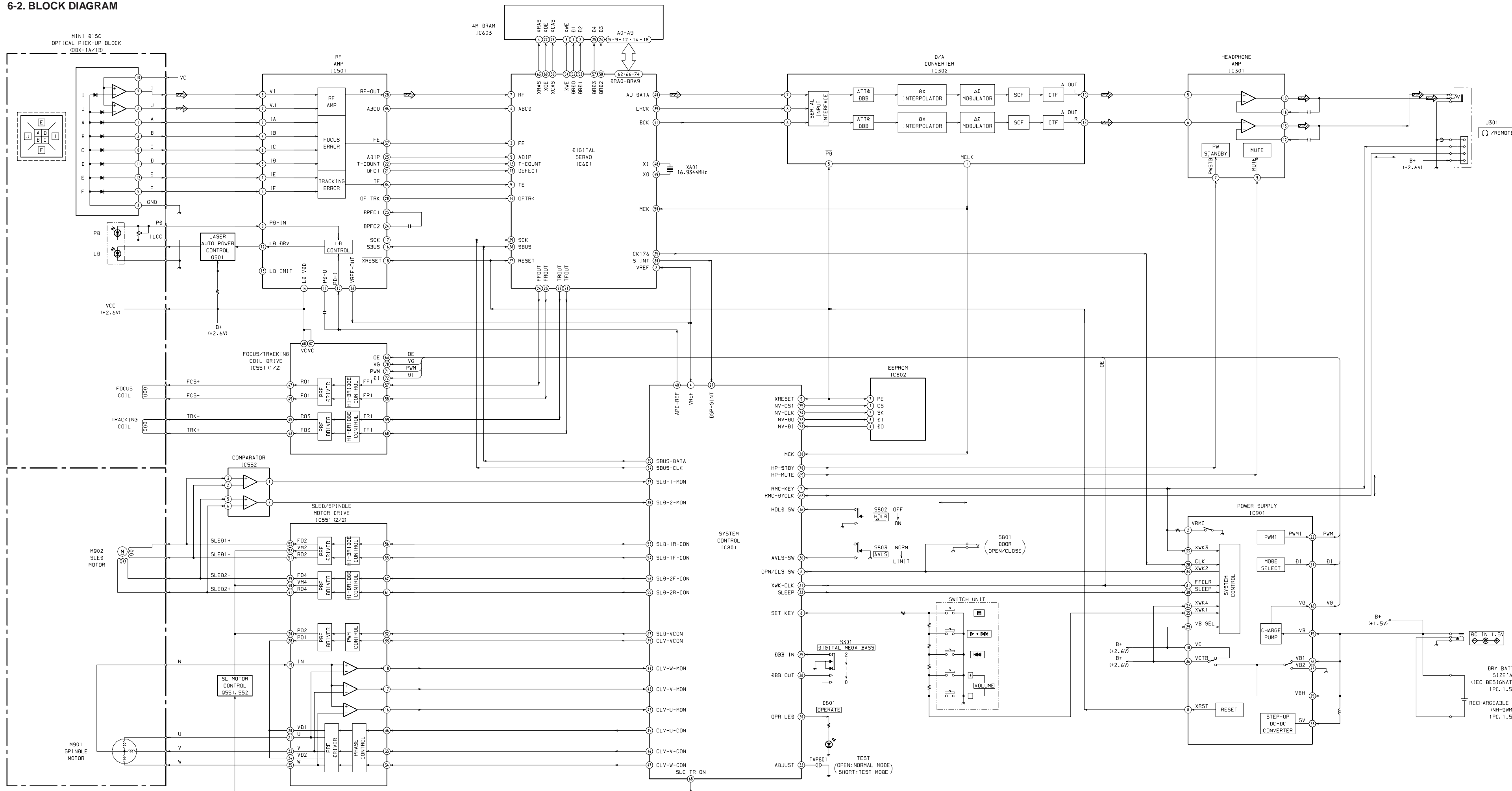
IC801 RU6815MF-0004 (VERSION 3.0) (SYSTEM CONTROL)

IC801 RU6815MF-0006 (VERSION 3.3) (SYSTEM CONTROL)

Pin No.	Pin Name	I/O	Pin Description
1		–	Not used (Fixed at “L”).
2	UREG MON	I	Unreg voltage monitor input.
3		–	Not used (Fixed at “L”).
4	VREF	I	Reference voltage for power supply voltage adjustment.
5	PLAY KEY	I	Set PLAY key input.
6	OPEN/CLS SW	I	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 (+2.6V or +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 “L”).
14	TYPE 2	I	Model discrimination terminal (Fixed at “L”).
15	MODEL	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 (+2.6V or +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 MEGA BASS switch input (MID).
29	DBB 1	I	DIGITAL MEGA BASS 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 (+2.6V or +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		–	Not used (Open).
49		–	Not used (Open).
50	VDD	–	Digital power supply (+2.6V or +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		–	Not used (Open).
58		–	Not used (Open).
59		–	Not used (Open).
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	Bypass 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 (+2.6V or +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



02

• Signal path.
➡ : PLAY

6-3. PRINTED WIRING BOARDS

● Semiconductor
Location

Ref. No.	Location
D351	I-10
D352	H-11
D801	I-5
D841	F-10
D901	D-5
D902	H-14
IC301	C-7
IC302	D-7
IC501	H-12
IC551	G-14
IC552	F-14
IC601	F-12
IC603	F-6
IC801	C-13
IC802	C-15
IC901	E-4
Q501	I-12
Q551	G-3
Q552	F-3

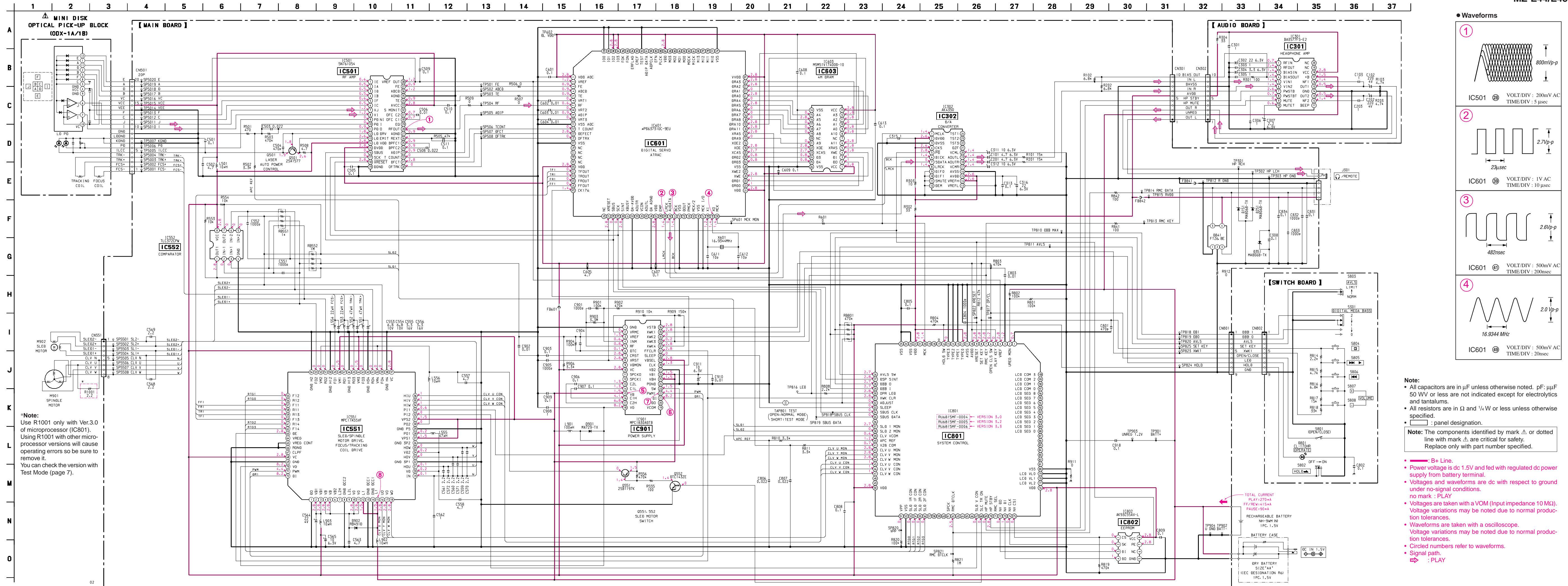
*Note:

Use R1001 only with Ver.3.0 of microprocessor (IC801).
Using R1001 with other microprocessor versions will
cause operating errors so be sure to remove it.
You can check the version with Test Mode (page 7).

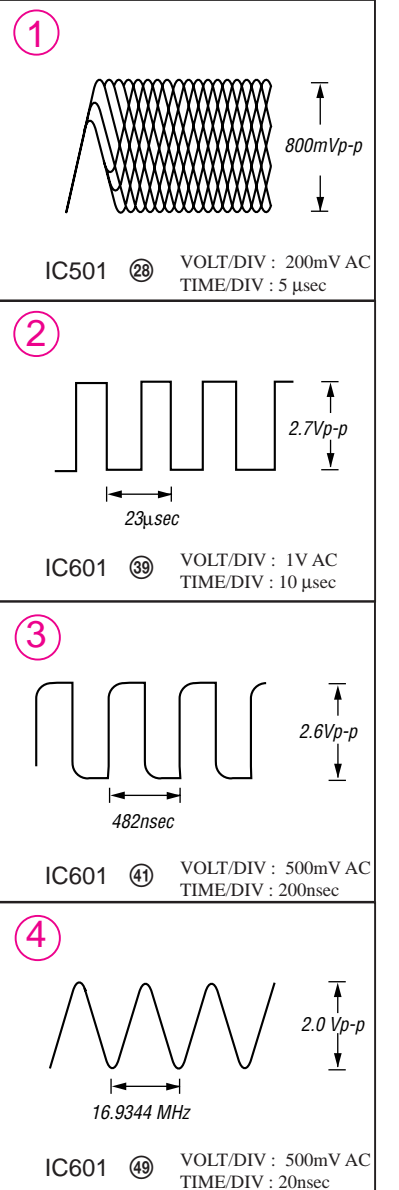
Note:

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

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



Waveforms



Note:

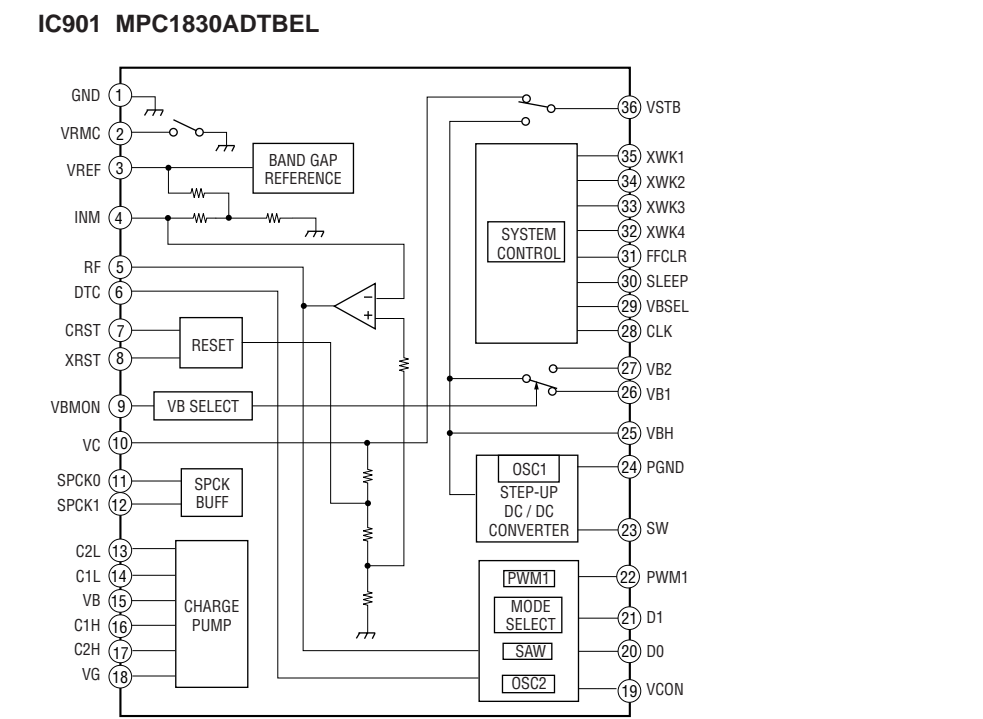
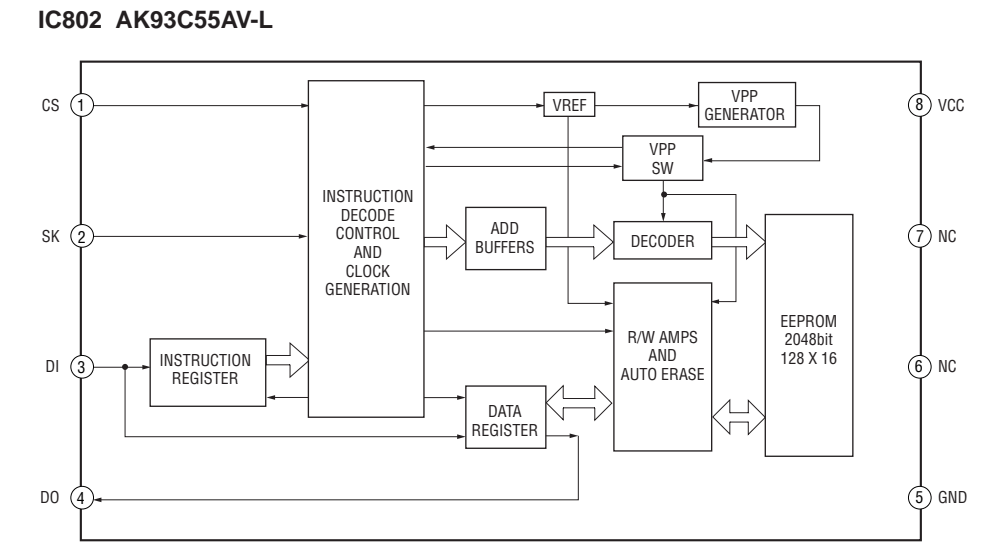
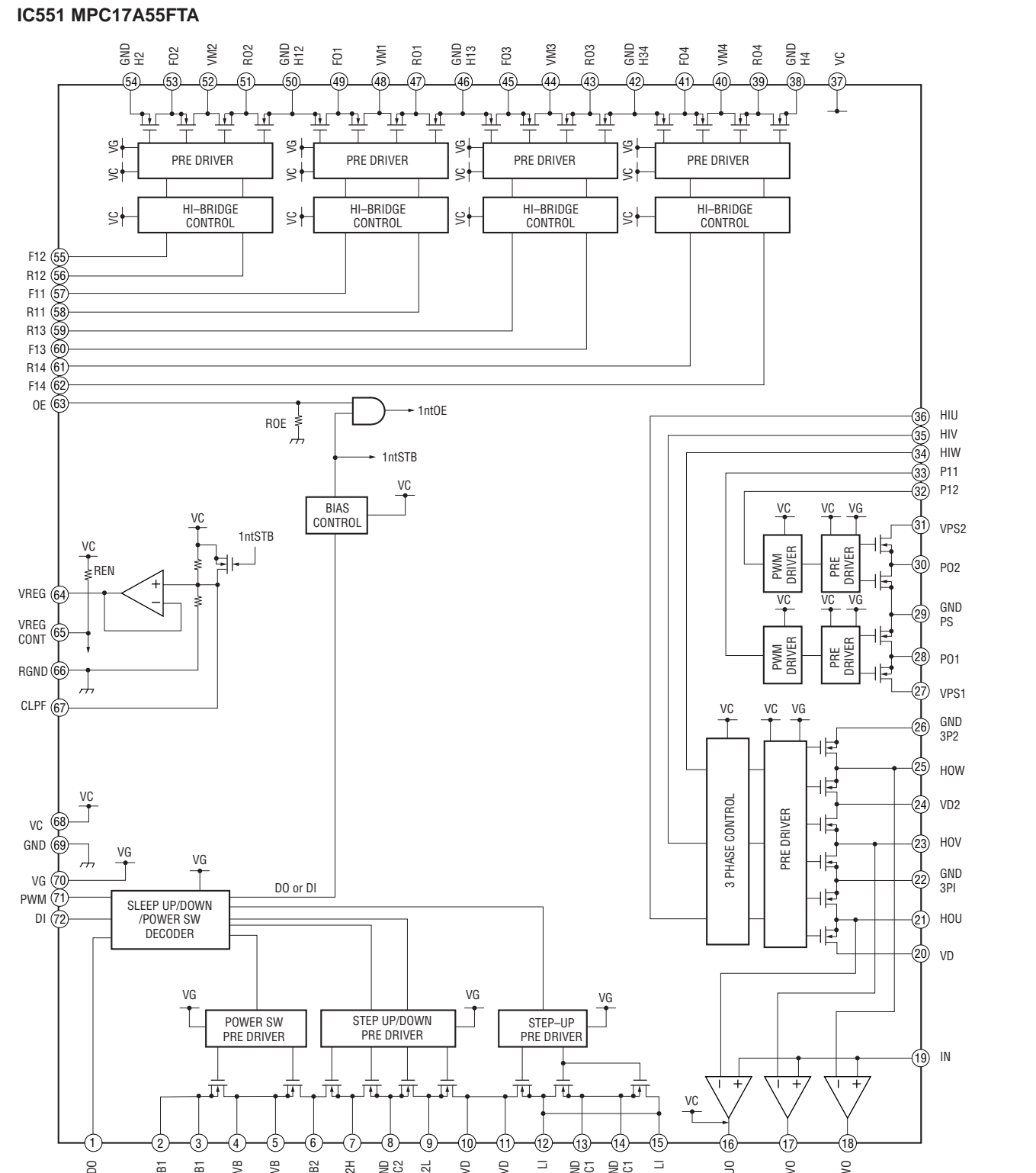
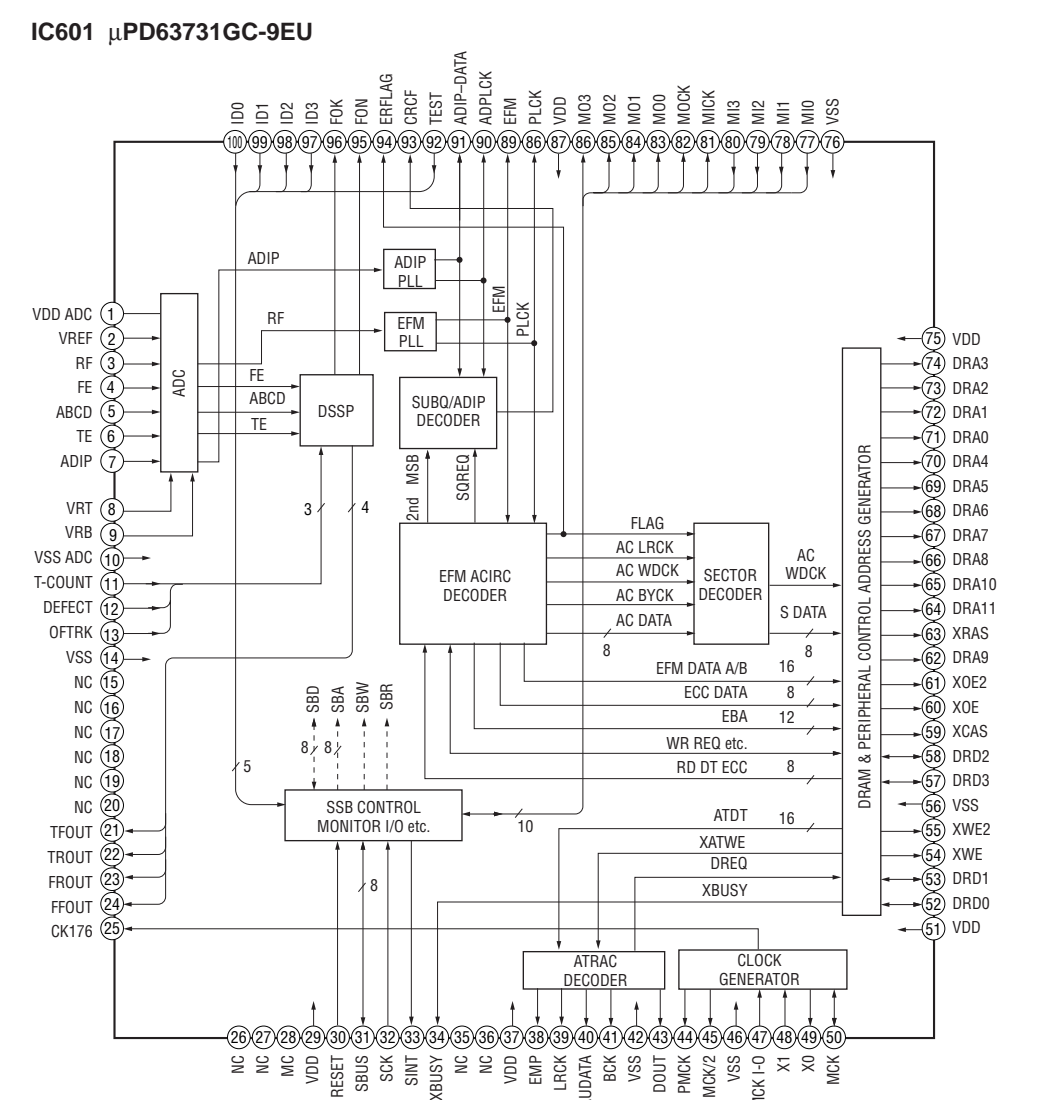
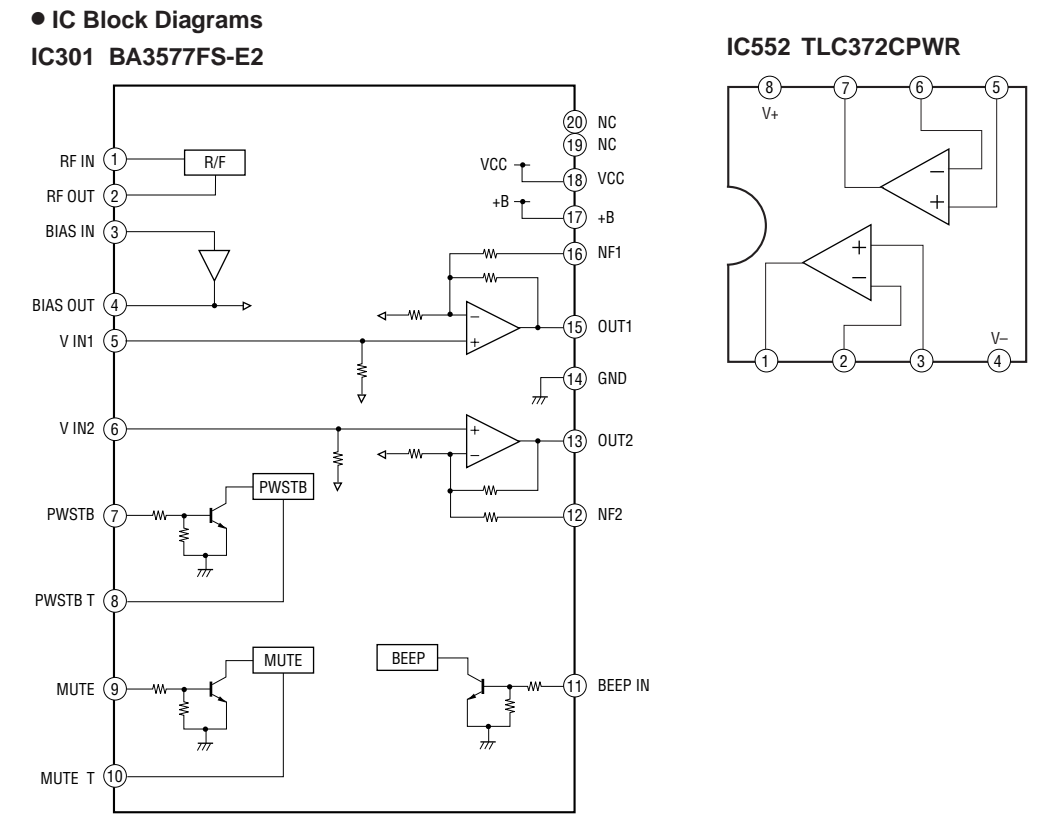
- All capacitors are in μF unless otherwise noted. pF: pF
- Power voltage is dc 1.5V and fed with regulated dc power supply from battery terminal.
- All resistors are in Ω and 1/4 W or less unless otherwise specified.
- Panel designation.
- The components identified by mark Δ or dotted line with mark Δ are critical for safety. Replace only with part number specified.

- B+ Line.
- Power voltage is dc 1.5V and fed with regulated dc power supply from battery terminal.
- Voltagess and waveforms are dc with respect to ground under no-signal conditions.
- Voltagess 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.
- Circled numbers refer to waveforms.
- Signal path.

Note:

Use R1001 only with Ver.3.0 of microprocessor (IC801). Using R1001 with other microprocessor versions will cause operating errors so be sure to remove it.

You can check the version with Test Mode (page 7).



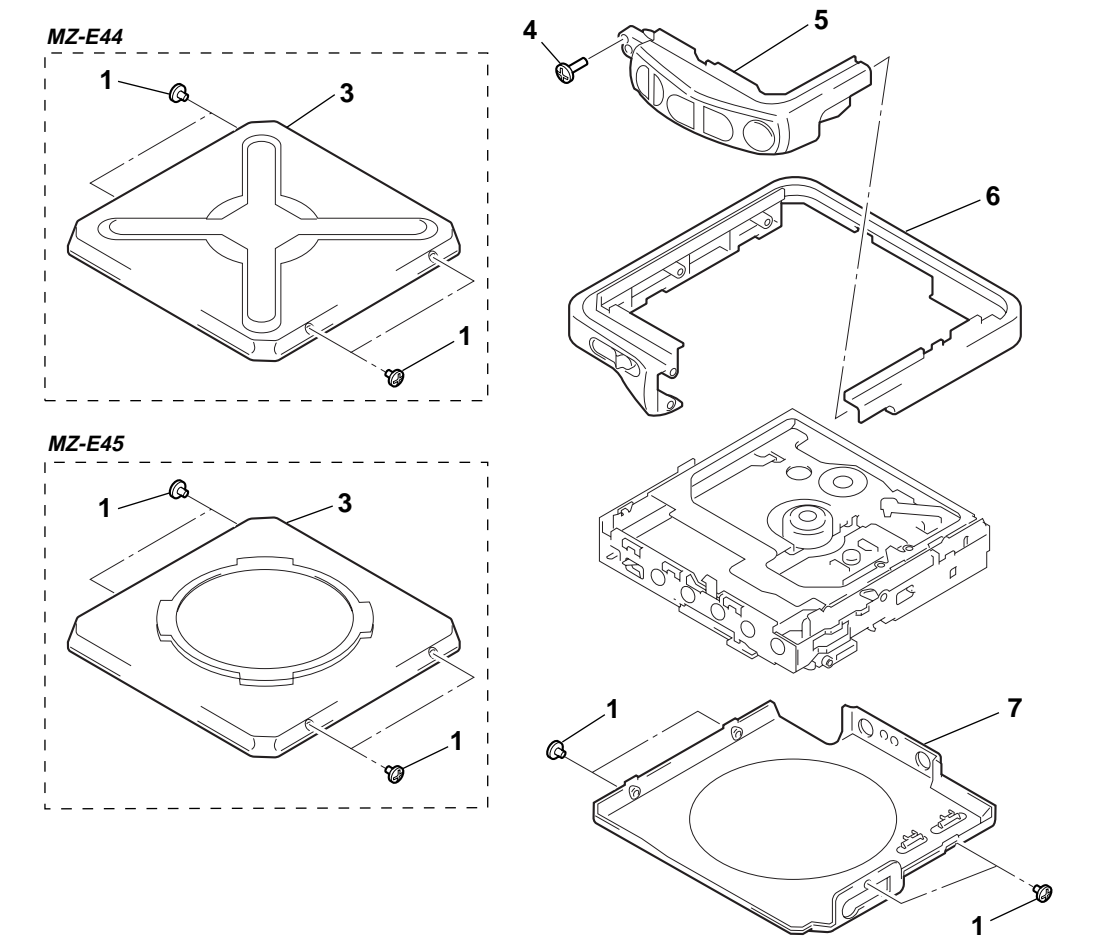
NOTE :

- XX, -X mean standardized parts, so they may have some difference from the original one.
- Color indication of Appearance Parts Example : KNOB, BALANCE (WHITE) *** (RED)
- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Accessories and packing materials are given in the last of this parts list.

Parts color Cabinet's color

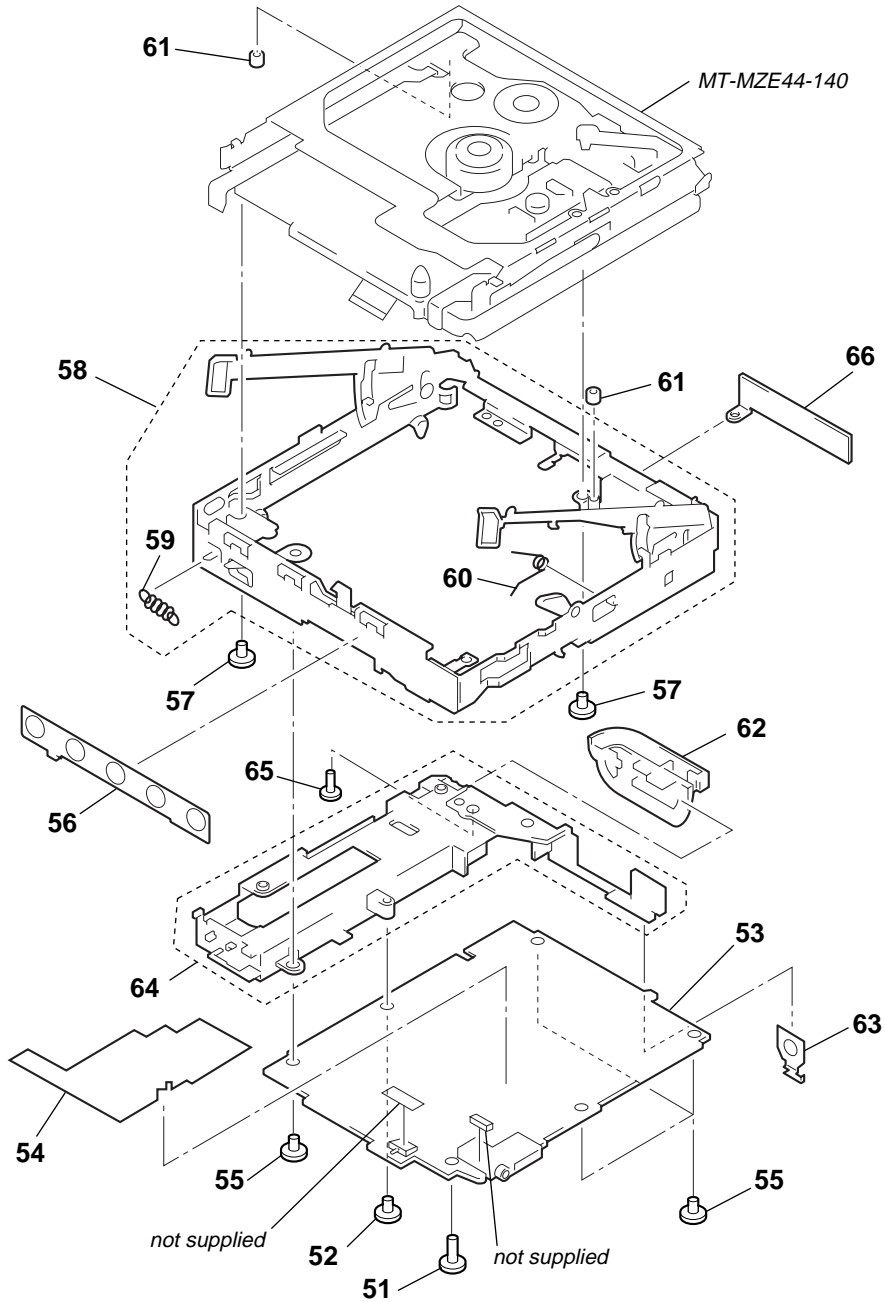
The components identified by mark Δ or dotted line with mark Δ are critical for safety. Replace only with part number specified.

7-1. PANEL SECTION



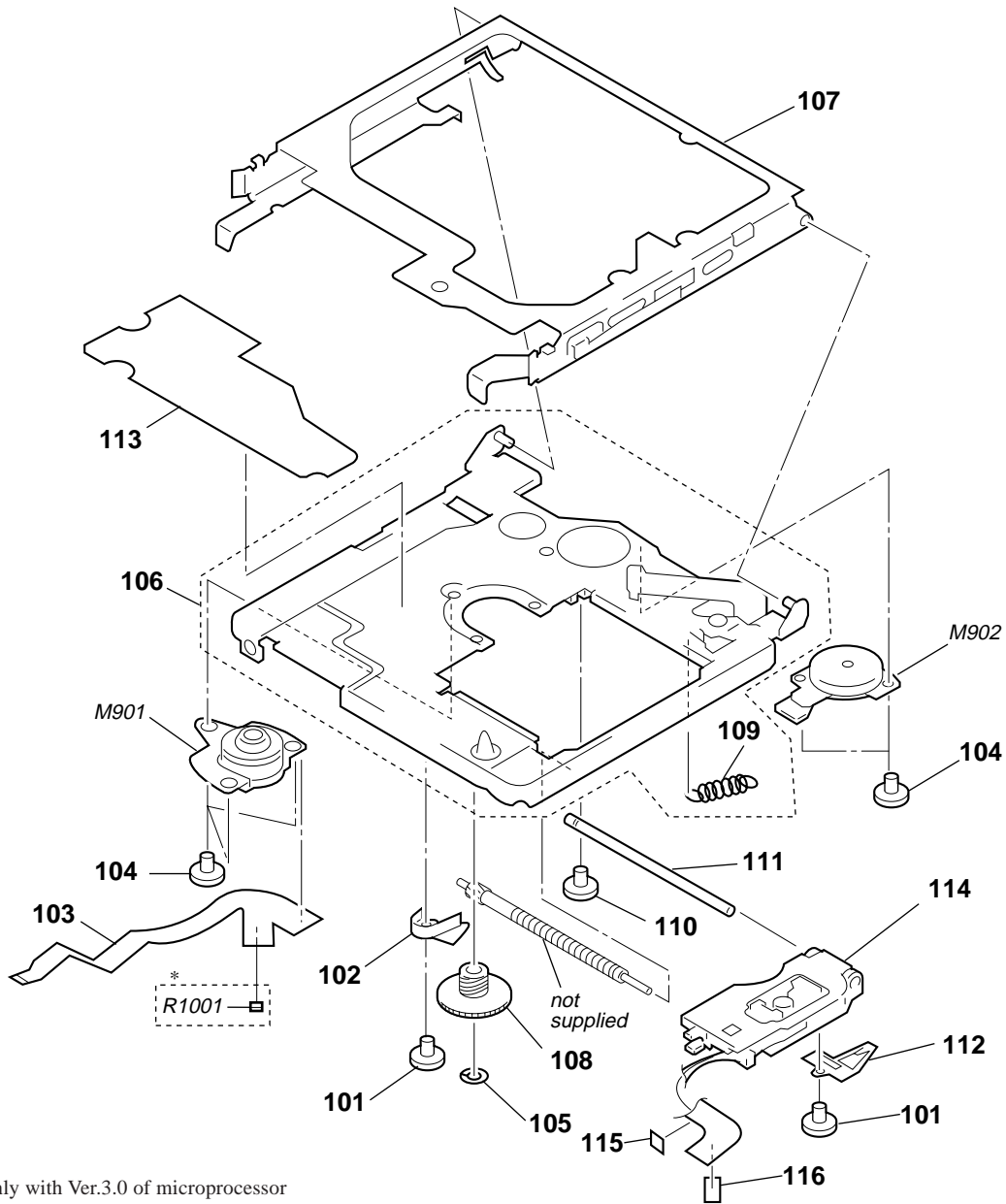
Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
1	4-963-883-21	SCREW (M1.4), PRECISION PAN (SILVER)		4	4-963-883-81	SCREW (M1.4), PRECISION PAN (MZ-E44)	
				5	X-4950-237-1	PANEL ASSY, FRONT	
1	4-963-883-31	SCREW (M1.4), PRECISION PAN (MZ-E44:BLUE, MZ-E45:ORANGE, GRAY)		6	X-4950-236-1	BELT ASSY	
3	X-4951-601-1	PANEL ASSY, UPPER (SILVER) (MZ-E44)		7	X-4950-235-1	PANEL ASSY, BOTTOM (SILVER) (MZ-E44)	
3	X-4951-601-2	PANEL ASSY, UPPER (BLUE) (MZ-E44)		7	X-4950-239-1	PANEL ASSY, BOTTOM (BLUE) (MZ-E44)	
3	X-4951-601-3	PANEL ASSY, UPPER (GRAY) (MZ-E45)		7	X-4950-240-1	PANEL ASSY, BOTTOM (GRAY) (MZ-E45)	
3	X-4951-601-4	PANEL ASSY, UPPER (ORANGE) (MZ-E45)		7	X-4950-241-1	PANEL ASSY, BOTTOM (ORANGE) (MZ-E45)	

7-2. MAIN SECTION



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
51	3-703-502-11	SCREW		60	4-995-274-11	SPRING (O-C), TORSION	
52	4-984-017-01	SCREW (1.7), TAPPING		61	4-982-418-01	DAMPER	
53	A-3293-984-A	MAIN BOARD, COMPLETE		62	4-211-118-01	LID, BATTERY CASE	
54	4-211-392-01	PLATE, BLIND		63	4-212-087-01	TERMINAL	
55	3-335-797-91	SCREW (M1.4), TOOTHED LOCK		64	X-4950-232-1	CASE ASSY, BATTERY	
56	1-475-804-11	SWITCH UNIT		65	4-963-883-41	SCREW (M1.4), PRECISION PAN	
57	4-211-119-01	SCREW, STEP		66	4-217-305-01	SHEET, BLIND	
58	X-4950-229-1	CHASSIS ASSY (MAIN SECTION)					
59	4-989-078-01	SPRING (OPEN), TENSION					

**7-3. MECHANISM DECK SECTION
(MT-MZE44-140)**



***Note :**
 Use R1001 only with Ver.3.0 of microprocessor (IC801).
 Using R1001 with other microprocessor versions will cause operating errors so be sure to remove it.
 You can check the version with Test Mode (page 7).

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

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
101	4-963-883-61	SCREW (M1.4), PRECISION PAN		111	4-993-251-01	SHAFT, MAIN	
102	4-982-563-01	SPRING, THRUST		112	4-982-561-11	SPRING, RACK	
103	1-666-784-13	FLEXIBLE (CLV) BOARD		113	4-995-532-11	COVER, MD	
104	4-963-883-21	SCREW (M1.4), PRECISION PAN		\triangle 114	X-4949-164-1	OPTICAL PICK-UP BLOCK ASSY	
105	4-965-893-01	WASHER, GEAR (A) STOPPER		115	4-988-858-01	SHEET (SW)	
106	X-4950-157-1	CHASSIS ASSY (MD SECTION)		116	3-309-595-11	SHEET, INSULATING, PACK	
107	X-4948-010-1	HOLDER ASSY		M901	1-698-991-11	MOTOR, DC (including PULLEY) (SPINDLE)	
108	4-982-555-01	GEAR (A)		M902	1-698-764-21	MOTOR, SLED (including PULLEY) (SLED)	
109	4-210-659-01	SPRING, TENSION		R1001	1-216-789-11	METAL CHIP	2.2 5% 1/16W
110	3-349-825-82	SCREW, PRECISION					

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, -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
All resistors are in ohms
METAL : Metal-film resistor
METAL OXIDE :Metal oxide-film resistor
F : nonflammable
- Items marked “ * ” are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

- SEMICONDUCTORS
In each case, u : μ , for example :
uA.... : μ A.... , uPA.... : μ PA....
uPB.... : μ PB.... , uPC.... : μ PC....
uPD.... : μ PD....
- CAPACITORS
uF : μ F
- COILS
uH : μ H
- Abbreviation
AUS : Australian
HK : Hong Kong
JE : Tourist

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

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

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
	A-3293-984-A	MAIN BOARD, COMPLETE *****		C560	1-115-566-11	CERAMIC CHIP 4.7uF	10% 10V
		< CAPACITOR >		C561	1-115-566-11	CERAMIC CHIP 4.7uF	10% 10V
C101	1-135-181-21	TANTALUM CHIP 4.7uF	20% 6.3V	C562	1-109-982-11	CERAMIC CHIP 1uF	10% 10V
C102	1-125-899-11	TANTAL. CHIP 220uF	20% 4V	C563	1-117-720-11	CERAMIC CHIP 4.7uF	10V
C103	1-115-156-11	CERAMIC CHIP 1uF	10V	C564	1-117-232-11	TANTALUM 22uF	20% 4V
C201	1-135-181-21	TANTALUM CHIP 4.7uF	20% 6.3V	C565	1-135-259-11	TANTAL. CHIP 10uF	20% 6.3V
C202	1-125-899-11	TANTAL. CHIP 220uF	20% 4V	C568	1-117-370-11	CERAMIC CHIP 10uF	10V
C203	1-115-156-11	CERAMIC CHIP 1uF	10V	C569	1-117-370-11	CERAMIC CHIP 10uF	10V
C301	1-135-259-11	TANTAL. CHIP 10uF	20% 6.3V	C601	1-164-156-11	CERAMIC CHIP 0.1uF	25V
C302	1-119-750-11	TANTAL. CHIP 22uF	20% 6.3V	C602	1-162-970-11	CERAMIC CHIP 0.01uF	10% 25V
C303	1-109-982-11	CERAMIC CHIP 1uF	10% 10V	C603	1-162-970-11	CERAMIC CHIP 0.01uF	10% 25V
C304	1-104-912-11	TANTAL. CHIP 3.3uF	20% 6.3V	C604	1-162-970-11	CERAMIC CHIP 0.01uF	10% 25V
C305	1-109-982-11	CERAMIC CHIP 1uF	10% 10V	C605	1-117-720-11	CERAMIC CHIP 4.7uF	10V
C306	1-109-982-11	CERAMIC CHIP 1uF	10% 10V	C607	1-164-156-11	CERAMIC CHIP 0.1uF	25V
C307	1-135-149-21	TANTALUM CHIP 2.2uF	20% 10V	C608	1-164-156-11	CERAMIC CHIP 0.1uF	25V
C308	1-115-156-11	CERAMIC CHIP 1uF	10V	C609	1-164-156-11	CERAMIC CHIP 0.1uF	25V
C311	1-135-259-11	TANTAL. CHIP 10uF	20% 6.3V	C801	1-162-962-11	CERAMIC CHIP 470PF	10% 50V
C312	1-135-259-11	TANTAL. CHIP 10uF	20% 6.3V	C803	1-162-970-11	CERAMIC CHIP 0.01uF	10% 25V
C313	1-115-156-11	CERAMIC CHIP 1uF	10V	C804	1-162-964-11	CERAMIC CHIP 0.001uF	10% 50V
C314	1-119-750-11	TANTAL. CHIP 22uF	20% 6.3V	C805	1-164-156-11	CERAMIC CHIP 0.1uF	25V
C315	1-164-156-11	CERAMIC CHIP 0.1uF	25V	C806	1-164-227-11	CERAMIC CHIP 0.022uF	10% 25V
C501	1-107-826-11	CERAMIC CHIP 0.1uF	10% 16V	C807	1-164-227-11	CERAMIC CHIP 0.022uF	10% 25V
C502	1-117-720-11	CERAMIC CHIP 4.7uF	10V	C808	1-164-156-11	CERAMIC CHIP 0.1uF	25V
C503	1-164-227-11	CERAMIC CHIP 0.022uF	10% 25V	C809	1-164-156-11	CERAMIC CHIP 0.1uF	25V
C504	1-162-962-11	CERAMIC CHIP 470PF	10% 50V	C811	1-162-964-11	CERAMIC CHIP 0.001uF	10% 50V
C505	1-164-156-11	CERAMIC CHIP 0.1uF	25V	C812	1-162-964-11	CERAMIC CHIP 0.001uF	10% 50V
C506	1-162-970-11	CERAMIC CHIP 0.01uF	10% 25V	C831	1-115-156-11	CERAMIC CHIP 1uF	10V
C508	1-164-227-11	CERAMIC CHIP 0.022uF	10% 25V	C832	1-162-964-11	CERAMIC CHIP 0.001uF	10% 50V
C509	1-164-156-11	CERAMIC CHIP 0.1uF	25V	C833	1-162-964-11	CERAMIC CHIP 0.001uF	10% 50V
C510	1-164-156-11	CERAMIC CHIP 0.1uF	25V	C834	1-164-156-11	CERAMIC CHIP 0.1uF	25V
C511	1-107-826-11	CERAMIC CHIP 0.1uF	10% 16V	C846	1-162-964-11	CERAMIC CHIP 0.001uF	10% 50V
C551	1-162-964-11	CERAMIC CHIP 0.001uF	10% 50V	C901	1-162-964-11	CERAMIC CHIP 0.001uF	10% 50V
C552	1-162-964-11	CERAMIC CHIP 0.001uF	10% 50V	C902	1-162-970-11	CERAMIC CHIP 0.01uF	10% 25V
C553	1-104-850-11	TANTAL. CHIP 6.8uF	20% 10V	C903	1-107-826-11	CERAMIC CHIP 0.1uF	10% 16V
C554	1-104-850-11	TANTAL. CHIP 6.8uF	20% 10V	C904	1-109-982-11	CERAMIC CHIP 1uF	10% 10V
C555	1-104-912-11	TANTAL. CHIP 3.3uF	20% 16V	C905	1-162-964-11	CERAMIC CHIP 0.001uF	10% 50V
C556	1-104-912-11	TANTAL. CHIP 3.3uF	20% 16V	C906	1-107-826-11	CERAMIC CHIP 0.1uF	10% 16V
C557	1-117-720-11	CERAMIC CHIP 4.7uF	10V	C907	1-107-826-11	CERAMIC CHIP 0.1uF	10% 16V
C558	1-117-720-11	CERAMIC CHIP 4.7uF	10V	C908	1-109-982-11	CERAMIC CHIP 1uF	10% 10V
C559	1-115-566-11	CERAMIC CHIP 4.7uF	10% 10V	C909	1-107-826-11	CERAMIC CHIP 0.1uF	10% 16V
				C910	1-162-970-11	CERAMIC CHIP 0.01uF	10% 25V
				C911	1-135-259-11	TANTAL. CHIP 10uF	20% 6.3V

MAIN

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
C914	1-126-246-11	ELECT CHIP 220uF	20% 4V			< RESISTOR >	
C918	1-115-156-11	CERAMIC CHIP 1uF	10V				
C919	1-115-156-11	CERAMIC CHIP 1uF	10V				
		< CONNECTOR >					
CN501	1-573-360-21	CONNECTOR, FFC/FPC 20P		R101	1-216-835-11	METAL CHIP 15K	5% 1/16W
CN551	1-784-226-21	CONNECTOR, FFC/FPC 8P		R102	1-216-831-11	METAL CHIP 6.8K	5% 1/16W
CN801	1-778-154-21	CONNECTOR, FFC/FPC 6P		R103	1-216-829-11	METAL CHIP 4.7K	5% 1/16W
		< DIODE >		R104	1-216-864-11	METAL CHIP 0	5% 1/16W
D351	8-719-017-58	DIODE MA8068		R201	1-216-835-11	METAL CHIP 15K	5% 1/16W
D352	8-719-045-87	DIODE MA4Z082WA-TX					
D801	8-719-052-72	LED CL-220HR-C (OPERATE)		R202	1-216-831-11	METAL CHIP 6.8K	5% 1/16W
D841	8-719-066-17	DIODE FTZ6.8E-T148		R203	1-216-829-11	METAL CHIP 4.7K	5% 1/16W
D901	8-719-420-51	DIODE MA729		R204	1-216-864-11	METAL CHIP 0	5% 1/16W
D902	8-719-066-16	DIODE RB491D-T146		R301	1-216-809-11	METAL CHIP 100	5% 1/16W
		< FERRITE BEAD >		R302	1-216-803-11	METAL CHIP 33	5% 1/16W
FB841	1-414-228-11	INDUCTOR CHIP					
FB842	1-414-228-11	INDUCTOR CHIP		R303	1-216-797-11	METAL CHIP 10	5% 1/16W
		< IC >		R501	1-216-817-11	METAL CHIP 470	5% 1/16W
IC301	8-759-431-56	IC BA3577FS-E2		R502	1-216-827-11	METAL CHIP 3.3K	5% 1/16W
IC302	8-759-541-32	IC AK4350-VF-E1		R503	1-216-853-11	METAL CHIP 470K	5% 1/16W
IC501	8-759-538-56	IC SN761054		R505	1-216-841-11	METAL CHIP 47K	5% 1/16W
IC551	8-759-390-25	IC MPC17A55FTA					
IC552	8-759-358-40	IC TLC372CPWR		R506	1-216-864-11	METAL CHIP 0	5% 1/16W
IC601	8-759-538-55	IC uPD63731GC-9EU		R507	1-216-864-11	METAL CHIP 0	5% 1/16W
IC603	8-759-527-01	IC MN41X4400TT-10L		R508	1-216-793-11	RES,CHIP 4.7	5% 1/16W
IC801	8-759-564-20	IC RU6815MF-0004 (VERSION 3.0)		R553	1-216-833-11	METAL CHIP 10K	5% 1/16W
IC801	8-759-580-35	IC RU6815MF-0006 (VERSION 3.3)		R554	1-216-833-11	METAL CHIP 10K	5% 1/16W
IC802	8-759-449-23	IC AK93C55AV-L					
IC901	8-759-538-57	IC MPC1830ADTBEL		R555	1-216-809-11	METAL CHIP 100	5% 1/16W
		< JACK >		R556	1-216-853-11	METAL CHIP 470K	5% 1/16W
J301	1-778-179-11	JACK (♁ /REMOTE)		R601	1-216-833-11	METAL CHIP 10K	5% 1/16W
		< COIL >		R602	1-216-809-11	METAL CHIP 100	5% 1/16W
L301	1-414-754-11	INDUCTOR 10uH		R801	1-216-845-11	METAL CHIP 100K	5% 1/16W
L501	1-414-754-11	INDUCTOR 10uH					
L551	1-412-031-11	INDUCTOR CHIP 47uH		R802	1-216-845-11	METAL CHIP 100K	5% 1/16W
L552	1-412-031-11	INDUCTOR CHIP 47uH		R803	1-216-853-11	METAL CHIP 470K	5% 1/16W
L553	1-414-400-11	INDUCTOR 22uH		R804	1-216-853-11	METAL CHIP 470K	5% 1/16W
L554	1-414-400-11	INDUCTOR 22uH		R808	1-216-825-11	METAL CHIP 2.2K	5% 1/16W
L555	1-412-031-11	INDUCTOR CHIP 47uH		R810	1-216-827-11	METAL CHIP 3.3K	5% 1/16W
L556	1-414-410-21	INDUCTOR 10uH					
L601	1-414-754-11	INDUCTOR 10uH		R811	1-216-827-11	METAL CHIP 3.3K	5% 1/16W
L901	1-412-032-11	INDUCTOR CHIP 100uH		R812	1-216-841-11	METAL CHIP 47K	5% 1/16W
L902	1-416-740-11	INDUCTOR 10uH		R814	1-216-825-11	METAL CHIP 2.2K	5% 1/16W
L903	1-414-410-21	INDUCTOR 10uH		R815	1-216-829-11	METAL CHIP 4.7K	5% 1/16W
		< TRANSISTOR >		R816	1-216-831-11	METAL CHIP 6.8K	5% 1/16W
Q501	8-729-922-10	TRANSISTOR 2SA1577-QR					
Q551	8-729-904-87	TRANSISTOR 2SB1197K-R		R817	1-216-835-11	METAL CHIP 15K	5% 1/16W
Q552	8-729-929-11	TRANSISTOR DTC143ZE-TL		R818	1-216-839-11	METAL CHIP 33K	5% 1/16W
				R819	1-216-853-11	METAL CHIP 470K	5% 1/16W
				R820	1-216-845-11	METAL CHIP 100K	5% 1/16W
				R821	1-216-857-11	METAL CHIP 1M	5% 1/16W
				R841	1-216-809-11	METAL CHIP 100	5% 1/16W
				R842	1-216-809-11	METAL CHIP 100	5% 1/16W
				R901	1-216-845-11	METAL CHIP 100K	5% 1/16W
				R902	1-216-853-11	METAL CHIP 470K	5% 1/16W
				R903	1-216-863-11	RES,CHIP 3.3M	5% 1/16W
				R904	1-216-845-11	METAL CHIP 100K	5% 1/16W
				R906	1-216-827-11	METAL CHIP 3.3k	5% 1/16W
				R909	1-216-847-11	METAL CHIP 150K	5% 1/16W
				R910	1-218-871-11	RES,CHIP 10K	0.50% 1/16W
						< COMPOSITION CIRCUIT BLOCK >	
				RB551	1-233-961-11	RES, NETWORK (CHIP TYPE) 1K	
				RB552	1-233-979-11	RES, NETWORK (CHIP TYPE) 1M	
				RB801	1-233-977-11	RES, NETWORK (CHIP TYPE) 470K	

Ref. No.	Part No.	Description	Remark
		< SWITCH >	
S301	1-762-079-11	SWITCH, SLIDE (DIGITAL MEGABASS)	
S801	1-572-688-11	SWITCH, PUSH (1 KEY) (OPEN/CLOSE)	
S802	1-762-078-11	SWITCH, SLIDE (HOLD \blacktriangleright)	
S803	1-762-078-11	SWITCH, SLIDE (AVLS)	
		< VIBRATOR >	
X601	1-767-621-11	VIBRATOR, CERAMIC (16.9344MHz)	

		MISCELLANEOUS	

56	1-475-804-11	SWITCH UNIT	
103	1-666-784-13	FLEXIBLE (CLV) BOARD	
Δ 114	X-4949-164-1	OPTICAL PICK-UP BLOCK ASSY	
M901	1-698-991-11	MOTOR, DC (SPINDLE)	
M902	1-698-764-21	MOTOR, SLED (SLED)	
R1001	1-216-789-11	METAL CHIP 2.2 5% 1/16W	
*Note :			
Use R1001 only with Ver.3.0 of microprocessor (IC801).			
Using R1001 with other microprocessor versions will cause operating errors so be sure to remove it.			
You can check the version with Test Mode (page 7).			

		ACCESSORIES & PACKING MATERIALS	

	1-475-831-11	REMOTE CONTROL UNIT (EXCEPT HK,JE)	
	1-475-831-42	REMOTE CONTROL UNIT (HK,JE)	
Δ	1-528-580-21	BATTERY CHARGER (BC-7HT) (E,JE)	
	1-528-743-11	BATTERY, NICKEL HYDROGEN	
Δ	1-528-865-11	BATTERY CHARGER (BC-9HY2) (AEP)	
Δ	1-528-866-11	BATTERY CHARGER (BC-9HP2) (UK,HK)	
Δ	1-528-867-11	BATTERY CHARGER (BC-9HG2) (AUS)	
Δ	1-528-891-12	BATTERY CHARGER (BC-9HU2) (US)	
Δ	1-569-007-11	ADAPTOR, CONVERSION 2P (E,JE)	
	1-759-628-11	CASE, BATTERY	
	3-008-521-01	CASE, BATTERY CHARG	
	3-864-524-11	MANUAL, INSTRUCTION (SPANISH, CHINESE) (AEP,E, HK,JE)	
	3-864-524-21	MANUAL, INSTRUCTION (ENGLISH, FRENCH)	
	3-864-524-31	MANUAL, INSTRUCTION (GERMAN, DUTCH) (MZ-E44:AEP)	
	3-864-524-41	MANUAL, INSTRUCTION (ITALIAN, PORTGUESE) (MZ-E44:AEP)	
	3-864-524-51	MANUAL, INSTRUCTION (SWEDISH, FINNISH) (MZ-E44:AEP)	
	3-864-524-61	MANUAL, INSTRUCTION (JAPANESE, KOREAN) (JE)	
	4-212-536-01	STRAP, HAND	
	4-972-888-01	CASE, CARRYING	
	8-953-304-90	HEADPHONE MDR-E805SP//K SET (EXCEPT US)	
	8-953-278-90	HEADPHONE MDR-A34SP SET (US)	

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

Free Manuals Download Website

<http://myh66.com>

<http://usermanuals.us>

<http://www.somanuals.com>

<http://www.4manuals.cc>

<http://www.manual-lib.com>

<http://www.404manual.com>

<http://www.luxmanual.com>

<http://aubethermostatmanual.com>

Golf course search by state

<http://golfingnear.com>

Email search by domain

<http://emailbydomain.com>

Auto manuals search

<http://auto.somanuals.com>

TV manuals search

<http://tv.somanuals.com>