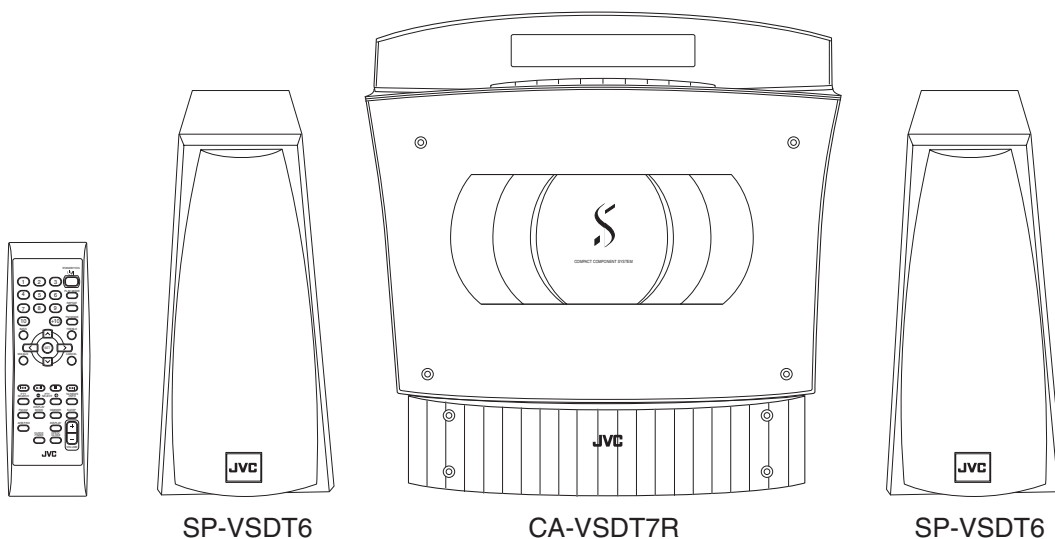


JVC

SERVICE MANUAL

COMPACT COMPONENET SYSTEM

VS-DT7R



COMPACT
disc
DIGITAL AUDIO

R·D·S

Area suffix

E - - - - - Continental Europe
EN - - - - - Northern Europe

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SECTION 1

Important safety precautions

1.1 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 manufacturers 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 reassembling.
- (5) Leakage shock hazard testing)

After reassembling 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.

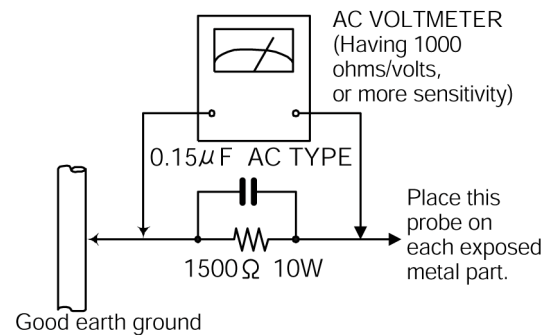
Do not use a line isolation transformer during this check.

 - 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 10W resistor paralleled by a 0.15 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.).



1.2 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.

1.3 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 pre-forming repair of this system.

1.4 Critical parts for safety

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

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

1.5 Preventing static electricity

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

1.5.1 Grounding to prevent damage by static electricity

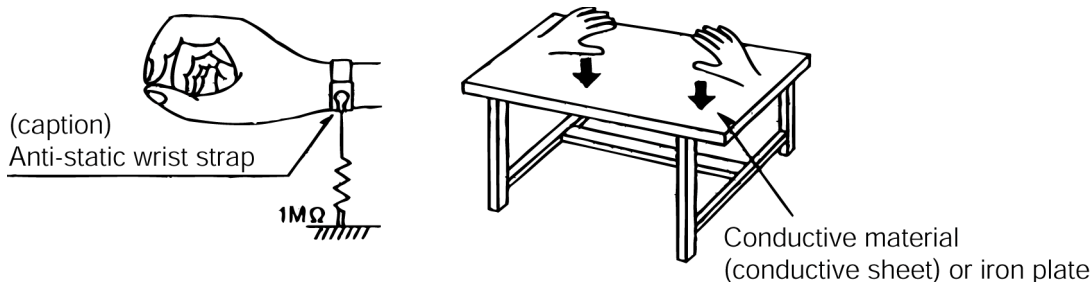
Static electricity in the work area can destroy the optical pickup (laser diode) in devices such as DVD players. Be careful to use proper grounding in the area where repairs are being performed.

(1) 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) 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.

1.6 Handling the traverse unit (optical pickup)

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

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

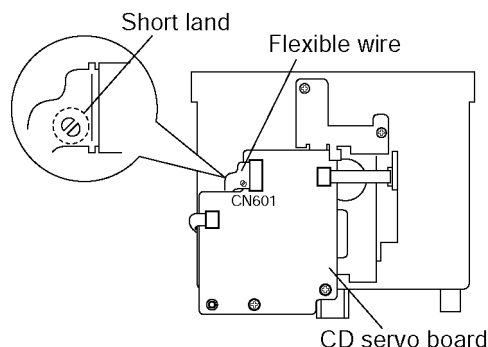
(3) Handle the flexible cable carefully as it may break when subjected to strong force.

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

1.7 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 flexible wire is disconnected from the connector on the CD pickup unit. (If the flexible 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 flexible wire.



1.8 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 laser radiation and is equipped with safety switches which prevent 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.

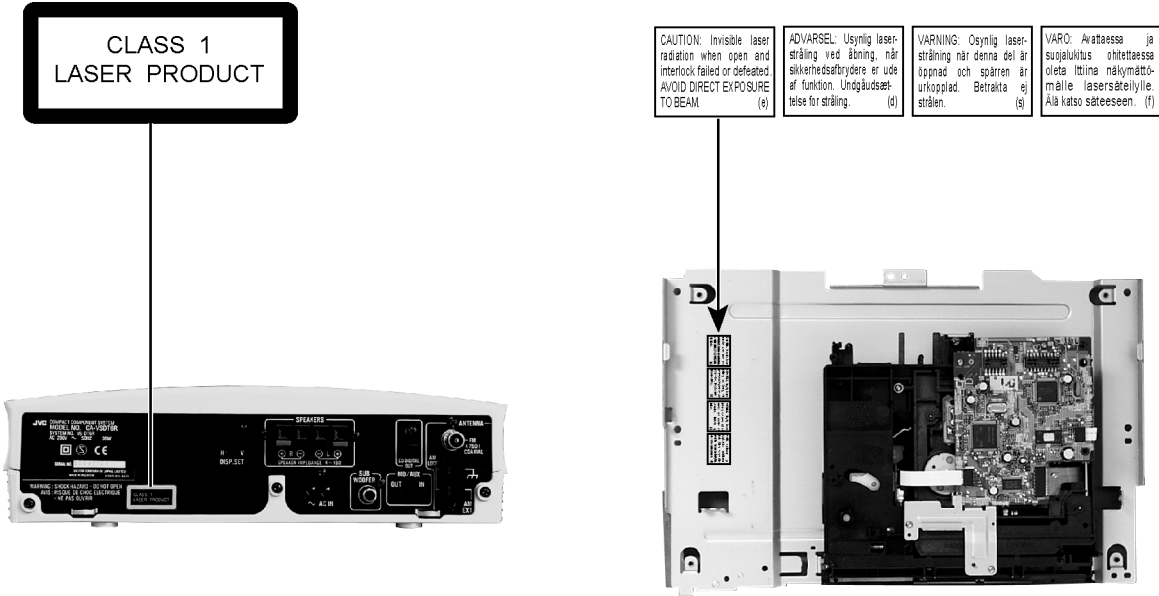
CAUTION

Please use enough caution not to see the beam directly or touch it in case of anadjustment or operation check.

<p>VARNING</p> <p>Osynlig laserstrålning är denna del är öppnasd och spårren är urkopplad. Betrakta ej strålen.</p> <p>VARO</p> <p>Avattaessa ja suojalulitus ohitettaessa olet alttiina näkymätömälle lasersateilylle. Älä katso säteeseen.</p>	<p>ADVARSEL</p> <p>Usynlig laserstrlning ved åbning, når sikkerhedsafbrydere er ude af funktion. Undgå udsasttelse for stråling.</p> <p>ADVARSEL</p> <p>Usynlig laserstråling ved åpning, når sikkerhetsbryteren er avslott. unngå utsettelse for stråling.</p>
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REPRODUCTION AND POSITION OF LABEL and PRINT

WARNING LABEL



SECTION 2

Disassembly method

2.1 Main body section

2.1.1 Removing the top lens [VS-DT9R only]

(See Figs.2-1)

From the top side of the main body, remove the four screws **A** attaching the top lens.

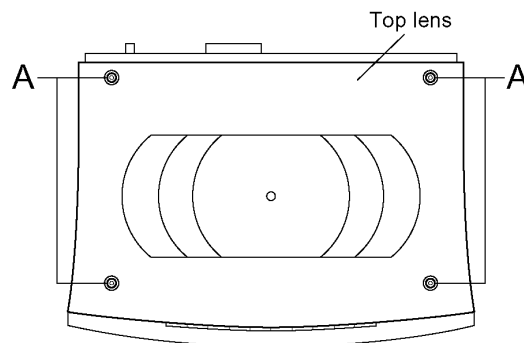


Fig.2-1

2.1.2 Removing the bottom panel

(See Figs. 2-2 and 2-3.)

- Remove the top lens. [VS-DT9R only]
 - (1) From the rear side of the main body, remove the three screws **B** attaching the bottom panel.
 - (2) From the bottom side of the main body, remove the two screws **C** attaching the bottom panel.
 - (3) Remove the bottom panel in an upward direction.

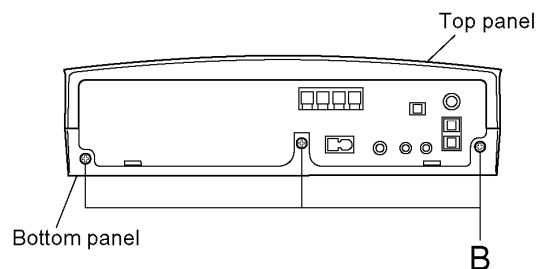


Fig.2-2

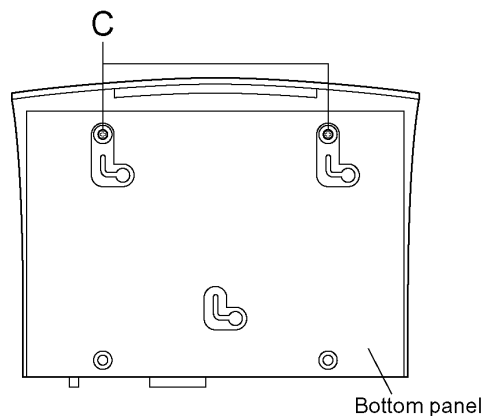


Fig.2-3

2.1.3 Removing the top panel

(See Fig. 2-4.)

- Remove the top lens. [VS-DT9R only]
- Remove the bottom panel.
- (1) Slide the top panel toward the rear (direction of the arrow) and disengage it from the engagement sections **a** and **b** of the bottom chassis.
- (2) Remove the top panel in an upward direction.

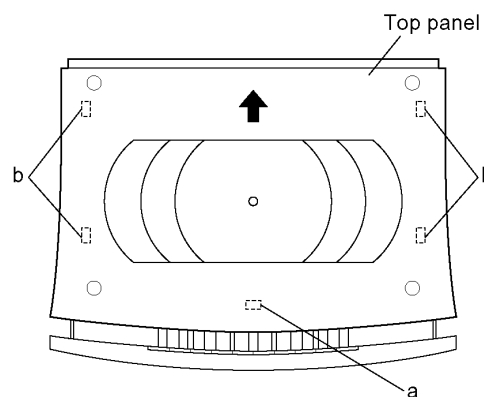


Fig.2-4

2.1.4 Removing the CD mechanism assembly

(See Fig. 2-5.)

- Remove the top lens. [VS-DT9R only]
- Remove the bottom panel.
- Remove the top panel.
 - (1) From the top side of the main body, disengage the claw **c** of the CD mechanism assembly and then remove the push button.
 - (2) Remove the six screws **D** and screw **E** attaching the CD mechanism assembly.
 - (3) Disconnect the wire from connector CN802 on the LED board.
 - (4) Remove the CD mechanism assembly in an upward direction.

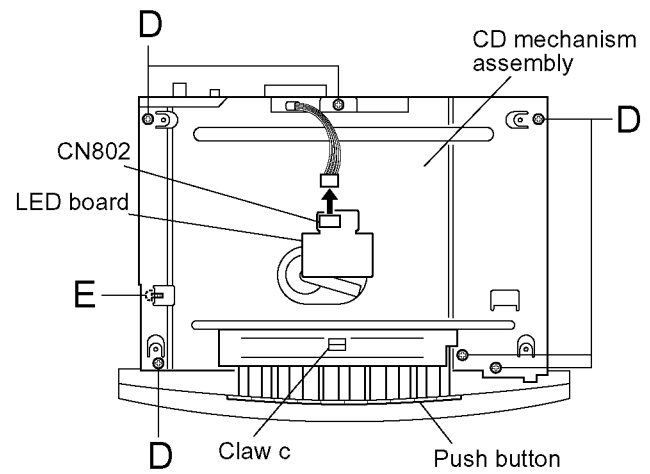


Fig.2-5

2.1.5 Removing the front panel assembly

(See Figs. 2-6 and 2-7.)

- Remove the top lens. [VS-DT9R only]
- Remove the bottom panel.
- Remove the top panel.
- Remove the CD mechanism assembly.
 - (1) Remove the tie band bundling the wires of the front panel assembly.
 - (2) Disconnect the wires from connectors CN106 and CN182 on the main board.
 - (3) Disconnect the card wires from connectors CN171 and CN183 on the main board.
 - (4) Remove the wire holder holding the card wire of the front panel assembly.
 - (5) From the front side of the main body, remove the two screws **F** attaching the front panel assembly.
 - (6) Disengage the claws **d** of the front panel assembly from the bottom chassis and then remove the front panel assembly in the direction of arrow.

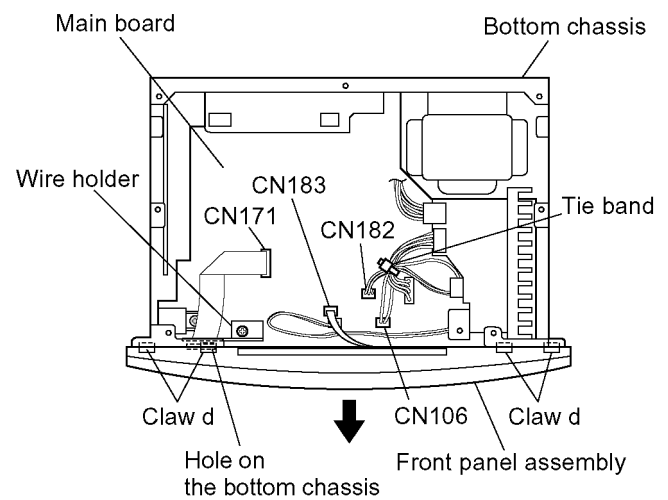


Fig.2-6

[Reference]

- Before attaching the front panel assembly, pass the card wire of the front panel assembly through the hole on the bottom chassis.
- After attaching the front panel assembly, bundling the card wire and wires of the front panel assembly using a wire holder and tie band.

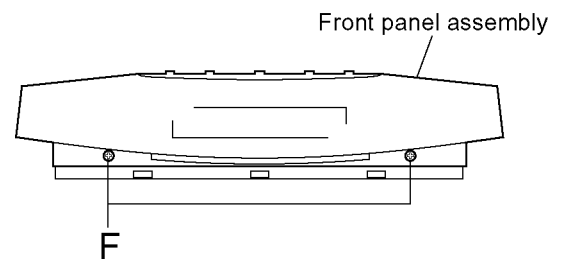


Fig.2-7

2.1.6 Removing the tuner board

(See Figs. 2-8 and 2-9.)

- Remove the top lens. [VS-DT9R only]
- Remove the bottom panel.
- Remove the top panel.
- Remove the CD mechanism assembly.
 - (1) Disconnect the card wire from connector CN111 on the main board.
 - (2) From the rear side of the main body, remove the two screws **G** attaching the FM/AM antenna terminals on the tuner board.
 - (3) Take out the tuner board from the bottom chassis. 3.

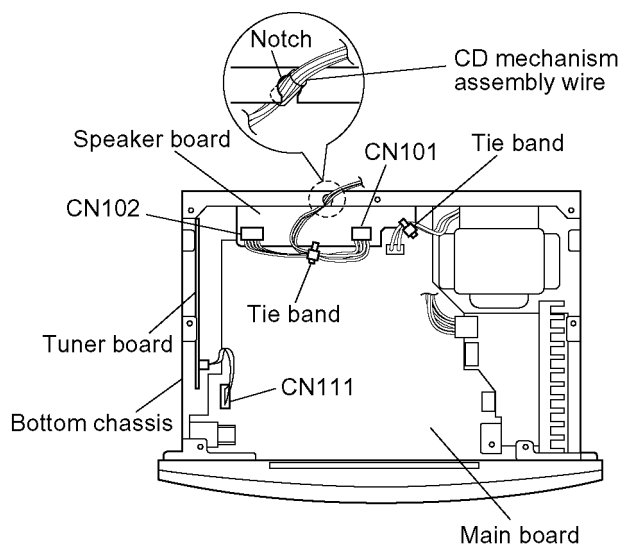


Fig.2-8

2.1.7 Removing the speaker board

(See Figs. 2-8 and 2-9.)

- Remove the top lens. [VS-DT9R only]
- Remove the bottom panel.
- Remove the top panel.
- Remove the CD mechanism assembly.
 - (1) Remove the tie band bundling the wires on the speaker board.
 - (2) Disconnect the wires from connectors CN101 and CN102 on the speaker board.
 - (3) From the rear side of the main body, remove the three screws **H** attaching the speaker/digital out terminals on the speaker board.
 - (4) Take out the speaker board from the bottom chassis.

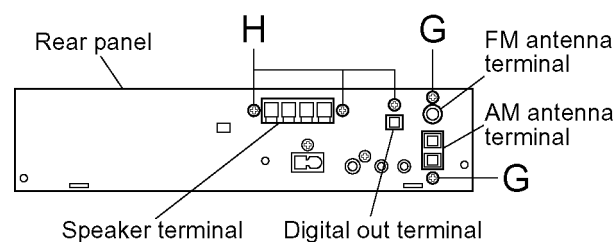


Fig.2-9

[Reference]

- After connecting the wires to the speaker board, bundle them using a tie band.
- Insert the CD mechanism assembly wire into the notch on the bottom chassis. (See Fig. 2-8.)

2.1.8 Removing the main board

(See Figs. 2-10 and 2-11.)

- Remove the top lens. [VS-DT9R only]
 - Remove the bottom panel.
 - Remove the top panel.
 - Remove the CD mechanism assembly.
 - Remove the front panel assembly.
 - Remove the tuner board.
 - Remove the speaker board.
- (1) Disconnect the wire from connector CN192 on the power amplifier board.
 - (2) Disengage the wire clamp bundling the wire of the power transformer.
 - (3) Disconnect the wires from connectors CN181, CN191 and CN194 on the main board.
 - (4) Remove the screw **J**, which retains the main board, together with the wire holder.
 - (5) Remove the three screws **K** and screw **K'** attaching the main board.
 - (6) Remove the two screws **L** attaching the main board and then remove the rear panel.
 - (7) Take out the main board from the bottom chassis.

[Reference]Attaching the main board

- When attaching the screw **K'**, attach the earth wire of the main board at the same time.
- When attaching the screw **J**, also attach the wire holder together with it.
- After connecting the wires to the connectors CN192 and CN193 on the power amplifier board, bundle them using wire holder.

2.1.9 Removing the power amplifier board

(See Fig. 2-12.)

- Remove the top lens. [VS-DT9R only]
 - Remove the bottom panel.
 - Remove the top panel.
 - Remove the CD mechanism assembly.
- (1) Disconnect the wires from connectors CN192 and CN193 on the power amplifier board.
 - (2) Remove the two screws **M** attaching the fan motor.

[Reference]

- It is not necessary to remove the wire from the fan motor.

- (3) Remove the two screws **N** attaching the power amplifier board.
- (4) Lift the power amplifier board, disengage the hook **e** from the heat sink of the main board and take out the power amplifier board.

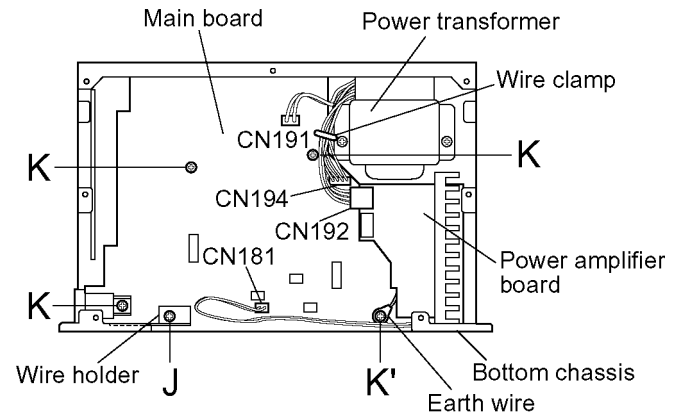


Fig.2-10

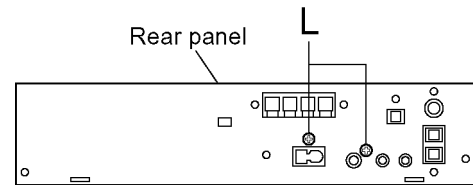


Fig.2-11

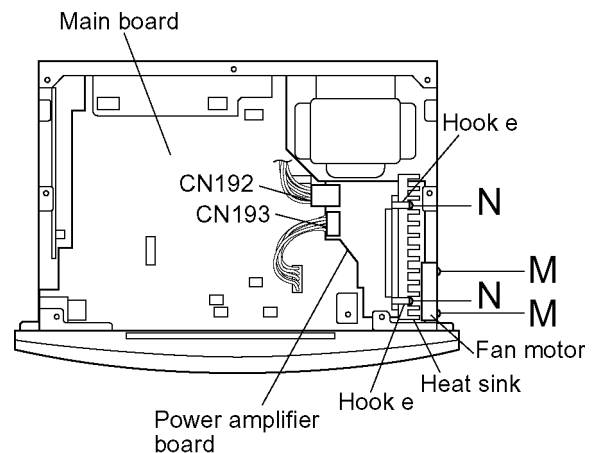


Fig.2-12

2.1.10 Removing the power transformer

(See Fig. 2-13.)

- Remove the top lens. [VS-DT9R only]
- Remove the bottom panel.
- Remove the top panel.
- Remove the CD mechanism assembly.
 - (1) Disengage the wire clamp and tie band bundling the wires of the power transformer.
 - (2) Disconnect the wire from connector CN192 on the power amplifier board.
 - (3) Disconnect the wires from connectors CN191 and CN194 on the main board.
 - (4) Remove the two screws **P** attaching the power transformer.

[Reference]

- After connecting the wires, bundling them using a wire clamp and tie band.

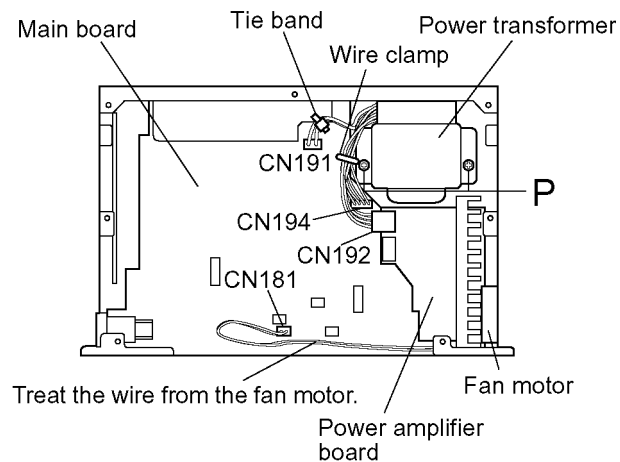


Fig.2-13

2.1.11 Removing the fan motor

(See Figs. 2-13 and 2-14.)

- Remove the top lens. [VS-DT9R only]
- Remove the bottom panel.
- Remove the top panel.
- Remove the CD mechanism assembly.
- Remove the front panel assembly.
 - (1) Disconnect the wire from connector CN181 on the main board.
 - (2) From the right side of the main body, remove the two screws **M** attaching the fan motor.

[Reference]

After mounting the fan motor, treat the wire from the fan motor as shown in fig. 2-13.

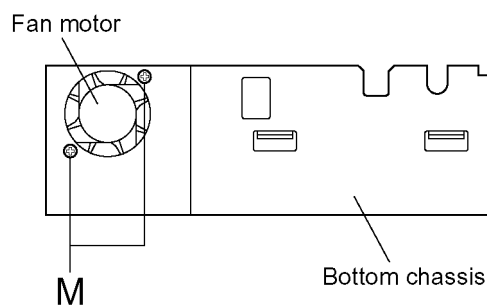


Fig.2-14

2.2 Front panel assembly section

- Remove the top lens. [VS-DT9R only]
- Remove the bottom panel.
- Remove the top panel.
- Remove the CD mechanism assembly.
- Remove the front panel assembly.

2.2.1 Removing the front switch board (See Fig. 2-15.)

From the back side of the front panel assembly, remove the four screws **Q** attaching the front switch board.

2.2.2 Removing the door switch board (See Figs. 2-15 and 2-16.)

- (1) From the back side of the front panel assembly, remove the two screws **R** attaching the door motor assembly.
- (2) Remove the screw **S** attaching the door switch board of the door motor assembly.

2.2.3 Removing the door motor (See Fig. 2-16.)

- Remove the door motor assembly.
 - (1) Remove the stop washers attaching the clutch assembly and gear 2.
 - (2) Remove the clutch assembly, washer and Gear 2.
 - (3) Remove the two screws **T** attaching the door motor.

2.2.4 Removing the front board (See Figs. 2-17 to 2-20.)

- (1) While widening section **f** of the front base in the direction of the arrow, remove the rod gear assembly.
- (2) Slide the moving panel assembly all the way in the direction of the arrow.
- (3) While slightly widening section **g** toward the front, take out the moving panel assembly in the direction of the arrow.
- (4) Remove the two screws **W** attaching the moving base of the moving panel assembly.
- (5) Disengage the engagement sections **h** on the inside of the moving base and at the inside of the moving panel assembly and remove the moving base.
- (6) Remove the two screws **X** attaching the front board.
- (7) Disengage the claw **i** of the moving panel and remove the front board.

[Reference]

- Before attaching the moving base, pass the card wire of the front board through the hole on the moving base. (See Fig.2-19.)

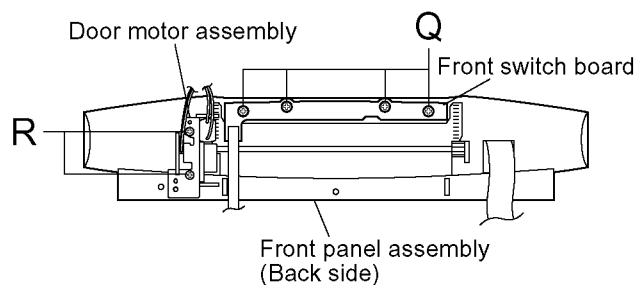


Fig.2-15

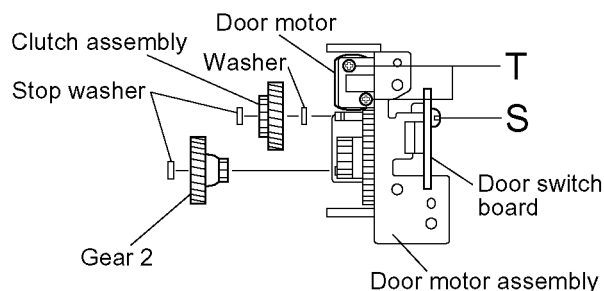


Fig.2-16

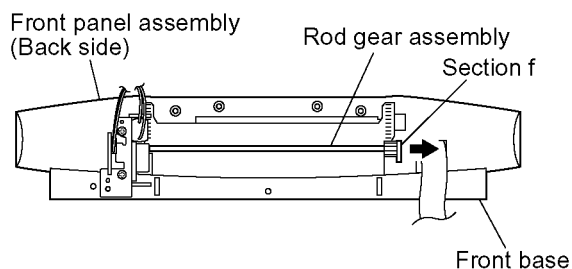


Fig.2-17

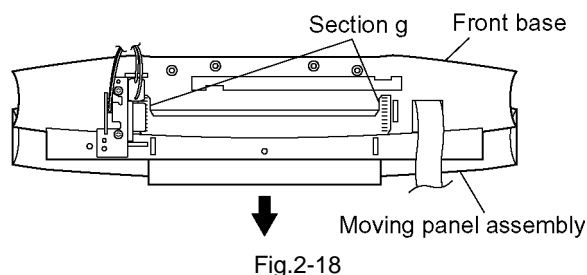


Fig.2-18

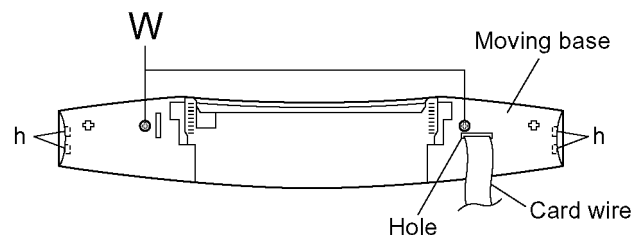


Fig.2-19

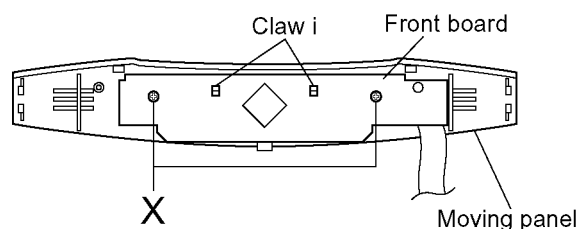


Fig.2-20

2.3 CD mechanism assembly section

2.3.1 Removing the LED board

(See Fig. 2-21.)

From the top side of the CD mechanism assembly, disengage the claw **a** of the top chassis attaching the LED board and then remove the LED board.

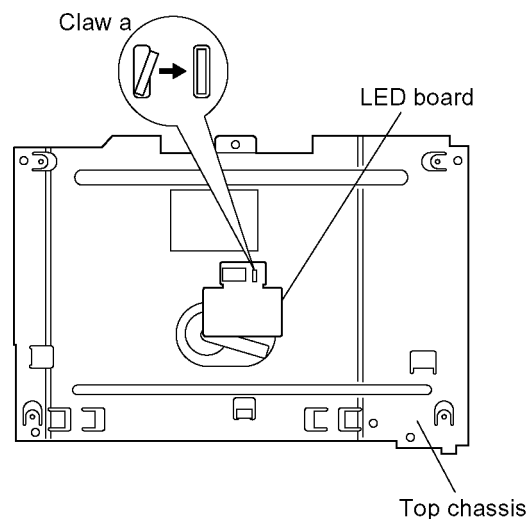


Fig.2-21

2.3.2 Removing the CD mechanism assembly

(See Fig. 2-22.)

- (1) From the back side of the CD mechanism assembly, remove the three screws **A** attaching the CD mechanism assembly on the top chassis.
- (2) Raise the protector in the direction of arrow and then remove the CD mechanism assembly.

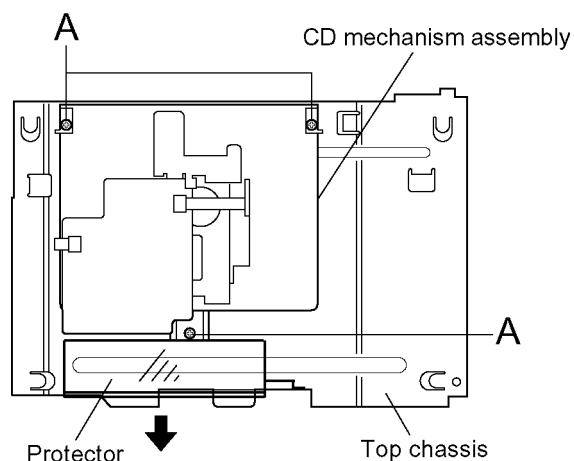


Fig.2-22

2.3.3 Removing the CD servo board

(See Fig. 2-23.)

[Caution]

- Be sure to solder the short land section **b** on the flexible wire before disconnecting the flexible wire from connector CN601 on the CD servo board.

If the flexible wire is disconnected without attaching solder, the pickup unit may be destroyed by static electricity.

- (1) From the back side of the CD mechanism assembly, attach solder to the short land section **b** of the flexible wire that is connected to the connector CN601 of the CD servo board.
- (2) Disconnect the flexible wire from connector CN601 on the CD servo board.
- (3) Disconnect the card wires from connectors CN611 and CN612 on the CD servo board.
- (4) Remove the two screws **B** attaching the CD servo board.
- (5) Lift the front edge of the CD servo board slightly and disengage it from the projection **c** and then from the engagement section **d**.

[Caution]

- In the assembly, be sure to remove solder from the short land section **b** after connecting the flexible wire.

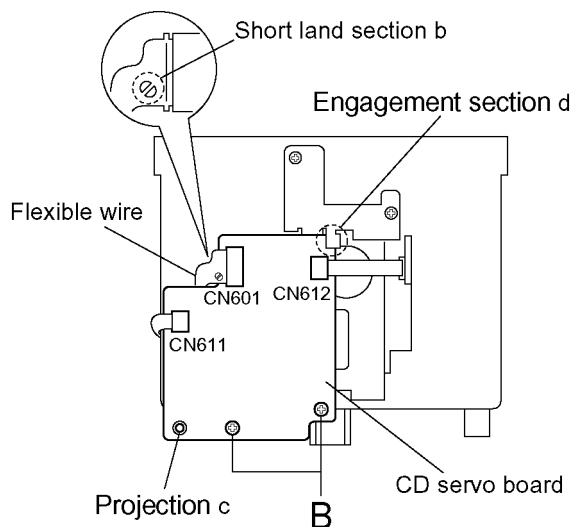


Fig.2-23

2.3.4 Removing the traverse mechanism assembly

(See Fig. 2-24.)

- Remove the CD servo board.
 - (1) Remove the two screws **C** attaching the CD servo board bracket.
 - (2) Remove the two screws **D** attaching the traverse mechanism assembly.
 - (3) Disengage the claw **e** attaching the traverse mechanism assembly and then take out the traverse mechanism assembly.

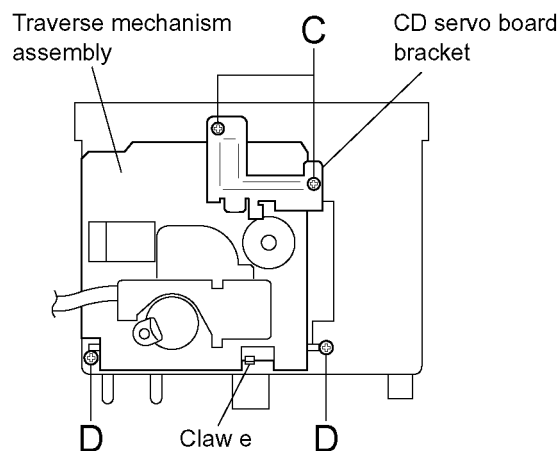


Fig.2-24

2.3.5 Removing the pickup unit

(See Figs. 2-25 and 2-26.)

- Remove the CD servo board.
- Remove the traverse mechanism assembly.
 - (1) From the top side of the traverse mechanism assembly, remove the two screws **E** attaching the shaft.
 - (2) From the traverse mechanism assembly, disengage the section **f** of the pickup unit and then remove the pickup unit with the shaft.
 - (3) Pull the shaft out of the pickup unit.
 - (4) Remove the screw **F** attaching the rack plate from the pickup unit.
 - (5) Remove the screw **G** attaching the P.S. spring from the pickup unit.

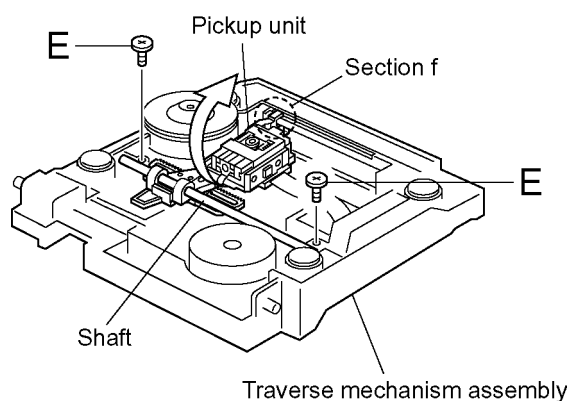


Fig.2-25

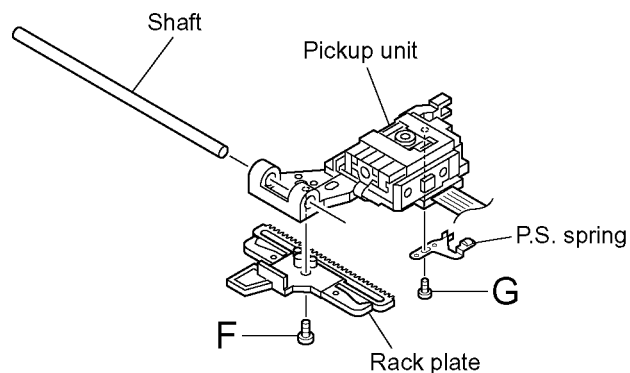


Fig.2-26

2.3.6 Attaching the pickup unit (See Figs. 2-27 and 2-28.)

[Reference]

Refer to the explanation of "Removing the pickup unit" on the preceding page.

- (1) Attach the P.S. spring and rack plate to the pickup unit.
- (2) Insert the shaft into the pickup unit.
- (3) Engage the section **f** of the pickup unit with the traverse mechanism assembly first, and set the both ends of the shaft in the grooves **g** and **h**.
- (4) After making sure that the section **j** of the rack plate is meshed correctly with the middle gear, attach the shaft using the two screws **E**.

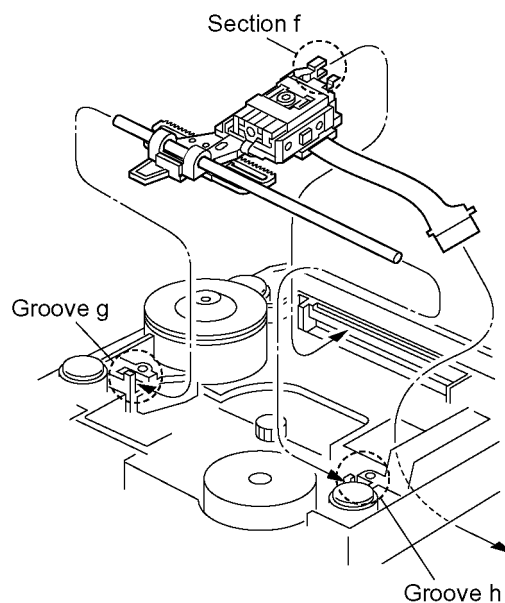


Fig.2-27

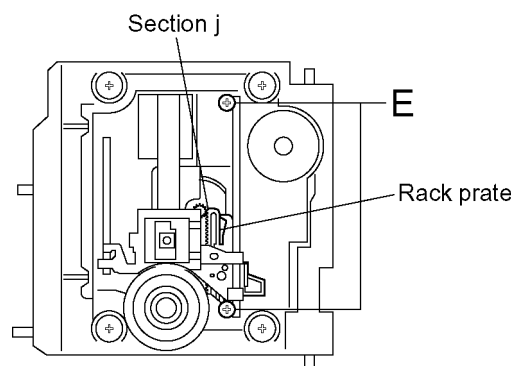


Fig.2-28

2.3.7 Removing the traverse mechanism board (See Fig.2-29 .)

- Remove the CD servo board.
- Remove the traverse mechanism assembly.
 - (1) From the back side of the traverse mechanism assembly, disconnect the feed motor wires that are soldered on the traverse mechanism board.
 - (2) Remove the two screws **H** attaching the traverse mechanism board.

2.3.8 Removing the feed motor (See Fig. 2-29.)

- Remove the CD servo board.
- Remove the traverse mechanism assembly.
 - (1) From the back side of the traverse mechanism assembly, disconnect the feed motor wires that are soldered on the traverse mechanism board.
 - (2) Remove the two screws **J** attaching the feed motor.

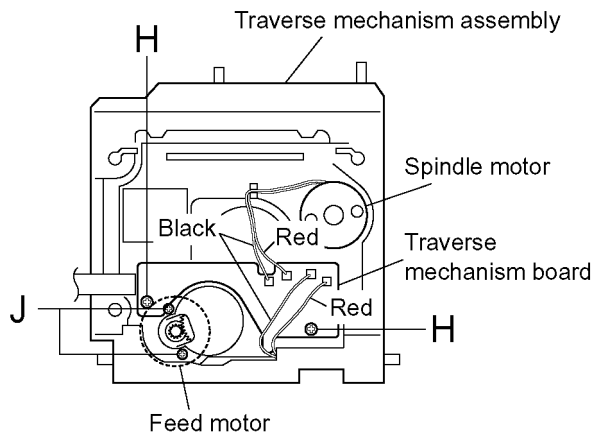


Fig.2-29

2.3.9 Removing the switch board

(See Fig.2-30.)

- Remove the CD mechanism assembly.
 - (1) From the top side of the CD mechanism assembly, remove the screw **K** attaching the switch board.
 - (2) Lift the switch board slightly and then remove the wire from connector CN101 on the switch board.

2.3.10 Removing the loading motor assembly

(See Figs.2-23, 2-30 to 2-32.)

- Remove the CD mechanism assembly.
 - (1) From the back side of the CD mechanism assembly, disconnect the card wire from connector CN612 on the CD servo board. (See Fig.2-23.)
 - (2) From the top side of the CD mechanism assembly, remove the two screws **L** attaching the clamber base assembly.
 - (3) Disconnect the wire from connector CN101 on the switch board while lifting the clamber base assembly slightly and remove the clamber base assembly.
 - (4) Remove the three screws **M** attaching the roller holder assembly and take out the roller holder assembly.
 - (5) Disconnect the wires from connectors CN103 and CN104 on the loading motor assembly.
 - (6) Remove the belt of the loading motor assembly.
 - (7) Remove the two screws **N** attaching the loading motor assembly and take out the loading motor assembly.

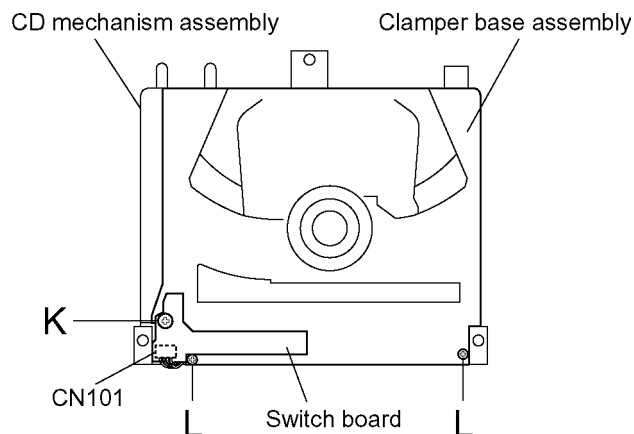


Fig.2-30

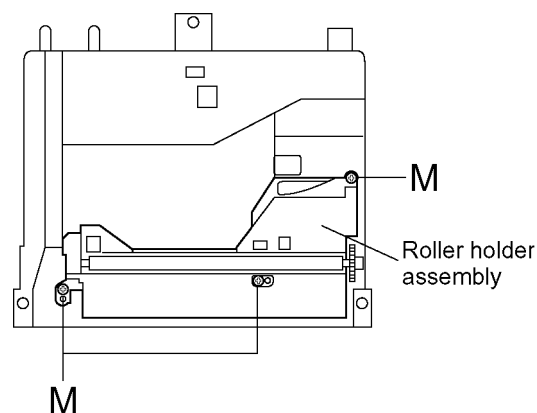


Fig.2-31

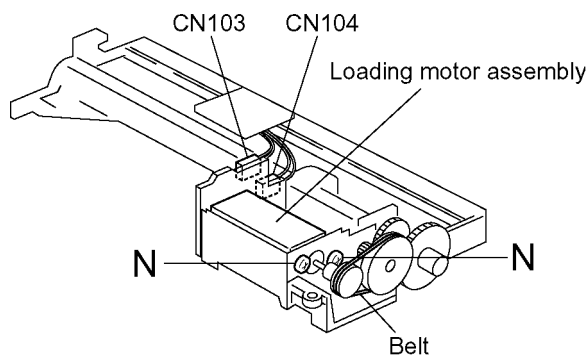
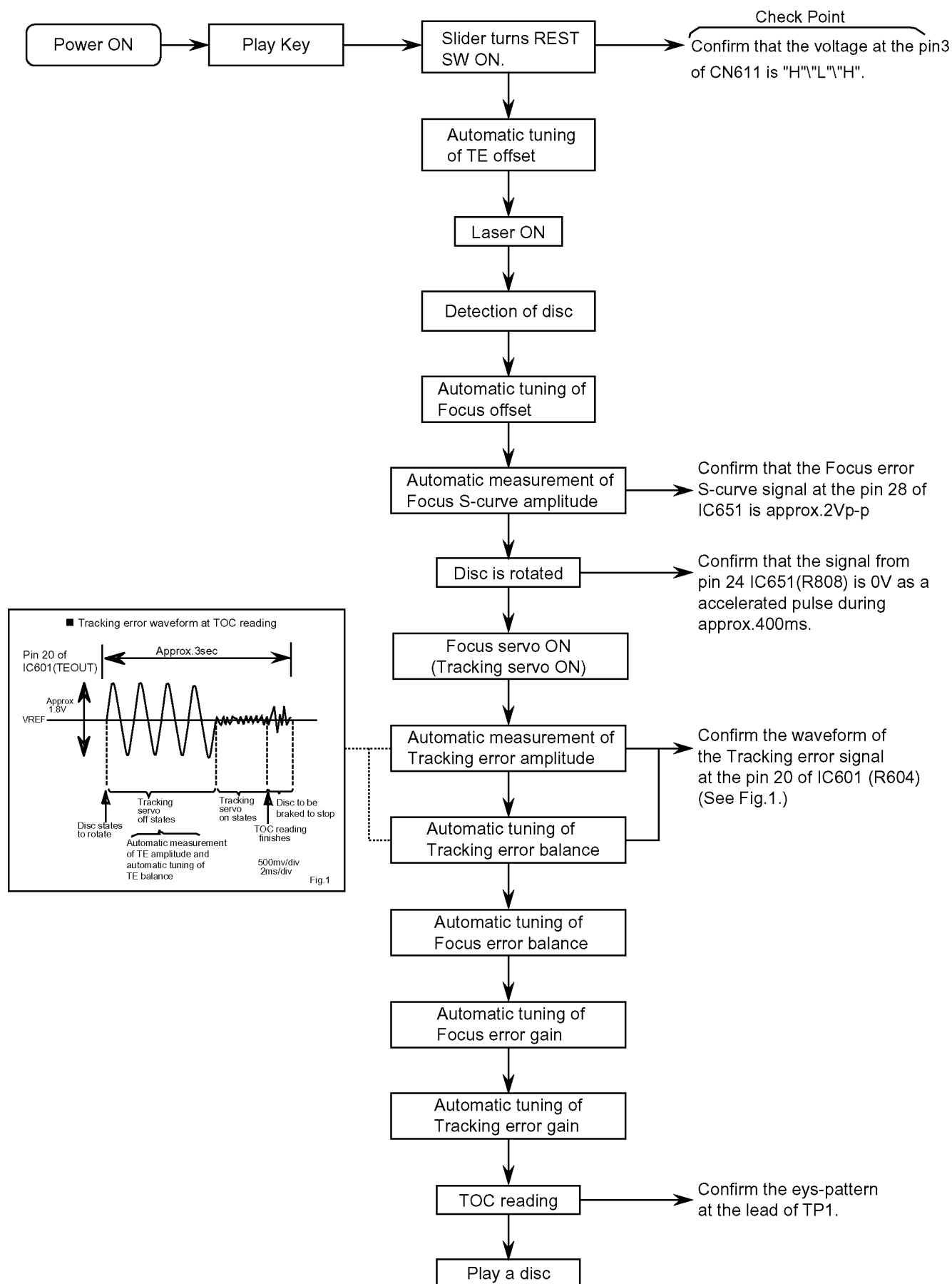


Fig.2-32

SECTION 3

Adjustment method

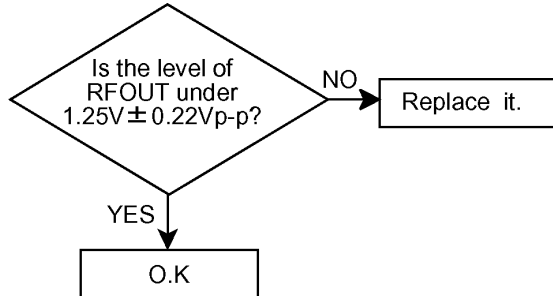
3.1 Flow of functional operation until TOC read



3.2 Maintenance of laser pickup

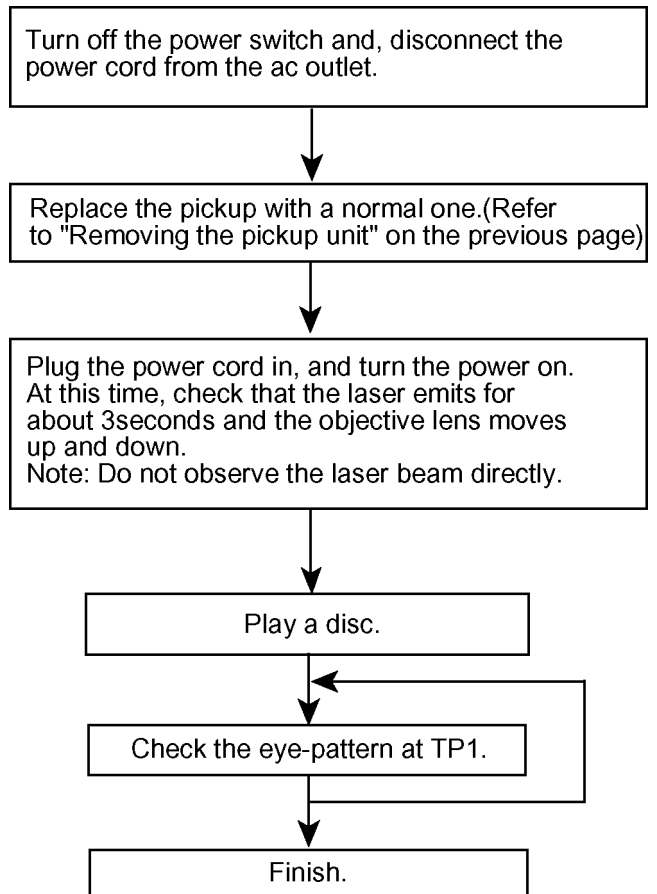
- (1) Cleaning the pick up lens
Before you replace the pick up, please try to clean the lens with a alcohol soaked cotton swab.
- (2) Life of the laser diode
When the life of the laser diode has expired, the following symptoms will appear.

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



- (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.

3.3 Replacement of laser pickup

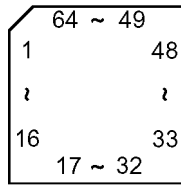


SECTION 4

Description of major ICs

4.1 MN101CP30AKJ (IC701) : System control microcomputer

4.1.1 Terminal layout



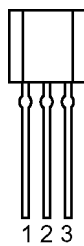
4.1.2 Pin function

Pin No.	Symbol	I/O	Function
1	THERM	I	Temperature detection, ON/OFF control of FAN_SW signal(pin 57)
2	KEY1	I	Key switch input of the main body
3	KEY2	I	Key switch input of the main body
4	VERSION	I	Switching signal for destination
5	GND	-	Ground
6	VREF+	-	Reference voltage for A/D converter (Connect to VDD.)
7	VDD	-	Power supply for microcomputer
8	OSC2	O	8MHz main clock output
9	OSC1	I	8MHz main clock input
10	VSS	-	Ground for microcomputer
11	XI	I	32.768kHz sub clock input
12	XO	O	32.768kHz sub clock output
13	GND	-	Ground
14	CDTX	O	CD(FMU-F1) communication
15	CDRX	I	CD(FMU-F1) communication
16	FLRST	O	FL reset output
17	FLDATA	I/O	FL driver communication data input/output
18	FLCS	O	FL driver communication chip select output
19	FLCLK	O	FL driver communication clock output
20	STBLEDH	O	Standby LED for horizontal establishment (POWER_OFF/ON=H)
21	RST	I	Microcomputer reset input
22	STBLEDV	O	Standby LED for vertical establishment (POWER_OFF/ON=H)
23	FTU	O	Power supply for tuner
24	TUDATA	I/O	PLL input/output data (Connect to tuner.)
25	TUST	O	PLL strobe output (Connect to tuner.)
26	TUCK	O	PLL clock output (Connect to tuner.)
27	MPX	I	Stereo detection (Connect to tuner.), STEREO=L
28	RDSCK	I	RDS clock input (Connect to tuner.)
29	RDSI	I	RDS data input (Connect to tuner.)
30	REM	I	Remote controller input
31	GND	-	Ground
32	SMUTE	O	Mute signal, MUTE=L
33	AHB	O	Bass boost, ON=L, POWER_OFF=L
34	VOLDI	O	Data output (Connect to VOLUME_IC.)
35	VOLCE	O	Enable output (Connect to VOLUME_IC.)
36	VOLCL	O	Clock output (Connect to VOLUME_IC.)

37	LOMUTE	O	Line out mute signal, MUTE=L
38	TREMCONT	I	Remote controller effective signal for horizontal establishment, L : effective state
39		-	Not connect
40	H-V	I	Detecting signal for horizontal or vertical establishment
41		-	Not connect
42		-	Not connect
43		-	Not connect
44	CDRSI	O	CD reset output (Connect to FMU-F1.)
45		-	Not connect
46	BLCTL	-	Not connect
47	PSAVE	O	Power save mode ON/OFF signal, SAVE=H
48	FCD	-	CD power supply ON/OFF, not use
49	POUT	O	Main power supply ON/OFF
50	TOPLED1	O	LED color control (Software PWN output)
51	TOPLED2	O	LED color control (Software PWN output)
52	STBDIM	I	Dimmer control for STBYLED_H/V
53	DOOR1	I	Moving panel position detecting signal, CLOSE=L
54	DOOR2	I	Moving panel position detecting signal, OPEN=L
55	+BCTL	O	Unnecessary power supply cut-off signal for outage, Outage=H
56	BUP	I	Outage detecting signal (Backup mode)
57	FANSW	O	Fan motor ON/OFF signal
58	MT0	O	Panel open (Motor driver)
59	MT1	O	Panel close (Motor driver)
60	MTS	O	Panel action speed (Not use)
61	VREF-	-	Reference voltage for A/D converter (Connect to VSS.)
62	LOCK	I	Detection signal for panel action load
63	SAFETYCD	I	Detecting signal for CD abnormal voltage
64	SAFETY	I	Detecting signal for abnormal voltage

4.2 KIA78S06P (IC702) : Regulator

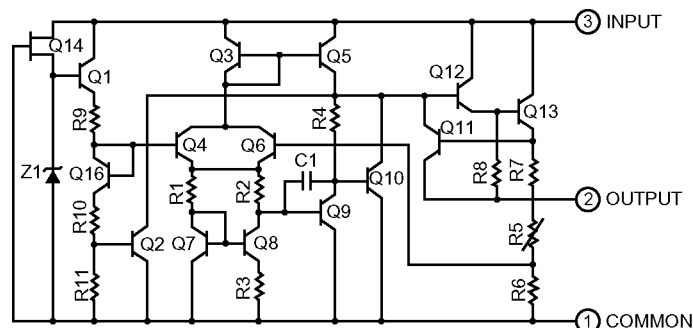
4.2.1 Terminal layout



4.2.2 Pin function

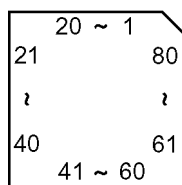
Pin No.	Function
1	Output
2	Common
3	Input

4.2.3 Block diagram



4.3 MN662790RSC (IC651) : Digital servo & Digital signal processor

4.3.1 Terminal layout



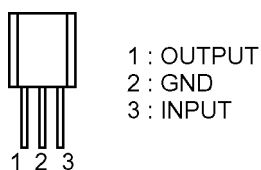
4.3.2 Pin function

Pin No.	Symbol	I/O	Function
1	BCLK	O	Bit clock output for SRDATA
2	LRCK	O	LR signal separation output
3	SRDATA	O	Serial data output
4	DVDD1	-	Power supply for digital circuit
5	DVSS1	-	GND for digital circuit
6	TX	O	Digital audio interface output
7	MCLK	I	Micro computer command clock signal input
8	MDATA	I	Micro computer command data input
9	MLD	I	Micro computer command load signal input (L:Load)
10	SENSE	-	Not use
11	FLOCK	-	Not use
12	TLOCK	-	Not use
13	BLKCK	O	Sub code block signal output
14	SQCK	I	External clock input for sub code Q register input
15	SUBQ	O	Sub code Qdata output
16	/DMUTE	I	Muting input (H:Mute)
17	STAT	O	Status signal input
18	DSP_RST	I	Reset signal input (L:Reset)
19	SMCK	-	Not use
20	CSEL	I	Connect to DVDD1 (H fix)
21	TEST2	-	Not use
22	TVD	O	Traverse drive output
23	PC	-	Not use
24	ECM	O	Spindle motor drive signal (Enforced mode output)
25	ECS	O	Spindle motor drive signal (Servo error signal output)
26	VDETMON	-	Not use
27	TRD	O	Tracking drive output
28	FOD	O	Focus drive output
29	VREF	I	Reference voltage for D/A output block
30	FBAL	O	Focus balance adjust signal output
31	TBAL	O	Tracking balance adjust signal output
32	FE	I	Focus error signal input (Analog input)
33	TE	I	Tracking error signal input (Analog input)
34	RF ENV	I	RF envelope signal input (analog input)
35	TEST3	I	Connect to GND
36	OFT	I	Off track signal input (H:Off track)
37	TRCRS	I	Track crosssignal input
38	/RFDET	I	RF detect signal input (L:Detect)
39	BDO	I	Drop out signal input (H:Drop out)

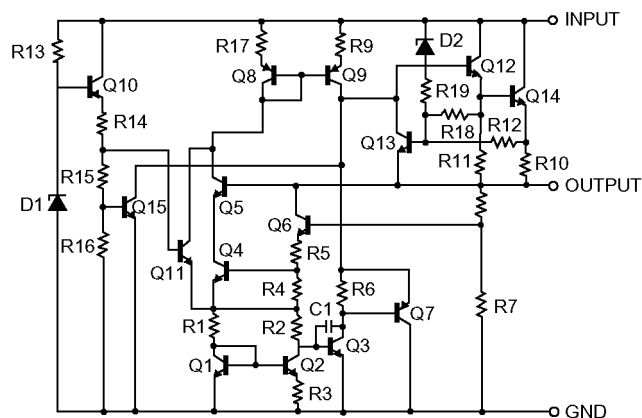
40	LDON	-	Not use
41	PLLF2	-	Not use
42	DSLBD A	-	Not use
43	WVEL	-	Not use
44	ARF	I	RF signal input
45	IREF	I	Reference current input
46	DRF	I	Bias pin for DSL
47	DSL F	I/O	Loop filter pin for DSL
48	PLLF	I/O	Loop filter pin for PLL
49	VCOF	I/O	Loop filter pin for VCO
50	AVDD2	-	Power supply for analog circuit
51	AVSS2	-	GND for analog circuit
52	EFM	-	Not use
53	DSL B	O	DSL balance output
54	VCOF2	I/O	Loop filter pin for Digital servo VCO
55	SUBC	-	Not use
56	SBCK	-	Not use
57	VSS	-	GND for crystal oscillation circuit
58	X1	I	Input for crystal oscillation circuit (f=16.9344MHz)
59	X2	O	Output for crystal oscillation circuit (f=16.9344MHz)
60	VDD	-	Power supply for crystal oscillation circuit
61	BYTCK	-	Not use
62	LD	O	Laser ON signal output (H : ON)
63	GAIN	O	Gain control output (H : CD-RW)
64	IPFLAG	-	Not use
65	FLAG	O	Flag signal output
66	CLVS	-	Not use
67	CRC	-	Not use
68	DEMPH	-	Not use
69	RESY	-	Not use
70	IOSEL	I	Mode select pin , Connect to DVDD1 (H fix)
71	/TEST	I	Test pin ,Connect to DVDD1 (H fix)
72	AVDD1	-	Power supply for analog circuit
73	OUTL	O	L-channel audio output
74	AVSS1	-	GND for analog circuit
75	OUTR	O	R-channel audio output
76	DQSY	-	Not use
77	Vcc5V	-	Connect to power supply
78	PSEL	I	IOSEL=H , Test pin , Connect to GND (L fix)
79	MSEL	I	IOSEL=H , SMCK output , Frequency select pin
80	SSEL	I	IOSEL=H , SMCK output , SUBQ output mode select pin

4.4 UPC78L05J-T (IC191) : Three terminal voltage regulator

4.4.1 Terminal layout

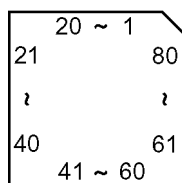


4.4.2 Circuit diagram



4.5 UPD780024AGKB62 (IC251) : Unit microcomputer

4.5.1 Terminal layout



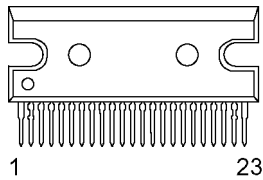
4.5.2 Pin function

Pin No.	Symbol	I/O	Function
1	P50/A8	-	Connect to ground
2	P59/A9	-	Not use
3	MCS	O	Synchronous/asynchronous output
4	MRDY	I	Ready signal input
5	CDINDEX	-	Not use
6	CDEMP	-	Not use
7	CDTNO	-	Not use
8	CDCOPY	-	Not use
9	VSSO	-	Ground terminal
10	VDDO	-	Power supply terminal
11	P30	-	Not use
12	P31	-	Not use
13	P32	-	Not use
14	/DRMUTE	O	Mute signal output
15	SUBQ	I	Sub code Q data input
16	P35/SO31	-	Not use
17	SQCK	O	Clock output for sub code Q register
18	KCMND	I	Command signal input
19	MSTAT	O	CD control status output
20	KCLK	I	CD control command clock input
21	RXDO	I	Command input
22	TXDO	O	Status output
23	P25/SCKO	-	Connect to ground
24	VDD1	-	Power supply terminal
25	AVSS	-	Ground terminal
26	VDTLV	I	Sensitivity adjustment for vibrating detection
27	P16/ANI6	-	Not use

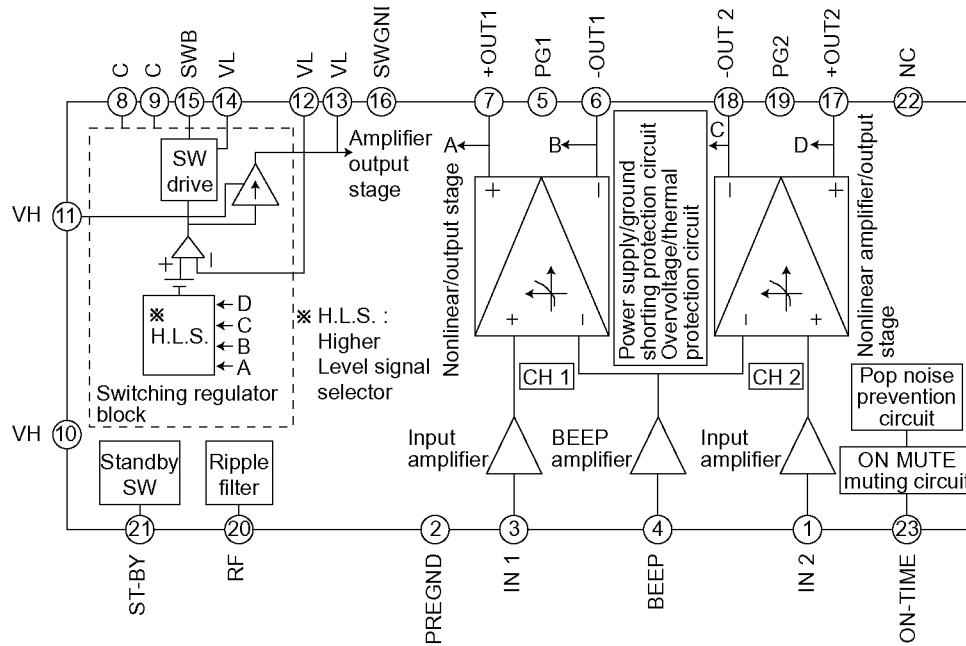
28	PCHK	I	Voltage monitor (for safety)
29	P14/ANI4	-	Connect to ground
30	P13/ANI3	-	Connect to ground
31	P12/ANI2	-	Connect to ground
32	/REST	I	Rest switch input
33	SW1	I	Mechanism switch (Photo sensor)
34	AVREF	-	Reference voltage for analog circuit
35	AVDD	-	Power supply terminal for analog circuit
36	/RESET	I	CD control reset input
37	XT2	-	Not use
38	XT1	-	Connect to power supply
39	IC	-	Connect to ground
40	X2	-	Connect to external crystal oscillator
41	X1	-	Connect to external crystal oscillator
42	VSS1	-	Ground terminal
43	FLAG	I	Flag signal input
44	BLKCK	I	Sub code block clock signal input
45	/RFDET	I	RF signal amplitude detecting signal input
46	EQx2	I	Equalizer select signal input
47	EQx4	I	Equalizer select signal input
48	P71/TIO1	-	Not use
49	FWD	O	Loading (EJECT) output
50	REW	O	Loading (LOAD) output
51	IREFx4	O	Switching signal for IREF current (4x mode : L)
52	P75/BUZ	-	Not use
53	/RESET	O	Reset signal output (L: reset)
54	STAT	I	Status signal input
55	/DMUTE	O	Muting output
56	/P.ON	O	Power ON/OFF switching signal output
57	MLD	O	Microcomputer command load signal output
58	MDATA	O	Microcomputer command data output
59	MCLK	O	Microcomputer command clock signal output
60	P43/AD3	-	Not use
61	P44/AD4	-	Not use
62	P45/AD5	-	Not use
63	/SW2	I	Mechanism switch (Loading switch)
64	/SW3	I	Mechanism switch (Chucking completion)

4.6 LA4905 (IC301) : 2ch BTL power IC

4.6.1 Terminal layout

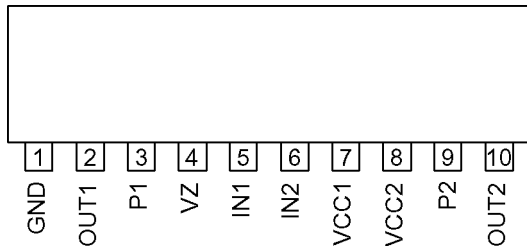


4.6.2 Block diagram



4.7 LB1641 (IC108) : DC motor driver

4.7.1 Terminal layout

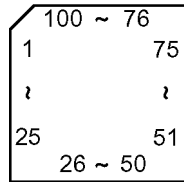


4.7.2 Pin function

Input		Output		Mode
IN1	IN2	OUT1	OUT2	
0	0	0	0	Brake
1	0	1	0	Clockwise
0	1	0	1	Counterclockwise
1	1	0	0	Brake

4.8 MN101CP35DKB (IC811) : FL driver microcomputer

4.8.1 Terminal layout

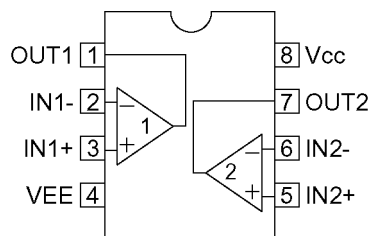


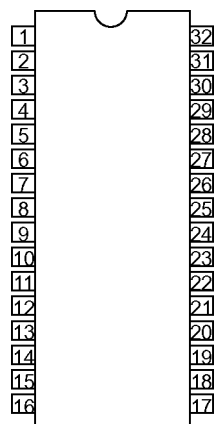
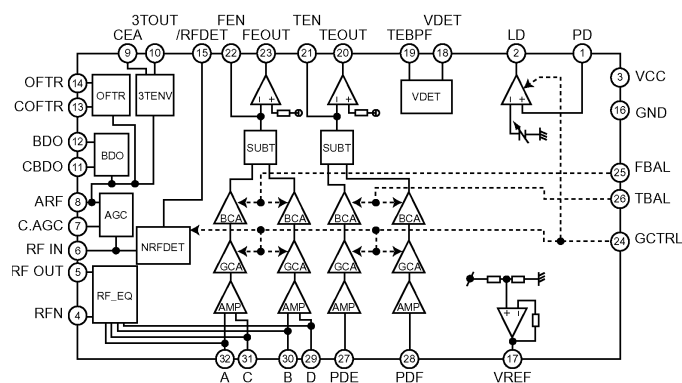
4.8.2 Pin function

Pin No.	Symbol	I/O	Function
1	NC	-	Not connect
2	FLDATA	I/O	FL driver communication data input/output
3	FLCLK	I	FL driver communication clock input
4	NC	-	Not connect
5	FLCS	I	FL driver communication chip select input
6,7	NC	-	Not connect
8	B5V	-	VDD(B5V)
9	OSC2	O	8MHz main clock output
10	OSC1	I	8MHz main clock input
11,12	GND	-	Ground
13	NC	-	Not connect
14~23	GND	-	Ground
24	VREF	-	Reference voltage
25	NC	-	Not connect
26	FLRST	I	FL reset input
27~30	NCV70	-	Not connect
31	REMCON_HO	O	Switching signal for receiver part of remote controller
32	NCV70	-	Not connect
33~38	GND	-	Ground
39,40	NCV70	-	Not connect
41	KEYLEDH	-	Not use
42	KEYLEDV	-	Not use
43	KEYDIMMER	-	Not use
44~46	NC	-	Not connect
47	G1	-	Not connect
48~60	G2 G14	O	Grid signal outputs
61	G15	-	Not connect
62~64		-	Not connect
65~99	S1 S35	O	Segment signal outputs
100	-VPP	-	VPP

4.9 BA15218F (IC102) : Dual operational amplifier

4.9.1 Terminal layout & Block diagram

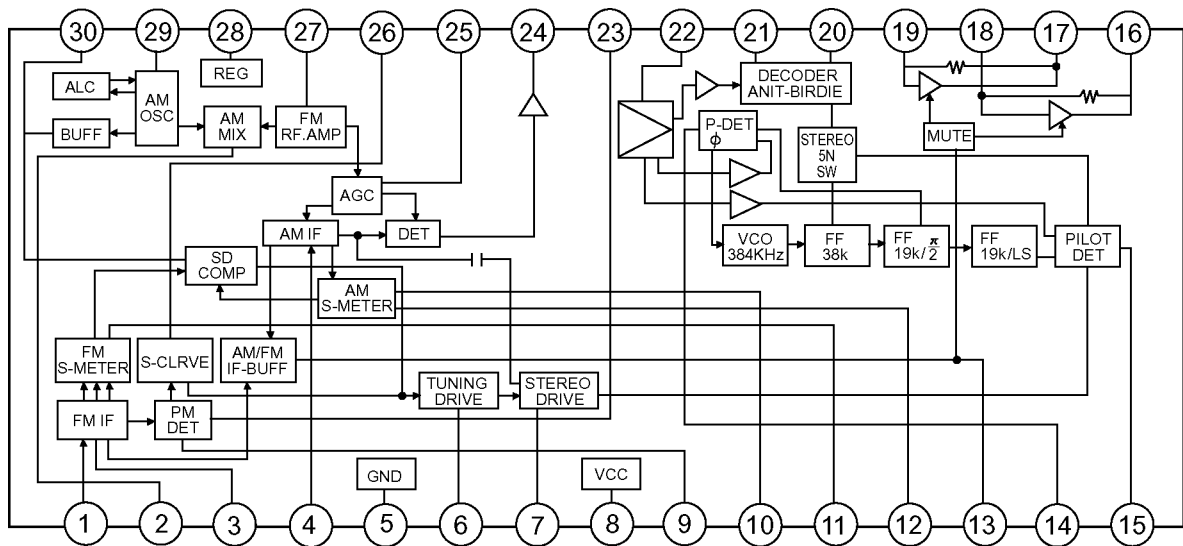


4.10 AN22000A (IC601) : RF & Servo amplifier**4.10.1 Terminal layout****4.10.2 Block diagram****4.10.3 Pin function**

Pin No.	Symbol	Function
1	PD	APC Amp. Input terminal
2	LD	APC Amp. Output terminal
3	VCC	Power supply terminal
4	RFN	RF addition Amp. Reversing input terminal
5	RF OUT	RF addition Amp. Output terminal
6	RF IN	AGC input terminal
7	C.AGC	Terminal of connection of capacity of AGC loop filter.
8	ARF	AGC output terminal
9	CEA	Capacity connection terminal for HPF-Amp.
10	3TOUT	3TENV output terminal
11	CBDO	Capacity connection terminal for RF shade side envelope detection
12	BDO	BDO output terminal
13	COFTR	Capacity connection terminal for RF discernment side envelope detection
14	OFTR	OFTR output terminal
15	/RFDET	RFDET output terminal (Negative logic)
16	GND	Earth terminal
17	VREF	VREF output terminal (Not use)
18	VDET	VDET output terminal (Not use)
19	TEBPF	VDET input terminal
20	TEOUT	TE Amp. output terminal
21	TEN	TE Amp. reversing input terminal
22	FEN	FE Amp. reversing input terminal
23	FEOUT	FE Amp. output terminal
24	GCTRL	Terminal GCTL & APC
25	FBAL	FBAL control terminal
26	TBAL	TBAL control terminal
27	PDE	Tracking signal input terminal 1
28	PDF	Tracking signal input terminal 2
29	D	Focus signal input terminal 4
30	B	Focus signal input terminal 2
31	C	Focus signal input terminal 3
32	A	Focus signal input terminal 1

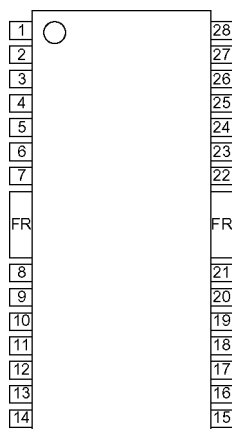
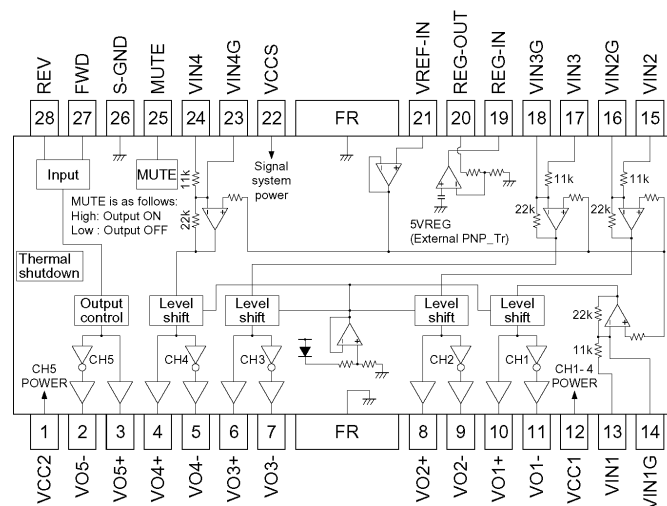
4.11 LA1838 (IC1) : FM AM IF amplifier & Detector, FM MPX Decoder

4.11.1 Terminal layout

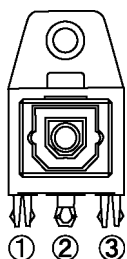
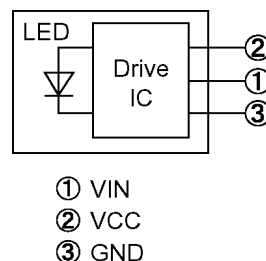


4.11.2 Pin function

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

4.12 LA6575H (IC801) : Focus & Spindle & Feed & Tracking BTL driver**4.12.1 Terminal layout****4.12.2 Block diagram****4.12.3 Pin function**

Pin No.	Symbol	Function	Pin No.	Symbol	Function
1	VCC2	Power supply for CH3/CH4/CH5	15	VIN2	Not use
2	VO5-	Loading output (-)	16	VIN2G	Spindle drive input
3	VO5+	Loading output (+)	17	VIN3	Not use
4	VO4+	Tracking output (+)	18	VIN3G	Focus drive input
5	VO4-	Tracking output (-)	19	REG-IN	Connect to power supply
6	VO3+	Focus output (+)	20	REG-OUT	Not use
7	VO3-	Focus output (-)	21	VREF-IN	Reference voltage input terminal
8	VO2+	Spindle output (+)	22	VCCS	Signal system power
9	VO2-	Spindle output (-)	23	VIN4G	Tracking drive input
10	VO1+	Traverse output (+)	24	VIN4	Not use
11	VO1-	Traverse output (-)	25	MUTE	Mute for CH1/CH2/CH3/CH4
12	VCC1	Power supply for CH1/CH2	26	S-GND	Signal system ground
13	VIN1	Not use	27	FWD	Loading input (EJECT)
14	VIN1G	Traverse drive input	28	REW	Loading input (LOAD)

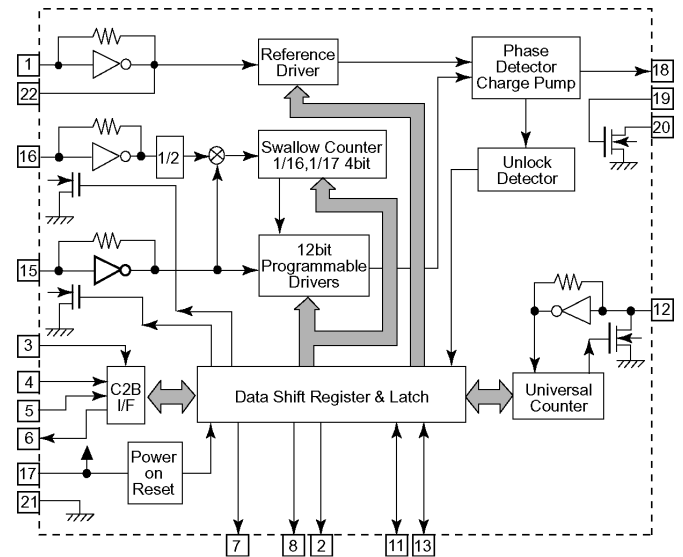
4.13 GP1FA550TZ (J3601) : Fiber optic transmitter/Receiver**4.13.1 Terminal layout****4.13.2 Block diagram**

4.14 LC72136N (IC2) : PLL frequency synthesizer

4.14.1 Terminal layout

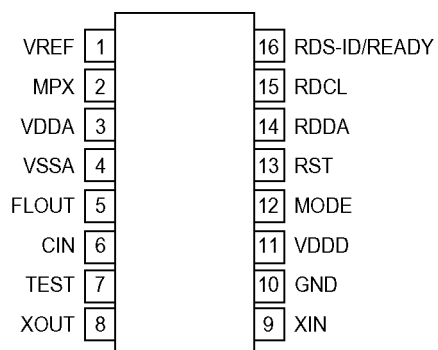
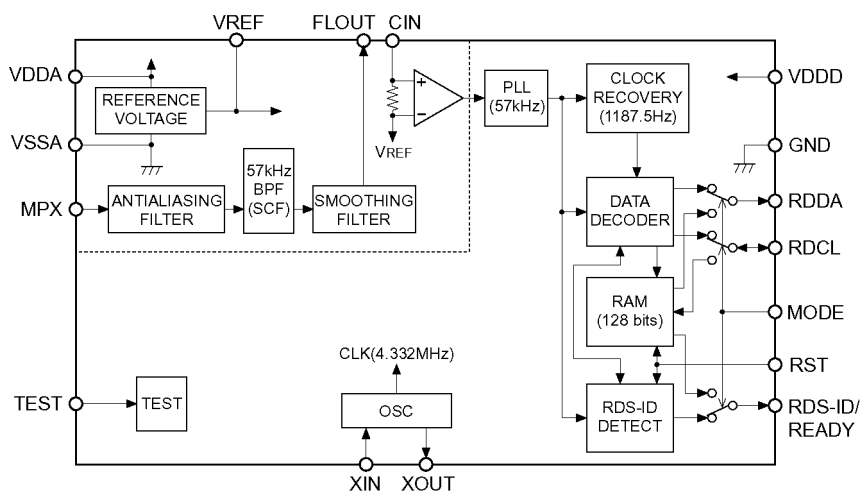
XOUT	1	22	XIN
FM	2	21	VSS
CE	3	20	LPFOUT
DI	4	19	LPFIN
CK	5	18	PD
DO	6	17	VDD
ST/MONO	7	16	FMOSC
AM/FM	8	15	AMOSC
LW	9	14	
MW	10	13	IF REQ
SDIN	11	12	FM/AMIF

4.14.2 Block diagram



4.14.3 Pin function

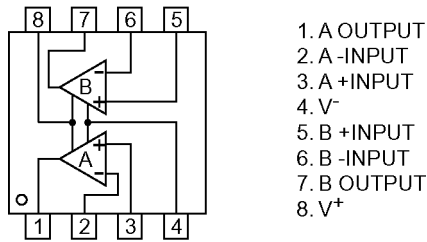
Pin No.	Symbol	I/O	Function
1	XOUT	I	X'tal oscillator connect (75kHz)
2	FM	O	LOW:FM mode
3	CE	I	Chip enable, When data output/input for 4pin(input) and 6pin(output): H
4	DI	I	Input for receive the serial data from controller
5	CK	I	Sync signal input use
6	DO	O	Data output for Controller, Output port
7	ST/MONO	O	"Low": MW mode
8	AM/FM	O	Open state after the power on reset
9	LW	I/O	Input/output port
10	MW	I/O	Input/output port
11	SDIN	I/O	Data input/output
12	FM/AM IF	I	IF counter signal input
13	IF REQ	O	IF signal output
14		-	Not use
15	AMOSC	I	AM Local OSC signal output
16	FMOSC	I	FM Local OSC signal input
17	VDD	-	Power supply(VDD=4.5-5.5V), When power ON:Reset circuit move
18	PD	O	PLL charge pump output(H: Local OSC frequency Height than Reference frequency. L: Low Agreement: Height impedance)
19	LPFIN	I	Input for active low pass filter of PLL
20	LPFOUT	O	Output for active low pass filter of PLL
21	VSS	-	Connected to GND
22	XIN	I	X'tal oscillator connect (75KHz)

4.15 LC72723 (IC3) : RDS decoder**4.15.1 Terminal layout****4.15.2 Block diagram****4.15.3****4.15.4 Pin function**

Pin No.	Symbol	I/O	Function
1	VREF	O	Reference voltage output (Vdda/2)
2	MPX	I	Base band (multiplex) signal input
3	VDDA	-	Analog system power supply (+5V)
4	VSSA	-	Analog system ground
5	FLOUT	O	Subcarrier output (filter output)
6	CIN	I	Subcarrier input (comparator input)
7	TEST	I	Test input
8	XOUT	O	Crystal element output (4.332MHz)
9	XIN	I	Crystal element input (or external reference signal input)
10	GND	-	Digital system ground
11	VDDD	-	Digital system power supply (+5V)
12	MODE	I	Readout mode setting (0:master, 1:slave)
13	RST	I	RDS ID and RAM reset (Active high logic)
14	RDDA	O	RDS data output
15	RDCL	I/O	RDS clock output (master mode)/RDS clock input (slave mode)
16	RDS-ID/READY	O	RDS ID/ready output (Active low)

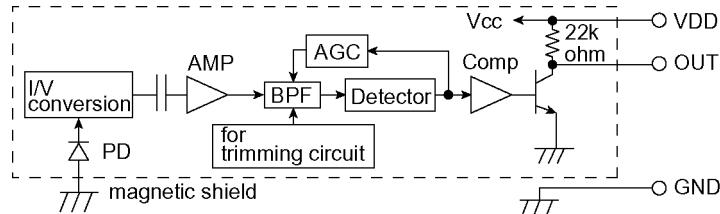
4.16 NJM4580D-D (IC101) : Dual operational amplifier

4.16.1 Terminal layout & Block diagram



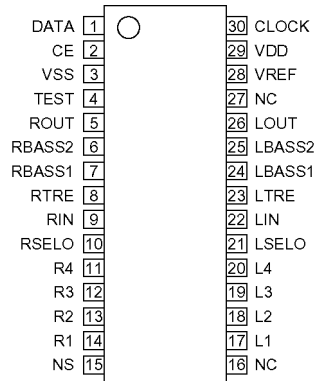
4.17 RPM6938-SV4 (IC801, IC802, IC812) : Remote control receiver

4.17.1 Block diagram

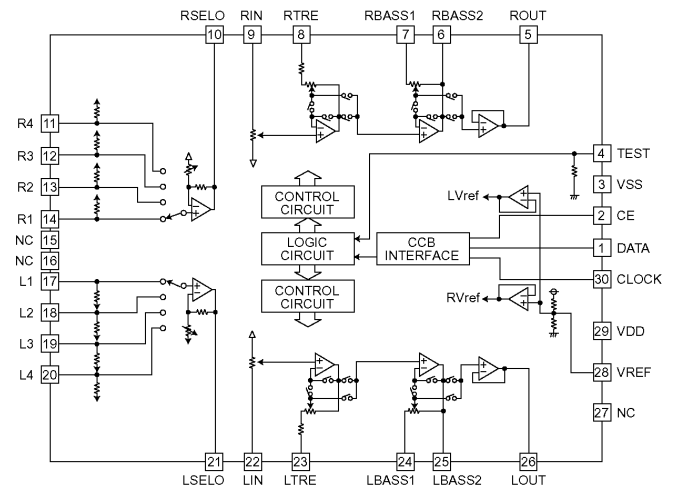


4.18 LC75342M (IC501) : E. volume

4.18.1 Terminal layout



4.18.2 Block diagram

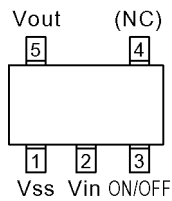


4.18.3 Pin function

Pin No.	Symbol	Function	Pin No.	Symbol	Function
1	DATA	Serial data and clock input for IC control	17	L1	Input signal connections
2	CE	Chip enable	18	L2	Input signal connections, not use
3	VSS	Connect to GND	19	L3	Input signal connections
4	TEST	Electric volume connection for test	20	L4	Input signal connections
5	ROUT	Volume control and equalizer input	21	LSELO	Input selector output
6	RBASS2	Connection for resistor and capacitor that from the bass band filter	22	LIN	Volume control and equalizer input
7	RBASS1	Connection for resistor and capacitor that from the bass band filter	23	LTRE	Connection for capacitor that from the treble band filter
8	RTRE	Connection for capacitor that from the treble band filter	24	LBASS1	Connection for resistor and capacitor that from the bass band filter
9	RIN	Volume control and equalizer input	25	LBASS2	Connection for resistor and capacitor that from the bass band filter
10	RSELO	Input selector output	26	LOUT	Volume control and equalizer input
11	R4	Input signal connections	27	NC	Not use
12	R3	Input signal connections	28	VREF	Connection to the 0.5X VDD voltage generator circuit used as the analog signal ground
13	R2	Input signal connections, not use	29	VDD	Power supply
14	R1	Input signal connections	30	CLOCK	Serial data and clock input for IC control
15	NC	Not use			
16	NC	Not use			

4.19 XC62HR3502P (IC291) : Regulator

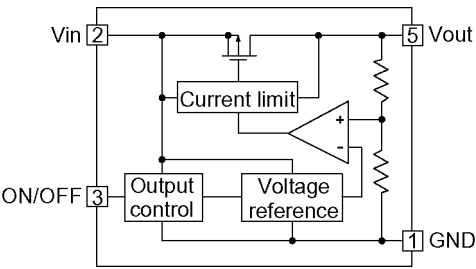
4.19.1 Terminal layout



4.19.3 Pin function

Pin No.	Symbol	Function
1	VSS	GND
2	Vin	Power supply input
3	ON/OFF	ON/OFF control
4	(NC)	Not use
5	Vout	Regulator output

4.19.2 Block diagram



< M E M O >



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