SHARP SERVICE MANUAL

No. S2006MDSR50H/

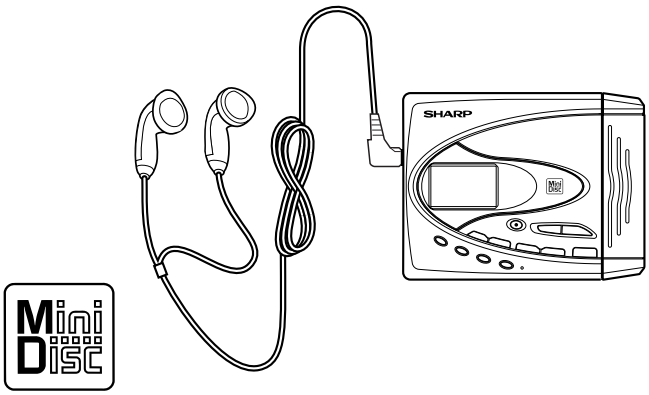


Illustration: MD-SR50H/SR50W

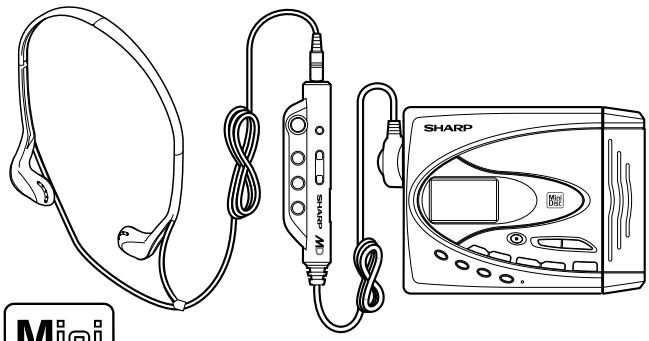


Illustration: MD-SR60E/SR60W

MD-SR50H(BL)
MD-SR50H(S)
MD-SR50H(YR)
MD-SR50W(BL)
MD-SR50W(S)
MD-SR60E(GL)
MD-SR60W(S)

- In the interests of user-safety the set should be restored to its original condition and only parts identical to those specified be used.

CONTENTS

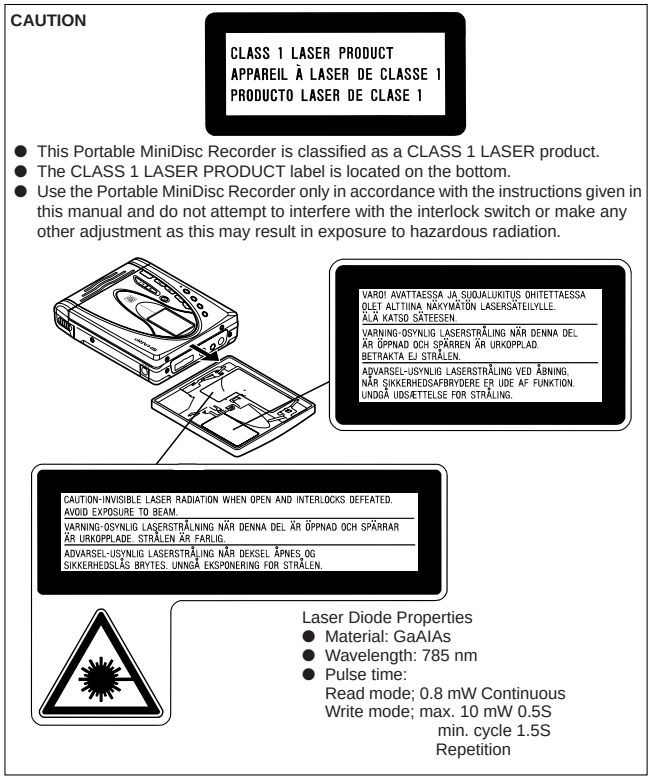
SHARP CORPORATION

SAFETY PRECAUTION FOR SERVICE MANUAL

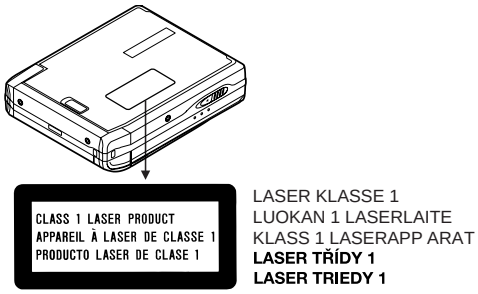
Precaution to be taken when replacing and servicing the Laser Pickup.

The AEL (Accessible Emission Level) of Laser Power Output for this model is specified to be lower than Class I Requirements. However, the following precautions must be observed during servicing to protect your eyes against exposure to the laser beam.

(1) When the cabinet has been removed, the power is turned on without a compact disc, and the Pickup is on a position outer than the lead-in position, the Laser will light for several seconds to detect a disc. Do not look into the Pickup Lens.
(2) The Laser Power Output of the Pickup inside the unit and replacement service parts have already been adjusted prior to shipping.
(3) No adjustment to the Laser Power should be attempted when replacing or servicing the Pickup.
(4) Under no circumstances look directly into the Pickup Lens at any time.
(5) CAUTION - Use of controls or adjustments, or performance of procedures other than those specified herein may result in hazardous radiation exposure.



(MD-SR50W/SR60W)



(MD-SR50H/SR60E)

(MD-SR50H)

VARO !	Avattaessa ja suojalukitus ohitettaessa olet alttiina näkymättömälle lasersäteilylle. Älä katso säteeseen.
VARNING!	Osynlig laserstralning när denna del är öppnad och spärren är urkopplad. Betrakta ej strålen.

Precaution to be taken when replacing and servicing the laser pickup.
The following precautions must be observed during servicing to protect your eyes against exposure to the laser.

Warning of possible eye damage when repairing:
If the AC adaptor or batteries are connected when the top housing (disc cover) of the unit is removed, and the PLAY key is pressed, the laser will light up during focus access (2-3 seconds). (Fig. 2-1) During the operation, the laser will leak from the opening between the magnetic head and the mechanical chassis (Fig. 2-2). In order to protect your eyes, you must not look at the laser during repair. Before repairing be sure to disconnect the AC adaptor and remove the batteries.

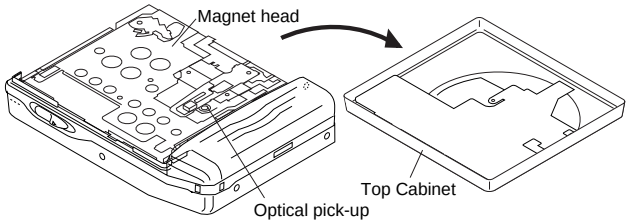


Figure 2-1

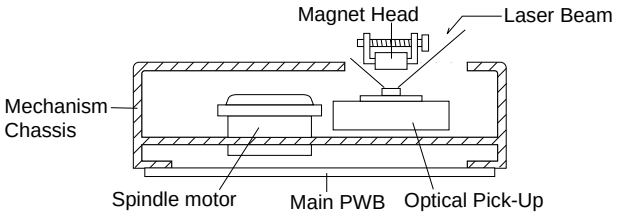


Figure 2-2

FOR A COMPLETE DESCRIPTION OF THE OPERATION OF THIS UNIT, PLEASE REFER TO THE OPERATION MANUAL.

SPECIFICATIONS

■ General

Power source: (MD-SR50H)
DC 5V : AC adaptor (AC 220-230V, 50/60 Hz)
DC 1.5V: Commercially available, "AA" (LR6) size, alkaline battery x 1
DC 1.2V: Optional rechargeable Nickel-Metal Hydride battery (AD-N70BT) x 1
DC 4.5V: Optional car adaptor, AD-CA20X (for cars with a 12-24V DC negative earth electrical system)

Power source: (MD-SR50W)
DC 5V : AC adaptor (AC 110-240V, 50/60 Hz)
DC 1.5V: Commercially available, "AA" size (LR6), alkaline battery x 1
DC 1.2V: Optional rechargeable Nickel-Metal Hydride battery (AD-N70BT) x 1
DC 4.5V: Separately available car adaptor, AD-CA20X (for cars with a 12-24V DC negative earth electrical system)

Power source: (MD-SR60E)
DC 1.2V: Rechargeable Nickel-Metal Hydride battery (AD-N70BT) x 1
DC 5V : AC adaptor (AC 230-240V, 50/60 Hz)
DC 1.5V: Commercially available, "AA" size (LR6), alkaline battery x 1
DC 4.5V: Separately available car adaptor, AD-CA20X (for cars with a 12-24V DC negative earth electrical system)

Power source: (MD-SR60W)
DC 1.2V: Rechargeable Nickel-Metal Hydride battery (AD-N70BT) x 1
DC 5V : AC adaptor (AC 220V, 50 Hz)
DC 1.5V: Commercially available, "AA" size (LR6), alkaline battery x 1
DC 4.5V: Separately available car adaptor, AD-CA20X (for cars with a 12-24V DC negative earth electrical system)

Power consumption: (MD-SR50H/60E) 7W (AC adaptor)
Power consumption: (MD-SR50W) 0.15A (AC adaptor)
Power consumption: (MD-SR60W) 6W, 0.06A (AC adaptor)
Output power: RMS; 20 mW (10 mW + 10 mW) (0.2 % T.H.D.)
Charging time: Approx. 3.5 hours (90%)
Approx. 5.5 hours (fully charged)
(When using the AC adaptor included with the unit)

Battery life:(MD-SR50H/SR50W)

When using a commercially available, high capacity, "AA" (LR6) size, alkaline battery	When using the optional rechargeable batter AD-N70BT(full charged)
Continuous recording Approx. 3 hours	Continuous recording Approx. 4.5 hours
Continuous play Approx. 7 hours	Continuous play Approx. 6.5 hours

Battery life:(MD-SR60W/SR60E)

When using a commercially available, high capacity, "AA" size (LR6), alkaline battery	When using the rechargeable batter (full charged) included with the unit
Continuous recording Approx. 3 hours	Continuous recording Approx. 4.5 hours
Continuous play Approx. 7 hours	Continuous play Approx. 6.5 hours

- The continuous recording time is for analogue input when the volume level is set to "VOL 0"
- The continuous play time shows the value when the volume level is set to "VOL 15"
- The above values are the standard values when the unit is charged and used at an ambient temperature of 20˚C (68˚F).
- The operation time when using an alkaline battery may be different, depending on the type and manufacturer of the battery and on the operating temperature.

Input sensitivity:

Recording level	Reference input level	input impedance
MIC H	0.25 mV	10 kohms
MIC L	2.5 mV	10 kohms
LINE	100 mV	20 kohms

Output level:(MD-SR50H/SR50W)

	Specified output	Maximum output level	Load impedance
Earphones	—	10 mW + 10 mW	32 ohms
LINE	250 mV (-12 dB)	—	10 kohms

Output level:(MD-SR60W/SR60E)

	Specified output	Maximum output level	Load impedance
Headphones	—	10 mW + 10 mW	16 ohms
LINE	250 mV (-12 dB)	—	10 kohms

Dimensions: Width: 99.9 mm (3-15/16")
Height: 22.9 mm (29/32")
Depth: 77.9 mm (3-3/32")
Weight: (MD-SR50H/SR50W) 168 g (0.37 lbs.) without battery
Weight: (MD-SR60W/SR60E) 191 g (0.42 lbs.) with rechargeable battery
Input socket: Line/optical digital, microphone (powered by the main unit)
Output socket: (MD-SR50H/SR50W) Earphones (impedance: 32 ohms)
Output socket: (MD-SR60W/SR60E) Headphones (impedance: 16 ohms)/ remote control unit

■ MiniDisc Recorder

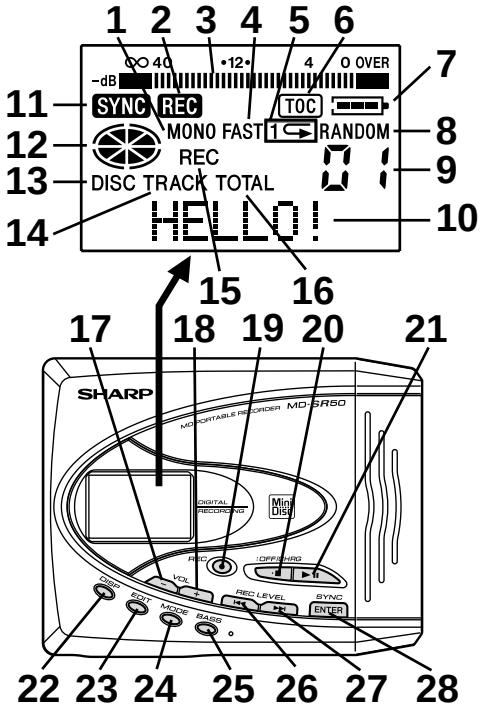
Type: Portable MiniDisc recorder
Signal readout: Non-contact, 3-beam semi-conductor laser pick-up
Audio channels: Stereo 2 channels/monaural (longplay mode) 1 channel
Frequency response: 20 - 20,000 Hz (± 3 dB)
Rotation speed: Approx. 400 - 900 rpm
Error correction: ACIRC (Advanced Cross Interleave Reed-Solomon Code)
Coding: ATRAC (Adaptive Transform Acoustic Coding), 24-bit computed type
Recording method: Magnetic modulation overwrite method
Sampling frequency: 44.1kHz (32 kHz and 48kHz signals are converted to 44.1kHz, and then recorded)
Wow and flutter: Unmeasurable (less than ±0.001% W. peek)

Specifications for this model are subject to change without prior notice

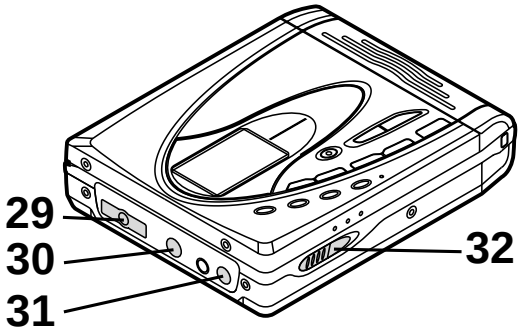
NAMES OF PARTS

■ Remote control unit

1. Monaural Long-Play Mode Indicator
2. Record Indicator
3. Level Meter
4. Fast Play Indicator
5. Repeat Indicator
6. TOC Indicator
7. Battery Indicator
8. Random Indicator
9. Track Number Indicator
10. Character/Time Information Indicator
11. Synchro Recording Indicator
12. Disc Mode Indicator
13. Disc Name Indicator
14. Track Name Indicator
15. Remaining Recording Time Indicator
16. Total Track Number Indicator

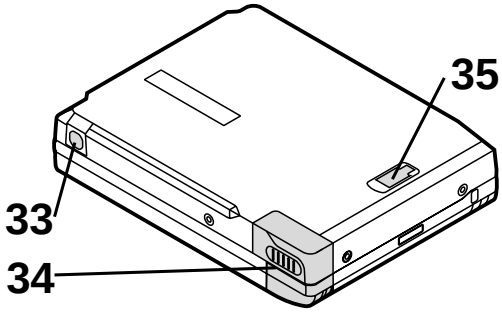


17. Volume Down/Cursor Button
18. Volume Up/Cursor Button
19. Record/Track Mark Button
20. Stop/Power Off/Charge Button
21. Play/Pause Button
22. Display/Character Select Button
23. Edit/Auto Mark/Time Mark Button
24. Mode Button
25. Bass/Delete Button
26. Fast Reverse/Recording Level Down/ Name Select Button
27. Fast Forward/Recording Level Up/ Name Select Button
28. Enter/Fast Play/Synchro Button



29. Earphones/Line Output Socket
30. Optical/Line Input Socket
31. Microphone Input Socket
32. Open Lever

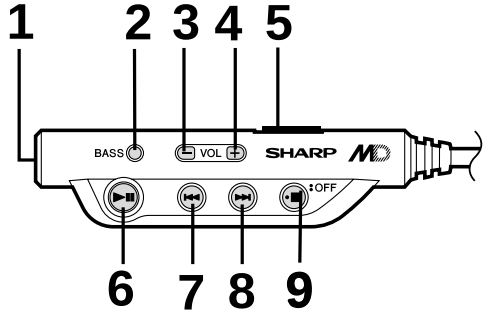
33. 5V DC Input Socket
34. Battery Cover
35. Hold Switch



■ Remote control unit

Illustration: MD-SR60E/SR60W Only

1. Headphones Socket
2. Bass/Delete/Track Mark Button
3. Volume Down/Cursor Button
4. Volume Up/Cursor Button
5. Hold Switch
6. Play/Pause Button
7. Fast Reverse/Recording Level Down/ Name Select Button
8. Fast Forward/Recording Level Up/ Name Select Button
9. Stop/Power Off Button



POWER SOURCE

You can power this unit with an AC adaptor or a commercially available alkaline battery (LR6, "AA" size).
You can also power this unit with a rechargeable battery (AD-N70BT) or car adaptor (AD-CA20X) which are available separately.

■ Rechargeable battery power

When the rechargeable battery is used for the first time or when you want to use it after a long period of disuse, be sure to charge it fully.

1 Open the battery cover.
- Slide the battery cover as far as it will go to the outside and then lift to open it. If the battery cover is lifted without being slid all the way out, it may break.

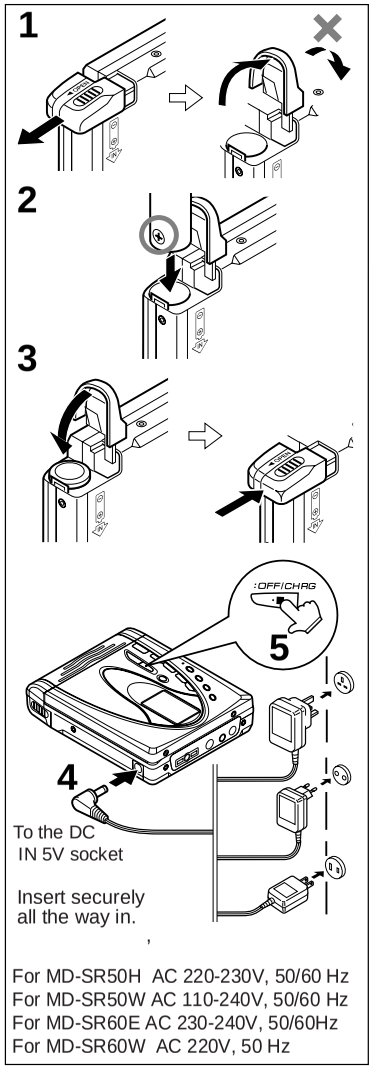
2 Insert the rechargeable battery according to the polarity marked on the bottom of the unit.

3 Close the battery cover.

4 Plug the AC adaptor into the AC socket, and then insert the plug on the AC adaptor lead into the DC IN 5V socket.

5 Press the :OFF/CHRG (• ■) button to begin charging.
- " ▭ " will appear, and the battery will begin charging.
- After about 3.5 hours have passed, " ▭ " will go out. This indicates that the battery charging is about 90% complete.
- To charge the battery fully, continue charging for about 2 more hours. (In this case, you do not need to press the :OFF/CHRG (• ■) button. Even if the :OFF/CHRG (• ■) button is pressed, " ▭ " will not appear.)

Notes:
- After charging has been completed, the AC adaptor may be left connected. (For example, when charging at night.)
- The battery will not be charged when the power to the main unit is turned on.
- Do not force the battery cover open too far.
- Do not use a rechargeable battery or an AC adaptor other than those specified.
- The charging time will vary, depending on the condition of the battery.
- When the battery is charged for the first time or is charged after not being used for a long period, the operating time may be shorter than normal.The battery life will recover with normal use i.e. charging and discharging.
- To avoid shortening the service life of the battery only recharge the battery after it has been completely discharged.



For MD-SR50H AC 220-230V, 50/60 Hz
For MD-SR50W AC 110-240V, 50/60 Hz
For MD-SR60E AC 230-240V, 50/60Hz
For MD-SR60W AC 220V, 50 Hz

RECORDING USING THE OPTICAL DIGITAL CABLE

This is the method used for recording digital signals from CDs or MDs exactly as they are stored on the original. Compared to recordings made from analogue inputs, digital recordings have extremely high-quality sound.

■ Synchro recording

1 Connect the external equipment.

2 Insert a recordable MiniDisc, and then press the REC button.

3 Put the equipment connected to this unit into the playback stand-by mode.

4 Press the ENTER/SYNC button.

5 Start the playback on the equipment connected to this unit.

■ Manual recording

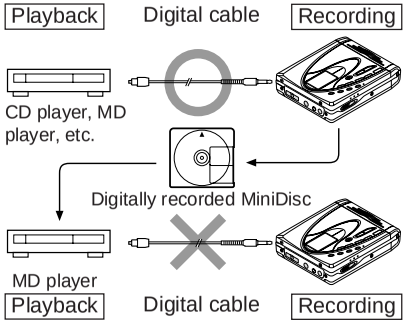
1 Place the unit in the recording stand-by mode. (Perform steps 1 - 3 in the "Synchro recording" section.)

2 Press the ▶II button, and then start playback on the equipment connected to this unit.

- When recording from digital inputs, it is not necessary to adjust the recording level.

There are cases where digital recording may be impossible.
In the following cases digital recording is impossible, even if you are using digital cables.

When you attempt to make a new digital recording from a track that was digitally recorded on a MiniDisc.
- MiniDiscs are designed so that only first generation digital copies can be made. Further digital copies are prevented by the SCMS (Serial Copy Management System).



Analogue recording is possible.

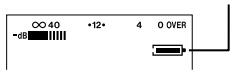
Notes:
- This unit incorporates a sampling rate converter.
  When this unit is connected to digital equipment such as CS/BS tuners or DAT tape recorders that use a different sampling frequency (32 kHz or 48 kHz), recordings can still be made. (The sampling frequency of this unit is 44.1 kHz.)
- When making a digital recording from a portable CD player (if the player has a sound skip prevention function and this function is turned on) the optical output will drop out and digital recording will not be possible. Be sure to turn the sound skip prevention function off.

CONVENIENT OPERATION OF THE UNIT

■ Checking the remaining amount of battery level

The remaining amount of battery level is shown by the battery indicator (▭) during operation.

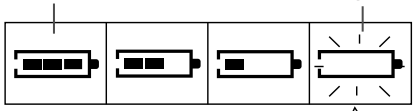
Battery indicator



< How to read the battery indicator >

When the battery level is high

When the battery level is very low



Since the battery level is very low, you cannot start recording or editing.

- When the battery is completely discharged, the battery indicator will flash. Recharge the battery or replace the alkaline battery with a new one.
- When the battery has run completely out, “BATT EMPTY” will appear. Then, the power will be disconnected automatically.

Notes:

- If you use the battery which you stopped charging halfway, “▭” may appear. It does not mean that the battery is completely charged.
- When using the unit with an alkaline battery or a rechargeable battery, the battery indicator will not correctly display the remaining capacity for approximately 10 seconds after the power has been turned on.
- When the AC adaptor included with this unit or a separately available car adaptor is used, the battery indicator will not be shown.
- The number of bars shown in the battery indicator may increase or decrease, depending on the operation being performed. This is normal.

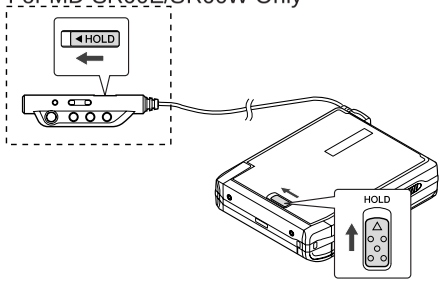
■ To prevent the unit from being operated by mistake

To avoid accidental operation of the unit, use the hold function.

Move the HOLD switch to the safety position (direction indicated by the arrow).

- When the unit is in the hold mode, pressing the buttons will have no affect.

For MD-SR60E/SR60W Only



- To cancel the hold mode, move the HOLD switch away from the safety position (the opposite direction of the arrow).

For MD-SR60E/SR60W Only

	Remote control unit	Main unit
Cannot be operated from either the remote control unit or the main unit.	Hold	Hold
Can only be operated from the main unit.	Hold	Cancel
Can only be operated from the remote control unit.	Cancel	Hold
Can be operated from either the remote control unit or the main unit.	Cancel	Cancel

If the hold function is active whilst the power is turned off, the power cannot be turned on by mistake and the battery will not be accidentally drained.

TROUBLESHOOTING

■ Moisture condensation

In the following cases, condensation may form inside the unit.

- Shortly after turning on a heater.
- When the unit is placed in a room where there is excessive steam or moisture.
- When the unit is moved from a cool place to a warm place.

When the unit has condensation inside, the disc signals cannot be read, and the unit may not function properly.

- If this happens, remove the disc. The condensation should evaporate in approximately 1 hour. The unit will then function properly.

Many potential “problems” can be resolved by the owner without calling a service technician.
If something seems to be wrong with this product, check the following before calling your authorised SHARP dealer or service centre.

PROBLEM	CAUSE
The unit does not turn on.	● Is the AC adaptor disconnected? ● Is the battery exhausted? ● Is the unit in the hold mode? ● Has condensation formed inside the unit? ● Is the unit being influenced by mechanical shock or by static electricity?
No sound is heard from the earphones.	● Is the volume set too low? ● Is the earphones plugged in? ● Are you trying to play a MiniDisc with data on it instead of a MiniDisc containing music?
When the operation buttons are pressed, the unit does not respond.	● Is the unit in the hold mode? ● Is the battery exhausted?
Some sounds are skipped.	● Is the battery exhausted? ● Is the unit being subjected to excessive vibration?
The MiniDisc cannot be ejected.	● Has the track number or character information been written on the disc yet? ● Is the unit in the recording or editing mode?
Recording and editing are impossible.	● Is the MiniDisc protected against accidental erasure? ● Is the unit connected properly to the other equipment? ● Is the AC adaptor unplugged or did a power failure occur whilst recording or editing? ● Is the unit in the hold mode? ● Is an optical signal being output from the external equipment? Read the operation manual for the external equipment.

■ If trouble occurs

When this product is subjected to strong external interference (mechanical shock, excessive static electricity, abnormal supply voltage due to lightning, etc.) or if it is operated incorrectly, it may malfunction.
If such a problem occurs, do the following:

1. Unplug the AC adaptor from the AC socket.
2. Remove the battery.
3. Leave the unit completely unpowered for approximately 30 seconds.
4. Plug the AC adaptor back into the AC socket and retry the operation.

If strange sounds, smell or smoke come out of the unit or an object is dropped into the unit, remove the AC adaptor from the AC socket immediately and contact an authorised SHARP service centre.

MINIDISC SYSTEM LIMITATIONS

MiniDiscs are recorded using a different system than is used for cassette tapes or DAT recordings. Therefore, the following conditions may be encountered, depending on how the disc has been recorded or edited. These are due to system limitations, and should be considered normal.

Even if the maximum recording time of a MiniDisc has not been reached, "DISC FULL" or "TOC FULL" may be displayed.	When the number of tracks used reaches the limit, regardless of the remaining recording time, further recording will be impossible. (Maximum number of tracks: 255) If a MiniDisc has been recorded or edited repeatedly or if a MiniDisc has scratches on it, it may not be possible to record the maximum number of tracks on it.
Even if the number of tracks and the recording time have not reached the limit, "DISC FULL" may be displayed.	If there are scratches on a disc, the unit will automatically avoid recording in those areas. The recording time will be reduced.
Even if several short tracks are erased, the remaining recording time may not show an increase.	When the remaining recording time of a disc is displayed, short tracks less than 12 seconds long may not be included in the total.
Two tracks may not be combined in editing.	For MiniDiscs on which repeated recording and editing operations were performed, the COMBINE function may not work.
The total of the recorded time and time remaining on a disc may not add up to the maximum possible recording time.	A cluster (about 2 seconds) is normally the minimum unit of recording. So, even if a track is less than 2 seconds long, it will use about 2 seconds of space on the disc. Therefore, the time actually available for recording may be less than the remaining time displayed. If there are scratches on discs, those sections will be automatically avoided (no recording will be placed in those sections). Therefore, the recording time will be reduced.
When recorded tracks are played back using the cue and review operations, some sounds may be skipped.	For MiniDiscs on which repeated recording and editing were performed, some sounds may be skipped whilst cueing and reviewing.
A track number can be created in the middle of a track.	If there are scratches or dust on a MiniDisc, the track numbers following that track will be increased by one.

ERROR MESSAGES

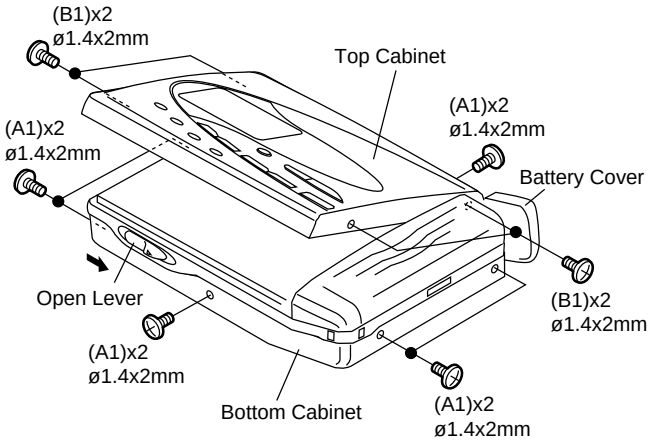
Error messages	Meaning	Remedy
BATT EMPTY	● The battery is run down.	● Charge the rechargeable battery or replace the alkaline battery (or use the AC adaptor for power).
BLANK MD	● Nothing is recorded.	● Replace the disc with a recorded disc.
Can't COPY	● No copy can be made because of the SCMS copyright system.	● Record using the analogue cable.
Can't EDIT	● A track cannot be edited.	● Change the stop position of the track and then try editing it.
Can't READ*	● The disc data cannot be read because the disc is damaged.	● Reload the disc or replace it. ● Replace it with another recorded disc.
Can't REC	● Recording cannot be performed correctly due to vibration or shock in the unit.	● Re-record or replace it with another recordable disc.
Can't STAMP	● Editing is impossible.	● Check the number of tracks.
Can't WRITE	● Cannot save the TOC information correctly to a MiniDisc.(A large portion of the disc has been damaged.)	● Replace the disc with another recordable disc.
DEFECT	● The disc is scratched.	● If the sound you hear is not right, try recording again. ● Replace the disc with another recordable disc.
DISC FULL	● The disc is out of recording space.	● Replace it with another recordable disc.
Er-MD**	● You have come to the conclusion that the unit is out of order.	● To have it repaired, go to the distributor where you purchased the unit.
HOLD	● The unit is in the hold mode.	● Return the HOLD switch to its original position.
LOCKED	● The OPEN lever was moved during recording or editing.	● Turn off the power and remove the MiniDisc.
NO DISC	● A disc has not been loaded.	● Load a disc.
NO SIGNAL	● Poor connection of the digital cable. ● No output signal comes out from the external unit to playback.	● Connect the digital cable securely. ● If the portable CD player has a function to prevent sound skips,deactivate it. ● Playback with the connected unit.
PLAY MD	● You tried to record on a playback-only disc.	● Replace it with a recordable disc.

*: Number or Symbol.

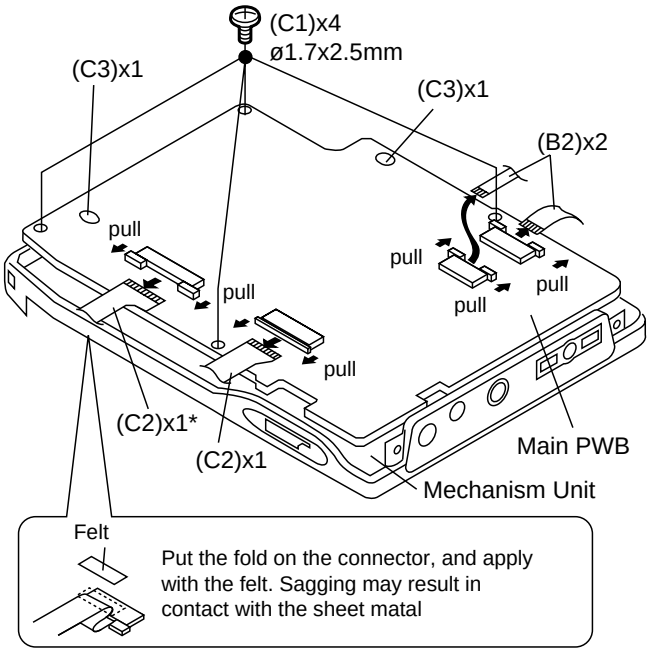
DISASSEMBLY

Cares before disassembling
When assembling the machine after disassembling or repair, observe the following requirements so as to ensure safety and performance.
1. Remove the batteries from the machine, and take out the mini-disc.
2. When assembling after repair, be sure to restore the initial location of wires.
   Since the screws are small, incorrect fixing may result in malfunction.
3. When repairing, pay utmost attention to static electricity of IC.

STEP	REMOVAL	PROCEDURE	FIGURE
1	Bottom Cabinet	1. Screw ..... (A1) x6	8-1
2	Top Cabinet	1. Open the Top cabinet. 2. Open the Battery Cover. 3. Screw ..... (B1) x4 4. Flexible PWB ..... (B2) x2	8-1 8-2
3	Main PWB	1. Screw ..... (C1) x4 2. Flexible PWB ..... (C2) x2 3.Solder joint ..... (C3) x2	8-2
4	Mechanism Unit	1. Raise the rear part, and remove in the arrow direction.	8-3



Figu re 8-1



Caution:
Carefully handle the main PWB and flexible PWB. After removing the flexible PWB (1*) for the optical pickup from the connector, do not touch directly the front end of flexible PWB with your hand so as to prevent damage of optical pickup by static electricity.

Figure 8-2

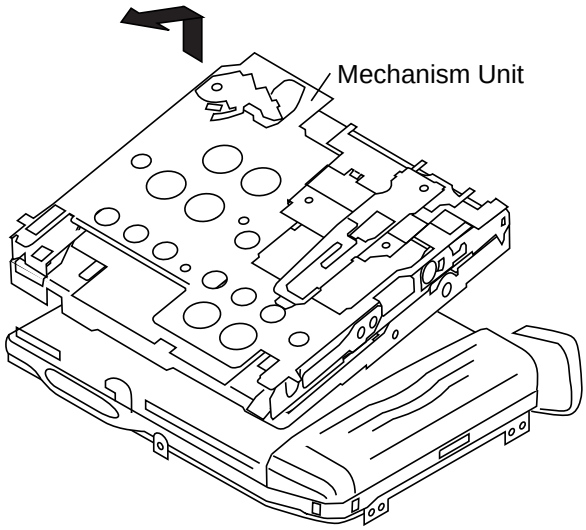


Figure 8-3

REMOVING AND REINSTALLING THE MAIN PARTS

Remove the mechanism according to the disassembling methods 1 to 4. (See Page 8.)

How to remove the spindle motor (See Fig. 9-1.)

1. Remove the solder joint (A1) x 1 of flexible PWB.
2. Remove the screws (A2) x 3 pcs., and remove the spindle motor.

How to remove the Lift motor (See Fig. 9-2.)

1. Remove the solder joints (B1) x 2 of head up/down motor lead wire.
2. Remove the screw (B2) x 1 pc., and remove the flexible PWB.
3. Remove the screw (B3) x 1 pc., and remove the head up/down motor.

Note:
Take care so that the motor gear is not damaged.
(If the gear is damaged, noise is caused.)

How to remove the sled motor (See Fig. 9-3.)

1. Remove the stop washer (C1) x 1 pc., and remove the drive gear (C2) x 1 pc.
2. Remove the screws (C3) x 2 pcs., and remove the sled motor.
3. Remove the solder joints (C4) x 2 of flexible PWB.

Note:
Take care so that the motor gear is not damaged.
(If the gear is damaged, noise is caused.)

How to remove the magnetic head (See Fig. 9-4.)

1. Remove the screws (D1) x4 which connects the magnetic head to the head relay flexible PWB, remove the spring washers (D2) x 2 and remove the soldering joints (D3) x 2.

Note:
Mount carefully so as not to damage the magnetic head.
(If the gear is damaged, noise is caused.)

How to reinstall the optical pickup unit (See Fig. 9-5.)

1. Remove the screw (E1) x 1 pc.
2. Slowly raise the optical pickup.

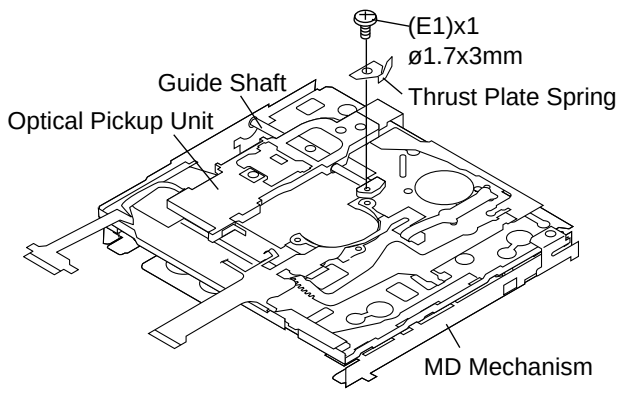


Figure 9-5

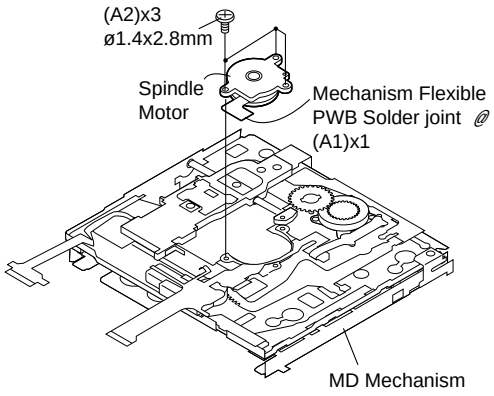


Figure 9-1

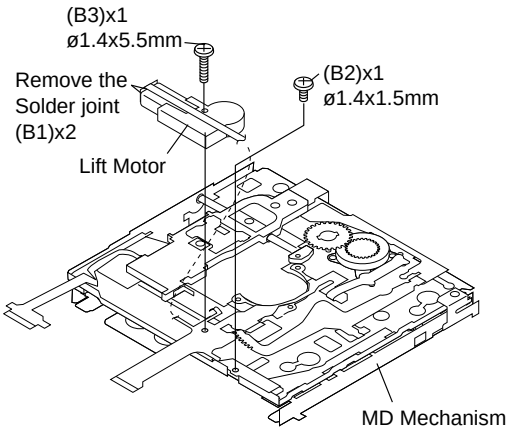


Figure 9-2

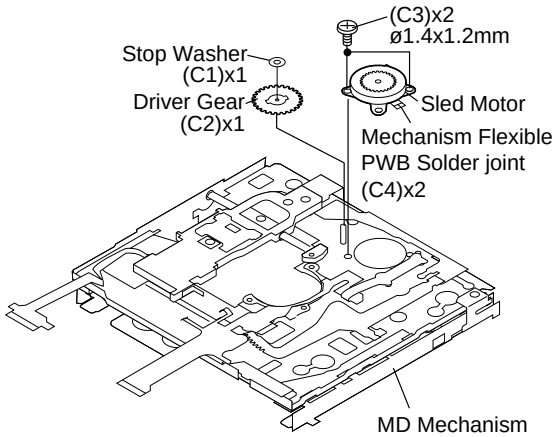


Figure 9-3

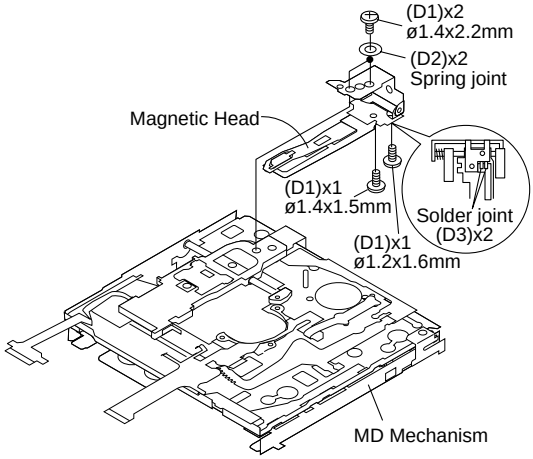


Figure 9-4

ADJUSTMENT

● Test disc

MD adjustment needs two types of disc, namely recording disc (low reflection disc) and playback-only disc (high reflection disc).

	Type	Test disc	Parts No.
1	High reflection disc	MMD-110 (TEAC Test MD)	88GMMD-110
2	Low reflection disc	MMD-212 (TEAC Test MD) 74-minute disc	88GMMD-212
3	Low reflection disc	MMD-213A (TEAC Test MD) 80-minute disc	88GMMD-213A
4	Low reflection disc	Recording minidisc	UDSKM0001AFZZ

Note: Use the low reflection disc on which music has been recorded.

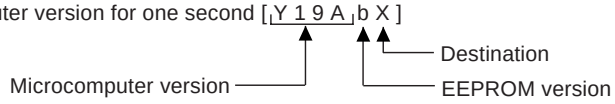
● Entering the TEST mode

1. Setting at port (power nonconnected state)

(1) Set the port as follows.
TEST1 : "Low" (TP416)
TEST0 : "High"
(2) Turn the Power ON.
(3) Test Mode START [T E S T _]

2. Setting by special button operation (in standby state)

(1) Holding down the DISP button and ENTER button, press the PLAY button.
(2) Normal mode setting initialization (BASS setting, VOL setting, etc.)
*Since the unit is changed to the setting for production line inspection , be sure to set it to the default setting state in the following default setting procedure before returning it to the user.
(3) Indication of microcomputer version for one second [Y 1 9 A b X]



(4) Whole LCD lighting for 2 seconds
(5) Test Mode START [T E S T _]
*When the PLAY button is pressed during indication (3) and (4), the process proceeds to (5).

● Leaving the TEST mode

(1) Press the STOP button in the TEST mode stop state.

● Shipping setting method

Holding down simultaneously the VOLUME-DOWN Button and PLAY Button of the set unit without disc, supply the power from the DC IN plug. After the indication "INIT" -> "BYE OK" disappears, release the power supply of DC IN.

● Test Mode

1. AUTO 1 Mode	• Perform preliminary automatic adjustment. • If the combination of mechanism and pickup PWB has been changed, be sure to start from AUTO1.
2. AUTO 2 Mode	• Perform ATT (attenuator) automatic adjustment. • Perform continuous playback (error rate display, jump test)
3. TEST-PLAY Mode	• Continuous playback from the specified address is performed. • 1 line, 10 lines or 384 lines manual jump is performed. • C1 error rate display (pit section), ADIP error rate display (groove section) • The temperature correction is performed only when servo start is performed, but the posture correction is not performed during continuous playback.
4. TEST-REC Mode	• Continuous record from the specified address is performed. • Change of record laser output(servo gain is also changed according to laser output). • The temperature correction is performed only when servo start is performed, but the posture correction is not performed during continuous recording.
5. MANUAL 1 Mode	• Temperature is displayed. (Updating in real time) • Seeing the displayed adjustment value, perform preliminary manual adjustment. (Error rate indication, jump test)
6. MANUAL 2 Mode	• Temperature is displayed. (Updating in real time) • Seeing the displayed adjustment value perform manfully the preliminary adjustment. (Error rate indication, jump test) • Continuous playback is performed (error rate display, jump test).
7. RESULT 1 Mode	• The value adjusted in AUTO1 or MANUAL1 is indicated. • (Execution in servo "OFF" state").
8. RESULT 2 Mode	• The value adjusted in AUTO 2 or MANUAL 2 is indicated. • Adjustment value is changed manually. (error rate display, jump test).
9. DIGITAL INPUT Mode	• Digital input information is displayed.
10. ERROR INFORMATION Mode	• Error information is displayed. • Error information is initialized
11. NORMAL Mode	• The mode is changed from the TEST mode to the normal mode without adjustment. • In the normal mode the internal operation mode, memory capacity, etc. areindicated. • In the normal mode both temperature correction and posture correction are perfomed.
12. EEPROM Mode	• Factors of digital servo are changed manually. (Each servo is turned on individually.) • Cut-off frequency of BASS1, BASS2 and BASS3 is selected manually. • Temperature detection terminal voltage is measured, and the reference value is set. • Defaults are selected and set. • Setting of EEPROM protect area is updated. (In case of protect releasing)
13. INNER Mode	• Determine the position where the INNER switch is turned on. (only high reflection disc). • The temperature correction is performed only when servo start is performed, but the posture correction is not performed.

● Operation in each TEST mode

1. AUTO1 Mode

- When the STOP button is pressed while the AUTO1 menu appears or during automatic adjustment, the mode changes to the TEST mode stop state. At this time the adjustment value is not output.
- Be sure to adjust, using the specified disc MMD-213A or MMD-212.
  At this time release the EEPROM (IC402) protection. (Refer to EEPROM write procedure.)
- Adjustment NG; Adjustment item out of range, focus ON failure, and adjustment error
- When the PLAY button is pressed while ADJ. OK is displayed, AUTO2 is executed.

2. AUTO2 Mode

- When the STOP button is pressed while the AUTO2 menu appears or during automatic adjustment, the mode changes to the TEST mode stop state. At this time the adjustment value is not output.
- Adjustment NG; Adjustment item out of range, and adjustment error.
- When the PLAY button is pressed while ADJ. OK is displayed,TEST_PLAY is executed.

3. TEST-PLAY Mode

- When the STOP button is pressed while the TEST-PLAY menu appears, or in TEST-PLAY or continuous playback mode, the mode changes to the TEST mode stop state.
- When the PLAY button is pressed while the TEST-PLAY menu appears,continuous playback is initiated from the current pickup position.
- Whenever the DISP button is pressed in the TEST-PLAY menu, the target address changes as follows.
  0032 — 03C0 — 0700 — 08A0 — 0950— 0032 —
  When the PLAY button is pressed while a target address is displayed, continuous playback is performed after searching that address.
- Each time the MODE button is pressed while the TEST-PLAY mode target address is displayed, the digit which is changed by pressing the SKIP UP/DOWN button is changed as follows.
  0032 — 0032 — 0032 — 0032 —
- When the SKIP UP button is pressed in the TEST-PLAY mode target address is displayed, the digit of address specified by the MODE button is set to +1h. (0 to F)
- When the SKIP DOWN button is pressed in the TEST-PLAY mode target address is displayed, the digit of address specified by the MODE button is set to -1h. (0 to F)
  * When the SKIP UP/DOWN button is held down, the setting changes continuously, one cycle being 100 ms.
- When the BASS button is pressed in the continuous playback mode, the number of jump lines changes as follows.
  1 — 10 — 384 — 1
  * After the number of jump lines is indicated for one second, the address indication is restored. [▲▲▲T R _]
- When the SKIP UP button is pressed in the continuous playback mode, the specified number of lines is jumped in the FWD direction.
- When the SKIP DOWN button is pressed in the continuous playback mode, the specified number of lines is jumped in the REV direction.
  * When the SKIP UP/DOWN button is held down, jump is repeated every approx. 100 ms.
- Whenever the DISP button is pressed in the continuous playback mode, the indication changes as follows.

  * Pre-mastered disc

  Continuous playback (SUBQ address indication) [S Q □□□□]
  |
  Continuous playback (C1 error indication) [C E ☆☆☆☆]
  |
  Continuous playback (SUBQ address indication) [S Q □□□□]

  * Recordabl disk

  Continuous playback (ADIP address indication) [A P □□□□]
  |
  Continuous playback (C1 error indication) [C E ☆☆☆☆]
  |
  Continuous playback (ADIP error indication) [A E★★★★]
  |
  Continuous playback (ADIP address indication) [A P □□□□]

4. TEST-REC Mode

- When the STOP button is pressed while the TEST-REC menu appears, or in the TEST-REC mode or continuous record mode, the mode changes to the TEST mode stop state.
- When the PLAY button is pressed while the TEST-REC menu appears, the continuous record is initiated from the current pickup position.
- Whenever the DISP button is pressed in the TEST-REC menu, the target address changes as follows.
  0032 — 03C0 — 0700 — 08A0 —0950 — 0032 —

When the PLAY button is pressed while a target address is displayed, continuous playback is performed after searching that address.

- Whenever the MODE button is pressed in the TEST-REC mode target address is displayed, the digit which is changed by the SKIP UP/DOWN button changes as follows.
  0032 — 0032 — 0032 — 0320 —
- When the SKIP UP button s pressed in the TEST-REC mode target address is displayed, the digit of address specified by the BASS button is set to +1h.(0 to F)
- When the SKIP DOWN button is pressed in the TEST-REC mode target address is displayed, the digit of address specified by the BASS button is set to -1h. (0 to F)
  * When the SKIP UP/DOWN button is held down, the setting changes continuously, one cycle being 100 ms.

5. NORMAL Mode

• When the STOP button is pressed while the NORMAL menu appears, the mode changes to the TEST mode stop state.
• Indication during operation
Indication of memory capacity on main unit LCD [□□ _ ✳✳✳✳ _ ✳✳] + Level meter
□□ : Internal mode
✳✳✳✳ : Address (Cluster section)
✳✳ : Address (Sector section)
• Selection of sound volume, BASS, etc. is possible (without indication)
• Recording is also possible.
• If the STOP button is pressed during operation in the NORMAL mode, the NORMAL mode is canceled, and the power is turned off.

6. Error data display Mode

• Reversing when SKIP DOWN button is pressed
• When the STOP button is pressed while the error data indication menu appears or during error data indication, the mode changes to the TEST mode stop state.
• Error data 0 is the latest error.
• Error which occurred in the TEST mode is also stored in the memory.
• When the DISP button is pressed while the error data indication menu appears, the error data is initialized. [C L E A R _]
• ◇◇: Error Code

● Explanation of error history code

12h : RF side FG, TG, and TCRS adjustment termination failure
13h : Adjustment servo retraction excessive retrial
16h : C. IN detection time-over
17h : A, B, E, F, and TCRSO offset measurement value out of tolerable range
21h : Focus retraction completion allowable time-over
23h : Track search completion allowable time-over
24h : Disc linear speed measurement failure
32h : P-TOC read failure
42h : U-TOC read failure
44h : U-TOC write data write disabled/read check error
52h : SD write data write disabled
71h : Pickup position initialization time-over
72h : EEPROM data read check sum error
73h : Record head drive disabled (by EJECT lever)
82h : Power overvoltage detection
91h : Ambient temperature is higher that the allowable temperature.

7. INNER Mode

• when the STOP button is pressed on the INNER menu (SQ□□□□), the state is changed to the TEST mode STOP state.
• □□□□ : Address

EEPROM (IC402) writing procedure

1. Procedure to replace EEPROM and write initial value of microcomputer in EEPROM

(1) Replace EEPROM.
(2) Refer to the latest EEPROM data list.
(3) Press the Display button, ENTER button and Play button to start the test mode.
(4) Version display

[V e r . ✳ ✳ ✳ ✳ ✳ x]

EEPROM version (b ~ Z)
Microcomputer ROM version

(5) The whole LCD lights.
(6) Test mode stop state.
[T E S T]
(7) Press the "BASS" button, and press twice the "SKIP DOWN" button.
[E E P R O M]
(8) Perform the operation to display "EEPROM SETTING MODE CHART", compare the EEPROM DATA LIST with the display, and set according to the EEPROM DATA LIST with the VOL UP or VOL DOWN key.
(9) Set the temperature reference. (Refer to the Temperature Reference Setting Method.)
(10) Set according to the EEPROM DATA LIST.
(11) Press the Stop button.
[T E S T]
(12) Press the Stop button.
(13) After data is written in EEPROM, turn off power .
(14) Restore protection of EEPROM.

2. Temperature reference setting method

[1] Measurement, calculation and setting procedure

(1) Set the TEST mode.
• Set TEST 1, 0 = '01', and turn on power (or set PLAY ON in standby state).
(2) Start the EEPROM mode 'Temp' menu.
• Key operation in order of BASS, SKIP-DOWN x 2 times, PLAY, PLAY in the test mode STOP state.
• 'TM$$%%' is displayed. ($$= Temperature code, %% = Temperature reference)
(3) Once press SKIP-UP, and determine the displayed microcomputer TEMP input AD value.
• 'TPin##' is displayed. (## = TEMP input AD value)
(4) At the ambient temperature, determine the temperature corrected value from the temperature measurement value correction table.
(5) Determine the temperature reference, using the following formula.
• Temperature reference = Microcomputer TEMP input AD value + Temperature corrected value
(6) Set the temperature reference value by button operation , and check whether the temperature code indication corresponds to "Temperature Code Identification Table".

[2] Temperature measurement value correction table

Ambient temperature	Temperature correction	Center temperature
+ 9°C ~ +11°C	- 05h	+ 10.0°C
+12°C ~ +14°C	- 04h	+ 12.7°C
+15°C ~ +16°C	- 03h	+ 15.4°C
+17°C ~ +19°C	- 02h	+ 18.2°C
+20°C ~ +22°C	- 01h	+ 20.9°C
+23°C ~ +24°C	± 00h	+ 23.6°C
+25°C ~ +27°C	+ 01h	+ 26.3°C
+28°C ~ +30°C	+ 02h	+ 29.0°C
+31°C ~ +33°C	+ 03h	+ 31.8°C

Ambient temperature	Temperature correction	Center temperature
- 9°C ~ +10°C	08h	+ 0.5°C
+ 3°C ~ +21°C	07h	+ 12.5°C
+15°C ~ +33°C	06h	+ 23.6°C
+26°C ~ +43°C	05h	+ 35.0°C

● EEPROM DATA LIST (EEPROM version b)

TEMP setting

Item display		Set values
T M _ _	○ ○	Calculate values

Fucus setting

Item display		Set values
F G _ _	○ ○	B0H
F F 1 _	○ ○	70H
F F 2 _	○ ○	E8H
F Z H _	○ ○	EDH
F L n _	○ ○	0AH
D J G _	○ ○	14H
F L V _	○ ○	20H
W T f _	○ ○	20H
F S S _	○ ○	E9H

Tracking setting

Item display		Set values
T G _ _	○ ○	48H
T F 1 _	○ ○	70H
T F 2 _	○ ○	E0H
T F S _	○ ○	00H
T B o _	○ ○	44H
T B t _	○ ○	20H
T K o _	○ ○	44H
T K t _	○ ○	1DH
T D o _	○ ○	67H
T D t _	○ ○	34H
T G R _	○ ○	00H
S C t _	○ ○	40H
S C m _	○ ○	53H
C L p _	○ ○	18H
C L r _	○ ○	28H
J P I _	○ ○	01H
K 1 0 _	○ ○	65H

Spindle setting

Item display		Set values
S P G _	○ ○	14H
S P i _	○ ○	E0H
S P m _	○ ○	A0H
S P o _	○ ○	68H
S P 1 _	○ ○	10H
S P 2 _	○ ○	60H
S P 3 _	○ ○	F2H
S P 4 _	○ ○	F2H
S P 5 _	○ ○	10H
S P D _	○ ○	60H
S P K _	○ ○	EBH

BASS setting

Item display		Set values
B S 1 _	○ ○	3FH
B S 2 _	○ ○	1FH
B S 3 _	○ ○	E2H

Sled setting

Item display		Set values
S L G _	○ ○	DFH
S L 2 _	○ ○	20H
S L M _	○ ○	7FH
S L V _	○ ○	ABH
S K k _	○ ○	72H
S K t _	○ ○	4CH
S K m _	○ ○	70H
W T m _	○ ○	24H
M V 1 _	○ ○	44H
M V 2 _	○ ○	88H
S R V _	○ ○	00H

ADJ. SET setting

Item display		Set values
C O K _	○ ○	A0H
F A T _	○ ○	C0H
T A T _	○ ○	3EH
C A T _	○ ○	20H
F A B _	○ ○	64H

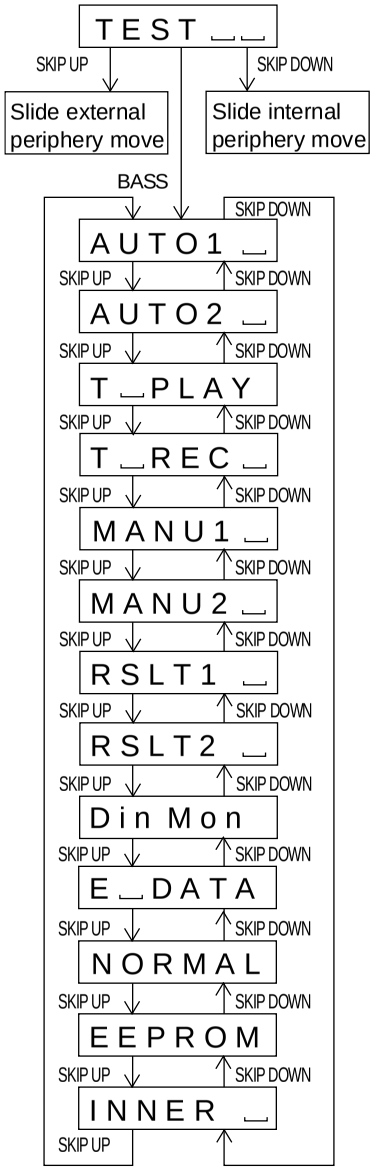
EQ. SET setting

Item display		Set values
H Q 1 _	○ ○	90H
H Q 2 _	○ ○	90H
H S G _	○ ○	11H
H S O _	○ ○	FDH
L Q 1 _	○ ○	90H
L Q 2 _	○ ○	90H
L S G _	○ ○	11H
L S O _	○ ○	00H
G Q 1 _	○ ○	98H
G Q 2 _	○ ○	84H
G S G _	○ ○	11H
F L p _	○ ○	08H

Control setting

Item display		Set values
C T 0 _	○ ○	01H
C T 1 _	○ ○	11H
C T 2 _	○ ○	40H
C T 3 _	○ ○	30H
R C 0 _	○ ○	C0H
R C 1 _	○ ○	FEH
S Y C _	○ ○	A6H
P W L _	○ ○	01H
D R 1 _	○ ○	00H
D R 2 _	○ ○	00H
I N 1 _	○ ○	C9H
I N 2 _	○ ○	64H
I N 3 _	○ ○	99H
I N H _	○ ○	64H
D R H _	○ ○	0CH
P L E _	○ ○	1BH
R C E _	○ ○	42H
E L T _	○ ○	76H
S L T _	○ ○	45H
S P M _	○ ○	00H
M S L _	○ ○	00H
U S 0 _	○ ○	00H
U S 1 _	○ ○	00H
U S 2 _	○ ○	00H

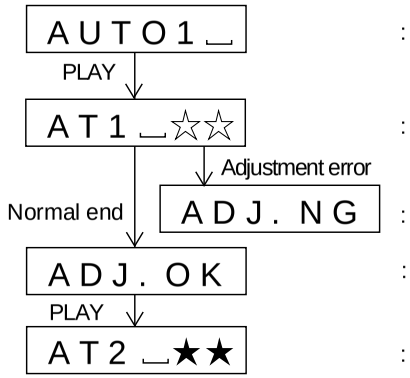
Test Mode Change Chart
Tset Mode Menu



: Test Mode STOP
: Pre-auto adjustment menu
: ATT auto adjustment menu
: Pre-manual adjustment menu
: ATT manual adjustment menu
: Pre-adjustment value check menu
: ATT adjustment value check menu
: Continuous playback menu
: Continuous record menu
: Test mode normal playback menu
: Digital input signal monitor menu
: Error history display menu
: EEPROM setting menu
: INNER switch position measurement menu

* When the [STOP] button is pressed in specific menu, the "TEST MODE STOP" state is set.
* When the [PLAY] button operation is performed in the specific menu, the operation of this menu is executed.

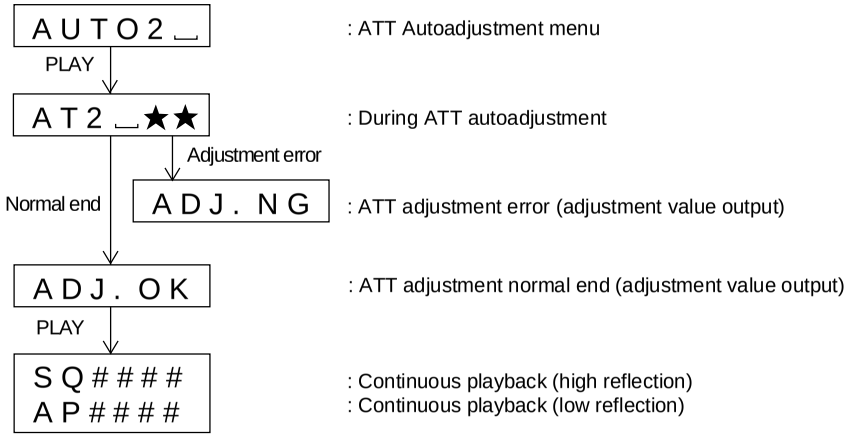
Preautomatic Adjustment



: Preautomatic Adjustment menu
: During preadjustment adjustment
: Preadjustment error (adjustment value output)
: Preadjustment normal end (adjustment value output)
: During ATT automatic adjustment

* When the [STOP] button is pressed in specific menu, the "TEST MODE STOP" state is set.
* "☆☆" represent the adjustment number as follows.
  - 0 0 : Innermost periphery move
  - 0 2 : ABEF offset tentative measurement
  - 0 4 : RF side focus gain coarse adjustment
  - 0 5 : Focus ATT tentative setting
  - 0 6 : RF side bit section tracking gain adjustment
  - 0 7 : COUT level setting for pit section adjustment
  - 0 8 : External periphery move
  - 0 9 : RF side groove section tracking gain adjustment
  - 1 0 : COUT level setting for groove section adjustment
  - 1 1 : RF side TCRS gain adjustment
  - 1 2 : Tracking ATT initial setting
  - 1 3 : RF side focus gain minor adjustment
  - 1 4 : Focus ATT initial setting
  - 1 5 : S gain "High" ABEF offset measurement
  - 1 6 : TCRS offset measurement
  - 1 7 : S gain "Low" ABEF offset measurement

ATT Auto Adjustment

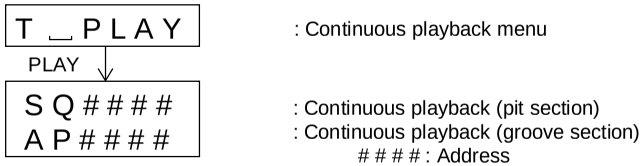


* When the [STOP] button is pressed in specific menu, the "TEST MODE STOP" state is set.
* "★★" represent the adjustment number as follows.

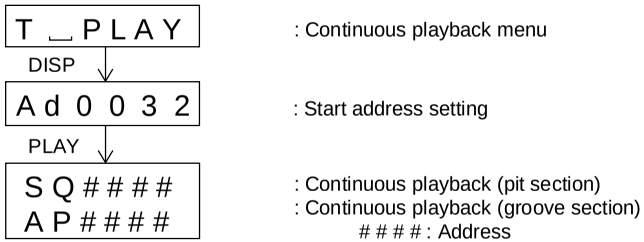
0 0 : Innermost periphery move		
0 3 : Pit section tracking ATT setting		
0 4 : Pit section focus ATT setting		
0 6 : External periphery move		(low reflection only)
0 7 : TCRS ATT setting		(low reflection only)
0 8 : Groove section tracking ATT setting		(low reflection only)
0 9 : Groove section focus ATT setting		(low reflection only)

Continuous Playback

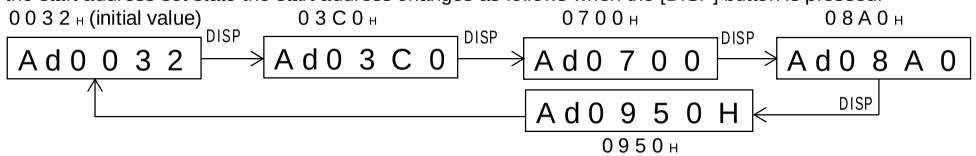
• Continuous playback from current pickup position



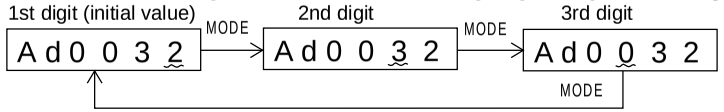
• Continuous playback from any address



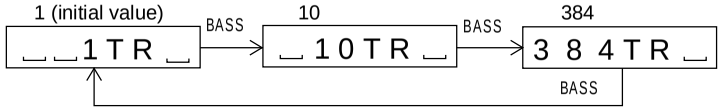
* When the [STOP] button is pressed in specific menu, the "TEST MODE STOP" state is set.
* In the start address set state the start address changes as follows when the [DISP] button is pressed.



* In the start address setting state the start address change digit changes when the [BASS] button is pressed.



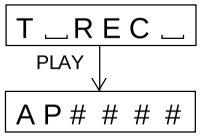
* In the start address set state the value of selection digit changes in the range of "0h to Fh" when the [SKIP UP/DOWN] button is pressed
* In the continuous playback state the number of jump lines changes as follows shown the [BASS] button is pressed.



* When the [SKIP UP] button is pressed in the continued playback mode, jump of specified number of lines occurs in the external periphery direction.
  If the key is held down jump occurs continuously (100 ms cycle).
* When the [SKIP DOWN] button is pressed in the continuous playback mode, jump of specified number of lines occurs in the internal periphery direction.
  If the key is held down, jump occurs continuously (100 ms cycle).

Continuous Rrecord

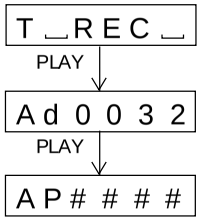
• Continuous record from the current pickup position



: Continuous record menu

: Continuous record
: Address

• Continuous record playback from any address

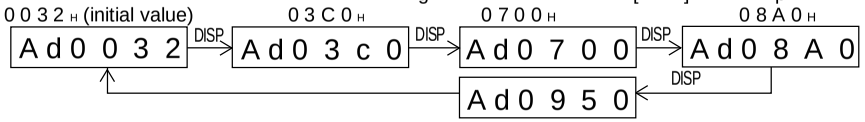


: Continuous record menu

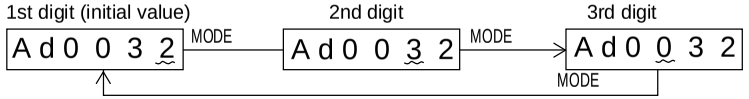
: Start address setting

: Continuous record
: Address

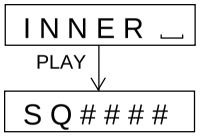
* When the [STOP] button is pressed in specific menu, the "TEST MODE STOP" state is set.
* In the start address set state the start address changes as follows when the [DISP] button is pressed.



* In the start address setting state the start address change digit changes when the [BASS] button is pressed.



Inner Switch Position Measurement

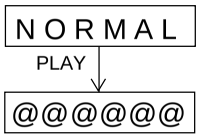


: INNER switch position measurement menu

: Continuous playback (pit section)
: Address

* When the [STOP] button is pressed in specific menu, the "TEST MODE STOP" state is set.

Test Mode Normal Playback



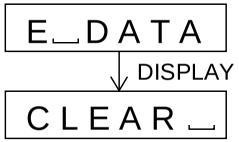
: TEST mode normal playback menu

: Continuous playback
@@@@@@: Mode and address display

* When the [STOP] button is pressed in specific menu, the "TEST MODE STOP" state is set.
* When the NORMAL mode is canceled, the power is turned off.

Error History Display

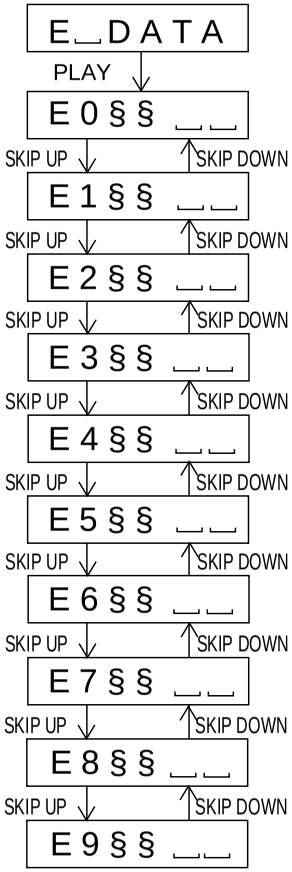
• Error history clear



: Error history display menu

: Error history clear

• Error history display



: Error history display menu

: Error history 0 display
§ § : Error code

: Error history 1 display
§ § : Error code

: Error history 2 display
§ § : Error code

: Error history 3 display
§ § : Error code

: Error history 4 display
§ § : Error code

: Error history 5 display
§ § : Error code

: Error history 6 display
§ § : Error code

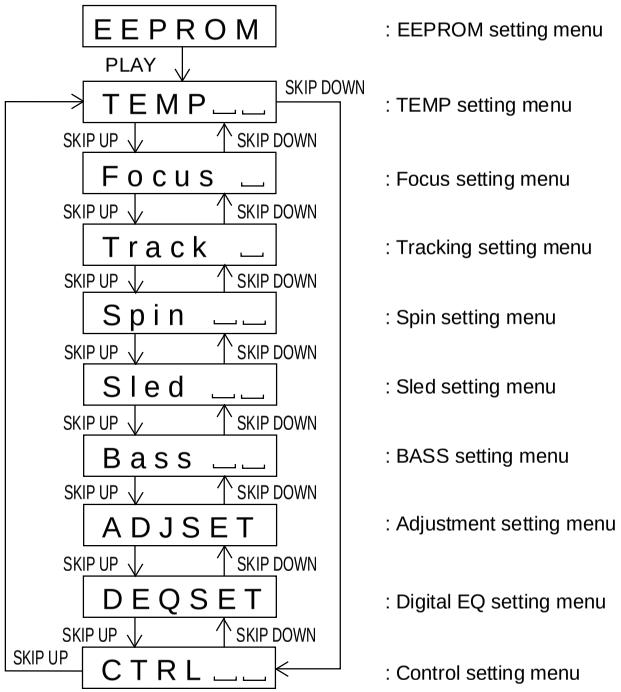
: Error history 7 display
§ § : Error code

: Error history 8 display
§ § : Error code

: Error history 9 display
§ § : Error code

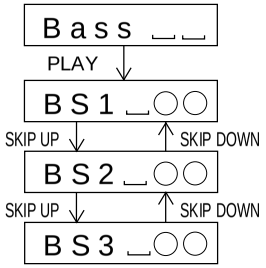
* When the [STOP] button is pressed in specific menu, the "TEST MODE STOP" state is set.

EEPROM Setting



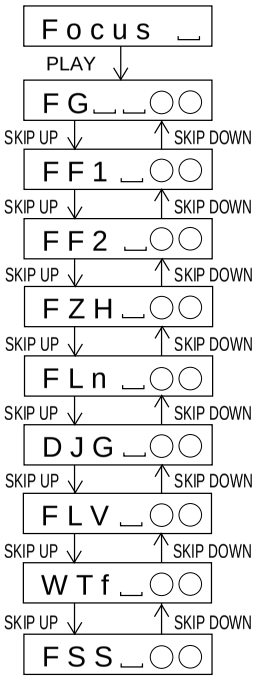
* When the [STOP] button is pressed in specific menu, the "TEST MODE STOP" state is set.
* When the [PLAY] button operation is performed in the specific state, the specific setting menu is set.

BASS Setting



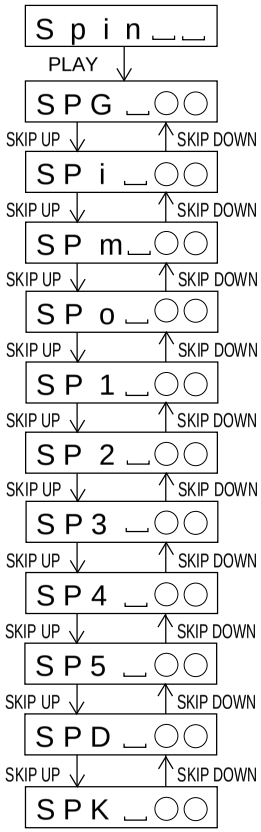
* When the [STOP] button is pressed in specific menu, the "TEST MODE STOP" state is set.
* When the [DISP] button operation is performed in the specific state, the menu changes to "TEMP SETTING menu".
* In the specific state the setting changes in the range of "00h to FFh" when the [VOL UP/DOWN] button is pressed. (The upper limit varies depending on the items)
* When the [MODE] button is pressed in each state, the set digit is changed.

Focus Setting



* When the [STOP] button is pressed in specific menu, the "TEST MODE STOP" state is set.
* When the [DISP] button operation is performed in the specific state, the menu changes to "TEMP SETTING menu".
* In specific state the setting changed in the range of "00h to FFh" when the [VOL UP/DOWN] button is pressed. (The upper limit varies depending on the items)
* When the [MODE] button is pressed in each state, the set digit is changed.

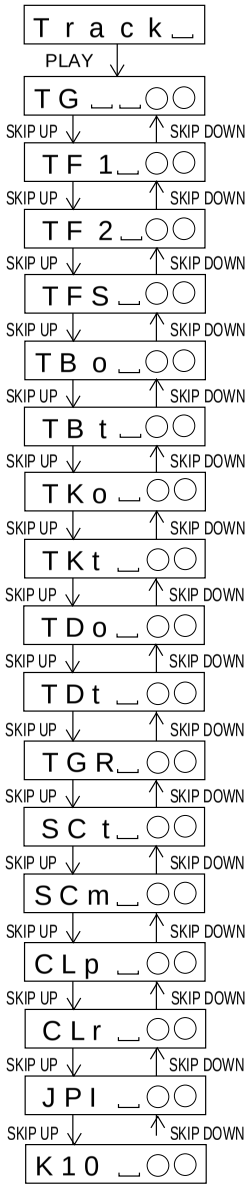
Spin Setting



: Spin setting menu

* When the [STOP] button is pressed in specific menu, the "TEST MODE STOP" state is set.
* When the [DISP] button operation is performed in the specific state, the menu changes to "TEMP SETTING menu".
* In specific state the setting changed in the range of "00h to FFh" when the [VOL UP/DOWN] button is pressed. (The upper limit varies depending on the items)
* When the [MODE] button is pressed in each state, the set digit is changed.

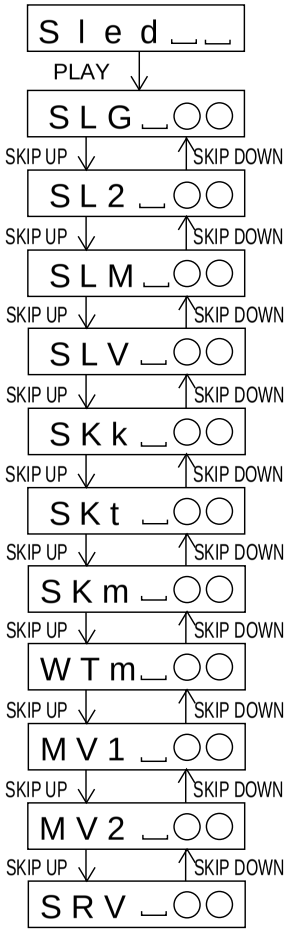
Tracking Setting



: Tracking setting menu

* When the [STOP] button is pressed in specific menu, the "TEST MODE STOP" state is set.
* When the [DISP] button operation is performed in the specific state, the menu changes to "TEMP SETTING menu".
* In the specific state the setting changes in the range of "00h to FFh" when the [VOL UP/DOWN] button is pressed. (The upper limit varies depending on the items)
* When the [MODE] button is pressed in each state, the set digit is changed.

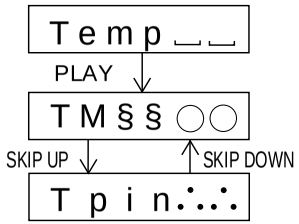
Sled Setting



: Slide setting menu

* When the [STOP] button is pressed in specific menu, the "TEST MODE STOP" state is set.
* When the [DISP] button operation is performed in the specific state, the menu changes to "TEMP SETTING menu".
* In the specific state the setting changes in the range of "00h to FFh" when the [VOL UP/DOWN] button is pressed.
  (The upper limit varies depending on the items)
* When the [MODE] button is pressed in each state, the set digit is changed.

TEMP Setting



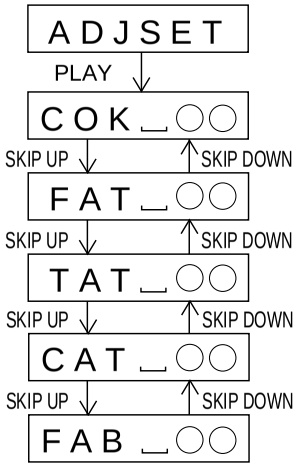
: Temp setting menu

: TEMP reference
○○: Reference
§ § : Temperature code

: TEMP A/D input value
∴∴ : Measurement value

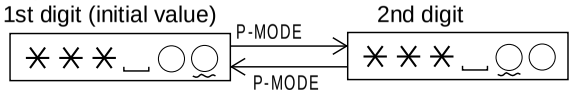
* When the [STOP] button is pressed in specific menu, the "TEST MODE STOP" state is set.
* When the [DISP] button operation is performed in the specific state, the menu changes to "TEMP SETTING menu".
* In the specific state the setting changes in the range of "00h to FFh" when the [VOL UP/DOWN] button is pressed.
* When the [MODE] button is pressed in each state, the set digit is changed.

Adjustment Setting



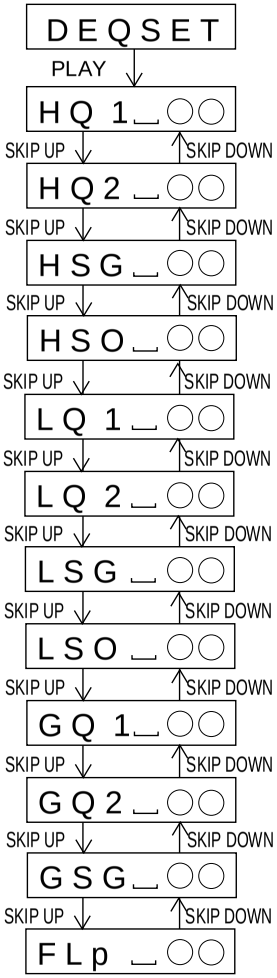
: Adjustment setting menu

* When the [STOP] button is pressed in specific menu, the "TEST MODE STOP" state is set.
* When the [DISP] button operation is performed in the specific state, the menu changes to "TEMP SETTING menu".
* In the specific setting display state the setting change digit changes when the [P-MODE] button is pressed.



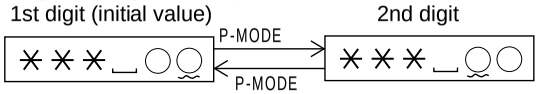
* In the specific state the setting changes in the range of "0h to Fh" when the [VOL UP/DOWN] button is pressed.
* When the [MODE] button is pressed in each state, the set digit is changed.

Digital EQ Setting



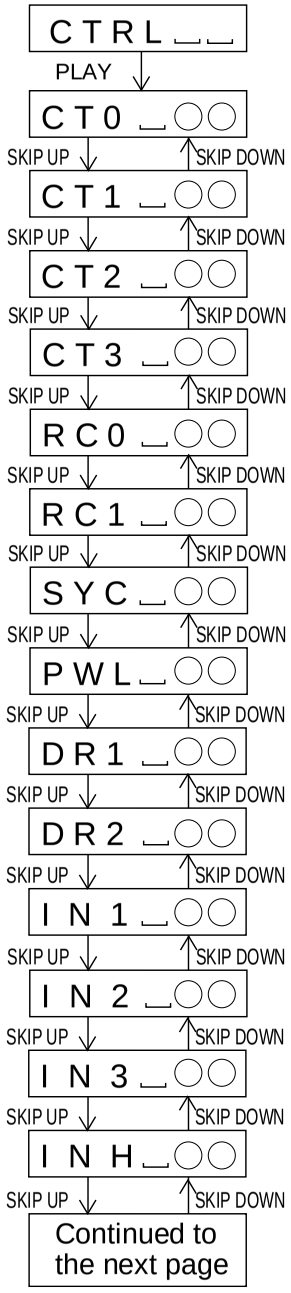
: Digital EQ setting menu

* When the [STOP] button is pressed in specific menu, the "TEST MODE STOP" state is set.
* When the [DISP] button operation is performed in the specific state, the menu changes to "TEMP SETTING menu".
* In the specific setting display state the setting change digit changes when the [P-MODE] button is pressed.

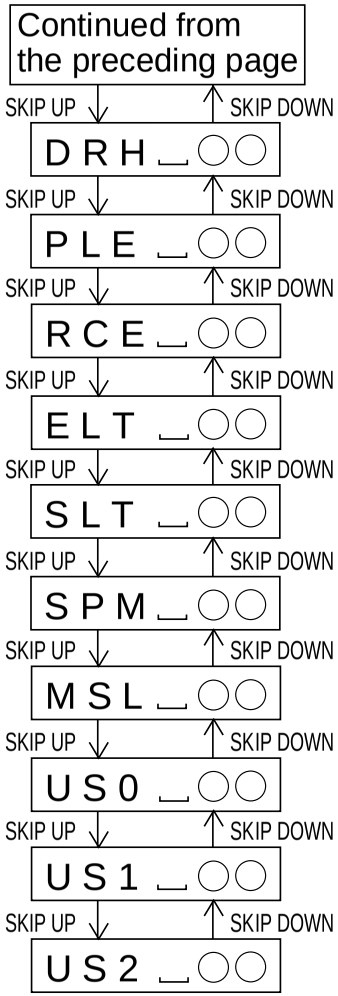


* In the specific state the setting changes in the range of "0h to Fh" when the [VOL UP/DOWN] button is pressed.
* When the [MODE] button is pressed in each state, the set digit is changed.

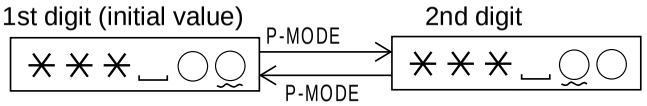
Control Setting



: Control setting menu



* When the [STOP] button is pressed in specific menu, the "TEST MODE STOP" state is set.
* When the [DISP] button operation is performed in the specific state, the menu changes to "TEMP SETTING menu".
* In the specific setting display state the setting change digit changes when the [P-MODE] button is pressed.



* In the specific state the setting changes in the range of "0h to Fh" when the [VOL UP/DOWN] button is pressed.
* When the [MODE] button is pressed in each state, the set digit is changed.

NOTES ON SCHEMATIC DIAGRAM

• Resistor:
To differentiate the units of resistors, such symbol as K and M are used: the symbol K means 1000 ohm and the symbol M means 1000 kohm and the resistor without any symbol is ohm-type resistor. Besides, the one with “Fusible” is a fuse type.
• Capacitor:
To indicate the unit of capacitor, a symbol P is used: this symbol P means micro-micro-farad and the unit of the capacitor without such a symbol is microfarad. As to electrolytic capacitor, the expression “capacitance/withstand voltage” is used.
(CH), (TH), (RH), (UJ): Temperature compensation
(ML): Mylar type

• The indicated voltage in each section is the one measured by Digital Multimeter between such a section and the chassis with no signal given.
• Parts marked with “ ⚠ ” (⊏ ニ ニ ニ ⊐) are important for maintaining the safety of the set. Be sure to replace these parts with specified ones for maintaining the safety and performance of the set.

REF. NO	DESCRIPTION	POSITION
SW401	EJECT	OFF—ON
SW402	HOLD	OFF—ON
SW403	LID DETECTION	OFF—ON
SW902	DISC PROTECT	OFF—ON

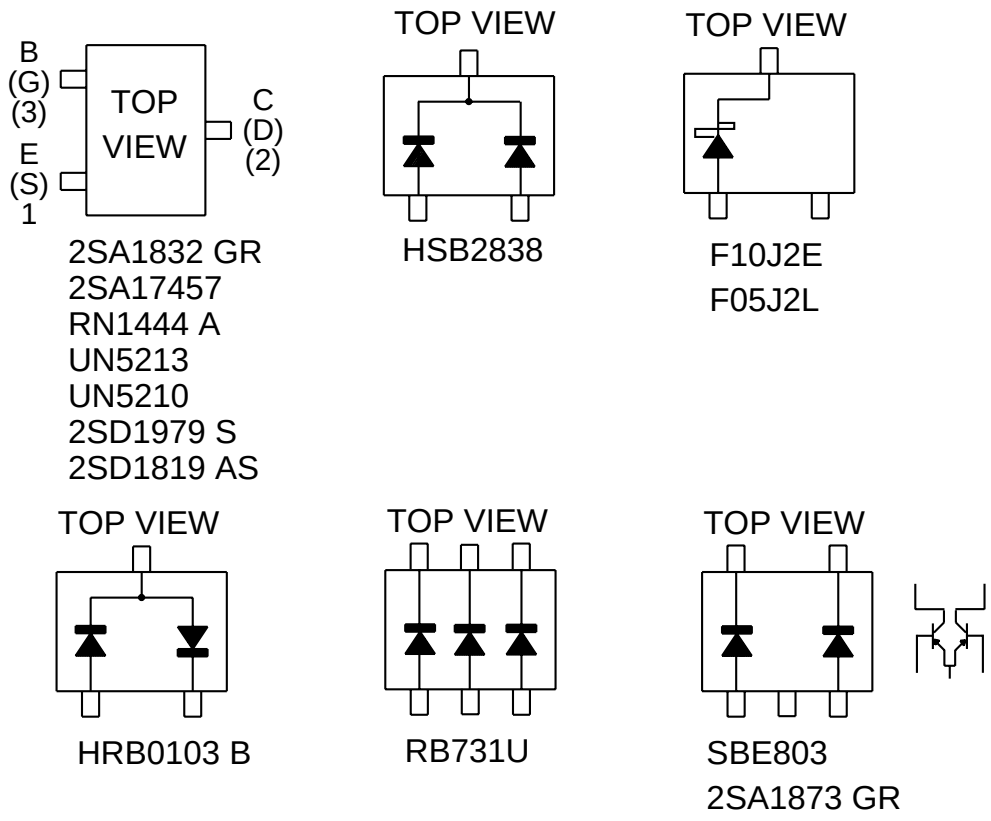


Figure 23 TYPES OF TRANSISTOR AND DIODE

VOLTAGE

IC101	
PIN NO.	VOLTAGE
1	0.71V
2	0.71V
3	0.71V
4	0.71V
5	1.24V
6	1.24V
7	0V
8	1.24V
9	1.24V
10	1.24V
11	1.24V
12	1.24V
13	2.28V
14	2.28V
15	0V
16	0V
17	2.48V
18	0V
19	0V
20	1.47V
21	2.35V
22	0V
23	0V
24	2.48V
25	1.24V
26	1.24V
27	1.24V
28	1.24V
29	1.24V
30	1.2V
31	1.24V
32	1.24V
33	1.24V
34	0V
35	1.24V
36	1.24V
37	0.16V
38	1.24V
39	1.24V
40	1.24V
41	1.24V
42	2.48V
43	0V
44	—
45	1.24V
46	1.24V
47	1.24V
48	0.19V

IC201			
PIN NO.	VOLTAGE	PIN NO.	VOLTAGE
1	0.84V	51	1V
2	2.48V	52	0V
3	1.22V	53	0V
4	0V	54	0V
5	1.24V	55	0V
6	1.24V	56	2V
7	1.24V	57	0V
8	1.24V	58	0V
9	1.24V	59	0V
10	2V	60	0V
11	1.17V	61	—
12	2V	62	2V
13	0V	63	0V
14	0V	64	0.88V
15	0V	65	0.76V
16	0V	66	2.46V
17	1V	67	1V
18	0V	68	2V
19	0V	69	0V
20	0V	70	1V
21	0V	71	1V
22	0V	72	0V
23	0V	73	0V
24	0V	74	0V
25	0V	75	—
26	0.5V	76	2V
27	0.5V	77	2V
28	0.5V	78	2V
29	1.4V	79	0V
30	1.13V	80	2V
31	2.55V	81	1V
32	0.5V	82	2V
33	0.8V	83	2V
34	0.8V	84	2V
35	0.8V	85	1V
36	0.8V	86	2V
37	1.84V	87	2V
38	0V	88	0V
39	1.97V	89	2.34V
40	1.38V	90	0V
41	1.53V	91	0.3V
42	0.9V	92	0V
43	1.9V	93	0V
44	2.56V	94	1.6V
45	1.66V	95	1.2V
46	1.56V	96	1.7V
47	0V	97	0.3V
48	1.9V	98	2.25V
49	1V	99	2.34V
50	0.9V	100	0.2V

IC202	
PIN NO.	VOLTAGE
1	1.55V
2	2.05V
3	2.57V
4	1.94V
5	0.93V
6	1.43V
7	0.49V
8	0.6V
9	0.6V
10	2.55V
11	0.6V
12	0.99V
13	0.99V
14	0.99V
15	0.8V
16	1.87V
17	2.12V
18	1.66V
19	1.73V
20	0V

IC203	
PIN NO.	VOLTAGE
1	0V
2	2V
3	2.73V

IC251	
PIN NO.	VOLTAGE
1	2.07V
2	0V
3	0V
4	0V
5	5.35V
6	2.08V
7	2.08V
8	2.08V

IC253	
PIN NO.	VOLTAGE
1	5.36V
2	5.31V
3	5.31V
4	0V
5	0V
6	0V

IC255	
PIN NO.	VOLTAGE
1	-1.05V
2	0V
3	0V
4	-2.25V
5	0V
6	0V
7	-1.65V
8	2.72V

IC256	
PIN NO.	VOLTAGE
1	0V
2	—
3	—
4	0V
5	0V
6	0V

IC257	
PIN NO.	VOLTAGE
1	0V
2	0V
3	—
4	0V

IC258	
PIN NO.	VOLTAGE
1	0V
2	0.59V
3	4.93V
4	0V
5	0V
6	0V

IC259	
PIN NO.	VOLTAGE
1	—
2	0.56V
3	0.56V
4	0V
5	0.56V
6	2.63V

IC841	
PIN NO.	VOLTAGE
1	—
2	2.8V
3	2.06V
4	2.06V
5	0V

IC842	
PIN NO.	VOLTAGE
1	—
2	2.81V
3	2.56V
4	0V
5	2.36V

IC353	
PIN NO.	VOLTAGE
1	2.73V
2	0V
3	0V
4	0V
5	0V
6	0V
7	0V
8	0V

IC354	
PIN NO.	VOLTAGE
1	0V
2	0V
3	0V
4	0V
5	0V

IC402	
PIN NO.	VOLTAGE
1	2.35V
2	0V
3	0V
4	0V
5	2.34V
6	0V
7	2.35V
8	2.35V

IC404	
PIN NO.	VOLTAGE
1	0.2V
2	0.2V
3	0V
4	2.19V
5	2.5V

IC431	
PIN NO.	VOLTAGE
1	2.34V
2	2.35V
3	0V
4	0V

IC621	
PIN NO.	VOLTAGE
1	8.58V
2	0V
3	0V
4	0V
5	2.34V
6	8.55V

IC260	
PIN NO.	VOLTAGE
1	2.72V
2	2.7V
3	2.7V
4	0V
5	0V
6	—

IC351	
PIN NO.	VOLTAGE
1	0V
2	0V
3	4.44V
4	0V
5	0V
6	4.44V
7	0V
8	0.91V
9	4.44V
10	0V
11	0.91V
12	4.44V
13	0V
14	4.49V

IC821	
PIN NO.	VOLTAGE
S	0V
G	—
D	—

IC401			
PIN NO.	VOLTAGE	PIN NO.	VOLTAGE
1	0V	51	0V
2	—	52	0V
3	0.29V	53	2.35V
4	2.32V	54	0V
5	—	55	2.32V
6	0.17V	56	0V
7	0V	57	2.35V
8	0.22V	58	2.35V
9	0V	59	2.32V
10	2.32V	60	2.35V
11	2.15V	61	2.35V
12	2.03V	62	2.28V
13	2.25V	63	2.35V
14	2.35V	64	2.35V
15	2.35V	65	2.35V
16	0V	66	1.09V
17	2.35V	67	1.12V
18	0V	68	0V
19	2.32V	69	0V
20	0.21V	70	2.34V
21	2.32V	71	2.35V
22	2.25V	72	2.35V
23	0.2V	73	2V
24	1.55V	74	2.32V
25	0V	75	2.32V
26	0V	76	0.15V
27	1.57V	77	2.35V
28	1.05V	78	2.35V
29	1.75V	79	0V
30	0.56V	80	0V
31	0V	81	2.34V
32	0V	82	2.34V
33	2.35V	83	2.12V
34	0V	84	1.47V
35	0V	85	0V
36	0V	86	0V
37	2.34V	87	0V
38	2.34V	88	0V
39	0V	89	0V
40	2.35V	90	0V
41	2.13V	91	0V
42	2.7V	92	0V
43	2.7V	93	0V
44	0V	94	0V
45	0V	95	2.32V
46	2.35V	96	0V
47	2.35V	97	0V
48	2.35V	98	2.35V
49	0V	99	2.33V
50	2.47V	100	0V

Preform the measurement on the IC401 pin 37 in the TEST mode with GND short-circuited. (LCD is in "TEST" state.)

IC901	
PIN NO.	VOLTAGE
1	0V
2	0V
3	2.34V
4	0V
5	2.49V
6	0V
7	2.49V
8	0V
9	—
10	—
11	—
12	—
13	0V
14	0.75V
15	—
16	—
17	—
18	0V
19	0V
20	0V
21	0V
22	0V
23	0V
24	0V

IC809	
PIN NO.	VOLTAGE
1	5.36V
2	0V
3	0V
4	0V
5	2.35V
6	5.36V

IC852	
PIN NO.	VOLTAGE
1	1.17V
2	2.8V
3	0.67V
4	0V
5	1.2V
6	1.17V
7	1.16V
8	1.26V

IC822	
PIN NO.	VOLTAGE
1	1.17V
2	2.8V
3	0.37V
4	0V
5	1.17V
6	1.17V
7	1.16V
8	1.26V

IC892	
PIN NO.	VOLTAGE
1	0V
2	0.6V
3	1.58V
4	0V
5	0V
6	0V

IC851	
PIN NO.	VOLTAGE
S	0V
G	—
D	—

IC501	
PIN NO.	VOLTAGE
1	0V
2	—
3	—
4	0V
5	2.49V
6	0V
7	0.78V
8	0V
9	0V
10	1V
11	1V
12	1V
13	—
14	—
15	—
16	—

IC651	
PIN NO.	VOLTAGE
1	2.73V
2	—
3	0V
4	0V
5	0V
6	0V
7	—
8	—
9	—
10	—

IC771	
PIN NO.	VOLTAGE
1	0V
2	2.74V
3	2.74V
4	—
5	2.5V

IC801	
PIN NO.	VOLTAGE
1	0V
2	2V
3	4.44V

IC802	
PIN NO.	VOLTAGE
1	0.45V
2	1.03V
3	3.28V
4	0.45V
5	0.99V
6	4.38V

IC871	
PIN NO.	VOLTAGE
1	1V
2	2.36V
3	0V
4	1.18V
5	2.36V

IC701	
PIN NO.	VOLTAGE
1	0V
2	0V
3	0V
4	0V
5	0V
6	0V
7	0V
8	0V
9	0V
10	0V
11	0V
12	0V
13	0V
14	0V
15	0V
16	0V
17	-2.32V
18	0V
19	0V
20	2.42V
21	0.86V
22	0V
23	0V
24	0V

IC601	
PIN NO.	VOLTAGE
1	2.34V
2	0V
3	—
4	—
5	—
6	8.55V
7	2.48V
8	0V
9	2.38V
10	0V
11	2.38V
12	2.34V
13	0V
14	0V
15	0V
16	0V
17	4.67V
18	0V
19	0V
20	0V
21	4.67V
22	0V
23	0V
24	0V
25	0V
26	—
27	4.67V
28	2.34V
29	0V
30	2.48V
31	—
32	—
33	—
34	—
35	2.48V
36	0V
37	0V
38	0V
39	0V
40	4.67V
41	0V
42	0V
43	0V
44	4.67V
45	—
46	0V
47	—
48	—

IC803	
PIN NO.	VOLTAGE
1	4.4V
2	4.46V
3	0V
4	0V

IC873	
PIN NO.	VOLTAGE
1	0V
2	8.59V
3	2.36V
4	—
5	4.47V

IC703	
PIN NO.	VOLTAGE
1	0V
2	0V
3	0V
4	0V
5	0V
6	2.5V
7	-2.34V
8	0V
9	2.5V
10	0V
11	1.26V
12	0V
13	2.35V
14	0V
15	0V
16	2.5V
17	0V
18	-2.34V
19	-2.34V
20	0V
21	0V
22	0V
23	0V
24	0V

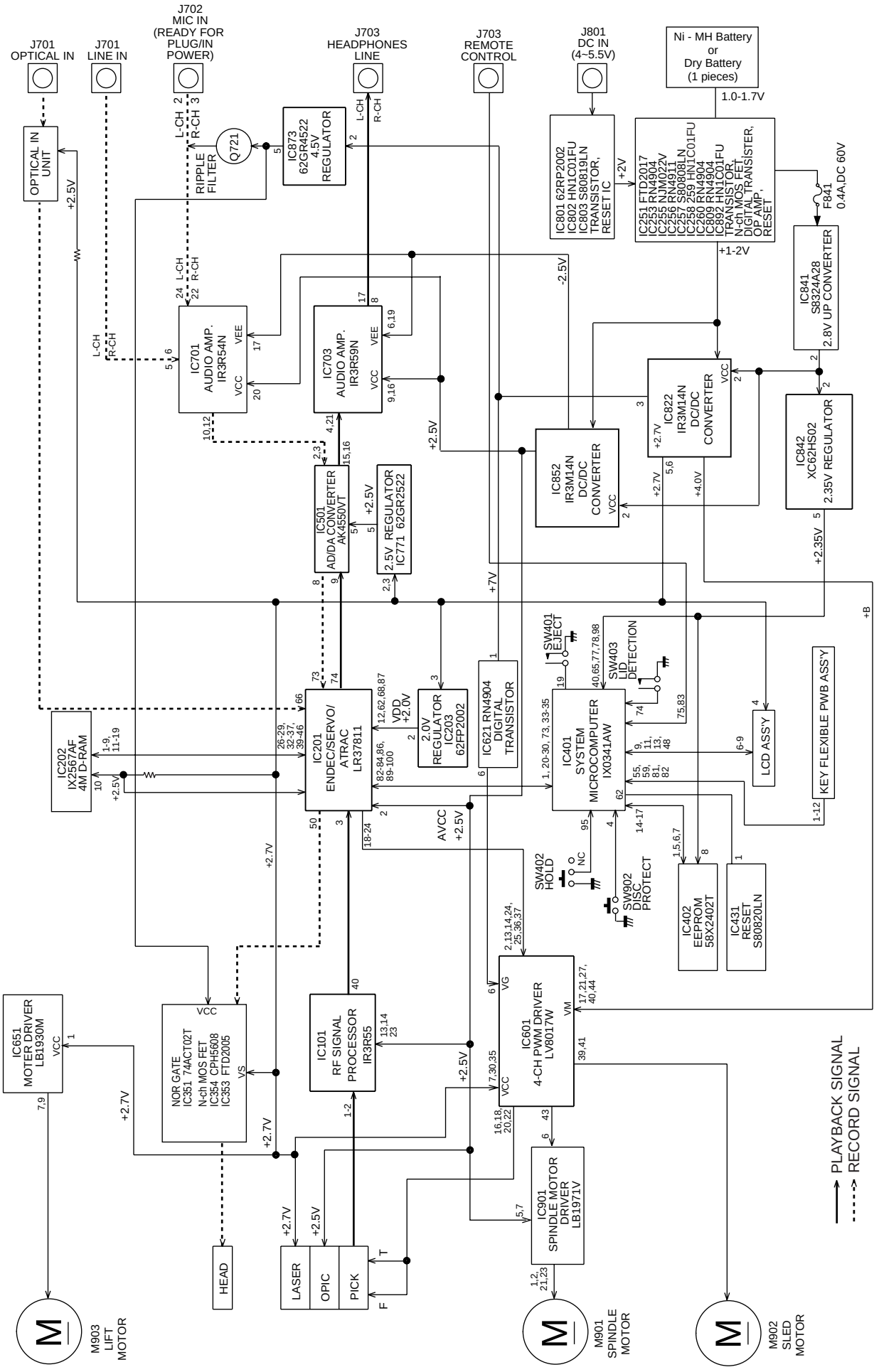
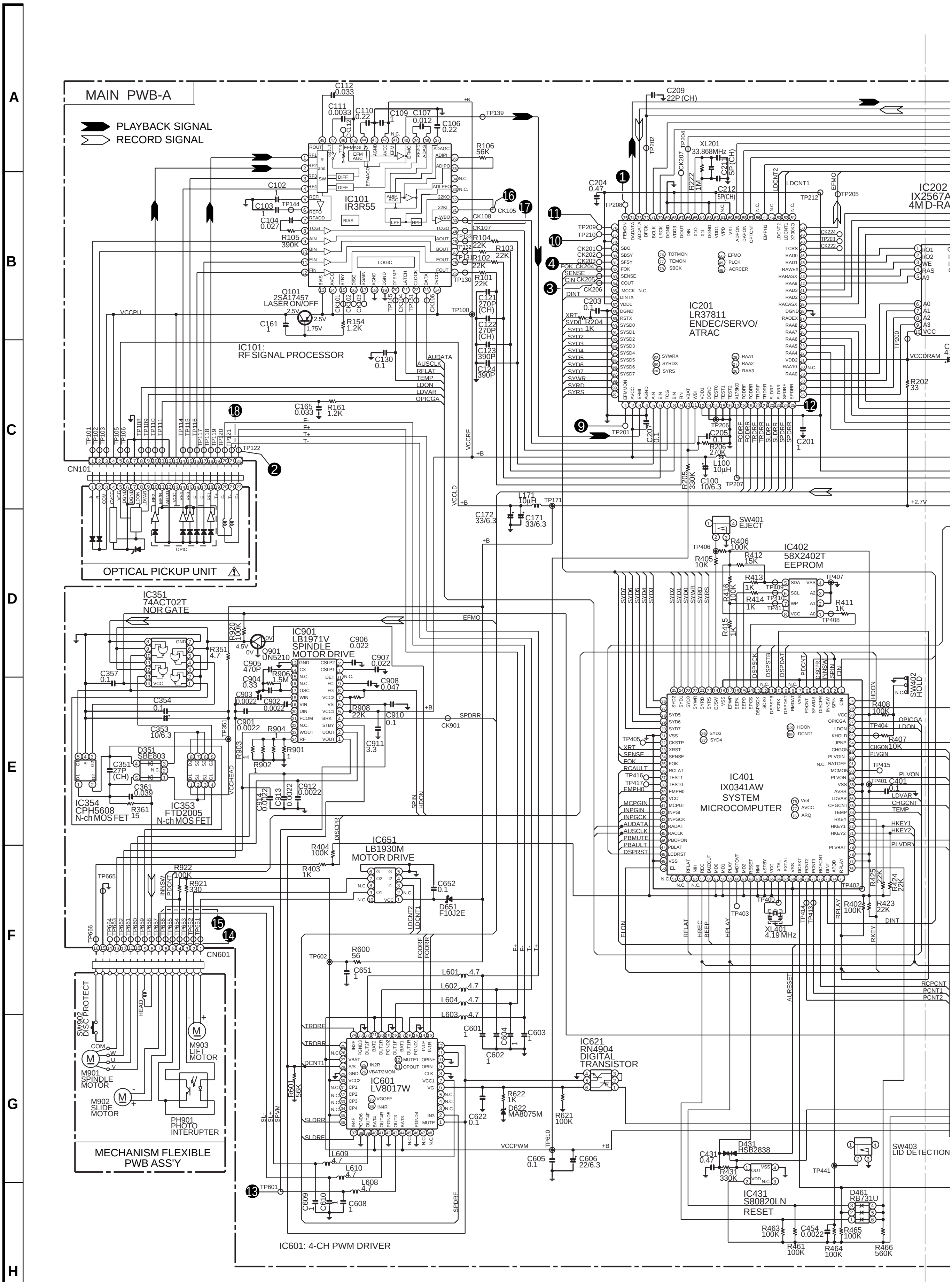


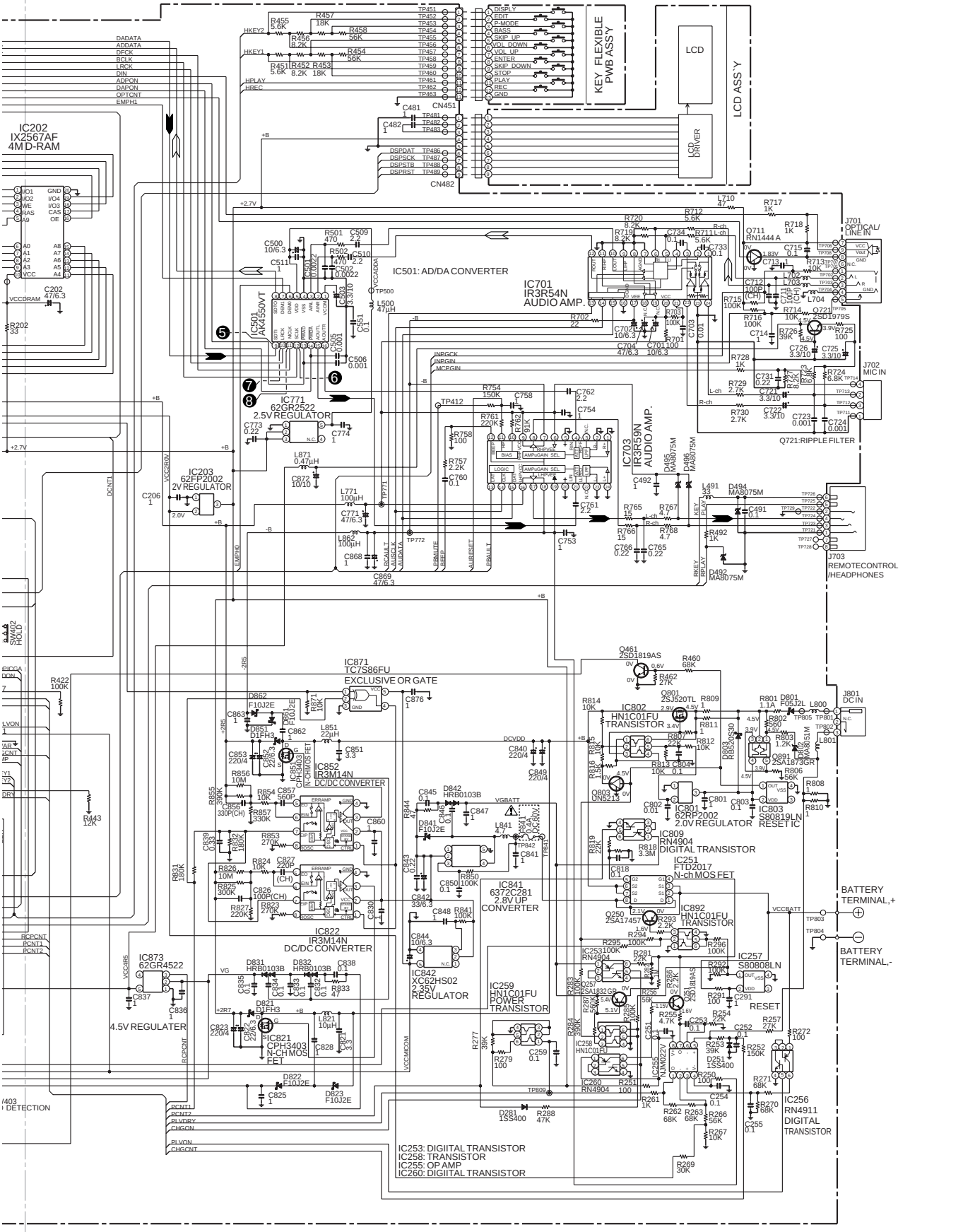
Figure 25 BLOCK DIAGRAM



• NOTES ON SCHEMATIC DIAGRAM can be found on page 23.

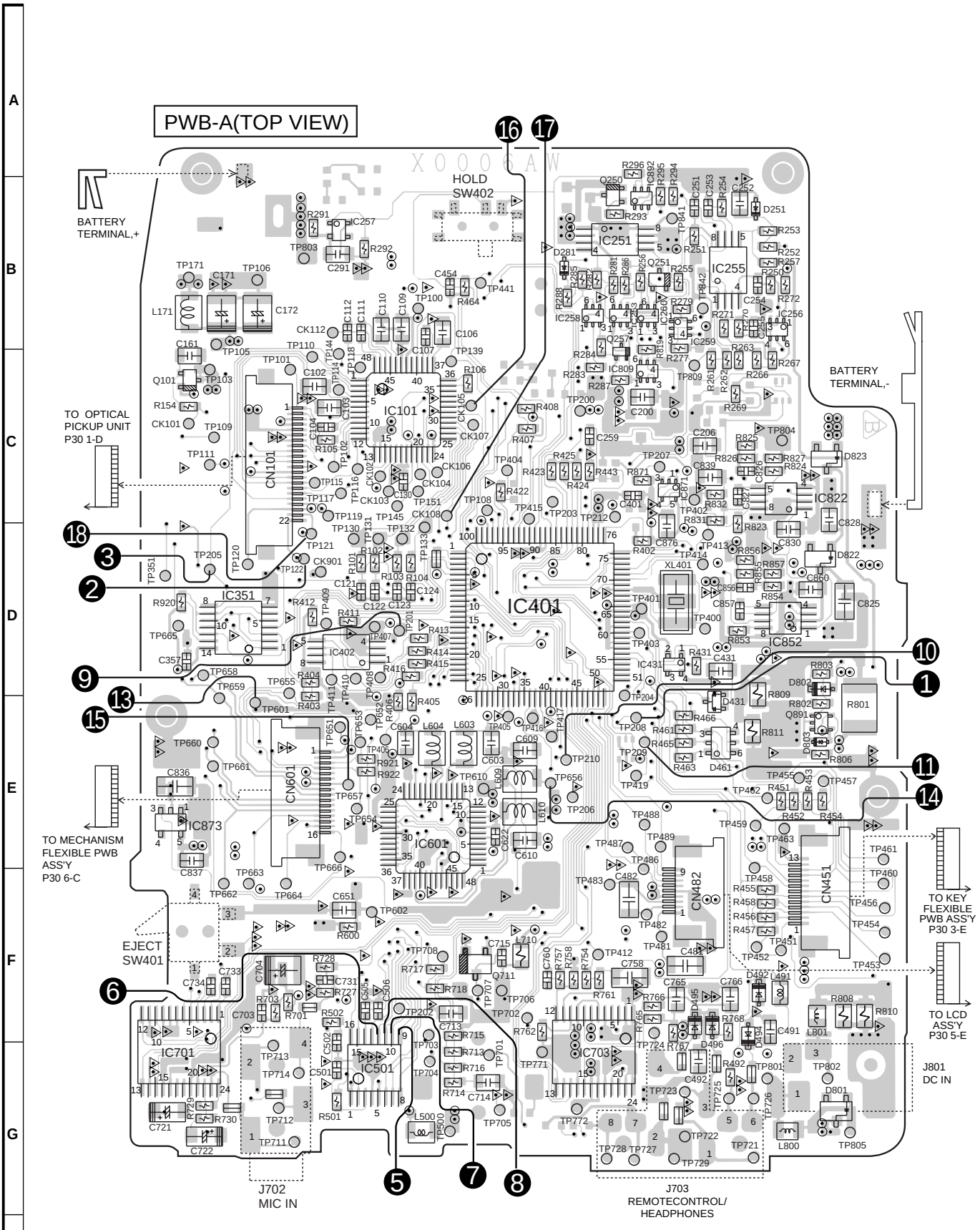
• The numbers ❶ to ⓲ are waveform numbers shown in page 31.

Figure 26 SCHEMATIC DIAGRAM (1/2)



7	8	9	10	11	12

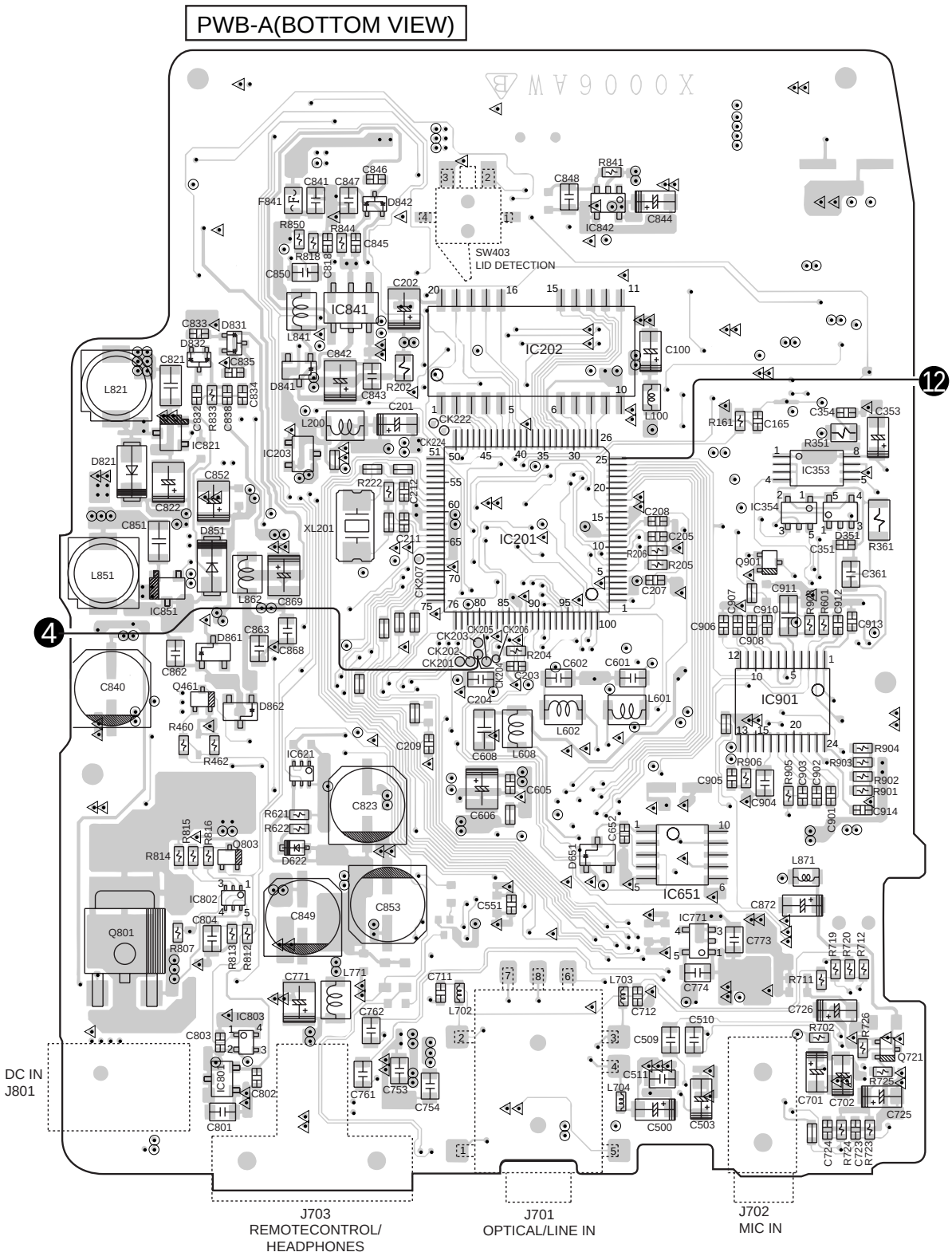
Figure 27 SCHEMATIC DIAGRAM (2/2)



◉ : Through-hole where the top, bottom and +B patterns are connected.
◭ : Through-hole where the top, bottom and hround patterns are connected.
● : Through-hole where the top and bottom patterns are connected.

• The numbers ❶ to ⑱ are waveform numbers shown in page 31.

Figure 28 WIRING OF P.W.BOARD (1/3)



7	8	9	10	11	12

Figure 29 WIRING OF P.W.BOARD (2/3)

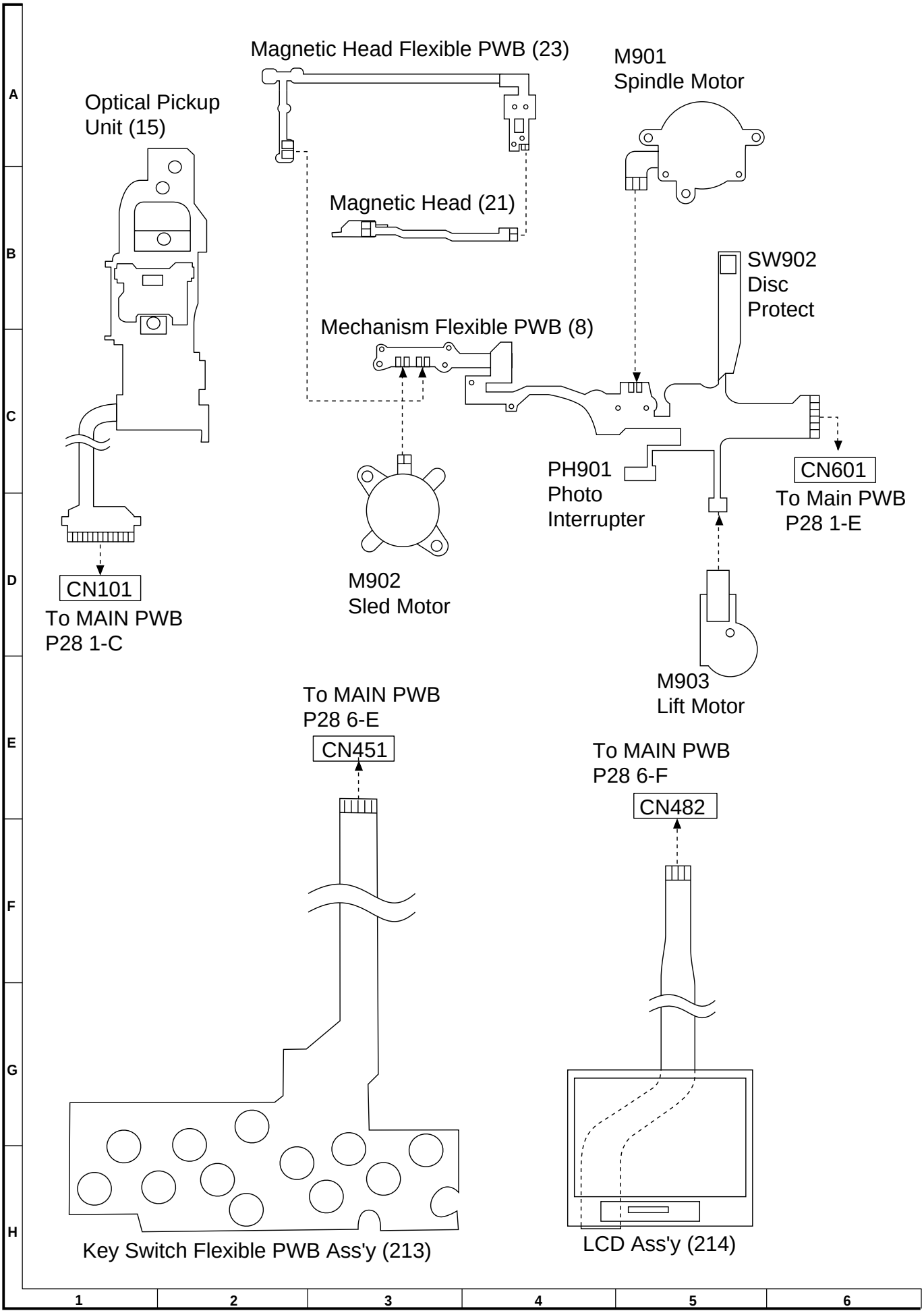
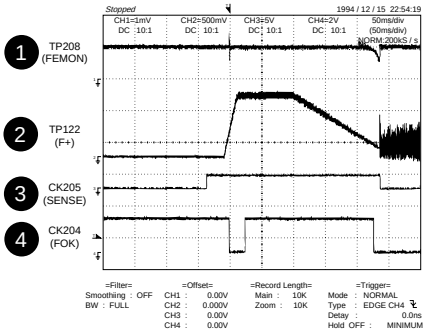
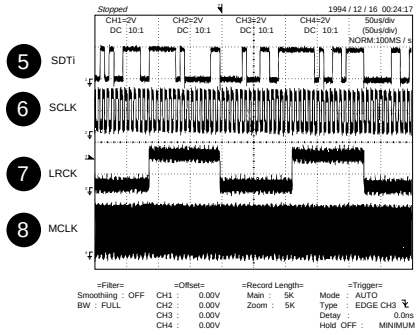
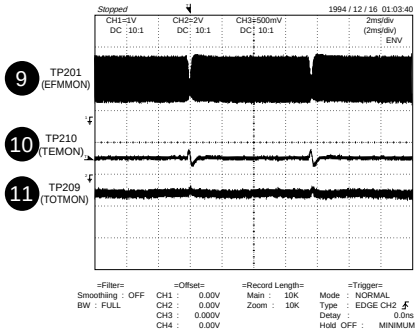


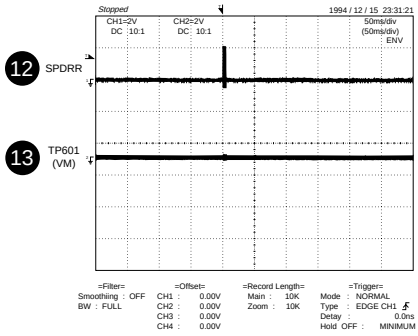
Figure 30 WIRING OF P.W.BOARD (3/3)

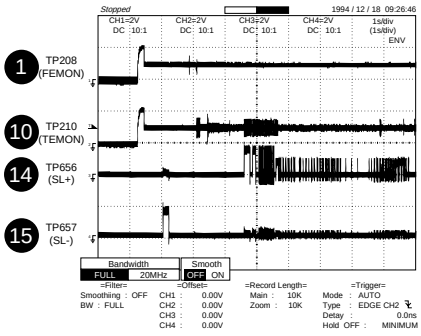
WAVEFORMS OF MD CIRCUIT

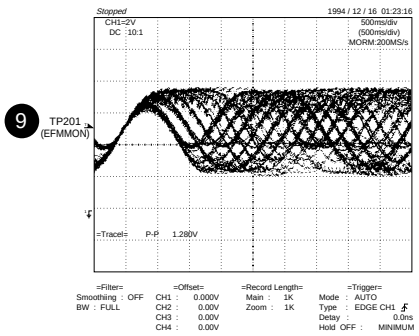


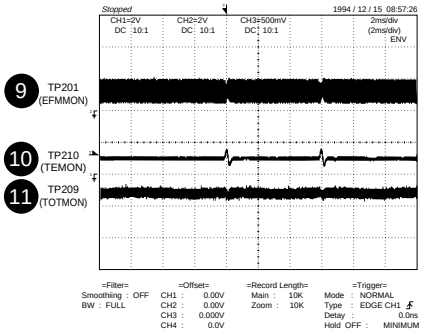


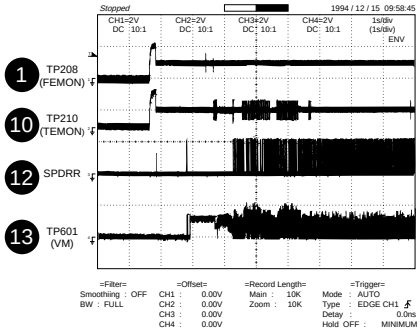


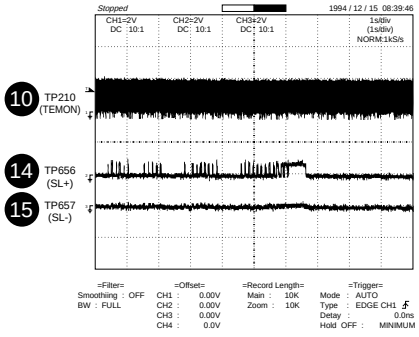


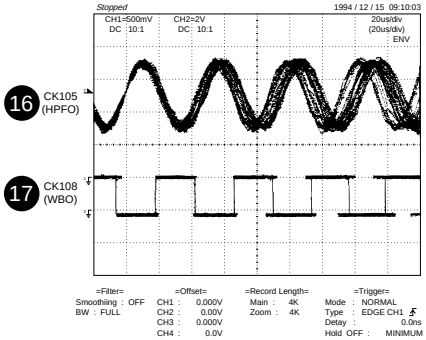


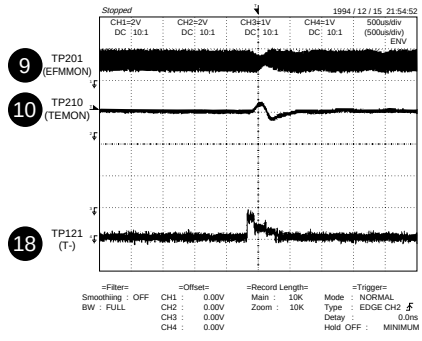




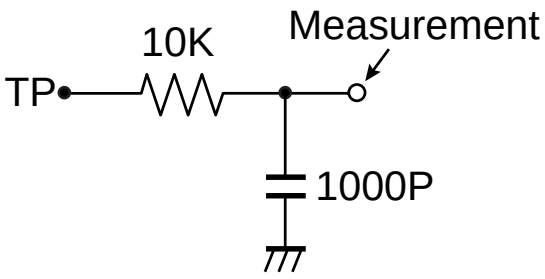








For TP208, TP209, and TP210, use the specific LPF, and observe the waveform.



When watching the EEM monitor (TP201)
Set MSL from 00H to 80H with EEPROM control setting. After completion restore 00H.

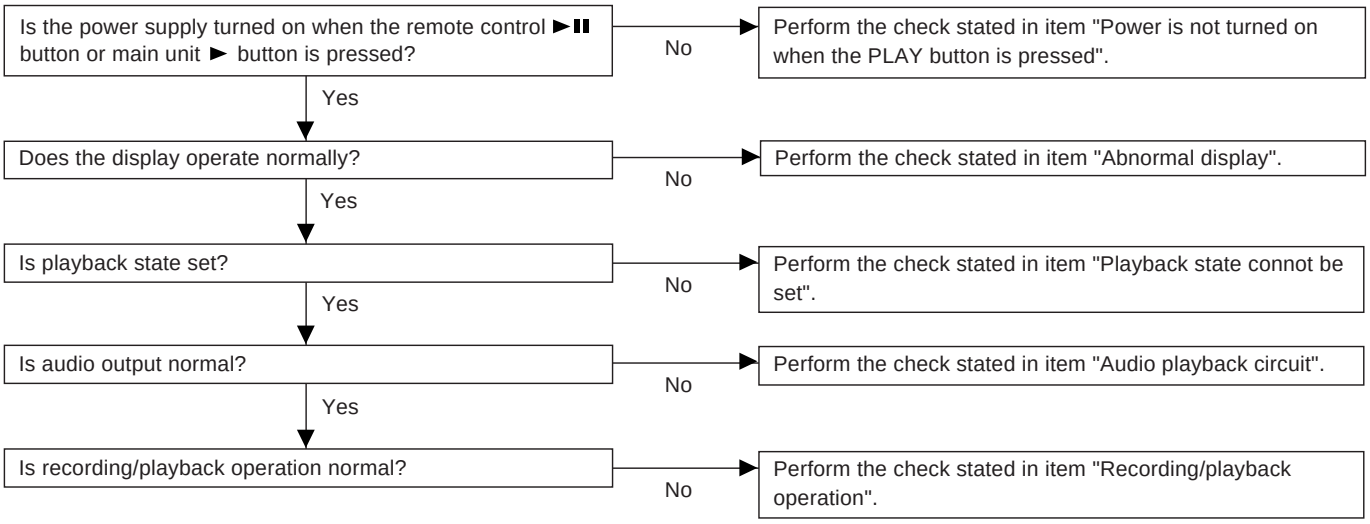
TROUBLESHOOTING

It is advisable to use the TEST mode (refer to Error Data Display Mode, P19) indicating the causes of troubles before starting repair. Causes of operation errors (up to 10 errors) are recorded as error codes. This information is useful for repair.

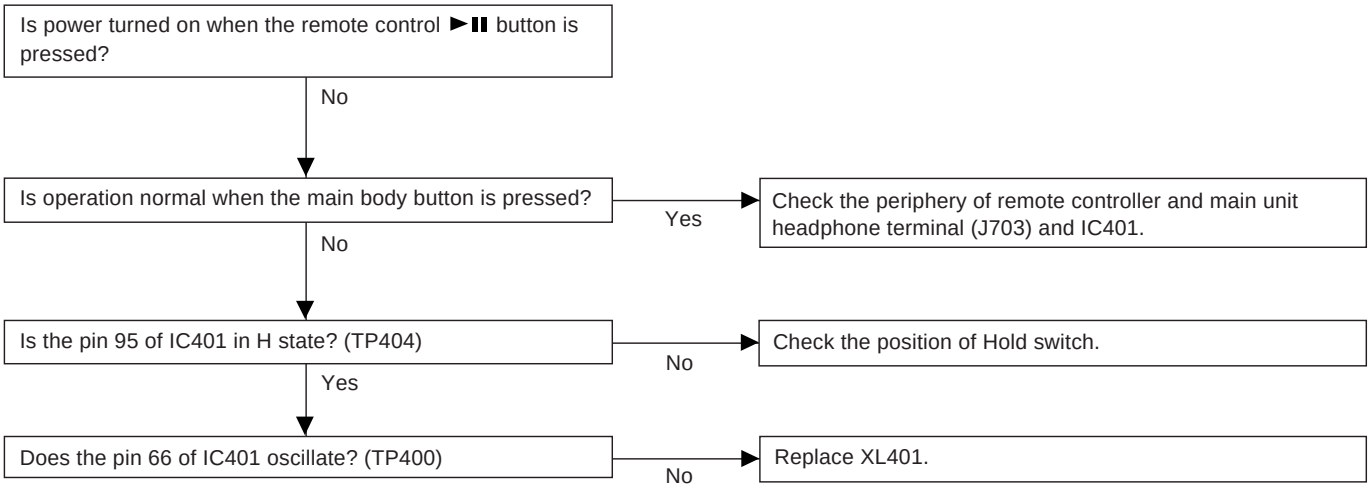
When does not function

When the CD section does not operate When the objective lens of the optical pickup is dirty,this section may not operate.Clean the objective lens,and check the playback operation.When this section does not operate even after the above step is taken,check the following items.
Remove the cabinet and follow the troubleshooting instructions.
"Track skipping and/or no TOC(Table Of Contents) may be caused by build up of dust other foreign matter on the laser pickup lens. Before attempting any adjustment make certain that the lens is clean. If not, clean it as mentioned below."

Turn the power off.
Gently clean the lens with a lens cleaning tissue and a small amount of isopropyl alcohol.
Do not touch the lens with the bare hand.



• Power is not turned on when the ► / ►II button is pressed.



• Abnormal display

Is waveform output from CN482 pins 6 to 8?
Are the pin 4 (VCC) and pin 5 (GND) normal?

No → Is waveform output from IC401 pins 9,11,13?

Yes → Check between IC401 and CN482.

No → Check the periphery of IC401.

Yes → Check for pattern breakage of flexible PWB, check for defects of display microcomputer (replace the display unit).

• Playback state cannot be set

When it has been ascertained that the address up to cluster address is normal in the TEST mode.

Is initialization performed normally in case of high- reflection disc playback?

Yes → Does the playback time display advance?

No → Check IC201 and IC202 connection line.

No → Is the lead-in photointerrupter set to OFF when the optical pickup moves to the innermost periphery in NORMAL mode? (Is TP654 in H level?).

No → Check the lead-in photointerrupter, mechanical flex PWB soldering and CN601 connection.

Yes → Ia an attempt to repeat repeatedly the TOC part performed on the low-reflection disc?

No → Replace the disc.

Yes → Position check in INNER mode

• Audio playback clrcult

Although the playback time display is acting., no sound is given during playback in the normal mode.

Is audio wavefrom output from IC501 pins 15 and 16?

No → Check IC201 pins 70 to 72, pin 74 and IC501 pins 9, 10, 11, 12.

Yes → Is audio wavefrom output from IC703 pins 8 and 17.

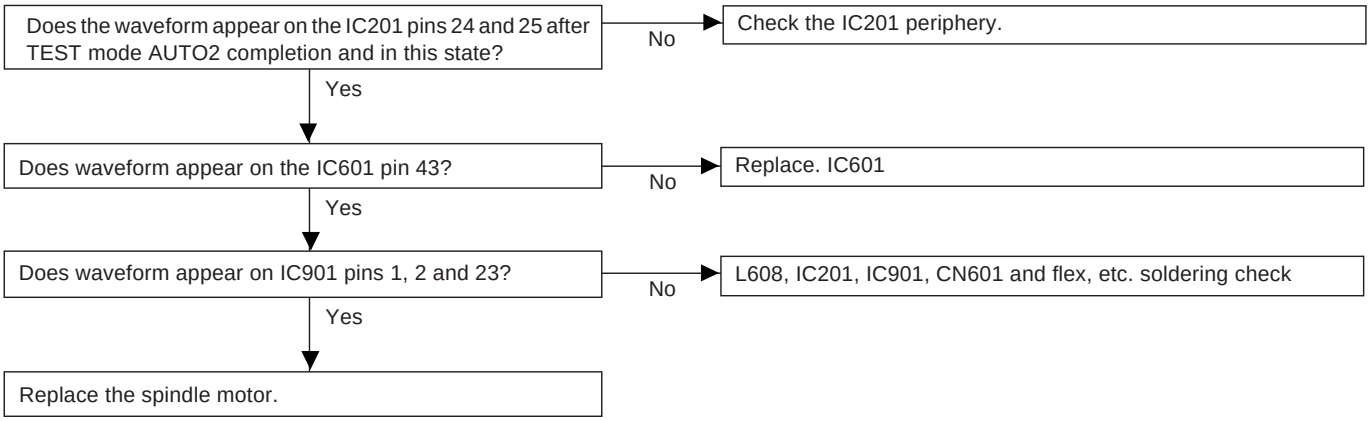
No → Check the pins 4 and 21 of IC703.

Yes → Is audio wavefrom output from J703 pins 3 and 4.

No → Check whether there is defective solder joint of audio signal line between IC703 and J703

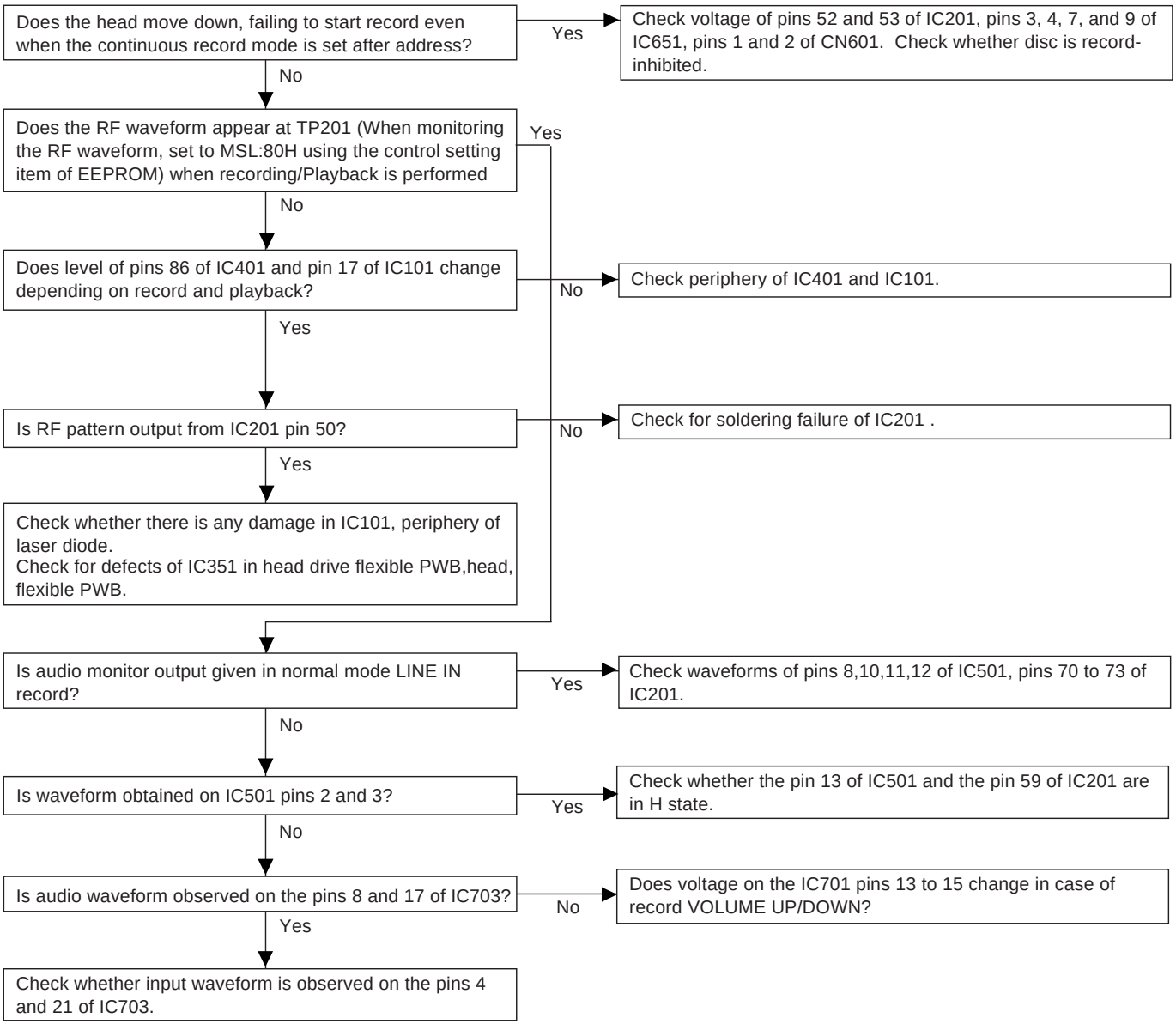
Yes → Check headphones jack,and periphery of headphone.

• The spindle motor fails to run.Does the head move



• Recording/playback operation

Insert a low reflection disc, and ascertain audio output by normal playback, and then set TEST REC mode.



FUNCTION TABLE OF IC

IC401 RH-iX0341AWZZ: System Microcomputer (IX0341AW) (1/3)

Pin No.	Port Name	Terminal Name	Input/Output	Function
1	P12/TCLKA	CIN	Input	Track cross signal/focus drive detection
2	TCLKB	SPIN	Input	Spindle motor FG pulse detection input
3	P14	INNSW	Input	Mechanism inner SW position detection input
4	P15	DISCPR	Input	Disc record inhibition switch input
5	TIOCA2	SPWDS	Input	Spindle motor FG pulse width detection
6	P17	PDCNT	Output	Inner detection PD current control output
7	Vss	VSS	—	Ground potential
8*	TxD0	RMDAT	Output	Remote control indication data output
9	TxD1	DSPDAT	Output	Unit indication data output
10	P32	PCRX	Input	Spare
11	P33	DSPSTB	Output	Main unit's display strobe output
12*	SCK0	SCK0	Output	Serial I/O clock output (not used)
13	SCK1	DSPSCK	Output	Unit indication data clock output
14	PE0	_EPCS	Output	EEPROM chip selection output
15	PE1	EEPD	Input/Output	EEPROM serial data input/output
16	PE2	EEPK	Output	EEPROM serial clock output
17	PE3	EPWP	Output	EEPROM write protection
18	Vss	VSS	—	Ground potential
19	PE4	_EJSW	Input	Ejection lever opertion detection input
20	PE5	SYRS	Output	System LSI register selection output
21	PE6	_SYRD	Output	System LSI read enable output
22	PE7	_SYWR	Output	System LSI write enable output
23-30	PD0-PD7	SYD0-SYD7	Input/Output	System LSI parallel data bus
31	Vss	VSS	—	Ground potential
32*	PC0	CKSTP	Output	Microcomputer stand by operation monitor
33	PC1	_XRST	Output	System LSI hand reset output
34	PC2	SENSE	Input	System LSI servo sense input
35	PC3	_FOK	Input	Focus OK signal input
36	PC4	RCLAT	Output	Record audio IC data latch output
37*	PC5	TEST1	Input	Test mode setting input 1
38*	PC6	TEST0	Input	Test mode setting input 0
39	PC7	EMPH0	Output	Audio emphasis control output 0
40	Vcc	VCC	—	Positive power supply
41	PB0	_MCPGI	Intput	Microphone plug insertion detection input
42	PB1	_INPGi	Intput	Line/digital plug insertion detection
43	PB2	INPGCK	Intput	Line/digital plug type detection
44	PB3	RADAT	Output	RF/Audio IC serial data output
45	PB4	RACLK	Output	RF/Audio IC data clock output
46	PB5	PBOPON	Output	Audio IC output stage control output
47	PB6	PBLAT	Output	Audio IC data lactch output
48	PB7	_LCDRST	Intput	LCD driver reset output
49	Vss	VSS	—	Ground potential
50	PA0	_ELON	Output	EL light control output
51*	PA1	PA1	Output	Spare
52*	PA2	PA2	Output	Spare
53	PA3	RFLAT	Output	FL amplifier IC data latch output
54*	P20	P20	Output	Spare
55	P21	_REC	Input	Unit REC buttom operation detection input
56	TIOCC3	BUZOUT	Output	Beep sound pulse output
57	MD0	MD0	Input	Operation mode selection input 0

In this unit, the terminal with asterisk mark (*) is (open) terminal which is not connected to the outside.

IC401 RH-iX0341AWZZ: System Microcomputer (IX0341AW) (2/3)

Pin No.	Port Name	Terminal Name	Input/Output	Function
58	MD1	MD1	Input	Operation mode selection input 1
59	P23	_PLAY	Input	Unit PLAY button operation detection input
60	$\overline{\text{WDTOVF}}$	WDTOVF	Output	Watch dog timer (not used)
61	MD2	MD2	Input	Operation mode selection input 2
62	RES	_RESET	Input	Microcomputer hard reset input
63	NMI	_NMI	Input	Nonmaskable interruption (not used)
64	$\overline{\text{STBY}}$	_STBY	Input	Microcomputer standby input (not used)
65	Vcc	VCC	—	Positive power supply
66	XTAL	XTAL	—	Crystal connection terminal
67	EXTAL	EXTAL	—	Crystal connection terminal
68	Vss	VSS	—	Ground potential
69	PF7	_DCEXT	Input	DC-IN detection input
70	PF6	PCNT2	Output	Vcc supply control output of power IC
71	PF5	PCNT1	Output	Vref supply control output of power IC
72	PF4	RCPCNT	Input/Output	Record cir cuit power control output
73	PF3	_DINT	Input	System LSI interruption
74	PF2	_ARQD	Input	Disk cap opens and closes detection/it is started and required
75	PF1	_RPLAY	Input	Remote control PLAY key operation detection
76	IRQ0	_ARQK	Input	It is started by the button input, requirement
77	AVcc	AVCC	—	A/D and D/A converter positive power supply
78	Vref	VREF	—	A/D and D/A converter reference voltage
79	AN0	PLVBAT	Input	Battery voltage detection input
80	AN1	PLCHK	Input	Power supply circuit abnormal detection input
81	AN2	HKEY2	Input	Unit key operation detection input 2
82	AN3	HKEY1	Input	Unit key operation detection input 1
83	AN4	RKEY	Input	Remote control key operation detection
84	AN5	TEMP	Input	Ambient temperature detection inputinput
85	AN6	CHGCNT	Output	Charging current control output
86	DA1	LDVAR	Output	P.U. laser power setting output
87	AVss	AVSS	—	A/D and D/A converter ground potential
88	Vss	VSS	—	Ground potential
89	P24	PLVOW	Output	Battery voltage measurement
90*	TIOCB4	MCMON	Output	Internal openation status monitor
91*	P26	P26	Output	Spare
92	P27	PLVGN	Output	Battery voltage detection gain select output
93	PG0	CHGON	Output	Ni-MH Battery charge ON output
94	PG1	JPNP	Input	Kana conversion/Kana input existencel nonexistence discrimination
95	PG2	_KHOLD	Input	Unit key hold switch input
96	PG3	LDON	Output	P.U. laser ON/OFF control output
97	PG4	OPICGA	Output	P.U. detection sensitivity switching output
98	Vcc	VDD	—	Positive power supply
99	P10	DCNT	Output	Mechanism driver enable output
100	P11	HDON	Output	Recording head current control output

In this unit, the terminal with asterisk mark (*) is (open) terminal which is not connected to the outside.

IC401 RH-iX0341AWZZ: System Microcomputer (IX0341AW) (3/3)

System LSI expansion output port (6th generation: LR37811)

Pin No.	Port Name	Terminal Name	Input/Output	Function	Remarks
52	EXPORT0	LDCNT1	Output	Recording head raising-lowering control output 1	See the separate table *3.
53	EXPORT1	LDCNT2	Output	Recording head raising-lowering control output 2	See the separate table *3.
54	EXPORT2	—	Output	Not used.	(Open)
55	EXPORT3	EMPH1	Output	Audio emphasis control output 1	See the separate table *2.
56	EXPORT4	—	Output	Not used.	(Open)
57	EXPORT5	OPTCNT	Output	Optical digital input circuit control	'H': Circuit operation ON
58	EXPORT6	DAPON	Output	D/A converter operation control output	'H': Operation ON
59	EXPORT7	ADPON	Output	A/D converter operation control output	'H': Operation ON

*1: List of TEST port settings

TEST1	TEST0	Details
H	H	Normal mode
H	L	No adjustment mode
L	H	Test mode
L	L	(Settings prohibited)

*2: List of EMPH port settings

EMPH1	EMPH0	Details
H	H	fs=32K: 'ON'
H	L	fs=48K: 'ON'
L	H	OFF
L	L	fs=44.1K: 'ON'

*3: List of LDCNT port settings

LDCNT1	LDCNT0	Details
H	H	Brake
H	L	Drive UP
L	H	Drive DOWN
L	L	Output OFF

— M E M O —

SHARP PARTS GUIDE

MODEL MD-SR50H(BL)
MD-SR50H(S)
MD-SR50H(YR)
MD-SR50W(BL)
MD-SR50W(S)
MD-SR60E(GJ)
MD-SR60W(S)

"HOW TO ORDER REPLACEMENT PARTS"

To have your order filled promptly and correctly, please furnish the following information.

1. MODEL NUMBER
2. REF. No.
3. PART NO.
4. DESCRIPTION

★ MARK: SPARE PARTS-DELIVERY SECTION

For U.S.A. only

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Please call Toll-Free;
1-800-BE-SHARP

Explanation of capacitors/resistors parts codes

Capacitors

VCC ..... Ceramic type
VCK..... Ceramic type
VCT ..... Semiconductor type
VC • • MF ..... Cylindrical type (without lead wire)
VC • • MN..... Cylindrical type (without lead wire)
VC • • TV..... Square type (without lead wire)
VC • • TQ ..... Square type (without lead wire)
VC • • CY ..... Square type (without lead wire)
VC • • CZ ..... Square type (without lead wire)
VC • • • • • • • • • J .. The 13th character represents capacity difference.
("J" ±5%, "K" ±10%, "M" ±20%, "N" ±30%,
"C" ±0.25 pF, "D" ±0.5 pF, "Z" +80-20%.)

If there are no indications for the electrolytic capacitors, error is ±20%.

Resistors

VRD ..... Carbon-film type
VRS..... Carbon-film type
VRN ..... Metal-film type
VR • • MF ..... Cylindrical type (without lead wire)
VR • • MN..... Cylindrical type (without lead wire)
VR • • TV..... Square type (without lead wire)
VR • • TQ ..... Square type (without lead wire)
VR • • CY ..... Square type (without lead wire)
VR • • CZ ..... Square type (without lead wire)
VR • • • • • • • • • J .. The 13th character represents error.
("J" ±5%, "F" ±1%, "D" ±0.5%.)

If there are no indications for other parts, the resistors are ±5% carbon-film type.

NOTE:
Parts marked with "⚠" are important for maintaining the safety of the set.
Be sure to replace parts with specified ones for maintaining the safety and performance of the set.

MD-SR50H/50W/60E/60W

INTEGRATED CIRCUITS

NO.	PARTS CODE	★	PRICE RANK	DESCRIPTION
IC101	VHIIR3R55//-1	J	AQ	RF Signal Processor,IR3R55
IC201	VHILR37811/-1	J	BB	ENDEC/SERVO/ATRAC, LR37811
IC202	RH-IX2567AFZZ	J	BA	4M D-RAM,IX2567AF
IC203	VHI62FP2002-1	J	AE	2V Regulator,62FP2002
IC251	VSFTD2017++-1	J	AC	N-ch MOS FET,FTD2017
IC253	VHIRN4904//-1	J	AD	Digital Transistor,RN4904
IC255	VHINJM022V/-1	J	AG	OP AMP,NJM022V
IC256	VSRN4911+++-1	J	AD	Digital Transistor,RN4911
IC257	VHIS80808LN-1	J	AE	Reset,S80808LN
IC258,259	VHIHN1C01FU-1	J	AD	Transistor,HN1C01FU
IC260	VHIRN4904//-1	J	AD	Digital Transistor,RN4904
IC351	VHI74ACT02T-1	J	AE	NOR Gate,74ACT02T
IC353	VHIFTD2005/-1	J	AG	N-ch MOS FET,FTD2005
IC354	VHICPH5608/-1	J	AH	N-ch MOS FET,CPH5608
IC401	RH-IX0341AWZZ	J		System Microcomputer, IX0341AW
IC402	VHI58X2402T-1	J	AF	EEPROM,58X2402T
IC431	VHIS80820LN-1	J	AD	Reset,S80820LN
IC501	VHIAK4550VT-1	J	AV	AD/DA Converter,AK4550VT
IC601	VHILV8017W+-1	J	AT	4-CH PWM Driver,LV8017W
IC621	VHIRN4904//-1	J	AD	Digital Transistor,RN4904
IC651	VHILB1930M/-1	J	AH	Motor Driver,LB1930M
IC701	VHIIR3R54N/-1	J	AQ	Audio Amp.,IR3R54N
IC703	VHIIR3R59N/-1	J	AN	Audio Amp.,IR3R59N
IC771	VHI62GR2522-1	J	AG	2.5V Regulator,62GR2522
IC801	VHI62RP2002-1	J	AF	2.0V Regulator,62RP2002
IC802	VHIHN1C01FU-1	J	AD	Power Transistor,HN1C01FU
IC803	VHIS80819LN-1	J	AE	Reset IC,S-80819LN
IC809	VHIRN4904//-1	J	AD	Digital Transistor,RN4904
IC821	VHICPH3403/-1	J	AE	N-ch MOS FET,CPH3403
IC822	VHIIR3M14N/-1	J	AK	DC/DC Converter,IR3M14N
IC841	VHI6372C281-1	J	AH	2.8V UP Converter,6372C281
IC842	VHIXC62HS02-1	J	AE	2.35V Regulator,XC62HS02
IC851	VHICPH3403/-1	J	AE	N-ch MOS FET,CPH3403
IC852	VHIIR3M14N/-1	J	AK	DC/DC Converter,IR3M14N
IC871	VHITC7S86FU-1	J	AE	Exclusive or Gate, TC7S86FU
IC873	VHI62GR4522-1	J	AG	4.5V Regulator,62GR4522
IC892	VHIHN1C01FU-1	J	AD	Power Transistor,HN1C01FU
IC901	VHILB1971V+-1	J	AR	Spindle Motor Driver,LB1971V

TRANSISTORS

Q101	VS2SA17457/-1	J	AB	Silicon,PNP,2SA17457
Q250	VS2SA17457/-1	J	AB	Silicon,PNP,2SA17457
Q251	VS2SD1819AS-1	J	AC	Silicon,NPN,2SD1819 AS
Q257	VS2SA1832GR-1	J	AC	Silicon,PNP,2SA1832 GR
Q461	VS2SD1819AS-1	J	AC	Silicon,NPN,2SD1819 AS
Q711	VSRN1444A//-1	J	AC	Digital,NPN,RN1444 A
Q721	VS2SD1979S+-1	J	AC	Silicon,NPN,2SD1979 S
Q801	VS2SJ520TL+-1	J	AM	FET,2SJ520 TL (P-ch)
Q803	VSUN5213+++-1	J	AC	Digital,NPN,UN5213
Q891	VS2SA1873GR-1	J	AC	Silicon,PNP,2SA1873 GR
Q901	VSUN5210+++-1	J	AC	Digital,NPN,UN5210

DIODES

D251	VHD1SS400//-1	J	AB	Silicon,1SS400
D281	VHD1SS400//-1	J	AB	Silicon,1SS400
D351	VHDSBE803//-1	J	AD	Silicon,SBE803
D431	VHDHSB2838+-1	J	AC	Silicon,HSB2838
D461	VHDRB731U//-1	J	AC	Silicon,RB731U
D492	VHEMA8075M/-1	J	AC	Zener,MA8075M
D494~496	VHEMA8075M/-1	J	AC	Zener,MA8075M
D622	VHEMA8075M/-1	J	AC	Zener,MA8075M
D651	VHDF10J2E//-1	J	AC	Schottky,F10J2E
D801	VHDF05J2L//-1	J	AC	Schottky,F05J2L
D802	VHEMA8051M/-1	J		Zener,MA8051M
D803	VHDRB520S30-1	J	AC	Schottky,RB520S30
D821	VHDD1FH3+++-1	J	AE	Schottky,D1FH3
D822,823	VHDF10J2E//-1	J	AC	Schottky,F10J2E
D831,832	VHDHRB0103B-1	J	AC	Schottky,HRB0103B
D841	VHDF10J2E//-1	J	AC	Schottky,F10J2E
D842	VHDHRB0103B-1	J	AC	Schottky,HRB0103B
D851	VHDD1FH3+++-1	J	AE	Schottky,D1FH3
D861,862	VHDF10J2E//-1	J	AC	Schottky,F10J2E
PH901(8-2)	VHPGP1S93K/-1	J	AF	Photo Interrupter

COILS

NO.	PARTS CODE	★	PRICE RANK	DESCRIPTION
L100	VPBNN100K0000	J	AC	10 µH
L171	RCILC0356AFZZ	J	AC	10 µH
L491	VRS-TV2AB330J	J	AA	33 ohms,1/10W
L500	RCILC0344AFZZ	J	AC	47 µH,Choke
L601~604	RCILC0358AFZZ	J	AC	4.7 µH,Choke
L608~610	RCILC0358AFZZ	J	AC	4.7 µH,Choke
L702~704	RCILC0353AFZZ	J	AB	Tip Solid Induction,100mA
L710	VRS-TV2AB470J	J	AA	47 ohms,1/10W
L771	RCILC0359AFZZ	J	AC	100 µH,Choke
L800,801	RCORF0017AWZZ	J	AE	Tip Impeder
L821	RCILC0005AWZZ	J	AF	10 µH,Choke
L841	RCILC0358AFZZ	J	AC	4.7 µH,Choke
L851	RCILC0008AWZZ	J		22 µH,Choke
L862	RCILC0359AFZZ	J	AC	100 µH,Choke
L871	VPBNNR47K0000	J	AC	0.47 µH

VIBRATORS

XL201	RCRSC0028AFZZ	J	AH	Crystal,33.868 MHz
XL401	RCRM-0201AFZZ	J	AD	Ceramic,4.19 MHz

CAPACITORS

C100	VCSATA0JJ106M	J	AD	10 µF,6.3V,Electrolytic,Tantalum
C102,103	VCKYTV1AB105K	J	AD	1 µF,10V
C104	VCKYCY1CB273K	J	AA	0.027 µF,16V
C106	VCKYTV1CB224K	J	AB	0.22 µF,16V
C107	VCKYCY1EB123K	J	AA	0.012 µF,25V
C109	VCKYTV1AB105K	J	AD	1 µF,10V
C110	VCKYTV1CB224K	J	AB	0.22 µF,16V
C111	VCKYCY1HB332K	J	AA	0.0033 µF,50V
C112	VCKYCY1CB333K	J	AA	0.033 µF,16V
C121,122	VCCCCY1HH271J	J	AA	270 pF (CH),50V
C123,124	VCCSCY1HL391J	J	AA	390 pF,50V
C130	VCKYCY1CB104K	J	AB	0.1 µF,16V
C161	VCKYTV1AB105K	J	AD	1 µF,10V
C165	VCKYCY1CB333K	J	AA	0.033 µF,16V
C171,172	RC-SZ1144AFZZ	J	AD	33 µF,6.3V,Electrolytic,Tantalum
C201	VCKYTQ1CB105K	J	AD	1 µF,16V
C202	VCSATE0JJ476M	J	AD	47 µF,6.3V,Electrolytic,Tantalum
C203	VCKYCY1CB104K	J	AB	0.1 µF,16V
C204	VCKYTV1CB474K	J	AC	0.47 µF,16V
C205	VCKYCY1CB104K	J	AB	0.1 µF,16V
C206	VCKYTV1AB105K	J	AD	1 µF,10V
C207	VCKYCY1CB104K	J	AB	0.1 µF,16V
C209	VCCCCY1HH220J	J	AA	22 pF (CH),50V
C211,212	VCCCCY1HH5R0C	J	AA	5 pF (CH),50V
C251	VCKYCY1CB104K	J	AB	0.1 µF,16V
C252	VCKYTV1CB104K	J	AA	0.1 µF,16V
C253~255	VCKYCY1CB104K	J	AB	0.1 µF,16V
C259	VCKYCY1CB104K	J	AB	0.1 µF,16V
C291	VCKYTV1AB105K	J	AD	1 µF,10V
C351	VCCCCY1HH270J	J	AA	27 pF (CH),50V
C353	VCSATA0JJ106M	J	AD	10 µF,6.3V,Electrolytic,Tantalum
C354	VCKYCY1CB104K	J	AB	0.1 µF,16V
C357	VCKYCY1CB104K	J	AB	0.1 µF,16V
C361	VCKYTV1HB393K	J	AB	0.039 µF,50V
C401	VCKYCY1CB104K	J	AB	0.1 µF,16V
C431	VCKYTV1CB474K	J	AC	0.47 µF,16V
C454	VCKYCY1HB222K	J	AA	0.0022 µF,50V
C481,482	VCKYTQ1CB105K	J	AD	1 µF,16V
C491	VCKYTV1CB104K	J	AA	0.1 µF,16V
C492	VCKYTV1AB105K	J	AD	1 µF,10V
C500	VCSATA0JJ106M	J	AD	10 µF,6.3V,Electrolytic,Tantalum
C501,502	VCKYCY1HB222K	J	AA	0.0022 µF,50V
C503	VCSATA1AJ335M	J	AB	3.3 µF,10V,Electrolytic,Tantalum
C505,506	VCKYCY1HB102K	J	AA	0.001 µF,50V
C509,510	VCKYTV1CF225Z	J	AC	2.2 µF,16V
C511	VCKYTV1AB105K	J	AD	1 µF,10V
C551	VCKYCY1CB104K	J	AB	0.1 µF,16V
C601~604	VCKYTV1AB105K	J	AD	1 µF,10V
C605	VCKYCY1CB104K	J	AB	0.1 µF,16V
C606	RC-SZ0001AWZZ	J	AG	22 µF,6.3V,Electrolytic
C608	VCKYTQ1CB105K	J	AD	1 µF,16V
C609,610	VCKYTV1AB105K	J	AD	1 µF,10V
C622	VCKYCY1CB104K	J	AB	0.1 µF,16V
C651	VCKYTV1CF105Z	J	AB	1 µF,16V
C652	VCKYCY1CB104K	J	AB	0.1 µF,16V
C701,702	VCSATA0JJ106M	J	AD	10 µF,6.3V,Electrolytic,Tantalum
C703	VCKYCY1EB103K	J	AA	0.01 µF,25V

NO.	PARTS CODE	★	PRICE RANK	DESCRIPTION
C704	VCSATE0JJ476M	J	AD	47 µF,6.3V,Electrolytic,Tantalum
C711,712	VCCCCY1HH101J	J	AA	100 pF (CH),50V
C713,714	VCKYTV1AB105K	J	AD	1 µF,10V
C715	VCKYCY1CB104K	J	AB	0.1 µF,16V
C721,722	VCSATA1AJ335M	J	AB	3.3 µF,10V,Electrolytic,Tantalum
C723,724	VCKYCY1HB102K	J	AA	0.001 µF,50V
C725,726	VCSATA1AJ335M	J	AB	3.3 µF,10V,Electrolytic,Tantalum
C731	VCKYCY1CF224Z	J	AB	0.22 µF,16V
C733,734	VCKYCY1CB104K	J	AB	0.1 µF,16V
C753	VCKYTV1CF105Z	J	AB	1 µF,16V
C754	VCKYTV1AB105K	J	AD	1 µF,10V
C758	VCKYTQ1CB105K	J	AD	1 µF,16V
C760	VCKYCY1CB104K	J	AB	0.1 µF,16V
C761,762	VCKYTV1CF225Z	J	AC	2.2 µF,16V
C765,766	VCKYTV1CB224K	J	AB	0.22 µF,16V
C771	VCSATE0JJ476M	J	AD	47 µF,6.3V,Electrolytic,Tantalum
C773	VCKYTV1CB224K	J	AB	0.22 µF,16V
C774	VCKYTV1CF105Z	J	AB	1 µF,16V
C801	VCKYTV1AB105K	J	AD	1 µF,10V
C802	VCKYCY1EB103K	J	AA	0.01 µF,25V
C803	VCKYCY1CB104K	J	AB	0.1 µF,16V
C804	VCKYTV1CB104K	J	AA	0.1 µF,16V
C818	VCKYCY1CB104K	J	AB	0.1 µF,16V
C821	VCKYTQ1AB335K	J	AF	3.3 µF,10V
C822	RC-SZ0001AWZZ	J	AG	22 µF,6.3V,Electrolytic
C823	VCEAPW0GW227M	J	AD	220 µF,4.0V,Electrolytic
C825	VCKYTQ1CB105K	J	AD	1 µF,16V
C826	VCCCCY1HH101J	J	AA	100 pF (CH),50V
C827	VCCCCY1HH221J	J	AA	220 pF (CH),50V
C828	VCKYTV1AB105K	J	AD	1 µF,10V
C830	VCKYTV1AB105K	J	AD	1 µF,10V
C832~835	VCKYCY1CB104K	J	AB	0.1 µF,16V
C836	VCKYTQ1CB105K	J	AD	1 µF,16V
C837	VCKYTV1AB105K	J	AD	1 µF,10V
C838	VCKYCY1CB104K	J	AB	0.1 µF,16V
C839	VCKYTV1CB334K	J	AC	0.33 µF,16V
C840	VCEAPW0GW227M	J	AD	220 µF,4.0V,Electrolytic
C841	VCKYTV1AB105K	J	AD	1 µF,10V
C842	RC-SZ1144AFZZ	J	AD	33 µF,6.3V,Electrolytic,Tantalum
C843	VCKYTV1CB224K	J	AB	0.22 µF,16V
C844	VCSATA0JJ106M	J	AD	10 µF,6.3V,Electrolytic,Tantalum
C845,846	VCKYCY1CB104K	J	AB	0.1 µF,16V
C847,848	VCKYTV1AB105K	J	AD	1 µF,10V
C849	VCEAPW0GW227M	J	AD	220 µF,4.0V,Electrolytic
C850	VCKYTV1CB104K	J	AA	0.1 µF,16V
C851	VCKYTQ1AB335K	J	AF	3.3 µF,10V
C852	RC-SZ0001AWZZ	J	AG	22 µF,6.3V,Electrolytic
C853	VCEAPW0GW227M	J	AD	220 µF,4.0V,Electrolytic
C856	VCCCCY1HH331J	J	AA	330 pF (CH),50V
C857	VCKYCY1HB561K	J	AA	560 pF,50V
C860	VCKYTV1AB105K	J	AD	1 µF,10V
C862,863	VCKYTV1AB105K	J	AD	1 µF,10V
C868	VCKYTV1CF105Z	J	AB	1 µF,16V
C869	VCSATE0JJ476M	J	AD	47 µF,6.3V,Electrolytic,Tantalum
C872	VCSATA1AJ106M	J	AE	10 µF,10V,Electrolytic,Tantalum
C876	VCKYTV1AB105K	J	AD	1 µF,10V
C901~903	VCKYCY1HB222K	J	AA	0.0022 µF,50V
C904	VCKYTV1CB334K	J	AC	0.33 µF,16V
C905	VCKYCY1HB471K	J	AA	470 pF,50V
C906,907	VCKYCY1CB223K	J	AA	0.022 µF,16V
C908	VCKYCY1CB473K	J	AA	0.047 µF,16V
C910	VCKYCY1CB104K	J	AB	0.1 µF,16V
C911	VCKYTQ1AB335K	J	AF	3.3 µF,10V
C912~914	VCKYCY1HB222K	J	AA	0.0022 µF,50V

RESISTORS

	VRS-CY1JB000J	J	AA	0 ohm,Jumper,0.8×1.55mm,Green
R101~104	VRS-CY1JB223J	J	AA	22 kohms,1/16W
R105	VRS-CY1JB394J	J	AA	390 kohms,1/16W
R106	VRS-CY1JB563J	J	AA	56 kohms,1/16W
R154	VRS-CY1JB122J	J	AA	1.2 kohms,1/16W
R161	VRS-CY1JB122J	J	AA	1.2 kohms,1/16W
R202	VRS-TV2AB330J	J	AA	33 ohms,1/10W
R204	VRS-CY1JB102J	J	AA	1 kohm,1/16W
R205	VRS-CY1JB334F	J	AA	330 kohms,1/16W
R206	VRS-CY1JB274F	J	AA	270 kohms,1/16W
R222	VRS-CY1JB105J	J	AA	1 Mohm,1/16W
R250,251	VRS-CY1JB101J	J	AA	100 ohm,1/16W
R252	VRS-CY1JB154D	J	AA	150 kohms,1/16W
R253	VRS-CY1JB393D	J	AA	39 kohms,1/16W
R254	VRS-CY1JB223J	J	AA	22 kohms,1/16W
R255	VRS-CY1JB472J	J	AA	4.7 kohms,1/16W
R256	VRS-CY1JB563J	J	AA	56 kohms,1/16W
R257	VRS-CY1JB273D	J	AA	27 kohms,1/16W
R261	VRS-CY1JB102J	J	AA	1 kohm,1/16W
R262,263	VRS-CY1JB683D	J	AA	68 kohms,1/16W
R266	VRS-CY1JB563D	J	AA	56 kohms,1/16W
R267	VRS-CY1JB103D	J	AA	10 kohm,1/16W
R269	VRS-CY1JB303D	J	AA	30 kohms,1/16W
R270,271	VRS-CY1JB683D	J	AA	68 kohms,1/16W
R272	VRS-CY1JB101J	J	AA	100 ohm,1/16W
R277	VRS-CY1JB393J	J	AA	39 kohms,1/16W
R279	VRS-CY1JB101J	J	AA	100 ohm,1/16W
R281	VRS-CY1JB223J	J	AA	22 kohms,1/16W
R282	VRS-CY1JB105J	J	AA	1 Mohm,1/16W
R283	VRS-CY1JB104J	J	AA	100 kohm,1/16W
R284	VRS-CY1JB394J	J	AA	390 kohms,1/16W
R285	VRS-CY1JB104J	J	AA	100 kohm,1/16W
R286	VRS-CY1JB222J	J	AA	2.2 kohms,1/16W
R287	VRS-CY1JB564J	J	AA	560 kohms,1/16W
R288	VRS-CY1JB473J	J	AA	47 kohms,1/16W
R291	VRS-CY1JB101J	J	AA	100 ohm,1/16W
R292	VRS-CY1JB104J	J	AA	100 kohm,1/16W
R293	VRS-CY1JB222J	J	AA	2.2 kohms,1/16W
R294~296	VRS-CY1JB104J	J	AA	100 kohm,1/16W
R351	VRS-TV2AB4R7J	J	AA	4.7 ohms,1/10W
R361	VRS-TQ2BB150J	J	AA	15 ohms,1/8W
R402	VRS-CY1JB104J	J	AA	100 kohm,1/16W
R403	VRS-CY1JB102J	J	AA	1 kohm,1/16W
R404	VRS-CY1JB104J	J	AA	100 kohm,1/16W
R405	VRS-CY1JB103J	J	AA	10 kohm,1/16W
R406	VRS-CY1JB104J	J	AA	100 kohm,1/16W
R407	VRS-CY1JB103J	J	AA	10 kohm,1/16W
R408	VRS-CY1JB104J	J	AA	100 kohm,1/16W
R411	VRS-CY1JB102J	J	AA	1 kohm,1/16W
R412	VRS-CY1JB153J	J	AA	15 kohms,1/16W
R413~415	VRS-CY1JB102J	J	AA	1 kohm,1/16W
R416	VRS-CY1JB104J	J	AA	100 kohm,1/16W
R422	VRS-CY1JB104J	J	AA	100 kohm,1/16W
R423	VRS-CY1JB223F	J	AA	22 kohms,1/16W
R424,425	VRS-CY1JB223J	J	AA	22 kohms,1/16W
R431	VRS-CY1JB334J	J	AA	330 kohms,1/16W
R443	VRS-CY1JB123J	J	AA	12 kohms,1/16W
R451	VRS-CY1JB562J	J	AA	5.6 kohms,1/16W
R452	VRS-CY1JB822J	J	AA	8.2 kohms,1/16W
R453	VRS-CY1JB183J	J	AA	18 kohms,1/16W
R454	VRS-CY1JB563J	J	AA	56 kohms,1/16W
R455	VRS-CY1JB562J	J	AA	5.6 kohms,1/16W
R456	VRS-CY1JB822J	J	AA	8.2 kohms,1/16W
R457	VRS-CY1JB183J	J	AA	18 kohms,1/16W
R458	VRS-CY1JB563J	J	AA	56 kohms,1/16W
R460	VRS-CY1JB683J	J	AA	68 kohms,1/16W
R461	VRS-CY1JB104J	J	AA	100 kohm,1/16W
R462	VRS-CY1JB273J	J	AA	27 kohms,1/16W
R463~465	VRS-CY1JB104J	J	AA	100 kohm,1/16W
R466	VRS-CY1JB564J	J	AA	560 kohms,1/16W
R492	VRS-CY1JB102J	J	AA	1 kohm,1/16W
R501,502	VRS-CY1JB471J	J	AA	470 ohms,1/16W
R600	VRS-CY1JB560J	J	AA	56 ohms,1/16W
R601	VRS-CY1JB563J	J	AA	56 kohms,1/16W
R621	VRS-CY1JB104J	J	AA	100 kohm,1/16W
R622	VRS-CY1JB102J	J	AA	1 kohm,1/16W
R701	VRS-CY1JB101J	J	AA	100 ohm,1/16W
R702	VRS-CY1JB220J	J	AA	22 ohms,1/16W
R703	VRS-CY1JB104J	J	AA	100 kohm,1/16W
R711,712	VRS-CY1JB562J	J	AA	5.6 kohms,1/16W
R713,714	VRS-CY1JB103J	J	AA	10 kohm,1/16W
R715,716	VRS-CY1JB104J	J	AA	100 kohm,1/16W
R717,718	VRS-CY1JB102J	J	AA	1 kohm,1/16W
R719,720	VRS-CY1JB822J	J	AA	8.2 kohms,1/16W
R723,724	VRS-CY1JB682J	J	AA	6.8 kohms,1/16W
R725	VRS-CY1JB101J	J	AA	100 ohm,1/16W
R726	VRS-CY1JB393J	J	AA	39 kohms,1/16W
R727	VRS-CY1JB822J	J	AA	8.2 kohms,1/16W
R728	VRS-CY1JB102J	J	AA	1 kohm,1/16W
R729,730	VRS-CY1JB272J	J	AA	2.7 kohms,1/16W
R754	VRS-CY1JB154J	J	AA	150 kohms,1/16W
R757	VRS-CY1JB222J	J	AA	2.2 kohms,1/16W
R758	VRS-CY1JB101J	J	AA	100 ohm,1/16W
R761	VRS-CY1JB224J	J	AA	220 kohms,1/16W
R762	VRS-CY1JB913J	J	AA	91 kohms,1/16W
R765,766	VRS-CY1JB150J	J	AB	15 ohms,1/16W
R767,768	VRS-CY1JB4R7J	J	AA	4.7 ohms,1/16W

NO.	PARTS CODE	★	PRICE RANK	DESCRIPTION
R801	VHHSMDM110V-1	J	AK	Conductive Resin Switch
R802	VRS-CY1JB561J	J	AA	560 ohms,1/16W
R803	VRS-CY1JB122J	J	AA	1.2 kohms,1/16W
R806	VRS-CY1JB563J	J	AA	56 kohms,1/16W
R807	VRS-CY1JB223J	J	AA	22 kohms,1/16W
R808	VRS-TV2AB1R0F	J	AB	1 ohm,1/10W
R809	VRS-TV2AB1R0J	J	AA	1 ohm,1/10W
R810	VRS-TV2AB1R0F	J	AB	1 ohm,1/10W
R811	VRS-TV2AB1R0J	J	AA	1 ohm,1/10W
R812~815	VRS-CY1JB103F	J	AA	10 kohm,1/16W
R816	VRS-CY1JB152J	J	AA	1.5 kohms,1/16W
R818	VRS-CY1JB335J	J	AA	3.3 Mohms,1/16W
R819	VRS-CY1JB223J	J	AA	22 kohms,1/16W
R823	VRS-CY1JB274J	J	AA	270 kohms,1/16W
R824	VRS-CY1JB103J	J	AA	10 kohm,1/16W
R825	VRS-CY1JB304F	J	AF	300 kohms,1/16W
R826	VRS-CY1JB106J	J	AA	10 Mohm,1/16W
R827	VRS-CY1JB224F	J	AA	220 kohms,1/16W
R831,832	VRS-CY1JB184F	J	AA	180 kohms,1/16W
R833	VRS-CY1JB470J	J	AA	47 ohms,1/16W
R841	VRS-CY1JB104J	J	AA	100 kohm,1/16W
R844	VRS-CY1JB470J	J	AA	47 ohms,1/16W
R850	VRS-CY1JB104J	J	AA	100 kohm,1/16W
R853	VRS-CY1JB274J	J	AA	270 kohms,1/16W
R854	VRS-CY1JB103J	J	AA	10 kohm,1/16W
R855	VRS-CY1JB394F	J	AA	390 kohms,1/16W
R856	VRS-CY1JB106J	J	AA	10 Mohm,1/16W
R857	VRS-CY1JB334F	J	AA	330 kohms,1/16W
R871	VRS-CY1JB103J	J	AA	10 kohm,1/16W
R901~904	VRS-CY1JB1R0J	J	AA	1 ohm,1/16W
R906	VRS-CY1JB155J	J	AA	1.5 Mohms,1/16W
R908	VRS-CY1JB223J	J	AA	22 kohms,1/16W
R920	VRS-CY1JB104J	J	AA	100 kohm,1/16W
R921	VRS-CY1JB331J	J	AA	330 ohms,1/16W
R922	VRS-CY1JB104J	J	AA	100 kohm,1/16W

OTHER CIRCUITRY PARTS

CN101	QCNCW801XAFZZ	J	AH	Socket,22Pin
CN451	QCNCW804NAFZZ	J	AE	Socket,13Pin
CN482	QCNCW804JAFZZ	J	AE	Socket,9Pin
CN601	QCNCW716RAFZZ	J	AF	Socket,16Pin
⚠ F841	QFS-L401AAFNZ	J		Sguare Tip Type Fuse,0.4A, DC 60V
J701	VHLGP1FB95R-1	J	AP	Jack,OPTICAL/LINE IN
J702	QJAKM0014AWZZ	J	AF	Jack,Mic IN
J703	QJAKM0015AWZZ	J	AL	Jack,Remote Control/Head-phones
J801	QJAKC0007AWZZ	J	AF	Jack,DC IN
M901	RMOTV0028AWZZ	J		Motor Ass'y [Spindle]
M902	RMOTV0511AFZZ	J	AT	Motor Ass'y [Sled]
M903	RMOTV0512AFM1	J	AR	Motor Ass'y [Lift]
SW401	QSW-M0001AWZZ	J	AD	Switch,Push Type [EJECT]
SW402	QSW-S0948AFZZ	J	AC	Switch,Slide Type [HOLD]
SW403	QSW-M0001AWZZ	J	AD	Switch,Push Type [LID DETECTION]
SW902(8-3)	QSW-M0170AFZZ	J	AD	Switch,Push Type [Disc Protect]

MECHANICAL PARTS

1	NGERH0597AFZZ	J	AC	Wheel,Drive
2	NSFTD0334AFZZ	J	AD	Screw,Drive
3	MARMM0170AFM1	J	AK	Bracket,Magnetic Field Ass'y
5	LHLDX3141AFM1	J	AP	Cartridge Holder Ass'y
6	LCHSM0097AWM1	J		Main Chassis Ass'y
7	PCUSG0599AFZZ	J	AB	Cushion
8	QPWBH0004AWM1	J		Magnetic Flexible PWB Ass'y
8- 1	————		—	Magnetic Flexible PWB (Not Replacement Item)
8- 2(PH901)	VHPGP1S93K/-1	J	AF	Photo Interrupter
8- 3(SW902)	QSW-M0170AFZZ	J	AD	Switch,Push Type [Disc Protect]
9	MLEVF2641AFZZ	J		Lever,Eject
11	MSPRP0923AFZZ	J		Spring,Thrust Plate
12	MSPRP0925AFZZ	J		Spring,Drive Screw
13	NGERH0603AFZZ	J	AE	Gear,Drive
14	LANGF1610AFZZ	J	AC	Bracket,Cancel
⚠ 15	RCTRH8194AFZZ	J	BM	Optical Pickup Unit
16	MSPRP0922AFFJ	J	AD	Spring,Drive Grip
17	NSFTM0292AFFW	J	AC	Shaft,Guide
18	MSPRT1625AFFJ	J	AD	Spring,Eject Lever
19	MLEVF2637AFM1	J	AH	Lift Working Lever Ass'y
20	MLEVF2640AFZZ	J		Lever,Lift
21	RCILH0002AWZZ	J		Magnetic Head
22	PCOVP1339AFZZ	J	AD	Cover,Mechanism
23	QPWBH0338AFZZ	J	AH	Magnetic Head Flexible PWB
24	MLEVF2639AFFW	J	AD	Lever,Lift Joint
25	MLEVF2638AFFW	J	AD	Lever,Block
26	MSPRD1362AFFJ	J	AD	Spring,Lift Lever
501	LX-BZ0800AFZZ	J	AA	Screw,ø1.4×2.5mm
502	LX-BZ0804AFFF	J	AA	Screw,ø1.4×2.2mm
503	LX-BZ0823AFZZ	J	AA	Screw,ø1.4×1.2mm
504	LX-JZ0148AFZZ	J	AA	Screw,ø1.7×3mm
505	LX-JZ0154AFZZ	J	AA	Screw,ø1.4×2.8mm
506	LX-WZ9290AFZZ	J	AA	Washer,ø0.8×ø2.4×0.2mm
507	XSPSN14P01500	J	AA	Screw,ø1.7×2.5mm
508	XWSSD14-05000	J	AA	Washer,ø1.4×0.5mm
509	LX-BZ0974AFZZ	J	AB	Screw,ø1.4×5.5mm
510	LX-WZ9296AFZZ	J	AA	Washer,ø1.5×ø3.5×0.25mm
511	LX-BZ0991AFZZ	J	AB	Screw,ø1.2×1.6mm
512	LX-BZ1001AFZZ	J		Screw,ø1.4×2.3mm
M901	RMOTV0028AWZZ	J		Motor Ass'y [Spindle]
M902	RMOTV0511AFZZ	J	AT	Motor Ass'y [Sled]
M903	RMOTV0512AFM1	J	AR	Motor Ass'y [Lift]

CABINET PARTS

201	GFTAT3008AWM1	J	AW	Top Cabinet [SR50H-S/SR50W-S]
201	GFTAT3008AWM2	J	AW	Top Cabinet [SR50H-BL/SR50W-BL]
201	GFTAT3008AWM3	J	AW	Top Cabinet [SR50H-YR]
201	GFTAT3009AWM1	J		Top Cabinet [SR60W]
201	GFTAT3009AWM2	J	AM	Top Cabinet [SR60E]
202	GCABA1194AWSA	J	AH	Center Cabinet [Except for SR50H-YR/SR60E]
202	GCABA1194AWSB	J	AH	Center Cabinet [SR50H-YR/SR60E]
203	GFTAU3019AWSA	J	AS	Bottom Cabinet [SR50H-S]
203	GFTAU3023AWSA	J	AS	Bottom Cabinet [SR50H-BL]
203	GFTAU3024AWSA	J	AS	Bottom Cabinet [SR50H-YR]
203	GFTAU3025AWSA	J	AS	Bottom Cabinet [SR50W-S]
203	GFTAU3026AWSA	J		Bottom Cabinet [SR50W-BL]
203	GFTAU3027AWSA	J		Bottom Cabinet [SR60W]
203	GFTAU3028AWSA	J	AS	Bottom Cabinet [SR60E]
204	HDECQ0527AWSA	J	AM	Decoration Plate [Except for SR50H-YR/SR50H-BL/ SR50W-BL/SR60E]
204	HDECQ0527AWSB	J	AM	Decoration Plate [SR50H-BL/SR50W-BL]
204	HDECQ0527AWSC	J	AM	Decoration Plate [SR60E]
204	HDECQ0527AWSD	J	AM	Decoration Plate [SR50H-YR]
205	PSHET0021AWZZ	J	AD	Insulation Sheet,Bottom Cabinet
206	PSHEF0019AWZZ	J	AB	Felt
207	GDORB0002AWSA	J	AF	Cover,Battery [Except for SR50H-YR/SR60E]
207	GDORB0002AWSB	J	AF	Cover,Battery [SR50H-YR/SR60E]
208	JKNBZ0666AWSA	J	AF	Knob,Eject
209	JKNBZ0625AWSA	J	AD	Knob,Hold
210	TCAUS0044AWZZ	J	AB	Label A,Class 3B
211	TCAUS0043AWZZ	J	AC	Label B,Class 3B
212	LANGT0065AWFW	J	AG	Bracket,Display
213	RUNTK0006AWZZ	J	AQ	Key Flexible PWB Ass'y
214	RUNTZ0016AWZZ	J	BB	LCD Ass'y
215	JKNBZ0667AWSA	J	AK	Button,Operation
216	PSHEZ0066AWZZ	J	AB	Sheet,LCD C
217	PSHEZ0069AWZZ	J		Sheet,Key Flexible PWB
218	PCUSZ0016AWZZ	J	AB	Cushion,Display Bracket
219	PSHET0020AWZZ	J	AB	Sheet,Jack
220	PCUSZ0015AWZZ	J	AB	Cushion,Mechanism Front
221	PSHEZ0068AWZZ	J		Spacer,Mechanism
222	PCUSZ0014AWZZ	J	AB	Cushion,Mechanism Right
223	PCUSZ0022AWZZ	J		Cushion,Mechanism
224	PCUSG0051AWZZ	J	AC	Rubber,Preventive Vibration B
225	PCUSG0050AWZZ	J	AC	Rubber,Preventive Vibration A
226	MSPRP0033AWFW	J	AC	Spring B,Cartridge
227	PGIDM0030AW00	J	AC	Guide,Battery Terminal
228	PCOVW1008AW01	J		Cover,Battery Terminal,+
229	QTANB9020AWFQ	J	AD	Terminal,Battery +
230	LANGZ0029AWFW	J	AE	Bracket,Side
231	PSHEZ0051AWZZ	J	AC	Sheet,Operation Button A
232	PSHEZ0052AWZZ	J	AC	Sheet,Operation Button B
233	PCUSS0047AWZZ	J	AB	Cushion,LCD B
234	PCUSS0046AWZZ	J	AB	Cushion,LCD A

NO.	PARTS CODE	★	PRICE RANK	DESCRIPTION
236	MSPRP0032AWFW	J	AB	Spring A,Cartridge
237	LHLDZ3012AWM1	J	AF	Main Frame Ass'y
240	MSPRP0034AWFW	J	AB	Spring C,Cartridge
241	PCUSZ0021AWZZ	J		Cushion,Display Bracket
242	PSPAP0002AW00	J		Spacer,Top Cabinet
601	LX-BZ1008AFFC	J	AB	Screw,ø1.4×2mm
602	LX-BZ0048AWFN	J		Screw,ø1.4×2.5mm
603	LX-CZ0107AFFF	J	AA	Screw,ø1.2×2.5mm
605	LX-BZ0805AFFN	J	AB	Screw,ø1.7×2.5mm

ACCESSORIES/PACKING PARTS

1	RPHOH0005AWZZ	J	AX	Earphones [SR60W/SR60E Only]
2	RPHOH0001AWZZ	J	AW	Headphones [SR50H/SR50W Only]
3	RRMCW0002AWZZ	J		Remote Control [SR60W/SR60E Only]
4	UBAGC0003AWZZ	J		Battery Case [SR60W/SR60E Only]
5	TINSE0295AWZZ	J		Quick Guide [SR60E]
5	TINSE0296AWZZ	J		Quick Guide [SR50H for U.K.]
6	SPAKZ0599AWZZ	J		Pad,AC Adapter [SR50H/SR60E]
6	SPAKZ0600AWZZ	J		Pad,AC Adapter [SR50W Except for Australia/New Zealand]
6	SPAKZ0601AWZZ	J		Pad,AC Adapter [SR50W for Australia/New Zealand/SR60W]
⚠7	RADPA5402AFZZ	J	BF	AC Adapter [SR50W Except for Australia/New Zealand]
⚠7	RADPA6435AFZZ	J	BG	AC Adapter [SR50W for Australia/New Zealand]
⚠7	RADPA7045AWZZ	J	AX	AC Adapter [SR50H for Europe]
⚠7	RADPA8046AWZZ	J		AC Adapter [SR60E/SR50H for U.K.]
⚠7	RADPA8493AFZZ	J	BH	AC Adapter [SR60W]
8	QCNWG0382AFZZ	J	AK	Connecting Cord,RCA Type
9	SPAKA0237AWZZ	J		Packing Add.
10	TINSE0289AWZZ	J		Operation Manual [SR60E]
10	TINSE0290AWZZ	J		Operation Manual [SR50H for U.K.]
10	TINSE0291AWZZ	J		Operation Manual [SR50W for Australia/New Zealand]
10	TINSZ0519AWZZ	J		Operation Manual [SR60W]
10	TINSZ0520AWZZ	J		Operation Manual [SR50H for Europe]
10	TINSZ0521AWZZ	J		Operation Manual [SR50W Except for Australia/ New Zealand]
11	SPAKZ0490AWZZ	J	AC	Operation Manual Spacer [SR60W/SR60E/SR50H for U.K. Only]
12	UBAGC0006AWSA	J		Carrying Case
13	SPAKC0944AWZZ	J		Packing Case [SR60W]
13	SPAKC0945AWZZ	J		Packing Case [SR60E]
13	SPAKC0948AWZZ	J		Packing Case [SR50H-S for Europe]
13	SPAKC0949AWZZ	J		Packing Case [SR50H-BL for Europe]
13	SPAKC0950AWZZ	J		Packing Case [SR50H-YR]
13	SPAKC0951AWZZ	J		Packing Case [SR50W-S]
13	SPAKC0952AWZZ	J		Packing Case [SR50W-BL]
13	SPAKC0970AWZZ	J		Packing Case [SR50H-S for U.K.]
13	SPAKC0971AWZZ	J		Packing Case [SR50H-BL for U.K.]
15	TLABE0354AWZZ	J		Label,Bar Code [SR60E]
15	TLABE0355AWZZ	J		Label,Bar Code [SR50H-S]
15	TLABE0356AWZZ	J		Label,Bar Code [SR50H-BL]
15	TLABE0357AWZZ	J		Label,Bar Code [SR50H-YR]
15	TLABE0358AWZZ	J		Label,Bar Code [SR50W-S for Australia/New Zealand]
15	TLABE0359AWZZ	J		Label,Bar Code [SR50W-BL for Australia/New Zealand]
16	TCADS0003AWZZ	J		Service Card [SR50H for U.K./SR60E Only]
17	92LG-CARD1266E	J	AB	Guarantee Card [SR50W for Australia/New Zealand Only]
18	QCNWG0422AFZZ	J	AQ	Connecting Cord,Optical Type [SR60W/SR60E Only]
19	SSAKH0037AWZZ	J		Bag,SET
20	SPAKZ0624AWZZ	J		Pad,Protection

NO.	PARTS CODE	★	PRICE RANK	DESCRIPTION

P.W.B. ASSEMBLY (Not Replacement Item)

PWB-A	92LPWB3355MDSS	J	—	Main

OTHER SERVICE PARTS

UDSKM0001AFZZ	J	AZ	Recording Mini Disc
88GMMD-110	J	BV	High Reflection Disc MMD-110 (TEAC Test MD)
88GMMD-212	J	BU	Low Reflection Disc MMD-212 (TEAC Test MD)
88GMMD-213A	J	BT	Low Reflection Disc MMD-213A (TEAC Test MD)

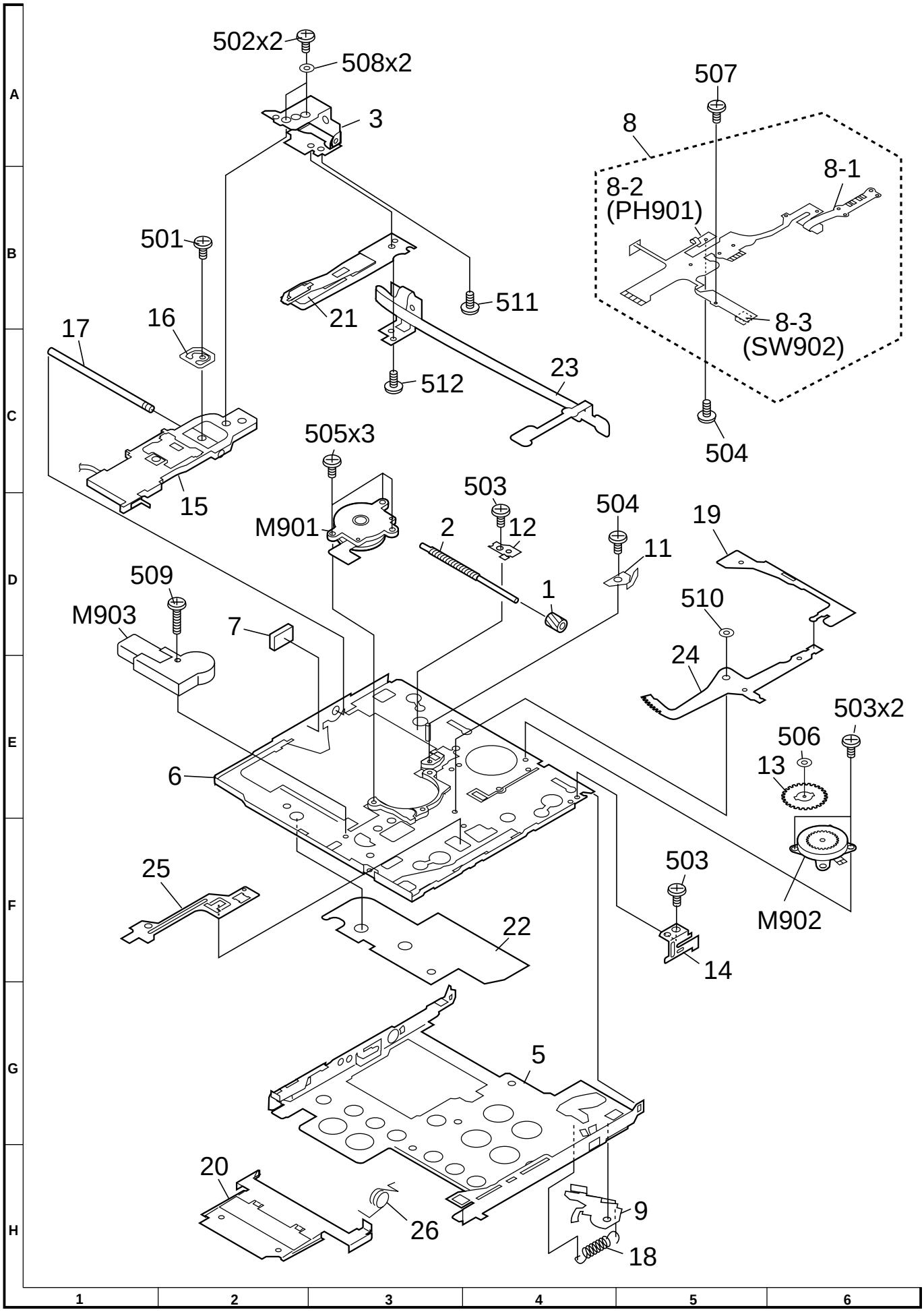


Figure 5 MD MECHANISM EXPLODED VIEW

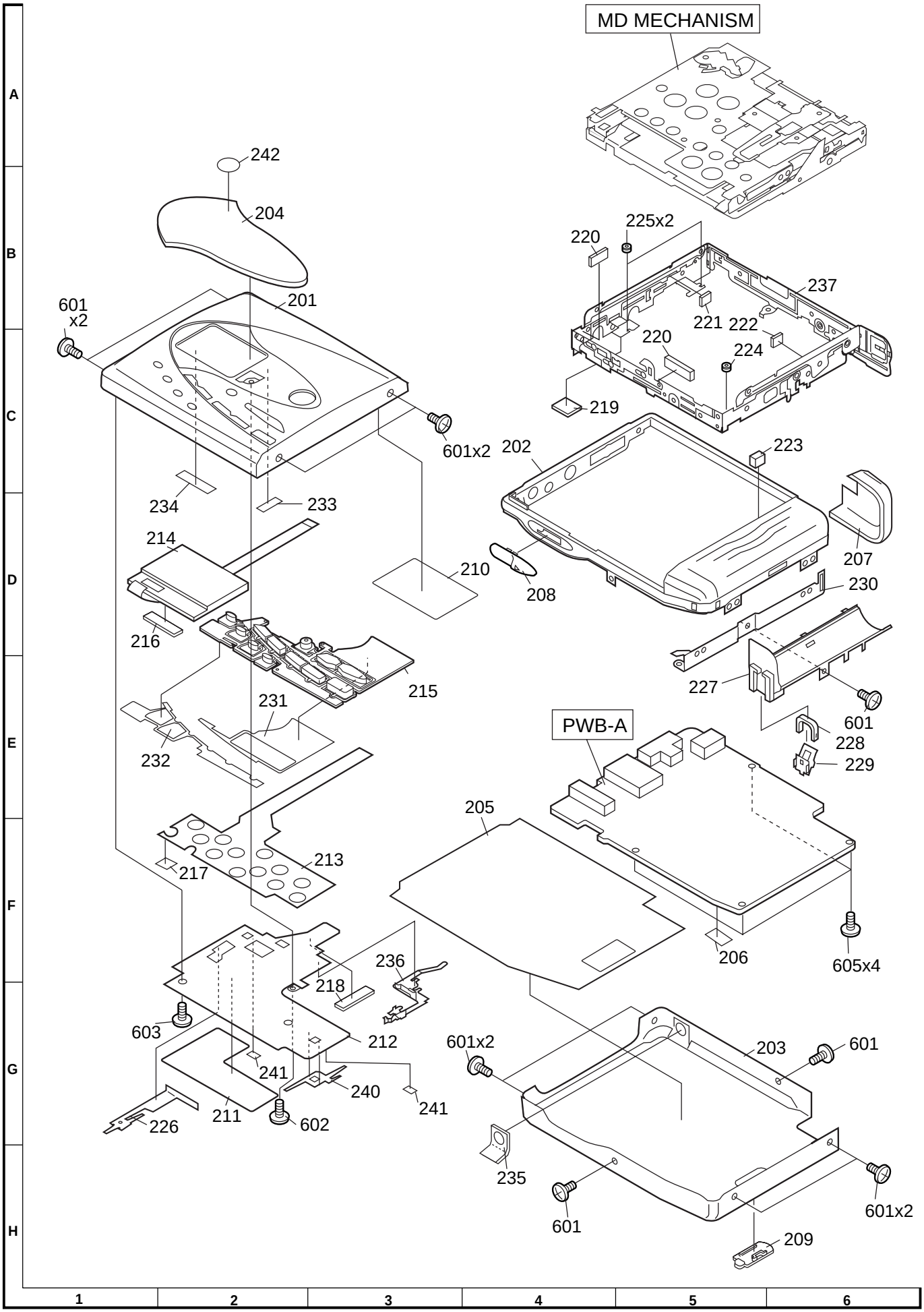
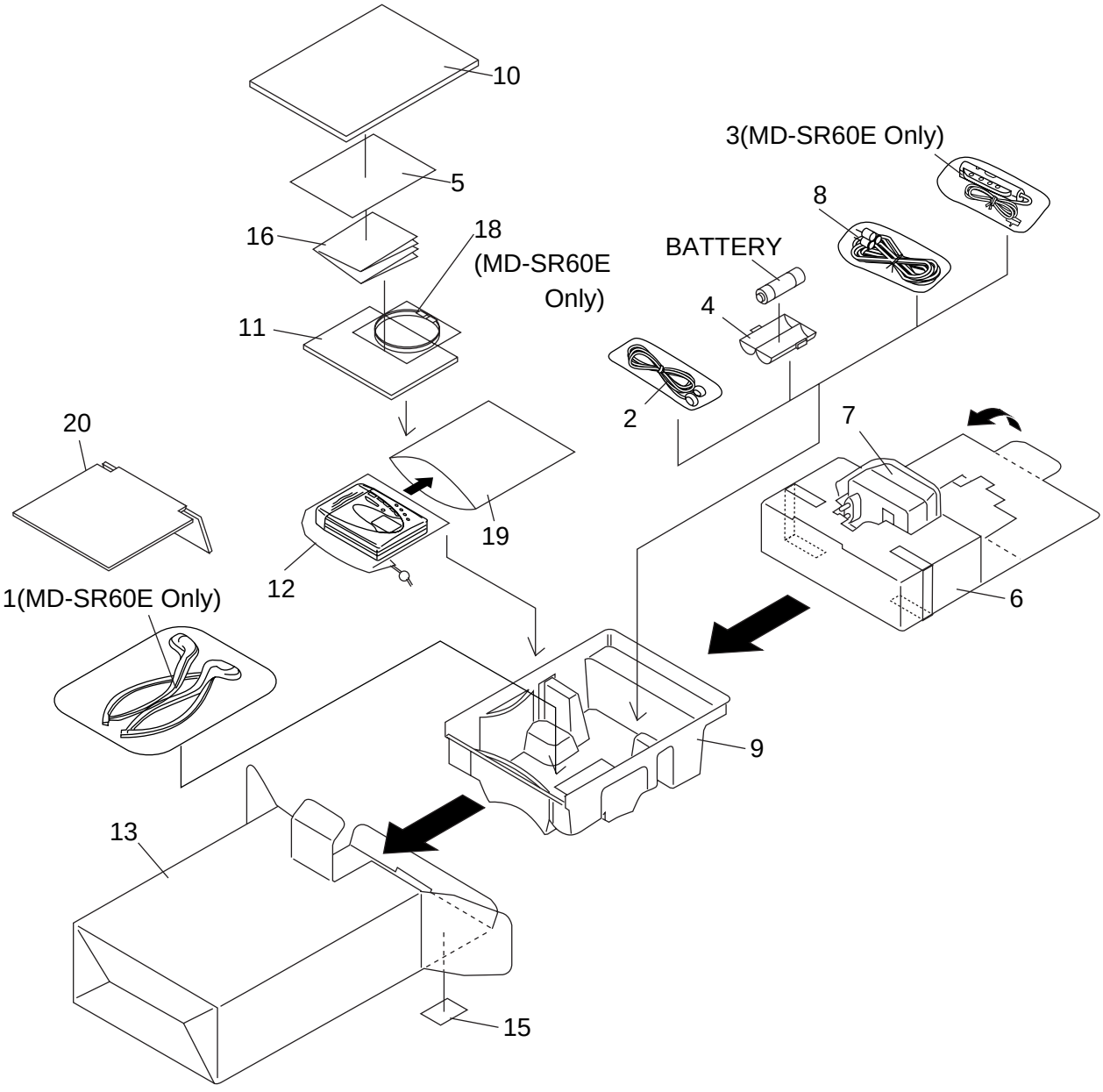


Figure 6 CABINET EXPLODED VIEW

PACKING METHOD (MD-SR50H FOR U.K./SR60E ONLY)

Setting position of switches and knobs		
UNIT	HOLD	OFF
Remote Control	HOLD	CANCEL

1	RPHOH0005AWZZ	Earphones [SR60E Only]
2	RPHOH0001AWZZ	Headphones [SR50H for U.K.]
3	RRMCW0002AWZZ	Remote Control [SR60E Only]
4	UBAGC0003AWZZ	Battery Case [SR60E]
5	TINSE0295AWZZ	Quick Guide [SR60E]
5	TINSE0296AWZZ	Quick Guide [SR50H for U.K.]
6	SPAKZ0599AWZZ	Pad, AC Adapter
7	RADPA8046AWZZ	AC Adapter
8	QCNWG0382AFZZ	Connecting Cord, RCA Type
9	SPAKA0237AWZZ	Packing Add.
10	TINSE0289AWZZ	Operation Manual [SR60E]
10	TINSE0290AWZZ	Operation Manual [SR50H for U.K.]
11	SPAKZ0490AWZZ	Operation Manual Spacer
12	UBAGC0006AWSA	Carrying Case
13	SPAKC0945AWZZ	Packing Case [SR60E]
13	SPAKC0970AWZZ	Packing Case [SR50H-S for U.K.]
13	SPAKC0971AWZZ	Packing Case [SR50H-BL for U.K.]
15	TLABE0354AWZZ	Label, Bar Code [SR60E]
15	TLABE0355AWZZ	Label, Bar Code [SR50H-S]
15	TLABE0356AWZZ	Label, Bar Code [SR50H-BL]
16	TCADS0003AWZZ	Service Card
18	QCNWG0422AFZZ	Conneting Cord, Optical Type [SR60E Only]
19	SSAKH0037AWZZ	Bag, SET
20	SPAKZ0624AWZZ	Pad, Protection



— M E M O —

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SHARP CORPORATION
Communication Systems Group
Quality & Reliability Control Center
Higashihiroshima, Hiroshima 739-0192, Japan

Printed in Japan

A0002-4543NS•HA•M

SG • SK • SCA • SCNZ • EX