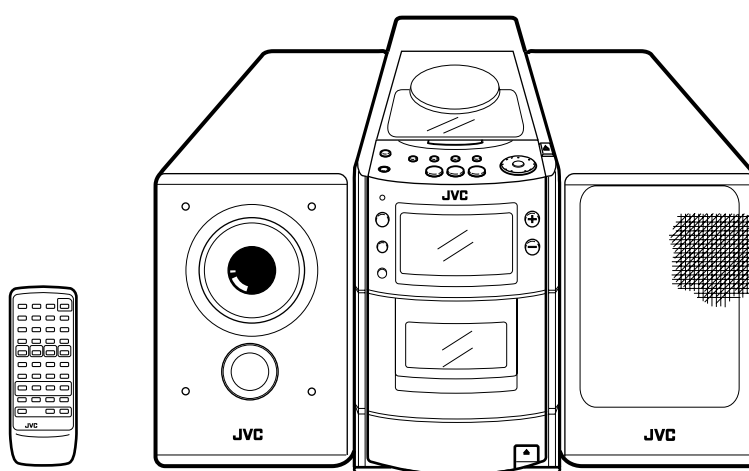


JVC

SERVICE MANUAL

MICRO COMPONENT SYSTEM

UX-T770R



COMPACT
disc
DIGITAL AUDIO

Area Suffix

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

Contents

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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.

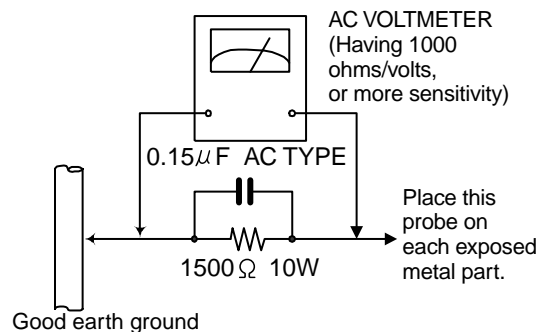
Do not use a line isolation transformer during this check.

- 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.

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

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 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 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 alltiina näkymättömälle lasersäteilylle.Älä katso säteeseen.

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

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

REPRODUCTION AND POSITION OF LABELS

WARNING LABEL

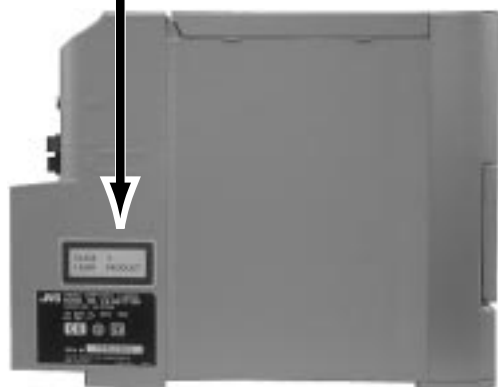
DANGER : Invisible laser radiation when open and interlock or defeated.
AVOID DIRECT EXPOSURE TO BEAM (e)

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

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

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

CLASS 1
LASER PRODUCT



Preventing static electricity

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

1.1. Grounding to prevent damage by static electricity

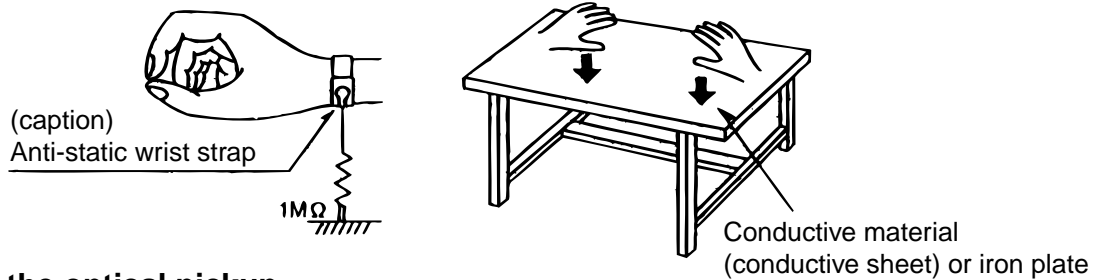
Static electricity in the work area can destroy the optical pickup (laser diode) in devices such as DVD players. Be careful to use proper grounding in the area where repairs are being performed.

1.1.1. Ground the workbench

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

1.1.2. Ground yourself

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

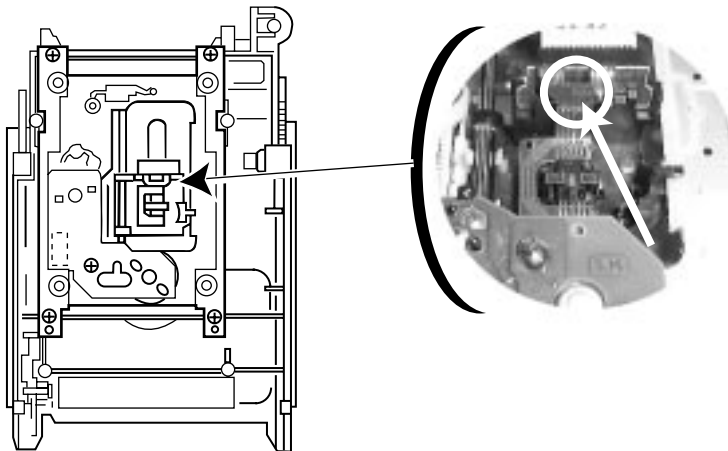


1.1.3. Handling the optical pickup

1. In order to maintain quality during transport and before installation, both sides of the laser diode on the replacement optical pickup are shorted. After replacement, return the shorted parts to their original condition. (Refer to the text.)
2. Do not use a tester to check the condition of the laser diode in the optical pickup. The tester's internal power source can easily destroy the laser diode.

1.2. Handling the traverse unit (optical pickup)

1. Do not subject the traverse unit (optical pickup) to strong shocks, as it is a sensitive, complex unit.
2. Cut off the shorted part of the flexible cable using nippers, etc. after replacing the optical pickup. For specific details, refer to the replacement procedure in the text. Remove the anti-static pin when replacing the traverse unit. Be careful not to take too long a time when attaching it to the connector.
3. Handle the flexible cable carefully as it may break when subjected to strong force.
4. It is not possible to adjust the semi-fixed resistor that adjusts the laser power. Do not turn it

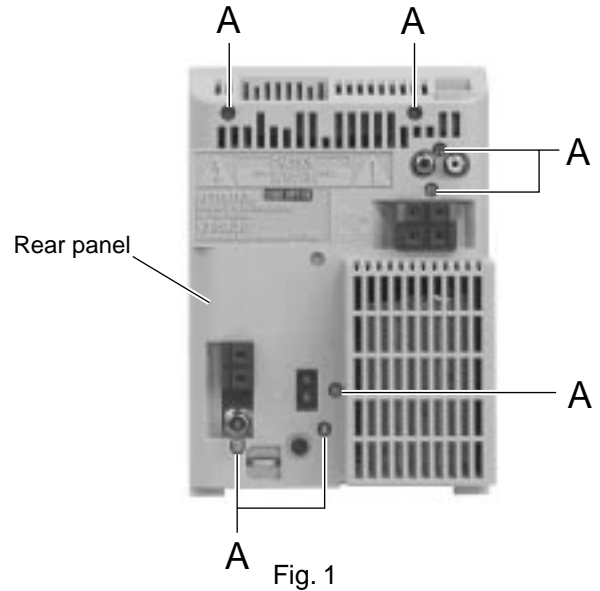


Disassembly method

■ Removing the rear panel

(See Fig. 1 and 2)

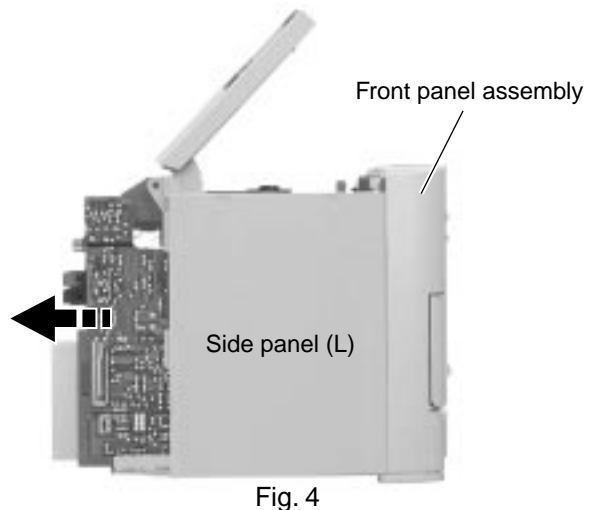
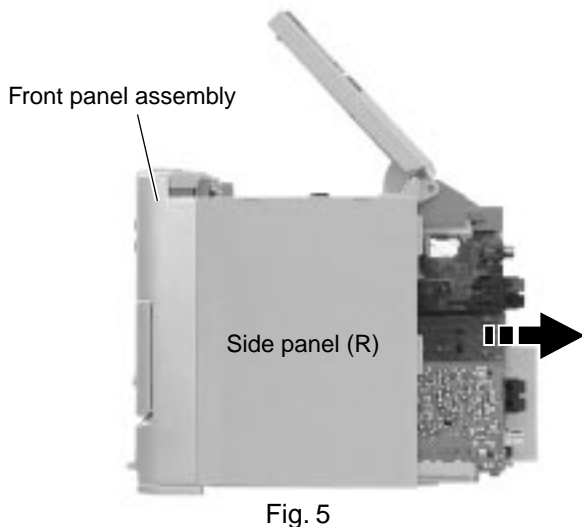
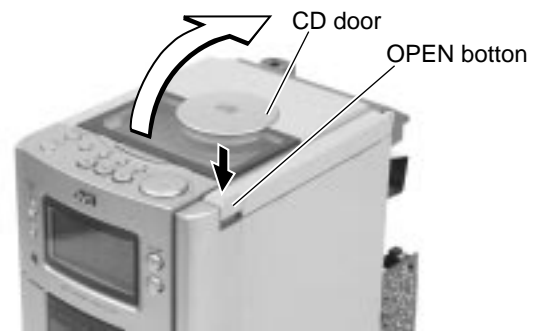
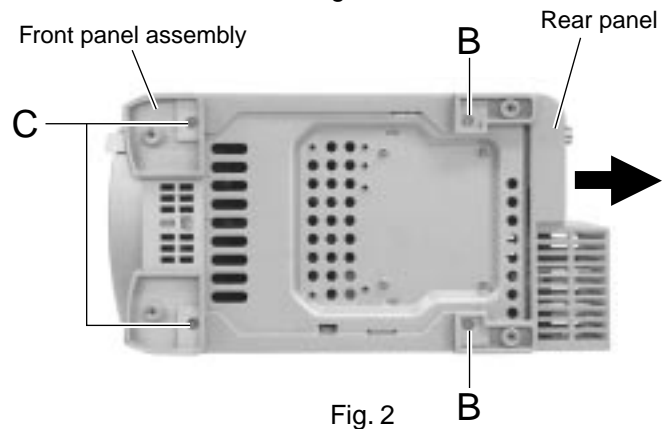
1. From behind the body, remove the seven screws **A** retaining the rear panel.
2. After turning the body upside down, remove the two screws **B** retaining the rear panel.
3. Take out the rear panel from behind the body.



■ Removing the side panel (L) and (R)

(See Fig. 2 to 5)

1. After turning the body upside down, remove the two screws **C** retaining the front cabinet assembly.
2. After turning the body back to initial position, open the CD door while pressing the upper OPEN button.
3. While moving the side panel (L) in the arrow direction, remove the panel from the left side of the body.
4. While moving the side panel (R) in the arrow direction, remove the panel from the right side of the body.



■ **Removing the CD player unit**
(See Fig. 6 to 8)

1. Remove the rear panel.
2. Remove the left and right side panels.
3. From the two connector CN603 and CN604 on the CD servo control board, disconnect the card wires outgoing from the connector CN304 on the power amplifier board and the connector CN766 on the LCD system CPU board.
4. Disengage the left and right engagements **a** and **b** fixing the CD player unit by using a minus screw driver, etc.

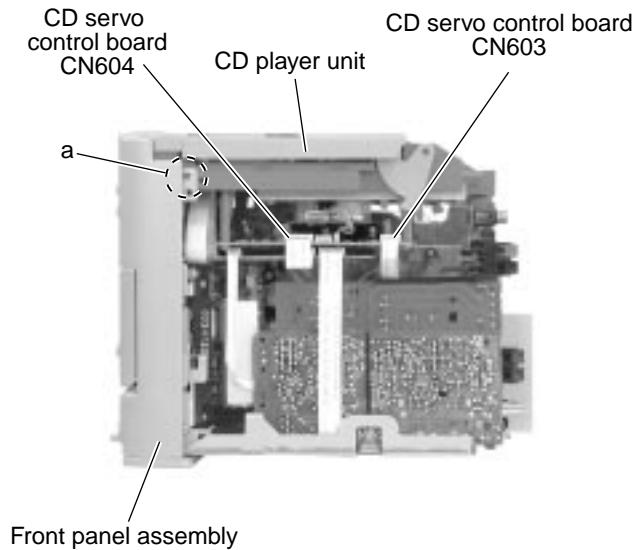


Fig. 6

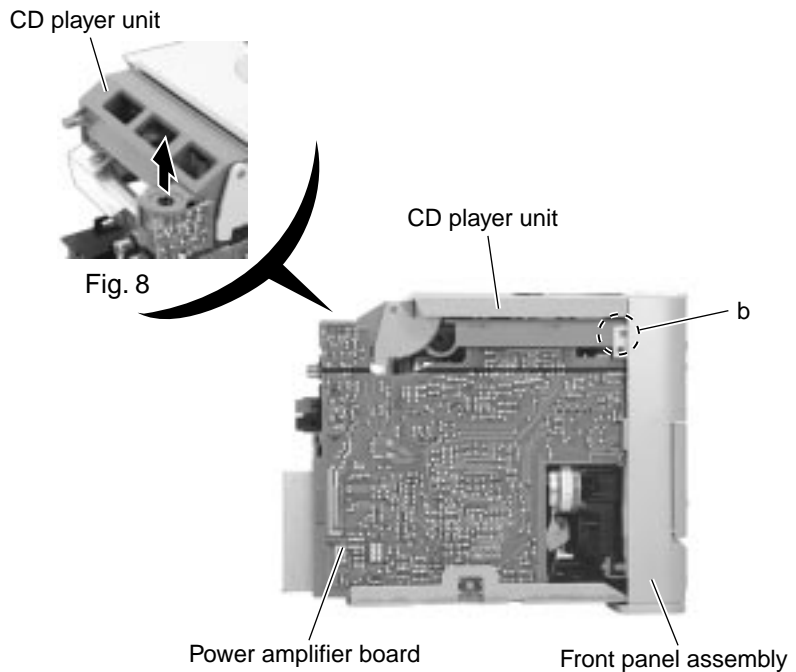


Fig. 7

■ Removing the power amplifier board and heat sink (See Fig. 9 to 11)

1. Remove the rear panel.
2. Remove the left and right side panels.
3. Remove the CD player unit.
4. Remove the five screws **D** and **E** retaining the heat sink.
5. From the connector CN303 on the power amplifier board, disconnect the card wire outgoing from the connector CN34 on the head amplifier and mechanism control board.
6. From the connector CN901 on the power supply board, disconnect the connector wire outgoing from the connector W306 on the power amplifier board.
7. Remove the one screw **F** retaining the power amplifier board.
8. Remove the power amplifier board from the two connectors CN711 and CN712 on the LCD system CPU board.
9. After removing the power amplifier board from the key way **c** on the bottom chassis, take this board out while raising it in the arrow direction.

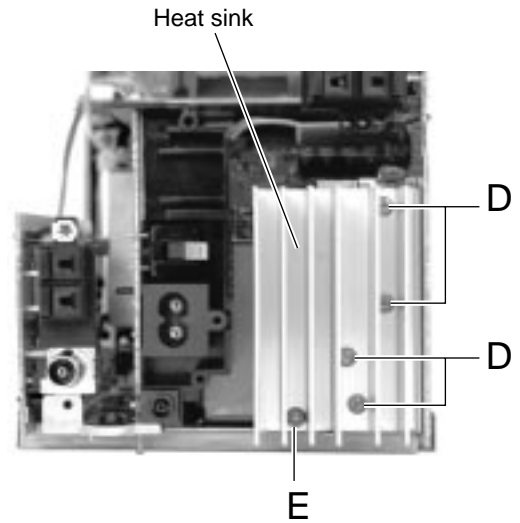


Fig. 9

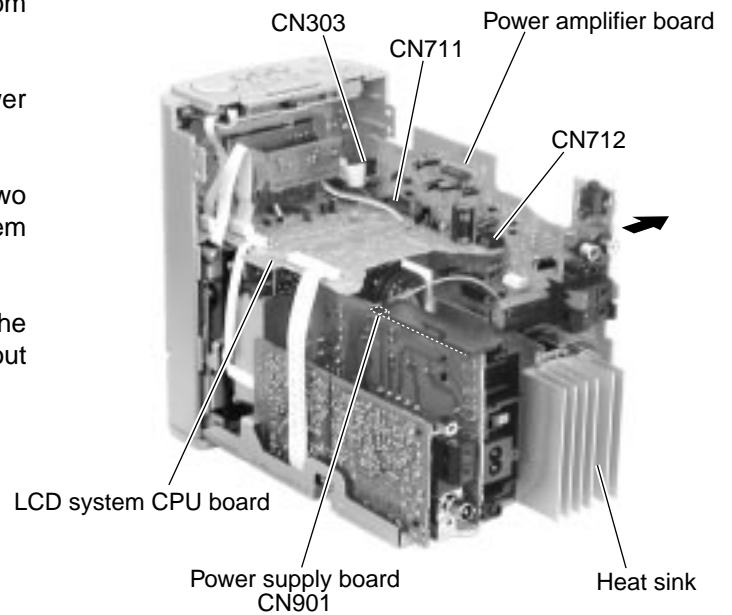


Fig. 10

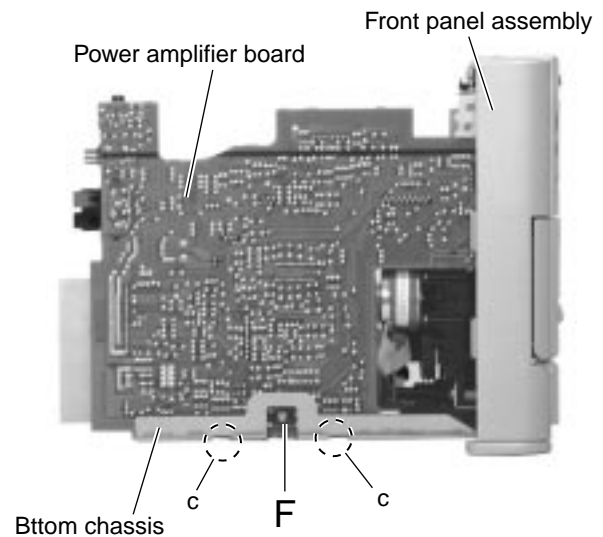
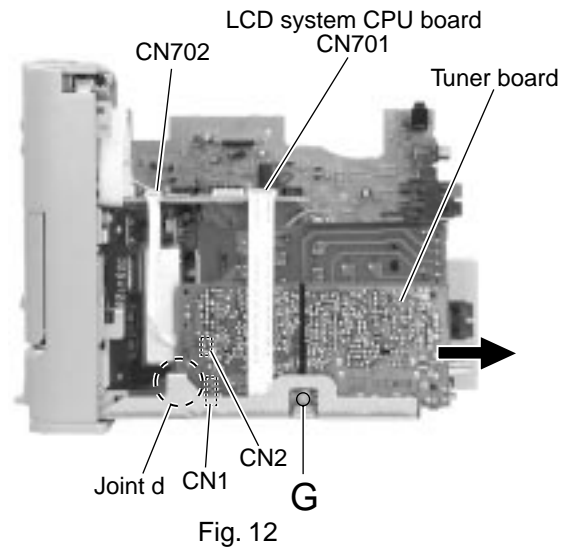


Fig. 11

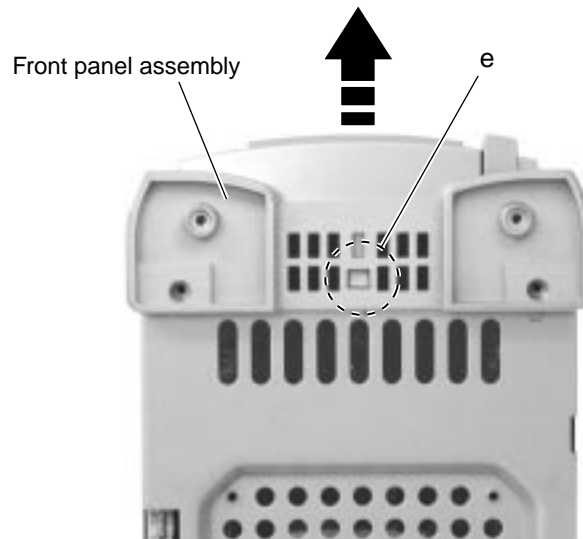
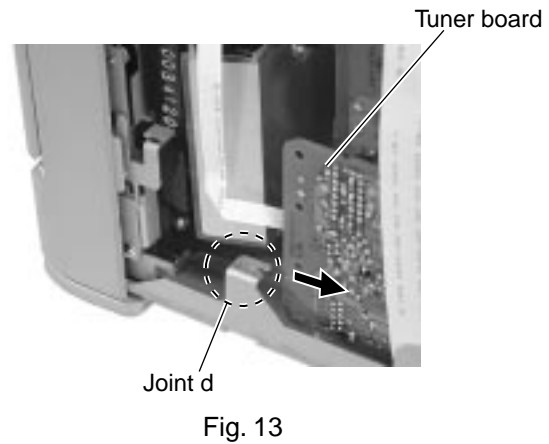
■ Removing the tuner board
(See Fig. 12 and 13)

1. Remove the rear panel.
2. Remove the left and right side panels.
3. From the right side of the body, remove the one screw **G** retaining the tuner board.
4. From the connector CN1 and CN2 on the tuner board, disconnect the card wire outgoing from the connector CN701 and CN702 on the LCD system CPU board.
5. Remove each tuner board backward while releasing the joint **d**.



■ Removing the front panel assembly
(See Fig. 12 and 14)

1. Remove the rear panel.
2. Remove the left and right side panels.
3. Remove the CD player unit.
4. Remove the power amplifier board and heat sink.
5. From the connector CN701 on the LCD system CPU board, disconnect the card wire outgoing from the connector CN1 on the tuner board.
6. From the bottom of the body, disengage the engagement **e** fixing the front panel assembly in Fig. 14 while pressing in with a minus screw driver, etc.



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

1. Remove the rear panel.
2. Remove the left and right side panels.
3. Remove the CD player unit.
4. Remove the power amplifier board and heat sink.
5. Remove the four screws **H** retaining the power transformer and power jack supply board and the one screw **I** retaining the jack holder.

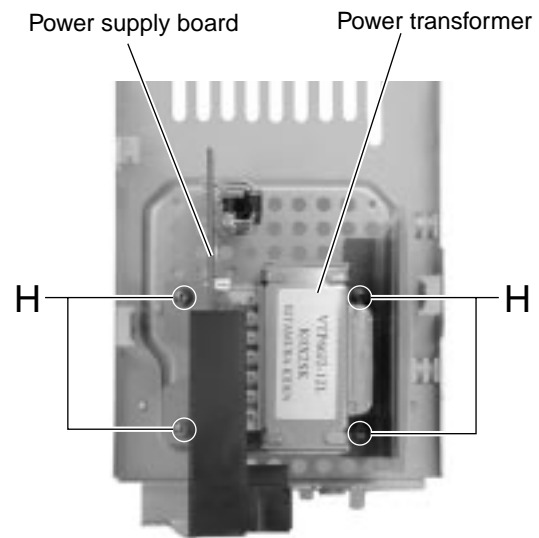


Fig. 15

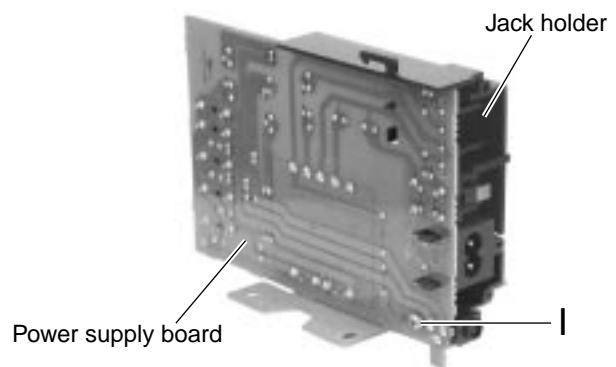


Fig. 16

■Removing the cassette mechanism unit (See Fig. 17)

1. Remove the rear panel.
2. Remove the left and right side panels.
3. Remove the CD player unit.
4. Remove the power amplifier board.
5. Remove the front panel assembly.
6. From inside the front panel assembly, remove the four screws **J** and **K** retaining the cassette mechanism unit.
7. From the connector CN33 on the head amplifier and mechanism control board, disconnect the card wire outgoing from the connector CN731 on the LCD system CPU board.

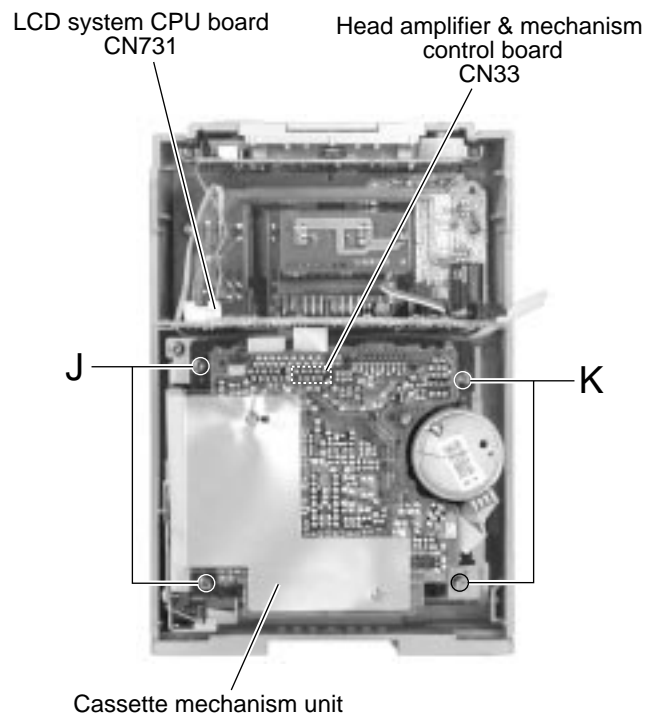


Fig. 17

■ Removing the function switch board and LCD system CPU board
(See Fig. 18 and 19)

1. Remove the rear panel.
2. Remove the left and right side panels.
3. Remove the CD player unit.
4. Remove the front panel assembly.
5. Remove the cassette mechanism unit.
6. From inside the front panel assembly remove the two screws **L** retaining the function switch board.
7. From the connector CN782 on the LCD system CPU board, disconnect the connector wire outgoing from the connector CN802 on the operation switch board.
8. While sliding the two engagements **f** fixing the LCD system CPU board, pull out this board.
9. After disconnect the connector CN801 on the function switch board from the connector CN781 on the LCD system CPU board, remove the respective boards while pulling them upward.

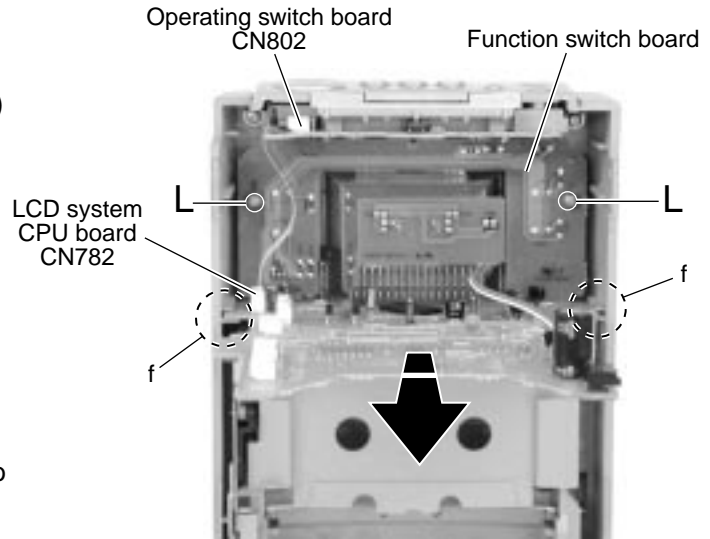


Fig. 18

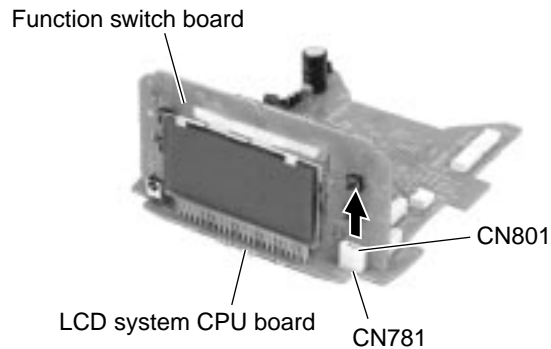


Fig. 19

**■ Removing the operating switch board
(See Fig. 20 to 22)**

1. Remove the rear panel.
2. Remove the left and right side panels.
3. Remove the CD player unit.
4. Remove the front panel assembly.
5. Remove the cassette mechanism unit.
6. Remove the LCD system CPU board.
7. Remove the two screws **M** retaining the operating switch board.
8. Remove the MULTI-JOG button.
9. Remove the VOLUME and POWER / AUX buttons.
10. Take out the standby LED lens.
11. After removing four pawls **g** fixing the operating switch board, remove the switch while pulling it in the arrow direction.
12. Remove the two screws **N** retaining the operation switch board.
13. Remove the six pawls **h** fixing the operating switch board.

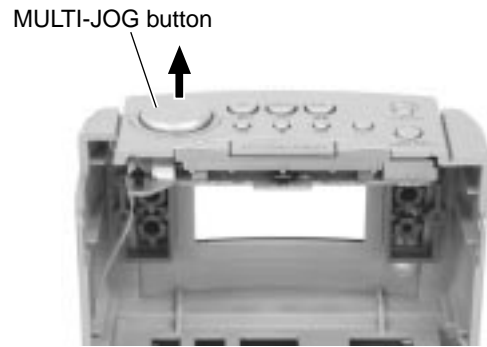


Fig. 20

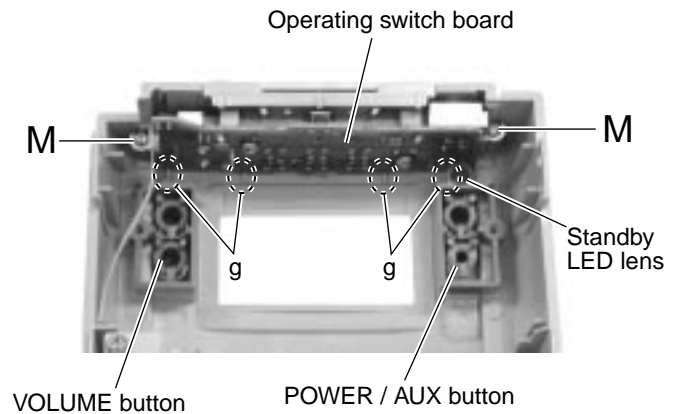


Fig. 21

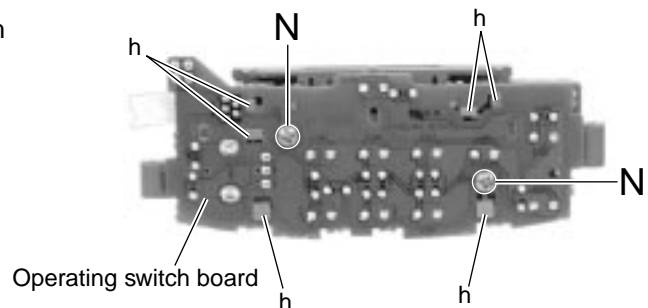
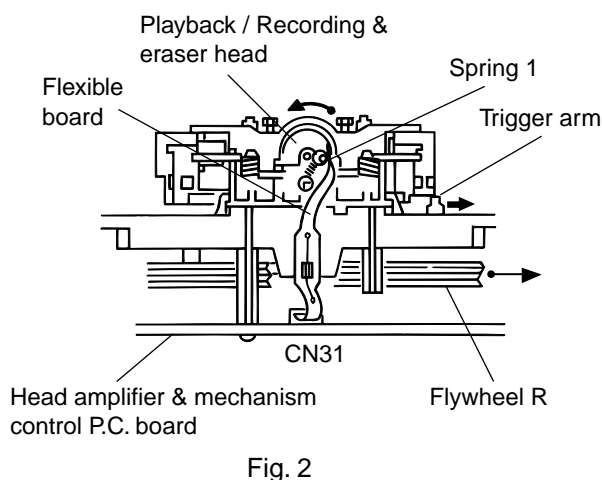
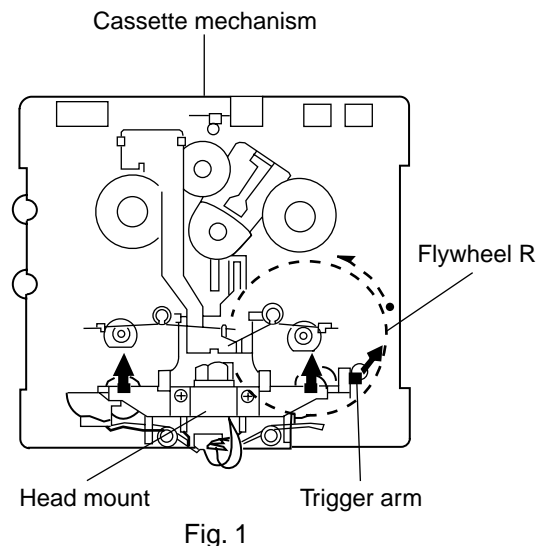


Fig. 22

<Cassette mechanism section>

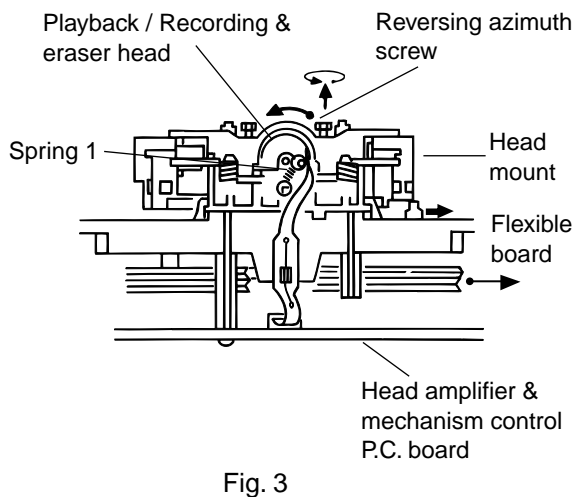
■ Removing the playback / recording & eraser head (See Fig. 1 to 3)

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



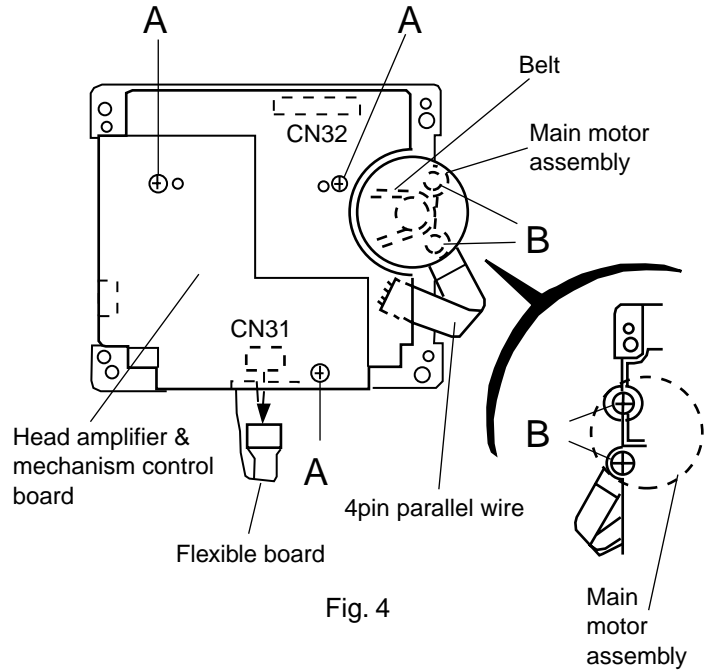
■ Reassembling the playback / recording & eraser head (See Fig.3)

1. Reassemble the playback head from the front of the head mount to the position as shown in Fig. 3.
2. Fix the reversing azimuth screw.
3. Set the spring 1 from behind the playback / recording & eraser head.
4. Attach the flexible P.C. board to the chassis base, as shown in Fig. 3.
5. The playback / recording & eraser head should also be reassembled similarly to step 1 to 4 above.



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

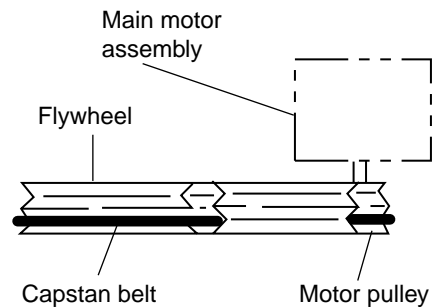
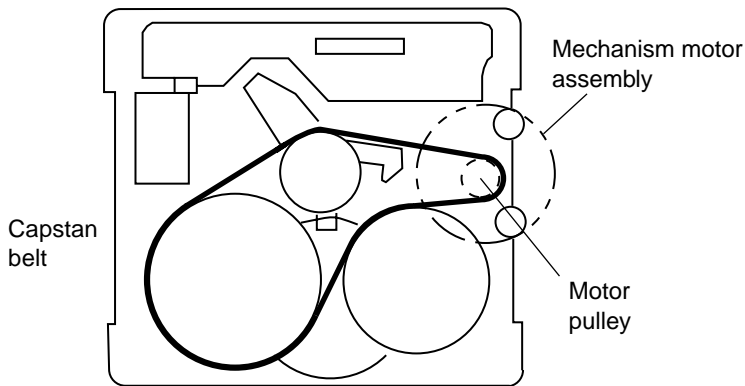
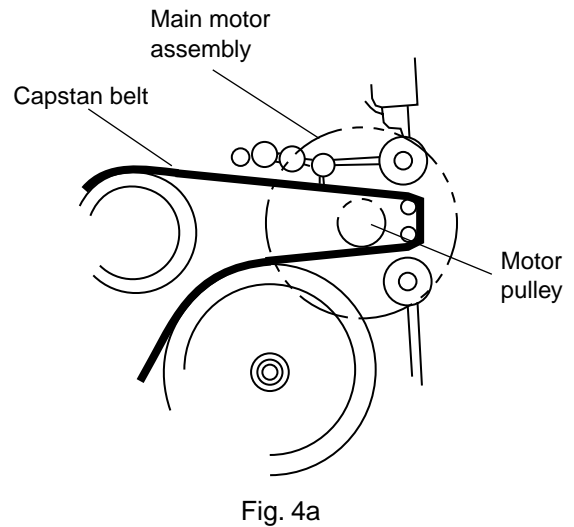
1. Remove the cassette mechanism assembly.
2. After turning over the cassette mechanism assembly, remove the three screws **A** retaining the head amplifier & mechanism control board.
3. Disconnect the connector CN32 on the board including the connector CN 1 on the reel pulse P.C. board.
4. When necessary,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



■ Removing the main motor assembly

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

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



■ **Removing the flywheel (See Fig. 7 and 8)**

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

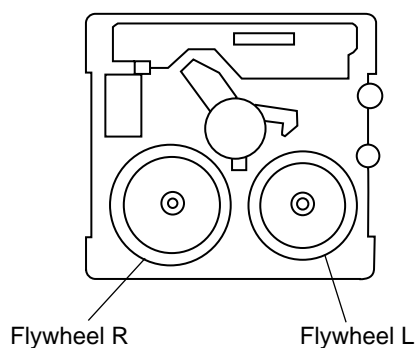


Fig. 8

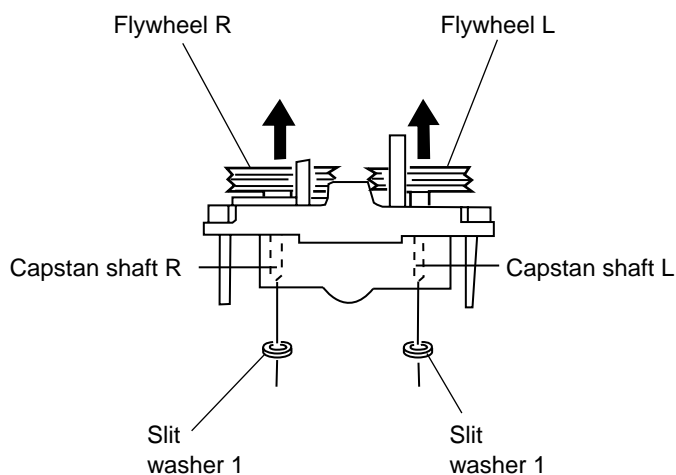


Fig. 7

■ **Removing the reel pulse P.C. board and solenoid (See Fig. 9)**

1. Remove the five pawls **a** to **e** reattaining the reel pulse board.
2. From the surface of the reel pulse board parts, remove the two pawls **f** and **g** retaining the solenoid.

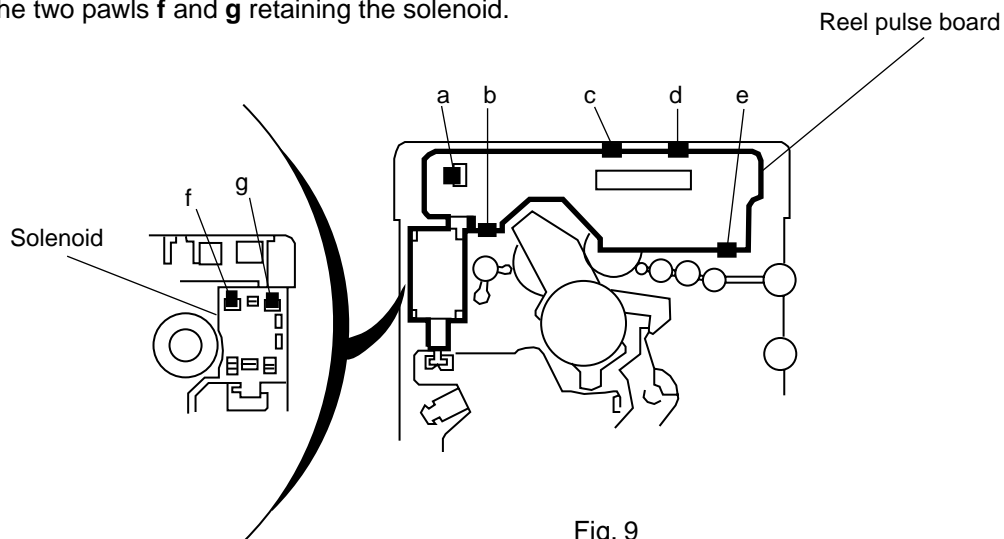


Fig. 9

<CD Player Unit Section>

■ Removing the CD mechanism and CD servo control P.C. board (See Fig. 1 and 2)

1. Remove the rear panel.
2. Remove the left and right side panels.
3. Remove the CD player unit.
4. After turning back the CD player unit, remove the four screws **A** retaining the CD servo control board and shield.
5. From the connector CN601 on the CD servo control board, disconnect the card wire outgoing from the CD mechanism.
6. From the connector P011 on the CD mechanism P.C. board, disconnect the connector wire outgoing from the connector CN602 on the CD servo control board.
7. Remove the four screws **B** retaining the CD mechanism.
8. While sliding the CD mechanism in the arrow direction, take turn table out so carefully that it does not come into contact with the chassis.

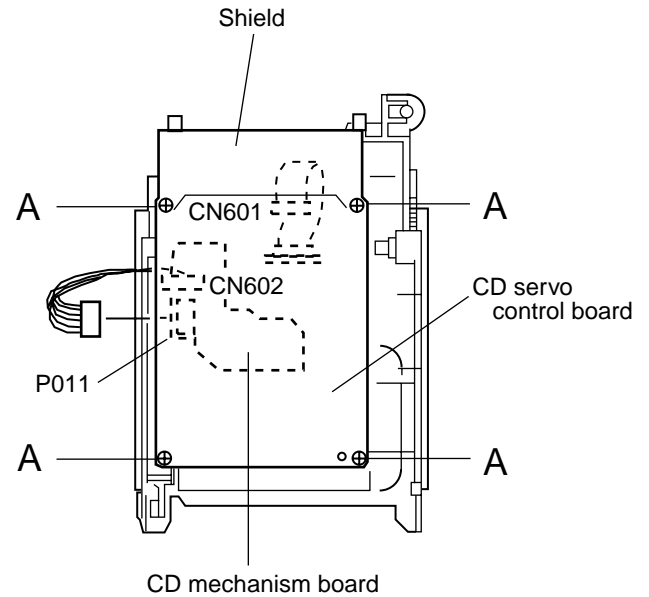


Fig. 1

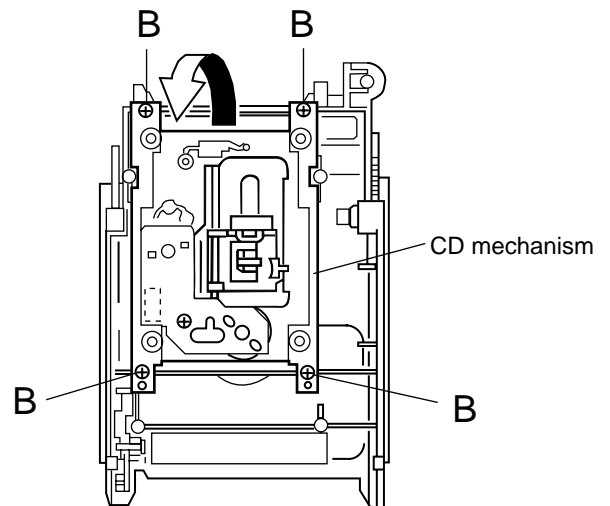


Fig. 2

Adjustment method

■ Measurement instruments required for adjustment

1. Low frequency oscillator
This oscillator should have a capacity to output 0dBs to 600Ω at an oscillation frequency of 50Hz-20kHz.
 2. Attenuator impedance : 600Ω
 3. Electronic voltmeter
 4. Distortion meter
 5. Frequency counter
 6. Wow & flutter meter
 7. Test tape
VT712 : Tape speed and running unevenness (3kHz)
VT724 : Reference level (1kHz)
TMT7036 : Head angle (10kHz), playback frequency characteristics (1kHz) and dubbing frequency characteristics (63, 1 and 10kHz)
- Because of frequency -mixed tape with 63, 1, 10 and 14kHz (250nWb/m - 24dB), use this tape together with a filter.
8. Blank tape
TYPE I : AC-225
TYPE II : AC-514
 9. Torque gauge : For play and back tension
FWD(TW2111A), REV(TW2121a) and
FF/REW(TW2231A)

■ Measurement conditions

Power supply voltage ----- AC230V (50Hz)
Reference output ----- Speaker : 0.775V/4Ω
Headphone : 0.245V/32Ω
Reference frequency and ----- 1kHz, AUX : -8dBs
input level
Input for confirming recording and ---- AUX : -28dBs
playback characteristics
Measurement output terminal ----- Speaker J3002
※ Load resistance ----- 4Ω

● Radio Input signal

AM frequency ----- 400Hz
AM modulation ----- 30%
FM frequency ----- 400Hz
FM frequency deviation ----- 22.5kHz

● Tuner section

Voltage applied to tuner ----- +B : DC5.7V
VT : DC 12V
Reference measurement ----- 26.1mV(0.28V)/4Ω
output
Input positions ----- AM : Standard loop antenna
FM : TP1 (hot) and TP2 (GND)

● Standard measurement position of volume

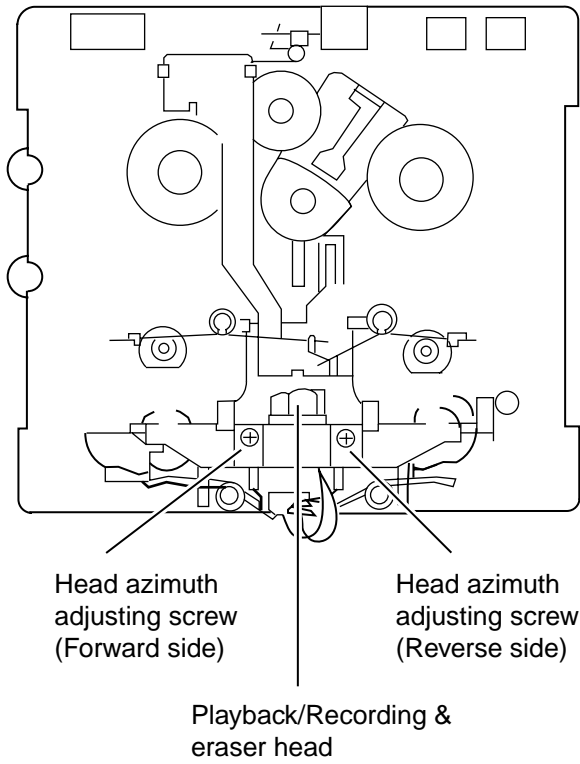
Bass ----- Off
Active hoper bass pro ----- Off
Up and down adjustment of volume ----- VOL : 23

Precautions for measurement

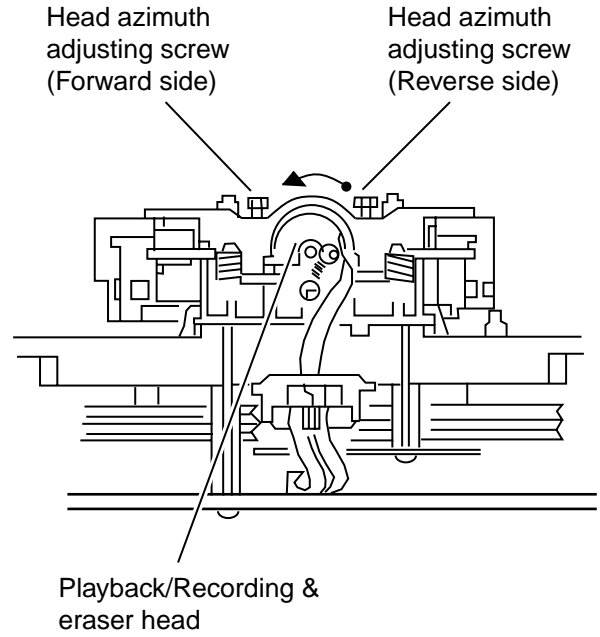
1. Apply 30pF and 33kΩ to the IF sweeper output side and 0.082μF and 100kΩ in series to the sweeper input side.
2. The IF sweeper output level should be made as low as possible within the adjustable range.
3. Since the IF sweeper is a fixed device, there is no need to adjust this sweeper.
4. Since a ceramic oscillator is used, there is no need to perform any MIX adjustment.
5. Since a fixed coil is used, there is no need to adjust the FM tracking.
6. The input and output earth systems are separated. In case of simultaneously measuring the voltage in both of the input and output systems with an electronic voltmeter for two channels, therefore, the earth should be connected particularly carefully.
7. In the case of BTL connection amp., the minus terminal of speaker is not for earthing. Therefore, be sure not to connect any other earth terminal to this terminal. **This system is of an BTL system.**
8. For connecting a dummy resistor when measuring the output, use the wire with a greater code size.
9. Whenever any mixed tape is used, use the band pass filter (DV-12).

<<Arrangement of adjusting positions>>

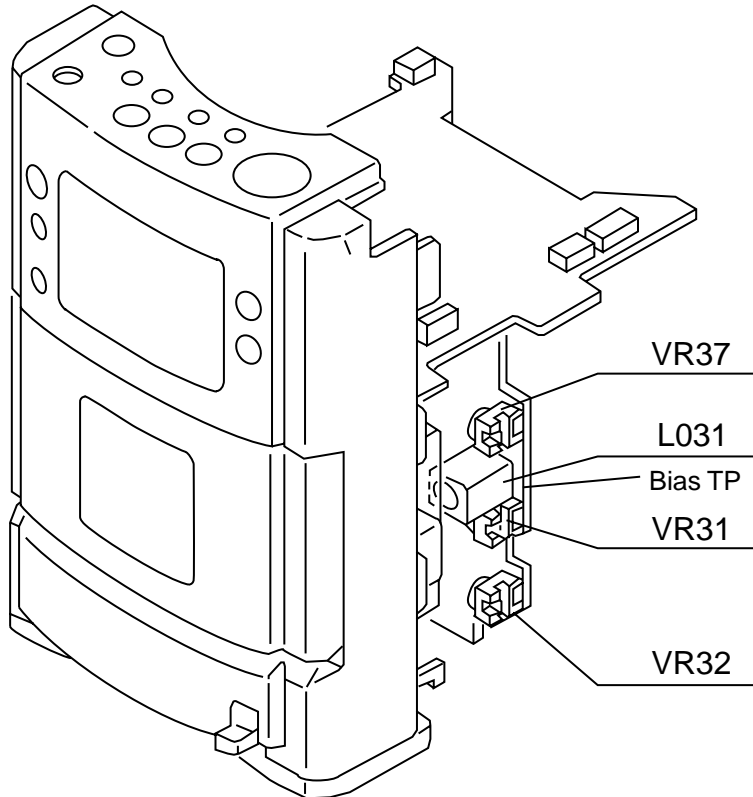
● Cassette mechanism section



● Cassette mechanism section (Bottom side)



● Front panel assembly section



■ Tape Recorder Section

Items	Measurement conditions	Measurement method	Standard Values	Adjusting positions
Confirmation of head angle	Test tape : TMT7036 (10kHz) Measurement output terminal : Speaker terminal Speaker R (Load resistance: 4 Ω) : Headphone terminal	1 Playback the test tape TMT7036 (10kHz) 2 With the recording & playback mechanism, adjust the head azimuth screw so that the forward and reverse output levels become maximum. After adjustment, lock the head azimuth at least by half turn. 3 In either case, this adjustment should be performed in both the forward and reverse directions with the head azimuth screw.	Maximum output	Adjust the head azimuth screw only when the head has been changed.
Confirmation of tape speed	Test tape : VT712 (3kHz) or TMT7036 (3kHz) Measurement output terminal : Headphone terminal	Adjust VR37 so that the frequency counter reading becomes 3,010Hz±15Hz when playing back the test tape VT712 (3kHz) with playback and recording mechanism after ending forward winding of the tape.	Tape speed of deck : 3,010Hz ±5Hz	VR37

■ Reference Values for Confirmation Items

Items	Measurement conditions	Measurement method	Standard Values	Adjusting positions
Difference between the forward and reverse speed	Test tape : VT712 (3kHz) or TMT7036 (3kHz) Measurement output terminal : Speaker terminal Speaker R (Load resistance: 4 Ω) Measurement output terminal : Headphone	When the test tape VT712 (3kHz) has been played back with the recording and playback mechanism at the beginning of forward winding, the frequency counter reading of the difference between both of the mechanism should be 6.0Hz or less.	6.0Hz or less	Head azimuth screw (See Fig. 34)
Wow & flutter	Test tape : VT712 (3kHz) or TMT7036 (3kHz) Measurement output terminal : Headphone terminal	When the test tape VT712 (3kHz) has been played back with the recording and playback mechanism at the beginning of forward winding, the frequency counter reading of wow & flutter should be 0.25% or less (WRMS).	0.25% or less (WRMS)	

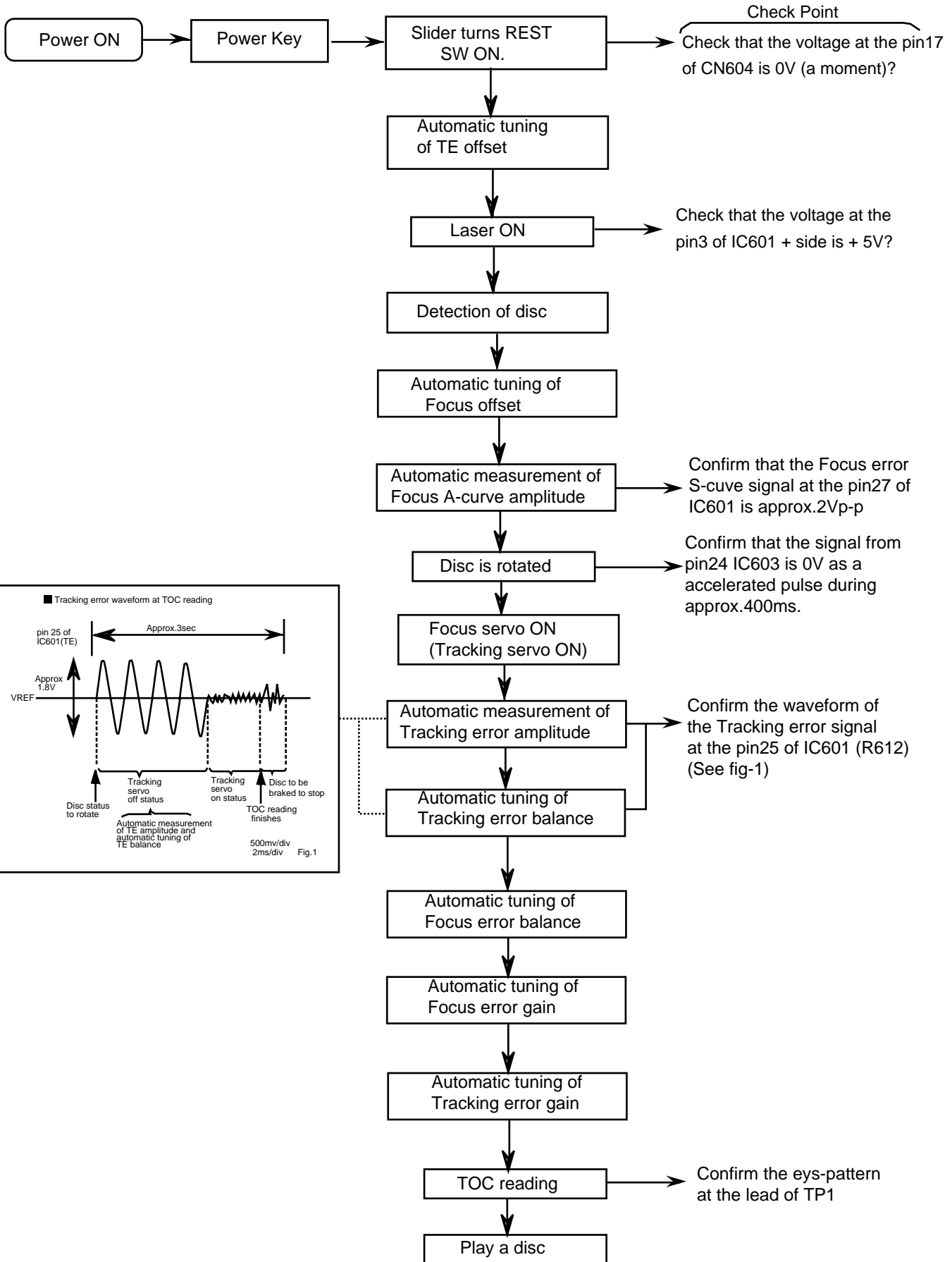
■ Electrical Performance

Items	Measurement conditions	Measurement method	Standard Values	Adjusting positions
Adjustment of recording bias current (Reference Value)	<ul style="list-style-type: none"> ▪ Mode: Forward or reverse mode ▪ Recording mode ▪ Test tape : AC-514 to TYPE II and AC-225 to TYPE I Measurement output terminal : Both recording and headphone terminals	<ol style="list-style-type: none"> 1 With the recording and playback mechanism, load the test tapes (AC-514 to TYPE II and AC-225 to TYPE I), and set the mechanism to the recording and pausing condition in advance. 2 After connecting 100Ω in series to the recorder head, measure the bias current with a valve voltmeter at both of the terminals. 3 After resetting the [PAUSE] mode, start recording. At this time, adjust VR31 for Lch and VR32 for Rch so that the recording bias current values become $4.0\mu A$ (TYPE I) and $4.20\mu A$ (TYPE II). 	AC-225 : $4.20\mu A$ AC-514 : $4.0\mu A$	L ch : VR31 R ch : VR32
Adjustment of recording and playback frequency characteristics	Reference frequency : 1kHz and 10kHz (REF.: -20dB) Test tape : AC-514 to TYPE II Measurement input terminal : OSC IN	<ol style="list-style-type: none"> 1 With the recording and playback mechanism, load the test tapes (AC-514 to TYPE II), and set the mechanism to the recording and pausing condition in advance. 2 While repetitively inputting the reference frequency signal of 1kHz and 10kHz from OSC IN, record and playback the tape. 3 While recording and playback the test tape in TYPE II, adjust VR31 for Lch and VR32 for Rch so that the output deviation between 1kHz and 10kHz becomes $-1dB \pm 2dB$. 	Output deviation between 1kHz and 10kHz : $-1dB \pm 2dB$	L ch : VR31 R ch : VR32

■ Reference Values for Electrical Function Confirmation Items

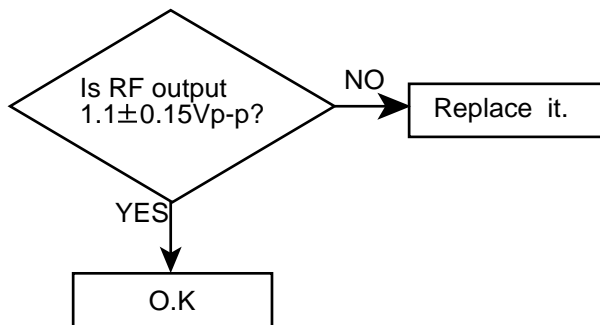
Items	Measurement conditions	Measurement method	Standard Values	Adjusting positions
Recording bias frequency	Forward or reverse <ul style="list-style-type: none"> ▪ Test tape : TYPE II (AC-514) ▪ Measurement terminal : BIAS TP on P.C. board 	<ol style="list-style-type: none"> 1 While changing over to and from BIAS 1 and 2, confirm that the frequency is changed. 2 With the recording and playback mechanism, load the test tape. (AC-514 to TYPE II), and set the mechanism to the recording and pausing condition in advance. 3 Confirm that the BIAS TP frequency on the P.C. board is $100kHz \pm 6kHz$. 	$100kHz \pm 6kHz$	
Eraser current (Reference value)	Forward or reverse <ul style="list-style-type: none"> ▪ Recording mode ▪ Test tape : AC-514 to TYPE II and AC-225 to TYPE I Measurement terminal : Both of the eraser head terminals	<ol style="list-style-type: none"> 1 While recording and playback mechanism, load the test tapes (AC-514 to TYPE II and AC-225 to TYPE I), and set the mechanism to the recording and pausing conditions in advance. 2 After setting to the recording conditions, connect $1W$ in series to the eraser head on the recording and playback mechanism side, and measure the eraser current from both of the eraser terminals. 	TYPE II : 120 mA TYPE I : 75 mA	

Flow of functional operation until TOC read



Maintenance of laser pickup

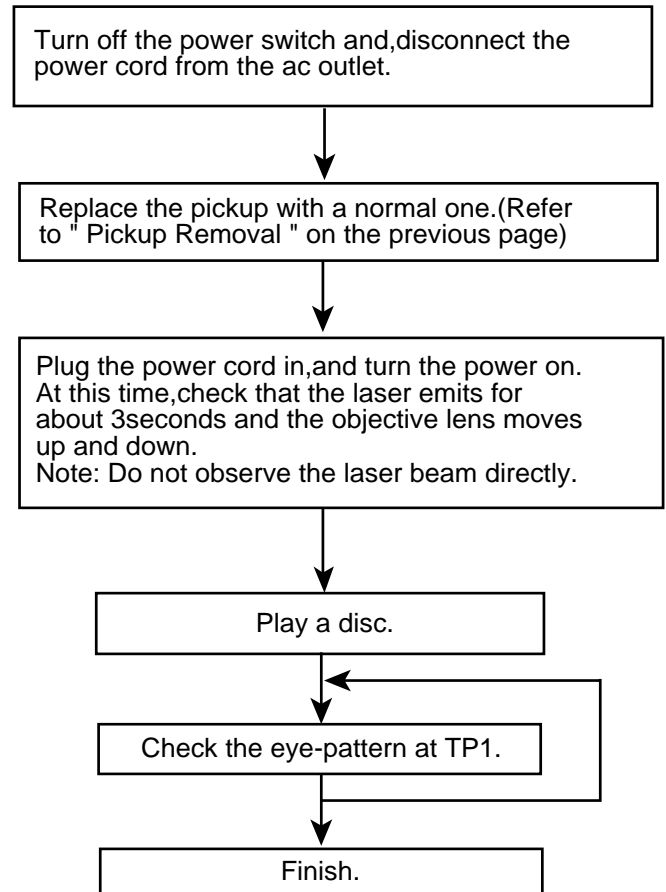
- (1) Cleaning the pick up lens
Before you replace the pick up, please try to clean the lens with a alcohol soaked cotton swab.
- (2) Life of the laser diode (Fig.1)
When the life of the laser diode has expired, the following symptoms will appear.
 - (1) The level of RF output (EFM output: amplitude of eye pattern) will below.



(Fig.1)

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

Replacement of laser pickup



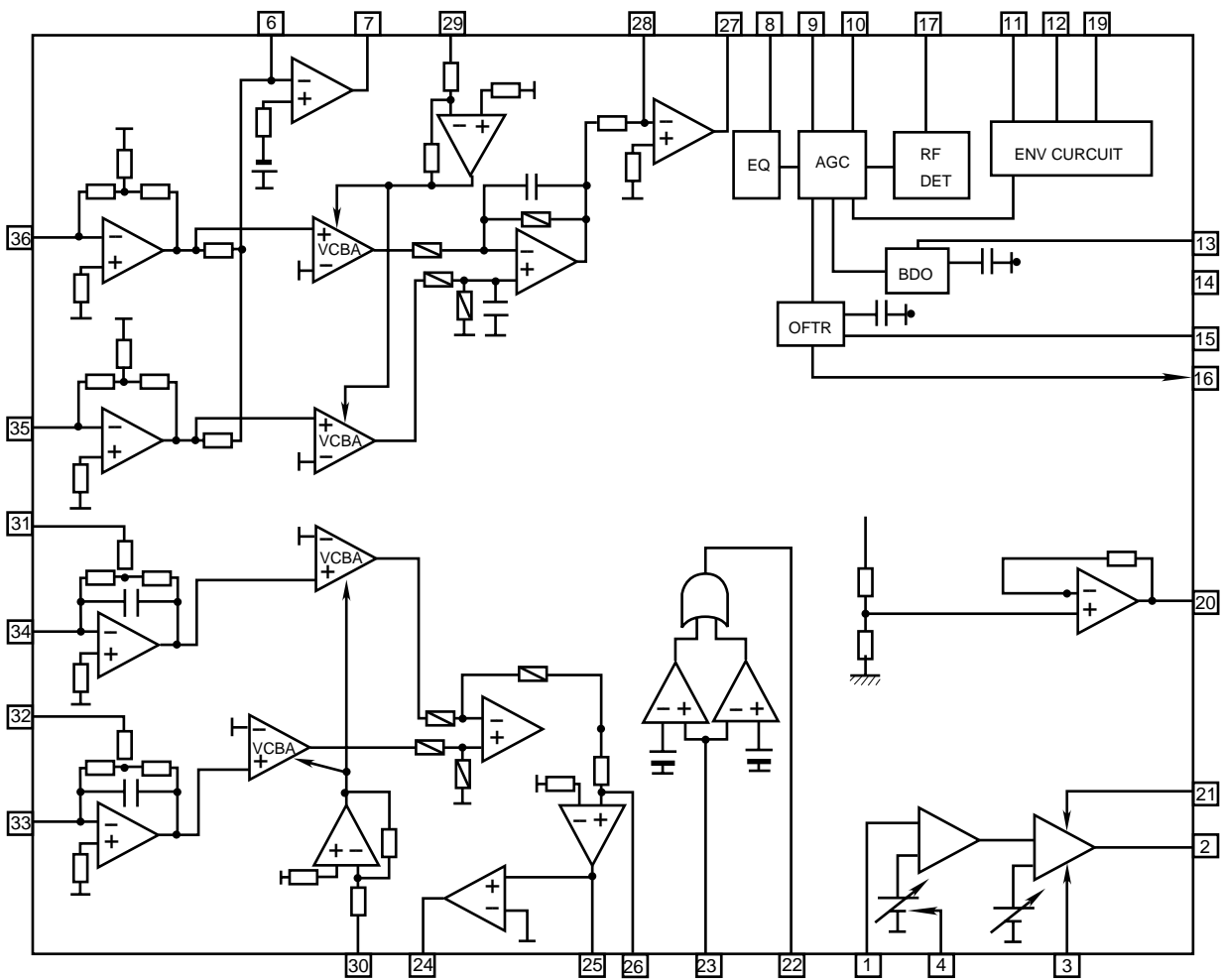
Description of major ICs

■ AN8806SB (IC601) : RF&Servo AMP

1.Pin layout

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

2.Block diagram

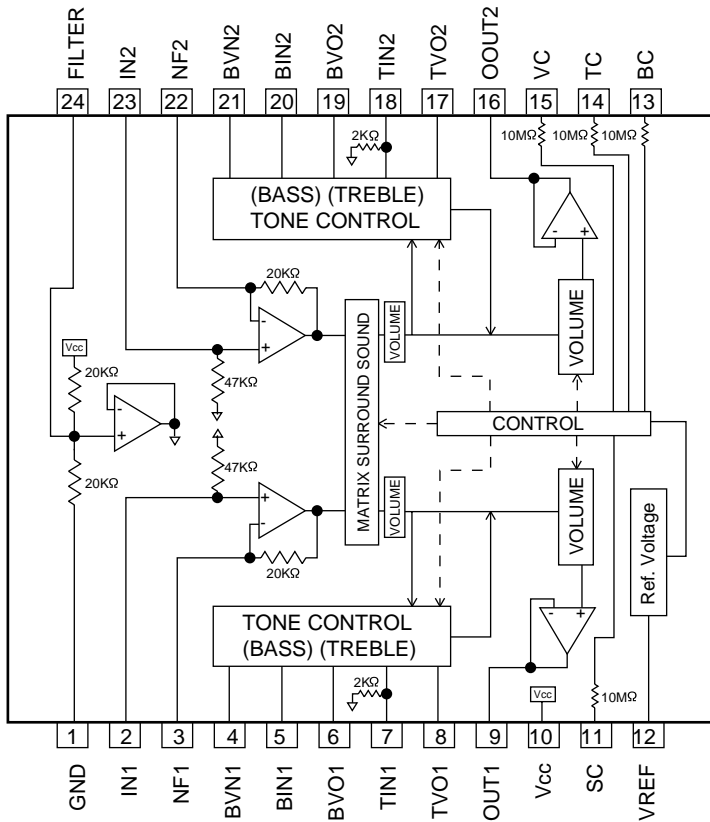


3. Pin function

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

■ BH3852S (IC38) : E.Volume

1. Block diagrams

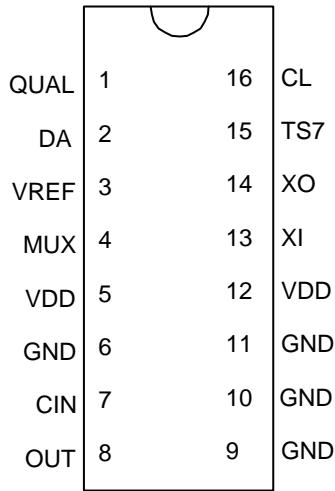


2. Pin function

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

■ BU1923(IC4) : RDS detector

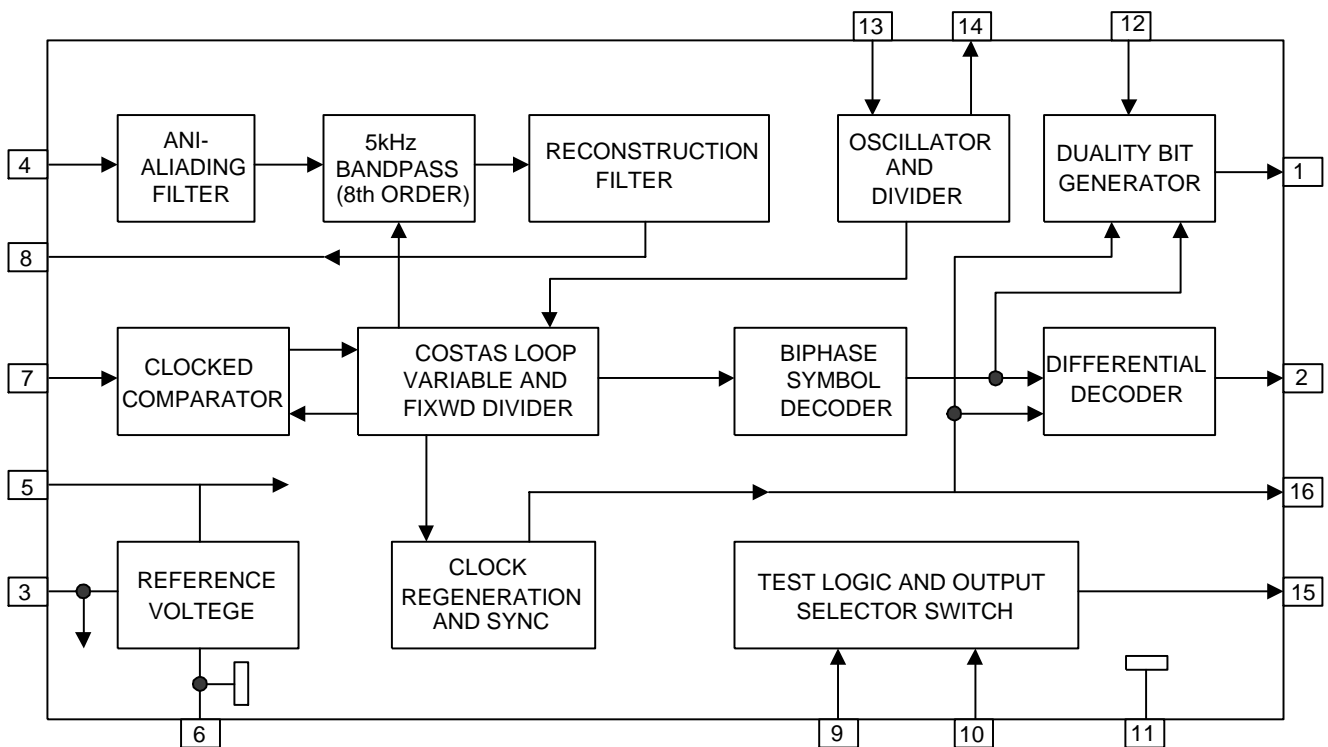
1.Terminal Layout



2.Pin Function

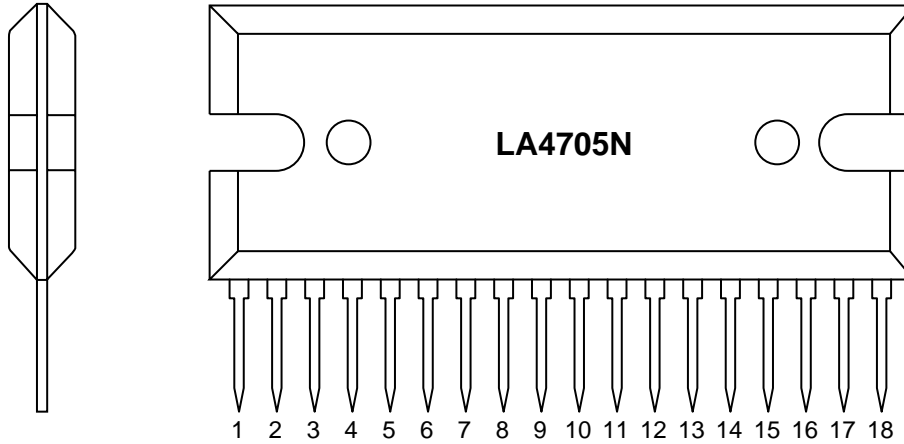
Pin No	Symbol	I/O	Function
1	QUAL	--	Non connection
2	DA	O	RDS data output
3	VREF	O	Reference voltage output
4	MUX	I	Multiplex signal input
5	VDD	--	+5Vsupply voltage for analog
6	GND	--	Ground for analog part(0V)
7	CIN	I	Sub carrier output of reconstruction filter
8	OUT	O	Ground for digital part(0V)
9	GND	--	Ground for digital part(0V)
10	GND	--	Ground for digital part(0V)
11	GND	--	Ground for digital part(0V)
12	VDD	--	+5Vsupply voltage for digital part
13	XI	I	Oscillator input
14	XO	O	Oscillator output
15	TS7	--	Non connection
16	CL	O	RDS clock output

3.Block Diagram

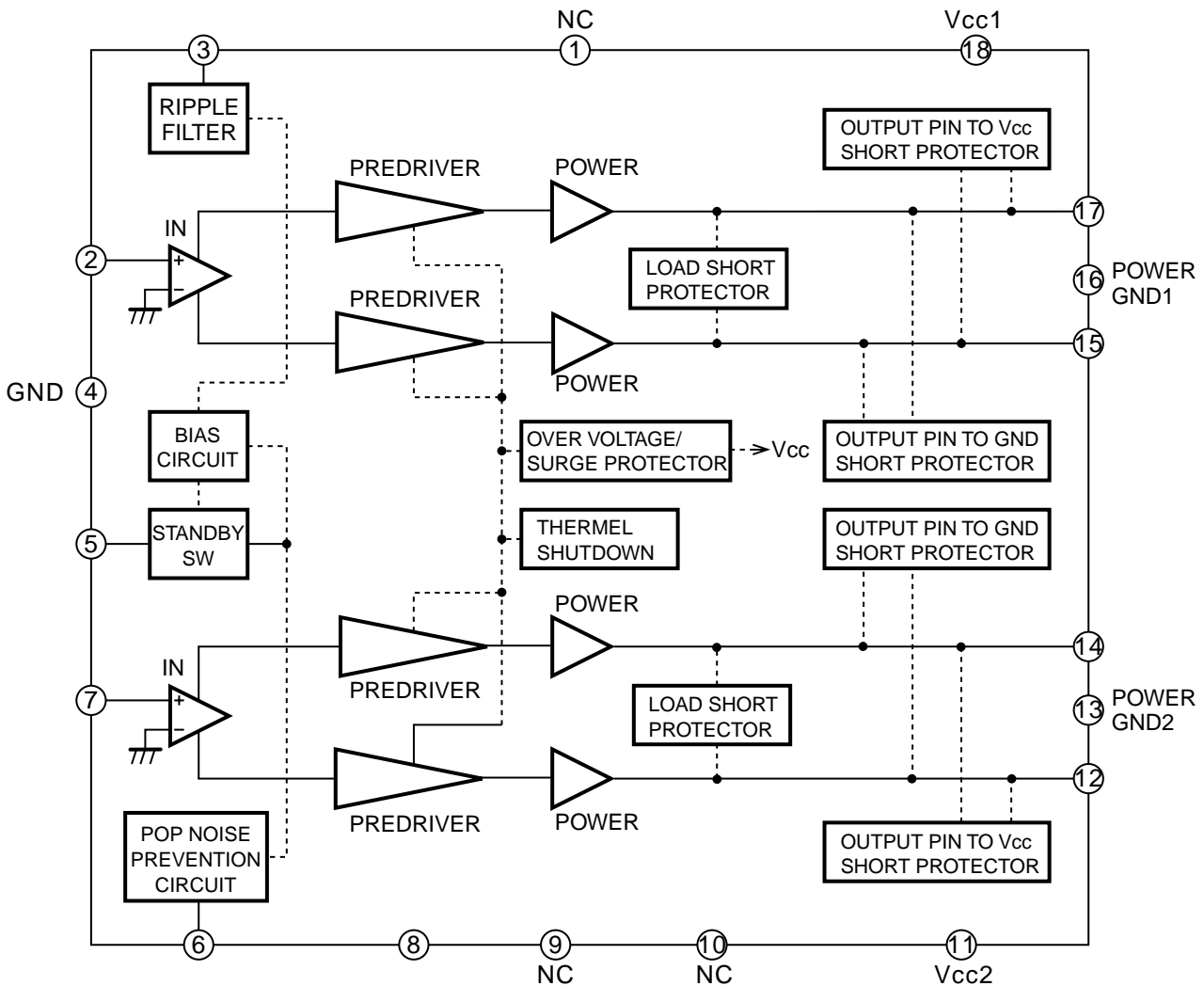


■ LA4705NA (IC31) : 2ch BTL power IC

1. Pin layout



2. Block diagram

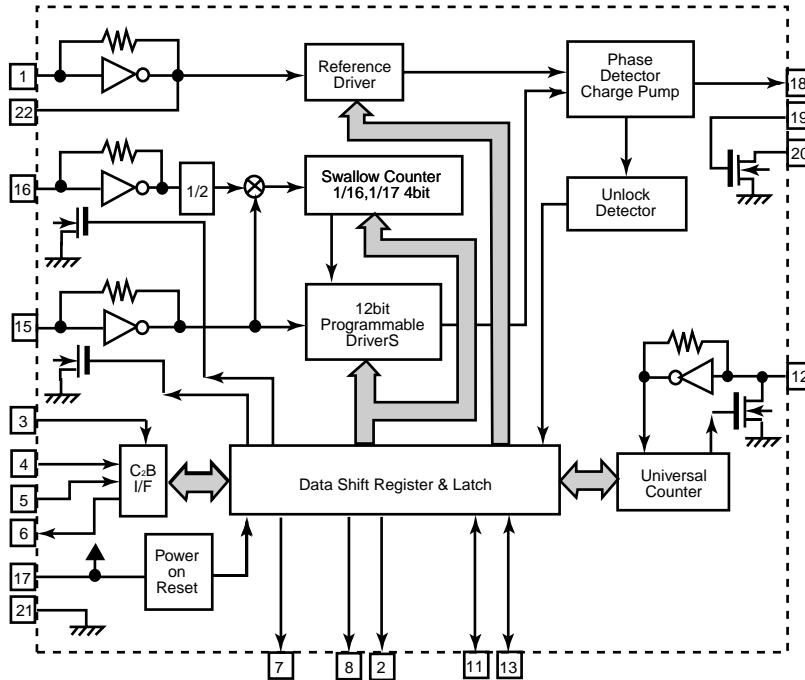


■ LC72136N (IC2) : PLL frequency synthesizer

1. Pin layout

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

2. Block diagram

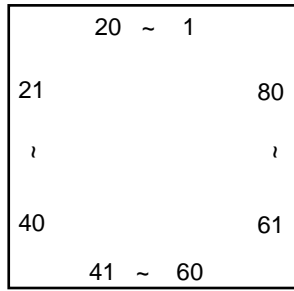


3. Pin function

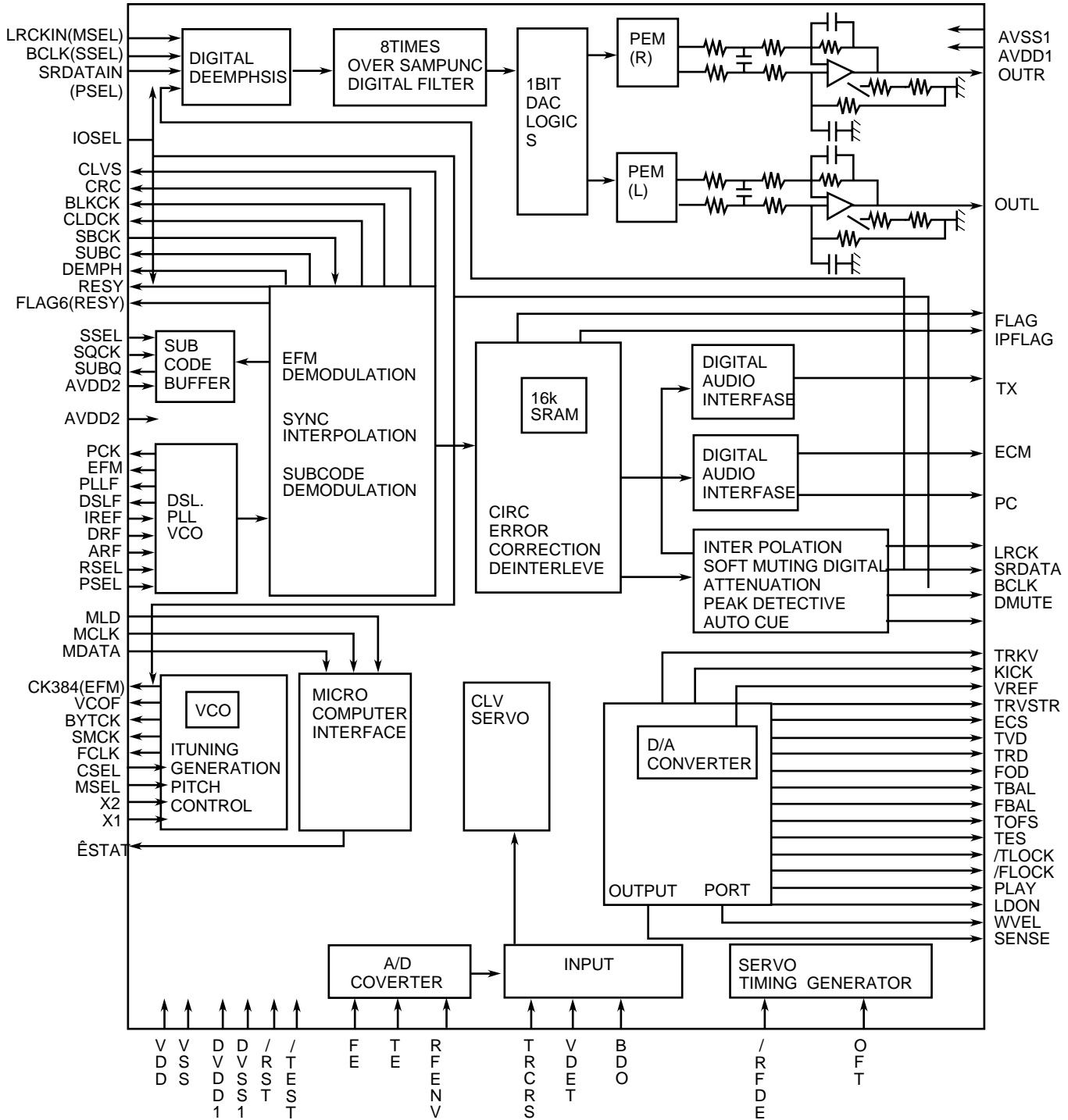
Pin No.	Symbol	I/O	Function	Pin No.	Symbol	I/O	Function
1	XT	I	X'tal oscillator connect (75kHz)	12	IFIN	I	IF counter signal input
2	FM/AM	O	LOW:FM mode	13	IFCONT	O	IF signal output
3	CE	I	When data output/input for 4pin(input) and 6pin(output): H	14	-	-	Not use
4	DI	I	Input for receive the serial data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

■ MN35510 (IC603) : Digital servo & digital signal processor

1. Pin layout



2. Block diagram

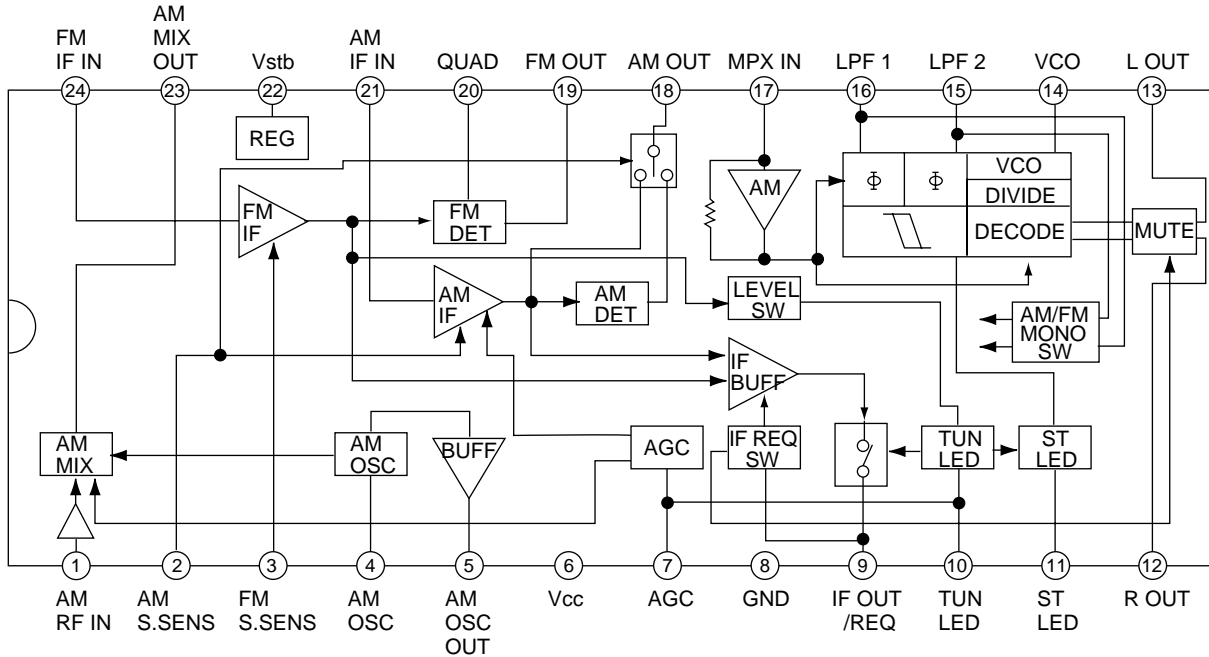


3. Pin function

Pin No.	symbol	I/O	Function	Pin No.	symbol	I/O	Function
1	BCLK	O	Not used	41	TES	O	Tracking error shunt signal output(H:shunt)
2	LRCK	O	Not used	42	PLAY	—	Not used
3	SRDATA	O	Not used	43	WVEL	—	Not used
4	DVDD1	—	Power supply (Digital)	44	ARF	I	RF signal input
5	DVSS1	—	Connected to GND	45	IREF	I	Reference current input pin
6	TX	O	Digital audio interface output	46	DRF	I	Bias pin for DSL
7	MCLK	I	μ com command clock signal input (Data is latched at signal's rising point)	47	DSLIF	I/O	Loop filter pin for DSL
8	MDATA	I	μ com command data input	48	PLLIF	I/O	Loop filter pin for PLL
9	MLD	I	μ com command load signal input	49	VCOF	—	Not used
10	SENSE	O	Not used	50	AVDD2	—	Power supply(Analog)
11	FLOCK	O	Not used	51	AVSS2	—	Connected to GND(Analog)
12	TLOCK	O	Not used	52	EFM	—	Not used
13	BLKCK	O	sub-code · block · clock signal output	53	PCK	—	Not used
14	SQCK	I	Outside clock for sub-code Q resister input	54	PDO	—	Not used
15	SUBQ	O	Sub-code Q -code output	55	SUBC	—	Not used
16	DMUTE	—	Connected to GND	56	SBCK	—	Not used
17	STATUS	O	Status signal (CRC,CUE,CLVS,TTSTOP,ECLV,SQOK)	57	VSS	—	Connected to GND(for X'tal oscillation circuit)
18	RST	I	Reset signal input (L:Reset)	58	XI	I	Input of 16.9344MHz X'tal oscillation circuit
19	SMCK	—	Not used	59	X2	O	Output of X'tal oscillation circuit
20	PMCK	—	Not used	60	VDD	—	Power supply(for X'tal oscillation circuit)
21	TRV	O	Traverse enforced output	61	BYTCK	—	Not used
22	TVD	O	Traverse drive output	62	CLDCK	—	Not used
23	PC	—	Not used	63	FCLK	—	Not used
24	ECM	O	Spindle motor drive signal (Enforced mode output) 3-State	64	IPPLAG	—	Not used
25	ECS	O	Spindle motor drive signal (Servo error signal output)	65	FLAG	—	Not used
26	KICK	O	Kick pulse output	66	CLVS	—	Not used
27	TRD	O	Tracking drive output	67	CRC	—	Not used
28	FOD	O	Focus drive output	68	DEMPH	—	Not used
29	VREF	I	Reference voltage input pin for D/A output block (TVD,FOD,FBA,TBAL)	69	RESY	—	Not used
30	FBAL	O	Focus Balance adjust signal output	70	IOSEL	—	pull up
31	TBAL	O	Tracking Balance adjust signal output	71	TEST	—	pull up
32	FE	I	Focus error signal input(Analog input)	72	AVDD1	—	Power supply(Digital)
33	TE	I	Tracking error signal input(Analog input)	73	OUT L	O	Lch audio output
34	RF ENV	I	RF envelope signal input(Analog input)	74	AVSS1	—	Connected to GND
35	VDET	I	Vibration detect signal input(H:detect)	75	OUT R	O	Rch audio output
36	OFT	I	Off track signal input(H:off track)	76	RSEL	—	pull up
37	TRCRS	I	Track cross signal input	77	CSEL	—	Connected to GND
38	RFDET	I	RF detect signal input(L:detect)	78	PSEL	—	Connected to GND
39	BDO	I	BDO input pin(L:detect)	79	MSEL	—	Connected to GND
40	LDON	O	Laser ON signal output(H:on)	80	SSEL	—	Pull up

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

1. Block diagrams

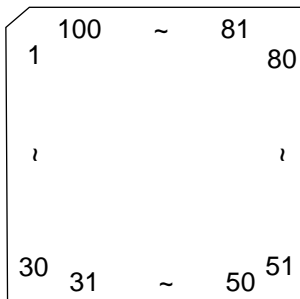


2. Pin function

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

■ UPD78064GF-149 (IC701) : System CPU

1.Pin layout



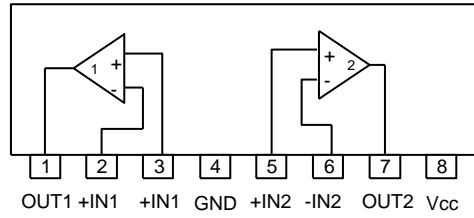
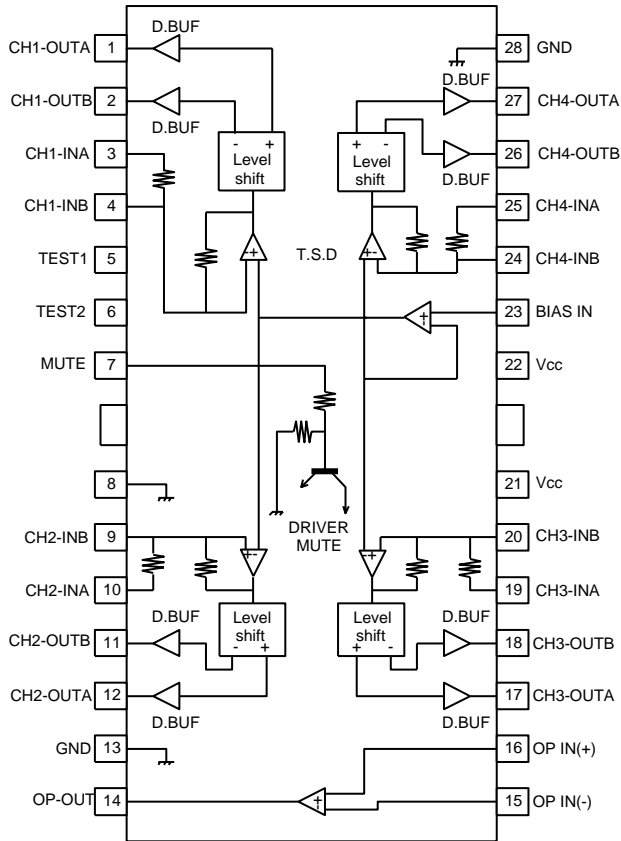
2.Pin function

Pin No.	Symbol	I/O	Function	Pin No.	Symbol	I/O	Function
1	USDATA	I/O	Serial data	29	URESET/CLOSE	I	[RESET/CLOSE] switch
2	USCK	O	Serial clock	30	USAFETY1	I	Abnormal voltage detection 1
3	UQRIN	I	CD Q code data	31	USAFETY0	I	Abnormal voltage detection 2
4	UNC	-	Non connect	32	UKEY1	I	Body key input 1
5	USQCK	O	CD Q code data synchronizing clock	33	UKEY0	I	Body key input 0
6	ICVSS	-	Connected to VSS	34	UTAPE0	I	Tape switch 0
7	UX2	-	Main system clock	35	UTAPE1	I	Tape switch 1
8	UX1	I	Main system clock	36	AVDD	-	AD converter power supply
9	VDD	-	Power supply	37	UAVREF	-	AD converter reference voltage
10	UXT1	I	Sub system clock	38	UBUP	I	Backup power supply decision
11	UXT2	-	Sub system clock	39	UFTUNER	O	Function tuner
12	URESET	I	Reset	40	VSS	-	GND
13	UREM	I	Remote control	41	UMPX	I	FM stereo detection
14	URDSCK	-	Non connect	42	UPERIOD	O	Tuner PLL strobe
15	UJOG1	I	Jog encoder 1	43	UJOGB	I	JOG encoder 2
16	UBEAT2	O	Main clock selection 2	44	UBASS	O	BASS control
17	UBEAT1	O	Main clock selection 1	45	UTRE	O	TRE control
18	U+BCTL	O	Switched 5V control	46	UVOL	O	VOL.control
19	UXRESET	O	CD LSI reset	47	USBASS	O	AHB on/off
20	UMCLK	O	CD LSI command clock	48	USMUTE	O	System muting
21	UMDATA	O	CD LSI command data	49	UPOUT	O	Power ON/OFF
22	UMLD	O	CD LSI command load	50	UFCD	O	Function CD
23	UPBMUTE	O	Tape playback mute	51~54	COM0~3	O	LCD common
24	ULATCH	O	Tape IC strobe	55	BIAS	-	LCD bias voltage
25	UREEL	I	Tape end detection	56~58	VLC0~2	-	LCD bias voltage
26	UFAUX	O	Function AUX	59	VSS	-	GND
27	UAVSS	-	AD converter GND	60~99	S0~39	O	LCD segment
28	USAFEYCD	I	CD abnormal voltage detection	100	USTATUS	I	LCD LSI status

■ BA6897FP (IC602) : 4channel driver

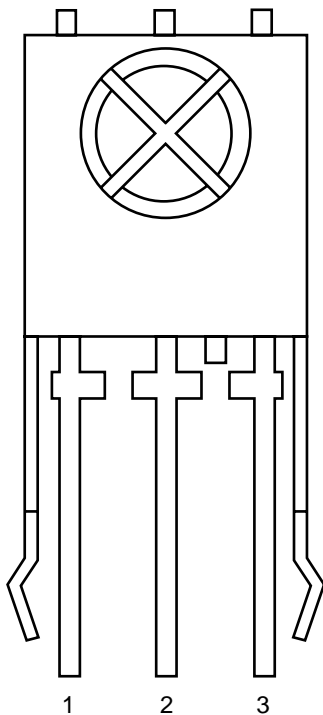
■ BA15218N (IC32 / IC35) : Dual Ope. Amp.

1.Pin layout



■ PIC-21043SP (IC702) : Remotocontrol receiver

1.Pin layout

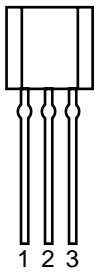


2. Pin function

Pin No.	Function
1	Vout
2	Vcc
3	Gnd

KIA78S06P (IC703) : Regulator

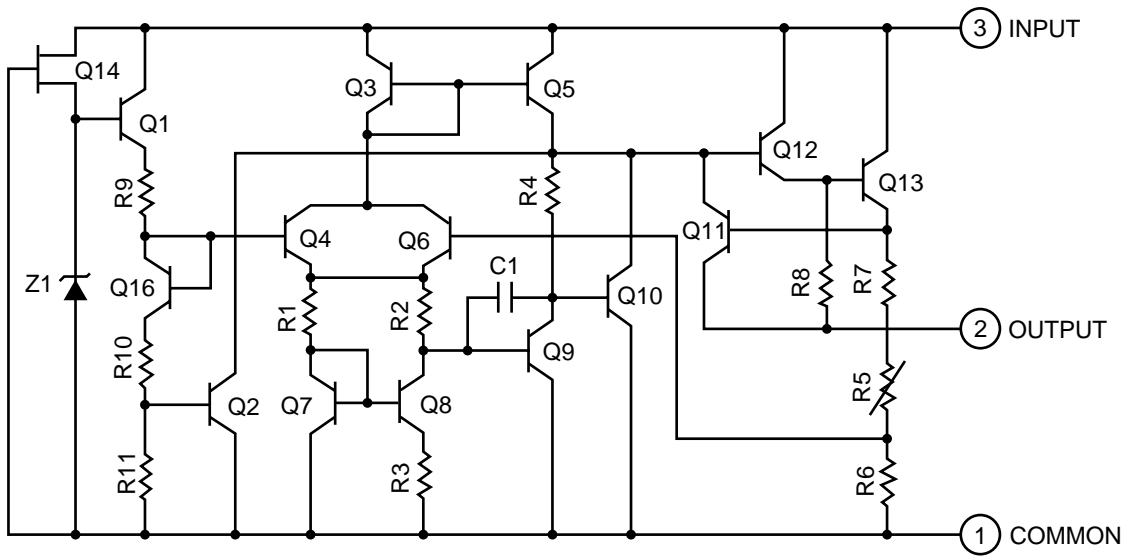
1.Pin layout



2. Pin function

Pin No.	Function
1	Output
2	Common
3	Input

3.Block diagram



JVC

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