

JVC

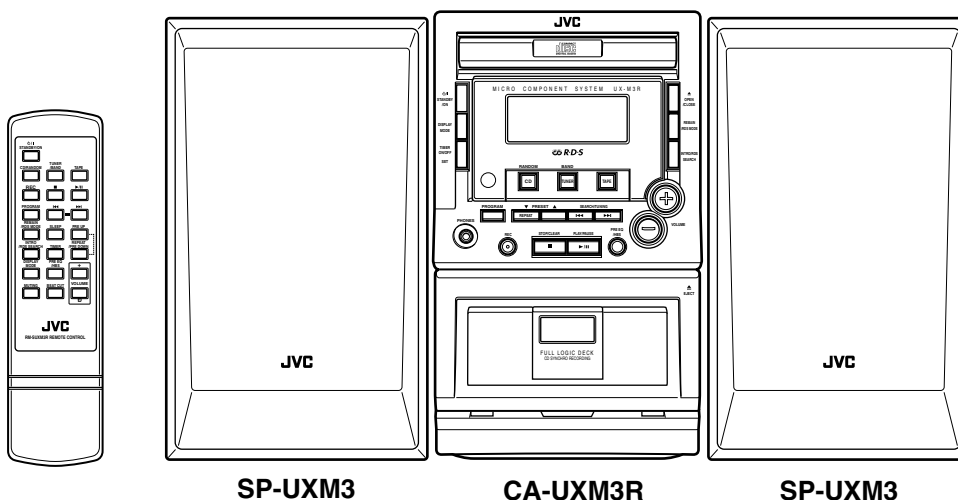
SERVICE MANUAL

MICRO COMPONENT SYSTEM

UX-M3R

Area suffix

- B ----- U.K.
- E ----- Continental Europe
- EN ----- Northern Europe
- EV ----- Eastern Europe



SP-UXM3

CA-UXM3R

SP-UXM3



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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.

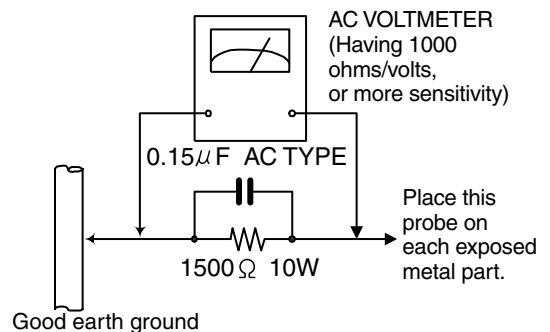
Do not use a line isolation transformer during this check.

- 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 Ω 10W resistor paralleled by a 0.15 μ 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. 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.

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.

(This regulation does not correspond to J and C version.)

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

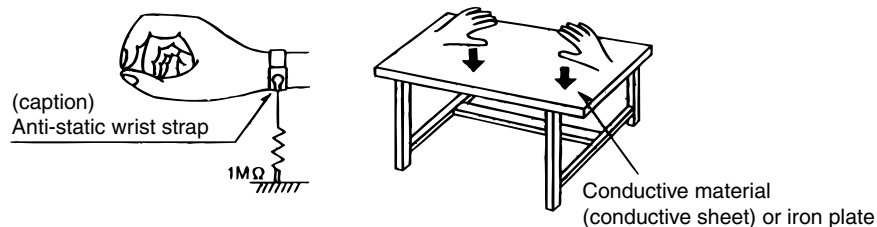
Static electricity in the work area can destroy the optical pickup (laser diode) in devices such as CD players. Be careful to use proper grounding in the area where repairs are being performed.

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.

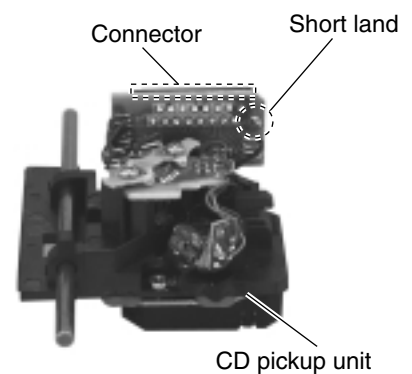
4. Handling the traverse unit (optical pickup)

1. Do not subject the traverse unit (optical pickup) to strong shocks, as it is a sensitive, complex unit.
2. Remove solder of the short land on the card wire 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 card wire 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.

5. Attention when traverse unit is decomposed

***Please refer to "Disassembly method" in the text for the CD pickup unit.**

- Apply solder to the short land before the card wire is disconnected from the connector on the CD pickup unit.
(If the card wire is disconnected without applying solder, the CD pickup may be destroyed by static electricity.)
- In the assembly, be sure to remove solder from the short land after connecting the card wire.



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

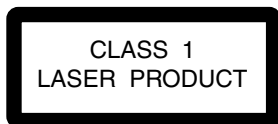
VARO : Avattaessa ja suojalukitus ohitettaessa olet alttiina näkymättömälle lasersäteilylle. Älä katso säteeseen.

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

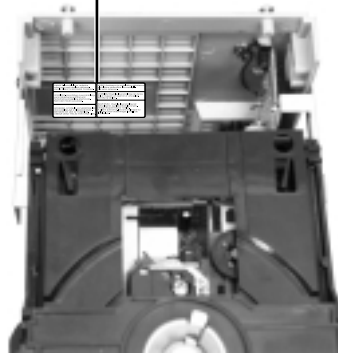
ADVARSEL : Usynlig laserstrålning ved åbning,når sikkerhedsbryteren er avslott. unngå utsettelse for stråling.

REPRODUCTION AND POSITION OF LABELS

WARNING LABEL



DANGER-Invisible laser radiation when open and interlock defeated, AVOID DIRECT EXPOSURE TO BEAM.	VARO! Avattaessa ja suojalukitus ohitettaessa olet alttiina näkymättömälle lasersäteilylle. Älä katso säteeseen.
VORSICHT- Unsichtbare Laserstrahlung wenn Abdeckung geöffnet und Sicherheitsverriegelung überbrückt, Nicht dem Strahl aussetzen.	WARNING! Osynlig laserstrålning när denna del är öppnad och spårren är urkopplad. Betrakta ej strålen.
ADVARSEL- USYNLIG LÅSERSTRÅLING VED ÅBNING. NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION, UNDGÅ UDSÆTTELSE FOR STRÅLING.	ADVARSEL! Usynlig laserstrålning når diskul åpnes og sikkerhedsafbrytes. Unngå eksponering for stråling. A pleine puissance, l'ecoute prolongee du baladeur peut endommager l'oreille de l'utilisateur.



Disassembly method

<Main body section>

Replacement of the fuses and power amplifier IC

■ Replacing the fuses (See Fig. 1.)

- Remove the left side panel according to its disassembly method (see **Figs. 5 and 6**).

Fuses are located inside the left side panel.

[Caution] Be sure to replace the required fuses with designated ones.

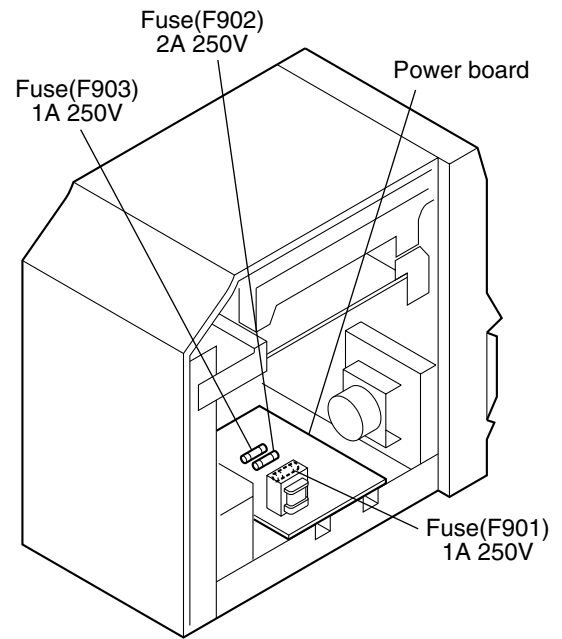


Fig.1

■ Replacing the power amplifier IC on the main board (See Fig. 2.)

- Remove the main board according to its disassembly method (see **Figs. 17 and 18**).
- Remove the two screws **A** that attach the power amplifier IC onto the heat sink.
 - In order to replace the power amplifier IC, remove the solder from soldered part **a** on the back side of the main board.

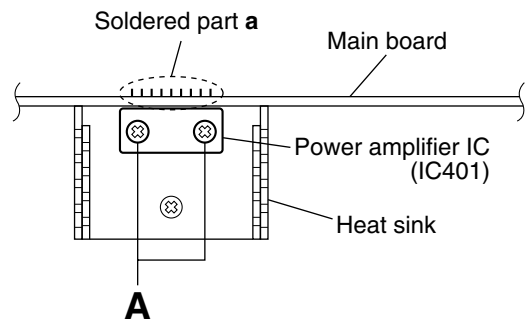


Fig.2

■ Removing the right side panel
(See Figs. 3 and 4.)

1. From the right side of the main body, remove the three screws **B** and three screws **C** retaining the right side panel.
2. Slide the right side panel toward the rear (in the direction of arrow **1**) until the claw **b** at the back of the panel is hooked by the chassis and then lift the panel upward (in the direction of arrow **2**) to remove it.

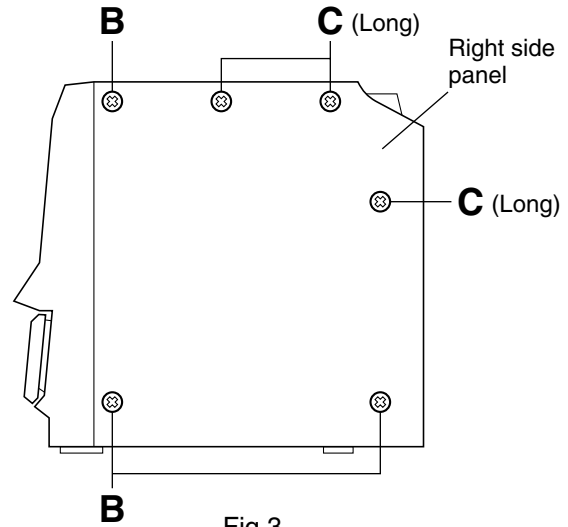


Fig.3

■ Removing the left side panel
(See Figs. 5 and 6.)

1. From the left side of the main body, remove the three screws **B** and three screws **C** retaining the left side panel.
2. Slide the left side panel toward the rear (in the direction of arrow **3**) until the claw **c** at the back of the panel is hooked by the chassis, and then lift the panel upward (in the direction of arrow **4**) to remove it.

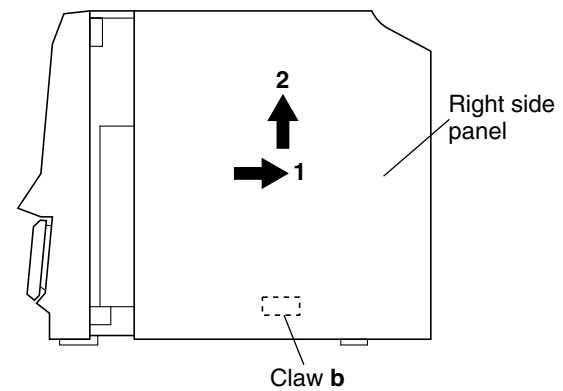


Fig.4

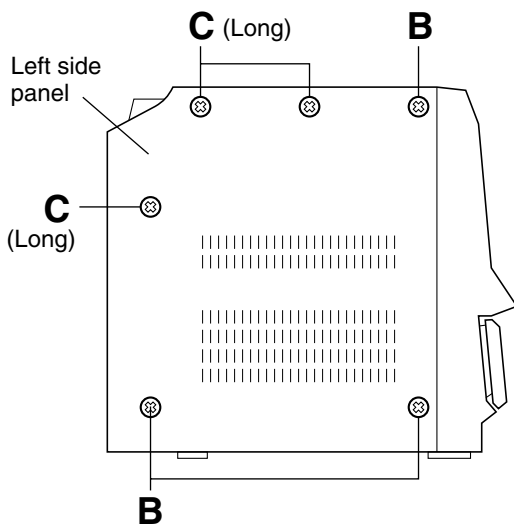


Fig.5

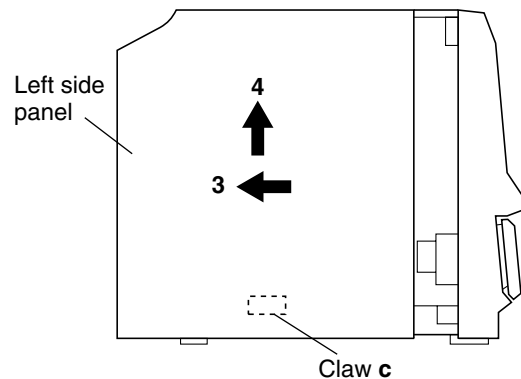


Fig.6

■ Removing the top cover
(See Figs. 7 and 8.)

- Remove the left and right side panels.
1. From the back side of the main body, loosen the two screws **D** retaining the top cover.
 2. Lift the rear part of the top cover to remove it.

■ Removing the front panel assembly
(See Figs. 9 to 11.)

- Remove the left and right side panels.
 - Remove the top cover.
1. Remove the tie band bundling the wires.
 2. Disconnect the wire from the connector CN902 on the power board.
 3. Disconnect the wire from the connector on the cassette switch board.
 4. Remove the screw **E** retaining the bracket on the ear phone board.
 5. Disconnect the wires from the two connectors CN201 and CN402 on the main board.
 6. Disconnect the wires from the two connectors CN607 and CN608 on the CD & MCU board.
 7. Remove the four screws **F** and the two screws **G** retaining the bracket of the CD mechanism assembly from the left and right.
 8. Remove the screw **H** retaining the front panel assembly from the bottom side of the main body.
 9. While opening the hooks **d** to the left and right of the lower part of the front panel assembly (in the direction of arrows **1**), slide the front panel assembly toward the front (in the direction of arrow **2**).

[Note] After assembly, apply a locking agent to the screws F and G.

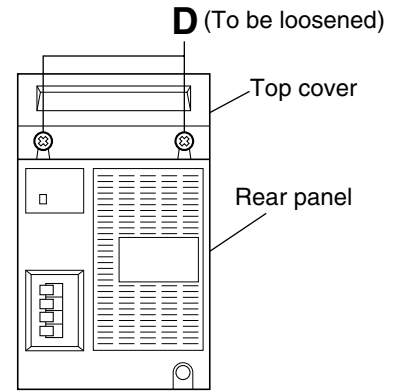


Fig.7

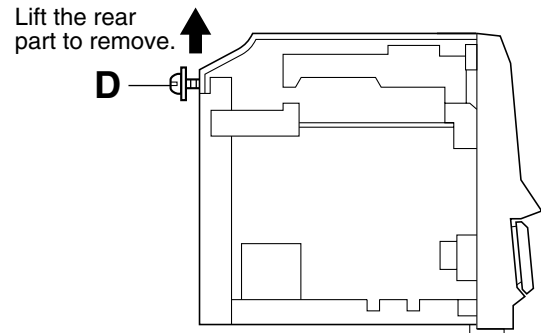


Fig.8

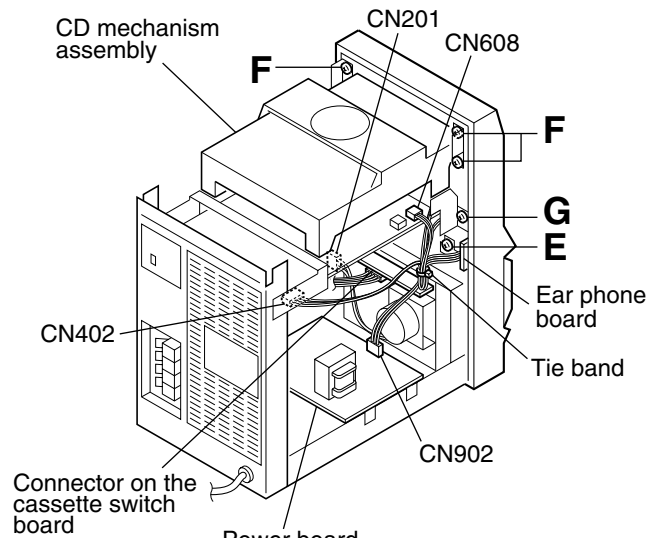


Fig.9

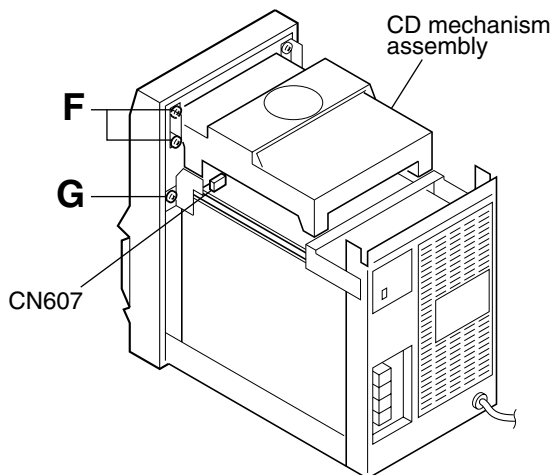


Fig.10

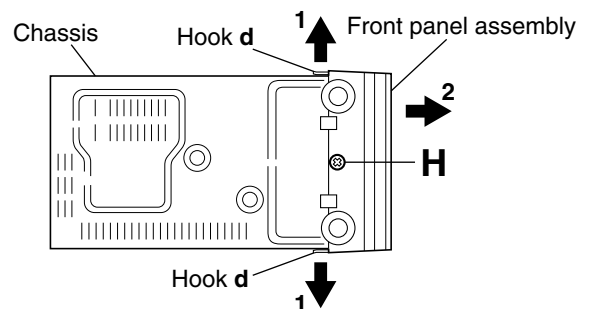


Fig.11

■ Removing the CD mechanism assembly (See Figs. 12 to 14.)

- Remove the left and right side panels.
- Remove the top cover.
- Remove the front panel assembly.

1. Disconnect the wires from the four connectors CN601, CN602, CN603 and CN701 on the CD & MCU board.
2. From the left side of the main body, remove the tie band bundling the wires.
3. Loosen the screw **J** retaining the main board.
4. From the left and right sides of the main body, remove the four screws **K** retaining the bracket.
5. Slide the CD mechanism assembly toward the front and remove it from the studs of the main board.

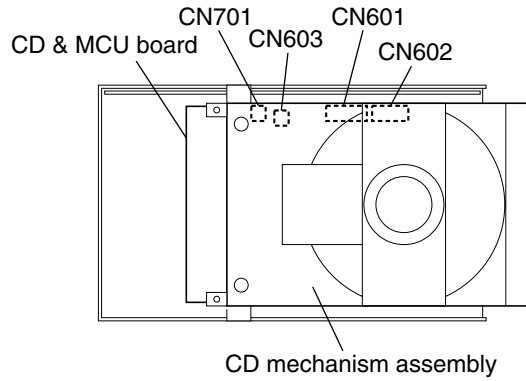


Fig.12

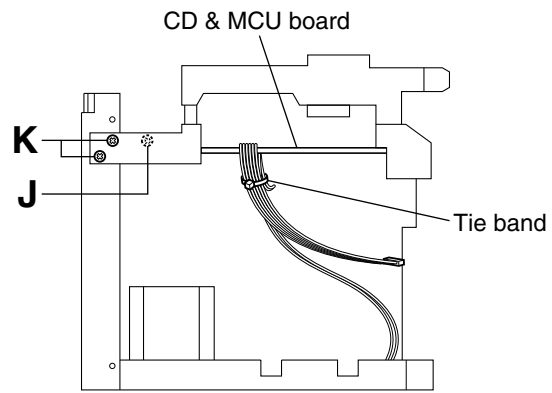


Fig.13

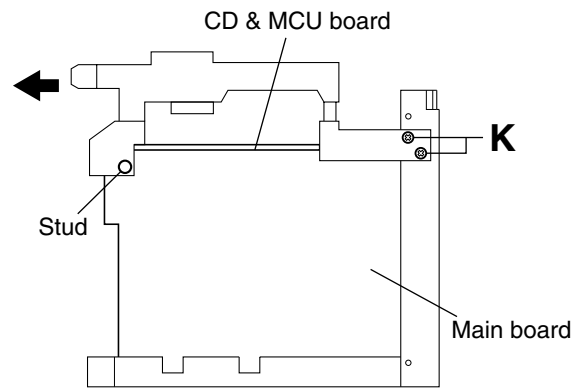


Fig.14

**■ Removing the power board
(See Figs. 15 and 16.)**

- Remove the left and right side panels.
1. Disconnect the wire from the connector CN901 on the power board.
 2. Remove the two screws **L** retaining the chassis .
 3. Remove the power board by pinching the two studs retaining the board using radio pliers, etc.

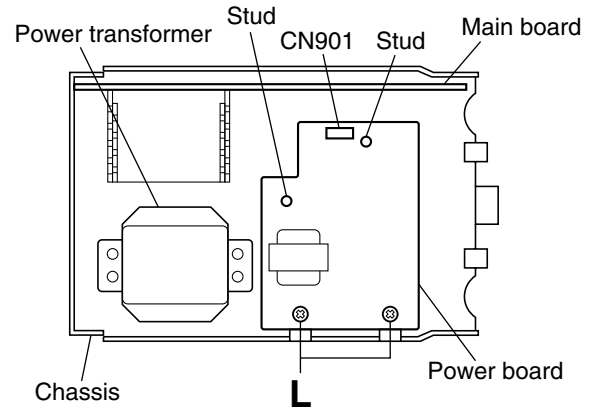


Fig.15

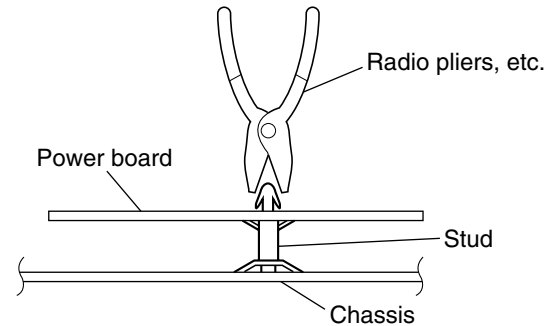


Fig.16

**■ Removing the main board
(See Figs. 17 and 18.)**

- Remove the left and right side panels.
 - Remove the top cover.
 - Remove the front panel assembly.
 - Remove the CD mechanism assembly.
1. Remove the two screws **M** retaining the speaker terminal of the main board.
 2. From the top side of the main body, remove the screw **N** retaining the heat sink of the main board.
 3. Remove the solder from the soldered part **e** that attaches the FM antenna wire to the main board.
 4. Slide the main board toward the front to remove it from the chassis.

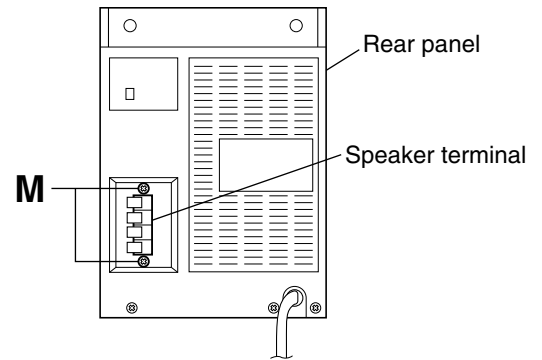


Fig.17

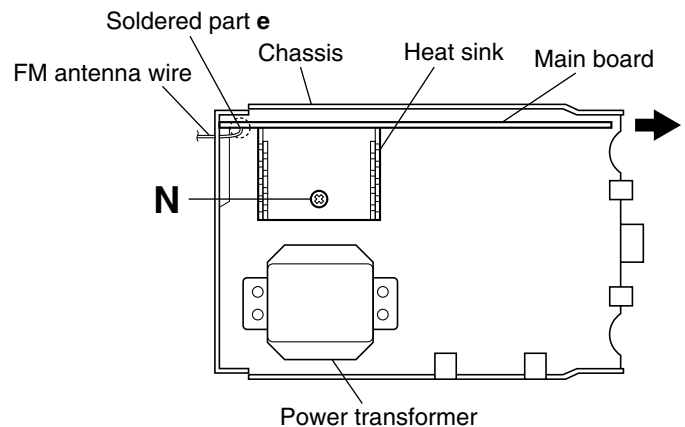


Fig.18

[Note] After assembly, apply a locking agent to the screw N.

<Front panel assembly section>

- Remove the left and right side panels.
- Remove the top cover.
- Remove the front panel assembly.

■ Removing the key board

(See Fig. 19.)

Remove the ten screws **P** retaining the key board.

■ Removing the cassette mechanism assembly

(See Fig. 19.)

1. Remove the two screws **Q** and the two screws **R** retaining the cassette mechanism assembly.
2. Remove the tie band bundling the REC/PB head wire.

[Caution] After assembly, apply a locking agent to the screws **Q** and **R**.

■ Removing the cassette door damper

(See Fig. 19.)

Remove the screw **S** retaining the damper bracket and take out the cassette door damper.

■ Removing the cassette door stopper

(See Fig. 19.)

Remove the two screws **T** retaining the cassette door stopper and remove the cassette door stopper.

■ Removing the cassette door cover

(See Fig. 20.)

[Note] Use the following procedure to remove only the cassette door cover. This procedure does not require the removal of exterior parts such as the side panels.

1. Open the cassette door.
2. Slide the cassette door cover in the direction of the arrow and disengage the two claws **f** and the two claws **g** on the left and right of the cassette door cover from the cassette door.

■ Removing the cassette door

(See Figs. 21 and 22.)

- Remove the cassette mechanism assembly.
 - Remove the cassette door cover.
1. Open the cassette door, disengage the spring hooked across the front of the front panel assembly and the cassette door in the outward direction, and remove it from the claw **h**.
 2. From the back side of the front panel assembly, remove the two screws **U** retaining the bracket.
 3. While pushing the arm section **i** of the cassette door in the direction of the arrow, remove the shaft section **j** of the cassette door from the front panel assembly.
 4. While pushing the cassette door arm section **k** in the direction of the arrow, remove the shaft section **m** of the cassette door from the front panel assembly.
 5. Take out the cassette door from the back side of the front panel assembly.

[Caution] In the assembly, be sure to put the spring around the shaft **j** before attaching the cassette door.

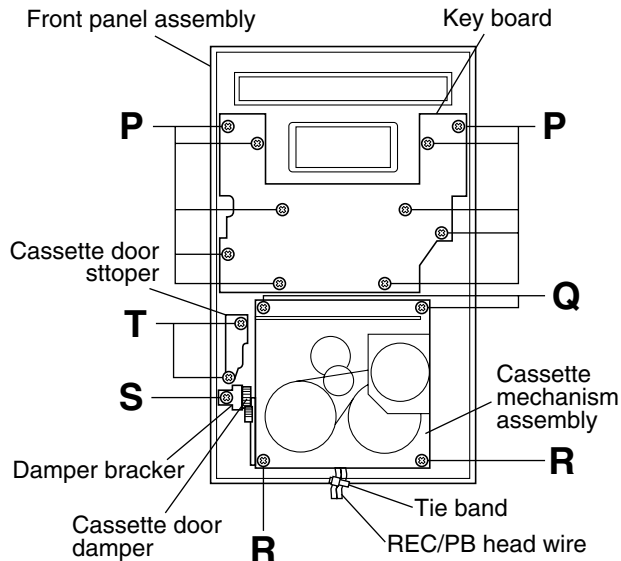


Fig.19

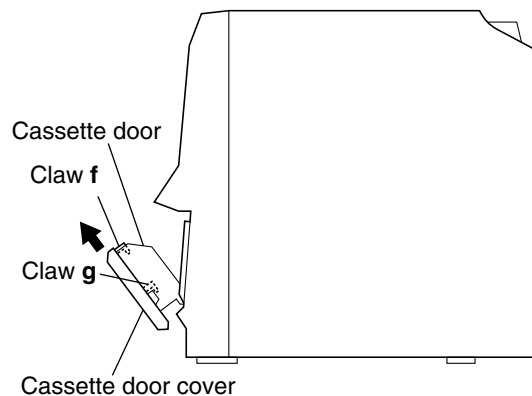


Fig.20

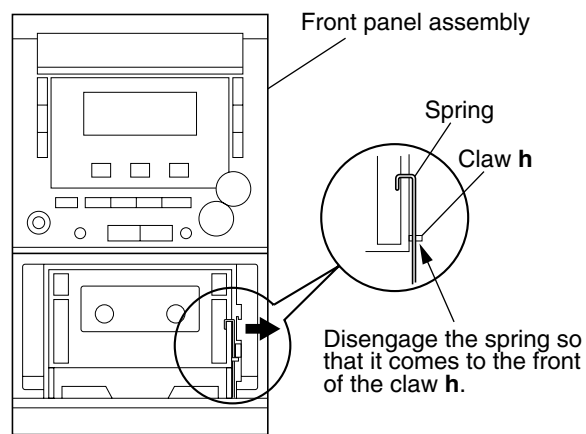


Fig.21

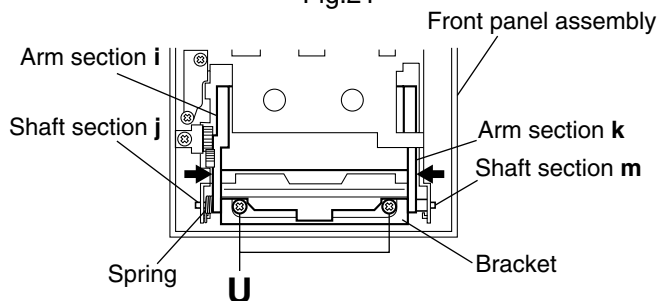


Fig.22

<CD mechanism section>

- Remove the left and right side panels.
- Remove the top cover.
- Remove the front panel assembly.
- Remove the CD mechanism assembly.

■ Removing the CD & MCU board

(See Figs. 23 and 24.)

1. From the back side of the CD mechanism assembly, remove the four screws **V** retaining the CD & MCU board.
2. Disengage the two studs retaining the CD & MCU board.
3. Disconnect the wires from the two connectors CN702 and CN703 on the CD & MCU board.
4. Lift the CD & MCU board and attach solder to the short land part **n** on the CD pickup assembly.
5. Disconnect the card wire from the connector CN704 on the CD & MCU board, and take out the CD & MCU board.

[Caution] • Be sure to solder the short land part **n** on the CD pickup unit before disconnecting the card wire from the CD pickup assembly (see Fig. 24). If the card wire is disconnected without attaching solder, the CD pickup may be destroyed by static electricity.

- In the assembly, be sure to remove solder from the short land part **n** after connecting the card wire.

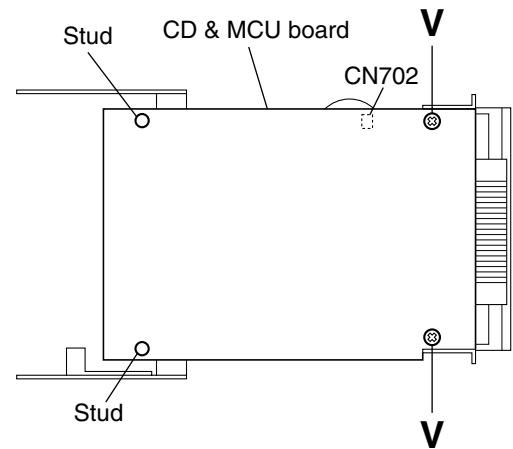


Fig.23

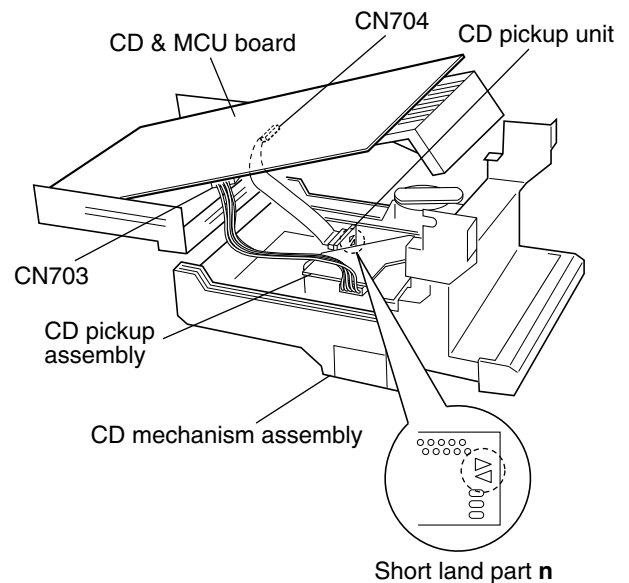


Fig.24

■ Removing the CD pickup assembly

(See Fig. 25.)

- Remove the CD & MCU board.
1. From the back side of the CD mechanism assembly, remove the four screws **W** retaining the CD pickup assembly.
 2. Take out the CD pickup assembly.

[Note] When removing or replacing the dampers, note their colors and be sure to attach them in their correct positions.

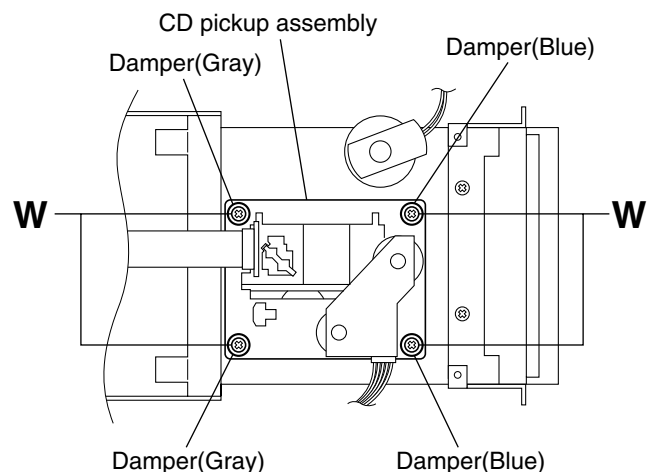


Fig.25

■ Removing the tray motor
(See Figs. 26 to 29.)

- Remove the CD & MCU board.
1. On the top of the CD mechanism assembly, open up the claws **p** and **q** at the left and right of the clamber assembly and lift the assembly to remove it.
 2. On the top of the CD mechanism assembly, push the section **r** of the elevator in the direction of the arrow and lower the CD pickup assembly.
 3. Pull out the tray.
 4. While opening up the claws **s** at the left and right of the tray in the directions of the arrows, remove the tray.
 5. While pushing the claw **t** on the CD mechanism assembly downwards, slide the elevator fully in the direction of the arrow.
 6. Remove the transparent cover.
 7. Remove the belt from the tray motor pulley.
 8. Remove the two screws **X** retaining the tray motor and remove it.

[Note] • Take care not to attach grease on the belt.
 • After attaching the tray motor in the assembly, apply a locking agent to the screws **X**.

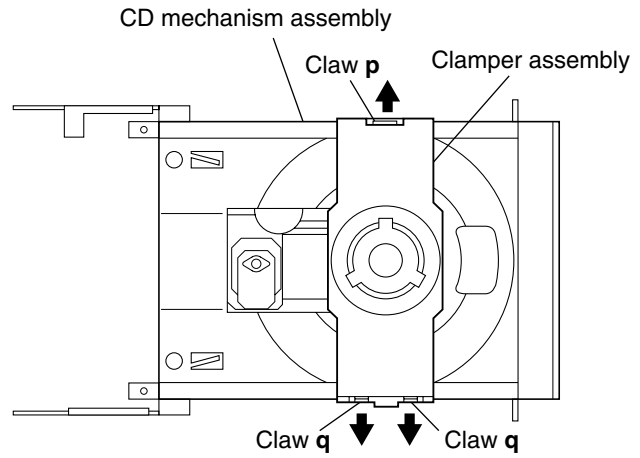


Fig.26

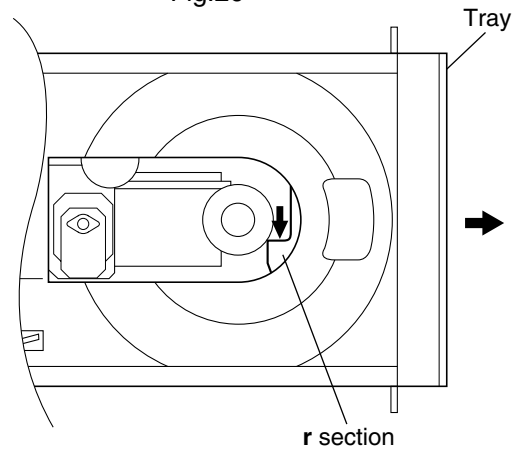


Fig.27

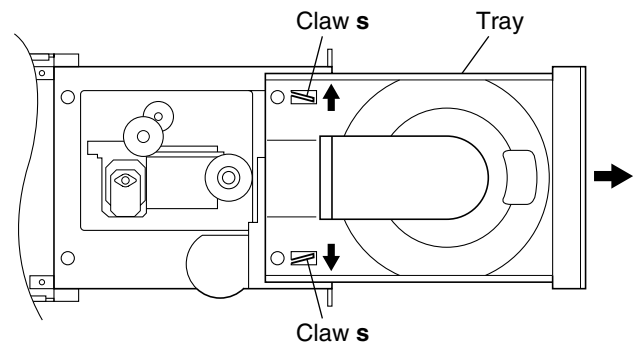


Fig.28

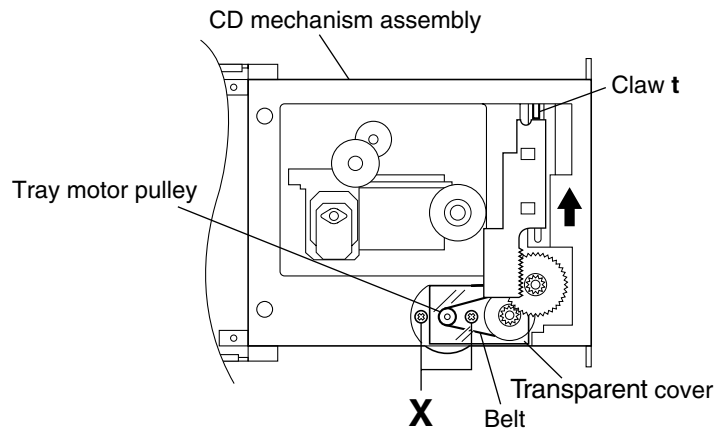


Fig.29

■ Replacing the CD pickup unit (See Figs. 30 to 33.)

[Note] Use the following procedure to replace only the CD pickup unit.

1. Remove the left and right side panels (see **Figs. 3** to **6**).
2. Remove the top cover (see **Figs. 7** and **8**).
3. On the top of the main body, open up the claws **p** and **q** on the left and right of the clamper assembly in the direction of the arrows and lift the assembly to remove it.
4. On the top of the main body, push section **r** on the elevator of the CD mechanism assembly and lower the CD pickup assembly.
5. Pull out the tray.
6. Remove the slit washer retaining the feed middle gear, and take out the feed middle gear.
7. Remove the two screws **Y** retaining the shaft.
8. Turn the CD pickup unit upside down and apply solder to the short land part **n**.
9. Disconnect the card wire from the CD pickup unit and replace the unit.

[Caution] • Be sure to solder the short land part **n** on the CD pickup unit before disconnecting the card wire from the CD pickup unit (see Fig. 33).
If the card wire is disconnected without attaching solder, the CD pickup may be destroyed by static electricity.

• In the assembly, be sure to remove solder from the short land part **n** after connecting the card wire.

[Note] • Removing the CD pickup unit involves the removal of the sliding spring. In the assembly, be sure to attach the spring in the correct orientation before attaching the CD pickup unit (see Fig. 33).

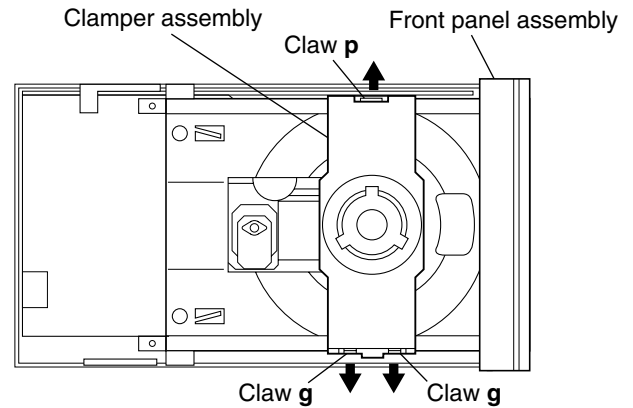


Fig.30

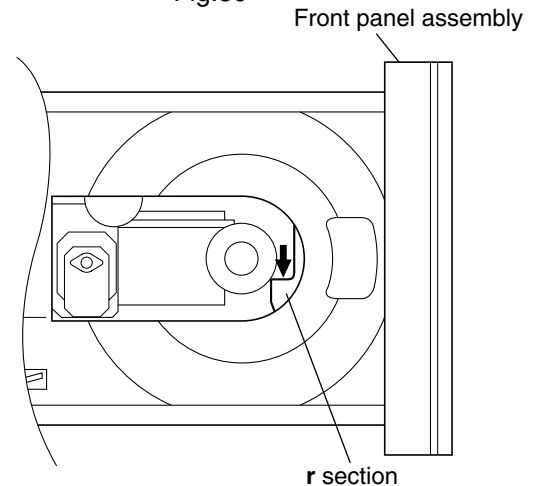


Fig.31

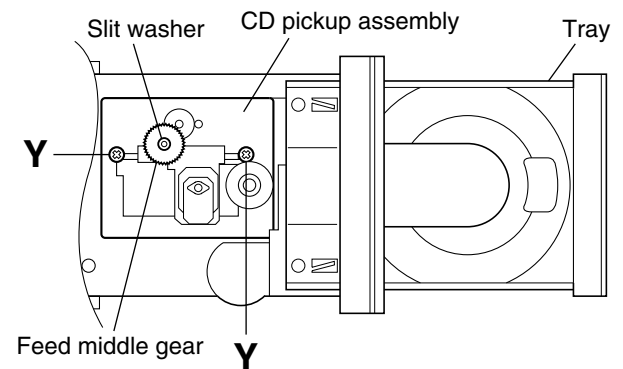


Fig.32

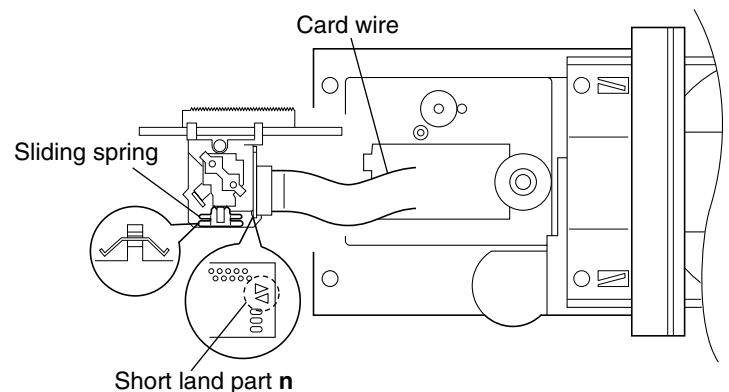


Fig.33

Adjustment method

■ Measuring instructions required for adjustment

1. AM signal generator
2. FM signal generator
3. Inter mediate frequency sweep generator
4. FM stereo signal generator
5. Low-frequency oscillator
(oscillation frequency 50Hz-20kHz, 0dB output with 600 ohm impedance)
6. Attenuator (600 ohm impedance)
7. Electronic voltmeter
8. Distortion meter
9. Torque gauge (cassette for CTG-N)
10. Wow & flutter meter
11. Frequency counter meter
12. Test tape
VT712 : For tape speed and wow flutter
VT724 : For reference level
VT703 : For playback frequency
VT703 : For head azimuth adjustment

13. Blank tape
TAPE I : AC-225

■ Measurement conditions

Power supply voltage
AC230V/50Hz

■ Measuring instruments

Radio section

FM 1kHz, 22.5kHz deviation
FM STEREO : 1kHz, 67.5kHz deviation
pilot signal 7.5kHz

AM : 1kHz, 30% modulation

Reference output :

H.phone output -10dBs(0.245V) 32 ohm
Speaker output 0dBs(2.8V) 8 ohm

Cassette amplifier section

Reference output :

H.phone output -10dBs(0.245V) 32 ohm
Speaker output 0dBs(2.8V) 8 ohm

Standard mode of function knob :

Press TAPE knob of select TAPE mode

CD section

CD test disc : CTS-1000

■ Cassette amplifier section

Item	Measuring condition	Check and adjustment procedure	Standard value	Adjusting part
Head azimuth adjustment	<ul style="list-style-type: none"> ▪ Test tape: VT703 (10kHz) ▪ Signal output terminal: H.phone out (with 32 ohm load) 	<ol style="list-style-type: none"> 1. Play back the test tape VT703 (10kHz). 2. Adjust the head azimuth adjusting screw so that the phase difference between the R and L channels is minimized at an output level that is within ± 2dB of the maximum output level. After this adjustment, lock the head azimuth adjusting screw with screw sealant to cover more than a half of the screw head. 3. When the head azimuth is maladjusted, correct it with the head azimuth adjusting screw. 	<ul style="list-style-type: none"> ▪ Output level: Within ± 2dB of maximum output level ▪ Phase difference R and L channels: Minimum 	Head azimuth adjusting screw (To be used only after head replacement) See Fig.1 on page 1-16.
Tape speed and wow/flutter check and adjustment	<ul style="list-style-type: none"> ▪ Test tape: VT712 (3kHz) ▪ Signal output terminal: H.phone out (with 32 ohm load) 	<ol style="list-style-type: none"> 1. Play back the test tape VT712 (3kHz) by the end portion. 2. Connect a frequency counter and check that it reads between 2940 and 3090Hz. If not, adjust the frequency with the motor semifixed resistor. 3. Check that the wow/flutter is within 0.38% (unweighted). 	<ul style="list-style-type: none"> ▪ 2940 to 3090Hz ▪ Within 0.38% (unweighted) 	<ul style="list-style-type: none"> ▪ Tape speed: ▪ Motor semifixed resistor See Fig.2 on page 1-16. ▪ Check only
PB frequency response check	<ul style="list-style-type: none"> ▪ Test tape: VT703 ▪ Signal output terminal: H.phone out (with 32 ohm load) 	Play back the test tape VT703 while con-firming that deviation between the 1kHz signal and 8kHz signal should be (0+3dB-6dB).	Deviation between 1kHz and 8kHz: (0+3dB-6dB)	
Bias frequency check	<ul style="list-style-type: none"> ▪ Tape: Normal ▪ Signal output terminal: Cassette REC./PLAY HEAD 	Set the TUNER or CD function and with TAPE to record. Check to see if the frequency at the measuring point P207 is 68kHz \pm 1kHz if not adjust L203 until the frequency counter indicates 68 kHz \pm 1kHz.		L203, P207 See Fig.3 on page 1-16.
REC and PB frequency response adjustment	<ul style="list-style-type: none"> ▪ Test tape: AC225 ▪ Signal input: SG 1kHz -20dBs with emphasis ▪ Signal output terminal: H.phone out (with 32 ohm load) 	At TUNER, set the BAND to the FM position, and record the reference 1kHz signal and 8kHz signal alternately repeatedly. While playing back the recorded signal of the 1kHz signal differ from that of the 8kHz signal by within (0+3dB-6dB).	Level difference for 1kHz signal: Within (0+3dB-6dB)	

■ Tuner section

Item	Measuring condition	Check and adjustment procedure	Standard value	Adjusting part
AM IF adjustment	<ul style="list-style-type: none"> ▪ Signal input: Loop antenna ▪ Signal output: IC101 pin19 	<ol style="list-style-type: none"> 1. Set the intermediate frequency sweep generator to AM 450kHz. 2. Adjust T101 for maximum and center output. 		T101 See Fig.3 on page 1-16.
AM tracking adjustment	<ul style="list-style-type: none"> ▪ Signal input: Loop antenna ▪ Signal output: H.phone out (with 32 ohm load) 	<ol style="list-style-type: none"> 1. Set the TUNER at 522kHz adjust L101 until the test point P101 voltage at $1.1V \pm 0.1V$. 2. Set the TUNER at 1629kHz, check the test point P101 voltage at $7.0V \pm 0.3V$. 3. Set the TUNER and S/G at 603kHz, adjust L102 for maximum output. 4. Set the TUNER and S/G at 1404kHz, adjust the TC102 for maximum output. 5. Repeat the above steps 3 and 4. 		L101 L102 TC102 See Fig.3 on page 1-16.
FM tracking adjustment	<ul style="list-style-type: none"> ▪ Signal input: Dummy antenna FM ANT FM GND ▪ Signal output: H.phone out (with 32 ohm load) 	<ol style="list-style-type: none"> 1. Set the TUNER at 87.5MHz adjust L106 until the test point P102 voltage at $2.3V \pm 0.1V$. 2. Set the TUNER at 108MHz, check the test point P102 voltage at $6.5V \pm 0.3V$. 3. Set the TUNER and S/G at 90.1MHz, adjust L105 for maximum output. 4. Set the TUNER and S/G at 106.1MHz, adjust the TC101 for maximum output. 5. Repeat the above steps 3 and 4. 		L106 L105 TC101 See Fig.3 on page 1-16.

■ Location of adjusting parts

• Cassette mechanism section

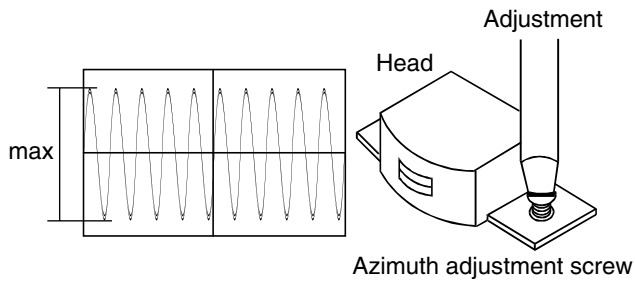


Fig.1 Head output signal

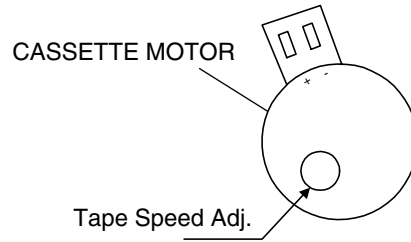


Fig.2

• Main board

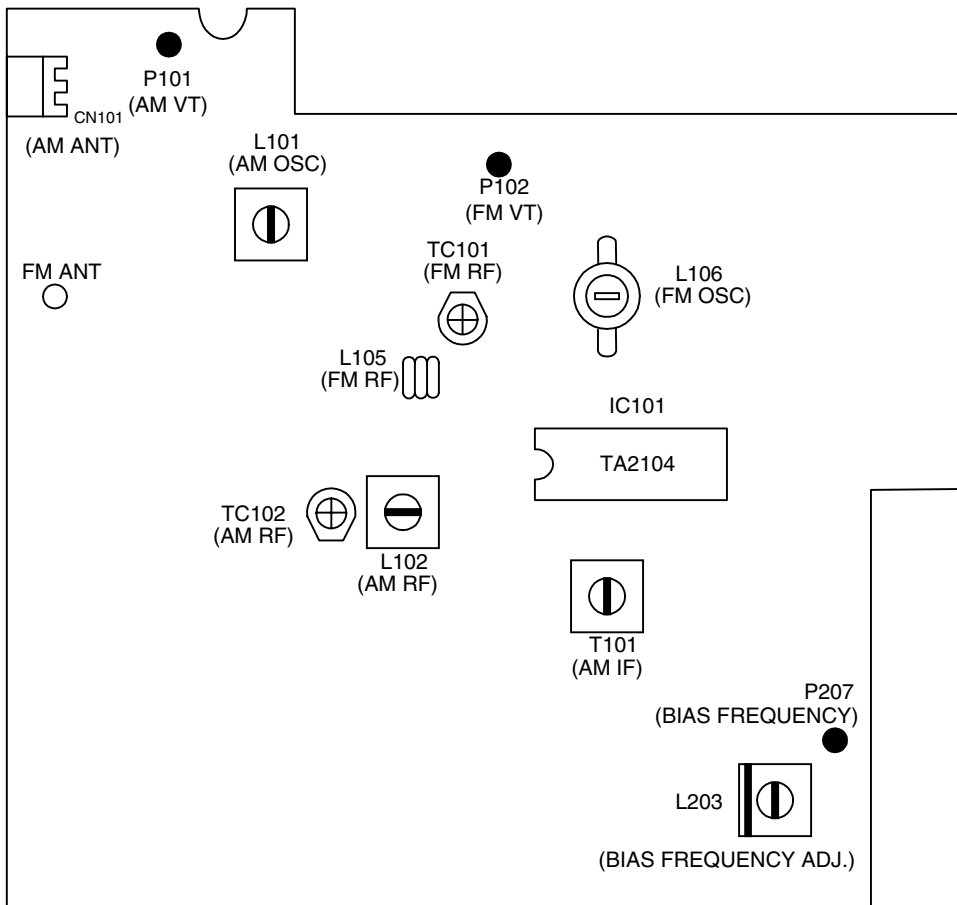
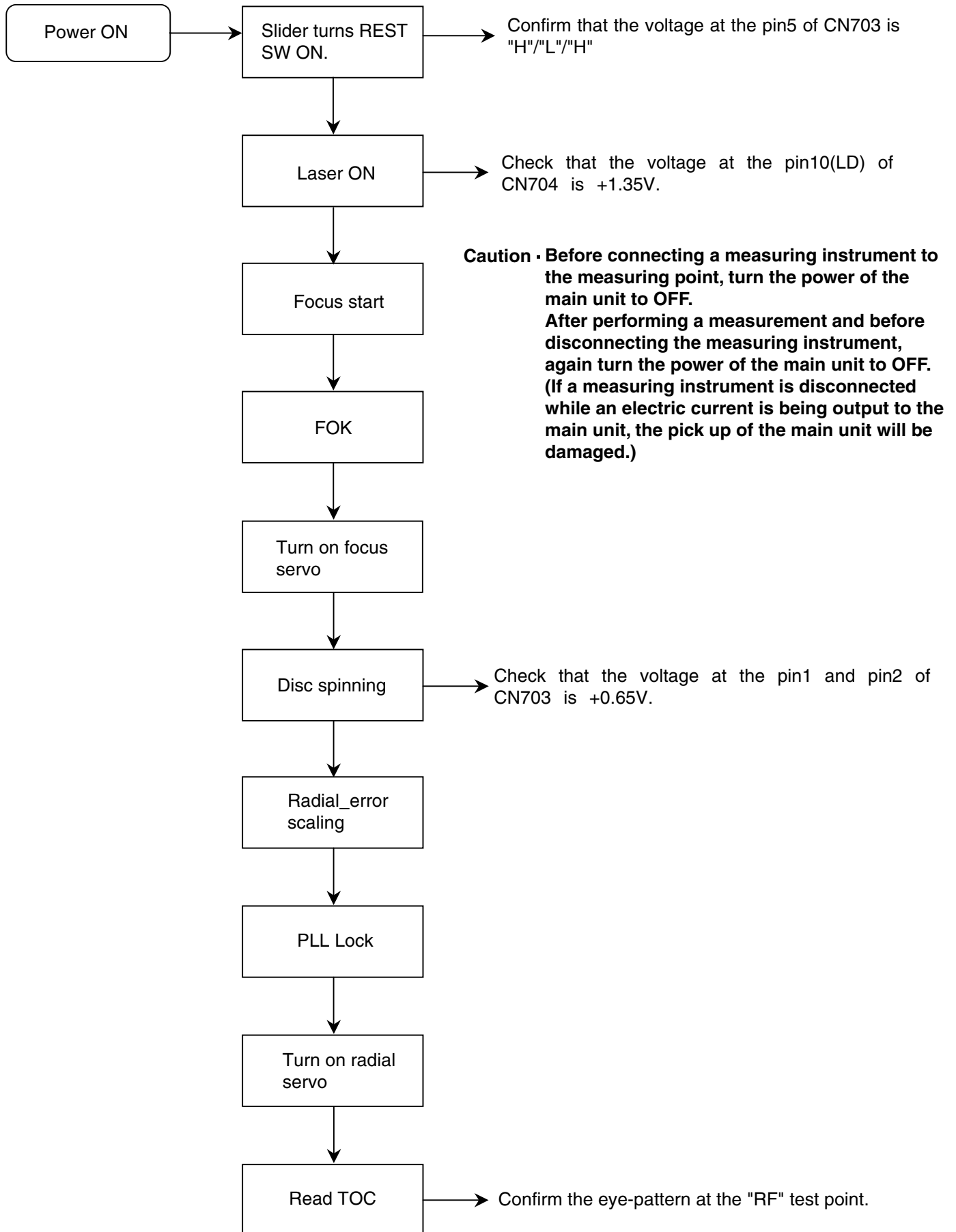


Fig.3

Flow of functional operation until TOC read

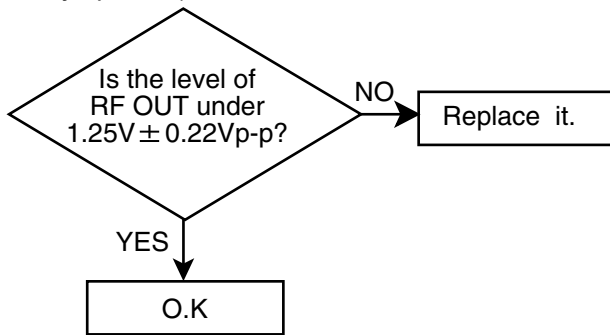


Maintenance of laser pickup

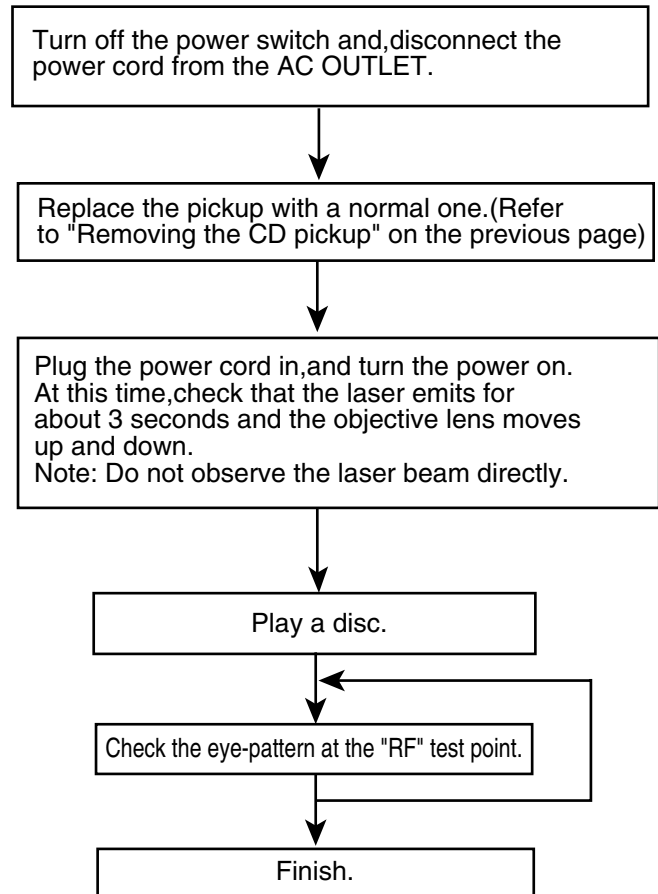
(1) Cleaning the pick up lens
 Before you replace the pick up, please try to clean the lens with a alcohol soaked cotton swab.

(2) Life of the laser diode
 When the life of the laser diode has expired, the following symptoms will appear.

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



Replacement of laser pickup



(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 would be adjusted when the pickup operates normally,the laser pickup may be damaged due to excessive current.

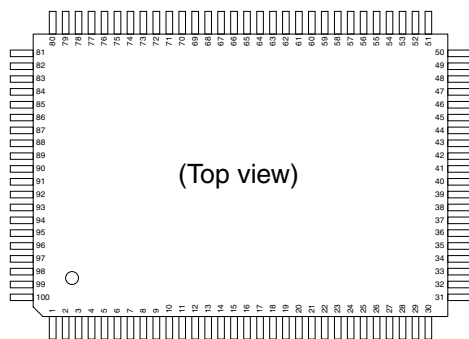
Trouble shooting

Circuit	Symptom	Cause	Remedy
General	No sound	<ul style="list-style-type: none"> ▪ Speakers are not connected. ▪ Wrong function is selected. ▪ Defective volume control ▪ Defective earphone jack ▪ Defect in IC601 ▪ Defect in IC301 	<p>Check the speaker connection.</p> <p>Set switch to the proper position.</p> <p>Set the volume control to a proper sound level.</p> <p>Replace the earphone jack.</p> <p>Check voltages. Replace if necessary.</p> <p>Check voltages. Replace if necessary.</p>
AM	No sound, weak sound (Low sensitivity)	<ul style="list-style-type: none"> ▪ Improper location of unit ▪ Defect in IFT101 ▪ Defect AM antenna coil or oscilloscope coil ▪ Intermediate frequency tuning faulty ▪ RF tracking faulty ▪ Defective IC101 ▪ Defective IC102 ▪ Poor contact in antenna circuit 	<p>Rotate or reposition the unit.</p> <p>Check resistance, voltage, and current. Replace as needed.</p> <p>Replace if necessary.</p> <p>Readjust (see "Adjustment method").</p> <p>Readjust (see "Adjustment method").</p> <p>Check voltages. Replace if necessary.</p> <p>Check resistance and resolder.</p> <p>Check resistance and resolder.</p>
FM	No sound, weak sound (Low sensitivity)	<ul style="list-style-type: none"> ▪ FM antenna not connected ▪ Defective band selector switch ▪ Defective IC101 ▪ Defective IC102 ▪ Intermediate frequency tuning faulty ▪ Poor contact in FM antenna circuit 	<p>Connect the built-in or external antenna.</p> <p>Replace or repair the switch.</p> <p>Check voltages. Replace if necessary.</p> <p>Check voltages. Replace if necessary.</p> <p>Readjust (see "Adjustment method").</p> <p>Resolder or repair as required.</p>
Tape	No sound/recording, unsteady tape sound, weak sound	<ul style="list-style-type: none"> ▪ Dirty capstan or head ▪ Irregular cassette tape winding ▪ Defective IC202 ▪ Cassette erasure prevention tabs broken out 	<p>Clean the capstan or head with alcohol.</p> <p>Replace tape.</p> <p>Check voltages. Replace if necessary.</p> <p>Replace tape or cover tab openings with adhesive tape.</p>
CD	Cannot read the table of content. No sound	<ul style="list-style-type: none"> ▪ Disc is inserted upside down. ▪ Disc is dirty. ▪ Disc is scratched. ▪ Disc is seriously warped. ▪ A non-standard disc has been inserted. ▪ Moisture has formed inside the CD deck. ▪ Defective IC701 ▪ Defective IC704 ▪ Defective TA2092N ▪ Defect in the CD pickup mechanism 	<p>Insert disc correctly.</p> <p>Wipe clean with a soft cloth.</p> <p>Use a new disc.</p> <p>Use a new disc.</p> <p>Use only a brand name disc.</p> <p>Wait about 20 to 30 minutes.</p> <p>Check voltages. Replace if necessary.</p> <p>Check voltages. Replace if necessary.</p> <p>Check voltages. Replace if necessary.</p> <p>Replace as required.</p>

Description of major ICs

■ TMP87EP26F (IC601) : MCU

1. Terminal layout

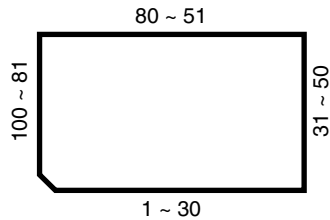


2. Pin function

Pin No.	Symbol	I/O	Function	Pin No.	Symbol	I/O	Function
1	VSS	-	GND (0V)	28	B-PHOTO OUTPUT	I	Reel pulse input of deck B. Have pulse input means the tape is rotating.
2	XOUT	O	Resonator connecting pins for high clock(4-8MHz).	29	CD-RW	O	CD-RW control output
3	XIN	I	For inputting external clock, XIN is used and XOUT is opened.	30	RES	O	CD servo reset output
4	RESERT	I/O	Reset signal input or watchdog timer output/address-trap-reset output	31	CCE	O	Servo DSP chip enable output
5	XTOUT	O	Resonator connecting pins for slow clock(32.768kHz)	32	BUCK	O	Servo DSP clock output
6	XTIN	I	or general purpose I/O.	33	BUS0	I/O	Servo DSP command and data I/O
7	TEST	I	Test pin for out-going test. Always fixed to low.	34	BUS1	I/O	Servo DSP command and data I/O
8	SHIFT FREQ.	O	Shift the crystal oscillation frequency to reduce tuner noise.	35	BUS2	I/O	Servo DSP command and data I/O
9	REMOTE	I	Remote control signal input	36	BUS3	I/O	Servo DSP command and data I/O
10	MUTE	O	Audio mute output	37	TRAY IN (SLOUT)	O	Tray open/close outputs for current sensor drawer type mechanism.
11	PLAY MUTE	O	Muting output during play	38	TRAY OUT (SLIN)	O	
12	REC MUTE	O	Muting output during recording	39	SLT	I	CD pick up position input: L if pick up is in inner side.
13	PLAY/REC	O	Play or recording output, low for recording.	40	CLT (SLEND)	I	Current sensor input
14	(SCK2)	-	Not connected	41	NC	-	Not connected
15	(SI2)	-	Not connected	42	RDS DATA	I	BU1923F(RDS demodulator) interface data input
16	(SO2)	-	Not connected	43	STEREO	I	Stereo input pin for tuner stereo indication
17	REC SW (RCS)/(WAIT)	I	Deck reverse record protection input. Low means can record on reverse side.	44	PWR DET	I	Power down detection
18	REC SW (FWD)	I	Deck forward record protection input. Low means can record on forward side.	45	AD K3	I	Panel key analog input
19	SOL.	O	Solenoid output for deck B.	46	AD K2	I	Panel key analog input
20	MODE SW	I	Mode switch input of deck B. Low means the head is up.	47	AD K1	I	Panel key analog input
21	VOL STB	O	TC9422F volume STB output	48	VAREF	-	Analog reference voltage input
22	POWER	O	Power output control	49	(BOOT)	I	Control input for writing MCU program area via ICU interface.
23	B-HALF SW	I	Half switch input of deck B. Low means deck B have tape.	50	VSS	-	GND (0V)
24	JOG-B/VOL DATA	I/O	Jog dial input and TC9422F volume data output	51	VDD	-	VDD (+5V)
25	JOG-A/VOL CLK	I/O	Jog dial input and TC9422F volume clock output	52~91	SEG39 ~ 0	O	LCD segment outputs
26	RDS CLK	I	BU1923F(RDS demodulator) interface CLK input	92~95	COM3 ~ 0	O	LCD common outputs
27	V-MOTOR	O	Motor output	96	VLC	-	LCD drive power supply
				97	PLL DATA	I/O	TC9257P (PLL) interface
				98	PLL CLK	O	TC9257P (PLL) interface
				99	PLL PRD	O	TC9257P (PLL) interface
				100	VDD	-	VDD (+5V)

■ TC9462F (IC701) : Digital servo single chip processor

1. Terminal layout



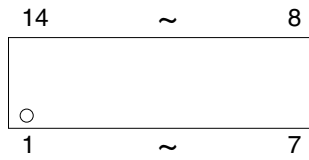
2. Pin function

Pin No.	Symbol	I/O	Function	Pin No.	Symbol	I/O	Function															
1	TEST0	I	Test mode terminal. Normally, keep at open	23	VDD2	-	Digital power supply voltage terminal.															
2	HSO	O	Playback speed mode flag output terminal. <table border="1"> <thead> <tr> <th>UHSO</th> <th>HSO</th> <th>PLAYBACK SPEED</th> </tr> </thead> <tbody> <tr> <td>H</td> <td>H</td> <td>Normal</td> </tr> <tr> <td>H</td> <td>L</td> <td>2 times</td> </tr> <tr> <td>L</td> <td>H</td> <td>4 times</td> </tr> <tr> <td>L</td> <td>L</td> <td>-</td> </tr> </tbody> </table>	UHSO	HSO	PLAYBACK SPEED	H	H	Normal	H	L	2 times	L	H	4 times	L	L	-	24	TESIO0	I	Test input/output terminal. Normally, keep at "L" level. The terminal that inputted the clock for read of text data by command.
UHSO	HSO	PLAYBACK SPEED																				
H	H	Normal																				
H	L	2 times																				
L	H	4 times																				
L	L	-																				
3	UHSO	O	25	P2VREF	-	PLL double reference voltage supply terminal.																
			26	HSSW	O	2/4 times speed at "V _{REF} " voltage.																
			27	ZDET	O	1 bit DA converter zero detect flag output terminal.																
4	EMPH	O	Subcode Q data emphasis flag output terminal. Emphasis ON at "H" level and OFF at "L" level. The output polarity can invert by command.	28	PDO	O	Phase difference signal output terminal of EFM signal and PLCK signal.															
5	LRCK	O	Channel clock output terminal. (44.1kHz) L-ch at "L" level and R-ch at "H" level. The output polarity can invert by command.	29	TMAXS	O	TMAX detection result output terminal. Selected by command bit (TMPS).															
6	VSS1	-	Digital ground terminal.	30	TMAX	O	TMAX detection result output terminal. Selected by command bit (TMPS). <table border="1"> <thead> <tr> <th>DIFFERENCE RESULT</th> <th>TMAX OUTPUT</th> </tr> </thead> <tbody> <tr> <td>Longer than fixed freq.</td> <td>"P2VREF"</td> </tr> <tr> <td>Shorter than fixed freq.</td> <td>"Vss"</td> </tr> <tr> <td>Within the fixed freq.</td> <td>"HiZ"</td> </tr> </tbody> </table>	DIFFERENCE RESULT	TMAX OUTPUT	Longer than fixed freq.	"P2VREF"	Shorter than fixed freq.	"Vss"	Within the fixed freq.	"HiZ"							
DIFFERENCE RESULT	TMAX OUTPUT																					
Longer than fixed freq.	"P2VREF"																					
Shorter than fixed freq.	"Vss"																					
Within the fixed freq.	"HiZ"																					
7	BCK	O	Bit clock output terminal. (1.4112MHz)	31	LPFN	I	LPF amplifier inverting input terminal for PLL.															
8	AOUT	O	Audio data output terminal.	32	LPFO	O	LPF amplifier output terminal for PLL.															
9	DOUT	O	Digital data output terminal.	33	PVREF	-	PLL reference voltage supply terminal.															
10	MBOV	O	Buffer memory over signal output terminal. Over at "H" level.	34	VCOREF	I	VCO center frequency reference level terminal. Normally, keep at "PV _{REF} " level.															
11	IPF	O	Correction flag output terminal. At "H" level, AOUT output is made to correction impossibility by C ₂ correction processing.	35	VCOF	O	VCO filter terminal.															
12	SBOK	O	Subcode Q data CRCC check adjusting result output terminal. The adjusting result is OK at "H" level.	36	AVSS1	-	Analog ground terminal.															
13	CLCK	I/O	Subcode P~W data readout clock input/output terminal. This terminal can select by command bit.	37	SLCO	O	Data slice level output terminal.															
14	VDD1	-	Digital power supply voltage terminal.	38	RFI	I	RF signal input terminal.															
15	VSS2	-	Digital ground terminal.	39	AVDD1	-	Analog power supply voltage terminal.															
16	DATA	O	Subcode P~W data output terminal.	40	RFCT	I	RFRP signal center level input terminal.															
17	SFSY	O	Playback frame sync signal output terminal.	41	RFZI	I	RFRP zero cross input terminal.															
18	SBSY	O	Subcode block sync signal output terminal.	42	RFRP	I	RF ripple signal input terminal.															
19	SPCK	O	Processor status signal readout clock output terminal.	43	FEI	I	Focus error signal input terminal.															
20	SPDA	O	Processor status signal output terminal.	44	SBAD	I	Sub-beam adder signal input terminal.															
21	COFS	O	Correction frame clock output terminal. (7.35kHz)	45	TSIN	I	Test input terminal. Normally, keep at "V _{REF} " level.															
22	MONIT	O	Internal signal (DSP internal flag and PLL clock) output terminal. Selected by command. This terminal output the text data with serial by command.	46	TEI	I	Tracking error signal input terminal. Take in at tracking servo on.															
				47	TEZI	I	Tracking error zero cross input terminal.															
				48	FOO	O	Focus servo equalizer output terminal.															
				49	TRO	O	Tracking servo equalizer output terminal.															
				50	VREF	-	Analog reference voltage supply terminal.															

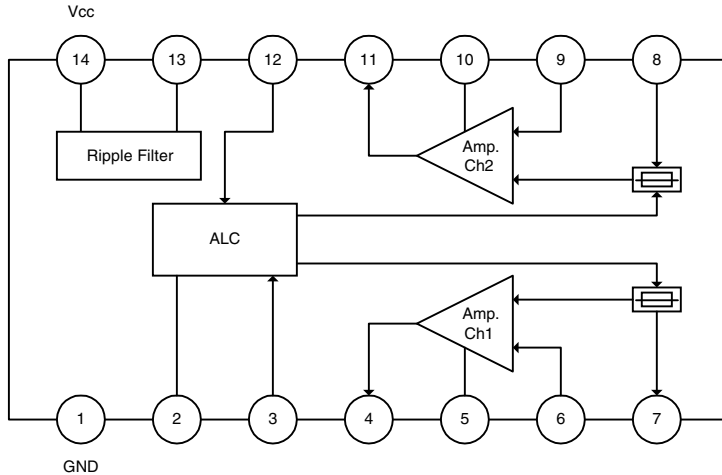
Pin No.	Symbol	I/O	Function	Pin No.	Symbol	I/O	Function
51	RFGC	O	RF amplitude adjustment control signal output terminal.	71	TESIN	I	Test input terminal. Normally, keep at "L" level.
52	TEBC	O	Tracking balance control signal output terminal.	72	TESIO1	I	Test input/output terminal. Normally, keep at "L" level.
53	FMO	O	Feed equalizer output terminal.	73	VSS4	-	Digital ground terminal.
54	FVO	O	Speed error signal or feed search equalizer output terminal.	74	PXI	I	Crystal oscillator connecting input terminal for DSP. Normally, keep at "L" level.
55	DMO	O	Disk equalizer output terminal. (PWM carrier=88.2kHz for DSP, Synchronize to PXO)	75	PXO	O	Crystal oscillator connecting output terminal for DSP.
56	2VREF	-	Analog double reference voltage supply terminal.	76	VDD4	-	Digital power supply voltage terminal.
57	SEL	O	APC circuit ON/OFF indication signal output terminal. At the laser on time, UHF = L at "HiZ" level and UHF = H at "H" level.	77	XVSS	-	Oscillator ground terminal for system clock.
58	FLGA	O	External flag output terminal for internal signal. Can select signal from TEZC, FOON, FOK and RFZC by command.	78	XI	I	Crystal oscillator connecting input terminal for system clock.
59	FLGB	O	External flag output terminal for internal signal. Can select signal from DFCT, FOON, FMON and RFZC by command.	79	XO	O	Crystal oscillator connecting output terminal for system clock.
60	FLGC	O	External flag output terminal for internal signal. Can select signal from TRON, TRSR, FOK and SRCH by command.	80	XVDD	-	Oscillator power supply voltage terminal for system clock.
61	FLGD	O	External flag output terminal for internal signal. Can select signal from TRON, DMON, HYS and SHC by command.	81	DVSR	-	Analog ground terminal for DA converter.(R-ch)
62	VDD3	-	Digital power supply voltage terminal.	82	RO	O	R channel data forward output terminal.
63	VSS3	-	Digital ground terminal.	83	DVDD	-	Analog supply voltage terminal for DA converter.
64	IO0	I/O	General I/O terminal. Can change over input port or output port by command. At the input mode time can readout a state of terminal (H/L) by read command. At the output mode time can control a state of terminal (H/L/HiZ) by command.	84	DVR	-	Reference voltage terminal for DA converter.
65	IO1	I/O		85	LO	O	L channel data forward output terminal.
66	IO2	I/O		86	DVSL	-	Analog ground terminal for DA converter.(L-ch)
67	IO3	I/O		87	TEST1	I	Test mode terminal. Normal, keep at open.
68	DMOUT	I		This terminal controls IO0-IO3 terminal. At "L" level time, IO0, 1 out feed equalizer signal of 2-state PWM, IO2,3 out disk equalizer signal of 2-state PWM.	88	TEST2	I
69	CKSE	I	Normally, keep at open.	89	TEST3	I	Test mode terminal. Normal, keep at open.
70	DACT	I	DAC test mode terminal. Normally, keep at open.	90	BUS0	I/O	Micon interface data input/output terminal.
				91	BUS1	I/O	
				92	BUS2	I/O	
				93	BUS3	I/O	
				94	VDD5	-	Digital power supply voltage terminal.
				95	VSS5	-	Digital ground terminal.
				96	BUCK	I	Micon interface clock input terminal.
				97	CCE	I	Command and data sending/receiving chip enable signal input terminal. The bus line becomes active at "L" level.
				98	TEST4	I	Test mode terminal. Normal, keep at open.
				99	TSMOD	I	Local test mode selection terminal.
				100	RST	I	Reset signal input terminal. Reset at "L" level.

■ AN7312 (IC202) : Dual recording/Playback pre-amplifier circuit with ALC

1. Terminal layout



2. Block diagram

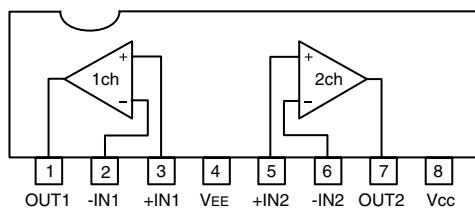


3. Pin function

Pin No.	Symbol	I/O	Function
1	GND	-	GND
2	ALC time constant	-	ALC time constant by resistance and capacitor
3	ALC input Ch.1	I	Right channel ALC input
4	Output Ch.1	O	Right channel output
5	Phase compensation Ch.1	-	No connect
6	N.E.B. Ch.1	I	Right channel negative feed back input
7	Input Ch.1	I	Right channel signal input
8	Input Ch.2	I	Left channel signal input
9	N.E.B. Ch.2	I	Left channel negative feed back input
10	Phase compensation Ch.2	-	No connect
11	Output Ch.2	O	Left channel output
12	ALC input Ch.2	I	Left channel ALC input
13	Ripple filter	-	Ripple filter
14	Vcc	-	Power supply

■ BA4558 (IC402) : Dual operational amplifier

1. Terminal layout & Block diagram

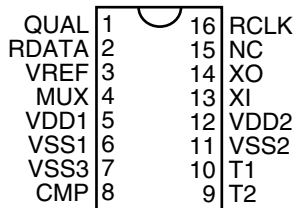


2. Pin function

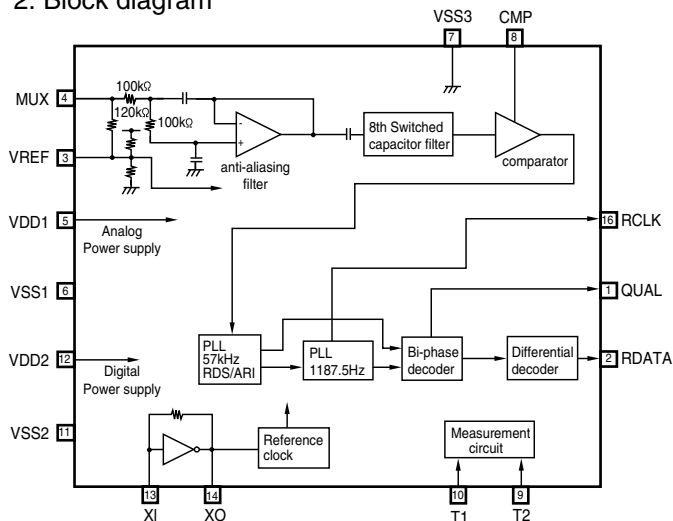
PIN No.	Symbol	I/O	Function
1	OUT1	O	A output
2	-IN1	I	A - input
3	+IN1	I	A + input
4	VEE	-	V-
5	+IN2	I	B + input
6	-IN2	I	B - input
7	OUT2	O	B output
8	Vcc	-	V+

■ BU1923F (IC602) : RDS decoder

1. Terminal layout



2. Block diagram

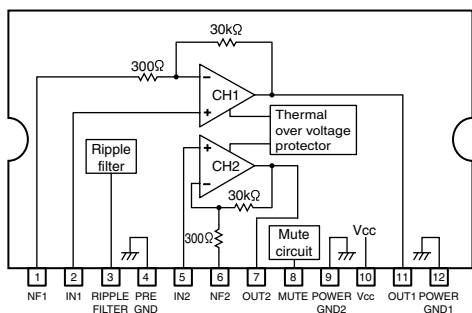


2. Pin function

PIN No.	Symbol	I/O	Function
1	QUAL	O	Demodulator quality, good data: Hi, bad data: Low
2	RDATA	O	Demodulator data
3	VREF	-	Reference voltage, 1/2 VDD1
4	MUX	I	Composite signal input
5	VDD1	-	Analog power supply
6	VSS1	-	Analog power supply
7	VSS3	-	Analog ground
8	CMP	I	Comparator input, C-junction
9	T1	I	Test input, open or connected to ground
10	T2	I	Test input, open or connected to ground
11	VSS2	-	Digital power supply
12	VDD2	-	Digital power supply
13	XI	I	4.332MHz crystal oscillator input
14	XO	O	4.332MHz crystal oscillator output
15	NC	-	Not used
16	RCLK	O	1187.5Hz demodulator clock

■ LA4282 (IC401) : Power amplifier

1. Terminal layout & Block diagram



2. Pin function

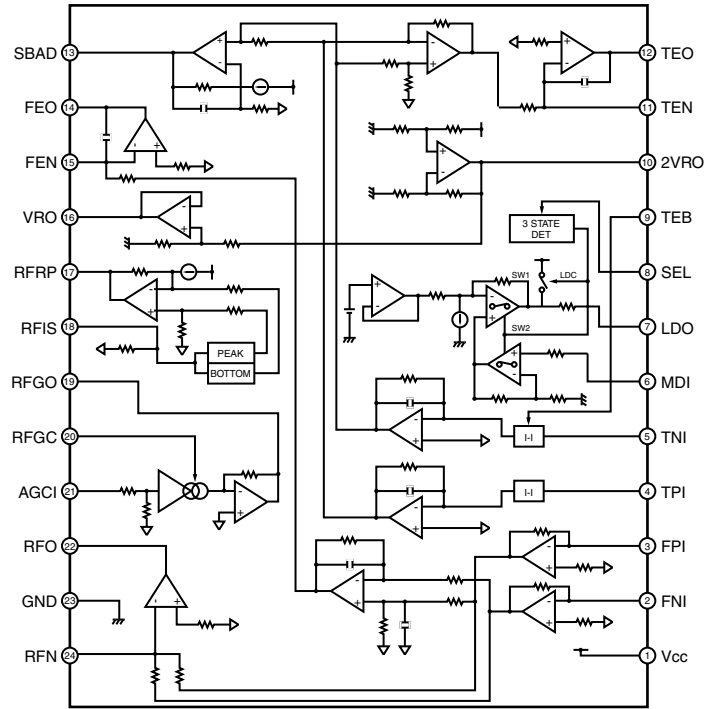
PIN No.	Symbol	I/O	Function
1	NF1	-	Right channel negative feed back
2	IN1	I	Right channel signal input
3	RIPPLE FILTER	-	Ripple filter
4	PRE GND	-	PRE GND
5	IN2	I	Left channel signal input
6	NF2	-	Left channel negative feed back
7	OUT2	O	Left channel output
8	MUTE	-	Mute control
9	POWER GND2	-	Power GND
10	Vcc	-	Power supply
11	OUT1	O	Right channel output
12	POWER GND1	-	Power GND

■ TA2109F (IC704) : RF Amplifier

1. Terminal Layout

VCC	1	24	RFN
FNI	2	23	GND
FPI	3	22	RFO
TPI	4	21	AGCI
TNI	5	20	RFGC
MDI	6	19	RFGO
LDO	7	18	RFIS
SEL	8	17	RFRP
TEB	9	16	VRO
2VRO	10	15	FEN
TEN	11	14	FEO
TEO	12	13	SBAD

2. Block Diagram



3. Pin Function

Pin No.	Symbol	I/O	Function
1	VCC	-	Power supply input terminal
2	FNI	I	Main beam I-V amplifier input terminal
3	FPI	I	Main beam I-V amplifier input terminal
4	TPI	I	Sub beam I-V amplifier input terminal
5	TNI	I	Sub beam I-V amplifier input terminal
6	MDI	I	Monitor photo diode amplifier input terminal
7	LDO	O	Laser diode amplifier output terminal
8	SEL	I	Laser diode control signal input terminal and APC circuit ON/OFF control signal input terminal
9	TEB	I	Tracking error balance adjustment signal input terminal Controlled by 3 PWM signal
10	2VRO	O	Reference voltage (2Vref) output terminal 2Vref=4.2V when Vcc=5V
11	TEN	I	TE amplifier negative input terminal
12	TEO	O	TE error signal output terminal
13	SBAD	O	Sub beam adder signal output terminal
14	FEO	O	Focus error signal output terminal
15	FEN	I	FE amplifier negative input terminal
16	VRO	O	Reference voltage (Vref) output terminal Vref=2.1V when Vcc=5V
17	RFRP	O	Track count signal output terminal
18	RFIS	I	RFRP detect circuit input terminal
19	RFGO	O	RF gain signal output terminal
20	RFGC	I	RF amplitude adjustment control signal input terminal controlled by 3 PWM signal (PWM carrier =88.2 kHz)
21	AGCI	I	RF signal amplitude adjustment amplifier input terminal
22	RFO	O	RF signal output terminal
23	GND	-	Connect to GND
24	RFN	I	RF amplifier negative input terminal

■ TA2104AN (IC101) : 1chip AM/FM, MPX tuner system

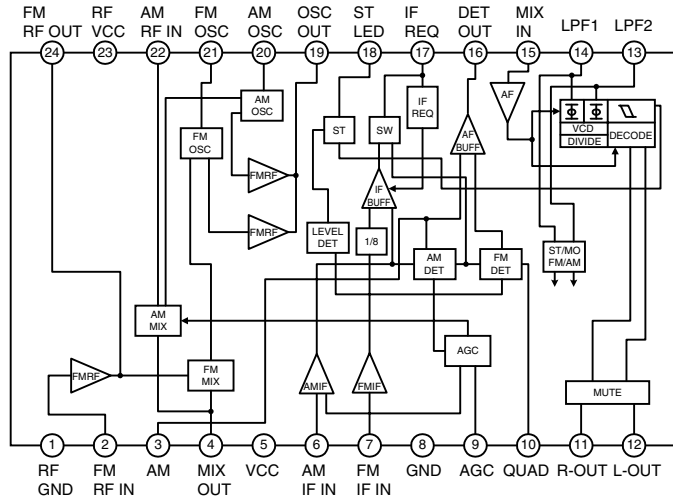
1. Terminal layout

RFGND	1	24	FMRF OUT
FMRF IN	2	23	RF VCC
AM	3	22	AMRF IN
MIX OUT	4	21	FM OSC
VCC	5	20	AM OSC
AMIF IN	6	19	OSC OUT
FMIF IN	7	18	ST LED
GND	8	17	IF REQ
AGC	9	16	DET OUT
QUAD	10	15	MPX IN
R OUT	11	14	LPF1
L OUT	12	13	LPF2

2. Pin function

PIN No.	Symbol	I/O	Function	PIN No.	Symbol	I/O	Function
1	RFGND	-	Ground terminal for RF	13	LPF2	I	FM/AM switch
2	FMRF IN	I	Input of FMRF signal	14	LPF1	I	Stereo/monoral switch
3	AM	I	AM low frequency cut	15	MPX IN	I	Multiplex signal input
4	MIX OUT	O	Output of FM/AM RF mix	16	DET OUT	O	AM/FM detection output
5	VCC	-	Power supply terminal	17	IF REQ	O	IF out/REQ out
6	AMIF IN	I	Input of AMIF signal	18	ST LED	O	Stereo indicator output
7	FMIF IN	I	Input of FMIF signal	19	OSC OUT	O	PLL data bus for FM or AM
8	GND	-	Ground terminal	20	AM OSC	-	AM local oscillation circuit
9	AGC	I	AGC voltage input terminal	21	FM OSC	-	FM local oscillation circuit
10	QUAD	I	OSC terminal for FM DET.	22	AMRF IN	I	Input of AMRF signal
11	R OUT	O	Output R-channel	23	RF VCC	-	Power supply terminal for RF
12	L OUT	O	Output L-channel	24	FMRF OUT	O	Output of FMRF signal

3. Block diagram



■ TC9257F (IC102) : PLL frequency synthesizer

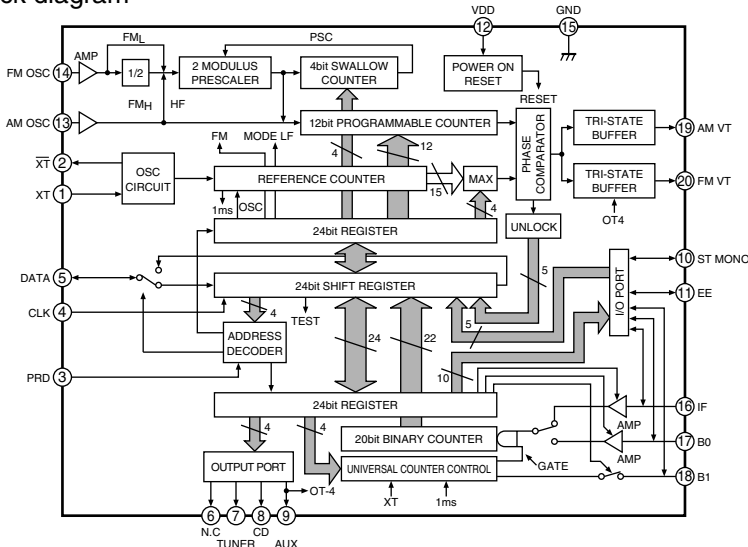
1. Terminal layout

XT	1	20	FM VT
XT	2	19	AM VT
PRD	3	18	B1
CLK	4	17	B0
DATA	5	16	IF
N.C	6	15	GND
TUNER	7	14	FM OSC
CD	8	13	AM OSC
AUX	9	12	VDD
ST MONO	10	11	EE

2. Pin function

PIN No.	Symbol	I/O	Function	PIN No.	Symbol	I/O	Function
1	XT	I	Crystal oscillator pins	11	EE	I/O	General-purpose I/O port
2	XT	O	Crystal oscillator pins	12	VDD	-	Power supply pin
3	PRD	I	Period signal input	13	AM OSC	I	Programmable counter input
4	CLK	I	Clock signal input	14	FM OSC	I	Programmable counter input
5	DATA	I/O	Serial data input/output	15	GND	-	Ground pin
6	N.C	O	General-purpose output port	16	IF	I/O	General-purpose I/O port
7	TUNER	O	General-purpose output port	17	B0	I/O	General-purpose I/O port
8	CD	O	General-purpose output port	18	B1	I/O	General-purpose I/O port
9	AUX	O	General-purpose output port	19	AM VT	O	Phase comparator output
10	ST MONO	I/O	General-purpose I/O port	20	FM VT	O	Phase comparator output

3. Block diagram

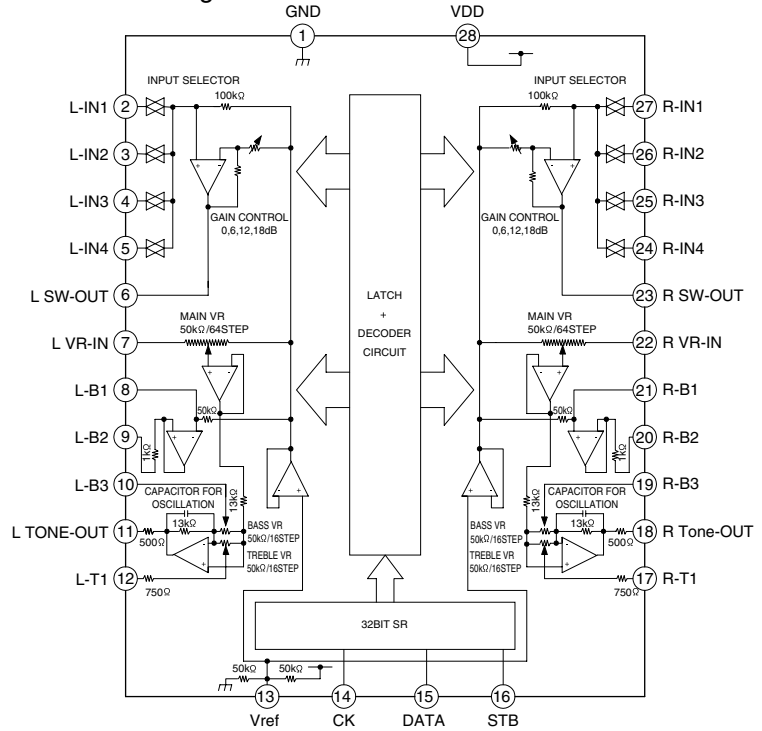


■ TC9422F (IC301) : System electronic volume

1. Terminal Layout

GND	1	28	VDD
L-IN1	2	27	R-IN1
L-IN2	3	26	R-IN2
L-IN3	4	25	R-IN3
L-IN4	5	24	R-IN4
L SW-OUT	6	23	R SW-OUT
L VR-IN	7	22	R VR-IN
L-B1	8	21	R-B1
L-B2	9	20	R-B2
L-B3	10	19	R-B3
L TONE-OUT	11	18	R TONE-OUT
L-T1	12	17	R-T1
Vref	13	16	STB
CK	14	15	DATA

2. Block Diagram

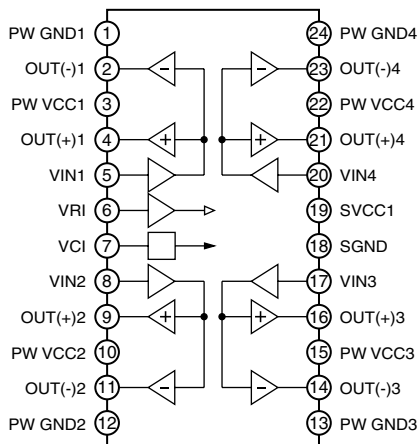


3. Pin Function

Pin No.	Symbol	I/O	Function
1	GND	-	Ground pin
2	L-IN1	I	Audio signal input pin (L-ch)
3	L-IN2	I	Audio signal input pin (L-ch)
4	L-IN3	I	Audio signal input pin (L-ch)
5	L-IN4	I	Audio signal input pin (L-ch)
6	L SW-OUT	O	Audio signal output pin (L-ch)
7	L VR-IN	I	Main volume input pin (L-ch)
8	L-B1	I	Tone control tap pin 1 for bus
9	L-B2	I	Tone control tap pin 2 for bus
10	L-B3	I	Tone control tap pin 3 for bus
11	L TONE-OUT	O	Tone control output pin (L-ch)
12	L-T1	I	Tone control tap pin for treble (L-ch)
13	Vref	I	Reference voltage input pin
14	CK	I	Clock input pin
15	DATA	I	Data input pin
16	STB	I	Strobe input pin
17	R-T1	I	Tone control tap pin for treble (R-ch)
18	R TONE-OUT	O	Tone control output pin (R-ch)
19	R-B3	I	Tone control tap pin 3 for bus
20	R-B2	I	Tone control tap pin 2 for bus
21	R-B1	I	Tone control tap pin 1 for bus
22	R VR-IN	I	Main volume input pin (R-ch)
23	R SW-OUT	O	Audio signal output pin (R-ch)
24	R-IN4	I	Audio signal input pin (R-ch)
25	R-IN3	I	Audio signal input pin (R-ch)
26	R-IN2	I	Audio signal input pin (R-ch)
27	R-IN1	I	Audio signal input pin (R-ch)
28	VDD	-	Power supply voltage pin

■ TA2092N (IC703) : Power driver IC

1. Terminal Layout & Block Diagram

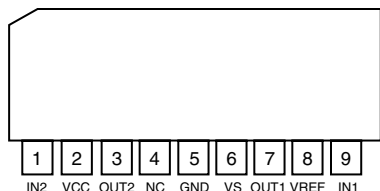


2. Pin Function

Pin No.	Symbol	I/O	Function
1	PW GND1	-	Power GND
2	OUT(-)1	O	Inverted output for CH1
3	PW VCC1	-	Supply terminal of output stage for CH1
4	OUT(+1)	O	Non-inverted output for CH1
5	VIN1	I	Input for CH1
6	VRI	-	Input reference voltage
7	VCI	-	Output reference voltage
8	VIN2	I	Input for CH2
9	OUT(+2)	O	Non-inverted output for CH2
10	PW VCC2	-	Supply terminal of output stage for CH2
11	OUT(-)2	O	Inverted output for CH2
12	PW GND2	-	Power GND
13	PW GND3	-	Power GND
14	OUT(-)3	O	Inverted output for CH3
15	PW VCC3	-	Supply terminal of output stage for CH3
16	OUT(+3)	O	Non-inverted output for CH3
17	VIN3	I	Input for CH3
18	SGND	-	Supply terminal of small signal GND
19	SVCC1	-	Small signal GND
20	VIN4	I	Input for CH4
21	OUT(+4)	O	Non-inverted output for CH4
22	PW VCC4	-	Supply terminal of output stage for CH4
23	OUT(-)4	O	Inverted output for CH4
24	PW GND4	-	Power GND

■ TA7291S (IC702) : Bridge driver

1. Terminal Layout

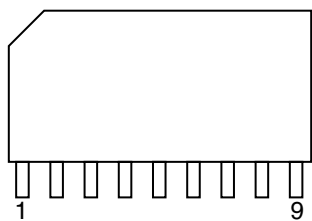


2. Truth table

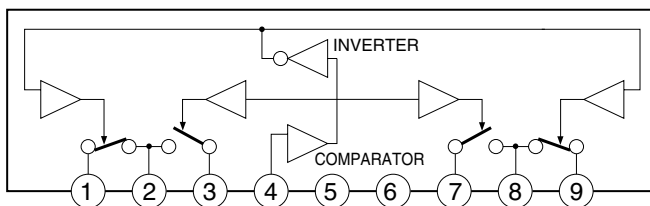
INPUT		OUTPUT		MODE
IN1	IN2	OUT1	OUT2	
0	0	∞	∞	STOP
1	0	H	L	CW/CCW
0	1	L	H	CCW/CW
1	1	L	L	BRAKE

■ UPC1330(IC201): REC/PB audio head switch

1. Terminal layout



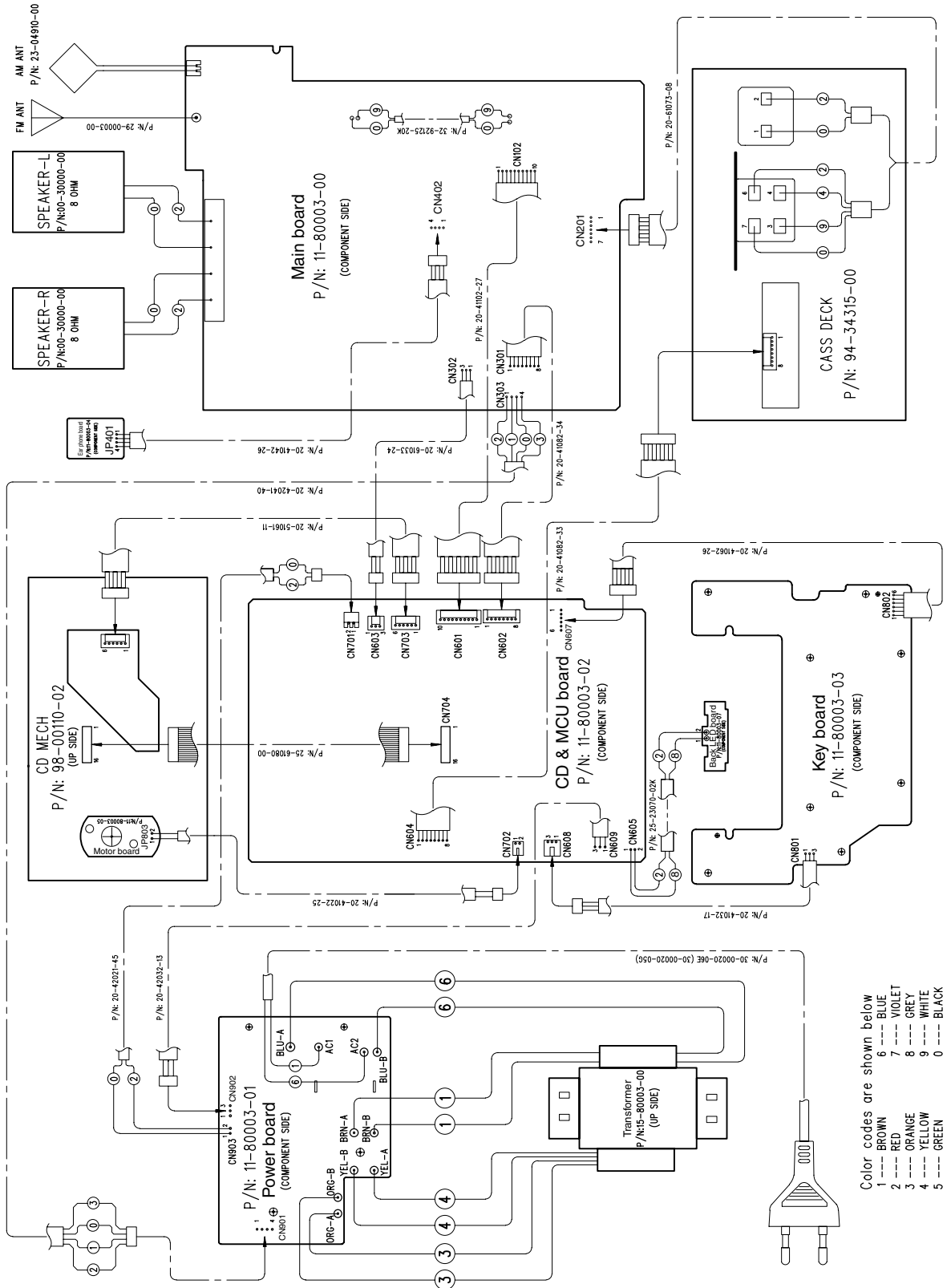
2. Block diagram



3. Pin function

Pin No.	Symbol	I/O	Function
1	SW _{R1}	-	Record SW (Left channel)
2	GND	-	GND
3	SW _{P1}	-	Play SW (Left channel)
4	CONT	-	Record/play control pin
5	GND	-	GND
6	Vcc	-	Power supply
7	SW _{P2}	-	Play SW (Right channel)
8	GND	-	GND
9	SW _{R2}	-	Record SW (Right channel)

Wiring connections





VICTOR COMPANY OF JAPAN, LIMITED

AUDIO & COMMUNICATION BUSINESS DIVISION

PERSONAL & MOBILE NETWORK BUSINESS UNIT. 10-1,1Chome,Ohwatari-machi,maebashi-city,371-8543,Japan