JVC

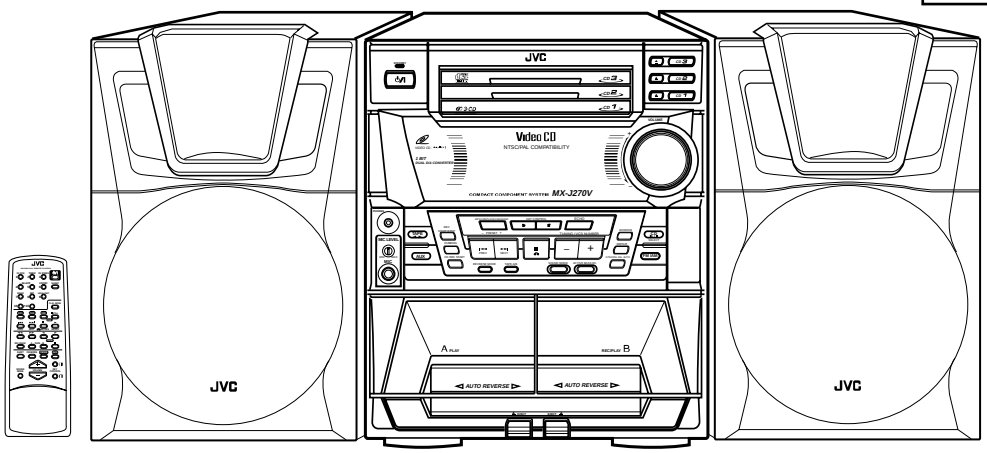
SERVICE MANUAL

COMPACT COMPONENT SYSTEM

MX-J270V

Area Suffix

US ---------- Singapore
UX ---------- Saudi Arabia



SP-MXJ270V CA-MXJ270V SP-MXJ270V

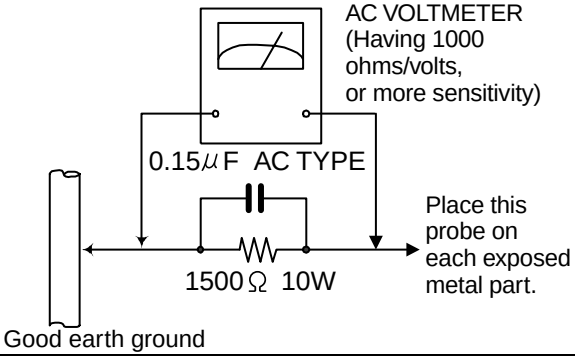
VIDEO CD

Contents

No.20880
Nov. 2000

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.**

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

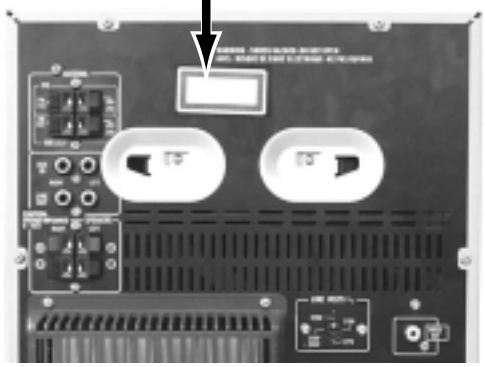
DANGER : Invisibie laser radiation when open and interlock or defeated.
AVOID DIRECT EXPOSURE TO BEAM (e)

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

VARNING : Osynlig laserstrålning 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

1. Grounding to prevent damage by 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.

2. About the earth processing for the destruction prevention by static electricity

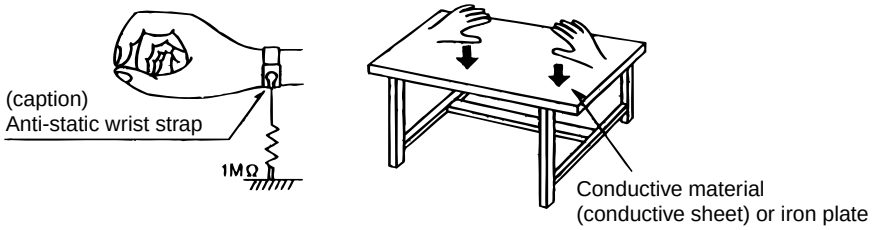
In the equipment which uses optical pick-up (laser diode), optical pick-up is destroyed by the static electricity of the work environment.
Be careful to use proper grounding in the area where repairs are being performed.

2-1 Ground the workbench

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.

2-2 Ground yourself

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



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.

4. 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

Disassembly method

<Main body>

■ Removing the metal cover

(See Fig.1 to 3)

1. Remove the six screws **A** attaching the metal cover on the back of the body.

2. Remove the two screws **B** on both sides of the body.

3. Remove the metal cover from the body while lifting up the rear part of the metal cover.

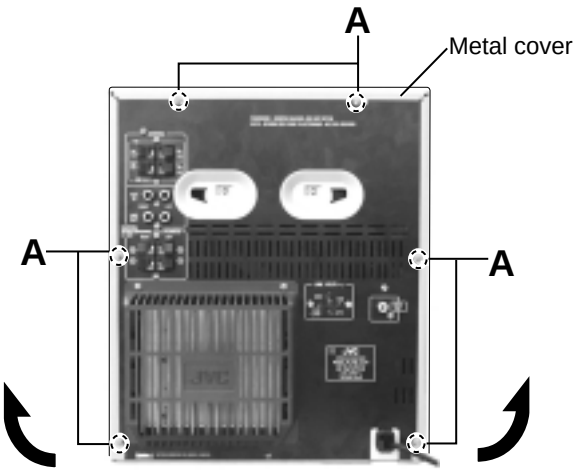


Fig.1

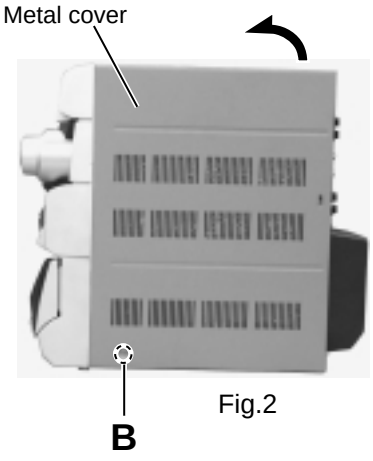


Fig.2

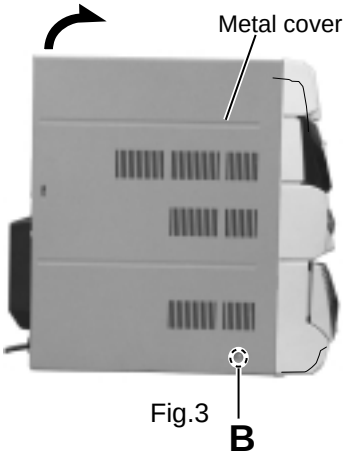


Fig.3

■ Removing the CD changer mechanism assembly (See Fig.4 to 7)

・Prior to performing the following procedures, remove the metal cover.

1. Disconnect the card wire from connector CN308 and CN309 connecting the CD servo board and the main board.

2. Disconnect the harness from CN310 on the main board.

3. Remove the two screws **C** attaching the CD changer mechanism assembly on the top of the body.

4. Remove the plastic rivet **a** fixing the main board to the front panel assembly on the left side of the body.

5. Remove the two screws **D** from the rear panel.

6. Cut off the band **b** and band **c** which bundle two harnesses coming from the MIC/headphone board and one harness coming from the video board, respectively.

7. Detach upward the rear part of the CD changer mechanism assembly while pulling the front panel assembly and the rear panel outward, then pull out the front part backward and upward.

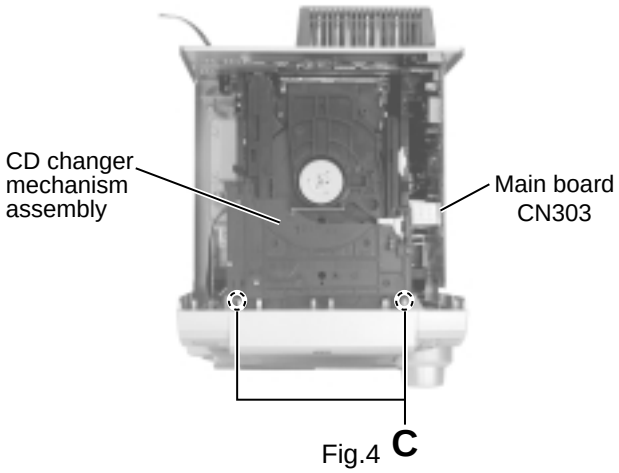


Fig.4

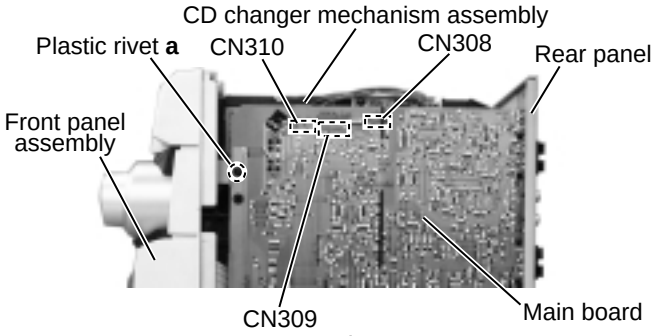


Fig.5

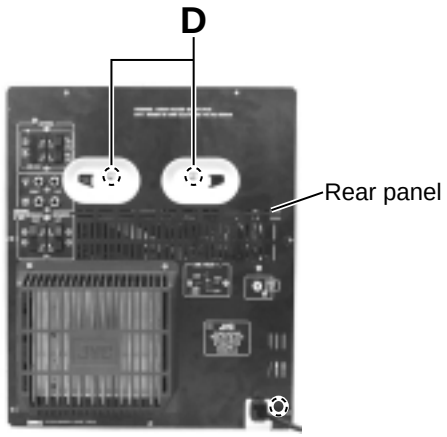


Fig.6

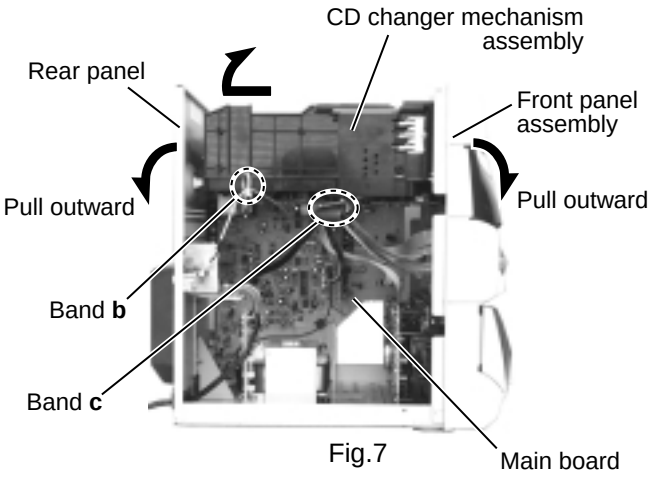


Fig.7

■ Removing the front panel assembly (See Fig.8 to 11)

・ Prior to performing the following procedures, remove the metal cover and the CD changer mechanism assembly.

1. Disconnect the card wires from connector CN302, CN306, CN307 and the harness from CN301, CN305 on the inside of the main board.

2. Turn over the body and remove the four screws **E**.

3. Release the joint **d** and **e** on both sides of the body using a screwdriver, and detach the front panel assembly toward the front.

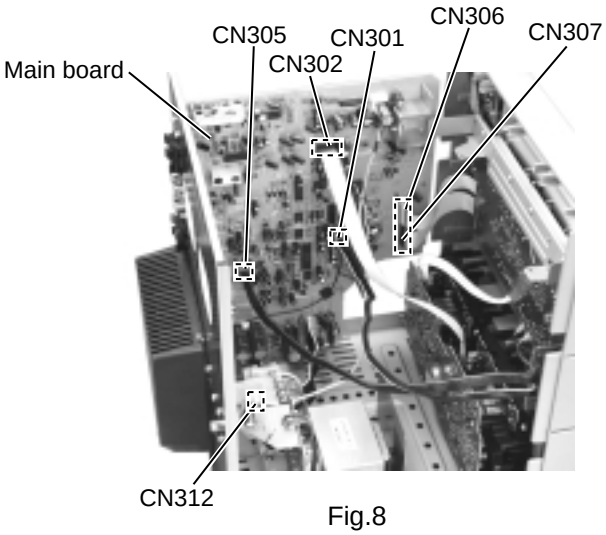


Fig.8

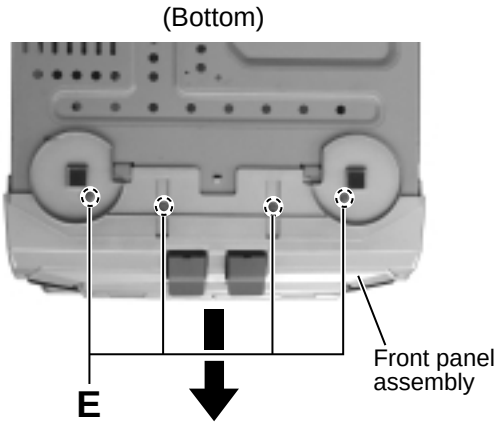


Fig.9

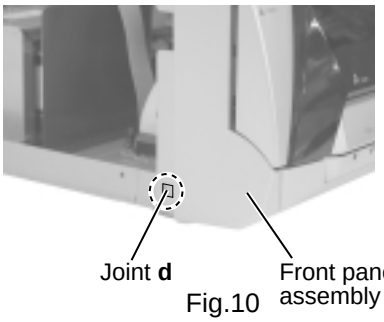


Fig.10

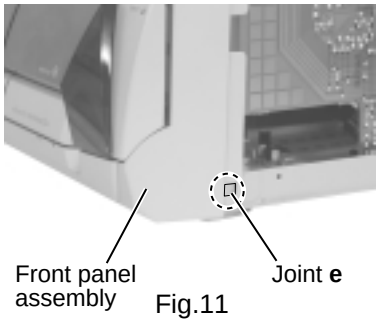


Fig.11

■ Removing the rear cover, the rear panel, the voltage selector and the video board (See Fig.12 to 15)

- Prior to performing the following procedures, remove the metal cover and the CD changer mechanism assembly.
- It is not necessary to remove the front panel assembly.

1. Remove the two screws **F** and the rear cover on the back of the body.

2. Remove the four screws **G** and the seven screws **H** attaching the main board and the heat sink to the rear panel.

3. Remove the screw **I** attaching the rear panel to the chassis base.

4. Remove the two screws **J** attaching the rear panel to the voltage selector.

5. Remove the two screws **K** attaching the rear panel to the video board.

6. Release the lower two joints **f** and **g** on both sides of the rear panel using a screwdriver and detach the rear panel backwards.

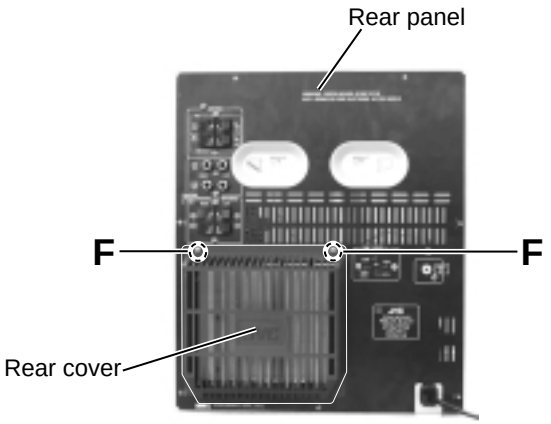


Fig.12

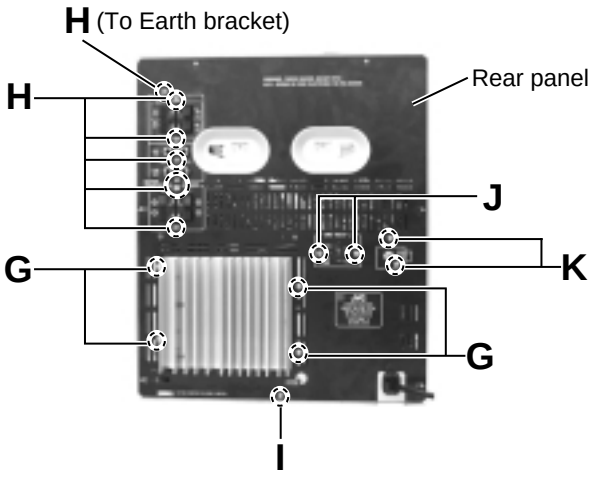


Fig.13

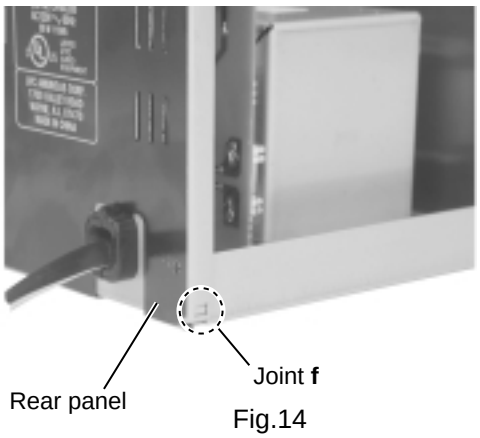


Fig.14

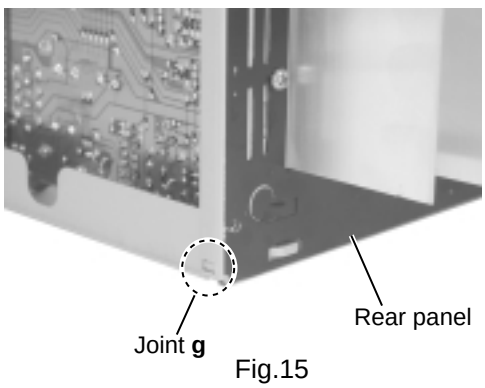


Fig.15

■ Removing the main board

(See Fig.16 to 19)

- Prior to performing the following procedures, remove the metal cover, the CD changer mechanism assembly, the rear cover, the rear panel, the voltage selector and the video board.
- It is not necessary to remove the front panel assembly.

1. Disconnect the card wires from connector CN302, CN306, CN307 and the harnesses from CN301, CN305, CN901A and CN901B on the inside of the main board.

2. Disconnect the harness from CN312 on the video board.

3. From the right side of the body, remove the screw **M** attaching the main board to the chassis base.

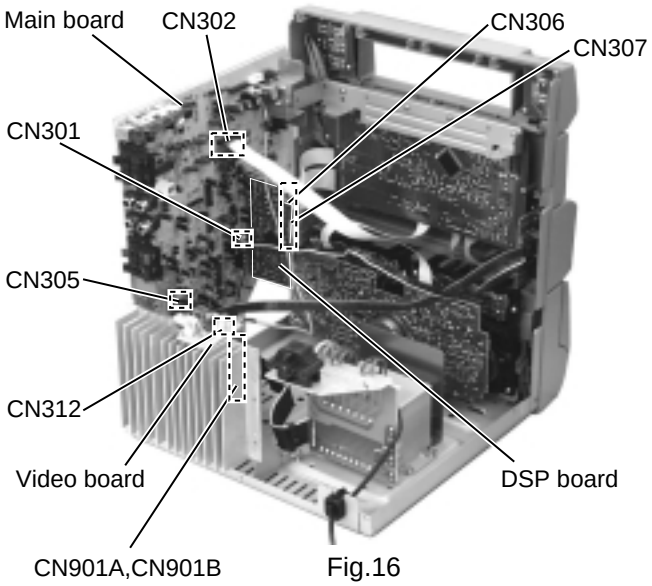


Fig.16

~To remove the heat sink from the main board~

- Prior to performing the following procedure, remove the rear cover, rear panel, voltage selector and the video board.

1. Remove the two screws **N** attaching the heat sink to the main board. Remove the IC bracket 1 and 2 on the back of the heat sink.

2. Pull out the heat sink toward you.

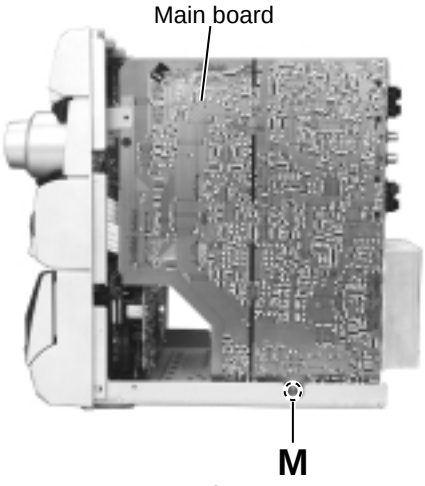


Fig.17

■ Removing the DSP board

(See Fig.19)

- Prior to performing the following procedures, remove the main board.

1. Release the two joints **h** and **i** using a screwdriver and detach the DSP board toward you.

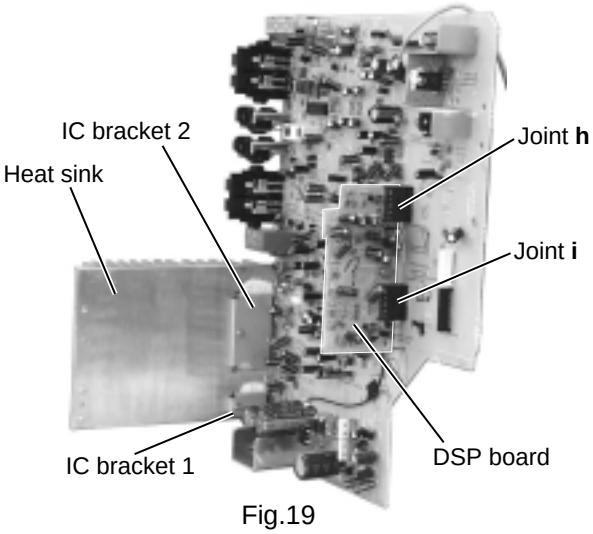


Fig.19

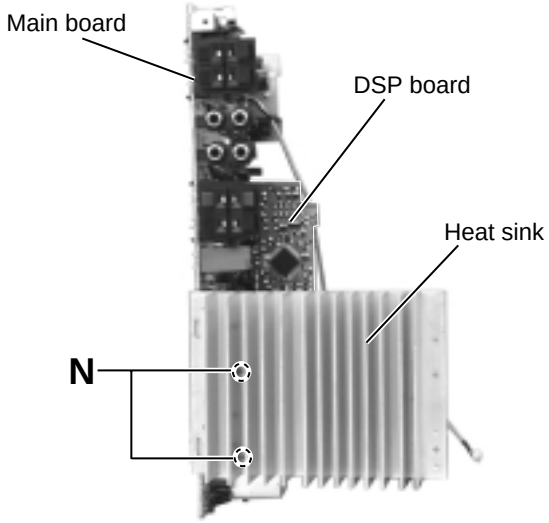


Fig.18

■ Removing the power transformer assembly (See Fig.20 to 22)

- Prior to performing the following procedure, remove the metal cover, the CD changer mechanism assembly and the voltage selector.

1. Disconnect the harness from connector CN901A and CN901B on the inside of the main board.

2. Cut off the tie band **j** of the power transformer assembly and unsolder the power cord.
   (Make sure to bundle the wires after repair.)

3. Remove the four screws **O** attaching the power transformer assembly.

- When removing the power transformer assembly with the power cord, remove the rear panel and pull out the power cord stopper from the bottom chassis upward.

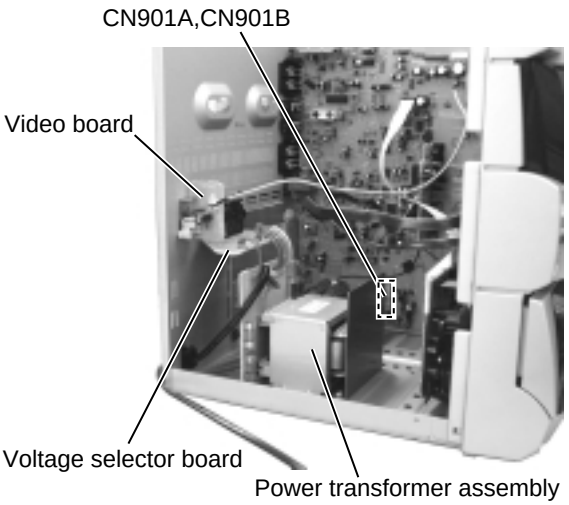


Fig.20

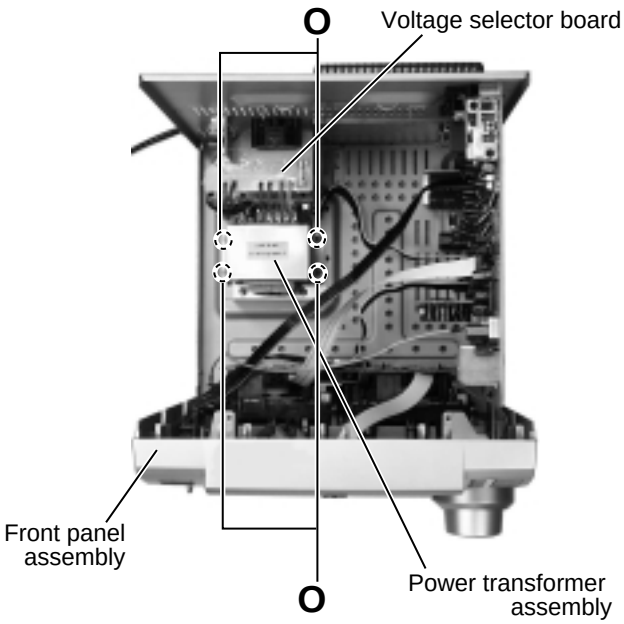


Fig.21

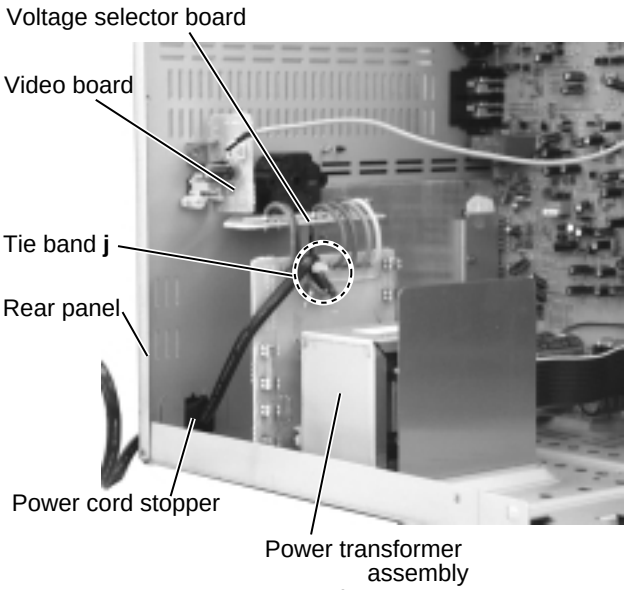


Fig.22

<Front panel assembly>

■ Removing the MIC/headphone board (See Fig.23 and 24)

- Prior to performing the following procedure, remove the metal cover, the CD changer mechanism assembly and the front panel assembly.

1. Remove the two screws **P** attaching the MIC /headphone board.
2. Pull out the MIC LEVEL knob from front side.

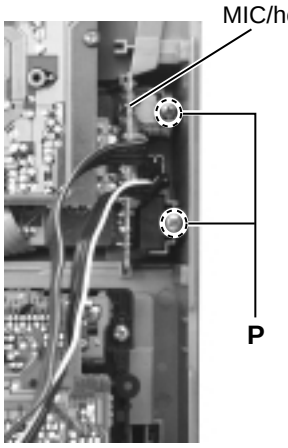


Fig.23

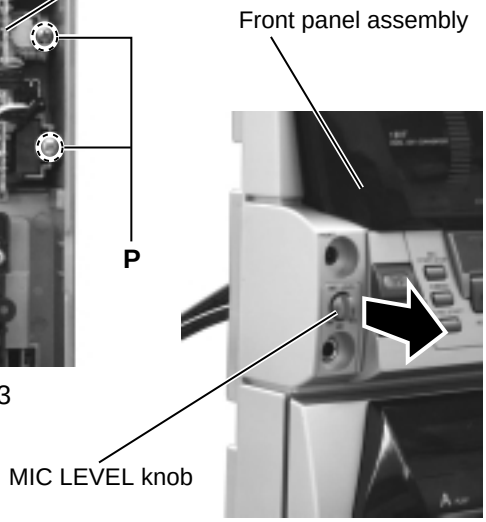


Fig.24

■ Removing the cassette mechanism assembly (See Fig.25)

- Prior to performing the following procedure, remove the metal cover, the CD changer mechanism assembly and the front panel assembly.

1. Disconnect the card wire from connector CN305 on the cassette amplifier board.
2. Remove the eight screws **Q** attaching the cassette mechanism assembly.
3. Detach the cassette mechanism assembly toward you.

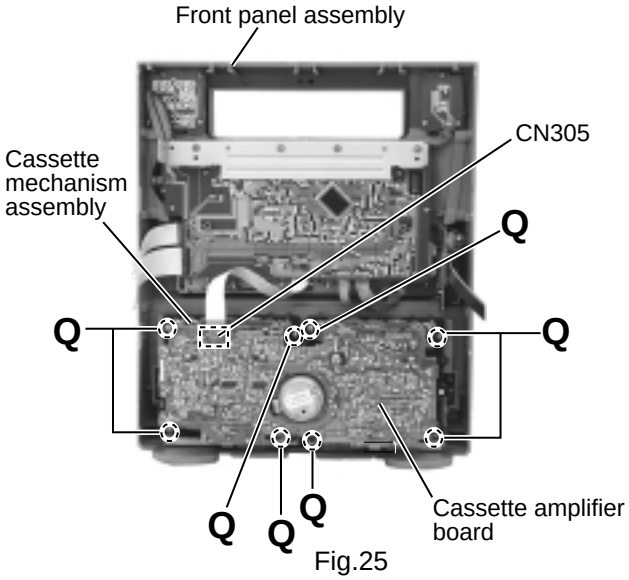


Fig.25

■ Removing the cassette amplifier board (See Fig.26)

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

1. Disconnect the card wire from connector CN301 and CN302 on the cassette amplifier board.
2. Remove the six screws **R** attaching the cassette amplifier board.
3. Unsolder the soldering **k** on the harness for the DC motor.
4. Detach the cassette amplifier board toward you.

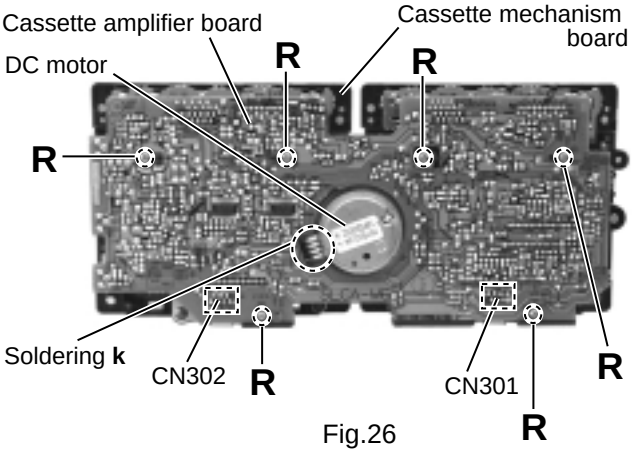


Fig.26

■ Removing the display board and the bracket (See Fig.27 and 28)

・Prior to performing the following procedure, remove the metal cover, the CD changer mechanism assembly and the front panel assembly.

1. Disconnect the card wire from connector CN306 on the cassette amplifier board.
2. Remove the four screws **S** attaching the front panel assembly.
3. Remove the four screws **T** attaching the front panel assembly.
4. Unsolder FW701, FW702, FW703, FW704 and FW705 on the display board. Disconnect the harnesses extending from the power switch board, the eject switch board, the volume board and the multi-control board respectively

■ Removing each board in the front panel assembly (See Fig.29 to 31)

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

~Removing the multi-control board~ (See Fig.29)

1. Remove the eight screws **U** attaching the multi-control board.

~Removing the volume board~ (See Fig.30 and 31)

1. Pull out the volume knob on the front side of the front panel assembly and remove the nut attaching the volume board.
2. Unhook the two hooks **I** on the back of the front panel assembly and detach the volume board.

~Removing the eject switch board ~ (See Fig.29)

1. Remove the four screws **V** attaching the eject switch board.

~Removing the power switch board~ (See Fig.29)

1. Remove the three screws **W** attaching the power switch board.

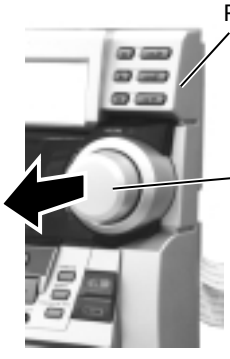


Fig.30

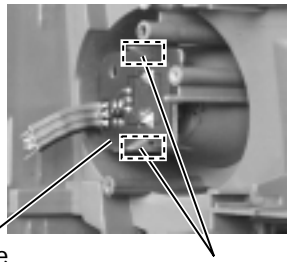


Fig.31

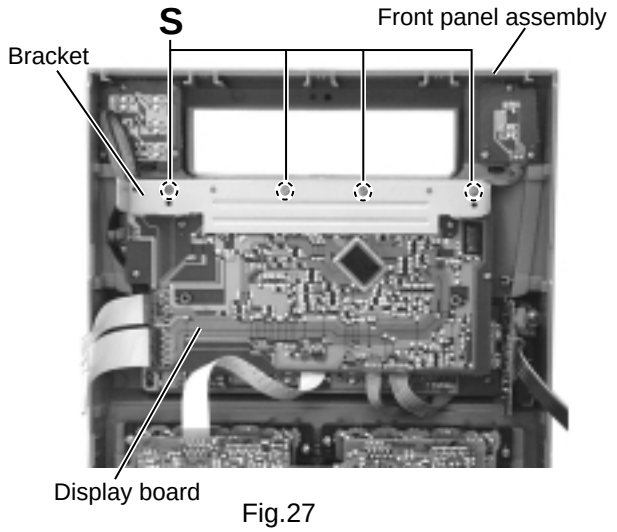


Fig.27

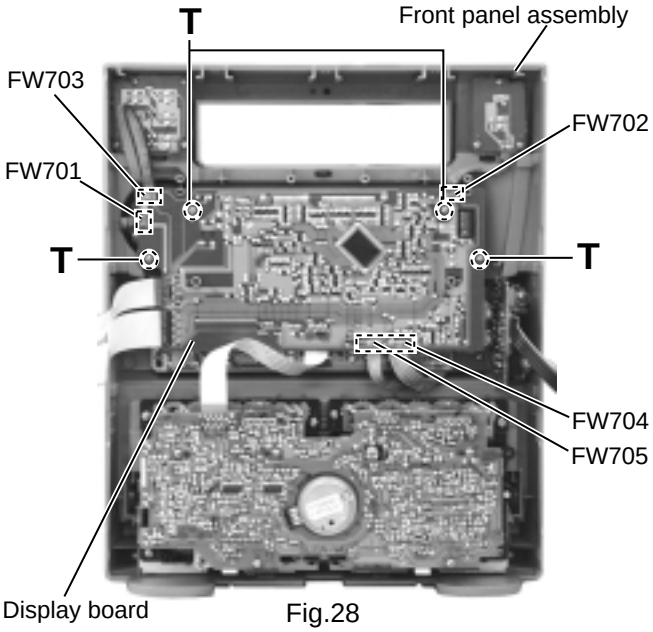


Fig.28

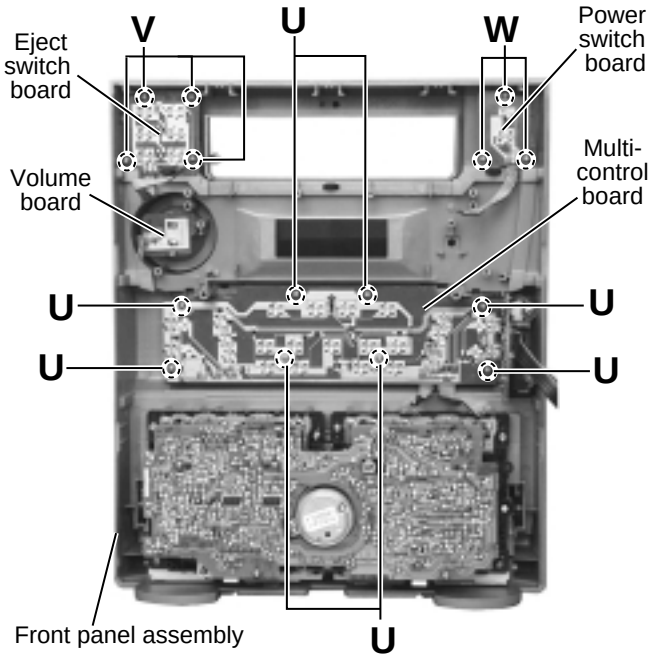


Fig.29

≪CD Traverse Mechanism Type:C3CN Section≫

■Removing the CD Servo control board
(See Fig.1)

1. Remove the Metal cover.
2. Remove the CD Traverse mechanism assembly.
3. From bottom side the CD Traverse mechanism assembly, remove the one screw A retaining the CD Servo control board.
4. From the connectors CN601, CN603, CN604 on the CD Servo control board, disconnect the card wire, from the connector CN602, disconnect the six pin connector wire.
5. Disengage the two engagements "a" , remove the CD Servo control board.

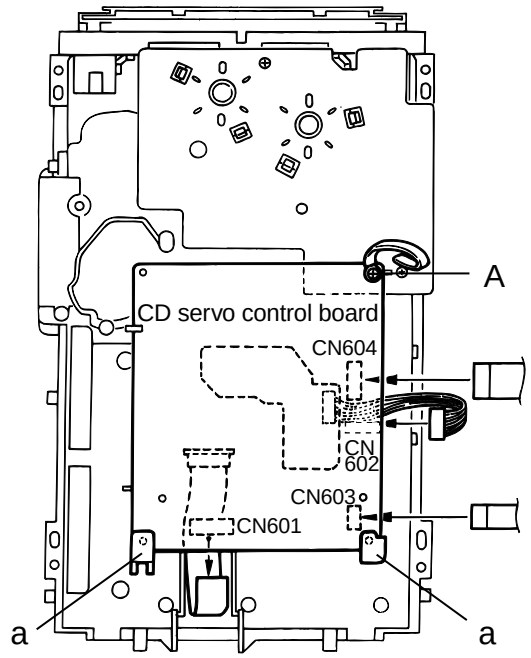


Fig.1

■Removing the CD tray assembly
(See Fig.2~4)

1. Remove the front panel assembly.
2. Remove the CD Traverse mechanism assembly.
3. Remove the CD Servo control board.
4. Remove the screw B retaining the disc stopper (See Fig.3).
5. Remove the three screws C retaining the T.bracket (See Fig.3).
6. From the clamper base section "c" , remove both of the edges fixing the rod(See Fig.2 and 3).
7. Remove the screw D retaining the clamper assembly (See Fig.3).
8. From the left side face of the chassis assembly, remove the one screw E retaining both of the return spring and lock lever(See Fig. 4).
9. By removing the pawl at the section "d" fixing the return spring, dismount the return spring(See Fig.4).
10. Remove the three lock levers(See Fig.4).

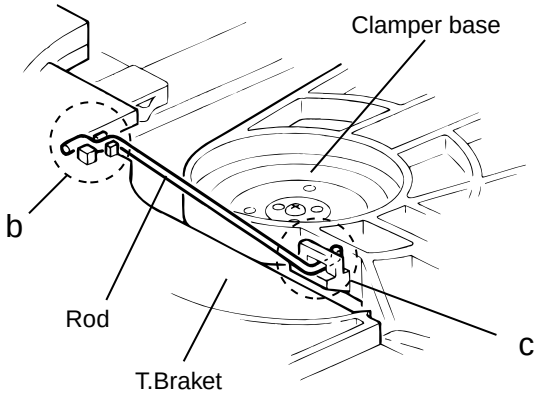


Fig.2

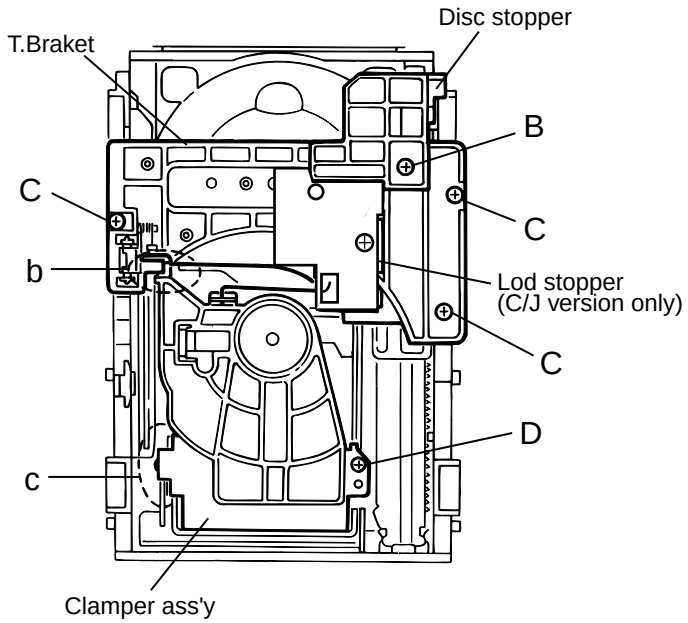


Fig.3

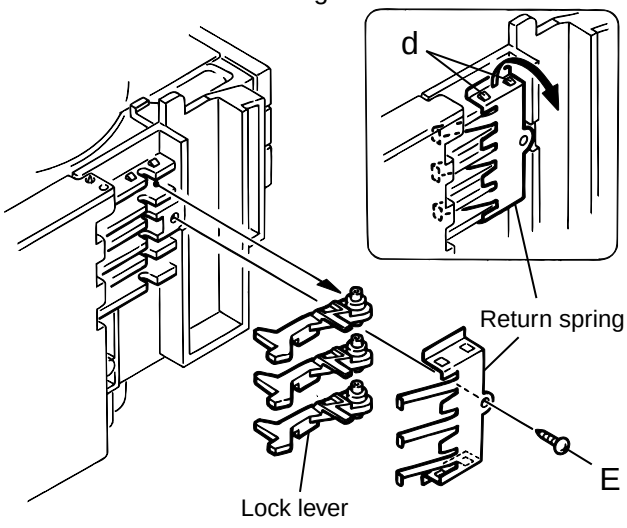


Fig.4

11. Check whether the lifter unit stopper has been caught into the hole at the section "e" of CD tray assembly as shown in Fig.5.
12. Make sure that the driver unit elevator is positioned as shown in Fig.6 from to the second or fifth hole on the left side face of the CD Traverse mechanism assembly.

[Caution] In case the driver unit elevator is not at above position, set the elevator to the position as shown in Fig.7 by manually turning the pulley gear as shown in Fig.8.

13. Manually turn the motor pulley in the clockwise direction until the lifter unit stopper is lowered from the section "e" of CD tray assembly(See Fig.8).
14. Pull out all of the three stages of CD tray assembly in the arrow direction "f" until these stages stop (See Fig.6).
15. At the position where the CD tray assembly has stoppend, pull out the CD tray assembly while pressing the two pawls "g and g' "on the back side of CD tray assembly(See Fig.9). In this case, it is easy to pull out the assembly when it is pulled out first from the stage CD tray assembly.

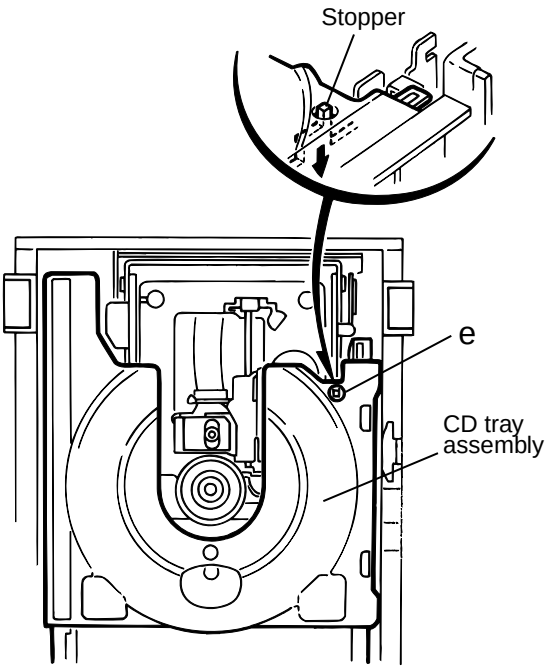


Fig.5

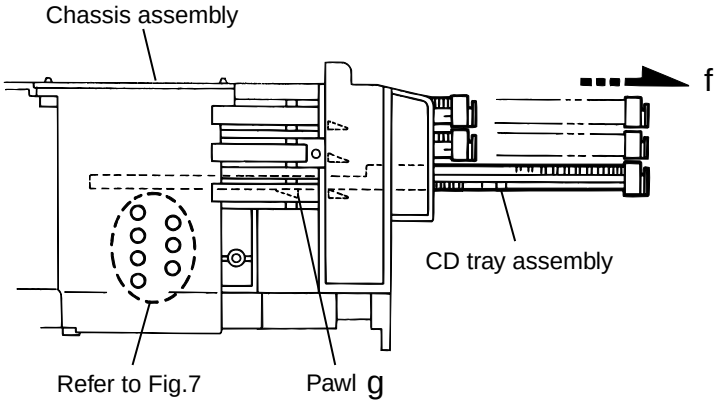


Fig.6

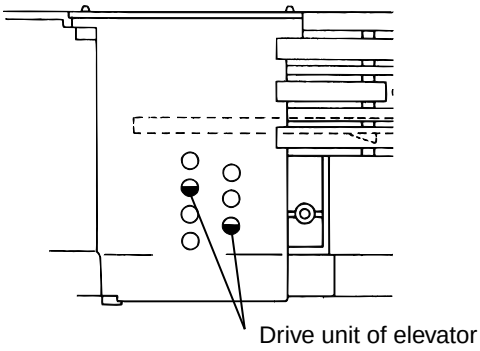


Fig.7

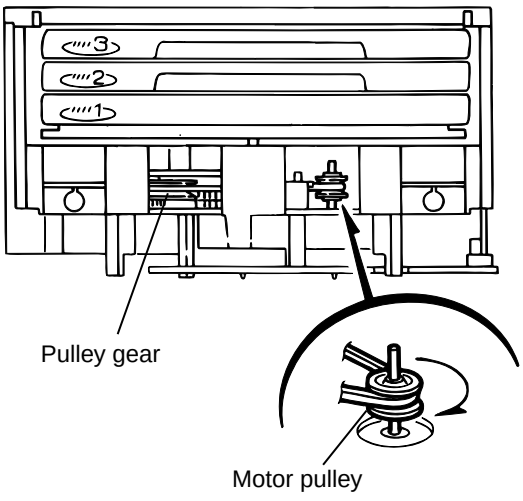


Fig.8

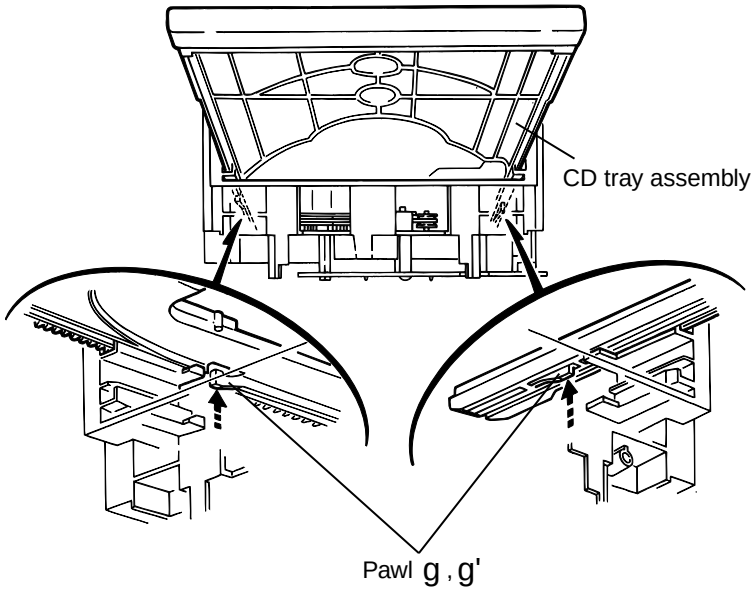


Fig.9

■Removing the CD mechanism assembly (See Fig.10)

1. While turning the cams R1 and R2 assembly in the arrow direction "h", align the shaft "i" of the CD mechanism assembly to the position shown in Fig.10.
2. Remove the four screw F retaining the CD mechanism assembly.

■Removing the CD mechanism (See Fig.11 and 12)

1. For dismounting only the CD mechanism without removing the CD mechanism assembly, align the shaft "j" of the CD mechanism assembly to the position shown Fig.11 while turning the cam R1 and R2 assembly in the arrow direction "k".
2. By raising the CD mechanism assembly in the arrow direction "l" , remove the assembly from the lifter unit (See Fig.12).

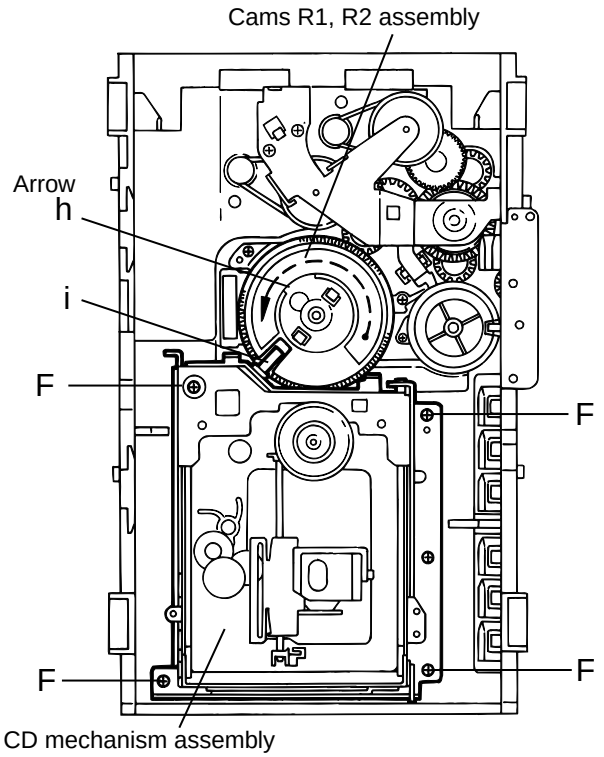


Fig.10

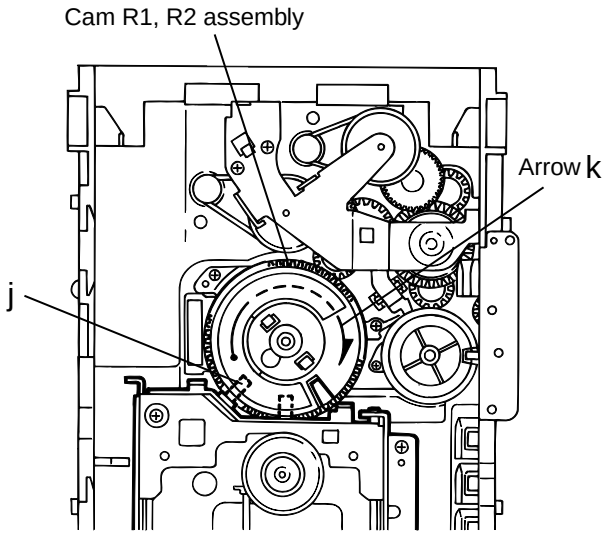


Fig.11

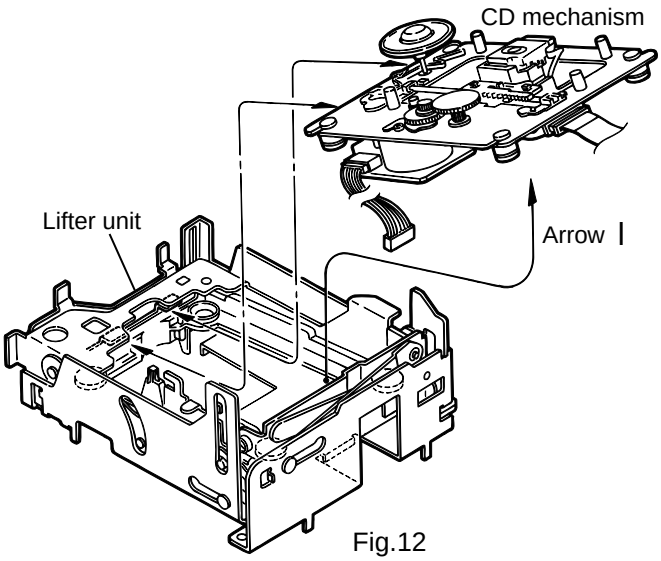


Fig.12

■Removing the CD pick unit (See Fig.13)

1. Move the cam gear in the arrow direction m . Then, the CD pickup unit will be moved in the arrow direction n .
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 o , pull out the shaft in the arrow direction p .
4. After dismounting the shaft from the CD pickup unit, remove the CD pickup unit

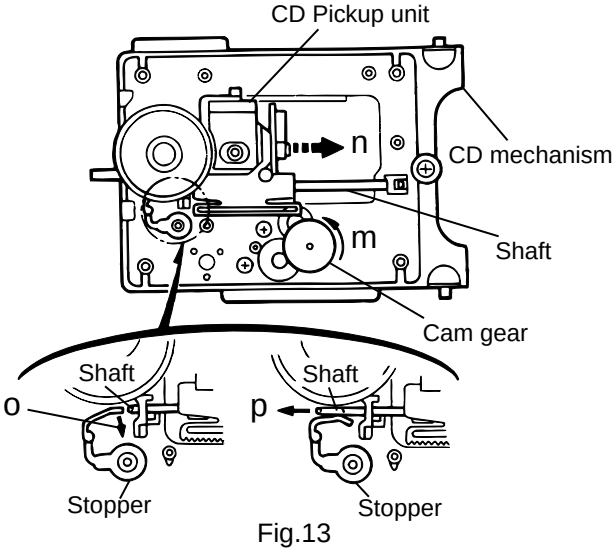


Fig.13

■ Removing the actuator motor board

(See Fig.14, 15)

1. Absorb the four soldered positions "q" of the right and left motors with a soldering absorber(See Fig.14).
2. Remove the two screws G retaining the actuator motor board(See Fig.14).
3. Remove the two screws H retaining the tray select switch board(See Fig.15).

■ Removing the cam unit

(See Fig.15 to 18)

1. Remove the CD mechanism assembly.
2. While turning the cam gear r, align the pawl "s" position of the drive unit to the notch position(Fig.15) on the cam gear r.
3. Pull out the drive unit and cylinder gear(See Fig.17).
4. While turning the cam gear r, align the pawl "t" position of the select lever to the notch position(Fig.18) on the cam gear r.
5. Remove the four screws I retaining the cam unit(cam gear r and cams R1/R2 assembly)(See Fig.18).

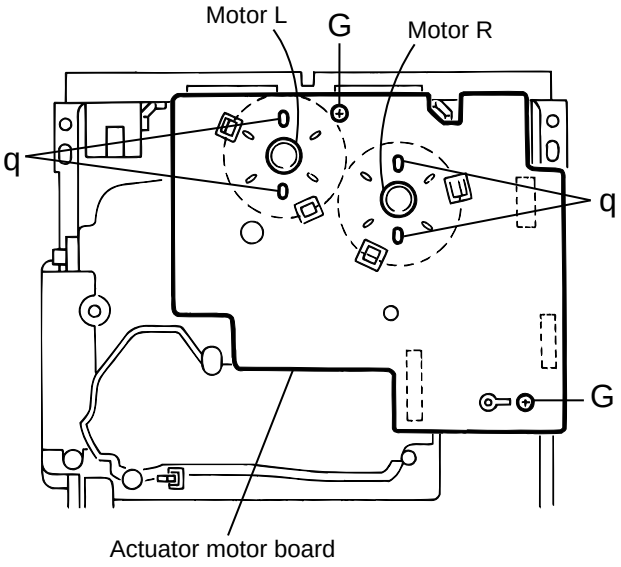


Fig.14

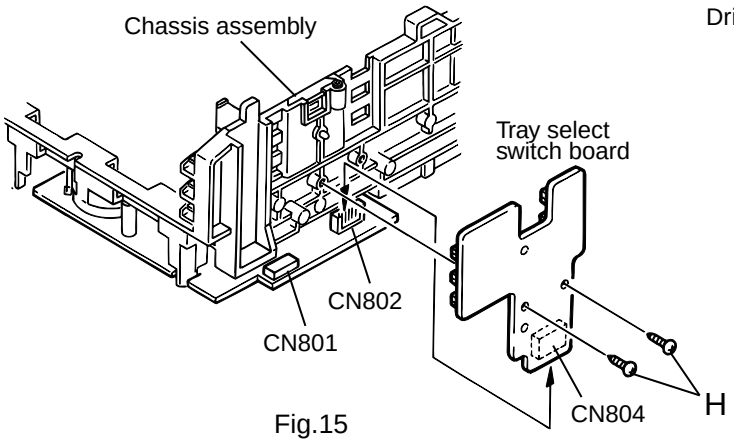


Fig.15

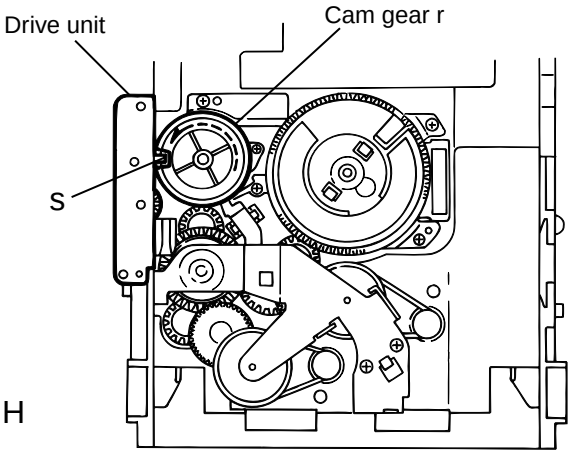


Fig.16

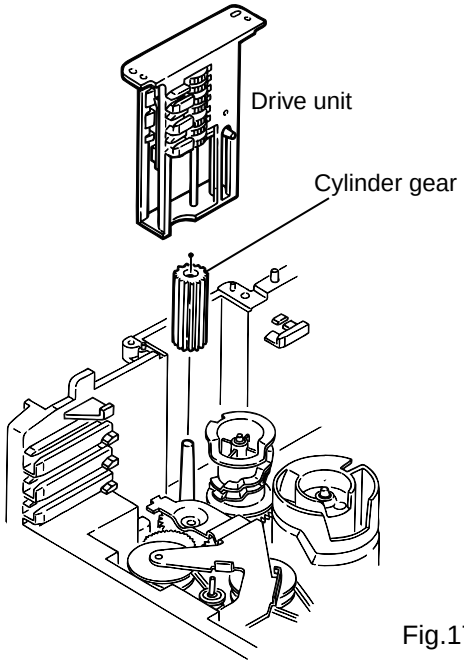


Fig.17

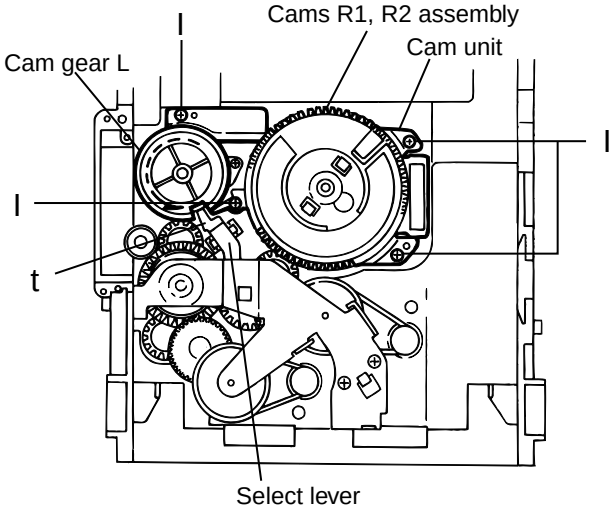


Fig.18

■ Removing the actuator motor and belt

(See Fig.19 to 22)

1. Remove the two screws J retaining the gear bracket (See Fig.19).
2. While pressing the pawl "u" fixing the gear bracket in the arrow direction, remove the gear bracket (See Fig.19).
3. From the notch "v section" on the chassis assembly fixing the edge of gear bracket, remove and take out the gear bracket(See Fig. 20).
4. Remove the belts respectively from the right and left actuator motor pulleys and pulley gears(See Fig. 19).
5. After turning over the chassis assembly, remove the actuator motor while spreading the four pawls "w" fixing the right and left actuator motors in the arrow direction(See Fig. 21).

[Note] When the chassis assembly is turned over under the conditions wherein the gear bracket and belt have been removed, then the pulley gear as well as the gear, etc. constituting the gear unit can possibly be separated to pieces. In such a case, assemble these parts by referring to the assembly and configuration diagram in Fig. 22.

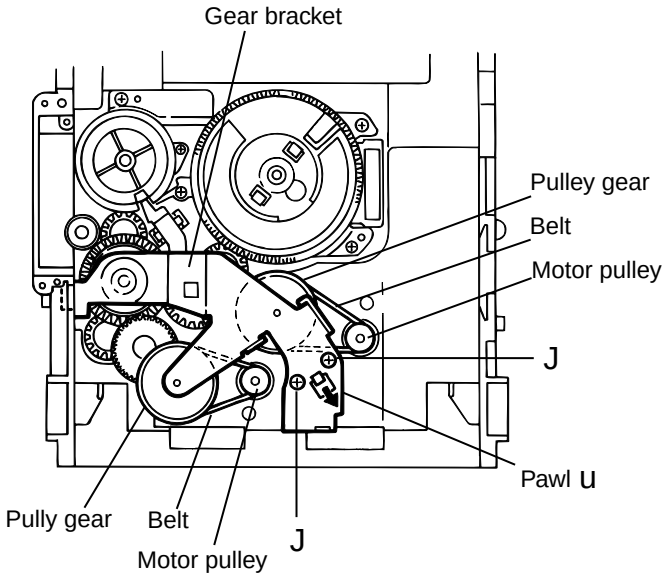


Fig.19

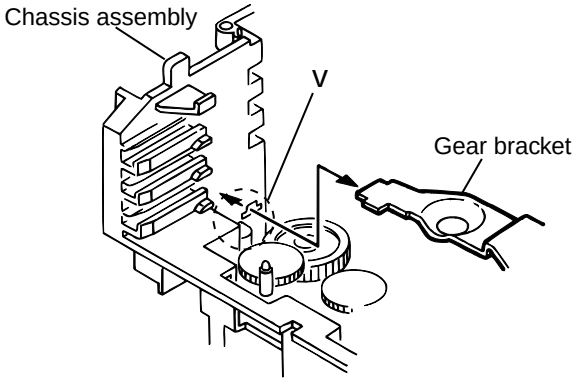


Fig.20

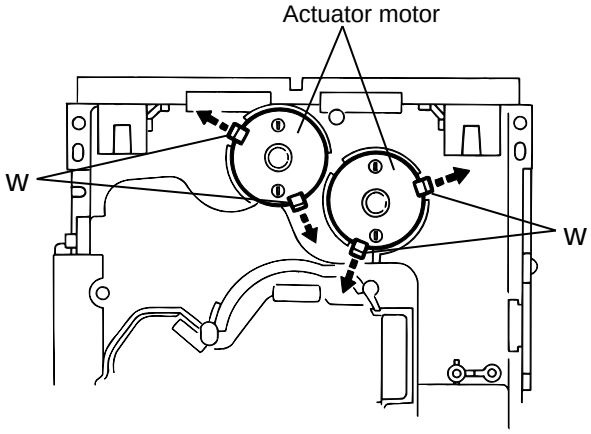


Fig.21

Assembly and Configuration Diagram

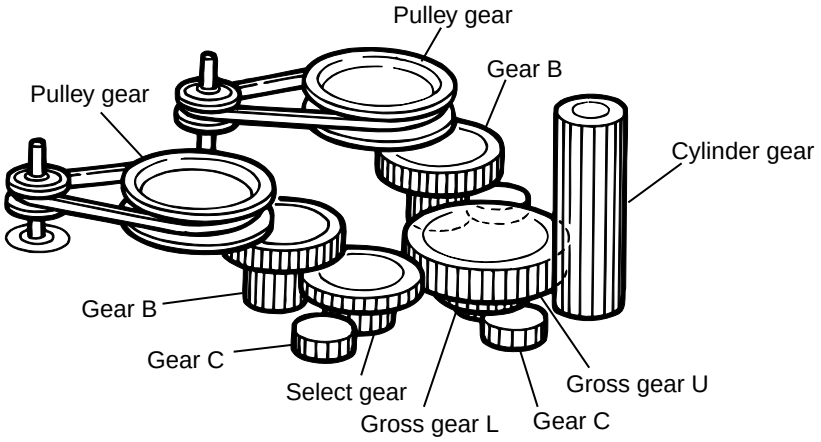


Fig.22

■ Removing the cams R1/R2 assembly and cam gear r (See Fig.23)

1. Remove the slit washer fixing the cams R1 and R2 assembly.
2. By removing the two pawls "x" fixing the cam R1, separate R2 from R1.
3. Remove the slit washer fixing the cam gear r.
4. Pull out the cam gear r from the C.G. base assembly.

■ Removing the C.G. base assembly (See Fig.23 and 24)

Remove the three screws K retaining the C.G. base assembly.

[Caution] To retassemble the cylinder gear, etc.with the cam unit (cam gear and cans R1/R2 assembly), gear unit and drive unit, align the position of the pawl "s" on the drive unit to that o f the notch on the cam gear r. Then, make sure that the gear unit is engaged by turning the cam gear r (See Fig. 24).

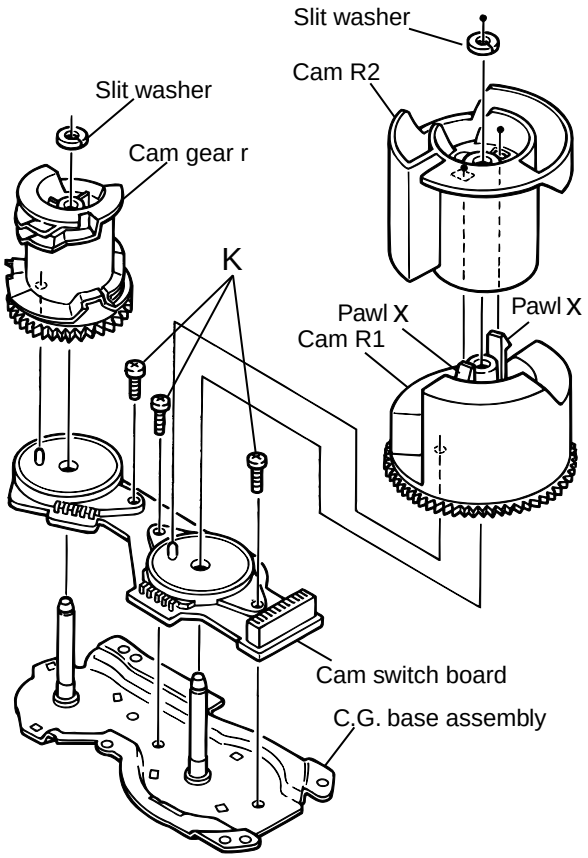


Fig.23

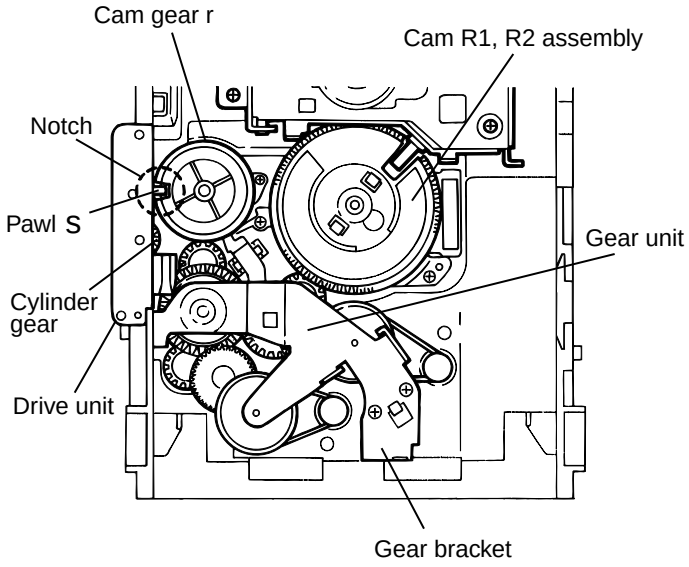


Fig.24

< Cassette mechanism section >

■ Removing the playback, recording and eraser heads (See Fig.1~3)

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 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 head) from the connector CN301 on the head amp. and mechanism control P.C. board.
4. After dismounting 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 head.
7. Loosen the reversing azimuth screw retaining the playback head.
8. Take out the playback head from the front of the head mount.
9. The recording and eraser heads should also be removed similarly according to Steps 1~8 above.

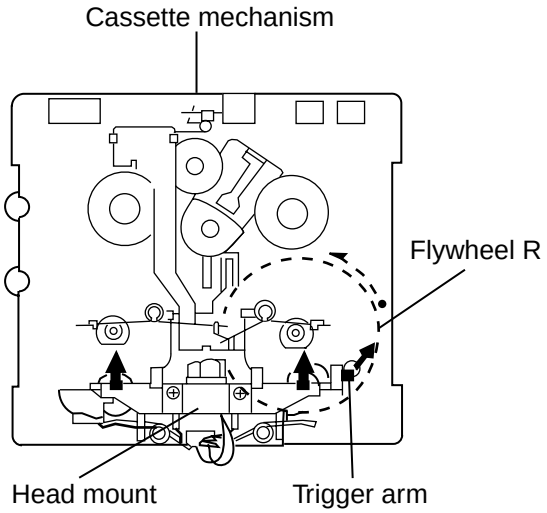


Fig.1 (Mechanism A side)

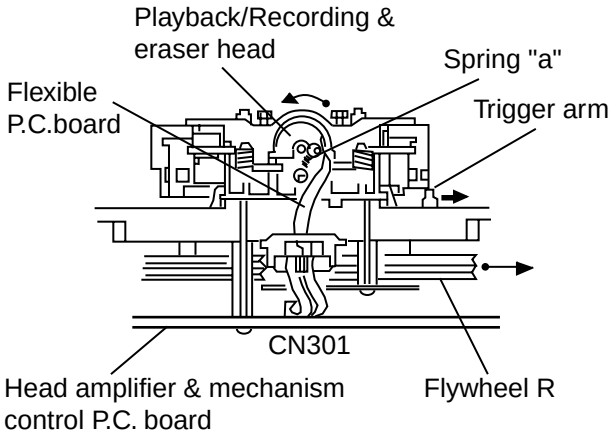


Fig.2 (Mechanism A side)

●Reassembling the playback, recording and eraser heads (See Fig.2,3)

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 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 recording and eraser heads should also be reassembled similarly according to Steps 1~4 above.

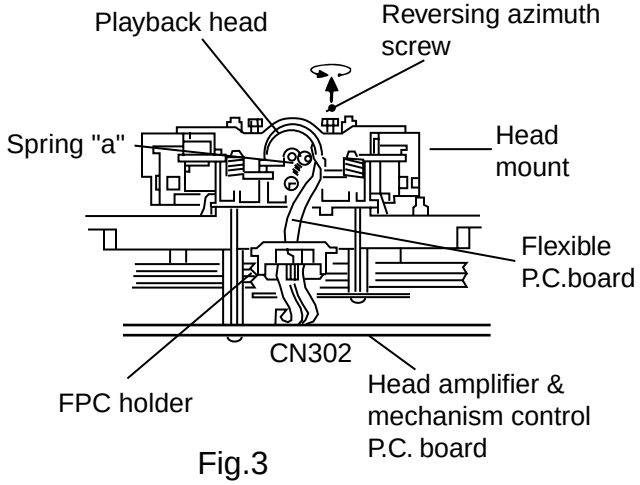


Fig.3 (Mechanism B side)

■Removing the head amp.and mechanism control P.C.board (See Fig. 4)

1.Remove the cassette mechanism assembly.
2.After turning over the cassette mechanism assembly, remove the five screws "A" retaining the head amp. and mechanism control P.C. board
3.Disconnect the connectors CN303 and CN304 on the P.C.Board and the connectors CN1 on both the right and left side reel pulse P.C.Boards.
4.When necessary, remove the 4pin parallel wire soldered to the main motor

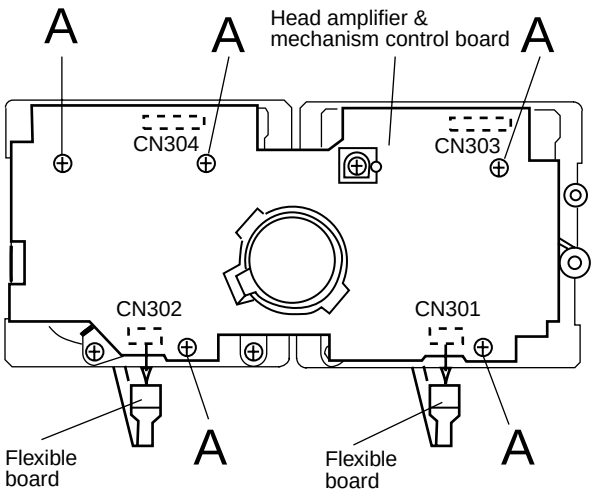


Fig.4

■Removing the capstan motor assembly

1.Remove the six screws "B" retaining capstan motor assembly (See Fig. 5).
2.While raising the capstan motor, remove the capstan belts A and B respectively from the motor pulley (See Fig. 6).

Caution 1: Be sure to handle the capstan belts so carefully that these belts will not be stained by grease and other foreign matter. Moreover, these belts should be hand while referring to the capstan belt hanging method.

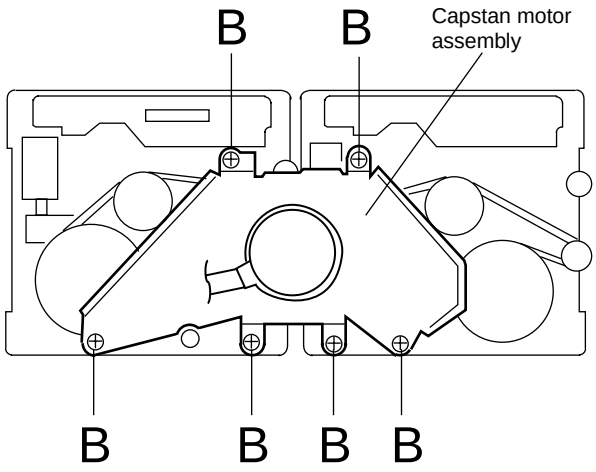


Fig.5

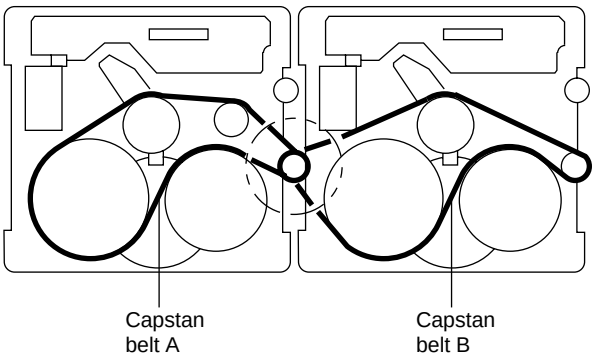


Fig.7

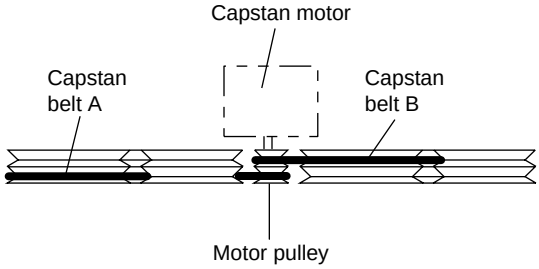


Fig.6

■ Removing the capstan motor (See Fig. 8)

From the joint bracket, remove the two screws "C" retaining the capstan motor.

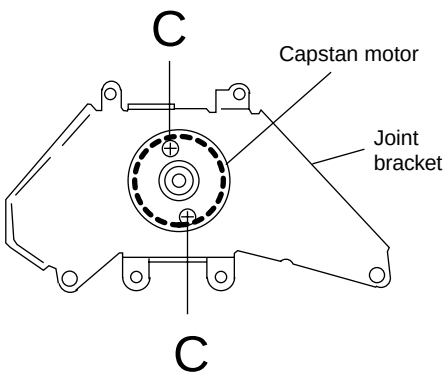


Fig.8

■ Removing the flywheel (See Fig. 9,10)

1.Remove the head amp. and mechanism control P.C.Board.
2.Remove the capstan motor assembly.
3.After turning over the cassette mechanism, remove the slit washers "a" and "b" fixing the capstan shafts R and L, and pull out the flywheels R and L respectively from behind the cassette mechanism.

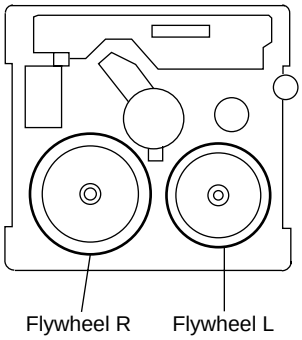


Fig.10

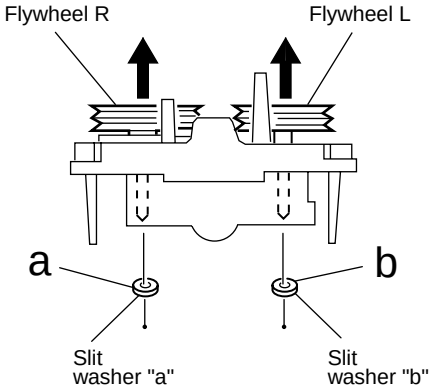


Fig.9

■ Removing the reel pulse P.C.board and solenoid (See Fig. 11)

1.Remove the five pawls (c,d,e,f,g) retaining the reel pulse P.C.Board.
2.From the surface of the reel pulse P.C.Board parts, remove the two pawls "h" and "i" retaining the solenoid.

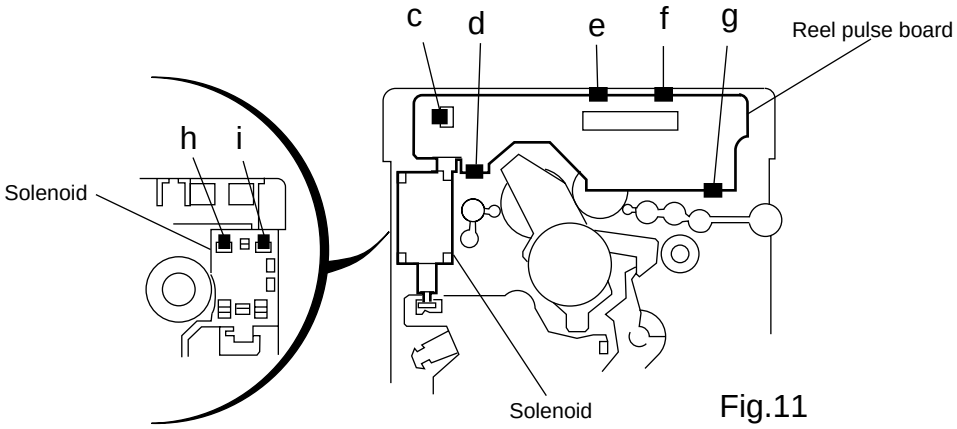


Fig.11

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 110 to 240 V (50/60 Hz)
Standard output .....Speaker: 0.775 V/6ohm
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: JA303
Load resistance 6ohm

■ 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

■ 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 0.082μF 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.

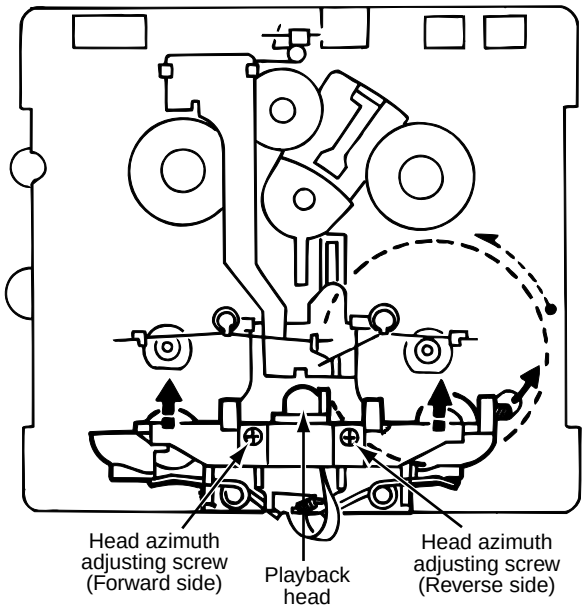
7. The speaker's minus terminal cannot be connected to ground when using a BTL format amplifier. Therefore, do not connect any type of ground wire to this terminal. The OTL format is used with this system.

8. Use a large wire to connect to the dummy impedance generator when measuring the output.

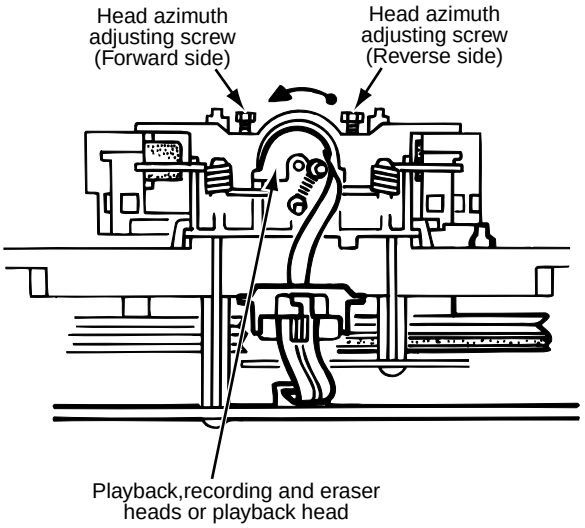
9. Be sure to use a band pass filter (DV-12) when using mixed tape.

■ Arrangement of Adjusting Positions

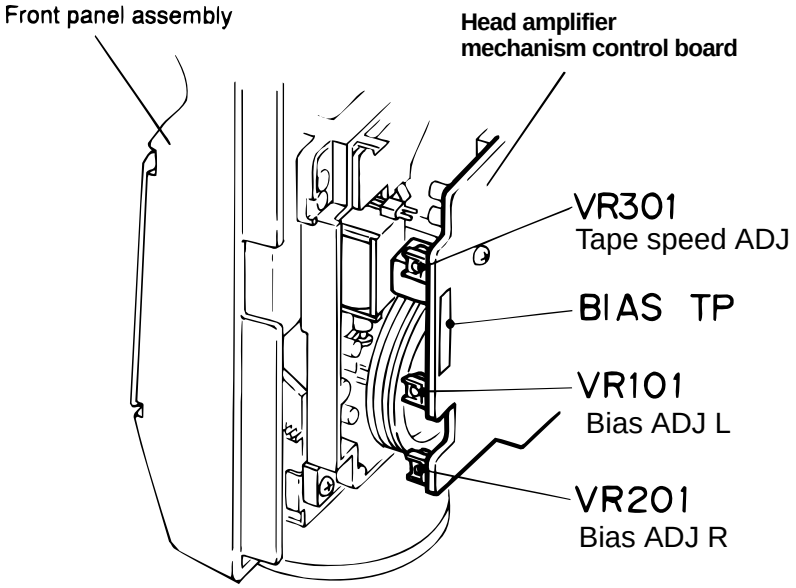
Cassette mechanism section (Mechanism A section)



Cassette mechanism section (Back side)



Cassette Mechanism Unit Section



■ Tape Recorder Section

Items	Measurement conditions	Measurement method	Standard values	Adjusting positions
Confirmation of head angle	Test tape :VT703(10kHz) Measurement output terminal :Speaker terminal Speaker R (Load resistor:3ohm) :Headphone terminal	1.Playback the test tape VT703(10kHz). 2.With the playback mechanism or recording & playback mechanism, adjust the head azimuth screw so that the forward and reverse output levels become maximum.After adjustment,lock the head azimuth at least by half a turn. 3.In either case,this adjustment should be performed in both the forward and reverse directions with the head azimuth screw.	Maximum output	Adjust the head azimuth screw only when the head has been changed.
Confirmation of tape speed	Test tape :VT712(3kHz) Measurement output terminal :Headphone terminal	<Constant speed> Adjust VR301 so that the frequency counter reading becomes 3,000Hz ± 60Hz when playing back the test tape VT712(3kHz)with the playback mechanism or playback and recording mechanism after ending forward winding of the tape.	Tape speed of decks (A and B) :3,000Hz ± 60Hz	VR301

■ Reference Values for Confirmation items

Items	Measurement conditions	Measurement method	Standard values	Adjusting positions
Double tape speed	Test tape :VT712(3kHz) Measurement output terminal :Speaker terminal Speaker R (Load resistance :3ohm) measurement output terminal :Headphone terminal	After setting to the double speed motor, confirm that the frequency counter reading becomes 4,800+400/-300Hz when the test tape VT712 (3kHz) has been play back with the playback mechanism.	4,800+400/-300Hz	Playback mechanism side
Difference between the forward and reverse speed. P.mecha and R/P mecha speed		When the test tape VT712(3kHz) has been played back with the playback mechanism or recording and playback mechanism at the beginning of forward winding, the frequency counter reading of the difference between both of the mechanisms should be 6.0Hz or less.	60Hz or less	Both the playback and recording & playback mechanism
Wow & flutter	Test tape :VT712(3kHz) Measurement output terminal :Headphone terminal	When the test tape VT712(3kHz) has been played back with the playback mechanism or recording and playback mechanism at the beginning of forward winding the frequency counter reading of wow & flutter should be 0.25% or less(WRMS).	with in 0.25% JIS(WTD)	Both the playback and recording & playback mechanism

■ Electrical Performance

Items	Measurement conditions	Measurement method	Standard values	Adjusting positions
Adjustment of recording bias current (Reference value)	*Mode : Forward or reverse mode *Recording mode *Test tape :AC-514 and AC-225 Measurement output terminal :Both recording and headphone terminals	1.With the recording and playback mechanism, load the test tapes(AC-514 to TYP Ⅱ and AC-225 to TYP Ⅰ),and set the mechanism to the recording and pausing conditions in advance. 2.After connecting 100ohm in series to the recorder head,measure the bias current with a valve voltmeter at both of the terminals. 3.After resetting the [PAUSE] mode,start recording. At this time,adjust VR101 for LcH and VR201 for RcH so that the recording bias current values become 4.0 μA (TYP Ⅰ) and 4.20 μA(TYP Ⅱ).	AC-225 :4.20 μA AC-514 :4.0 μA	LcH :VR101 RcH :VR201
Adjustment of recording and playback frequency characteristics	Reference frequency :1kHz and 10kHz (REF:-20dB) Test tape :TYP Ⅱ AC-514 Measurement input terminal :OSC IN	1.With the recording and playback mechanism,load the test tape(AC-514 to TYP Ⅱ),and set the mechanism to the recording and pausing condition in advance. 2.While repetitively inputting the reference frequency signal of 1kHz and 10kHz from OSC IN, record and playback the test tape. 3.While recording and playing back the test tape in TYP Ⅱ,adjust VR101 for LcH and VR201 for RcH so that the output deviation between 1kHz and 10kHz becomes -1dB±2dB.	Output deviation between 1kHz and 10kH :-1dB±2dB	LcH :VR101 RcH :VR201

■ Reference Values for Electrical Function Confirmation Items

Items	Measurement conditions	Measurement method	Standard values	Adjusting positions
Recording bias frequency	*Recording and playback side forward or reverse *Test tape :TYP Ⅱ AC-514 *Measurement terminal BIAS TP on P.C.board	1.While changing over to and from BIAS 1 and 2, confirm that the frequency is changed. 2.With the recording and playback mechanism. load the test tape (AC-514 to TYP Ⅱ),and set the mechanism to the recording and pausing conditions in advance. 3.Confirm that the BIAS TP frequency on the P.C.board is 100kHz±6kHz.	100kHz +9kHz -7kHz	
Eraser current (Reference value)	*Recording and playback side forward or reverse *Recording mode *Test tape :AC-514 and AC-225 Measurement terminal Both of the eraser head	1.With the recording and playback mechanism, load the test tapes(AC-514 to TYP Ⅱ and AC-225 to TYP Ⅰ),and set the mechanism to the recording and pausing condition in advance. 2.After setting to the recording conditions,connect 1Mohm in series to the eraser head on the recording and playback mechanism side,and measure the eraser current from both of the eraser terminal.	TYP Ⅱ :120mA TYP Ⅰ :75mA	

Flow of functional operation until TOC read

Power ON

Power Key

Slider turns REST SW ON.

Check Point

Check that the voltage at the pin 5 of CN602 is 0V (a moment)?

Automatic tuning of TE offset

Laser ON

Check that the voltage at the pin3 of IC601 + side is + 5V?

Detection of disc

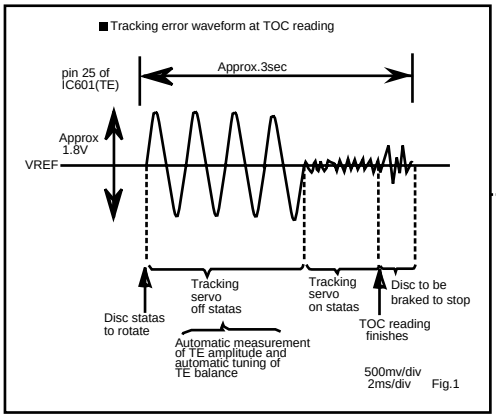
Automatic tuning of Foucus offset

Automatic measurement of Focus A-curve amplitude

Confirm that the Focus error S-cuve siganl at the pin27 of IC601 is approx.2Vp-p

Disc is rotated

Confirm that the siganl from pin24 IC603 is 0V as a accelerated pulse during approx.400ms.



Focus servo ON (Tracking servo ON)

Automatic measurement of Tracking error amplitude

Confirm the waveform of the Tracking error signal at the pin25 of IC601 (R612) (See fig-1)

Automatic tuning of Tracking error balance

Automatic tuning of Focus error balance

Automatic tuning of Focus error gain

Automatic tuning of Tracking error gain

TOC reading

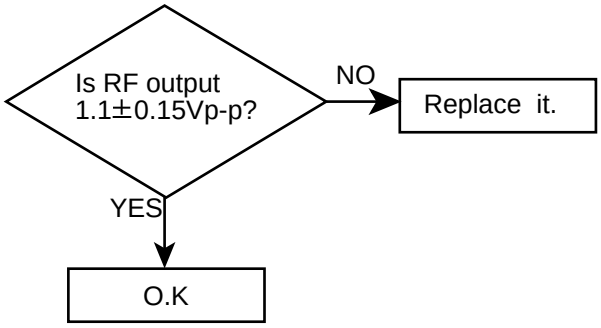
Confirm the eys-pattern at the lead of TP602

Play a disc

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.

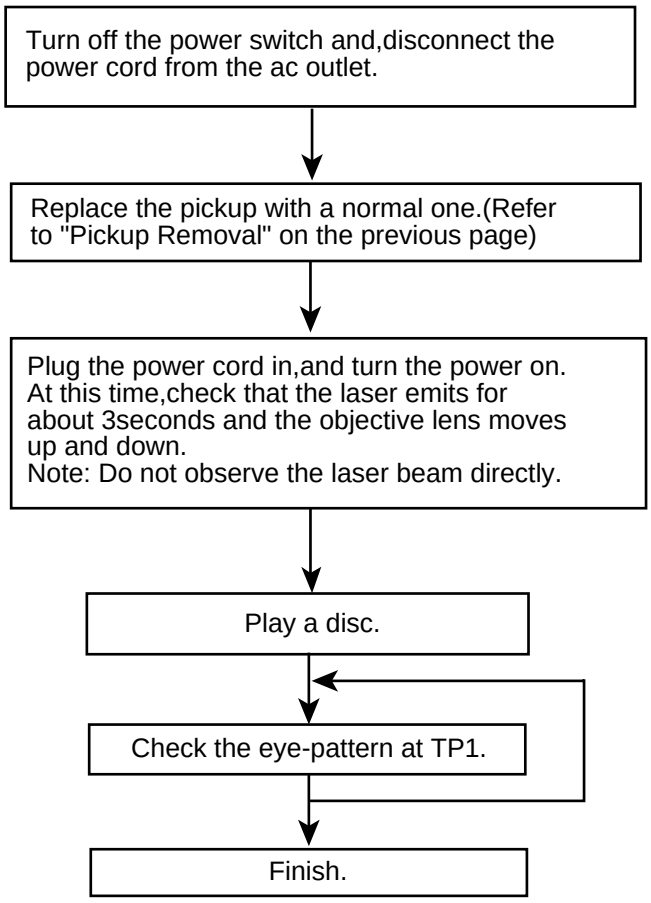
(2) Life of the laser diode (Fig.1)
When the life of the laser diode has expired, the following symptoms wil appear.
(1) The level of RF output (EFM output:amplitude of eye pattern) will below.



(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.

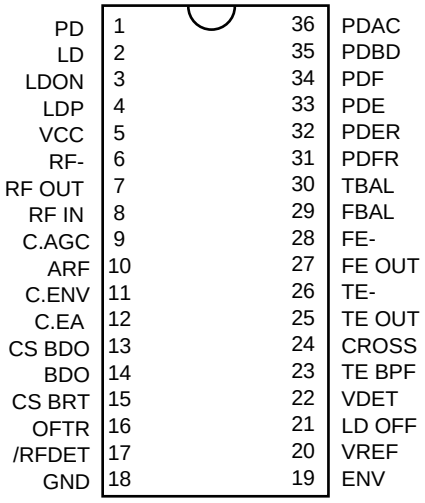
Replacement of laser pickup



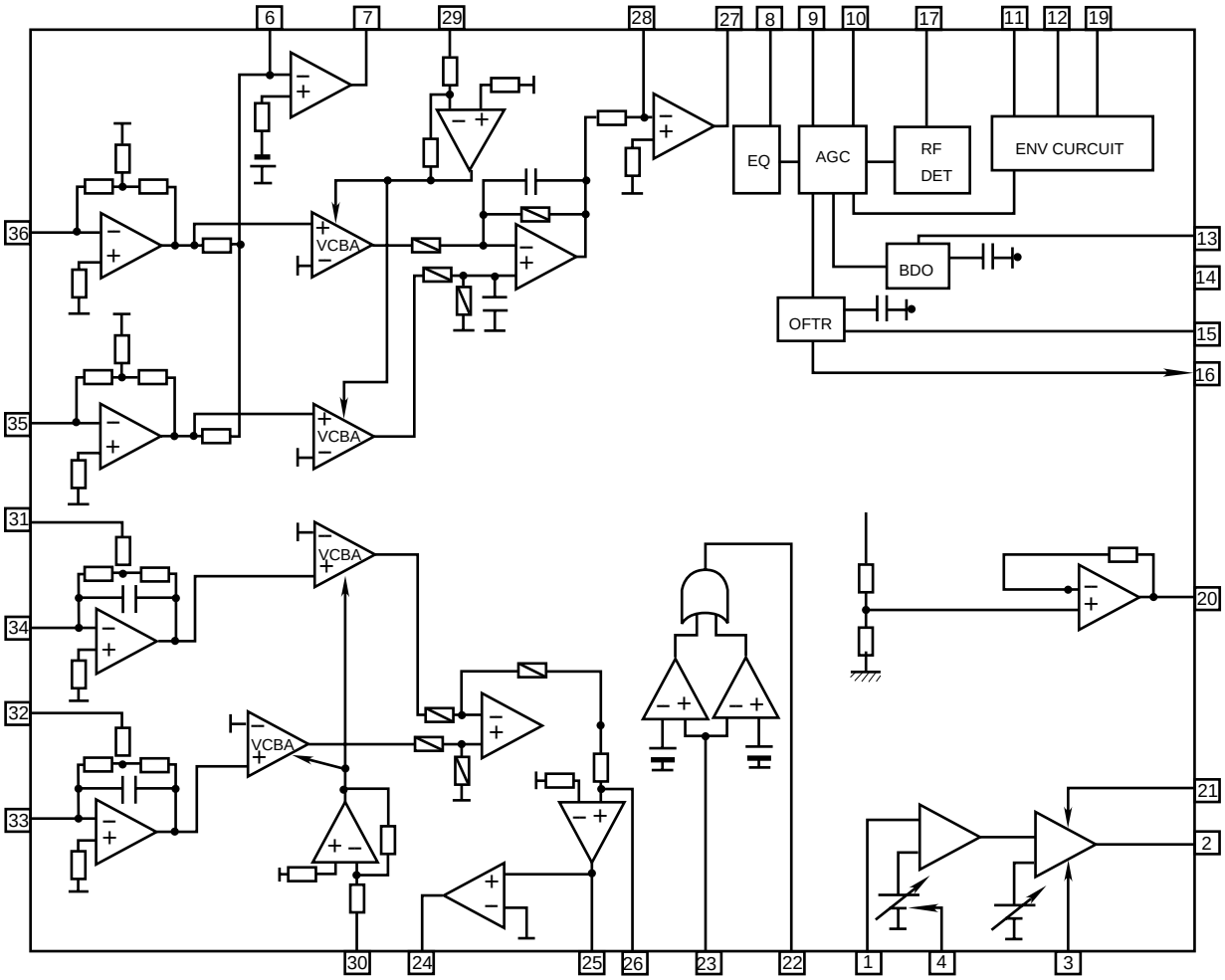
Description of major ICs

■ AN8806SB (IC601) : RF&Servo AMP

1.Pin layout



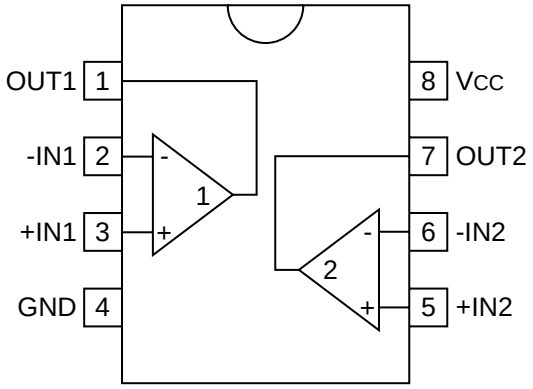
2.Block diagram



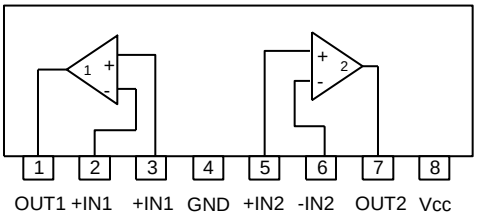
3. Pin function

Pin No.	Symbol	I/O	Description
1	PD	I	APC amp input terminal
2	LD	O	APC amp output terminal
3	LD ON	I	APC ON/OFF control terminal
4	LDP	--	Connect to ground
5	VCC	--	Power supply
6	RF-	I	Inverse input pin for RF amp
7	RF OUT	O	RFamp output
8	RF IN	I	RF input
9	C.AGC	I/O	Connecting pin of AGC loop filter
10	ARF	O	RF output
11	C.ENV	I/O	A capacitor is connected to this terminal to detect the envelope of RF signal
12	C.EA	I/O	A capacitor is connected to this terminal to detect the envelope of RF signal
13	CS BDO	I/O	A capacitor is connected to detect the lower envelope of RF signal
14	BDO	O	BDO output pin
15	CS BRT	I/O	A capacitor is connected to detect the lower envelope of RF signal
16	OFTR	O	Of-track status signal output
17	/RFDET	O	RF detection signal output
18	GND	--	Ground
19	ENV	O	Envelope output
20	VREF	O	Reference voltage output
21	LD OFF	--	Connect to ground
22	VDET	O	Vibration detection signal output
23	TE BPF	I	Input pin of tracking error through BPF
24	CROSS	O	Tracking error cross output
25	TE OUT	O	Tracking error signal output
26	TE-	I	Inverse input pin for tracking error amp
27	FE OUT	O	Output pin of focus error
28	FE-	I	Inverse input pin for focus error amp
29	FBAL	I	Focus balance control
30	TBAL	I	Tracking balance control
31	PDFR	I/O	F I-V amp gain control
32	PDER	I/O	E I-V amp gain control
33	PDE	I	I-V amp input
34	PDF	I	I-V amp input
35	PD BD	I	I-V amp input
36	PD AC	I	I-V amp input

■ BA15218F (IC852) : OP AMP.

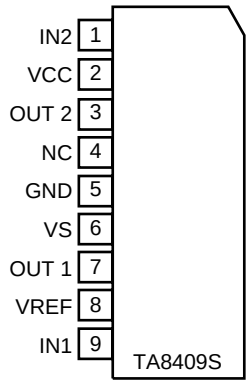


■ BA15218N (IC301,303,305,307) : Dual Ope. Amp.



■ TA8409S (IC851,852) : Motor driver

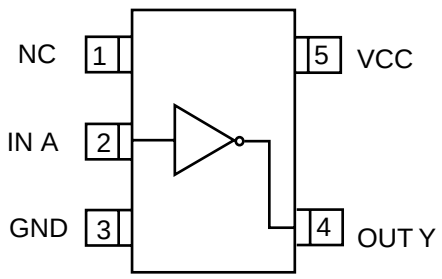
1.Pin layout



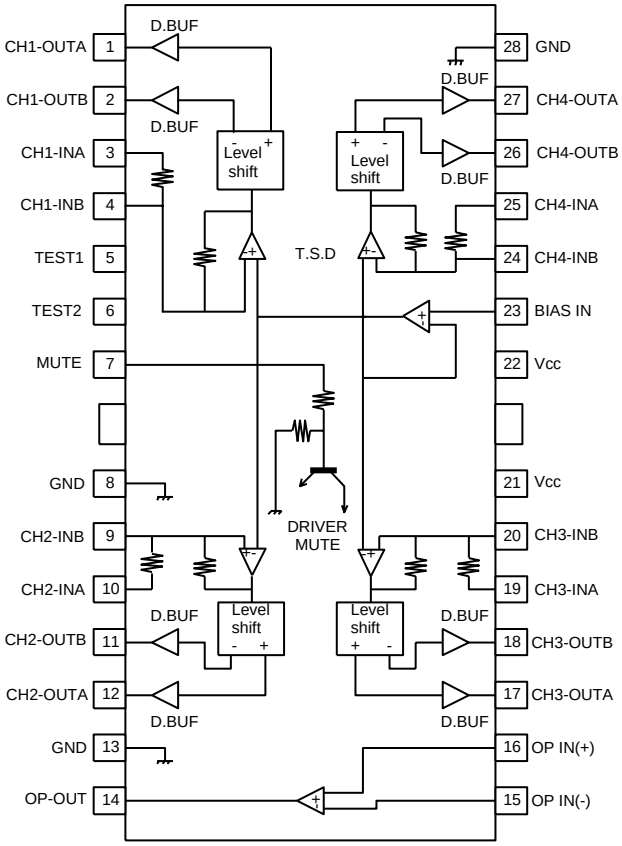
2.Pin function

INPUT		OUTPUT		MODE
IN1	IN2	OUT1	OUT2	MOTOR
0	0	∞	∞	STOP
1	0	H	L	CW/CCW
0	1	L	H	CCW/CW
1	1	L	L	BRAKE

■ TC7SH04FU (IC108) : CMOS Inverter

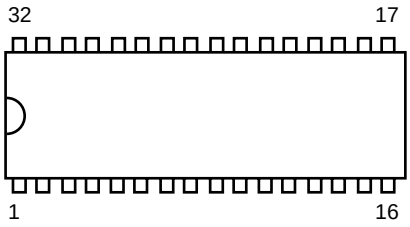


■ BA6897FP (IC801) : 4channel driver

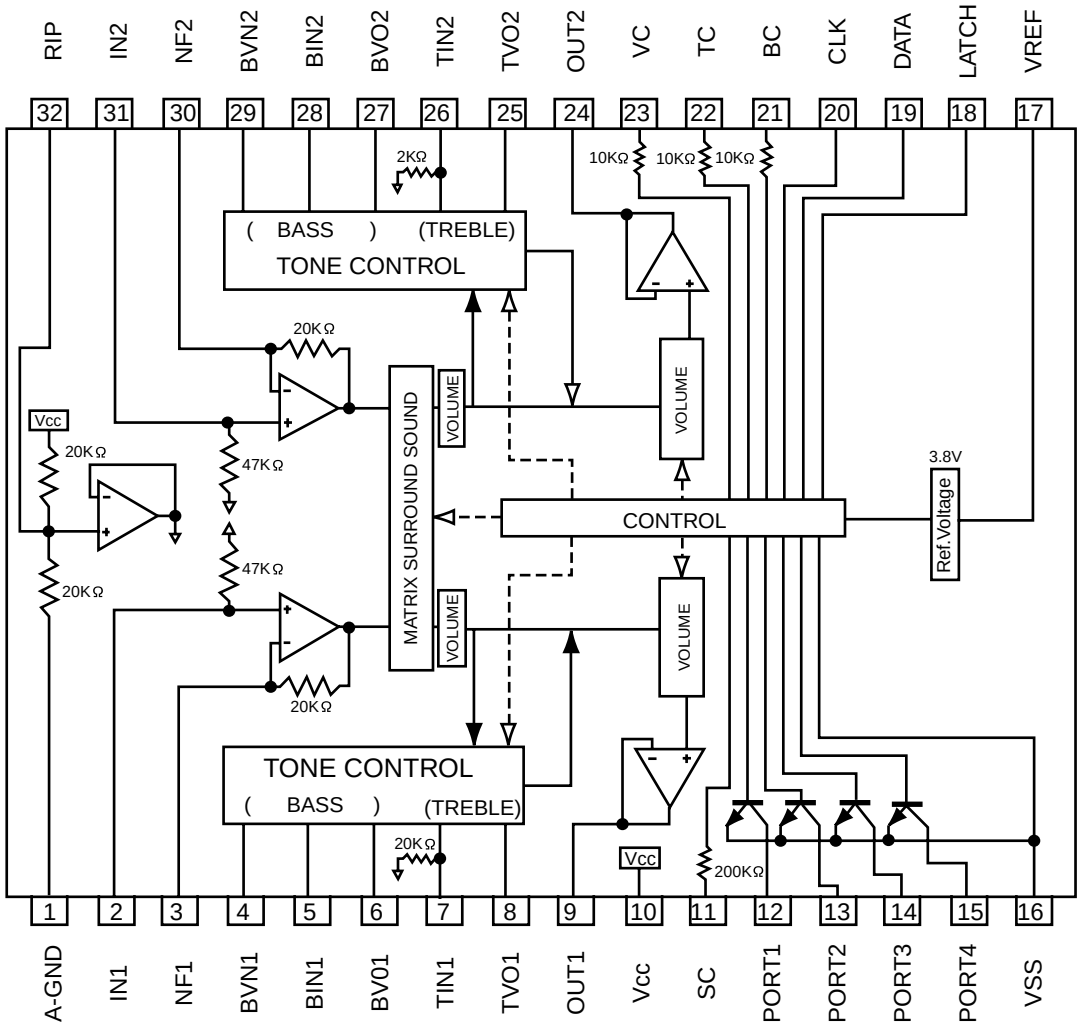


BH3854 (IC306) : E.Volume

1.Terminal layout



2.Block diagram



◎ Volume, bass treble and surround can be also controlled externally by giving DC voltage through VC (volume control) terminal, BC (bass control) terminal, TC (treble control) terminal and SC (surround control) terminal.

◎ Impedance of VC, TC and BC terminals is 10 K Ω (Typ.).

◎ Impedance of SC terminal is 200K Ω (Typ.).

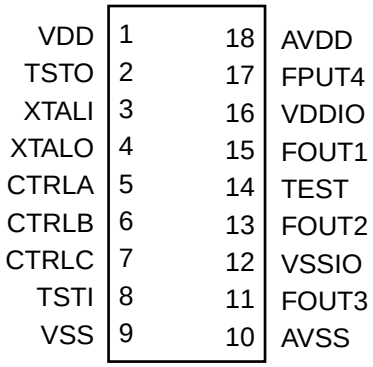
3. Pin function

BH3854

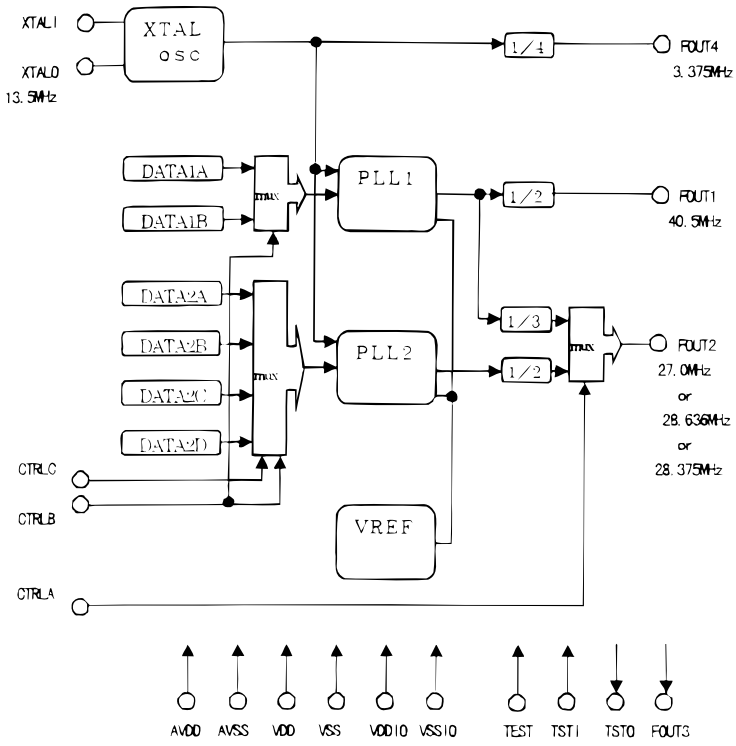
PIN	PIN Name	Function	PIN	PIN Name	Function
1	A-GND	Analog system ground	17	VREF	Terminal for 3.8V reference voltage output
2	IN1	Terminal for 1ch volume input	18	LATCH	Terminal to receive latch data
3	NF1	Terminal for gain adjustment of input step AMP	19	DATA	Terminal to receive data
4	BVN1	Terminal for connection of 1ch low-frequency filter	20	CLK	Terminal to receive clock
5	BIN1	Terminal for connection of 1ch low-frequency filter	21	BC	Terminal for time constant attachment for switching shock protection
6	BV01	Terminal for connection of 1ch low-frequency filter			
7	TIN1	Terminal for connection of 1ch high-frequency filter	22	TC	Terminal for time constant attachment for switching shock protection
8	TV01	Terminal for connection of 1ch high-frequency filter			
9	OUT1	Terminal for 1ch volume output	23	VC	Terminal for time constant attachment for switching shock protection
10	Vcc	Terminal for power supply			
11	SC	Terminal for time constant attachment for switching shock protection	24	OUT2	Terminal for 2ch volume output
			25	TV02	Terminal for connection of 2ch high-frequency filter
12	PORT1	Terminal for port output	26	TIN2	Terminal for connection of 2ch high-frequency filter
13	PORT2	Terminal for port output	27	BV02	Terminal for connection of 2ch low-frequency filter
14	PORT3	Terminal for port output	28	BIN2	Terminal for connection of 2ch low-frequency filter
15	PORT4	Terminal for port output	29	BVN2	Terminal for connection of 2ch low-frequency filter
16	VSS	Digital system ground	30	NF2	Terminal for gain adjustment of input step AMP
			31	IN2	Terminal for 2ch volume output
			32	RIP	Terminal for filter

■ BU2173F (IC105) : VCO

1.Terminal Layout



2.Block diagrams



3.Pin function

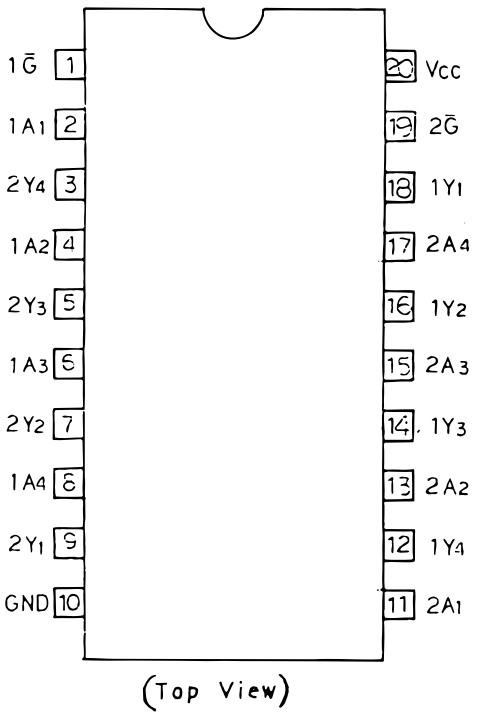
Pin No.	Symbol	I/O	Function
1	VDD	-	Digital VDD.
2	TSTO		Use open this pin for normal operation.
3	XTALI	I	Reference oscillation input.
4	XTALO	O	Reference oscillation output.
5	CTRLA		Frequency select for V-CD/CD-G.
6	CTRLB		Force H for normal operation.
7	CTRLC		PAL/NTSC select for CD-G mode.
8	TSTI		Force L for normal operation.
9	VSS	-	Digital GND.
10	AVSS	-	Analog GND.
11	FOUT3		Use open this pin for normal operation.
12	VSSIO	-	I/O GND.
13	FOUT2	O	Clock output (2).
14	TEST		Force L for normal operation.
15	FOUT1	O	Clock output (1).
16	VDDIO	-	I/O VDD.
17	FOUT4	O	Clock output (4).
18	AVDD	-	Analog VDD.

■ CL480-F1 (IC101) : MPEG-1 Audio / Video decoder

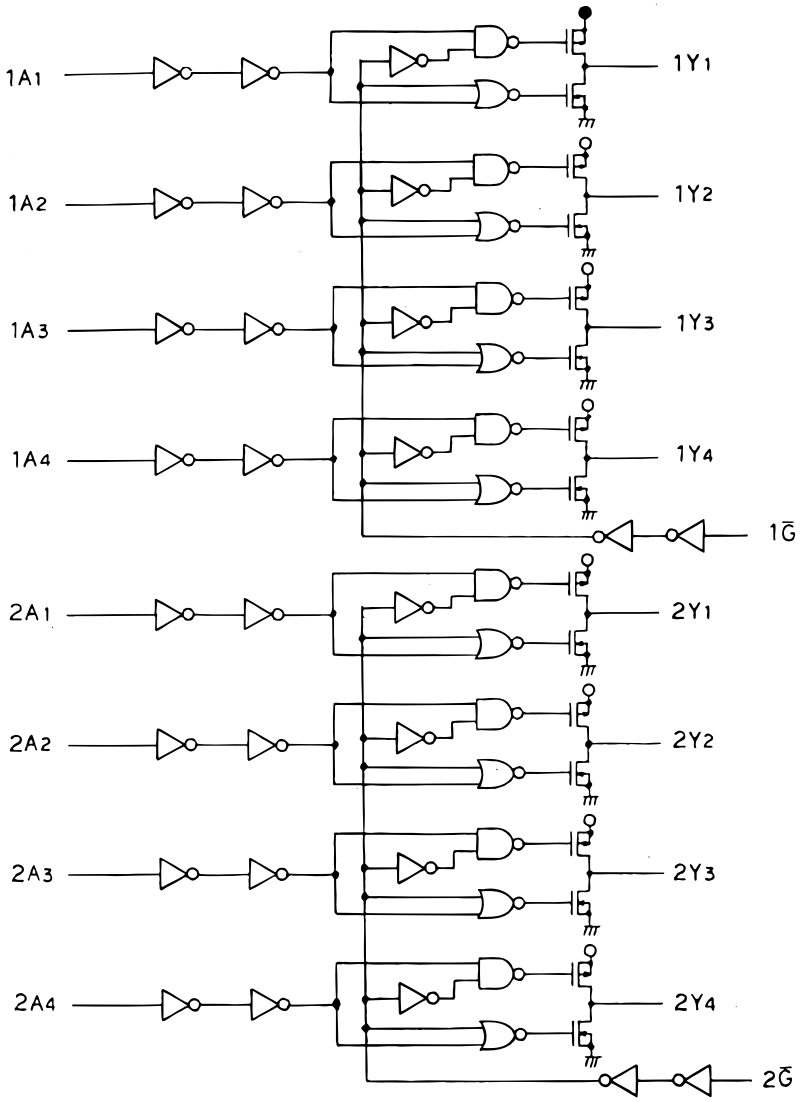
Pin No.	Symbol	I/O	Function	Pin No.	Symbol	I/O	Function
1	HA2	I	Host address.	78～80	VD10～12	O	Video data terminal (G24/Y24)
2	DS	I	Data strobe terminal.	81	IOVDD	-	Power supply for Input/Output.
3	W/R	I	I/O read terminal.	82～84	VD13～15	O	Video data terminal (G57/Y57)
4	IRQ	O	Interact terminal.	85	CKTVSS	-	Connect to GND.
5	DTACK	O	Acknowledge data output.	86～89	VD16～19	O	Video data terminal(B0B3)
6	HD0	I/O	Host data terminal.	90	IOVSS	-	Ground terminal for Input/Output.
7	IO VDD	-	Power supply for input/output.	91～94	VD20～23	O	Video data terminal(B47)
8,9	HD1,2	I/O	Host data terminal.	95	VSYNC	I/O	Vertical comparator/Composite
10	CKT VSS	-	Connected to GND.				comparator output.
11～15	HD3～7	I/O	Date data terminal.	96	HSYNC	I/O	Horizontal synchronizing signal.
16	IOVSS	-	Ground terminal for Input/Output.	97	VOE	I	Video output enable signal.
17	TEST	I	Test terminal.	98	VCOVDD	-	Power supply of VCO.
18	XTLVSS	I	Oscillator ground terminal.	99	VCLK	I/O	Video clock terminal.
19	XTLIN	I	Oscillator input terminal.	100	VCOVSS	-	Ground of VCO.
20	XTLOUT	O	Oscillator output terminal.	101	RESET	I	Reset signal input.
21	XTLVDD	-	Power supply for oscillator.	102	IOVSS	-	Ground terminal for Input/Output.
22	CKTVDD	-	Power supply.	103	C2PO	I	Data error flag input.
23～28	MD0～5	I/O	DRAM data / ROM data terminal.	104	CDLRCK	I	L/R word clock input.
29	IOVDD	-	Power supply for Input/Output.	105	CDDATA	I	Bit serial data input.
30,31	MD6,7	I/O	DRAM data/ROM data terminal.	106	CDBCK	I	Bit clock output.
32,33	MCE01	O	Chip enable output for ROM bank.	107	DALRCK	O	L/R clock output.
34～37	MD8～11	I/O	DRAM data/ROM data terminal.	108	DADATA	O	Bit serial PCM audio signal output.
38	IOVSS	-	Ground terminal for Input/Output.	109	DABCK	O	Bit clock output.
39～42	MD12～15	I/O	DRAM data/ROM address terminal.	110	IOVDD	-	Power supply for Input/Output.
43	5VVDD	-	Power supply (+5V).	111	XCK	I	Bit clock input terminal.
44	LCAS	O	DRAM LCAS/ROM address terminal.	112	CKTVDD	-	Power supply.
45	LCASIN	I	DRAM LCAS input.	113	PIO12	O	Interact 2 signal output.
46	CKTVSS	-	Connect to GND.	114	PIO11	O	Non connect.
47	MWE	O	DRAM write enable signal output.	115	PIO10	I	Host enable signal input.
48	UCAS	O	DRAM UCAS/ROM address terminal.	116	PIO9	I	Boot ROM enable signal input.
49	IOVDD	-	Power supply for Input/Output.	117	PIO8	O	Non connect.
50	UCASIN		DRAM UCAS input terminal.	118	PIO7	O	DAC emphasis signal output.
51,52	RAS0,1	O	DRAM RAS0,1 terminal.	119	PIO6	I	CD-DA emphasis signal output.
53～57	MA9～5	O	DRAM data/ROM address terminal.	120	PIO5	O	Non connect.
58	IOVSS	-	Ground terminal for Input/Output.	121	PIO4	O	FMV detect signal output.
59～63	MA4～0	O	DRAM data/ROM address terminal.	122	PIO3	O	CD-DA video CD select signal
64	PIO0	O	ROM address extension terminal.				output Low:Video CD.
65	IOVDD	-	Power supply for Input/output.	123	5VVDD	-	Power supply (+5V).
66～72	VD0～6	O	Video data terminal	124	PIO2	O	Non connect.
			(R6/CrCb6/YCrCb066)	125	IOVSS	-	Ground for Input/Output.
73	IOVSS	-	Ground terminal for Input/Output.	126	PIO1	O	Non connect.
74～76	VD7～9	O	Video data terminal	127	HA0	-	Host address input.
			(R7/CrCb7/YCrCb7)(G0,1/Y0,1)	128	HA1	-	Host address input.
77	CKTVDD	-	Power supply.				

■ HD74HCT244 (IC113) : Buffer

1. Terminal layout

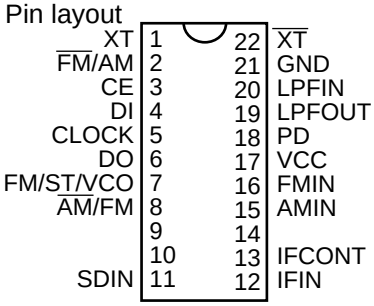


2. Block diagram

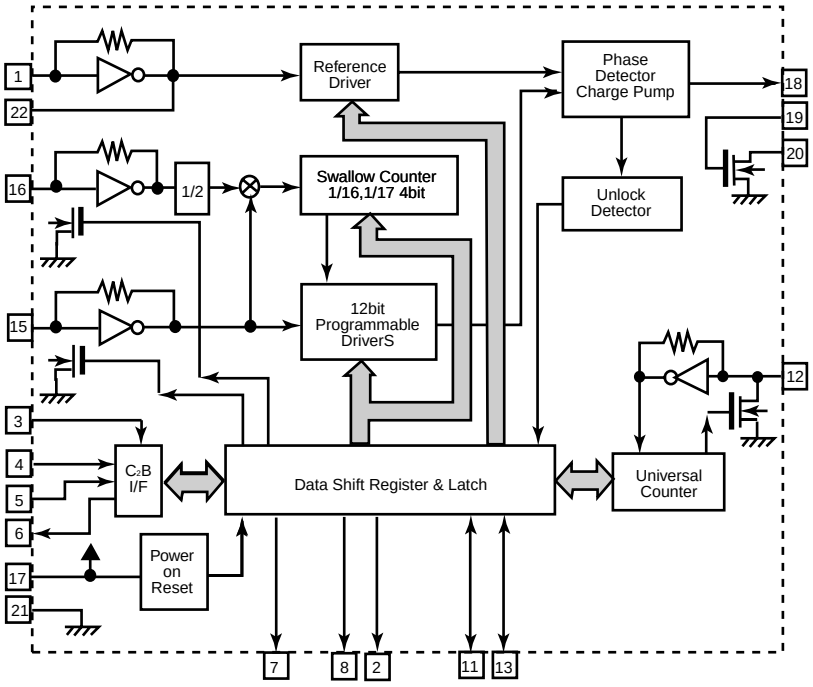


■ LC72136 (IC2) : PLL Frequency Synthesizer

1. Pin layout



2. Block diagram

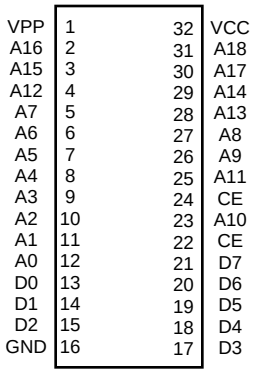


3. Pin function

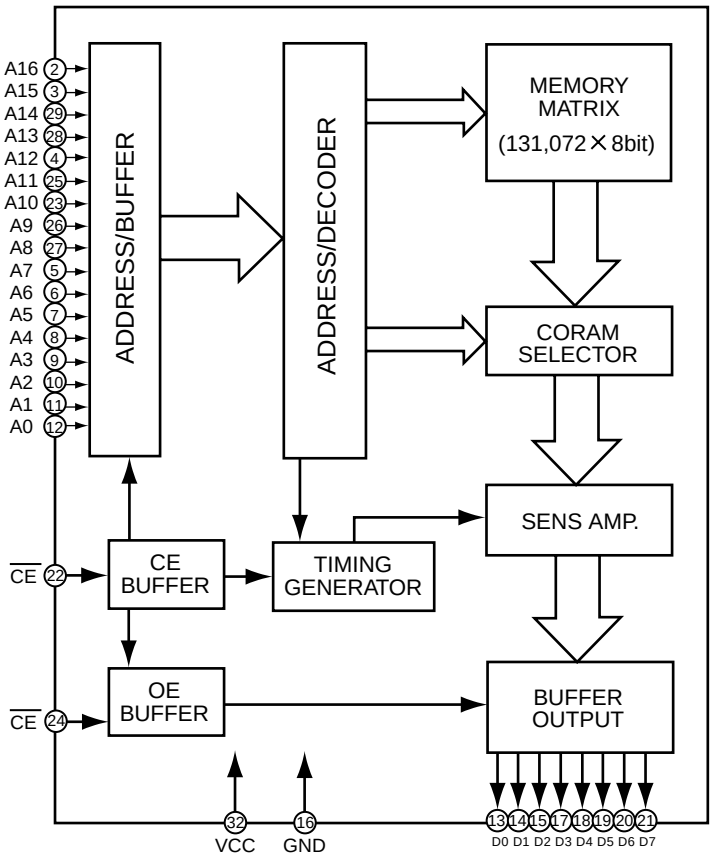
Pin No.	Symbol	I/O	Function	Pin No.	Symbol	I/O	Function
1	XT	I	X'tal oscillator connect (75kHz)	12	IFIN	I	IF counter signal input
2	$\overline{FM}$/AM	O	LOW:FM mode	13	IFCONT	O	IF signal output
3	CE	I	When data output/input for 4pin(input) and 6pin(output): H	14		-	Not use
4	DI	I	Input for receive the 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	LPFOUT	O	Output for active lowpassfilter of PLL
9	LW	I/O	Input/output port	20	LPFIN	I	Input 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	$\overline{XT}$	I	X'tal oscillator(75KHz)

■ LH531HEG (IC102) : 1M ROM

1.Terminal Layout



2.Block diagram

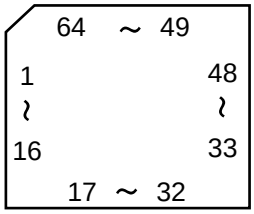


3.Pin Function

Pin No.	Symbol	I/O	Function
1	VPP	-	Power supply.
2	A16	I	Adress input.
3	A15	I	Adress input.
4	A12	I	Adress input.
5～12	A7A0	I	Adress input.
13～15	D0D2	O	Data output.
16	GND	-	Connect to GND
17～21	D3D7	O	Data output.
22	CE	I	Chip enable input.
23	A10	I	Adress input.
24	CE	I	Chip enable input.
25	A11	I	Adress input.
26,27	A9,A8	I	Adress input.
28,29	A13,A14	I	Adress input.
30,31	D17,D18	O	Data output.
32	VCC	-	Power supply.

■ MN171601AK8J2 (IC111) : HOST Micro Computer

1.Terminal Layout

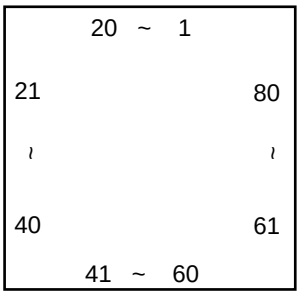


2.Pin Function

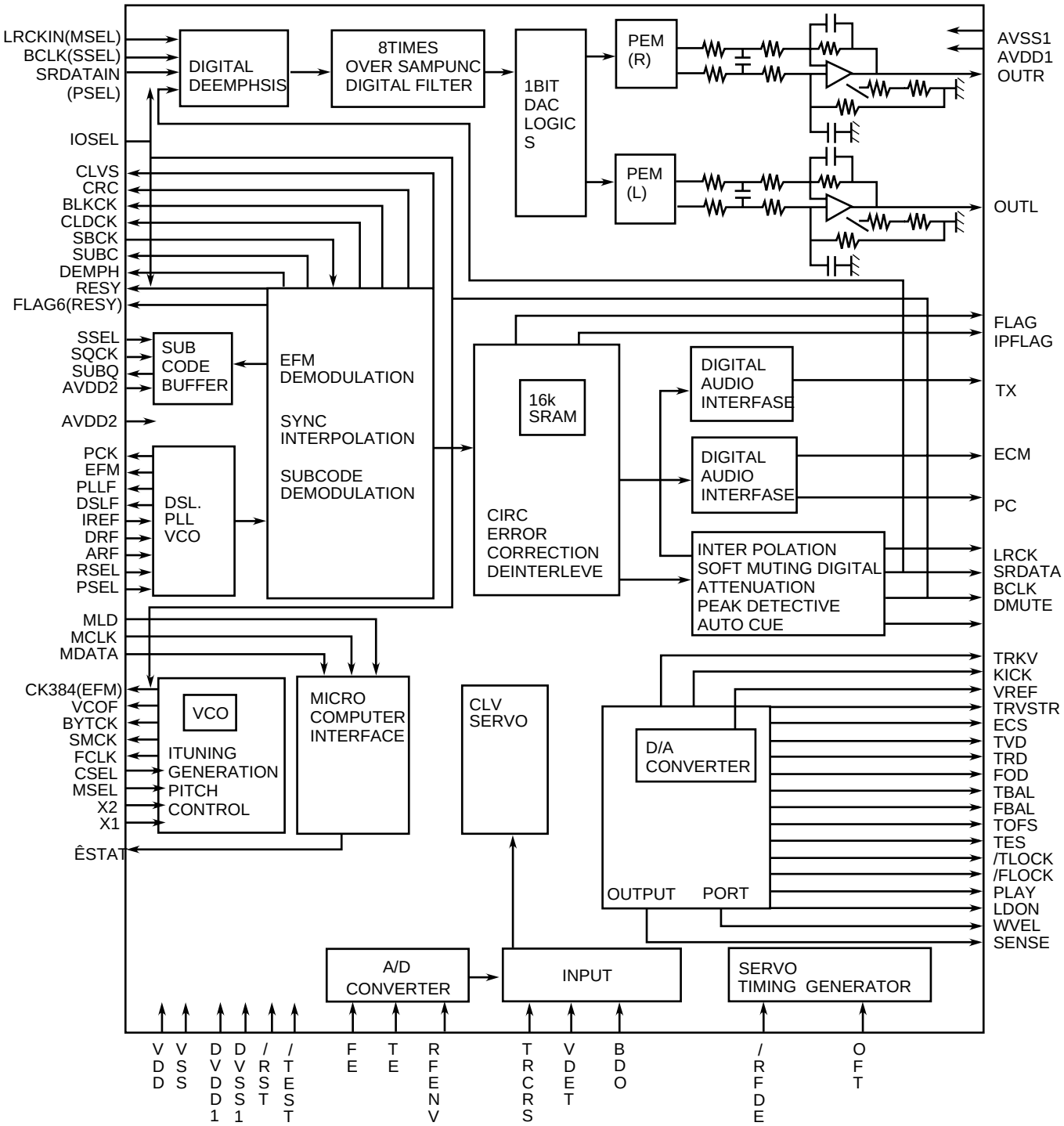
Pin No.	Symbol	I/O	Function
1	480RST	O	Reset signal output.
2	MREQ	I	Input the transfer request data signal.
3	ACTINT	I	Interact 2 signal input.
4	GDET	I	CD-G detect terminal H:CD-G
5	GND	-	Connected to GND.
6	DTACK	I	Acknowledge signal input.
7	GND	-	Connect to GND.
8	GND	-	Connect to GND.
9	DIR	I/O	Input/Output control for IC114.
10	N/PAL	-	Not use.
11	RGB	O	Video out control signal (H:RGB L:composite)
12	W/R	I/O	Read/Write signal input/output.
13～15	HA02	O	Address signal output for MPEG LSI.
16	DS	O	Data strobe signal output.
17～24	HD07	I/O	Data terminal for MPEG LSI.
25～39	SA014	O	SRAM address signal output.
40	SCS	O	SRAM chip select signal output.
41～48	SD18	I/O	SRAM data Input/Output terminal.
49	SR/W	I/O	SRAM read/write signal input/output.
50	PAL60	-	Not use.
51	RESET	I	Reset signal input.
52	X1	-	Non connect
53	X2	-	Non connect.
54	VSS	-	Connect to GND.
55	OSC2	-	Non connect.
56	OSC1	I	Clock input terminal.
57	VDD	-	Power supply.
58	HREQ	O	Communication signal output.
59	SRCLK	O	Clock signal for data request.
60	M2HDT	O	Serial data output.
61	M2MDT	I	Serial data input.
62	HRDY	O	Communication signal output.
63	VCD/G	O	Video swith switching signal output.
64	PALCDG	O	CD-G PAL/NTSC clock select terminal.

■ MN35510 (IC651) : Digital servo & digital signal processor

1. Terminal Layout



2.Block Diagram

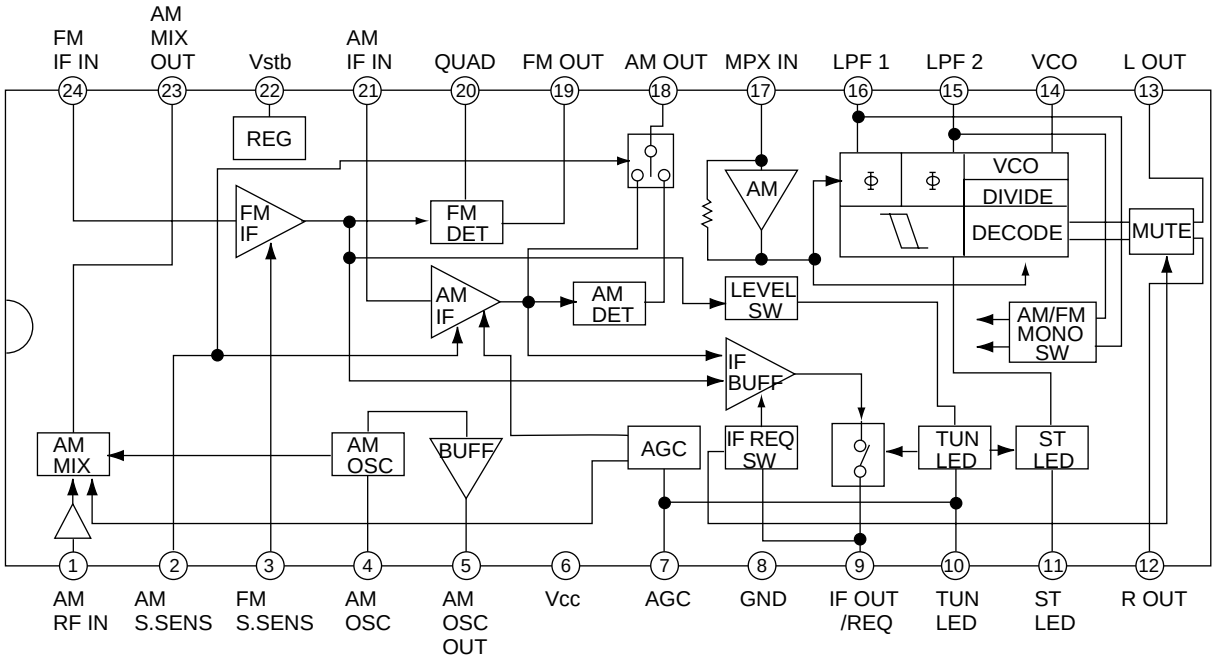


3. Description

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	Micom command clock signal input (Data is latched at signal's rising point)	47	DSLF	I/O	Loop filter pin for DSL
8	MDATA	I	Micom command data input	48	PLLF	I/O	Loop filter pin for PLL
9	MLD	I	Micom 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

■ TA2057N (IC1) : FM/AM IF AMP & Detector

1.Block Diagrams

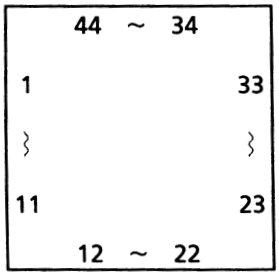


2.Pin Function

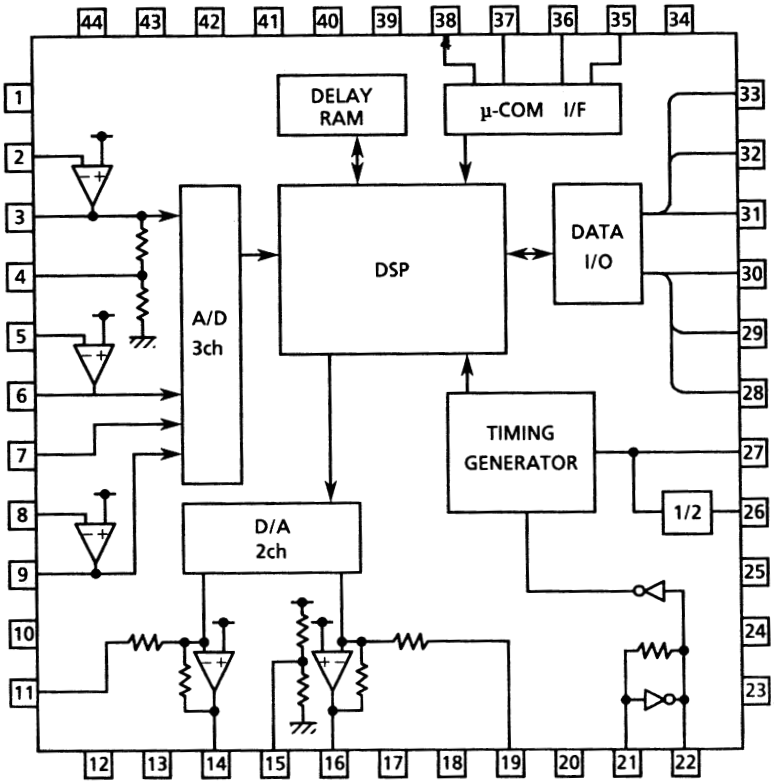
Pin No.	I/O	Symbol	Function	Pin No.	I/O	Symbol	Function
1	I	AM RF	AMRF signal input	13	O	Lch OUT	Output Lch
2		AM S.SENS		14	O	VCO	Voltage controlled terminal
3		FM S.SENS		15	O	LPF2	When voltage of terminal is MONO at "H" and ST at "L"
4	-	AM OSC	AM local oscillation circuit				
5	O	AM OSC OUT	AM local oscillation signal output	16	O	LPF1	When voltage of terminal is AM at "H" and FM at "L"
6	-	VCC	Power supply				
7	I	AGC	AGC voltage input terminal	17	I	MPX IN	Multi plex signal input
8	-	GND	Connect to GND	18	O	AM OUT	AM detection signal output
9	O	IF OUT	IF REQ signal output to IC2	19	O	FM OUT	FM detection signal output
10	O	TU IND	Indicator drive output when tuning	20	I	FM QUAD	Bypass to FMIF
11	O	ST IND	Stereo indicator output "H"mono . "L"stereo	21	I	AM IF IN	Input of AMIF signal
				22	-	Vst	Fixed voltage output terminal
12	O	Rch OUT	Output Rch	23	O	AM MIX OUT	Output terminal for AM mixer
				24	I	FM IF IN	Input of FMIF signal

■ TC9409BF (IC601) : KARAOKE DSP

1. Terminal Layout



2. Block Diagram

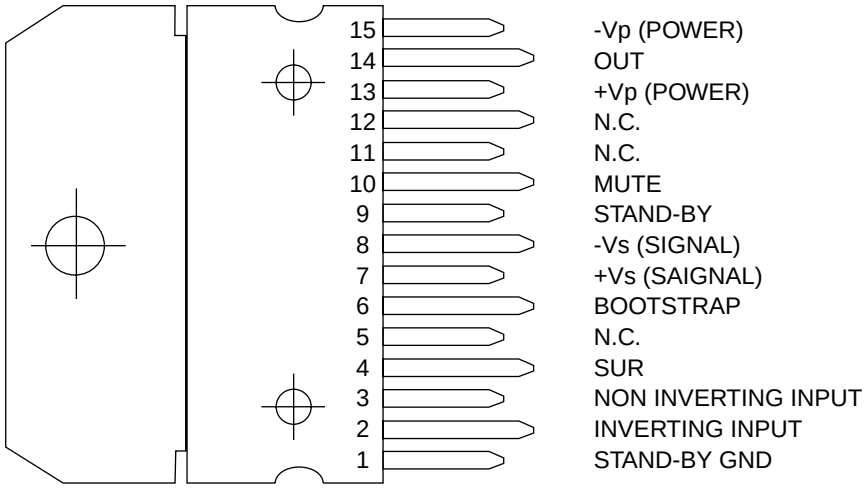


3. Pin Functions

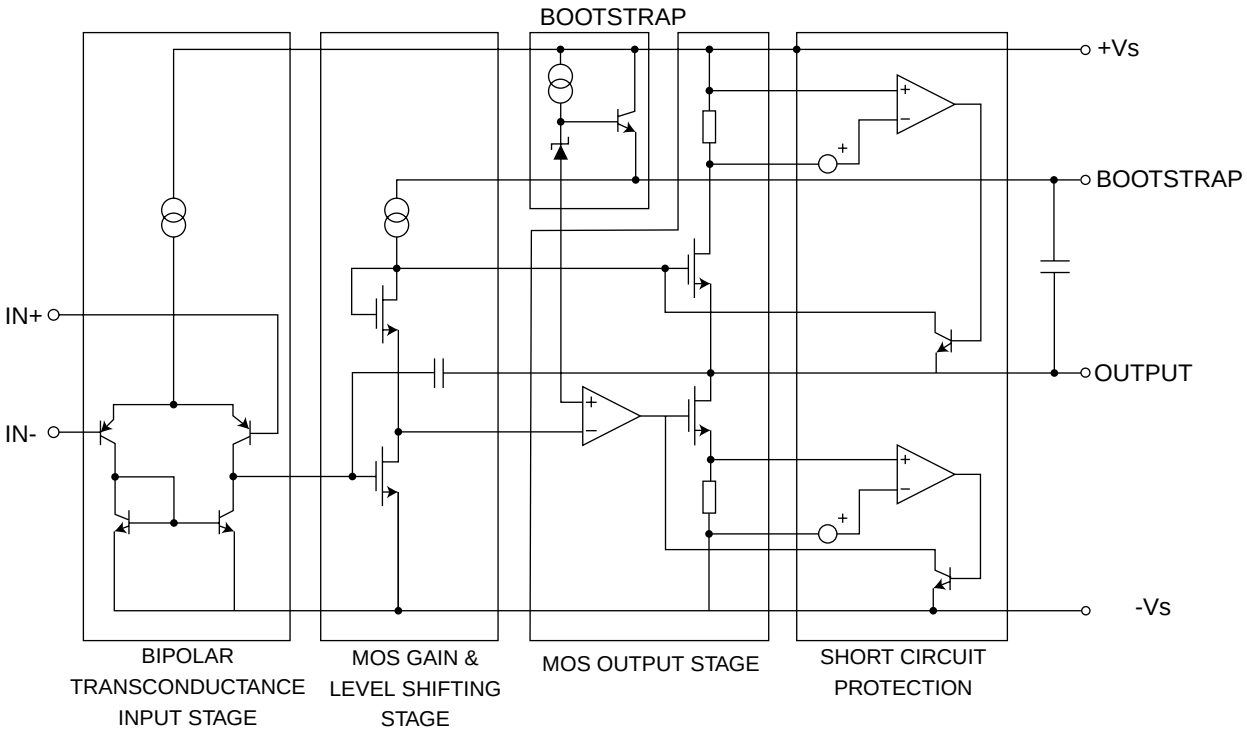
Pin No.	Symbol	I/O	Description	Pin No.	Symbol	I/O	Description
1	VDA1	--	ADC power	23	GNDX	--	Ground for oscillator
2	MICI	I	LPF input for MIC in	24	VDD1	--	Digital power
3	LPFO1	O	LPF output for MIC in	25	CKS	I	Master clock select(H:256/384fs L:512/768fs)
4	VR1	--	ADC reference voltage	26	MCK2	O	Oscillator clock 1/2 diving output
5	AIL	I	LPF input for Lch line in	27	MCK1	O	Oscillator clock output
6	LPFO2	O	LPF output for Lch line in	28	SDO	O	Digital audio data output
7	VRA2	--	Reference power for ADC	29	BCKO	O	Bit clock output
8	AIR	I	LPF input for Rch line in	30	LRCKO	O	Channel clock output
9	LPFO3	O	LPF output for Rch line in	31	SDI	I	Digital audio data input
10	GNDA1	--	ADC ground	32	BCKI	I	Bit clock input
11	LI	I	Lch analog accumulated input	33	LRCKI	I	Channel clock input
12	LZ	O	Lch digital input zero detect	34	GNDD	--	Digital ground
13	GNDA2	--	DAC ground	35	RESET	I	Reset (L:reset)
14	AOL	O	DAC output Lch	36	IFD	I	µ-com I/F data input
15	VR2	--	DAC reference voltage	37	IFS	I	µ-com I/F data shift clock input
16	AOR	O	DAC output Rch	38	IFL	I	µ-com I/F rach pauls input
17	VDA2	--	DAC power	39	EMP	I	Di-emphasis setting (H:Di-emphasis filter on)
18	RZ	O	Rch digital input zero detect	40	EXTO	O	Expanding output terminal
19	RI	I	Rch analog accumulated input	41	TEST	I	Setting test mode (H;fix)
20	VDX	--	Power for oscillator	42	VDD2	--	Digital power
21	XI	I	Crystal oscillator	43	VDL	--	Digital power for DRAM
22	XO	O	Crystal oscillator	44	GNDL	--	Digital ground for DRAM

■ TDA7295 (IC101, IC201) : Audio AMP

1. Pin arrangement chart



2. Block diagram



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