ORDER No.AD0009165C8

Service Manual

Portable MD Recorder

SJ-MR200

MD unit: RAE1630Z-M Mechanism Series

Colour

(S).....Silver Type

(W).....White Type

Areas

EB.....Great Britain.

EG.....Europe.

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)
No. of channels:	2 (left and right, stereo) 1 (monaural)
Frequency response:	20 Hz-20 kHz (+0 dB, -6dB)
Wow and flutter:	Below measurable limit

● General

Input terminal	
OPT/LINE IN jack	
Impedance:	47k Ω
Input level:	SENS H: 178mV SENS L: 500mV
MIC jack	
Impedance:	600 Ω
Input level:	0.4mV
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:	78.2x71.6x16.8 mm
incl.projecting parts:	79.9x73.6x18.6 mm
Weight:	120 g (with battery) 94 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:	About 15 hours	About 7 hours
Panasonic alkaline:	About 21 hours	About 3 hours
Both together:	About 38 hours	About 15 hours

● Charger

Input:	AC 220 V (GH) / AC220-230 V (EG) / AC 230-240V (EB), 50/60 Hz 8W
Recharging time:	About 3 hours

Notes:

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

⚠ 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 with carrying case .....1pc.**
  (RFKFHFAZ01EM)
- **External battery case.....1pc.**
  (RFA1537-S)
- **Carrying case.....1pc.**
  (RFC0056-K)
- **Wired remote control.....1pc.**
  (N2QCBD000007)
- **Stereo earphones.....1pc.**
  (RFEV335P-SA)
- **Connection cable.....1pc.**
  (K2KA39B00001)

For EB area

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

For EG area

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

For GH area

- **AC adaptor.....1pc.**
  (RFEA004H-S)

2. Precation of Laser Diode

CAUTION:

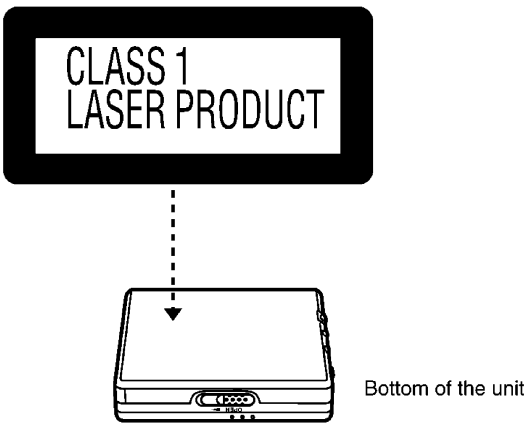
This product utilizes a laser diode with the unit turned “on”, invisible laser radiation is emitted fromthe pickup lens.
Wave length:780 nm
Maximum output radiation power from pickup: 100 μ W/VDE
Laser radiation from the pickup lens is safety level,but be sure the followings:

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 adjsuted.
3. Do not look at the focus lens using optical insturments.
4. Recommend no to look at pickup lens for a long time.

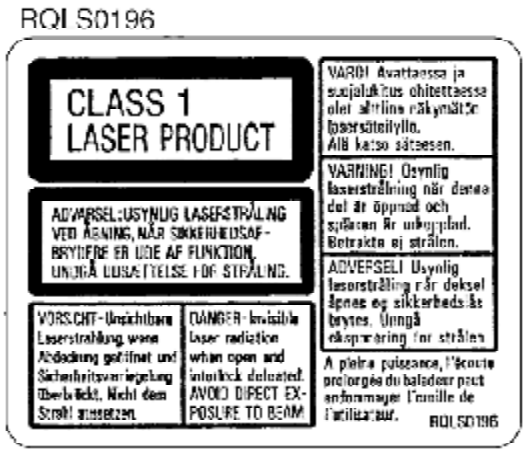
ACHTUNG:

Dieses Produkt enthält eine Laserdiode. Im eingeschalteten Zustand wird unsichtbare Leserstrahlung von der
Laserinheit adgestrahit.
Wellenlänge: 780 nm
Maximale Strahlungsleistung der Lasereinheit: 100 μ W/VDE
Die Strahlungan der Lasereinheit ungefährlich, wenn folgende Punkte beachtet werden:

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



Bottom of the unit



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

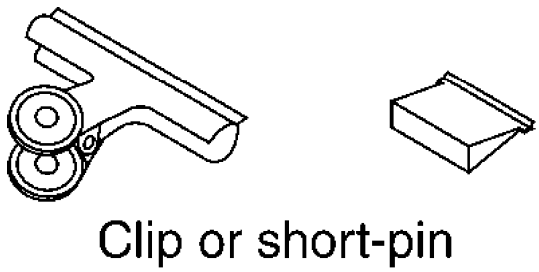
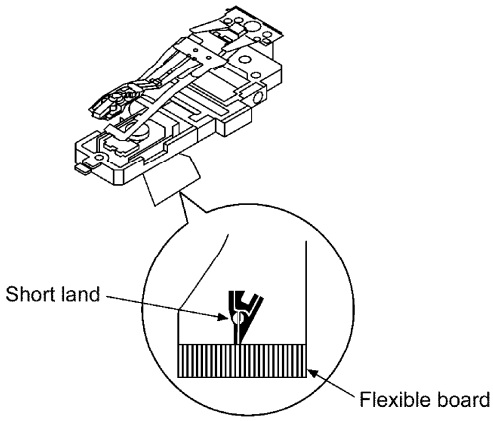


Fig. 2



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).

Fig. 3

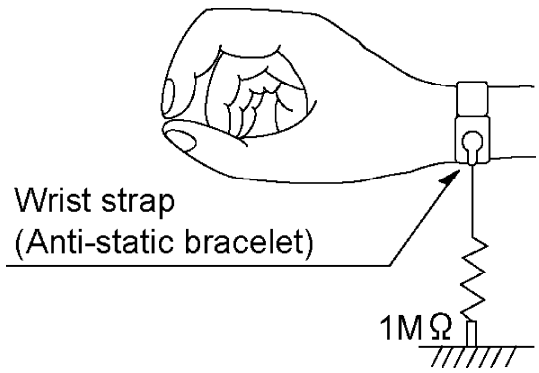
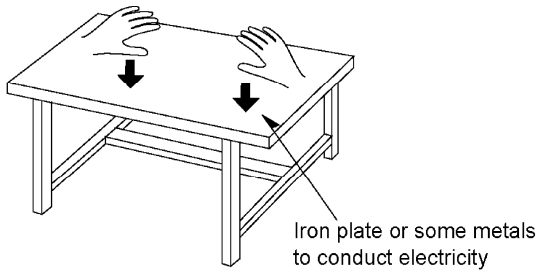


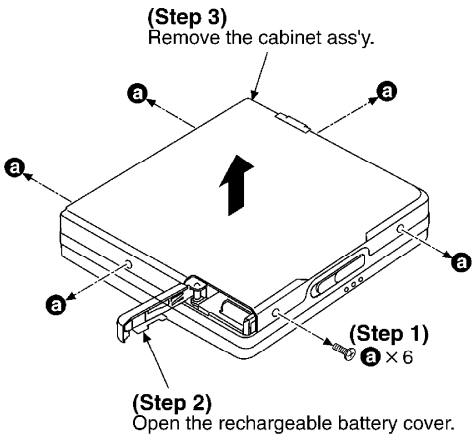
Fig. 4

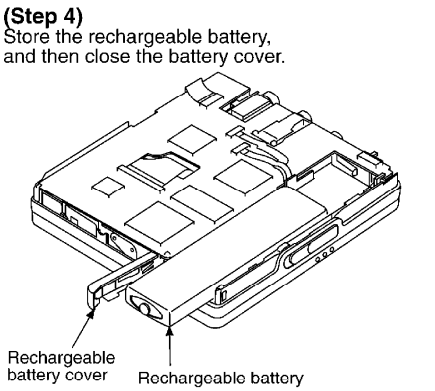


5. Operation Checks and Component Replacement Procedures

- 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”.

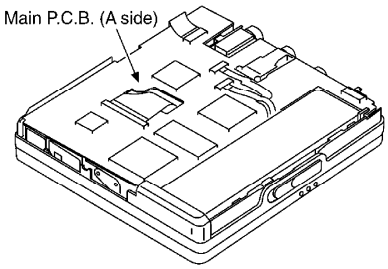
5.1. Checking for the main P.C.B.





NOTE:
The rechargeable battery
should be recharged fully.

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

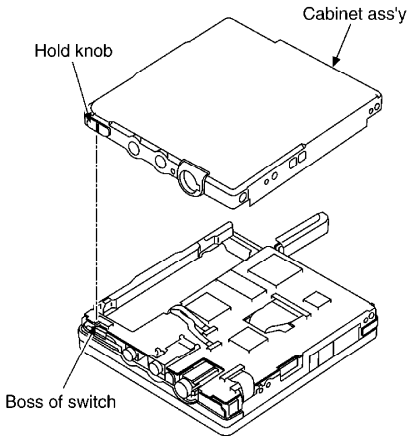


[Checking for the main P.C.B. (B side)]

- Each parts on main P.C.B. (B side) can not be checkesd 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).

Notice for installation of the cabinet ass'y

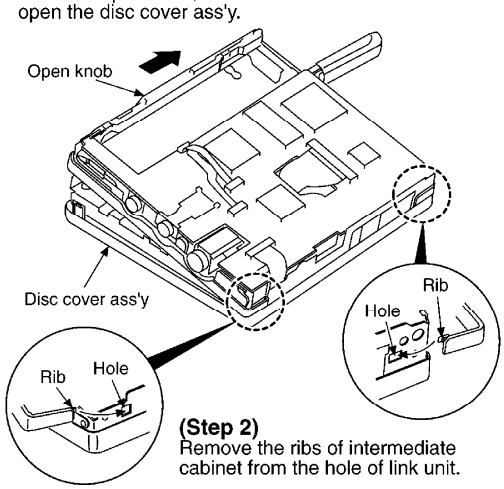
- Make sure the boss of switch are fit in the hold knob when assembling.



5.2. Replacement for the intermediate cabinet

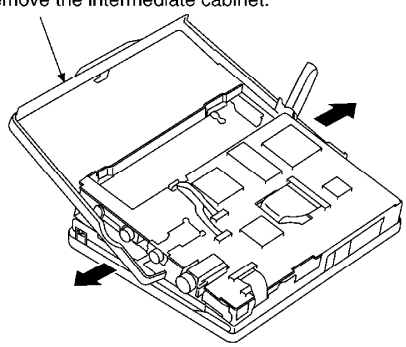
- Follow the (Step 1) - (Step 3) of item 5.1.

(Step 1)
Push the open knob, and then open the disc cover ass'y.



(Step 2)
Remove the ribs of intermediate cabinet from the hole of link unit.

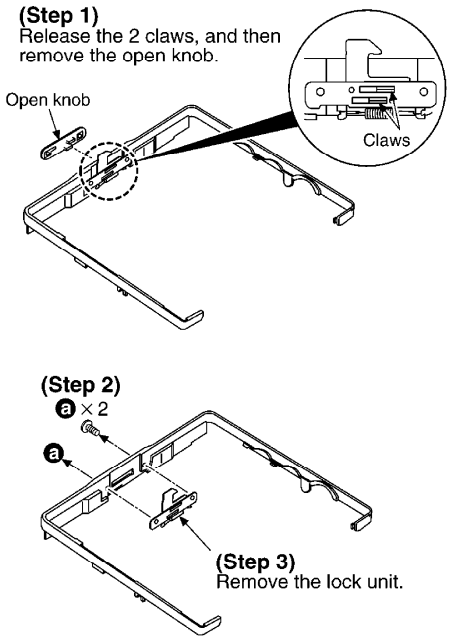
(Step 3)
Remove the intermediate cabinet.



5.3. Replacement for the open knob and lock unit

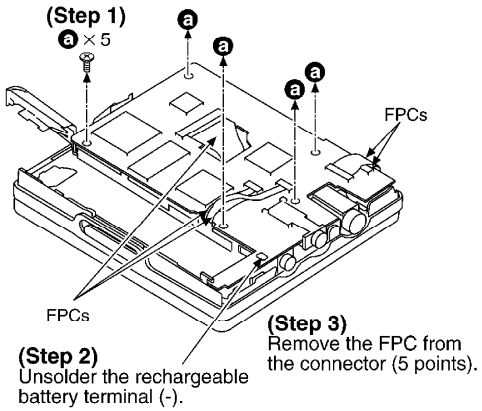
- Follow the (Step 1) - (Step 3) of item 5.1.

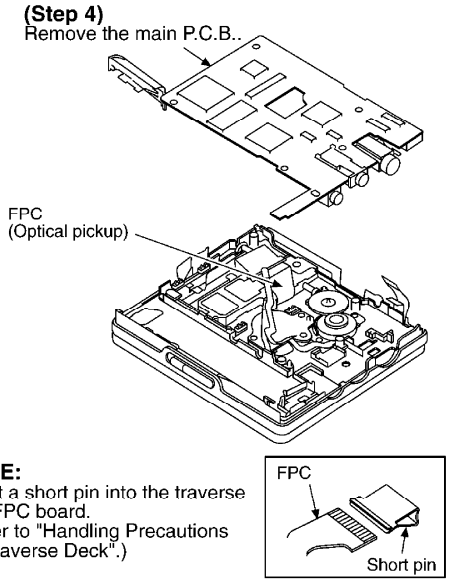
- Follow the (Step 1) - (Step 3) of item 5.2.



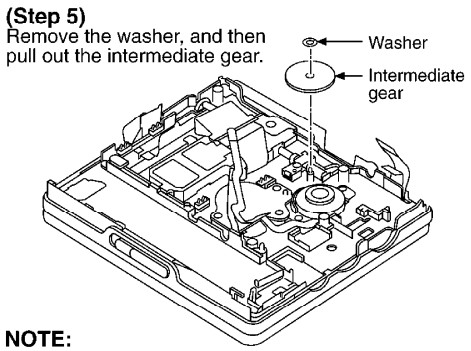
5.4. Replacement for the traverse motor

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

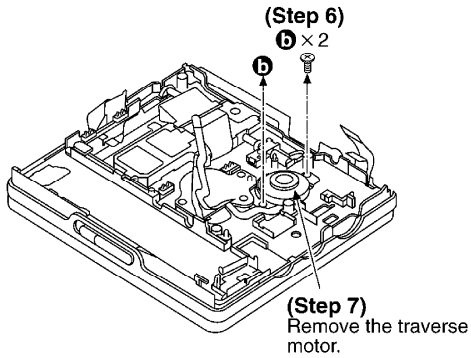




NOTE:
Insert a short pin into the traverse unit FPC board.
(Refer to "Handling Precautions for Traverse Deck".)



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

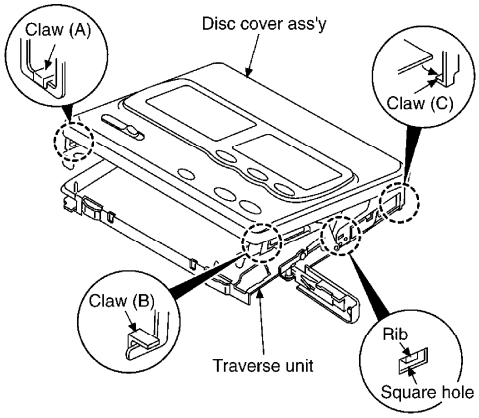


5.5. Replacement for the LCD

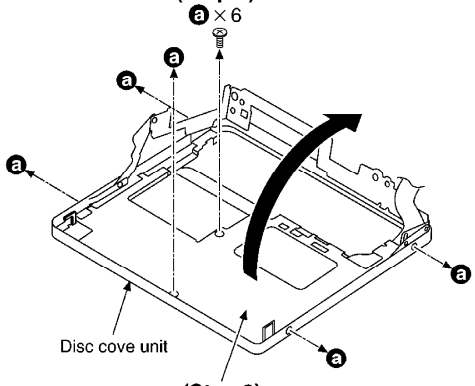
- Follow the (Step 1) - (Step 3) of item 5.1.

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

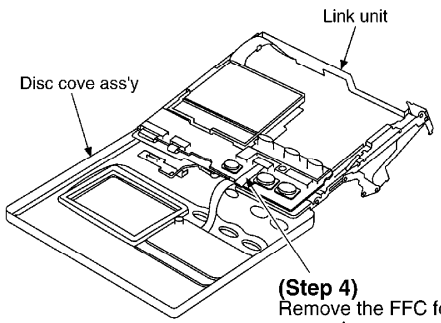
(Step 1)
Remove the rib form the square hole, and then remove the claw (A), (B), (C).
Then, remove the disc cover ass'y.



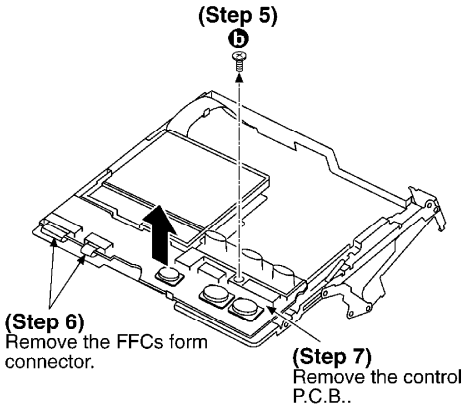
(Step 2)
ⓐ × 6

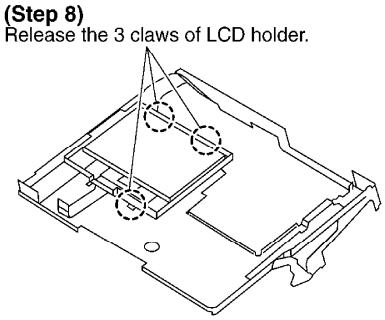


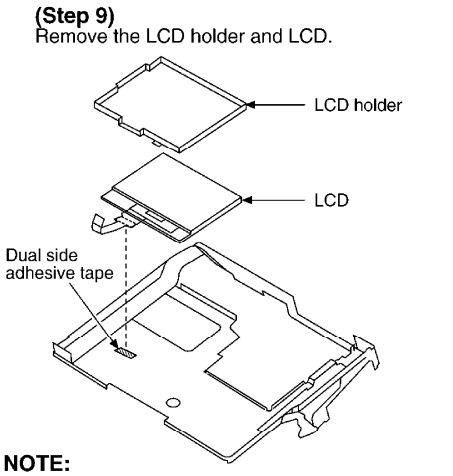
(Step 3)
Remove the link unit in the direction of arrow.



(Step 4)
Remove the FFC form connector.



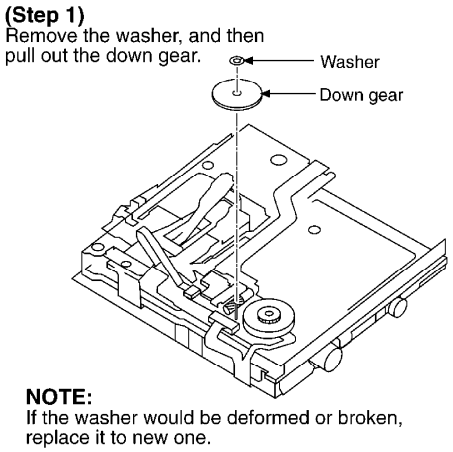


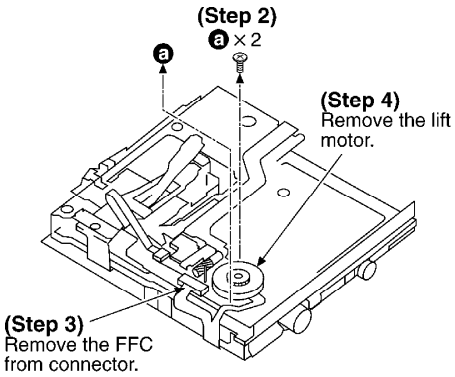


NOTE:
Take care not to damage the FFC when removing it due to the dual side adhesive tape.

5.6. Replacement for the lift motor

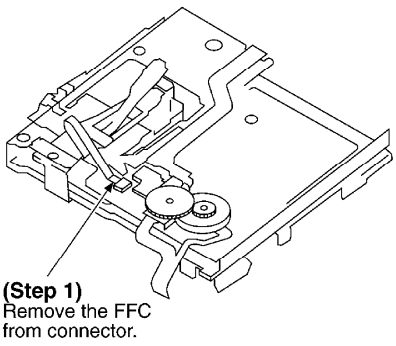
- Follow the (Step 1) - (Step 3) of item 5.1.
- Follow the (Step 1) - (Step 3) of item 5.2.
- Follow the (Step 1) of item 5.5.





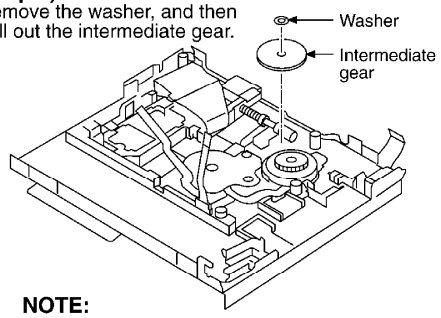
5.7. Replacement for the optical pickup

- 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.

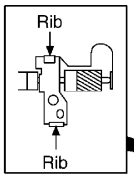


(Step 2)
Upset the main body.

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

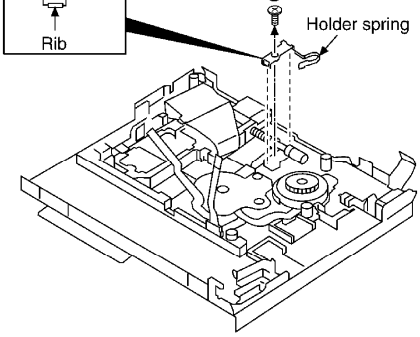


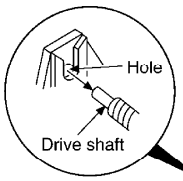
NOTE:
If the washer would be deformed or broken, replace it to new one.



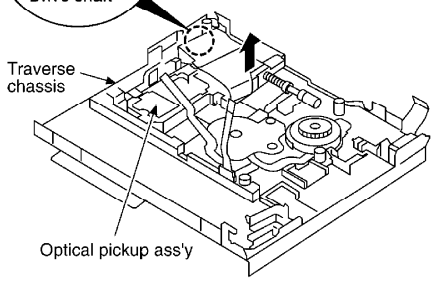
(Step 5)
Release the 2 ribs, and then remove the holder spring.

(Step 4)
ⓐ

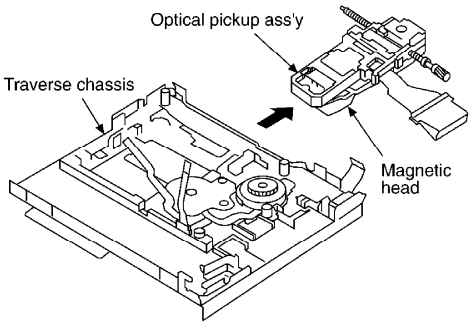




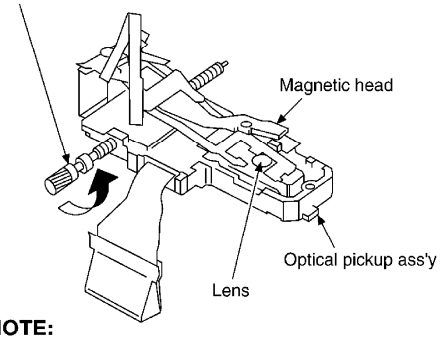
(Step 6)
Lift up the optical pickup ass'y, and then remove the drive shaft from hole of the traverse chassis.



(Step 7)
Pull the optical pickup ass'y out the traverse chassis with spreading the magnatic head.



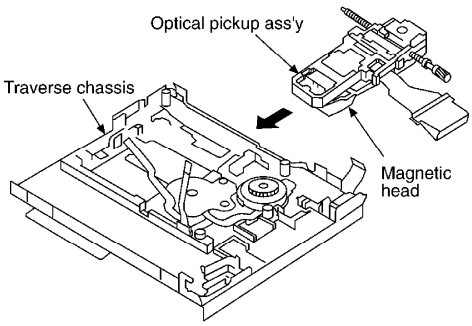
(Step 8)
Rotate the drive shaft, and then pull out the it.

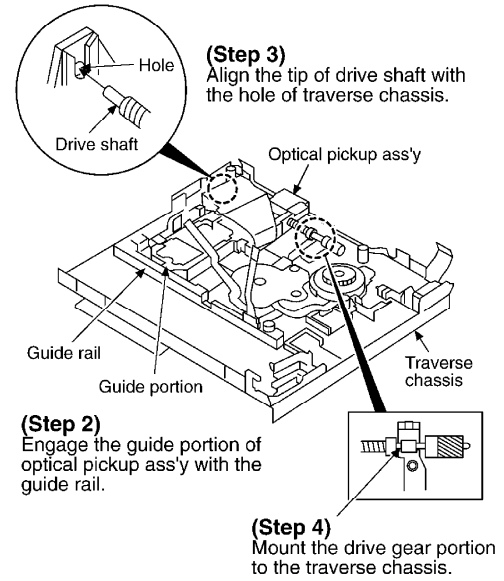


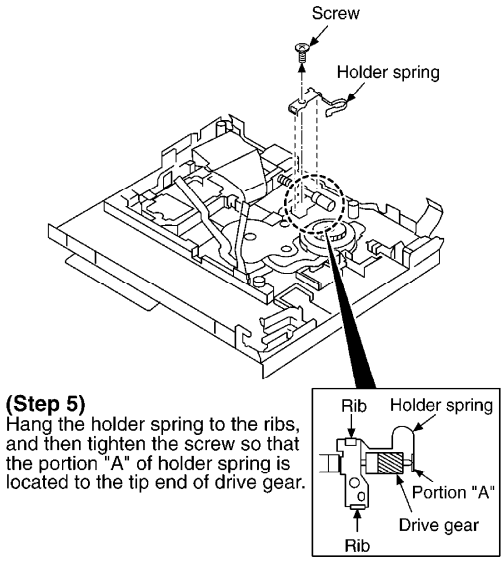
NOTE:
1. Use care to prevent damage the optical pickup, due to the precision construction.
2. Do not touch the lens of the optical pickup.

Installing the optical pickup

(Step 1)
Insert the optical pickup ass'y into the traverse chassis with spreading the magnatic head.







6. Measurements and Adjsutments

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 "ROM/RAM 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)**

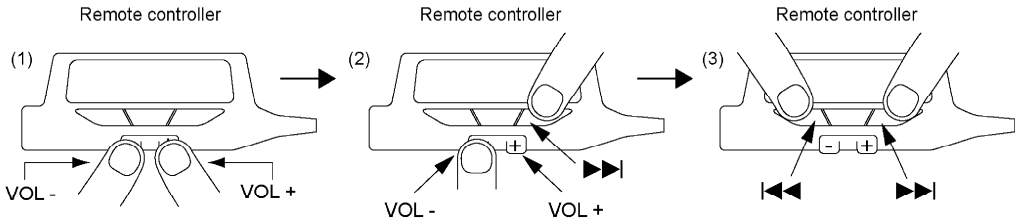
4. Remote controller

6.2. Laser power adjustment, Playback-only disc/magneto-optical disc automatic 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 VOL+, VOL-, ▶▶|, and |◀◀ buttons on the remote controller within two seconds. (as shown in Fig. 5)

Fig. 5



4. When the adjustment mode is activated, " T1 EX " will be displayed on the LCD of remote controller. After " T1 EX " 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	T1
Magneto-optical disc automatic adjustment	T2
Playback-only disc automatic adjustment	T3
EFM jitter meajurement	T4
Record inspection	T5
REC jitter meajurement	T6
Magneto-optical disc automatic adjustment value check	T7
Playback-only disc automatic adjustment value check	T8
Error rate measurement (double velocity)	T9
AD read result confirmation	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 T1 ~ TF shown above, you must adjust T1, T2 and TF. You must perform the adjustment by observing the order 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 5 mW. 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.

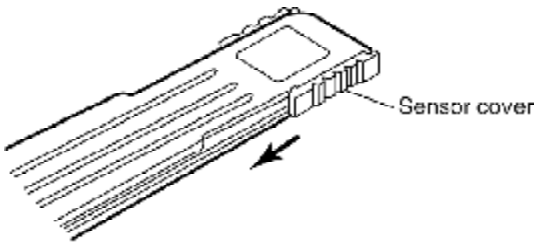
- Laser diode in the optical pickup may be destroyed by the

staticelectricity generated in your clothes or body. Be especially careful with the static electricity.

6.2.2.2. Adjustment Procedure

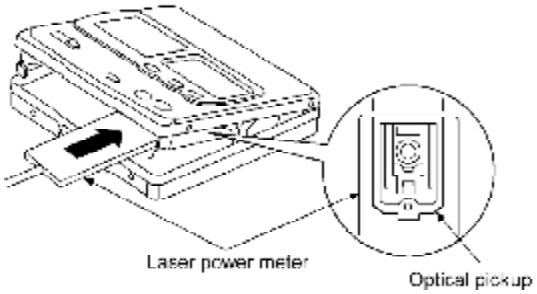
1. Have " T1 EX " indicated on display, and move the optical pickup to the most inside (only when a MD cartridge type laser power meter is used).
2. Uncover the laser power meter. (as shown in Fig. 6)

Fig. 6



3. Locate the sensor of the laser power meter at a position above the optical pickup (horizontally at a level of the disc position). (as shown in Fig. 7)

Fig. 7



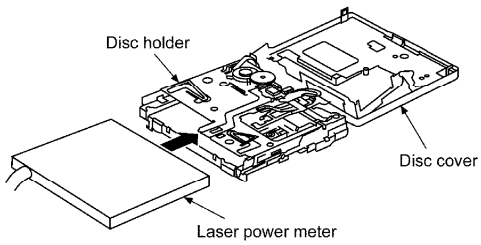
4. Press the PLAY key of the remote controller (" T1 EX " changes to " LD " of the LCD).
5. Press the ▶▶| key of the remote controller (" LD " changes to " LP " of the LCD).
6. Perform the read power adjustment. Set the light power at 600 μ W ±10% by using VOL+ and VOL- key of the remote controller.
   Caution:
   Proceeding on to the subsequent adjustment procedure with the read power exceeding 600 μ W±10% will result in damage to the optical pickup.
7. Press the ▶▶| key of the remote controller (" LP " changes to "

RLDA ” in the LCD).
Specified range (read power): 600 μW±10% or lower

8. Perfome the light power adjustment. Set the light power at 4.55mW by using VOL+ and VOL- key of the remote controller. If at this time the amperage between TP405 and TP406 (laser current) is 70mA or higher, it is conceivable that theoptical pickup is defective.
   Specified range (light power): 4.5mW
   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.
9. Press the ▶▶| key of the remote controller (“ RLDA ” changes to “ LP ” on the LDC. At this time, the data is written to EEPROM.).
10. Press the PLAY key on the remote controller (“ LP ” changes to “ T1 EX ” on the LCD.).
11. Remove the laser power meter. Laser power adjustment is finished.

[REFERENCE]
For use of MD cartridge type laser power meter: / We recommend you to use a stick type laser power meter for laser power adjustment of this set. / But if available is a MD cartridge type only, arrange the set as shown in Fig. 9 , and from the state of “6.2.1. Enter the adjustment mode”, start the laser power adjustment. / (As for the method of disassembly, refer to “5. Operation checks and main component replacementprocedures”.)

Fig. 8



6.2.3. Magneto-optical disc automatically adjustment

1. Have “ T2 EX ” indicated on display, and move the optical pickup to around the center (only when a MD cartridge type laser power meter is used).

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

Note:
If it is displayed “ 0ANG ”, check the “Troubleshooting Procedures” in the order.

6.2.4. Playback-only disc automatically adjustment

1. Have “ T3 EX ” indicated on display, and move the optical pickup to around center (only when a MD cartridge type laser power meter is used).
2. Set the playback-only disc.
3. Press the PLAY key of the remote controller (“ T1 EX ” changes to “ 00ADJ ” (or “ 10ADJ ”) on the LCD, adjusment is started.).
4. If it has been finished normally, “ 0AADJ ” (or “ 10ADJ ”) changes to “ 00OK ” (or “ 10OK ”) on LCD. If it is abnormally, it changes to “ 00NG ” (or “ 10NG ”).
5. Press the PLAY key [“ 00OK ” (or “ 10OK ”) or “ 00NG ” (or “ 10NG ”) changes to “ T3 EX ”, playback-only discadjustment is finished.]

Note:
If it is displayed “ 00NG ” (or “ 10NG ”), check the “Troubleshooting Procedures” in the order.

6.2.5. How to get out the adjustment mode

Remove the battery when you finish the adjustment mode.

6.3. Checking the main unit's keys

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 |◀◀ buttonson the remote controller within two seconds. (as shown in Fig. 5)

3. When entering the main unit's key check mode, " KEY EX " will be displayed on the LCD of main unit and " T KEX " will be displayed on the LCD of remote controller. (If it is notdisplayed, 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.

Mian 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 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	IC501 55pin	0V	2.4V
REC PAUSE	IC501 49pin	0V	2.4V
EDIT	IC501 3pin	1.94V	2.4V
STOP	IC501 3pin	0V	2.4V
PLAY	IC501 48pin	0V	2.4V

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 asshown below are all OK, " 0 " is displayed.

Display position	Main unit's keys
4th. letter	DISPLAY, PLAYMODE, EQ
5th. letter	Flat pad lower rank 3 key
6th. letter	Flat pad upper rank 3 key

9. Upon detection of all keys, " 000 " is shown on the right side of LCD of the remote control.

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

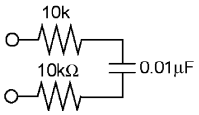
Main unit's keys	Check points	ON	OFF
DISPLAY	IC501 3pin	1.45V	2.4V
PLAYMODE	IC501 3pin	0.44V	2.4V
EQ	IC501 3pin	1.0V	2.4V
Flat pad (*1)	IC501 6~8pin	2.4V	0V

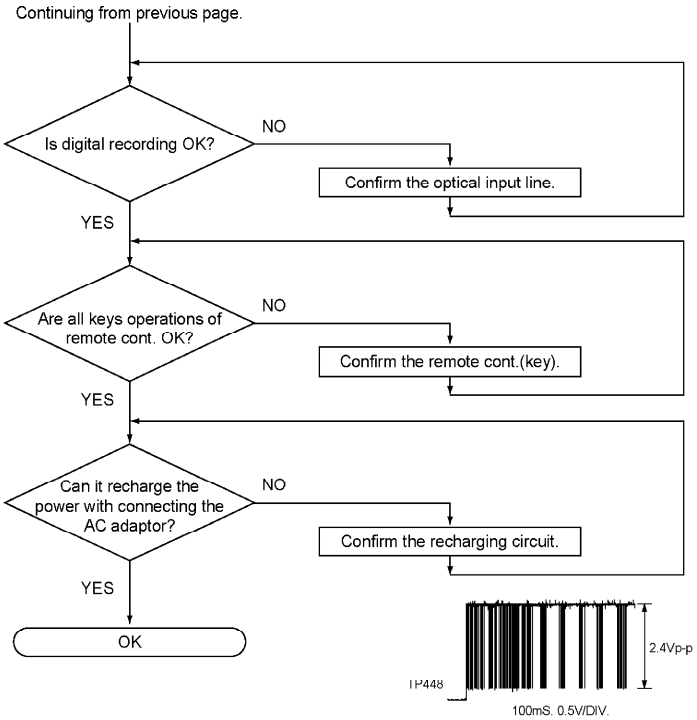
11. Remove the battery when you exit from this mode.

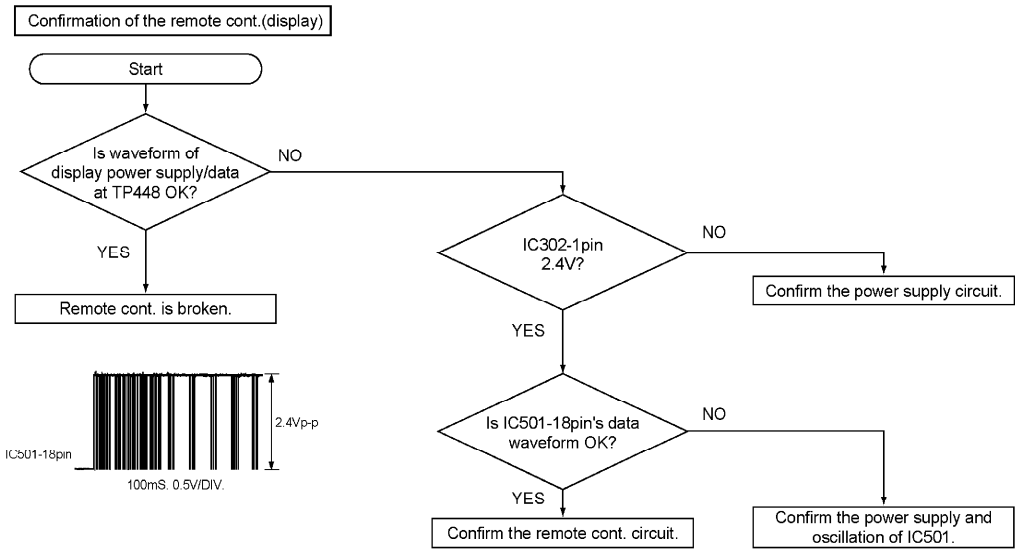
Note:
Refer to "Printed Circuit Board and Wiring Connection Diagram" for the test points.

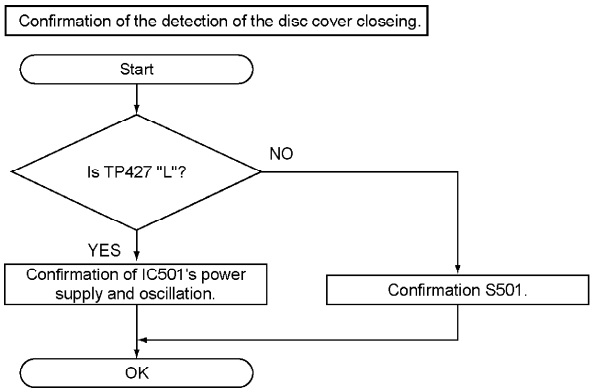
7. Troubleshooting Guide

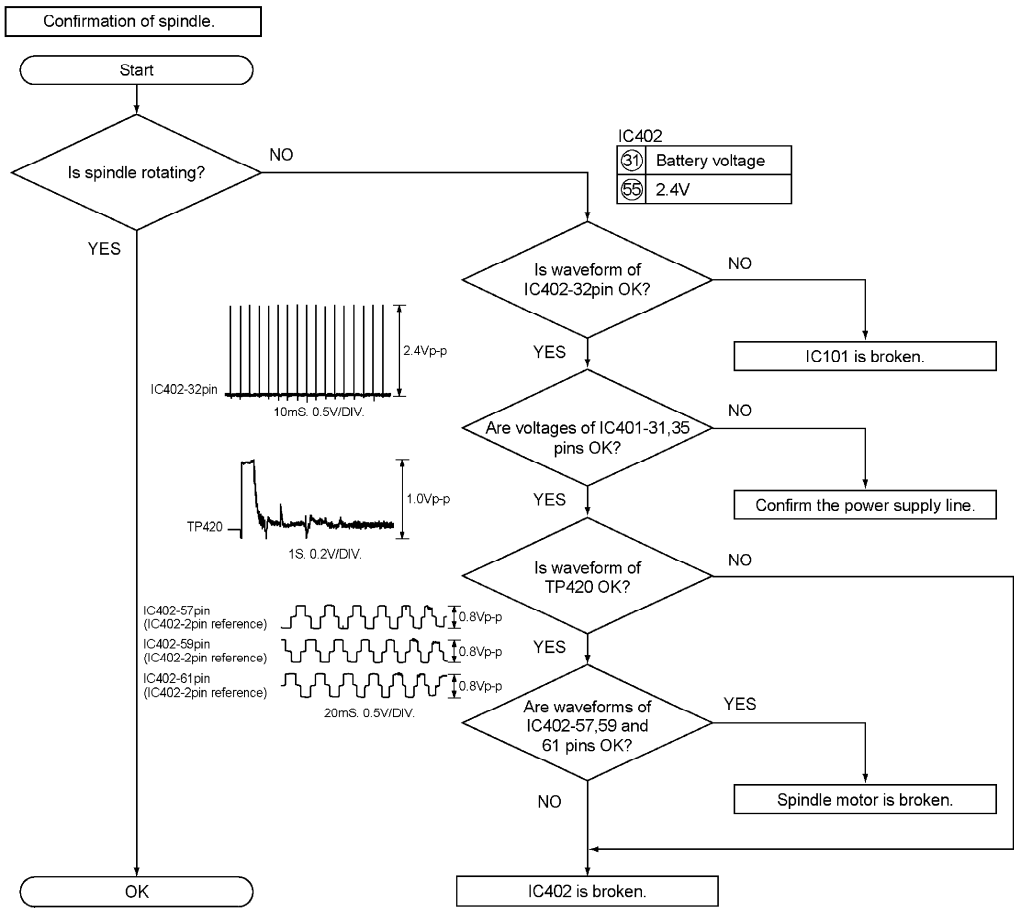
Note) We mentioned " ※Filter" beside the waveform about the points for necessary the filter when you check the waveforms.
Check it with setting the band width of the meter about 5～10kHz, or connecting the filter shown below.

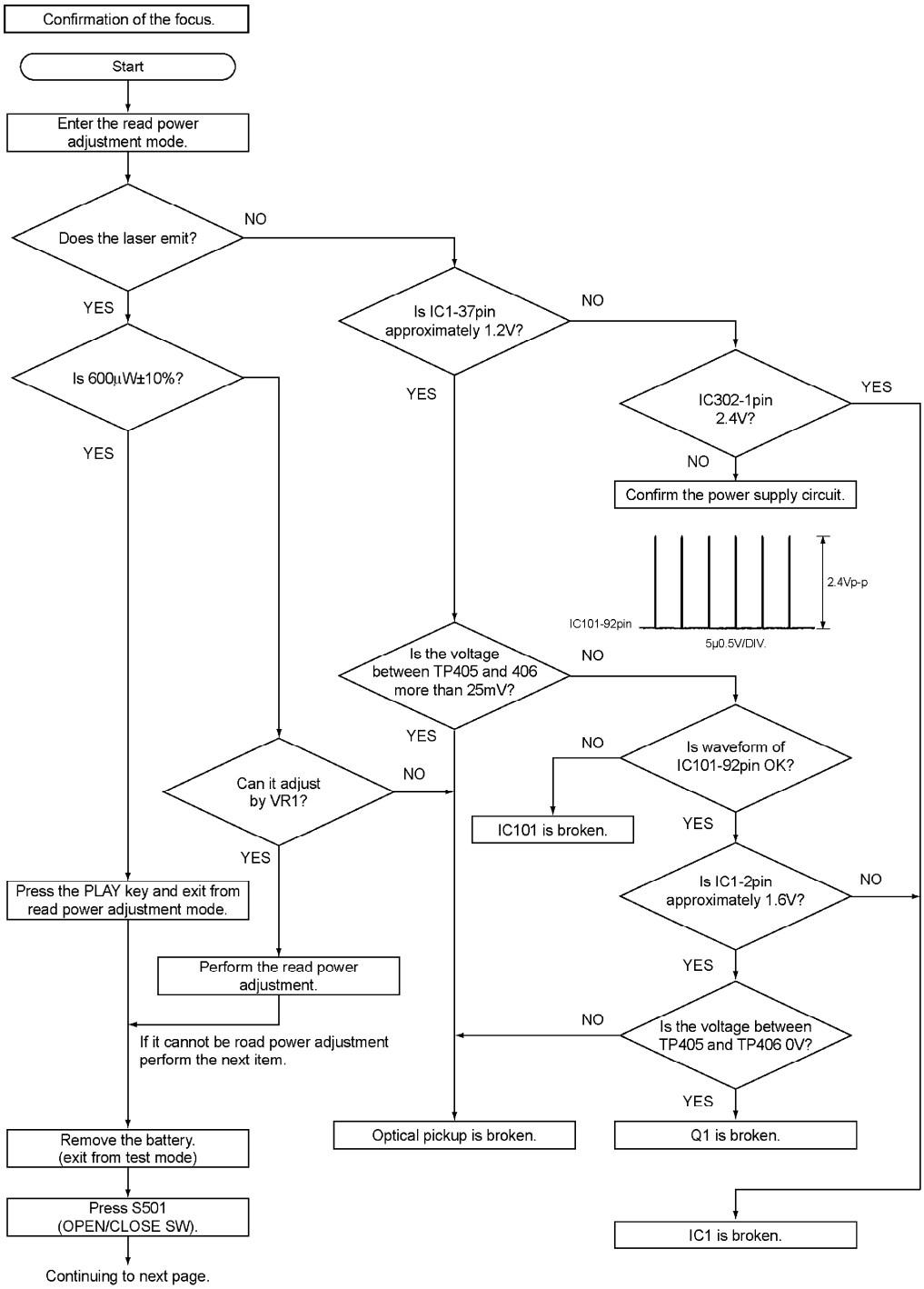


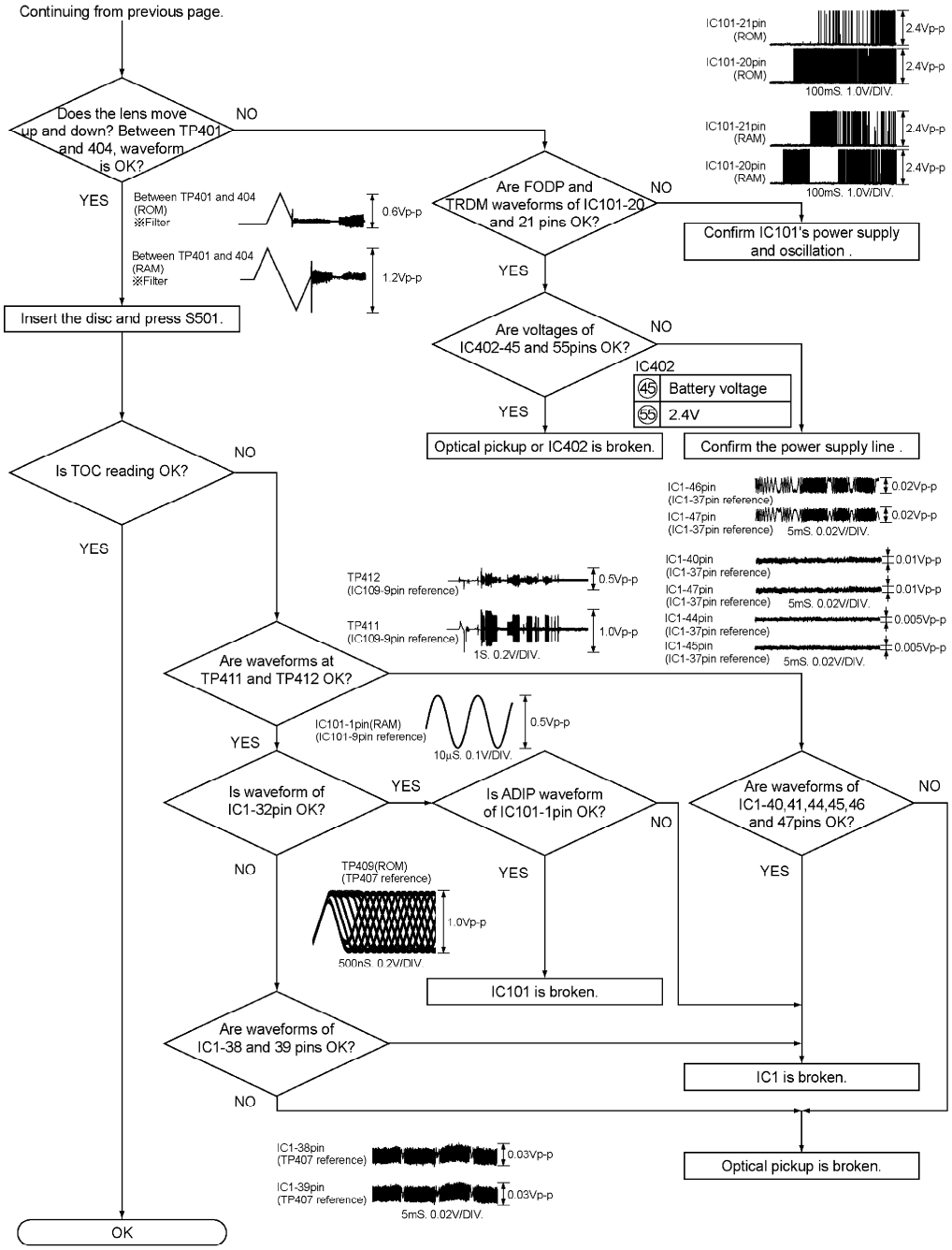

Continuing from previous page.
Is digital recording OK?
NO
Confirm the optical input line.
YES
Are all keys operations of remote cont. OK?
NO
Confirm the remote cont.(key).
YES
Can it recharge the power with connecting the AC adaptor?
NO
Confirm the recharging circuit.
YES
OK
2.4Vp-p
TP448
100mS. 0.5V/DIV.


Confirmation of the remote cont.(display)
Start
Is waveform of display power supply/data at TP448 OK?
NO
YES
Remote cont. is broken.
IC302-1pin 2.4V?
NO
Confirm the power supply circuit.
YES
Is IC501-18pin's data waveform OK?
NO
YES
Confirm the remote cont. circuit.
Confirm the power supply and oscillation of IC501.
2.4Vp-p
IC501-18pin
100mS. 0.5V/DIV.

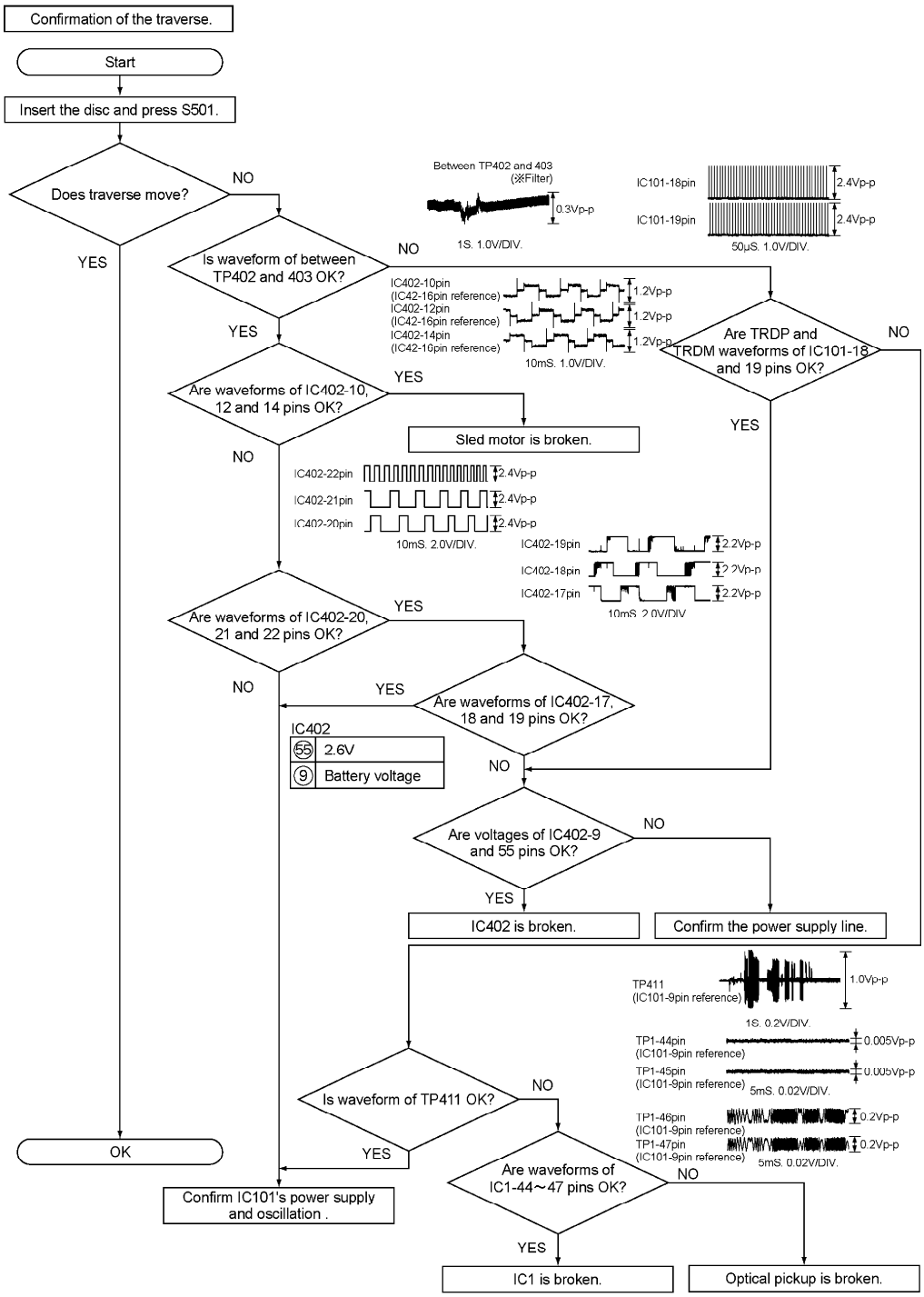

Confirmation of the detection of the disc cover closeing.
Start
Is TP427 "L"?
NO
YES
Confirmation of IC501's power supply and oscillation.
Confirmation S501.
OK

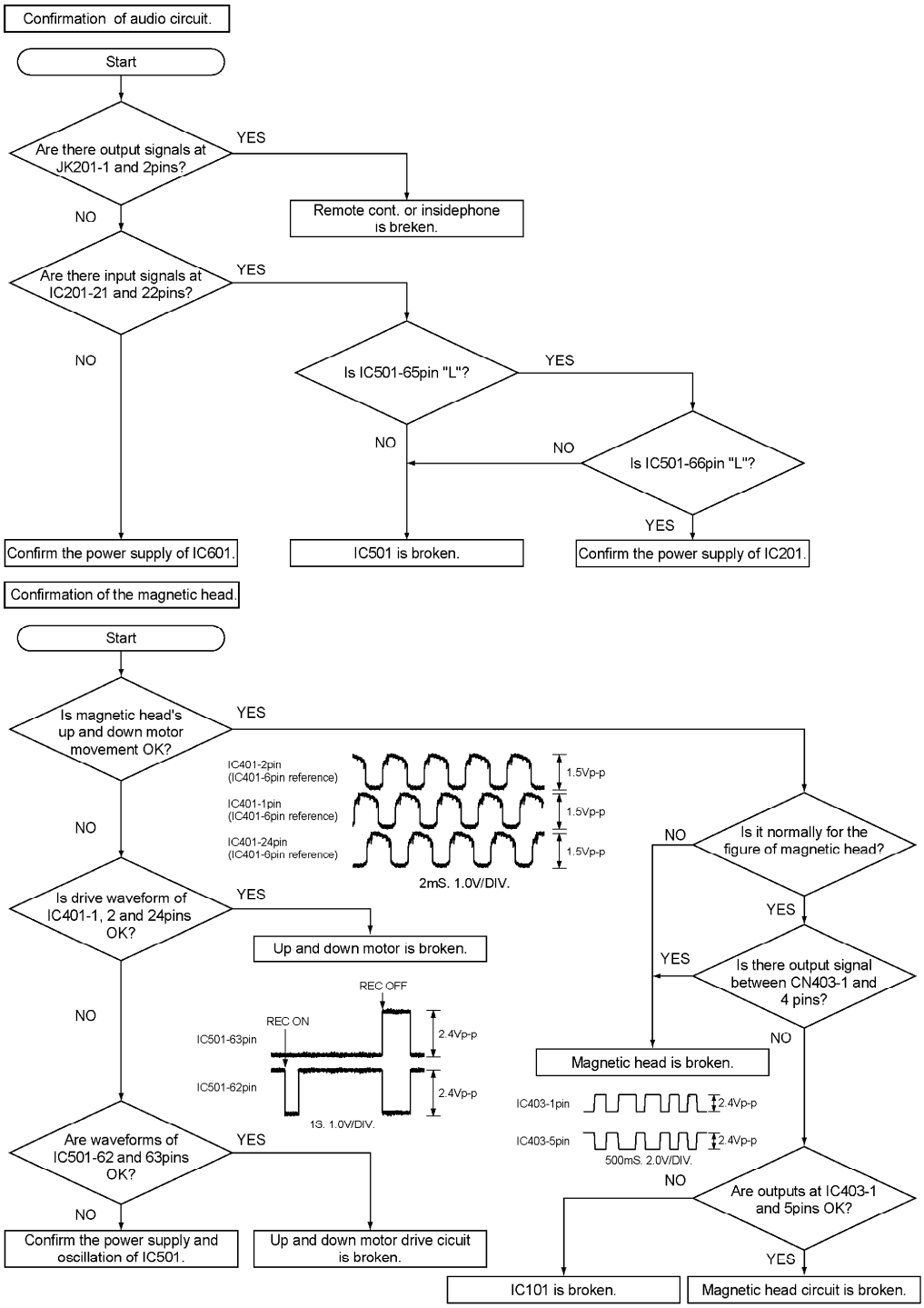

Confirmation of spindle.
Start
Is spindle rotating?
NO
YES
IC402
31 Battery voltage
55 2.4V
Is waveform of IC402-32pin OK?
NO
YES
IC101 is broken.
2.4Vp-p
IC402-32pin
10mS. 0.5V/DIV.
Are voltages of IC401-31,35 pins OK?
NO
YES
Confirm the power supply line.
1.0Vp-p
TP420
1S. 0.2V/DIV.
Is waveform of TP420 OK?
NO
YES
IC402-57pin (IC402-2pin reference)
IC402-59pin (IC402-2pin reference)
IC402-61pin (IC402-2pin reference)
0.8Vp-p
0.8Vp-p
0.8Vp-p
20mS. 0.5V/DIV.
Are waveforms of IC402-57,59 and 61 pins OK?
YES
NO
Spindle motor is broken.
OK
IC402 is broken.


Confirmation of the focus.
Start
Enter the read power adjustment mode.
Does the laser emit?
NO
YES
Is 600µW±10%?
YES
Press the PLAY key and exit from read power adjustment mode.
Remove the battery. (exit from test mode)
Press S501 (OPEN/CLOSE SW).
Continuing to next page.
Can it adjust by VR1?
NO
YES
Perform the read power adjustment.
If it cannot be road power adjustment perform the next item.
Is IC1-37pin approximately 1.2V?
NO
YES
Is the voltage between TP405 and 406 more than 25mV?
NO
YES
Optical pickup is broken.
IC302-1pin 2.4V?
YES
NO
Confirm the power supply circuit.
IC101-92pin
2.4Vp-p
5µ0.5V/DIV.
Is waveform of IC101-92pin OK?
NO
YES
IC101 is broken.
Is IC1-2pin approximately 1.6V?
NO
YES
Is the voltage between TP405 and TP406 0V?
NO
YES
Q1 is broken.
IC1 is broken.

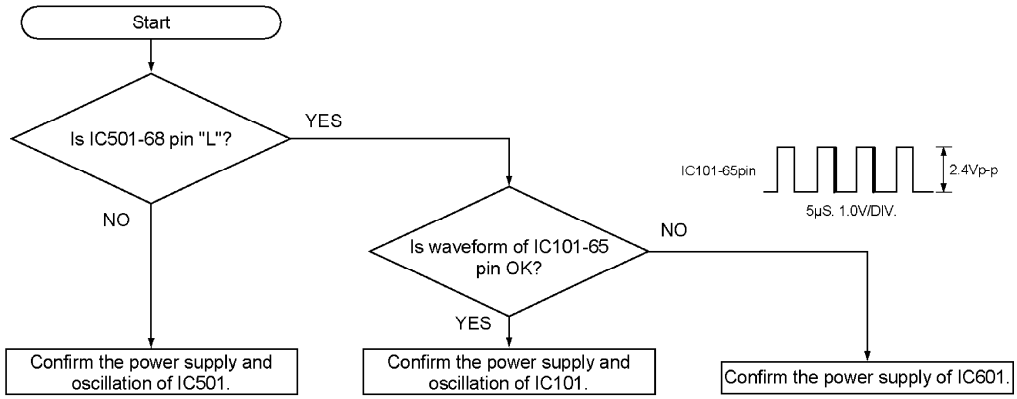


※) When you confirm RF waveform, perform "EFM jitter meajurement" in "Adjustment mode" (refer to " 7.Meajurements and Adjustments"). And you'll be able to observe the continuous waveforms.

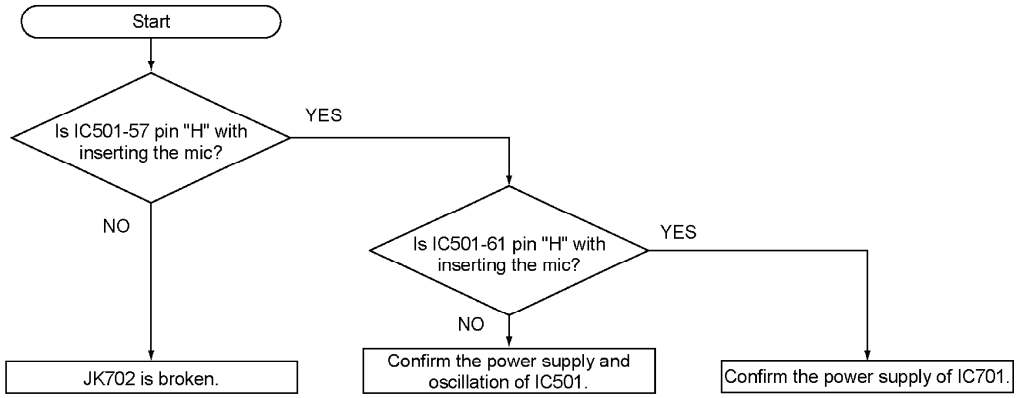

Confirmation of the traverse.
Start
Insert the disc and press S501.
Does traverse move?
NO
YES
Between TP402 and 403
(※Filter)
0.3Vp-p
1S. 1.0V/DIV.
IC101-18pin
IC101-19pin
2.4Vp-p
2.4Vp-p
50µS. 1.0V/DIV.
Is waveform of between TP402 and 403 OK?
NO
YES
IC402-10pin
(IC42-16pin reference)
IC402-12pin
(IC42-16pin reference)
IC402-14pin
(IC42-16pin reference)
1.2Vp-p
1.2Vp-p
1.2Vp-p
10mS. 1.0V/DIV.
Are TRDP and TRDM waveforms of IC101-18 and 19 pins OK?
NO
YES
Are waveforms of IC402-10, 12 and 14 pins OK?
YES
NO
Sled motor is broken.
IC402-22pin
IC402-21pin
IC402-20pin
2.4Vp-p
2.4Vp-p
2.4Vp-p
10mS. 2.0V/DIV.
IC402-19pin
IC402-18pin
IC402-17pin
2.2Vp-p
2.2Vp-p
2.2Vp-p
10mS. 2.0V/DIV
Are waveforms of IC402-20, 21 and 22 pins OK?
YES
NO
Are waveforms of IC402-17, 18 and 19 pins OK?
YES
NO
IC402
55 2.6V
9 Battery voltage
Are voltages of IC402-9 and 55 pins OK?
NO
YES
IC402 is broken.
Confirm the power supply line.
TP411
(IC101-9pin reference)
1.0Vp-p
1S. 0.2V/DIV.
TP1-44pin
(IC101-9pin reference)
TP1-45pin
(IC101-9pin reference)
0.005Vp-p
0.005Vp-p
5mS. 0.02V/DIV.
TP1-46pin
(IC101-9pin reference)
TP1-47pin
(IC101-9pin reference)
0.2Vp-p
0.2Vp-p
5mS. 0.02V/DIV.
Is waveform of TP411 OK?
NO
YES
Are waveforms of IC1-44~47 pins OK?
NO
YES
OK
Confirm IC101's power supply and oscillation .
IC1 is broken.
Optical pickup is broken.


Confirmation of audio circuit.
Start
Are there output signals at JK201-1 and 2pins?
YES
Remote cont. or insidephone is breken.
NO
Are there input signals at IC201-21 and 22pins?
YES
NO
Is IC501-65pin "L"?
YES
NO
NO
Is IC501-66pin "L"?
YES
Confirm the power supply of IC601.
IC501 is broken.
Confirm the power supply of IC201.
Confirmation of the magnetic head.
Start
Is magnetic head's up and down motor movement OK?
YES
NO
IC401-2pin (IC401-6pin reference)
IC401-1pin (IC401-6pin reference)
IC401-24pin (IC401-6pin reference)
1.5Vp-p
1.5Vp-p
1.5Vp-p
2mS. 1.0V/DIV.
Is drive waveform of IC401-1, 2 and 24pins OK?
YES
Up and down motor is broken.
NO
REC OFF
REC ON
IC501-63pin
IC501-62pin
2.4Vp-p
2.4Vp-p
1S. 1.0V/DIV.
Are waveforms of IC501-62 and 63pins OK?
YES
NO
Confirm the power supply and oscillation of IC501.
Up and down motor drive cicuit is broken.
Is it normally for the figure of magnetic head?
NO
YES
YES
Is there output signal between CN403-1 and 4 pins?
NO
Magnetic head is broken.
IC403-1pin
IC403-5pin
2.4Vp-p
2.4Vp-p
500mS. 2.0V/DIV.
NO
Are outputs at IC403-1 and 5pins OK?
YES
IC101 is broken.
Magnetic head circuit is broken.

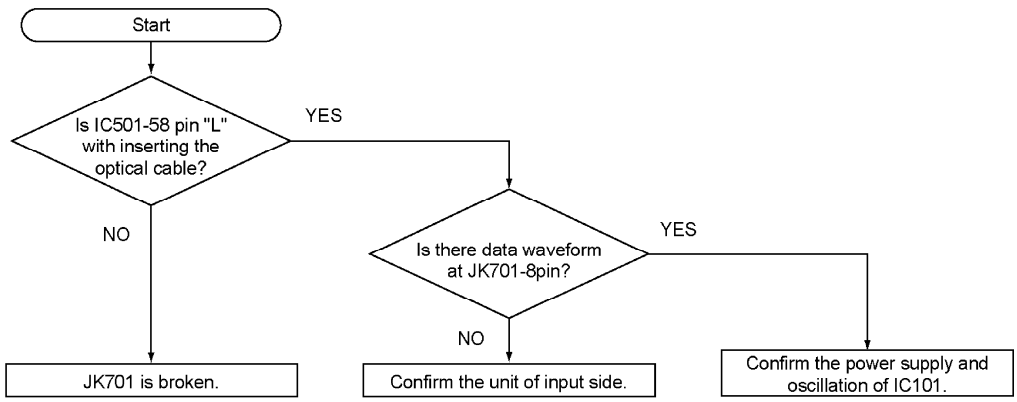
Confirmation of AD/DA section.

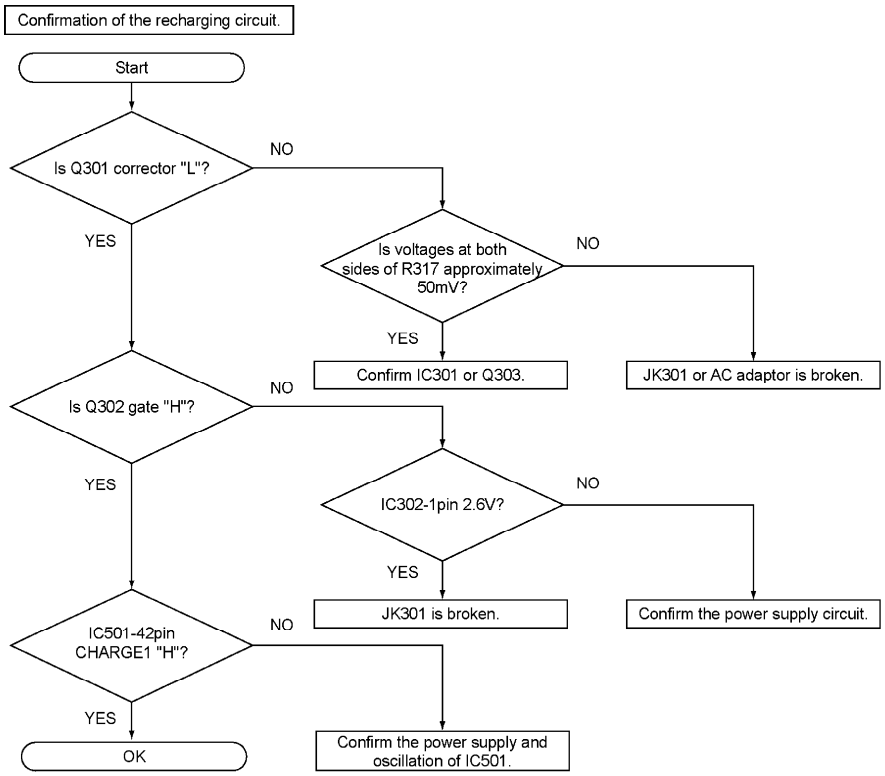


Confirm the MIC/LINE AMP section.



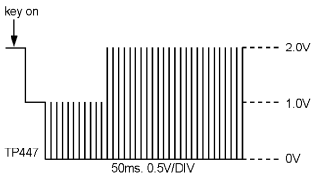
Confirmation of the optical input.





Confirmation of remote cont. (key)

○ Confirm the waveform at TP446 and the voltage when the keys are pressed.



MAIN	HOLD	VOLTAGE (V)	BOUNDARY VOLTAGE(V)
PLAY/STOP		0.140	
			0.265
VOLUME+		0.391	
			0.558
VOLUME–		0.726	
			0.870
EQ MODE/TRACK MARK		1.014	
			1.100
PLAY MODE		1.186	
			1.290
F SKIP		1.394	

MAIN	HOLD	VOLTAGE (V)	BOUNDARY VOLTAGE(V)
			1.480
DISPLAY/LIGHT		1.566	
			1.680
R SKIP		1.794	
			1.897
(KEY-OFF)		2.000	
			2.100
	HOLD	2.200	
			2.300
(WITHOUT REMOTE CONT.)		2.400	

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

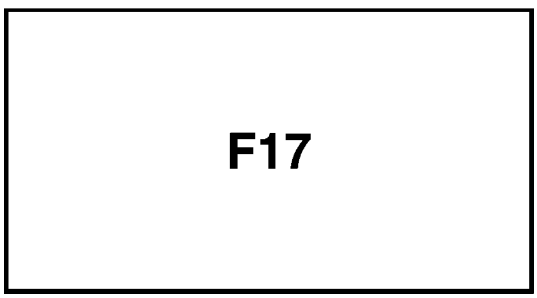
As it cannot meajure the mechanism side of MAIN P.C.B. directly, refer to the table shown below for the criterion in the time of repairing or checking.

Circuit No.	Part No.	Function	Symptom	Check point	Result and m
IC304	C0DBAGZ00006	DC-DC converter / 3.5V / Power IC for magnetic head driver control	● Recording is impracticable.	● Confirm the voltage of IC403 (pin 14) or (TP137) ● Confirm the voltage of IC501 (pin 74)	● If voltage at T normal and volt IC501 is unusua IC501 and switc periphery. ● If voltage at T unusual, replac
IC401	C0GBE000003	Optical head lift motor drive	● Recording is impracticable. ● Magnetic head fails to descend.	● Confirm the motor drive wave form of TP144 ~ 147 (CN402 pins 1 ~ 4)	● If drive wave normal, check F condition of sol around lift moto nothing unusua found, replace t motor. ● If drive wave unusual, check supplyvoltage o and peripheral s and if nothing u found, replace I
IC701	AN7635SH-E1	MIC/LINE AMP	● Optical input permits recording, but line input does not. ● MIC recording is impracticable.	● Make sure of IC601 (pins 2, 3) input wave form (during MIC/LINE input time).	● If input wave IC601 is unusua supply voltage and peripheral s and if nothing u found, replace I ● If input wave IC601 is normal, checkIC601 and perihperal circu

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)



"F17"---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. Schemtic Diagram Notes

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

Notes:

- **S1** : **Magnetic head up switch (M.HEAD UP)**
- **S501** : **Open det. switch (OPEN ▶)**
- **S502** : **Hold swithc in "OFF" position. (HOLD →)**
- **S503** : **PROTECT det. switch**
- **S801** : **Play / record / pause / operation on / character type button (▶ / ▮▮, CHARA)**
- **S802** : **Recording pause / operation on switch (REC →)**
- **S803** : **Stop / operation off / edit cancel button (■, OPR OFF)**
- **S804** : **Play and record mode / character delete button (MODE, DELETE)**
- **S805** : **Tone / recording sensitivity / space button (EQ / REC SENS, SPACE)**
- **S806** : **Display, capital / lower case button (DISP, CAPS)**
- **S807** : **Changing edit mode, changing track mark mode, completing edit button (EDIT, MARK MODE)**

- 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 theinternal 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 theparts 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 (AN8772FHKEBV) : RF AMP

Pin No.	Mark	I/O Division	Function
1	CENVD	I	D signal det. capacitor input terminal
2	LDO	O	Laser amp output terminal
3	APCPD	I	Photo diode light quantity det. input terminal
4	LD IN	I	Laser amp reverse input terminal
5	APC REF	I	APC amp reference voltage input terminal
6	TEMP IN	I	Temperature sensor amp input terminal
7	TEMP	O	Temperature sensor amp output terminal
8	ADIP	O	ADIP signal output terminal
9	TOFS	I	Tracking error offset adjustment terminal
10	TBAL	I	Tracking ballance adjustment input terminal
11	TE	O	Tracking error signal output terminal
12	CRS IN	I	Track cross input terminal
13	TGAIN	I	Tracking gain adjustment input terminal
14	LNP	O	Lens position signal output terminal
15	AB GAIN	I	APP compensation signal gain adjustment terminal
16	FE	O	Focus error signal output terminal
17	AS GAIN	I	AS gain adjustment input terminal
18	FBAL	I	Focus ballance adjustment input terminal
19	AS/ MON3T	O	AS/3TMON signal output terminal
20	CEA	I	3T envelope det. capacitor connection terminal (Connected to power supply through capacitor)
21	BDO/ / TRCRS	O	BDO/Track cross signal output terminal

Pin No.	Mark	I/O Division	Function
22	CBD O	O	BDO detection capacitor connection terminal (Connected to GND through capacitor)
23	OFT O	O	Off track detection signal output terminal
24	GND	—	GND terminal
25	OFT IN	I	Off track detection signal input terminal
26	V cc	I	Power supply terminal (+ 3V)
27	NRFDET/ / OFTR	O	NRFDET/off track signal output terminal
28	NRFLD	I	Serial command latch signal input terminal
29	RF DATA	I	Serial command data signal input terminal
30	RFCK	I	Serial command clock input terminal
31	NRFSTBY	I	Standby control signal input terminal
32	OUT RF	O	EFM signal output terminal
33	CRF AGC	—	RFAGC capacitor connection terminal (Connected to GND through capacitor)
34	EQ IN	I	EQ input terminal
35	ARFO	O	RF amp. output terminal
36	SVREF	I	Reference voltage input terminal
37	VREF	I	Reference voltage input terminal
38	RF1	I	RF1 signal input terminal
39	RF2	I	RF2 signal input terminal
40	F1	I	F1 signal input terminal
41	F2	I	F2 signal input terminal
42	CLPF1	I	APP compensation LPF capacitor input terminal
43	EQADJ	—	RF equalizer adjustment resistor connection terminal (Connected to power supply through resistor)

Pin No.	Mark	I/O Division	Function
44 / ~ / 47	A / ~ / D	I	Main beam A~D signal input terminal
48	CENVC	I	Beam E signal detection capacitor input terminal

15.2. IC101 (M66616RB2) : ATRAC ENCORDER/DECORDER, SERVO SIGNAL PROCESSOR

Pin No.	Mark	I/O Division	Function
1	ADIP	I	ADIP FM signal input terminal
2	LNP	I	Lens position signal input terminal
3	FE	I	Focus error signal input terminal
4	TE	I	Tracking error signal input terminal
5	AS	I	AS signal input terminal
6	DRMONI	I	Drive voltage monitor input terminal
7	BAT	I	Battery power supply terminal
8	AMONI	—	Servo analog monitor signal output (Not used, open)
9	VREFI	I	Reference voltage input terminal
10	TOFS	O	Tracking off-set adjustment output terminal
11	FBAL	O	Focus balance adjustment output terminal
12	TBAL	O	Tracking balance adjustment output terminal
13	TGAIN	O	TE error gain adjustment output terminal
14	ASGAIN	O	Main beam amp gain adjustment output terminal
15	ABGAIN	O	APP adjustment output terminal
16	AV DD 1	I	Power supply terminal
17	AV SS 1	—	GND terminal

Pin No.	Mark	I/O Division	Function
18	TRDP	O	Tracking drive (+) PWM signal output terminal
19	TRDM	O	Tracking drive (-) PWM signal output terminal
20	FODP	O	Focus drive (+) PWM signal ouutput terminal
21	FODM	O	Focus drive (-) PWM signal/ focus, tracking ON/OFF signal output terminal
22	SPDP	O	Spindle drive (+) PWM signal output terminal
23	DIR	O	Spindle drive (-) PWM signal output terminal
24	DV DD 0	I	Power supply terminal
25	FG	I	FG input terminal
26	STPO0	O	Stepper drive signal 0 output terminal
27	STPO1	O	Stepper drive signal 1 output terminal
28	IV DD 0	I	Power supply terminal for I/ O pad
29	DV ss 0	—	GND terminal
30	RAD12	O	DRAM address output terminal (Not used, open)
31	RAD11		
32 / ~42	RAD10 / ~RAD0	O	DRAM address output terminal
43 / ~ / 46	RDT3 / ~ / RDT0	I/O	DRAM data input/output terminal
47	NRAS	O	DRAM row address strobe output terminal
48	NCAS	O	DRAM culum address strobe output terminal
49	NWE	O	DRAM write enable output terminal
50	NRST	I	Reset signal input terminal
51	SELAD	I	MSP/MDA,I/F address select input terminal (“H” Address)
52	SSCK	I	MSP/MDA,I/F clock input terminal
53	SSDW	I	MSP/MDA,I/F write data input terminal

Pin No.	Mark	I/O Division	Function
54	SSDR	O	MSP/MDA,I/F read data output terminal
55	MDISY	O	Leader synchronous signal output
56	SCTSY	O	ADIP synchronous noise output terminal
57	SGSYNC	O	Frame synchronous signal output terminal
58	DV_{DD} 1	I	Power supply terminal
59	IV_{DD} 1	—	Power supply terminal for I/O pad
60	DV_{ss} 1	—	GND terminal
61	FS384	O	384 Fs output terminal
62	SCL	O	Bit clock output terminal
63	SWS	O	Word clock output terminal
64	SDAP	O	Audio data output terminal
65	SDAR	I	Audio data input terminal
66	STPI1	I	Stepper status 1 input terminal
67	STPI2	I	Stepper status 2 input terminal
68	STPI0	I	Stepper status 0 input terminal
69	STPO2	O	Stepper drive signal 2 output terminal
70	RX1	I	Digital audio interface signal 1 input terminal
71	NRECP	I	Amp. Play/Rec switching signal input terminal
72	NREFM	O	EFM modulation inverted output
73	REFM	O	EFM modulation inverted output terminal
74	MONI3	O	Monitor signal output (Not used)
75	MONI2	O	Monitor signal output (Not used)
76	MONI1	O	Monitor signal output (Not used)
77	MONI0	O	Monitor signal output (Not used)
78	TS3	—	Not used, connected to GND

Pin No.	Mark	I/O Division	Function
79	TS2	—	Not used, connected to GND
80	TS1	—	Not used, connected to GND
81	TS0	—	Not used, connected to GND
82	EXSYSCK	I	External system clock input terminal (Not used, connected to GND)
83	DV DD 2	I	Power supply terminal
84	XI	I	Crystal oscillator input terminal (F=16.9344MHz)
85	XO	O	Crystal oscillator output terminal (F=16.9344MHz)
86	VDss2	—	GND terminal
87	RFDAT	O	RF serial data output terminal
88	RFCK	O	RF serial clock output terminal
89	NRFLD	O	RF serial load output terminal
90	TRCRS	I	Track cross input terminal
91	OFTR	I	Off-track signal input terminal
92	APCD	O	Laser power PWM output terminal
93	EXEFMCK	I	External FM clock input terminal (Not used, connected to GND through registor)
94	PEFM1	O	EFM loop filter output terminal
95	EFMIREF	I	EFM PLL reference current input terminal
96	EFMPLLF	O	EFM PLL filter output terminal
97	PEFMS	I	EFM signal input terminal
98	AV DD 0	I	Power supply terminal
99	AVss0	—	GND terminal
100	TEFSEL	—	Tracking error signal output terminal

15.3. IC402 (BD6605KVT) : FOCUS/TRACKING COIL, TRAVERSE

MOTOR DRIVE, SPINDLE MOTOR DRIVE, ROTARY DETECTOR

Pin No.	Mark	I/O Division	Function
1	SPWIN	I	Roter position detect comparater(W) input terminal
2	SPCOM	I	Spindle motor coil center input terminal
3	EXTCLK	I	Not used, open
4	C1P	—	Charge pump capacitor 1(+) connect terminal
5	C1M	—	Charge pump capacitor 1(-) connect terminal
6	C2P	—	Charge pump capacitor 2(+) connect terminal
7	C2M	—	Charge pump capacitor 2(-) connect terminal
8	VG	O	Charge pump output terminal
9	SLVM1	I	Power supply terminal
10	SLUOUT	O	Stepping motor (U) output terminal
11	SLPG1	—	GND termial
12	SLVOUT	O	Stepping motor (V) output terminal
13	SLVM2	I	Power supply terminal
14	SLWOUT	O	Stepping motor (W) output terminal
15	SLPG2	—	GND terminal
16	SLCOM	I	Step motor coil center input terminal
17	BEMFW	O	Step detect comparater (W) output terminal
18	BEMFV	O	Step detect comparater (V) output terminal
19	BEMFU	O	Step detect comparater (U) output terminal
20	S3	I	Stepping decorder 3 input terminal
21	S2	I	Stepping decorder 2 input terminal
22	S1	I	Stepping decorder 1 input terminal
23	SGND	—	GND terminal

Pin No.	Mark	I/O Division	Function
24	ASGND	—	GND terminal
25	STHB	I	H1, H2 bridge mute input terminal
26	STALL	I	Standby input terminal
27	PW1VM	I	Power supply terminal
28	PW1OUT	O	Hlaf bridge 1 output terminal / (Not used, open)
29	PWPG	—	GND terminal
30	PW2OUT	O	Half bridge 2 output terminal
31	PW2VM	I	Power supply terminal
32	PWIN2	I	Half bridge input terminal
33	PWIN1	—	GND terminal
34	IN 2R	I	H bridge 2 reverse input terminal
35	IN 2F	I	H bridge 2 forward input terminal
36	IN 1R	I	H bridge 1 reverse input terminal
37	IN 1F	I	H bridge 1 forward input terminal
38	H2 PG2	—	GND terminal
39	H2 R OUT	O	H bridge 2 reverse output terminal
40	H2 VM	I	Power supply terminal
41	H2 F OUT	O	H bridge 2 forward output terminal
42	H2 PG1	—	GND terminal
43	H1 PG2	—	GND terminal
44	H1 R OUT	O	H bridge 1 reverse output terminal
45	H1 VM	I	Power supply terminal
46	H1 F OUT	O	H bridge 1 forward output terminal
47	H1 PG1	—	GND terminal
48	CST	—	Connected to GND through capacitor
49	CSL1	I	Slope capacitor connection terminal (Connected to GND through capacitor)
50	CSL2		
51	FG	O	Speed pulse output terminal

Pin No.	Mark	I/O Division	Function
52	BRK-	I	Brake comparater- input terminal
53	BRK+	I	Brake comparater+ input terminal
54	V CC 2	I	Power supply terminal
55	V CC 1	I	Power supply terminal
56	SP VM1	I	Half bridge 1 input terminal
57	SP U OUT	O	Spindle motor coil (U) output terminal
58	SP PG1	—	GND terminal
59	SP V OUT	O	Spindle motor coil (V) output terminal
60	SP VM2	I	Half bridge input terminal
61	SP W OUT	O	Spindle motor coil (W) output terminal
62	SP PG2	—	GND terminal
63	SP U IN	I	Roter position detect comparater (U) input terminal
64	SP V IN	I	Roter position detect comparater (V) input terminal

15.4. IC501 (MN101C32GAD) : 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	FP IN1	I	Flat pad 1 input terminal
7	FP IN2	I	Flat pad 2 input terminal
8	FP IN3	I	Flat pad 3 input terminal
9	AN7	—	Connected to power supply
10	VREF+	I	Reference voltage input terminal
11	V DD	I	Power supply terminal

Pin No.	Mark	I/O Division	Function
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	O	Not used
21	SSDW	O	MSP/MDA interface writing data output terminal
22	SSDR	I	MSP/MDA interface reading data input terminal
23	SSCLK	O	MSP/MDA interface data forward clock output terminal
24	BUZZER	O	Buzzer output trminal
25	RST	I	Reset signal input terminal
26	SELAD	O	MSP/MDA interface address signal output terminal
27	ATRAC CNT	O	ATRAC contorl output terminal (“H”:NORMAL, “L” :HiFi)
28	LCD STB	O	LCD driver strobe signal output terminal
29	REC SENSE	O	REC sensitivity select output terminal
30	MONO/ ST	O	REC amp monaural/stereo select terminal
31	WAKEUP	I	Micro computer wake up signal input terminal
32	MDISY	I	Leader synchronize signal from IC101 input terminal

Pin No.	Mark	I/O Division	Function
33	SCTSY	I	ADIP/sub A synchronize signal from IC101 input terminal
34	CFSYNC	I	MDA synchronize signal from IC101 input trminal (11.6ms pulse)
35	OPENSW	I	Disc cover open/close switch det. input terminal (“H”:open, “L”:close)
36	LCD DATA	O	LCD driver data output terminal
37	—	—	Connected to GND
38	LCD CK	I	LCD driver clock input terminal
39	DEBUG	O	Micro computer debug output terminal (Not used, open)
40	DOCTOR	O	Doctor mode input terminal
41	NC	—	Not used, open
42	CHARGE1	O	Recharging control output terminal
43	NRECP	O	Track jump det. output terminal
44	EEPCS	O	EEPROM chip select output terminal
45	EEPCK	O	EEPROM clock output terminal
46	EEPDATA0	O	EEPROM data output terminal
47	EEPDATAI	I	EEPROM data input terminal
48	PLAY KEY	I	PLAY/PAUSE KEY input terminal
49	REC KEY	I	REC/PAUSE KEY input terminal
50	DC IN WAKEUP	I	DC IN wake up input terminal
51	REG	I	Area selection input terminal
52	MHEAD UP	I	Magnetic head down input terminal
53	PROTECT	I	Erase prevention switch input terminal

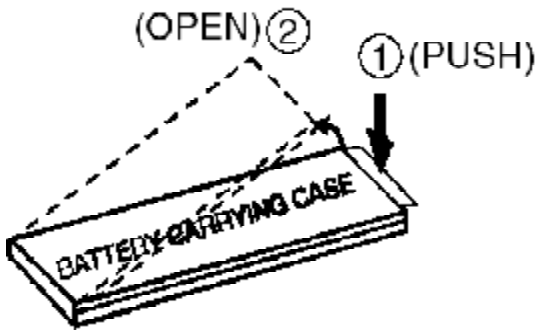
Pin No.	Mark	I/O Division	Function
54	JITTER OK	I	Connected to power supply through resistor
55	HOLD SW	I	HOLD switch input terminal (“H”:OFF, “L”:ON)
56	DCINDET	I	DC IN det. input terminal
57	MIC DET	I	Mic det. input terminal
58	INSEL	I	INPUT select det. input terminal
59	FPOUT1 / JOGA	O	Flat pad A output terminal
60	FPOUT2 / JOGB	O	Flat pad B output terminal
61	MIC/LINE	O	MIC/LINE select output terminal
62	LOAD0	O	Magnetic head movement control 0 output terminal
63	LOAD1	O	Magnetic head movement control 1 output terminal
64	HFON1	I	HF module ON 1 input terminal
65	MUTEA	O	Analog mute A output terminal
66	MUTEB	O	Analog mute B output terminal
67	NRFSTBY	O	RF amp standby output terminal
68	ADC OFF	O	ADC OFF output terminal
69	LOW BST	O	VMS select output terminal
70	DEO	O	DE enphasis output terminal
71	DAC OFF	O	DAC off output 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	EL ON	I	EL display control input terminal

Pin No.	Mark	I/O Division	Function
77	PC	O	4ch driver standby output terminal
78	STBY2	O	FD/TR coil power supply control output terminal
79	NC	—	Not used, open
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. 9)

Fig. 9

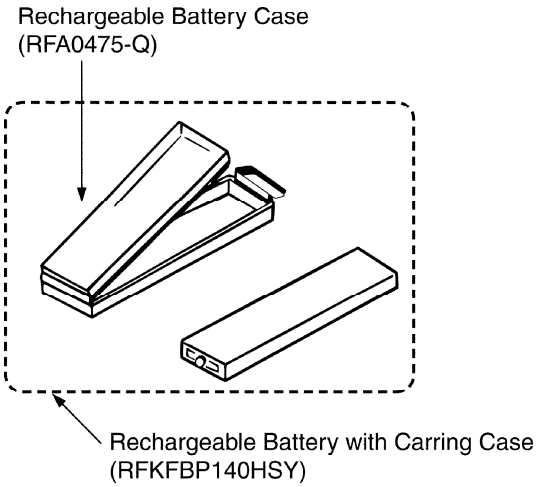


17. Supply of Rechargeable Battery Ass'y as Replacement Parts

Please take note of the following points relating to Battery Carrying Case to be used for protection of Rechargeable Battery Ass'y from shorting. Replacement Parts:

- Rechargeable Battery Ass'y (RFKFBP140HSY) supplied will be provided with Battery Carrying Case (RFA0475-Q).
- No replacement parts will be supplied for Rechargeable Battry Ass'y without Battery Carrying Case.
- Replacement parts will be supplied for Battery Carrying Case (RFA0475-Q) without Rechargeable Battery Ass'y.
- To your customers, delivery Rechargeable Battery Ass'y together with Battery Carrying Case to prevent shorting accidents that may occur when Rechargeable Battery Ass'y is carried about Battery Carrying Case. (as shown in Fig. 10)

Fig. 10



18. Replacement Parts List

Notes:

***Important safety notice: / Components identified by ⚠ mark have special characteristics important for safety. / Funrthermore, 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 einc vom hersteller spezifizierte einheit ausgetauscht werden.**

***Capacity values are in microfarads (uF) 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 retentionperiod 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.**

***"<lA>" "<lB>" marks in Remarks indicate languages of instruction manuals. [<lA>:English/Spanish/French/German/Netherlands/Swedish/Italian/Danish, <lB>:English/ Chinese]**

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
1	RGU1915-S1	OPERATION BUTTON	1	(S)
1	RGU1915-D2	OPERATION BUTTON	1	(W)
2	RHQ0083-S	SCREW	6	
3	RJB2280A	OPERATION FPC	1	
4	RMN0613	LCD HOLDER	1	
5	RMQ0916	TAPE	1	
6	RMZ0533	INSULATING SHEET	1	
7	RXM0072	LINK UNIT	1	
8	RYF0560-S	DISC COVER	1	(S)
8	RYF0560-W	DISC COVER	1	(W)
8-1	RGV0266-S	REC KNOB	1	
8-2	RMA1378	REC LEVER	1	
9	XQN14+B2FC	SCREW	1	
10	RYK1030A-S	CABINET ASS'Y	1	(EB)(EG)
10	RYK1030B-S	CABINET ASS'Y	1	(GH-S)
10	RYK1030B-W	CABINET ASS'Y	1	(GH-W)
10-1	RGV0265-S2	HOLD KNOB	1	
11	RYK1031-S1	INTERMEDIATE CABINET	1	
11-1	RGV0264-S	OPEN KNOB	1	
12	RHD14076-S	SCREW	6	
13	RKK0140-S	RECHARGEABLE BATT.COVER	1	(S)
13	RKK0140-W	RECHARGEABLE BATT.COVER	1	(W)
14	REJ0150	R.BATT.TERMINAL(+)	1	
15	RMX0186	JACK SHEET	1	
16	RHD14067	SCREW	5	
17	RAE1630Z-M	MECHANISM UNIT	1	⚠
17-1	RDG0481	INTERMEDIATE GEAR	1	
17-2	RHD14078	SCREW	1	
17-3	RHD14080	SCREW	1	
17-4	RHW11011	WASHER	1	
17-5	RMC0409	SPRING	1	
17-6	RXJ0028	DRIVE SHAFT	1	
17-7	BRL1A1CWC	TRAVERSE MOTOR	1	
17-8	BTL2A1CRD	SPRING MOTOR	1	
17-9	RHD14067	SCREW	3	
17-10	RHD14082	SCREW	1	
17-11	RJC99040	R.BATT.TERMINAL(-)	1	
17-12	RMA1364	HOLDER ANGEL	1	
17-13	RMB0655-2	DETECT LEVER SPRING	1	
17-14	RMK0463	TRAVERSE CHASSIS	1	
17-15	RMX0156-1	STOPPER RUBBER	4	
17-16	RMX0162	SPACER	1	
17-17	RMZ0535	INSULATING SHEET	1	
17-18	RXA0183	DETECTION LEVER UNIT	1	
17-19	XQN14+B2FC	SCREW	1	
17-20	XQN14+C12FZ	SCREW	2	
17-21	BRL1A1CWD	LIFT MOTOR	1	
17-22	RDG0482	REDUCTION GEAR	1	
17-23	RHW06001	WASHER	1	
17-24	RMB0650	EJECT SPRING	1	
17-25	RMC0232	DRIVE ROD	1	
17-26	RML0586-1	LIFTER	1	
17-27	RML0587	LINK	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
17-28	RMM0230	EJECT ROD A	1	
17-29	RMQ0958-2	ARM	1	
17-30	RXG0050	TRANSFER GEAR	1	
17-31	RXK0318	HOLDER UNIT	1	
17-32	RXM0071	EJECT ROD B	1	
17-33	XQN14+A12FC	SCREW	2	
17-34	RMX0194	SHEET	1	
18	RMX0190	SPACER	1	
19	RMG0534-K	SHEET	1	
20	RMX0187	HOLDER SPACER	2	
A1	RFKFHFAZ01EM	RECHARGEABLE BATT.ASS'Y	1	
A1-1	RFA0475-Q	RECHARGEABLE BATT.CASE	1	
A2	RFA1537-S	EXTERNAL BATTERY CASE	1	
A3	RFC0056-K	CARRYING CASE	1	
A4	N0JCAD000001	AC ADAPTOR	1	(EG)
A4	RFEA003B-S	AC ADAPTOR	1	(EB)
A4	RFEA004H-S	AC ADAPTOR	1	(GH)
A5	N2QCBD000007	WIRED REMOTE CONTROL	1	
A5-1	RYQ0312-H	REMOCON.CLIP	1	
A6	RFEV335P-SA	STEREO EARPHONES	1	L0BAB0000118
A7	K2KA39B00001	LINE CABLE	1	
A8	RQA0117	WARRANTY CARD	1	(EB)(EG)
A9	RQT5606-E	INSTRUCTION MANUAL	1	(EB)(EG)<IA>
A9	RQT5607-G	INSTRUCTION MANUAL	1	(GH)<IB>
A10	RQCB0169	SERVICE CENTER LIST	1	
C1	ECUE1H221KBQ	50V 220P	1	F1G1H221A402
C2,C3	ECUVNA224KBV	10V 0.22U	2	F1H1A224A028
C5,C6	RCST0GZ106RG	4V 10U	2	F3E0G106A002
C7	ECUENA104KBQ	10V 0.1U	1	F1G1A104A014
C8	ECUE1C153KBQ	16V 0.015U	1	F1G1C153A044
C10	ECUE1H181KBQ	50V 180P	1	
C14	ECUVNA224KBV	10V 0.22U	1	F1H1A224A028
C15	ECUVNJ105KBV	63V 1U	1	F1H0J105A002
C16	ECUE1H181KBQ	50V 180P	1	
C17	ECUE1C223KBQ	16V 0.022U	1	F1G1C223A044
C18	ECUE1H101KBQ	50V 100P	1	
C19-21	ECUE1H102KBQ	50V 1000P	3	F1G1H102A457
C22	ECUE1E682KBQ	25V 6800P	1	
C23	ECUENA393KBQ	10V 0.039U	1	F1G1A393A014
C24	ECUE1E332KBQ	25V 3300P	1	F1G1E3320001
C27	ECUENA104KBQ	10V 0.1U	1	F1G1A104A014
C28	ECUE1E332KBQ	25V 3300P	1	F1G1E3320001
C29-32	ECUE1H102KBQ	50V 1000P	4	F1G1H102A457
C33	ECUVNA224KBV	10V 0.22U	1	F1H1A224A028
C34	ECUE1C103KBQ	16V 0.01U	1	
C35	ECUE1C123KBQ	16V 0.012U	1	F1G1C1230001
C36,37	ECUV1C823KBV	16V 0.082U	2	
C38	ECUENA104KBQ	10V 0.1U	1	F1G1A104A014
C39	RCST0GZ106RG	4V 10U	1	F3E0G106A002
C40	ECUE1H102KBQ	50V 1000P	1	F1G1H102A457
C41	ECUE1C183KBQ	16V 0.018U	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
C42	ECUV0J474KBV	6.3V 0.47U	1	F1H0J474A002
C44	ECUE1E332KBQ	25V 3300P	1	F1G1E3320001
C101	RCST0GZ106RG	4V 10U	1	F3E0G106A002
C102	ECUENA104KBQ	10V 0.1U	1	F1G1A104A014
C104	ECUE1H102KBQ	50V 1000P	1	F1G1H102A457
C105	ECUE1C103KBQ	16V 0.01U	1	
C107	RCST0GZ106RG	4V 10U	1	F3E0G106A002
C108	ECUENA104KBQ	10V 0.1U	1	F1G1A104A014
C109	RCST0GZ106RG	4V 10U	1	F3E0G106A002
C111	ECUENA104KBQ	10V 0.1U	1	F1G1A104A014
C112,13	ECUE1H100DCQ	50V 10P	2	F1G1H100A420
C115	ECUE1C123KBQ	16V 0.012U	1	F1G1C1230001
C116	ECUE1H221KBQ	50V 220P	1	F1G1H221A402
C117	ECUENA473KBQ	10V 0.047U	1	F1G1A473A014
C118	ECUENA104KBQ	10V 0.1U	1	F1G1A104A014
C201	ECUENA104KBQ	10V 0.1U	1	F1G1A104A014
C202	RCST0GZ475RG	4V 4.7U	1	F3E0G475A002
C203	ECUVNJ105KBV	63V 1U	1	F1H0J105A002
C204	RCST0GZ475RG	4V 4.7U	1	F3E0G475A002
C205	RCST0GZ106RG	4V 10U	1	F3E0G106A002
C206	ECUV0J334KBV	16V 0.33U	1	
C207	RCST0GZ475RG	4V 4.7U	1	F3E0G475A002
C208	ECUV0J334KBV	16V 0.33U	1	
C209	ECUENA104KBQ	10V 0.1U	1	F1G1A104A014
C210	RCST0GZ106RG	4V 10U	1	F3E0G106A002
C211-13	ECUENA104KBQ	10V 0.1U	3	F1G1A104A014
C214,15	RCST0EX227RE	2.5V 220U	2	F3G0E2270001
C218	ECUE1H101KBQ	50V 100P	1	
C219,20	ECUE1H102KBQ	50V 1000P	2	F1G1H102A457
C221	ECUENA104KBQ	10V 0.1U	1	F1G1A104A014
C301	RCST0JX107RG	6.3V 100U	1	F3G0J1070002
C303	RCST0EX227RE	2.5V 220U	1	F3G0E2270001
C305	RCST0GZ226RG	4V 22U	1	F3E0G226A002
C306	ECUENA104KBQ	10V 0.1U	1	F1G1A104A014
C307	RCST0EC397RE	2.5V 390U	1	F3H0J397A012
C308	ECUENA104KBQ	10V 0.1U	1	F1G1A104A014
C309	ECUE1C103KBQ	16V 0.01U	1	
C310	ECUENA104KBQ	10V 0.1U	1	F1G1A104A014
C312	ECUENA104KBQ	10V 0.1U	1	F1G1A104A014
C313	ECUE1C103KBQ	16V 0.01U	1	
C315	ECUENA104KBQ	10V 0.1U	1	F1G1A104A014
C316	ECUVNJ105KBV	63V 1U	1	F1H0J105A002
C317	ECUVNJ475MBN	63V 4.7U	1	F1J0J4750002
C318	ECUENA104KBQ	10V 0.1U	1	F1G1A104A014
C401	ECUVNA224KBV	10V 0.22U	1	F1H1A224A028
C402	ECUENA473KBQ	10V 0.047U	1	F1G1A473A014
C403	ECUVNA224KBV	10V 0.22U	1	F1H1A224A028
C404	ECUVNC104KBV	16V 0.1U	1	
C405	RCST0GZ226RG	4V 22U	1	F3E0G226A002
C407	RCST0GZ106RG	4V 10U	1	F3E0G106A002
C408-11	ECUENA104KBQ	10V 0.1U	4	F1G1A104A014
C416-18	ECUE1H222KBQ	50V 2200P	3	F1G1H222A457
C423	RCST0GZ226RG	4V 22U	1	F3E0G226A002
C424	ECUVNJ105KBV	63V 1U	1	F1H0J105A002

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
C425,26	ECUENC273KBQ	16V 0.027U	2	F1G1C273A004
C427	ECUV0J334KBV	16V 0.33U	1	
C432-35	ECUE1C103KBQ	16V 0.01U	4	
C441	RCST0GZ106RG	4V 10U	1	F3E0G106A002
C442	ECUENA104KBQ	10V 0.1U	1	F1G1A104A014
C443	ECUENA473KBQ	10V 0.047U	1	F1G1A473A014
C444	ECUENA104KBQ	10V 0.1U	1	F1G1A104A014
C445	ECUE1H150JCQ	50V 15P	1	
C501	ECUE1H101KBQ	50V 100P	1	
C502	ECUENA104KBQ	10V 0.1U	1	F1G1A104A014
C503	ECUE1C103KBQ	16V 0.01U	1	
C504	ECUE1H102KBQ	50V 1000P	1	F1G1H102A457
C505	RCST0GZ226RG	4V 22U	1	F3E0G226A002
C506	ECUENA104KBQ	10V 0.1U	1	F1G1A104A014
C507	ECUE1C103KBQ	16V 0.01U	1	
C508	ECUV0J474KBV	6.3V 0.47U	1	F1H0J474A002
C509	ECUE1C103KBQ	16V 0.01U	1	
C511,12	ECUE1H270JCQ	50V 27P	2	F1G1H270A422
C516	ECUVNJ105KBV	63V 1U	1	F1H0J105A002
C601	ECUE1H470JCQ	50V 47P	1	F1G1H470A422
C606,07	ECUE1E121KBQ	25V 120P	2	
C608	RCST0GZ106RG	4V 10U	1	F3E0G106A002
C609	ECUENA104KBQ	10V 0.1U	1	F1G1A104A014
C610	RCST0GZ475RG	4V 4.7U	1	F3E0G475A002
C611	ECUENA104KBQ	10V 0.1U	1	F1G1A104A014
C614,15	ECUVNJ105KBV	63V 1U	2	F1H0J105A002
C701	ECUENA104KBQ	10V 0.1U	1	F1G1A104A014
C702,03	ECUE1C103KBQ	16V 0.01U	2	
C704	ECUVNA224KBV	10V 0.22U	1	F1H1A224A028
C705	RCST0GZ106RG	4V 10U	1	F3E0G106A002
C706	ECUVNA224KBV	10V 0.22U	1	F1H1A224A028
C707	RCST0GZ106RG	4V 10U	1	F3E0G106A002
C708,09	RCST0GZ335RE	4V 3.3V	2	F3E0G335A001
C710,11	ECUVNA224KBV	10V 0.22U	2	F1H1A224A028
C712	RCST0GZ335RE	4V 3.3V	1	F3E0G335A001
C713	RCST0GY106RG	4V 10U	1	F3F0G1060003
C714	RCST0GY226RG	4V 22U	1	F3F0G2260002
C715	RCST0GZ226RG	4V 22U	1	F3E0G226A002
C716	ECUENA104KBQ	10V 0.1U	1	F1G1A104A014
C717	RCST0GZ225RG	4V 2.2U	1	F3E0G225A002
C718	RCST0GY106RG	4V 10U	1	F3F0G1060003
C720	ECUENA104KBQ	10V 0.1U	1	F1G1A104A014
C801	ECUENC333KBQ	16V 0.033U	1	F1G1C333A004
C802	ECUE1E472KBQ	25V 4700P	1	F1G1E4720004
C803	ECUE1C103KBQ	16V 0.01U	1	
CN1	K1MN26B00047	CONNECTOR(26P)	1	
CN2	K1MN06B00069	CONNECTOR(6P)	1	
CN3	K1MN04B00034	CONNECTOR(4P)	1	
CN402	K1MN10B00064	CONNECTOR(10P)	1	
CN403,04	K1MN04B00034	CONNECTOR(4P)	2	
CN701	K1MN13B00043	CONNECTOR(13P)	1	
CP801	K1MN13B00042	CONNECTOR(13P)	1	
CP802	K1MN07B00049	CONNECTOR(7P)	1	

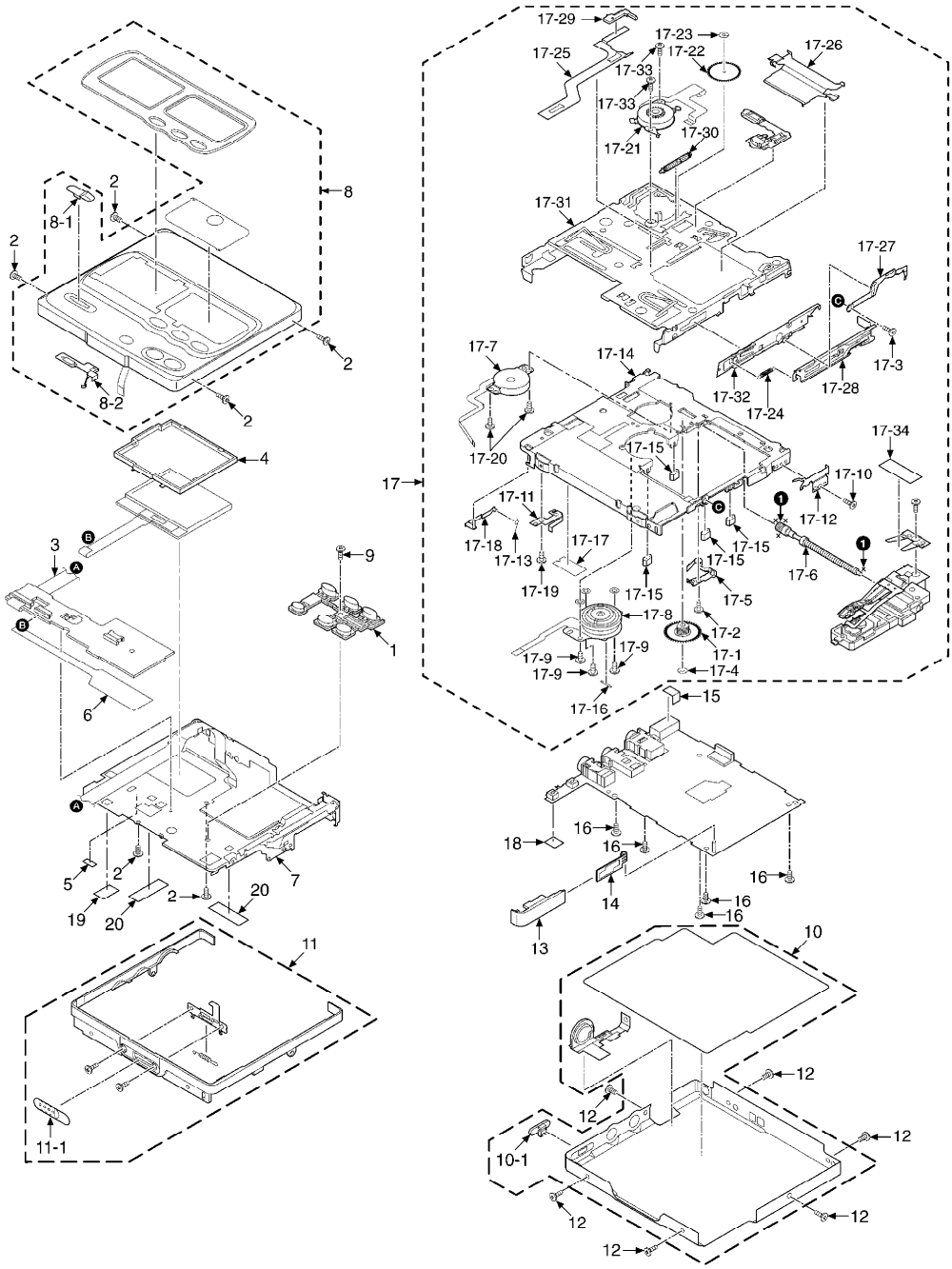
Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
CP803	K1MN05B00042	CONNECTOR(5P)	1	
D1	MA2S111TX	DIODE	1	MA2S11100L
D301	MA133TX	DIODE	1	MA3S13300L
D303-05	B0JCMC000006	DIODE	3	
D401,02	ZHCS1006TA	DIODE	2	B0JCLG000001
D403,04	MA133TX	DIODE	2	MA3S13300L
D501,02	MA741WATX	DIODE	2	MA3J741D0L
IC1	AN8772FHKEBV	IC	1	
IC101	MN66616RB2	IC	1	
IC102	MNA7400CWA1T	IC	1	
IC201	TA2131FL	IC	1	
IC301	NJU7015RTE1	IC	1	C0ABHA000012
IC302	C0DBAFZ00016	IC	1	⚠
IC303	XC6367A151MR	IC	1	C0DBAFZ00012 ⚠
IC304	C0DBAGZ00006	IC	1	⚠
IC401	C0GBE0000003	IC	1	
IC402	BD6605KVT	IC	1	C1BB00000481
IC403	C0JBAB000373	IC	1	
IC404	B1MBBDA00002	IC	1	
IC405	B1MBBLA00001	IC	1	
IC501	MN101C32GAD	IC	1	
IC502	AK93C45BH-L	IC	1	C3EBCG000028
IC503	C0EBC0000032	IC	1	
IC601	C0FBZH000011	IC	1	
IC701	AN7635SH-E1	IC	1	
JK201	K2HC106D0001	JACK,HEADPHONES	1	
JK301	RJJ43K10-H	JACK,DC IN	1	K2EA2B000003
JK701	RJJ38TW01-H	JACK,OPT/LINE IN	1	B3MBZ0000002
JK702	RJJ34R01-1H	JACK,MIC	1	K2HC103E0012
L1	RLQP100MT-W	COIL	1	G1C100M00016
L101	RLQP100MT-W	COIL	1	G1C100M00016
L103,04	ERJ8GEY0R00V	COIL	2	
L201,02	RLBV601V-W	COIL	2	J0JCC0000059
L203	ERJ8GEY0R00V	COIL	1	
L301	G1A220E00006	COIL	1	
L302	G1A100F00002	COIL	1	
L303	ELJEA470KF	COIL	1	
L305	RLM9Z006T-D	COIL	1	
L402	ERJ8GEY0R00V	COIL	1	
L407	ELJEA470KF	COIL	1	
L501	RLQP100MT-W	COIL	1	G1C100M00016
L701-03	RLBV601V-W	COIL	3	J0JCC0000059
L705,06	J0JAC0000009	COIL	2	
LCD801	L5DCADC00008	LCD	1	
P1	RPK1473	PACKING CASE	1	(S)
P1	RPK1528	PACKING CASE	1	(W)
P2	RPQ0991	PAD	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
P3	RPF0257-1	PROTECTION BAG	1	
P4	RPQ1004-1	TRANSPORT SPACER	1	
PCB1	REP3036A-M	REC.HEAD P.C.B.	1	(RTL)
PCB2	REP3038B-M	MAIN P.C.B.	1	(RTL)
PCB3	REP3039A-S	OPERATION P.C.B.	1	(RTL)
Q1	2SB1295-6-TB	TRANSISTOR	1	B1ADKB000001
Q2	2SB1462STX	TRANSISTOR	1	2SB14620SL
Q202	2SB1295-6-TB	TRANSISTOR	1	B1ADKB000001
Q203	B1ABDF000001	TRANSISTOR	1	
Q301	B1ABDF000001	TRANSISTOR	1	
Q302	XP151A12A2MR	TRANSISTOR	1	B1DFBC000002
Q303	XP4601TX	TRANSISTOR	1	XP0460100L
Q304	XP161A1355PR	TRANSISTOR	1	B1DFDC000003
Q305	XP152A12C0MR	TRANSISTOR	1	B1DHAC000002
Q306,07	XP151A13A0MR	TRANSISTOR	2	B1DFBC000003
Q308	2SB1462STX	TRANSISTOR	1	2SB14620SL
Q309	XP151A13A0MR	TRANSISTOR	1	B1DFBC000003
Q310	DTC144TETL	TRANSISTOR	1	B1GBCFNA0001
Q311	2SD1979TX	TRANSISTOR	1	2SD1979
Q312,13	XP152A12C0MR	TRANSISTOR	2	B1DHAC000002
Q314	DTC144EETL	TRANSISTOR	1	B1GBCFNN0001
Q315	XP152A12C0MR	TRANSISTOR	1	B1DHAC000002
Q401	DTC144EETL	TRANSISTOR	1	B1GBCFNN0001
Q701	XP4601TX	TRANSISTOR	1	XP0460100L
Q703	UMG2NTR	TRANSISTOR	1	B1GFCFNN0010
Q705	B1ABDF000001	TRANSISTOR	1	
R1	ERJ2GEJ472X	1/4W 4.7K	1	ERJ2RMJ472X
R2	ERJ2GEJ272X	1/4W 2.7K	1	ERJ2RMJ272X
R5	ERJ2GEJ103X	1/4W 10K	1	ERJ2RMJ103X
R10	ERJ2GEJ1R0X	1/4W 1	1	ERJ2RMJ1R0X
R11	EXB24V103JX	1/4W 10K	1	
R14	ERJ2GEJ471X	1/4W 470	1	ERJ2RMJ471X
R15	ERJ2GEJ473X	1/4W 47K	1	ERJ2RMJ473X
R16	ERJ2GEJ222X	1/4W 2.2K	1	ERJ2RMJ222X
R18	ERJ2GEJ474X	1/4W 470K	1	ERJ2RMJ474X
R20	EXB24V104JX	1/16W 100K	1	
R21	ERJ2GEJ223X	1/4W 22K	1	ERJ2RMJ223X
R22	ERJ2GEJ102X	1/4W 1K	1	ERJ2RMJ102X
R23	ERJ2GEJ473X	1/4W 47K	1	ERJ2RMJ473X
R24	EXB24V272JX	1/16W 2.7K	1	
R25	ERJ2GEJ563X	1/4W 56K	1	
R29	ERJ2GEJ333X	1/4W 33K	1	ERJ2RMJ333X
R30	EXB24V473JX	1/16W 47K	1	
R32	EXB24V473JX	1/16W 47K	1	
R34	ERJ2GEJ223X	1/4W 22K	1	ERJ2RMJ223X
R35	ERJ2GEJ473X	1/4W 47K	1	ERJ2RMJ473X
R107	ERJ2GEJ105X	1/4W 1M	1	D0GA105JA001
R108	ERJ2GEJ223X	1/4W 22K	1	ERJ2RMJ223X
R110	ERJ2GEJ333X	1/4W 33K	1	ERJ2RMJ333X
R111	ERJ2GEJ682X	1/4W 6.8K	1	ERJ2RMJ682X
R113	ERJ2GEJ102X	1/4W 1K	1	ERJ2RMJ102X

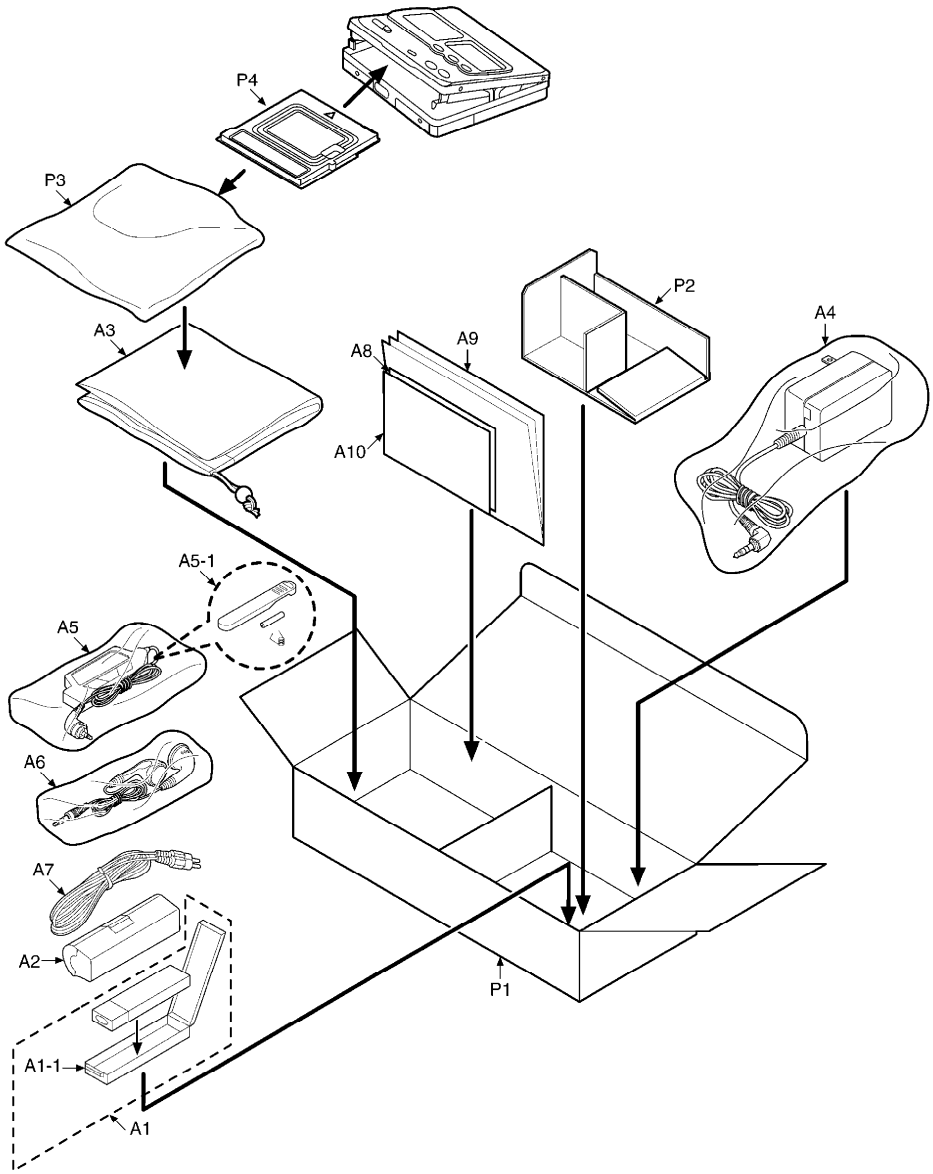
Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
R114	ERJ2GEJ473X	1/4W 47K	1	ERJ2RMJ473X
R201	ERJ2GEJ104X	1/4W 100K	1	ERJ2RMJ104X
R202	ERJ2GEJ221X	1/4W 220	1	ERJ2RMJ221X
R203	ERJ2GEJ102X	1/4W 1K	1	ERJ2RMJ102X
R204	EXB24V225JX	1/16W 2.2M	1	
R205	ERJ2GEJ222X	1/4W 2.2K	1	ERJ2RMJ222X
R206	EXB24V100JX	1/16W 10	1	
R207	ERJ2GEJ471X	1/4W 470	1	ERJ2RMJ471X
R208	ERJ2GED273X	1/4W 27K	1	ERJ2RHD273X
R209	EXB28V103JX	1/32W 10K	1	
R211	EXB24V332JX	1/16W 3.3K	1	
R212,13	ERJ2GEJ221X	1/4W 220	2	ERJ2RMJ221X
R301	EXB24V334JX	1/16W 330K	1	
R302	EXB24V104JX	1/16W 100K	1	
R303	ERJ2RHD223X	1/4W 22K	1	
R304	ERJ2GEJ103X	1/4W 10K	1	ERJ2RMJ103X
R305	ERJ2GEJ474X	1/4W 470K	1	ERJ2RMJ474X
R306	ERJ2GEJ103X	1/4W 10K	1	ERJ2RMJ103X
R308	EXB24V474JX	1/16W 470K	1	
R309	ERJ2GEJ394X	1/4W 390K	1	ERJ2RMJ394X
R310	ERJ2GED563X	1/4W 56K	1	
R311	ERJ2GED683X	1/4W 68K	1	ERJ2RHD683X
R312	ERJ2GED105X	1/4W 1M	1	ERJ2RKD105X
R313	EXB24V104JX	1/16W 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	ERJ2GED105X	1/4W 1M	1	ERJ2RKD105X
R324,25	ERJ2GEJ474X	1/4W 470K	2	ERJ2RMJ474X
R326	ERJ2GEJ221X	1/4W 220	1	ERJ2RMJ221X
R327	ERJ2GEJ474X	1/4W 470K	1	ERJ2RMJ474X
R401	ERJ2GEJ6R8X	1/4W 6.8	1	
R402	ERJ2GEJ103X	1/4W 10K	1	ERJ2RMJ103X
R403	EXB24V473JX	1/16W 47K	1	
R406	EXB24V473JX	1/16W 47K	1	
R408	ERJ2GEJ472X	1/4W 4.7K	1	ERJ2RMJ472X
R410	ERJ2GEJ153X	1/4W 15K	1	ERJ2RMJ153X
R411	ERJ2GEJ682X	1/4W 6.8K	1	ERJ2RMJ682X
R412	ERJ2GEJ182X	1/4W 1.8K	1	ERJ2RMJ182X
R413	ERJ2GEJ471X	1/4W 470	1	ERJ2RMJ471X
R414	ERJ2GEJ102X	1/4W 1K	1	ERJ2RMJ102X
R501	ERJ2GEJ473X	1/4W 47K	1	ERJ2RMJ473X
R502	ERJ2GEJ103X	1/4W 10K	1	ERJ2RMJ103X
R504	EXB28V334JX	1/32W 330K	1	
R506	ERJ2GEJ103X	1/4W 10K	1	ERJ2RMJ103X
R507	EXB28V224JX	1/32W 220K	1	
R509	ERJ2GEJ223X	1/4W 22K	1	ERJ2RMJ223X
R513	EXB28V334JX	1/32W 330K	1	
R516	ERJ2GEJ221X	1/4W 220	1	ERJ2RMJ221X

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
R518	EXB28V104JX	1/32W 100K	1	
R602	ERJ2GEJ5R6X	1/4W 5.6	1	ERJ2RMJ5R6X
R603	EXB24V123JX	1/16W 12K	1	
R604	ERJ2GEJ470X	1/4W 47	1	ERJ2RMJ470X
R605	EXB28V470JX	1/32W 47	1	
R701	ERJ2GEJ102X	1/4W 1K	1	ERJ2RMJ102X
R702	ERJ2GEJ103X	1/4W 10K	1	ERJ2RMJ103X
R703	EXB24V104JX	1/16W 100K	1	
R704	EXB24V333JX	1/16W 33K	1	
R705	EXB24V102JX	1/16W 1K	1	
R706	EXB24V471JX	1/16W 470	1	
R707	ERJ2GEJ394X	1/4W 390K	1	ERJ2RMJ394X
R708	EXB24V104JX	1/16W 100K	1	
R709	ERJ2GEJ473X	1/4W 47K	1	ERJ2RMJ473X
R710	ERJ2GEJ470X	1/4W 47	1	ERJ2RMJ470X
R712	ERJ2GEJ104X	1/4W 100K	1	ERJ2RMJ104X
R713	ERJ2GEJ101X	1/4W 100	1	ERJ2RMJ101X
R714	ERJ2GEJ473X	1/4W 47K	1	ERJ2RMJ473X
R715	ERJ2GEJ155X	1/4W 1.5M	1	
R716	EXB24V103JX	1/4W 10K	1	
R717	EXB24V223JX	1/4W 22K	1	
R801	ERJ3GEYJ222V	1/16W 2.2K	1	
R802	ERJ3GEYJ472V	1/16W 4.7K	1	D0GB472JA002
R803	ERJ3GEYJ822V	1/16W 8.2K	1	D0GB822JA002
R804	ERJ3GEYJ273V	1/16W 27K	1	D0GB273JA002
R807	ERJ2GEJ473X	1/4W 47K	1	ERJ2RMJ473X
R808	ERJ2GEJ563X	1/4W 56K	1	
RX103	ERJ2GEJ103X	1/4W 10K	1	ERJ2RMJ103X
RX503	ERJ2GEJ334X	1/4W 330K	1	ERJ2RMJ334X
S1	ABC1111P	SW,MAGNETIC HEAD	1	K0L1BA000050
S501	RSH1A039-A	SW,OPEN DET.	1	K0L1BA000037
S502	K0D112A00114	SW,HOLD	1	
S503	RSH1A039-A	SW,PROTECT	1	K0L1BA000037
S801	RSG0051-P	SW,PLAY/PAUSE,CHARA	1	
S802	K0F111A00335	SW,REC	1	
S803-07	RSG0051-P	SW,PUSH	5	
TH1	RRSP33J103CW	THERMISTOR	1	D4CC11730001
TH401	RRSP33J103CW	THERMISTOR	1	D4CC11730001
X101	H0J169500013	OSCILLATOR	1	
X501	H2C100500005	OSCILLATOR	1	
Z301	RJH9209-1	BATT.CASE CONNECT.TERMINA	1	K4BC02E00005

19. Cabinet Parts Location



20. Packaging



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