

ORDER No.AD0109126C8

Service Manual

Portable MD Recorder



MDLP

SJ-MR220

MD unit: RAE1640Z-M Mechanism Series

Colour

(S).....Silver Type

(W).....White Type [(GH) area only.]

Areas

EB.....Great Britain.

EG.....Europe.

GCS.....Singapore, Malaysia.

GH.....Hong Kong.



SPECIFICATIONS

Specifications

● Audio

System:	MiniDisc digital audio system
Laser:	Semiconductor laser (=780 nm)
Sampling frequency:	44.1 kHz
Coding:	Adaptive Transform Acoustic Coding (ATRAC / ATRAC3)
No. of channels:	2 (left and right, stereo) 1 (monaural)
Frequency response:	20 Hz-20 kHz (+0 dB, -8dB)
Wow and flutter:	Below measurable limit

● General

Input terminal	
OPT/LINE IN jack	
Impedance:	22k Ω
Input level:	SENS H: 178mV SENS L: 500mV
MIC jack	
Impedance:	600 Ω
Input level:	SENS H: 0.4mV SENS L: 2.5mV
Output terminal	
Output Jack:	Phones, 22 Ω
Power output:	3.5 mW+3.5 mW
Power supply	

Rechargeable battery: DC 1.2V
 (included rechargeable battery)
 Battery: DC 1.5V (One LR6, AA, UM-3 battery)
 AC adaptor: DC 1.8V (included AC adaptor)

Dimensions (WxHxD)

Cabinet dimensions: 78.2x71.6x16.0
 mm

incl.projecting parts: 80.4x74.1x18.3
 mm

Weight: 115 g (with
 battery)
 88 g (without battery)

● **Play time**

(When used in hold mode, at 25°C, on a flat, stable surface)

Battery type:	Play time	Record time
Rechargeable		
Normal:	About 11.5 hours	About 5.5 hours
LP2:	About 15 hours	About 8 hours
LP4:	About 17 hours	About 9.5 hours
Panasonic alkaline		
Normal:	About 42 hours	About 19 hours
LP2:	About 54 hours	About 26 hours
LP4:	About 62 hours	About 34 hours
Both together		
Normal	About 54 hours	About 25 hours
LP2:	About 71 hours	About 34 hours
LP4:	About 82 hours	About 44 hours

Notes:

- The play time may be less depending on the operating conditions.
- Specifications are subject to change without notice. Weight and dimensions are approximate.

**© 2001 Matsushita Electric Industrial Co., Ltd. All rights reserved.
 Unauthorized copying and distribution is a violation of law.**

⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

Panasonic®

1. Accessories

- Rechargeable battery.....1pc.
(RP-BP62EYD)
- External battery case.....1pc.
(RFA1537-S2)
- Carrying case.....1pc.
(RFC0069-H)
- Stereo earphones.....1pc.
(L0BAB0000162)
- Connection cable.....1pc.
(K2KA39B00001)

For EB area

- AC adaptor.....1pc.
(RFEA003B-S)

For EG, GCS areas

- AC adaptor.....1pc.
(N0JCAD000001)

For GH area

- AC adaptor.....1pc.
(RFEA004H-S)
- Wired remote control.....1pc.
(N2QCBD000012)

For EB, EG, GCS areas

- Wired remote control.....1pc.
(N2QCBD000013)

2. Precaution of Laser Diode

CAUTION:

This product utilizes a laser diode with the unit turned "on", invisible laser radiation is emitted from the pickup lens.

Wave length: 780 nm

Maximum output radiation power from pickup: 100 μ W/VDE

Laser radiation from the pickup lens is safety level, but be sure the followings:

1. Do not disassemble the optical pickup unit, since radiation from exposed laser diode is dangerous.
2. Do not adjust the variable resistor on the pickup unit. It was already adjusted.
3. Do not look at the focus lens using optical instruments.
4. Recommend no to look at pickup lens for a long time.

ACHTUNG:

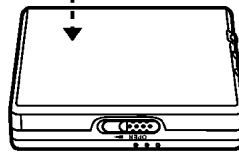
Dieses Produkt enthält eine Laserdiode. Im eingeschalteten Zustand wird unsichtbare Laserstrahlung von der Laserinheit abgestrahlt.

Wellenlänge: 780 nm

Maximale Strahlungsleistung der Laserinheit: 100 μ W/VDE

Die Strahlung der Laserinheit ungefährlich, wenn folgende Punkte beachtet werden:

1. Die Laserinheit nicht zerlegen, da die Strahlung an der freigelegten Laserdiode gefährlich ist.
2. Den werkseitig justierten Einstellregler der Laserinheit nicht verstellen.
3. Nicht mit optischen Instrumenten in die Fokussierlinie blicken.
4. Nicht über längere Zeit in die Fokussierlinie blicken.



Bottom of the unit

RQLS0196



3. Operating Instructions

4. Handling Precautions for Traverse Deck

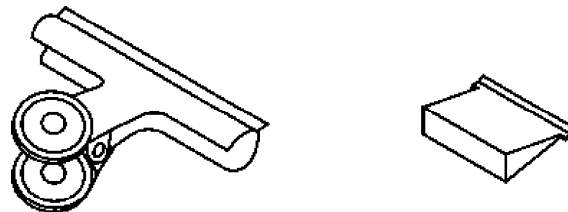
The laser diode in the traverse deck (optical pickup) may break down due to potential difference caused by static electricity of clothes or human body.

So, be careful of electrostatic breakdown during repair of the traverse deck (optical pickup).

4.1. Handling the traverse deck (optical pickup)

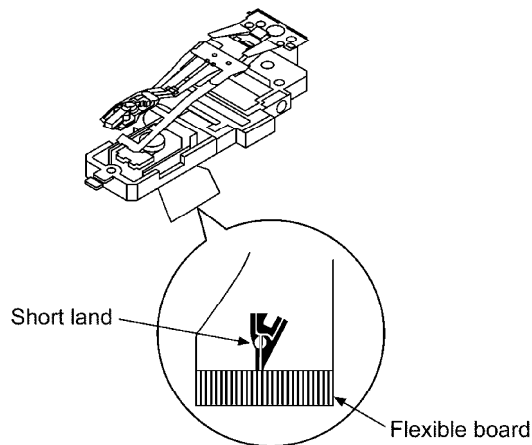
1. The traverse deck (optical pickup) is an extremely high-precision construction and must not be subjected to impact, excessive vibration, or other types of rough handling.
2. In order to prevent static electricity damage to the laser diode, use a short pin or similar tool to short the optical pickup's flexible circuit boards after they have been disconnected from the main circuit board. (as shown in [Fig. 1](#))
3. Handle the flexible circuit boards with care; excessive force could cause them to be broken.
4. Do not turn the pre-set variable resistor (for adjustment of the laser power); it has been adjusted at the factory. (as shown in [Fig. 2](#))

Fig. 1



Clip or short-pin

Fig. 2



4.2. Grounding for electrostatic breakdown prevention

1. Human body grounding

Use the anti-static wrist strap to discharge the static electricity from your body. (as shown in **Fig. 3**)

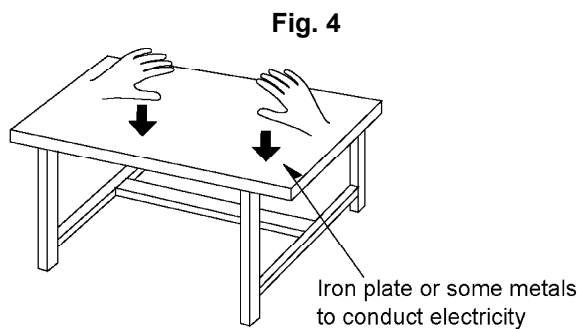
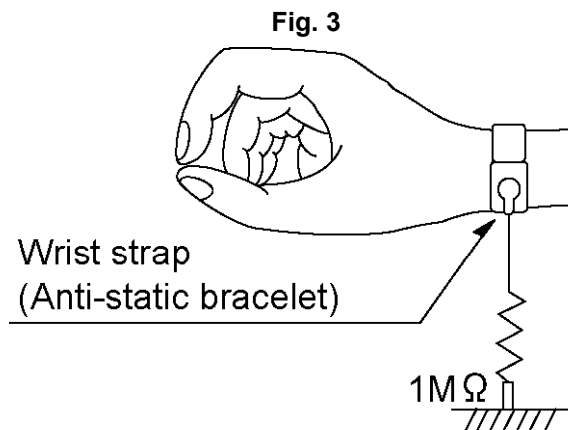
2. Work table grounding

Put a conductive material (sheet) or steel sheet on the area where the traverse deck (optical pickup) is placed, and ground the sheet. (as shown in **Fig. 4**)

Caution

The static electricity of your clothes will not be grounded through the wrist strap.

So, take care not to let your clothes touch the traverse deck (optical pickup).

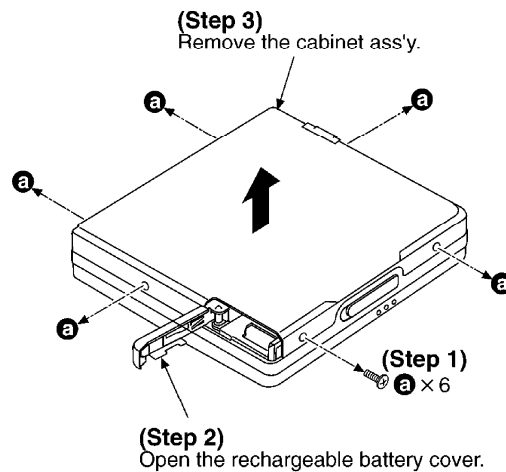


5. Operation Checks and Component Replacement Procedures

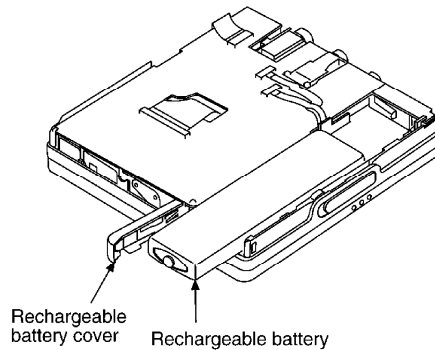
- This section describes procedures for checking the operation of the major printed circuit boards and replacing the main components.

- For reassembly after operation checks or replacement, reverse the respective procedures. Special reassembly procedures are described only when required.
- After replacing the main components (optical pickup or traverse motor, etc.) of mechanism unit block, change to the adjust mode, and then perform the “ROM/RAM auto-adjustment”.

5.1. Checking for the main P.C.B.

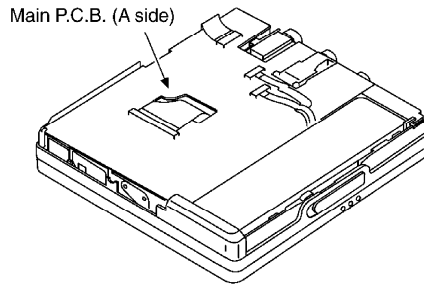


(Step 4)
Store the rechargeable battery,
and then close the battery cover.



NOTE:
The rechargeable battery
should be recharged fully.

- Check the main P.C.B. (A side) as shown below.

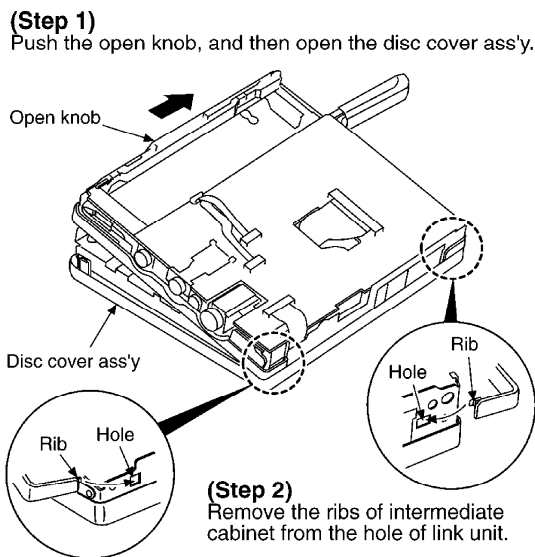


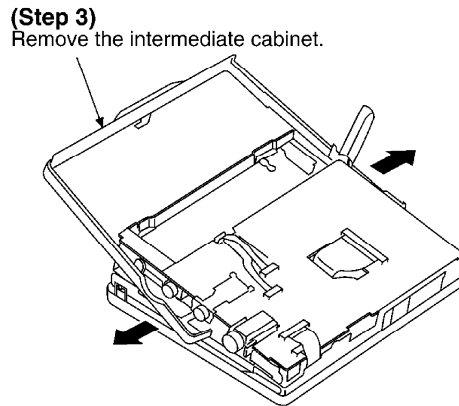
[Checking for the main P.C.B. (B side)]

- Each parts on main P.C.B. (B side) can not be checked directly, however, for the checking of main component parts on P.C.B., refer to the “Checking procedures of main components parts on the main P.C.B. (B side).

5.2. Replacement for the intermediate cabinet

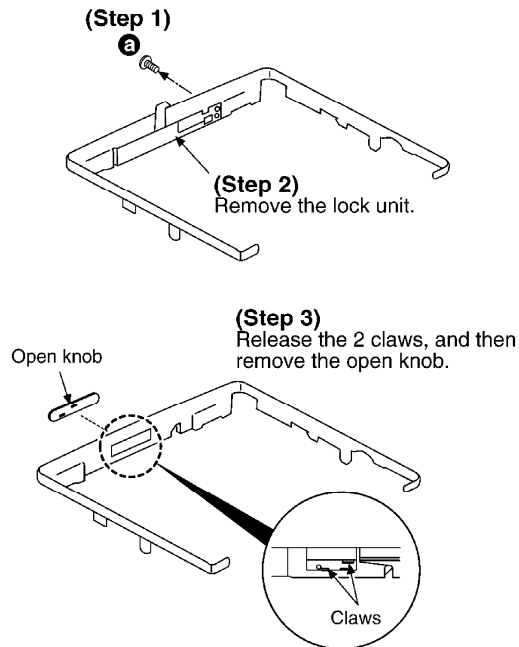
- Follow the (Step 1) - (Step 3) of item 5.1.





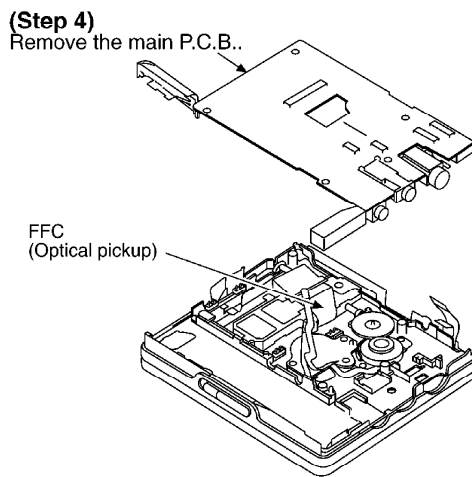
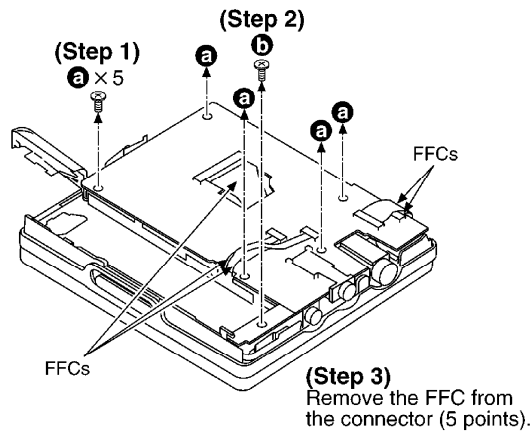
5.3. Replacement for the open knob and lock unit

- Follow the (Step 1) - (Step 3) of item 5.1.
- Follow the (Step 1) - (Step 3) of item 5.2.

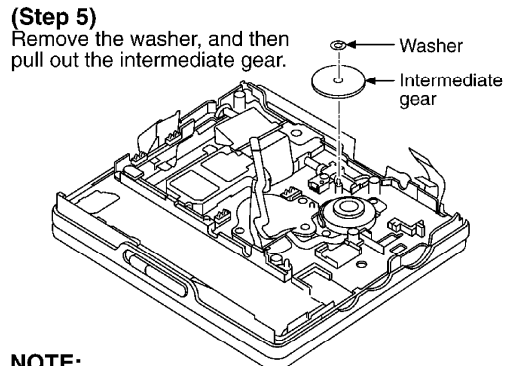
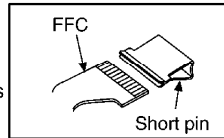


5.4. Replacement for the traverse motor

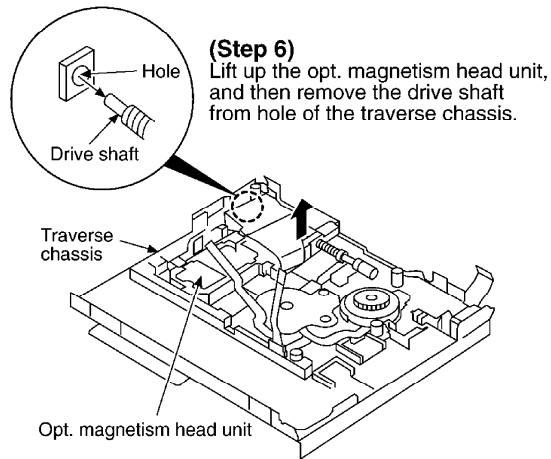
- Follow the (Step 1) - (Step 3) of item 5.1.



NOTE:
Insert a short pin into the traverse unit FFC board.
(Refer to "4. Handling Precautions for Traverse Deck".)



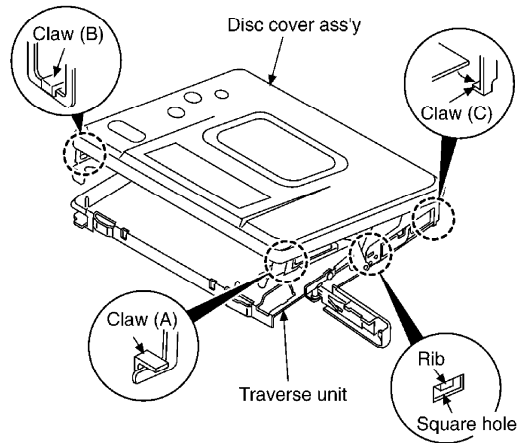
NOTE:
If the washer would be deformed or broken, replace it to new one.

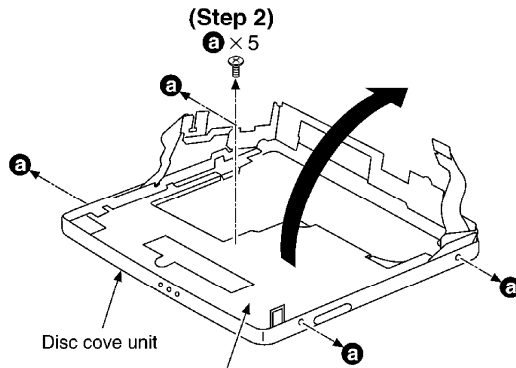


5.5. Replacement for the LCD

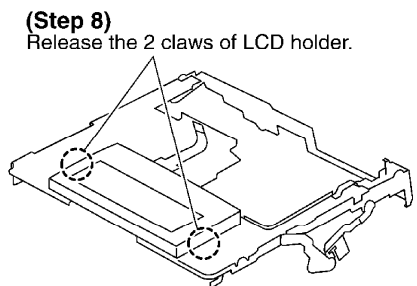
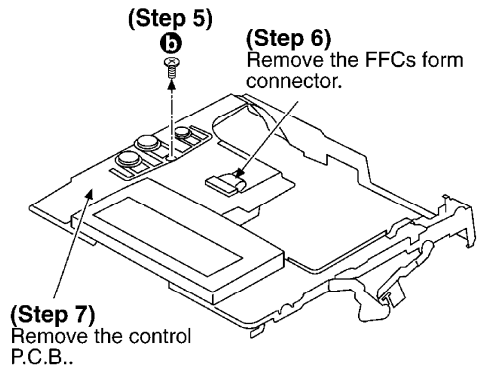
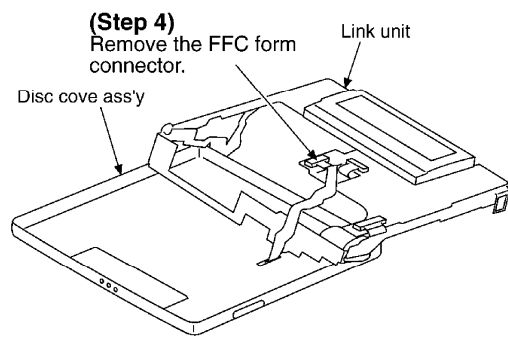
- Follow the (Step 1) - (Step 3) of item 5.1.
- Follow the (Step 1) - (Step 3) of item 5.2.

(Step 1)
Remove the rib from the square hole, and then remove the claw (A), (B), (C). Then, remove the disc cover ass'y.

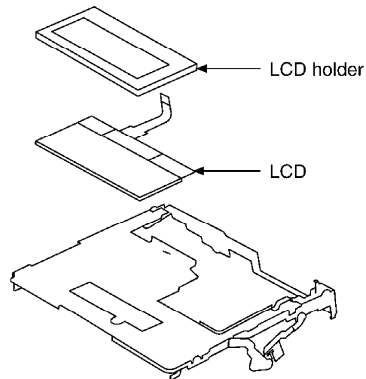




(Step 3)
 Remove the link unit in the direction of arrow.

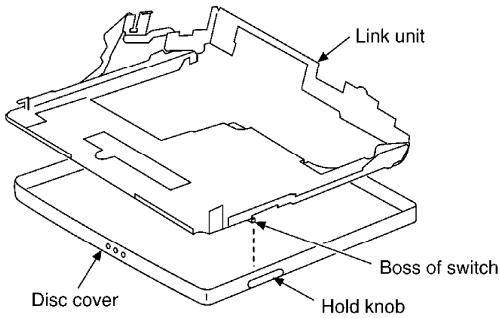


(Step 9)
Remove the LCD holder and LCD.



Notice for installation of the link unit

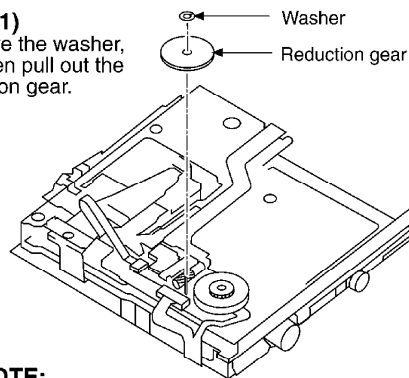
- Make sure the boss of switch are fit in the hold knob when assembling.



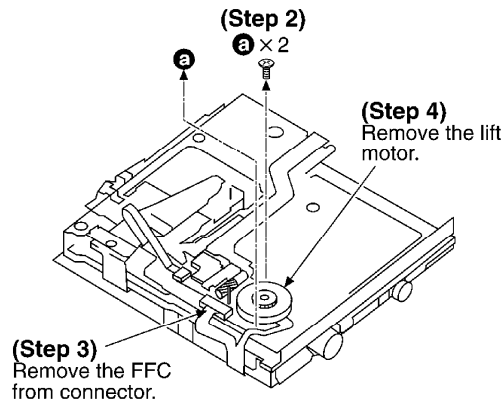
5.6. Replacement for the lift motor

- Follow the (Step 1) - (Step 3) of item 5.1.
- Follow the (Step 1) - (Step 3) of item 5.2.
- Follow the (Step 1) of item 5.5.

(Step 1)
Remove the washer,
and then pull out the
reduction gear.

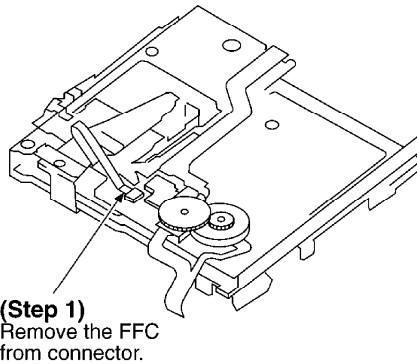


NOTE:
If the washer would be deformed or broken,
replace it to new one.



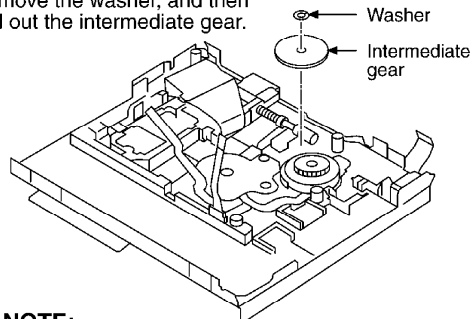
5.7. Replacement for the optical pickup

- Follow the (Step 1) - (Step 3) of item 5.1.
- Follow the (Step 1) - (Step 3) of item 5.2.
- Follow the (Step 1) - (Step 4) of item 5.4.
- Follow the (Step 1) of item 5.5.

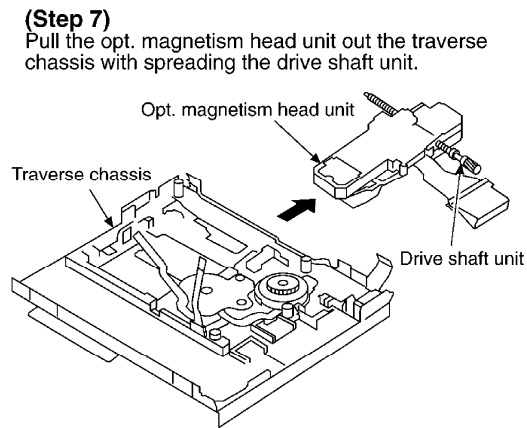
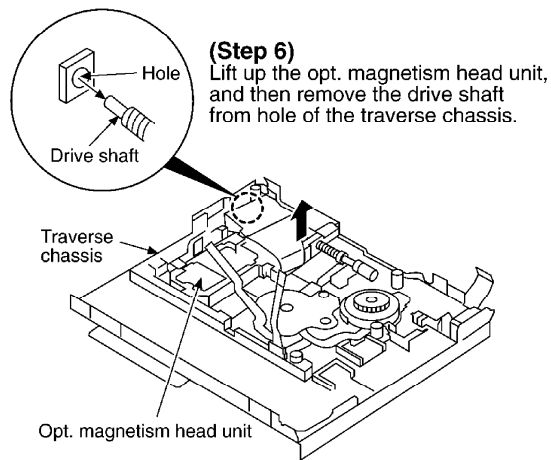
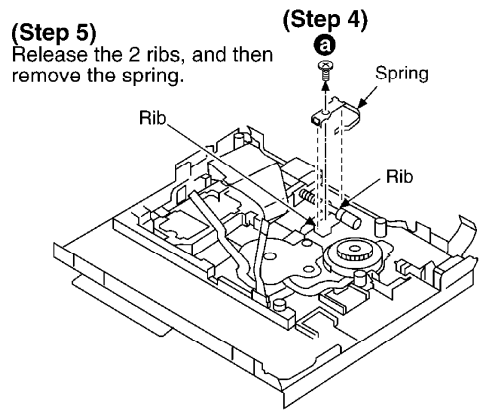


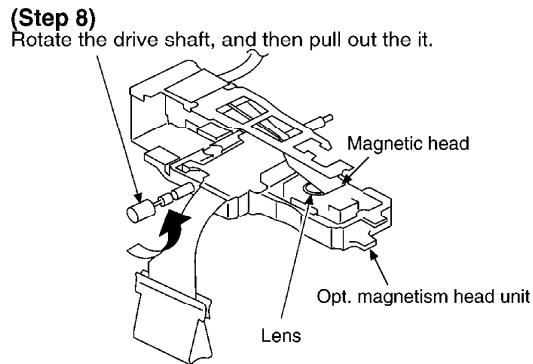
(Step 2)
Upset the main body.

(Step 3)
Remove the washer, and then pull out the intermediate gear.



NOTE:
If the washer would be deformed or broken, replace it to new one.



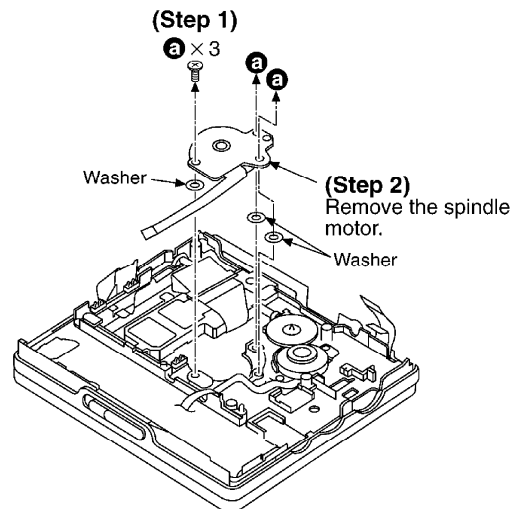


NOTE:

1. Use care to prevent damage the optical pickup, due to the precision construction.
2. Do not touch the lens of the optical pickup.

5.8. Replacement for the spindle motor

- Follow the (Step 1) - (Step 3) of item 5.1.
- Follow the (Step 1) - (Step 4) of item 5.4.



6. Measurements and Adjustments

Note:

After replacing the main components (optical pickup or traverse motor, etc.) of mechanism unit block, change to the adjust mode, and then perform the “laser power adjustment”, “off-set auto-adjustment” and “playback-only disc/magneto-optical disc auto-adjustment”.

6.1. Instruments to prepare

1. Playback-only disc (Test disc RFKV0006)

2. Commercially available recordable disc (fully recorded with music)
(magneto-optical disc)
3. Laser power meter (LE8010 or compatible meter)
4. Remote controller

Note:

For use of MD cartridge type laser power meter, remove the intermediate cabinet before perform the laser power adjustment (as for the method of disassembly, refer to “5. Operation checks and main component replacement procedures”).

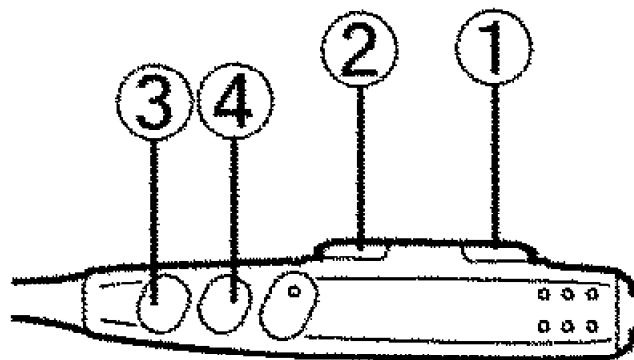
6.2. Laser power adjustment, Playback-only disc/magneto-optical disc auto- adjustment

6.2.1. Enter the adjustment mode

1. Set the battery and connect the remote controller.
2. Turn off the power, and switch main unit’s HOLD switch off.
3. Press the buttons of the remote controller in order from 1 to 4 [for (EB, EG, GCS) areas, refer to **Fig. 5**. For (GH) area , refer to **Fig. 6**.]

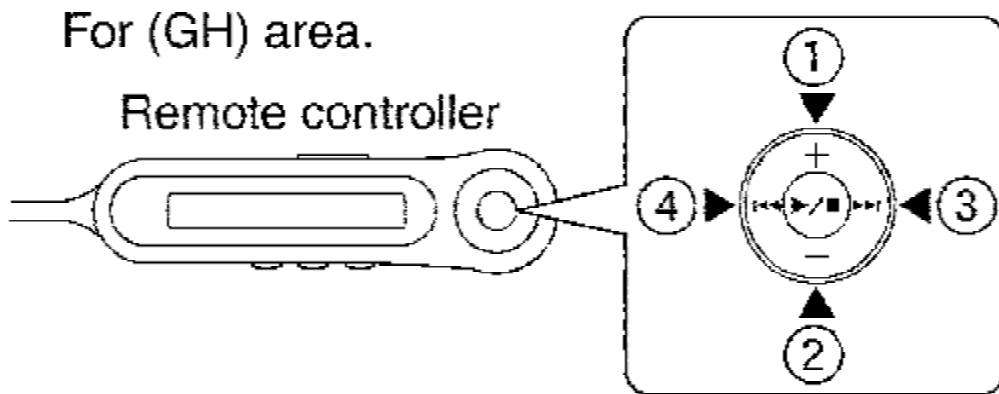
Fig. 5

For (EB,EG,GCS) areas.



Remote controller

Fig. 6



4. When the adjustment mode is activated, “T0E1” or “T0E2” will be displayed on the LCD of remote controller and unit [(EB, EG, GCS) areas are displayed only unit]. After “T0E1” or “T0E2” is displayed, select the desired adjustment item with the **▶▶** button or **◀◀** button of the remote controller. (If it is not displayed, perform the procedures written above again.)

Adjustment mode

Adjustment mode	Display
Laser power adjustment	T0**
Off-set automatic adjustment	T1**
Magneto-optical disc automatic adjustment	T2**
Playback-only disc automatic adjustment	T3**
Automatic adjustment value check	T4**
EFM jitter measurement	T5**
REC jitter measurement	T6**
Area setting	T7**
Open	T8**
Error rate measurement (double velocity)	T9**
Open	TA**
ROM collection check sum	TB**
DRAM check	TC**
Reliability test	TD**
Tilt measurement (disc middle speed)	TE**
PWB inspection (audio test)	TF**

*In the display of T0** ~ TF** shown above, you must adjust T0**, T1**, T2** and T3**. You must perform the adjustment by observing the order T0** → T1** → T2** → T3**.

6.2.2. Laser Power Adjustment

Adjust each laser power: read power for reading (play) and write power for writing (record).

6.2.2.1. Set the Unit to the Adjustment Mode

Cautions

About handling the optical pickup and the magnetic head.

- The optical pickup and the magnetic head are structured precisely; therefore, they are very fragile. Be careful not to touch them with the edge of the laser power meter. Do not touch the lens.
- The sensor of the laser power meter is a very fine part. Be careful not to touch it to the optical pickup lens.
- Do not loosen or remove the magnetic head installing screw.
- The focus point of the laser reaches to 356°F. Therefore, avoid adjusting using laser power for a long time because the sensor of the laser power meter may be burned.
- Do not allow the write power to even momentarily reach or exceed 6mW. Doing so will result in damage to the optical pickup.
- Do not set the unit to the laser power adjustment mode with the MD loaded. Doing so may result in damage to the MD.
- Laser diode in the optical pickup may be destroyed by the static electricity generated in your clothes or body. Be especially careful with the static electricity.

6.2.2.2. Adjustment Procedure

1. Have "T0**" indicated on display, and move the optical pickup to the most inside (only when a MD cartridge type laser power meter is used).
2. Set the laser power meter.
[For use of stick type laser power meter.]
 - 2-1 Uncover the laser power meter (refer to [Fig. 7](#)).
 - 2-2 Locate the sensor of the laser power meter right over above the optical pickup (horizontally at a level of the disc position). (as shown in [Fig. 8](#))[For use of MD cartridge type laser power meter.]
 - 2-1 Set the laser power meter and close the disc cover, fix it with tape as not to open. (refer to [Fig. 9](#)).

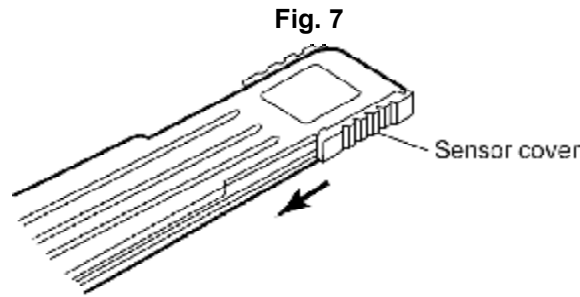


Fig. 8

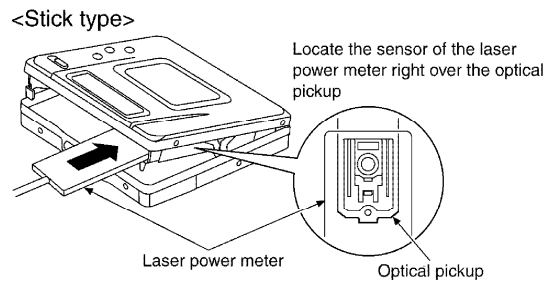
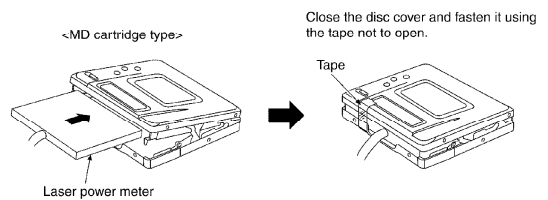


Fig. 9



3. Press the **PLAY** key of the remote controller (“T0**” changes to “LD” of the LCD).
4. Press the **▶▶** key of the remote controller (“LD” changes to “LP” of the LCD).
5. Perform the read power adjustment. Set the light power at $600 \mu W \pm 10\%$ by using **VOL+**, **VOL-**, **EQ** and **PLAY MODE** keys of the remote controller. In the laser power adjustment, **EQ** and **PLAY MODE** keys change every 8 steps for **VOL+** and **VOL-** keys change 1 step.

Note:

EQ and **PLAY MODE** keys are applied for only (GH) area. For other areas, those keys are not applied. Perform with only **VOL+** and **VOL-** keys.

Caution:

Proceeding on to the subsequent adjustment procedure with the read power exceeding $600 \mu W \pm 10\%$ will result in damage to the optical pickup.

6. Press the **▶▶** key of the remote controller (“LP” changes to “RLDA” in the LCD).

Specified range (read power): $600 \mu W \pm 10\%$ or lower

7. Perform the light power adjustment. Set the light power at 5.7mW by using VOL+, VOL-, EQ and PLAY MODE keys of the remote controller. If at this time the voltage between TP406 and TP407 is 85mA or higher, it is conceivable that the optical pickup is defective. Specified range (light power): 5.7mW

Caution:

Do not allow the write power to even momentarily reach or exceed 5 mW. Doing so will result in damage to the optical pickup.

8. Press the **▶▶** key of the remote controller (“RLDA” changes to “LP” on the LCD. At this time, the data is written to EEPROM.).
9. Press the PLAY key on the remote controller (“LP” changes to “T0**” on the LCD.).
10. Remove the laser power meter. Laser power adjustment is finished.

6.2.3. Off-set automatic adjustment

1. After laser power adjustment performed, press the **▶▶** key of the remote controller and make “T1**” display on the LCD .
2. Make the optical pickup move to center.
3. Press the PLAY key of remote controller without insert disc (change the display of the LCD to “1FADJ” , adjustment will be started.).
4. Press the PLAY key of the remote controller (change the display of the LCD to “T1**” , off-set automatic adjustment will be finished.).

6.2.4. Magneto-optical disc automatically adjustment

1. Have “T2**” indicated on display, and move the optical pickup to around the center.

2. Set the full-recorded magneto-optical disc with the prevention erase situation.
3. Press the PLAY key of the remote controller (“T2**” changes to “1AADJ” on the LCD, adjustment is started.).
4. If it has been finished normally, “1ADDJ” changes to “00OK” or “10OK” on LCD. If it is abnormally, it changes to “10NG”.
5. Press the PLAY key (“00OK” or “10OK” or “10NG” changes to “T3**”, magneto-optical disc adjustment is finished.).

Note:

If it is displayed “10NG”, check the “Troubleshooting Procedures” in the order.

6.2.5. Playback-only disc automatically adjustment

1. Have “T3**” indicated on display, and move the optical pickup to around center.
2. Set the playback-only disc.
3. Press the PLAY key of the remote controller (“T3**” changes to “10ADJ” on the LCD, adjustment is started.).
4. If it has been finished normally, “10ADJ” changes to “00OK” (or “10OK”) on LCD. If it is abnormally, it changes to “10NG”.
5. Press the PLAY key (“00OK” or “10OK” or “10NG” changes to “T3**”, playback-only disc adjustment is finished.).

Note:

If it is displayed “10NG”, check the “Troubleshooting Procedures” in the order.

6.2.6. How to get out the adjustment mode

Remove the battery when you finish the adjustment mode.

6.3. Checking the main unit's keys

Note:

“T KJP1” and “T KJP2” are displayed only (GH) area. Other areas are not display them.

1. Set the battery and connect the remote controller.
2. Turn off the power. Then, with the main unit's HOLD switch at OFF, press the VOL+, VOL-, ►►, and ◀◀ buttons on the remote controller within two seconds. (as shown in [Fig. 5](#) or [Fig. 6](#))
3. When entering the main unit's key check mode, "KEY JP1" or "KEY JP2" will be displayed on the LCD of main unit and "T KJP1" or "T KJP2" will be displayed on the LCD of remote controller. (If it is not displayed, perform the procedures written above again.)
4. Confirm the display of LCD by pressing any keys on the main unit. There is no order to press the keys.

Main unit's keys	LCD display positions and letters
HOLD OFF	1st. 2nd. letters are AA
REC PAUSE	3rd. 4th. letters are BB
EDIT	5th. 6th. letters are CC
STOP	7th. 8th. letters are DD
PLAY	9th. 10th. letters are EE

5. Remote controller's LCD [(GH) area only] lights "T ■■■" and main unit's LCD lights all when you can detect all keys.
6. Perform below voltage check about the keys come under if you cannot detect the key.

Main unit's keys	Check points	ON	OFF
HOLD	TP403	0V	2.2V
REC PAUSE	IC501 3pin	0.12V	2.2V
EDIT	IC501 3pin	1.96V	2.2V
STOP	IC501 3pin	1.05V	2.2V
PLAY	IC501 3pin	0V	2.2V

7. When the keys are ready for detection, press the PLAY key of the remote control.
8. Pressing each key mounted to the main body, make sure of displayed three letters (4th ~ 6th letters) on the right side of the

remote control. / Keys to be pressed are not in order. / When the 3 keys apportioned to the respective letters as shown below are all OK, “0” is displayed.

Display position	Main unit's keys
4th. letter	Flat pad lower rank 3 keys
5th. letter	Flat pad middle rank 3 keys
6th. letter	Flat pad upper rank 3 keys

9. Upon detection of all keys, “000” is shown on the right side of LCD of the remote control [(GH) area only].

10. Perform below voltage check about the keys come under if you cannot detect the key.

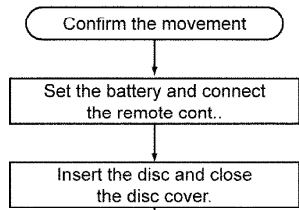
Main unit's keys	Check points	ON	OFF
Flat pad (*1)	IC501 65~67pin	2.2V	0V

11. Remove the battery when you exit from this mode.

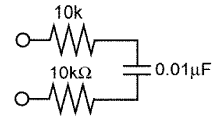
Note:

Refer to “12. Printed Circuit Board and Wiring Connection Diagram” for the test points.

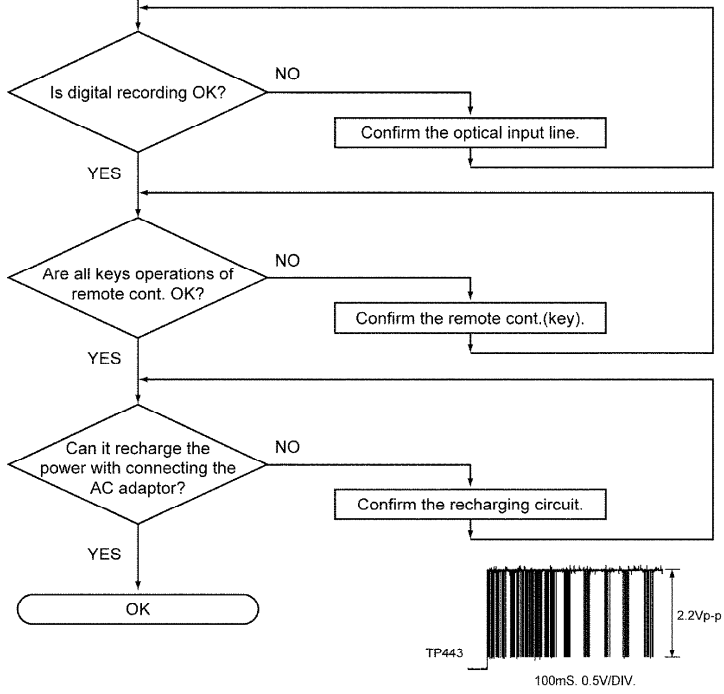
7. Troubleshooting Guide



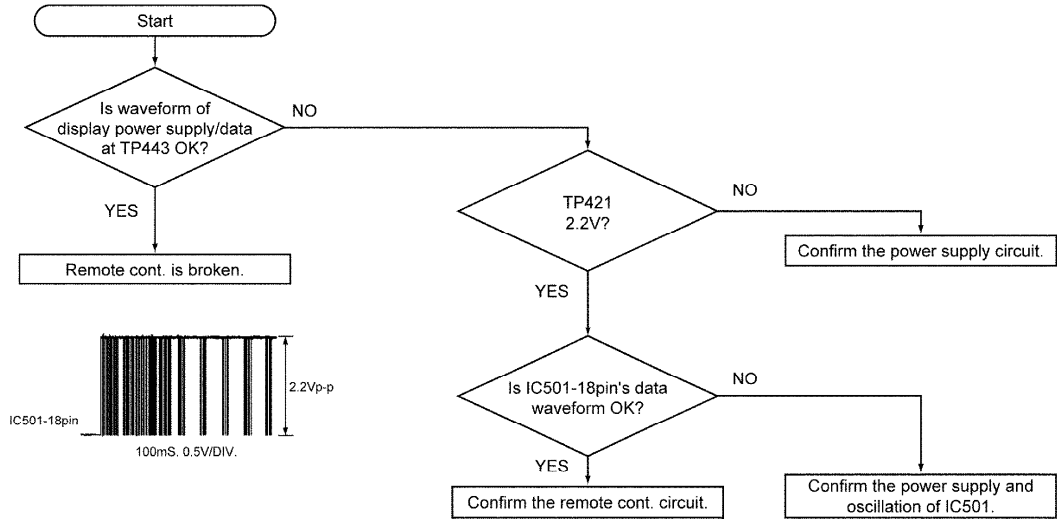
Note) We mentioned "※Filter" beside the waveform about the points for necessary the filter when you check the waveforms. Check it with setting the band width of the meter about 5~10kHz, or connecting the filter shown below.



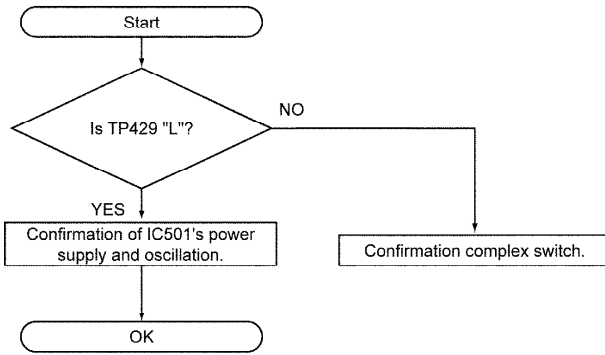
Continuing from previous page.



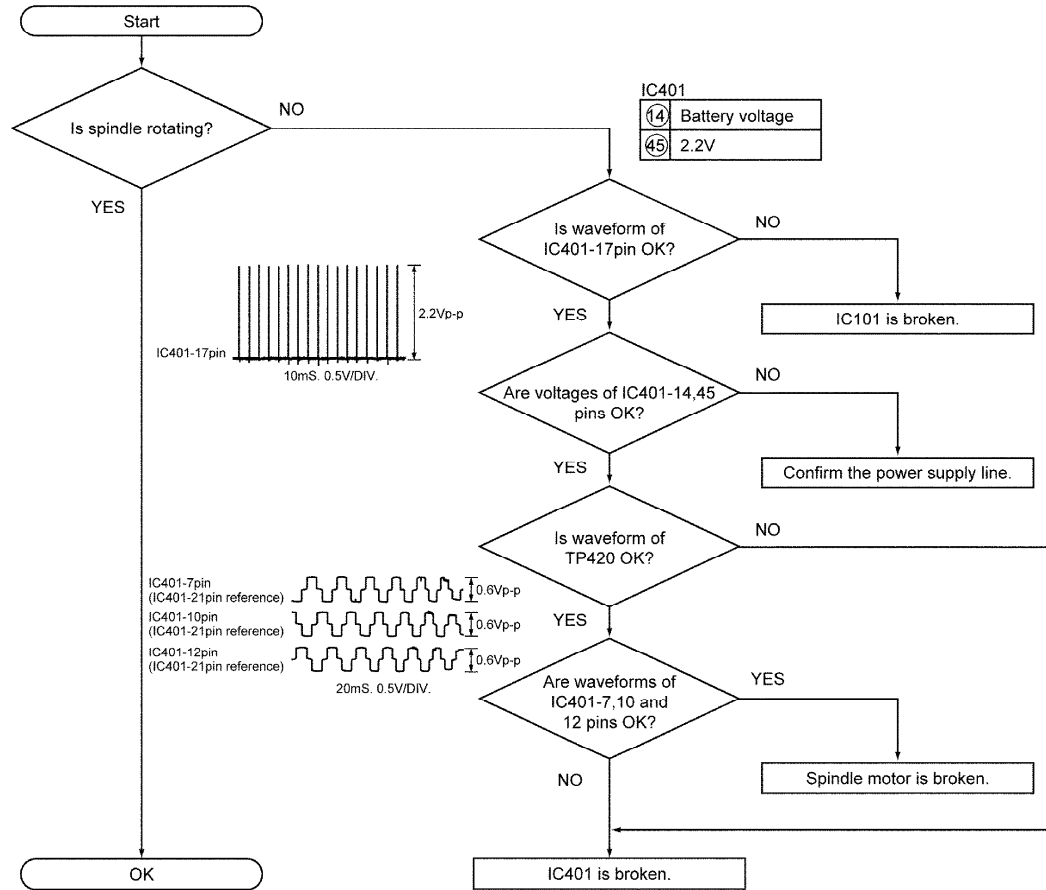
Confirmation of the remote cont.(display)

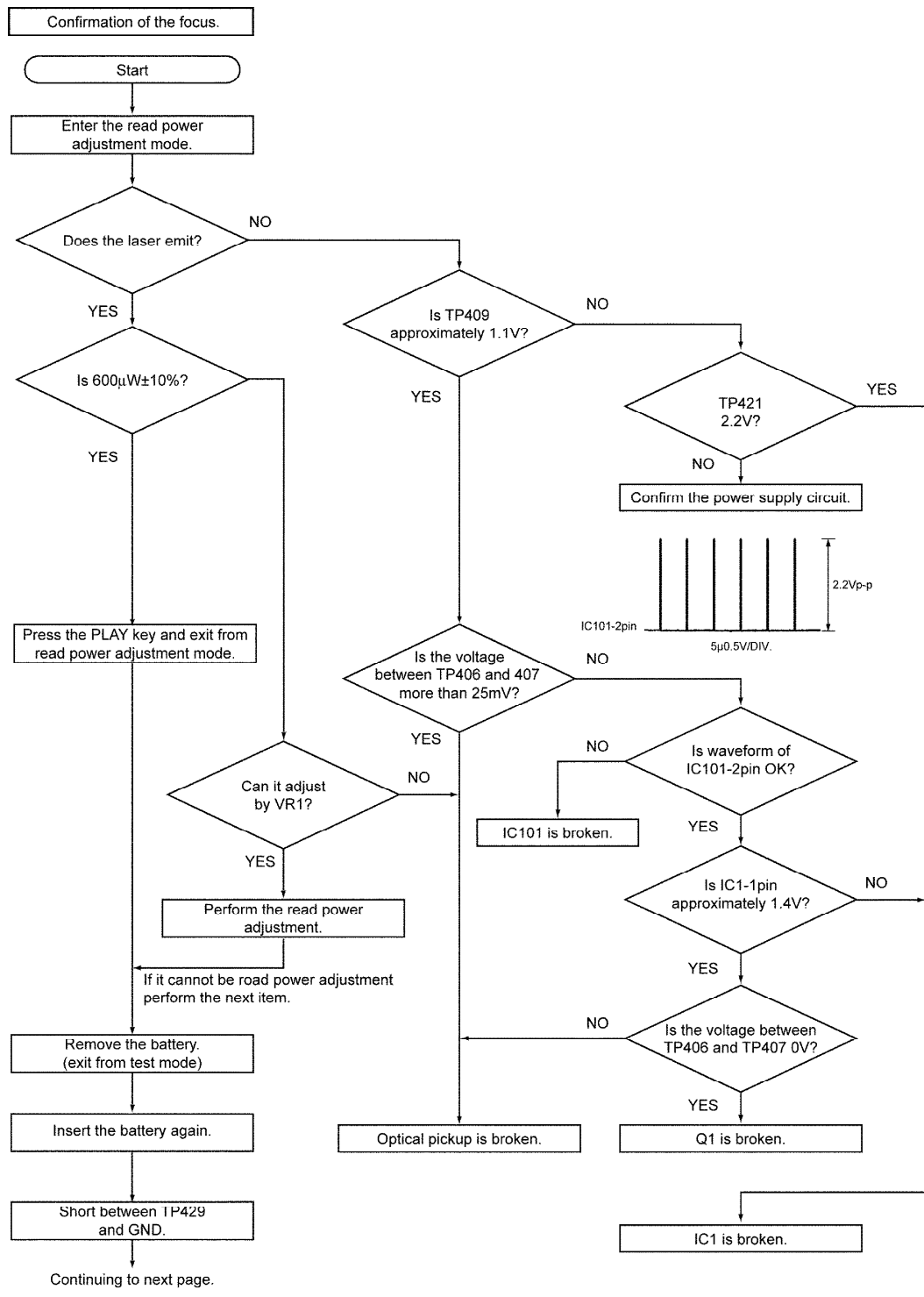


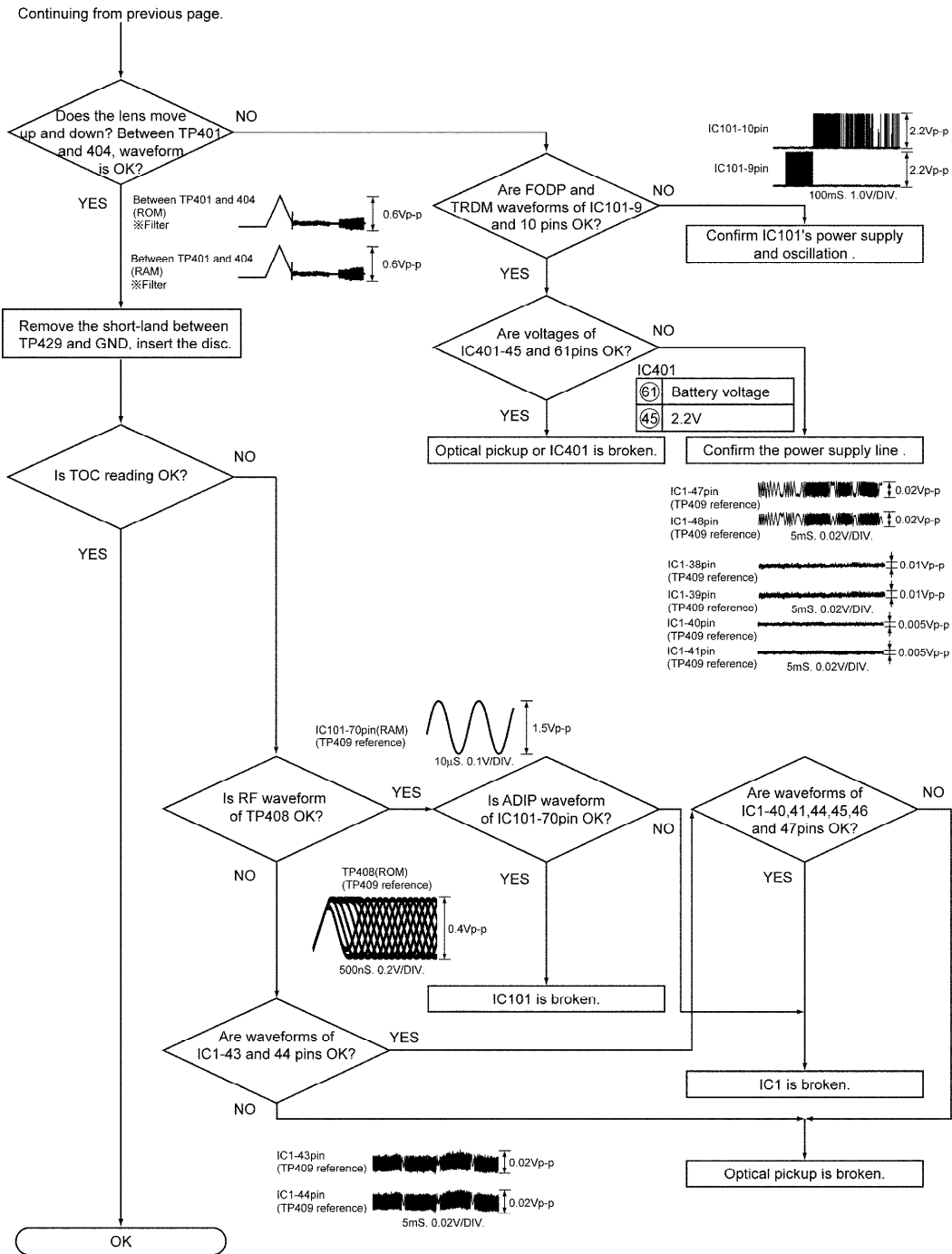
Confirmation of the detection of the disc cover closing.



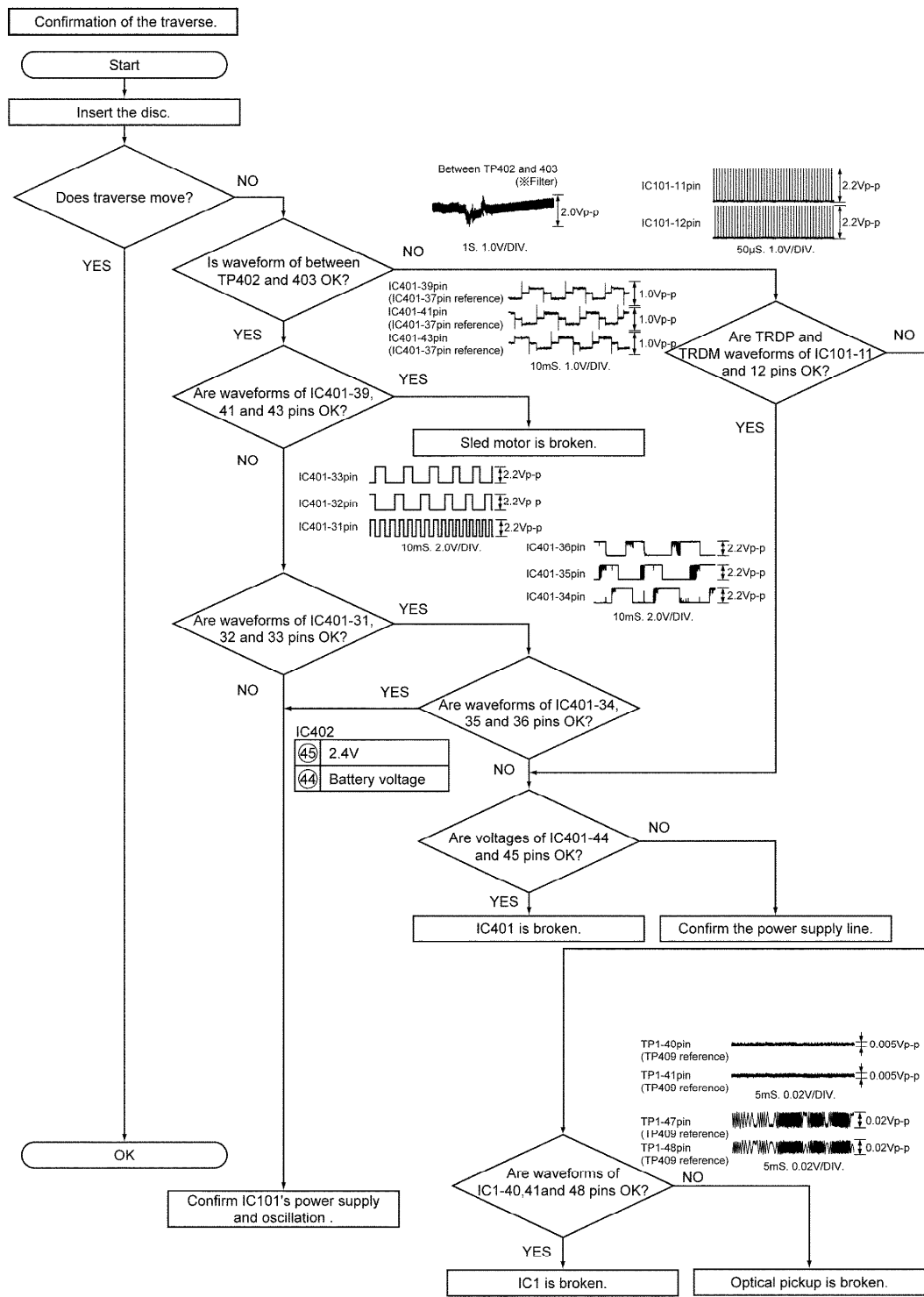
Confirmation of spindle.



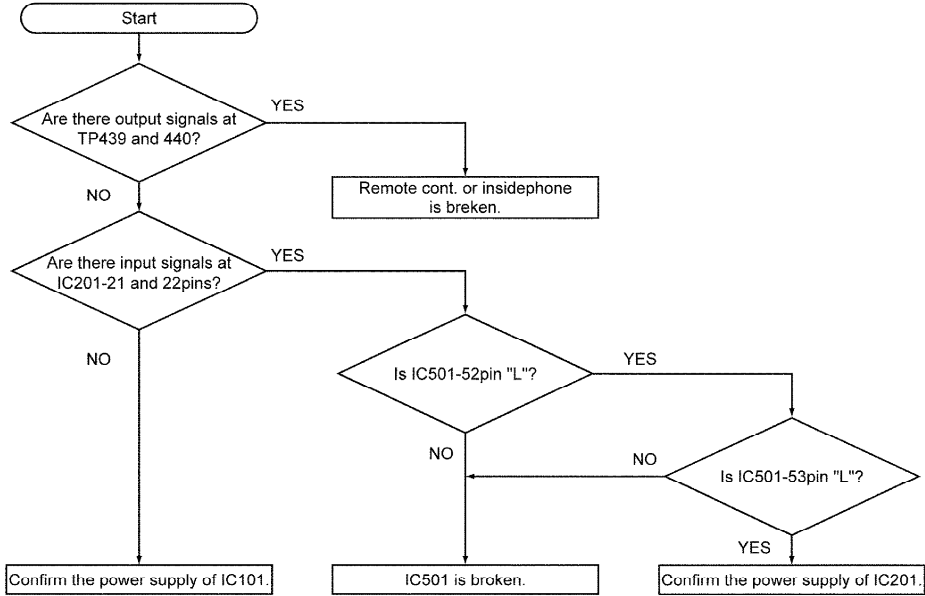




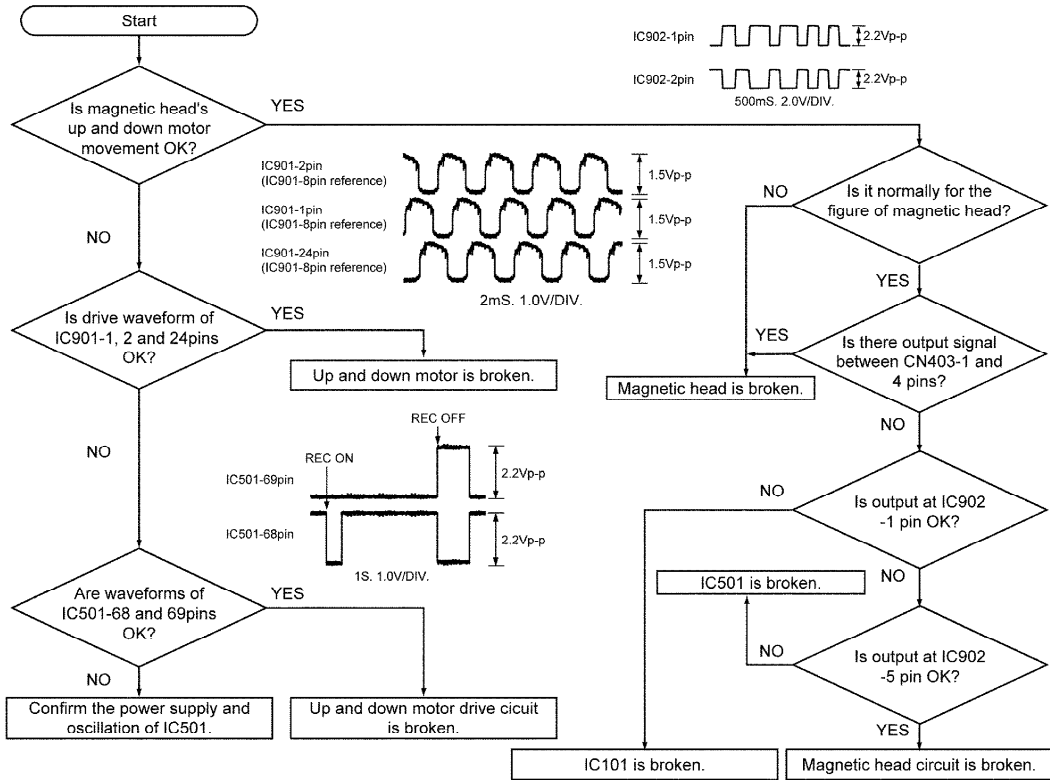
※) When you confirm RF waveform, perform "EFM jitter measurement" in "Adjustment mode" (refer to "6.Measurements and Adjustments"). And you'll be able to observe the continuous waveforms.

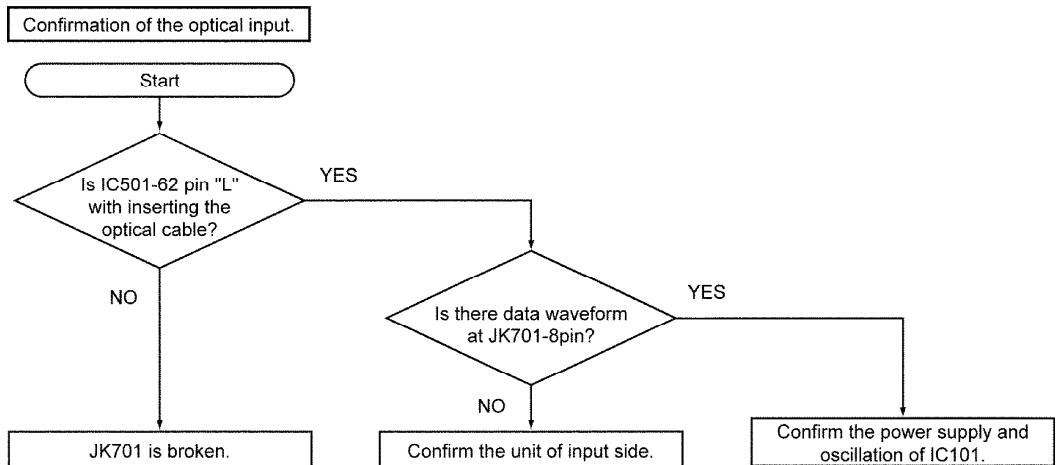
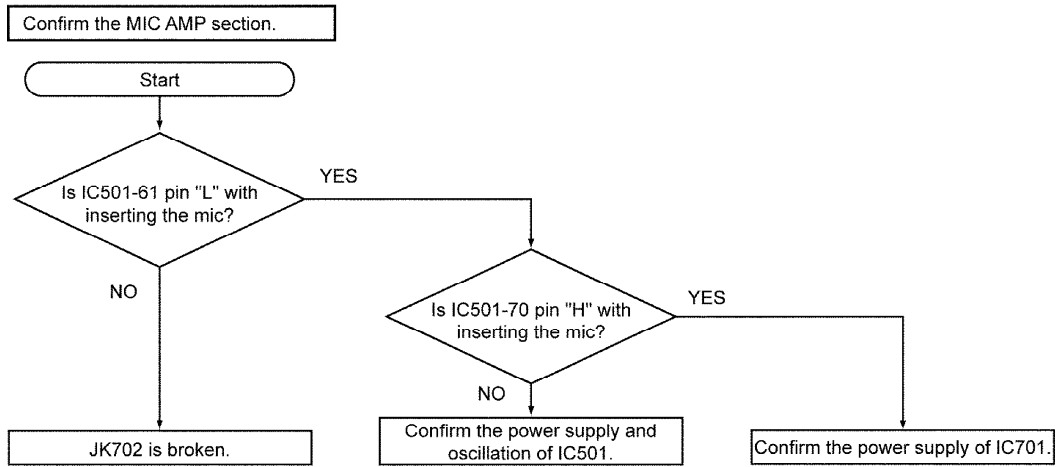
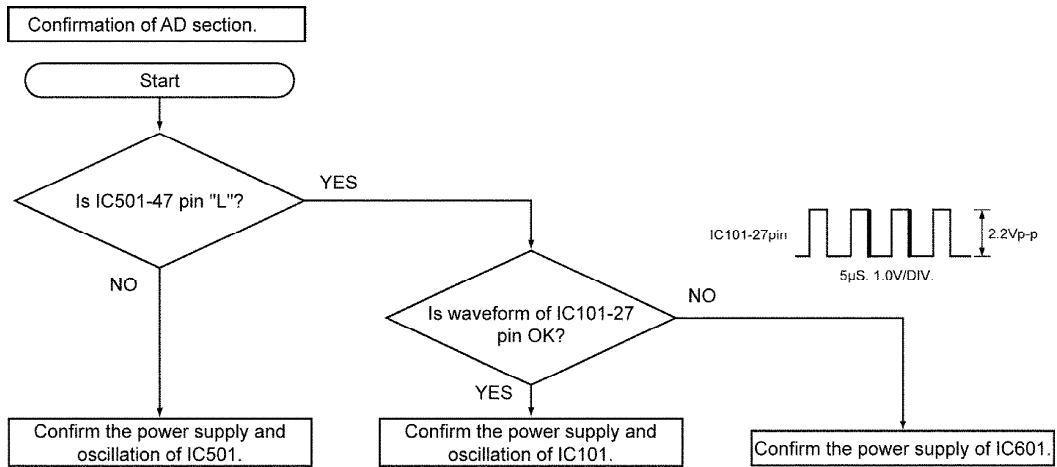


Confirmation of audio circuit.

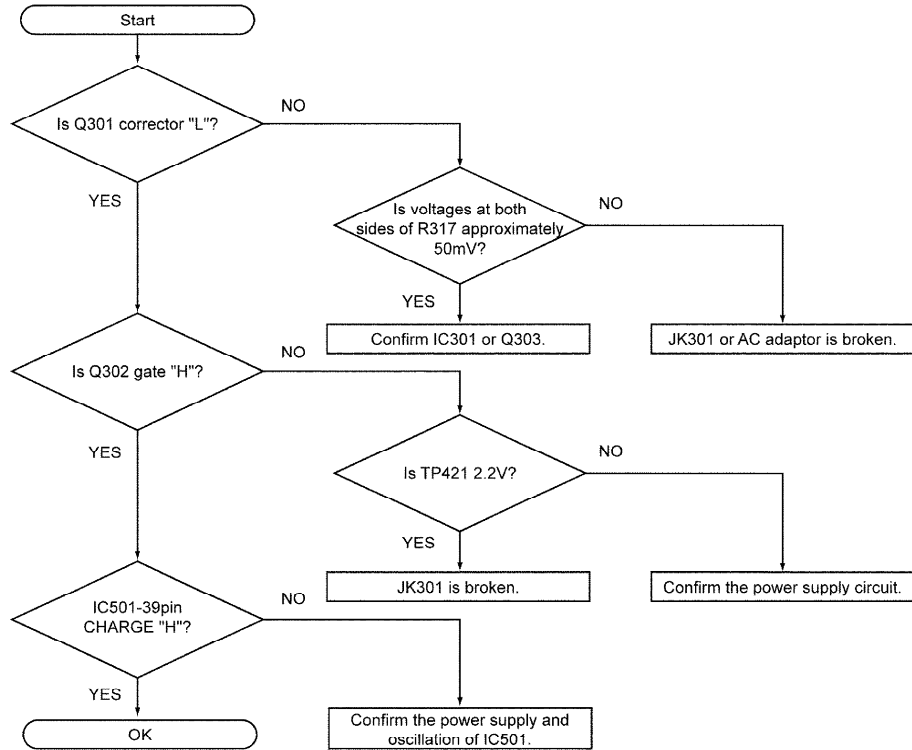


Confirmation of the magnetic head.



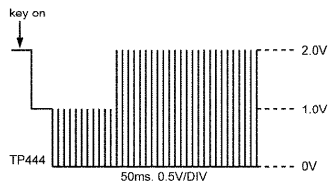


Confirmation of the recharging circuit.



Confirmation of remote cont. (key)

o Confirm the waveform at TP444 and the voltage when the keys are pressed.



MAIN	VOLTAGE (V)	BOUNDARY VOLTAGE(V)
PLAY/STOP	0.150000	0.243
VOLUME+	0.344098	0.512
VOLUME	0.653031	0.798
EQ MODE/TRACK MARK	0.864831	1.009
PLAY MODE	1.045768	1.183
F SKIP	1.226250	

MAIN	VOLTAGE (V)	BOUNDARY VOLTAGE(V)
		1.367
DISPLAY/LIGHT	1.425471	1.540
R SKIP	1.605523	1.740
KEY-OFF	1.799174	1.925
HOLD	2.000	2.108
WITHOUT REMOTE CONT.	2.200	

8. Checking Procedures of Main Components Parts on the Main P.C.B. (B side)

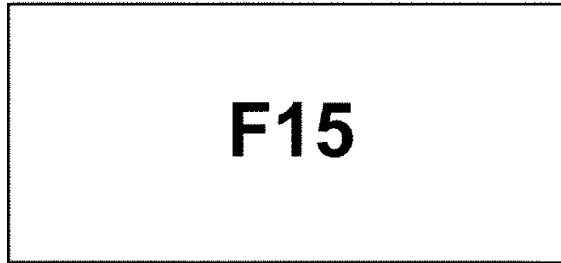
As it cannot measure the mechanism side of MAIN P.C.B. directly, refer to the table shown below for the criterion in the time of repairing or checking.

Circuit No.	Part No.	Function	Symptom	Check point	Result and mea
IC304	C0DBAGZ00006	DC-DC converter / 3.5V / Power IC for magnetic head driver control	<ul style="list-style-type: none"> ● Recording is impracticable. 	<ul style="list-style-type: none"> ● Confirm the voltage of IC902 (pin 14) or (TP137) ● Confirm the voltage of IC501 (pin 74) 	<ul style="list-style-type: none"> ● If voltage at TP1 normal and voltage IC501 is unusual, c IC501 and switch periphery. ● If voltage at TP1 unusual, replace IC
IC901	C0GBE000003	Optical head lift motor drive	<ul style="list-style-type: none"> ● Recording is impracticable. ● Magnetic head fails to descend. 	<ul style="list-style-type: none"> ● Confirm the motor drive wave form of TP145,146, 147 and 148 (CN901 pins 1,2,3 and 4). 	<ul style="list-style-type: none"> ● If drive wave for normal, check FPC condition of solder around lift motor, a nothing unusual is found, replace the motor. ● If drive wave for unusual, check sup voltage of IC401 ar peripheral solder, a nothing unusual is found, replace IC40
IC601	C0FBAJ000008	A/D CONVERTER	<ul style="list-style-type: none"> ● Optical input permits recording, but line input does not. ● MIC recording is impracticable. 	<ul style="list-style-type: none"> ● Make sure of IC101 (pin 27) input wave form (during MIC/LINE input time). 	<ul style="list-style-type: none"> ● If input wave for IC601 is unusual, c supply voltage of IC and peripheral sold and if nothing unu: found, replace IC70 ● If input wave for IC601 is normal, ch IC601 and perihper circuit.

9. Display of Self-Diagnostic Function

This model is equipped with a self-diagnosis function and shows, when necessary, the following indication in the LCD section of the set.

(LCD display)



“F15”---This indication appears when the Down switch fails to turn ON since the magnetic head fails to move up/down normally (Due to trouble of the magnetic head or trouble of the magnetic head up/down motor) or the magnetic head P.C.B. is out of position or a foreign matter has mixed in or for some other reason.

In such a case, check the peripheral parts of the magnetic head, repair or replace defective parts with normal ones.

10. Schematic Diagram Notes

10.1. Schematic Diagram Notes

This schematic diagram may be modified at any time with the development of new technology.

Notes:

- : Magnetic head up switch (M.HEAD UP)
S1
- : Open/close det. switch (OPEN/CLOSE)
S2-1
- : PROTECT det. switch
S2-2
- : Play / record / pause / operation on /
S801 character type button (▶ / ||, CHARA)
- : Recording pause / operation on / LP
S802 recording switch (REC →, LP MODE)
- : Stop / operation off / edit cancel button (■,
S803 OPR OFF)
- : Entering edit mode, completing edit,
S804 changing track ,mark mode switch (EDIT,
MARK MODE)
- : Hold switch in “OFF” position. (HOLD →)
S806

- Indicated voltage values are the standard values for the unit measured by the DC electronic circuit tester (high-impedance) with the chassis taken as standard. Therefore, there may exist some

errors in the voltage values, depending on the internal impedance of the DC circuit tester.

No mark: MD STOP

(): MD play [1kHz, L+R, 0dB]

Important safety notice:

Components identified by  mark have special characteristics important for safety.

Furthermore, special parts which have purpose of fire-retardant (resistors), high-quality sound (capacitors), low-noise (resistors), etc. are used. When replacing any of components, be sure to use only manufacture's specified parts shown in the parts list.

Caution!

IC and LSI are sensitive to static electricity.

Secondary trouble can be prevented by taking care during repair.

Cover the parts boxes made of plastics with aluminum foil.

Ground the soldering iron.


Put a conductive mat on the work table.

Do not touch the legs of IC or LSI with the fingers directly.

Voltage and signal line

: Positive voltage line

: Playback signal line

: Recording signal "digital" line

: Recording signal "analog" line

: Mic signal line

10.2. Type Illustration of IC's, Transistors and Diodes

11. Schematic Diagram

12. Printed Circuit Board Diagram

13. Block Diagram

14. Wiring Connection Diagram

15. Terminal Function of IC's

15.1. IC1 (AN22010A-VF) : RF AMP

Pin No.	Mark	I/O Division	Function
1	LDO	O	Laser amp output terminal
2	LD IN	I	Laser amp reverse input terminal
3	APCPD	I	Photo diode light quantity det. input terminal
4	APC REF	I	APC amp reference voltage input terminal
5	ARFO	O	RF amp. output terminal
6	NC	—	Not used, open
7	EQ IN	I	EQ input terminal
8	CRF AGC	—	RFAGC capacitor connection terminal (Connected to GND through capacitor)
9	OUT RF	O	EFM signal output terminal
10	NC	—	Not used, open
11	PEAK	O	EFM bright side det. output terminal
12	GND	—	GND terminal
13	BOTM	O	EFM dark side det. output terminal
14	CEA	I	3T envelope det. capacitor connection terminal (Connected to power supply through capacitor)
15	MON3T	O	AS/3TMON signal output terminal
16	CC	O	C signal dark side det. / amplifier output terminal
17	DD	O	D signal dark side det. / amplifier output terminal
18	Vcc	I	Power supply terminal (+3V)
19	BB GAIN	O	B signal I/V converter output terminal
20	AA	O	A signal I/V converter output terminal
21	FF2	O	F2 signal I/V converter output terminal
22	FF1	O	F1 signal I/V converter output terminal

Pin No.	Mark	I/O Division	Function
23,24	NC	—	Not used, open
25	ADIP	O	ADIP signal output terminal
26	NC	—	Not used, open
27	NREC	I	REC/PLAY select signal input terminal
28	RFSWHL	I	Reflect H/L select signal input terminal
29	RFSWPG	O	Pit / group select signal output terminal
30	GND	—	GND terminal
31	NC	—	Not used, open
32	MONIOFF	I	3TMON circuit control signal input terminal
33	CLT2	I	ADIP BPF select signal input terminal
34	LDON	I	ACP circuit control signal input terminal
35	NRFSTBY	I	Standby control signal input terminal
36	TEMP	O	Temperature sensor amp output terminal
37	TEMP IN	I	Temperature sensor amp input terminal
38	F1	I	F1 signal input terminal
39	F2	I	F2 signal input terminal
40	A	I	Main beam A signal input terminal
41	B	I	Main beam B signal input terminal
42	VREF	I	Reference voltage input terminal
43	RF2	I	RF2 signal input terminal
44	RF1	I	RF1 signal input terminal
45	CENVD	I	D signal det. capacitor input terminal
46	CENVC	I	Beam E signal detection capacitor input terminal
47	D	I	Main beam D signal input terminal

Pin No.	Mark	I/O Division	Function
48	C	I	Main beam C signal input terminal

15.2. IC101 (M66621ARG) : ATRAC ENCODER/DECORDER, SERVO SIGNAL PROCESSOR

Pin No.	Mark	I/O Division	Function
1	TS0	I	Test input terminal (Not used, connected to GND)
2	APCD	O	Laser power setting PWM output terminal
3	RFSWPG	O	Pit / group setting signal output terminal
4	RFSWHL	O	High / low reflection setting signal output terminal
5	CLV2	O	High speed select signal output terminal
6	REFM	O	EFM signal output terminal
7	SPDM	O	Spindle (-) drive signal output terminal
8	SPDP	O	Spindle (+) drive signal output terminal
9	FODM	O	Focus (-) drive signal output terminal
10	FODP	O	Focus (+) drive signal output terminal
11	TRDM	O	Tracking (-) drive signal output terminal
12	TRDP	O	Tracking (+) drive signal output terminal
13	DVDD0	—	Power supply input terminal (For digital circuit)
14	LDON	O	LD lighting control signal output terminal
15	TVDM/ STPO0	O	Traverse (-) drive signal / stepper drive signal 0 output terminal

Pin No.	Mark	I/O Division	Function
16	TVDP/ STPO1	O	Traverse (+) drive signal / stepper drive signal 1 output terminal
17	SBCK/ STPO2	O	Sub code Q clock for resistor / stepper drive signal 2 output terminal
18	SUBC/ STPI0	I	Sub code Q / stepper status 0 input terminal
19	BLKCK/ STI1	I	Sub code block clock signal / stepper status 1 input terminal
20	NCLDCK / STPI2	I	Sub code flame clock signal / stepper status 2 input terminal
21	NREC	O	REC / PLAY select signal output terminal
22	DRVSEL	I	Driver mode select input terminal
23	DATA/FG	I	CD data / FG input terminal
24	BCK	I	CD bit clock input terminal
25	LRCK	I	CD word clock input terminal
26	FS384	O	External ADC / DAC clock output terminal
27	SDAR	I	Audio data input terminal
28	SDAP	O	Audio data output terminal
29	SWS	O	Word clock output terminal
30	SCL	O	Bit clock output terminal
31	RX2	I	Digital audio interface 2 input terminal
32	RX1	I	Digital audio interface 1 input terminal
33	TX	O	Digital audio interface output terminal
34	DVDD1	—	Power supply terminal
35	DVSS1	—	GND terminal
36	SGSYNC	O	Frame synchronous signal output terminal
37	MDISY	O	Leader synchronous signal output terminal

Pin No.	Mark	I/O Division	Function
38	SCTSY	O	ADIP synchronous noise output terminal
39	SSDR	O	System control read data output terminal
40	SSDW	I	System control write data input terminal
41	SSCK	I	System sift clock signal input terminal
42	SELAD	I	System control address signal select input terminal
43	MONI1	O	Monitor 1 output terminal (Not used, open)
44	MONI2	O	Monitor 2 output terminal (Not used, open)
45	MONI3	O	Monitor 3 output terminal (Not used, open)
46	NRST	I	Hardware reset signal input terminal
47	PWMVSS	—	GND terminal
48	ADACR	O	Audio Rch output terminal
49	ADACL	O	Audio Lch output terminal
50	PWMVDD	—	Power supply terminal
51	AVSS0	—	GND terminal
52	PEAK	I	Servo A/D converter input terminal
53	BOTM	I	Servo A/D converter input terminal
54	OSC	I	Servo A/D converter input terminal
55	MON3T	I	Servo A/D converter input terminal
56	VREF1	I	Reference voltage input terminal
57	FF2	I	Servo A/D converter input terminal
58	FF1	I	Servo A/D converter input terminal
59	AVDD0	—	Power supply terminal
60	DD	I	Servo A/D converter input terminal

Pin No.	Mark	I/O Division	Function
61	CC	I	Servo A/D converter input terminal
62	BB	I	Servo A/D converter input terminal
63	AA	I	Servo A/D converter input terminal
64	AVSS1	—	GND terminal
65	PEFMS	I	EFM signal input terminal
66	PEFM1	O	EFM data slice roop filter 1 output terminal
67	EFMIL	O	EFM data slice roop filter 2 output terminal
68	EFMPLL	O	Filter for EFMPLL output terminal
69	EFMIREF	I	Reference voltege for EFMPLL setting input terminal
70	ADIP	I	ADIP signal input terminal
71	AVDD1	—	Power supply terminal
72	MONI0	O	Monitor 0 output terminal
73	RAD11	O	Address for DRAM 11 output terminal
74	RAD10	O	Address for DRAM 10 output terminal
75	RAD9	O	Address for DRAM 9 output terminal
76	RAD8	O	Address for DRAM 8 output terminal
77	RAD7	O	Address for DRAM 7 output terminal
78	RAD6	O	Address for DRAM 6 output terminal
79	DVSS2	—	Connected to GND
80	RAD5	O	Address for DRAM 5 output terminal
81	RAD4	O	Address for DRAM 4 output terminal
82	RAD3	O	Address for DRAM 3 output terminal

Pin No.	Mark	I/O Division	Function
83	RAD2	O	Address for DRAM 2 output terminal
84	RAD1	O	Address for DRAM 1 output terminal
85	DVDD2	I	Power supply input terminal
86	RAD0	O	Address for DRAM 0 output terminal
87	RDT3	I/O	Data for DRAM 3 input / output terminal
88	IVDD1	—	Power supply for I/O pad
89	RDT2	I/O	Data for DRAM 2 input / output terminal
90	RDT1	I/O	Data for DRAM 1 input / output terminal
91	RDT0	I/O	Data for DRAM 0 input / output terminal
92	NRAS	O	Load address strobe for DRAM signal output terminal
93	NCAS	O	Calam address strobe for DRAM signal output terminal
94	NEW	O	Write enable signal for DRAM output terminal
95	TS2	I	Test input terminal (Not used, connected to GND)
96	DVSS0	—	GND terminal
97	XO	O	Crystal oscillator output terminal (F=16.9344MHz)
98	XI	I	Crystal oscillator input terminal (F=16.9344MHz)
99	IVDD0	—	Power supply for I/O pad
100	TS1	I	Test input terminal (Not used, connected to GND)

15.3. IC401 (C0GBZ000006) : FOCUS/TRACKING COIL, TRAVERSE MOTOR DRIVE, SPINDLE MOTOR DRIVE, ROTARY DETECTOR

Pin No.	Mark	I/O Division	Function
1	IN 1R	I	H bridge 1 reverse input terminal
2	IN 2F	I	H bridge 2 forward input terminal
3	IN 2R	I	H bridge 2 reverse input terminal
4	STALL	I	Standby input terminal
5	STHB	I	H1, H2 bridge mute input terminal
6	SP VM1	I	Half bridge 1 input terminal
7	SP U OUT	O	Spindle motor coil (U) output terminal
8	SP PG1	—	GND terminal
9	NC	—	Not used, open
10	SP V OUT	O	Spindle motor coil (V) output terminal
11	SP VM2	I	Half bridge input terminal
12	SP W OUT	O	Spindle motor coil (W) output terminal
13	SP PG2	—	GND terminal
14	PWVM	I	Power supply terminal
15	PWOUT	O	Half bridge 1 output terminal / (Not used, open)
16	PWPG	—	GND terminal
17	PWIN1	—	GND terminal
18	SP U IN	I	Roter position detect comparater (U) input terminal
19	SP V IN	I	Roter position detect comparater (V) input terminal
20	SPWIN	I	Roter position detect comparater(W) input terminal
21	SPCOM	I	Spindle motor coil center input terminal
22	RIB	—	Connected to GND through resistor
23	CST	—	Connected to GND through capacitor

Pin No.	Mark	I/O Division	Function
24	CSL1	I	Slope capacitor connection terminal (connected to GND through capacitor)
25	CSL2	I	Slope capacitor connection terminal (connected to GND through capacitor)
26	FG	O	Speed pulse output terminal
27	BRK-	I	Brake comparater- input terminal
28	BRK+	I	Brake comparater+ input terminal
29	ASGND	—	GND terminal
30	SGND	—	GND terminal
31	S1	I	Stepping decorder 1 input terminal
32	S2	I	Stepping decorder 2 input terminal
33	S3	I	Stepping decorder 3 input terminal
34	BEMFU	O	Step detect comparater (U) output terminal
35	BEMFV	O	Step detect comparater (V) output terminal
36	BEMFW	O	Step detect comparater (W) output terminal
37	SLCOM	I	Step motor coil center input terminal
38	SLPG2	—	GND terminal
39	SLWOUT	O	Stepping motor (W) output terminal
40	SLVM2	I	Power supply terminal
41	SLVOUT	O	Stepping motor (V) output terminal
42	SLPG1	—	GND termial
43	SLUOUT	O	Stepping motor (U) output terminal
44	SLVM1	I	Power supply terminal
45	Vcc2	I	Power supply terminal
46	Vcc1	I	Power supply terminal

Pin No.	Mark	I/O Division	Function
47	VG	O	Charge pump output terminal
48	C2M	—	Charge pump capacitor 2(-) connect terminal
49	C2P	—	Charge pump capacitor 2(+) connect terminal
50	C1M	—	Charge pump capacitor 1(-) connect terminal
51	C1P	—	Charge pump capacitor 1(+) connect terminal
52	EXTCLK	I	Not used, open
53	NC	—	Not used, open
54	H2 PG2	—	GND terminal
55	H2 R OUT	O	H bridge 2 reverse output terminal
56	H2 VM	I	Power supply terminal
57	H2 F OUT	O	H bridge 2 forward output terminal
58	H2 PG1	—	GND terminal
59	H1 PG2	—	GND terminal
60	H1 R OUT	O	H bridge 1 reverse output terminal
61	H1 VM	I	Power supply terminal
62	H1 F OUT	O	H bridge 1 forward output terminal
63	H1 PG1	—	GND terminal
64	IN 1F	I	H bridge 1 forward input terminal

15.4. IC501 (MN101C61GAB) : SYSTEM CONTROL

Pin No.	Mark	I/O Division	Function
1	VREF-	I	Reference voltage input terminal
2	REM KEY	I	Remote cont. key input terminal
3	KEY IN1	I	Unit key1 input terminal
4	TEMP	I	Temperature sensor input terminal
5	BATT1	I	Battery voltage det. input terminal
6	LDPADJ	I	LDP input terminal
7	DOCTOR	O	Doctor mode input terminal
8	OUTC	O	Charge pump output terminal (Not used, open)
9	NC	—	Not used, open
10	VREF+	I	Reference voltage input terminal
11	V _{DD}	I	Power supply terminal
12	OSC2	I	System clock input terminal (f=10.02MHz)
13	OSC1	O	System clock output terminal (f=10.02MHz)
14	VSS	—	GND terminal
15	XI	I	Sub clock input terminal (Not used, connected to GND)
16	XO	O	Sub clock output terminal (Not used, open)
17	MMOD	—	Memory mode select input terminal (Connected to GND)
18	REM DATA	O	LCD driver data output terminal
19	LINK RXD	I	Link serial input terminal
20	NC	—	Not used, open
21	SSDW	O	MSP/MDA interface writing data output terminal
22	SSDR	I	MSP/MDA interface reading data input terminal

Pin No.	Mark	I/O Division	Function
23	SSCLK	O	MSP/MDA interface data forward clock output terminal
24	BUZZER	O	Buzzer output terminal
25	RST	I	Reset signal input terminal
26	SELAD	O	MSP/MDA interface address signal output terminal
27	ATRAC CNT	O	ATRAC control output terminal ("H":NORMAL, "L":HiFi)
28	LCD STB	O	LCD driver strobe signal output terminal
29	MIC SENSE	O	MIC sensitivity select output terminal
30	EFMON	O	Magnetic head EFM drive output terminal
31	OPENSW	I	Disc cover open/close switch det. input terminal ("H":open, "L":close)
32	WAKEUP	I	Micro computer wake up signal input terminal
33	SCTSY	I	ADIP/sub A synchronize signal from IC101 input terminal
34	CFSYNC	I	MDA synchronize signal from IC101 input terminal (11.6ms pulse)
35	MDISY	I	Leader synchronize signal from IC101 input terminal
36	LCD DATA	O	LCD driver data output terminal
37	NC	—	Not used, open
38	LCD CK	I	LCD driver clock input terminal
39	CHARGE1	O	Recharging control output terminal
40	EEPCS	O	EEPROM chip select output terminal
41	EEPCK	O	EEPROM clock output terminal

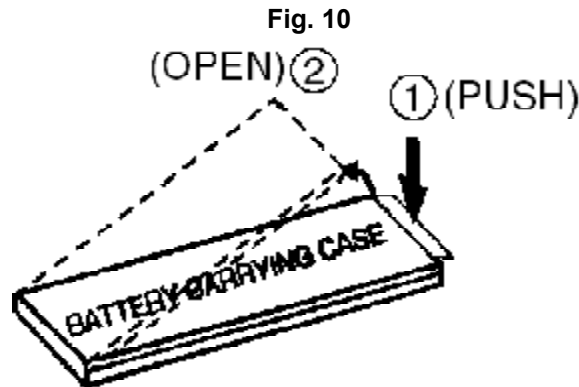
Pin No.	Mark	I/O Division	Function
42	EEPDATA0	O	EEPROM data output terminal
43	EEPDATA1	O	EEPROM data input terminal
44	AKMCDT1	O	Analog input PGA A/D converter interface data output terminal
45	AKMCSN	O	Analog input PGA A/D converter interface chip select output terminal
46	AKMCCLK	O	Analog input PGA A/D converter interface clock output terminal
47	AKMPDN	O	Analog input PGA A/D converter interface reset output terminal
48	EL ON	I	EL display control input terminal
49	DC IN WAKEUP	I	DC IN wake up input terminal
50	LCDCNT	O	LCD power cont. output terminal ("H" : ON)
51	MONIOFF	O	3T monitor OFF output terminal ("H" : OFF)
52	MUTEA	O	Analog mute A output terminal
53	MUTEB	O	Analog mute B output terminal
54	NC	—	Not used, open
55	DEBUG1	O	Micro computer debug output terminal
56	DEBUG2	O	Micro computer debug output terminal
57	MHEAD UP	I	Magnetic head down input terminal
58	PROTECT	I	Erase prevention switch input terminal
59	HOLD SW	I	HOLD switch input terminal ("H":OFF, "L":ON)
60	DCINDET	I	DC IN det. input terminal

Pin No.	Mark	I/O Division	Function
61	MIC DET	I	Mic det. input terminal
62	INSEL	I	INPUT select det. input terminal
63	FPOUT1	O	Flat pad A output terminal
64	FPOUT2	O	Flat pad B output terminal
65	FP IN1	I	Flat pad 1 input terminal
66	FP IN2	I	Flat pad 2 input terminal
67	FP IN3	I	Flat pad 3 input terminal
68	LOAD0	O	Magnetic head movement control 0 output terminal
69	LOAD1	O	Magnetic head movement control 1 output terminal
70	MIC/LINE	O	MIC/LINE select output terminal
71	HFON1	I	HF module ON 1 input terminal
72	RECCNT2	O	REC control 2 output terminal
73	RFCNT	O	RF power supply control output terminal
74	RECCNT1	O	REC control 1 output terminal
75	PWRCNT	O	Power supply control output terminal
76	FPOUT3	O	Flat pad output terminal
77	PC	O	4ch driver standby output terminal
78	STBY2	O	FD/TR coil power supply control output terminal
79	NRFSTBY	O	RF amp standby output terminal
80	MSP RST	O	MSP reset output terminal

16. Caution in Use of Rechargeable Battery Ass'y

- Take Rechargeable Battery Ass'y out of Battery Carrying Case and use it.
- Be sure to carry Rechargeable Battery Carrying Case. If not, it may

either heat or ignite by shorting with a metal. (as shown in [Fig. 10](#))



17. Replacement Parts List

Notes:

*Important safety notice: / Components identified by \triangle mark have special characteristics important for safety. / Furthermore, special parts which have purposes of fire-retardant (resistors), high-quality sound (capacitors), low-noise (resistors), etc. are used. / When replacing any of components, be sure to use only manufacture's specified parts shown in the parts list. / * Warning: This product uses a laser diode. Refer to caution statements.

***ACHTUNG:**Die lasereinheit nicht zerlegen.Die lasereinheit darf nur gegen eine vom hersteller spezifizierte einheit ausgetauscht werden.

*Capacity values are in microfarads (μF) unless specified otherwise, P=Pico-farads (pF) F=Farads (F) / *Resistance values are in ohms, unless specified otherwise, 1K=1,000 (OHM), 1M=1,000K (OHM)

*The marking <RTL> indicates that the Retention Time is limited for this item. After the discontinuation of this assembly in production, the item will continue to be available for a specific period of time. The retention period of availability is dependant on the type of assembly, and in accordance with the laws governing part and product retention. After the end of this period, the assembly will no longer be available.

*"<IA>"-"<IC>" marks in Remarks indicate languages of instruction manuals.

[<IA>:English/Spanish/French/German/Netherlands/Swedish/Italian/Danish/Polish,<IB>: English,<IC>:English/Chinese]

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
1	L5DCAEC00001	LCD	1	
2	RJB2434A	OPERATION FPC	1	
3	RGP0875-1Q1	LCD HOLDER	1	(W)
3	RGP0875-Q1	LCD HOLDER	1	(S)
4	RGU2014-D1	OPERATION BUTTON	1	(W)
4	RGU2014-S1	OPERATION BUTTON	1	(S)
5	RHQ0083-S	SCREW	6	
6	RMZ0580	INSULATION SHEET	1	
7	RXM0075-2	LINK UNIT	1	
8	RYF0596-S	DISC COVER ASS'Y	1	(S)
8	RYF0596-W	DISC COVER ASS'Y	1	(W)
8-1	RGV0284-S	REC KNOB	1	
8-2	RGV0286-S	HOLD KNOB	1	
8-3	RMA1469	REC LEVER	1	
9	RYK1125-S	INTERMEDIATE CABI.ASS'Y	1	(S)
9	RYK1125-1S	INTERMEDIATE CABI.ASS'Y	1	(W)
9-1	RGV0285-S1	OPEN KNOB	1	
10	XQN14+B2FC	SCREW	1	
11	RYK1124A-S	CABINET ASS'Y	1	(EB)(EG)
11	RYK1124B-S	CABINET ASS'Y	1	(GH)(S)
11	RYK1124B-W	CABINET ASS'Y	1	(GH)(W)
11	RYK1124C-S	CABINET ASS'Y	1	(GCS)
12	RHD14094-S	SCREW	6	
13	RKK0151-S	RECHARGEABLE BATT.COVER	1	(S)
13	RKK0151-W	RECHARGEABLE BATT.COVER	1	(W)
14	RHD14080	SCREW	1	
15	BRL1A1CWD	LIFT LEVER	1	
16	RDG0482-1	REDUCTION GEAR	1	
17	RHW06001	WASHER	1	
18	RMB0650	EJECT SPRING	1	
19	RMC0232	SPRING	1	
20	RML0586-3	LIFTER	1	
21	RML0587-3	LINK	1	
22	RMM0230	EJECT ROD A	1	
23	RMQ0958-3	ARM	1	
24	RXG0050	TRANSFER GEAR	1	
25	RXK0318	HOLDER UNIT	1	
26	RXM0071	EJECT ROD B	1	
28	RDG0510	INTERMEDIATE GEAR	1	
29	RHD14078	SCREW	1	
30	RHW11011	WASHER	1	
31	RMC0437	SPRING	1	
32	BRL1A1CWF	TRAVERSE MOTOR	1	
33	K0L2LF000001	SWITCH(S2)	1	
34	REM0096	SPINDLE MOTOR	1	
35	RHD14067	SCREW	8	
36	RHD14082	SCREW	1	
37	RMA1364-2	HOLDER ANGLE	1	
38	RMK0496	TRAVERSE CHASSIS	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
39	RMX0156-1	STOPPER RUBBER	2	
40	RMZ0592	INSULATION SHEET	1	
41	XQN14+B4FC	SCREW	1	
42	XQN14+C12FZ	SCREW	2	
43	RXJ0030	DRIVE SHAFT UNIT	1	
44	RFKQMR220S	OPT MAGNETISM HEAD UNIT	1	⚠
45	RJC99039-1	R.BATTERY TERMINAL(+)	1	
46	RJR0195-2	BATTERY SHAFT	1	
A1	RP-BP62EYD	RECHARGEABLE BATT. ASSY	1	
A1-1	RFA0475-Q	RECHARGEABLE BATT.CASE	1	
A2	RFA1537-S2	EXTERNAL BATTERY CASE	1	
A3	RFC0069-H	CARRYING CASE	1	
A4	RFEA003B-S	AC ADAPTOR	1	(EB) ⚠
A4	N0JCAD000001	AC ADAPTOR	1	(EG)(GCS) ⚠
A4	RFEA004H-S	AC ADAPTOR	1	(GH) ⚠
A5	N2QCB000013	WIRED REMOTE CONTROL	1	(EB)(EG)(GCS)
A5	N2QCB000012	WIRED REMOTE CONTROL	1	(GH)
A5-1	RFKY0004	REMOTE CONT.CLIP ASS'Y	1	(GH)
A5-2	RFKY0003	REMOTE CONT.FRONT PANEL	1	(GH)
A6	L0BAB0000162	STEREO EARPHONES	1	
A7	RQT6074-B	INSTRUCTION MANUAL	1	(EB)<IB>
A7	RQT6073-E	INSTRUCTION MANUAL	1	(EG)<IA>
A7	RQT6075-G	INSTRUCTION MANUAL	1	(GH)(GCS)<IC>
A8	K2KA39B00001	CONNECTION CABLE	1	
A9	RQCB0169	SERVICE CENTER LIST	1	
C1	ECUVNA224KBV	10V 0.22U	1	F1H1A224A028
C2	ECUVNA105ZFB	10V 1U	1	F1H1A105A030
C3	ECUVNC104ZFN	16V 0.1U	1	F1J1C104A081
C4	ECUE1E472KBQ	25V 4700P	1	F1G1E4720004
C5	ECUVNJ105KBV	6.3V 1U	1	F1H0J105A002
C20,21	ECUVNA224KBV	10V 0.22U	2	F1H1A224A028
C30	RCST0GZ106RG	4V 10U	1	F3E0G106A002
C31	ECUENA104KBQ	10V 0.1U	1	F1G1A104A014
C34	RCST0GZ106RG	4V 10U	1	F3E0G106A002
C35	F5A421040001	4V 0.1U	1	
C50	ECUENA104KBQ	10V 0.1U	1	F1G1A104A014
C51	ECUE1H102KBQ	50V 1000P	1	F1G1H102A457
C52	ECUENA104KBQ	10V 0.1U	1	F1G1A104A014
C53	ECUVNJ474KBV	6.3V 0.47U	1	F1H0J474A002
C101	RCST0GZ106RG	4V 10U	1	F3E0G106A002
C102	ECUENA104KBQ	10V 0.1U	1	F1G1A104A014
C103	RCST0GZ106RG	4V 10U	1	F3E0G106A002
C104	ECUENA104KBQ	10V 0.1U	1	F1G1A104A014
C105	RCST0GZ106RG	4V 10U	1	F3E0G106A002
C106	ECUENA104KBQ	10V 0.1U	1	F1G1A104A014
C107	RCST0EX227RE	2.5V 220U	1	F3G0E2270001
C109,10	ECUE1H100DCQ	50V 10P	2	F1G1H100A420
C111	ECUE1H470JCQ	50V 47P	1	F1G1H470A422

--	--	--	--	--

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
C112	ECUENA104KBQ	10V 0.1U	1	F1G1A104A014
C120	ECUENA104KBQ	10V 0.1U	1	F1G1A104A014
C121	ECUE1C223KBQ	16V 0.022U	1	F1G1C223A044
C122	ECUVNA224KBV	10V 0.22U	1	F1H1A224A028
C123	ECUE1E681KBQ	25V 680P	1	
C130	ECUE1E472KBQ	25V 4700P	1	F1G1E4720004
C140	ECUE1C103KBQ	16V 0.01U	1	
C201	F1J0J4750010	6.3V 4.7U	1	
C202	ECUVNJ105KBV	6.3V 1U	1	F1H0J105A002
C203	F1J0J4750010	6.3V 4.7U	1	
C204	RCST0GZ106RG	4V 10U	1	F3E0G106A002
C205	RCST0GZ226RG	4V 22U	1	F3E0G226A002
C206	F5A421040001	4V 0.1U	1	
C207	ECUE1H331KBQ	50V 330P	1	F1G1H331A402
C208	F1J0J4750010	6.3V 4.7U	1	
C211,12	ECUVNJ105KBV	6.3V 1U	2	F1H0J105A002
C213,14	ECUE1H102KBQ	50V 1000P	2	F1G1H102A457
C215,16	RCST0EX227RE	2.5V 220U	2	F3G0E2270001
C220	ECUE1H101KBQ	50V 100P	1	
C222	ECUVNJ105KBV	6.3V 1U	1	F1H0J105A002
C223	ECUE1C103KBQ	16V 0.01U	1	
C301	RCST0EC397RE	2.5V 390U	1	F3H0J397A012
C302	RCST0JX107RG	6.3V 100U	1	F3G0J1070002
C303	F3Z0G107A003	4V 100U	1	
C304	RCST0JY226RG	6.3V 22U	1	F3F0J2260002
C305	ECUVNJ105KBV	6.3V 1U	1	F1H0J105A002
C306	ECUENA104KBQ	10V 0.1U	1	F1G1A104A014
C308-10	ECUENA104KBQ	10V 0.1U	3	F1G1A104A014
C312	ECUENA104KBQ	10V 0.1U	1	F1G1A104A014
C313	ECUE1C103KBQ	16V 0.01U	1	
C316	F1J0J1060001	6.3V 10U	1	
C317	F1J0J4750005	6.3V 4.7U	1	
C318	ECUENA104KBQ	10V 0.1U	1	F1G1A104A014
C401	F1J0J4750010	6.3V 4.7U	1	
C402	ECUENA104KBQ	10V 0.1U	1	F1G1A104A014
C403	ECUVNJ105KBV	6.3V 1U	1	F1H0J105A002
C404	F5A421040001	4V 0.1U	1	
C411	RCST0GZ226RG	4V 22U	1	F3E0G226A002
C412-14	ECUE1H222KBQ	50V 2200P	3	F1G1H222A457
C415-17	ECUENC333KBQ	16V 0.033U	3	F1G1C333A004
C418	ECUVNJ334KBV	6.3V 0.33U	1	F1H0J334A002
C419,20	ECUENA104KBQ	10V 0.1U	2	F1G1A104A014
C501	RCST0GZ226RG	4V 22U	1	F3E0G226A002
C502	ECUENA104KBQ	10V 0.1U	1	F1G1A104A014
C503	ECUE1C103KBQ	16V 0.01U	1	
C505	ECUENA104KBQ	10V 0.1U	1	F1G1A104A014
C510	ECUVNJ474KBV	6.3V 0.47U	1	F1H0J474A002
C511	ECUE1H101KBQ	50V 100P	1	
C513	ECUE1C103KBQ	16V 0.01U	1	
C516	F1H0J2250003	50V 2.2U	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
C601	F1J0J4750005	6.3V 4.7U	1	
C602	ECUE1C103KBQ	16V 0.01U	1	
C603	F1J0J4750005	6.3V 4.7U	1	
C605	RCST0GZ156RG	4V 15U	1	F3E0G156A002
C606	ECUVNJ105KBV	6.3V 1U	1	F1H0J105A002
C607,08	ECUE1H102KBQ	50V 1000P	2	F1G1H102A457
C611,12	ECUVNJ105KBV	6.3V 1U	2	F1H0J105A002
C701	RCST0JY226RG	6.3V 22U	1	F3F0J2260002
C702	ECUENA104KBQ	10V 0.1U	1	F1G1A104A014
C704	RCST0GZ106RG	4V 10U	1	F3E0G106A002
C711	ECUENA104KBQ	10V 0.1U	1	F1G1A104A014
C713,14	ECUVNJ105KBV	6.3V 1U	2	F1H0J105A002
C720-22	ECUENA104KBQ	10V 0.1U	3	F1G1A104A014
C723,24	ECUE1H102KBQ	50V 1000P	2	F1G1H102A457
C725,26	F1J0J4750010	6.3V 4.7U	2	
C727,28	RCST0GZ106RG	4V 10U	2	F3E0G106A002
C801	ECUENC333KBQ	16V 0.033U	1	F1G1C333A004
C802	ECUE1E472KBQ	25V 4700P	1	F1G1E4720004
C803	ECUE1C103KBQ	16V 0.01U	1	
C806	ECUE1C103KBQ	16V 0.01U	1	
C901	RCST0GZ226RG	4V 22U	1	F3E0G226A002
C902	ECUVNA224KBV	10V 0.22U	1	F1H1A224A028
C903	ECUENA473KBQ	10V 0.047U	1	F1G1A473A014
C904	ECUVNA224KBV	10V 0.22U	1	F1H1A224A028
C905-07	ECUE1E472KBQ	25V 4700P	3	F1G1E4720004
C908	ECUENA104KBQ	10V 0.1U	1	F1G1A104A014
C909	ECUE1C103KBQ	16V 0.01U	1	
C911	ECUENA104KBQ	10V 0.1U	1	F1G1A104A014
C912	RCST0GZ106RG	4V 10U	1	F3E0G106A002
C913	ECUENA104KBQ	10V 0.1U	1	F1G1A104A014
C914	ECUE1H150JCQ	50V 15P	1	
C915	ECUENA473KBQ	10V 0.047U	1	F1G1A473A014
CN1	K1MN21B00045	CONNECTOR(21P)	1	
CN2	K1MN06B00069	CONNECTOR(6P)	1	
CN3	K1MN04B00034	CONNECTOR(4P)	1	
CN403,04	K1MN04B00034	CONNECTOR(4P)	2	
CN701	K1MN13B00043	CONNECTOR(13P)	1	
CN901	K1MN10B00064	CONNECTOR(10P)	1	
CP801	K1MN13B00042	CONNECTOR(13P)	1	
CP802	K1MN07B00053	CONNECTOR(7P)	1	
CP803	K1MN06B00082	CONNECTOR(6P)	1	
D101	MA2YD2100L	DIODE	1	
D301	MA2S111TX	DIODE	1	MA2S11100L
D303	B0JCMB000001	DIODE	1	
D304	MA2YD2100L	DIODE	1	
D305	MA2Z74800L	DIODE	1	
D911	MA133TX	DIODE	1	MA3S13300L

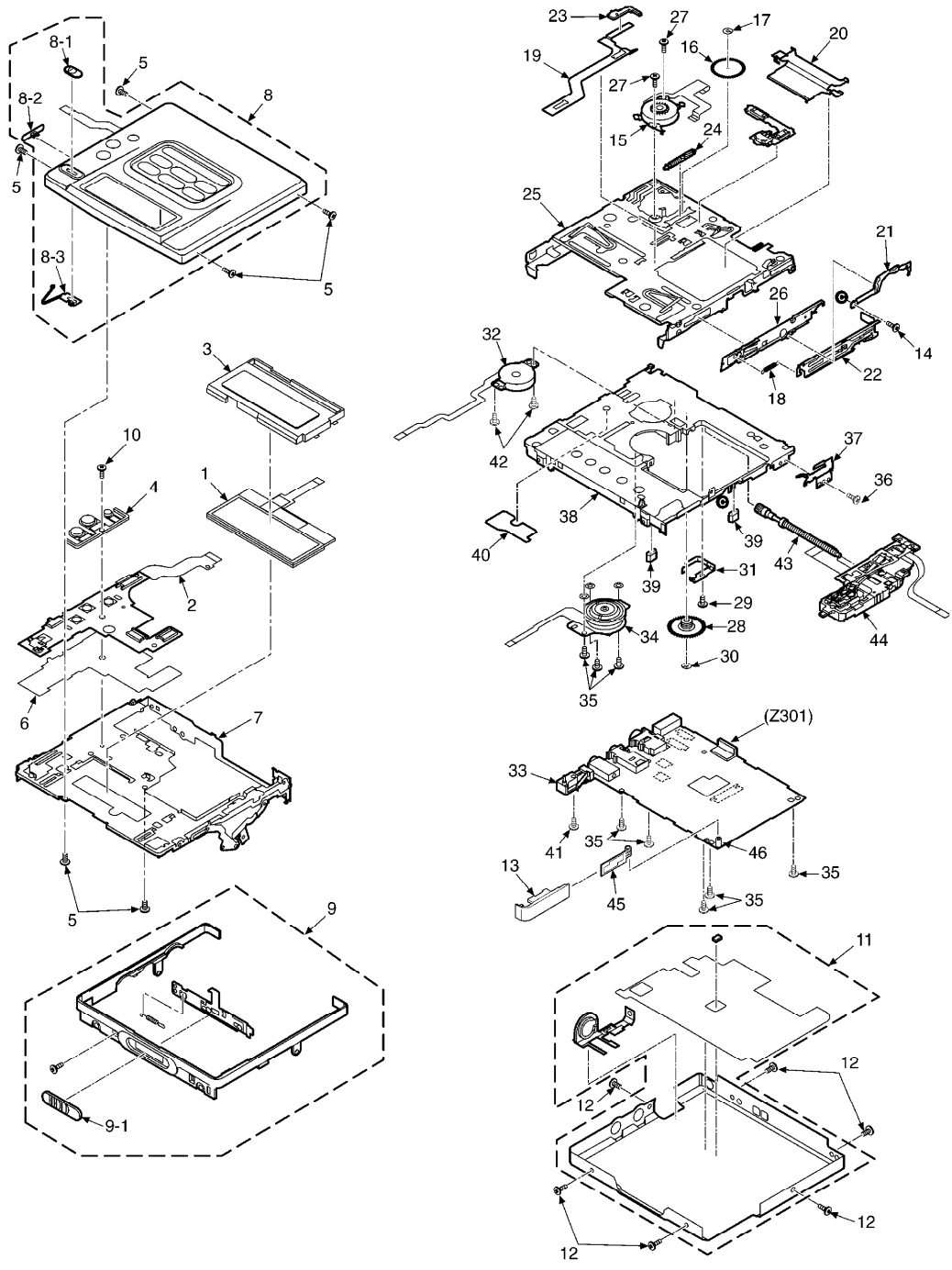
Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
D912,13	ZHCS1006TA	DIODE	2	B0JCLG000001
IC1	AN22010A-VF	IC	1	
IC101	MN66621ARG	IC	1	
IC102	C3ABMB000026	IC	1	
IC201	TA2131FL	IC	1	C1BB00000516
IC301	NJU7015RTE1	IC	1	C0ABHA000012
IC302	C0DBAFZ000020	IC	1	C0DBAFZ000017
IC303	XC6367A151MR	IC	1	C0DBAFZ000012
IC304	C0DBAGZ000006	IC	1	
IC305	C0CBCAC000006	IC	1	
IC401	C0GBZ0000006	IC	1	
IC501	MN101C61GAB	IC	1	
IC502	C3EBCG0000052	IC	1	
IC503	C0EBC00000035	IC	1	
IC601	C0FBAJ0000008	IC	1	
IC701	C1BB00000609	IC	1	
IC901	C0GBE00000003	IC	1	
IC902	C0JBAZ001767	IC	1	
IC903	B1MBBDA000002	IC	1	
IC904	B1MBBLA000001	IC	1	
JK201	RJJ36TK06-C	JACK,HEADPHONE	1	K2HC106E0002
JK301	K2EA2A0000001	JACK,DC IN	1	
JK701	RJJ38TW01-H	JACK,OPT/LINE	1	B3MBZ0000002
JK702	K2HC103E0016	JACK,MIC	1	
L1	RLQP1R0KT2-Y	COIL	1	G1C1R0K00005
L101	RLQP100MT-W	COIL	1	G1C100M00016
L201,02	RLBV601V-W	COIL	2	J0JCC0000059
L203	G1C100Z00011	COIL	1	
L301	G1A220D000002	COIL	1	
L302	G1A150D000002	COIL	1	
L303	ELJEA470KF	COIL	1	
L305	RLM9Z006T-D	COIL	1	J0LC00000008
L411	ELJEA470KF	COIL	1	
L501	RLQP100MT-W	COIL	1	G1C100M00016
L710-12	RLBV601V-W	COIL	3	J0JCC0000059
L721,22	RLBV601V-W	COIL	2	J0JCC0000059
P1	RPK1649	PACKING CASE	1	(EB)(EG)(GCS)
P1	RPK1702	PACKING CASE	1	(GH)(S)
P1	RPK1662	PACKING CASE	1	(GH)(W)
P2	RPQ0991	PAD	1	
P3	RPF0257-1	PROTECTION BAG	1	
PCB1	REP3036A-M	REC.HEAD P.C.B.	1	(RTL)
PCB2	REP3203A-M	MAIN P.C.B.	1	(RTL)
PCB3	REP3204A-S	OPERATION P.C.B.	1	(RTL)

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
Q1	2SB1295-6-TB	TRANSISTOR	1	B1ADKB000001
Q101	B1CDGD000001	TRANSISTOR	1	
Q202	2SB1295-6-TB	TRANSISTOR	1	B1ADKB000001
Q203	B1ABDF000001	TRANSISTOR	1	
Q301	B1ABDF000001	TRANSISTOR	1	
Q302	B1CFHD000005	TRANSISTOR	1	
Q303	XP4601TX	TRANSISTOR	1	XP0460100L
Q304	B1CFNC000001	TRANSISTOR	1	
Q305	B1CHMC000001	TRANSISTOR	1	
Q306,07	B1CFNC000001	TRANSISTOR	2	
Q308	2SB1462STX	TRANSISTOR	1	2SB14620SL
Q311	2SD1979	TRANSISTOR	1	
Q312	B1CHMC000001	TRANSISTOR	1	
Q313	B1CHHD000003	TRANSISTOR	1	
Q314	DTC144EETL	TRANSISTOR	1	B1GBCFNN0001
Q701	XP4601TX	TRANSISTOR	1	XP0460100L
Q702	DTC144TETL	TRANSISTOR	1	B1GBCFNA0001
Q703	2SB1462STX	TRANSISTOR	1	2SB14620SL
Q901	DTC144EETL	TRANSISTOR	1	B1GBCFNN0001
Q911	DTC144EETL	TRANSISTOR	1	B1GBCFNN0001
R1	ERJ2GEJ472X	1/4W 4.7K	1	ERJ2RMJ472X
R2	ERJ2GEJ272X	1/4W 2.7K	1	ERJ2RMJ272X
R3	ERJ2GEJ1R5X	1/4W 1.5	1	
R4	ERJ2GEJ472X	1/4W 4.7K	1	ERJ2RMJ472X
R5	ERJ2GEJ271X	1/4W 270	1	ERJ2RMJ271X
R6	ERJ2GEJ150X	1/4W 15	1	
R7	ERJ2GEJ474X	1/4W 470K	1	ERJ2RMJ474X
R11	ERJ2GEJ222X	1/4W 2.2K	1	ERJ2RMJ222X
R41	ERJ2GEJ103X	1/4W 10K	1	ERJ2RMJ103X
R42	ERJ2GEJ473X	1/4W 47K	1	ERJ2RMJ473X
R101	ERJ2GEJ105X	1/4W 1M	1	D0GA105JA001
R103	ERJ2GEJ100X	1/4W 10	1	ERJ2RMJ100X
R104	ERJ2GEJ221X	1/4W 220	1	ERJ2RMJ221X
R110	ERJ2GEJ470X	1/4W 47	1	ERJ2RMJ470X
R111	EXB24V470JX	47~2	1	
R112	ERJ2GEJ470X	1/4W 47	1	ERJ2RMJ470X
R120	ERJ2GEJ123X	1/4W 12K	1	
R121,22	ERJ2GEJ333X	1/4W 33K	2	ERJ2RMJ333X
R123	ERJ2GEJ221X	1/4W 220	1	ERJ2RMJ221X
R130	ERJ2GEJ222X	1/4W 2.2K	1	ERJ2RMJ222X
R201	ERJ2GEJ221X	1/4W 220	1	ERJ2RMJ221X
R202	ERJ2GEJ471X	1/4W 470	1	ERJ2RMJ471X
R203	ERJ2GED273X	1/4W 27K	1	ERJ2RHD273X
R204	EXB24V103JX	10K~2	1	
R205	ERJ2GEJ104X	1/4W 100K	1	ERJ2RMJ104X
R206	EXB24V103JX	10K~2	1	
R207	EXB24V392JX	1/16W 3.9K	1	
R208	EXB24V225JX	1/16W 2.2M	1	
R209	EXB24V100JX	1/16W 10	1	

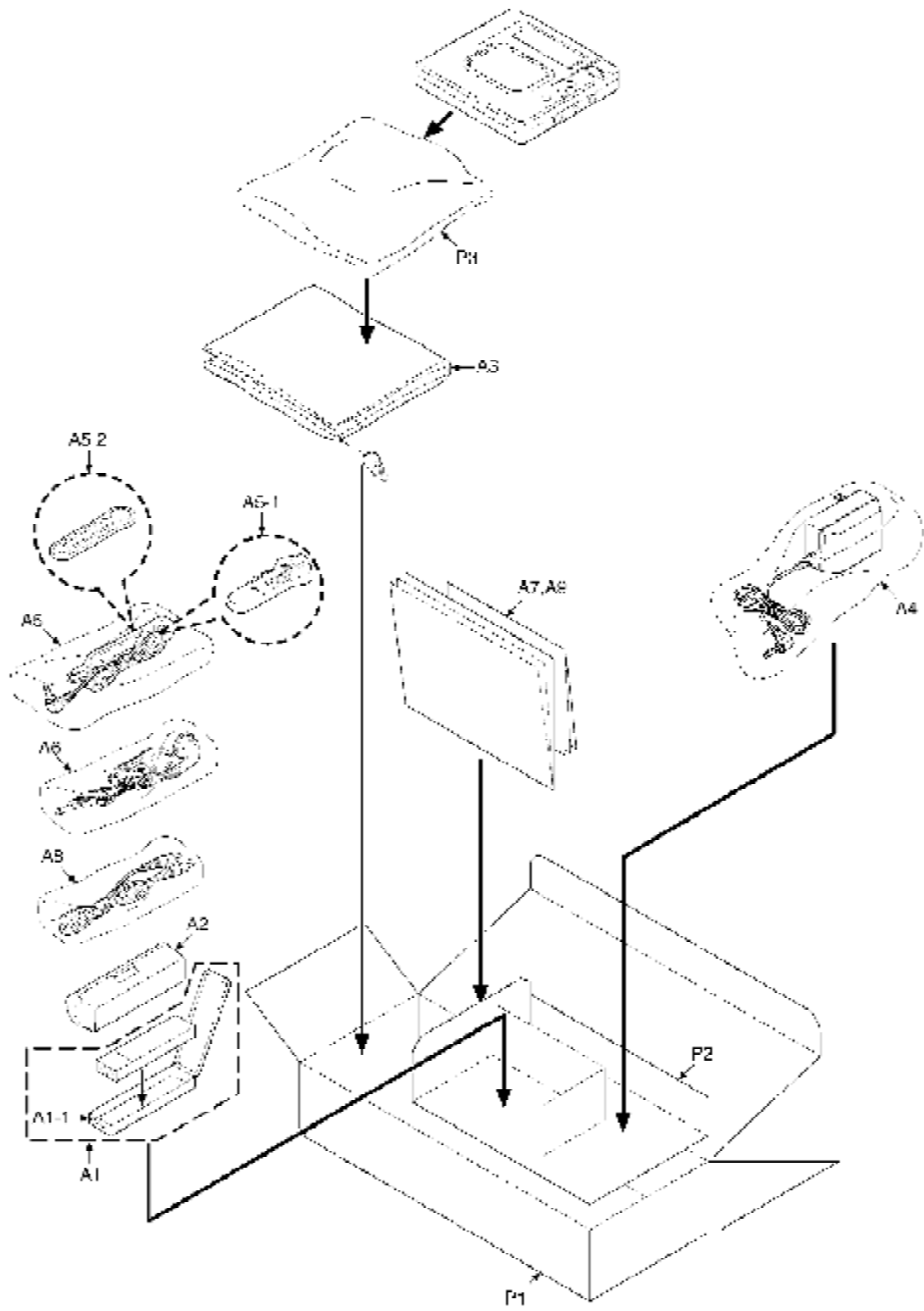
Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
R210	EXB24V221JX	1/4W 220	1	
R301	EXB24V334JX	1/16W 330K	1	
R302	EXB24V104JX	1/4W 100K	1	
R303	ERJ2RHD823X	1/4W 82K	1	
R304	ERJ2GEJ103X	1/4W 10K	1	ERJ2RMJ103X
R305	ERJ2GEJ101X	1/4W 100	1	ERJ2RMJ101X
R306	ERJ2GEJ103X	1/4W 10K	1	ERJ2RMJ103X
R307	ERJ2GEJ474X	1/4W 470K	1	ERJ2RMJ474X
R308	EXB24V474JX	1/16W 470K	1	
R309	ERJ2GEJ394X	1/4W 390K	1	ERJ2RMJ394X
R310	ERJ2GED333X	1/4W 33K	1	ERJ2RHD333X
R311	ERJ2GED104X	1/4W 100K	1	D0HA104ZA002
R312	ERJ3GEJ335V	1/16W 3.3M	1	
R313	EXB24V104JX	1/4W 100K	1	
R314	ERJ2GEJ154X	1/4W 150K	1	ERJ2RMJ154X
R315	ERJ2GED104X	1/4W 100K	1	D0HA104ZA002
R316	ERJ2GEJ104X	1/4W 100K	1	ERJ2RMJ104X
R317	ERJ6RSJR10V	1/10W 0.1	1	
R318	ERJ2GED105X	1/4W 1M	1	ERJ2RKD105X
R320	ERJ2GEJ474X	1/4W 470K	1	ERJ2RMJ474X
R321	ERJ2GEJ394X	1/4W 390K	1	ERJ2RMJ394X
R322	ERJ2GEJ225X	1/4W 2.2M	1	ERJ2RMJ225X
R323	ERJ2GEJ105X	1/4W 1M	1	D0GA105JA001
R324	ERJ2GEJ474X	1/4W 470K	1	ERJ2RMJ474X
R326	ERJ2GEJ221X	1/4W 220	1	ERJ2RMJ221X
R401	EXB24V473JX	1/16W 47K	1	
R411	ERJ2GEJ471X	1/4W 470	1	ERJ2RMJ471X
R412	ERJ2GEJ682X	1/4W 6.8K	1	ERJ2RMJ682X
R431	ERJ2GEJ103X	1/4W 10K	1	ERJ2RMJ103X
R501	EXB24V473JX	1/16W 47K	1	
R502-04	EXB24V334JX	1/16W 330K	3	
R505,06	EXB24V104JX	1/4W 100K	2	
R507,08	EXB24V224JX	1/4W 220K	2	
R509	ERJ2GEJ223X	1/4W 22K	1	ERJ2RMJ223X
R510	ERJ2GEJ103X	1/4W 10K	1	ERJ2RMJ103X
R511	ERJ2GEJ224X	1/4W 220K	1	ERJ2RMJ224X
R512	ERJ2GEJ221X	1/4W 220	1	ERJ2RMJ221X
R513	ERJ2GEJ104X	1/4W 100K	1	ERJ2RMJ104X
R601	ERJ2GEJ4R7X	1/4W 4.7	1	ERJ2RMJ4R7X
R701	ERJ2GEJ101X	1/4W 100	1	ERJ2RMJ101X
R702	ERJ2GEJ184X	1/4W 180K	1	ERJ2RMJ184X
R703	EXB24V104JX	1/4W 100K	1	
R704	ERJ2GEJ334X	1/4W 330K	1	ERJ2RMJ334X
R705	ERJ2GEJ473X	1/4W 47K	1	ERJ2RMJ473X
R706	EXB24V182JX	1.8K~2	1	
R707	EXB24V223JX	1/4W 22K	1	
R708	EXB24V182JX	1.8K~2	1	
R710	ERJ2GEJ472X	1/4W 4.7K	1	ERJ2RMJ472X
R711	ERJ2GEJ471X	1/4W 470	1	ERJ2RMJ471X
R712	ERJ2GEJ104X	1/4W 100K	1	ERJ2RMJ104X

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
R713	ERJ2GEJ101X	1/4W 100	1	ERJ2RMJ101X
R714	ERJ2GEJ103X	1/4W 10K	1	ERJ2RMJ103X
R715	EXB24V104JX	1/4W 100K	1	
R801	ERJ2GEJ122X	1/4W 1.2K	1	ERJ2RMJ122X
R802	ERJ2GEJ563X	1/4W 56K	1	
R803	ERJ2GEJ683X	1/4W 68K	1	ERJ2RMJ683X
R807	ERJ2GEJ333X	1/4W 33K	1	ERJ2RMJ333X
R808	ERJ2GEJ513X	1/4W 51K	1	ERJ2RMJ513X
R901	ERJ2GEJ682X	1/4W 6.8K	1	ERJ2RMJ682X
R902	ERJ2GEJ153X	1/4W 15K	1	ERJ2RMJ153X
R903	ERJ2GEJ182X	1/4W 1.8K	1	ERJ2RMJ182X
R904	ERJ2GEJ471X	1/4W 470	1	ERJ2RMJ471X
R905	ERJ2GEJ102X	1/4W 1K	1	ERJ2RMJ102X
R911	EXB24V473JX	1/16W 47K	1	
R912	ERJ2GEJ6R8X	1/4W 6.8	1	
S1	ABC1111P	SW,MAGNETIC HEAD	1	K0L1BA000050
S801	RSG0051-P	SW,PLAY/PAUSE,CHARA	1	
S802	K0F111A00335	SW,REC,LP MODE	1	
S803	RSG0051-P	SW,STOP,OPR/OFF	1	
S804	RSG0051-P	SW,EDIT/MARK MODE	1	
S806	K0D112A00114	SW,HOLD	1	
TH40	D4CC11030009	THERMISTORS	1	
TH901	D4CC11030009	THERMISTORS	1	
X101	H0J169500011	OSCILLATOR	1	
X501	H2D100500004	OSCILLATOR	1	
Z301	RJH9212-1	BATT.CONNECTOR TERMINAL	1	K4BC02E00007

18. Cabinet Parts Location



19. Packaging



Printed in Japan (H01090000) KA/HH