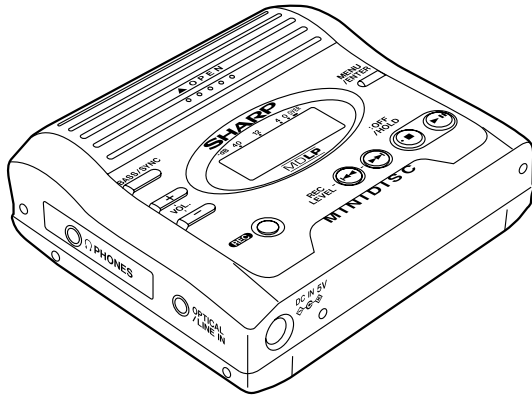


SHARP SERVICE MANUAL

No. SX299MDMT270H



PORTABLE MINIDISC RECORDER

MODEL MD-MT270H(S)/(BK)


MDLP

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

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SAFETY PRECAUTION FOR SERVICE MANUAL

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

THE AEL (ACCESSIBLE EMISSION LEVEL) OF THE LASER POWER OUTPUT IS LESS THAN CLASS 1 BUT THE LASER COMPONENT IS CAPABLE OF EMITTING RADIATION EXCEEDING THE LIMIT FOR CLASS 1. THEREFORE IT IS IMPORTANT THAT THE FOLLOWING PRECAUTIONS ARE 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.

English:

This product is classified as a CLASS 1 LASER PRODUCT.

German:

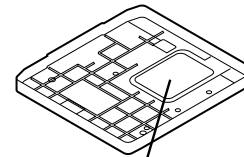
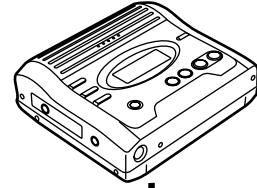
Dieses Produkt ist ein Laserprodukt der Klasse 1.

French:

Ce Produit est Classifié comme étant un PRODUCTO LASER DE CLASSE 1.

Laser Diode Properties

- Material: GaAlAs
- Wavelength: 785 nm
- Pulse time:
 - Read mode: 0.8 mW Continuous
 - Write mode: max 10 mW 0.5S
 - min cycle 1.5S
 - Repetition



ADVARSEL-USYNLIG LASERSTRÅLING VED ÅBNING, NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION. UNDGÅ UDSÆTTELSE FOR STRÅLING.

VARO! AVATTAESSA JA SUOJALUKITUS OHITETTAESSA OLET ALTTIINA NÄKYMÄTÖN LASERSÄTEILYLLE. ÄLÄ KATSO SÄTEESEN.

ARNING-OSYNLIG LASERSTRÅLING NÅR DENNA DEL ÄR ÖPPNAD OCH SPÄRREN ÄR URKOPPLAD. BETRAKTA EJ STRÅLEN.

VARO ! Avattaessa ja suojalukitus ohitettaessa olet alltiina näkymättömälle lasersäteilylle. Älä katso säteeseen.
 VARNING! Osynlig laserstraling 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.

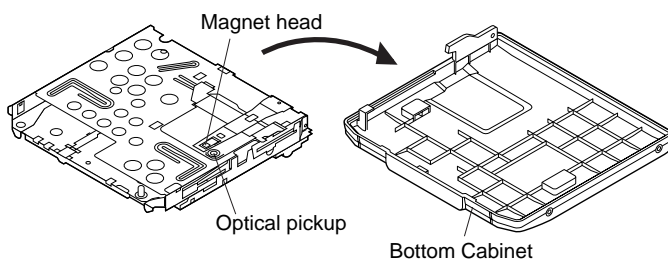


Figure 2-1

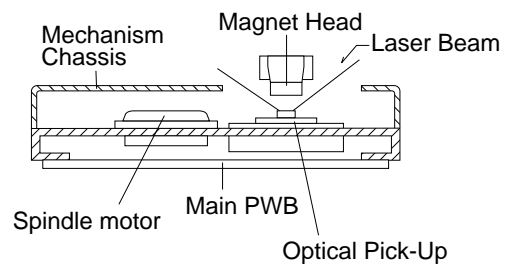


Figure 2-2

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

SPECIFICATIONS

Power source:	DC 5 V: AC adaptor (AC 230 V, 50/60 Hz)
	DC 1.5 V: Commercially available, "AA" size (LR6), alkaline battery x 1
	DC 4.5 V: Optional car adaptor, AD-CA20X (for cars with a 12-24 V DC negative earth electrical system)
Power consumption:	7 W (AC adaptor)
Output power:	RMS: 20 mW (10 mW + 10 mW) (0.2 % T.H.D.)
Dimensions:	Width: 83 mm (3-9/32") Height: 28 mm (1-1/8") Depth: 77 mm (3-1/32")
Weight:	107 g (0.24 lbs.) without battery
Input socket:	Line/optical digital
Output socket:	Earphones (impedance: 32 ohms)
Type:	Portable MiniDisc recorder
Signal readout:	Non-contact, 3-beam semiconductor laser pickup
Audio channels:	Stereo 2 channels/monaural 1 channel
Frequency response:	20 - 20,000 Hz (± 3 dB)
Rotation speed:	Approx. 400 - 1,800 rpm CLV
Error correction:	ACIRC (Advanced Cross Interleave Reed-Solomon Code)
Coding:	ATRAC/ATRAC3 (Adaptive TRansform Acoustic Coding), 24-bit computed type
Recording method:	Magnetic modulation overwrite method
Sampling frequency:	44.1 kHz (32 kHz and 48 kHz signals are converted to 44.1 kHz, and then recorded.)
Wow and flutter:	Unmeasurable (less than ± 0.001 % W. peak)

Input sensitivity:

	Reference input level	Input impedance
LINE	100 mV	20 k ohms

Output level:

	Specified output	Maximum output level	Load impedance
Ear-phones	-	10 mW + 10 mW	32 ohms
LINE	250 mV (-12 dB)	-	10 k ohms

Battery life:

When using a commercially available, high capacity, "AA" size (LR6), alkaline battery

Stereo	Continuous recording: Approx. 8.5 hours Continuous play: Approx. 33 hours
2 times long	Continuous recording: Approx. 12 hours Continuous play: Approx. 44 hours
4 times long	Continuous recording: Approx. 18 hours Continuous play: Approx. 52 hours

- The continuous recording time is for analogue inputs 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 used at an ambient temperature of 25°C (77°F).
- The operating time when using an alkaline battery may be different, depending on the type and manufacturer of the battery, and on the operating temperature.

Specifications for this model are subject to change without prior notice

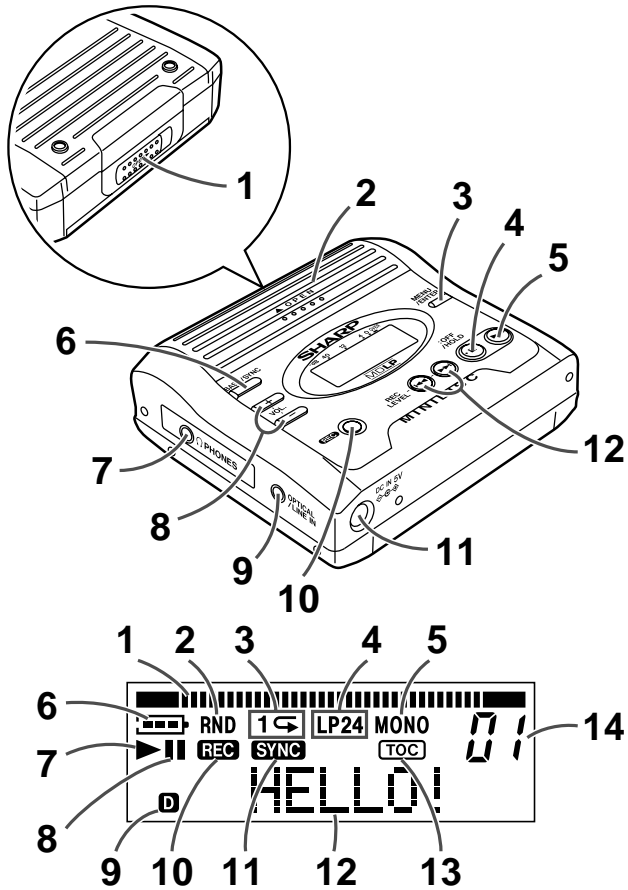
NAMES OF PARTS

■ Main unit

1. Open Lever
2. Battery Cover
3. Menu/Enter Button
4. Stop/Power Off/Hold Button
5. Play/Pause Button
6. Bass/Delete/Synchro Button
7. Earphones/Line Output Socket
8. Volume/Cursor Buttons
9. Optical/Line Input Socket
10. Record/Track Mark Button
11. 5 V DC Input Socket
12. Fast Forward/Fast Reverse/
Recording Level/Menu Select/
Name Select Buttons

■ Display panel

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



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 position the wires in the same location.
 Use the specified screws to fix the cabinet and the mechanism unit. The use of the screws with length other than specified may cause contact with the mechanism unit resulting in malfunction.
3. When repairing, pay close attention so not to damage the IC from static electricity.

STEP	REMOVAL	PROCEDURE	FIGURE
1	Top Cabinet	1. Open the Bottom cabinet. 2. Open the Battery Door. 3. Screw (A1) x4 4. Screw (A2) x1 5. Flexible PWB (A3) x1	5-1 5-2
2	Bottom Cabinet	1. Screw (B1) x2	5-2
3	Main PWB	1. Screw (C1) x4 2. Flexible PWB (C2) x2	5-2
4	Mechanism Unit	1. Screw (D1) x2 2. Screw (D2) x1	5-3

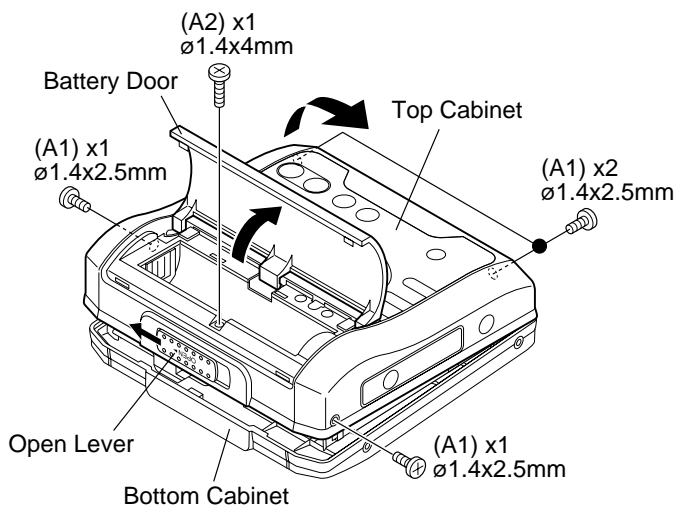


Figure 5-1

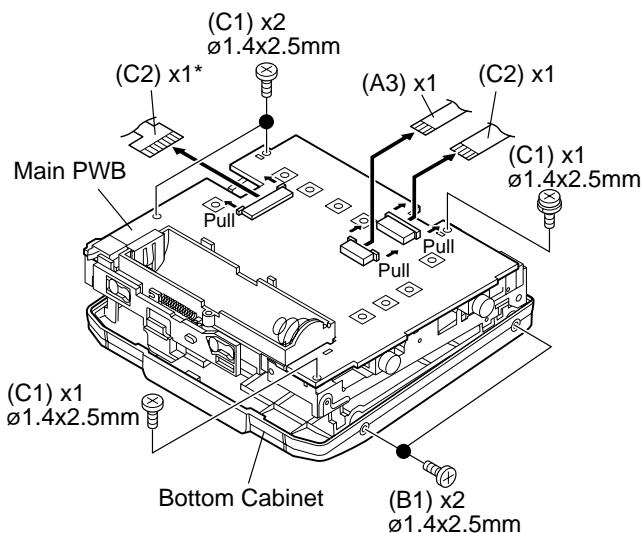


Figure 5-2

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.

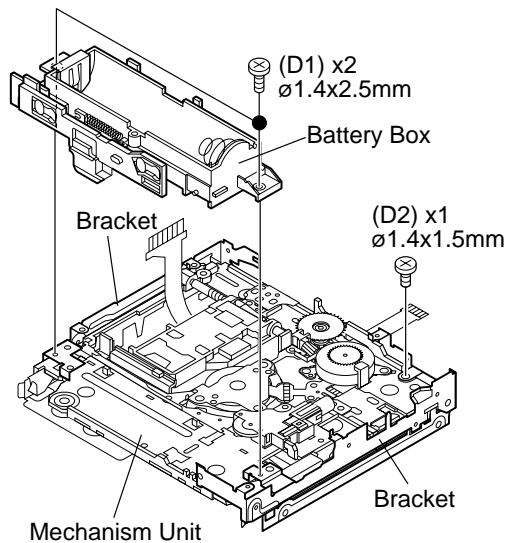


Figure 5-3

REMOVING AND REINSTALLING THE MAIN PARTS

Remove the mechanism according to the disassembling methods 1 to 4. (See Page 5.)

How to remove the magnetic head (See Fig. 6-1.)

1. Remove the solder joints (A1) x 2 of the head flexible plate.
2. Remove the screws (A2) x 2 pcs. of the magnetic head.

Note:

Mount carefully so as not to damage the magnetic head.

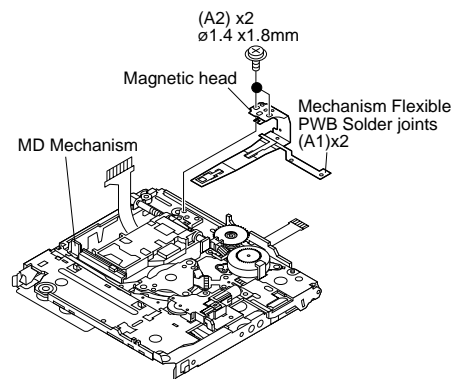


Figure 6-1

How to remove the spindle motor (See Fig. 6-2.)

1. Remove the solder joints (B1) x 4 of flexible PWB.
2. Remove the screws (B2) x 3 pcs., and remove the spindle motor.

How to remove the sled motor (See Fig. 6-3.)

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

Note:

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

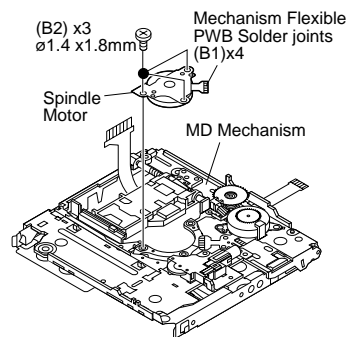


Figure 6-2

How to remove the Lift motor (See Fig. 6-4.)

1. Remove the solder joints (D1) x 2 of the lift motor lead wire.
2. Remove the screw (D2) x 1 pc., and remove the lift motor.

Note:

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

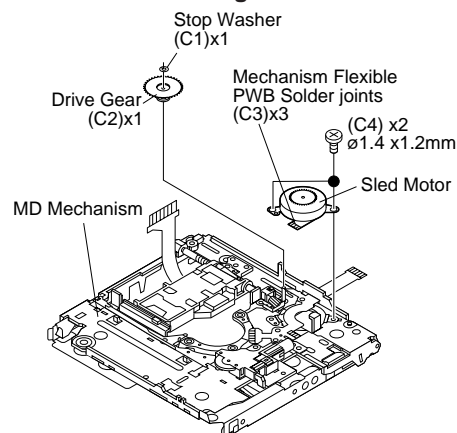


Figure 6-3

How to reinstall the optical pickup (See Fig. 6-4.)

1. Remove the screw (E1) x 1 pc., and remove the spring.
2. Remove the screw (E2) x 1 pc., and remove the shaft guide.
3. Slowly raise the optical pickup.

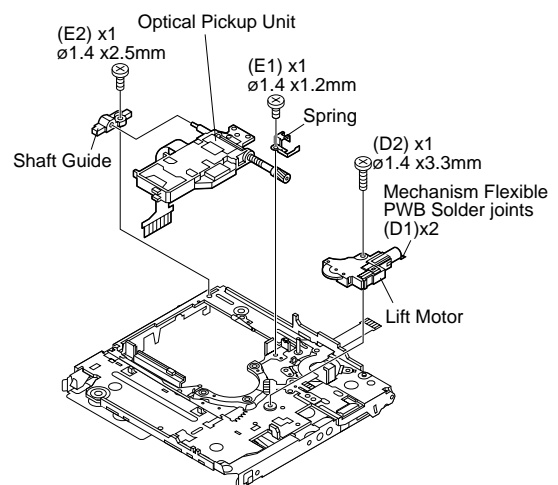


Figure 6-4

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)

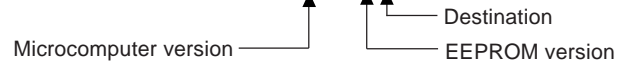
- (1) Press the VOL.+ button and PLAY button. Continue to hold down the PLAY button to release the VOL.+ button and press the VOL.- button.

- (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) Test Mode START [T E S T _]

- (4) When the VOL.+ button is pressed, indication of microcomputer version for one second [, X 2 8 A , d X]



- (5) When the VOL.- button is pressed, whole LCD lighting for 2 seconds

● Leaving the TEST mode

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

● Shipping setting method

Holding down simultaneously the VOLUME – 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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> Perform ATT (attenuator) automatic adjustment. Perform continuous playback (error rate display, jump test)
3. TEST-PLAY Mode	<ul style="list-style-type: none"> Continuous playback from the specified address is performed. 1 line, 10 lines or 100 steps 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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> Temperature is displayed. (Updating in real time) Seeing the displayed adjustment value perform manually the preliminary adjustment. (Error rate indication, jump test) Continuous playback is performed (Error rate display, jump test).

7. RESULT 1 Mode	<ul style="list-style-type: none"> The value adjusted in AUTO1 or MANUAL1 is indicated. (Execution in servo "OFF" state).
8. RESULT 2 Mode	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> Digital input information is displayed.
10. ERROR INFORMATION Mode	<ul style="list-style-type: none"> Error information is displayed. Error information is initialized
11. NORMAL Mode	<ul style="list-style-type: none"> 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. are indicated. In the normal mode both temperature correction and posture correction are performed.
12. EEPROM Mode	<ul style="list-style-type: none"> 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. AUTO J Mode	<ul style="list-style-type: none"> AUTO 1/2, focus balance adjustment, TEST-PLAY (ADIP/C1 error check), EEPROM are updated sequentially.

● Operation in each TEST mode

1. AUTO1 Mode

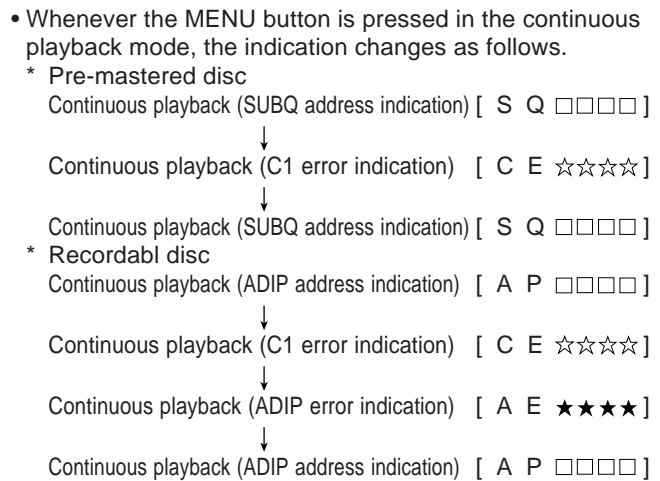
- When the STOP ■ button is pressed while the AUTO1 menu appears or during automatic adjustment, the mode changes to the TEST mode stop state. At this time the adjustment value is not output.
- Be sure to adjust, using the specified disc MMD-213A or MMD-212.
At this time release the EEPROM (IC402) protection. (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 MENU 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 REC button is pressed while the TEST-PLAY mode target address is displayed, the digit which is changed by pressing the FAST FORWARD/FAST REVERSE ►► / ◄◄ button is changed as follows.
0032 → 0032 → 0032 → 0032 →
- When the FAST FORWARD ►► button is pressed in the TEST-PLAY mode target address is displayed, the digit of address specified by the ENTER button is set to +1h. (0 to F)
- When the FAST REVERSE ◄◄ button is pressed in the TEST-PLAY mode target address is displayed, the digit of address specified by the ENTER button is set to -1h. (0 to F)
- * When the FAST FORWARD/FAST REVERSE ►► / ◄◄ 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.
1TR → 10TR → 100STP → 1TR →
- * After the number of jump lines is indicated for one second, the address indication is restored [▲▲▲ T R _]
- When the FAST FORWARD ►► button is pressed in the continuous playback mode, the specified number of lines is jumped in the FWD direction.
- When the FAST REVERSE ◄◄ button is pressed in the continuous playback mode, the specified number of lines is jumped in the REV direction.
- * When the FAST FORWARD/FAST REVERSE ►► / ◄◄ button is held down, jump is repeated every approx. 100 ms.



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 MENU 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 REC button is pressed in the TEST-REC mode target address is displayed, the digit which is changed by the FAST FORWARD/FAST REVERSE ►► / ◄◄ button changes as follows.
0032 → 0032 → 0032 → 0320 →
- When the FAST FORWARD ►► 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 FAST REVERSE ◄◄ 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 FAST FORWARD/FAST REVERSE ►► / ◄◄ 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 FAST REVERSE ◀◀ 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 MENU 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

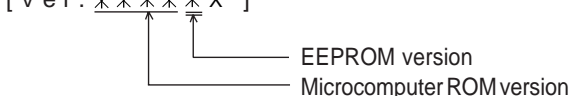
- 13h : Excessive number of retry to draw servo during its adjustment.
- 16h : COUT detection time over during servo adjustment.
- 17h : The level of input signal from the RF amplifier is out of the allowable range.
- 1Fh : Cannot clear the factor of ENDEC DINT.
- 21h : Cannot focus on the disc.
- 22h : Cannot start up the spindle.
- 23h : Track search time over.
- 32h : Cannot read P-TOC.
- 42h : Cannot read U-TOC.
- 44h : Cannot write U-TOC.
- 45h : Cannot perform write test of U-TOC.
- 52h : Cannot write SD. (Sound Data)
- 72h : Check sum error occurred when reading EEPROM.
- 73h : Cannot operate the recording head (by using the EJECT lever).
- 82h : DC-IN power voltage error.
- 83h : Temperature sensor input voltage error.
- 91h : The ambient temperature is out of the allowable range.

7. Auto J Mode

- AUTO 1/2, focus balance adjustment, TEST-PLAY (ADIP/C1 error check), EEPROM are updated sequentially.
- If the STOP button is pressed while processed, the same operation as the normal STOP button operation will be performed.

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 VOL.+ button and PLAY button. Continue to hold down the PLAY button to release the VOL.+ button and press the VOL.- button.
- (4) Press the VOL.+ button, version display.
[V e r . * * * * * X]

- (5) Press the VOL.- button, the whole LCD lights.
- (6) Test mode stop state.
[T E S T]
- (7) Press the "BASS" button, and press 3 times the "FAST REVERSE ◀◀" button.
[E E P R O M]
- (8) Perform the operation to display "EEPROM SETTING ENTER CHART", compare the EEPROM DATA LIST with the display, and set according to the EEPROM DATA LIST with the VOL.+ or VOL.- button.
- (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) Press the VOL.+ button and PLAY button. Continue to hold down the PLAY button to release the VOL.+ button and press the VOL.- button.
- (3) Start the EEPROM mode 'Temp' menu.
 - Button operation in order of MENU, FAST REVERSE ◀◀ x 3 times, PLAY ▶, PLAY ▶ in the test mode STOP state.
 - 'TM\$\$○○' is displayed. (\$\$= Temperature code, ○○ = Temperature reference)
- (4) Once press FAST FORWARD ▶▶▶, and determine the displayed microcomputer TEMP input AD value.
 - 'TPin##' is displayed. (## = TEMP input AD value)
- (5) At the ambient temperature, determine the temperature corrected value from the temperature measurement value correction table.
- (6) Determine the temperature reference, using the following formula.
 - Temperature reference = Microcomputer TEMP input AD value + Temperature corrected value
- (7) 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
+ 8°C ~ +10°C	- 05h	+ 9.2°C
+11°C ~ +13°C	- 04h	+ 12.1°C
+14°C ~ +16°C	- 03h	+ 14.9°C
+17°C ~ +19°C	- 02h	+ 17.8°C
+20°C ~ +22°C	- 01h	+ 20.7°C
+23°C ~ +25°C	± 00h	+ 23.6°C
+26°C ~ +27°C	+ 01h	+ 26.5°C
+28°C ~ +30°C	+ 02h	+ 29.4°C
+31°C ~ +33°C	+ 03h	+ 32.3°C

[3] Temperature code identification

Ambient temperature	Temperature correction	Center temperature
- 8°C ~ +10°C	08h	+ 0.5°C
+ 3°C ~ +21°C	07h	+ 12.0°C
+14°C ~ +33°C	06h	+ 23.6°C
+26°C ~ +43°C	05h	+ 35.0°C

● EEPROM DATA LIST (EEPROM version d)

Focus setting

Item display	Set values
FG 1 _	40H
FG 2 _	90H
FF 0 _	10H
FF 1 _	70H
FF 2 _	E5H
Ff 0 _	10H
Ff 1 _	48H
Ff 2 _	EAH
FZH _	EDH
FLn _	09H
FLp _	06H
DJG _	0EH
FSS _	28H
FTS _	18H
FSB _	40H
FTB _	28H
FGM _	66H
TVG _	84H
TO 1 _	50H
TO 5 _	58H
TOR _	58H
PLE _	8BH
RFT _	00H

Tracking setting

Item display	Set values
TG 1 _	17H
TG 2 _	40H
TF 0 _	10H
TF 1 _	70H
TF 2 _	E0H
Tf 0 _	10H
Tf 1 _	40H
Tf 2 _	E4H
TFS _	00H
TBo _	20H
Tbt _	34H
Tko _	20H
Tkt _	32H
TKT _	16H
TDo _	67H
Tdt _	0EH
TDT _	16H
SCO _	00H
SCt _	3AH
SCm _	48H
CLp _	24H
CLr _	30H
JPI _	0EH
THP _	02H
THG _	02H
TOP _	F0H
T0G _	EFH
T1P _	18H
TKn _	11H
TKN _	26H
TKL _	40H

Spindle setting

Item display	Set values
SPG _	30H
SPi _	9AH
SPm _	62H
SPo _	4FH
PGM _	E0H
SP 1 _	10H
SP 2 _	60H
SP 3 _	F2H
SP 4 _	F2H
SP 5 _	10H
Sp 2 _	60H
Sp 5 _	10H
SD 1 _	7FH
SD 2 _	7FH
SPK _	EBH
MPG _	28H
SPL _	60H
SPW _	0FH
SPB _	66H
SRi _	C0H
SRm _	9AH
SRo _	7BH
SBR _	60H
OSL _	14H
PJG _	46H

Sled setting

Item display	Set values
SKS _	7FH
SKL _	7FH
SLC _	22H
STL _	08H
STM _	42H
STE _	A6H
SDV _	60H
SJP _	03H
WTm _	18H
SRV _	54H
SLT _	58H
MVS _	0AH
SLS _	28H
SKE _	25H
SDE _	1CH
BPE _	02H
BPW _	4AH
BP 1 _	87H
BRE _	93H
BRW _	23H
SRS _	00H

MD-MT270H

Bass setting

Item display	Set values
B S 0 _	02H
B S 1 _	01H
B S 2 _	12H
B S 3 _	40H
B S 4 _	22H
B S 5 _	22H
B S 6 _	03H
B S 7 _	22H
B S 8 _	00H

ADJ. SET setting

Item display	Set values
C O K _	28H
F A T _	C0H
T A T _	3EH
C A T _	40H
F A B _	64H

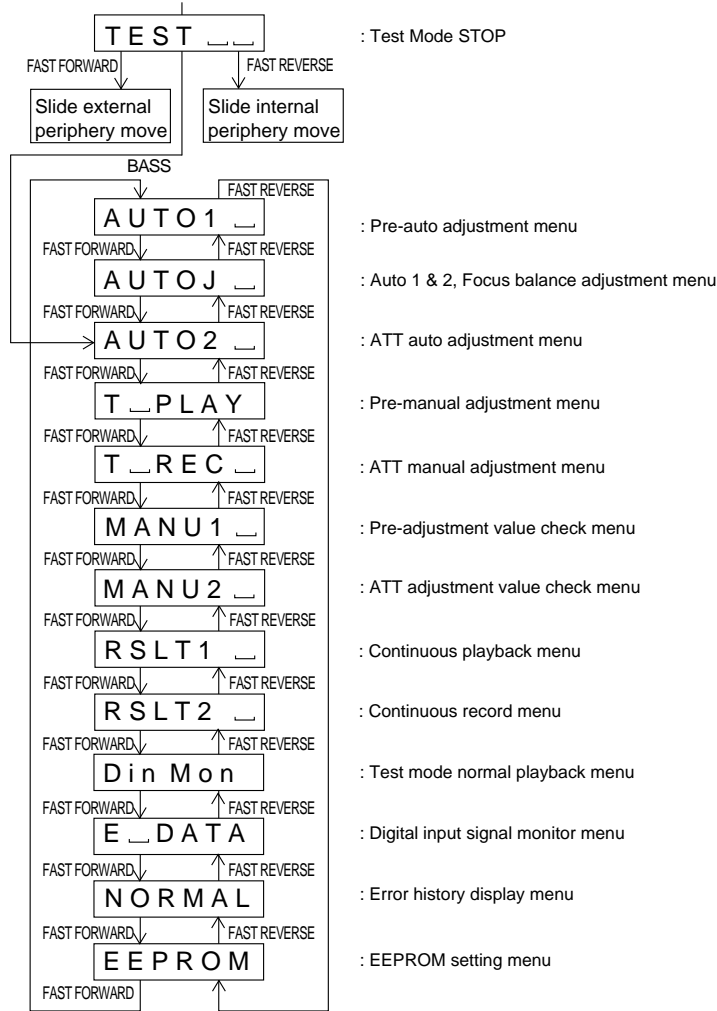
DEQ. SET setting

Item display	Set values
H Q 1 _	90H
H Q 2 _	90H
H S G _	11H
H S O _	FFH
L Q 1 _	90H
L Q 2 _	90H
L S G _	12H
L S O _	00H
G Q 1 _	98H
G Q 2 _	84H
G S G _	12H
A L S _	3FH
R C N _	00H
E Q R _	00H

Control setting

Item display	Set values
C T 0 _	03H
C T 1 _	01H
C T 2 _	BBH
C T 3 _	50H
U S A _	18H
R C E _	94H
X 2 T _	FFH
S D F _	1FH
F B 0 _	FC H
B H S _	00H
F B L _	16H
M C 2 _	00H
M C 4 _	00H
L 2 H _	81H
L 4 H _	80H
B S 0 _	3AH
B S 1 _	98H
B U 0 _	01H
B D 0 _	05H
B D 1 _	DC H
B M K _	1EH
C S T _	69H
I J U _	41H
I J D _	55H
M C T _	C1H
E R C _	5AH
C V 0 _	00H
C V 1 _	15H
S S K _	00H
A C T _	68H
C 1 E _	52H
A D E _	C0H
L C V _	12H
R C 0 _	D7H
R C 1 _	D6H
R 2 0 _	80H
R 2 1 _	20H
R 4 0 _	BFH
R 4 1 _	02H
M F P _	4BH
S P M _	00H
M S L _	00H
U S 0 _	00H
U S 1 _	00H
U S 2 _	00H
w E 0 p _	54H
w E 2 _	46H
w E 3 p _	05H
w E 3 g _	00H
w E A _	16H
w E F _	00H
K 1 0 _	0FH
K 1 1 _	8EH

Test Mode Change Chart
Test Mode Menu



: Test Mode STOP

: Pre-auto adjustment menu

: Auto 1 & 2, Focus balance 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

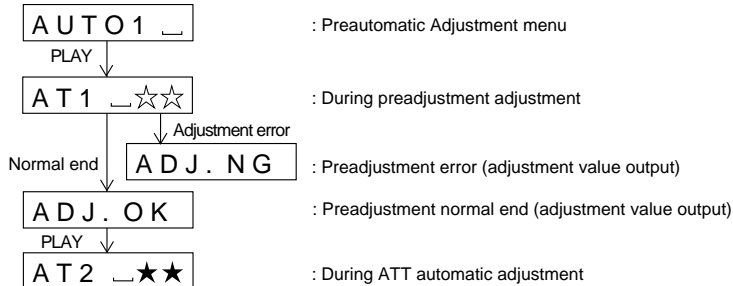
: Digital input signal monitor menu

: Error history display menu

: EEPROM setting menu

* 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)

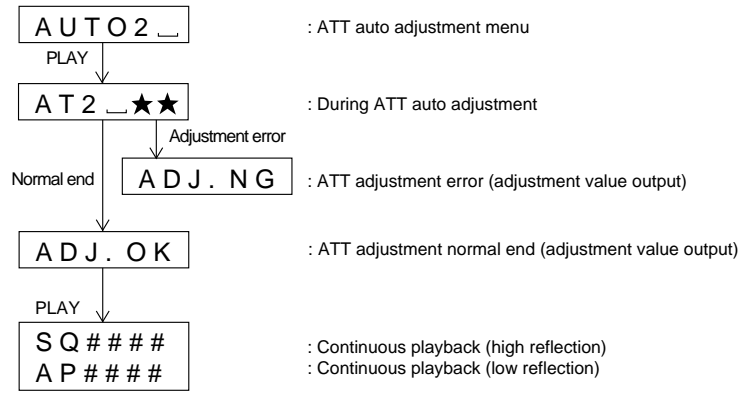
: During ATT automatic adjustment

* 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

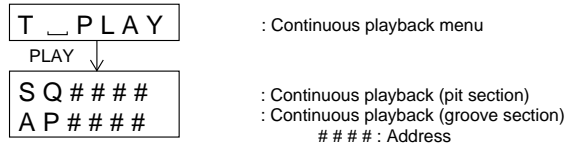
ATT Auto Adjustment



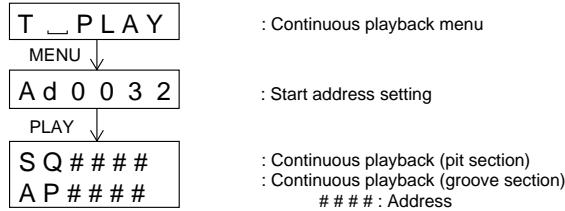
- * When the [STOP ■] button is pressed in specific menu, the "TEST MODE STOP" state is set.
- * "★★" represent the adjustment number as follows.
 - 0 0 : Innermost periphery move
 - 0 3 : Pit section tracking ATT setting
 - 0 4 : Pit section focus ATT setting
 - 0 6 : External periphery move (low reflection 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

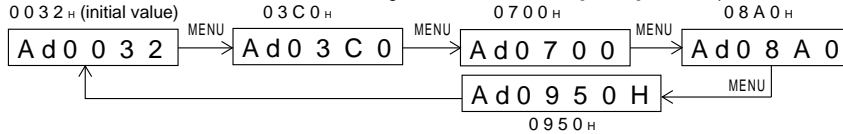
- Continuous playback from current pickup position



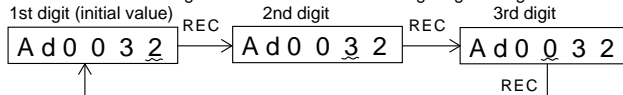
- Continuous playback from any address



- * 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 [MENU] button is pressed.

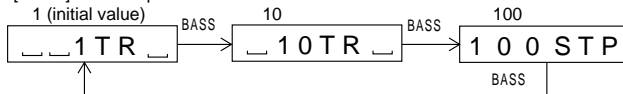


- * In the start address setting state the start address change digit changes when the [REC] button is pressed.



- * In the start address set state the value of selection digit changes in the range of "0h to Fh" when the [FAST FORWARD/REVERSE ►►/◄◄] button is pressed.

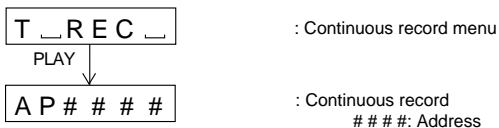
- * In the continuous playback state the number of jump lines changes as follows shown the [BASS] button is pressed.



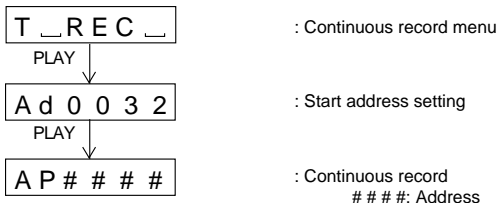
- * When the [FAST FORWARD ►►] button is pressed in the continued playback mode, jump of specified number of lines occurs in the external periphery direction. If the key is held down jump occurs continuously (100 ms cycle).
- * When the [FAST REVERSE ◄◄] button is pressed in the continued playback mode, 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

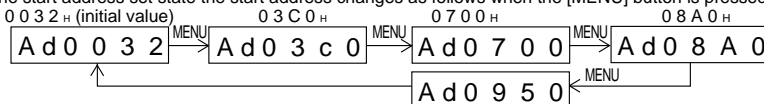
- Continuous record from the current pickup position



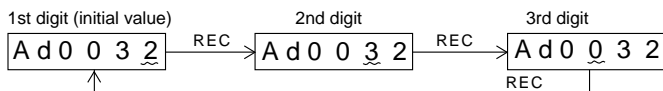
- Continuous record playback from any address



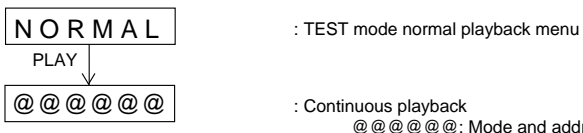
- * When the [STOP ■] button is pressed in specific menu, the "TEST MODE STOP" state is set.
- * In the start address set state the start address changes as follows when the [MENU] button is pressed.



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



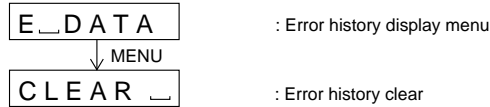
Test Mode Normal Playback



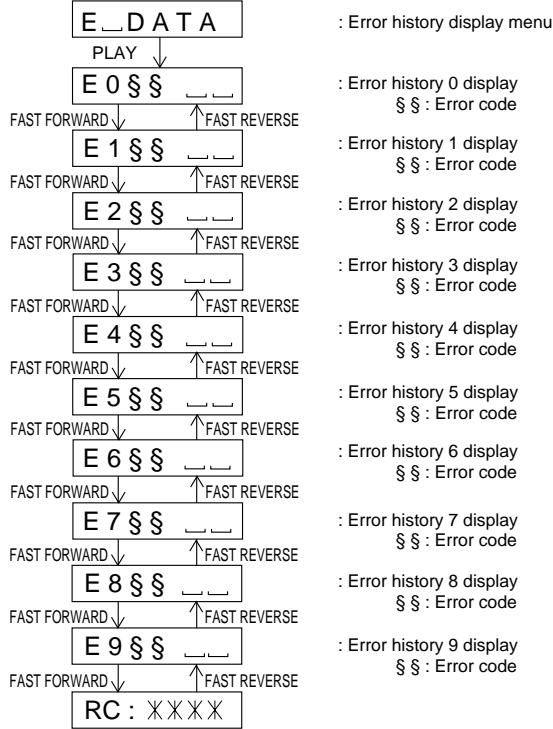
- * When the [STOP ■] button is pressed in specific menu, the "TEST MODE STOP" state is set.
- * When the NORMAL mode is canceled, the power is turned off.

Error History Display

- Error history clear



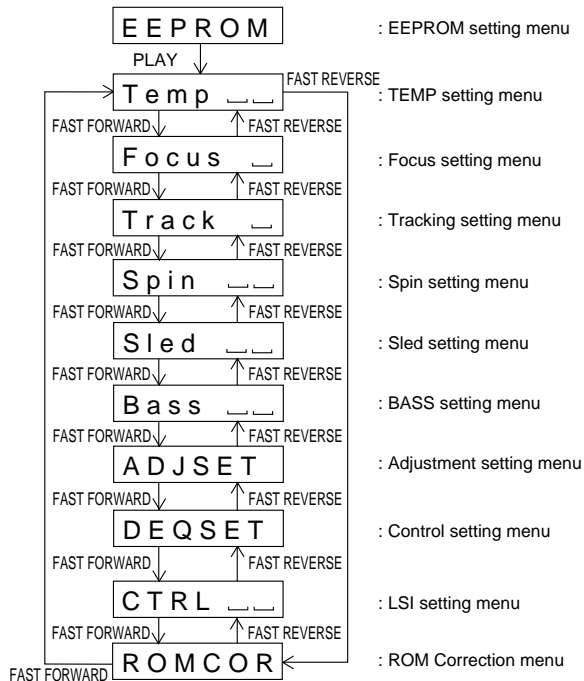
- Error history display



XXXX : Total Recording Time

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

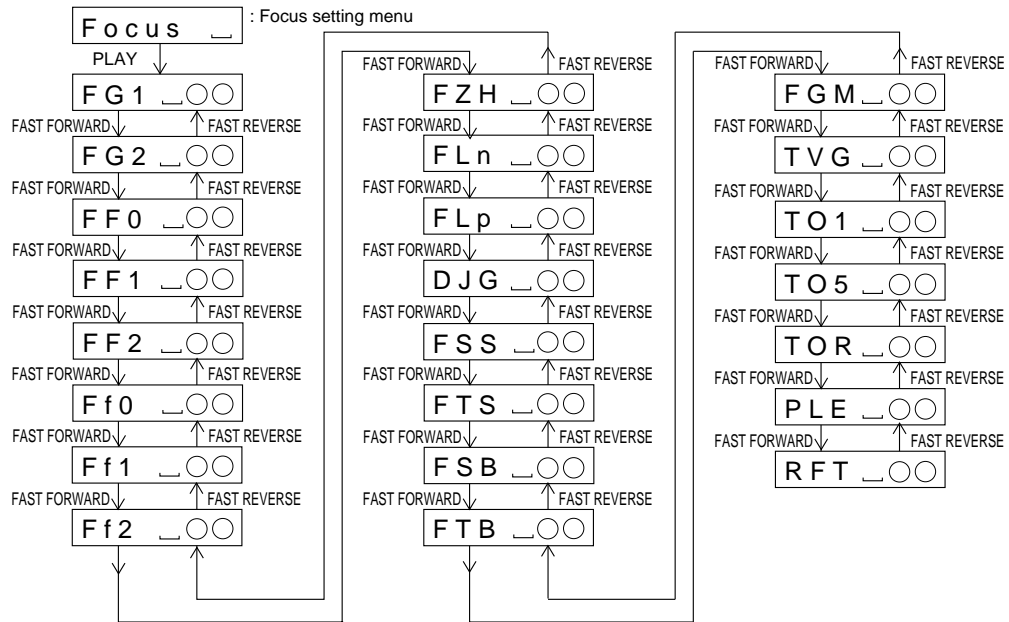
EEPROM Setting



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

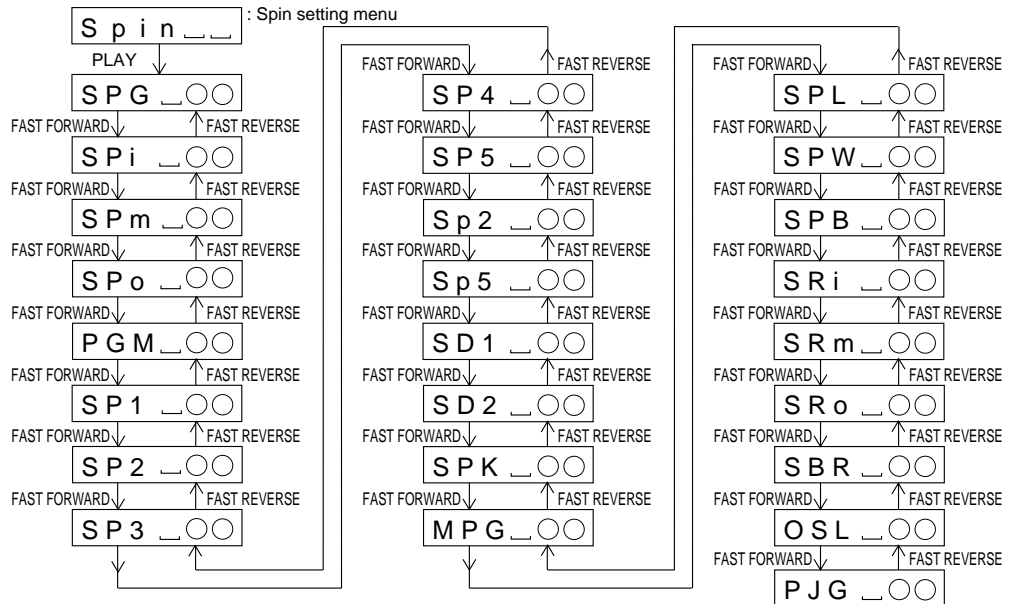
* When the [PLAY ►] button operation is performed in the specific state, the specific setting menu is set.

Focus Setting



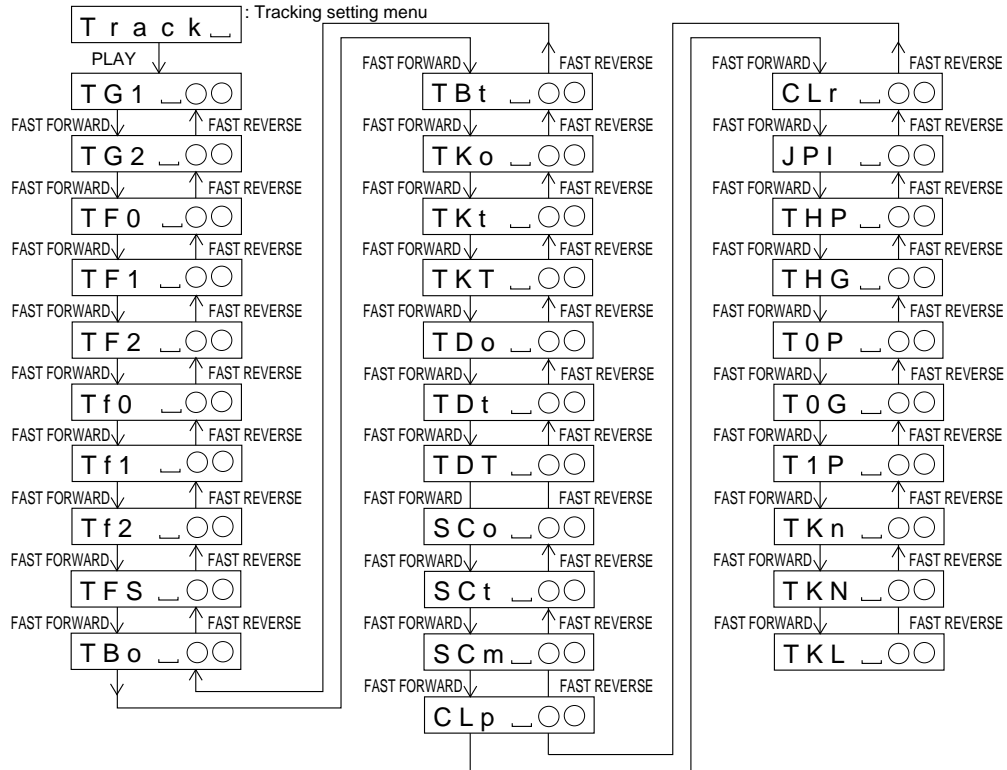
- * When the [STOP ■] button is pressed in specific menu, the "TEST MODE STOP" state is set.
- * When the [MENU] button operation is performed in the specific state, the menu changes to "TEMP SETTING menu".
- * In specific state the setting changed in the range of "00h to FFh" when the [VOL.+/-] button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

Spin Setting



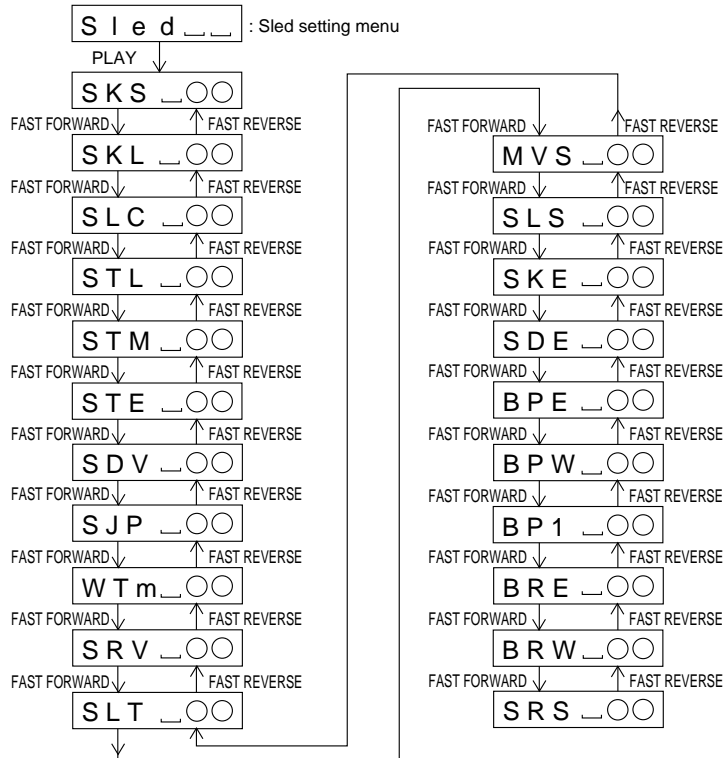
- * When the [STOP ■] button is pressed in specific menu, the "TEST MODE STOP" state is set.
- * When the [MENU] button operation is performed in the specific state, the menu changes to "TEMP SETTING menu".
- * In specific state the setting changed in the range of "00h to FFh" when the [VOL.+/-] button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

Tracking Setting



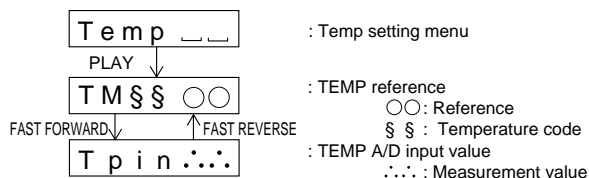
- * When the [STOP ■] button is pressed in specific menu, the "TEST MODE STOP" state is set.
- * When the [MENU] button operation is performed in the specific state, the menu changes to "TEMP SETTING" menu".
- * In the specific state the setting changes in the range of "00h to FFh" when the [VOL.+/-]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

Sled Setting



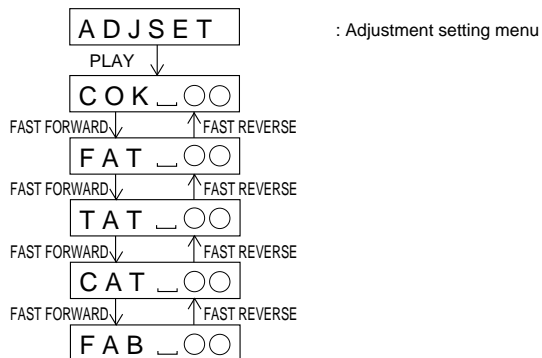
- * When the [STOP ■] button is pressed in specific menu, the "TEST MODE STOP" state is set.
- * When the [MENU] button operation is performed in the specific state, the menu changes to "TEMP SETTING" menu".
- * In the specific state the setting changes in the range of "00h to FFh" when the [VOL.+/-]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

TEMP Setting

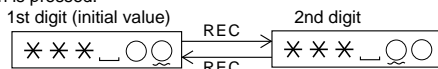


- * When the [STOP ■] button is pressed in specific menu, the "TEST MODE STOP" state is set.
- * When the [MENU] button operation is performed in the specific state, the menu changes to "TEMP SETTING menu".
- * In the specific state the setting changes in the range of "00h to FFh" when the [VOL. +/-]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

Adjustment Setting

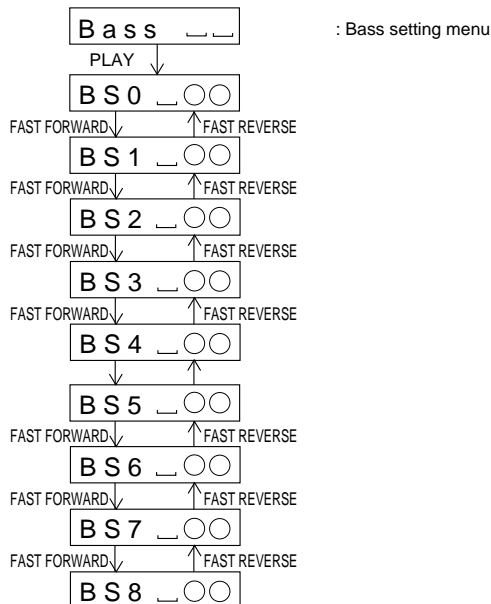


- * When the [STOP ■] button is pressed in specific menu, the "TEST MODE STOP" state is set.
- * When the [MENU] button operation is performed in the specific state, the menu changes to "TEMP SETTING menu".
- * In the specific setting display state the setting change digit changes when the [REC] button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



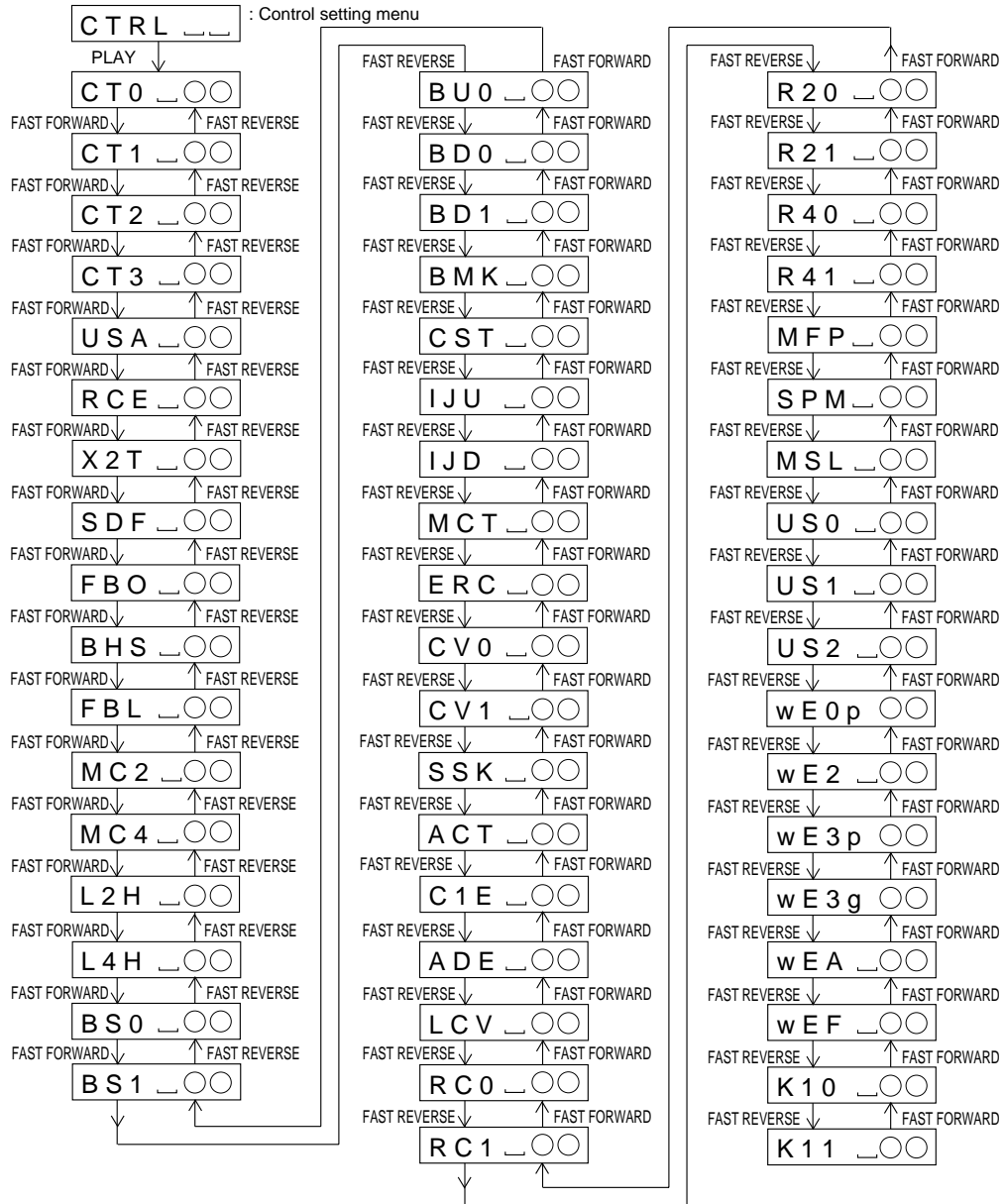
- * In the specific state the setting changes in the range of "0h to Fh" when the [VOL. +/-] button is pressed.
- * When the [REC] button is pressed in each state, the set digit is changed.

Bass Setting



- * When the [STOP ■] button is pressed in specific menu, the "TEST MODE STOP" state is set.
- * When the [MENU] 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. +/-] button is pressed.
- * When the [REC] button is pressed in each state, the set digit is changed.

Control Setting



If the EEPROM version is displayed as X28AbX during replacement, update all set values and conduct the following:

1. Change CT2 of the control from B3H to BBH.
2. An item "ROMCOR" is added into the EEPROM settings.
3. Enter the following values for "ROMCOR".

RM00	5 8 H	RM0B	3 F H	RM15	3 8 H	RM1F	D 7 H
RM01	3 2 H	RM0C	A 0 H	RM16	5 C H	RM20	2 8 H
RM02	3 8 H	RM0D	9 D H	RM17	0 F H	RM21	F D H
RM03	4 1 H	RM0E	7 6 H	RM18	0 D H	RM22	1 2 H
RM04	1 0 H	RM0F	6 1 H	RM19	0 E H	RM23	9 8 H
RM05	0 F H	RM10	0 0 H	RM1A	2 4 H	RM24	0 E H
RM06	5 C H	RM11	C 0 H	RM1B	0 E H	RM25	F C H
RM07	3 5 H	RM12	1 A H	RM1C	7 5 H	RM26	1 E H
RM08	C 3 H	RM13	0 9 H	RM1D	C A H	RM27	2 4 H
RM09	0 4 H	RM14	F C H	RM1E	0 6 H	RM28	0 E H
RM0A	7 E H						

Note: This process partly changes the microcomputer program. Make sure the values are entered correctly.

MD ERROR MESSAGE DISPLAY CONTENT LIST

Display content	Error content	Error code	Remarks
Can' t READ*	Readout of the information is not completed.	f: Focus error r: READ ERR s: Search time over w: SD write time over p: Time over at spindle start-up	* indicates the detailed factor.
Can' t READ*	Readout of the TOC information is not completed.		
Can' t READ*	Readout of the U-TOC information is not completed.		
Can't LOCK	The EJECT lever cannot be locked.		
Er-MD41	Judged it abnormal by the U-TOC write test.		
Er-MD80	EEPROM readout Check sum error		
TOC FORM**	Abnormal data DISC detection	L*: UTOC SELECTOR is Loop a_: Address abnormal t_: FTNO > LTNO	* indicates the detailed factor.
NAME FULL	The number of characters for names exceeds the specification limit.		
OPEN	The disc compartment is open.		Open lid is detected while the system is running.

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 "⚠" (⏏ = = = ⏏) 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	ON—OFF
SW403	LID OPEN	ON—OFF
SW451	BASS	ON—OFF
SW452	VOL+	ON—OFF
SW453	VOL-	ON—OFF
SW454	SKIP DOWN	ON—OFF

REF. NO	DESCRIPTION	POSITION
SW455	SKIP UP	ON—OFF
SW456	MENU/ENTER	ON—OFF
SW457	STOP	ON—OFF
SW458	PLAY	ON—OFF
SW459	REC	ON—OFF
SW601	DISC PROTECT	ON—OFF

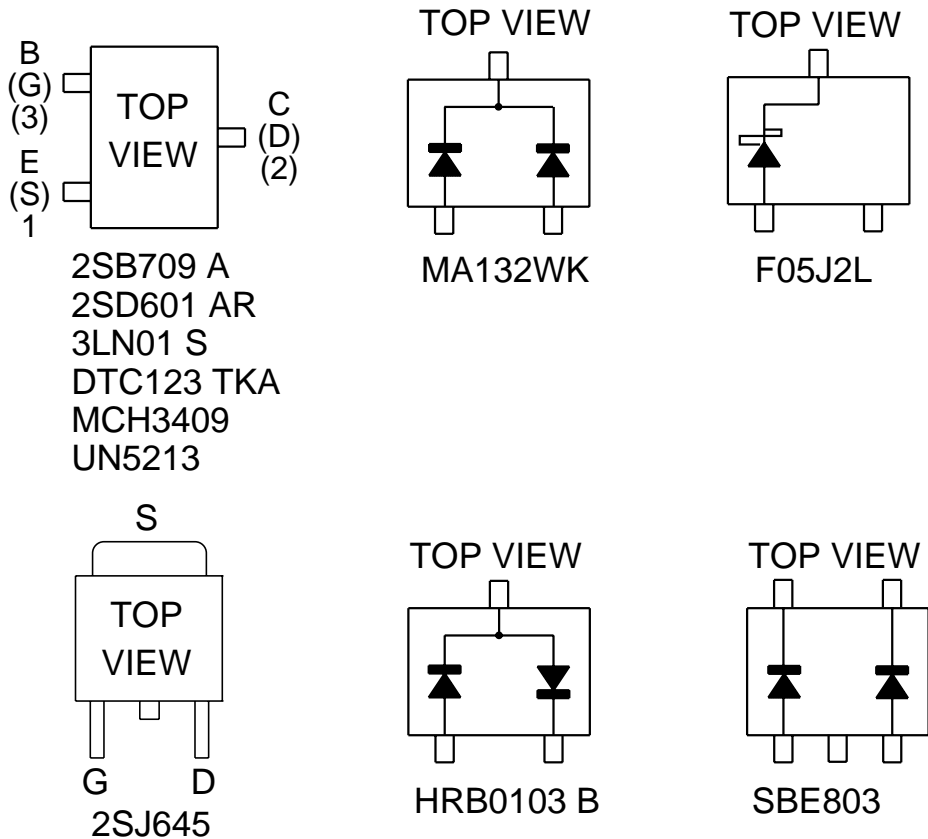


Figure 22 TYPES OF TRANSISTOR AND DIODE

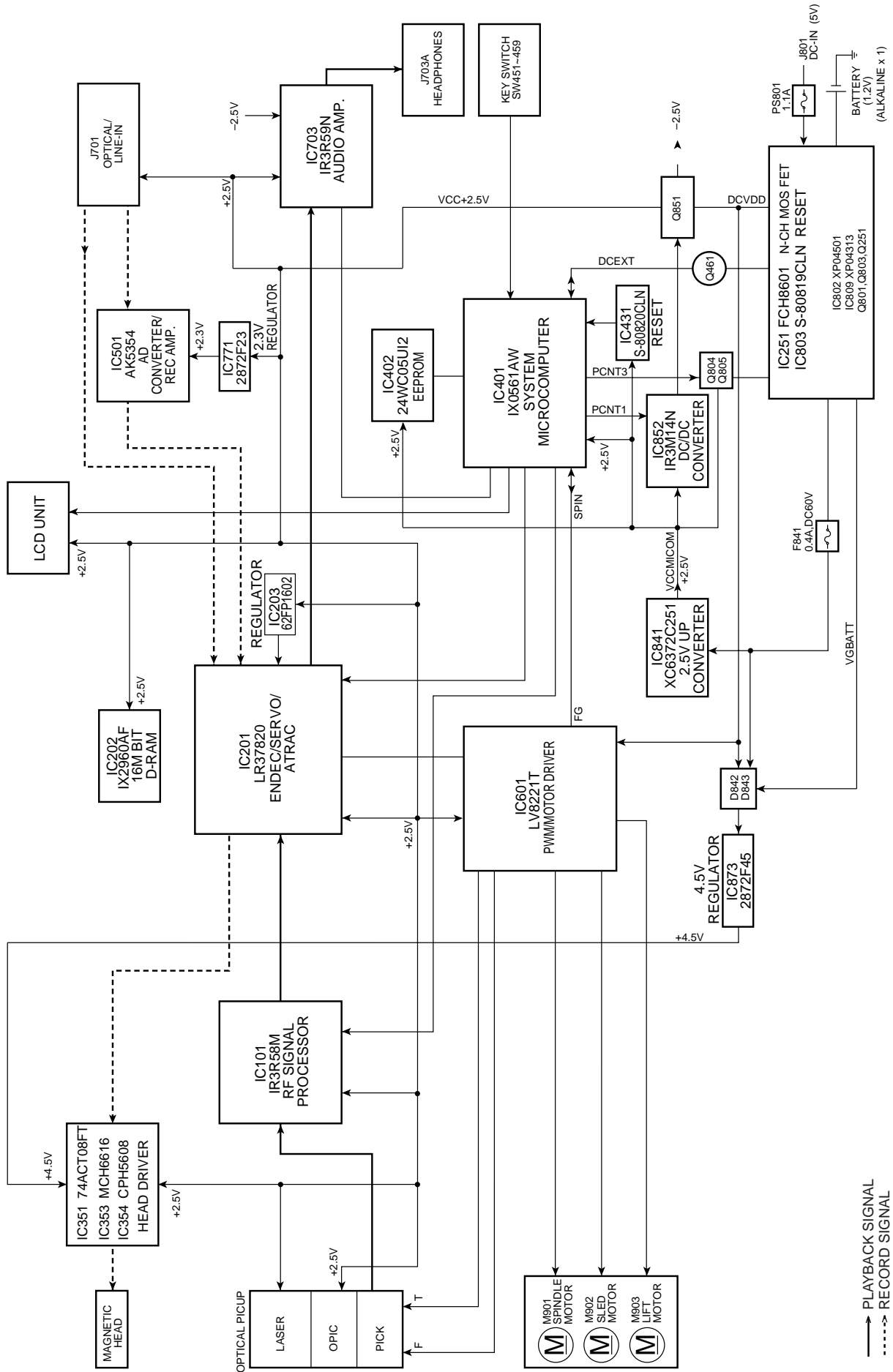
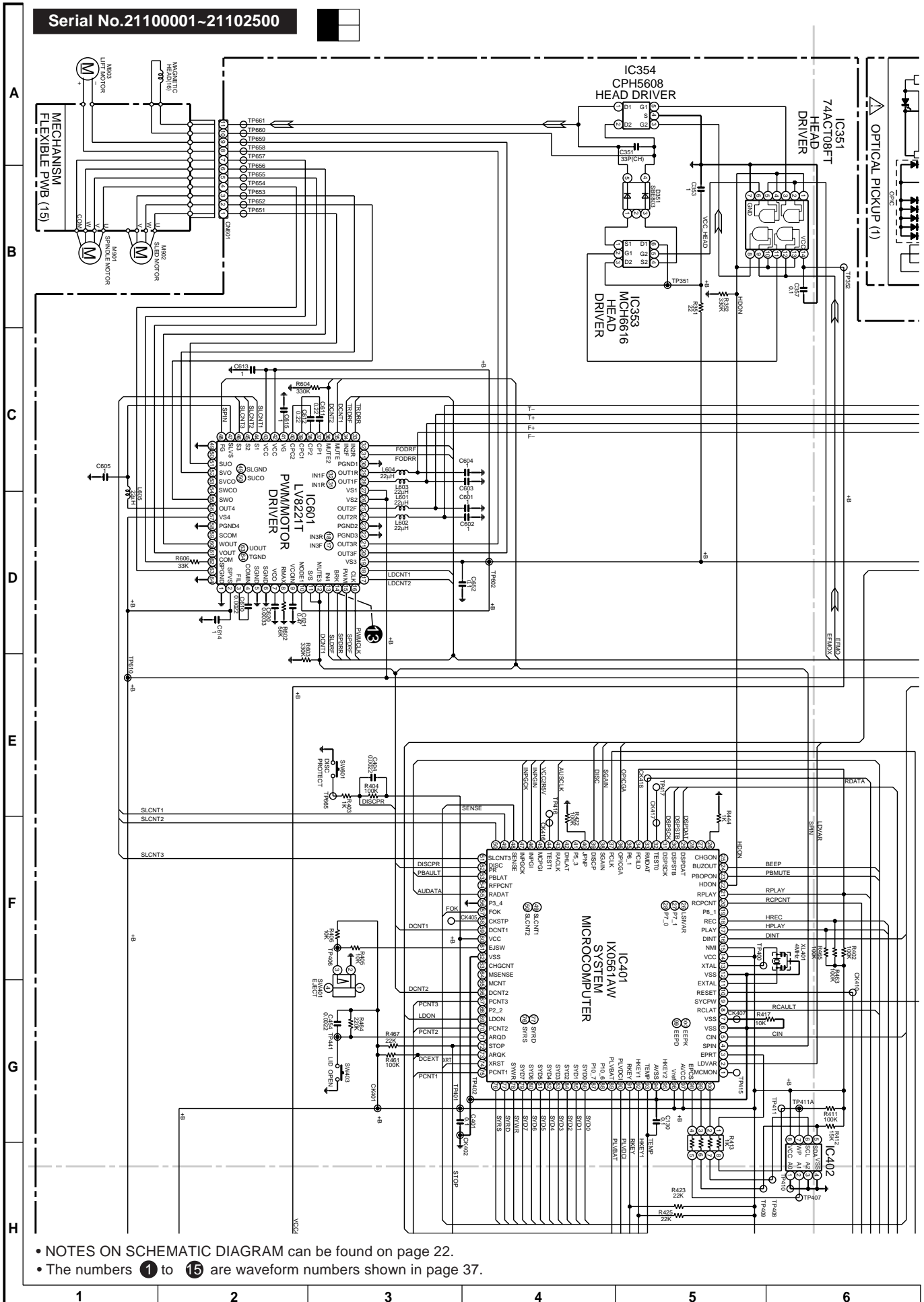


Figure 23 BLOCK DIAGRAM

Serial No.21100001~21102500



- NOTES ON SCHEMATIC DIAGRAM can be found on page 22.
- The numbers ① to ⑮ are waveform numbers shown in page 37.

Figure 24 SCHEMATIC DIAGRAM (1/8)

MAIN PWB-A

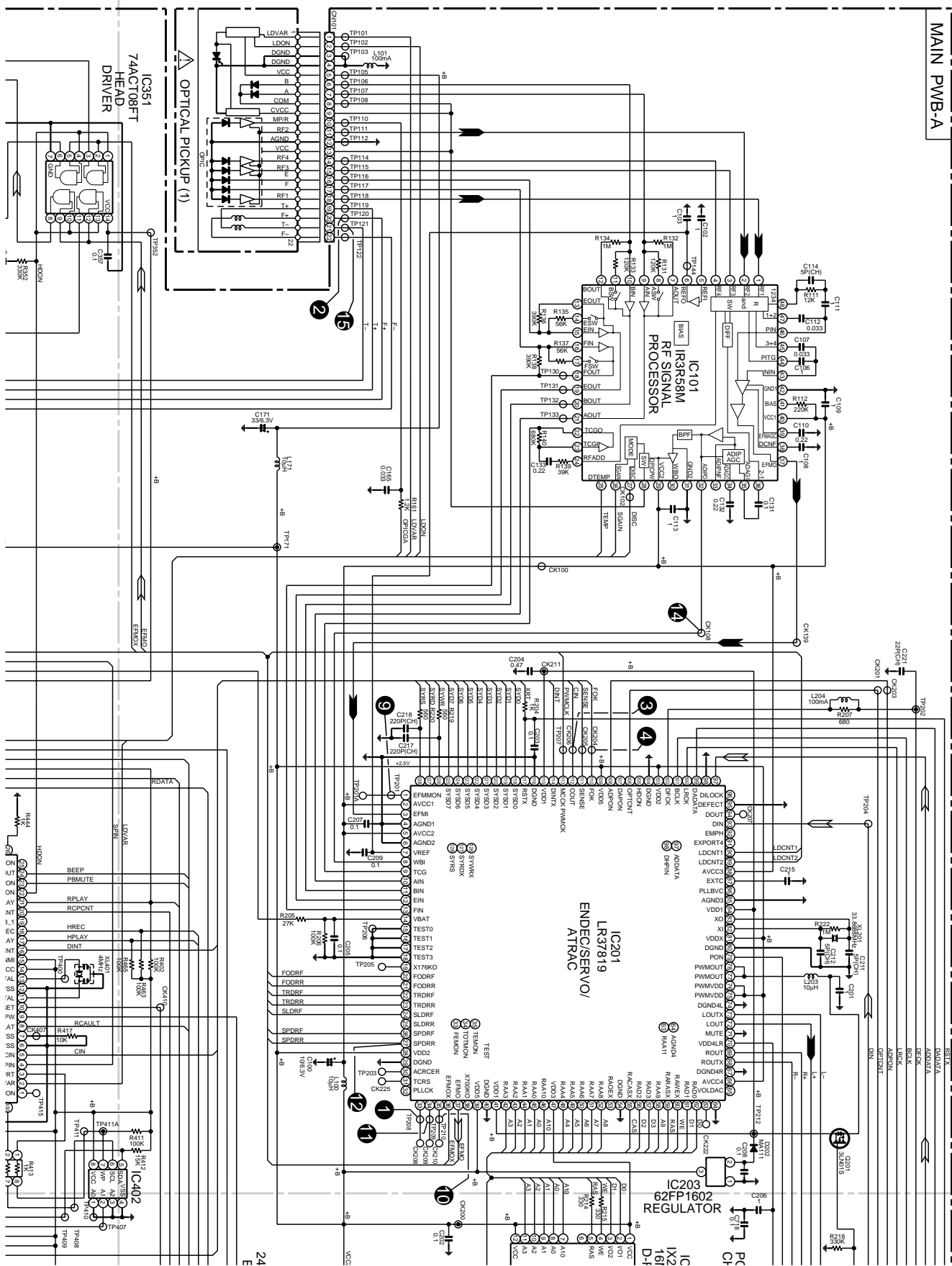
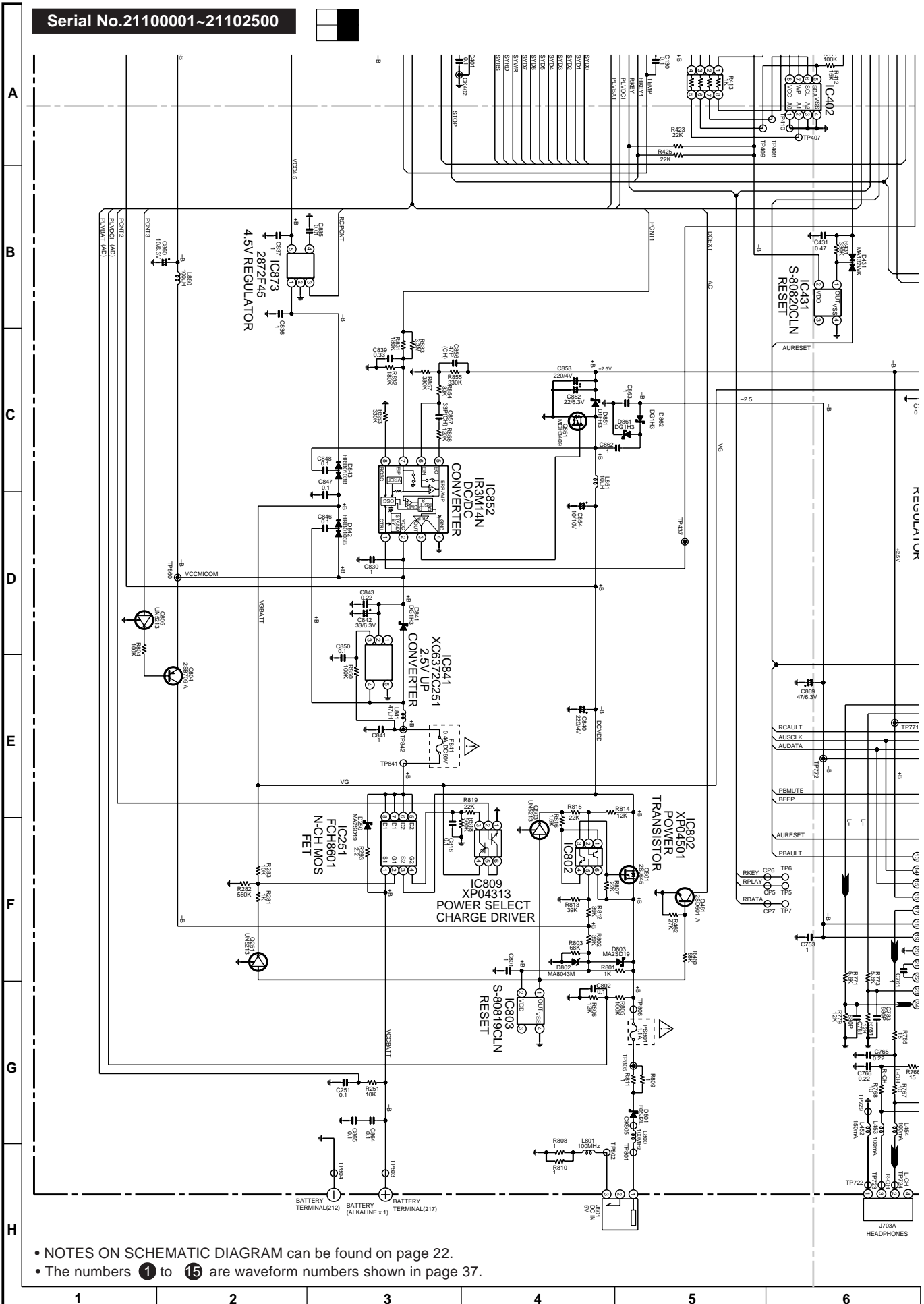


Figure 25 SCHEMATIC DIAGRAM (2/8)

Serial No.21100001~21102500



- NOTES ON SCHEMATIC DIAGRAM can be found on page 22.
- The numbers ① to ⑮ are waveform numbers shown in page 37.

Figure 26 SCHEMATIC DIAGRAM (3/8)

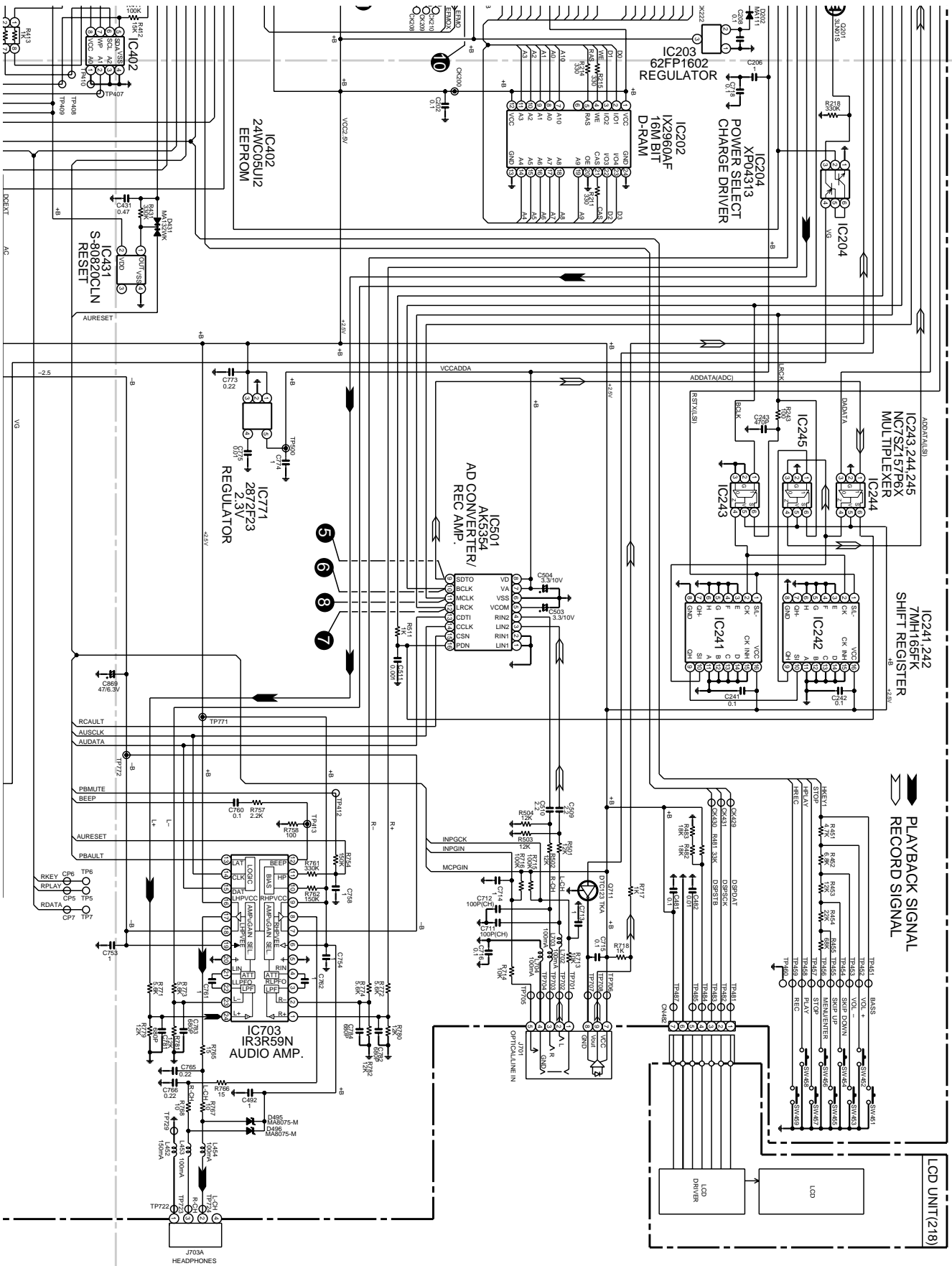
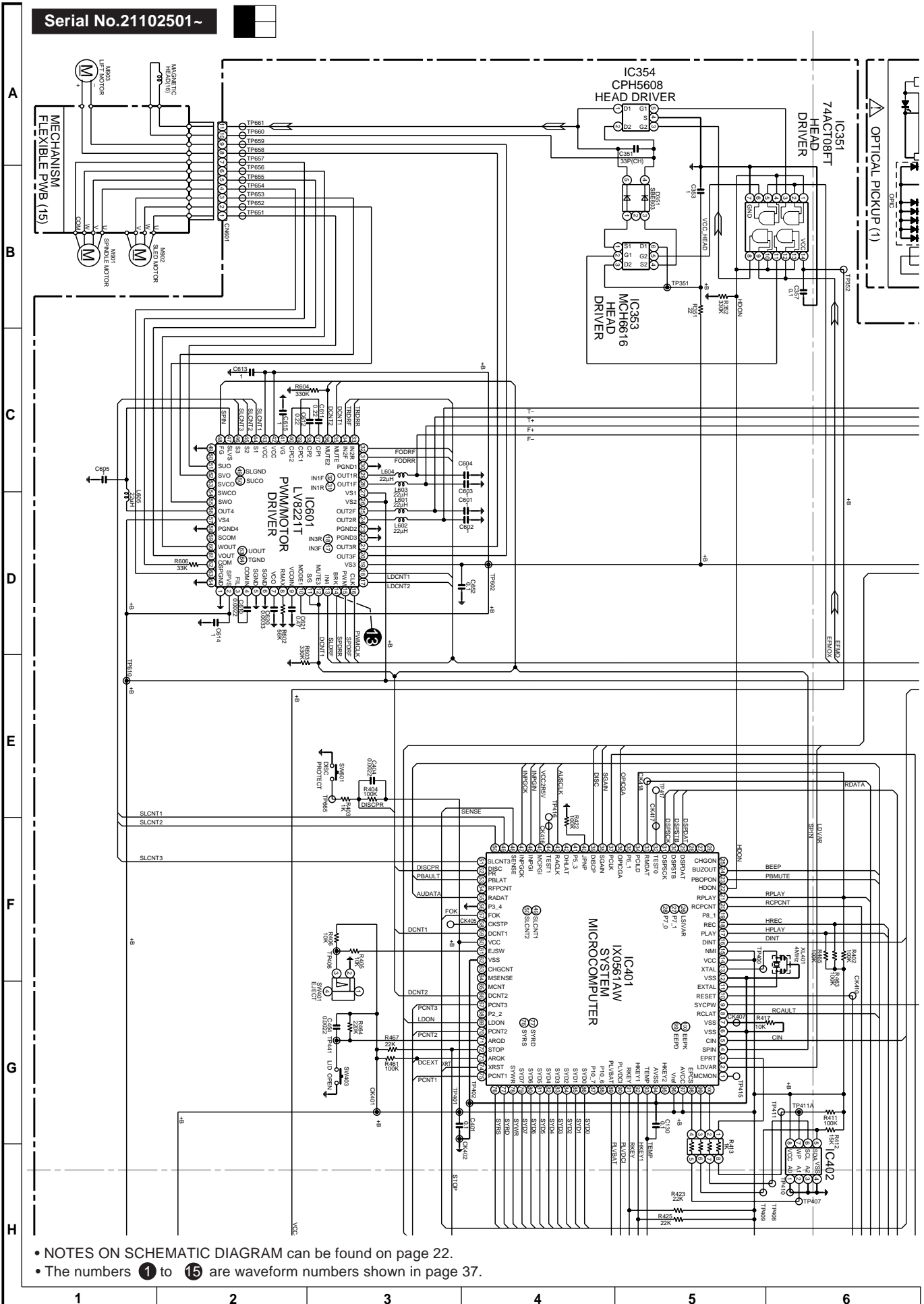


Figure 27 SCHEMATIC DIAGRAM (4/8)

7	8	9	10	11	12
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Serial No.21102501~



- NOTES ON SCHEMATIC DIAGRAM can be found on page 22.
- The numbers ① to ⑮ are waveform numbers shown in page 37.

Figure 28 SCHEMATIC DIAGRAM (5/8)

MAIN PWB-A

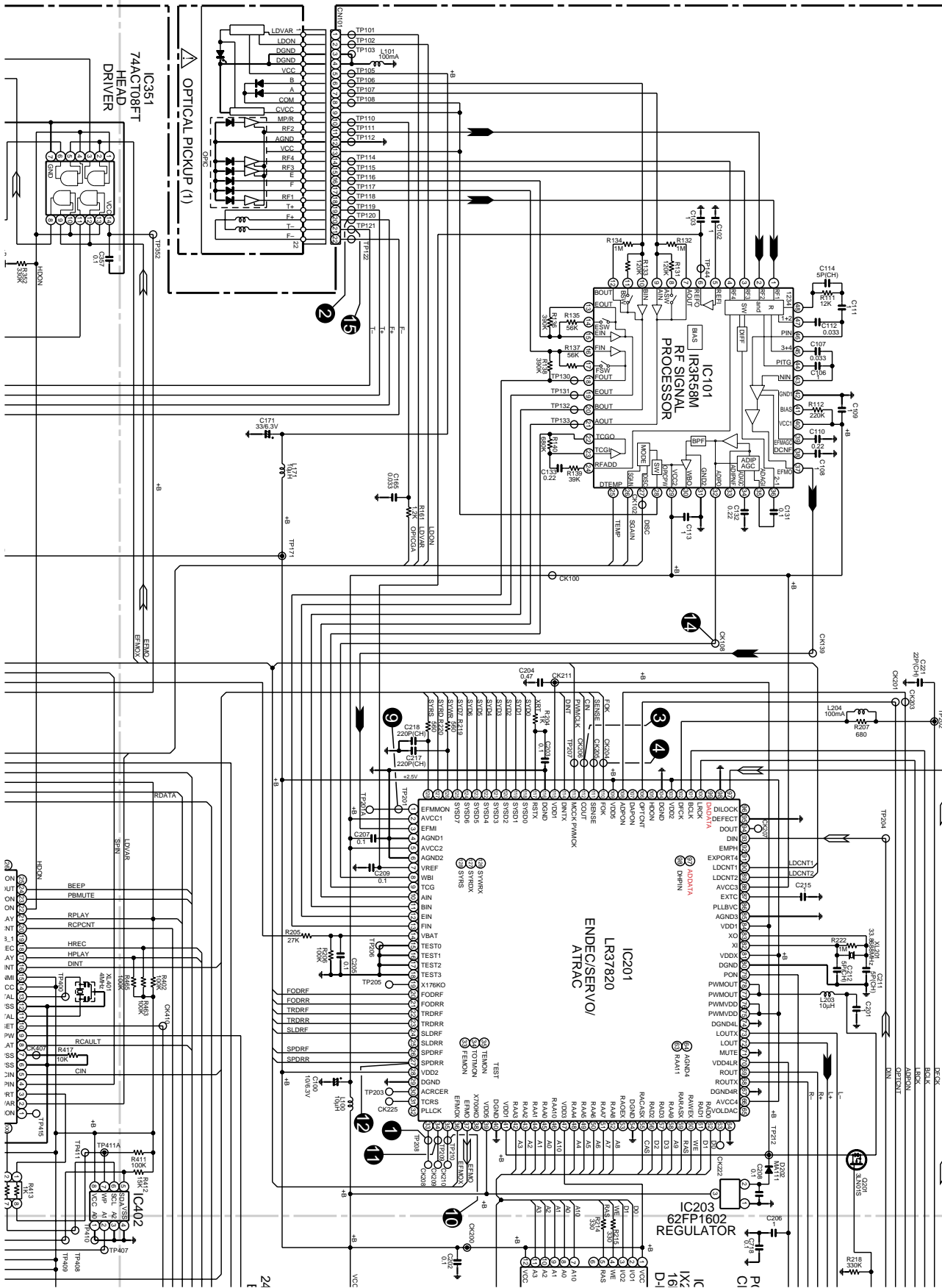
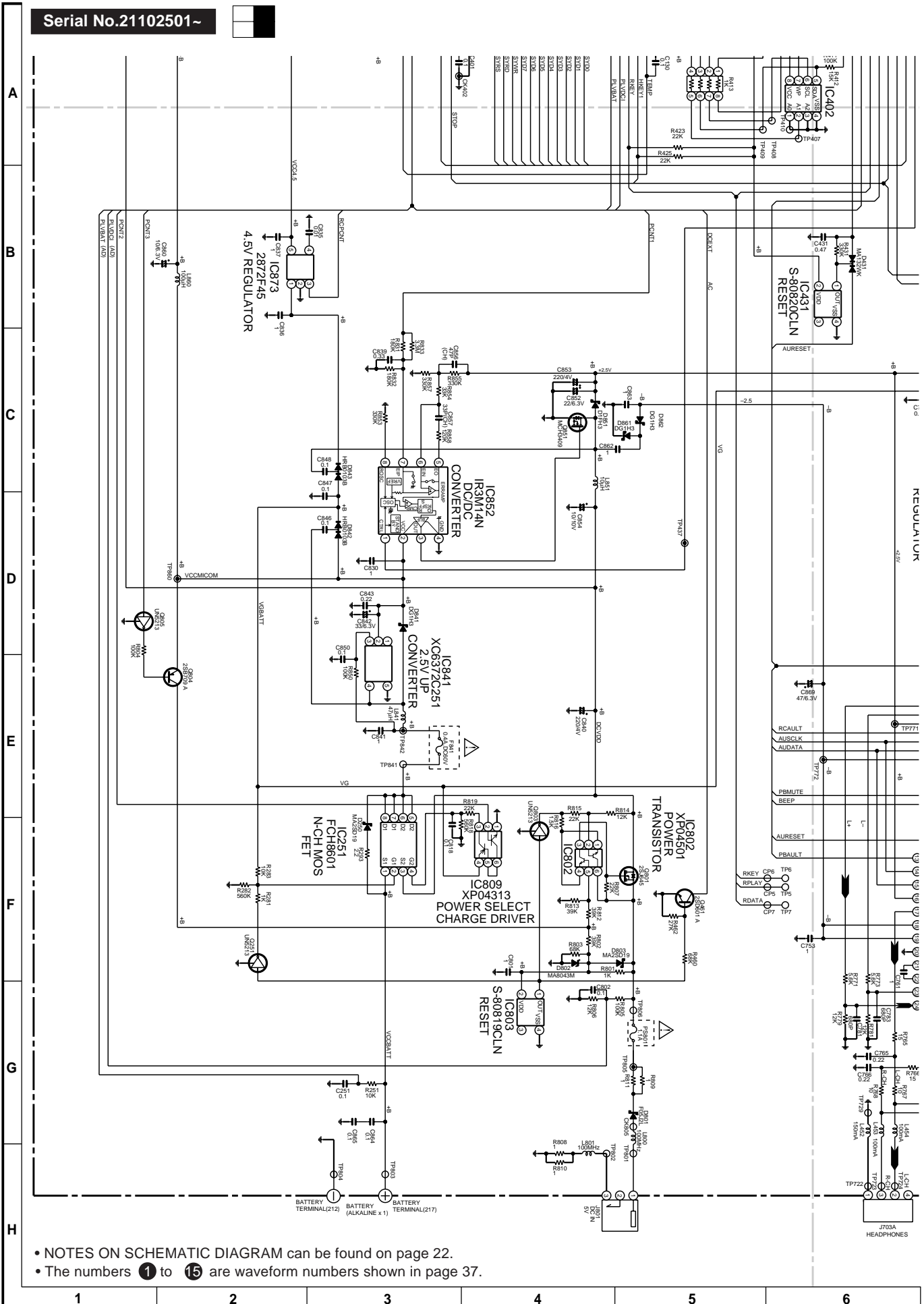


Figure 29 SCHEMATIC DIAGRAM (6/8)

Serial No.21102501~



- NOTES ON SCHEMATIC DIAGRAM can be found on page 22.
- The numbers ① to ⑮ are waveform numbers shown in page 37.

Figure 30 SCHEMATIC DIAGRAM (7/8)

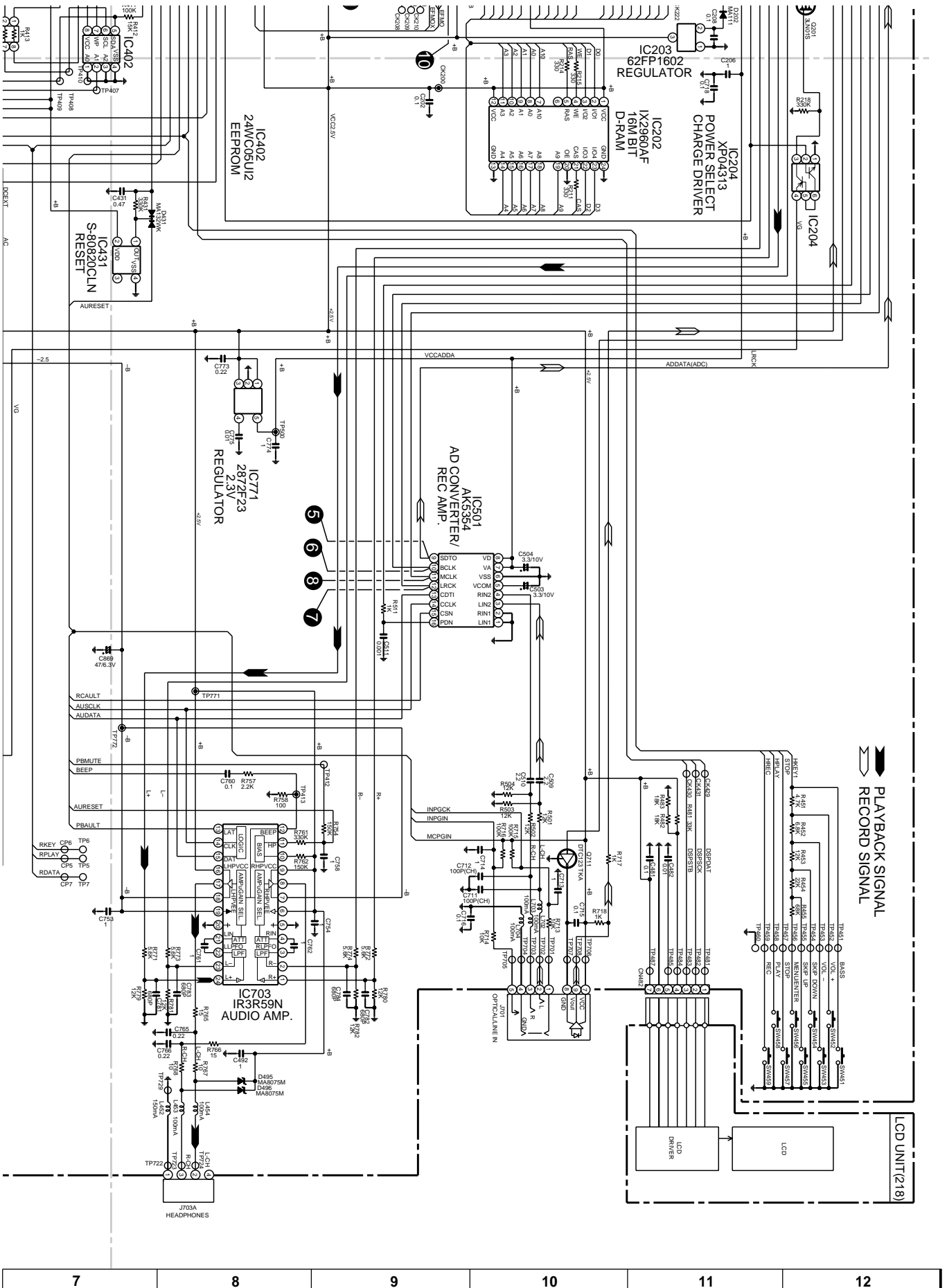
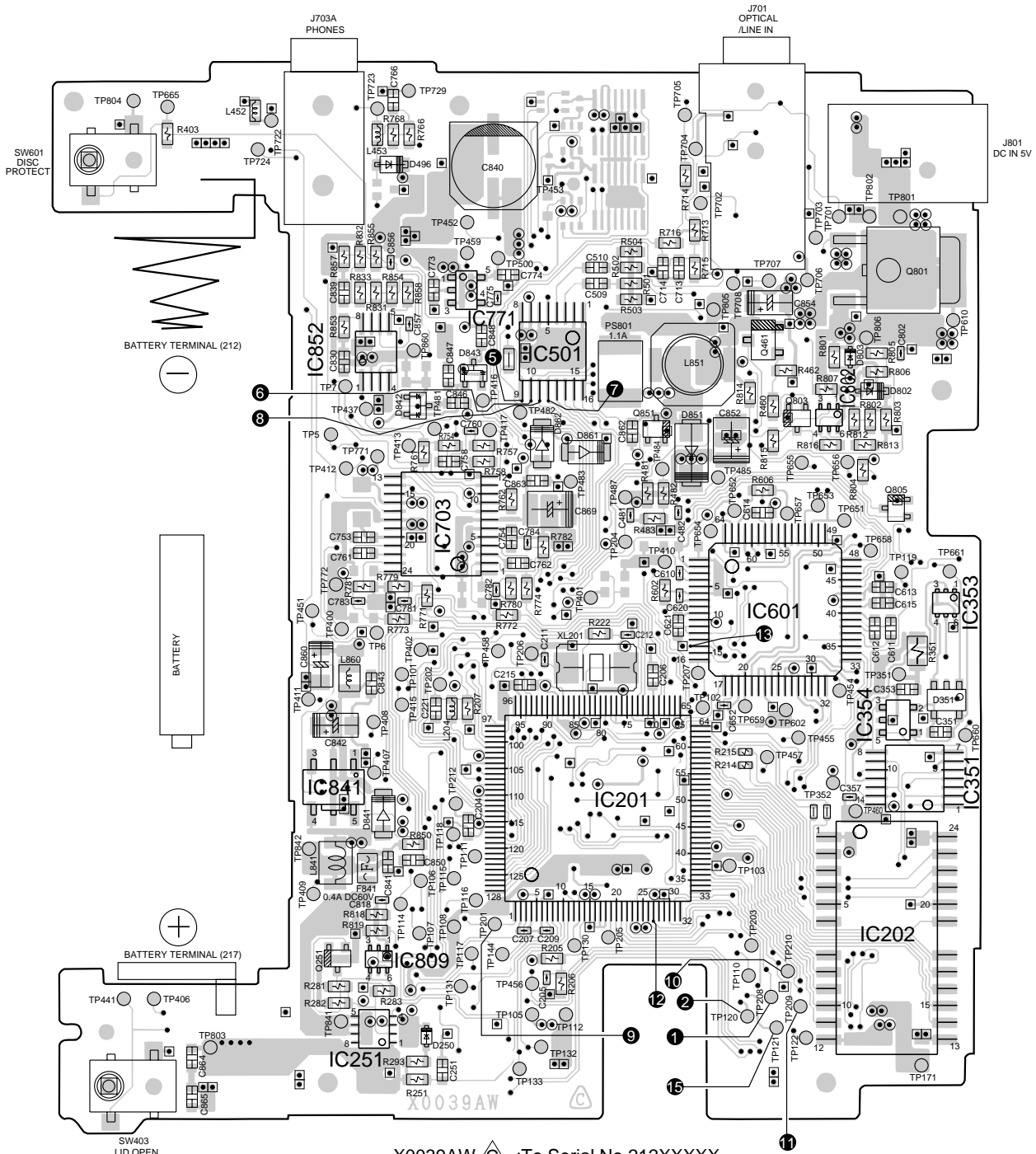


Figure 31 SCHEMATIC DIAGRAM (8/8)

Serial No.21102501~

MAIN PWB-A (BOTTOM VIEW)

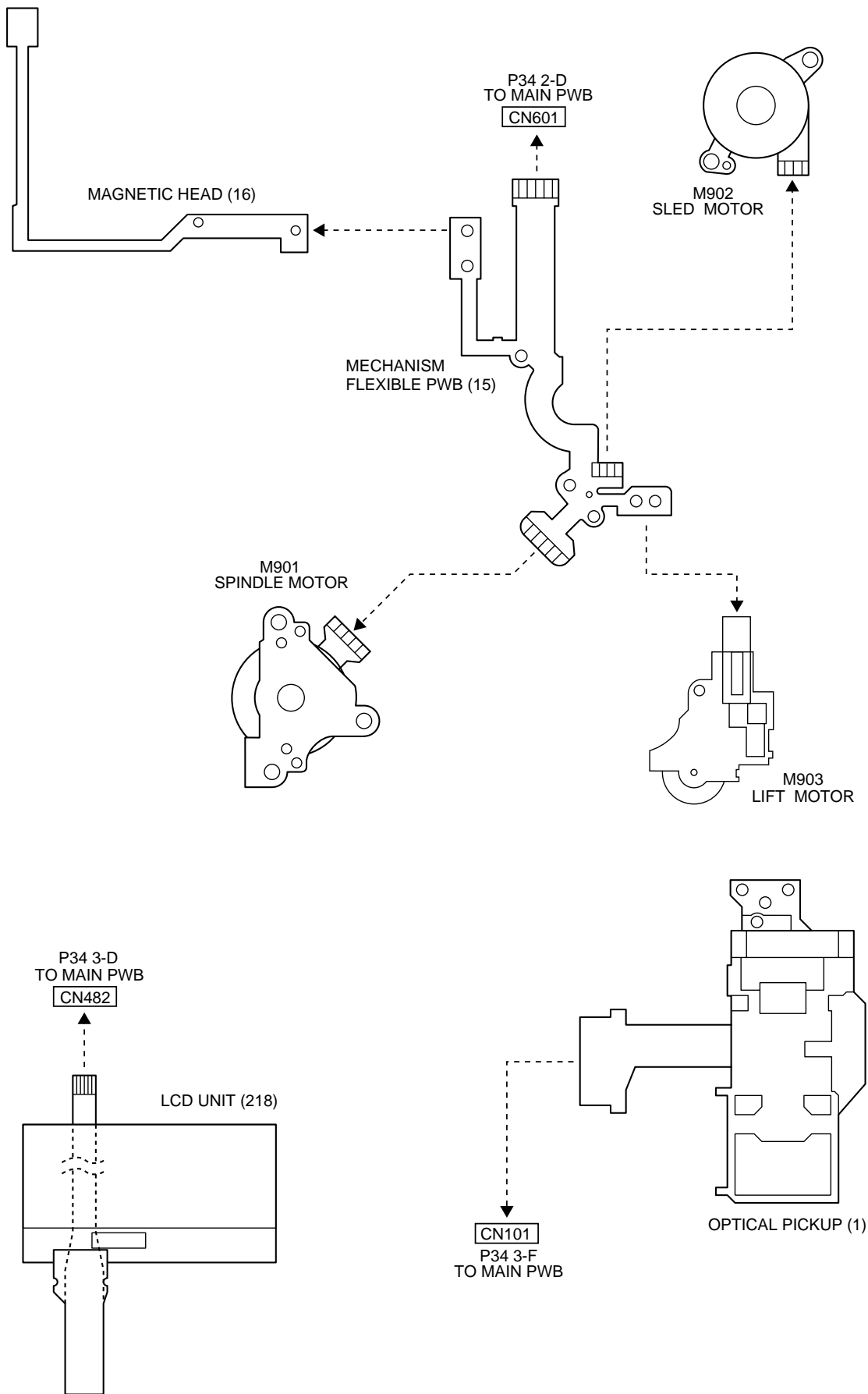


X0039AW \triangle :To Serial No.212XXXXX

X0039AW ∇ :From Serial No.301XXXXX

7	8	9	10	11	12
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Figure 33 WIRING SIDE OF P.W.BOARD (2/4)



7	8	9	10	11	12
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Figure 35 WIRING SIDE OF P.W.BOARD (4/4)

VOLTAGE

IC101	
PIN NO.	VOLTAGE
1	0.73V
2	0.73V
3	0.73V
4	0.73V
5	1.28V
6	1.28V
7	1.28V
8	1.28V
9	1.28V
10	1.28V
11	1.28V
12	1.28V
13	1.28V
14	1.28V
15	1.28V
16	1.28V
17	1.28V
18	1.28V
19	1.28V
20	1.28V
21	1.28V
22	1.28V
23	1.28V
24	0.73V
25	1.49V
26	2.47V
27	2.47V
28	2.47V
29	2.54V
30	1.71V
31	0V
32	1.29V
33	1.28V
34	0.58V
35	1.28V
36	1.28V
37	1.27V
38	1.26V
39	0.59V
40	2.54V
41	1.53V
42	0V
43	1.27V
44	0V
45	0.82V
46	1.27V
47	0.82V
48	0.73V

IC202	
PIN NO.	VOLTAGE
1	2.53V
2	(0.65V)
3	(0.83V)
4	(2.52V)
5	(2.48V)
6	-
7	(0V)
8	(2.52V)
9	(0V)
10	(0V)
11	(0V)
12	2.53V
13	0V
14	(0V)
15	(0V)
16	(0V)
17	(0V)
18	(0V)
19	(0V)
20	(2.52V)
21	(2.48V)
22	(1.22V)
23	(1.22V)
24	0V

IC203	
PIN NO.	VOLTAGE
1	0V
2	1.60V
3	2.53V

IC201							
PIN NO.	VOLTAGE	PIN NO.	VOLTAGE	PIN NO.	VOLTAGE		
1	1.20V	51	(0V)	101	0V		
2	2.53V	52	(0V)	102	1.27V		
3	1.27V	53	(2.52V)	103	2.53V		
4	0V	54	0V	104	0V		
5	2.53V	55	(2.48V)	105	0V		
6	0V	56	(1.22V)	106	0V		
7	1.28V	57	(1.22V)	107	0V		
8	1.28V	58	(0V)	108	0V		
9	1.28V	59	(2.48V)	109	2.53V		
10	1.28V	60	(2.52V)	110	2.53V		
11	1.28V	61	(0.83V)	111	0V		
12	1.28V	62	(0.65V)	112	0V		
13	1.28V	63	0V	113	0V		
14	1.28V	14	1.56V	64	0V	114	2.56V
15	1.28V	15	0V	65	0V	115	1.02V
16	1.28V	16	0V	66	2.53V	116	0V
17	1.28V	17	0V	67	0V	117	2.49V
18	1.28V	18	0V	68	1.16V	118	(0.46V)
19	1.28V	19	1.27V	69	1.16V	119	(0.46V)
20	1.28V	20	0V	70	2.31V	120	(0.46V)
21	1.28V	21	0V	71	0V	121	(0.46V)
22	1.28V	22	0V	72	1.16V	122	(0.46V)
23	1.28V	23	0V	73	1.16V	123	(0.46V)
24	0.73V	24	0V	74	0V	124	(0.46V)
25	1.49V	25	0V	75	2.53V	125	(0.46V)
26	2.47V	26	0V	76	2.53V	126	2.46V
27	2.47V	27	2.53V	77	1.25V	127	2.46V
28	2.47V	28	2.53V	78	1.25V	128	0V
29	2.54V	29	0V	79	2.46V		
30	1.71V	30	2.42V	80	0V		
31	0V	31	0V	81	2.53V		
32	1.29V	32	1.96V	82	1.16V		
33	1.28V	33	1.25V	83	1.18V		
34	0.58V	34	1.25V	84	1.01V		
35	1.28V	35	1.25V	85	0V		
36	1.28V	36	0V	86	2.52V		
37	1.27V	37	1.06V	87	1.43V		
38	1.26V	38	1.27V	88	2.52V		
39	0.59V	39	2.53V	89	0V		
40	2.54V	40	0V	90	0V		
41	1.53V	41	1.02V	91	(0.95V)		
42	0V	42	(0V)	92	(1.06V)		
43	1.27V	43	(0V)	93	2.53V		
44	0V	44	(0V)	94	1.26V		
45	0.82V	45	(2.52V)	95	0V		
46	1.27V	46	(0V)	96	2.53V		
47	0.82V	47	2.53V	97	0V		
48	0.73V	48	(0V)	98	0V		
		49	(0V)	99	0V		
		50	(0V)	100	0V		

IC251	
PIN NO.	VOLTAGE
1	1.37V
2	0.45V
3	2.00V
4	0V
5	1.39V
6	1.39V
7	1.39V
8	1.39V

IC351	
PIN NO.	VOLTAGE
1	0V
2	0V
3	0V
4	0V
5	0V
6	0V
7	0V
8	0V
9	1.07V
10	0V
11	0V
12	1.07V
13	0V
14	4.51V

IC353	
PIN NO.	VOLTAGE
1	0V
2	0V
3	1.87V
4	0V
5	0V
6	1.87V

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

IC402	
PIN NO.	VOLTAGE
1	0V
2	2.47V
3	0V
4	0V
5	2.47V
6	0V
7	2.47V
8	2.47V

IC431	
PIN NO.	VOLTAGE
1	2.47V
2	2.47V
3	0V
4	0V

IC501	
PIN NO.	VOLTAGE
1	0V
2	0V
3	0V
4	0V
5	0V
6	0V
7	2.31V
8	2.31V
9	0V
10	0V
11	2.54V
12	0V
13	2.48V
14	0V
15	2.48V
16	0V

IC401			
PIN NO.	VOLTAGE	PIN NO.	VOLTAGE
1	0V	51	2.49V
2	0V	52	2.49V
3	2.46V	53	2.49V
4	0V	54	2.49V
5	0V	55	2.49V
6	0V	56	0V
7	0V	57	2.53V
8	2.46V	58	2.49V
9	2.46V	59	2.49V
10	2.46V	60	2.49V
11	1.25V	61	2.49V
12	0V	62	0V
13	1.13V	63	0V
14	2.49V	64	0V
15	2.49V	65	0V
16	2.56V	66	0V
17	2.49V	67	2.49V
18	2.49V	68	0V
19	0V	69	0V
20	2.49V	70	2.49V
21	2.49V	71	2.49V
22	0V	72	2.49V
23	2.49V	73	0V
24	0V	74	2.49V
25	0V	75	2.49V
26	0V	76	0V
27	0V	77	2.49V
28	0V	78	2.49V
29	0V	79	(0.46V)
30	2.49V	80	(0.46V)
31	2.49V	81	(0.46V)
32	2.49V	82	(0.46V)
33	2.49V	83	(0.46V)
34	2.49V	84	(0.46V)
35	2.49V	85	(0.46V)
36	0V	86	(0.46V)
37	1.25V	87	0V
38	2.49V	88	0V
39	2.49V	89	1.99V
40	0V	90	0.51V
41	0V	91	2.49V
42	0V	92	2.49V
43	0V	93	1.48V
44	2.48V	94	0V
45	2.56V	95	1.25V
46	2.53V	96	2.49V
47	2.53V	97	2.49V
48	0V	98	2.49V
49	2.48V	99	2.49V
50	2.48V	100	0V

IC601	
PIN NO.	VOLTAGE
1	0V
2	1.99V
3	1.99V
4	1.99V
5	0V
6	0V
7	0.63V
8	0V
9	0V
10	2.54V
11	2.49V
12	2.49V
13	0V
14	2.53V
15	0V
16	0V
17	0V
18	0V
19	2.53V
20	0.03V
21	0.03V
22	0V
23	0V
24	0V
25	0V
26	1.99V
27	0V
28	0V
29	0V
30	1.99V
31	0V
32	0V
33	0V
34	0V
35	2.48V
36	0V
37	0.02V
38	2.53V
39	2.56V
40	6.23V
41	6.27V
42	2.55V
43	2.55V
44	2.48V
45	2.48V
46	2.48V
47	0V
48	0V
49	0V
50	0V
51	0.02V
52	0.02V
53	0V
54	0V
55	0.02V
56	0V
57	1.99V
58	0V
59	1.34V
60	1.99V
61	1.99V
62	1.99V
63	1.99V
64	0V

IC703	
PIN NO.	VOLTAGE
1	0.76V
2	0.76V
3	0V
4	0V
5	0V
6	2.56V
7	-2.41V
8	0V
9	2.56V
10	0V
11	1.28V
12	0V
13	2.48V
14	0V
15	2.48V
16	2.55V
17	0V
18	-2.41V
19	-2.41V
20	0V
21	0V
22	0V
23	0.76V
24	0.76V

IC771	
PIN NO.	VOLTAGE
1	0V
2	0V
3	1.27V
4	2.31V
5	2.55V

IC802	
PIN NO.	VOLTAGE
1	0.72V
2	1.3V
3	3.7V
4	0.72V
5	1.24V
6	4.95V

IC803	
PIN NO.	VOLTAGE
1	3.54V
2	3.57V
3	0V
4	0V

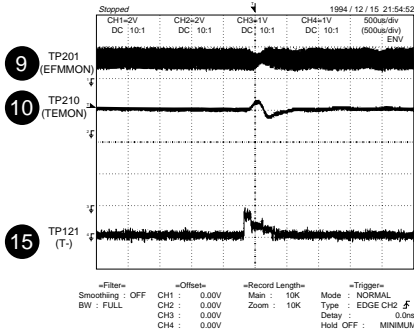
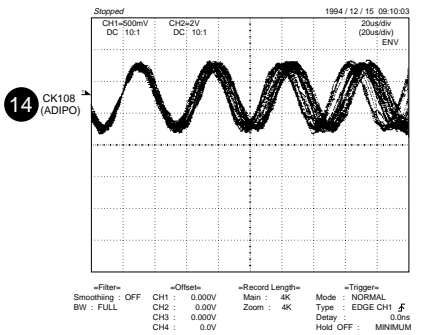
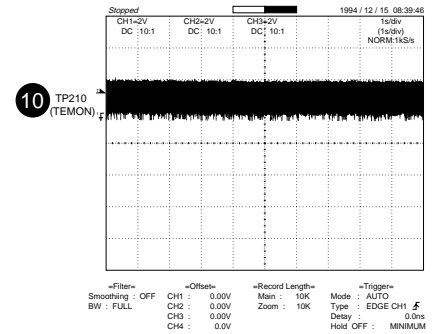
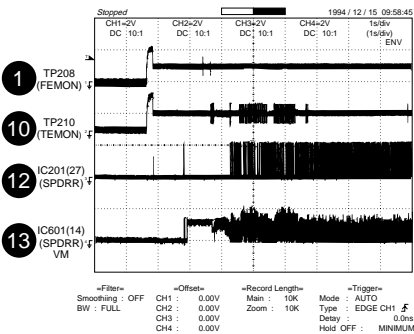
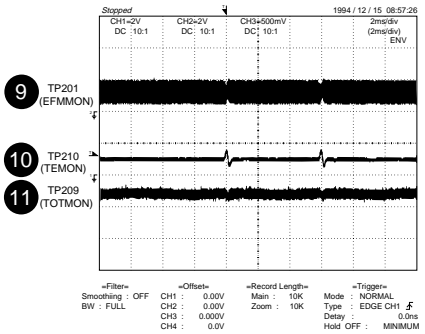
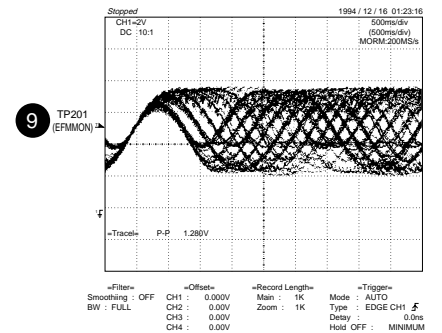
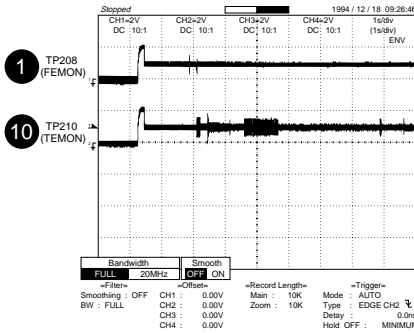
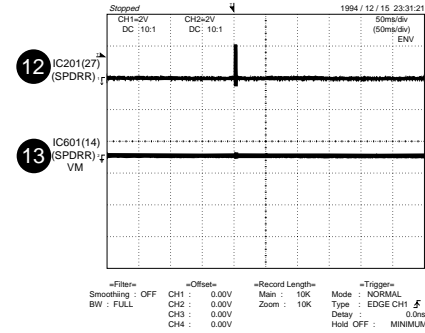
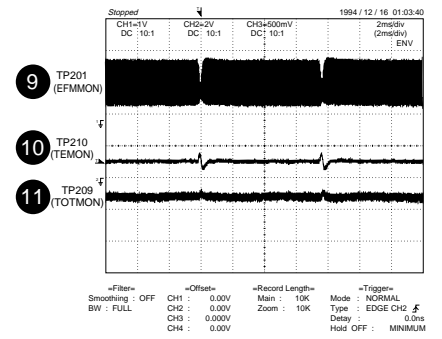
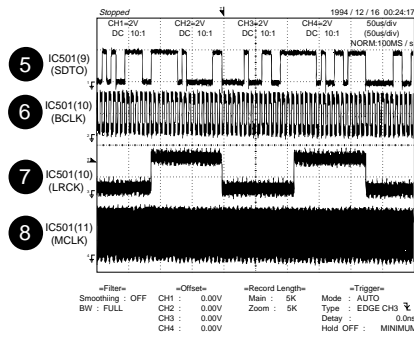
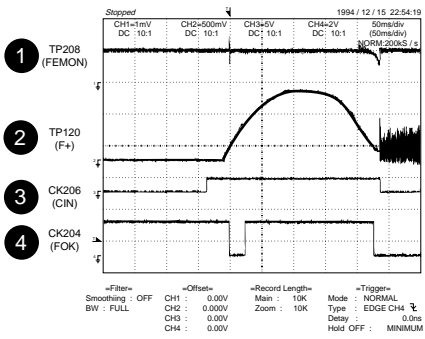
IC809	
PIN NO.	VOLTAGE
1	0V
2	0V
3	0V
4	4.6V
5	4.56V
6	4.56V

IC841	
PIN NO.	VOLTAGE
1	0V
2	2.5V
3	1.98V
4	1.98V
5	0V

IC852	
PIN NO.	VOLTAGE
1	1.24V
2	2.50V
3	0.39V
4	0V
5	1.12V
6	1.27V
7	1.27V
8	1.27V

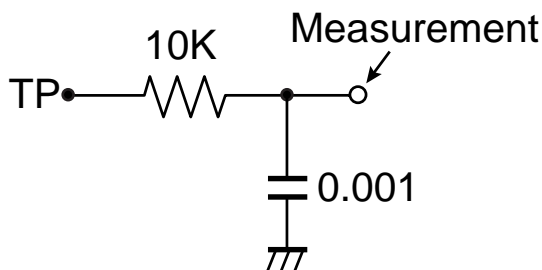
IC873	
PIN NO.	VOLTAGE
1	2.47V
2	0V
3	1.27V
4	4.52V
5</	

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, P12) 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 MD playback does not function

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.

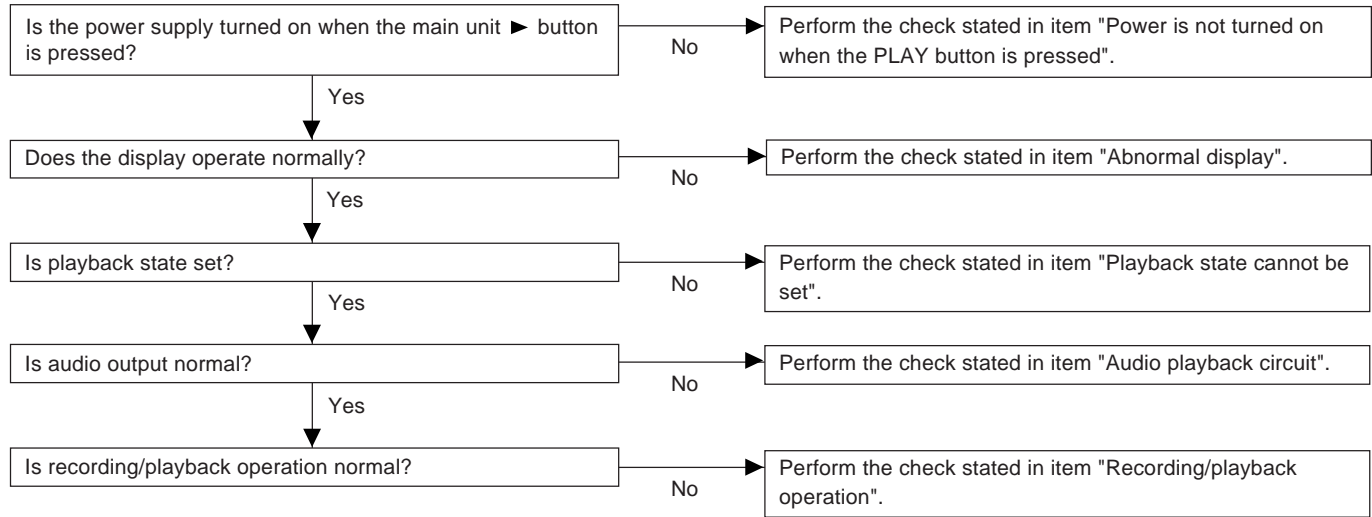
Remove the cabinet and follow the troubleshooting instructions.

"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."

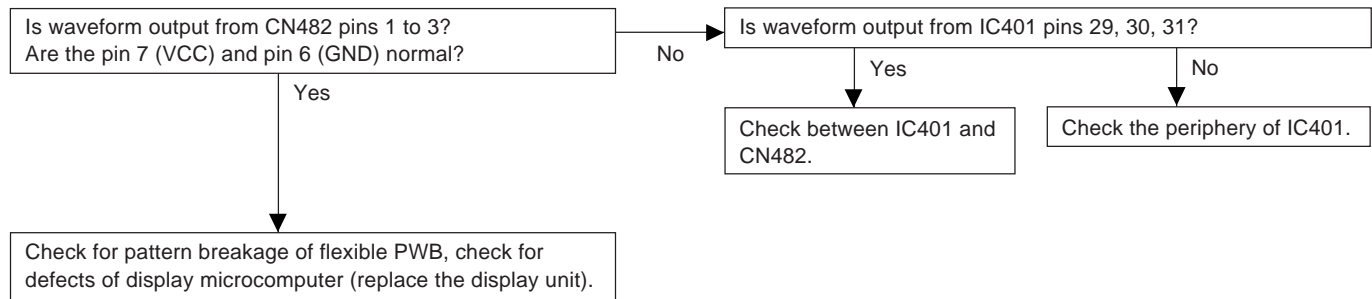
Turn the power off.

Gently clean the lens with a lens cleaning tissue and a small amount of lens cleaner on the market.

Do not touch the lens with the bare hand.

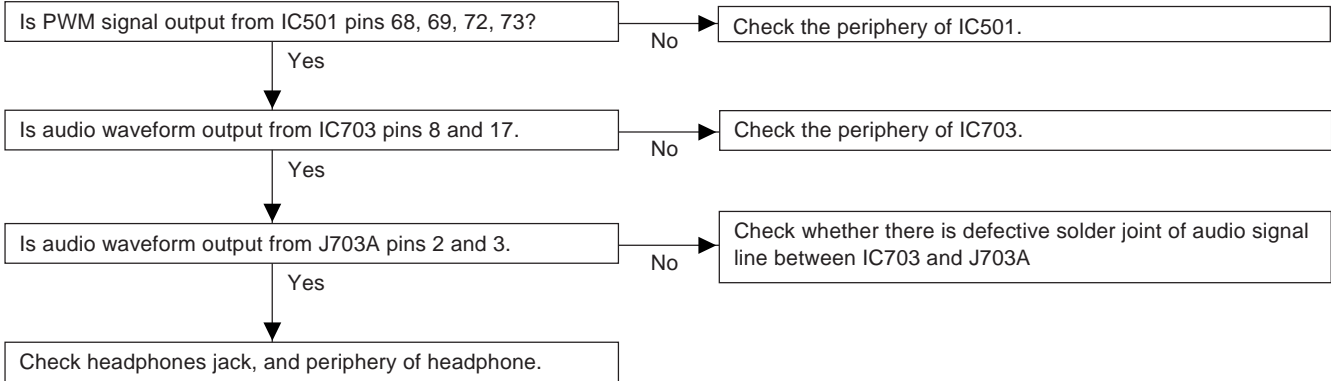


• Abnormal display

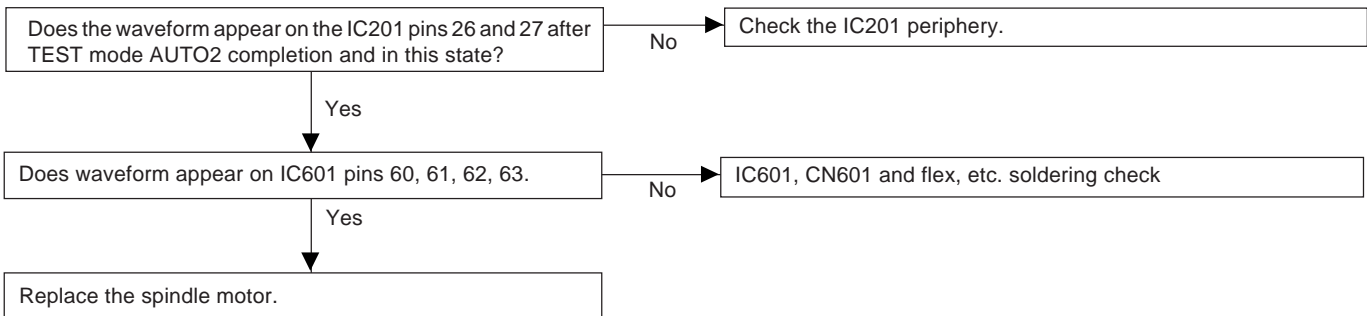


• Audio playback circuit

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



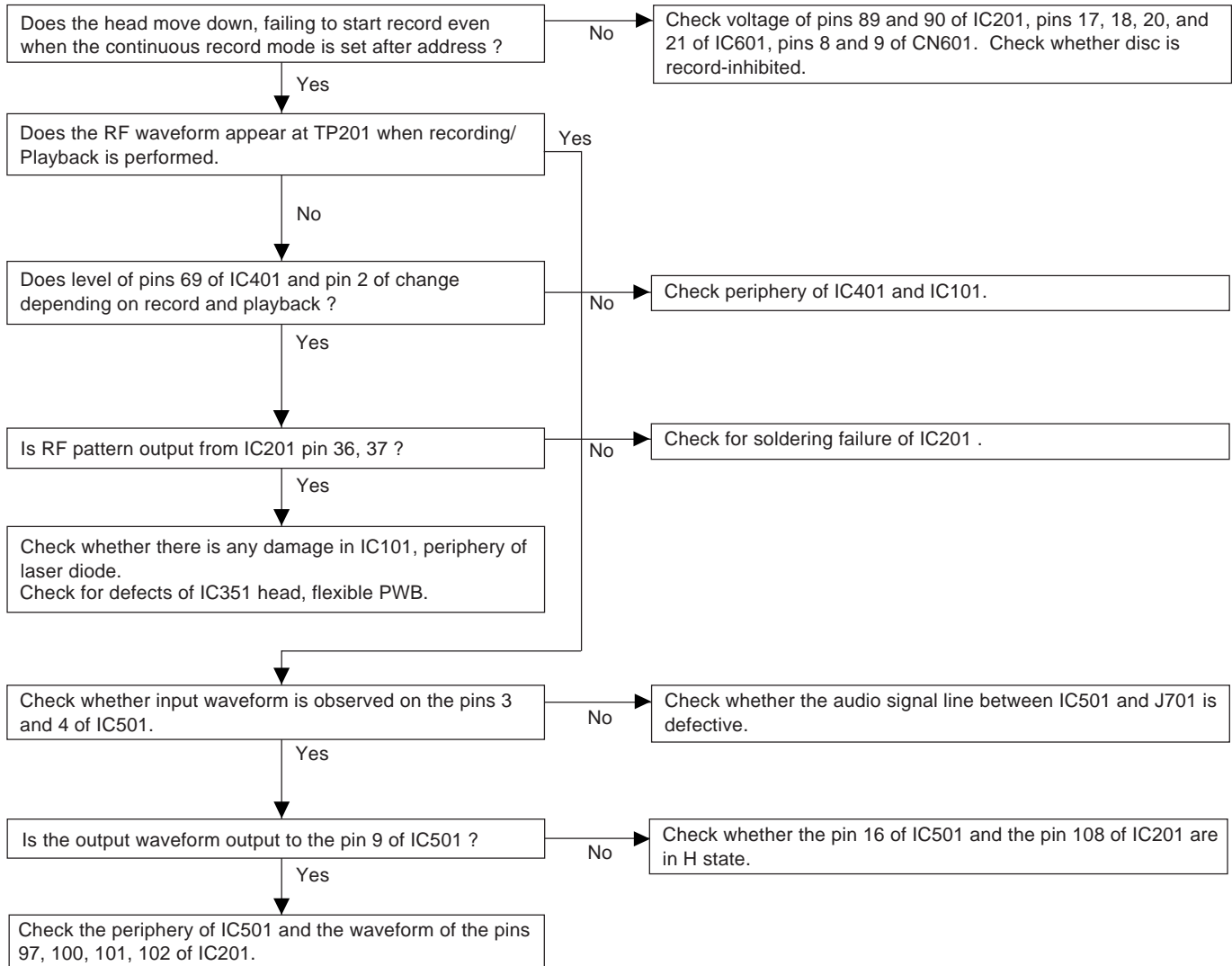
• The spindle motor fails to run. Does the head move



MD-MT270H

• Recording/playback operation.

Insert a low reflection disc, and ascertain audio output by normal playback, and then set TEST REC mode.
Change MSL from 00H to 80H by the control setting of EEPROM. After completing the operation, return in to 00H.



FUNCTION TABLE OF IC

IC401 RH-iX0561AWZZ :System Microcomputer (IX0561AW) (1/2)

Pin No.	Port Name	Terminal Name	Input/Output	Function
1*	P9_4/DA1	MCMON	Output	Internal operation status monitor
2	P9_3/DA0	LDVAR	Output	P.U. laser power setting output
3	P9_2	EPRT	Output	EEPROM write protection
4	TB1IN	SPIN	Input/Output	Spindle motor FG pulse detection input
5	TB0IN	CIN	Output	Track cross signal/focus drive detection
6	BYTE	VSS	—	Ground potential
7	CNVSS	VSS	—	Ground potential
8	P8_7	RCLAT	Output	Record audio IC data latch output
9	P8_6	SYCPW	Output	System LSI core power on/off
10	RESET	_RESET	Input	Microcomputer hard reset input
11	XOUT	EXTAL	—	Crystal connection terminal
12	VSS	VSS	—	Ground potential
13	XIN	XTAL	—	Crystal connection terminal
14	VCC	VCC	—	Positive power supply
15	P8_5/NMI	NMI	Input	Nonmaskable interruption input (not used)
16	INT2	_DINT	Input	System LSI interruption
17	INT1	_PLAY	Input	Unit PLAY button operation detection input
18	INT0	_REC	Input	Unit REC button operation detection input
19*	P8_1/TA4IN		Output	Reserve
20	P8_0	RCPCNT	Input/Output	Record circuit power control output
21	TA3IN	_RPLAY	Input	Remote control PLAY key operation detection input
22	P7_6		Output	Reserve
23	P7_5	PBOPON	Output	Audio IC output stage control output
24	TA2OUT	BUZOUT	Output	Beep sound pulse output
25*	P7_3	CHGON	Output	Battery charge ON/OFF control output
26	P7_2/TA1OUT		Output	Reserve
27*	P7_1/TB5IN		Output	Reserve
28*	P7_0/TA0OUT		Output	Reserve
29	P6_7/TXD1	DSPDAT	Output	Unit indication data output
30	P6_6/RXD1	DSPSTB	Output	Main unit display strobe output
31	P6_5/CLK1	DSPSCK	Output	Unit indication data clock output
32*	P6_4	TEST0	Input	Test mode setting input 0
33	P6_3/TXD0	RMDAT	Output	Remote control indication data output
34	P6_2/RXD0	PCILD	Input/	IF data input
35*	P6_1/CLK0	SCK0	Output	Serial I/O clock output (not used)
36	P6_0	OPICGA	Output	P.U detection sensitivity switching output
37	P5_7/CLKOUT	PCLK	Output	Power clock
38	P5_6	SGAIN	Output	RF amp gain polarity switching output
39	P5_5	DISCP	Output	RF amp TE polarity switching output
40	P5_4	JPNP	Input	Kana conversion/Kana input existence/nonexistence discrimination
41*	P5_3		Output	Reserve
42*	P5_2		Output	Reserve
43	P5_1	RACLK	Output	Audio IC data clock output
44*	P5_0	TEST1	Input	Test mode setting input 1
45	P4_7	_MCPGI	Input	Microphone plug insertion detection input
46	P4_6	_INPGI	Input	Line/digital plug insertion detection
47	P4_5	INPGCK	Input	Line/digital plug type detection
48	P4_4	SENSE	Input/Output	System LSI servo sense input
49	P4_3	SLCNT1	Output	Stepping control 1
50	P4_2	SLCNT2	Output	Stepping control 2

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

MD-MT270H

IC401 RH-iX0561AWZZ :System Microcomputer (IX0561AW) (2/2)

Pin No.	Port Name	Terminal Name	Input/Output	Function
51	P4_1	SLCNT3	Output	Stepping control 3
52	P4_0	DISCPR	Input	Disc record inhibition switch input
53	P3_7	PBLAT	Output	Audio IC data latch output
54*	P3_6	RFPCNT	Output	RF control
55	P3_5	RADAT	Output	Audio IC serial data output
56	P3_4	CHGFIM	Input	Charging function existance/nonexistence discrimination input
57	P3_3	_FOK	Input/Output	Focus OK signal input
58	P3_2	CKSTP	Output	Microcomputer standby operation monitor output
59	P3_1	DCNT1	Output	Mechanism driver enable output
60	VCC	VCC	—	Positive power supply
61	P3_0	_EJSW	Output	Ejection lever operation detection input
62	VSS	VSS	—	Ground potential
63*	P2_7	CHGCNT	Output	Charging current control output
64*	P2_6	MSENSE	Output	Microphone sensitivity switching
65*	P2_5	MCNT	Output	Microphone power control
66	P2_4	DCNT2	Output	MO raising-lowerng P control
67	P2_3	PCNT3	Output	
68*	P2_2	PF4	Output	Reserve
69	P2_1	LDON	Output	P.U. laser ON/OFF control output.
70	P2_0	PCNT2	Output	Servo DC-DC converter ON/OFF control
71	INT5	ARQD	Input	Disk cap opens and closes detection/it is started and required
72	INT4	_STOP	Input	Unit STOP button operation detection input
73	INT3	_DCEXT	Input	DC-IN detection
74	P1_4	_XRST	Output	System LSI hard reset output
75	P1_3	PCNT1	Output	Main DC-DC converter ON/OFF control
76	P1_2	SYRS	Output	System LSI register selection output
77	P1_1	_SYRD	Output	System LSI read enable output
78	P1_0	_SYWR	Output	System LSI write enable output
79	P0_7	SYD7	Input/Output	System LSI parallel data bus
80	P0_6	SYD6	Input/Output	
81	P0_5	SYD5	Input/Output	
82	P0_4	SYD4	Input/Output	
83	P0_3	SYD3	Input/Output	
84	P0_2	SYD2	Input/Output	
85	P0_1	SYD1	Input/Output	
86	P0_0	SYD0	Input/Output	
87*	P10_7/AN7		Output	Reserve
88*	P10_6/AN6		Output	Reserve
89	P10_5/AN5	PLVBAT	Input	Battery voltage detection input
90	P10_4/AN4	PLVDCI	Input	DC-DC converter unusual voltage detection
91	P10_3/AN3	RKEY	Input	Remote control key operation detection input
92	P10_2/AN2	HKEY1	Input	Unit key operation detection input 1
93	P10_1/AN1	TEMP	Input	Ambient temperature detection input
94	AVSS	AVSS	—	A/D and D/A converter ground potential
95*	P10_0/AN0		Output	Reserve
96	VREF	VREF	—	A/D and D/A converter reference voltage
97	AVCC	AVCC	—	A/D and D/A converter positive power supply
98	P9_7	_EPCS	Output	EEPROM chip selection output
99	P9_6	EEPD	Input/Output	EEPROM serial data input/output
100	P9_5	EEPK	Output	EEPROM serial clock output

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

IC201 VHiLR37819+-1 :Endec/Servo/Atrac (LR37819) (Serial No.21100001~21102500)

IC201 VHiLR37820+-1 :Endec/Servo/Atrac (LR37820) (Serial No.21102501~)

System LSI expansion output port

Pin No.	Port Name	Terminal Name	Input/Output	Function	Remarks
90	EXPORT4	LDCNT1	Output	Recording head raising-lowering control output 1	See the separate table *2.
89	EXPORT5	LDCNT2	Output	Recording head raising-lowering control output 2	See the separate table *2.
105*	EXPORT3	HDON	Output	Recording head current control output	'H': Record electric current
106	EXPORT2	OPTCNT	Output	Optical digital input circuit control	'H': Circuit operation ON
107*	EXPORT0	DAPON	Output	D/A converter operation control output.	'H': Operation ON
108	EXPORT1	ADPON	Output	A/D converter operation control output	'H': Operation ON

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

*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 LDCNT port settings

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

MD-MT270H

IC601 VHiLV8221T+-1 :PWM/Motor Driver (LV8221T)(1/2)

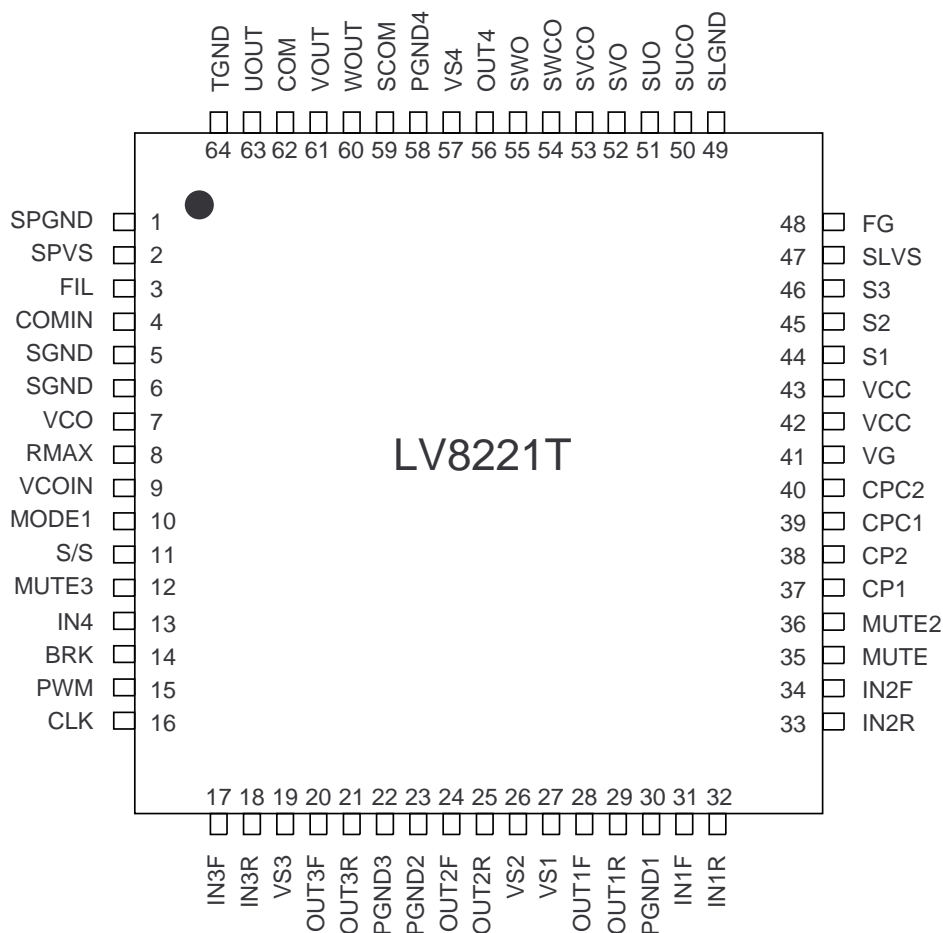
Pin No.	Terminal Name	Function
1	SPGND	Ground terminal of spindle output.
2	SPVS	Power supply terminal for spindle drive . The capacitor is connected to the GND terminal.
3	FIL	Position detection comparator filter terminal in the spindle motor. The capacitor is connected between this terminal and COMIN terminal (pin).
4	COMIN	Position detection comparator filter terminal in the spindle motor. The capacitor is connected between this terminal and FIL terminal (pin).
5, 6	SGND	Small signal GND terminal.
7	VCO	VCO oscillation terminal. The capacitor is connected to the GND terminal. VCO oscillation frequency is changed in accordance with the revolution speed of the motor (voltage at VCOIN terminal).
8	RMAX	VCO maximum frequency setting terminal. The resistor is connected to the GND terminal. The frequency rises by lowering the resistance.
9	VCOIN	VCO control voltage input terminal. The capacitor is connected to the GND terminal. Control output is generated according to the revolution speed of the motor inside the logic, and charged/discharged to the capacitor connected to the GND terminal. The voltage at this terminal controls the VCO oscillation frequency.
10	MODE1	PWM frequency switching input terminal. Select "H" when the CLK terminal (PIN) input frequency is 32 times as high as the spindle PWM frequency, and select "L" when it is 64 times as high.
11	S/S	Start/stop terminal in the spindle motor section. Started with "H" level input.
12	MUTE3	Half-bridge mute terminal. All output terminals of the above driver are set into a high impedance state at the entry of "L".
13	IN4	Half bridge control input terminal.
14	BRK	Brake terminal in the spindle motor section. Counter torque brake applied with "L" level input.
15	PWM	PWM signal input terminal TR is on with "H" level input.
16	CLK	Reference clock input terminal for logic operations. Enter a frequency 32 times or 64 times as high as the spindle PWM frequency.
17	IN3F	H bridge 3 logic input terminal.
18	IN3R	
19	VS3	H bridge 3 power supply terminal. The capacitor is connected to the GND terminal.
20	OUT3F	H bridge 3 forward output terminal.
21	OUT3R	H bridge 3 reverse output terminal.
22	PGND3	H bridge 3 output section GND terminal.
23	PGND2	H bridge 2 output section GND terminal.
24	OUT2R	H bridge 2 reverse output terminal.
25	OUT2F	H bridge 2 forward output terminal
26	VS2	H bridge 2 power supply terminal. The capacitor is connected to the GND terminal.
27	VS1	H bridge 1 power supply terminal. The capacitor is connected to the GND terminal.
28	OUT1F	H bridge 1 forward output terminal.
29	OUT1R	H bridge 1 reverse output terminal.
30	PGND1	H bridge 1 output section GND terminal.
31	IN1R	H bridge 1 logic input terminal.
32	IN1F	
33	IN2R	H bridge 2 logic input terminal.
34	IN2F	
35	MUTE	Mute terminal for H bridge 1-, 2-, 3-phase thread. Output terminals of drivers above have high impedance when L is input.
36	MUTE2	H bridge 3 mute terminal.
37	CP1	Charge pump booster output terminal. The capacitor is connected between this terminal and CPC1 terminal (pin).
38	CP2	Output terminal for charge pump booster pulse. The capacitor is connected between this terminal and CPC2 terminal (pin).
39	CPC1	Charge pump booster terminal. The capacitor is connected between this terminal and CP1 terminal (pin).
40	CPC2	Charge pump booster terminal. The capacitor is connected between this terminal and CP2 terminal (pin).
41	VG	Charge pump booster output terminal. The capacitor is connected to the GND terminal.
42, 43	VCC	Small signal power terminal. The capacitor is connected to the GND terminal.
44	S1	Logic input terminal in 3-phase thread section. Output from pin.
45	S2	
46	S3	

IC601 VHiLV8221T+-1 :PWM/Motor Driver (LV8221T)(2/2)

Pin No.	Terminal Name	Function
47	SLVS	Drive power terminal in 3-phase thread section. The capacitor is connected to the GND terminal.
48	FG	FG pulse output terminal (MOS output). It outputs the pulse equivalent to 3-hole.
49	SLGND	3-phase thread output section GND terminal.
50*	SUCO	Position detection comparator output terminal in the thread driver section.
51	SUO	3-phase thread U-phase output terminal.
52	SVO	3-phase thread V-phase output terminal.
53*	SVCO	Position detection comparator output terminal in the thread driver section.
54*	SWCO	Position detection comparator output terminal in the thread driver section.
55	SWO	3-phase thread W-phase output terminal.
56	OUT4	Half bridge output terminal
57	VS4	Power supply terminal for half bridge section. The capacitor is connected to the GND terminal.
58	PGND4	Half bridge output section GND terminal.
59*	SCOM	Input terminal for position detection comparator COM in the thread driver section.
60	WOUT	3-phase spindle W-phase output terminal. The motor coil is connected.
61	VOUT	3-phase spindle V-phase output terminal. The motor coil is connected.
62	COM	Input terminal for position detection comparator COM in the spindle driver section.
63	UOUT	3-phase spindle U-phase output terminal. The motor coil is connected.
64	TGND	Small signal GND terminal.

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

IC601 VHiLV8221T+-1 :PWM/Motor Driver (LV8221T)



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IC202 RH-iX2960AFZZ: 16M Bit D-RAM (IX2960AF)

Pin No.	Terminal Name	Function
1	Vcc	Power supply (2.6V)
2	I/O1	Data input/data output
3	I/O2	Data input/data output
4	WE	Write enable
5	RAS	Low address strobe
6*	NC	Not connected
7	A10	Address input
8-11	A0-A3	Address input
12	Vcc	Power supply (2.6V)
13	GND	Ground (0V)
14-19	A4-A9	Address input
20	OE	Output enable
21	CAS	Column address strobe
22	I/O3	Data input/data output
23	I/O4	Data input/data output
24	GND	Ground (0V)

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

SHARP PARTS GUIDE

PORTABLE MINIDISC RECORDER MODEL MD-MT270H(S)/(BK)

“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

Contact your nearest SHARP Parts Distributor to order.

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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.

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NO.	PART CODE	★ PRICE RANK	DESCRIPTION
INTEGRATED CIRCUITS			
IC101	VHIIR3R58M/-1	J AM	RF Signal Processor,IR3R58M
IC201	VHILR37819+-1	J BK	Endec/Servo/Atrac,LR37819 [Serial No.21100001~21102500]
IC201	VHILR37820+-1	J BK	Endec/Servo/Atrac,LR37820 [Serial No.21102501~-]
IC202	RH-IX2960AFZZ	J BB	16M Bit D-RAM,IX2960AF
IC203	VHI62FP1602-1	J AF	Regulator,62FP1602
IC204	VSXP04313+++1	J AC	Power Select Charge Driver,XP04313
IC241,242	VHI7MH165FK-1	J AK	Shift Register,7MH165FK [Serial No.21100001~21102500]
IC243~245	VHI7SZ157P6-1	J AE	Multiplexer,NC7SZ157P6X [Serial No.21100001~21102500]
IC251	VSECH8601+++1	J AH	N-ch MOS FET,FCH8601
IC351	VHI74ACT08T-1	J AF	Head Driver,74ACT08FT
IC353	VSMCH6616+++1	J AG	Head Driver,MCH6616
IC354	VHICPH5608/-1	J AH	Head Driver,CPH5608
IC401	RH-IX0561AWZZ	J AY	System Microcomputer,IX0561AW
IC402	VHI24WC5UI2-1	J AG	EEPROM,24WC5UI2
IC431	VHI80820CLN-1	J AD	Reset IC,S-80820CLN
IC501	VHIAK5354VT-1	J AM	AD Converter/REC AMP.,AK5354
IC601	VHILV8221T+-1	J AY	PWM/Motor Driver,LV8221T
IC703	VHIIR3R59N/-1	J AN	Audio Amp.,IR3R59N
IC771	VHI2872F23+-1	J AE	2.3V Regulator,2872F23
IC802	VSXP04501+++1	J AC	Power Transistor,XP04501
IC803	VHI80819CLN-1	J AD	Reset IC,S-80819CLN
IC809	VSXP04313+++1	J AC	Power Select Charge Driver,XP04313
IC841	VHI6372C251-1	J AH	2.5V UP Converter,XC6372C251
IC852	VHIIR3M14N/-1	J AK	DC/DC Converter,IR3M14N
IC873	VHI2872F45+-1	J AE	4.5V Regulator,2872F45

TRANSISTORS

Q201	VS3LN01S+++1	J AC	N-ch MOS FET,3LN01 S
Q251	VSUN5213++++1	J AC	Digital,NPN,UN5213
Q461	VS2SD601AR/-1	J AC	Silicon,NPN,2SD601 AR
Q711	VSDTC123TKA-1	J AC	Digital,NPN,DTC123 TKA
Q801	VS2SJ645+++1	J AG	FET,2SJ645
Q803	VSUN5213+++1	J AC	Digital,NPN,UN5213
Q804	VS2SB709A+++1	J AB	Silicon,PNP,2SB709 A
Q805	VSUN5213+++1	J AC	Digital,NPN,UN5213
Q851	VSMCH3409+++1	J AF	FET,MCH3409

DIODES

D202	VHDMA111///-1	J AC	Silicon,MA111
D250	VHDMA2SD19+-1	J AC	Silicon,MA2SD19
D351	VHDSBE803//--1	J AD	Silicon,SBE803
D431	VHDMA132WK/-1	J AB	Silicon,MA132WK
D495,496	VHEMA8075M/-1	J AC	Zener,MA8075M
D801	VHDF05J2L//--1	J AC	Silicon,F05J2L
D802	VHEMA8043M/-1	J AC	Zener,MA8043M
D803	VHDMA2SD19+-1	J AC	Silicon,MA2SD19
D841	VHDDG1H3+++1	J AC	Schottky,DG1H3
D842,843	VHDHRB0103B-1	J AC	Silicon,HRB0103B
D851	VHDD1FH3+++1	J AE	Schottky,D1FH3
D861,862	VHDDG1H3+++1	J AC	Schottky,DG1H3

COILS

L100	VPBNN100K0000	J AC	10 μH
L101	RCILC0353AFZZ	J AB	Tip Solid Induction,100mA
L171	RCILC0356AFZZ	J AC	10 μH
L203	VPBNN100K0000	J AC	10 μH
L204	RCILC0353AFZZ	J AB	Tip Solid Induction,100mA
L452	RCILC0352AFZZ	J AB	Tip Impeder,150mA
L453,454	RCILC0353AFZZ	J AB	Tip Solid Induction,100mA
L601~605	RCILC0372AFZZ	J AC	22 μH,Choke
L702~704	RCILC0353AFZZ	J AB	Tip Solid Induction,100mA
L800,801	RCILZ0027AWZZ	J AD	100 MHz,Tip Impeder
L841	RCILC0358AFZZ	J AC	47 μH,Choke
L851	RCILC0026AWZZ	J AE	10 μH

NO.	PARTS CODE	★ PRICE RANK	DESCRIPTION
L860	VPCBM101K0000	J AC	100 μH
VIBRATORS			
XL201	RCRSC0028AFZZ	J AH	Crystal,33.8688 MHz
XL401	RCRM-0050AWZZ	J AE	Ceramic,Oscillator,4 MHz
CAPACITORS			
C100	VCSAFA0JJ106M	J AD	10 μF,6.3V,Electrolytic,Tantalum
C102,103	VCKYCY0JB105K	J AC	1 μF,6.3V
C106	VCKYCY0JB105K	J AC	1 μF,6.3V
C107	VCKYCYZ1CB333K	J AB	0.033 μF,16V
C108,109	VCKYCY0JB105K	J AC	1 μF,6.3V
C110	VCKYCY1AB224K	J AB	0.22 μF,10V
C111	VCKYCY0JB105K	J AC	1 μF,6.3V
C112	VCKYCYZ1CB333K	J AB	0.033 μF,16V
C113	VCKYCY0JB105K	J AC	1 μF,6.3V
C114	VCCCCZ1HH5R0C	J AB	5 pF (CH),50V
C130,131	VCKYCYZ1AB104K	J AB	0.1 μF,10V
C132,133	VCKYCY1AB224K	J AB	0.22 μF,10V
C165	VCKYCYZ1CB333K	J AB	0.033 μF,16V
C171	VCSAFA0JJ336M	J AE	33 μF,6.3V,Electrolytic,Tantalum
C201	VCKYCY0JB105K	J AC	1 μF,6.3V
C202	VCKYCY1CB104K	J AB	0.1 μF,16V
C203	VCKYCYZ1AB104K	J AB	0.1 μF,10V
C204	VCKYCY1AB474K	J AC	0.47 μF,10V
C205	VCKYCYZ1AB104K	J AB	0.1 μF,10V
C206	VCKYCY0JB105K	J AC	1 μF,6.3V
C207	VCKYCYZ1AB104K	J AB	0.1 μF,10V
C208	VCKYCY1CB104K	J AB	0.1 μF,16V
C209	VCKYCYZ1AB104K	J AB	0.1 μF,10V
C211,212	VCCCCZ1HH5R0C	J AB	5 pF (CH),50V
C215	VCKYCY0JB105K	J AC	1 μF,6.3V
C217,218	VCCCCZ1HH221J	J AB	220 pF (CH),50V
C221	VCCCCY1HH220J	J AA	22 pF (CH),50V
C241,242	VCKYCYZ1AB104K	J AB	0.1 μF,10V [Serial No.21100001~21102500]
C243	VCKYCYZ1HB471K	J AA	470 pF,50V [Serial No.21100001~21102500]
C251	VCKYCY1CB104K	J AB	0.1 μF,16V
C351	VCCCCY1HH330J	J AA	33 pF (CH),50V
C353	VCKYCY0JB105K	J AC	1 μF,6.3V
C357	VCKYCYZ1AB104K	J AB	0.1 μF,10V
C401	VCKYCYZ1AB104K	J AB	0.1 μF,10V
C404	VCKYCYZ1HB222K	J AB	0.0022 μF,50V
C431	VCKYCY1AB474K	J AC	0.47 μF,10V
C454	VCKYCYZ1HB222K	J AB	0.0022 μF,50V
C481	VCKYCYZ1AB104K	J AB	0.1 μF,10V
C482	VCKYCYZ1CB103K	J AB	0.01 μF,16V
C492	VCKYCY0JB105K	J AC	1 μF,6.3V
C503,504	VCSATA1AJ335M	J AB	3.3 μF,10V,Electrolytic,Tantalum
C509,510	VCKYCY0JF225Z	J AC	2.2 μF,6.3V
C511	VCKYCYZ1HB102K	J AB	0.001 μF,50V
C601~605	VCKYCY0JB105K	J AC	1 μF,6.3V
C610	VCKYCYZ1HB222K	J AB	0.0022 μF,50V
C611,612	VCKYCY1AB224K	J AB	0.22 μF,10V
C613~615	VCKYCY0JB105K	J AC	1 μF,6.3V
C620	VCKYCYZ1HB332K	J AA	0.0033 μF,50V
C621	VCKYCY1AB474K	J AC	0.47 μF,10V
C652	VCKYCYZ1AB104K	J AB	0.1 μF,10V
C711,712	VCCCCZ1HH101J	J AB	100 pF (CH),50V
C713,714	VCKYCY0JB105K	J AC	1 μF,6.3V
C715,716	VCKYCYZ1AB104K	J AB	0.1 μF,10V
C718	VCKYCYZ1AB104K	J AB	0.1 μF,10V
C753,754	VCKYCY0JB105K	J AC	1 μF,6.3V
C758	VCKYCY0JB105K	J AC	1 μF,6.3V
C760	VCKYCYZ1AB104K	J AB	0.1 μF,10V
C761,762	VCKYCY0JB105K	J AC	1 μF,6.3V
C765,766	VCKYCY1AB224K	J AB	0.22 μF,10V
C773	VCKYCY1AB224K	J AB	0.22 μF,10V
C774	VCKYCY0JB105K	J AC	1 μF,6.3V
C775	VCKYCYZ1CB103K	J AB	0.01 μF,16V
C781~784	VCKYCYZ1HB681K	J AB	680 pF,50V
C801	VCKYCY0JB105K	J AC	1 μF,6.3V
C802	VCKYCYZ1AB104K	J AB	0.1 μF,10V
C818	VCKYCYZ1AB104K	J AB	0.1 μF,10V
C830	VCKYCY0JB105K	J AC	1 μF,6.3V
C835	VCKYCYZ1CB103K	J AB	0.01 μF,16V

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NO.	PART CODE	★ PRICE RANK	DESCRIPTION
7	MLEVF0112AWFW	J AC	Lever,Lift
8	MSPRP0060AWFJ	J AB	Spring,Thrust
9	MSPRP0067AWFJ	J AB	Spring,Drive Grip
10	MSPRT0058AWFJ	J AB	Spring,Eject Lever
11	NBRGC0004AWZZ	J AB	Metal
12	NGERH0164AWZZ	J AC	Gear,Drive
13	NGERH0165AWZZ	J AB	Drive Wheel
14	NSFTD0011AWZZ	J AG	Drive Screw
15	QPWBH0026AWZZ	J AG	Mechanism Flexible PWB Ass'y
16	RCILH0008AWM1	J AQ	Magnetic Head Ass'y
17	LHLDX3017AWM1	J AH	Cartridge Holder Ass'y
501	LX-BZ0049AWZZ	J AB	Screw,ø1.4×1.8mm
502	LX-BZ0050AWZZ	J AB	Screw,ø1.4×2.5mm
503	LX-BZ0059AWZZ	J AB	Screw,ø1.4×1.8mm
504	LX-BZ0072AWZZ	J AB	Screw,ø1.4×3.3mm
505	LX-BZ0079AWZZ	J AB	Screw,ø1.4×1.2mm
506	LX-BZ0823AFZZ	J AA	Screw,ø1.4×1.2mm
507	LX-WZ9290AFZZ	J AA	Washer,ø0.8×ø2.4×0.25mm
M901	RMOTV0044AWZZ	J AW	Motor Ass'y [Spindle]
M902	RMOTS0002AWZZ	J AT	Motor Ass'y [Sled]
M903	RMOTV0053AWZZ	J AR	Motor Ass'y [Lift]

CABINET PARTS

201	GCAB-1224AWSA	J AL	Top Cabinet [BK]
201	GCAB-1224AWSB	J AL	Top Cabinet [S]
202	GFTAB1047AWSA	J AF	Lid,Battery [BK]
202	GFTAB1047AWSB	J AF	Lid,Battery [S]
203	GFTAF1003AWSA	J AK	Bottom Cabinet [BK]
203	GFTAF1003AWSB	J AK	Bottom Cabinet [S]
204	HDECQ0961AWSA	J AK	Decoration Plate,Window [BK]
204	HDECQ0961AWSB	J AK	Decoration Plate,Window [S]
205	JKNBZ0918AWSA	J AL	Button,Operation
206	JKNBZ0919AWSA	J AE	Knob,Eject
207	LANGT0145AWFW	J AD	Bracket,Bottom Cabinet
208	LANGT0146AWFW	J AF	Bracket,Mechanism,Left
209	LANGT0147AWFW	J AE	Bracket,Mechanism,Right
210	LHLDB1001AWZZ	J AD	Holder,Battery
211	MLEVP0123AWZZ	J AC	Eject Lever
212	MSPRC0040AWFQ	J AB	Spring,Battery Terminal (-)
213	MSPRT0071AWFJ	J AB	Spring,Eject Lever
214	PSHET0116AWZZ	J AF	Shield Sheet
215	PSHET0118AWZZ	J AC	Insulation Sheet
216	PSHEZ0181AWZZ	J AC	Tape,Window
217	QTANB9044AWFQ	J AF	Battery Terminal (+)
218	RUNTZ0051AWZZ	J AZ	LCD Unit Ass'y.
219	TCAUS0053AWZZ	J AB	Label,Class 3B
220	TLABB0004AWZZ	J AB	Label,Specification [BK] [For Singapore Only]
220	TLABB0005AWZZ	J AB	Label,Specification [S] [For Singapore Only]
221	TLABN0229AW01	J AB	Label,Serial No. [BK] [For Europe]
221	TLABN0229AW02	J AB	Label,Serial No. [BK] [For Sweden]
221	TLABN0229AW03	J AB	Label,Serial No. [BK] [For U.K.]
221	TLABN0229AW04	J AB	Label,Serial No. [BK] [For Korea]
221	TLABN0229AW05	J AB	Label,Serial No. [BK] [For Australia/New Zealand]
221	TLABN0229AW06	J AB	Label,Serial No. [BK] [For Hong Kong]
221	TLABN0229AW07	J AB	Label,Serial No. [BK] [Except for Europe/U.K./Korea/ Australia/New Zealand/ Thailand/Hong Kong]
221	TLABN0234AW01	J AB	Label,Serial No. [S] [For Europe]
221	TLABN0234AW02	J AB	Label,Serial No. [S] [For Sweden]
221	TLABN0234AW03	J AB	Label,Serial No. [S] [For U.K.]
221	TLABN0234AW04	J AB	Label,Serial No. [S] [For Korea]
221	TLABN0234AW05	J AB	Label,Serial No. [S] [For Hong Kong]
221	TLABN0234AW06	J AB	Label,Serial No. [S] [Except for Europe/U.K./Korea/ Australia/New Zealand/ Thailand/Hong Kong]
221	TLABN0234AW07	J AB	Label,Serial No. [S] [For Australia/New Zealand]
221	TLABN0238AWZZ	J AB	Label,Serial No. [S/BK] [For Thailand]
601	LX-BZ0048AWFN	J AC	Screw,ø1.4×2.5mm

NO.	PARTS CODE	★ PRICE RANK	DESCRIPTION
602	LX-BZ0063AWFC	J AB	Screw,ø1.4×2.5mm
603	LX-BZ0063AWFC	J AB	Screw,ø1.4×2.5mm [S]
603	LX-BZ0063AWF6	J AD	Screw,ø1.4×2.5mm [BK]
604	LX-BZ0960AFZZ	J AB	Screw,ø1.4×1.5mm
605	LX-CZ0010AWFC	J AB	Screw,ø1.4×4mm

ACCESSORIES/PACKING PARTS

1	QCNWG0029AWZZ	J AK	Connecting Cord,RCA Type
△ 2	RADPA5050AWZZ	J BG	AC Adapter [For Hong Kong]
△ 2	RADPA5051AWZZ	J BF	AC Adapter [Except for Europe/U.K./Korea/ Australia/New Zealand/Hong Kong]
△ 2	RADPA5063AWZZ	J AX	AC Adapter [For Korea]
△ 2	RADPA6049AWZZ	J BF	AC Adapter [For Australia/New Zealand]
△ 2	RADPA7057AWZZ	J AX	AC Adapter [For Europe]
△ 2	RADPA8058AWZZ	J AY	AC Adapter [For U.K.]
3	RPHOH0011AWZZ	J AT	Headphones
4	SPAKC1541AWZZ	J AH	Packing Case [BK]
4	SPAKC1551AWZZ	J AH	Packing Case [S]
5	SPAKZ0490AWZZ	J AC	Space Pad [For Australia/New Zealand/ U.K./Hong Kong Only]
6	SSAKH0033AWZZ	J AB	Polyethylene Bag
7	TCADS0005AWZZ	J AB	Service Card [For U.K. Only]
8	TGANE0013AWZZ	J AC	Warranty Card [For U.K. Only]
9	TINSE0488AWZZ	J AE	Operation Manual [For U.K.]
9	TINSE0506AWZZ	J AE	Operation Manual [For Australia/New Zealand]
9	TINSX0002AWZZ	J AG	Operation Manual [Except for Europe/U.K./Korea/ Australia/New Zealand]
9	TINSZ0858AWZZ	J AM	Operation Manual [For Europe]
9	TINSZ0873AWZZ	J AL	Operation Manual [For Sweden]
9	TINSZ0900AWZZ	J AE	Operation Manual [For Korea]
10	TINSE0489AWZZ	J AD	Quick Guide [For U.K. Only]
12	TLABE0711AWZZ	J AB	Label,Bar Code [BK] [For Europe/U.K./Korea/ Australia/New Zealand/ Thailand/Hong Kong]
12	TLABE0726AWZZ	J AB	Label,Bar Code [S] [For Europe/U.K./Korea/ Australia/New Zealand/ Thailand/Hong Kong]
13	TLABG0002AWZZ	J AB	Label,Hong Kong [For Hong Kong Only]
14	TLABN0092AWZZ	J AB	Label,Serial No. [For U.K.]
14	TLABN0092AW02	J AB	Label,Serial No. [For Europe/Korea]
16	TLABS0294AWZZ	J AB	Label,CPA [Except for Europe/U.K./Korea/ Australia/New Zealand/ Thailand/Hong Kong]

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

PWB-A 92LPWB4953MDSS 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)

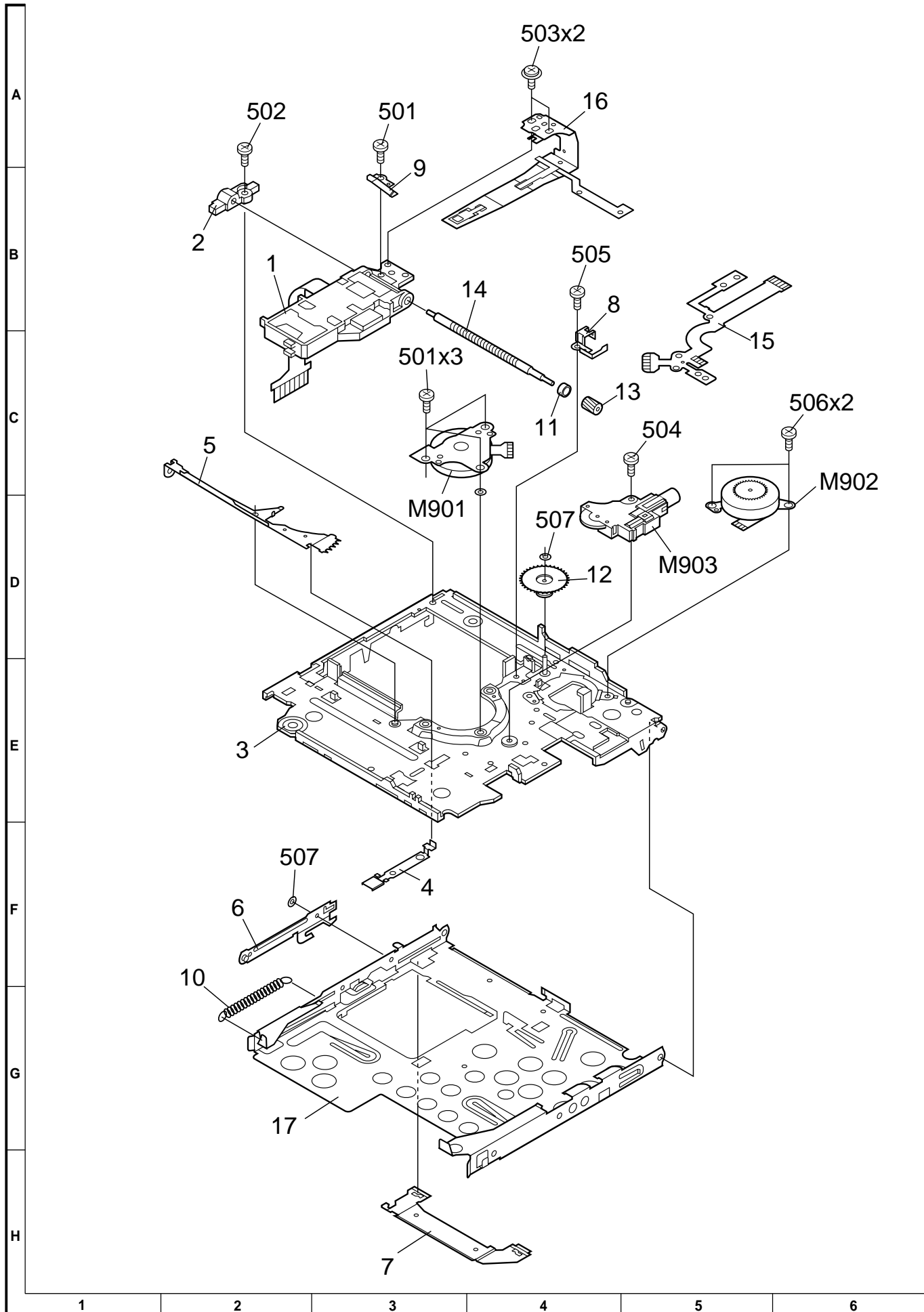


Figure 4 MD MECHANISM EXPLODED VIEW

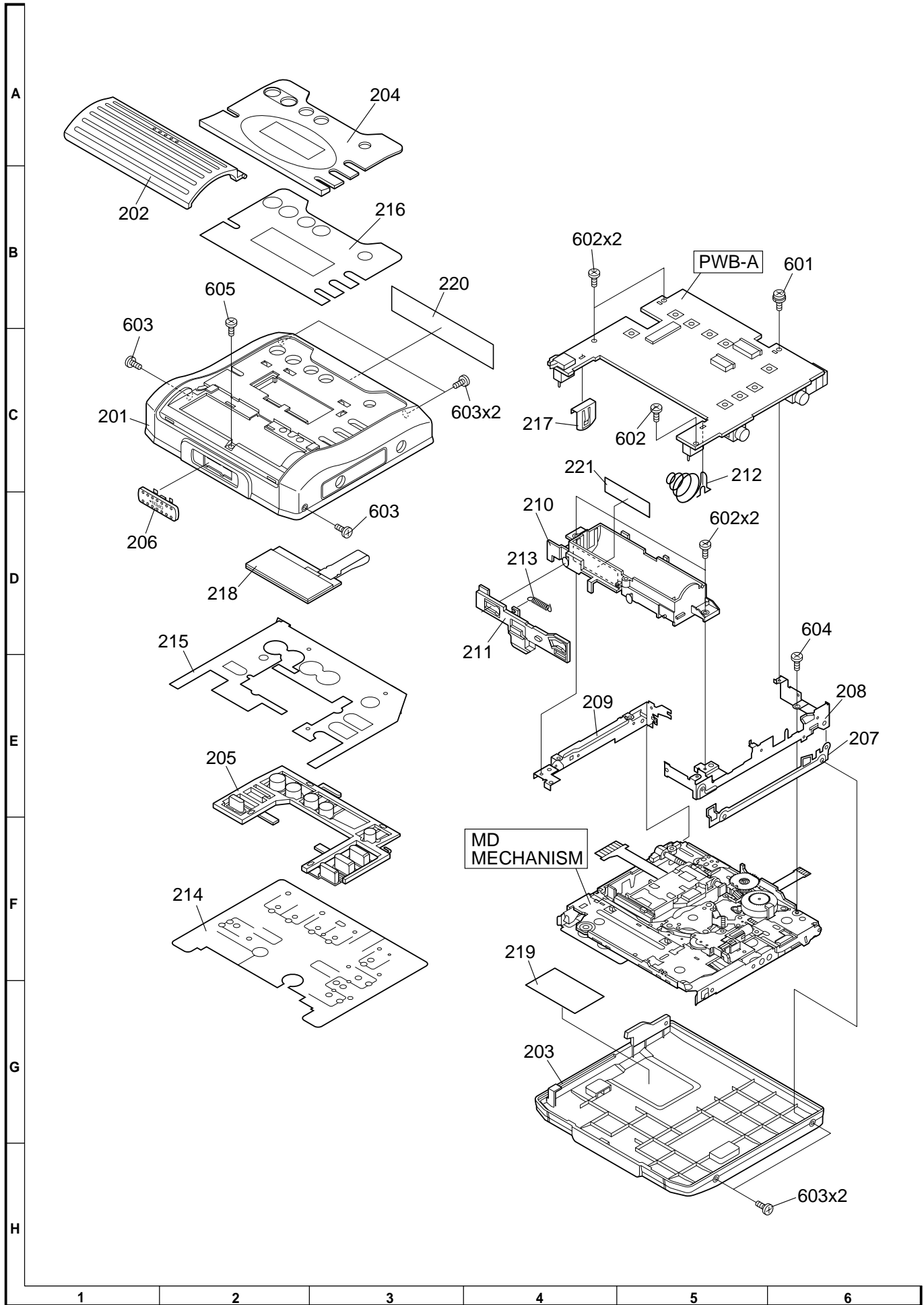


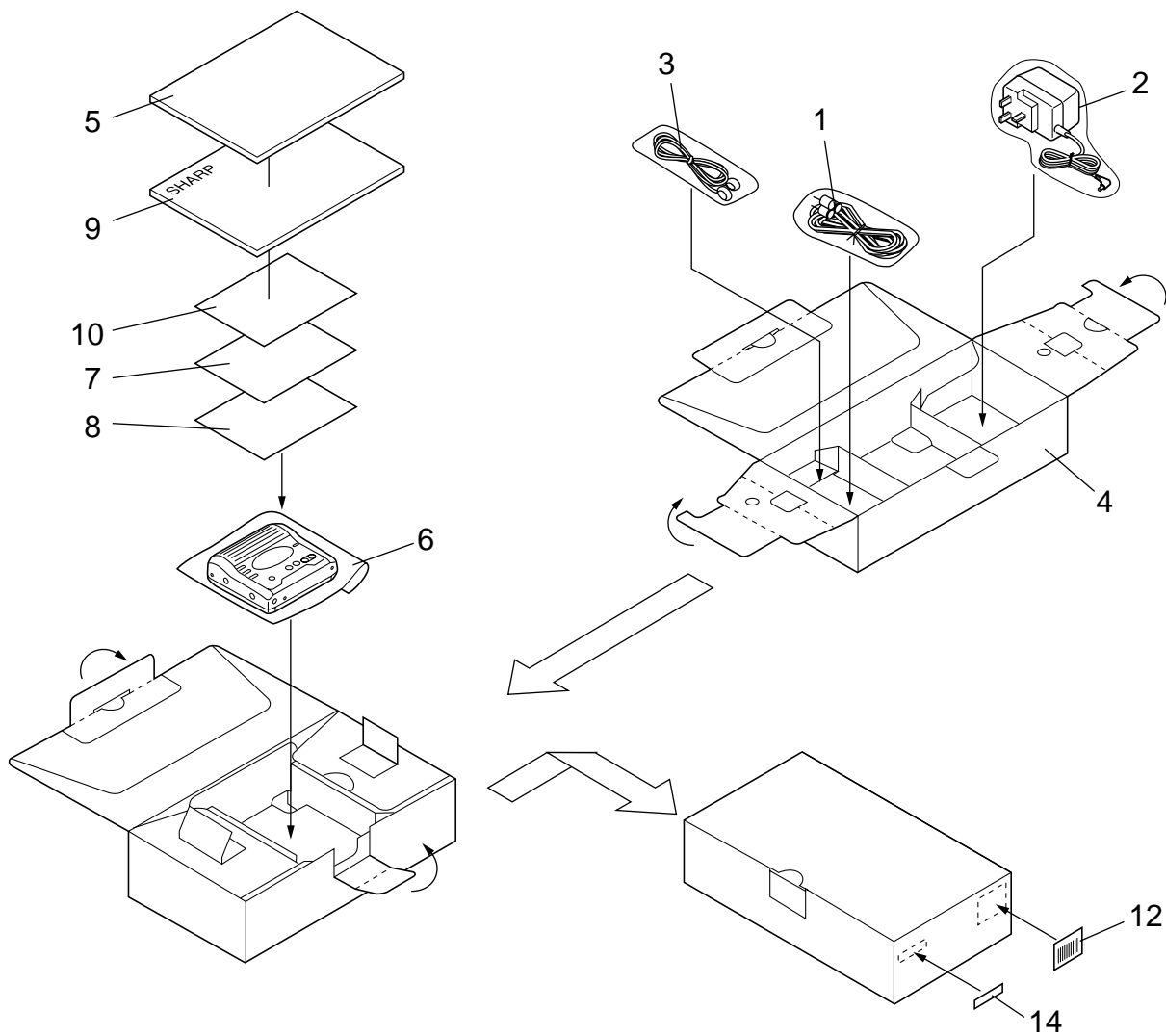
Figure 5 CABINET EXPLODED VIEW

PACKING OF METHOD (FOR U.K. ONLY)

- | | |
|-----------------------------|---------------|
| 1. Connecting Cord,RCA Type | QCNWG0029AWZZ |
| 2. AC Adapter | RADPA8058AWZZ |
| 3. Headphones | RPHOH0011AWZZ |
| 4. Packing Case [K] | SPAKC1541AWZZ |
| 4. Packing Case [S] | SPAKC1551AWZZ |
| 5. Space Pad | SPAKZ0490AWZZ |
| 6. Polyethylene Bag | SSAKH0033AWZZ |
| 7. Service Card | TCADS0005AWZZ |
| 8. Warranty Card | TGANE0013AWZZ |

- | | |
|------------------------|---------------|
| 9. Operation Manual | TINSE0488AWZZ |
| 10. Quick Guide | TINSE0489AWZZ |
| 12. Label,Bar Code [K] | TLABE0711AWZZ |
| 12. Label,Bar Code [S] | TLABE0726AWZZ |
| 14. Label,Serial No. | TLABN0092AWZZ |

Setting position of switches and knobs	
UNIT	HOLD



MD-MT270H

— M E M O —

— M E M O —

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