ORDER No.AD0211153C3

Service Manual

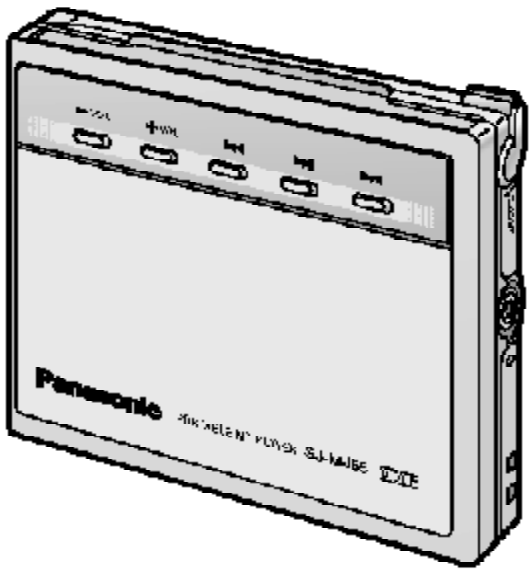
Portable MD Player

MDLP

SJ-MJ55GH

Colour

(S).....Silver Type



SPECIFICATIONS

Specifications

● Audio

System:	MiniDisc digital audio system
Beam source:	Semiconductor laser
Wave length:	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, -6dB)
Wow and flutter:	Below measurable limit

● General

Headphones:	
Output level (approx.):	3.0 mW+3.0 mW
Inpedance (approx.):	32 Ω
Speakers (ceramic card type):	
Output level (approx.):	45 mW+45 mW
Inpedance (approx.):	200 Ω / 1kHz
Power supply	
Rechargeable battery:	DC 1.2V
	(included rechargeable battery)
Battery:	DC 1.5V (One LR6, AA, UM-3 battery)
Dimensions (WxHxD)	
Cabinet dimensions:	79.9x72.7x14.1 mm
incl.projecting parts:	80.9x74.2x17.0 mm
Weights:	96 g (with battery)
	69 g (without battery)

● Play time

[Approximate operating time in hours (in hold mode, at 25°C, on a flat, stable surface)]

Battery type:	Play time (Stereo/ LP2/ LP4)
Rechargeable:	40 hours/ 53 hours/ 70 hours
Panasonic alkaline:	63 hours/ 93 hours/ 121 hours
Both together:	103 hours/ 148 hours/ 193 hours

[When the rechargeable battery (included) is fully recharged.]

● AC adaptor and charger

AC adaptor input:	AC220 V, 50/60 Hz, 5 VA
AC adaptor output and Charger input:	DC 3.5 V, 0.5A
Charger output:	DC 2V, 0.5 A
Recharging time:	About 3.5 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.**

⚠ 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

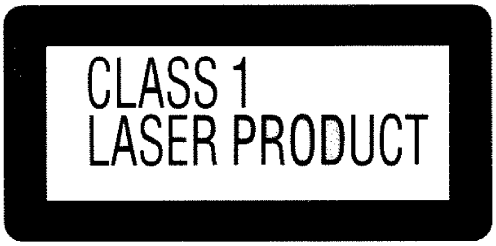
- **Stereo earphones.....1 pc. / (L0BAB0000174)**
- **Wired remote control.....1 pc. / (N2QCBD000020)**
- **External battery case.....1 pc. / (K3ZZ00200038)**
- **Nickel-metal hydride rechargeable battery.....1 pc. / (RFKFFAZ01EM1)**
- **Soft case.....1 pc. / (RFC0074-H)**
- **Speaker/Battery charger.....1 pc. / (L0EAAB000011)**
- **AC adaptor.....1 pc. / (N0JCBD000001)**

2. Precaution 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.



DANGER	INVISIBLE LASER RADIATION WHEN OPEN. AVOID DIRECT EXPOSURE TO BEAM.
ADVARSEL	USYNLIG LASERSTRÅLING VED ÅBNING, NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION. UNDGÅ UDSÆTTELSE FOR STRÅLING.
VARO!	AVATTAESSA JA SUOJALUKITUS OHITETTAESSA OLET ALTTIINA NÄKYMÄTÖNTÄ LASERSÄTEILYLLE. ÄLÄ KATSO SÄTEESEEN.
VARNING	OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD OCH SPÄRREN ÄR URKOPPLAD. BETRAKTA EJ STRÅLEN.
ADVARSEL	USYNLIG LASERSTRÅLING NÅR DEKSEL ÅPNES OG SIKKERHEDSLÅS BRYTES. UNNGÅ EKSPONERING FOR STRÅLEN.
VORSICHT	UNSICHTBARE LASERSTRAHLUNG, WENN ABDECKUNG GEÖFFNET. NICHT DEM STRAHL AUSSETZEN.

3. Operating Instructions

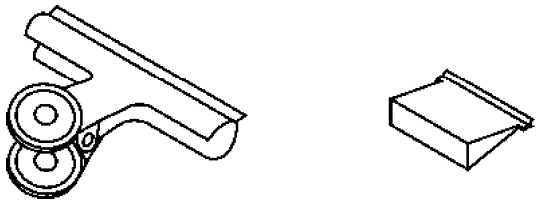
4. Handling Precautions for MD Mechanism (Optical pickup)

The laser diode in the MD mechanism (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 MD mechanism (optical pickup)

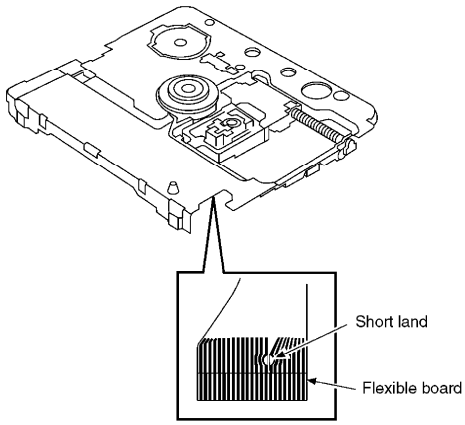
1. **The MD mechanism (optical pickup) is an extremely high-precision construction and must not be subjected to impact, excessive vibration, or other types of rough handling.**
2. **In order to prevent static electricity damage to the laser diode, use a short pin or similar tool to short the optical 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).

Fig. 3

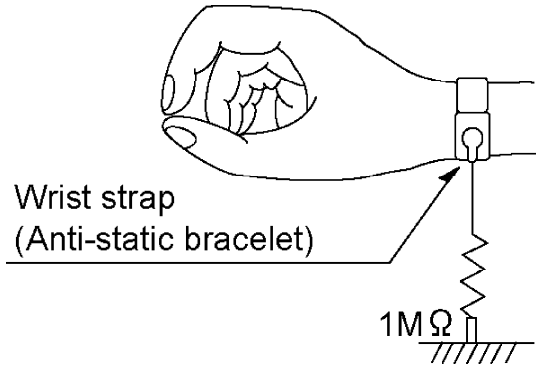
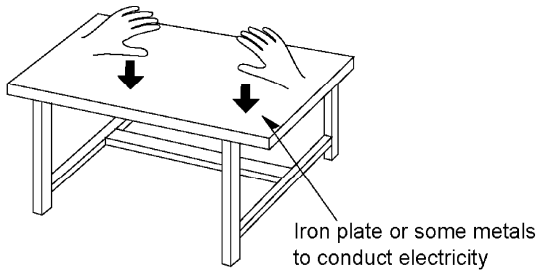


Fig. 4



5. Operation Checks and Component Replacement Procedures

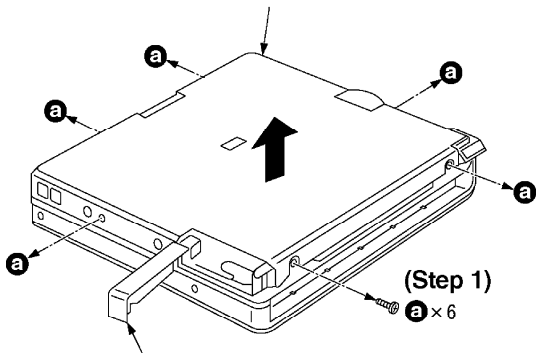
- This section describes procedures for checking the operation of the major printed circuit boards and replacing the main components.

- 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 adjustments (Laser power, off-set, ROM/ RAM).

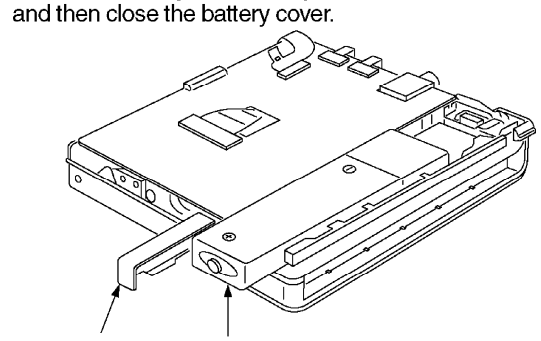
5.1. Checking for the P.C.B.

(Step 3)
Remove the cabinet ass'y



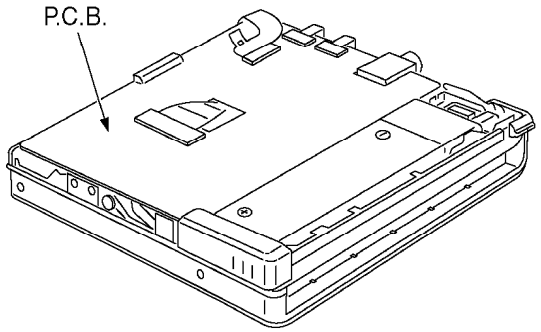
(Step 2)
Open the rechargeable battery cover.

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



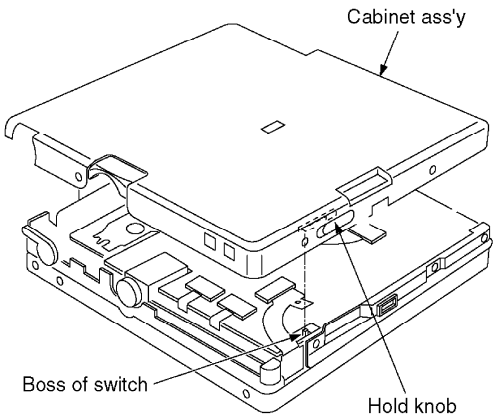
NOTE:
The rechargeable battery should be recharged fully.

- Check the P.C.B. as shown below.



Notice for installation of the cabinet ass'y

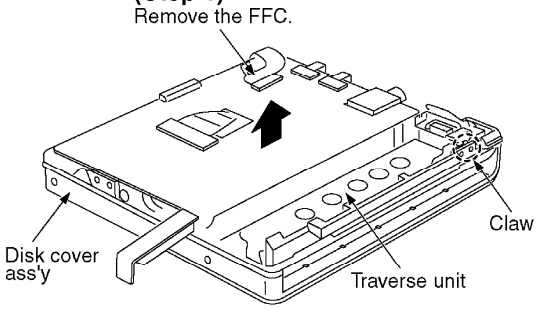
- Make sure the boss of switch are fit in the hold knob when assembling.



5.2. Replacement for the intermediate cabinet

- Follow the (Step1)-(Step3) of item 5.1.

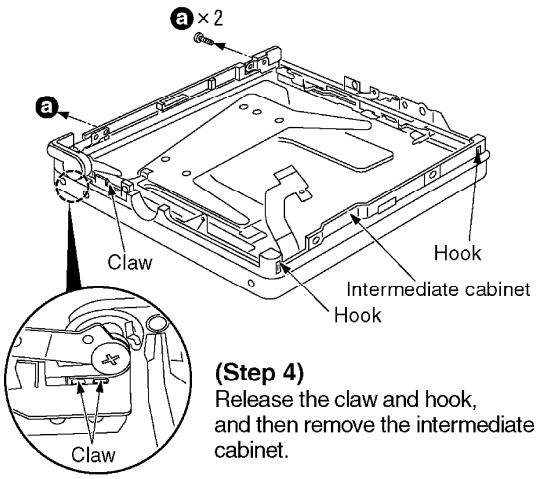
(Step 1)
Remove the FFC.



(Step 2)
Release the claw of disk cover ass'y, and then remove the traverse unit.

NOTE:
Locate the traverse unit as the turn table is faced up.

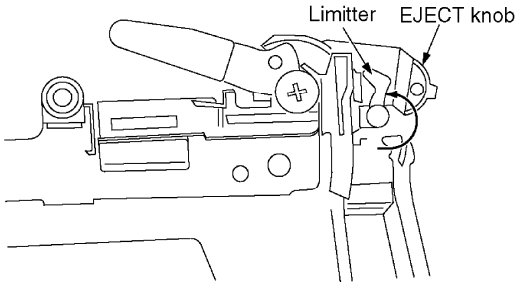
(Step 3)



(Step 4)
Release the claw and hook, and then remove the intermediate cabinet.

Notice for installation of the intermediate cabinet

- Make sure that there is the limitter to the direction of the EJECT knob when assembling the intermediate cabinet.



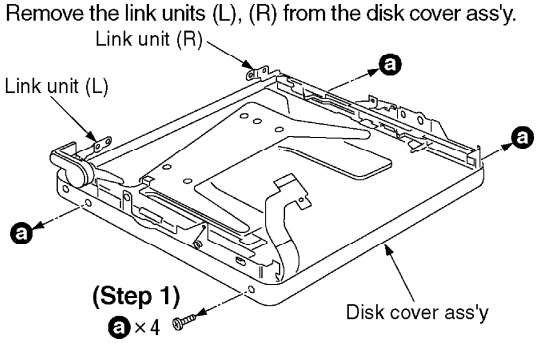
5.3. Replacement for the disk cover ass'y and the link units (L), (R)

- Follow the (Step1)-(Step3) of item 5.1.

- Follow the (Step1)-(Step4) of item 5.2.

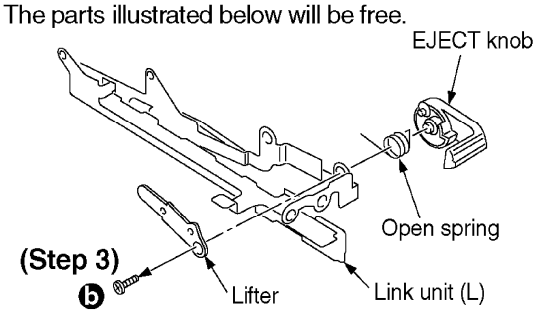
(Step 2)

Remove the link units (L), (R) from the disk cover ass'y.



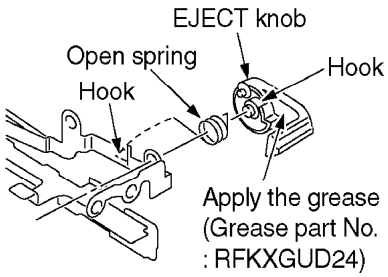
(Step 4)

The parts illustrated below will be free.

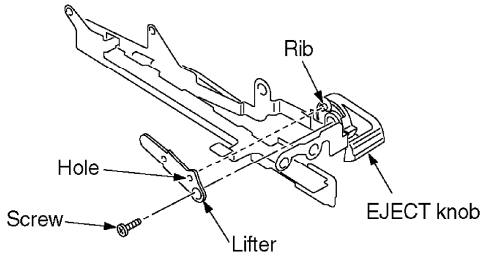


Notice for installation of the EJECT knob

1. Latch the open spring to the Hook

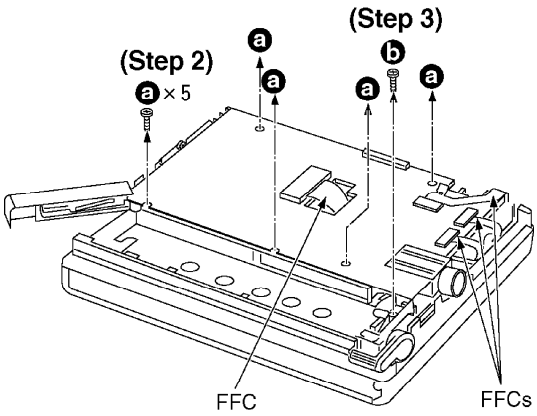


2. Put in the rib of EJECT knob to the hole of lifter, and then fix the screw.



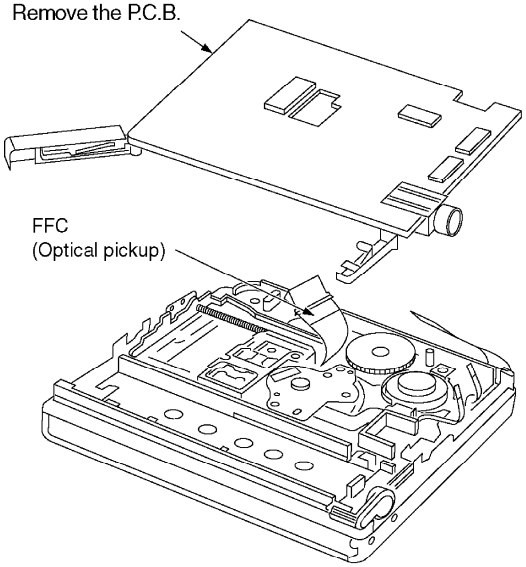
5.4. Replacement for the traverse motor

- Follow the (Step1)-(Step3) of item 5.1.

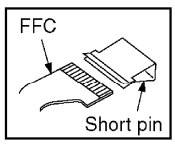


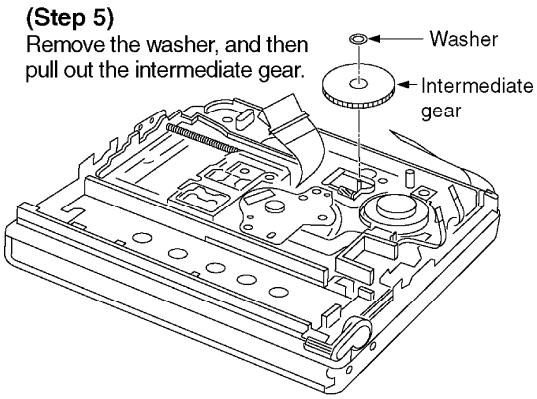
(Step 1)
Remove the FFC from the connector (4 points).

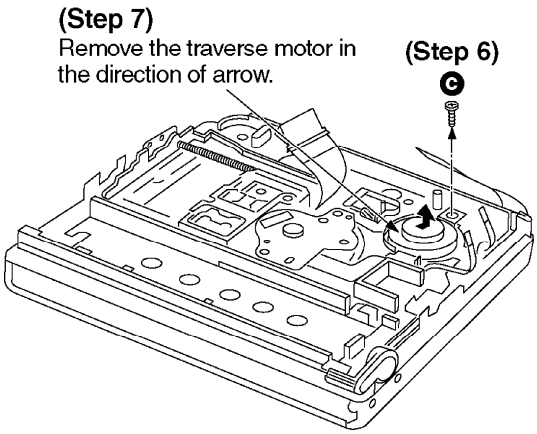
(Step 4)
Remove the P.C.B.



NOTE:
Insert a short pin into the traverse unit FFC board.
(Refer to "Handling precautions for MD Mechanism (Optical pickup)".)



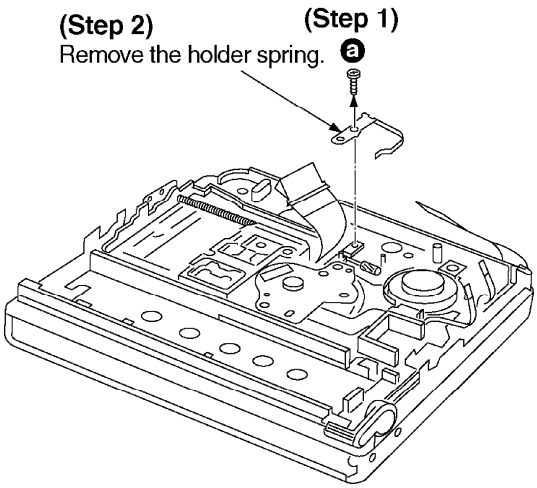


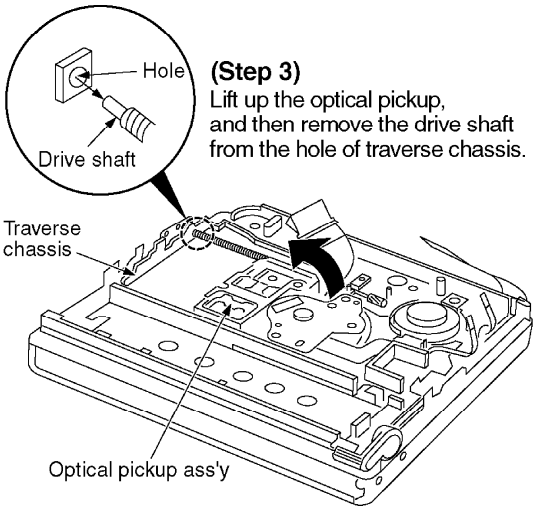


5.5. Replacement for the optical pickup

- Follow the (Step1)-(Step3) of item 5.1.

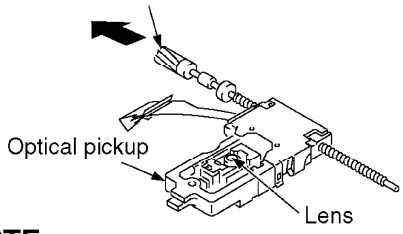
- Follow the (Step1)-(Step5) of item 5.4.





(Step 3)
Lift up the optical pickup, and then remove the drive shaft from the hole of traverse chassis.

(Step 4)
Pull out the drive shaft.



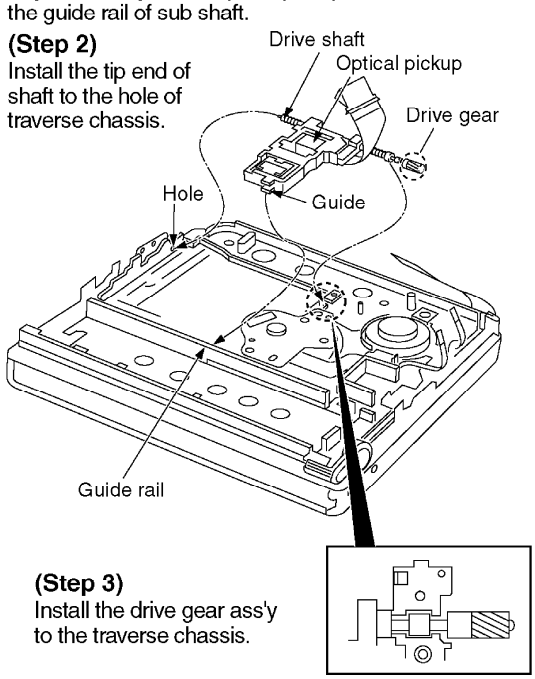
NOTE:

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

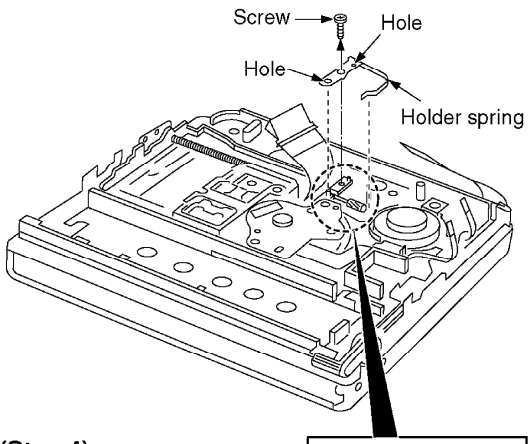
Installing the optical pickup

(Step 1)
Align the slot guide of optical pickup with the guide rail of sub shaft.

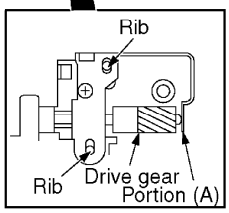
(Step 2)
Install the tip end of shaft to the hole of traverse chassis.



(Step 3)
Install the drive gear ass'y to the traverse chassis.



(Step 4)
Latch the claw of holder spring to the ribs, and then tighten the screw so that the portion (A) of holder spring interferes with the end of drive gear.



6. Measurements and Adjustments

Note:
After replacing the main components (optical pickup, traverse motor, IC201, IC202 or P.C.B. ass'y, etc.) of mechanism unit block, change to the adjust mode, and then perform the "Laser power adjustment", "Off-setautomatic adjustment" and "Playback-only disc/magneto-optical disc automatic 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 (Parts No: N2QCBD000020) [or Remote controller of SJ-MJ88 etc. (Parts No: RFEV025P-SM)]**

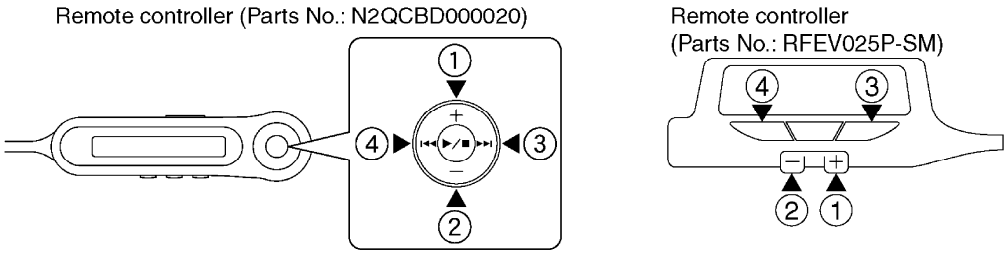
6.2. Laser power adjustment, Off-set automatic adjustment, Playback -only disc/magneto-optical disc automatic adjustment magnet

6.2.1. Enter the adjustment mode

Note:
For use of MD cartridge type laser power meter, disassemble this unit into the state of only the mechanism unit before perform the laser power adjustment (as for the method of disassembly, refer to "5.2. Replacement for the intermediatecabinet").

1. **Set the battery and connect the remote controller. (The position of the HOLD switch of remote controller is “OFF”.)**
2. **Turn off the power, and switch main unit’s HOLD switch off.**
3. **Press the VOL+(①), VOL-(②), ▶▶| (③), and |◀◀ (④)keys on the remote controller within two seconds. (asshown in Fig. 5)**

Fig. 5



4. **When the adjustment mode is activated, “T0E ” will be displayed on the LCD of remote controller. After “T0E ” 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	Display
Laser power adjustment	**T0E**
Off-set automatic adjustment	**T1E**
Magneto-optical disc automatic adjustment	**T2E**
Playback-only disc automatic adjustment	**T3E**
Jitter measurement (74minutes)	T4E
Jitter/ Audio characteristic measurement (74minutes)	T5E
Destination change	T6E
Jitter measurement (60minutes)	T7E
Automatic adjustment value check for a design	T8E
Error rate measurement	T9E
DRAM check	TBE
Aging	TCE
ROM collection	TDE
Tilt measurement	TEE
PWB inspection	TFE

***In the display of T0E ~ TFE shown above, you must adjust T0E , T1E , T2E and T3E . You must perform the adjustment by observing the order T0E → T1E → T2E → T3E .**

Note:
If it is going to perform “T2E” and “T3E”, without performing “T1E”, it will be displayed as “NG”.
If it is going to perform “T3E” when “T2E” is “NG”, it will be displayed as “NG”.

6.2.2. Laser Power Adjustment

Adjust each laser power: read power for reading (play).

6.2.2.1. Set the Unit to the Adjustment Mode

Cautions

About handling the optical pickup and the magnetic head.

- The optical pickup is structured precisely; therefore, it is very fragile. Be careful not to touch it 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.

- 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 set the unit to the laser power adjustment mode with the MD loaded. Doing so may result in damage to the MD.

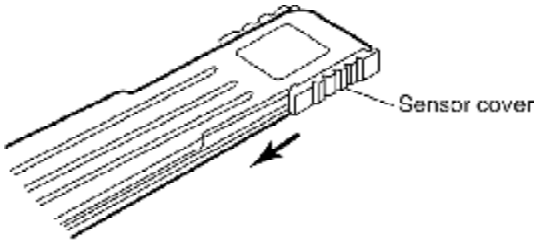
- Laser diode in the optical pickup may be destroyed by the static electricity generated in your clothes or body. Be especially careful with the static electricity.

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 (as shown in Fig. 6).
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. 7)
[For use of MD cartridge type laser power meter.]
2-1 Open the shutter of the laser power meter. (as shown in Fig. 9)
2-2 Set the laser power meter. (as shown in Fig. 8)

Fig. 6



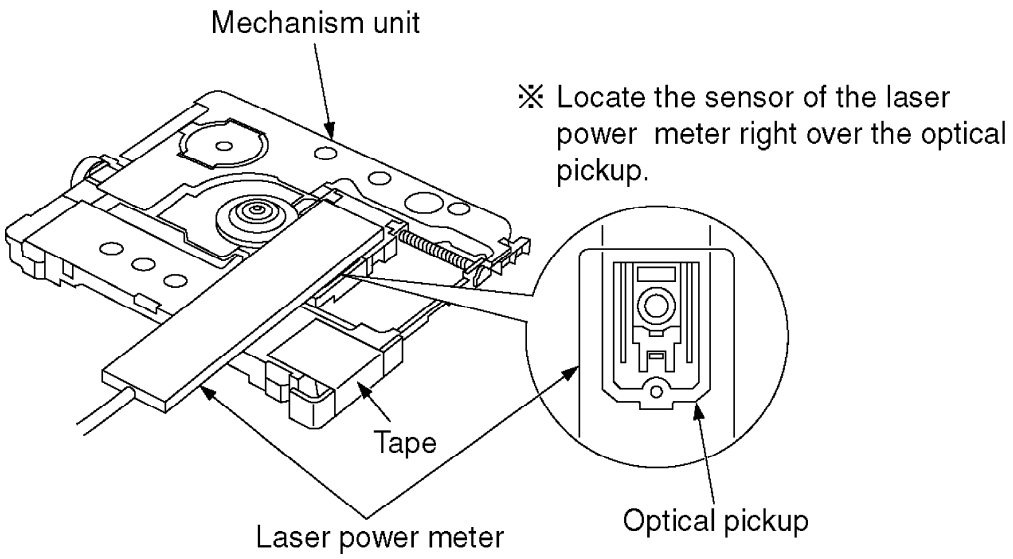
3. Press the ▶/■ key of the remote controller (“T0E ” changes to “LD ” of the LCD).
4. Press the ▶▶| key of the remote controller (“LD ” changes to “LP ” of the LCD).
5. Set the laser power at 600 μW±10% by using VOL+ and VOL- key of the remote controller. / [Specified range: 600 μW±10%]

   Caution:

   Proceeding on to the subsequent adjustment procedure with the read power exceeding “over 660 μW” will result in damage to the optical pickup.
6. Set the laser power with the ▶▶| key of the remote controller (“LP ” changes to “LDOK ” in the LCD).
7. Press the ▶/■ key of the remote controller (“LDOK ” changes to “T0E ” on the LDC.
8. Remove the laser power meter. Laser power adjustment is finished.

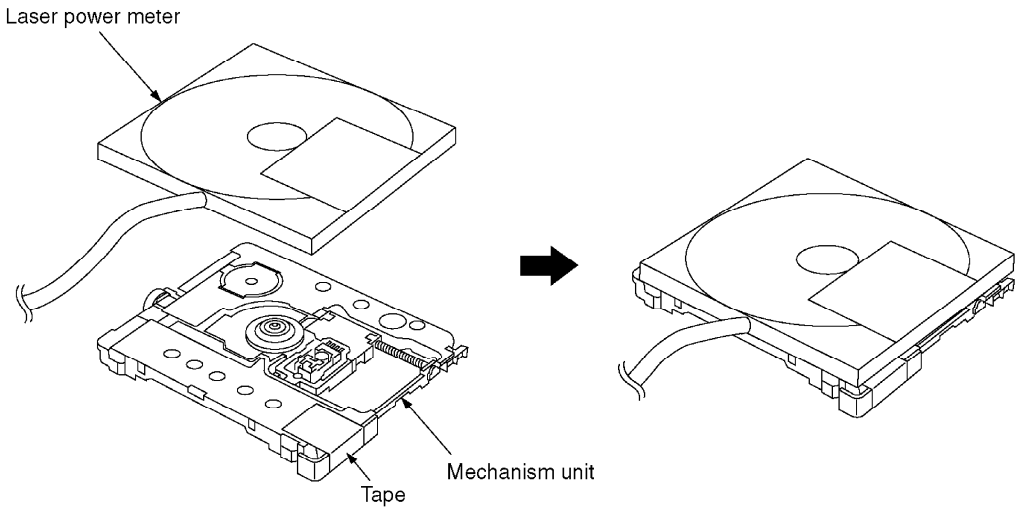
<Stick type>

Fig. 7



<MD cartridge type>

Fig. 8



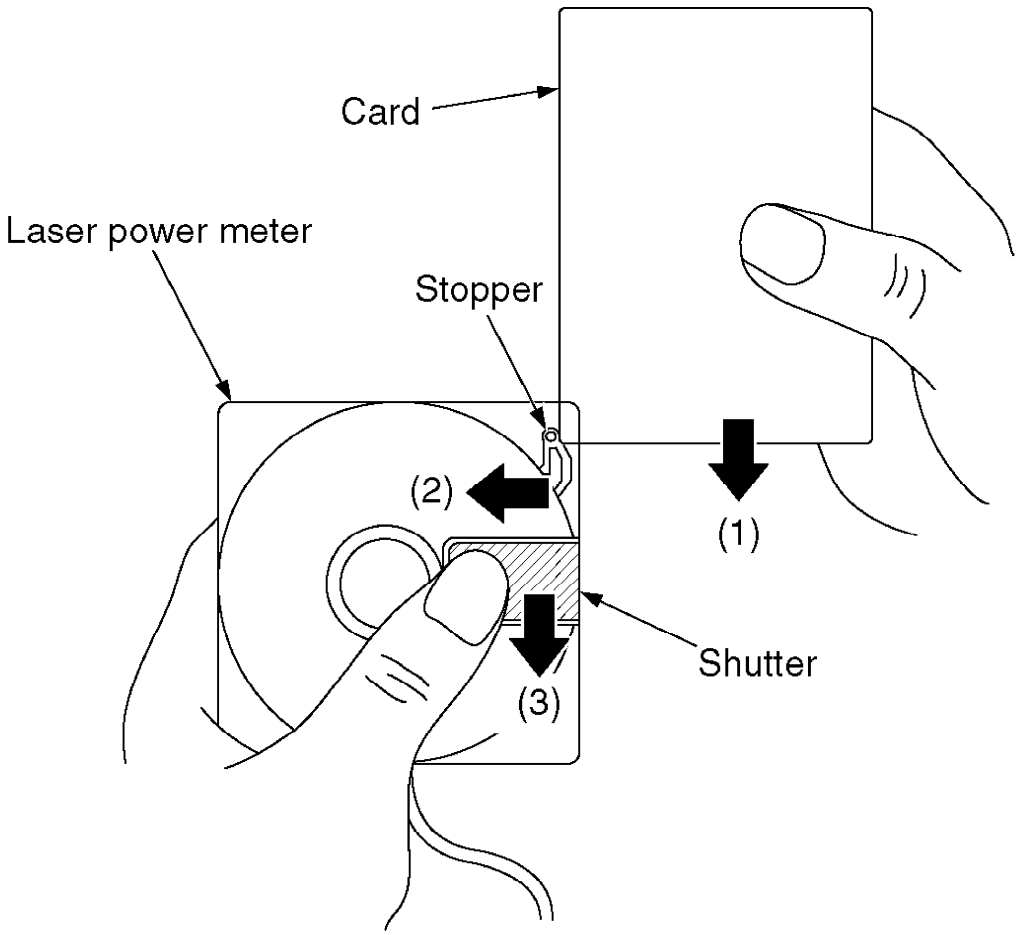
[How to open the shutter]

1. **Insert a thin and hard card to the crevice between laser power meter, and pull a card in the direction of an arrow (1).**
2. **A stopper moves in the direction of an arrow (2).**
3. **Move the shutter in the direction of an arrow (3) and the shutter opens.**

Caution:

Please be sure to shut the shutter after the adjustment end.

Fig. 9



6.2.3. Off-set automatic adjustment

1. With “T1E ” displayed, leave the disc cover open.
2. Pressing the ▶/■ key on the remote controller will start adjustment.
3. During adjustment, “FADJ ” is displayed on the LCD of the remote controller. If there is no abnormality, “FOK ” will be displayed.
4. Pressing the ▶/■ key while “FOK ” is displayed will return to the “T1E ” display mode.

6.2.4. Magneto-optical disc automatically adjustment

1. Have “T2E ” indicated on display, and set the full-recorded magneto-optical disc. (Check to make sure the disc is properly seated.)
2. Press ▶/■ key of the remote controller. The adjustment is started.
3. During adjustment, “AADJ ” is displayed on the LCD of the

remote controller. / If there is no abnormality, “AOK ” will be displayed.

Note:
If it is displayed “ANG ”, check “7. Troubleshooting Guide” in the order.

4. Press ▶/■ key (“AOK ” or “ANG ” changes to “T2E ”).
5. After the adjustment is finished, remove the disc.

6.2.5. Playback-only disc automatic adjustment

1. Have “T3E ” indicated on display, set the playback-only disc. / (Check to make sure the disc is properly seated.)
2. Press ▶/■ key of the remote controller. The adjustment is started.
3. During adjustment. “AADJ ” is displayed on the LCD of the remote controller. / If there is no abnormality, “AOK ” will be displayed.

Note:
If it is displayed “ONG ”, check “7. Troubleshooting Guide” in the order.

4. Press ▶/■ key (“OOK ” or “ONG ” changes to “T3E ”).
5. After the adjustment is finished, remove the disc.

6.2.6. How to get out the adjustment mode

Remove the battery when you finish the adjustment.

6.3. Checking the main unit's keys

1. Set the battery and connect the remote controller.
2. Turn off the power, and switch main unit’s HOLD switch ON.
3. Press the VOL+(①), VOL-(②), ▶▶|(③), and |◀◀(④) keys on the remote controller within two seconds. (asshown in Fig. 5)
4. When the unit enters the unit key check mode, the display shows “E KEX ”. While “E KEX ” is displayed, press the ▶/■, ▶▶|, |◀◀, VOL+, VOL- and HOLD keys of the unit. / *When the first key is pressed, the display will change to “E ■ ■ ■ ”.

Main unit's keys	LCD display position and letters
▶/■	After the second key is pressed, the first digit displayed will change from " ■ " to "O ".
HOLD OFF	
VOL+	After the second key is pressed, the second digit displayed will change from " ■ " to "O ".
VOL-	
▶▶|	After the second key is pressed, the third digit displayed will change from " ■ " to "O ".
|◀◀	

5. After all keys have been pressed and there is no abnormality, "E OOO " will be displayed.

6. Perform below voltage check about the keys come under if it is not displayed "E OOO ".

Main unit's keys	Check points	ON	OFF
▶/■	IC201 48pin	0V	2.2V
HOLD	TP428	0V	2.2V
VOL+	TP421	0V	2.2V
VOL-	TP421	0.58V	2.2V
▶▶|	TP421	1.13V	2.2V
|◀◀	TP421	1.69V	2.2V

Note:
Refer to "12. Printed Circuit Board Diagram" for the test points.

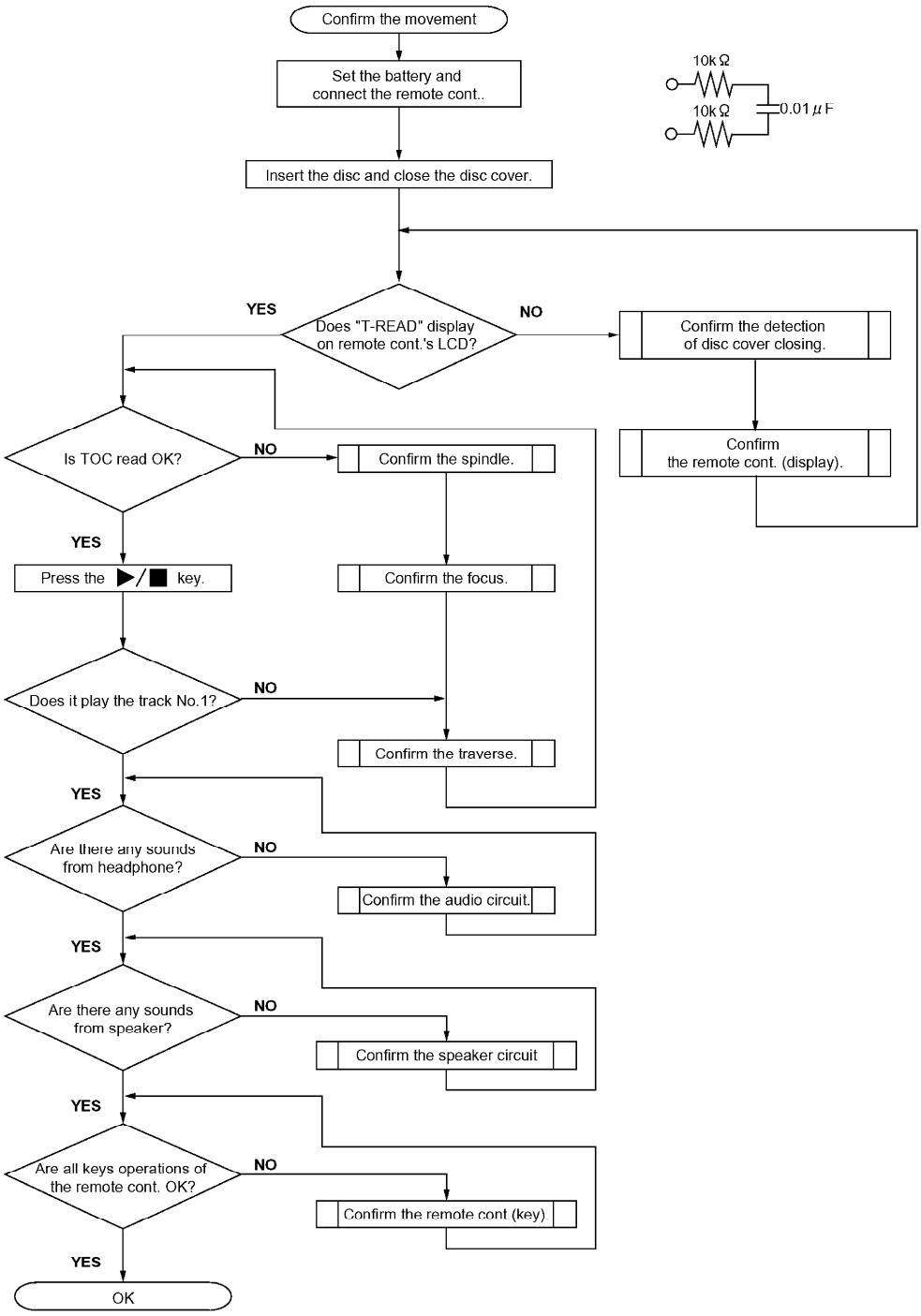
7. Remove the battery when you exit from this mode.

7. Troubleshooting Guide

Overall flowchart

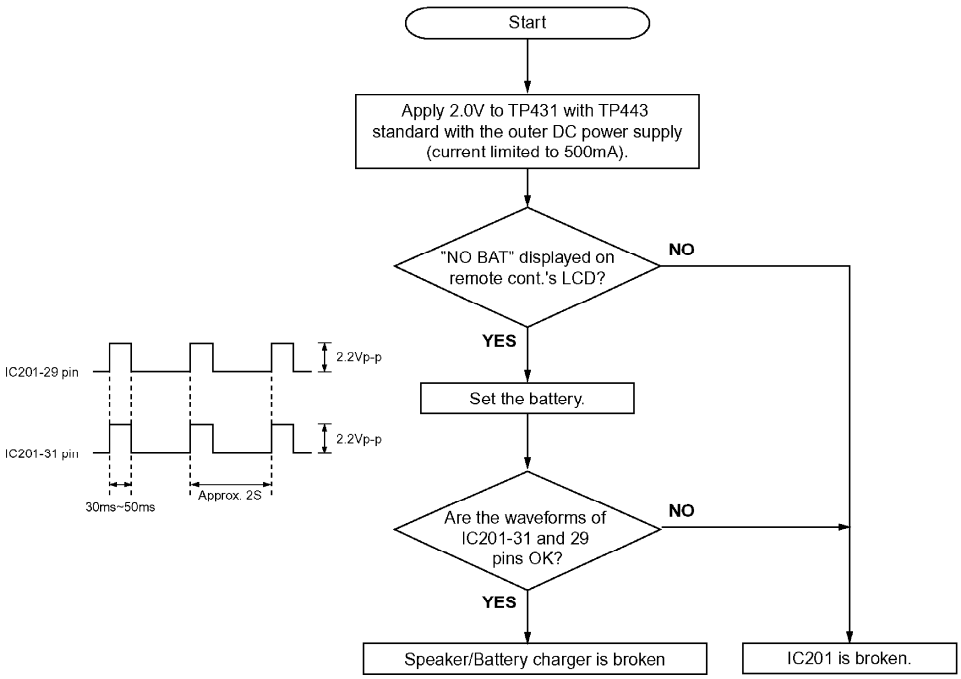
1. Confirmation of the Main unit and the remote controller.

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.

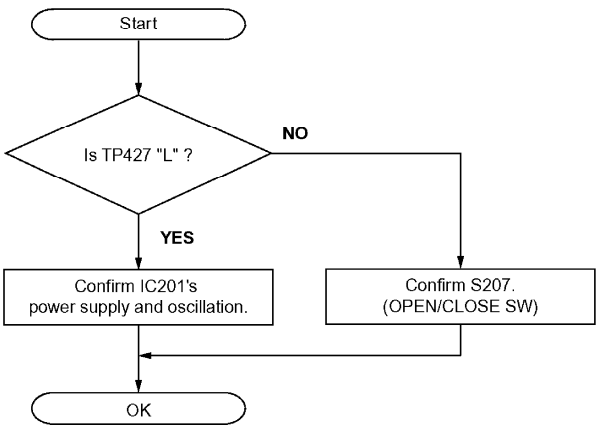


2. Confirmation of the main unit and the Speaker/Battery charger
(Confirmation of the charging circuit.)

Note: DC power supply to be prepared.

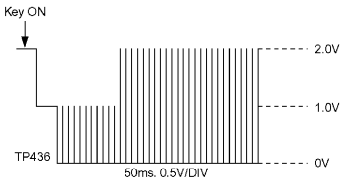


Confirm the detection of the disc cover closing.



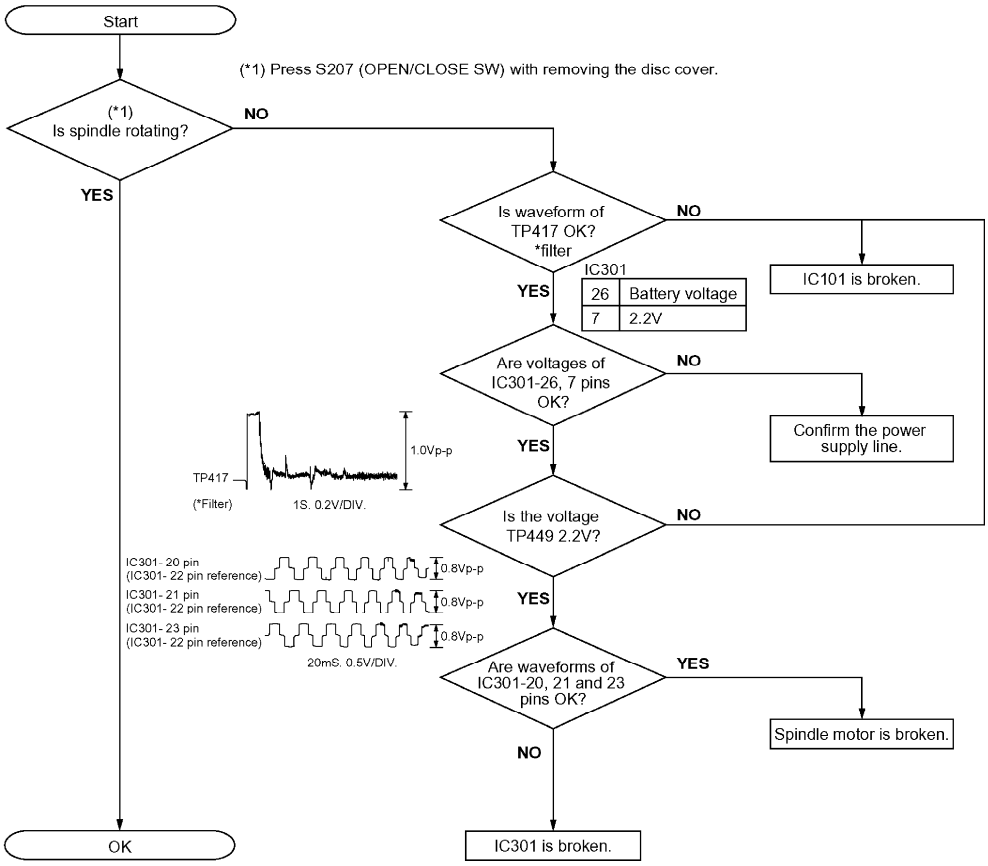
Confirm the remote controller(key)

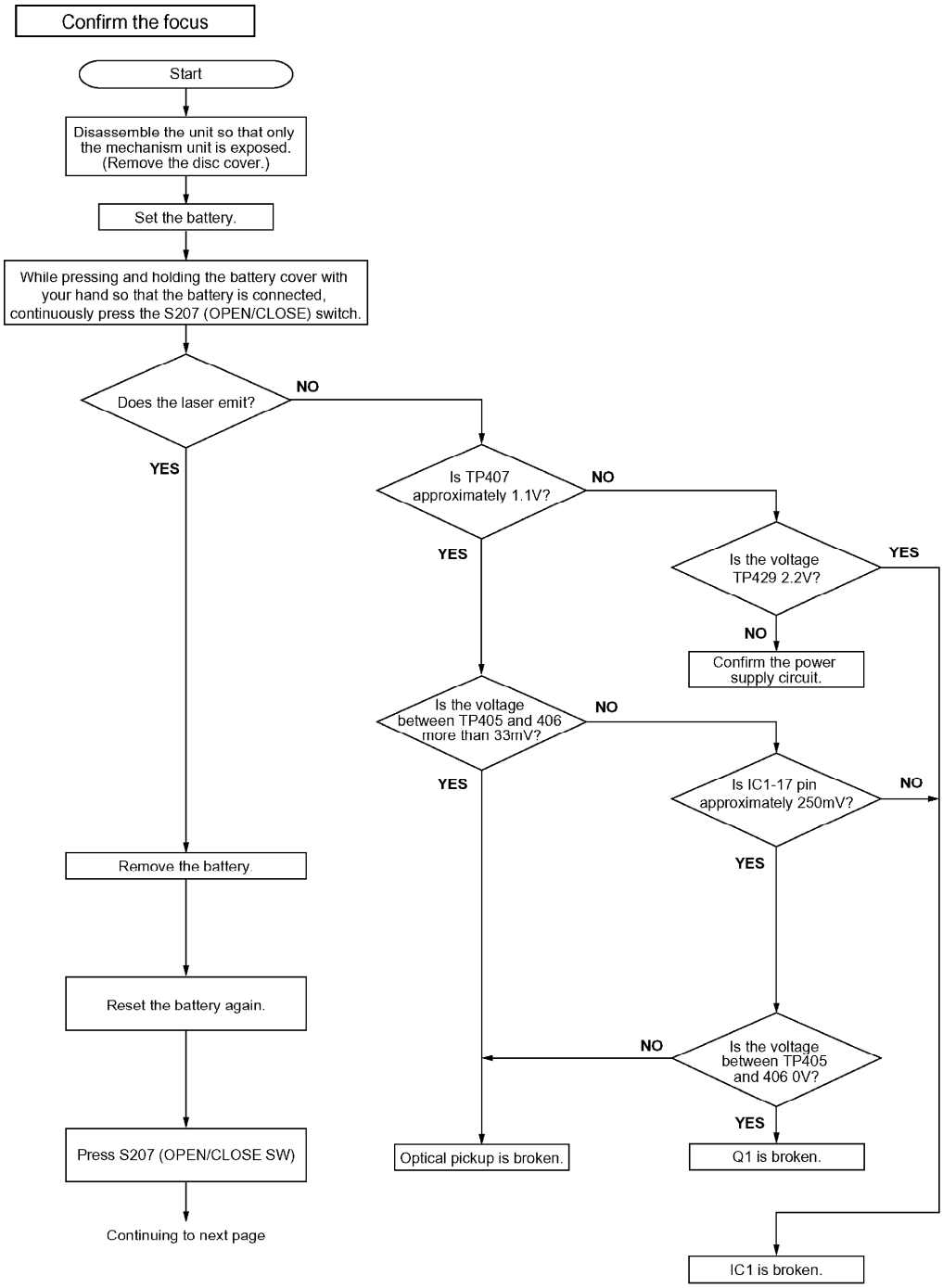
Confirm the waveform at TP436 and the voltage when the keys are pressed.



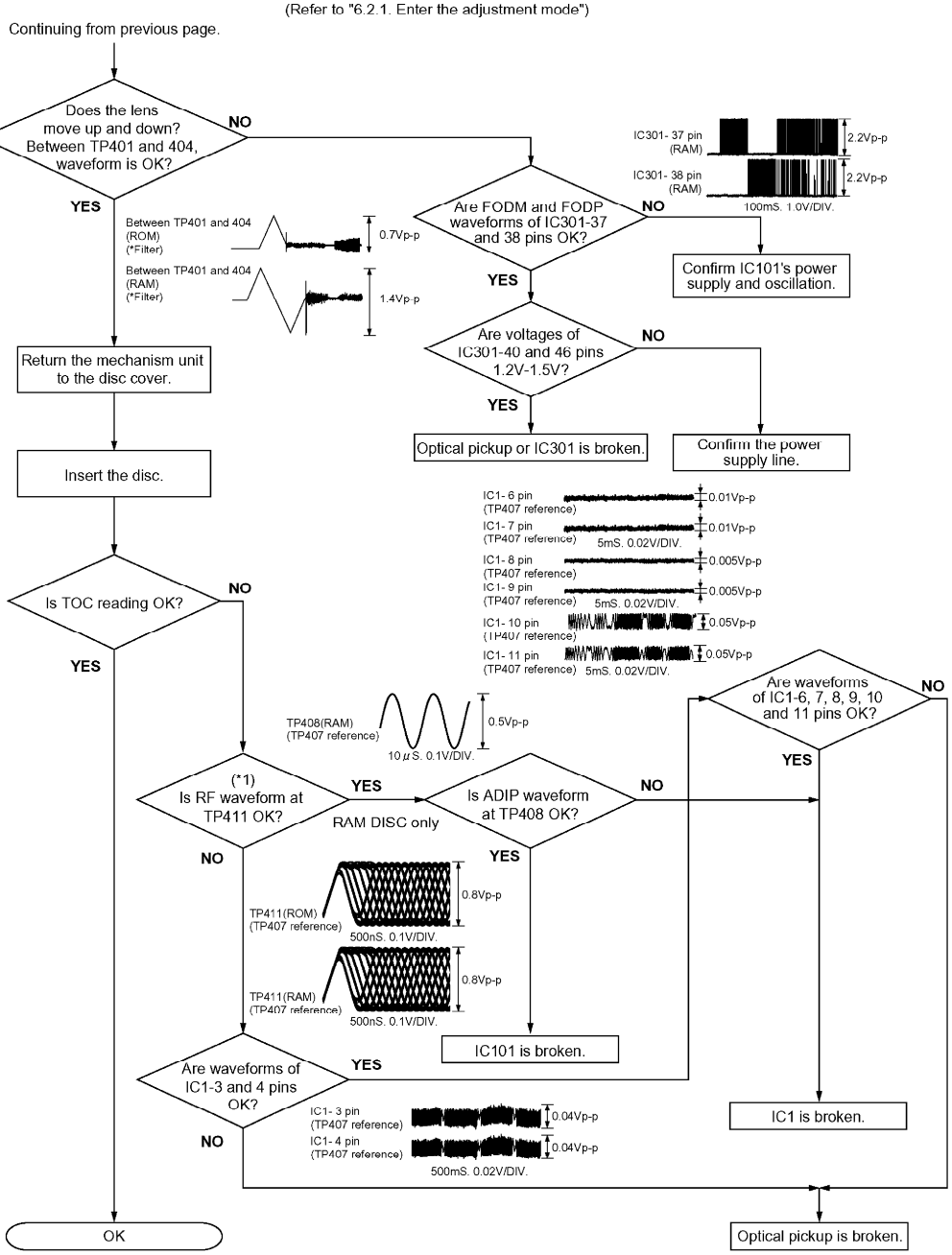
MAIN	VOLTAGE(V)	BOUNDARY VOLTAGE(V)
PLAY	0.150	
		0.172
VOL +	0.344	
		0.490
VOL –	0.653	
		0.759
EQ MODE	0.865	
		0.955
PLAY MODE	1.046	
		1.136
F-SKIP	1.226	
		1.326
DISPLAY	1.425	
		1.515
R-SKIP	1.606	
		1.702
(KEY-OFF)	1.799	
		1.900
HOLD	2.000	
		2.100
WITHOUT REMOTE CONT.	2.200	

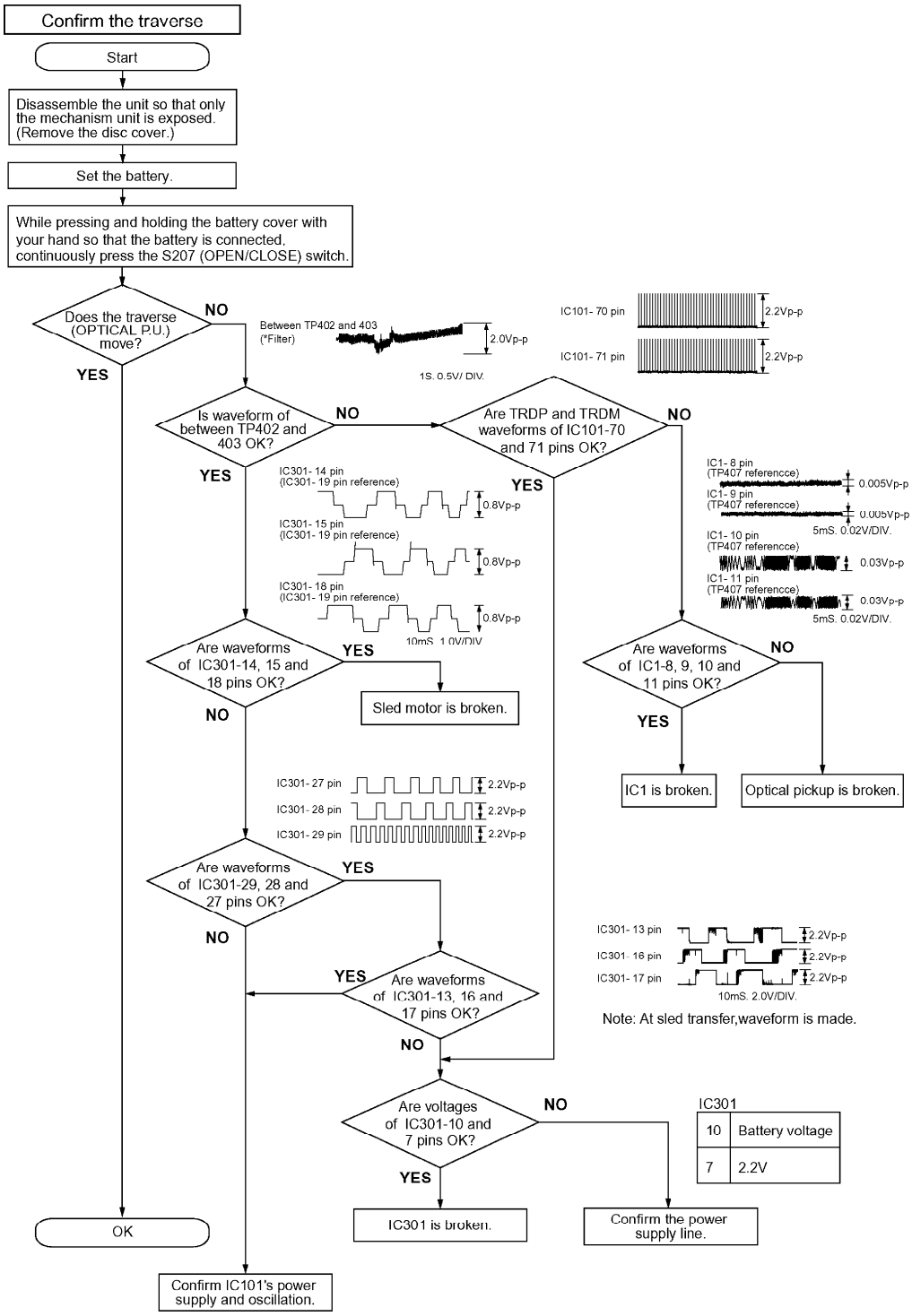
Confirm the spindle



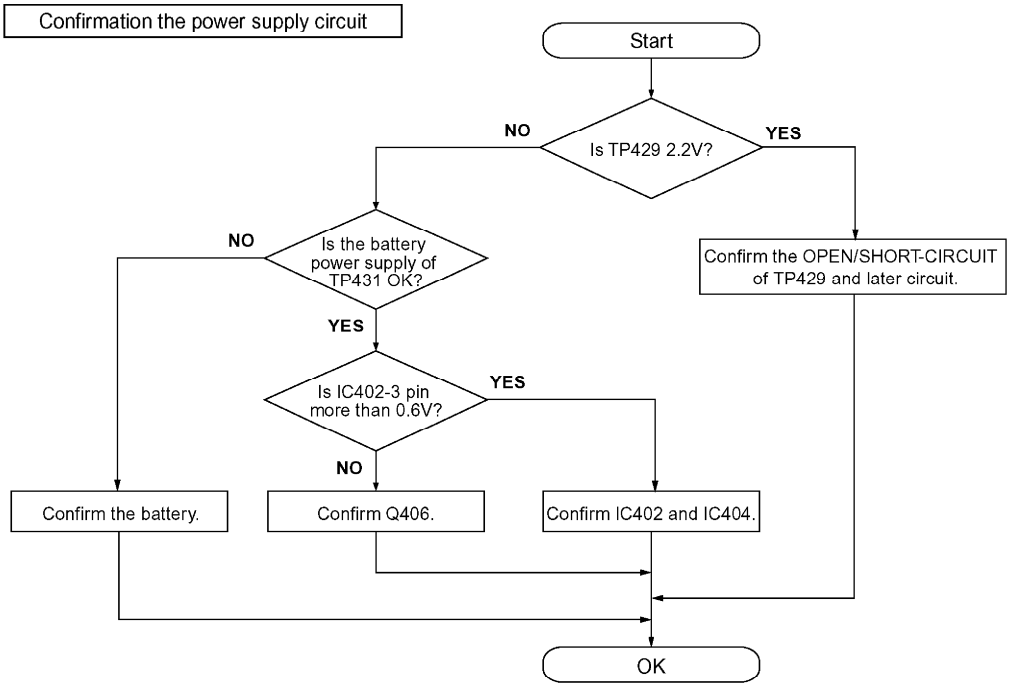

Confirm the focus
Start
Disassemble the unit so that only the mechanism unit is exposed. (Remove the disc cover.)
Set the battery.
While pressing and holding the battery cover with your hand so that the battery is connected, continuously press the S207 (OPEN/CLOSE) switch.
Does the laser emit?
NO
YES
Is TP407 approximately 1.1V?
NO
YES
Is the voltage TP429 2.2V?
YES
NO
Confirm the power supply circuit.
Is the voltage between TP405 and 406 more than 33mV?
NO
YES
Is IC1-17 pin approximately 250mV?
NO
YES
Remove the battery.
Reset the battery again.
Press S207 (OPEN/CLOSE SW)
Continuing to next page
NO
Is the voltage between TP405 and 406 0V?
YES
Optical pickup is broken.
Q1 is broken.
IC1 is broken.

(*1) When checking the RF waveform, set to the adjustment mode and adjust it to the jitter measurement condition. Continuous waveform can be checked. (Refer to "6.2.1. Enter the adjustment mode")

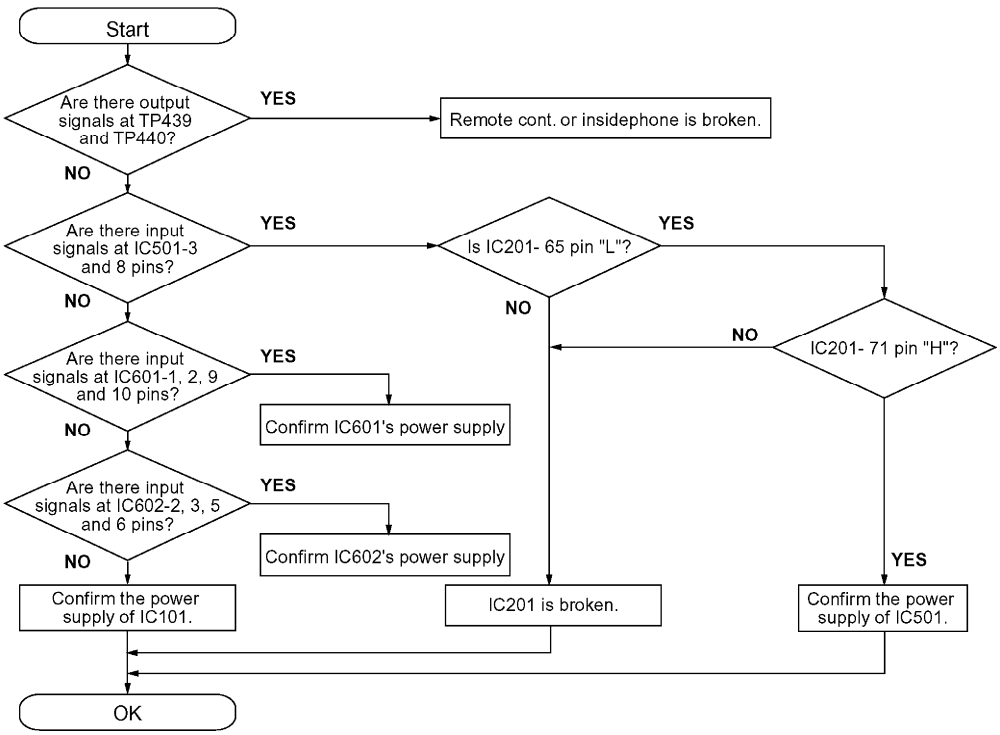



Confirm the traverse
Start
Disassemble the unit so that only the mechanism unit is exposed. (Remove the disc cover.)
Set the battery.
While pressing and holding the battery cover with your hand so that the battery is connected, continuously press the S207 (OPEN/CLOSE) switch.
Does the traverse (OPTICAL P.U.) move?
NO
YES
Between TP402 and 403 (*Filter)
2.0Vp-p
1S. 0.5V/ DIV.
IC101- 70 pin
2.2Vp-p
IC101- 71 pin
2.2Vp-p
Is waveform of between TP402 and 403 OK?
NO
YES
Are TRDP and TRDM waveforms of IC101-70 and 71 pins OK?
NO
YES
IC301- 14 pin (IC301- 19 pin reference)
0.8Vp-p
IC301- 15 pin (IC301- 19 pin reference)
0.8Vp-p
IC301- 18 pin (IC301- 19 pin reference)
0.8Vp-p
10mS. 1.0V/DIV.
IC1- 8 pin (TP407 referencce)
0.005Vp-p
IC1- 9 pin (TP407 referencce)
0.005Vp-p
5mS. 0.02V/DIV.
IC1- 10 pin (TP407 referencce)
0.03Vp-p
IC1- 11 pin (TP407 referencce)
0.03Vp-p
5mS. 0.02V/DIV.
Are waveforms of IC301-14, 15 and 18 pins OK?
YES
NO
Sled motor is broken.
Are waveforms of IC1-8, 9, 10 and 11 pins OK?
NO
YES
IC1 is broken.
Optical pickup is broken.
IC301- 27 pin
2.2Vp-p
IC301- 28 pin
2.2Vp-p
IC301- 29 pin
2.2Vp-p
Are waveforms of IC301-29, 28 and 27 pins OK?
YES
NO
IC301- 13 pin
2.2Vp-p
IC301- 16 pin
2.2Vp-p
IC301- 17 pin
2.2Vp-p
10mS. 2.0V/DIV.
Note: At sled transfer,waveform is made.
YES
Are waveforms of IC301-13, 16 and 17 pins OK?
NO
Are voltages of IC301-10 and 7 pins OK?
NO
YES
IC301
10 Battery voltage
7 2.2V
IC301 is broken.
Confirm the power supply line.
OK
Confirm IC101's power supply and oscillation.

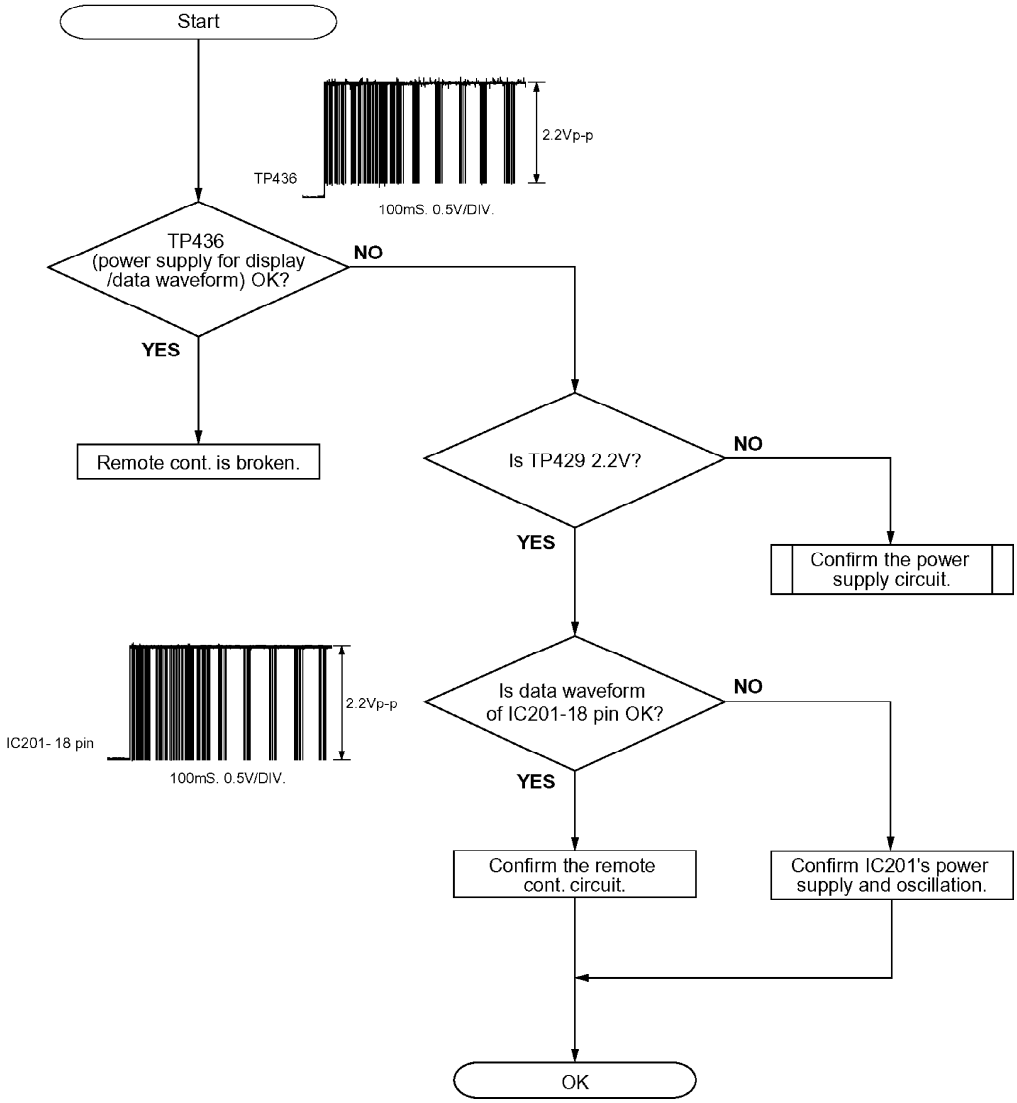
Confirmation the power supply circuit

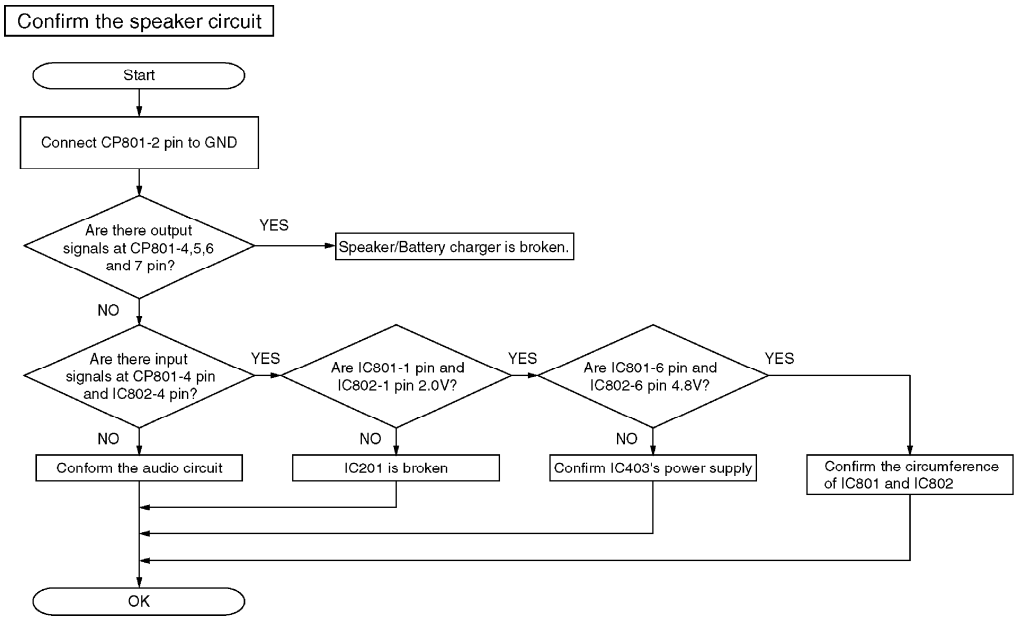


Confirmation the audio circuit



Confirmation the remote controller (Display)





8. Precaution for Replacement of EEPROM IC (IC202) and SYSTEMCONTROL IC (IC201)

8.1. Replacement of EEPROM IC (IC202)

In case of replacing EEPROM IC (IC202), depending on the Parts No. of SYSTEMCONTROL (IC201), it is need to replace SYSTEMCONTROL simultaneously.
For details, please refer to the following table.

Parts No. of SYSTEMCONTROL (IC201)	Replacement
MN101C32GAG1	Need
MN101C32GAG2	Needlessness

Note
When "MN101C32GAG1" is mounted, please exchange for "MN101C32GAG2".

8.2. Replacement of SYSTEMCONTROL IC (IC201)

Exchange only SYSTEMCONTROL IC (IC201).

Caution

After replacing either "IC201" or "IC202", please be sure to perform the "laser power adjustment", "Off-set automatic adjustment" and "Playback only disc/magneto-opticaldisc automatic adjustment". (Refer to "6 Measurements and Adjustments ")
If the set is operated without adjusting, an error will be displayed and the set will not operate.

9. Precaution for Replacement of P.C.B. ASS'Y

After replacing P.C.B. ASS'Y, please be sure to perform the "laser power adjustment", "Off-set automatic adjustment" and "Playback only disc/magneto-optical disc automatic adjustment".(Refer to "6 Measurements and Adjustments ")
If the set is operated without adjusting, an error will be displayed and the set will not operate.

10. Schematic Diagram Notes

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

10.2. Schematic Diagram Notes

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

Notes:

- **S207 : Cover open/close det. switch**
- **S208 : Hold switch in "OFF" position. (HOLD)**
- **SX201 : Volume control switch (-)**
- **SX202 : Volume control switch (+)**
- **SX203 : Skip/search switch (▶▶|)**
- **SX204 : Skip/search switch (|◀◀)**
- **SX206 : Play/stop switch (▶ / ■)**

- 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] (*)
(*) The play of MD is performed in "Jitter measurement / (T4E)" mode.
(Refer to "6.2.1. Enter the adjustment mode " for the / method of going into "Jittermeasurement (T4E) mode").

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

11. Schematic Diagram

12. Printed Circuit Board Diagram

13. Block Diagram

14. Terminal Function of IC's

14.1. IC1 (C1BB00000728): RF AMP

Pin No.	Mark	I/O Division	Function
1	NC	—	Not used, open
2	RVCC	I	Power supply input terminal
3	RF1	I	RF 1 signal input terminal
4	RF2	I	RF 2 signal input terminal
5	VCC	I	Power supply input terminal
6	F1	I	F 1 signal input terminal
7	F2	I	F 2 signal input terminal
8	A	I	A signal input terminal
9	B	I	B signal input terminal
10	C	I	C signal input terminal
11	D	I	D signal input terminal
12	GHSW	I	ROM/ RAM gain switching signal input terminal
13	BWCT	I	Wobble signal band pass filter switcing input terminal

Pin No.	Mark	I/O Division	Function
14	SETR	I	Band pass filter control input terminal
15	GND	—	GND terminal
16	LDO	O	APC output terminal
17	LDS	I	I/V converted laser quantity of light input terminal
18	LDREF	I	Laser control signal input terminal
19	VC	O	1/2VCC (reference voltage) output terminal
20	VR	I	Connected to GND through capacitor
21	WOO	O	Wobble signal output terminal
22	CC	O	C signal dark-side detection / amplified output terminal
23	DD	O	D signal dark-side detection / amplified output terminal
24	BB	O	B signal IV conversion output terminal
25	AA	O	A signal IV conversion output terminal
26	FF2	O	F2 signal IV conversion output terminal
27	FF1	O	F1 signal IV conversion output terminal
28	RGND	—	GND terminal
29	BOTTOM	—	RF bottom signal output terminal (Not used, open)
30	PEAK	O	RF peak signal output terminal
31	HFL	O	Track detection signal output terminal
32	BHC	O	Connected to GND through capacitor
33	PHC	O	Connected to GND through capacitor
34	EQO	O	RF equalizer output terminal
35	EQI	I	RF equalizer input terminal
36	RFO	O	RF signal output terminal

14.2. IC101 (C1BB00000729): DIGITAL SERVO PROCESSOR

Pin No.	Mark	I/O Division	Function
1	VDD	I	Power supply input terminal
2	SLCO	O	HF signal slicing level output terminal
3	SLCISET	I	Slicing level adjustment bias resistor input terminal
4	EFMIN	I	HF signal input terminal
5	TEST1	I	Test terminal / (Connected to power supply)
6	RESET B	I	System reset input terminal
7	HFL	I	Ttack detection signal input terminal
8	PDO	O	VCEC current charge pump output terminal
9	VCVDD	—	Power supply input terminal for VCEC
10	FR	I	VCEC oscillation frequency bias resistor input terminal (Connected to GND through reistor)
11	ISET	I	VCEC current charge pump bias resistor input terminal (Connected to GND through reistor)
12	VCVSS	—	GND terminal
13	AVDD1	—	Power supply input terminal
14	PEAK	I	Peak signal input terminal
15	FF1	I	Focus error signal input terminal
16	FF2	I	Focus error signal input terminal
17	AA	I	LNP error signal input terminal
18	BB	I	LNP error signal input terminal
19	CC	I	Tracking error signal input terminal
20	DD	I	Tracking error signal input terminal

Pin No.	Mark	I/O Division	Function
21	AVDD1D	I	Power supply input terminal
22	AVSS1	—	GND terminal
23	ADIPWO	I	Wobble signal input terminal
24	TEPWM	—	Not used, open
25	FEPWM	—	Not used, open
26	ABPWM	—	Not used, open
27	SIN	I	Connected to GND through reistor
28	SOUT	—	Not used, open
29	SCLK	—	Not used, open
30	VSS	—	Connected to GND
31	VDD	I	Power supply input terminal
32-38	NC	—	Not used, open
39	VCC2	O	Power supply output terminal
40-43	NC	—	Not used, open
44	PCK	—	Not used, open
45	VCC2	I	Power supply input terminal
46	VSS	—	GND terminal
47	DEFECT	—	Not used, open
48-51	NC	—	Not used, open
52	VSS	—	GND terminal
53-56	NC	—	Not used, open
57	TEST3	I	Test terminal (Connected to power supply)
58	SPPWMF	O	Spindle PMW output terminal
59	SPPWMR	O	Spindle PMW output terminal
60	VSS	—	GND terminal
61	VCC2	I	Power supply input terminal
62	SLPWMF	O	Sled PMW output terminal
63	SLPWMR	O	Sled PMW output terminal

Pin No.	Mark	I/O Division	Function
64	SLD0	O	Sled control signal output terminal
65	SLD1	I	Sled control signal input terminal
66	SLD2	I	Sled control signal input terminal
67	SLD3	I	Sled control signal input terminal
68	FOPWMF	O	Focus PMW output terminal
69	FOPWMR	O	Focus PMW output terminal
70	TRPWMF	O	Tracking PMW output terminal
71	TRPWMR	O	Ttacking PMW output terminal
72	FG	I	Verocity puls signal input terminal
73	D4M	O	CLV servo clock judgement output terminal (Not used, open)
74	FOK	O	Focus OK signal output terminal
75	CL	I	CPU I/F data transfer clock input terminal
76	CE	I	CPU I/F chip enable signal input terminal
77	DI	I	CPU I/F data input terminal
78	DO	O	CPU I/F data output terminal
79	WRQB	O	CPU interrupt signal output terminal
80	INTB	O	CPU I/F interrupt signal output terminal
81	DPVCC2	—	Power supply terminal for buffer amp. PWM output
82	LDPWM+	O	Buffer amp. Lch PWM output terminal
83	LDPWM-	O	Buffer amp. Lch PWM output terminal
84	RDPWM+	O	Buffer amp. Rch PWM output terminal
85	RDPWM-	O	Buffer amp. Rch PWM output terminal

Pin No.	Mark	I/O Division	Function
86	DPVSS	—	GND terminal for buffer amp. PWM output
87	VDD	I	Power supply input terminal
88	XIN	I	16.9344MHz oscillate input terminal
89	XOUT	O	16.9344MHz oscillate output terminal
90	VSS	—	GND terminal
91	VCC2	I	Power supply input terminal
92	DDOUT	O	Digital audio output terminal (Not used, open)
93-105	NC	—	Not used, open
106	VSS	—	Connected to GND
107	VCC2	I	Power supply input terminal
108	TEST2	I	Test terminal (Connected to power supply)
109-114	NC	—	Not used, open
115	SMON3	I	Monitor signal output terminal (Not used, open)
116	SMON2	O	Monitor signal output terminal
117	SMON1	O	Monitor signal output terminal
118	SMON0	—	Monitor signal output terminal (Not used, open)
119	NC	—	Not used, open
120	VSS	—	Connected to GND

14.3. IC201 (MN101C32GAG2): SYSTEM CONTROL

Pin No.	Mark	I/O Division	Function
1	VREF-	—	Connected to GND
2	REM_KEY	I	Remote control key input terminal
3	KEYIN	I	Unit key input terminal
4	BATT	I	Battery voltage detection input terminal
5	(AN3)	—	Connected to GND
6	(AN4)	—	Connected to GND
7	(AN5)	—	Connected to GND
8	OUTC	—	Not used, open
9	VPP	I	Power supply input terminal
10	VREF+	I	Power supply input terminal
11	VDD	I	Power supply input terminal
12	OSC2	O	System clock output terminal (F=6MHz)
13	OSC1	I	System clock input terminal (F=6MHz)
14	VSS	—	Connected to GND
15	XI	—	Sub clock input terminal (Not used, connected to GND)
16	XO	—	Sub clock output terminal (Not used, open)
17	MMOD	—	Memory mode switching input terminal (Not used, connected to GND)
18	REM_DATA	O	LCD driver data output terminal
19	LINK_IN	I	LINK serial data input terminal
20	—	—	Not used, open
21	—	—	Not used, open
22	5V_CONT	—	Not used, open
23	SC_DET	—	Not used, open
24	BUZZER	O	Beep signal output terminal
25	RST	I	Reset signal input terminal
26	SETR	O	EQ frequency gain switching output terminal
27	—	—	Not used, open

Pin No.	Mark	I/O Division	Function
28	BWCT	O	EQ frequency gain switching output terminal
29	CHARGE	O	Recharge control output terminal
30	LD_PWM	O	Laser power controlling PWM output terminal
31	DCIN_ WAKEUP	I	Charger starting detection signal input terminal
32	INTB	I	IC101 interrupt signal input terminal
33	WRQB	I	IC101 interrupt signal input terminal
34	OPEN_SW	I	Lid open/ close detection input terminal (H: Open/ L: Close)
35	—	—	Not used, open
36	SSDW	O	IC101 I/F write data output terminal
37	SSDR	I	IC101 I/F read data input terminal
38	SSCLK	O	IC101 I/F clock output terminal
39	SELAD	O	IC101 I/F address select output terminal
40	RESET B	O	IC101 I/F reset output terminal
41	ZDTCL	I	IC101 I/F monitor signal input terminal
42	ZDTCR	I	IC101 I/F monitor signal input terminal
43	—	—	Not used, open
44	BATT_SW	O	Battery control signal output terminal
45	MUTE_C	O	Noise measure low pass filter control terminal
46	—	—	Not used, open
47	—	—	Not used, open
48	PLAY_KEY	I	PLAY key starting input terminal
49	REM_WUP	I	Remote control key wake up input terminal

Pin No.	Mark	I/O Division	Function
50	ELON	O	EL display control output terminal (L: Start)
51	—	—	Not used, open
52	FOK	I	Focus OK signal input terminal
53	DRV_STBY	O	Driver IC standby output terminal
54	SP_STBY	O	Driver IC circuit spindle standby output terminal
55	MUTE_P	—	Not used, open
56	—	—	Not used, open
57	EEP_DATA_I	I	EEP ROM data input terminal
58	EEP_DATA_O	O	EEP ROM data output terminal
59	EEP_CLK	O	EEP ROM clock output terminal
60	EEP_CS	O	EEP ROM chip select output terminal
61	LSI_ STATUS	—	Not used, open
62	ST_READ	—	Not used, open
63	GHSW	O	Pit/ Group gain switching signal output terminal
64	RFCONT	O	RF amp. power supply control output terminal (L: ON)
65	P.CONT	O	Power supply control output terminal (H: Power OFF/ L: Power ON)
66	NC	—	Not used, open
67	MODEL 1	I	Model switching input terminal (1)
68	NC	—	Not used, open
69	DOCTOR	I	Process inspection mode input terminal (Connected to power supply through resistor)
70	HOLD	I	HOLD switch input terminal
71	MUTEA	O	Analog mute A output terminal

Pin No.	Mark	I/O Division	Function
72	3DSW	O	Head phone surround mode change switch output terminal
73	MUTE_ MODE	I	Mute mode dicision input terminal (Connect to GND)
74	LED_CNT6_LP4_R	O	RED LED (PLAY1) control output terminal
75	LED_CNT5_LP2_G	O	GREEN LED (PLAY2) control output terminal
76	LED_CNT4_G	O	GREEN LED (R_SKIP) control output terminal
77	LED_CNT3_G	O	GREEN LED (VOL-) control output terminal
78	LED_CNT2_G	O	GREEN LED (F_SKIP) control output terminal
78	LED_CNT1_G	O	GREEN LED (VOL+) control output terminal
80	ADJ_OK	—	Not used, open

14.4. IC301 (C0GBZ000009): FOCUS/TRACKING COIL/TRAVERSE MOTOR DRIVE/SPINDLE MOTOR DRIVE/ROTARY DETECTOR

Pin No.	Mark	I/O Division	Function
1	IN1R	I	H bridge (1) logic reverse input terminal
2	CP1	O	Charge pump gain puls output terminal
3	CPC1	I	Charge pump gain input terminal
4	CP2	O	Charge pump gain puls output terminal
5	CPC2	I	Charge pump gain input terminal
6	VG	O	Charge pump gain output trminal (Connected to GND through capacitor)
7	VCC	I	Small signal block power supply input terminal
8	CLK	I	Reference clock signal input terminal

Pin No.	Mark	I/O Division	Function
9	MODE	I	PWM frequency switching input terminal
10	VS	I	3-phase sled drive power supply input terminal
11	BRK	I	Spindle motor block brake input terminal
12	PGND4	—	GND terminal
13	SUCO	O	Sled driver block position detection comparator output terminal
14	SUO	O	3-phase sled (U) output terminal
15	SVO	O	3-phase sled (V) output terminal
16	SVCO	O	Sled driver block position detection comparator output terminal
17	SWCO	O	Sled driver block position detection comparator output terminal
18	SWO	O	3-phase sled (W) output terminal
19	SCOM	I	Sled driver block position detection comparator input terminal
20	WOUT	O	3-phase spindle (W) output terminal
21	VOUT	O	3-phase spindle (V) output terminal
22	COM	I	Spindle motor COM point connect input terminal
23	UOUT	O	3-phase spindle (U) output terminal
24	FG	O	FG pulse output terminal
25	RF	—	Output current detection input terminal (Connected to GND)
26	VS	I	Spindle motor drive power supply input terminal
27	S3	I	3-phase sled block logic input terminal
28	S2	I	3-phase sled block logic input terminal

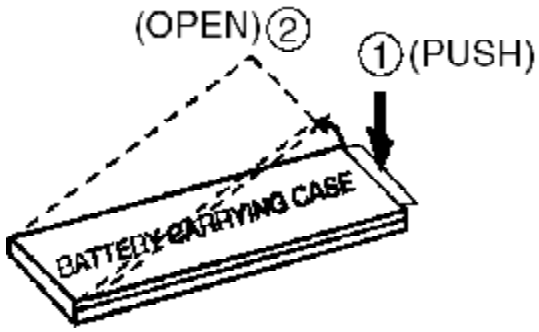
Pin No.	Mark	I/O Division	Function
29	S1	I	3-phase sled block logic input terminal
30	PWM	I	PWM signal input terminal (H: Output TR ON)
31	GND	—	GND terminal
32	FIL	O	Spindle motor position detection comparator filter output terminal
33	COMIN	I	Spindle motor position detection comparator filter input terminal
34	VCOIN	I	VCO control voltage input terminal (Connected to GND through capacitor)
35	VCO	—	VCO oscillation terminal (Connected to GND through capacitor)
36	RMAX	—	VCO highest frequency setting terminal (Connected to GND through resistor)
37	IN2R	I	H bridge (2) logic reverse input terminal
38	IN2F	I	H bridge (2) logic forward input terminal
39	MUTE	I	H bridge 1,2 and 3-phase sled mute input terminal
40	VS2	I	H bridge (2) motor power supply input terminal
41	OUT2F	O	H bridge (2) forward output terminal
42	OUT2R	O	H bridge (2) reverse output terminal
43	PGND1	—	GND terminal
44	OUT1R	O	H bridge (1) reverse output terminal
45	OUT1F	O	H bridge (1) forward output terminal
46	VS1	I	H bridge (1) motor power supply input terminal
47	S/S	I	Spindle motor block start/ stop input terminal (H: Start)

Pin No.	Mark	I/O Division	Function
48	IN1F	I	H bridge (1) logic forward input terminal

15. 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)

Fig. 10

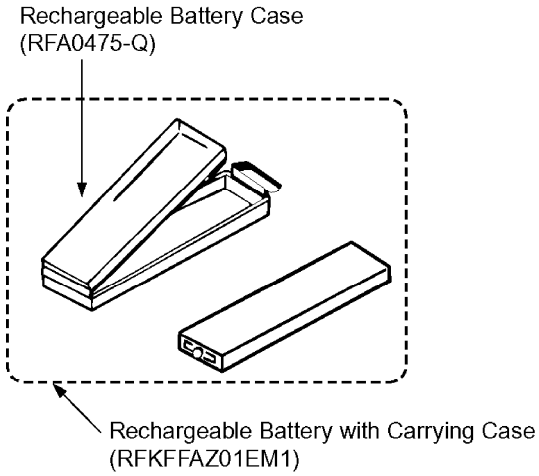


16. Supply of Rechargeable Battery Ass'y as Replacement Parts

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 (RFKFFAZ01EM1) supplied will be provided with Battery Carrying Case (RFA0475-Q).
- No replacement parts will be supplied for Rechargeable Battery 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. 11)

Fig. 11



17. Replacement Parts List

Notes:
***Important safety notice: / Components identified by ⚠ 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.**
***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, it will no longer be available.**
***"<IA>" mark in Remarks indicates languages of instruction manual.**
[<IA>: English/ Chinese]
***All parts are supplied by MESA.**

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
1	RDG0477	INTERMEDIATE GEAR	1	
2	RHD14078	SCREW	1	
3	RHW11011	WASHER	1	
4	RMC0483	HOLDER SPRING	1	
5	RXK0354-1	TRAVERSE UNIT	1	
5-1	BRL1A1CWB	TRAVERSE MOTOR	1	
5-2	RHD14074	SCREW	1	
5-3	RJC99038-2	RECHARGE.BATT.TERMINAL(-)	1	
5-4	XQN14+B2FC	SCREW	1	
6	RAF2000A-4M	OPTICAL PICK-UP	1	⚠
7	RXJ0025-1	DRIVE SHAFT	1	
8	RHD14067	SCREW	5	
9	RJC99039-1	RECHARGE.BATT.TERMINAL(+)	1	
10	RJR0195-2	BATTERY SHAFT	1	
12	RHQ0083-S	SCREW	6	
13	RXQ0982	LINK UNIT(R)	1	
14	RXQ0984	LINK UNIT(L)	1	
14-1	RGU2040-S1	EJECT KNOB	1	
15	RYF0652-S	DISC COVER	1	
16	RYK1256-S	INTERMEDIATE CABINET	1	
17	RYK1257A-S	CABINET ASS'Y	1	
17-1	RGV0296-S	HOLD KNOB	1	
18	RHD14076-S	SCREW	6	
19	RKK0156-S	BATTERY COVER	1	
20	RMQ1205	SPACER	1	
A1	K3ZZ00200038	EXTERNAL BATTERY CASE	1	
A2	L0BAB0000174	STEREO EARPHONES	1	
A3	L0EAAB000011	SPEAKER BATTERY CHARGER	1	
A4	N0JCBD000001	AC ADAPTOR	1	⚠
A5	N2QCBD000020	WIRED REMOTE CONTROLLER	1	
A5-1	RFKY0010	REMOCON PANLE ASS'Y	1	
A5-2	RFKY0004	REMOCON CLIP ASS'Y	1	
A6	RFKFFAZ01EM1	RECHARGE. BATTERY ASS'Y	1	
A6-1	RFA0475-Q	RECHARGE. BATT.CASE	1	
A7	RFC0074-H	SOFT CASE	1	
A8	RQT6640-K	OPERATING INSTRUCTION	1	<IA>
C1	ECUE1E332KBQ	25V 3300P	1	F1G1E332A059
C2	F5A421050001	4V 1U	1	
C4	F1G0J224A004	6.3V 0.22U	1	
C5	F3E0G226A002	4V 22U	1	
C7	F5A422240001	4V 0.22U	1	
C9	F1G1C103A044	16V 0.01U	1	
C10	F1G1H100A420	50V 10P	1	
C13	F1G1H2R0A424	50V 2P	1	
C20	F1J0J4750010	6.3V 4.7U	1	
C24	F1G1C103A044	16V 0.01U	1	
C28	F3E0G226A002	4V 22U	1	
C101,02	F1G1C103A044	16V 0.01U	2	
C103	ECJ1VB0J105K	6.3V 1U	1	
C105-07	ECUENA104KBQ	10V 0.1U	3	F1G1A104A014
C108	ECUE1H102KBQ	50V 1000P	1	F1G1H102A457

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
C113	ECUENA104KBQ	10V 0.1U	1	F1G1A104A014
C115	ECUENA104KBQ	10V 0.1U	1	F1G1A104A014
C116	ECJ0EB1C822K	16V 8200P	1	
C117	ECUE1H102KBQ	50V 1000P	1	F1G1H102A457
C130	ECJ1VB0J105K	6.3V 1U	1	
C131,32	F1G1E472A059	25V 4700P	2	
C133	F3E0G106A001	4V 10U	1	
C201	F1G1C103A044	16V 0.01U	1	
C202	ECJ0EB1H101K	50V 100P	1	
C203	F1J0J4750010	6.3V 4.7U	1	
C204	ECUENA104KBQ	10V 0.1U	1	F1G1A104A014
C206	ECJ0EB1H101K	50V 100P	1	
C210	F1G1C103A044	16V 0.01U	1	
C211	ECUVNJ474KBV	6.3V 0.47U	1	F1H0J474A002
C212	F1G1C103A044	16V 0.01U	1	
C214	F5A422240001	4V 0.22U	1	
C220	ECJ0EB1H101K	50V 100P	1	
C221	ECUE1H102KBQ	50V 1000P	1	F1G1H102A457
C304	ECUE1E332KBQ	25V 3300P	1	F1G1E332A059
C305	ECJ2YB0J225K	6.3V 2.2U	1	
C306	F1G1H222A416	50V 2200P	1	
C307	F1J0J4750010	6.3V 4.7U	1	
C310	F5A422240001	4V 0.22U	1	
C311	F1G0J224A004	6.3V 0.22U	1	
C330	ECJ1VB0J105K	6.3V 1U	1	
C401	F3Z0G107A003	4V 100U	1	
C402	F3E0G226A002	4V 22U	1	
C403	F1G1C103A044	16V 0.01U	1	
C404	F3G0G2270001	4V 220U	1	
C405	F3Z0J106A001	6.3V 10U	1	
C406,07	F1J0J4750010	6.3V 4.7U	2	
C410	ECUENA104KBQ	10V 0.1U	1	F1G1A104A014
C411	F1G1C103A044	16V 0.01U	1	
C412	ECUENA104KBQ	10V 0.1U	1	F1G1A104A014
C413	F3F1A226A008	10V 22U	1	
C415	F1G1C103A044	16V 0.01U	1	
C421	F1G1H330A422	50V 33P	1	
C501	F3E0G226A002	4V 22U	1	
C502	ECUENA104KBQ	10V 0.1U	1	F1G1A104A014
C503	ECUVNJ334KBV	6.3V 0.33U	1	F1H0J334A002
C504	F5A421050001	4V 1U	1	
C505	F3E0G106A001	4V 10U	1	
C507,08	F3G0E2270001	2.5V 220U	2	
C509	F1J0J4750010	6.3V 4.7U	1	
C511	F5A421020001	4V 1000P	1	
C515	F5A422240001	4V 0.22U	1	
C523	F5A421040002	4V 0.1U	1	
C551-53	F1G1C103A044	16V 0.01U	3	
C602,03	F1G1E472A059	25V 4700P	2	
C604,05	F5A421050001	4V 1U	2	
C608,09	F1G1H151A016	50V 150P	2	
C610	F3E0G106A001	4V 10U	1	
C611-13	F1G1H680A410	50V 68P	3	
C614	F3E0G106A001	4V 10U	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
C615	ECUENA104KBQ	10V 0.1U	1	F1G1A104A014
C616	F1G1H680A410	50V 68P	1	
C621,22	F1G1H271A401	50V 270P	2	
C801	F5A421050001	4V 1U	1	
C803-06	F1J0J4750010	6.3V 4.7U	4	
C807,08	F3F1A226A008	10V 22U	2	
CP1	RJS2A7121T	CONNECTOR(21P)	1	K1MN21B00028
CP201	K1MN13B00065	CONNECTOR(13P)	1	
CP301,02	RJS2A7104T	CONNECTOR(4P)	2	K1MN04A00014
CP801	K4BZ07E00001	CONNECTOR(7P)	1	
CX110,11	ECUE1E472KBQ	25V 4700P	2	F1G1E4720004
CX222	ECUENA104KBQ	10V 0.1U	1	F1G1A104A014
CX415	F1G1E472A059	25V 4700P	1	
CX451	F1J0J4750010	6.3V 4.7U	1	
CX811,12	ECUE1C153KBQ	16V 0.015U	2	F1G1C153A044
D402,03	B0JCJB000001	DIODE	2	
D406	MA2YD2100L	DIODE	1	
IC1	C1BB00000728	IC	1	
IC101	C1BB00000729	IC	1	
IC201	MN101C32GAG2	IC	1	
IC202	C3EBDG000039	IC	1	
IC203	C0EBC0000032	IC	1	
IC301	C0GBZ0000009	IC	1	
IC401	XC6367A151MR	IC	1	C0DBAFZ00012
IC402	C0DBAFZ00021	IC	1	
IC403	C0DBAGZ00016	IC	1	
IC404	B1KBB0000006	IC	1	
IC501	C1BB00000720	IC	1	
IC601	C1BB00000730	IC	1	
IC602	NJU7015RTE1	IC	1	C0ABHA000012
IC801,02	NJM2135RTE1	IC	2	C0ZZZ0000014
JK501	RJJ36TA02-C	JACK,HEADPHONE	1	K2HC106E0003
L201	G1C100Z00011	COIL	1	
L401	G1C100Z00011	COIL	1	
L402	G1A330D00007	COIL	1	
L403	RLQP100MT-W	COIL	1	G1C100M00016
L405	G1A150D00002	COIL	1	
L406	ELJEA470KF	COIL	1	
L501,02	RLBV601V-W	COIL	2	J0JCC0000059
P1	RPK1852	PACKING CASE	1	
P2	RPQ1442	PAD	1	
P3	RPF0257-1	PROTECTION BAG	1	
P4	RPQ1443	PAD	1	
PCB1	REP3453A-M	MAIN P.C.B. ASS'Y	1	(RTL)
Q1	B1ADMB000003	TRANSISTOR	1	

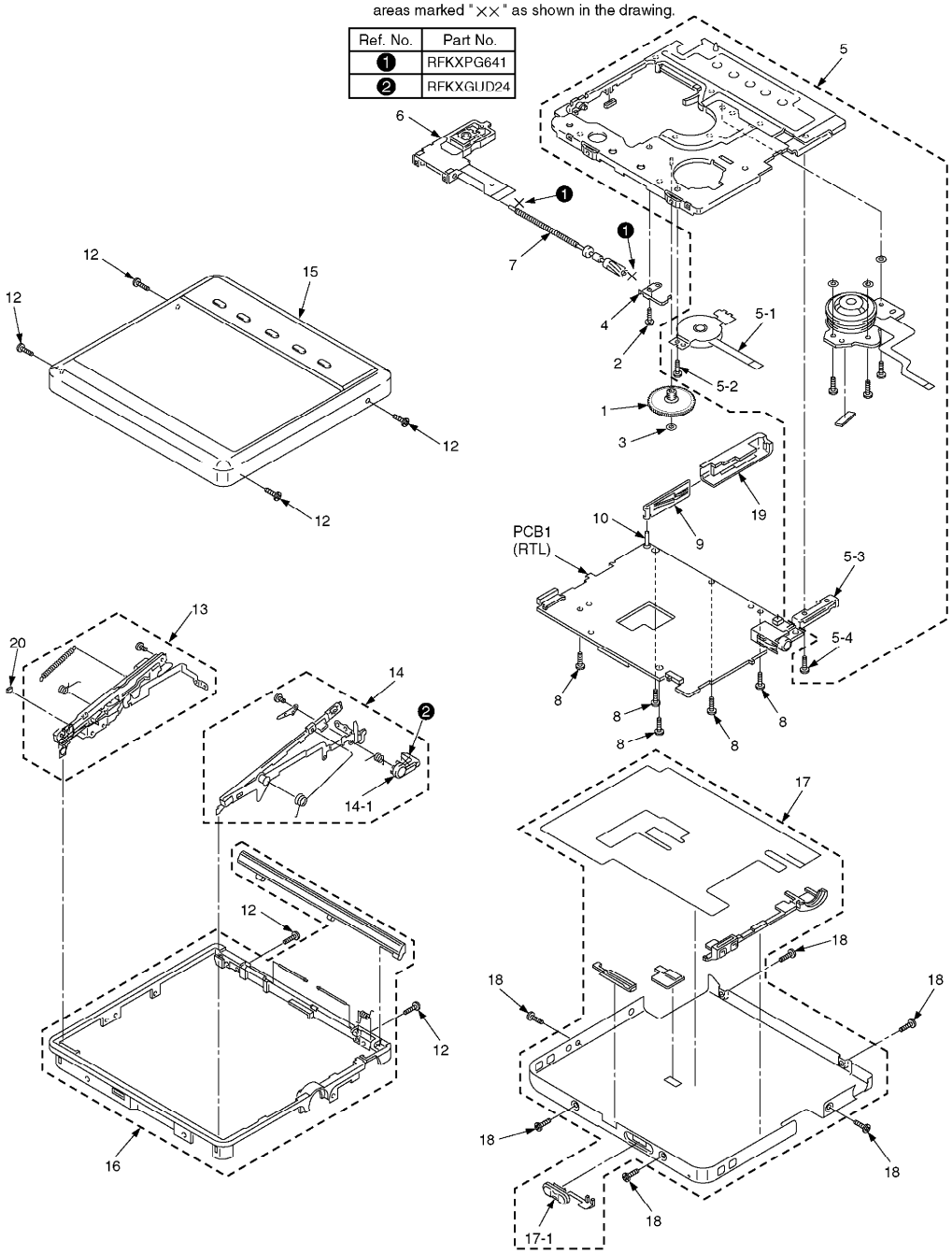
Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
Q5	B1CHMC000001	TRANSISTOR	1	
Q201	2SD1819ASTX	TRANSISTOR	1	2SD1819ASL
Q202	B1ADMB000003	TRANSISTOR	1	
Q203-05	B1GFCFJN0013	TRANSISTOR	3	
Q402,03	B1CHMC000001	TRANSISTOR	2	
Q404,05	B1DFAC000003	TRANSISTOR	2	
Q406,07	2SB1218ASTX	TRANSISTOR	2	2SB1218ASL
Q408	B1HFCFA00005	TRANSISTOR	1	
Q410	B1DFAC000003	TRANSISTOR	1	
Q411	B1MBADA00001	TRANSISTOR	1	
Q412	B1DFAC000003	TRANSISTOR	1	
Q551	MCH6602-TL	TRANSISTOR	1	B1CFHD000004
R1	D1H411320001	11K	1	
R2	ERJ2GEJ471X	1/4W 470	1	ERJ2RMJ471X
R3	ERJ2GEJ391X	1/4W 390	1	ERJ2RMJ391X
R4	ERJ2GEJ104	1/4W 100K	1	
R5	ERJ2GEJ1R0X	1/4W 1	1	ERJ2RMJ1R0X
R7	ERJ2GEJ223X	1/4W 22K	1	ERJ2RMJ223X
R8	ERJ2GEJ474X	1/4W 470K	1	ERJ2RMJ474X
R9	ERJ2GEJ823X	1/4W 82K	1	ERJ2RMJ823X
R101	ERJ2GEJ472X	1/4W 4.7K	1	ERJ2RMJ472X
R102	ERJ2GEJ222X	1/4W 2.2K	1	ERJ2RMJ222X
R103	ERJ2GEJ682X	1/4W 6.8K	1	ERJ2RMJ682X
R104	ERJ2GEJ473X	1/4W 47K	1	ERJ2RMJ473X
R106	ERJ2GEJ105	1/4W 1M	1	D0GA105JA001
R107	ERJ2GE0R00X	1/4W 0	1	D0YAR0000003
R108	ERJ2GEJ682X	1/4W 6.8K	1	ERJ2RMJ682X
R109	ERJ2GEJ332X	1/4W 3.3K	1	ERJ2RMJ332X
R112	ERJ2GEJ224	1/4W 220K	1	
R113	ERJ2GEJ103	1/4W 10K	1	
R115	ERJ2GEJ393X	1/4W 39K	1	ERJ2RMJ393X
R116	ERJ2GEJ103	1/4W 10K	1	
R117	ERJ2GEJ101	1/4W 100	1	
R120	ERJ2GEJ473X	1/4W 47K	1	ERJ2RMJ473X
R131	ERJ2GEJ101	1/4W 100	1	
R201	ERJ2GEJ103	1/4W 10K	1	
R202	ERJ2GEJ473X	1/4W 47K	1	ERJ2RMJ473X
R203	ERJ2GEJ221	1/4W 220	1	
R204	ERJ2GEJ332X	1/4W 3.3K	1	ERJ2RMJ332X
R205	ERJ2GEJ682X	1/4W 6.8K	1	ERJ2RMJ682X
R206	ERJ2GEJ223X	1/4W 22K	1	ERJ2RMJ223X
R207	ERJ2GEJ471X	1/4W 470	1	ERJ2RMJ471X
R208	D1H422420001	220K	1	
R209	D1H410320002	10K	1	
R215	ERJ2GEJ223X	1/4W 22K	1	ERJ2RMJ223X
R216	D1H422420001	220K	1	
R218	ERJ2RHD273X	1/4W 27K	1	
R219	ERJ2GEJ104	1/4W 100K	1	
R221	D1H410320002	10K	1	
R231	ERJ2GEJ101	1/4W 100	1	
R233,34	D1H410120001	100	2	
R301	ERJ2GEJ103	1/4W 10K	1	
R302	ERJ2GEJ1R0X	1/4W 1	1	ERJ2RMJ1R0X

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
R303	ERJ2GEJ682X	1/4W 6.8K	1	ERJ2RMJ682X
R305	ERJ2GEJ393X	1/4W 39K	1	ERJ2RMJ393X
R401	ERJ2GEJ225X	1/4W 2.2M	1	ERJ2RMJ225X
R402	D1H84744A024	470K	1	
R403	D1H447420001	470K	1	
R404	ERJ2GEJ274X	1/4W 270K	1	D0GA274JA001
R405	ERJ2GEJ105	1/4W 1M	1	D0GA105JA001
R406	D1H84744A024	470K	1	
R407	ERJ2GEJ103	1/4W 10K	1	
R408	ERJ3GEYJ101	1/16W 100	1	D0GB101JA002
R410	ERJ6GEYJ4R7V	1/10W 4.7	1	
R412	ERJ2RKD684X	1/4W 680K	1	
R413	ERJ2RKD474X	1/4W 470K	1	
R421	ERJ2RKD684X	1/4W 680K	1	
R422	ERJ2GEJ104	1/4W 100K	1	
R423	ERJ2GEJ823X	1/4W 82K	1	ERJ2RMJ823X
R501	D1H439220001	3.9K	1	
R504	D1H410320002	10K	1	
R506	EXB24V225JX	1/4W 2.2M	1	
R507	D1H410020002	10	1	
R509	ERJ2GEJ221	1/4W 220	1	
R551	D1H447420001	470K	1	
R553	ERJ2GEJ474X	1/4W 470K	1	ERJ2RMJ474X
R602	ERJ2GEJ183	1/4W 18K	1	
R603	ERJ2GEJ682X	1/4W 6.8K	1	ERJ2RMJ682X
R604	ERJ2GEJ104	1/4W 100K	1	
R605	D1H84734A024	47K	1	
R606	ERJ2GEJ470	1/4W 47	1	
R607	D1H427320001	27K	1	
R608	ERJ2GEJ273X	1/4W 27K	1	ERJ2RMJ273X
R609	D1H422320002	22K	1	
R610	D1H84734A024	47K	1	
R611	ERJ2GEJ273X	1/4W 27K	1	ERJ2RMJ273X
R621	D1H84734A024	47K	1	
R801,02	ERJ2GEJ152	1/4W 1.5K	2	
R803,04	ERJ2GEJ183	1/4W 18K	2	
R805,06	ERJ2GEJ224	1/4W 220K	2	
R810,11	ERJ2GEJ2R2X	1/4W 2.2	2	ERJ2RMJ2R2X
R812,13	ERJ2GEJ150	1/4W 15	2	
RX210	ERJ2GEJ104	1/4W 100K	1	
RX808,09	ERJ2GEJ821X	1/4W 820	2	ERJ2RMJ821X
S207	RSH1A039-A	SW,OPEN/CLOSE DET.	1	K0L1BA000037
S208	RSS2A010-1A	SW,HOLD	1	K0D112B00071
X101	H2D169500017	OSCILLATOR	1	
X201	H2D400400010	OSCILLATOR	1	
Z401	RJH9212-1	CONNECTOR TERMINAL	1	K4BC02E00007

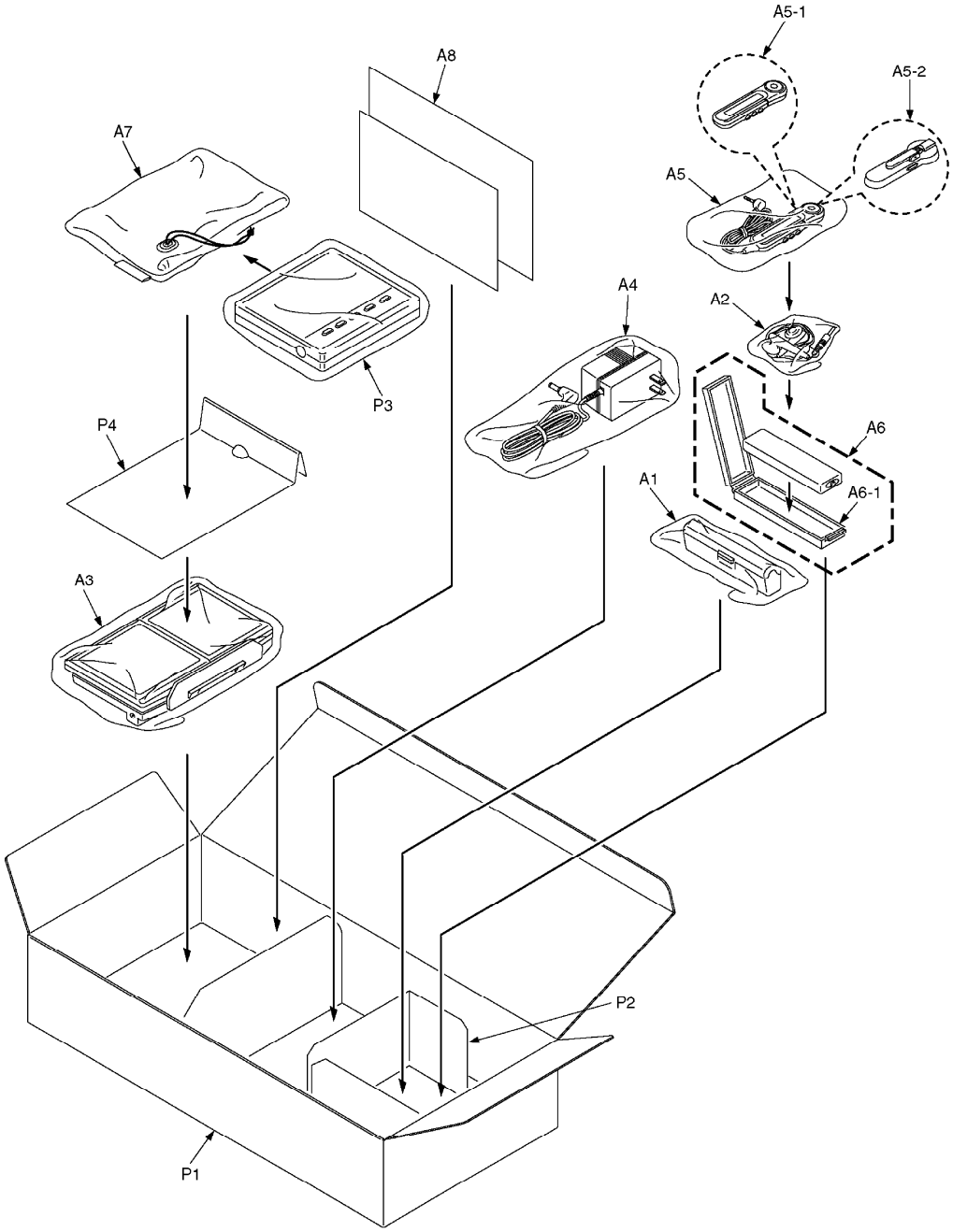
18. Cabinet Parts Location

Note: When changing loading mechanism parts apply the specified greace to the areas marked "××" as shown in the drawing.

Ref. No.	Part No.
❶	RFKXPG641
❷	RFKXGUD24



19. Packaging



20. Schematic Diagram for Printing with A4 Size

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