

# JVC

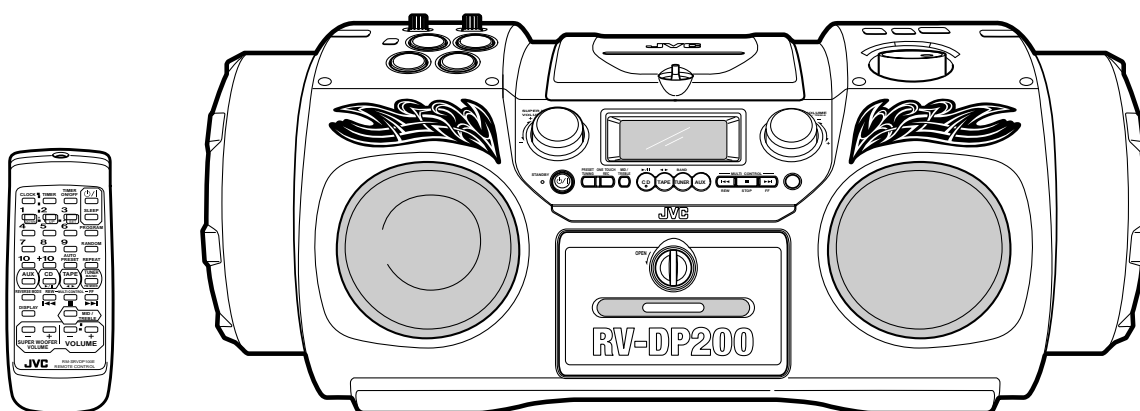
# SERVICE MANUAL

## POWERED WOOFER CD SYSTEM

### RV-DP200BK

#### Area Suffix

B ..... U.K.  
 E ..... Continental Europe  
 EN ..... Northern Europe



**COMPACT**  
**disc**  
**DIGITAL AUDIO**

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## 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 ( $\triangle$ ) 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 current check (Electrical shock hazard testing)
 

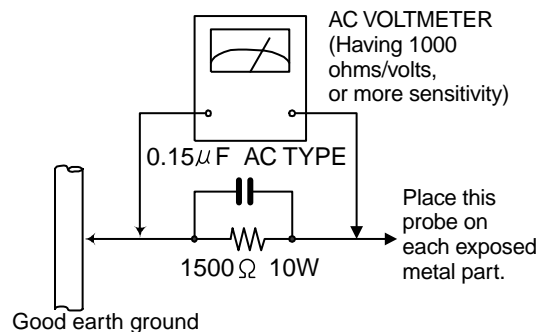
After re-assembling the product, always perform an isolation check on the exposed metal parts of the product (antenna terminals, knobs, metal cabinet, screw heads, headphone jack, control shafts, etc.) to be sure the product is safe to operate without danger of electrical shock.

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 1,500  $\Omega$  10W resistor paralleled by a 0.15  $\mu$ F 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 each exposed metal part, particularly any exposed metal part having a return path to the chassis, and measure the AC voltage across the resistor. Now, reverse the plug in the AC outlet and repeat each measurement. Any voltage measured 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 performing repair of this system.**

In regard with component parts appearing on the silk-screen printed side (parts side) of the PWB diagrams, the parts that are printed over with black such as the resistor (■), diode (▣) and ICP (●) or identified by the " $\triangle$ " mark nearby are critical for safety.


When replacing them, be sure to use the parts of the same type and rating as specified by the manufacturer. (Except the JC version)

## **Safety precautions** (U.K only)

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.
2. Any unauthorised design alterations or additions will void the manufacturer's guarantee ; furthermore the manufacturer cannot accept responsibility for personal injury or property damage resulting therefrom.
3. Essential safety critical components are identified by (  ) on the Parts List and by shading on the schematics, and must never be replaced by parts other than those listed in the manual. Please note however that many electrical and mechanical parts in the product have special safety related characteristics. These characteristics are often not evident from visual inspection. Parts other than specified by the manufacturer may not have the same safety characteristics as the recommended replacement parts shown in the Parts List of the Service Manual and 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.

## **Warning**

1. Service should be performed by qualified personnel only.
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 **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 performing repair of this system.

## Important for laser products

### 1.CLASS 1 LASER PRODUCT

**2.DANGER** : Invisible laser radiation when open and interlock 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 which prevent emission of radiation when the drawer is open and the safety interlocks have failed or are defeated. 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.

**WARNING** : Osynlig laserstråling är denna del är öppnad och spårren är urkopplad. Betrakta ej strålen.

**VARO** : Avattaessa ja suojalukitus ohitettaessa olet alltiina 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

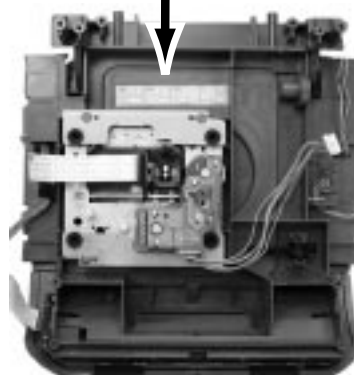
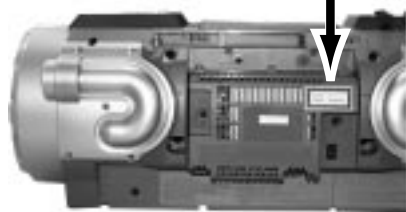
DANGER : Invisible laser radiation when open and interlock or defeated.  
AVOID DIRECT EXPOSURE TO BEAM (e)

VARO : Avattaessa ja suojalukitus ohitettaessa olet alltiina näkymättömälle lasersäteilylle. Älä katso säteeseen. (d)

WARNING : Osynlig laserstråling är denna del är öppnad och spårren är urkopplad. Betrakta ej strålen. (s)

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

**CLASS 1  
LASER PRODUCT**



## 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

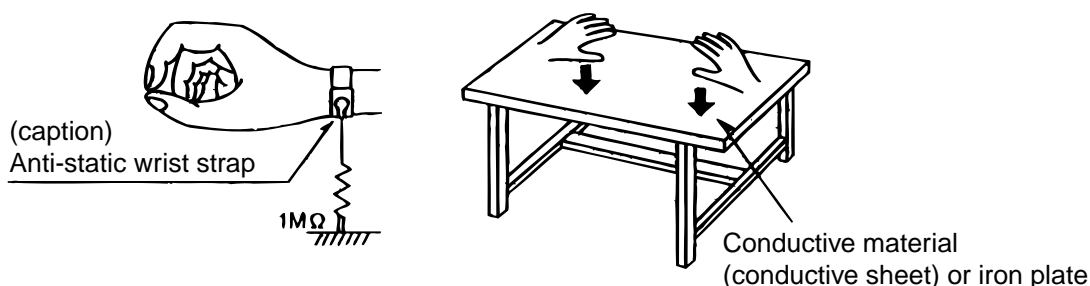
Static electricity in the work area can destroy the optical pickup (laser diode) in devices such as CD players. Be careful to use proper grounding in the area where repairs are being performed.

#### 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

# Dismantling and assembling the CD mechanism assembly

## 1. Notice regarding replacement of optical pickup

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 to the optical pickup or connected devices.

(Refer to the section regarding anti-static measures.)

1. Do not touch the area around the laser diode and actuator.
2. Do not check the laser diode using a tester, as the diode may easily be destroyed.
3. It is recommended that you use a grounded soldering iron when shorting or removing the laser diode.  
Recommended soldering iron: HAKKO ESD-compatible product
4. Solder the short-circuit land on the optical pickup unit.

\* In accordance with the following steps, solder the short-circuit land properly.

1. Remove the four screws attaching the micon board as shown in Fig1.  
(Refer to "Disassembly method", page 2-8.)
2. Raise the micon board as shown in Fig. 2.
3. Prior to disconnecting the card wire from the connector CN601 on the micon board, solder the short-circuit land on the pickup unit.
4. When reassembling, unsolder the short-circuit land on the pickup unit after connecting the card wire.

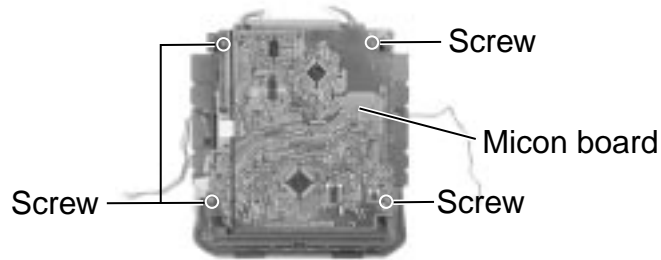


Fig.1

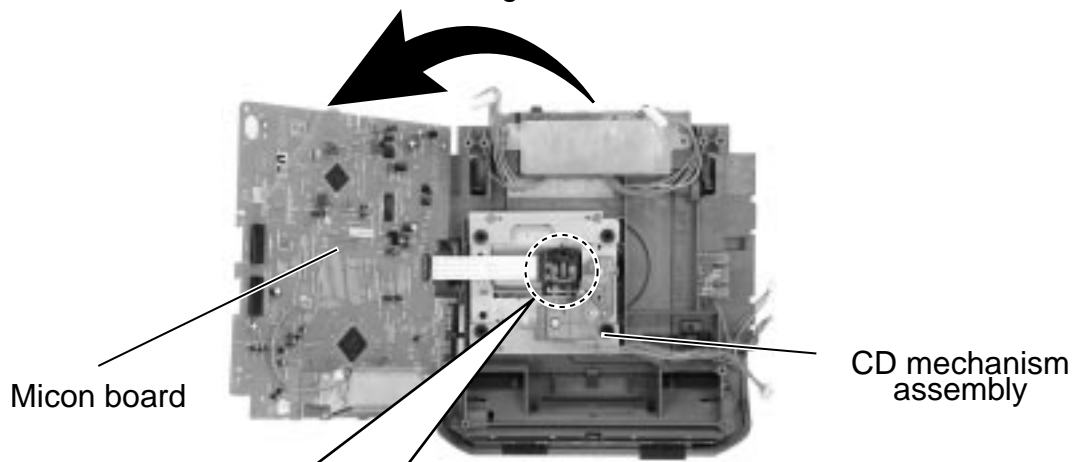
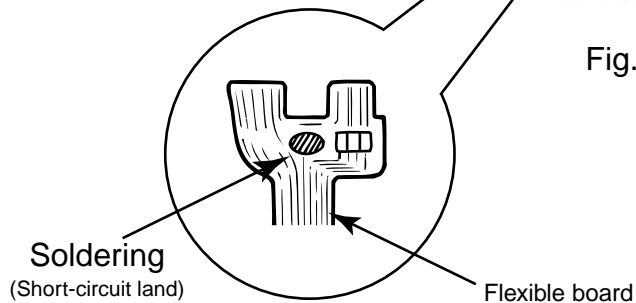


Fig.2



## Disassembly method

### <How to disassemble>

#### ■ Replacing the fuses ..... Described at the end of "Disassembly method".

#### ■ Removing the cabin .....

- 1) Remove the side grilles.  
Remove the two screws on the front of each speaker.
- 2) Remove the mixing unit and the scratch & rhythm unit on the upper right and left sides of the body.
- 3) Remove the ten screws attaching the cabinet on the back of the body.
- 4) The front cabinet comes off.

#### ■ Power amplifier board

- 1) After disassembling the cabinet, remove the CD unit.
- 2) Remove the three screws attaching the power amplifier assembly  
(Use an offset screwdriver to remove the screw on the bottom).

### <Main Body>

#### ■ Removing the side grilles ( See Fig.1)

1. Remove the four screws A attaching the side grille on the left side of the body. Pull out the side grille from the body outward.
2. Remove the side grille on the right side in the same way.

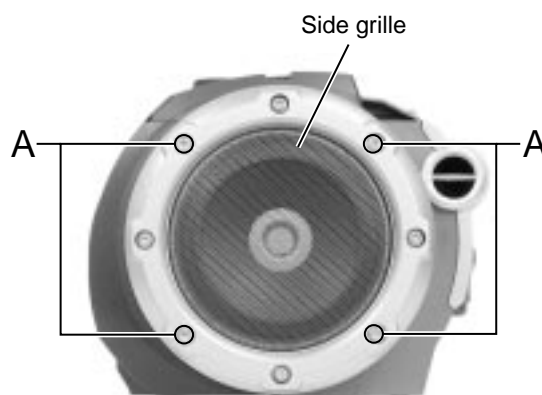


Fig.1

#### ■ Removing the woofer speakers

(See Fig.2)

- Prior to performing the following procedure, remove the right and left side grilles.

※ When disassembling without removing the woofer speaker, remove the two screws B on the front of each speaker.

1. Remove the four screws B attaching the woofer speaker on the left side of the body.
2. Disconnect the harness from the speaker terminal on the back of the woofer speaker.
3. Remove the woofer speaker on the right side in the same way.

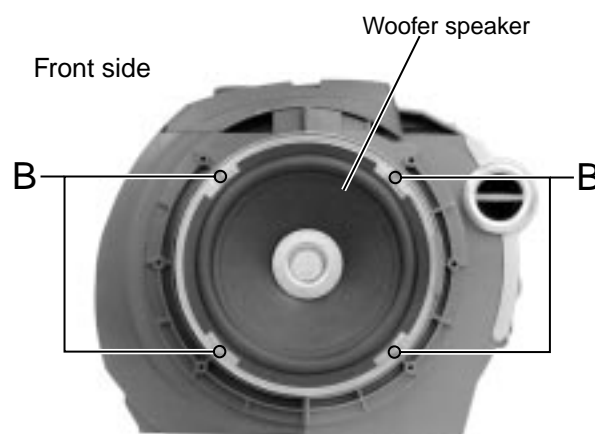


Fig.2

**■ Removing the scratch & rhythm assembly  
(See Fig.3 and 4)**

- Prior to performing the following procedure, remove the left side grilles.
1. Remove the four screws C attaching the scratch & rhythm assembly
  2. Disconnect the harness from connector CN924 of the scratch & rhythm board on the underside of the scratch & rhythm assembly.



Fig.3

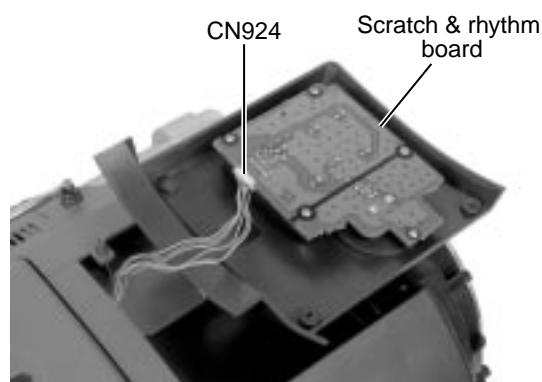


Fig.4

**■ Removing the mixing assembly  
(See Fig.5 and 6)**

- Prior to performing the following procedure, remove the right side grilles.
1. Remove the four screws D attaching the mixing assembly.
  2. Disconnect the harness from connector CN424 on the mic & guitar volume board and CN923 on the drum key board on the underside of the mixing assembly.

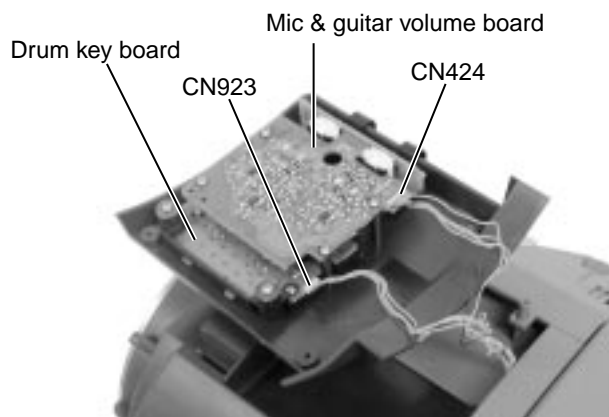


Fig.6

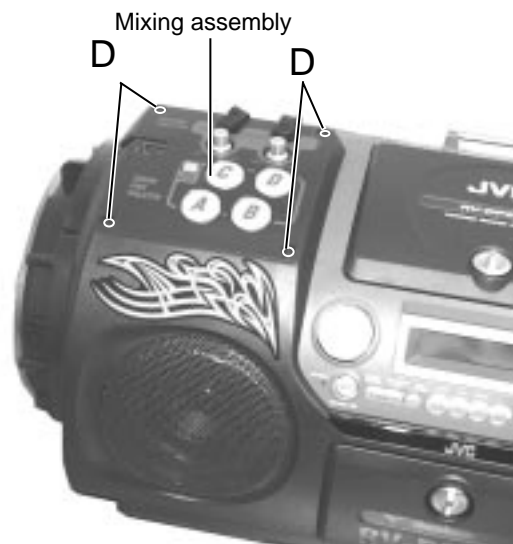


Fig.5



## ■ Removing the front cabinet and the rear cabinet (See Fig.7 and 8)

- Prior to performing the following procedure, remove the side grilles, the woofer speakers, the scratch & rhythm assembly and the mixing assembly.

**ATTENTION:** The front cabinet can be removed on condition that the front two screws B attaching the woofer speakers are removed.

1. Remove the ten screws E attaching the rear cabinet on the back of the body.
2. Remove the front cabinet and the rear cabinet (The speaker terminal inside the front cabinet comes off at the same time).

**ATTENTION:** When reassembling, make sure that connector CN193 of the rear cabinet is connected to the speaker terminal on the front cabinet.

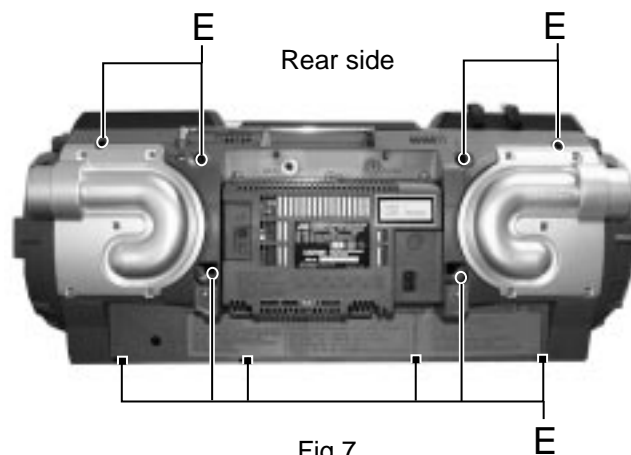


Fig.7

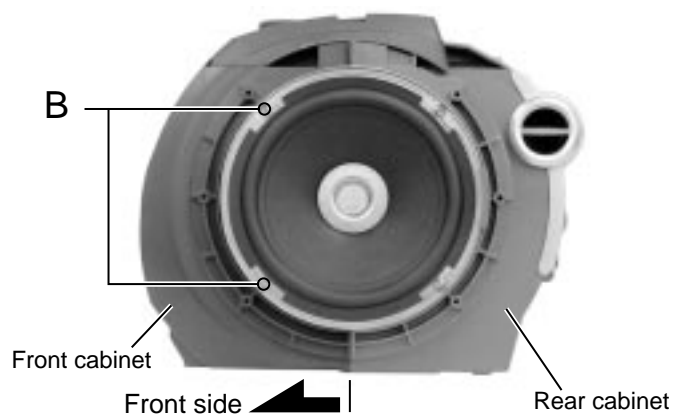


Fig.8

**<Rear cabinet>**

- Prior to performing the following procedure, remove the front cabinet and the rear cabinet.

**■ Removing the CD unit (See Fig.9 to 12)**

1. Remove the two screws F attaching the CD unit on the back of the rear cabinet.
2. Disconnect the card wires from connector CN916 on the micom board and CN415 and CN413 on the main switch board in the lower left part of the CD unit.
3. Pull out the CD unit toward the front. The connector CN417 and CN418 of the micom board in the lower rear part of the CD unit are disconnected from the main switch board at the same time.

**CAUTION:** When reassembling, make sure that connector CN417 and CN418 of the CD unit are connected to connector CN427 and CN428 on the power aboard correctly.

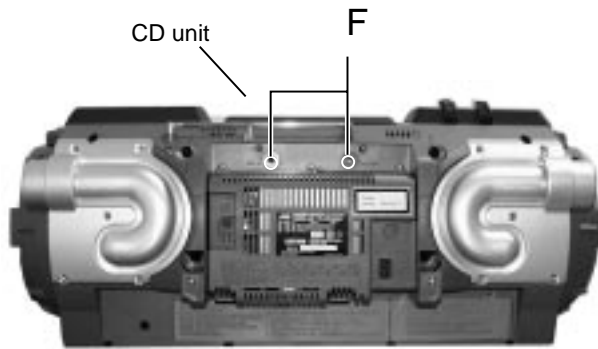


Fig.9

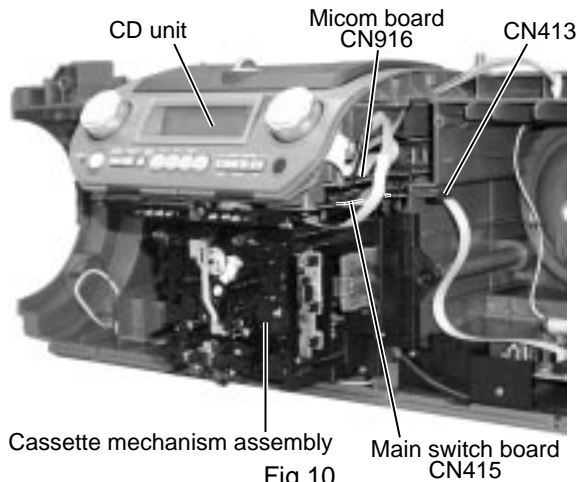


Fig.10

**■ Removing the cassette mechanism assembly (See Fig.10 and 11)**

1. Disconnect the card wires from connector CN916 on the micom board and CN415 on the main switch board in the lower left part of the CD unit.
2. Remove the four screws G attaching the cassette mechanism assembly. Detach the cassette mechanism assembly toward the front.

**■ Removing the tuner board (See Fig.13)**

1. Disconnect the card wire from connector CN1 on the tuner board.
2. Remove the antenna wire from TP1 on the tuner board.
3. Remove the two screws H attaching the tuner board holder.
4. Pull out the tuner board toward the front.

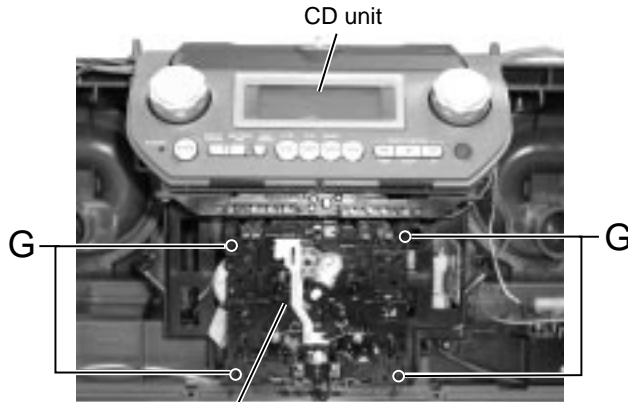


Fig.11

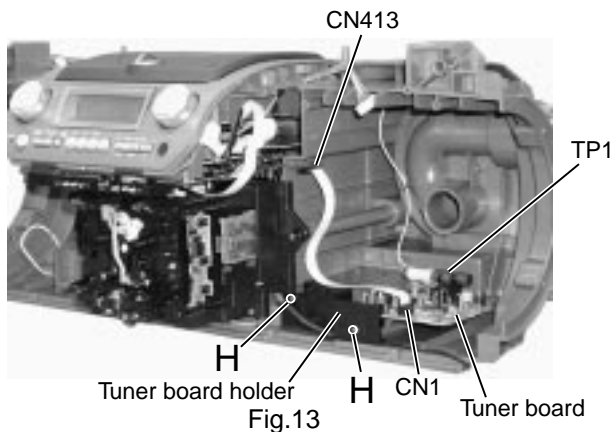


Fig.13

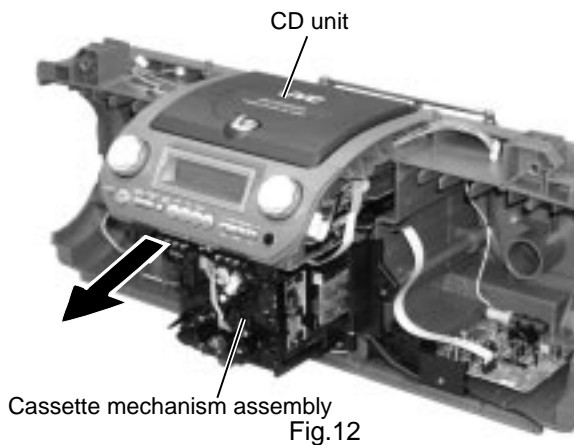
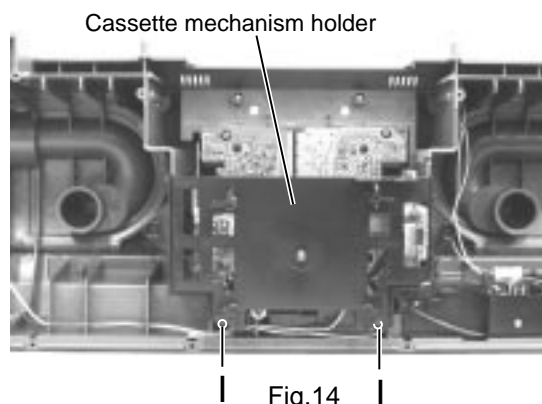


Fig.12

### ■ Removing the cassette mechanism holder (See Fig.14)

- Prior to performing the following procedure, remove the cassette mechanism.

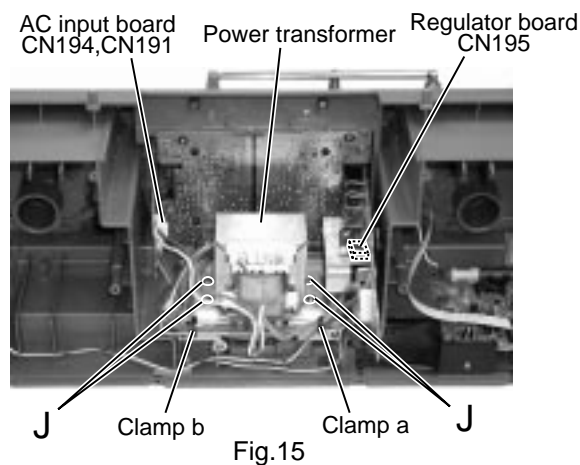
1. Remove the two screws I and the cassette mechanism holder toward the front.



### ■ Removing the power transformer (See Fig.15 and 16)

- Prior to performing the following procedure, remove the cassette mechanism assembly, the cassette mechanism holder and the CD unit.

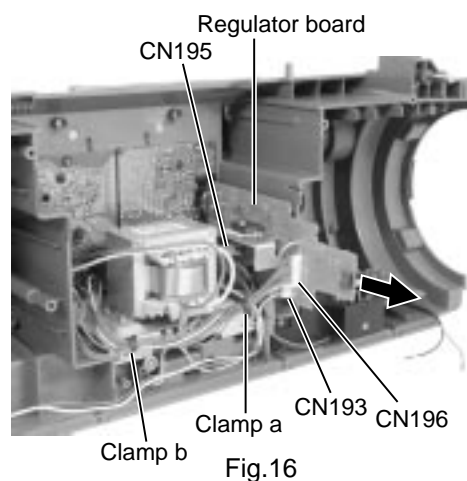
1. Disconnect the harnesses from connector CN194 on the AC input board and CN195 on the regulator board respectively. Release the harness from the clamp marked a.
2. Remove the four screws J attaching the power transformer.



### ■ Removing the regulator board (See Fig.15, 16 and 17)

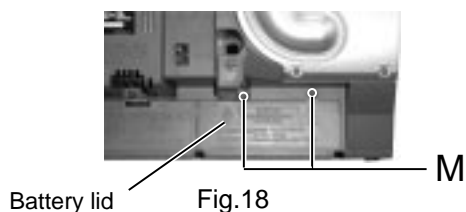
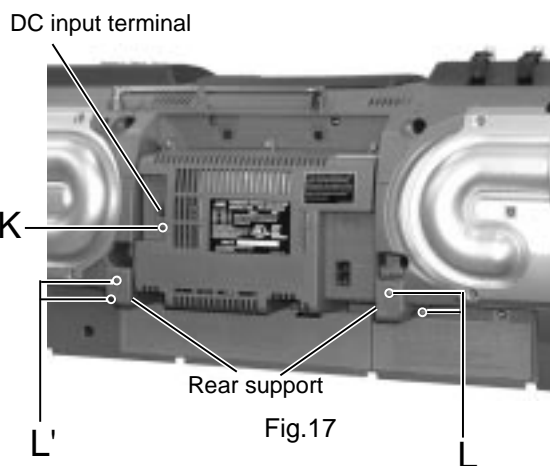
- Prior to performing the following procedure, remove the cassette mechanism assembly, the cassette mechanism holder and the CD unit.

1. Disconnect the harness from connector CN191 on the AC input board. Release the harness from the clamps marked a and b.
2. Disconnect the harness from connector CN193, CN195 and CN196 on the regulator board.
3. Pull out the regulator board from the cabinet slot under the regulator board toward the front.
4. Remove the screw K attaching the DC input terminal on the rear cabinet.



### ■ Removing the rear support and battery lid (See Fig.17 and 18)

1. Remove the two screws L & L' attaching the rear support.
2. Remove the two screws M attaching the battery lid.



**■ Removing the power amplifier board (See Fig.19)**

• Prior to performing the following procedure, remove the cassette mechanism assembly, the cassette mechanism holder, the CD unit, the power transformer, the regulator board.

1. Release the harness from the clamps marked a, b and the spacer marked c.
2. Remove the three screws N attaching the power amplifier board.

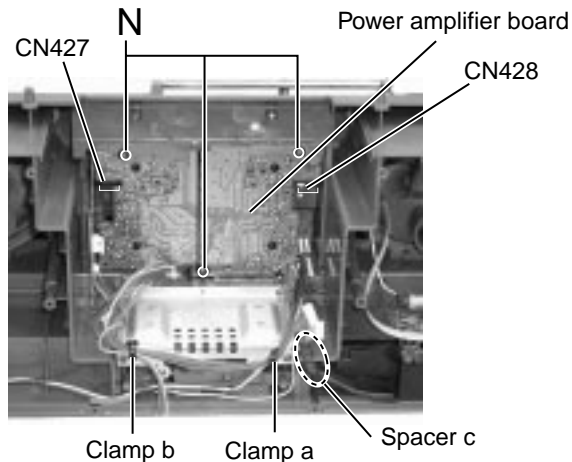


Fig.19

**■ Removing the AC input board (See Fig.20)**

• Prior to performing the following procedure, remove the cassette mechanism assembly, the cassette mechanism holder, the CD unit, the power transformer, the regulator board and the power amplifier board .

1. Remove the two screws O attaching the AC jack on the AC input board.

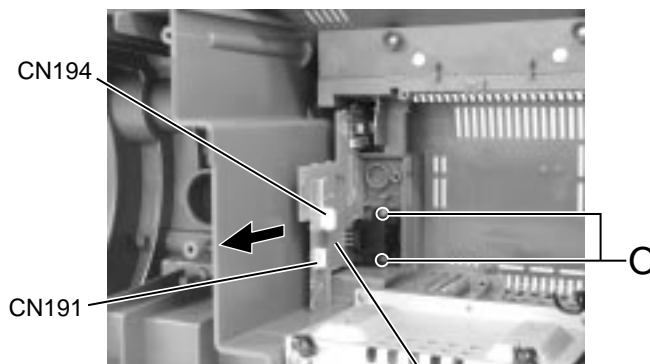


Fig.20 AC input board

**■ Removing the battery board 1 and the battery board 2 (See Fig.21)**

• Prior to performing the following procedure, remove the cassette mechanism assembly, the cassette mechanism holder and the tuner board holder.

1. Disconnect the harness from connector CN193 of the regulator board. Release the harness from the spacer marked c.
2. Pull out the battery board 1 toward the front.
3. Remove the screw Q and pull out the battery board 2 toward the front.

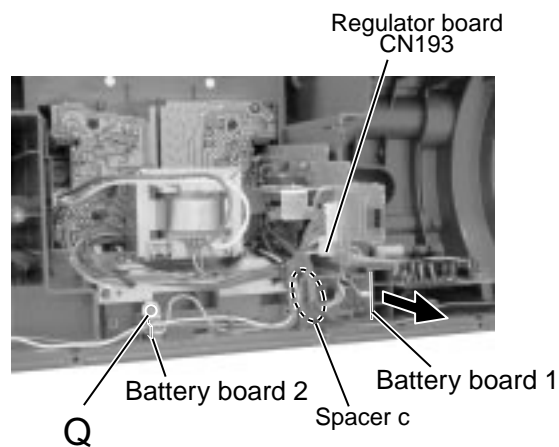


Fig.21

## <CD Unit >

- Prior to performing the following procedure, remove the front cabinet, the rear cabinet and the CD unit.

### ■ Removing the main switch board and illumination board. (See Fig.22)

1. Disconnect the card wire from connector CN411 and CN412, and the harness from CN401, CN419 and CN410 of the main switch board on the underside of the CD unit.
2. Remove the four screws R attaching the main switch board and illumination board.

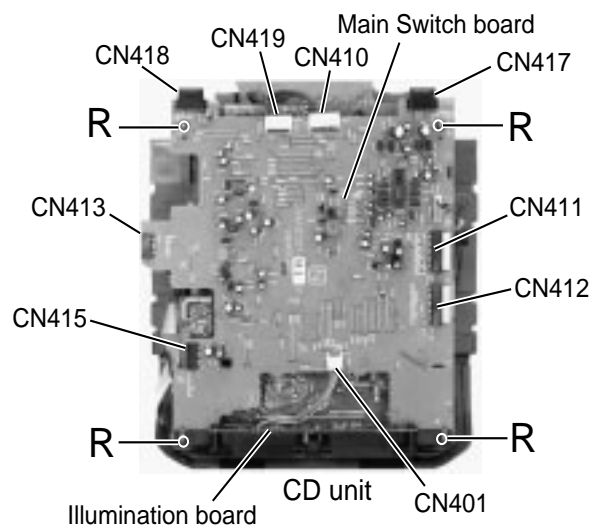


Fig.22

### ■ Removing the micon board (See Fig.23)

- Prior to performing the following procedure, remove the main switch board.

#### CAUTION:

- **Prior to disconnecting the card wire from connector CN601 on the micon board, solder the short-circuit land on the pickup unit.**
- **Disconnecting the card wire extending from the pickup unit may cause damage to the pickup unit.**
- **When reassembling, unsolder the short-circuit land on the pickup unit after connecting the card wire to connector CN601.**
- **Fig.25 shows more detail about the short-circuit land.**

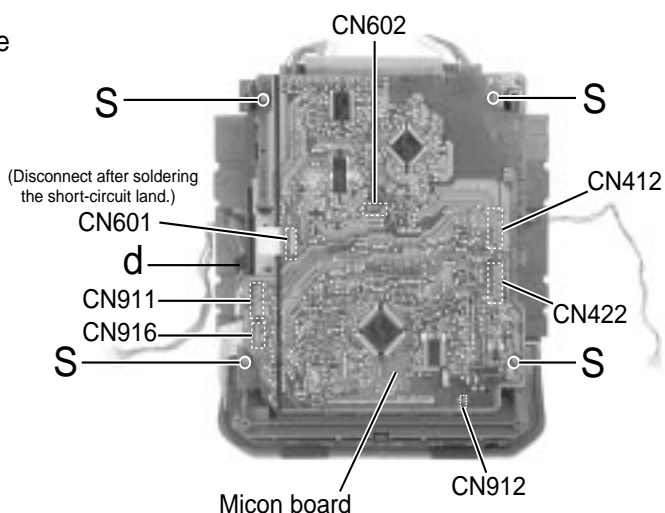


Fig.23

1. Disconnect the card wires from connector CN601 and CN911 on the micon board.
2. Remove the spacer fixing the harnesses marked d.
3. Remove the four screws S attaching the micon board.
4. Disconnect the harness from connector CN912 and CN602 on under side of the micon board respectively.

**■ Removing the CD door switch board**  
(See Fig.24 and 25)

• Prior to performing the following procedure, remove the main switch board and the micon board.

1. Remove the CD door switch board by pushing the two tabs e inward.

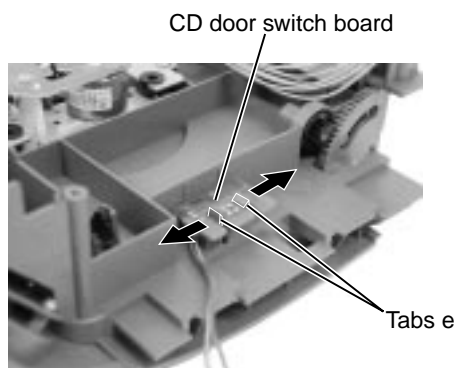


Fig.24

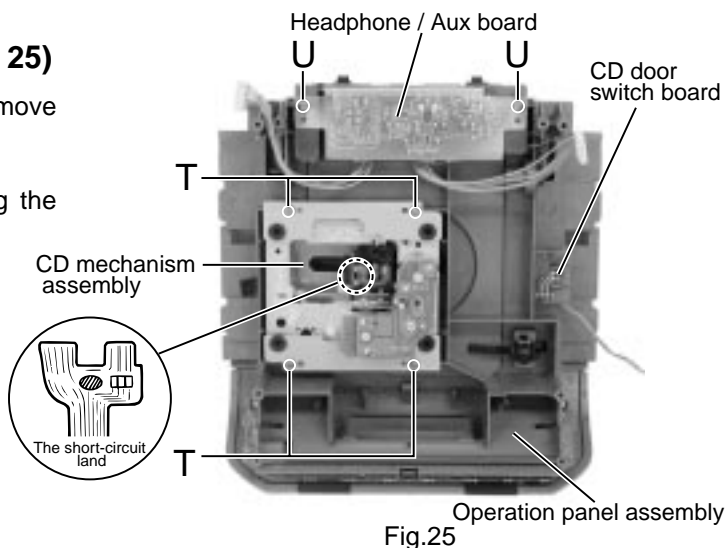


Fig.25

**■ Removing the CD mechanism assembly**  
(See Fig.25)

• Prior to performing the following procedure, remove the main switch board and the micon board.

1. Remove the four screws T attaching the CD mechanism holder on the underside of the CD case.
2. Remove the CD mechanism holder and the CD cushion from the CD mechanism assembly respectively.

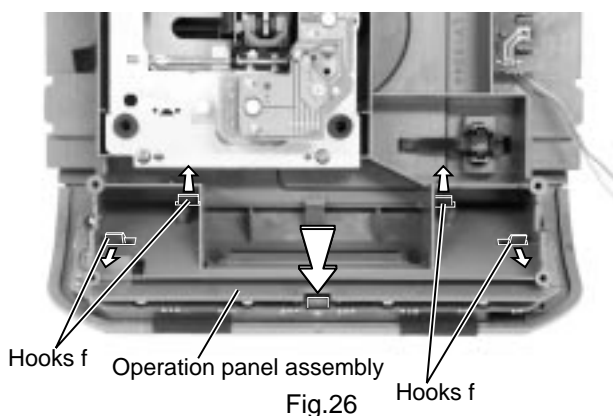


Fig.26

**■ Removing the headphone / aux board**  
(See Fig.25)

• Prior to performing the following procedure, remove the main switch board and the micon board.

1. Remove the two screws U attaching the headphone / aux board.

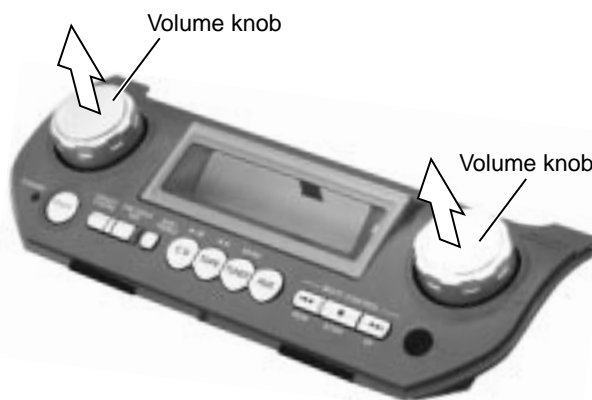


Fig.27

**■ Removing the key switch board**  
(See Fig.26 to 28)

• Prior to performing the following procedure, remove the main switch board and the micon board.

1. Extrude the operation panel assembly from the underside of the CD unit toward the front while pushing the four hooks f outward.

Pull out the two volume knobs from the operation panel assembly.

Remove the ten screws V attaching the key switch board on the reverse side of the operation panel.

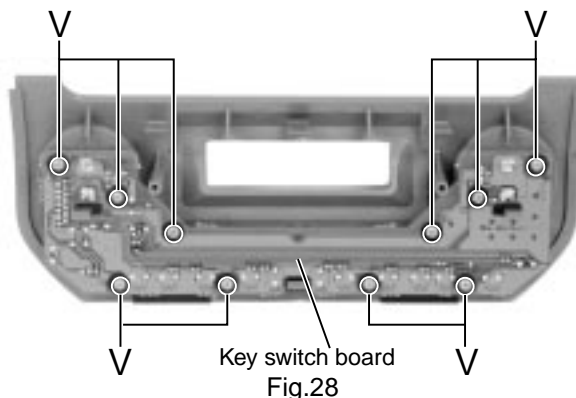


Fig.28

### <Scratch & rhythm unit>

- Prior to performing the following procedure, remove the left side grille and the scratch & rhythm unit.

#### ■ Removing the scratch & rhythm board (See Fig.29 and 30)

1. Pull out the S & R jogdial knob.
2. Remove the five screws W attaching the scratch & rhythm board on the reverse side of the scratch & rhythm unit.

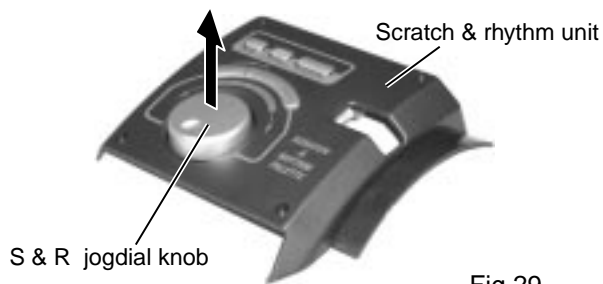


Fig.29

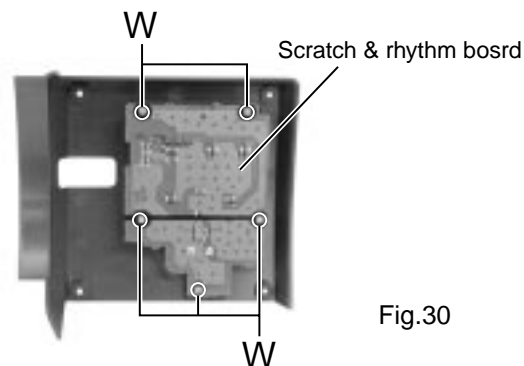


Fig.30

### <Mixing unit>

- Prior to performing the following procedure, remove the right side grille and the mixing unit.

#### ■ Removing the mic & guitar volum board / mic / guitar jack board / drum key board (See Fig.31 to 35)

1. Pull out the mic knob and the guitar knob. Remove the covers from the mic jack and the guitar jack.
2. Remove the four screws X attaching the mic & guitar volum board and the three screws Y attaching the bracket on the underside of the mixing unit. Remove the mic & guitar volum board together with the mic / guitar jack board.
3. Disconnect the connector CN951 on the mic & guitar volum board from the mic / guitar jack board.
4. Remove the two snap plates attaching the bracket to the mic / guitar jack board by moving them outward.
5. Remove the five screws Z attaching the drum key board.

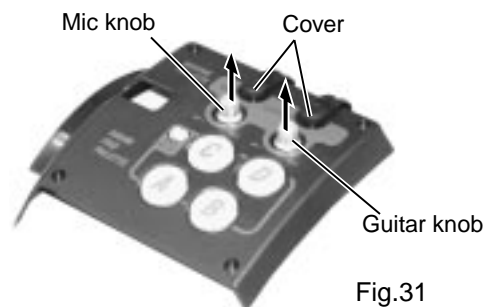


Fig.31

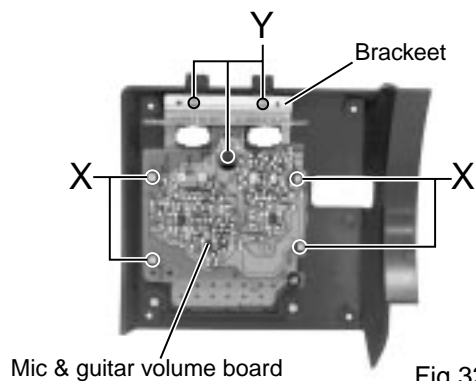


Fig.32

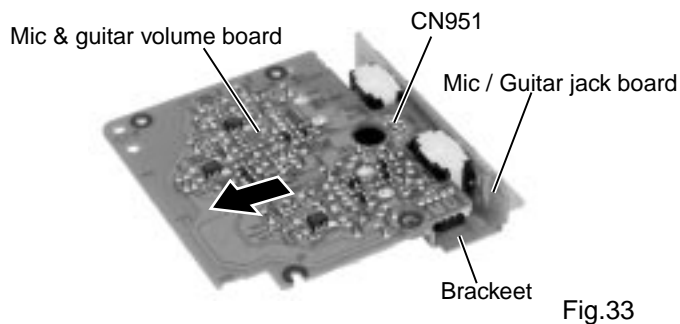


Fig.33

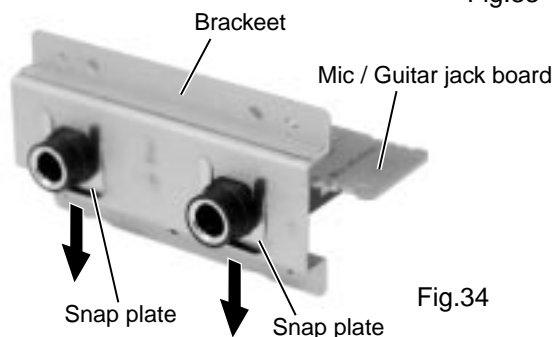


Fig.34

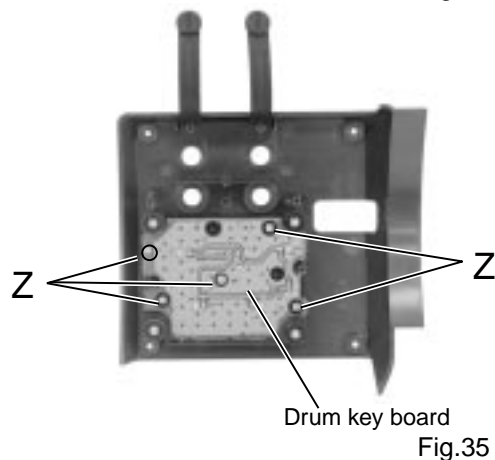


Fig.35

### <Front cabinet assembly>

- Prior to performing the following procedure, remove the front cabinet and the rear cabinet.

### ■ Removing the front speakers (See Fig.36 and 37)

1. Remove the eight screws A attaching the speaker covers on the inside of the front cabinet.
2. Remove the eight screws B attaching the right and left front speakers.
3. Remove the screw C attaching the speaker terminal.

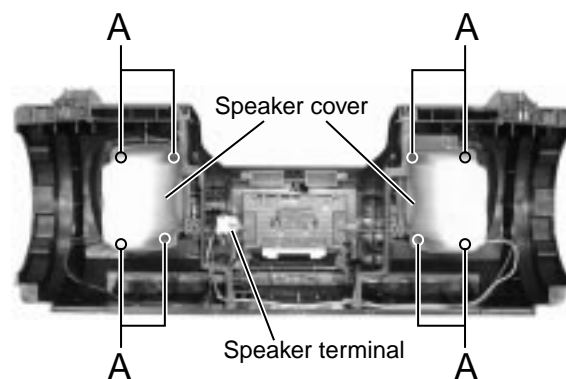


Fig.36

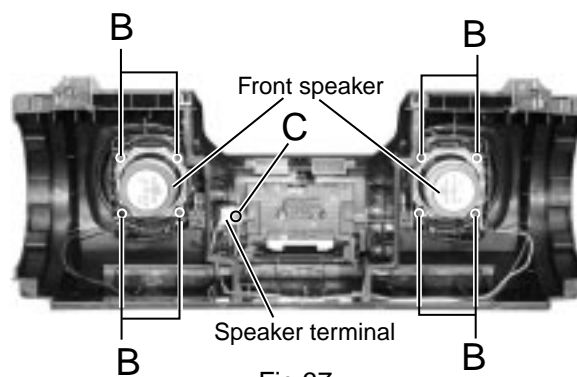


Fig.37

### <Replacing a fuse> (See Fig.38 and 39)

CAUTION: It is not necessary to remove the AC input board and the power amplifier board.

1. Remove the battery cover on the back of the body.
2. Remove the five screws D attaching the power amplifier cover on the back of the body.
3. Replace the fuse F1901 of the AC input board and F1902 and F1903 of the regulator board on the back of the body respectively.

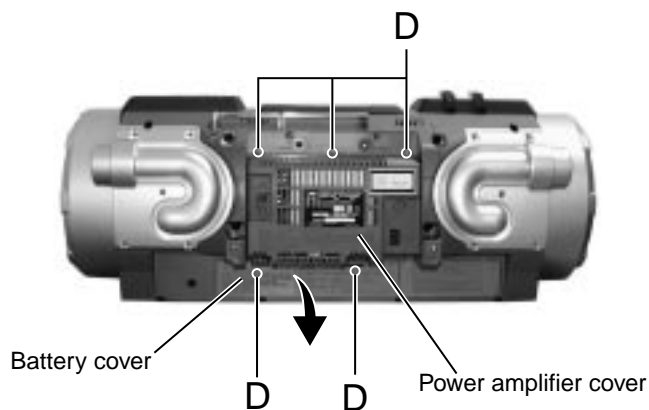


Fig.38

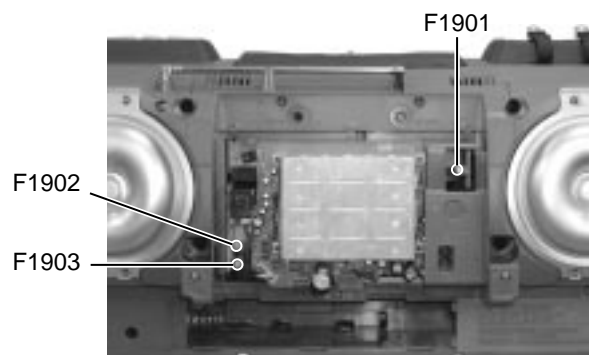


Fig.39



## ■ Removing the CD pickup unit (See Fig.38)

1. Move the cam gear in the arrow direction "f" . Then, the CD pickup unit will be moved in the arrow direction "g" .
2. According to the above step, shift the CD pickup unit to the center position.
3. While pressing the stopper retaining the shaft in the arrow direction "h" , pull out the shaft in the arrow direction "i".
4. After dismounting the shaft from the CD pickup unit, remove the CD pickup unit

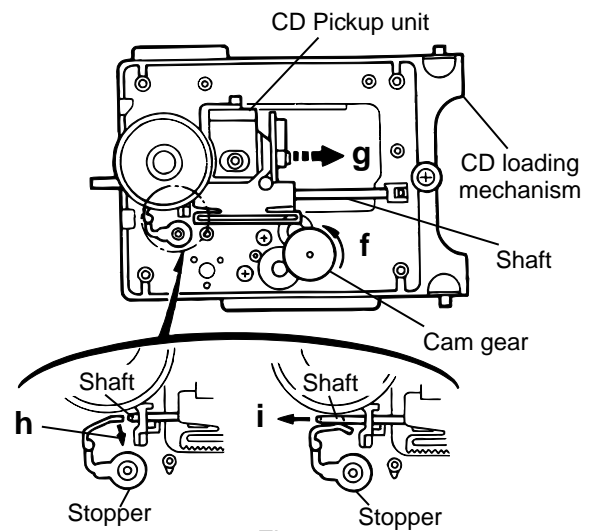


Fig.38

## &lt;&lt;Cassette mechanism section&gt;&gt;

### ■ Removing the playback/recording & eraser head ( See Figs. 1 and 2 )

1. While shifting the trigger arms seen on the right side of the head mount in the arrow direction, turn the flywheel R in counterclockwise direction until the head mount has gone out with a click (See Fig. 1).
2. When the flywheel R is rotated in counterclockwise direction, the playback/recording & eraser head will be turned in counterclockwise direction from the position in Fig. 2 to that in Fig. 3.
3. At this position, disconnect the flexible P.C. board (outgoing from the playback/recording & eraser head) from the connector CN31 on the head amplifier & mechanism control P.C. board.
4. After dismantling the FPC holder, remove the flexible P.C. board.
5. Remove the flexible P.C. board from the chassis base.
6. Remove the spring a from behind the playback/recording & eraser head.
7. Loosen the reversing azimuth screw retaining the playback/recording & eraser head.
8. Take out the playback/recording & eraser head from the front of the head mount.
9. The playback/recording & eraser head should also be removed similarly according to Steps 1 ~ 8 above.

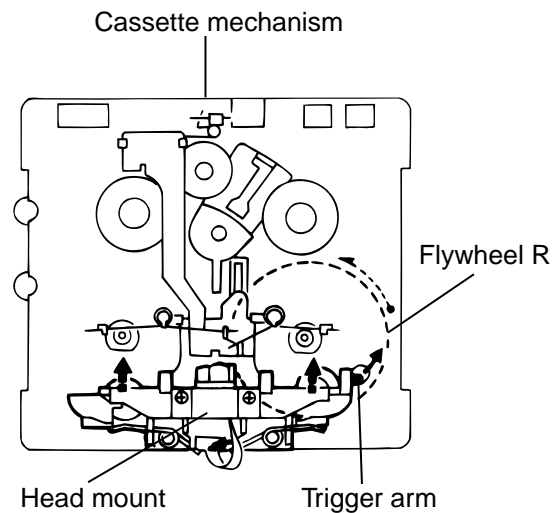


Fig. 1

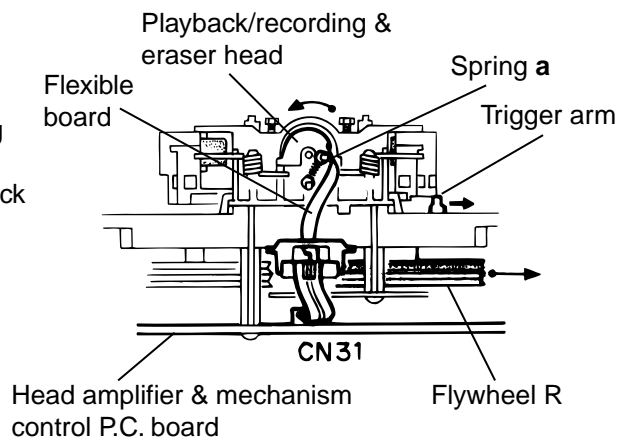


Fig. 2

### ■ Reassembling the playback/recording & eraser head

1. Reassemble the playback head from the front of the head mount to the position as shown in Fig. 3.
2. Fix the reversing azimuth screw.
3. Set the spring a from behind the Playback/Recording & Eraser head.
4. Attach the flexible P.C. board to the chassis base, and fix it with the FPC holder as shown in Fig. 3.
5. The playback/recording & eraser head should also be reassembled similarly to Step 1 ~ 4 above.

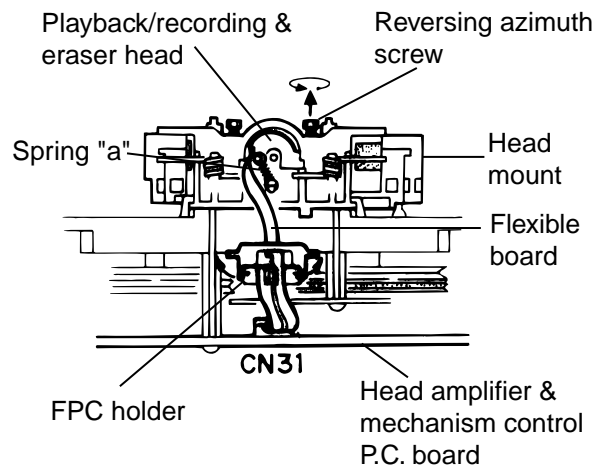


Fig. 3

## ■ Removing the head amplifier & mechanism control P.C. board (See Fig. 4)

1. Remove the cassette mechanism assembly.
2. After turning over the cassette mechanism assembly, remove the three screws **A** retaining the head amplifier & mechanism control P.C. board.
3. Disconnect the connector CN32 on the P.C. board including the connector CN 1 on the reel pulse P.C. board.
4. When necessary, remove the 4 pin parallel wire soldered to the main motor.

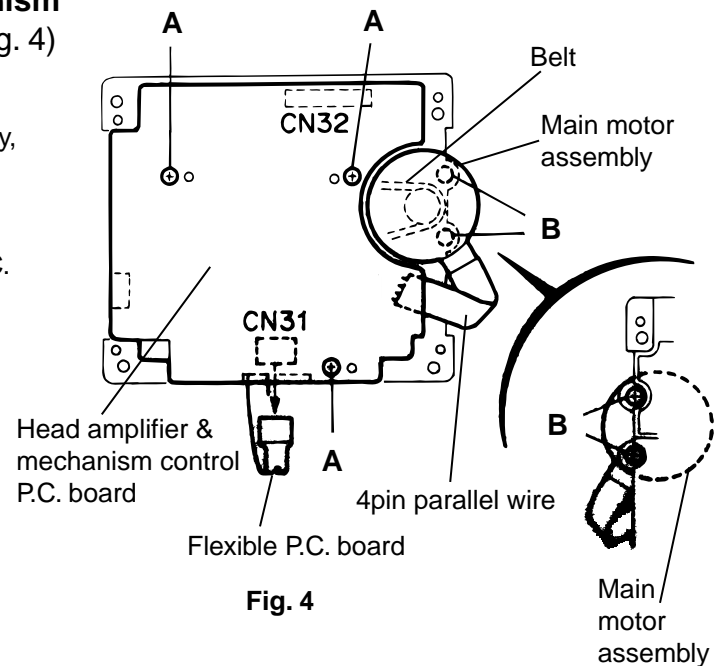


Fig. 4

## ■ Removing the main motor assembly (See Fig. 4~6)

1. Remove the two screws **B** retaining the main motor assembly (See Fig. 4, 4a).
2. While raising the main motor, remove the capstan belt from the motor pulley (See Fig. 4a).

**Caution 1:** Be sure to handle the capstan belt so carefully that this belt will not be stained by grease and other foreign matter. Moreover, this belt should be hung while referring to the capstan belt hanging method in Fig. 5, 6.

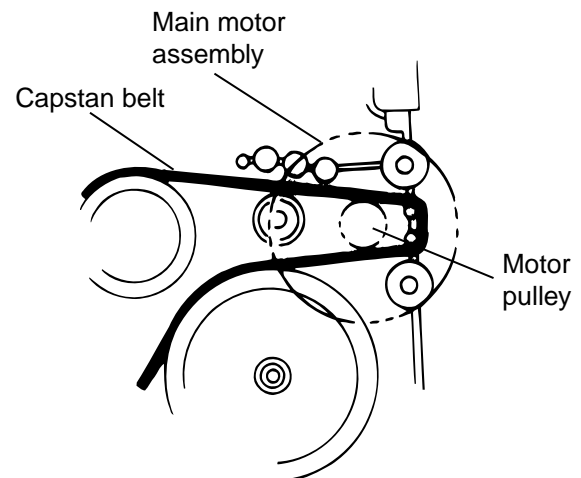


Fig. 4a

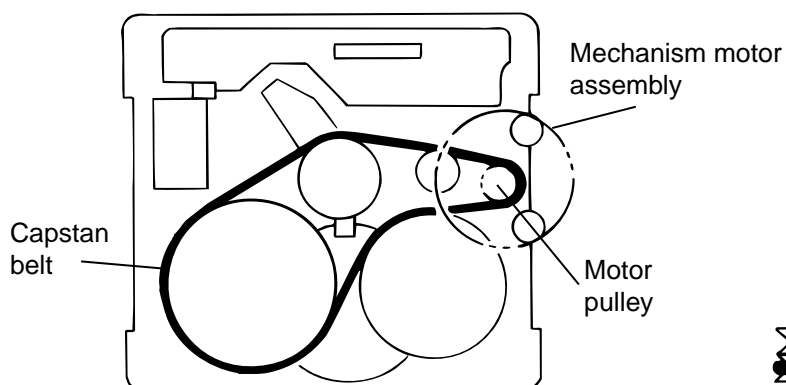


Fig. 5

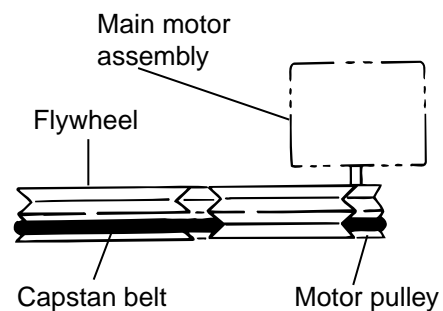


Fig. 6

## ■ Removing the flywheel

(See Figs. 7 and 8)

1. Remove the head amplifier & mechanism control P.C. board.
2. Remove the main motor assembly.
3. After turning over the cassette mechanism, remove the slit washers **b** and **c** fixing the capstan shafts R and L, and pull out the flywheel R and L respectively from behind the cassette mechanism.

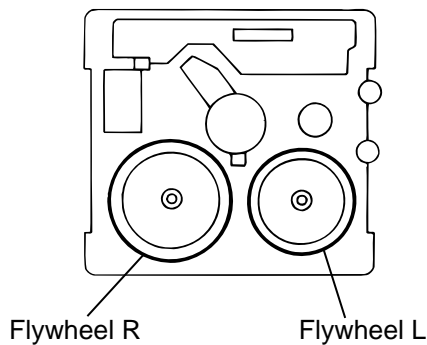


Fig. 8

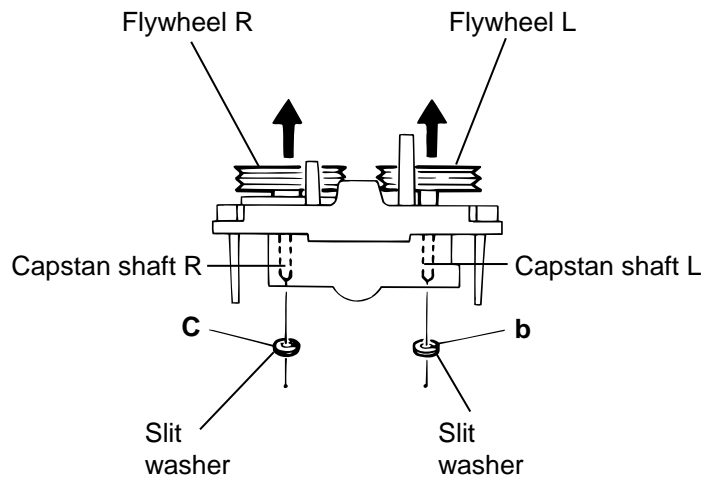


Fig.7

## ■ Removing the reel pulse P.C. board and solenoid

(See Fig. 9)

1. Remove the five pawls **d~h** and screw **C** retaining the reel pulse P.C. board.
2. From the surface of the reel pulse P.C. board parts, remove the two pawls **i** and **j** retaining the solenoid.

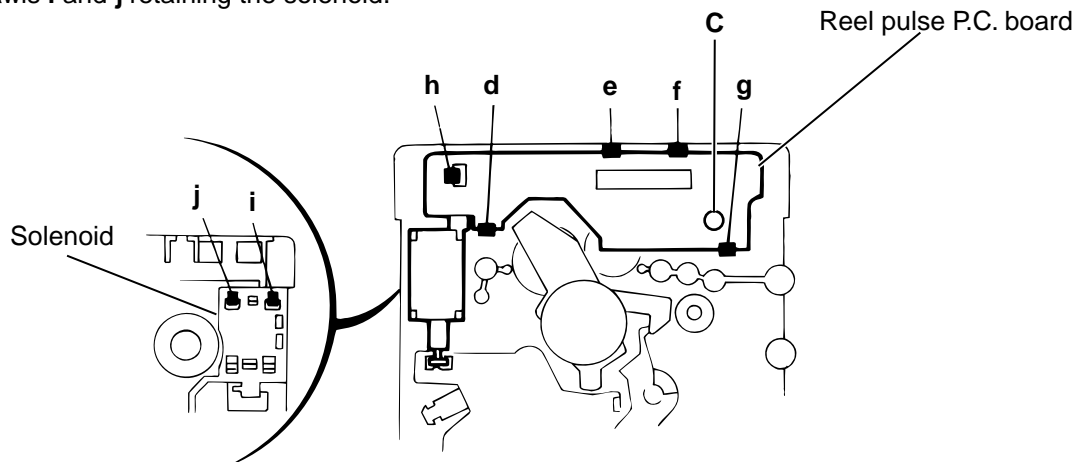


Fig. 9

## Adjustment method

### ■ Measuring devices necessary for adjustment

1. Low-frequency oscillator  
It must have the ability to output 600ohm from 0 dBs at an oscillation frequency of 20 Hz-50 Hz.
2. Attenuator impedance: 600ohm
3. Electronic voltmeter
4. Distortion meter
5. Frequency counter
6. Wow and flutter meter
7. Test tapes  
VT-712: tape speed and rotational distortion (3 kHz)  
VT-724: standard level (1 kHz)  
VT-703: head angle adjustment (10 kHz),  
or use VT-73  
VT-739: reproduction of frequency characteristics  
(1 kHz, 63 Hz, 10 kHz)
8. Blank tape  
Type I : AC-225 (TDK-AD)  
Type II : AC-514 (TDK-SA)
9. Torque gauge: Tension gauge for playback,  
fast-forward and rewind.  
FWD (TW211A), REW (TW212A)  
and FF/REW (TW2231A)

### ■ Specifications for measurement

Power supply voltage ..... AC 230 V (50 Hz)  
Standard output ..... Speaker: 0.775V/4ohm  
Headphone: 0.245V/32ohm  
Standard frequency and input level  
..... 1 kHz: AUX: -8 dBs  
Input level for reproduction of recording characteristics  
..... AUX: -28 dBs  
Measuring output terminal ..... Speaker: CN633  
Load resistance ..... 4ohm

### ■ Radio input signal

AM frequency ..... 400 Hz  
Degree of modulation in AM band ..... 30%  
FM frequency ..... 400 Hz  
Frequency deviation in FM band ..... 22.5 kHz

### ■ Extention cord (Between the Front ass'y and Rear ass'y)

Parts No. .... EXTDP100-10P

### ■ Tuner section

Voltage input to the tuner ..... +B: DC 5.7 V  
VT: DC 12 V  
Standard measuring output ..... 26.1 mV (0.28 V)/3ohm  
Input locations ..... AM: standard loop antenna  
FM: TP1 (hot) and TP2 (GND)

### ■ Standard settings for measuring volume

Sound ..... OFF  
Effective hyper bass ..... OFF  
Volume adjustment ..... VOL. 23

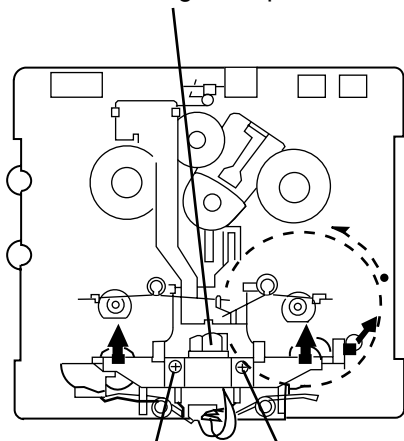
### Precautions for measuring

1. Input 30 pF and 33 kohm to the IF sweeper output and 0.082  $\mu$ F and 100 kohm to the sweeper input, respectively.
2. Lower the output level of the IF sweeper as much as possible in the adjustable range.
3. The IF sweeper needs no adjustment as it is a fixed component.
4. It is not necessary to perform any kind of adjustment on the MPX, as a ceramic oscillator is used for measuring.
5. FM tracking adjustment is not necessary as a fixed coil is used.
6. The grounding circuit is separate from the input and output. Therefore, be sure to connect to ground carefully when measuring both the input and output voltages simultaneously using 2 channels of the electronic voltmeter.
7. The speaker's minus terminal cannot be connected to ground when using a BTL format amplifier. Therefore, do not connect any type of ground wire to this terminal. The OTL format is used with this system.
8. Use a large wire to connect to the dummy impedance generator when measuring the output.
9. Be sure to use a band pass filter (DV-12) when using mixed tape.

**Location of parts to be adjusted**

■ **Cassette handling mechanism**

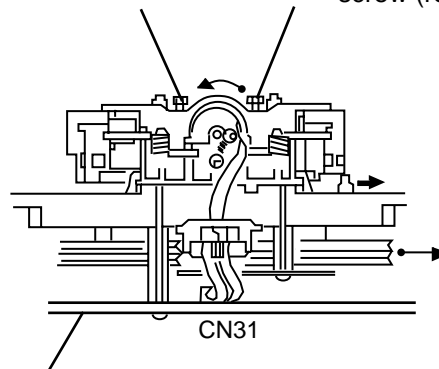
Head for recording, playing and erasing the tape



Head azimuth adjusting screw (fast-forward)  
Head azimuth adjusting screw (rewind)

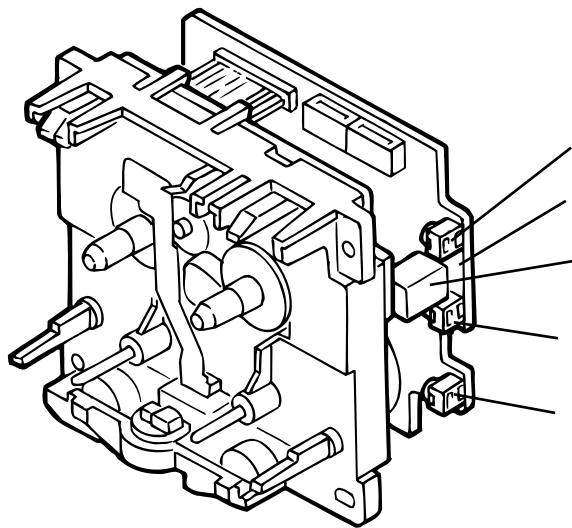
■ **Cassette handling mechanism (reverse side)**

Head azimuth adjusting screw (fast-forward)  
Head azimuth adjusting screw (rewind)



Head for recording, playing and erasing the tape

■ **Location of parts to be adjusted**



- VR37  
Motor speed
- TP  
Bias oscillation frequency (wide pattern)
- L301  
Bias oscillation frequency
- VR31  
Lch recording frequency (bias adjustment)
- VR32  
Rch recording frequency (bias adjustment)

## ■ Adjustment of cassette handling mechanism

Items	Condition	Method for adjustment and confirmation	Standard value	Parts to be adjusted
Confirmation of head angle	Test tape: VT-703 (10 kHz) Measuring output terminal: Speaker terminal, speaker (R) (Load resistance: 4ohm), headphone terminal	(1) Play back the VT-703 test tape. (2) Adjust the head azimuth screws so that the tape playback mechanism records the maximum output level in both the fast-forward and rewind direction. (3) In all cases, both the fast-forward and rewind direction should be adjusted using head azimuth screws.	Maximum output	Adjust the head azimuth screws when changing the head.
Confirmation of tape speed	Test tape: VT-712 (3 kHz) Measuring output terminal: Headphone terminal	Adjust VR37 so that the frequency counter records 3,015 Hz $\pm$ 15 Hz when playing back the end of the VT-712 test tape (3 kHz) in the fast-forward direction.	Tape speed of cassette deck: 3,015 Hz $\pm$ 15 Hz	VR37

## ■ Items to be confirmed and standard values

Items	Condition	Method for adjustment and confirmation	Standard value	Parts to be adjusted
Difference in speed between fast-forward and rewind	Test tape: VT-712 (3 kHz) Measuring output terminal: Speaker terminal, speaker (R) (Load resistance: 4 ), headphone terminal	The difference between fast-forward and rewind should be less than 60 Hz on the frequency counter when playing back the beginning of the VT-712 test tape (3 kHz) in both directions.	Less than 60 Hz	Should be confirmed when changing the motor.
Wow and flutter	Test tape: VT-712 (3 kHz) Measuring output terminal: Headphone terminal	Wow and flutter should be recorded at less than 0.25% (WRMS) when playing back the VT-712 test tape (3 kHz) in the fast-forward direction.	Less than 0.25% (WRMS)	

## ■ Electronic performance

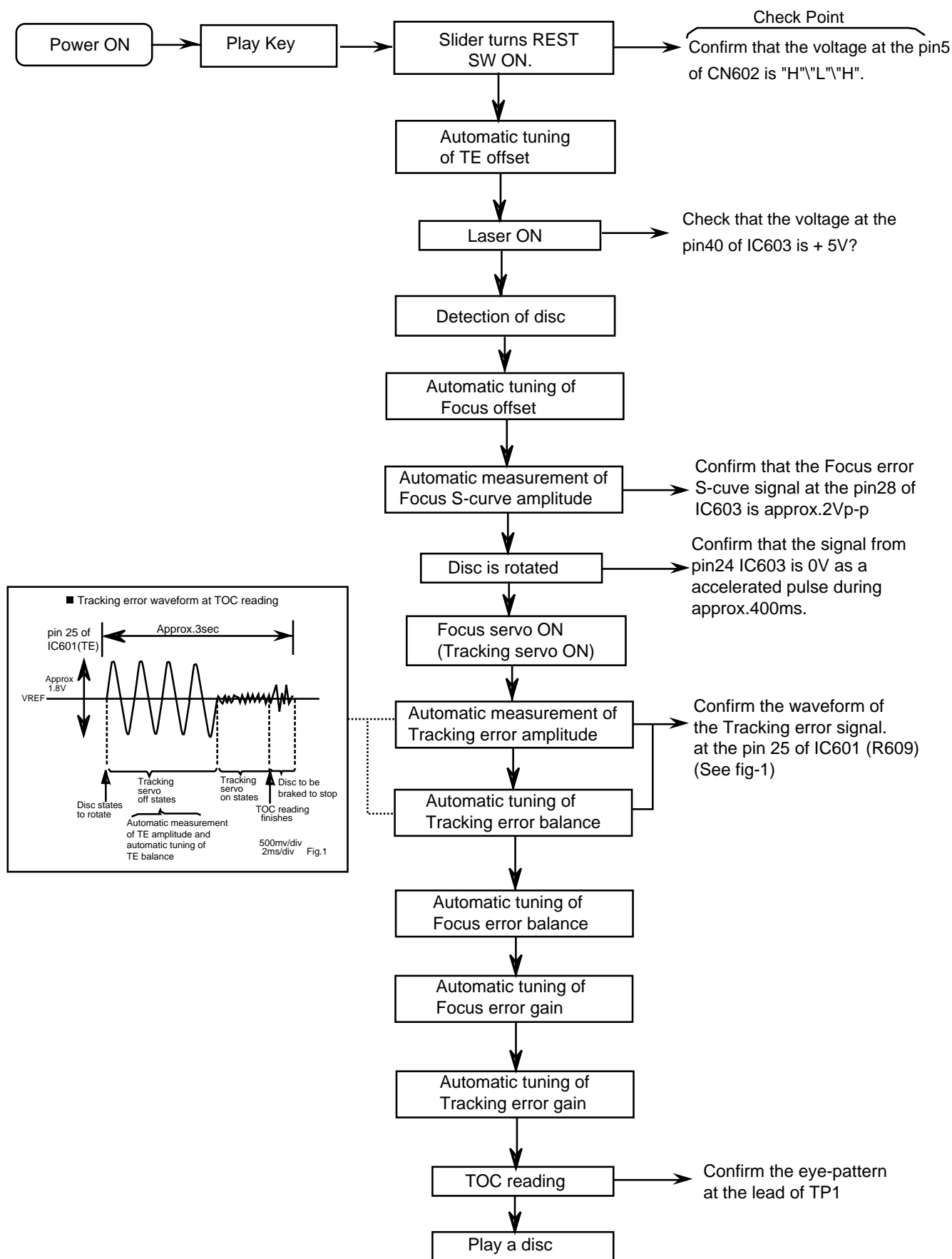
Items	Condition	Method for adjustment and confirmation	Standard value	Parts to be adjusted
Confirmation of output	Measuring output terminal: CN34-5 or 7-terminal preamp base Test tape: VT-724	Confirm that the output from the CN34-5 or 7-terminal preamp base connector is -25 dBs $\pm$ 3 dB when playing back the VT-724 test tape. Reference value: The output from the headphone terminal is -7 dB $\pm$ 4 dB.	Output of CN34-5 terminal: -25 dBs $\pm$ 3 dB Difference between Lch and Rch: within 3 dB	
Confirmation of reproduction of frequency characteristics	Measuring output terminal: Headphone terminal Test tape: VT-739	Confirm that the 10 kHz reproduction level is -1 dB $\pm$ 5 dB compared to the 1 kHz reproduction level when playing back the VT-739 test tape.	Difference between 10 kHz and 1 kHz should be -1 dB $\pm$ 5 dB.	
Recording bias frequency	Fast-forward or rewind direction: Test tape: TYPE II (AC-514) Measuring terminal: Bias TP on the base	Switch the bias (beat cut switch) between 1 and 2 to confirm that the frequency changes. Load the test tape (AC-514 for TYPE II) into the mechanism and preset it to the record-pause mode. Confirm that the bias TP frequency on the base is 100 kHz $\pm$ 6kHz.	100 kHz $\pm$ 6 kHz	

### ■ Standard values for confirmation of electronic performance

Items	Condition	Method for adjustment and confirmation	Standard value	Parts to be adjusted
Erasing current (standard and reference value)	Fast-forward and rewind direction: <ul style="list-style-type: none"> <li>• Recording mode</li> <li>• AC-514 for TYPE II, AC-225 for TYPE I</li> </ul> Measuring terminal: Both erase head terminals	Load the test tape (AC-514 for TYPE II, AC-225 for TYPE I) into the tape playback mechanism and preset it to the record-pause mode. After setting it to the recording mode, send 1 M in series to the erase head and measure the erasing current from both erase head terminals.	TYPE II: 110 mA TYPE I: 75 mA	
Adjustment of reproduction of frequency characteristics	Standard frequencies: 1 kHz and 10 kHz (REF: -20 dB) Test tape: TYPE II: AC-514 Measuring input terminal: OSC IN	Load the test tape (AC-514 for TYPE II, AC-225 for TYPE I) into the tape playback mechanism and preset it to the record-pause mode. Input the standard value of -20 dB and the standard frequencies of 1 kHz and 10 kHz repeatedly to the microphone input from the transmitter in the recording mode. Adjust VR31 for Lch and VR32 for Rch so that the difference in level between 10kHz and 1 kHz is $-1\text{dB} \pm 5\text{dB}$ . Repeat the above for TYPE I and confirm that the difference in level is $-X\text{dB} \pm \text{dB}$ .	Difference in output between 1 kHz and 10 kHz: $-1\text{dB} \pm 5\text{dB}$	Lch: VR31 Rch: VR32



## Flow of functional operation until TOC read



## Maintenance of laser pickup

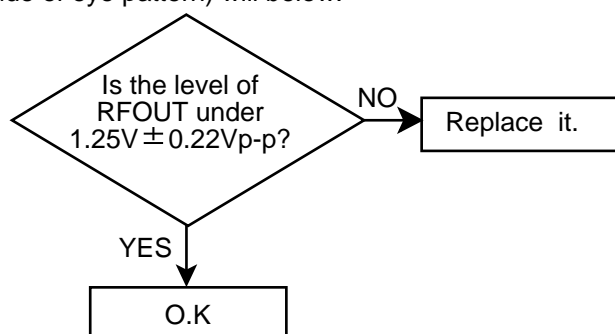
### (1) Cleaning the pick up lens

Before you replace the pick up, please try to clean the lens with a alcohol soaked cotton swab.

### (2) Life of the laser diode

When the life of the laser diode has expired, the following symptoms will appear.

1. The level of RF output (EFM output : amplitude of eye pattern) will below.



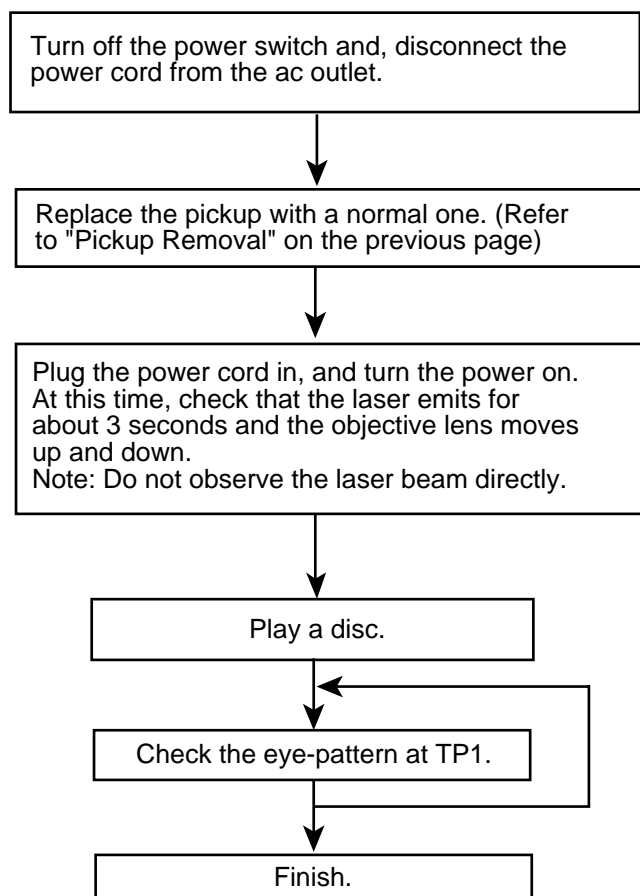
### (3) Semi-fixed resistor on the APC PC board

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.

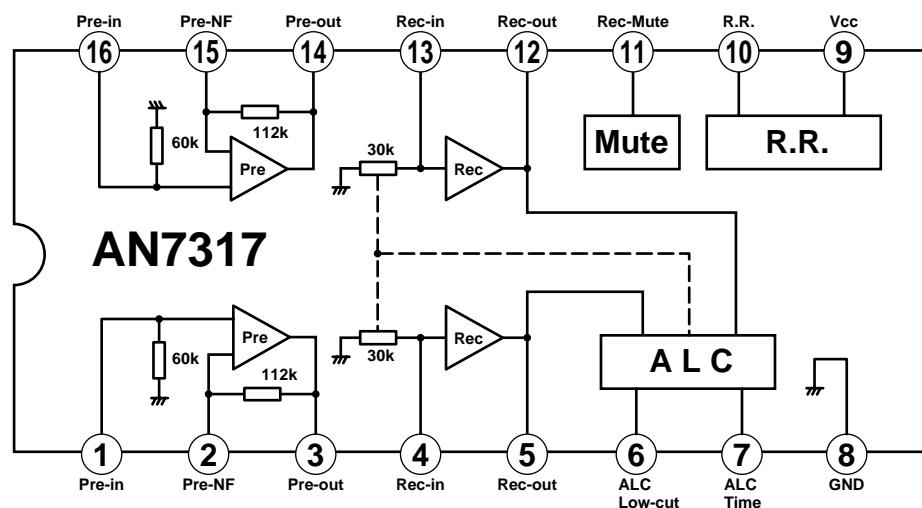
If the semi-fixed resistor is adjusted while the pickup is functioning normally, the laser pickup may be damaged due to excessive current.

## Replacement of laser pickup



## Description of major ICs

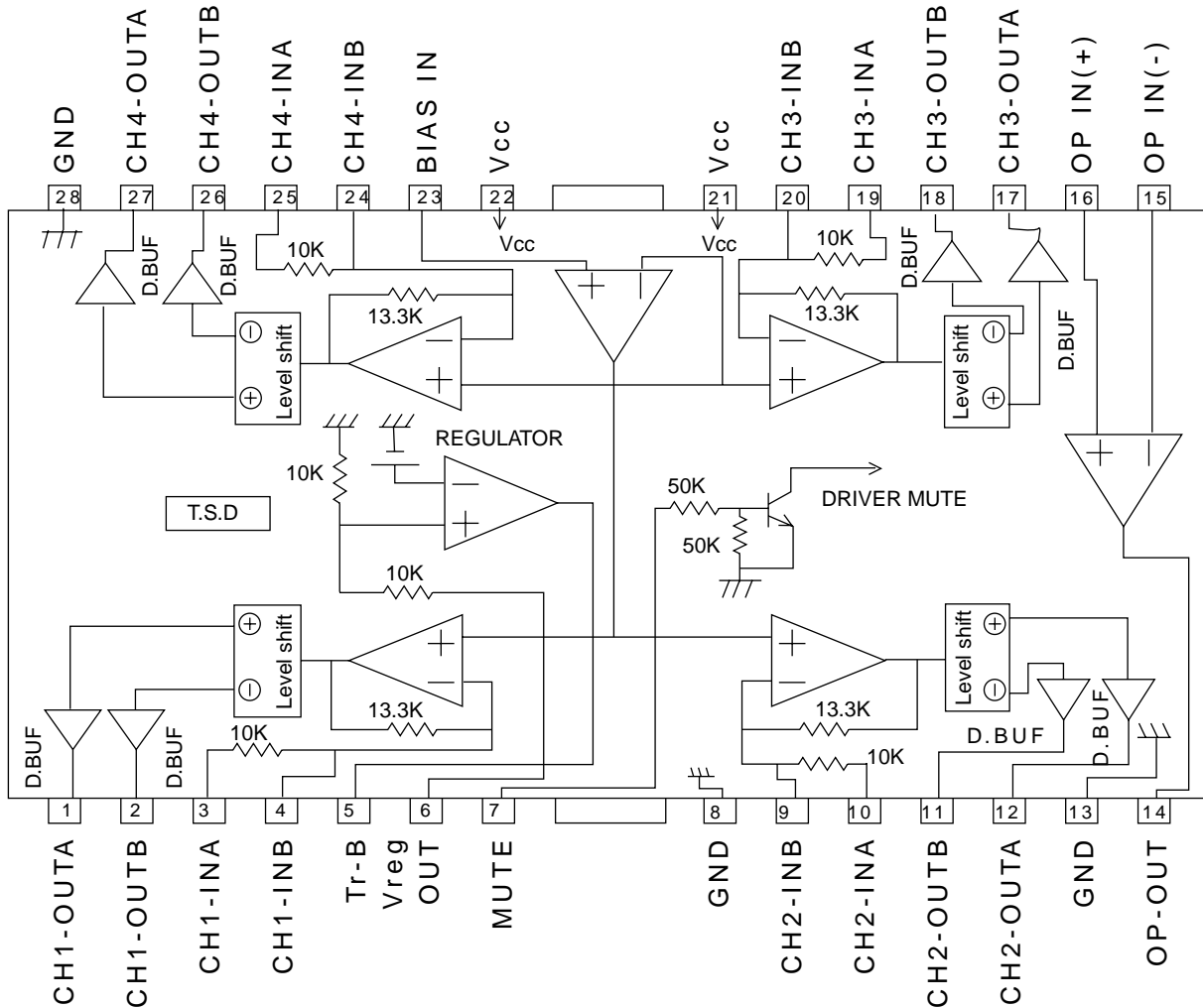
### ■ AN7317(IC32) : ALC & Pre Amplifier



Pin No.	Pin Descriptions
1	Channel 1 Playback Amplifier Input
2	Channel 1 Playback Amplifier Negative Freed back
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 Feedback
16	Channel 2 Playback Amplifier Input

■ BA6897FP-W (IC602): 4channel driver

1.Pin layout & Block diagram



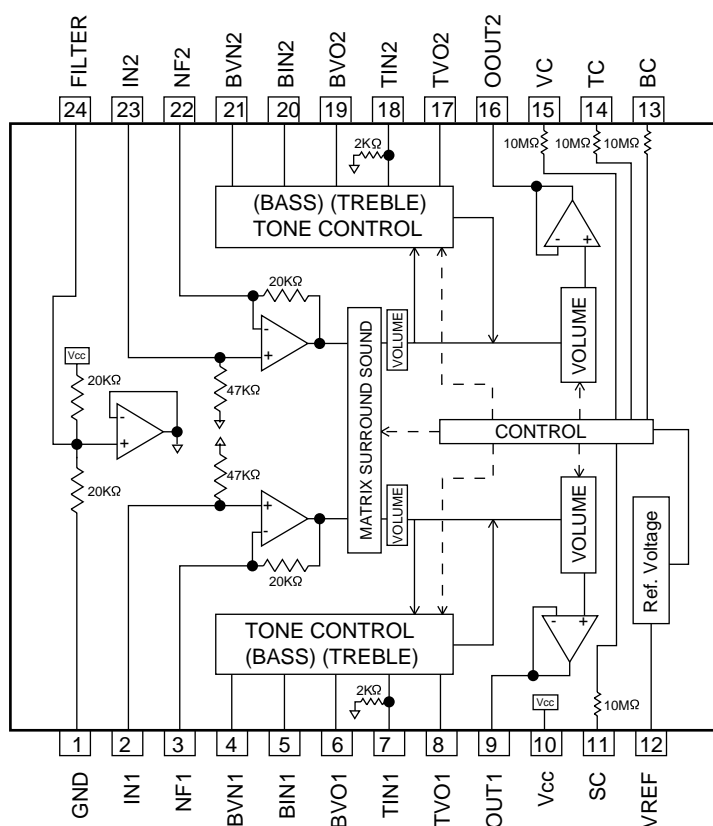
2.Pin function

T.S.D;Thermal shutdown  
D.BUF:Drive buffer

Pin NO.	Symbol	Function	Pin NO.	Symbol	Function
1	CH1-OUTA	Driver CH1 - output	15	OP IN(-)	Operation amplifier - input
2	CH1-OUTB	Driver CH1 + output	16	OP IN(+)	Operation amplifier + output
3	CH1-INA	Driver CH1 input	17	CH3-OUTA	Driver CH3 - output
4	CH1-INB	Driver CH1 gain adjustment Input terminal	18	CH3-OUTB	Driver CH3 + output
5	Tr-B	Connect to the base of external Tr	19	CH3-INA	Driver CH3 input
6	Vreg OUT	Fixed voltage output	20	CH3-INB	Driver CH3 gain adjustment Input terminal
7	MUTE	Mute control terminal	21	Vcc	Power supply terminal
8	GND	GND	22	Vcc	Power supply terminal
9	CH2-INB	Driver CH2 gain adjustment Input terminal	23	BAIS IN	Bias amplifier input terminal
10	CH2-INA	Driver CH2 input	24	CH4-INB	Driver CH4 gain adjustment Input terminal
11	CH2-OUTB	Driver CH2 + output	25	CH4-INA	Driver CH4 input
12	CH2-OUTA	Driver CH2 - output	26	CH4-OUTB	Driver CH4 + output
13	GND	Sub-slate GND	27	CH4-OUTA	Driver CH4 - output
14	OPOUT	Operation amplifier output	28	GND	Sub-slate GND

## ■ BH3852S (IC501) : E.Volume

### 1. Block diagrams



### 2. Pin function

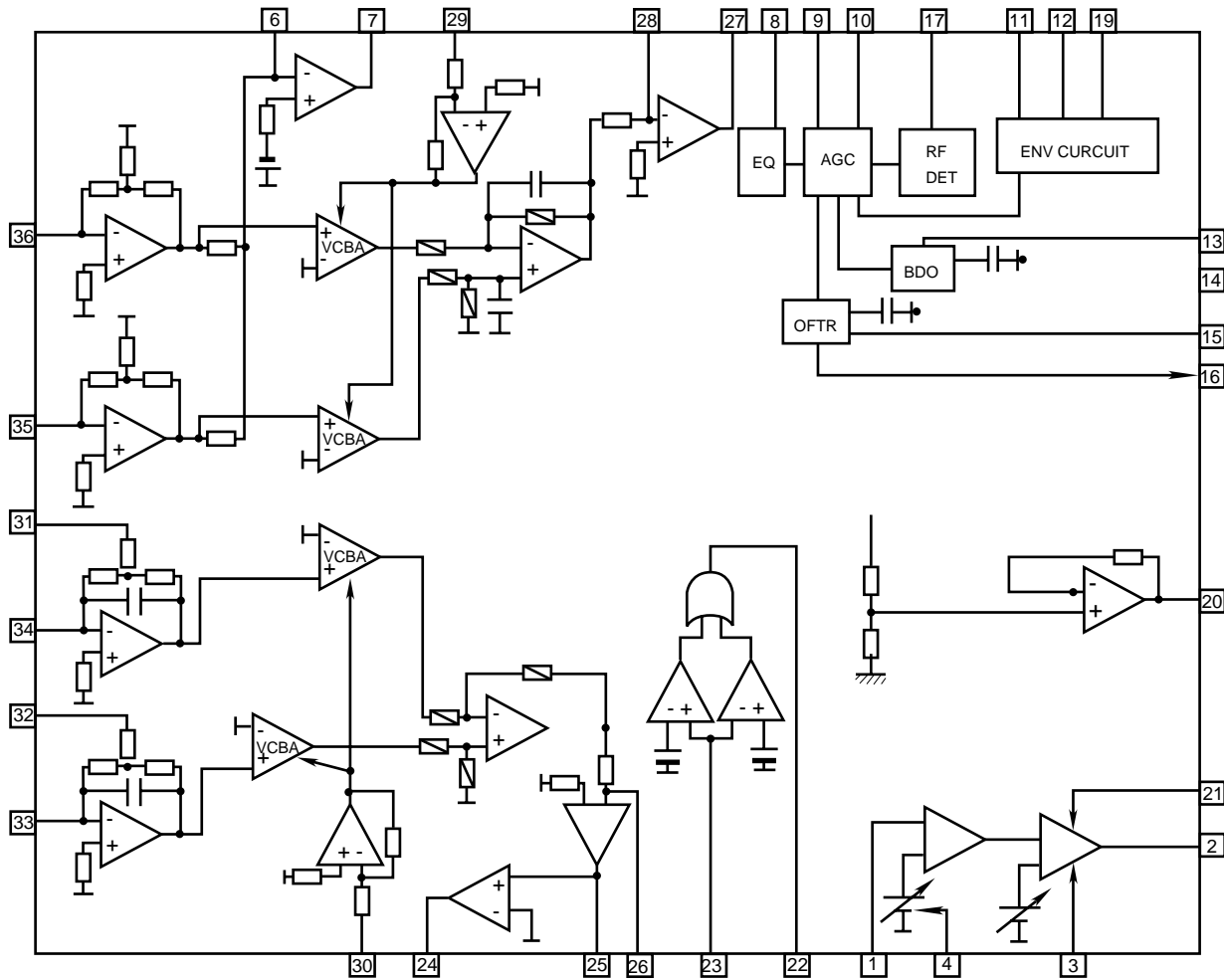
Pin No.	Symbol	I/O	Function	Pin No.	Symbol	I/O	Function
1	GND	-	Connect to GND.	13	BASS	I	Terminal for bass control.
2	IN1	I	Terminal for 1ch volume input.	14	TRE	I	Terminal for treble control.
3	NF1	I	Terminal for gain adjustment of input step AMP.	15	VOL	I	Terminal for volume control.
4~6	BASS1	-	Terminal for connection of 1ch low-frequency filter.	16	OUT2	O	Terminal for 2ch volume output.
7.8	TRE1	-	Terminal for connection of 1ch high-frequency filter.	17.18	TRE2	-	Terminal for connection of 2ch high-frequency filter.
9	OUT1	O	Terminal for 1ch volume output.	19~21	BASS2	-	Terminal for connection of 2ch low-frequency filter.
10	VCC	-	Terminal for power supply.	22	NF2	I	Terminal for gain adjustment of input step AMP.
11	LIVE	-	Terminal for surround control.	23	IN2	I	Terminal for 2ch volume input.
12	VREF	O	Terminal for reference voltage output.	24	VSET	-	Terminal for filter.

■ AN8806SB-W(IC601) :RF&SERVO AMP

1.Pin layout

PD 1	36 PDAC
LD 2	35 PDBD
LDON 3	34 PDF
LDP 4	33 PDE
VCC 5	32 PDER
RF- 6	31 PDFR
RF OUT 7	30 TBAL
RF IN 8	29 FBAL
C.AGC 9	28 EF-
ARF 10	27 EF OUT
C.ENV 11	26 TE-
C.EA 12	25 TE OUT
CS BDO 13	24 CROSS
BDO 14	23 TE BPF
CS BRT 15	22 VDET
OFTR 16	21 LD OFF
/NRFDET 17	20 VREF
GND 18	19 ENV

2.Block diagram



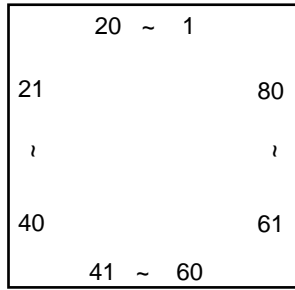
## 3. Pin function

AN8806SB

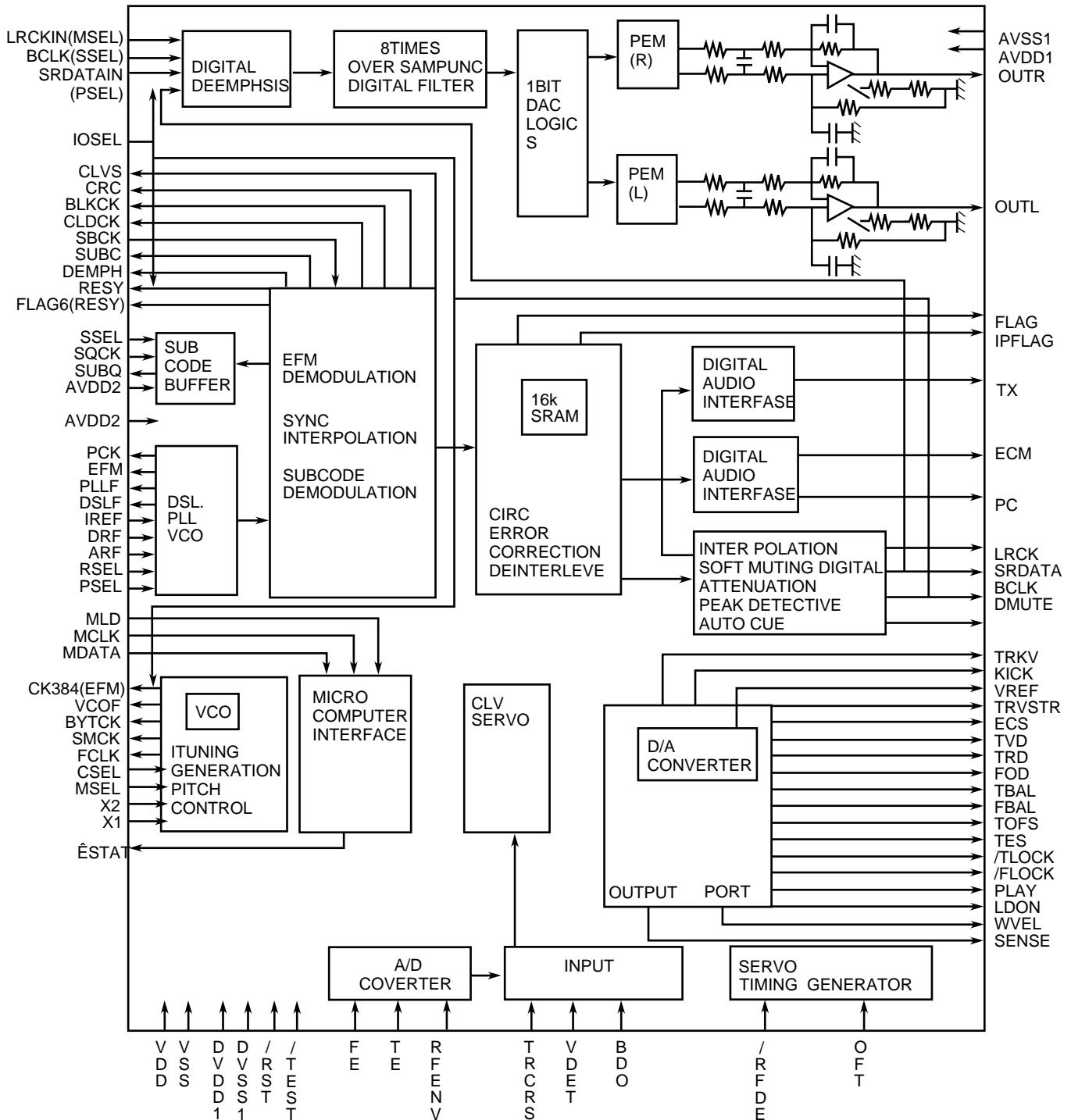
Pin No.	symbol	I/O	Function
1	PD	I	APC amp . Input terminal
2	LD	O	APC amp . Output terminal
3	LD ON	I	LD ON/OFF control terminal
4	LDP	--	Connect to GND
5	VCC	--	Power supply
6	RF-	I	RF amp . Reversing input terminal
7	RF OUT	O	RFamp . Output terminal
8	RF IN	I	AGC input terminal
9	C.AGC	I/O	AGC loop filter connection terminal
10	ARF	O	ARF output terminal
11	C.ENV	I/O	RF detection capacity connection terminal
12	C.EA	I/O	HPF-amp capacity connection terminal
13	CS BDO	I/O	Capacity connection terminal for RF discernment side envelope detection
14	BDO	O	BDO output terminal
15	CS BRT	I/O	Capacity connection terminal for RF discernment side envelope detection
16	OFTR	O	OFTR output terminal
17	/NRFDET	O	RFDET output terminal
18	GND	--	Connect to GND
19	ENV	O	3TENV output terminal
20	VREF	O	VREF output terminal
21	LD OFF	--	APC OFF control terminal
22	VDET	O	VDET output terminal
23	TE BPF	I	VDET input terminal
24	CROSS	O	CROSS output terminal
25	TE OUT	O	TE amp . Output terminal
26	TE-	I	FE amp . Reversing input terminal
27	FE OUT	O	FE amp . output terminal
28	FE-	I	FE amp . Reversing input terminal
29	FBAL	I	F.BAL control terminal
30	TBAL	I	T.BAL control terminal
31	PDFR	I/O	I-V amp conversion resistance adjustment terminal
32	PDER	I/O	I-V amp conversion resistance adjustment terminal
33	PDF	I	I-V amp input terminal
34	PDE	I	I-V amp input terminal
35	PD BD	I	I-V amp input terminal
36	PD AC	I	I-V amp input terminal

# MN35510(IC603):DIGITAL SERVO&DIGITAL SIGNAL PROCESSER

## 1. Terminal Layout



## 2. Block Diagram





## 3. Description

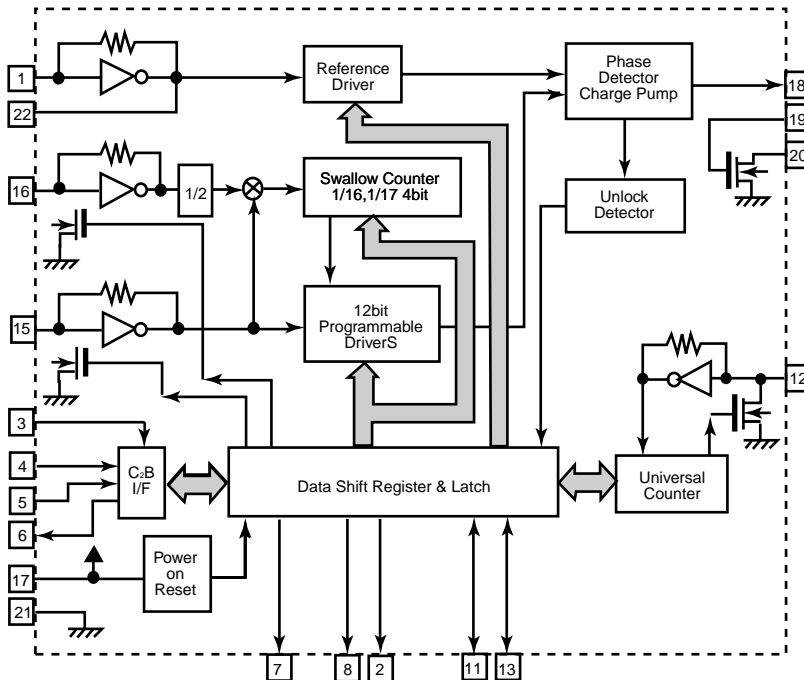
Pin No.	symbol	I/O	Description	Pin No.	symbol	I/O	Description
1	BCLK	O	Not used	41	TES	O	Tracking error shunt signal output(H:shunt)
2	LRCK	O	Not used	42	PLAY	—	Not used
3	SRDATA	O	Not used	43	WVEL	—	Not used
4	DVDD1	—	Power supply (Digital)	44	ARF	I	RF signal input
5	DVSS1	—	Connected to GND	45	IREF	I	Reference current input pin
6	TX	O	Digital audio interface output	46	DRF	I	Bias pin for DSL
7	MCLK	I	$\mu$ com command clock signal input (Data is latched at signal's rising point)	47	DSLIF	I/O	Loop filter pin for DSL
8	MDATA	I	$\mu$ com command data input	48	PLLF	I/O	Loop filter pin for PLL
9	MLD	I	$\mu$ com command load signal input	49	VCOF	—	Not used
10	SENSE	O	Sence signal output	50	AVDD2	—	Power supply(Analog)
11	FLOCK	O	Focus lock signal output Active :Low	51	AVSS2	—	Connected to GND(Analog)
12	TLOCK	O	Tracking lock signal output Active :Low	52	EFM	—	Not used
13	BLKCK	O	sub-code - block - clock signal output	53	PCK	—	Not used
14	SQCK	I	Outside clock for sub-code Q resister input	54	PDO	—	Not used
15	SUBQ	O	Sub-code Q -code output	55	SUBC	—	Not used
16	DMUTE	—	Connected to GND	56	SBCK	—	Not used
17	STATUS	O	Status signal (CRC,CUE,CLVS,TTSTOP,ECLV,SQOK)	57	VSS	—	Connected to GND(for X'tal oscillation circuit)
18	RST	I	Reset signal input (L:Reset)	58	XI	I	Input of 16.9344MHz X'tal oscillation circuit
19	SMCK	—	Not used	59	X2	O	Output of X'tal oscillation circuit
20	PMCK	—	Not used	60	VDD	—	Power supply(for X'tal cscillation circuit)
21	TRV	O	Traverse enforced output	61	BYTCK	—	Not used
22	TVD	O	Traverse drive output	62	CLDCK	—	Not used
23	PC	—	Not used	63	FLAG	—	Not used
24	ECM	O	Spindle motor drive signal (Enforced mode output) 3-State	64	IPPLAG	—	Not used
25	ECS	O	Spindle motor drive signal (Servo error signal output)	65	FLAG	—	Not used
26	KICK	O	Kick pulse output	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	Reference voltage input pin for D/A output block (TVD,FOD,FBA,TBAL)	69	RESY	—	Not used
30	FBAL	O	Focus Balance adjust signal output	70	IOSEL	—	pull up
31	TBAL	O	Tracking Balance adjust signal output	71	TEST	—	pull up
32	FE	I	Focus error signal input(Analog input)	72	AVDD1	—	Power supply(Digital)
33	TE	I	Tracking error signal input(Analog input)	73	OUT L	O	Lch audio output
34	RF ENV	I	RF envelope signal input(Analog input)	74	AVSS1	—	Connected to GND
35	VDET	I	Vibration detect signal input(H:detect)	75	OUT R	O	Rch audio output
36	OFT	I	Off track signal input(H:off track)	76	RSEL	—	pull up
37	TRCRS	I	Track cross signal input	77	CSEL	—	Connected to GND
38	RFDET	I	RF detect signal input(L:detect)	78	PSEL	—	Connected to GND
39	BDO	I	BDO input pin(L:detect)	79	MSEL	—	Connected to GND
40	LDON	O	Laser ON signal output(H:on)	80	SSEL	—	Pull up

## ■ LC72136N (IC2) : PLL Frequency Synthesizer

### 1. Pin layout

XT	1	22	XT
FM/AM	2	21	GND
CE	3	20	LPFOUT
DI	4	19	LPFIN
CLOCK	5	18	PD
DO	6	17	VCC
FM/ST/VCO	7	16	FMIN
AM/FM	8	15	AMIN
	9	14	
	10	13	IFCONT
SDIN	11	12	IFIN

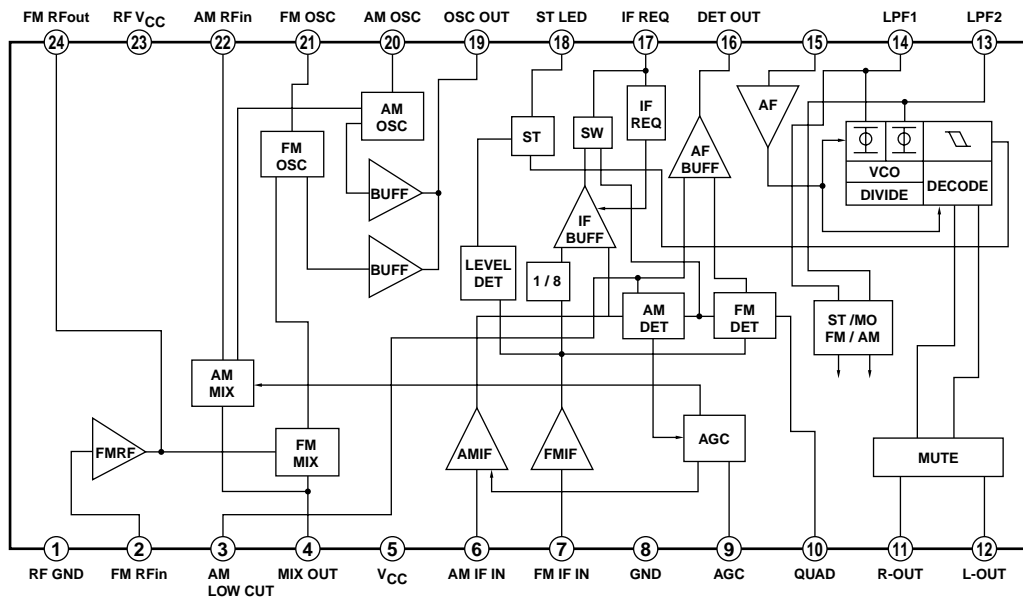
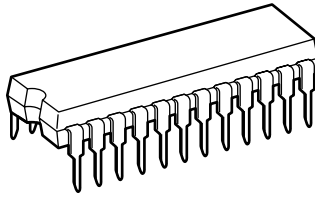
### 2. Block diagram



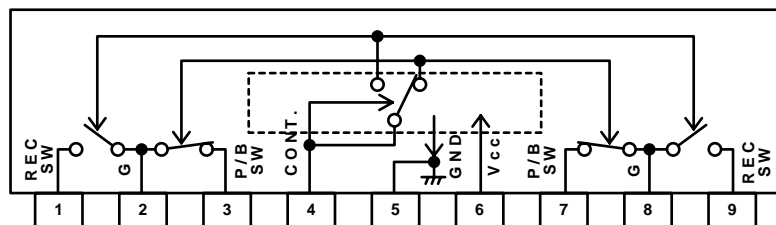
### 3. Pin function

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	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 supply(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	AM/FM	O	Open state after the power on reset	19	LPFIN	I	Input for active lowpassfilter of PLL
9	LW	I/O	Input/output port	20	LPFOUT	O	Output for active lowpassfilter of PLL
10	MW	I/O	Input/output port	21	GND	-	Connected to GND
11	SDIN	I/O	Data input/output	22	XT	I	X'tal oscillator(75KHz)

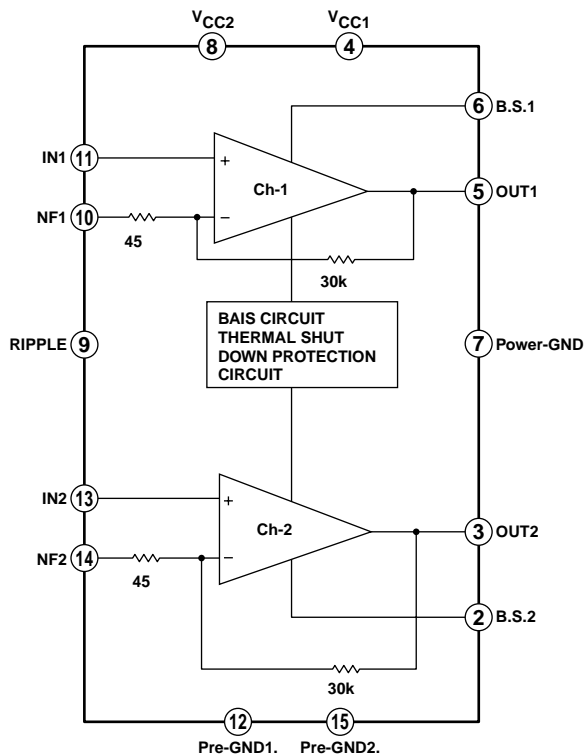
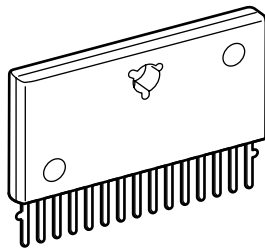
■ TA2104AN(IC1) : Radio Tuner



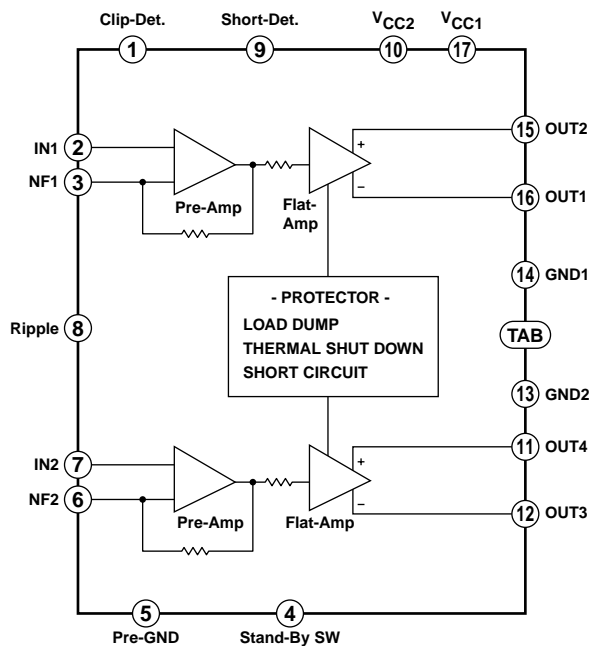
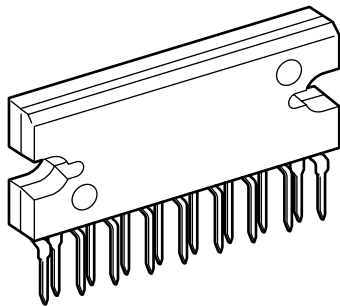
■ BA3126N(IC31) : R/P Switch



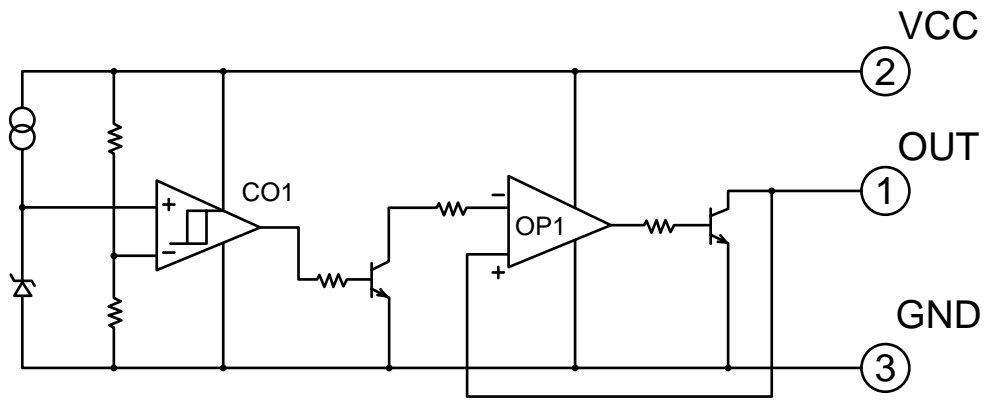
■ TA8223K(IC631) : power amplifier



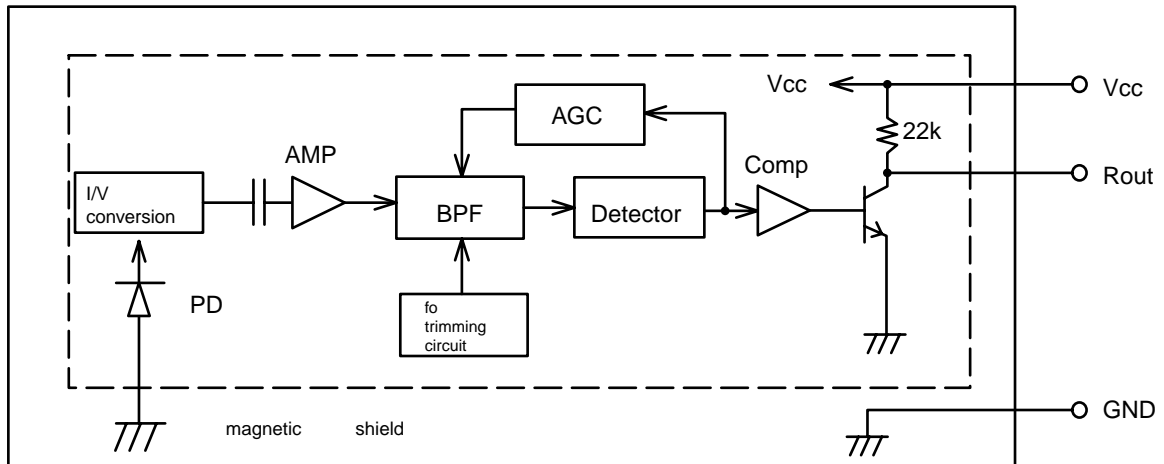
■ TA8223H(IC641) : power amplifier



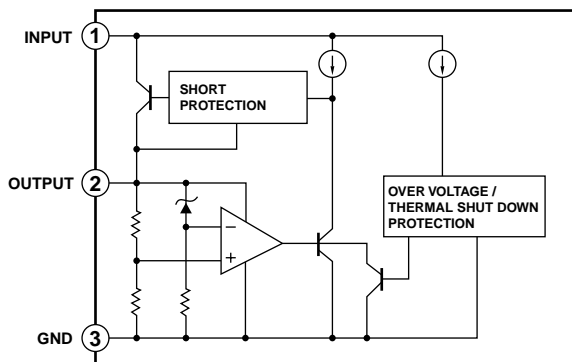
■ IC-PST9131-T(IC902) : Reset



■ RPM6938-SV4(IC251) : Remote Censor



■ TA78DL06S(IC390) : 6VOLTAGE REGULATOR

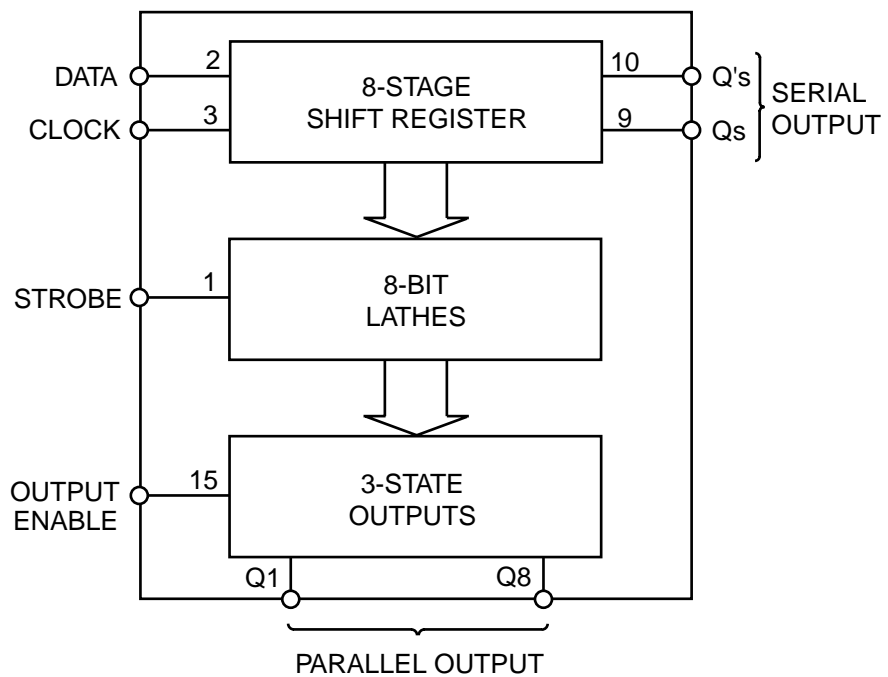


■ BU4094B(IC33):Serial to parallel port extension

1.Pin layout

STROBE	1	16	Vdd
DATA	2	15	OUTPUT ENABLE
CLOCK	3	14	Q5
Q1	4	13	Q6
Q2	5	12	Q7
Q3	6	11	Q8
Q4	7	10	Q's
Vss	8	9	Qs

2.Block diagram



< M E M O >

**RV-DP200BK**


**JVC**

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(No.20937)

 Printed in Japan  
200104(V)