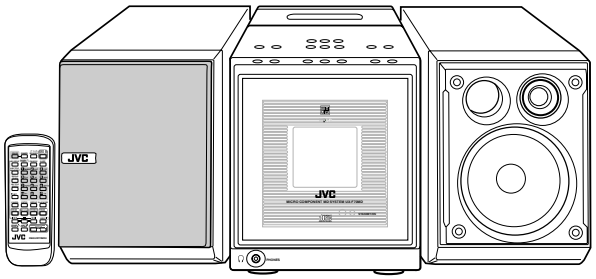
JVC

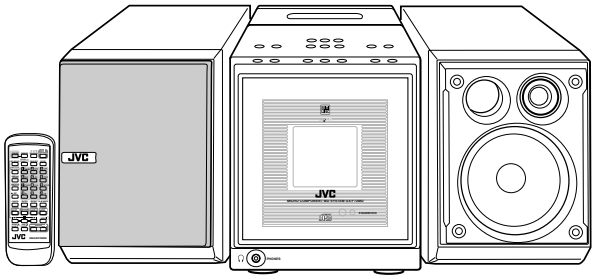
SERVICE MANUAL

MICRO COMPONENT MD SYSTEM

UX-F70MD
UX-F72MD



SP-UXF70MD CA-UXF70MD SP-UXF70MD



SP-UXF72MD CA-UXF72MD SP-UXF72MD

COMPACT disc DIGITAL AUDIO

MiniDisc MDLP

Area Suffix

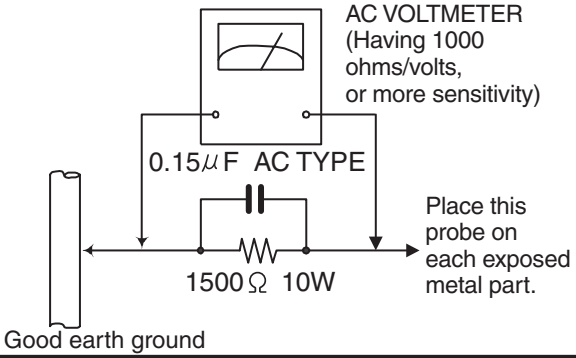
UB ---------- **Hong Kong**
UF ---------- **China**

Contents

No.21028
Sep. 2001

Safety Precautions

1. This design of this product contains special hardware and many circuits and components specially for safety purposes. For continued protection, no changes should be made to the original design unless authorized in writing by the manufacturer. Replacement parts must be identical to those used in the original circuits. Services should be performed by qualified personnel only.
2. Alterations of the design or circuitry of the product should not be made. Any design alterations of the product should not be made. Any design alterations or additions will void the manufacturer`s warranty and will further relieve the manufacture of responsibility for personal injury or property damage resulting therefrom.
3. Many electrical and mechanical parts in the products have special safety-related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in the Parts List of Service Manual. Electrical components having such features are identified by shading on the schematics and by (⚠) on the Parts List in the Service Manual. The use of a substitute replacement which does not have the same safety characteristics as the recommended replacement parts shown in the Parts List of Service Manual may create shock, fire, or other hazards.
4. The leads in the products are routed and dressed with ties, clamps, tubings, barriers and the like to be separated from live parts, high temperature parts, moving parts and/or sharp edges for the prevention of electric shock and fire hazard. When service is required, the original lead routing and dress should be observed, and it should be confirmed that they have been returned to normal, after re-assembling.
5. Leakage currnet check (Electrical shock hazard testing)
   After re-assembling the product, always perform an isolation check on the exposed metal parts of the product (antenna terminals, knobs, metal cabinet, screw heads, headphone jack, control shafts, etc.) to be sure the product is safe to operate without danger of electrical shock.
   Do not use a line isolation transformer during this check.
   - Plug the AC line cord directly into the AC outlet. Using a "Leakage Current Tester", measure the leakage current from each exposed metal parts of the cabinet , particularly any exposed metal part having a return path to the chassis, to a known good earth ground. Any leakage current must not exceed 0.5mA AC (r.m.s.)
   - Alternate check method
     Plug the AC line cord directly into the AC outlet. Use an AC voltmeter having, 1,000 ohms per volt or more sensitivity in the following manner. Connect a 1,500Ω 10W resistor paralleled by a 0.15μF AC-type capacitor between an exposed metal part and a known good earth ground.
     Measure the AC voltage across the resistor with the AC voltmeter.
     Move the resistor connection to eachexposed metal part, particularly any exposed metal part having a return path to the chassis, and meausre the AC voltage across the resistor. Now, reverse the plug in the AC outlet and repeat each measurement. voltage measured Any must not exceed 0.75 V AC (r.m.s.). This corresponds to 0.5 mA AC (r.m.s.).



Warning

1. This equipment has been designed and manufactured to meet international safety standards.
2. It is the legal responsibility of the repairer to ensure that these safety standards are maintained.
3. Repairs must be made in accordance with the relevant safety standards.
4. It is essential that safety critical components are replaced by approved parts.
5. If mains voltage selector is provided, check setting for local voltage.

⚠ ***CAUTION*** **Burrs formed during molding may be left over on some parts of the chassis. Therefore, pay attention to such burrs in the case of preforming repair of this system.**

Preventing static electricity

Electrostatic discharge (ESD), which occurs when static electricity stored in the body, fabric, etc. is discharged, can destroy the laser diode in the traverse unit (optical pickup). Take care to prevent this when performing repairs.

1.1. Grounding to prevent damage by static electricity

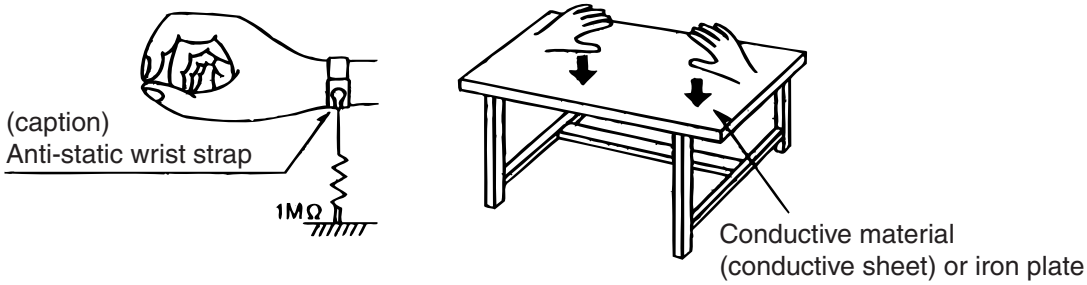
Static electricity in the work area can destroy the optical pickup (laser diode) in devices such as DVD players. Be careful to use proper grounding in the area where repairs are being performed.

1.1.1. Ground the workbench

1. Ground the workbench by laying conductive material (such as a conductive sheet) or an iron plate over it before placing the traverse unit (optical pickup) on it.

1.1.2. Ground yourself

1. Use an anti-static wrist strap to release any static electricity built up in your body.



1.1.3. Handling the optical pickup

1. In order to maintain quality during transport and before installation, both sides of the laser diode on the replacement optical pickup are shorted. After replacement, return the shorted parts to their original condition. (Refer to the text.)

2. Do not use a tester to check the condition of the laser diode in the optical pickup. The tester's internal power source can easily destroy the laser diode.

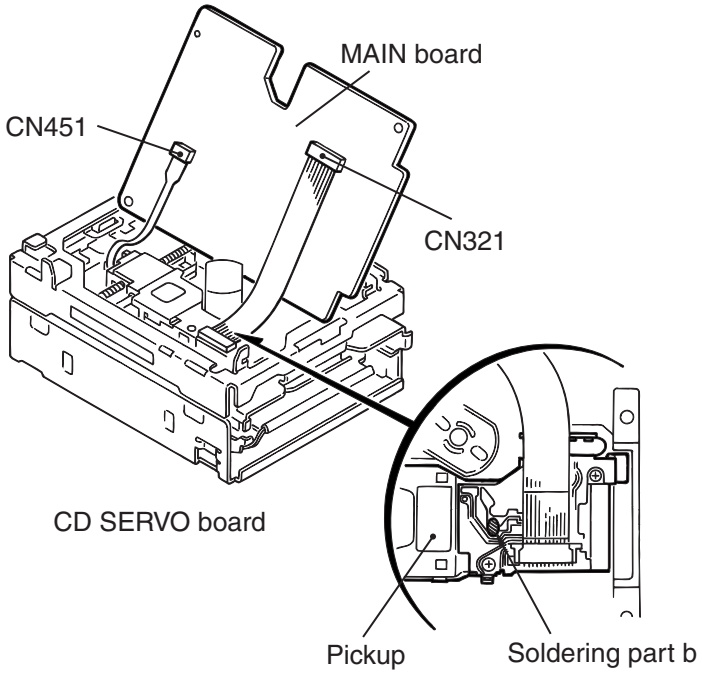
1.2. Handling the traverse unit (optical pickup)

1. Do not subject the traverse unit (optical pickup) to strong shocks, as it is a sensitive, complex unit.

2. Cut off the shorted part of the flexible cable using nippers, etc. after replacing the optical pickup. For specific details, refer to the replacement procedure in the text. Remove the anti-static pin when replacing the traverse unit. Be careful not to take too long a time when attaching it to the connector.

3. Handle the flexible cable carefully as it may break when subjected to strong force.

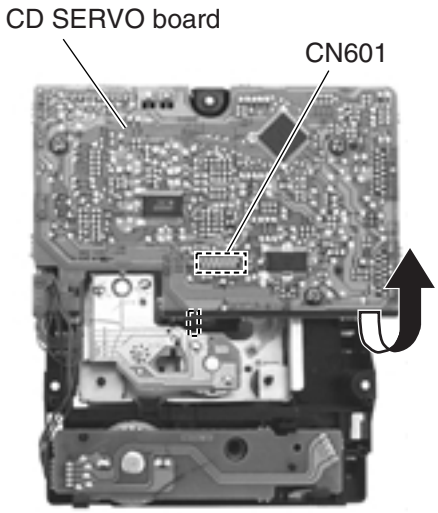
4. It is not possible to adjust the semi-fixed resistor that adjusts the laser power. Do not turn it

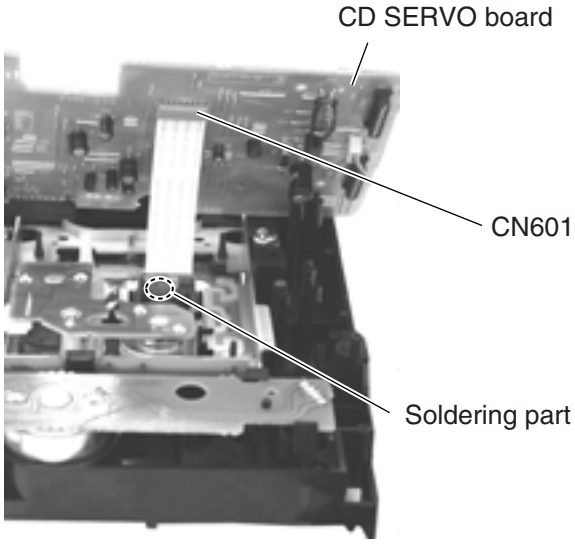


1.3. Cautions on removing the CD traverse unit

* For removing the CD traverse unit in detail, refer to the "Adjustment Method" section of this manual.

1. Before disconnecting the flexible wire from the connector CN601 on the CD SERVO board, solder the part shown in the figure below.
   (Note:If the flexible wire is disconnected from the CN601 without presoldering, it may cause breakdown of the CD pickup assembly.)
2. When reassembling the CD traverse unit, be sure to remove the solder from the soldered part after reconnecting the flexible wire to the CN601.





Important for laser products

1.CLASS 1 LASER PRODUCT

2.DANGER : Invisible laser radiation when open and inter lock failed or defeated. Avoid direct exposure to beam.

3.CAUTION : There are no serviceable parts inside the Laser Unit. Do not disassemble the Laser Unit. Replace the complete Laser Unit if it malfunctions.

4.CAUTION : The compact disc player uses invisible laserradiation and is equipped with safety switches whichprevent emission of radiation when the drawer is open and the safety interlocks have failed or are de feated. It is dangerous to defeat the safety switches.

5.CAUTION : If safety switches malfunction, the laser is able to function.

6.CAUTION : Use of controls, adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

⚠ ***CAUTION*** **Please use enough caution not to see the beam directly or touch it in case of an adjustment or operation check.**

VARNING : Osynlig laserstrålning är denna del är öppnad och spårren är urkopplad. Betrakta ej strålen.

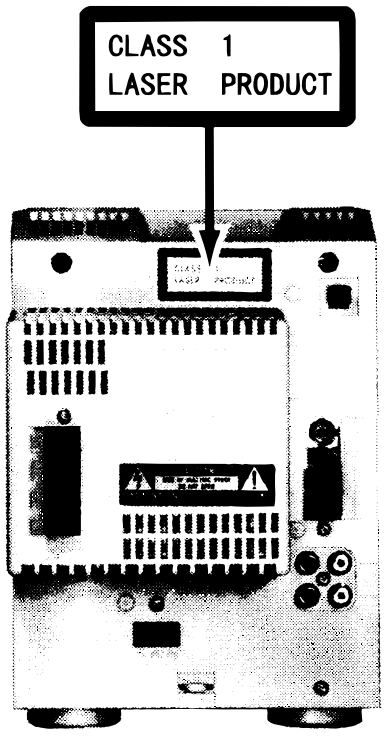
VARO : Avattaessa ja suojalukitus ohitettaessa olet alttiina näkymättömälle lasersäteilylle.Älä katso säteeseen.

ADVARSEL : Usynlig laserstråling ved åbning , når sikkerhedsafbrydere er ude af funktion. Undgå udsættelse for stråling.

ADVARSEL : Usynlig laserstråling ved åpning,når sikkerhetsbryteren er avslott. unngå utsettelse for stråling.

REPRODUCTION AND POSITION OF LABELS

WARNING LABEL



Disassembly method

<Main body>

■Removing the rear cover

(See Fig.1 and 2)

1. Remove the seven screws **A** on the back of the body.
2. Remove the two screws **B** on the bottom of the body.
3. Unlock the speaker terminal and the antenna terminal, then remove the rear cover backward with releasing the hooks.

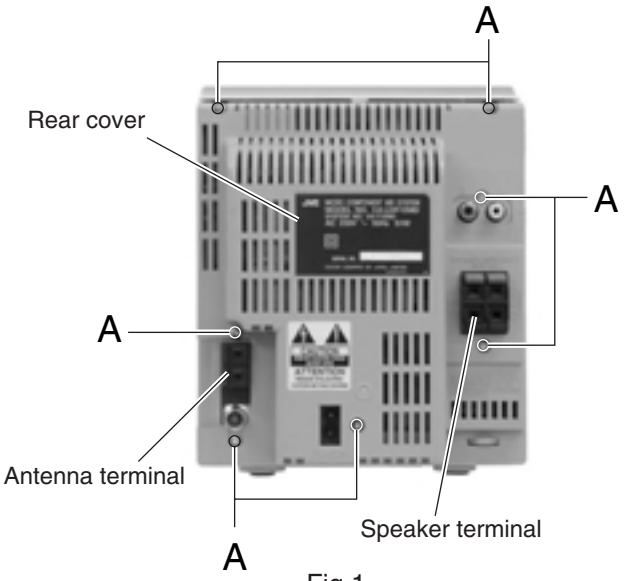


Fig.1

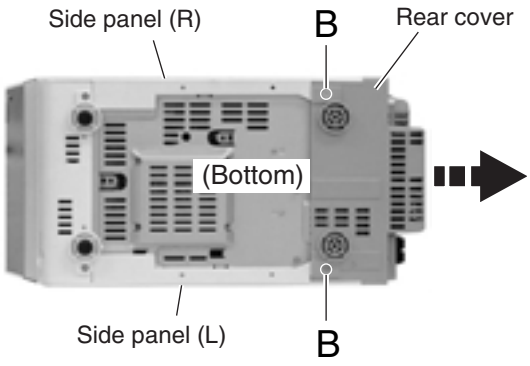


Fig.2

■Removing the side panels

(See Fig.3 to 5)

・ Prior to performing the following procedure, remove the rear cover.

1. Remove the two screws **C** attaching the side panels on the bottom of the body.
2. Remove each side panel backward while releasing the eight joints **a** as shown in Fig.4 and 5.

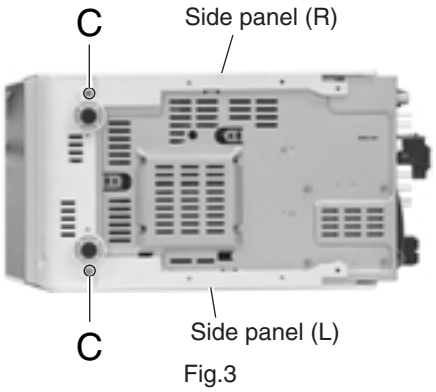


Fig.3

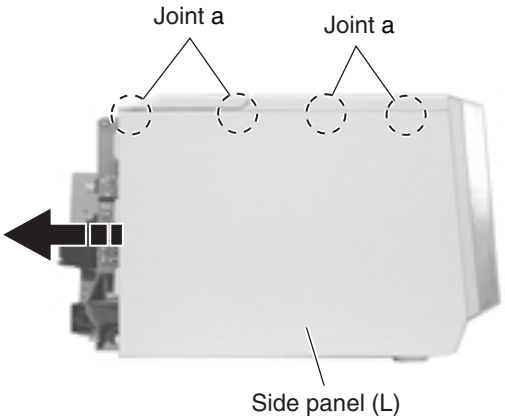


Fig.5

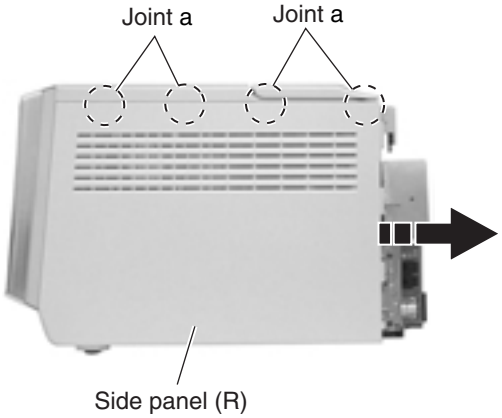


Fig.4

■Removing the cassette mechanism assembly section (See Fig.6 and 7)

・ Prior to performing the following procedure, remove the rear cover and the side panels.

1. Remove the two screw **D** on each side of the body.
2. Release the joint **b** on each side of the body and remove the cassette mechanism assembly section in the direction of the arrow.
3. Disconnect the card wires from connector CN705, CN743 and CN744 on the system control board on the left side of the body.

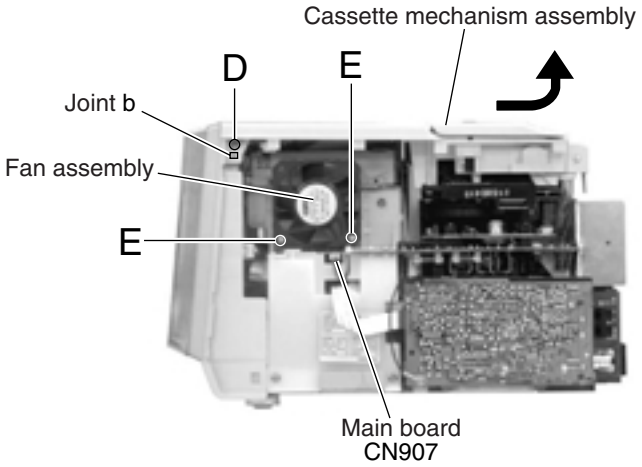


Fig.6

■Removing the fan assembly (See Fig.6)

・ Prior to performing the following procedure, remove the rear panel and the right side panel.

1. Disconnect the wire from connector CN907 on the main board on the right side of the body.
2. Remove the two screws **E** attaching the fan assembly.

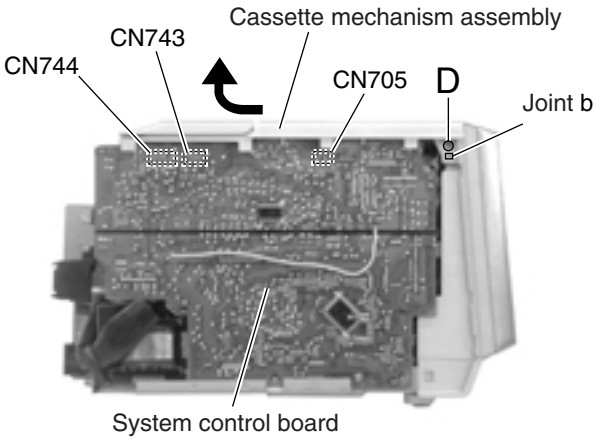


Fig.7

■Removing the MD mechanism assembly section (See Fig.8)

・ Prior to performing the following procedure, remove the rear cover, the side panels, the cassette mechanism assembly section and the fan assembly.

1. Disconnect the card wire from connector CN721 on the system control board.
2. Disconnect the card wire from connector CN522 on the underside of the MD mechanism assembly section.
3. Remove the four screws **F** and the MD mechanism assembly section upward.

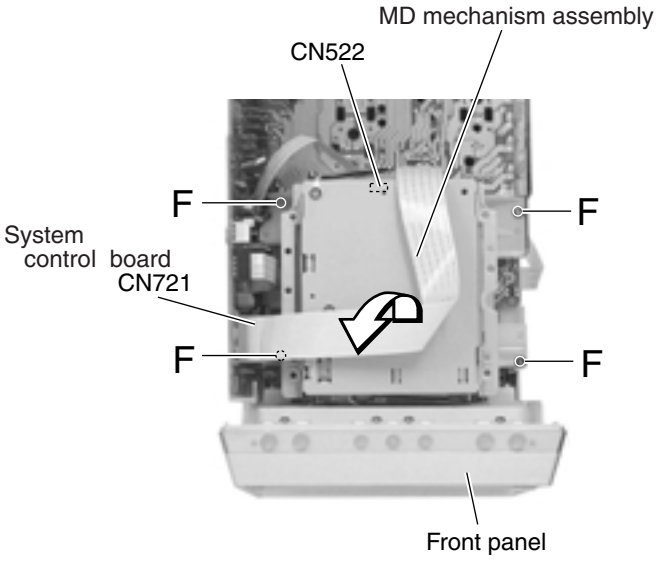


Fig.8

■ Removing the system control board (See Fig.9)

・ Prior to performing the following procedure, remove the rear cover, the side panels and the cassette mechanism assembly section.

1. Remove the screw **G** on the left side of the body.
2. Disconnect the card wire from connector CN701 and CN721on the system control board.
3. Disconnect connector CN709, CN711 and CN712 on the system control board from the body outward.
4. Disconnect the card wire from connector CN704 on the underside of the system control board.

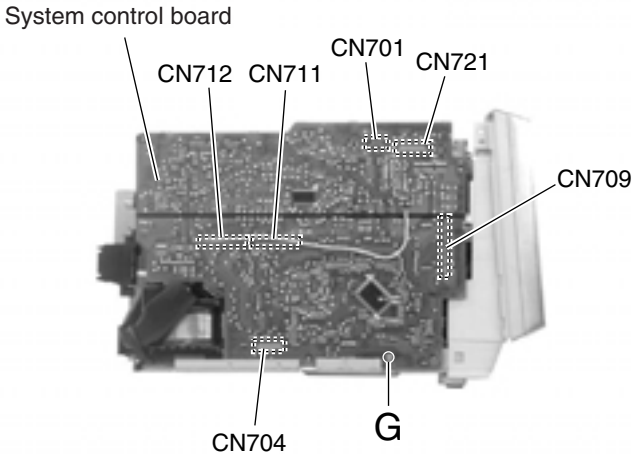


Fig.9

■ Removing the tuner board (See Fig.10)

・ Prior to performing the following procedure, remov the rear cover and the right side panel.

1. Disconnect the card wire from connector CN1 on th tuner board on the right side of the body.
2. Remove the screw **H** and remove the tuner boa upward while disengaging the three joint **c**.

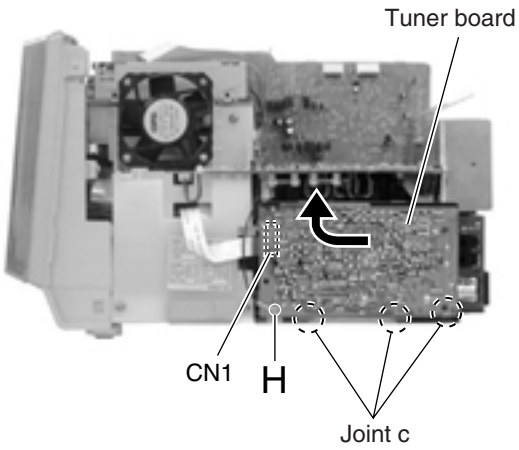


Fig.10

■ Removing the front panel assembly (See Fig.11 and 12)

- Prior to performing the following procedure, remove the rear cover, the side panels, the cassette mechanism assembly section and the system control board.

1. Release the two joints **d** on the lower right and left sides of the front panel assembly, then remove the front panel assembly toward the front.

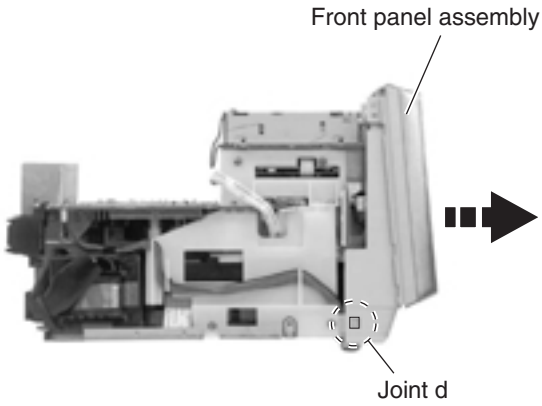


Fig.11

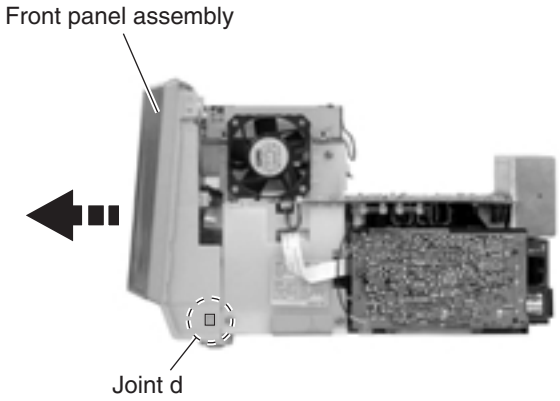


Fig.12

■ Removing the headphone jack board (See Fig.13 and 14)

- Prior to performing the following rear cover, the side panels, the cassette mechanism assembly section, the system control board and the front panel assembly section.

1. Disconnect the wire from connector CN804 on the main board.

2. Remove the plastic rivet fixing the headphone jack board.

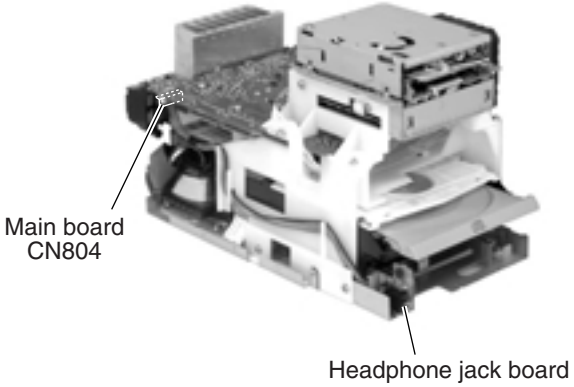


Fig.13

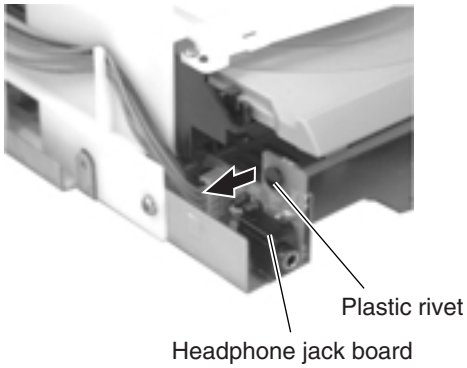


Fig.14

■ Removing the main board / the heat sink (See Fig.15 to 17)

- Prior to performing the following procedure, remove the rear cover, the side panels, the cassette mechanism assembly section, the system control board and the MD mechanism assembly section.

1. Remove the screw **I** attaching the main board.
2. Remove the screw **H** attaching the grounding terminal extending from the main board.
3. Disconnect the wire from connector CN804 on the main board.
4. Disconnect connector CN805 on the main board from the AC jack board while pulling out it. Remove the main board in the direction of the arrow and disconnect the wire from connector CN803 on the reverse side of the main board.
5. Remove the three screws **J** attaching the heat sink on the reverse side of the main board.

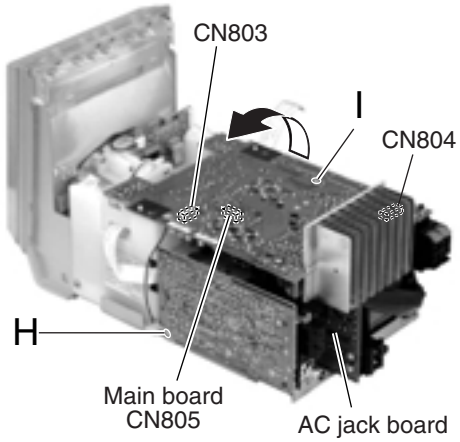


Fig.15

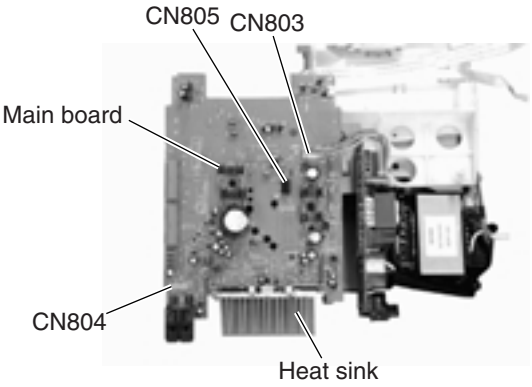


Fig.16

■ Removing the AC jack board (See Fig.18 and 19)

- Prior to performing the following procedure, remove the rear cover, the side panels, the cassette mechanism assembly section, the system control board, the MD mechanism assembly section and the main board / the tuner board.

1. Disconnect the wire from connector CN809 on the AC jack board.
2. Remove the screw **K** and screw **L** attaching the AC jack board.

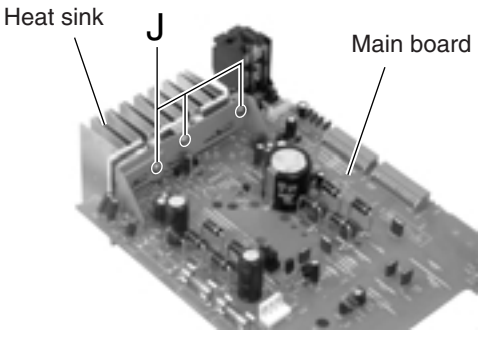


Fig.17

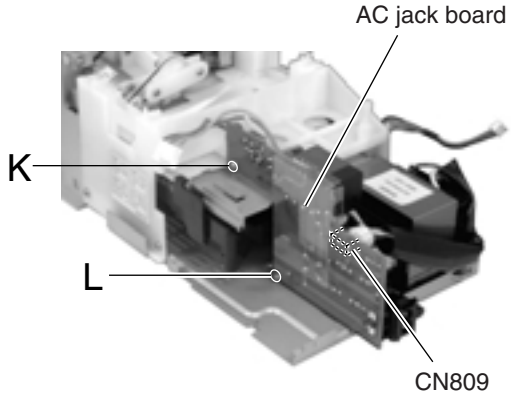


Fig.19

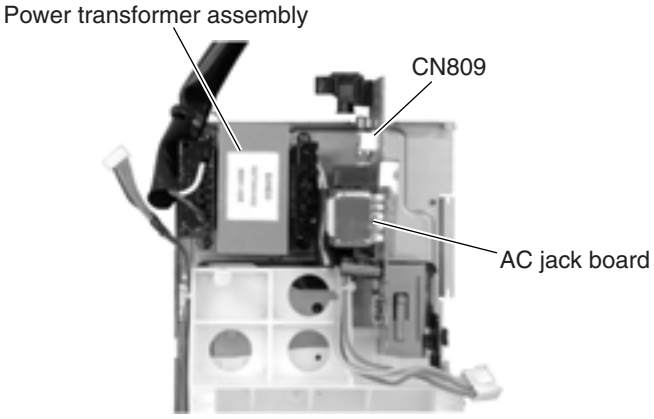


Fig.18

■Removing the power transformer assembly (See Fig.20)

・ Prior to performing the following procedure, remove the rear cover, the side panels, the cassette mechanism assembly section, the system control board, the MD mechanism assembly section and the main board.

1. Disconnect the wire from connector CN809 on the AC jack board.
2. Cut off the band setting the wire on the CD mechanism cover.
3. Remove the four screws **M** attaching the power transformer assembly.

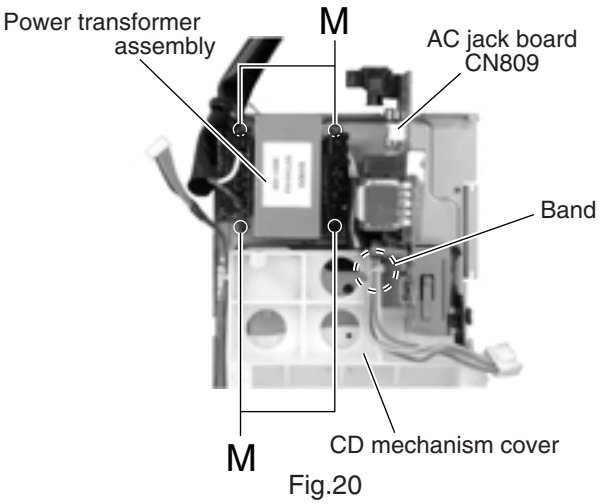


Fig.20

■Removing the CD mechanism assembly (See Fig.21 to 23)

・ Prior to performing the following procedure, remove the rear cover, the side panels, the cassette mechanism assembly section, the system control board, the front panel assembly section, the MD mechanism assembly section, the main board / the tuner board and the AC jack board.

1. Cut off the band setting the wire on CD mechanism cover.
2. Release the wire extending from the headphone jack board from the three notches of the CD mechanism cover on the left side of the body.
3. Remove the four screws **N** on the left and right side of the CD mechanism cover. Then remove the CD mechanism cover upward.
4. Remove the three screws **O** attaching the CD mechanism assembly.

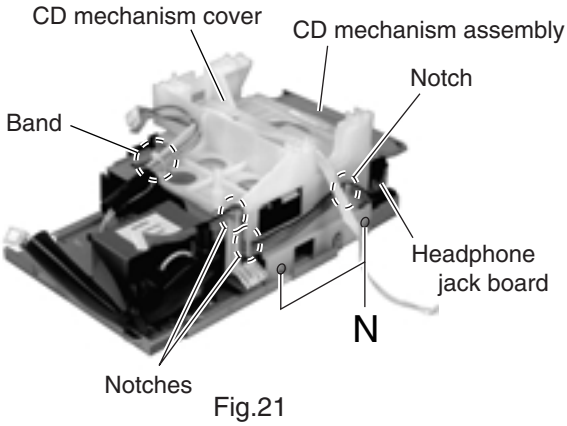


Fig.21

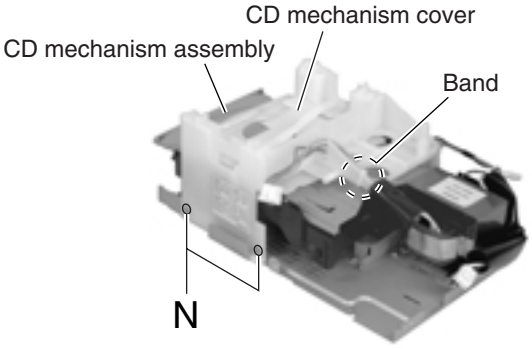


Fig.22

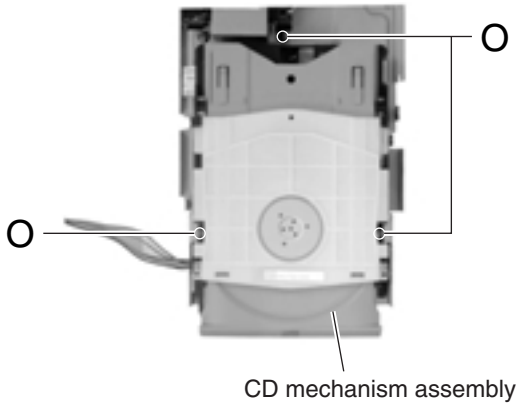


Fig.23

<MD mechanism assembly section>

・ Prior to performing the following procedure, remove the rear cover, the side panels, the cassette mechanism assembly section, the fan assembly and the MD mechanism assembly section.

■ Removing the MD mechanism assembly (See Fig.24 to 26)

1. Remove the four screws **P** attaching the brackets (1) and (2) on the left and right side of the MD mechanism assembly.
2. Disconnect the card wire from connector CN521 on the MD mechanism board.
3. Remove the MD mechanism bottom cover downward.

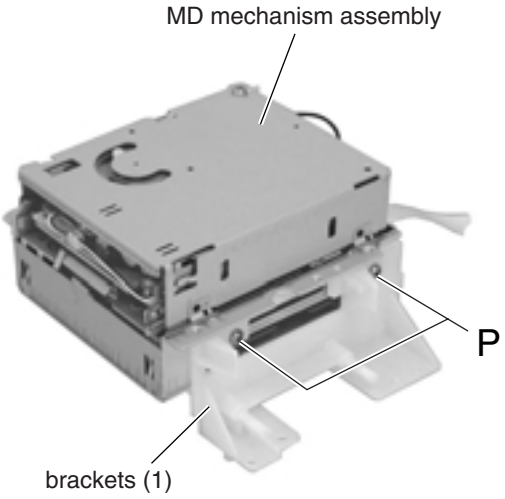


Fig.24

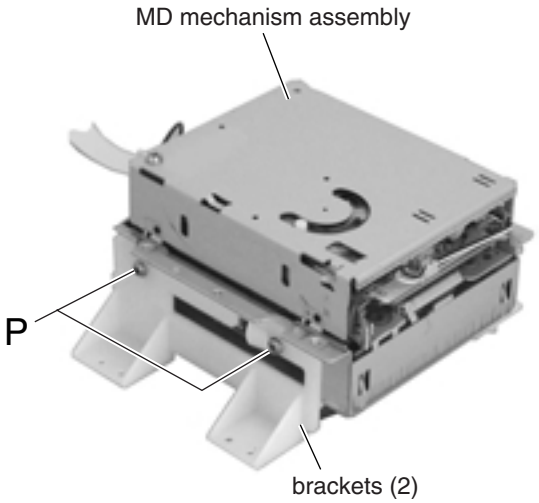


Fig.25

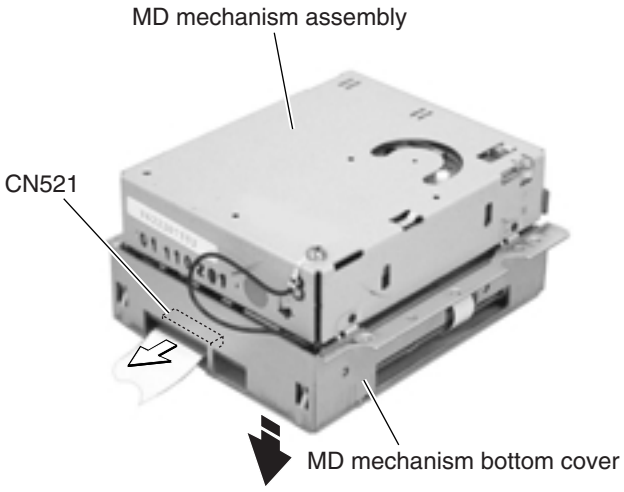


Fig.26

<Front panel assembly section>

- Prior to performing the following procedure, remove the rear cover, the side panels, the cassette mechanism assembly section, the system control board and the front panel assembly section.

■ Removing the relay board (See Fig. 27)

1. Disconnect the wire from connector CN906, CN907 and the card wire from CN908 on the relay board respectively.
2. Remove the two screws **Q**.

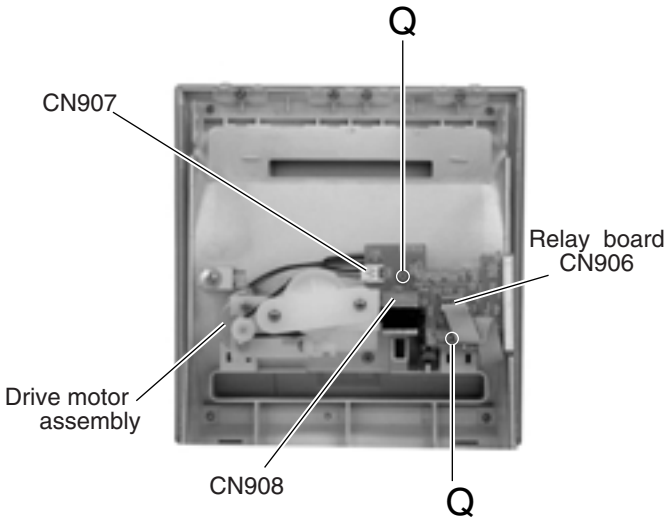


Fig.27

■ Removing the drive motor assembly (See Fig.28)

- Prior to performing the following procedure, remove the relay board.

1. Remove the four screws **R** attaching the drive motor assembly.

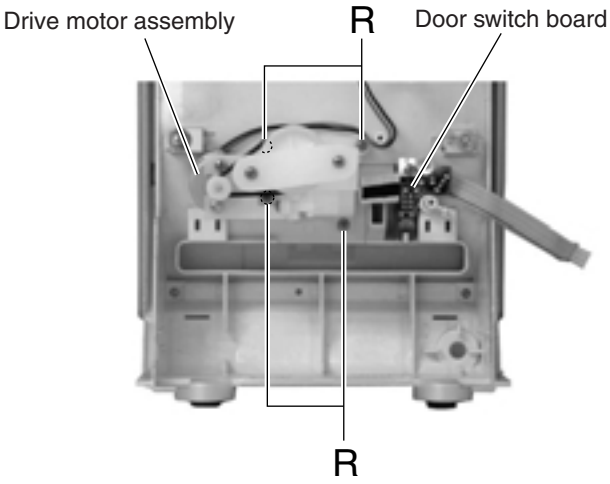


Fig.28

■ Removing the belt and the drive motor (See Fig.29)

REFERENCE: The belt and the drive motor can be removed respectively without removing the drive motor assembly from the front panel section.

1. Remove the two screws **S** attaching the plate.
2. Remove the belt from the two pulleys.
3. Remove the two screws **T** attaching the drive motor.

REFERENCE: When removing the drive motor only, remove the belt from the drive motor pulleys in advance.

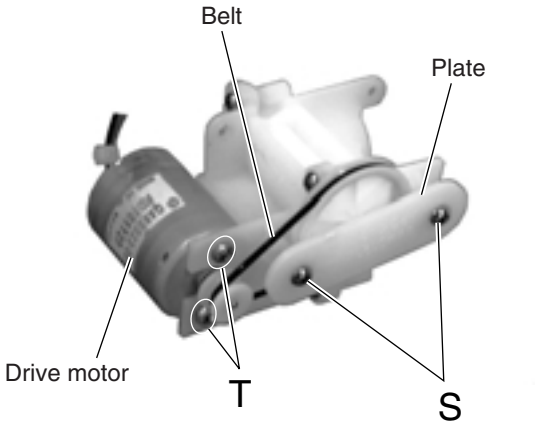


Fig.29

■Removing the door switch board (See Fig.30 and 31)

・ Prior to performing the following procedure, remove the relay board.

1. Loosen the screw **U** attaching the door switch.
2. Remove the door switch board while releasing it from the joint **e**.

CAUTION: When reattaching the door switch board, fit it to the joint **e** and check the operating state of the switch before tightening the screw **U**.

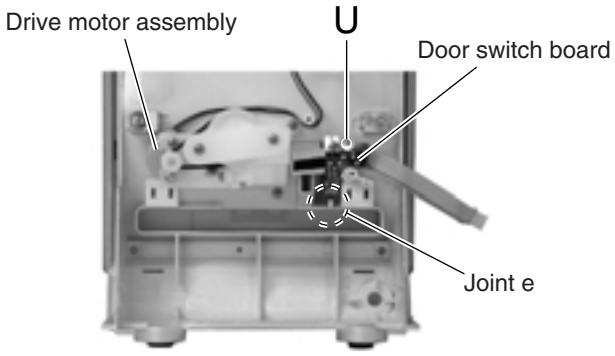


Fig.30

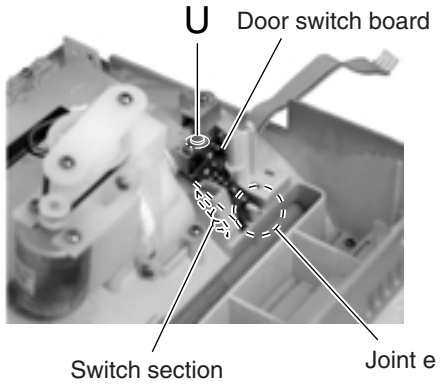


Fig.31

■Removing the LCD section (See Fig.32 to 34)

・ Prior to performing the following procedure, remove the relay board.

1. Loosen the two screws **V** attaching the lock lever.
2. Push the part **f** of the lock lever in the direction of the arrow as shown in Fig.33-1 / 33-2 and disengage the LCD section from the front panel assembly.

CAUTION: Because the LCD may come off, hold it when loosening the screws **V**.

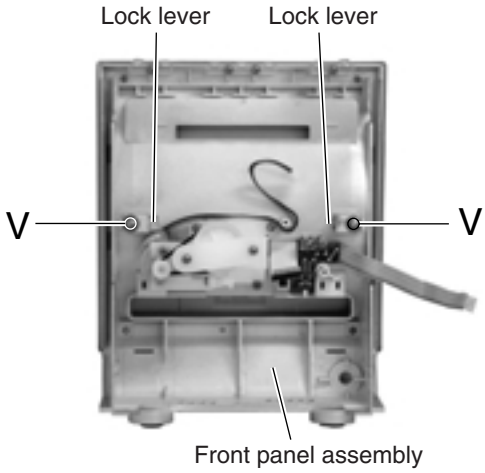


Fig.32

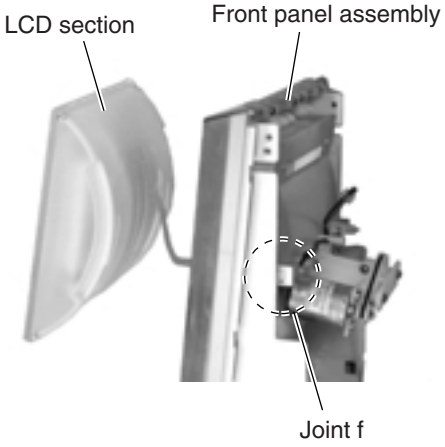


Fig.34

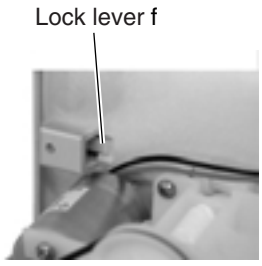


Fig.33-1

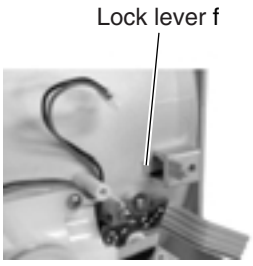


Fig.33-2

■ Removing the LCD board assembly (See Fig.35 to 39)

・ Prior to performing the following procedure, remove the relay board and the LCD section.

1. Remove the four screws **W** attaching the case cover.
2. Remove the four screws **X** attaching the LCD panel on the back of the LCD section.
3. Remove the LCD cover.
4. Release the joint **g** and remove the LCD board assembly in the direction of the arrow.

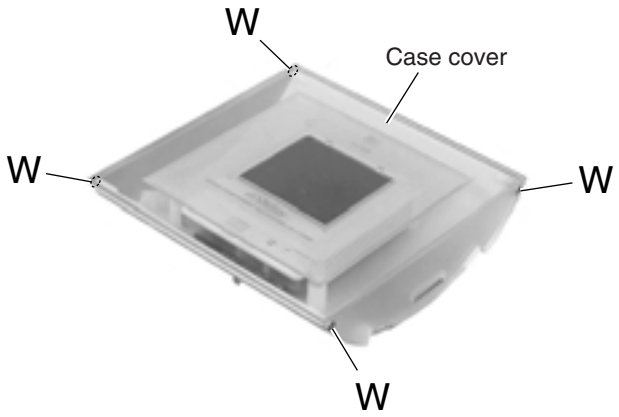


Fig.35

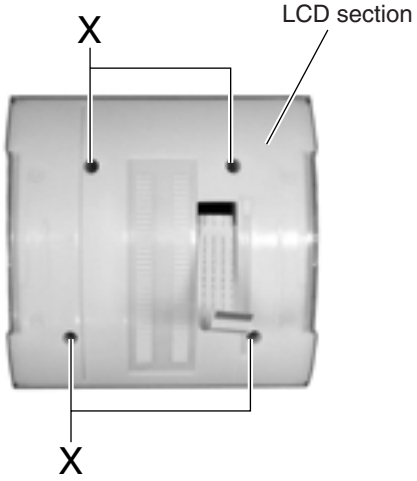


Fig.36

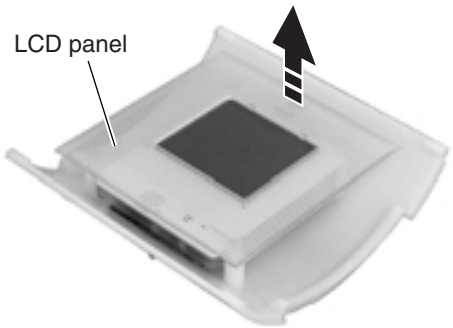


Fig.37

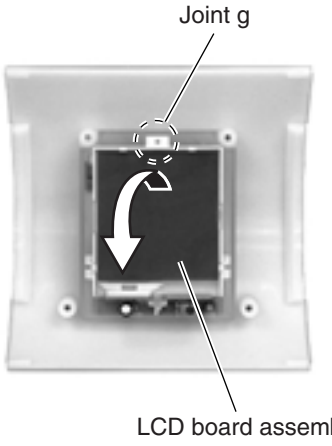


Fig.39

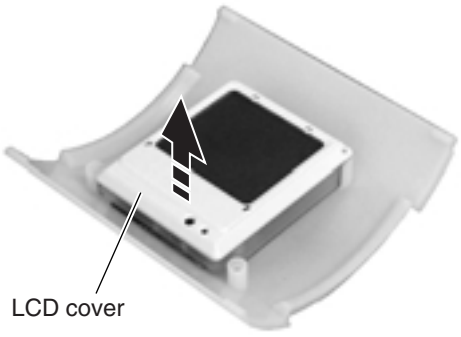


Fig.38

<Cassette mechanism assembly section>

・ Prior to performing the following procedure, remove the rear cover, the side panels and the cassette mechanism assembly section.

■ Removing the operation switch board (See Fig.40)

1. Remove the seven screws **Y** attaching the operation switch board on the reverse side of the cassette mechanism assembly.

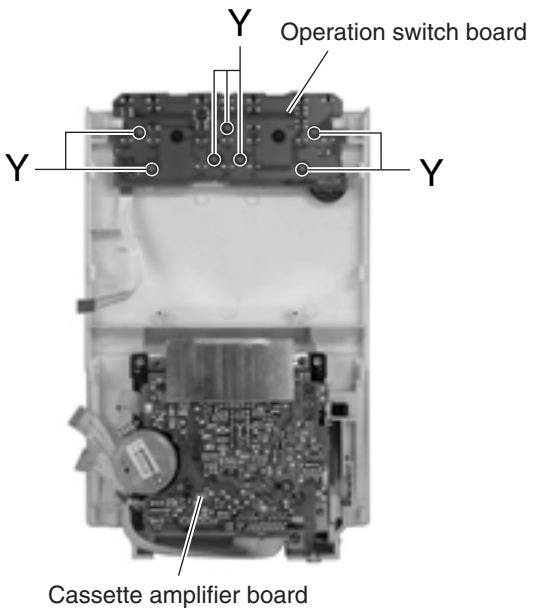


Fig.40

■ Removing the cassette mechanism assembly (See Fig.41)

1. Remove the four screws **Z** on the reverse side of the cassette mechanism assembly.

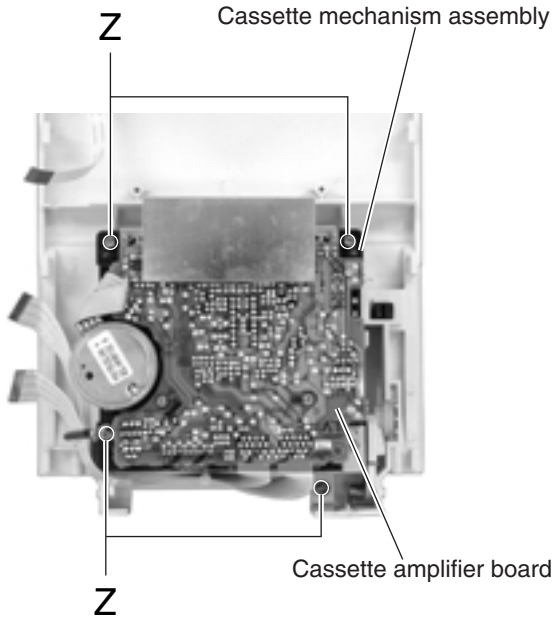


Fig.41

Disassembly method

<Main body>

■Removing the main board (See Fig.1 and 2)

1. Turn over the body and disconnect the card wire from connector CN408 and the flexible wire from CN407 on the main board.

2. Remove the two screws A attaching the main board. Slide the main board in the direction of the arrow to release the two joints a with the single flame.

3. Solder part b on the pickup in the body. Disconnect the flexible harness from connector CN321 and CN451 on the underside of the main board. Then remove the main board.

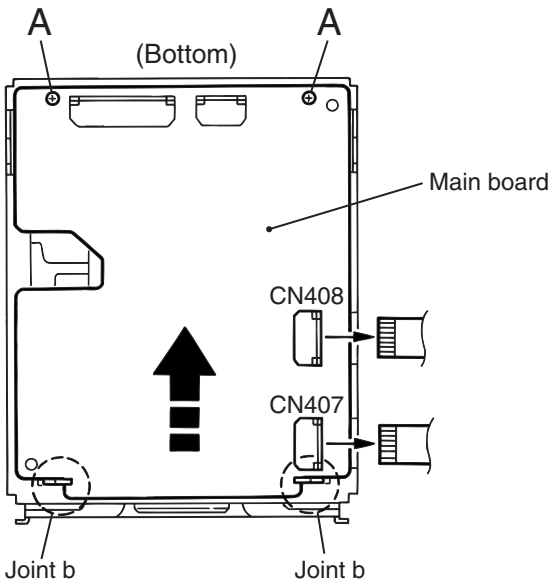


Fig.1

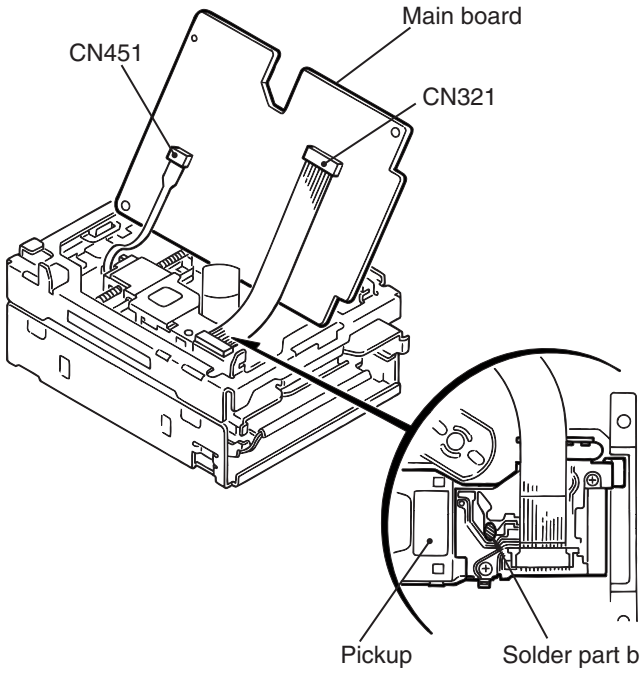


Fig.2

■Removing the mechanism cover (See Fig.3)

1. Remove the four screws B on both sides of the body.

2. Move the mechanism cover toward the front to disengage the front hook of the mechanism cover from the internal loading assembly (Joint c). Then remove the mechanism cover upward.

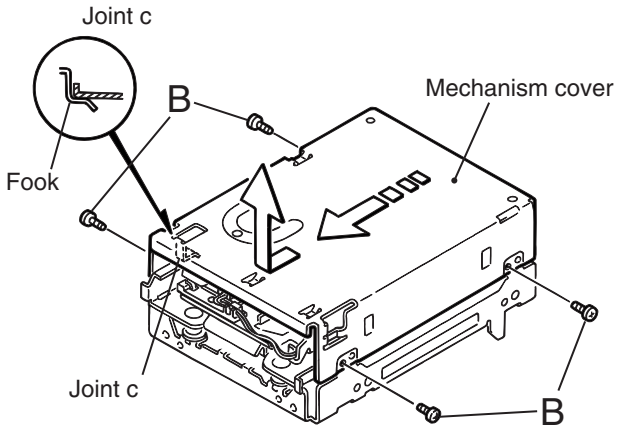


Fig.3

■Removing the head lifter (See Fig.4 to 6)

1. Move the head lifter on top of the body in the direction of the arrow and turn around.
2. Detach the spring from the hook of the body. Remove the head lifter with the spring.
3. If necessary, remove the spring from the head lifter.

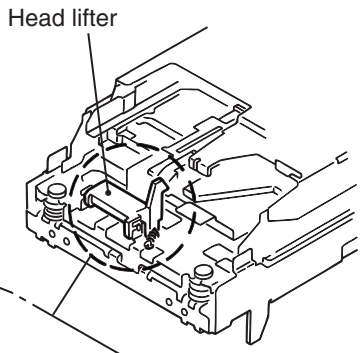


Fig.4

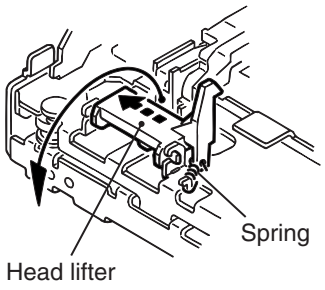


Fig.5

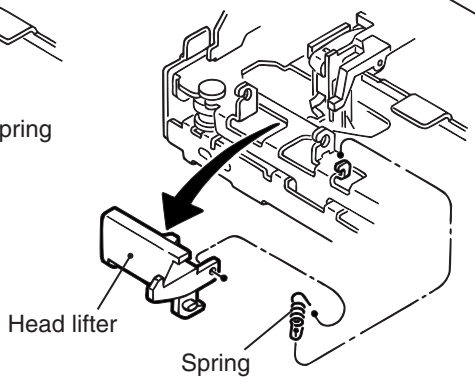


Fig.6

■Removing the head assembly (See Fig.7)

1. Remove the screw C on the upper side of the body. Remove the head assembly while pulling the flexible harness from the body.

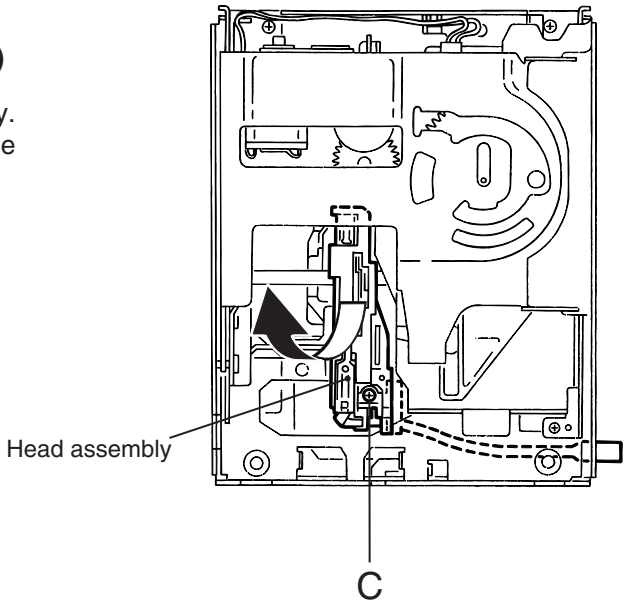


Fig.7

■Removing the Loading assembly (See Fig.8 and 9)

Ref: The loading assembly, the traverse mechanism assembly and the single flame will be removable after removing the loading assembly from the body.

・ Prior to performing the following procedure, remove the main board, the mechanism cover, the head lifter and the head assembly.

1. Remove the three screws D on the upper side of the body.

2. Move the loading assembly forward to disengage it from the traverse mechanism assembly (Joint d). Then remove it upward.

3. Remove the traverse mechanism assembly from the single flame.

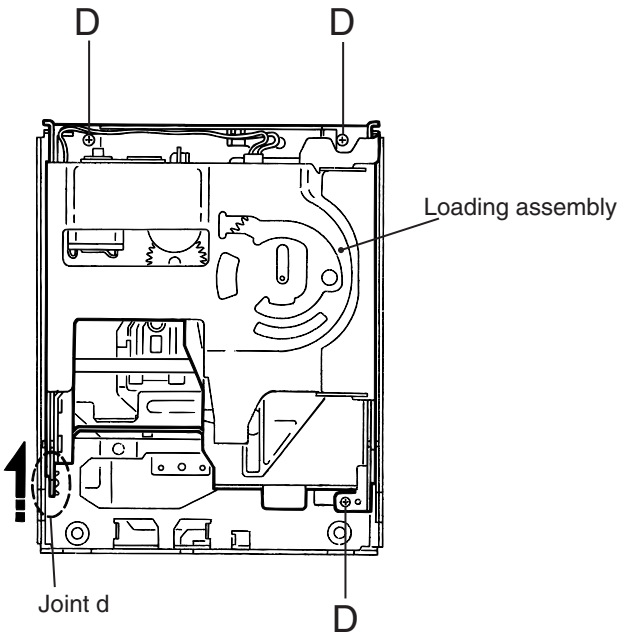


Fig.8

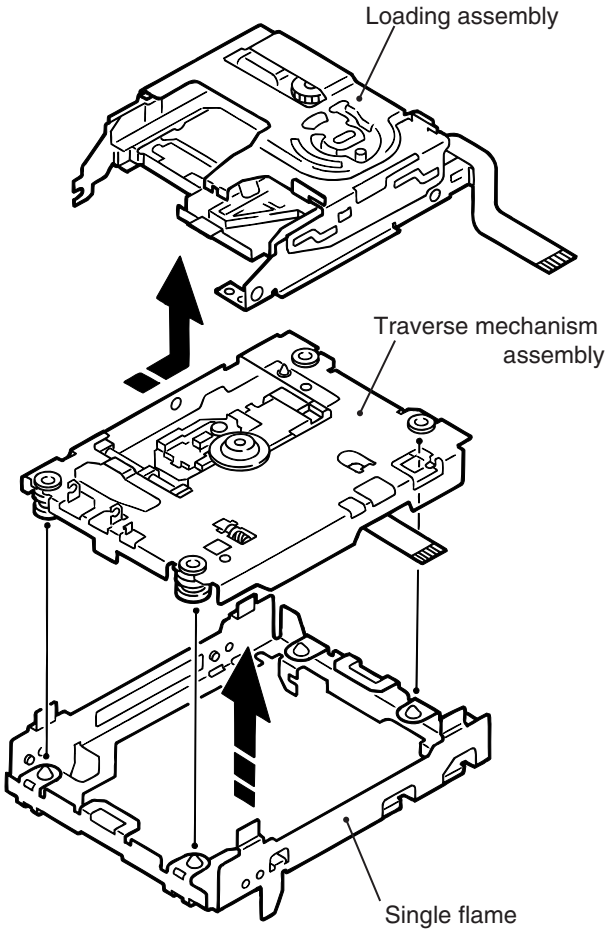


Fig.9

<Loading assembly>

■Removing the slide base (L) / (R) (See Fig.10)

1. Remove the two screws E on the upper side of the loading assembly.
2. Remove the slide base (L) outward. (Release it from the joint bosses E.)
3. Remove the slide base (R) outward.

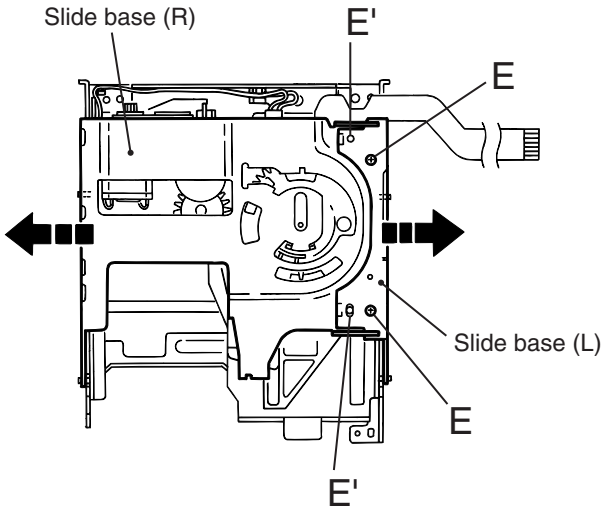


Fig.10

■Removing the loading mechanism assembly (See Fig.11)

1. Detach the loading mechanism assembly upward to release the four pins on both sides from the loading motor, paying attention to the part e of the loading mechanism base.

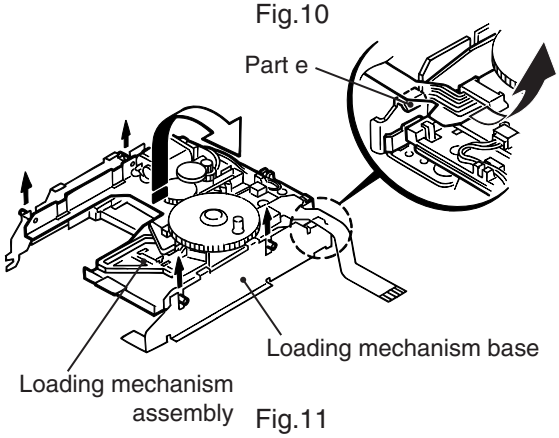


Fig.11

— **Loading mechanism assembly** —

■Removing the loading motor (See Fig.12 and 13)

1. Disconnect the harnesses from the wire holder and from connector CN612 on the cam switch board.
2. Remove the screw F attaching the loading motor and release the joint f.
3. Remove the belt from the loading motor assembly.
4. Remove the two screws G attaching the loading motor.

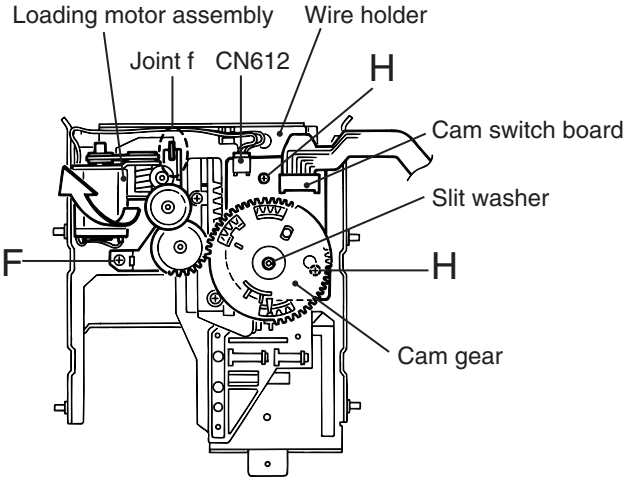


Fig.12

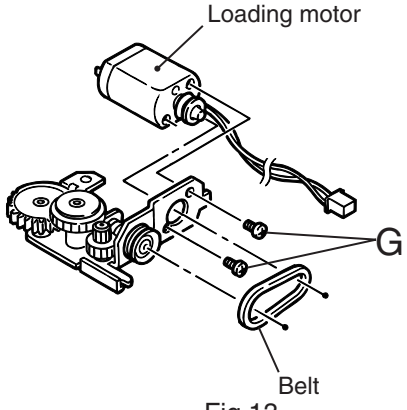


Fig.13

■Removing the cam gear and the cam switch board (See Fig.12)

1. Remove the slit washer attaching the cam gear and pull out the cam gear.
2. Disconnect the harness from the wire holder and from connector CN612 on the cam switch board.
3. Remove the two screws H and the clamp. Remove the cam switch board.

■Removing the cartridge holder assembly (See Fig.14 and 15)

1. Remove the two screws l on the upper side of the loading assembly.

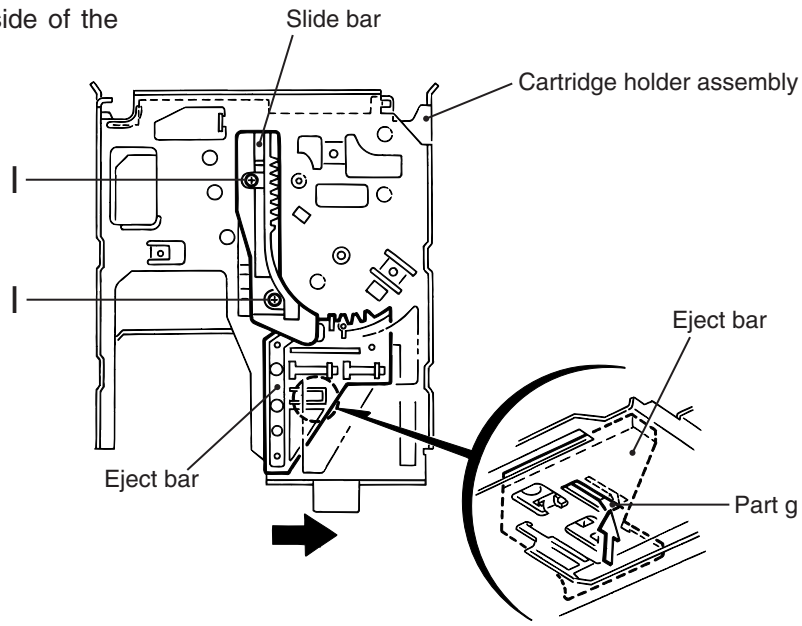


Fig.14

■ Removing the slide bar and the eject bar (See Fig.14 and 15)

・ Prior to performing the following procedure, remove the cartridge holder assembly.

1. Remove the slide bar upward.

2. Move the eject bar outward until it stops as shown in Fig.14. Push the convex part g on the bottom of the body and remove the eject bar from the chassis.

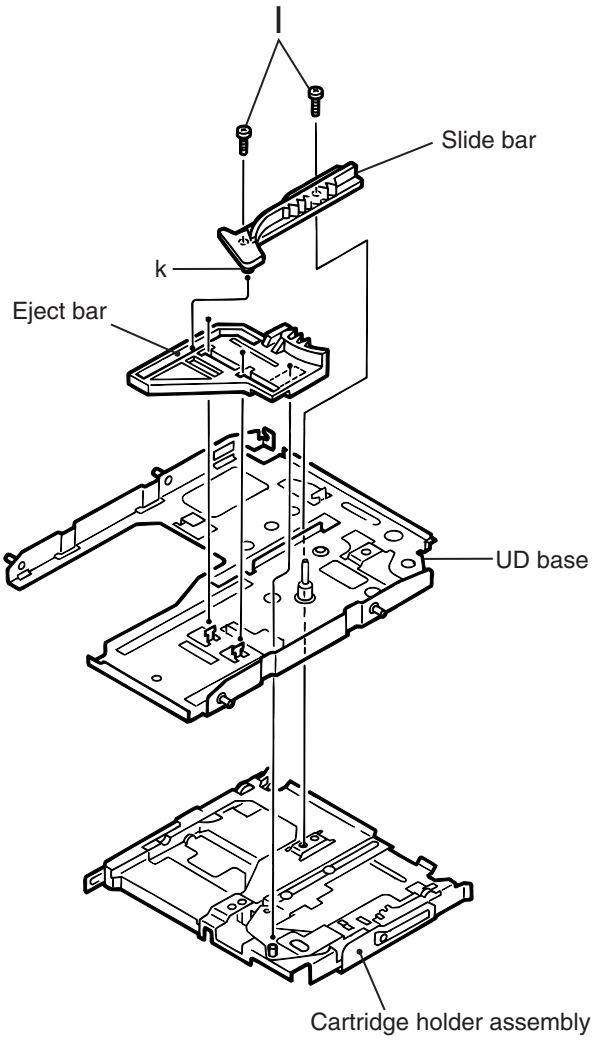


Fig.15

<Traverse mechanism assembly>

■Removing the Insulators (See Fig.16)

1. Disengage the four insulators from the notches of the traverse mechanism chassis.

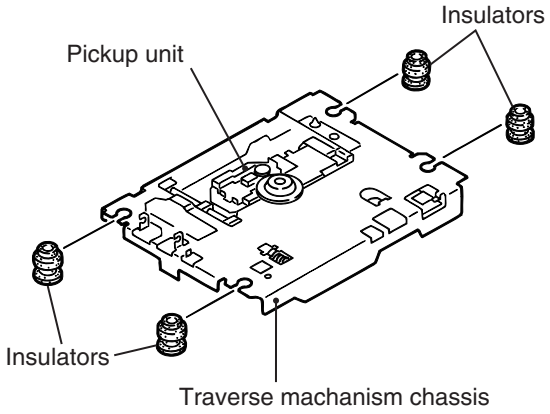


Fig.16

■Removing the pickup unit (See Fig.17)

1. Turn over the traverse mechanism assembly and remove the screw J attaching the shaft holder (F).

2. Move the shaft inward and remove it from the shaft holder (R).

3. Detach the shaft side of the pickup unit upward and release the joint h with the pickup guide. Then remove the pickup unit with the shaft.

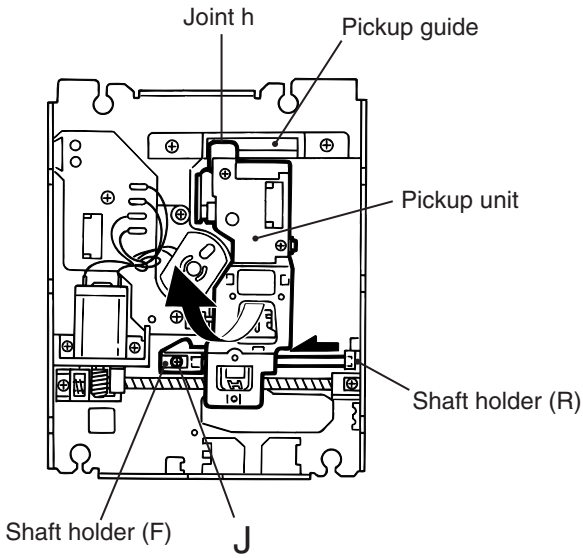


Fig.17

■Removing the pickup (See Fig.18)

1. Draw out the shaft from the pickup.

2. Remove the two screws K attaching the rack spring.

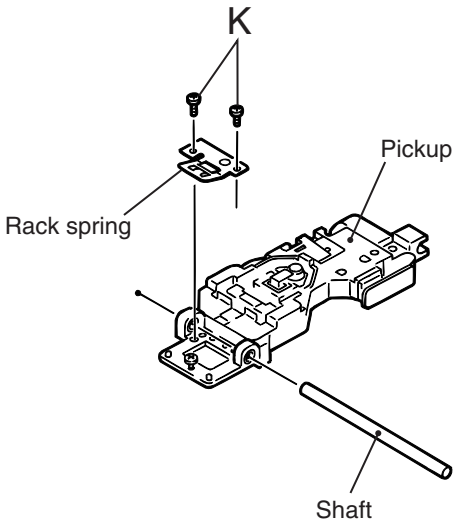


Fig.18

■Removing the feed motor assembly (See Fig.19-1, 19-2)

・It is not necessary to remove the pickup unit.

1. For the white and black harnesses extending from the feed motor assembly, unsolder the soldering i on the traverse mechanism board.
2. Remove the two screws L attaching the feed motor assembly.
3. Remove the two screws N attaching the feed motor bracket.

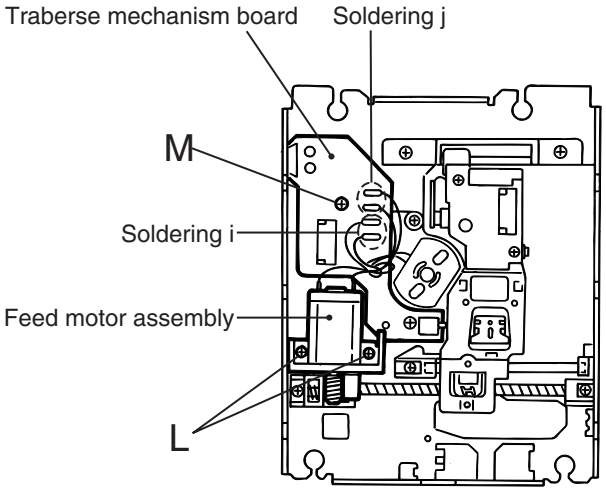


Fig.19-1

■Removing the traverse mechanism board (See Fig.19-1)

・Prior to performing procedure, remove the feed motor assembly.

1. For the red and black harnesses extending from the spindle motor, unsolder the soldering j on the traverse mechanism board.
2. Remove the screw M attaching the traverse mechanism board.

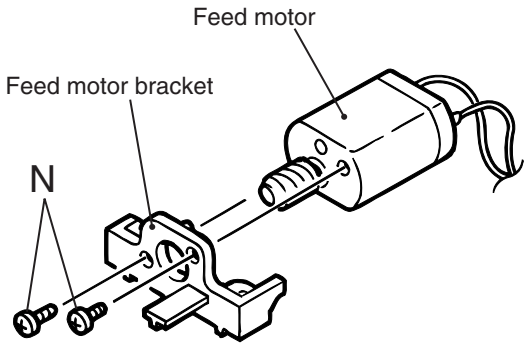


Fig.19-2

<Reattaching the loading assembly>

1. Reattach the eject bar to the UD base.
(Fig.15 and 20)

2. Reattach the slide bar to the loading mechanism chassis while fitting the boss marked k to the eject bar slot. (Fig.20)

3. Slide the slide bar and the eject bar in the direction of the arrow in Fig.20 and reattach the cartridge holder assembly using the two screws I.
(Fig.20 and 21)

ATTENTION: Make sure the pin of the eject lever marked l is fitted to the slot of the eject bar marked m at the bottom of the loading mechanism chassis after moving the eject lever and the loading slider of the cartridge holder assembly in the direction of the arrow.
(Refer to Fig.21)

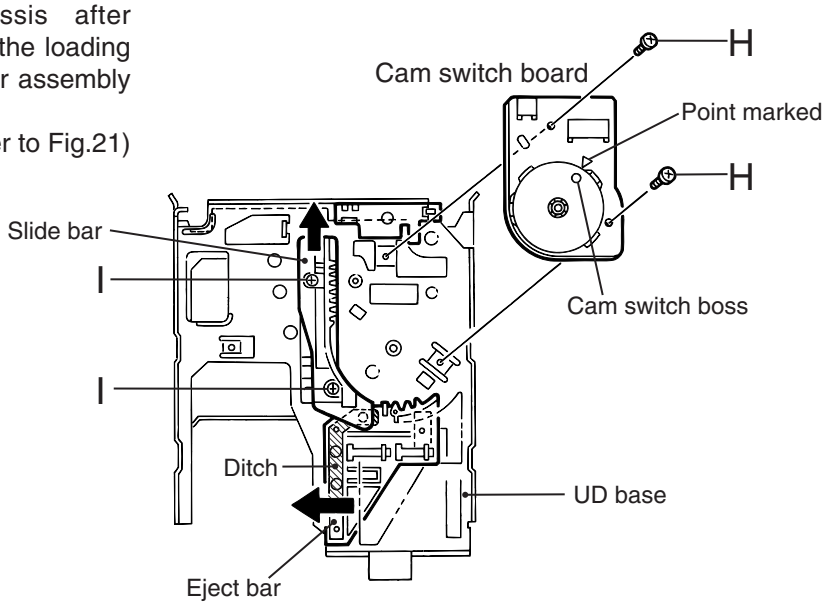


Fig.20

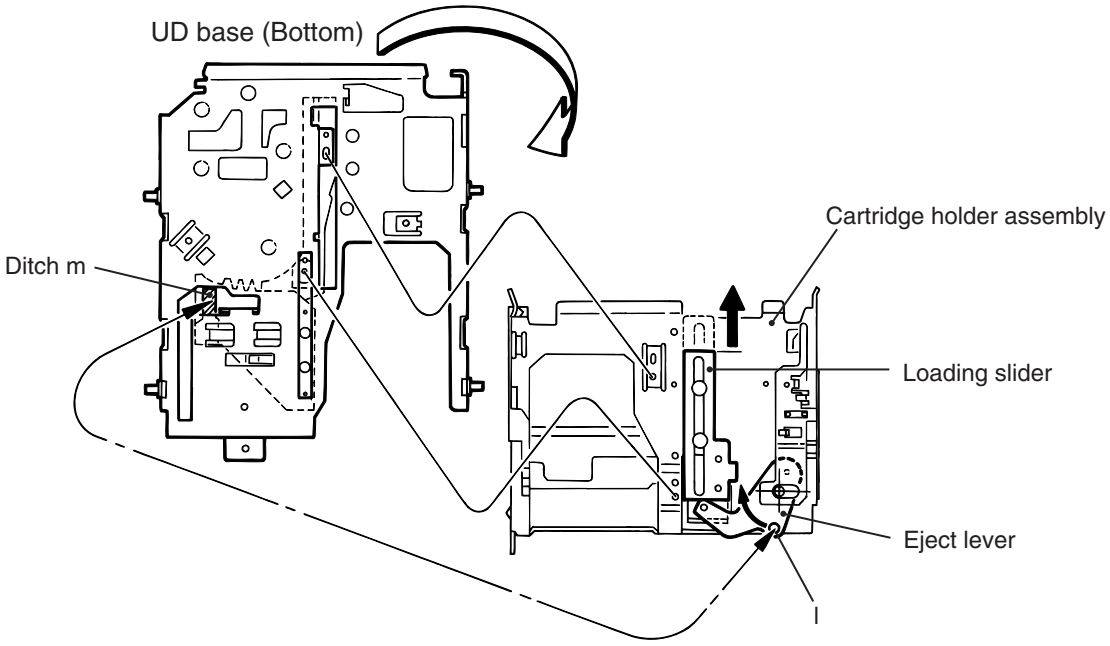


Fig.21

4. Reattach the wire holder to the UD base while engaging the UD base hook marked u to the wire holder slot marked t (At the same time, the boss on the reverse side of the wire holder is fitted to the UD base round hole).

5. Reattach the cam switch board using the two screws H. (Fig.22)

6. Turn the cam switch to bring the boss to the point marked △ on the cam switch board. Reattach the cam gear using a slit washer while fitting the cam gear slot to the cam switch boss. (Fig.22)

   ATTENTION: When reattaching the cam gear, the cam switch boss should be fitted to the cam gear slot, and the triangle mark of the cam gear should be aligned to the hole of the eject bar as shown in Fig.22.

7. Reattach the loading motor assembly, using the screw F. Connect the harness extending from the loading motor to connector CN612 on the switch board and fix it with the wire holder. (Fig.22)

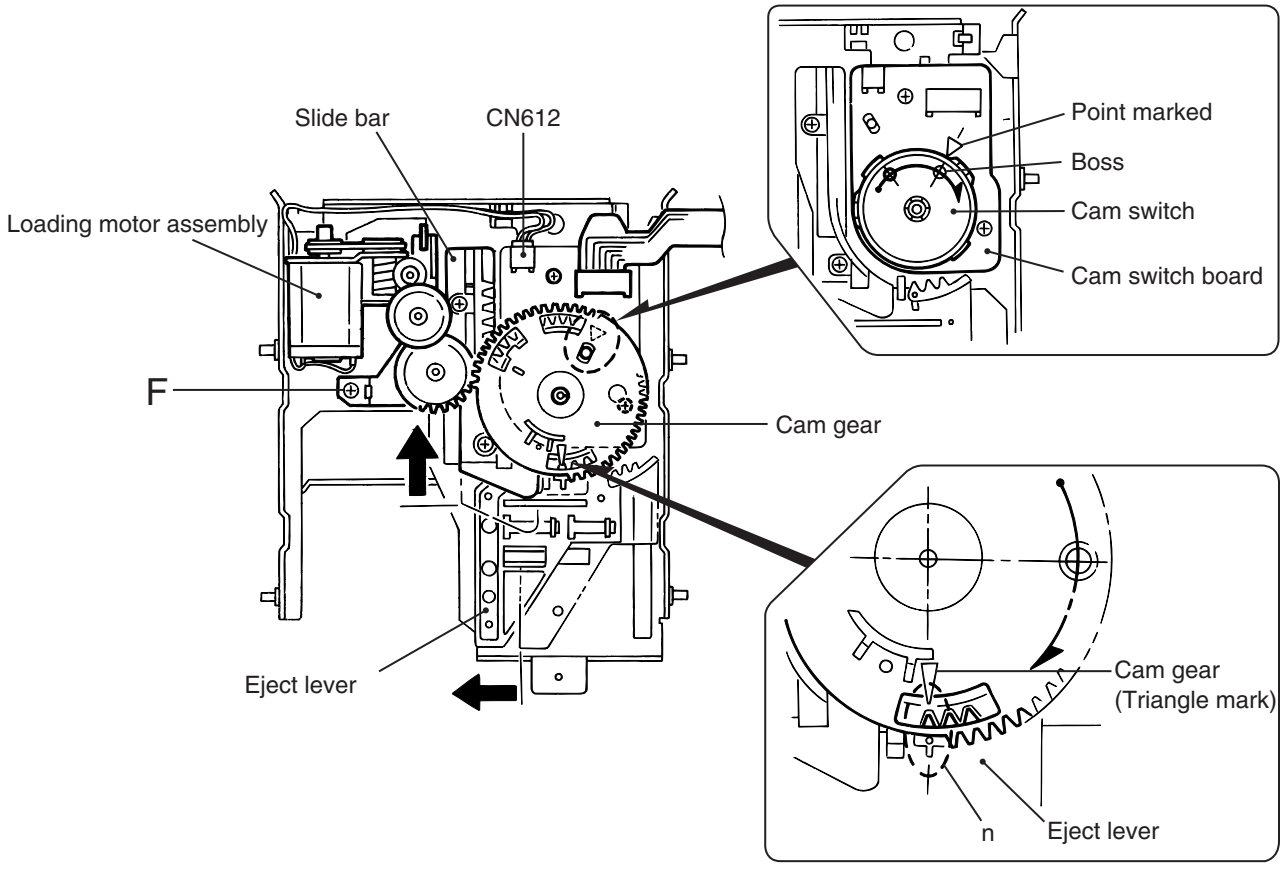


Fig.22

8. Reattach the UD base while engaging the four pins on both sides of the UD base to the notches of the loading mechanism base and placing the edge (marked e') of the cartridge holder assembly under the hook e of the loading mechanism base. (Fig.23)

9. Reattach the slide base (R) while fitting the two pins on another side of the UD base to the slots of the slide base (R). (Fig.24)

   ATTENTION: Fit the part v of the slide base (R) to the part w on the inward side of the cam gear rib. (Fig.25)

10. Reattach the slide base (L) on the slide base (R) while fitting the two pins on another side of the UD base to the slots of the slide base (L) (Fig.25). Make sure the two slots of the slide base (L) are fitted to the two bosses marked E' and tighten the two screws E. (Fig.26)

    Ref: To expedite the work, bring up the UD base slightly when fitting each pin to the appropriate notch.

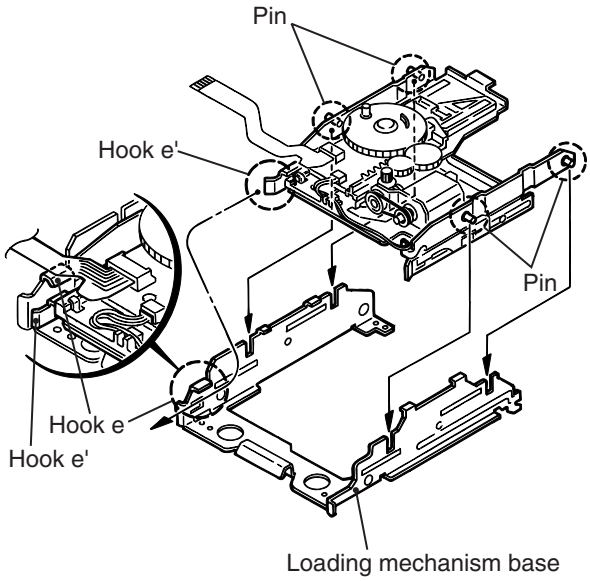


Fig.23

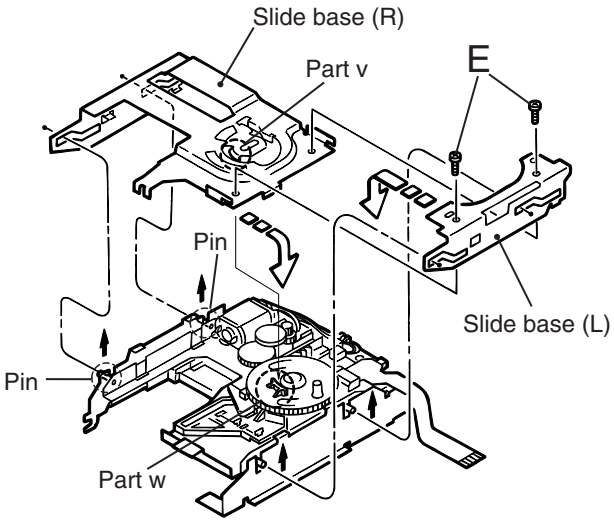


Fig.24

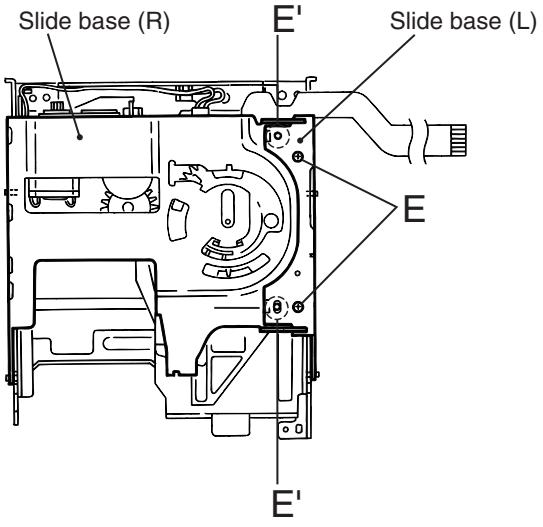


Fig.26

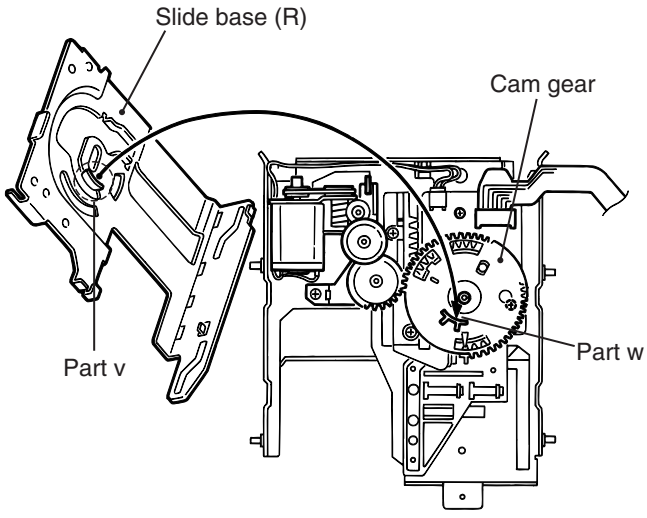


Fig.25

<Cassette Mechanism Section>

■ Removing the Recording, Playback / Erasing Head (Refer to Figs. 1 to 3.)

1. Shifting the trigger arm seen in the right side of the head mount in the arrow-marked direction, turn the flywheel (R) counterclockwise until the head mount clicks while moving frontwards. (See Fig. 1.)
2. Turn the flywheel (R) counterclockwise. The playback head accordingly turns counterclockwise from the position shown in Fig. 2 to that in Fig. 3.
3. Leaving the playback head in the position shown in Fig. 3, disconnect the flexible wire coming from the playback head from the connector CN31 on the head amplifier & mechanism control P.C. board.
4. Remove the flexible wire from the hook b of the chassis base.
5. Remove the spring a from the back of the head.
6. Loosen the reversing azimuth screw A that fastens the head.
7. Remove the recording, playback/erasing head from the front side (head side) of the head mount.

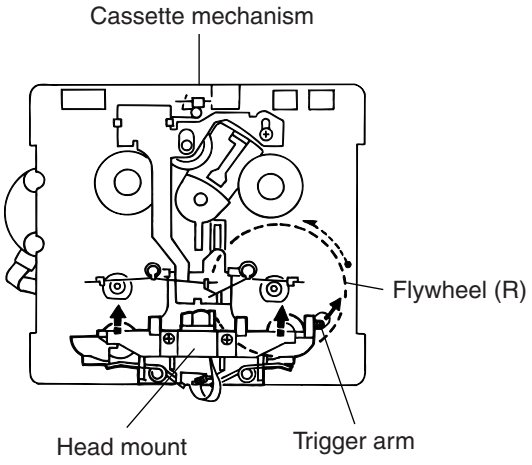


Fig. 1

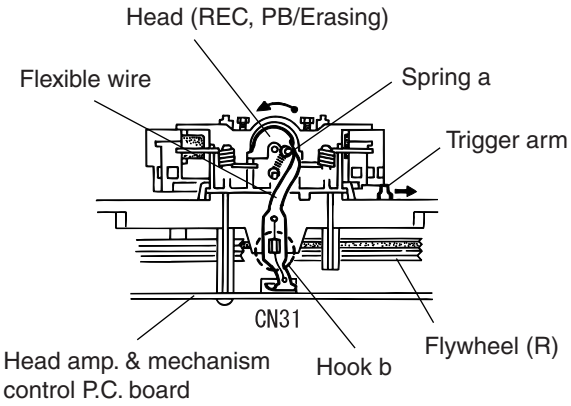


Fig. 2

■ Reinstalling the Recording, Playback / Erasing Head

1. Install the recording, playback/erasing head from the front side of the head mount as shown in Fig. 3.
2. Tighten the reversing azimuth screw A.
3. Install the spring a from the back of the head.
4. Set the flexible wire at the hook b of the chassis base.
5. Connect the flexible wire coming from the head to the connector CN31 on the head amplifier & mechanism control P.C. board.

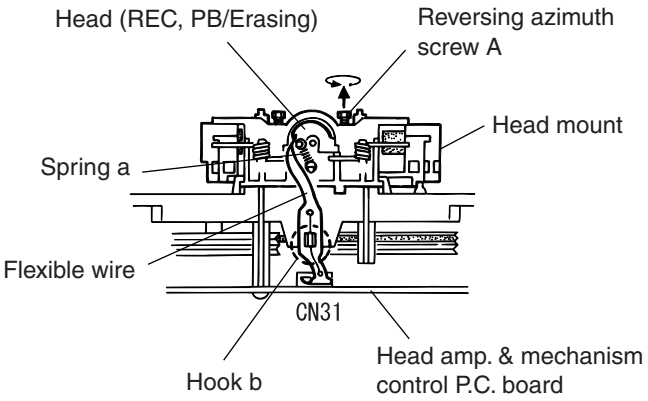


Fig. 3

■ Removing the Head Amplifier & Mechanism Control P.C. Board (Refer to Figs. 4 and 5.)

1. Disconnect the flexible wire from the connector CN31 on the head amplifier & mechanism control P.C. board mounted on the back of the cassette mechanism assembly.

2. Remove the three screws B fastening the head amplifier & mechanism control P.C. board.

3. Disconnect the connector CN32 of the head amplifier & mechanism control P.C. board from the connector CN1 on the reel pulse P.C. board.

Note: Remove the 4-pin parallel wire soldered to the main motor depending on the situation.

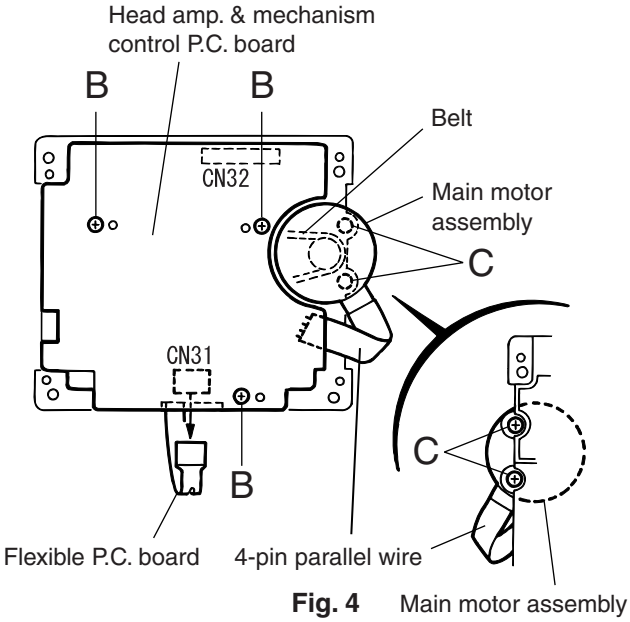


Fig. 4

■ Removing the Main Motor Assembly (Refer to Figs. 4 to 7.)

- The main motor assembly can be removed without removal of the head amplifier & mechanism control P.C. board.

1. Remove the two screws C fastening the main motor assembly.

2. Lifting the main motor assembly slightly upwards, disengage the capstan belt from the motor pulley.

Note: Be careful not to soil the capstan belt with grease or the like. When reinstalling the main motor assembly, refer to Fig. 6 and Fig. 7 for engaging the capstan belt.

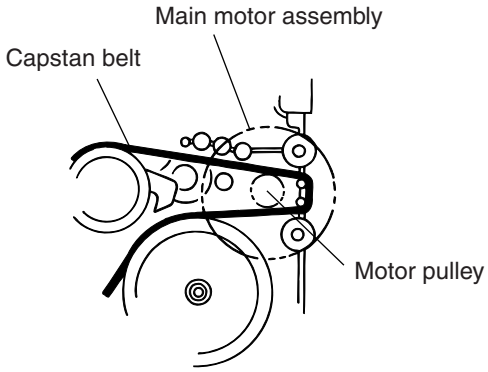


Fig. 5

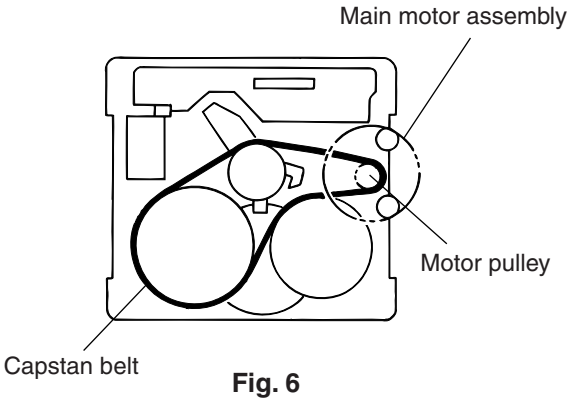


Fig. 6

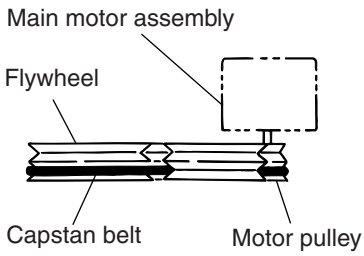


Fig. 7

■ Removing the Flywheel (Refer to Figs. 8 and 9.)

- Remove the head amplifier & mechanism control P.C. board.
- Remove the main motor assembly.

1. Remove the slit washers c and d that fasten the capstan shafts (L) and (R) from the front side of the cassette mechanism assembly, and then draw out the flywheels (L) and (R) from the back side of the cassette mechanism assembly in the arrow-marked direction for removing them.

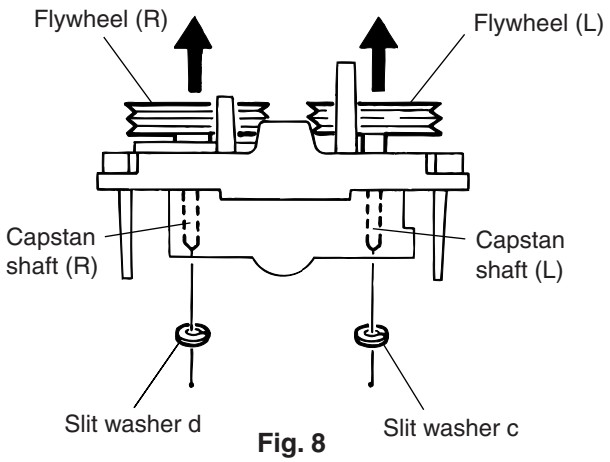


Fig. 8

■ Removing the Reel Pulse P.C. Board / Solenoid (Refer to Fig. 10.)

- Remove the head amplifier & mechanism control P.C. board.
- Remove the main motor assembly.

1. Remove the screw D fastening the reel pulse P.C. board.

2. Disengage the five hooks e that retain the reel pulse P.C. board by pressing each in the arrow-marked direction.

3. Disengage the two hooks f that retain the solenoid by pressing each from the front side of the cassette mechanism assembly in the arrow-marked direction.

Note: When reinstalling the reel pulse P.C. board and solenoid, make sure that the hook g of the solenoid is properly engaged.

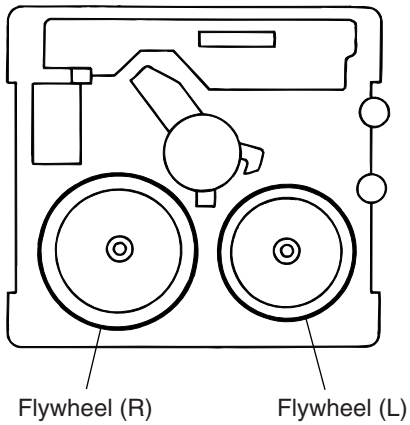
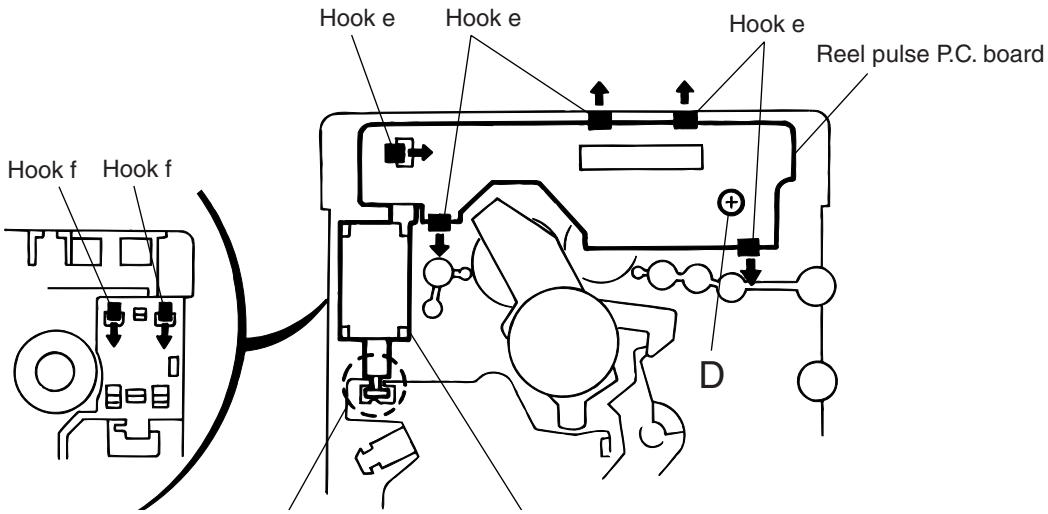


Fig. 9



Disassembly Method

<CD Mechanism Assembly>

■ **Removing the CL. Base Assembly and Tray (Refer to Figs. 1 to 5.)**

1. Remove the two screws A fastening the CL. base assembly from the top of the CD mechanism assembly.

2. Move the CL. base assembly diagonally upwards as indicated by the arrow to release it from the two hooks a.

3. Turn the idle gear in the arrow-marked direction from the upper side of the CD mechanism assembly. Accordingly, the TRAMECHA assembly moves downwards.

Note: When drawing out the tray, shift down the TRAMECHA assembly to the position where the tray does not contact the T-T assembly of the TRAMECHA assembly.

4. Draw out the tray frontwards for removing it.

Note: When reinstalling the tray:
- Turn the idle gear so that the part b of the tray gear is positioned in the part c shown in Fig. 4. (Eject position)
- Engage the right and left hooks d and e of the tray with the right and left grooves of the TRAMECHA assembly respectively for retaining the tray.

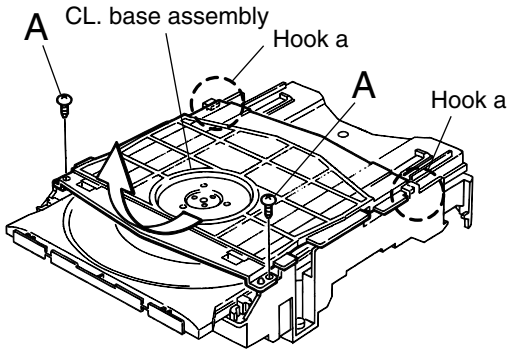


Fig. 1

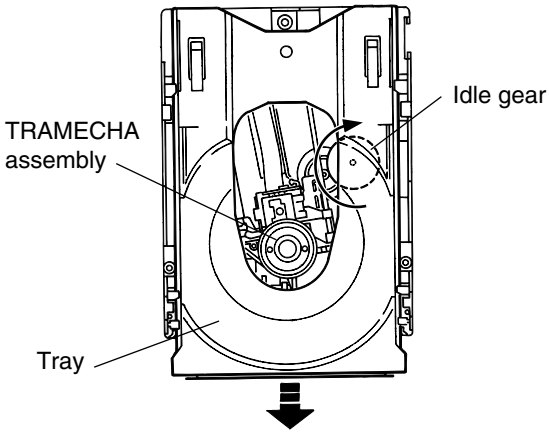


Fig. 2

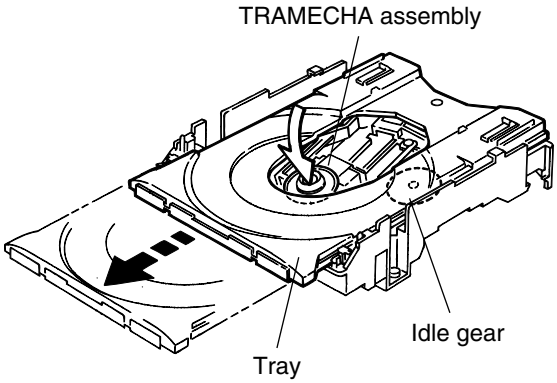


Fig. 3

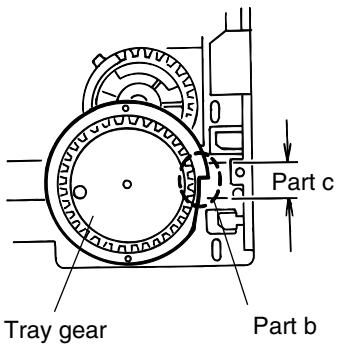


Fig. 4

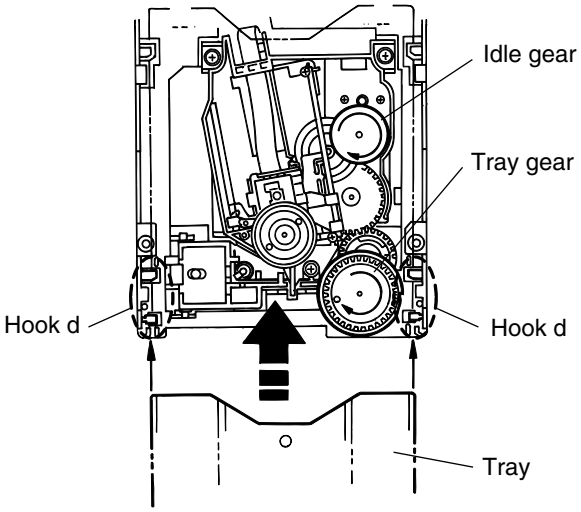


Fig. 5

■ Removing the TRAMECHA Assembly (Refer to Figs. 6 to 9.)

- Remove the CL. base assembly and tray.

Reference: The TRAMECHA assembly can be removed without removal of the mechanism P.C. board.

1. If the TRAMECHA assembly is lowered and it is located out of the PLAY position, turn the idle gear in the arrow-marked direction so that the hole in the part f of the tray gear meets the hole on the CL. base assembly. (Set the TRAMECHA assembly at the PLAY position.)

2. Remove the three screws B fastening the TRAMECHA assembly and then remove the TRAMECHA assembly upwards from the front side.

3. At the same time, remove the spring from the groove of the CH. base assembly in the part g of the TRAMECHA assembly.

Note: When reinstalling the TRAMECHA assembly:
- Check to see if the spring is properly engaged with groove of the CH. base assembly in the part g of the TRAMECHA assembly.
- After making sure that the three insulators of the TRAMECHA assembly are properly set on the bosses of the L. base assembly's guide, fasten them with the screws.

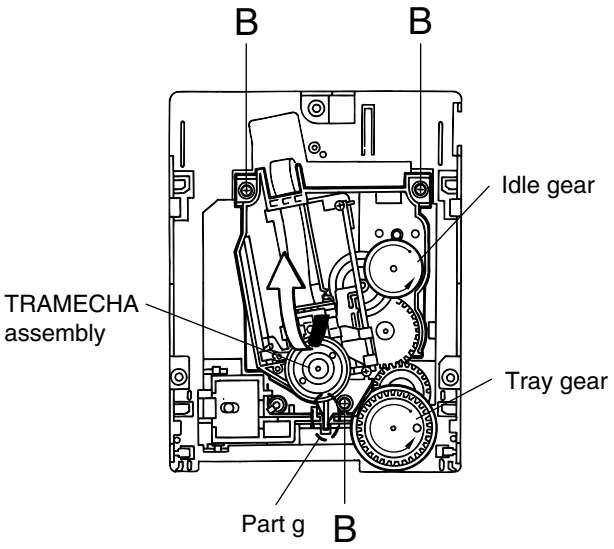


Fig. 6

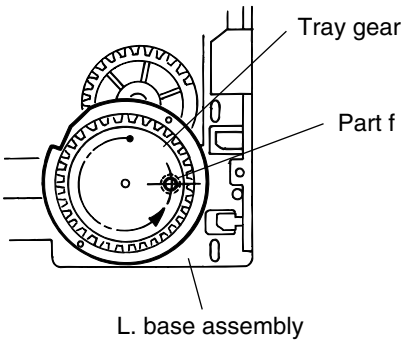


Fig. 7

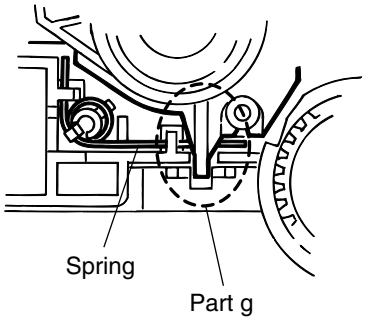


Fig. 8

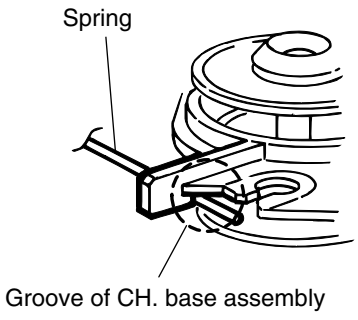


Fig. 9

■ Removing the Mechanism P.C. Board (Refer to Fig 10.)

Reference: The mechanism P.C. board can be removed without removal of the TRAMECHA assembly.

Note: Before disconnecting the flexible wire coming from the pickup from the connector, be sure to solder its shorting round.
If the flexible wire is connected without soldering, it may cause breakdown of the pickup.

1. Solder the shorting round of the flexible wire connected with the mechanism P.C. board from the back of the mechanism assembly.
2. Disconnect the flexible wire from the connector CN601 on the mechanism P.C. board.
3. Remove the three screws C fastening the mechanism P.C. board.
4. Unsolder the two points of the part h and one point of the part i of the mechanism P.C. board. Then, remove the mechanism P.C. board upwards.

Note: When reinstalling the mechanism P.C. board, connect the flexible wire coming from the pickup to the connector first and then remove the solder from the shorting round of the flexible cable.

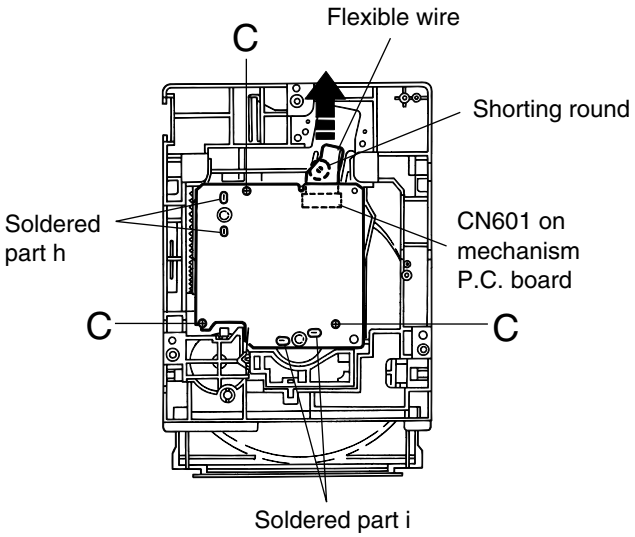


Fig. 10

■ Removing the Pickup (Refer to Figs. 11 to 14.)

- Remove the CL. base assembly and tray.
- Remove the TRAMECHA assembly.

Reference: The pickup can be removed without removal of the mechanism P.C. board.

Note: Before disconnecting the flexible wire coming from the pickup from the connector, be sure to solder its shorting round.
If the flexible wire is connected without soldering, it may cause breakdown of the pickup.

1. Solder the shorting round of the flexible wire connected with the mechanism P.C. board from the back of the TRAMECHA assembly.

2. Disconnect the flexible wire from the connector CN601 on the mechanism P.C. board.

3. Turn the idle gear in the arrow-marked direction from the top of the TRAMECHA assembly so that the pickup assembly is shifted to the reverse side of the T-T assembly.
Move the pickup assembly until the part j of the rack plate in the lower part of the pickup assembly comes out of the CH. base assembly.

4. Remove the two screws D retaining the shaft of the pickup assembly. Next, disengage the hook k from the CH. base assembly and then remove the pickup assembly together with the shaft.

5. Pull the shaft out of the pickup.

6. Remove the two screws E fastening the rack plate from the pickup.

7. Remove the screw F retaining the P.S. spring from the pickup.

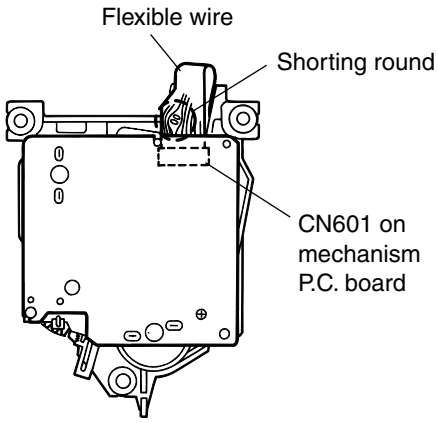


Fig. 11

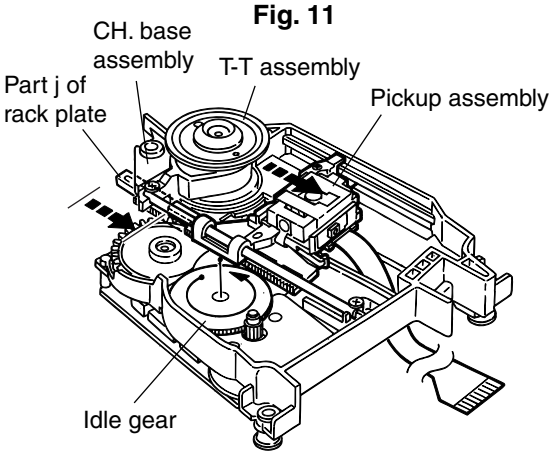


Fig. 12

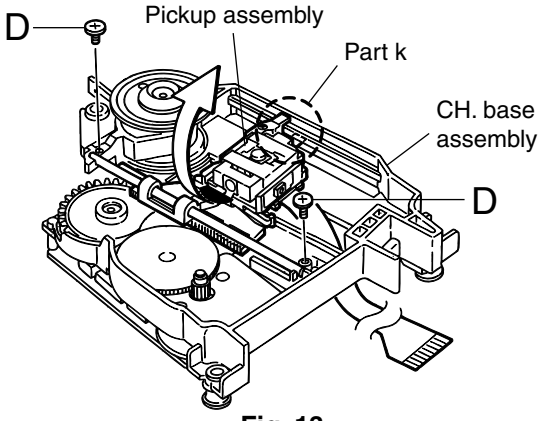


Fig. 13

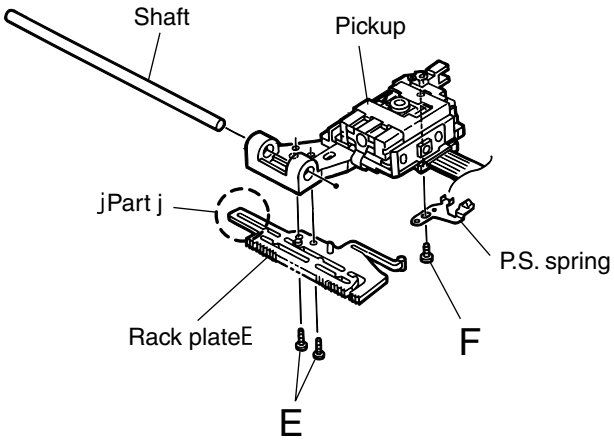


Fig. 14

■ Reinstalling the Pickup Assembly (Refer to Figs. 15 and 16.)

Reference: Refer to the explanation of "Removing the Pickup" on the preceding page.

1. Fit the P.S. spring and rack plate to the pickup.
2. Insert the shaft into the pickup.
3. Engage the hook k of the pickup assembly with the CH. base assembly first, and set the part j of the rack plate in the opening I next. Then, reinstall the pickup assembly while shifting it to the T-T side (inward) so that the part m of the rack plate is positioned as shown in Fig. 16.
4. Move the pickup assembly to the center position and fasten the shaft with the two screws D. (Make sure that the part n of the rack plate is correctly engaged with the middle gear.)
5. After passing the flexible wire coming from the pickup through the opening of the CH. base assembly, connect it to the connector CN601.

Note: When reinstalling the pickup assembly, remove the solder from the shorting round after connecting the flexible wire coming from the pick to the connector CN601.

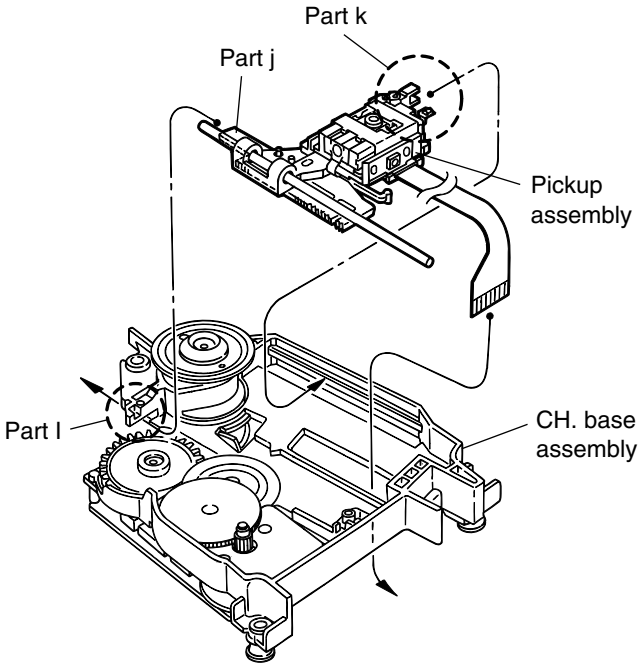


Fig. 15

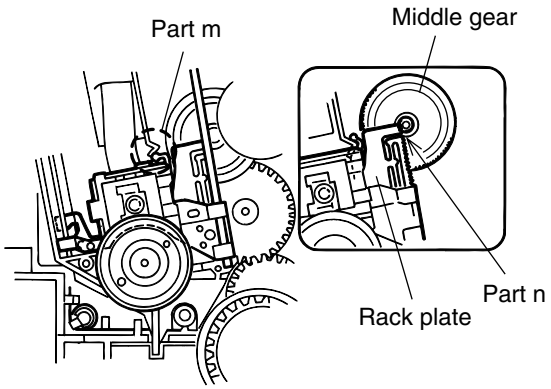


Fig. 16

■ Removing the Feed Motor Assembly (Refer to Fig. 17.)

- Remove the CL. base assembly and tray.
- Remove the mechanism P.C. board.

Remove the two screws E fastening the feed motor assembly from the top of the mechanism assembly.

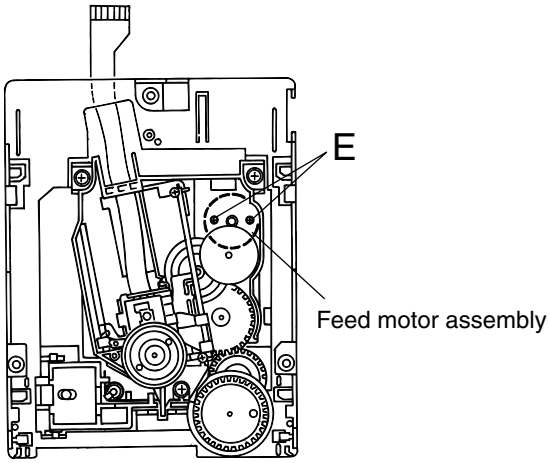


Fig. 17

Adjustment Method 1 (CD/MD section)

1. Jigs and test instruments

Laser power meter
Laser power meter sensor (or disk sensor)
Premastered disk (MRG-1018)
Recordable disk (MDW-74/AU1)

2. Adjustment and check items

1) Indications in the modes that all LCD's are on

2) CD section

(1) Indication of the C1 error
(2) Cancel of the C1 error indication

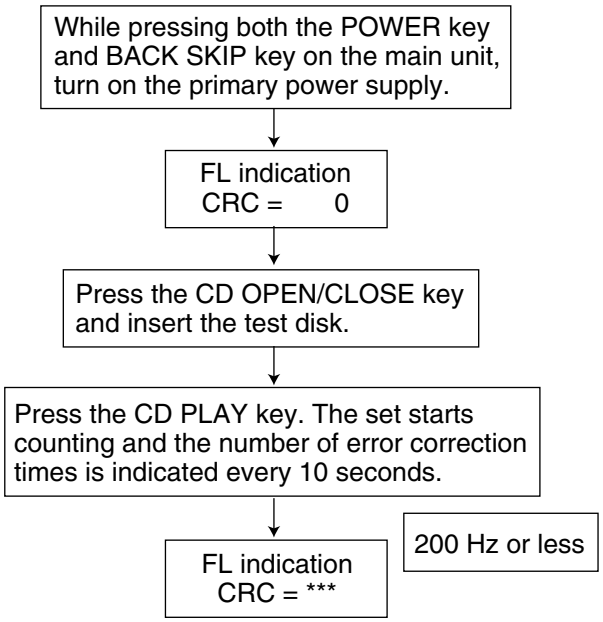
3) MD section

(1) Setup of the TEST MODE 1
(2) Initialization of the EEPROM
(3) Adjustment of the laser power
(4) Adjustment of the disk
(5) Setup of the TEST MODE 2
(6) Indication of variation in the pickup adjustment value
(7) Indication of the C1 error
(8) Cancel of the TEST MODE

3. Adjustment and check method

1) CD section

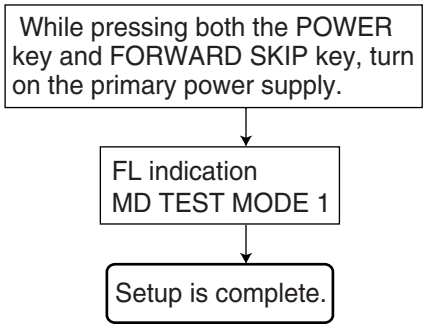
(1) Indication of the C1 error



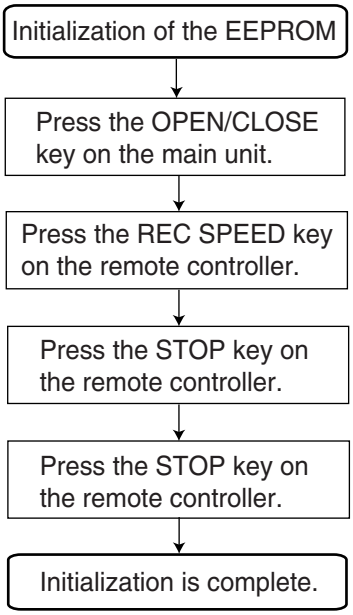
(2) Cancel of the C1 error indication
To cancel the C1 error indication, cut off the power supply.

2) MD section

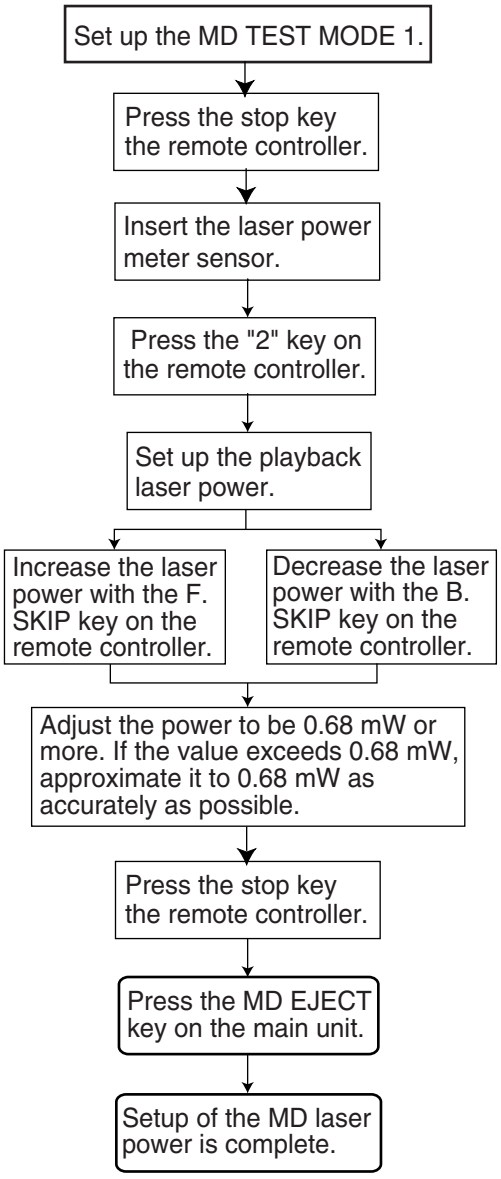
(1) Setup of the TEST MODE 1



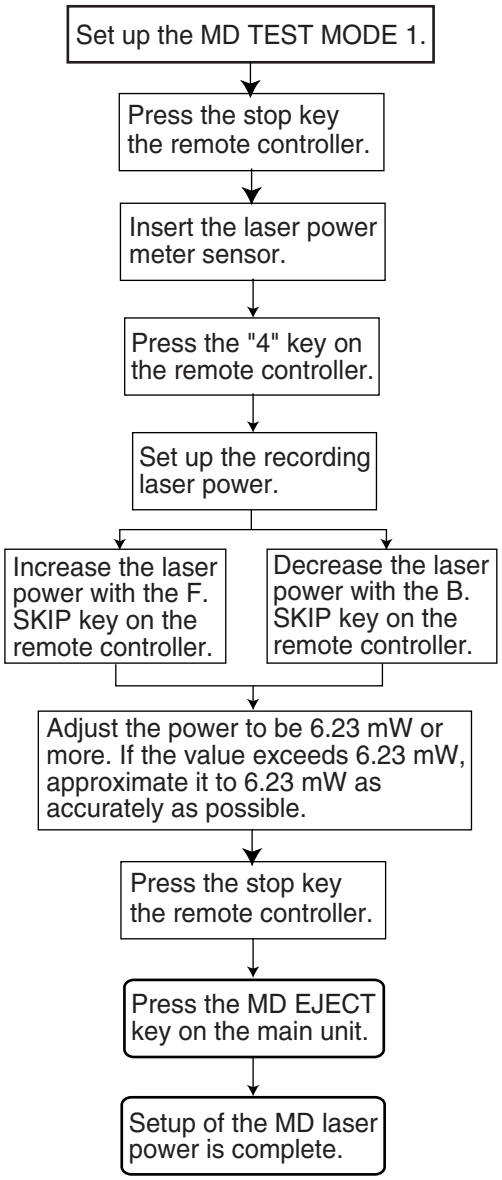
(2) Initializing the EEPROM
(For initializing the EEPROM, it is the prerequisite that the test mode has been completely set up. Use the remote controller for the following operation.)
※ Among the keys on the main unit, only the EJECT key is used for ejecting the disk.)



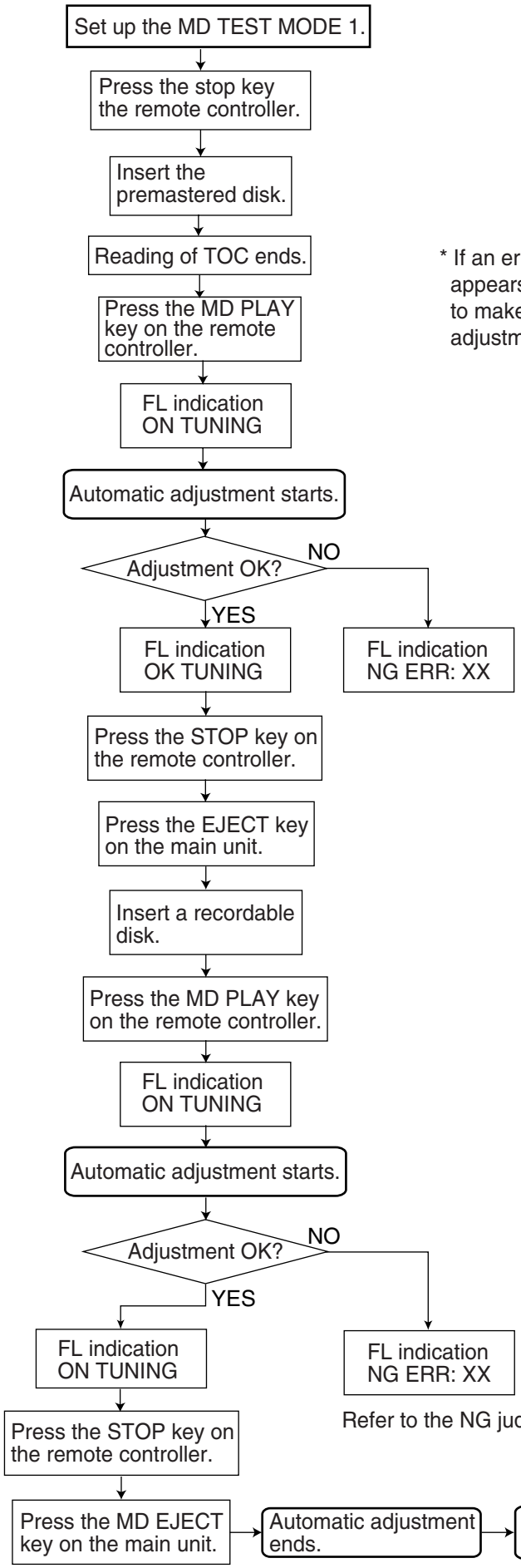
(3) Adjustment of the playback laser power



(4) Adjustment of the recording laser power



(5) Adjustment of the disk



* If an error indication of "ERR:07" appears at the first adjustment, try to make a fresh start of the same adjustment.

XX: Refer to the NG judgment code table.

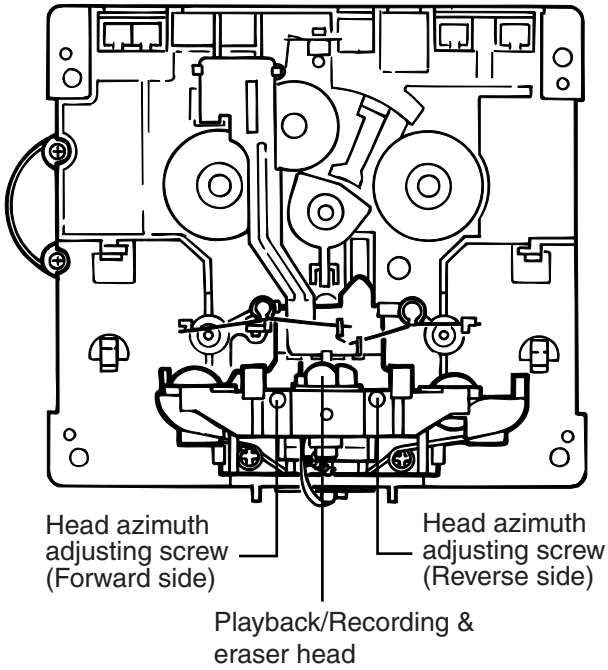
Refer to the NG judgment code table.

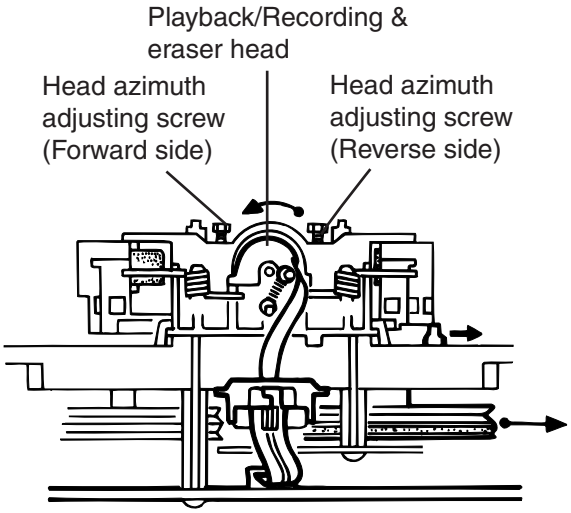
NG Judgment Code Table

Code	NG item in adjustment
00	Automatic adjustment is incomplete.
01	Rest switch detection
02	Focus-on
03	EF balance, tracking offset adjustment (Pit area)
04	ABCD level (I-V resistance) adjustment (Pit area)
05	Focus servo AGC (Pit area)
06	Tracking servo AGC (Pit area)
07	Focus bias adjustment (Pit area)
08	EF balance, tracking offset adjustment (GRV area)
09	ABCD level (I-V resistance) adjustment (GRV area)
0A	Focus servo AGC (GRV area)
0B	Tracking servo AGC (GRV area)
0C	Focus bias adjustment (GRV area)
0D	Room temperature measurement
0E	Write in EEPROM
XX	Automatic adjustment is complete.

Adjustment Method 2 (Cassette mechanism section)

■ Tuner section





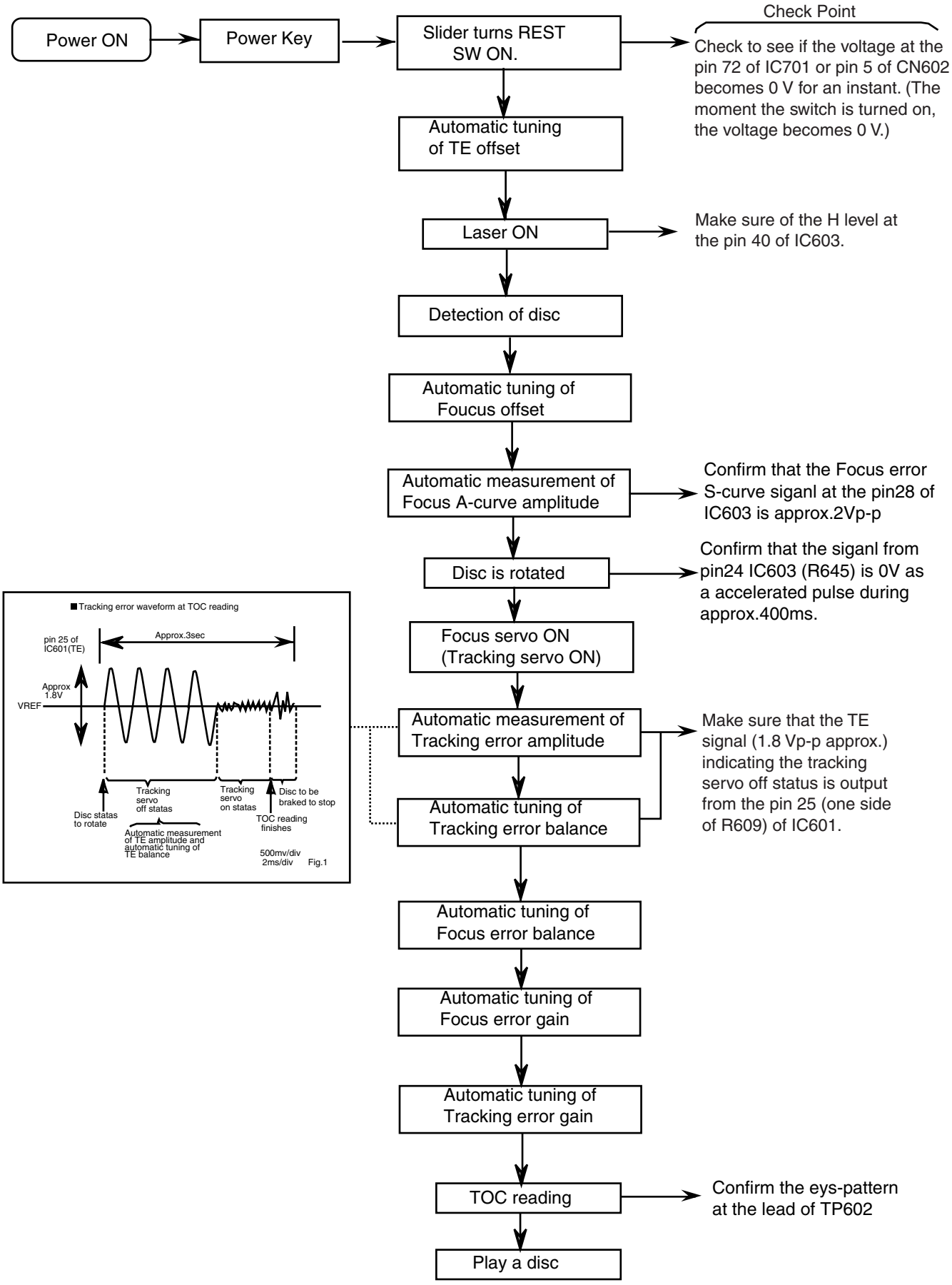
Removing the Cassette Mechanism Assembly

1. Remove the rear cover.
2. Remove the side panels (right and left).
3. Remove the cassette mechanism assembly.
4. Remove the four screws S fastening the cassette mechanism assembly from the back of the cassette mechanism.
5. Press the EJECT button on the front side of the cassette mechanism assembly to open the cassette door, and then remove the cassette mechanism assembly.

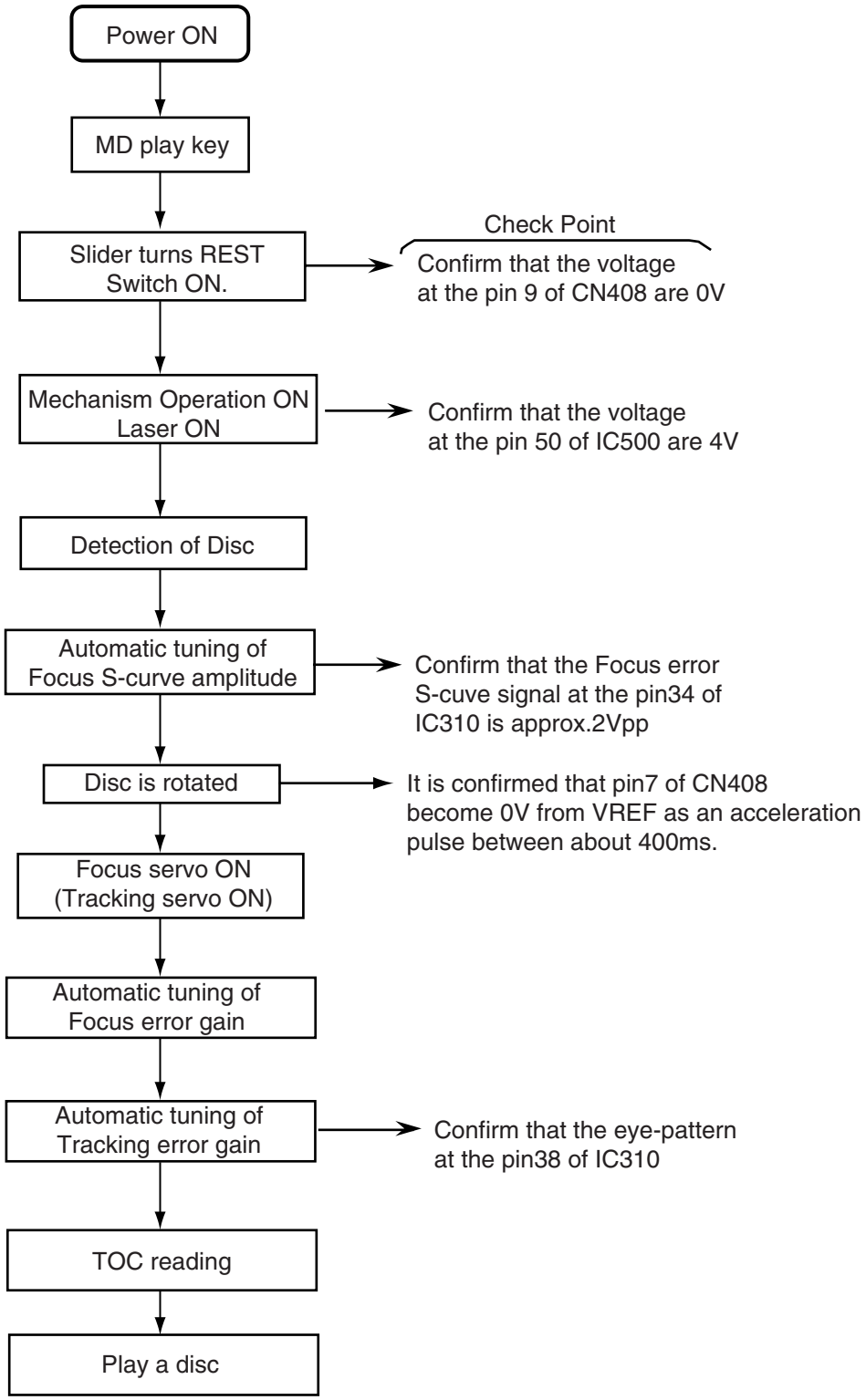
■ Check and Adjustment of the Head Amplifier Section

Item	Check/Adjustment Method	Adjusting Point	Standard Value
1. Head azimuth adjustment	1) Play back the end part of the test tape VT703 (10 kHz). 2) Adjust the head azimuth screws so that the output becomes maximum in both the normal and reverse directions. After adjustment, lock the screws with screw bond without fail. Measuring output terminal: Speaker terminal, 3Ωload resistance Difference between L-ch and R-ch: Within 3 dB Difference between FWD and REV directions: Within 4 dB	Head azimuth screw	Maximum output
2. Tape speed adjustment	1) Play back the end part of the test tape VT712 (3 kHz). 2) Adjust VR37 so that the frequency counter reads 3015 ±15 Hz in playback in the normal direction.	VR37	3015 ±15Hz
(Reference value) Speed difference between the normal and reverse directions	Measuring output terminal: Speaker terminal Make sure that speed difference between the normal and reverse directions is 60 Hz or less by reading of the frequency counter. (With the beginning part of the test tape)	—	60 Hz or less
Wow and flutter	Play back the end part of the test tape VT712 (3 kHz). Make sure that the wow and flutter meter reads 0.25 % (WRMS) or less.		0.25 % (WRMS) or less
3. Recording / playback frequency characteristic adjustment	1) Set a blank cassette tape (Type I: AC225) and enter the set into the recording pause mode. 2) Cancel the pause mode and start recording. Repeat to input the 1 kHz and 10 kHz reference signals alternately from the CD test disk to record the signals on the blank tape. 3) While playing back the repeatedly input 1 kHz and 10 kHz reference signals, adjust VR31 so that output distortion between the 1 kHz and 10 kHz signals is -1 dB ±1 dB.	VR31	-1dB ±1dB
(Reference value) Recording bias frequency	1) Set a blank cassette tape (Type I: AC225) and enter the set into the recording pause mode. 2) Make sure that the bias frequency at the bias test point on the head amplifier P.C. board is 70 ±9 kHz.	—	70 ±9kHz
(Reference value) Erasing current	1) Set a blank cassette tape (Type I: AC225) and enter the set into the recording pause mode. 2) After connecting a 1Ω resistor to the erasing head in series, cancel the pause mode and start recording. Connect the electronic voltmeter to both the terminals and measure the erasing current.	—	Erasing current: 60 mA (Type I tape)

Flow of functional operation until TOC read (CD)



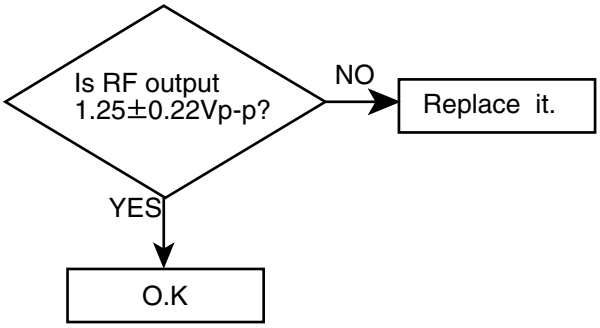
Flow of functional operation until TOC read (MD)



Maintenance of laser pickup

(1) Cleaning the pick up lens
Befor you replace the pick up, please try to clean the lens with a alcohol soaked cotton swab.

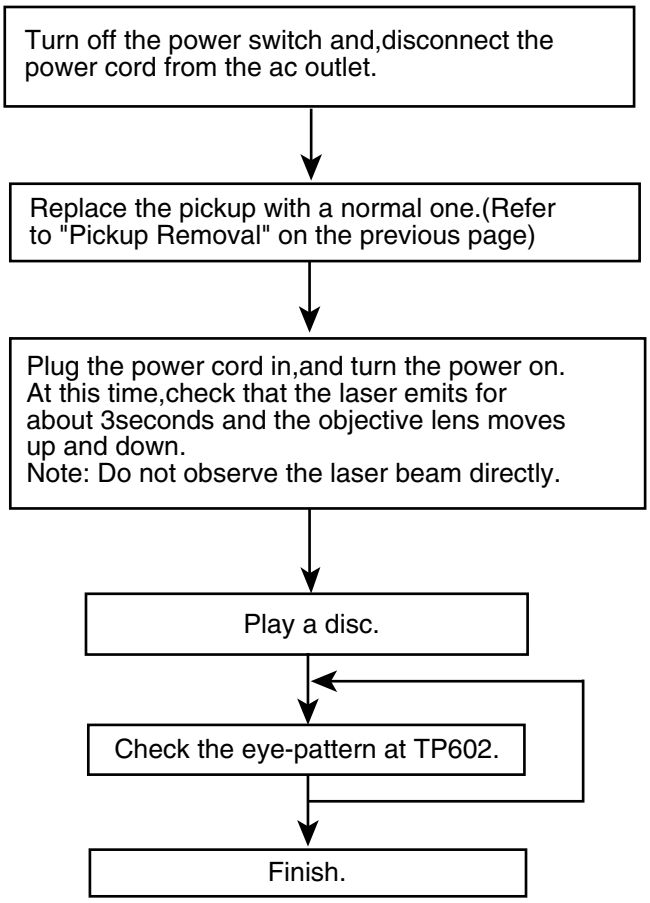
(2) Life of the laser diode (Fig.1)
When the life of the laser diode has expired, the following symptoms wil appear.
(1) The level of RF output (EFM output:amplitude of eye pattern) will below.



(Fig.1)

(3) Semi-fixed resistor on the APC PC board
The semi-fixed resistor on the APC printed circuit board which is attached to the pickup is used to adjust the laser power.Since this adjustment should be performed to match the characteristics of the whole optical block, do not touch the semi-fixed resistor.
If the laser power is lower than the specified value,the laser diode is almost worn out, and the laser pickup should be replaced.
If the semi-fixed resistor is adjusted while the pickup is functioning normally,the laser pickup may be damaged due to excessive current.

Replacement of laser pickup



Maintenance of MD pickup

1. Cleaning of pickup lens

(1) Prior to changing the pickup, clean the pickup lens.

(2) For cleaning the lens, use the following cotton swab after mearsing it in alcohol.

Product No. JCB-B4; Manufacturer;Nippon Cotton Swab

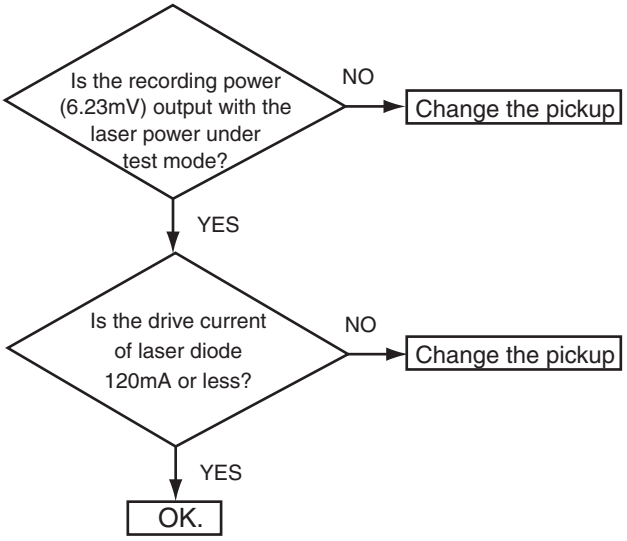
2. Confirmation of the service life of laser diode when the service life of the laser diode has been exhausted, the following symptoms will appear.

(1) Recording will become impossible.

(2) The RF output (EFM output and eye pattern amplitude) will become lower.

(3) The drive current required for light emitting of laser diode will be increased.

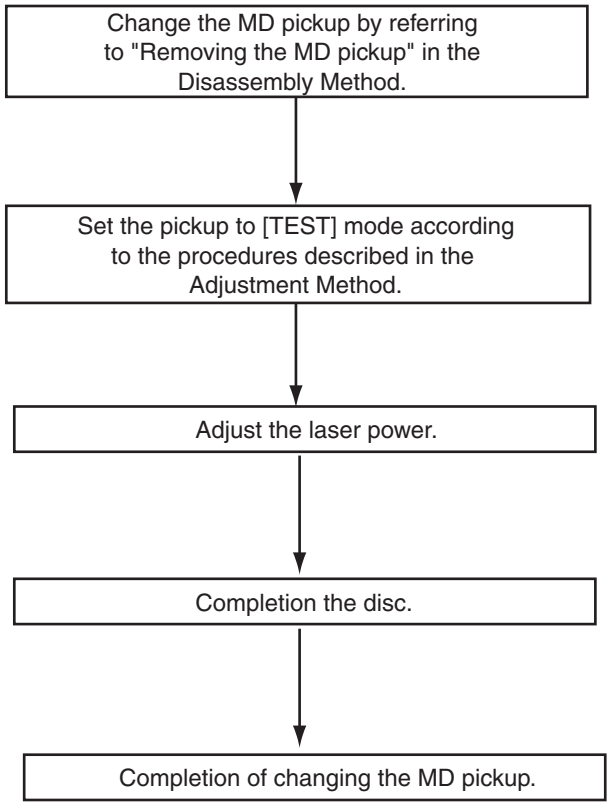
Confirm the service life according to the following flow chart:



3. Method of measuring the drive current of laser diode

For disk check after the laser power adjustment, be sure to use a disk that is not only clean without scratch but full of circular recording, because the adjustment is automatically carried out and resultant setup values are written in the memory.

Procedures of changing the MD pickup



[Caution] Since this system is designed to perform magnetic recording, the laser power ten times or over of the conventional MD player will be output. Therefore, be sure to perform not only adjustment and operation of this system so carefully as not to directly look at the laser beam or touch on the body. Measure the voltage at both sides of R337 on the MD servo control P.C. board. If the voltage is 120 mV or more, the laser diode is judged as it has come to the end of its service life.

4. Semi-solid state resistors on the APC P.C. board

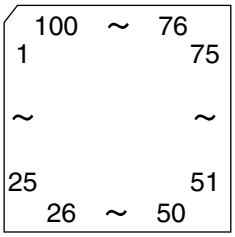
The semi-solid state resistor on the APC P.C.board attached to the pickup is used for adjusting the laser power. Since these resistor should be adjusted in pair according to the characteristics of the optical block, be sure not to touch on the resistors.

Since the service life of the laser diode will be exhausted when the laser power is low, it is necessary to change the pickup. Meanwhile, do not pickup. Otherwise, the pickup will be damaged due to over current.

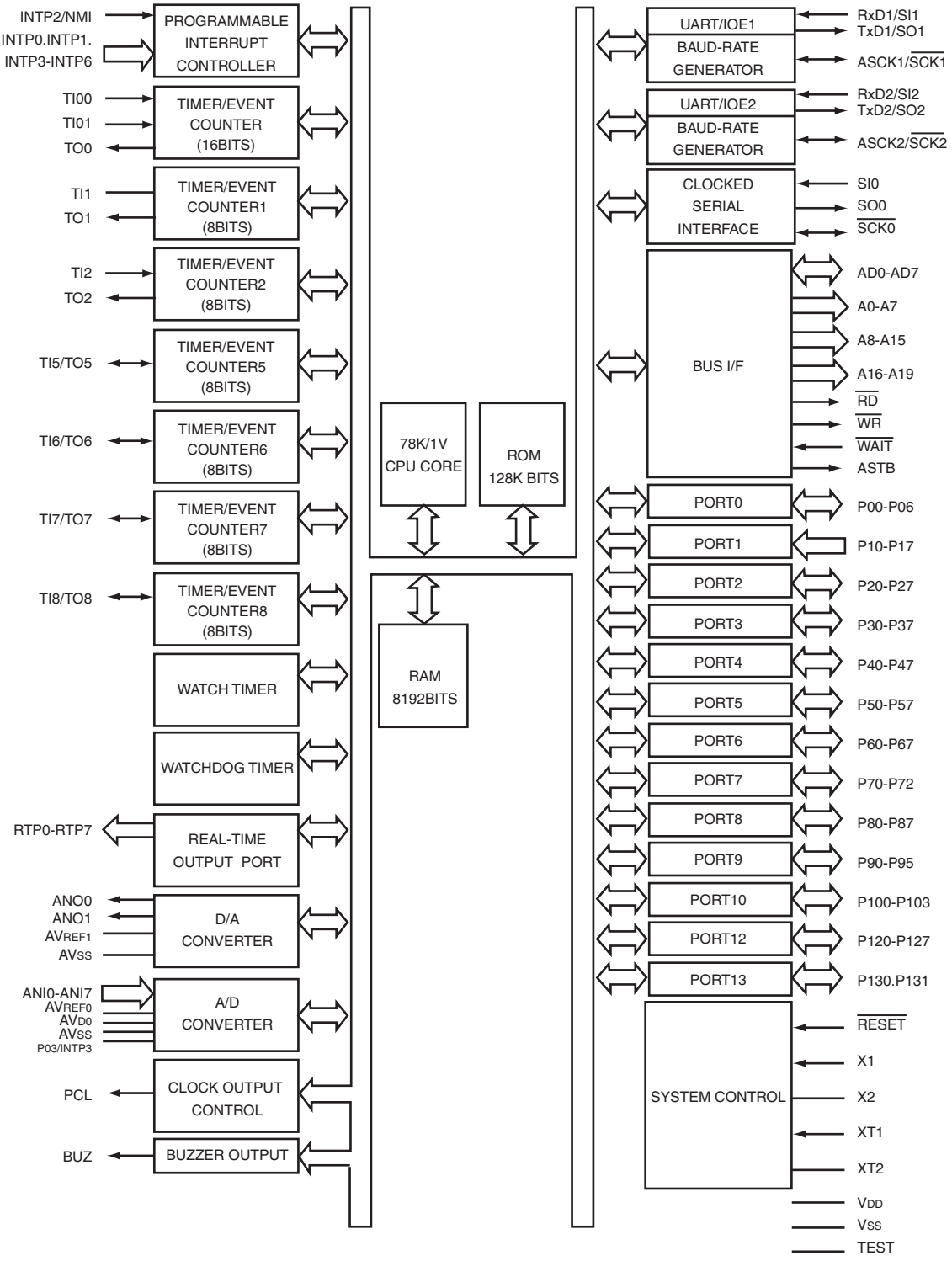
Description of major ICs

■ UPD784216AGF(IC701) : System micon

1. Pin layout



2. Block diagram



3. Pin function (1/2)

Pin No.	Symbol	I/O	Description
1	FAUX2	-	Not connected
2	NC	-	Not connected
3	RDSDATA	-	Not connected
4	MPX	I	Stereo detection
5	TUST	I	Stereo indicator detection
6	NC	O	Not connected
7	FTUNER	O	Tuner switch output
8	FCD	O	CD switch output
9	VDD	-	Connected with VDD
10	NC	-	Not connected
11	PBMUTE	O	PB mute output
12	NC	-	Not connected
13	PIN	I	Power key input
14	LEDCTL	O	LED control output
15	BUZER	O	Buzzer output
16	MDPOUT	O	MD PB output
17	MDRESET	O	MD reset output
18	SMUTE	O	System mute output
19	NC	-	Not connected
20	NC	-	Not connected
21	POUT	O	Power-on control output
22	VPP	I	GND
23	UP	I	Door position detection - UP
24	RMT0	O	Door open/shut motor control output
25	RMT1	O	Door open/shut motor control output
26	MIDDLE	I	Door position detection - MIDDLE
27	DOWN	I	Door position detection - DOWN
28	RMSPEED	O	Door open/shut motor speed control output
29	VOLCK	O	Volume control clock
30	VOLCE	O	Volume control chip enable
31	VOLDA	O	Volume control data
32	AHB	O	Active hyper bus control
33	BUB	I	Backup detection
34	BTCL	O	Battery control
35	NC	O	Not connected
36	XKILL	I/O	Power-off clock oscillator control
37	VDD	I	Power supply
38	X1	I	Master clock
39	X2	O	Master clock
40	VSS	I	GND
41	XT2	O	Clock for timer
42	XT1	I	Clock for timer
43	RESET	I	Power-on reset
44	REM	I	Remote control sensor
45	RDSCK	-	Not connected
46	NC	-	Not connected
47	PHOTO	I	Reel pulse detection
48	SAFTEY4	I	Current detection
49	NC	-	Not connected
50	NC	-	Not connected

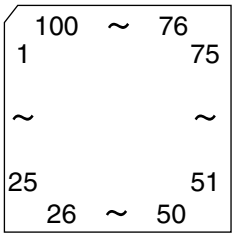
3. Pin function (2/2)

UPD784216AGF(2/2)

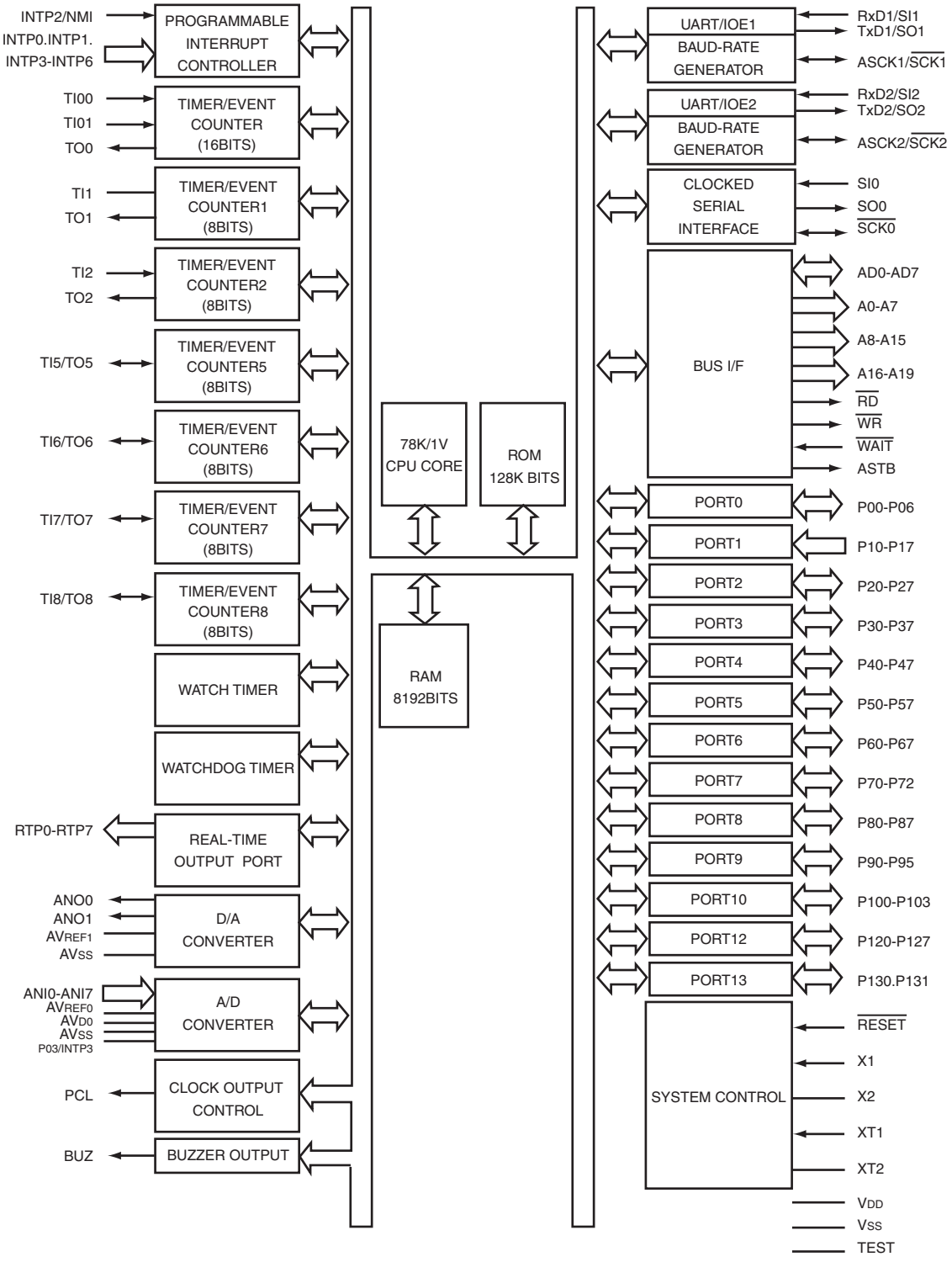
Pin No.	Symbol	I/O	Description
51	AVREF	I	Reference power supply +5 V
52	AVREF0	I	Reference power supply +5 V
53	SEFTY2	I	Current detection
54	SEFTY3	I	Current detection
55	LDCK	I/O	
56	FKEY1	I	Function switch key input
57	VERSION	I	Destination switch input
58	FKEY2	I	Function switch key input
59	KEY1	I	Cassette key input
60	SEFTY1	I	Current detection
61	VSS	I	GND
62	RCDL	O	LED color display control
63	BCDL	O	LED color display control
64	AVREF1	I	Reference power supply +5 V
65	RXD	I	Digital input
66	TXD	O	Digital output
67	NC	-	Not connected
68	CDRXD	I	CD digital input
69	CDTXD	O	CD digital output
70	CDRST	O	CD reset
71	GCDL	O	LED color display control
72	NC	-	Not connected
73	TUDATA (1)	I	Tuner data
74	TUDATA	O	Tuner data
75	TUCK	O	Tuner clock
76	NC	-	Not connected
77	NC	-	Not connected
78	NC	-	Not connected
79	NC	-	Not connected
80	NC	-	Not connected
81	NC	-	Not connected
82	NC	-	Not connected
83	NC	-	Not connected
84	NC	-	Not connected
85	NC	-	Not connected
86	NC	-	Not connected
87	NC	-	Not connected
88	SCL	O	LCD clock
89	CS	O	LCD power supply
90	RESET	O	LCD reset
91	SDA	I/O	LCD serial data
92	NC	-	Not connected
93	RS	I	LCD start
94	NC	-	Not connected
95	NC	-	Not connected
96	SDATA	I/O	Cassette control serial data
97	SCK	I/O	Cassette control serial clock
98	STTA	I/O	Cassette control status signal
99	PLAY	O	Cassette PB switch detection
100	VSS	I	GND

UPD784217AGF139 (IC500) : MD micon

1. Pin layout



2. Block diagram



3. Pin function (1/2)

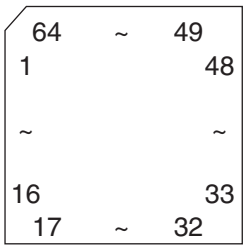
Pin No.	Symbol	I/O	Description
1	MPROT	I	Disk hole detection switch input (REC protection detection input)
2	SSTOP	I	Disk innermost circumference detection limit switch on/off detection signal input
3	MREF	I	Disk detection (premaster and recordable disk)
4	NC	-	Not connected
5	NC	-	Not connected
6	NC	-	Not connected
7	NC	-	Not connected
8	NC	-	Not connected
9	Vdd	-	Power supply
10	X2	-	Connected with 12 MHz oscillator
11	X1	-	Connected with 12 MHz oscillator
12	Vss	-	GND
13	XT2	-	Not used
14	XT1	-	Not used. Connected to GND
15	RESET	I	Reset input
16	MHON	O	Magnetic head drive control (L: Recording)
17	SQSY	I	Disk sub-code Q sync/ADIP sync input
18	DQSY	I	Digital input U-bit, Sub-code Q sync input
19	XINT	I	Connected with DSP (IC350) XINT terminal (Interrupt request output terminal)
20	CD_EMP	I	Emphasis detection
21	CD_CBIT	I	CD copy inhibit
22	CD_TNO	I	Non CD track detection
23	AVdd	-	Analog power supply
24	AVref0	-	Connected to GND
25	MT0	-	Not used. Connected to GND
26	MT1	-	Not used. Connected to GND
27	MT2	-	Not used. Connected to GND
28	MT3	-	Not used. Connected to GND
29	MODSEL	I	Microcomputer operation mode select (H: Usual)
30	UART	I	External communication system select (H: UART, L: 4-wire)
31	DOUT_SEL	I	Digital output select (H: DIN through output, L: FS convert output)
32	DOUT_OFF	I	Digital output select (H: Off, L: On)
33	AVss	-	GND
34	EJECT	O	Eject control signal output
35	LOAD	O	Load control signal output
36	AVref1	-	Connected with power supply terminal
37	COMIN	I	Command input
38	COMOUT	O	Command output
39	COMCLK	I/O	Command clock
40	SRDT	I	Data input for microcomputer serial interface
41	SWDT	O	Data output for microcomputer serial interface
42	SCLK	O	Shift clock for microcomputer serial interface
43	MONILT	-	Not used
44	NC	-	Not connected
45	NC	-	Not connected
46	MONIDATA	-	Not used
47	MONICLK	-	Not used
48	DINUNL	-	Not used
49	SVIB	O	Spindle servo brake
50	AXREC	O	Recording speed switch output

3. Pin function (2/2)

Pin No.	Symbol	I/O	Description
51	DO	O	Serial data output for external EEPROM
52	DI	I	Serial data input for external EEPROM
53	SCL	O	Clock output for external EEPROM
54	CS	O	Chip select output for external EEPROM
55	TEST	-	Test pin
56	STS_RDY	-	Not used
57	MMON10	I	Parallel operation monitor input
58	MMON11	I	Parallel operation monitor input
59	MMON12	I	Parallel operation monitor input
60	MMON13	I	Parallel operation monitor input
61	NC	-	Not connected
62	NC	-	Not connected
63	NC	-	Not connected
64	POWER	O	Power on/off control (H: Power on)
65	PWAD	O	Audio A-D converter on/off control (L: Power down)
66	PWDA	O	Audio D-A converter on/off control (L: Power down)
67	EMPHA	O	PB signal emphasis on/off signal (L: On)
68	ID0	-	Connected to GND
69	ID1	-	Connected to GND
70	ID2	-	Connected to GND
71	ID3	-	Connected to GND
72	Vss	-	GND
73	NC	-	Not connected
74	MODON	O	Laser pickup high frequency duplex on/off (L: On [in PB])
75	MODCHG	O	Laser pickup high frequency duplex voltage control (L: PB, H: REC)
76	NC	-	Not connected
77	NC	-	Not connected
78	NC	-	Not connected
79	DRIVER_ON	O	Driver shoot
80	XTSL	O	Connected with DSP (IC350) XTSL terminal (for switching input frequency)
81	Vdd	-	Power supply
82	TX	O	REC data output enable signal
83	NC	-	Not connected
84	RECP	O	Connected with DSP (IC350) RECP terminal (for switching laser power)
85	NC	-	Not connected
86	NC	-	Not connected
87	XRST	O	Connected with DSP (IC350) XRST terminal (reset input)
88	SENS	I	Connected with DSP (IC350) SENS terminal (internal status output)
89	XLAT	O	Connected with DSP (IC350) XLAT terminal (microcomputer serial interface latch input)
90	MNT3	I	Connected with DSP (IC350) MNT3 terminal (monitor output)
91	MNT2	I	Connected with DSP (IC350) MNT2 terminal (monitor output)
92	MNT1	I	Connected with DSP (IC350) MNT1 terminal (monitor output)
93	MNT0	I	Connected with DSP (IC350) MNT0 terminal (monitor input/output)
94	Vpp		
95	CAM4	I	Cam switch input 4
96	CAM3	I	Cam switch input 3
97	CAM1	I	Cam switch input 1
98	CAM2	I	Cam switch input 2
99	NC	-	Not connected
100	NC	-	Not connected

■ UPD780024AGKB21 (IC251) : Unit micon

1. Pin layout



2. Pin function (1/2)

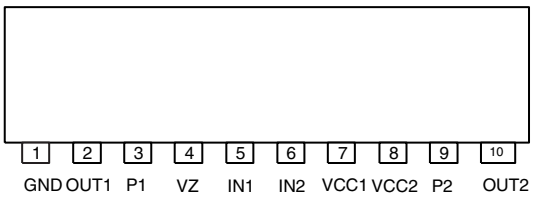
Pin No.	Symbol	I/O	Description
1	P50/A8		Connected to GND
2	P59/A9	-	Not used
3	MCS		Pull-up +B
4	MRDY	-	Not used
5	CDINDEX	-	Not used
6	CDEMP	I	CD emphasis detection
7	CDTNO	I	CD track No. detection
8	CDCOPY	I	CD copy detection
9	VSS0	-	GND
10	VDD0	-	Power supply
11	P30	-	Not used
12	P31	-	Not used
13	P32	-	Not used
14	MUTE	O	Mute output
15	SUBQ	I	Sub-code Q data input from IC651
16	P35/SO31	-	Not used
17	SQCK	O	Sub-code Q register clock output to IC651
18	KCMND	O	Kick command data
19	MSTAT	O	CD control status output to IC801
20	MCLK	I	CD control command clock input from IC801
21	RXDO	I	Digital data input
22	TXDO	O	Digital data output
23	P25/SCK0		Connected to GND
24	VDD1	-	Power supply
25	AVSS	-	GND
26	KEY1	I	Key input 1
27	KEY2	I	Key input 2
28	PCHK	I	Parity check
29	P14/AN14		Connected to GND
30	P13/AN13		Connected to GND
31	/OPEN	I	Open switch input
32	/REST	I	Rest switch input

2. Pin function (2/2)

Pin No.	Symbol	I/O	Function
33	P10/AN10		Connected to GND
34	AVREF	-	Analog circuit reference voltage. Connected with analog circuit power supply
35	AVDD	-	Analog circuit power supply
36	/RESET	I	CD control reset input from IC801
37	XT2	-	Not used
38	XT1	-	Connected with power supply
39	IC	O	Flash memory control
40	X2	-	Connected with external crystal oscillator
41	X1	-	Connected with external crystal oscillator
42	VSS1	-	GND
43	FLAG	I	Flag signal input from IC651
44	BLKCK	I	Sub-code block clock signal input from IC651
45	/RFDET	I	RF signal amplitude detection input
46	EQx2	O	×2 equalizer switch output
47	EQx4	O	×4 equalizer switch output
48	VCOx4	-	Not used
49	OPEN	I	Open door detection
50	/CLOSE	I	Closed door detection
51	IREFx4	O	×4 DSP current switch output
52	P75/BUZ	-	Not used
53	/RESET	O	Reset signal output to IC651 (L: Reset)
54	STAT	I	Status signal input from IC651
55	/DMUTE	O	Muting output to IC651
56	/P.ON	O	Power on/off switch signal output to IC291
57	MLD	O	Microcomputer command load signal output to IC651
58	MDATA	O	Microcomputer command data output to IC651
59	MCLK	O	Microcomputer command clock signal output to IC651
60	CLKSW	-	Not used
61	JIG	-	Not used
62	JIG	-	Not used
63	JIG	-	Not used
64	JIG		Connected to GND

■ LB1641 (IC703) : DC motor driver

1. Pin layout

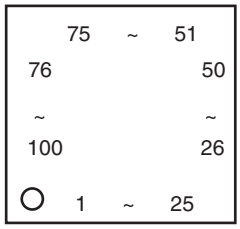


2. Pin function

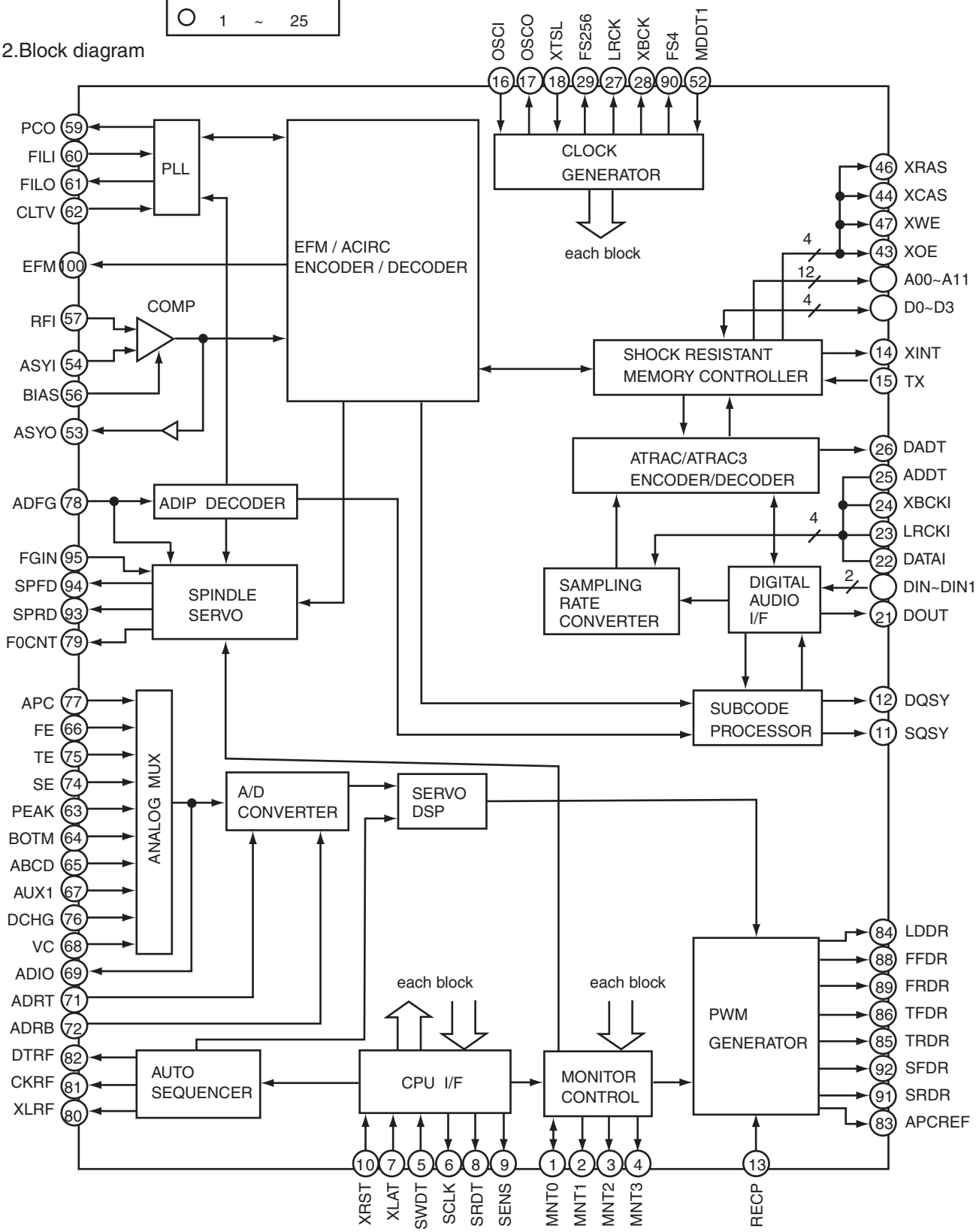
Input		Output		Mode
IN1	IN2	OUT1	OUT2	
0	0	0	0	Brake
1	0	1	0	CLOCKWISE
0	1	0	1	COUNTER-CLOCKWISE
1	1	0	0	Brake

■ CXD2662R (IC350) : DSP

1.Pin layout



2.Block diagram



3.Pin function (1/3)

Pin No.	Symbol	I/O	Function
1	MNT0	I/O	Monitor output.
2	MNT1	O	Monitor output.
3	MNT2	O	Monitor output.
4	MNT3	O	Monitor output.
5	SWDT	I	Data input for microcomputer serial interface.
6	SCLK	I	Shift clook input for microcomputer serial interface.
7	XLAT	I	Latch input for microcomputer serial interface.Latched at the falling edge.
8	SRDT	O	Data output for microcomputer serial interface.
9	SENS	O	Outputs the internal status corresponding to the microcomputer serial interface address.
10	XRST	I	Reset input. Low : reset
11	SQSY	O	Disc subcode Q sync / ADIP sync output.
12	DQSY	O	Subcode Q sync output in U-bit CD or MD format when the Digital In source is CD or MD.
13	RECP	I	Laser power switching input. High : recording power ; low ; playback power
14	XINT	O	Interruption request output. Low when the interruption status occurs.
15	TX	I	Enable signal input for recoding data output. High : enabled
16	OSCI	I	Crystal oscillation circuit input.
17	OSCO	O	Crystal oscillation circuit output. (inverted output of the OSCI pin)
18	XTSL	I	OSCI input frequency switching. XTSL1(command) = low and XTSL = high : 512Fs (22.5792MHz) XTSL1(command) = low and XTSL = low : 1024Fs (45.1584MHz) XTSL1(command) = high : 2048Fs (90.3168MHz)
19	DIN0	I	Digital audio interface signal input 1.
20	DIN1	I	Digital audio interface signal input 2.
21	DOUT	O	Digital audio interface signal output.
22	DATAI	I	Test pin. Connect to GND.
23	LRCKI	I	Test pin. Connect to GND.
24	XBCKI	I	Test pin. Connect to GND.
25	ADDT	I	Data input from A / D converter.
26	DADT	O	REC monitor output / decoded audio data output.
27	LRCK	O	LA clock (44.1kHz) output to the external audio block.
28	XBCK	O	Bit clock (2.8224kHz) output to the external audio block.
29	FS256	O	256Fs output.
30	DVDD	-	Digital power supply.
31	A03	O	External DRAM address output.
32	A02	O	External DRAM address output.
33	A01	O	External DRAM address output.
34	A00	O	External DRAM address output.
35	A10	O	External DRAM address output.
36	A04	O	External DRAM address output.
37	A05	O	External DRAM address output.
38	A06	O	External DRAM address output.
39	A07	O	External DRAM address output.
40	A08	O	External DRAM address output.
41	A11	O	External DRAM address output.
42	DVSS	-	Digital ground.
43	XOE	O	External DRAM output enable.

3. Pin function (2/3)

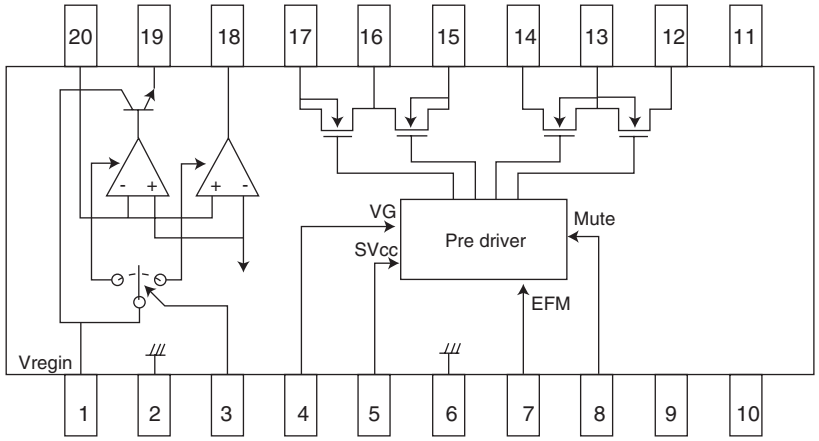
Pin No.	Symbol	I/O	Function
44	XCAS	O	External DRAM CAS output.
45	A09	O	External DRAM address output.
46	XRAS	O	External DRAM RAS output.
47	XWE	O	External DRAM write enable.
48	D1	I/O	External DRAM data bus.
49	D0	I/O	External DRAM data bus.
50	D2	I/O	External DRAM data bus.
51	D3	I/O	External DRAM data bus.
52	MDDTI	I	MD-DATA mode 1 switching input. (Low : normal mode ; high : MD-DATA mode 1)
53	ASYO	O	Playback EFM full-swing input. (Low : vss ; high : Vdd)
54	ASYI	I	Playback EFM comparator slice voltage input.
55	AVDD	-	Analog power supply.
56	BIAS	I	Playback EFM comparator bias current input.
57	RFI	I	Playback EFM RE signal input.
58	AVSS	-	Analog ground.
59	PCO	O	Phase comparison output for master PLL of playback digital PLL and recording EFM PLL.
60	FILI	I	Filter input for master PLL of playback digital PLL and recording EFM PLL.
61	FILO	O	Filter output for master PLL of playback digital PLL and recording EFM PLL.
62	CLTV	I	Internal VCO control voltage input for master PLL of playback digital EFM PLL and recording EFM PLL.
63	PEAK	I	Peak hold signal input for quantity of light.
64	BOTM	I	Bottom hold signal input for quantity of light.
65	ABCD	I	Signal input for quantity of light.
66	FE	I	Focus error signal input.
67	AUXI	I	Auxillary input 1.
68	VC	I	Center voltage input.
69	ADIO	I	Monitor output for A / D converter input signal.
70	AVDD	-	Analog power supply.
71	ADRT	I	Voltage input for the upper limit of the A / D converter operating range.
72	ADRB	I	Voltage input for the lower limit of the A / D converter operating range.
73	AVSS	-	Analog ground.
74	SE	I	Sled error signal input.
75	TE	I	Tracking error signal input.
76	DCHG	I	Connect to he low-inpedance power supply.
77	APC	I	Error signal input for laser digital APC.
78	ADFG	I	ADIP binary FM signal (22.05 ± 1kHz) input.
79	F0CNT	O	CXA2523 current source setting output.
80	XLRF	O	CXA2523 control latch output. Latched at the falling edge.
81	CKRF	O	CXA2523 control shift clock output.
82	DTRF	O	CXA2523 control data output.
83	APCREF	O	Reference PWM output for laser APC.
84	LDDR	O	PWM output for laser digital APC.
85	TRDR	O	Tracking servo drive PWM output. (–)
86	TFDR	O	Tracking servo drive PWM output. (+)
87	DVDD	-	Digital power supply.
88	FFDR	O	Focus servo drive PWM output. (+)
89	FRDR	O	Focus servo drive PWM output. (–)
90	FS4	O	4Fs output. (176.4kHz)

3. Pin function (3/3)

Pin No.	Symbol	I/O	Function
91	SRDR	O	Sled servo drive PWM output. (−)
92	SFDR	O	Sled servo drive PWM output. (+)
93	SPRD	O	Spindle servo drive output. (PWM (−) or polarity)
94	SPFD	O	Spindle servo drive output. (PWM (+) or PWM absolute value)
95	FGIN	I	Spindle CAV servo FG input.
96	TEST1	I	Test pin. Connect to GND.
97	TEST2	I	Test pin. Connect to GND.
98	TEST3	I	Test pin. Connect to GND.
99	DVSS	-	Digital ground.
100	EFMO	O	Low when playback ; EFM (encoded data) output when recording.

■ BD7910FV-X (IC450) : Pre driver

1.Block diagram

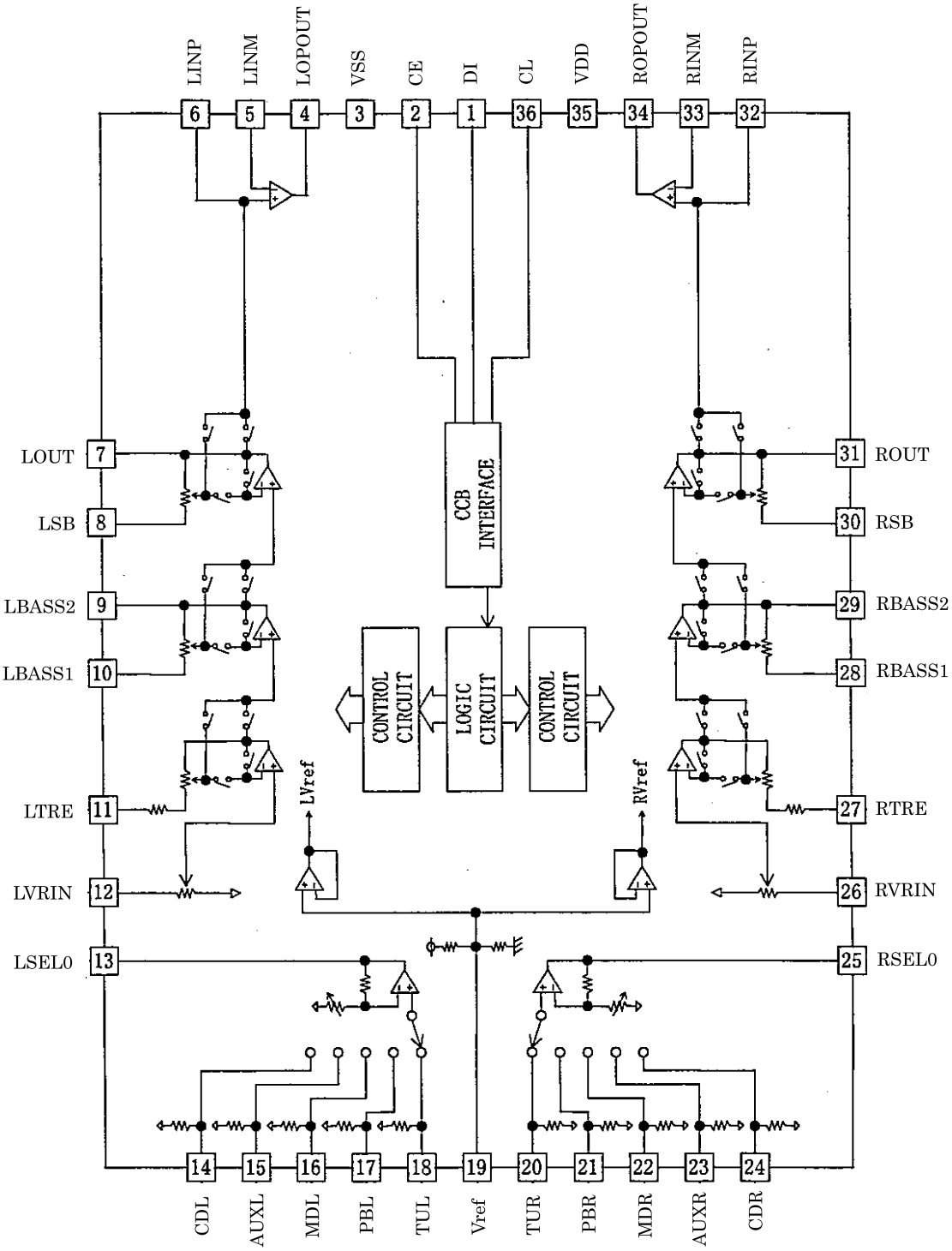


2.Pin function

Pin No.	Symbol	I/O	Function	Pin No.	Symbol	I/O	Function
1	Vreg IN	I	Regulator input and regulator power supply	11	NC	-	Non connect
				12	VOD2	O	Sync.output (Lower power MOS,drain)
2	Reg GN	-	Regulator GND	13	VSS	-	"H"bridge GND (Lower power MOS,source)
3	NC	-	Non connect	14	VOD1	O	Sync.output (Lower power MOS,drain)
4	VG	I	Voltage input for power MOS drive	15	VOS1	O	Source output (Upper power MOS,source)
5	SVCC	O	EFM high level output voltage	16	VDD	-	"H" bridge power supply terminal (Upper power MOS,source)
6	PDGND	-	Pre-driver GND				
7	EFM	I	EFM signal input	17	VOS2	O	Source output (Upper power MOS,source)
8	MUTE	I	Mute control (Low active)	18	Reg DRV	O	External PNP drive output for regulator
9	NC	O	Non conncet	19	Reg OUT	O	Reglator output (Emitter follower output)
10	NC	O	Non connect	20	Reg NF	-	Regulator feedbaack terminal

LC75345M-X(IC702) : E. volume

1. Pin layout & Block diagram

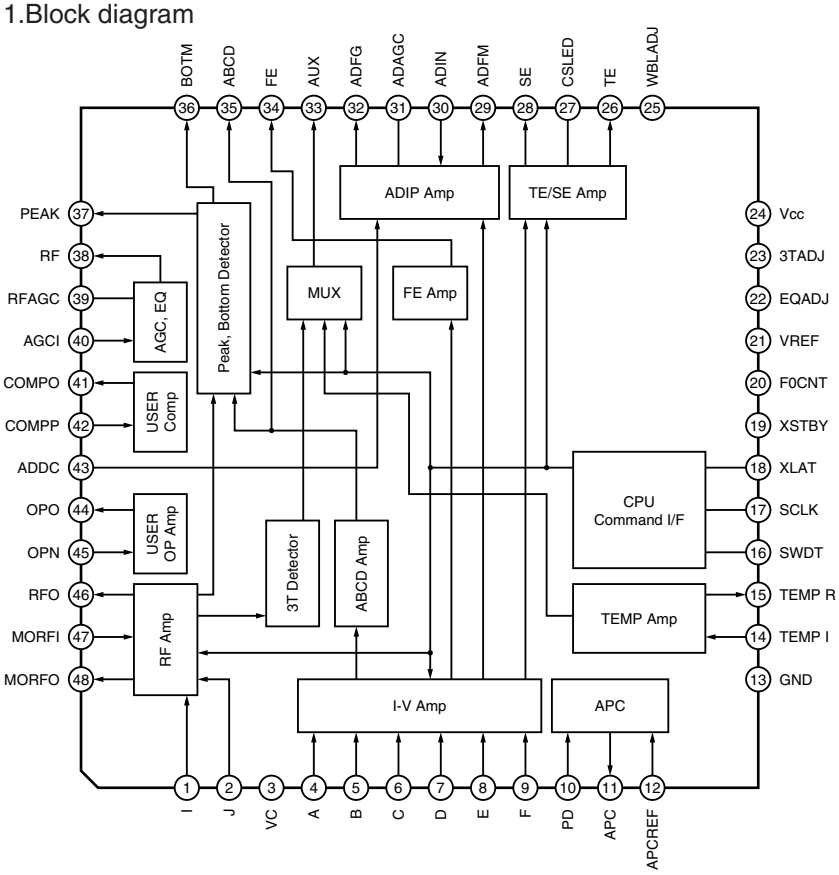


2. Block diagram

Pin No.	Symbol	Description
1	DI	Serial data/clock input terminal
2	CE	Chip enable terminal
3	Vss	GND
4	LOPOUT	Op-amp output
5	LINM	Op-amp inverse input
6	LINP	Op-amp non-inverse input
7	LOUT	C-connector terminal comprising volume + equalizer output and super-bass filter
8	LSB	Super-bass band filter C & R connector terminal
9	LBASS2	Bass band filter C & R connector terminal
10	LBASS1	Bass band filter C & R connector terminal
11	LTRE	Treble band filter C connector terminal
12	LVRIN	Volume input
13	LSELO	Input selector output
14	CDL	CD signal input
15	AUXL	AUX signal input
16	MDL	MD signal input
17	PBL	Tape PB signal input
18	TUL	FM tuner signal input
19	Vref	Analog GND
20	TUR	FM tuner signal input
21	PBR	Tape PB signal input
22	MDR	MD signal input
23	AUXR	AUX signal input
24	CDR	CD signal input
25	RSELO	Input selector output
26	RVRIN	Volume input
27	RTRE	Treble band filter C connector terminal
28	RBASS1	Bass band filter C & R connector terminal
29	RBASS2	Bass band filter C & R connector terminal
30	RSB	Super-bass band filter C & R connector terminal
31	ROUT	C connector terminal consisting of volume + equalizer output and super-bass filter
32	RINP	Op-amp non-inverse input
33	RINM	Op-amp inverse input
34	ROPOUT	Op-amp output
35	VDD	Power supply
36	CL	Serial data and clock input

■ CXA2523AR (IC310) : MD servo

1.Block diagram

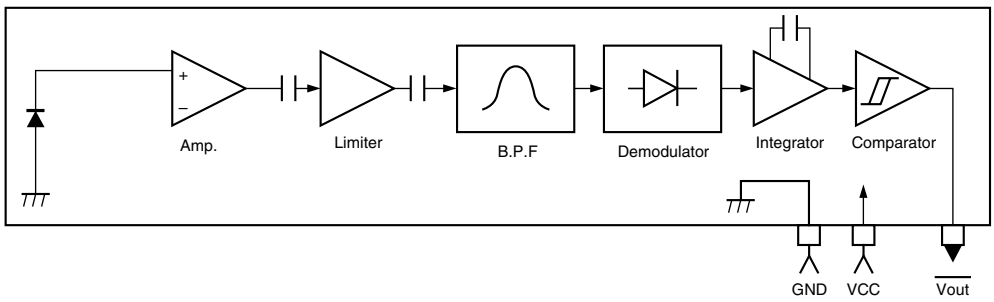


2.Pin function

Pin No.	Symbol	I/O	Function
1	I	I	I-V converted RF signal I input.
2	J	I	I-V converted RF signal J input.
3	VC	O	Vcc/2 voltage output.
4	A	I	A current input for main beam servo signal.
5	B	I	B current input for main beam servo signal.
6	C	I	C current input for main beam servo signal.
7	D	I	D current input for main beam servo signal.
8	E	I	E current input for side beam servo signal.
9	F	I	F current input for side beam servo signal.
10	PD	I	Reflection light quantity monitor signal input.
11	APC	O	Laser APC output.
12	APCREF	I	Reference voltage input for the laser power intensity setting.
13	GND	-	Connect to GND.
14	TEMPI	I	Connects the temperature sensor.
15	TEMP R	I	Connects the temperature sensor. outputs the reference voltage.
16	SWDT	I	Data input for microcomputer serial interface.
17	SCLK	I	Shift clock input for microcomputer serial interface.
18	XLAT	I	Latch signal input for microcomputer serial interface.Latched when low.
19	XSTBY	I	Standby setting pin. Normal operation when high Standby when low.
20	F0CNT	I	Internal current source setting pin.

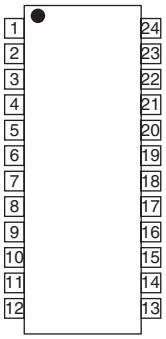
Pin No.	Symbol	I/O	Function
21	VREF	O	Reference voltage output.
22	EQADJ	I/O	Equalizer center frequency setting pin.
23	3TADJ	I/O	BPF3T center frequency setting pin.
24	Vcc	-	Power supply.
25	WBLADJ	I/O	BPF22 center frequency setting pin.
26	TE	O	Tracking error signal output.
27	CSLED	-	Connects the sled error signal LPF capacitor.
28	SE	O	Sled error signal output.
29	ADFM	O	ADIP FM signal output.
30	ADIN	I	ADIP signal comparator input.
31	ADAGC	-	Connects the ADIPAGC capacitor.
32	ADFG	O	ADIP2 binary value signal output.
33	AUX	O	13 output / temperature signal output. Switched with serial commands.
34	FE	O	Focus error signal output.
35	ABCD	O	Reflection light quantity signal output for the main beam servo detector.
36	BOTM	O	RF/ABCD bottom hold signal output.
37	PEAK	O	Peak hold signal output for the RF/ABCD signals.
38	RF	O	RF equalizer output.
39	RFAGC	-	Connects the RFAGC capacitor.
40	AGCI	I	RFAGC input.
41	COMPO	O	User comparator output.
42	COMPP	I	User comparator non-inverted input.
43	ADDC	I/O	Connects the capacitor for ADIP amplifier feedback circuit.
44	OPO	O	User operational amplifier output.
45	OPN	I	User operational amplifier inverted input.
46	RFO	O	RF amplifier output. Eye pattern checkpoint.
47	MORFI	I	Input of the groove RF signal with AC coupling.
48	MORFO	O	Groove RF signal output.

■ GP1UM271XK (IC901) : Receiver for remote

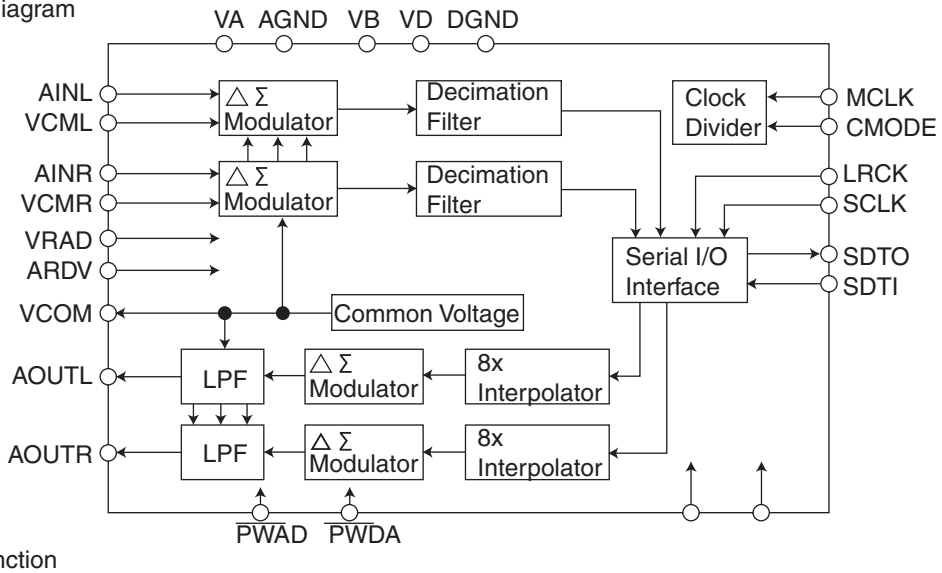


■ AK4519VF-X (IC480) : A / D D / A converter

1.Pin layout



2.Block diagram

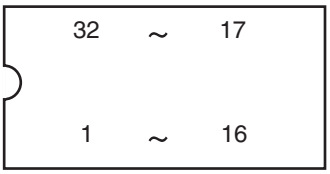


3.Pin Function

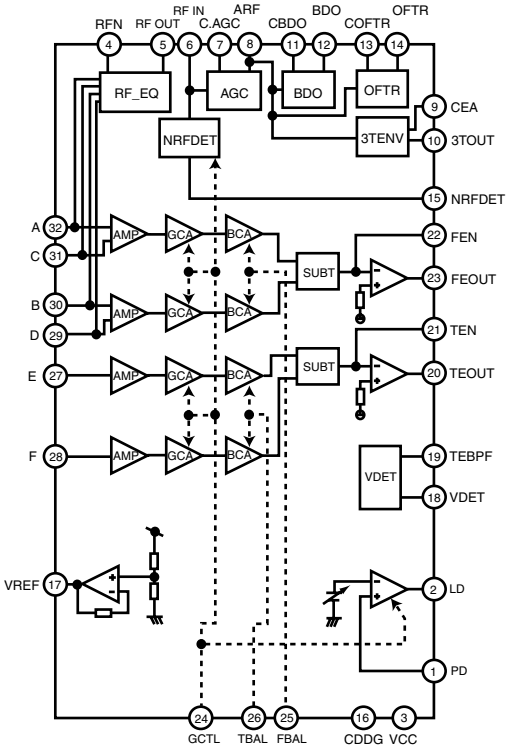
Pin NO.	Symbol	I/O	Function
1	VRDA	I	Voltage Reference Input Pin for DAC, VA
2	VRAD	I	Voltage Reference Input Pin for ADC, VA
3	AINR	I	RCH Analog Input Pin
4	VCMR	O	Rch Common Voltage Output Pin, 0.45xVA
5	VCML	O	Lch Common Voltage Output Pin, 0.45xVA
6	AINL	I	Lch Analog Input Pin
7	PWAD	I	ADC Power-Down Mode Pin "L":Power Down
8	PWDA	I	DAC Power-Down Mode Pin "L":Power Down
9	MCLK	I	Master Clock Input Pin
10	LRCK	I	Input/Output Channel Clock Pin
11	SCLK	I	Audio Serial Data Clock Pin
12	SDTO	O	Audio Serial Data Output Pin
13	DGND	-	Digital Ground Pin
14	VD	-	Digital Power Supply Pin
15	SDTI	I	Audio Serial Data Input Pin
16	CMODE	I	Master Clock Select Pin
17	DEM1	I	De-emphasis Frequency Select Pin
18	DEM0	I	De-emphasis Frequency Select Pin
19	AOUTL	O	Lch Analog Output Pin
20	AOUTR	O	Rch Analog Output Pin
21	VCOM	O	Common Voltage Output Pin, 0.45xVA
22	AGND	-	Analog Ground Pin
23	VB	-	Substrate Pin
24	VA	-	Analog Power Supply Pin

■AN22000A(IC601):RF & SERVO AMP

1. Pin layout



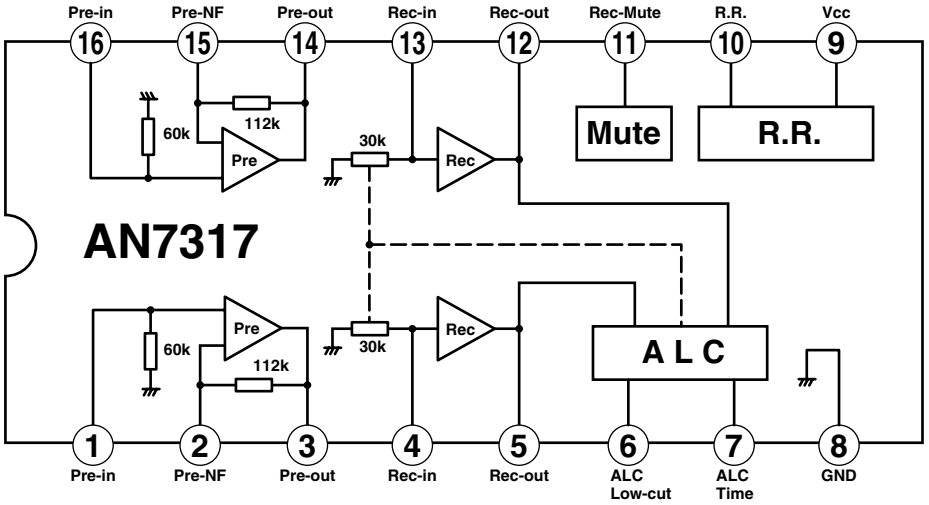
2. Block diagram



3. Pin function

Pin No.	Symbol	Function	Pin No.	Symbol	Function
1	PD	APC Amp. Input terminal	16	CDDG	Earth terminal
2	LD	APC Amp.Output terminal	17	VREF	VREF output terminal
3	VCC	Power supply terminal	18	VDET	VDET output terminal
4	RFN	RF addition Amp.Reversing input terminal	19	TEBPF	VDET input terminal
5	RF OUT	RF addition Amp.Output terminal	20	TEOUT	TE Amp. output terminal
6	RF IN	AGC input terminal	21	TEN	TE Amp. reversing input terminal
7	C.AGC	Terminal of connection of capacity of AGC loop filter.	22	FEN	FE Amp. reversing input terminal
			23	FEOUT	FE Amp. output terminal
8	ARF	AGC output terminal	24	GCTL	Terminal GCTL & APC
9	CEA	Capacity connection terminal for HPF-Amp.	25	FBAL	FBAL control terminal
10	3TOUT	3TENV output terminal	26	TBAL	TBAL control terminal
11	CBDO	Capacity connection terminal for RF shade side envelope detection	27	E	Tracking signal input terminal 1
			28	F	Tracking signal input terminal 2
12	BDO	BDO output terminal	29	D	Focus signal input terminal 4
13	COFTR	Capacity connection terminal for RF discernment side envelope detection	30	B	Focus signal input terminal 2
			31	C	Focus signal input terminal 3
14	OFTR	OFTR output terminal	32	A	Focus signal input terminal 1
15	NRFDET	NRFDET output terminal			

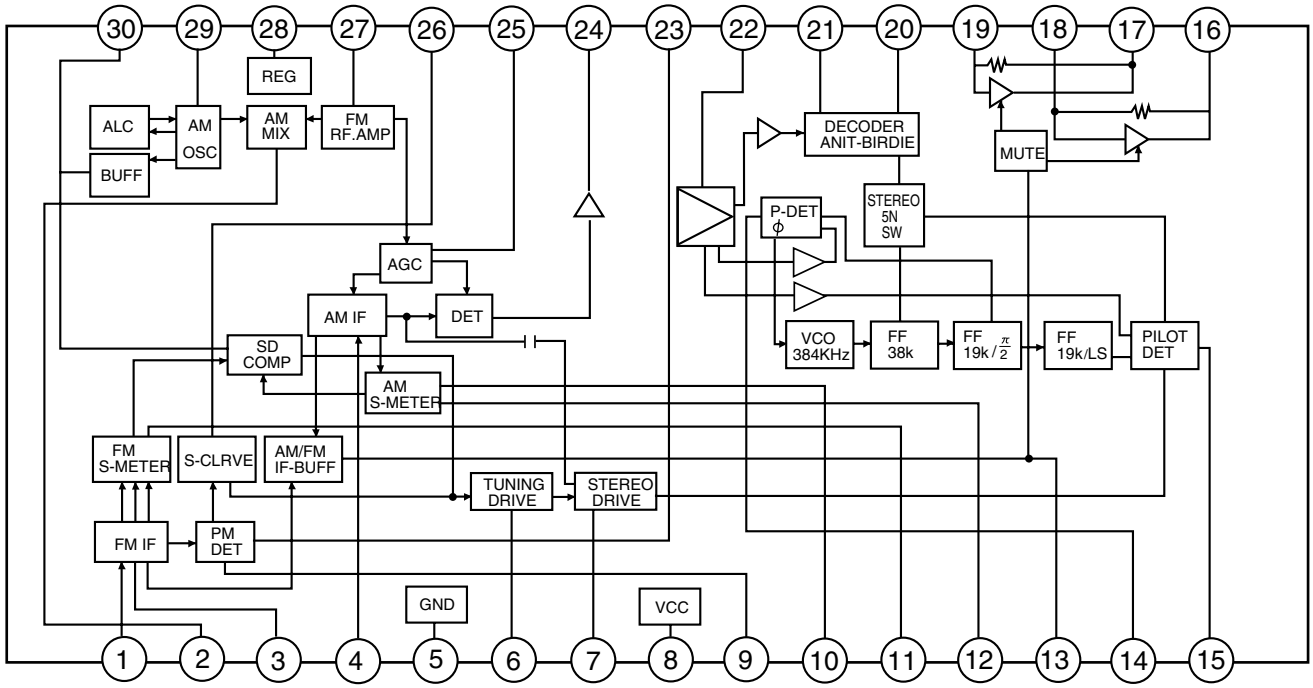
AN7317(IC32) : ALC & Pre Amplifier



Pin No.	Pin Descriptions
1	Channel 1 Playback Amplifier Input
2	Channel 1 Playback Amplifier Negative Freedback
3	Channel 1 Playback Amplifier Output
4	Channel 1 Record Amplifier Input
5	Channel 1 Record Amplifier Output
6	ALC Low-Cut
7	ALC Time
8	Ground
9	Vcc
10	Ripple Filter
11	Record - Amplifier Mute
12	Channel 2 Record Amplifier Output
13	Channel 2 Record Amplifier Input
14	Channel 2 Playback Amplifier Output
15	Channel 2 Playback Amplifier Negative Freedback
16	Channel 2 Playback Amplifier Input

■ LA1838 (IC1): FM AM IF AMP&detector, FM MPX decoder

1. Block Diagram

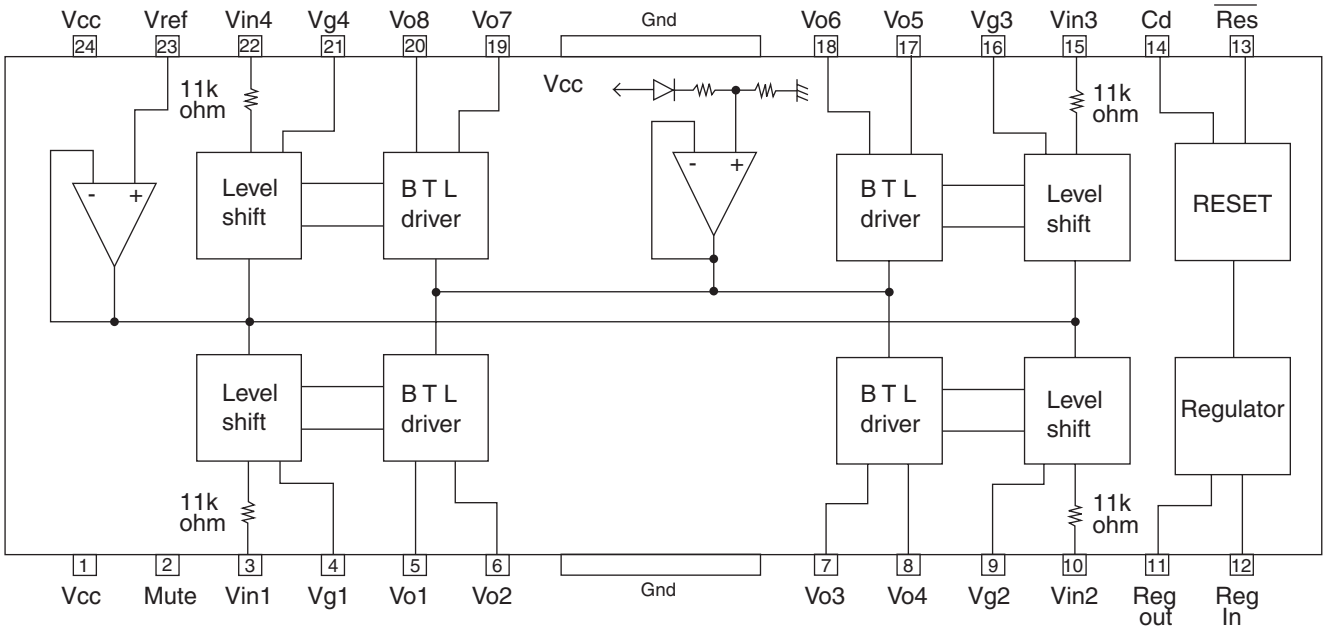


2. Pin Function

Pin No.	Symbol	I/O	Function	Pin No.	Symbol	I/O	Function
1	FM IN	I	This is an input terminal of FM IF signal.	16	L OUT	O	Left channel signal output.
2	AM MIX	O	This is an out put terminal for AM mixer.	17	R OUT	O	Right channel signal output.
3	FM IF	I	Bypass of FM IF	18	L IN	I	Input terminal of the left channel post AMP.
4	AM IF	I	Input of AM IF Signal.	19	R IN	I	Input terminal of the right channel post AMP.
5	GND	—	This is the device ground terminal.	20	RO	O	Mpx Right channel signal output.
6	TUNED	O	When the set is tuning, this terminal becomes "L".	21	LO	O	Mpx Left channel signal output.
7	STEREO	O	Stereo indicator output. Stereo "L", Mono: "H"	22	IF IN	I	Mpx input terminal
8	VCC	—	This is the power supply terminal.	23	FM OUT	O	FM detection output.
9	FM DET	—	FM detect transformer.	24	AM DET	O	AM detection output.
10	AM SD	—	This is a terminal of AM ceramic filter.	25	AM AGC	I	This is an AGC voltage input terminal for AM
11	FM VSM	O	Adjust FM SD sensitivity.	26	AFC	—	This is an output terminal of voltage for FM-AFC.
12	AM VSM	O	Adjust AM SD sensitivity.	27	AM RF	I	AM RF signal input.
13	MUTE	I/O	When the signal of IF REQ of IC121(LC72131) appear, the signal of FM/AM IF output. //Muting control input.	28	REG	O	Register value between pin 26 and pin28 desides the frequency width of the input signal.
14	FM/AM	I	Change over the FM/AM input. "H" :FM, "L" : AM	29	AM OSC	—	This is a terminal of AM Local oscillation circuit.
15	MONO/ST	O	Stereo : "H", Mono: "L"	30	OSC BUFFER	O	AM Local oscillation Signal output.

■ LA6541-X (IC801) : Servo driver

1. Pin Layout & block diagram

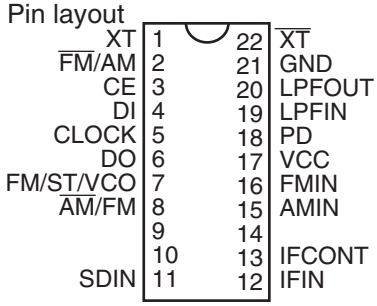


2. Pin function

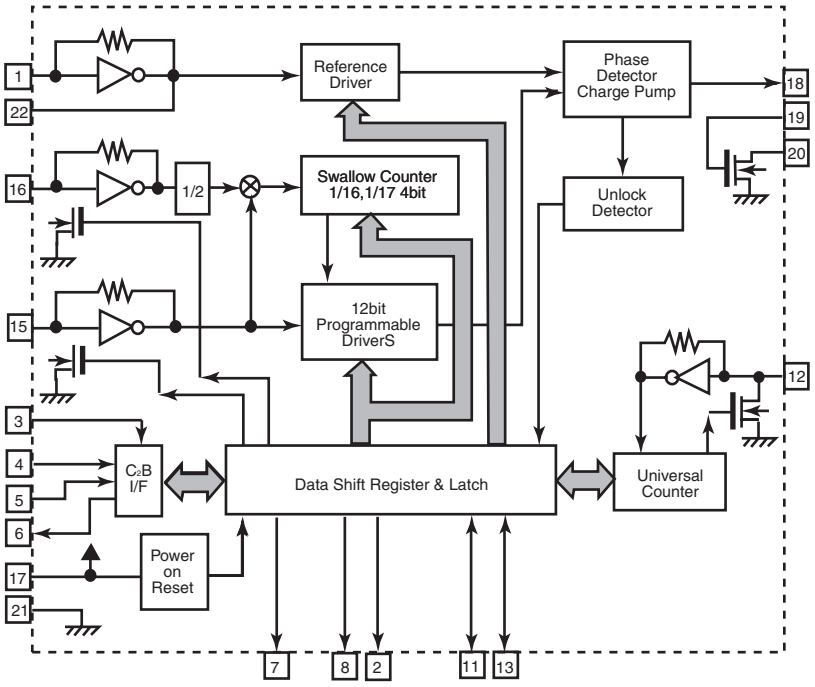
Pin No.	Symbol	Function
1	Vcc	Power supply (Shorted to pin 24)
2	Mute	All BTL amplifier outputs ON/OFF
3	Vin1	BTL AMP 1 input pin
4	Vg1	BTL AMP 1 input pin (For gain adjustment)
5	Vo1	BTL AMP 1 input pin (Non inverting side)
6	Vo2	BTL AMP 1 input pin (Inverting side)
7	Vo3	BTL AMP 2 input pin (Inverting side)
8	Vo4	BTL AMP 2 input pin (Non inverting side)
9	Vg2	BTL AMP 2 input pin (For gain adjustment)
10	Vin2	BTL AMP 2 input pin
11	Reg Out	External transistor collector (PNP) connection. 5V power supply output
12	Reg In	External transistor (PNP) base connection
13	Res	Reset output
14	Cd	Reset output delay time setting (Capacitor connected externally)
15	Vin3	BTL AMP 3 input pin
16	Vg3	BTL AMP 3 input pin (For gain adjustment)
17	Vo5	BTL AMP 3 output pin (Non inverting side)
18	Vo6	BTL AMP 3 output pin (Inverting side)
19	Vo7	BTL AMP 4 output pin (Inverting side)
20	Vo8	BTL AMP 4 output pin (Non inverting side)
21	Vg4	BTL AMP 4 output pin (For gain adjustment)
22	Vin4	BTL AMP 4 output pin
23	Vref	Level shift circuit's reference voltage application
24	Vcc	Power supply (Shorted to pin 1)

■ LC72136N (IC2) : PLL frequency synthesizer

1. Pin layout



2. Block diagram

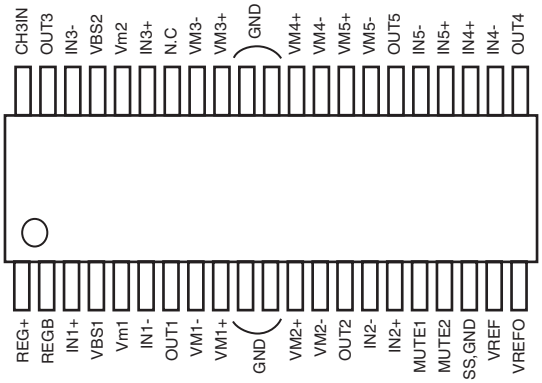


3. Pin function

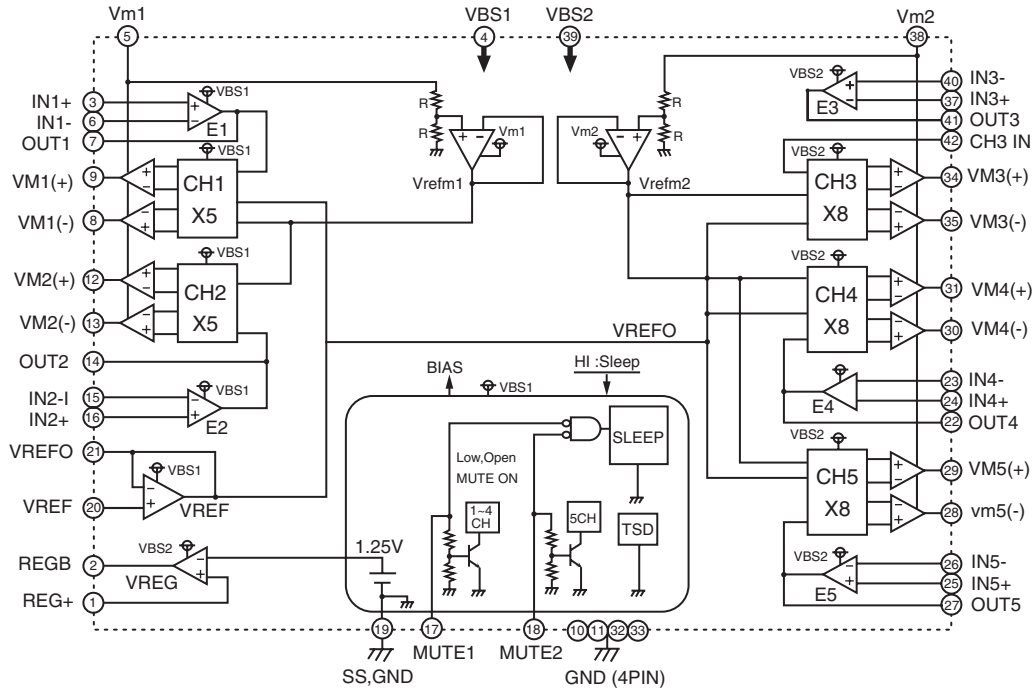
Pin No.	Symbol	I/O	Function	Pin No.	Symbol	I/O	Function
1	XT	I	X'tal oscillator connect (75kHz)	12	IFIN	I	IF counter signal input
2	$\overline{FM}$/AM	O	LOW:FM mode	13	IFCONT	O	IF signal output
3	CE	I	When data output/input for 4pin(input) and 6pin(output): H	14		-	Not use
4	DI	I	Input for receive the serial data from controller	15	AMIN	I	AM Local OSC signal output
5	CLOCK	I	Sync signal input use	16	FMIN	I	FM Local OSC signal input
6	DO	O	Data output for Controller Output port	17	VCC	-	Power suplly(VDD=4.5-5.5V) When power ON:Reset circuit move
7	FM/ST/VCO	O	"Low": MW mode	18	PD	O	PLL charge pump output(H: Local OSC frequency Height than Reference frequency. L: Low Agreement: Height impedance)
8	$\overline{AM}$/FM	O	Open state after the power on reset	19	LPFIN	I	Input for active lowpassfilter of PLL
9		-	Not use	20	LPFOUT	O	Output for active lowpassfilter of PLL
10		-	Not use	21	GND	-	Connected to GND
11	SDIN	I/O	Data input/output	22	$\overline{XT}$	I	X'tal oscillator(75KHz)

■ M63008FP-X (IC410) : 5ch Actuator driver

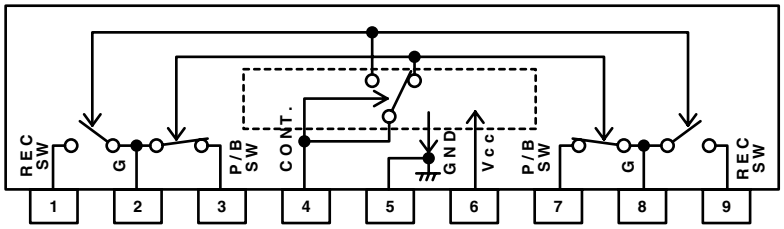
1.Pin layout



2.Block diagram

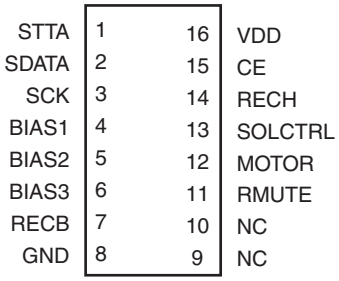


■ BA3126N(IC31) : R/P Switch

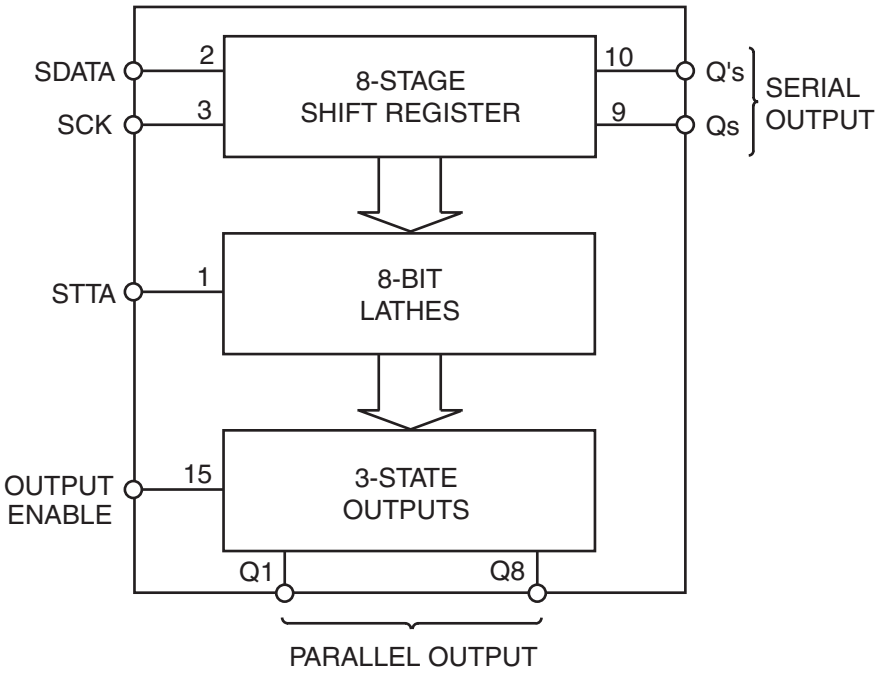


■ BU4094B(IC33):Serial to parallel port extension

1.Pin layout

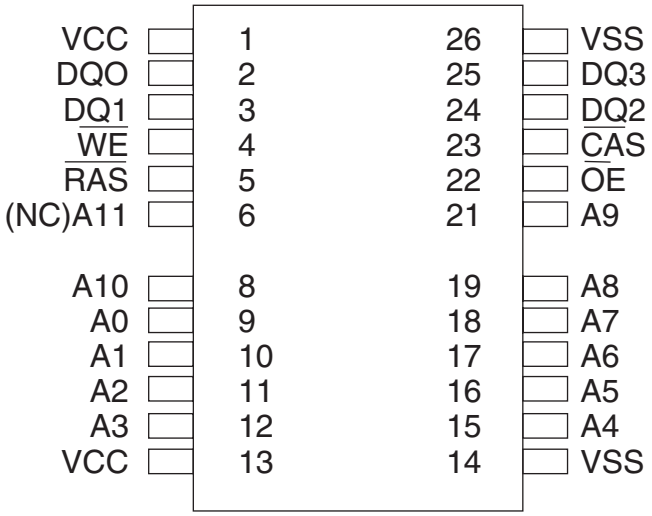


2.Block diagram



■ GM71VS17400CLT5(IC390) : DRAM

1. Pin layout

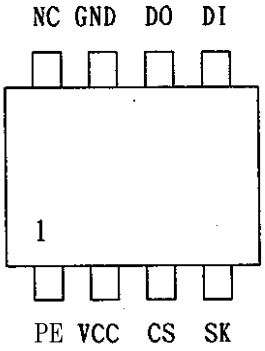


2. Block diagram

Pin No.	Symbol	Function
1.13	VCC	Power (+3.3V)
2.3.24.25	DQO～DQ3	Data-input/Data-output
4	$\overline{WE}$	Write Enable
5	$\overline{RAS}$	Row Address Strobe
6.8～12. 15～19.21	AO～A11	Address Inputs (4K Refresh Product)
8～12. 15～19.21	AO～A10	Address Inputs (2K Refresh Product)
14.26	VSS	Ground
22	$\overline{OE}$	Output Enable
23	$\overline{CAS}$	Column Address Strobe

BR93LC66F-X(IC590):EEPROM

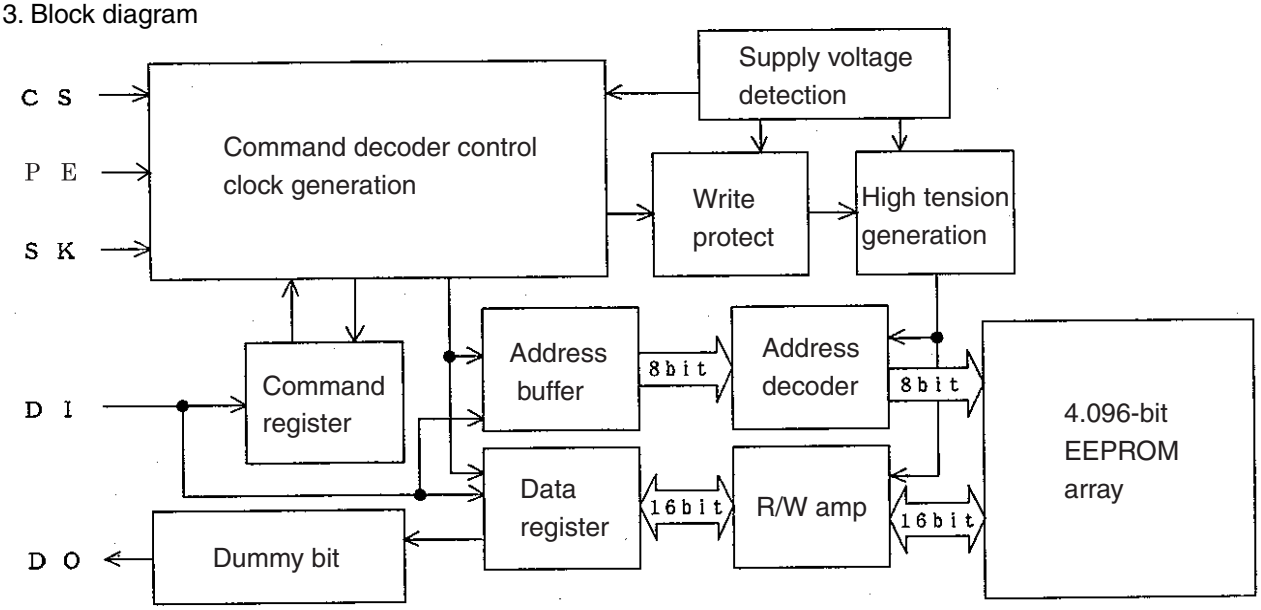
1. Pin layout



2. Pin function

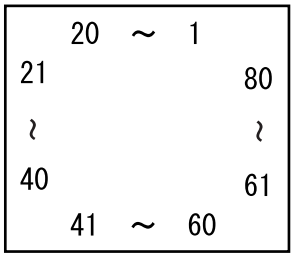
Pin No.	Symbol	Pin function
1	PE	Program enable
2	VCC	Power supply
3	CS	Chip select
4	SK	Clock input
5	DI	Data input
6	DO	Data output
7	GND	Ground
8	NC	Non connect

3. Block diagram



MN662790RSC (IC651) : Digital servo & Digital signal processer

1. Pin layout

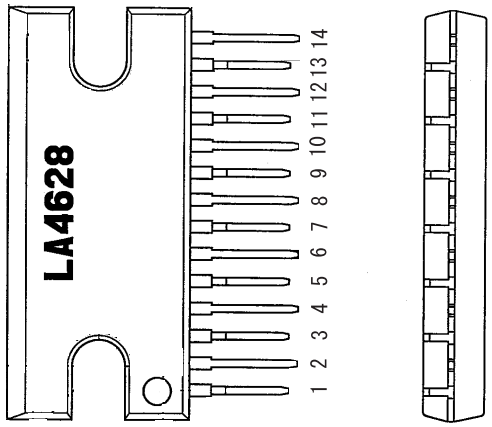


2. Pin function

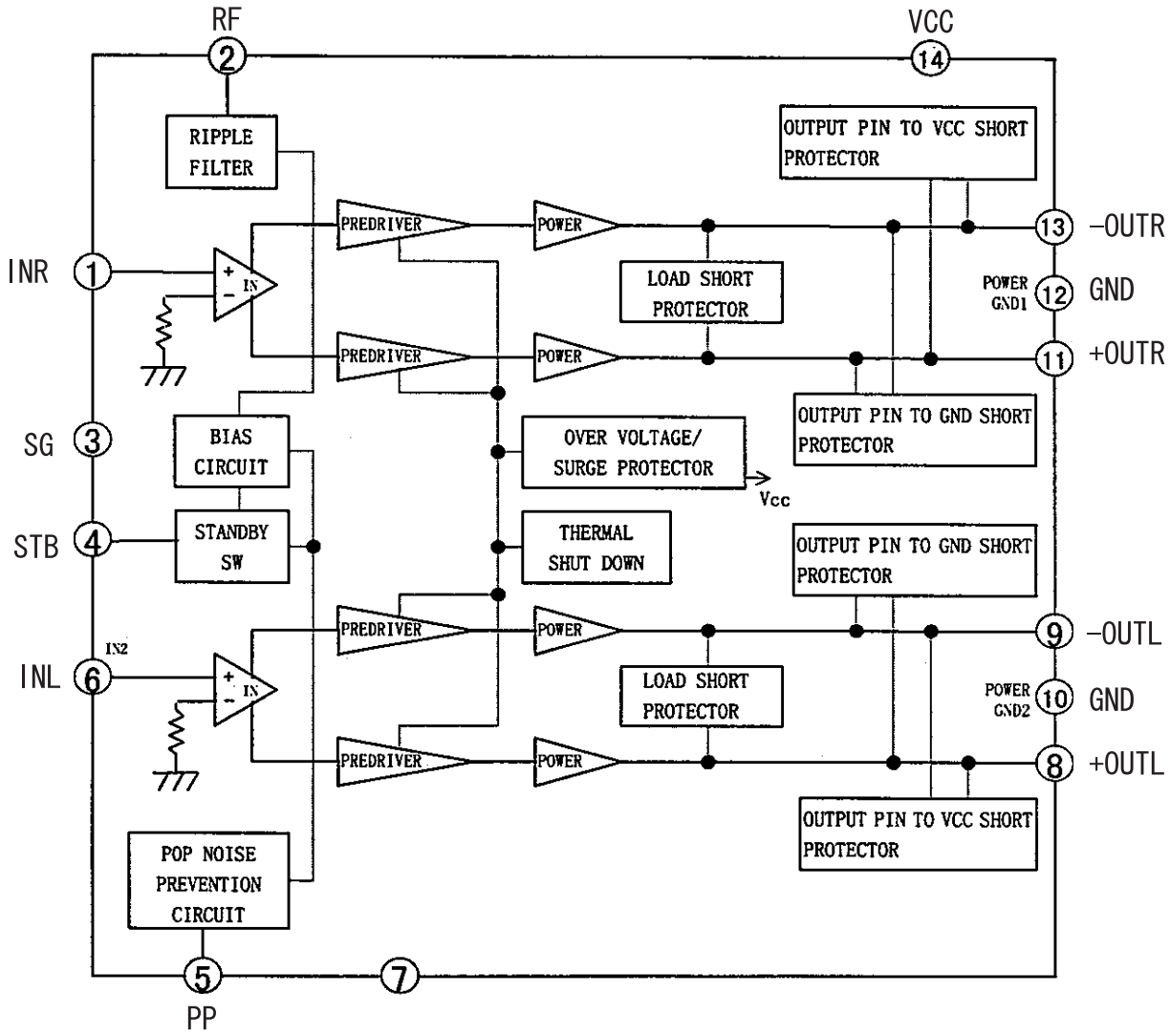
Pin No.	Symbol	I/O	Description	Pin No.	Symbol	I/O	Description
1	BCLK	O	Bit clock output for SRDATA output (pin 3)	41	PLLF2	I/O	PLL loop filter characteristic switching terminal
2	LRCK	O	L/R discrimination signal output	42	DSLBDA	—	Not used
3	SRDATA	O	Serial data output	43	WVEL	—	Not used
4	DVDD1	—	Power supply for digital circuit	44	ARF	I	RF signal input
5	DVSS1	—	Digital circuit GND	45	IREF	I	Reference current input
6	TX	O	Digital audio interface output signal	46	DRF	I	DSL bias input
7	MCLK	I	Microcomputer command clock signal input	47	DSLF	I/O	DSL loop filter input/output
8	MDATA	I	Microcomputer command data input	48	PLLF	I/O	PLL loop filter input/output
9	MLD	I	Microcomputer command load signal input (L: Load)	49	VCOF	I/O	VCO loop filter input/output
10	SENSE	—	Not used	50	AVDD2	—	Power supply for analog circuit
11	FLOCK	—	Not used	51	AVSS2	—	Analog circuit GND
12	TLOCK	—	Not used	52	EFM	—	Not used
13	BLKCK	O	Sub-code block clock signal	53	DSLB	O	DSL balance output
14	SQCK	I	External clock input for sub-code Q register	54	VCOF2	I/O	Digital servo 33.8688 MHz generator VCO loop filter input/output
15	SUBQ	O	Sub-code Q data output	55	SUBC	—	Not used
16	$\overline{\text{DMUTE}}$	I	Muting input (H: Mute)	56	SBCK	—	Connected to GND
17	STAT	O	Status signal output	57	VSS	—	GND for transmission circuit
18	DSP-RST	I	Reset signal input (L: Reset)	58	X1	I	Crystal oscillator circuit input (f = 16.9344 MHz)
19	SMCK	—	Not used	59	X2	O	Crystal oscillator circuit output (f = 16.9344 MHz)
20	CSEL	I	Oscillation frequency selector	60	VDD	—	Power supply for oscillator circuit
21	TEST2	—	Not used	61	BYTCK	—	Not used
22	TVD	O	Traverse drive output	62	LD		
23	PC	—	Not used	63	GAIN		
24	ECM	O	Spindle motor drive signal (Forced mode output)	64	IPFLAG	—	Not used
25	ECS	O	Spindle motor drive signal (Servo malfunction signal output)	65	FLAG	O	Flag signal output
26	VDETMON	—	Not used	66	CLVS	—	Not used
27	TRD	O	Tracking drive output	67	CRC	—	Not used
28	FOD	O	Focus drive output	68	DEMPH	—	Not used
29	VREF	I	D/A output reference voltage	69	RESY	—	Not used
30	FBAL	O	Focus balance control output	70	IOSEL	I	Mode switching, Pull-up
31	TBAL	O	Tracking balance control output	71	$\overline{\text{TEST}}$	I	Test pin (H: Usual)
32	FE	I	Focus error signal input (analog input)	72	AVDD1	—	Power supply for analog circuit
33	TE	I	Tracking error signal input (analog input)	73	OUTL	O	L-ch audio output
34	RF ENV	I	RF envelope signal input (analog input)	74	AVSS1	—	Analog circuit GND
35	TEST3	—	Connected to GND	75	OUTR	O	R-ch audio output
36	OFT	I	Off-track signal input (H: Off-track)	76	DQSY		
37	TRCRS	I	Track cross signal input	77	Vcc5V	—	Connected with power supply
38	$\overline{\text{RFDET}}$	I	RF detection signal input (L: Detection)	78	PSEL	I	When IOSEL = H: Test pin (Usually L)
39	BDO	I	Dropout signal input (H: Dropout)	79	MSEL	—	When IOSEL = H: SMCK output frequency switching terminal (L: SMCK = 4.2336 MHz)
40	LDON	—	Not used	80	SSEL	I	When IOSEL = H: SUBQ output mode switching terminal (H: Q code buffer use mode)

LA4628 (IC801) : Power amp.

1. Pin layout

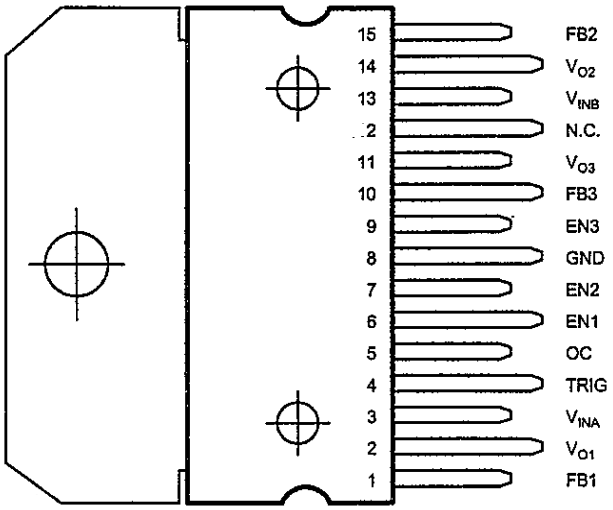


2. Block diagram



L4909 (IC802) : Regulator

1. Pin layout



2. Pin function

Pin No.	Symbol	Description
1	FB1	REG1 feedback voltage input
2	Vo1	REG1 output voltage
3	VinA	Input DC supply voltage
4	TRIG	External SCR trigger (clover protection)
5	OC	Overcurrent warning output
6	EN1	REG1 enable input
7	EN2	REG2 enable input
8	GND	Analog GND
9	EN3	REG3 enable input
10	FB3	REG3 feedback voltage input
11	Vo3	REG3 output voltage
12	N.C.	Not connected
13	VinB	Input DC supply voltage
14	Vo2	REG2 output voltage
15	FB2	REG2 feedback voltage input

<<MEMO>>

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