

JVC

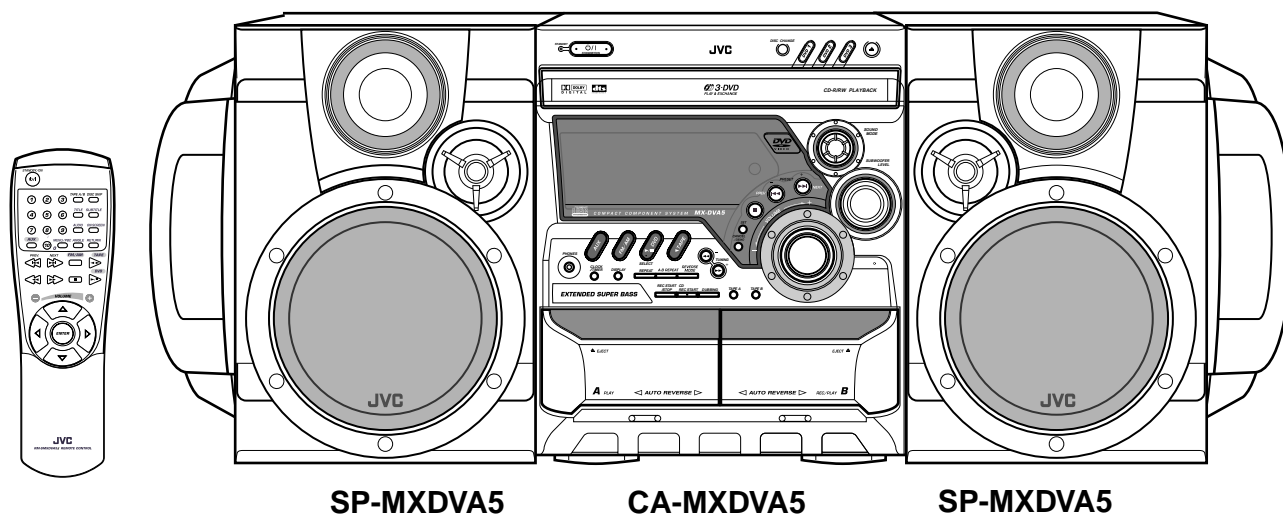
SERVICE MANUAL

COMPACT COMPONENT SYSTEM

MX-DVA5

Area suffix

J ----- U.S.A.
C ----- Canada



SP-MXDVA5

CA-MXDVA5

SP-MXDVA5



CD / DVD Mechanism is exchanged by a unit (contain CPC cords).

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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.

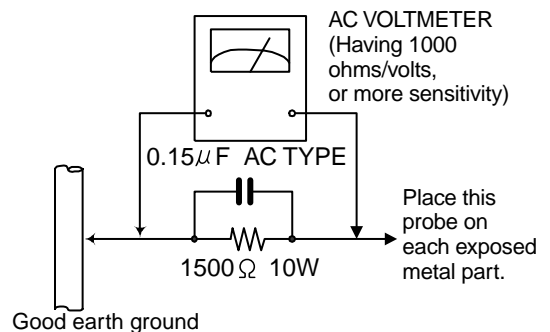
Do not use a line isolation transformer during this check.

- 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 performing repair of this system.

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

(This regulation does not correspond to 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.

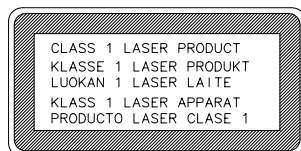
5. CAUTION : If safety switches malfunction, the laser is able to function.

6. CAUTION : Use of controls, adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

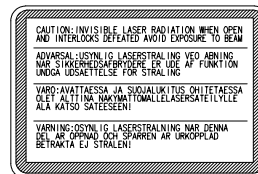
CAUTION Please use enough caution not to see the beam directly or touch it in case of an adjustment or operation check.

Reproduction and position of labels

CLASS 1 LASER PRODUCT



WARNING LABEL



Preventing static electricity

1. Grounding to prevent damage by static electricity

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

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

In the equipment which uses optical pick-up (laser diode), optical pick-up is destroyed by the static electricity of the work environment.

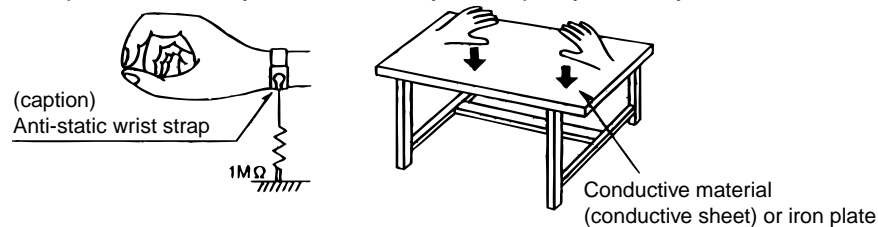
Be careful to use proper grounding in the area where repairs are being performed.

2-1 Ground the workbench

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

2-2 Ground yourself

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



3. Handling the optical pickup

1. In order to maintain quality during transport and before installation, both sides of the laser diode on the replacement optical pickup are shorted. After replacement, return the shorted parts to their original condition. (Refer to the text.)

2. Do not use a tester to check the condition of the laser diode in the optical pickup. The tester's internal power source can easily destroy the laser diode.

4. Handling the traverse unit (optical pickup)

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

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

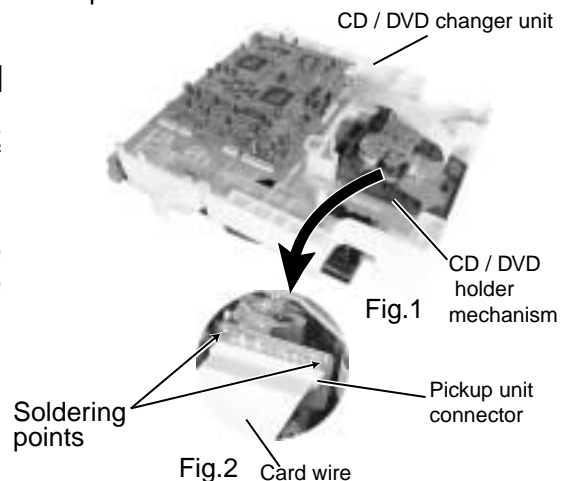
3. Handle the flexible cable carefully as it may break when subjected to strong force.

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

Attention when traverse unit is decomposed

Because the CD / DVD mechanism assembly of this model is a unit component, the individual component parts consisting of the CD / DVD mechanism assembly are not supplied separately.

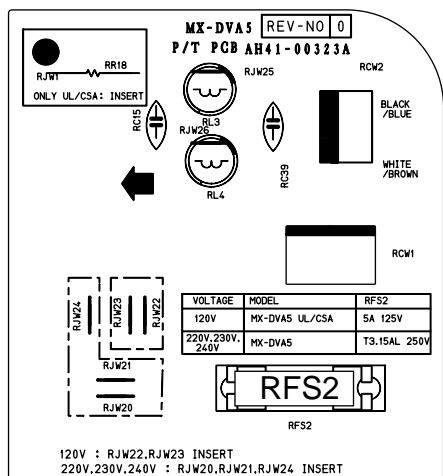
If you need to decompose the traverse unit, short-circuit the connector of the flexible board by using a metal clip and the like prior to decomposing the traverse unit.



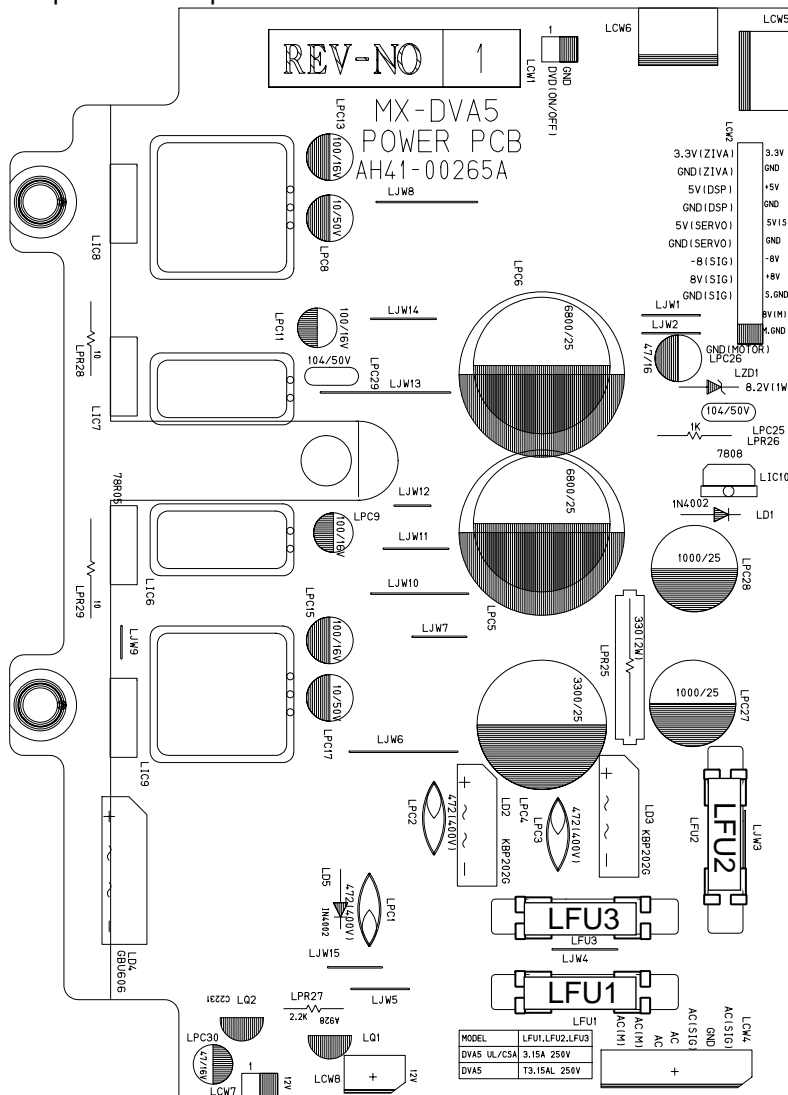
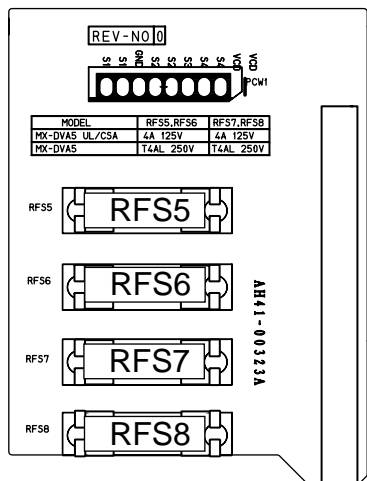
Importance administering point on the safety

DVD power board part

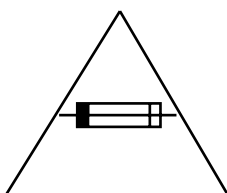
Primary part



Secondary parts



For USA and Canada / pour États - Unis d' Amérique et Canada



Caution: For continued protection against risk of fire, replace only with same type 5A/125V for RFS2, 4A/125V for RFS5,RFS6,RFS7, and RFS8, 3.15A /250V for LFU1,LFU2, and LFU3. This symbol specifies type of fast operating fuse.

Précaution: Pour éviter risques de feux, remplacez le fusible de sureté de RFS2 comme le meme type que 5A/125V, et 4A/125V pour RFS5,RFS6,RFS7, et RFS8, 3.15A /250V for LFU1,LFU2, and LFU3. Ce sont des fusibles sùretes qui fonctionnes rapide.

Disassembly method

<Main body>

■ Removing the metal cover

(See Fig.1 and 2)

1. Remove the three screws **A** attaching the metal cover on the back of the body.
2. Remove the six screws **B** attaching the metal cover on both sides of the body.
3. Remove the metal cover from the body by lifting the rear part of the cover.

ATTENTION: Do not break the front panel tab fitted to the metal cover.

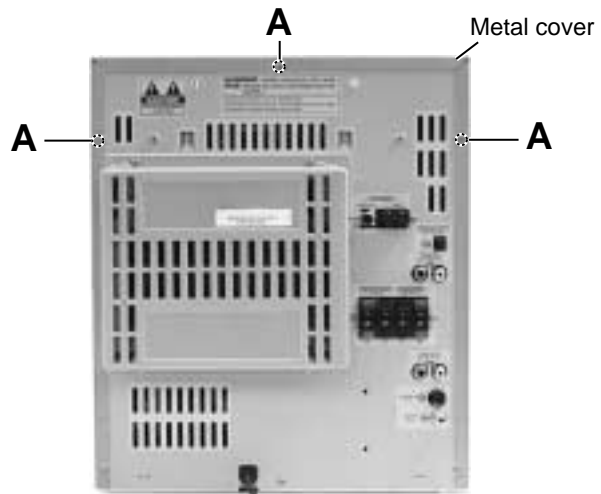


Fig.1

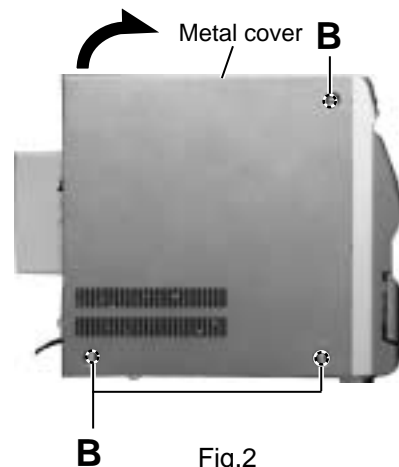


Fig.2

■ Removing the CD / DVD changer unit

(See Fig.3 to 6)

- Prior to performing the following procedure, remove the metal cover.
1. Disconnect the card wire which is attached with adhesive to the left side of the CD / DVD changer unit.
 2. Disconnect the harness from connector ACW1, DCW4 and VCW1 of the CD / DVD servo board on the back of the CD / DVD changer unit.
 3. Disconnect the harness from connector LCW2 and LCW6 on the DVD power board.
 4. Disconnect the card wire from connector UCW3 on the FL display & System control board.
 5. Remove the two screws **C** attaching the CD / DVD changer unit on the back of the body.
 6. Remove the two screws **D** attaching the CD / DVD changer unit on the both side of the body.
 7. Draw the CD / DVD changer unit upward from behind while pulling the rear panel outward.

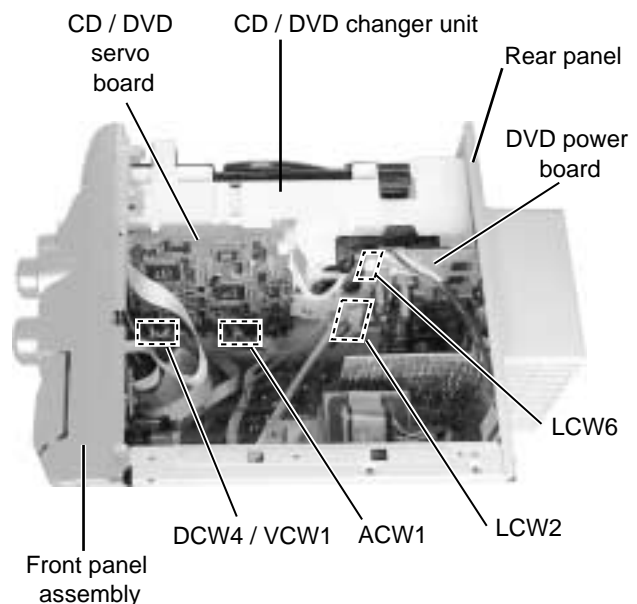


Fig.3

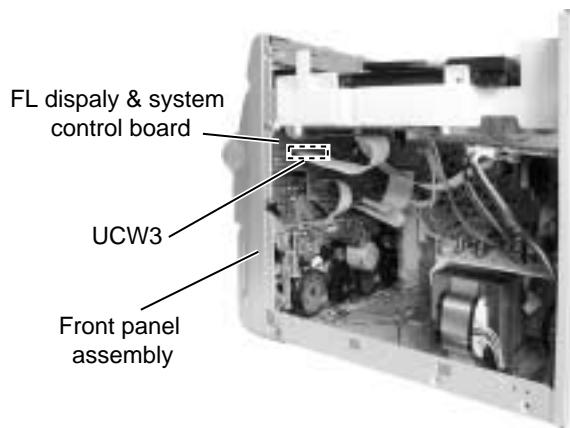


Fig.4

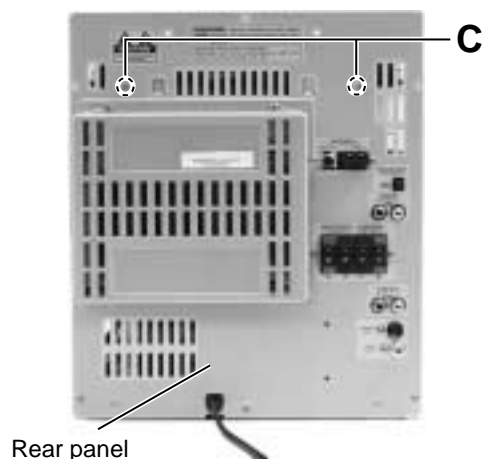


Fig.5

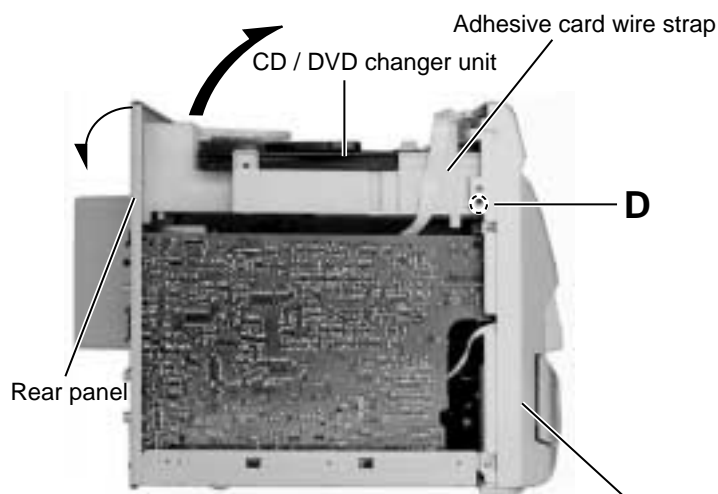


Fig.6a

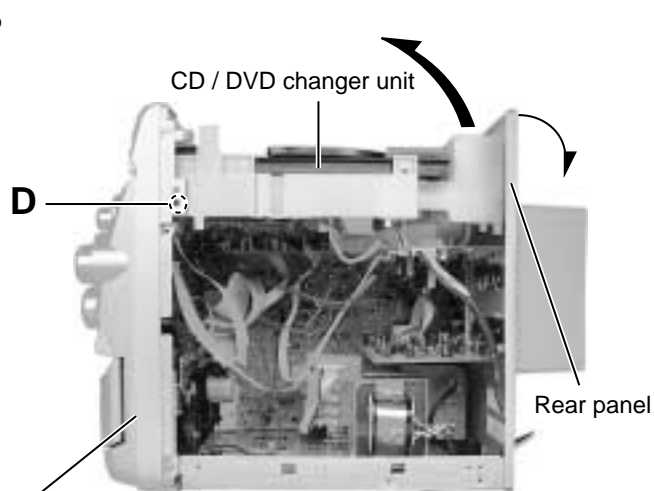


Fig.6b

Front panel assembly

■ Removing the front panel assembly (See Fig.7 to 9)

• Prior to performing the following procedure, remove the metal cover and the CD / DVD changer unit.

1. Disconnect the card wire from connector FCW3 and the harness from connector JCW1, JCW2 and HCW3 on the inner side of the main board in the body.
2. Remove the two screws **E** attaching the front panel assembly on both sides of the body.
3. Remove the screw **F** attaching the earth terminal extending from the cassette mechanism assembly.
4. Remove the screw **G** attaching the front panel assembly and main board.
5. Remove the screw **H** attaching the front panel assembly on the bottom of the body.
6. Release the two joints **a** on both sides and two joints **b** on the bottom of the body using a screwdriver.

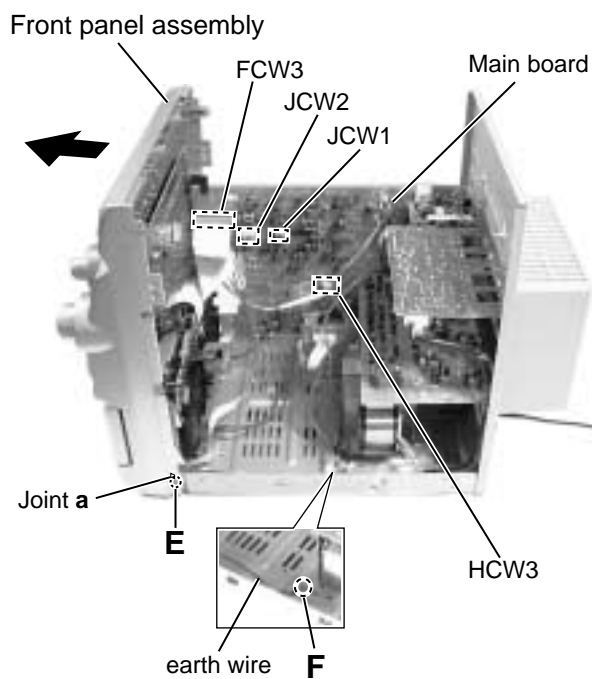


Fig.7

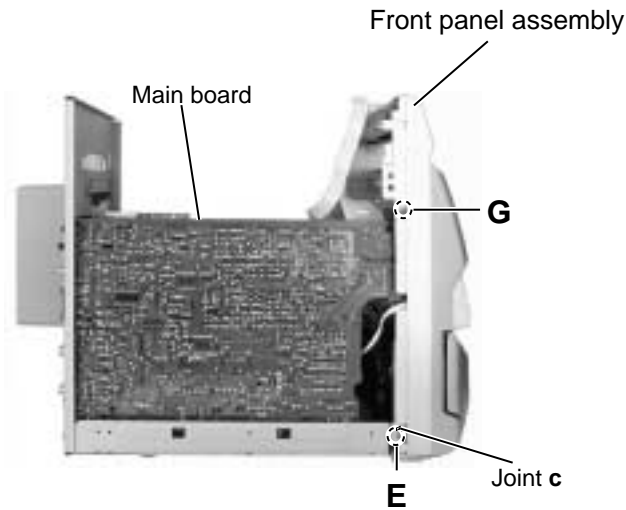


Fig.8

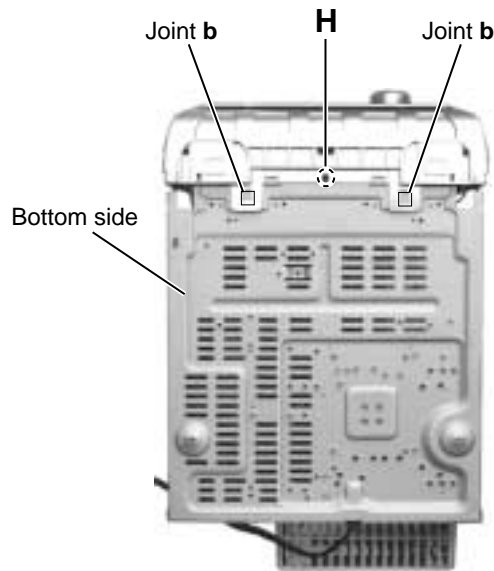


Fig.9

■ Removing the heat sink, amp. board and DVD power board (See Fig.10 to 12)

• Prior to performing the following procedure, remove the metal cover and the CD / DVD changer unit.

1. Remove the four screws **I** attaching the heat sink cover on the back of the body. Remove the heat sink cover.
2. Remove the four screws **J** attaching the heat sink, amp. board and DVD power board to the rear panel on the back of the body.
3. Remove the two screws **K** attaching the speaker terminal to the rear panel on the back of the body.
4. Disconnect the card wire from connector ACW1 and the harness from connector ACW2 on the amp. board.
5. Disconnect the harness from connector LCW5 and LCW4 on the DVD power board.
6. After moving the heat sink upward, remove the claws. Then pull out the heat sink, amp. board and DVD power board inward.

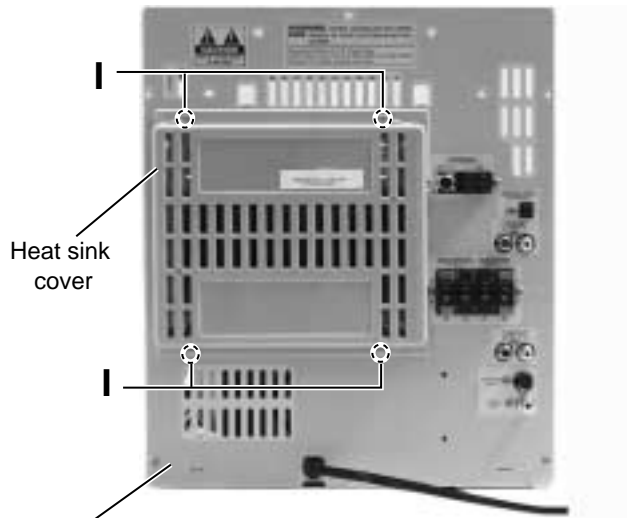


Fig.10

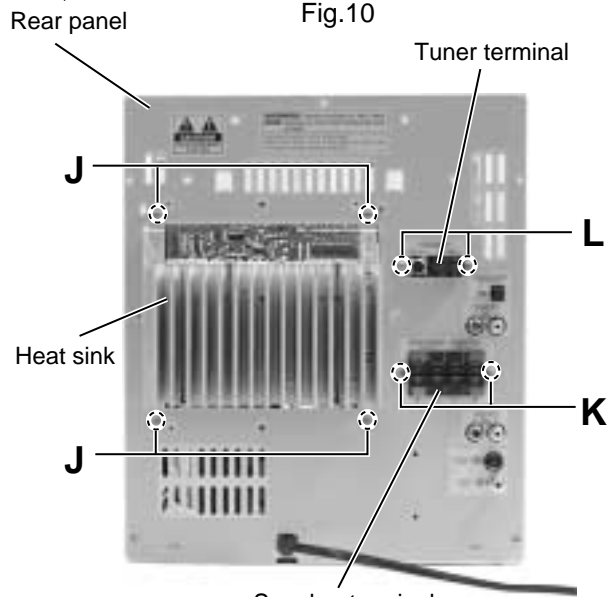


Fig.11

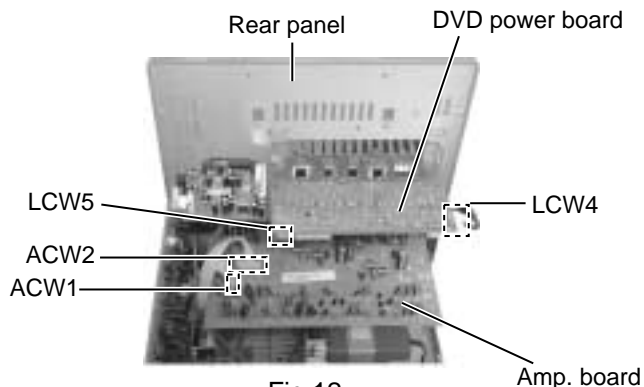


Fig.12

■ Removing the tuner board (See Fig.11 and 13)

- Prior to performing the following procedure, remove the metal cover and CD / DVD changer unit.
1. Disconnect the card wire from connector CON01 on the tuner board.
 2. Remove the two screws **L** attaching the tuner board.

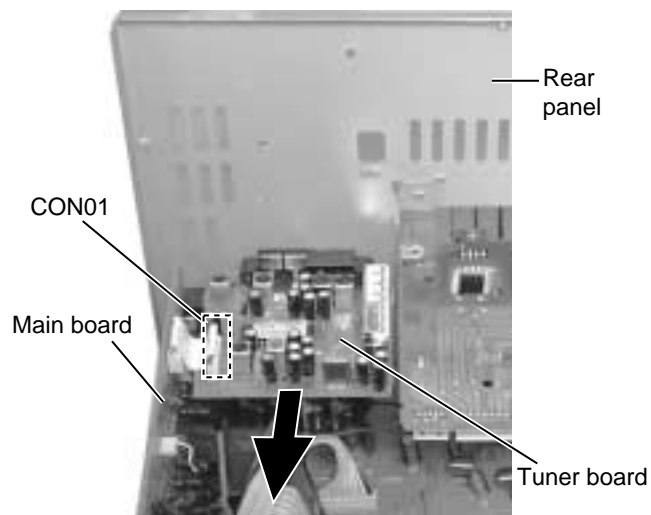


Fig.13

■ Removing the rear panel (See Fig.14)

- Prior to performing the following procedure, remove the metal cover, CD / DVD changer unit, heat sink & Amp. board and tuner board.
1. Remove the three screws **N** and five screws **M** attaching the rear panel.

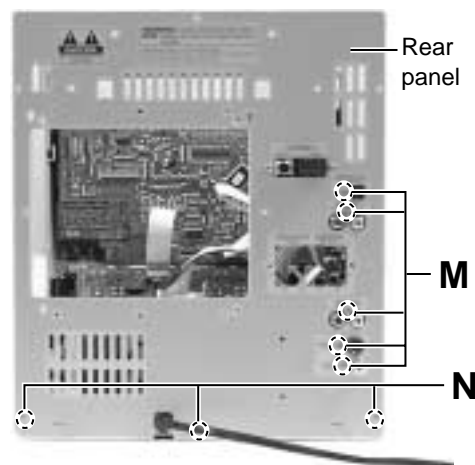


Fig.14

■ Removing the main Board (See Fig. 15)

- Prior to performing the following procedure, remove the metal cover, CD / DVD changer unit, heat sink & Amp. board tuner board and rear panel.
1. Disconnect the card wire from connector FCW3 and the harness from connector JCW1, JCW2, and HCW3 on the main board.
 2. Disconnect the harness from connector PCW1 on the power transformer board.
 3. Remove the screw **G** attaching the main board holder. (See Fig.8)
 4. Remove the two screws **O** attaching the heat sink and bottom chassis.

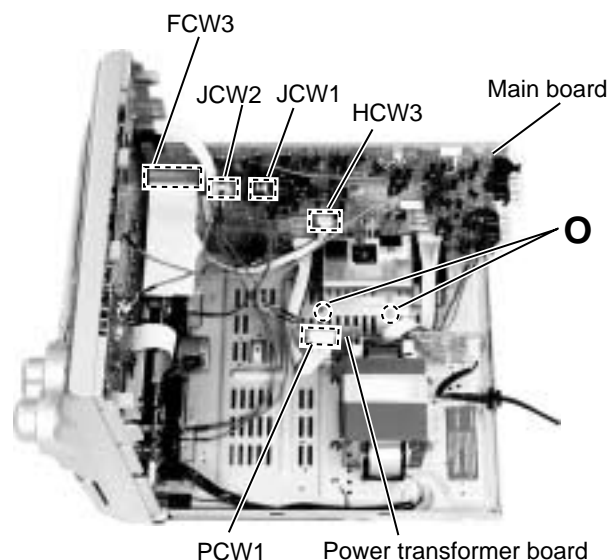


Fig.15

■Removing the power ICs and DVD power board (See Fig.16 to 18)

⌋ Prior to performing the following procedure, remove the metal cover, CD / DVD changer unit, heat sink, amp. board and DVD power board.

1. Remove the four screws **P** attaching the power ICs to the heat sink.
2. Unsolder the power ICs solder point.
3. Remove the three screws **Q** and three screws **R** attaching the DVD power board to the heat sink.

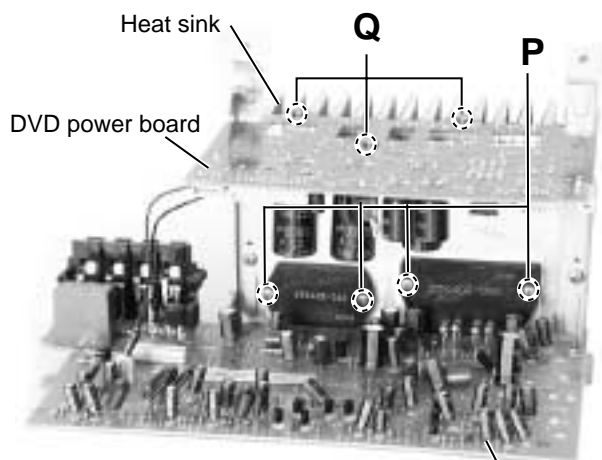


Fig.16

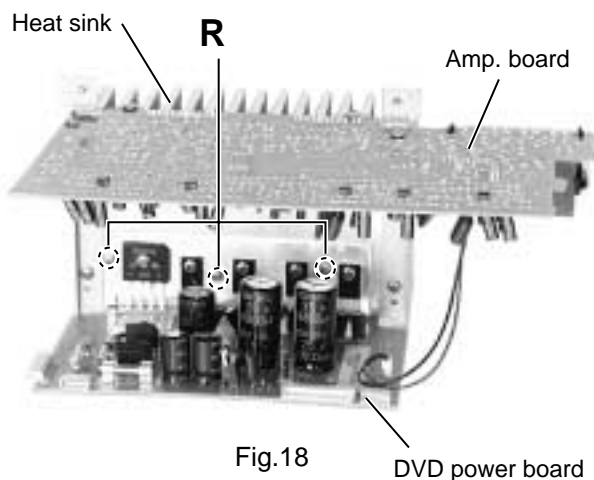


Fig.18

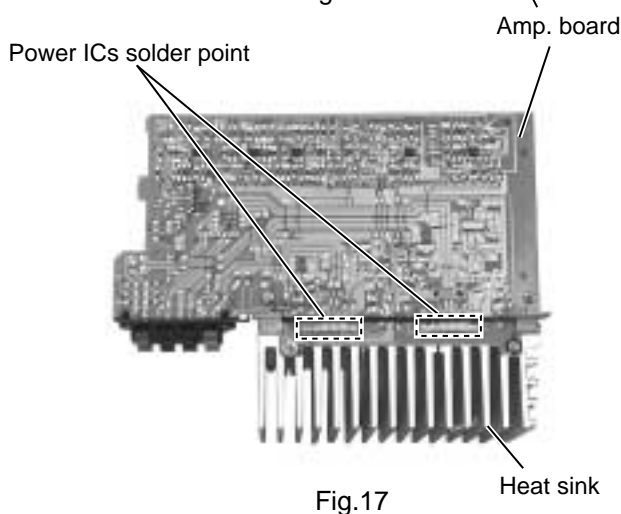


Fig.17

■Removing the power transformer (See Fig .19)

⌋ Prior to performing the following procedure, remove the metal cover, CD / DVD changer unit, heat sink & Amp. board, tuner board and rear panel.

1. Disconnect the power cord from connector RCW2 of the power transformer board.
2. Disconnect the harness from connector PCW1 of the power transformer board.
3. Remove the four screws **S** attaching the power transformer.

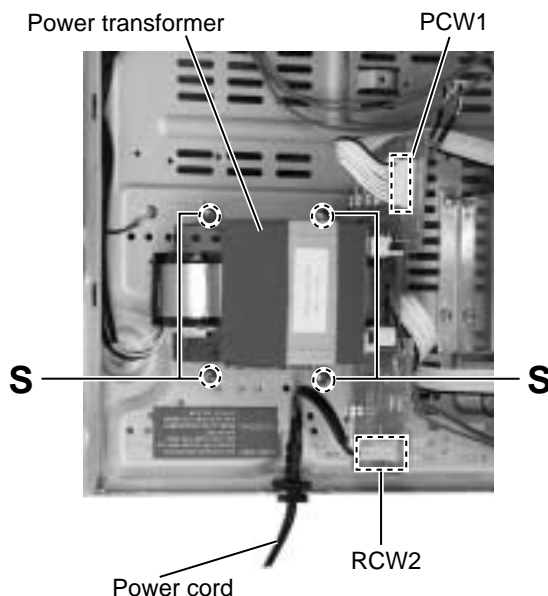


Fig.19

<Front panel assembly>

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

■ Removing the power / DVD switch board (See Fig.20)

1. Disconnect the card wire from connector UCW1 of the power / DVD switch board.
2. Remove the five screws **T** attaching the power / DVD switch board and release the tab **c** outward.

■ Removing the FL display & System control board (See Fig.20)

1. Disconnect the card wire from the connector UCW3, UCW4, UCW5 and UCW6 on the FL display & System control board.
2. Remove the five screws **U** attaching the FL display & System board.
3. Disconnect the card wire from the connector UCW2 on the FL display & System control board.

■ Removing the headphone board (See Fig.21)

- Prior to performing the following procedure remove the FL display & System control board.

1. You can pull out the headphone board.

■ Removing the front board (See Fig. 21 and 22)

- Prior to performing the following procedure, remove the FL display & System control board.

1. Pull out the volume knob, subwoofer level knob and sound mode nob from front side.
2. Remove the eleven screws **V** attaching the front board and release the two tabs **d** outward.

■ Removing the cassette mechanism assembly (See Fig.21)

1. Disconnect the card wire **e** from the mechanism board on the cassette mechanism assembly.
2. Remove the six screws **W** attaching the cassette mechanism assembly.

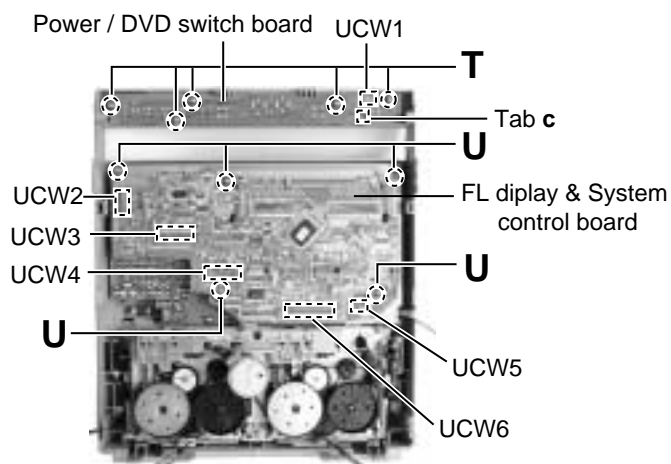


Fig.20

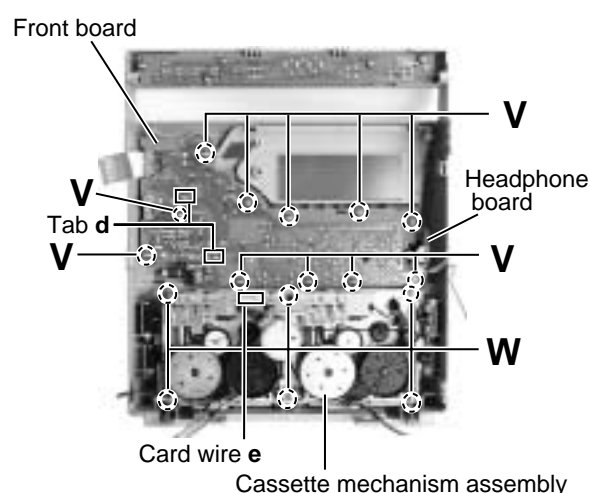


Fig.21

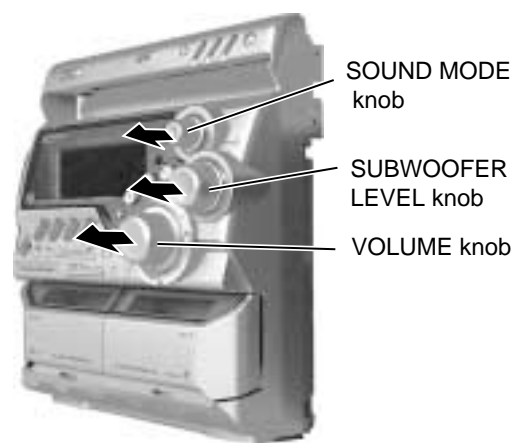


Fig.22

<CD / DVD changer unit>

- Prior to performing the following procedure, remove the CD / DVD changer unit.

■Removing the CD / DVD tray
(See Fig.1 to 3)

1. Disconnect the card wire from connector RCW1 of the CD / DVD servo board.
2. Turn the black loading pulley gear on the under side of the CD / DVD changer unit in the direction of the arrow and draw the CD / DVD tray toward the front until it stops.
3. Disconnect the card wire from connector DCW1 of the CD / DVD servo board on the upper side of the CD / DVD changer unit.
4. Push down the two tray stoppers marked **a** and pull out the CD / DVD tray.

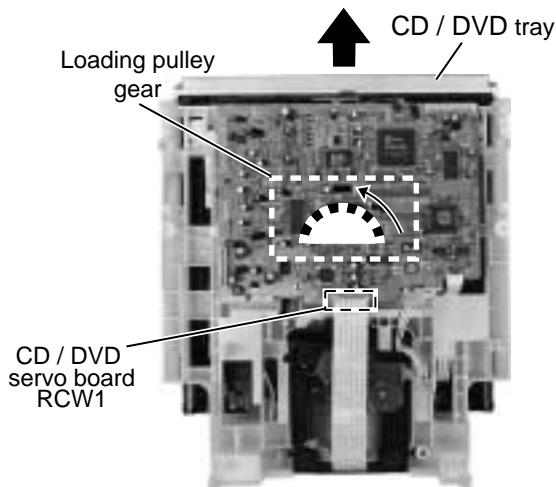


Fig.1

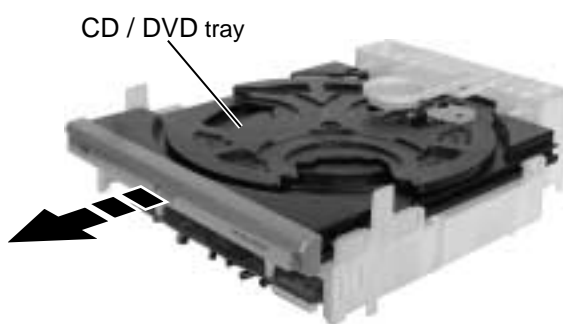


Fig.2

■Reinstall the CD / DVD tray
(See Fig.4 and 5)

1. Align the gear-cam with the gear-tray as shown fig.3, then mount the CD / DVD tray.
2. When assembling the CD / DVD tray, take extreme care not engage with gear - synchro.

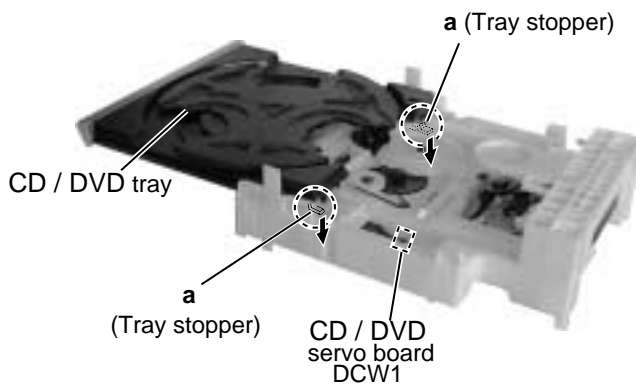


Fig.3

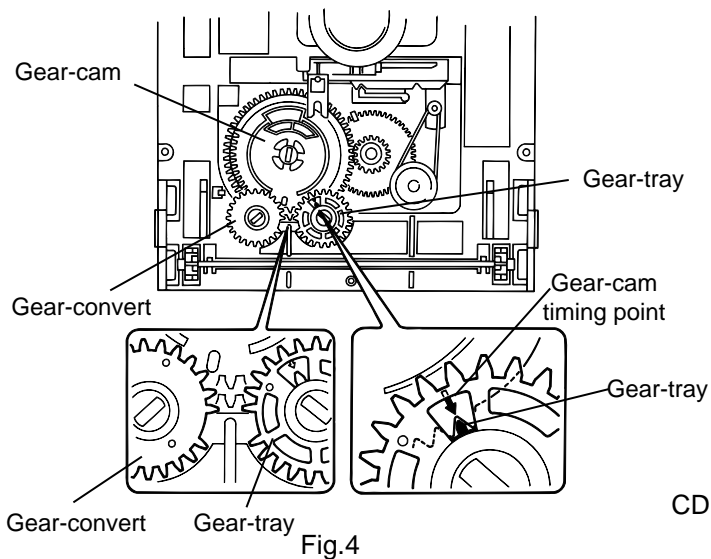


Fig.4

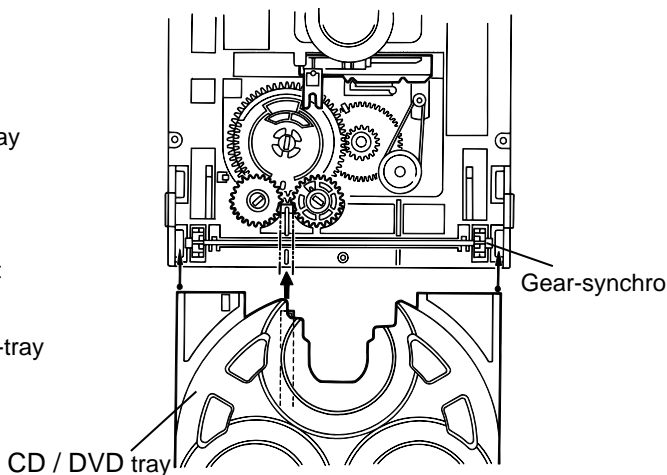


Fig.5

■ Removing the sensor board, the LED board and the turn table motor assembly (See Fig.6 to 9)

- Prior to performing the following procedure, remove the CD / DVD tray.
1. Remove the screw **A** attaching the LED board and release the screws **B** attaching the bracket.
 2. Remove the screw **C** attaching the sensor board and release the two tabs **b** attaching the sensor board on the under side of the CD / DVD tray.
 3. Disconnect the harness from connector on the sensor board and release the harness from the two hooks **c**. Remove the sensor board.
 4. Remove the screw **D** attaching the turn table. Detach the turn table from the tray.
 5. Pull outward the tab marked **d** attaching the turn table motor assembly on the upper side of the tray and detach the turn table motor assembly from the tray.

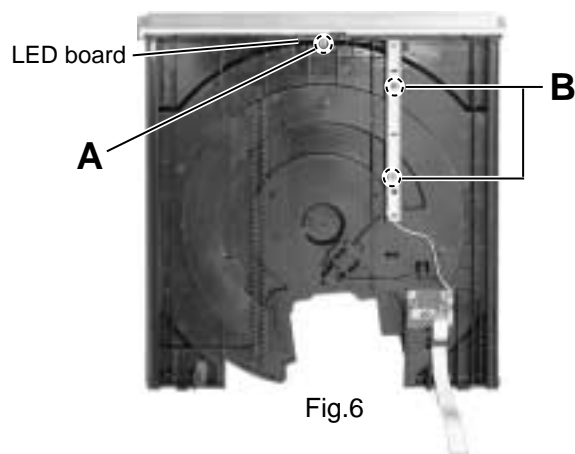


Fig.6

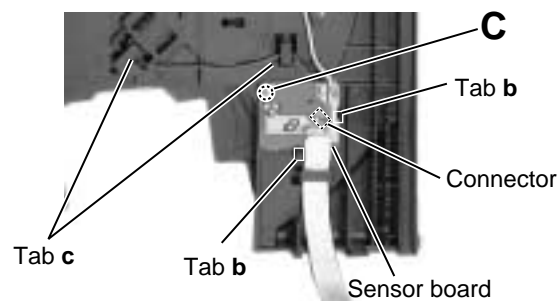


Fig.7

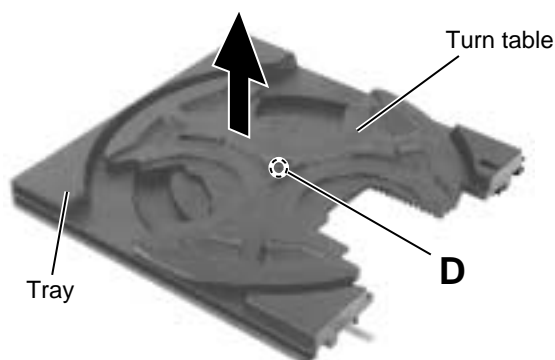


Fig.8

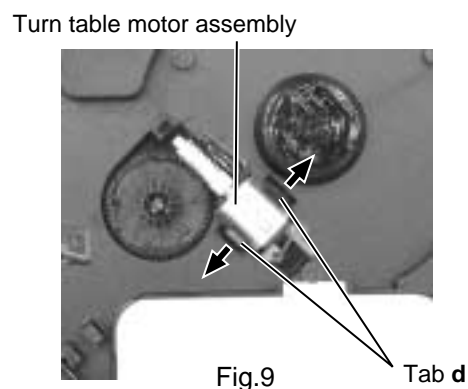
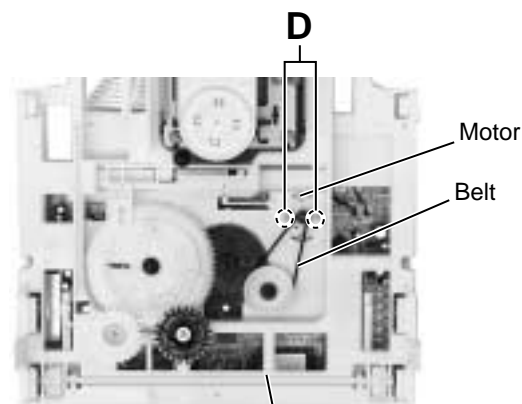


Fig.9

■ Removing the belt, and the motor (See Fig.10)

- Prior to performing the following procedure, remove the CD / DVD tray.
1. Detach the belt from the pulley on the upper side of the CD / DVD changer unit (Do not stain the belt with grease).
 2. Remove the two screws **D** attaching the motor.



CD / DVD changer unit

Fig.10

**■ Removing the CD / DVD servo board
(See Fig. 12)**

• Prior to performing the following procedure, remove the CD / DVD tray, the two screws attaching the motor and detach the belt from the pulley.

1. Unsolder points the motor terminal.
2. Disconnect the card wire from the connector RCW1 on the CD / DVD servo board.
3. Disconnect the motor board wire from the motor board connector on the motor board.
4. Remove the three screws **D** attaching the CD / DVD servo board.

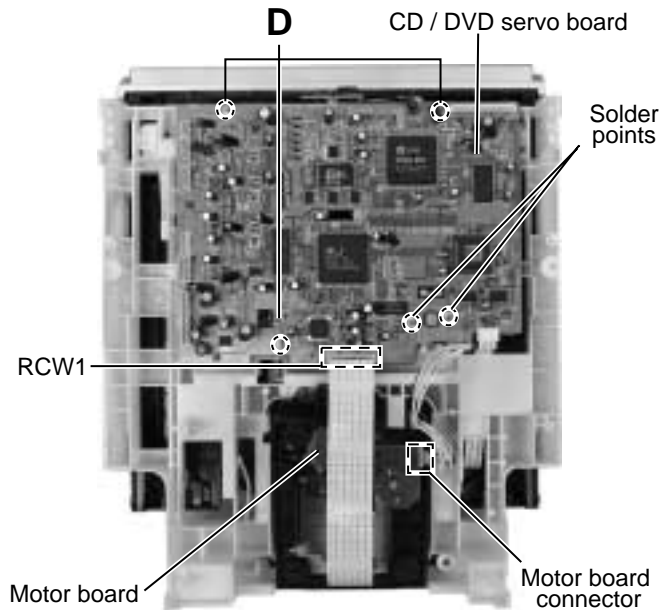


Fig.11

**■ Removing the CD / DVD mechanism holder assembly (mechanism included)
(See Fig.12 to 14)**

1. Disconnect the motor wire from connector on the motor board in the CD / DVD mechanism holder assembly on the under side of the CD / DVD changer unit.
2. Disconnect the card wire from connector on the pickup unit in the CD / DVD mechanism holder assembly.
3. Remove the screw **E** attaching the shaft on the right side of the CD / DVD mechanism holder assembly.
4. Pull outward the stopper fixing the shaft on the left side and remove the CD / DVD mechanism holder assembly from behind in the direction of the arrow ★.
5. Pull out the CD / DVD mechanism holder assembly.

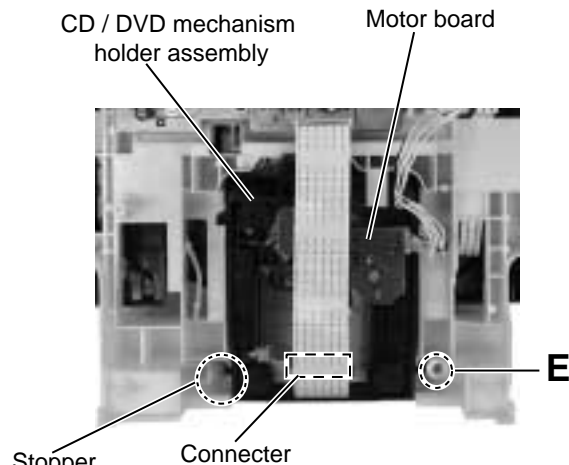


Fig.12

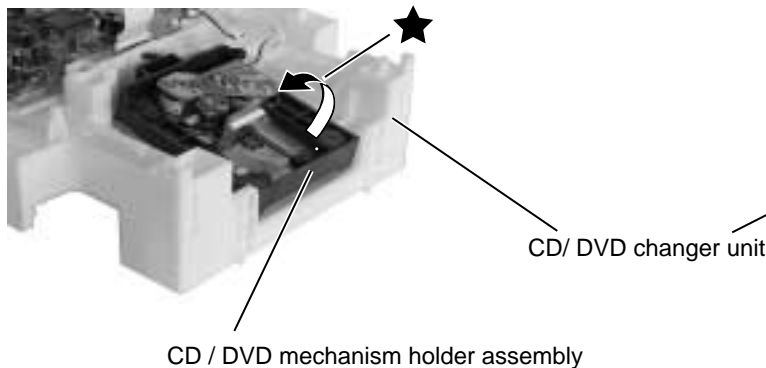


Fig.13

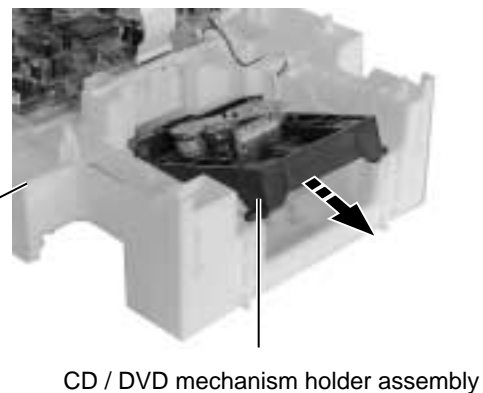


Fig.14

<Cassette mechanism section>

- Removing the record/playback mechanism.

■ Removing the R/P head.

1. Remove the screw **A** on the right side of the R/P head.(Fig.1)
2. Remove the screw **B** on the left side of the R/P head.(Fig.1)

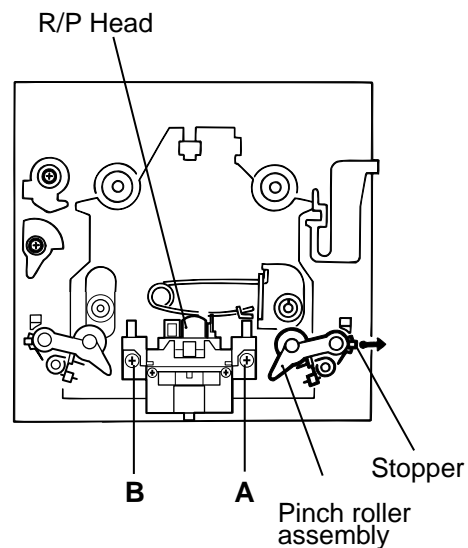


Fig.1

■ Removing the pinch roller.

1. Pull out the pinch roller by opening the pinch roller stopper outward to unlock .(Fig.2)
2. When reassembling the pinch roller, refer to fig. 3 to hook up the spring.

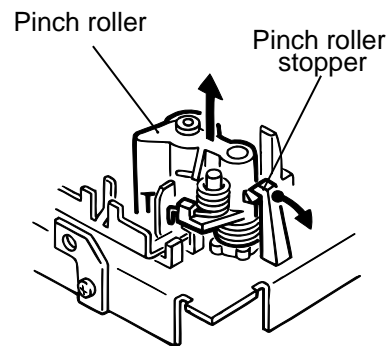


Fig.2

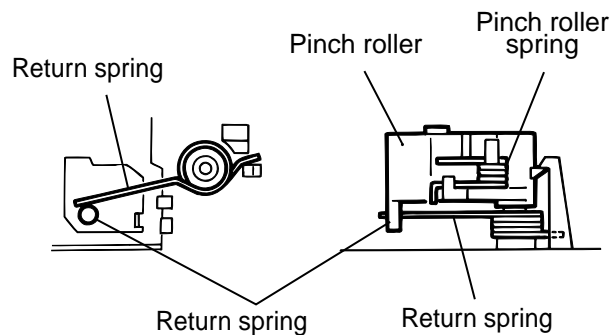
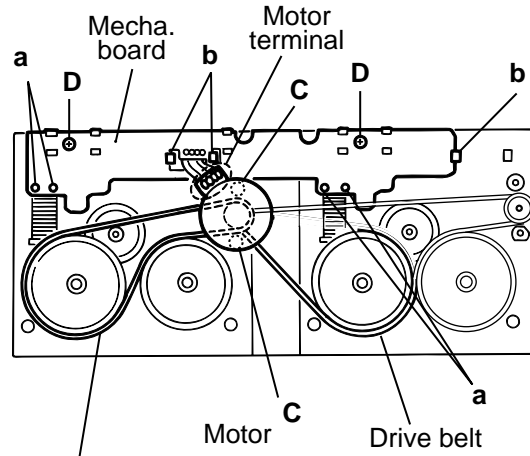


Fig.3

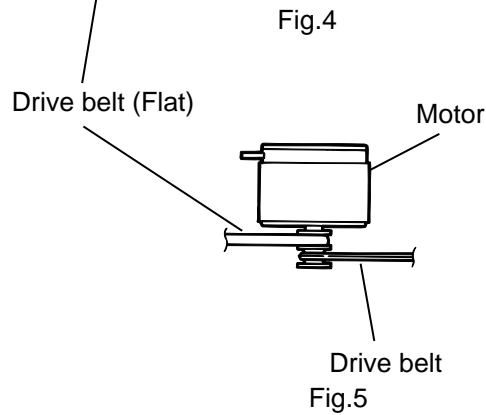
■ **Removing the motor.**

1. Remove the two screws **C** fixing the motor.
Be careful to grease's splash when the drive belt comes off.(Fig.4, Fig.5)
2. Unsolder the motor terminal.(Fig.4)



■ **Removing the mechanism board.**

1. Unsolder the four parts **a** on the solenoid coil terminal.(Fig.4)
2. Remove the two screws **D** fixing the board.(Fig.4)
3. Unhook the three parts **b** from the board.(Fig.4)
4. Remove the mechanism board.(Fig.4)



■ **Removing the flywheel.**

Remove the cut-washers at **c** and **d** from the capstan shaft, then remove the flywheel.
When reassembling the flywheel, be sure to use new washers as they cannot be reused. (Fig.7, Fig.8)

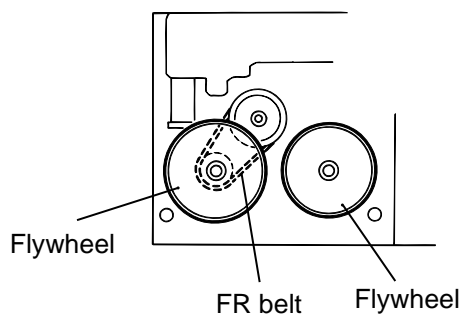
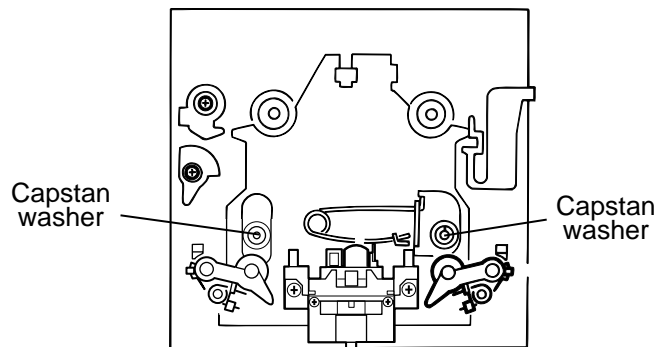


Fig.7

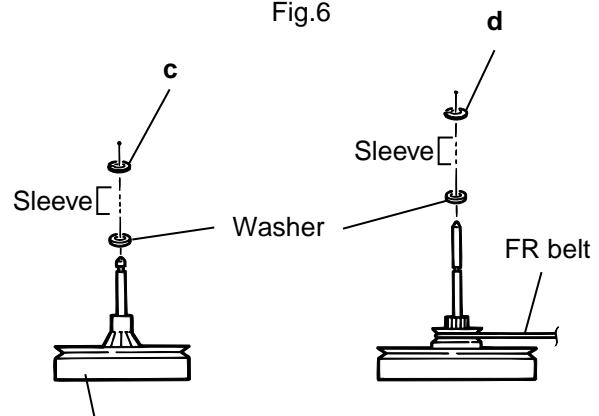


Fig.8

< Speaker section >

■ Removing the side panel (See Fig. 1)

1. Remove the five screws **A** and **B** attaching the side panel, then remove the side panel.

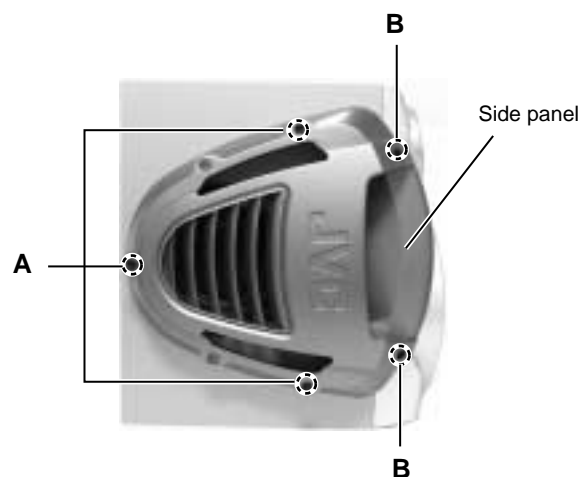


Fig.1

■ Removing the side speaker (See Fig. 2 and 3)

Prior to performing the following procedure, remove the side panel.

1. Remove the fore screws **C** attaching the side speaker.
2. Pull out the side speaker and remove the speaker cord from the speaker terminal.

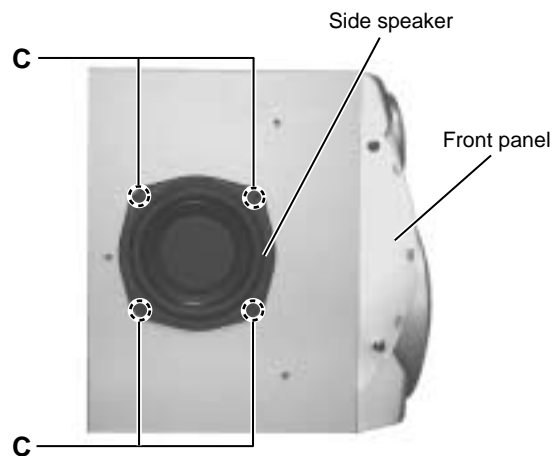


Fig.2

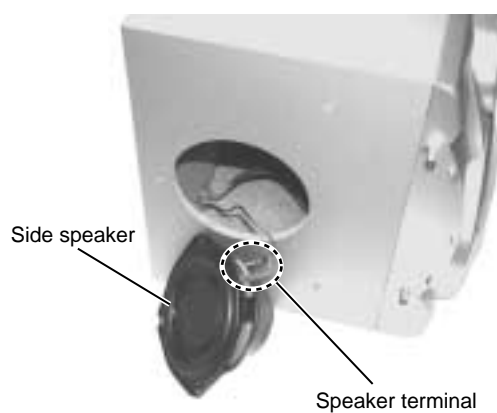
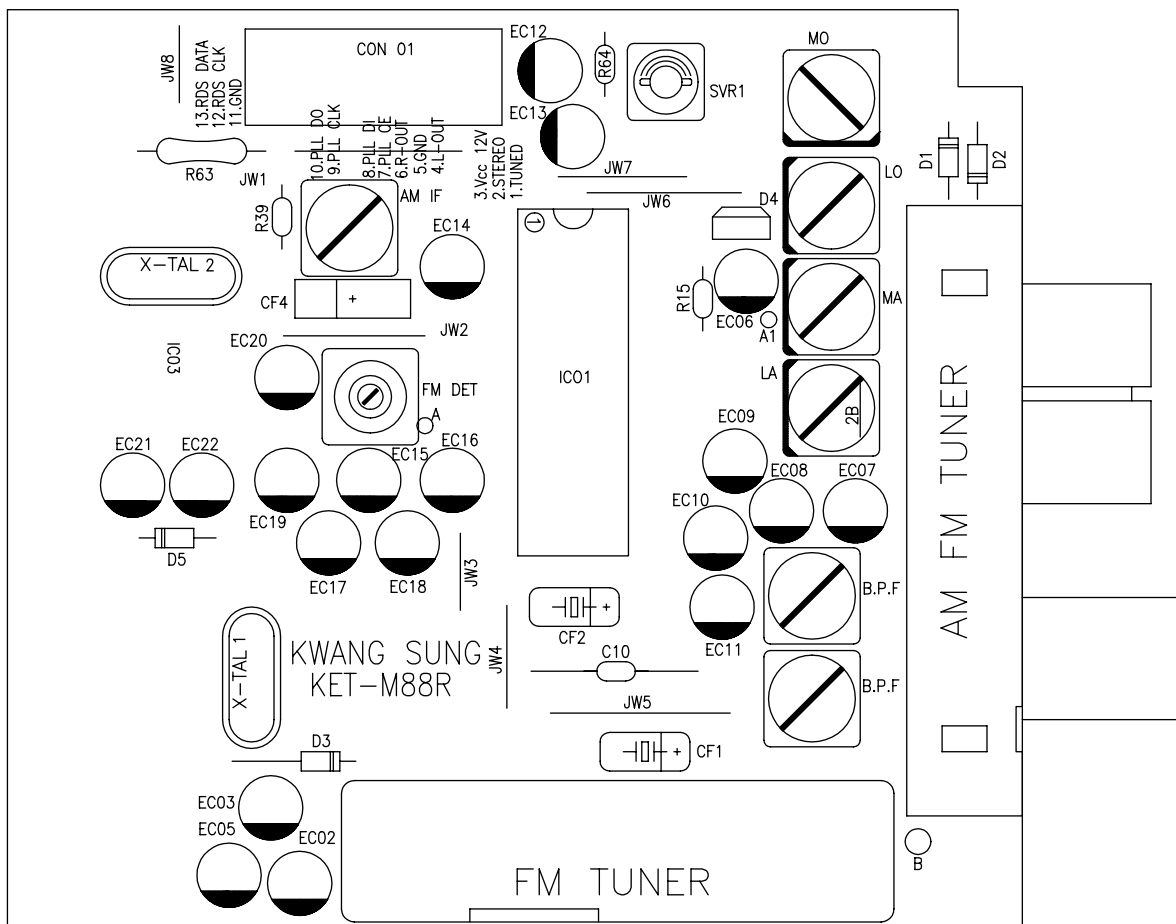


Fig.3

Adjustment method

1. Tuner



* Adjustment Location of Tuner PCB

ITEAM	AM(MW) OSC Adjustment	AM(MW) RF Adjustment
Received FREQ.	530~1710 KHz	600 KHz
Adjustment point	MO	MA
Output	1~7.0 V	Maximum Output(Fig1-4)

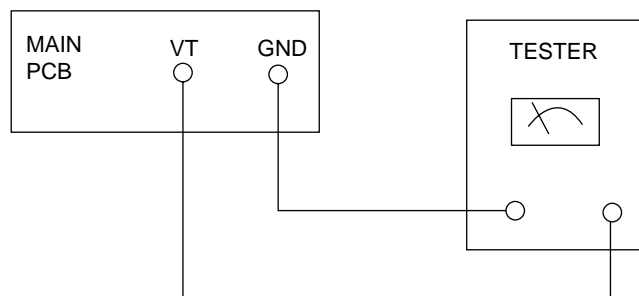


Fig 1-4 OSC Voltage

FM THD Adjustment	
SSG FREQ.	98 MHz
Adjustment point (FM DET)	FM DETECTOR COIL
Output	60 dB
Minimum Distortion (0.4% below) (Figure 1-1)	

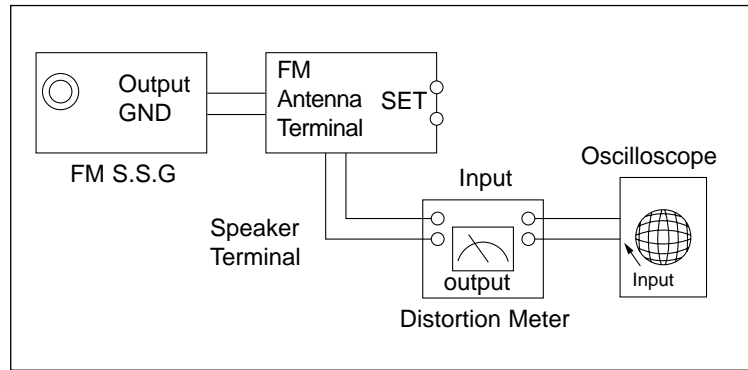


Figure1-1 IF CENTER and THD Adjustment

FM Search Level Adjustment	
SSG FREQ.	98 MHz
Adjustment point (SVR1)	BEACON SENSITIVITY SEMI-VR(20K)
Output	28 dB
Adjust SVR1 so that "TUNED" of FL T is lighted (Figure 1-2)	
*Adjust FM S.S.G level to 28dB	

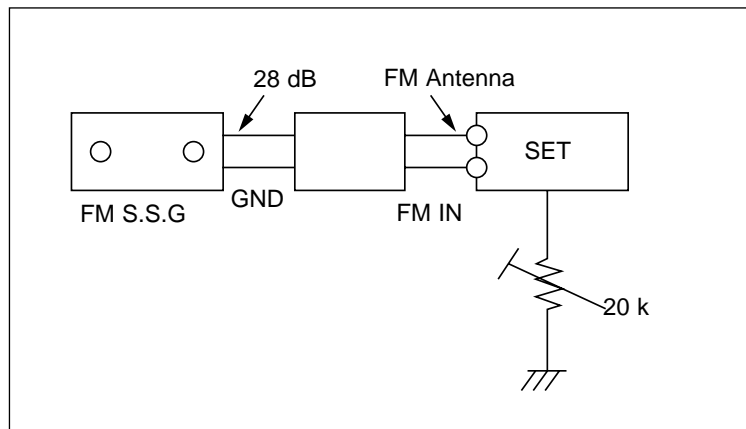


Figure1-2 FM Auto Search Level Adjustment

AM(MW) I.F Adjustment	
SSG FREQ.	450 kHz
Frequency	530 kHz
Adjustment point	AM IF
Maximum output (Figure 1-3)	

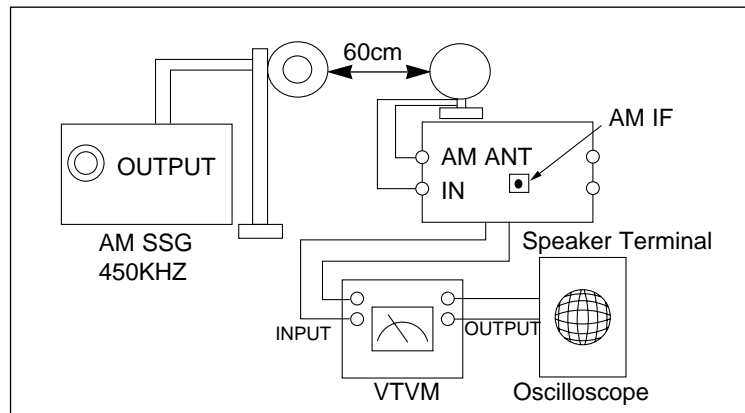


Figure1-3 AM I.F Adjustment

2 Cassette Deck

2-1 To Adjust Tape Speed

Notes

- 1) Measuring tape : i) VT712
(Tapes recorded with 3kHz)
ii) AC-225
- 2) Connect the cassette deck to the frequency counter as in figure 1-5.

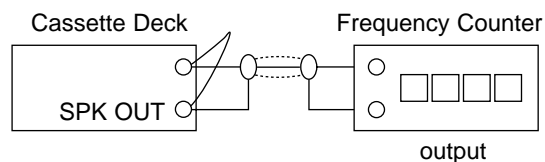


Figure 1-5

Step	Item	Pre-Setup Condition	Pre-Setup	To Adjust	Standard	Remark
1	TAPE SPEED Control	OUT (connected to the frequency counter)	1) Deck 1:VT712 2) Press PLAY SW button 3) Deck 2:Same as above	Turn USR1 to left and right (FRONT board)	3KHz ±30Hz	

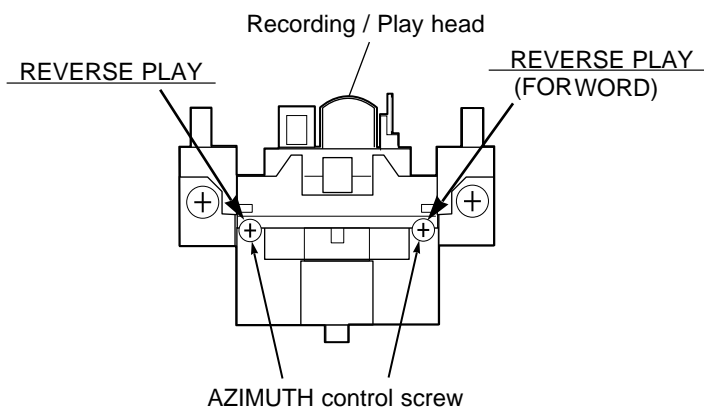


Figure 1-6

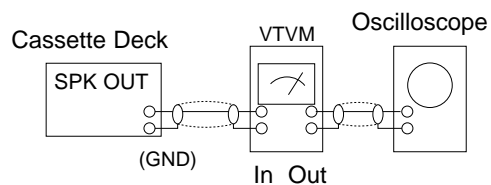


Figure 1-7

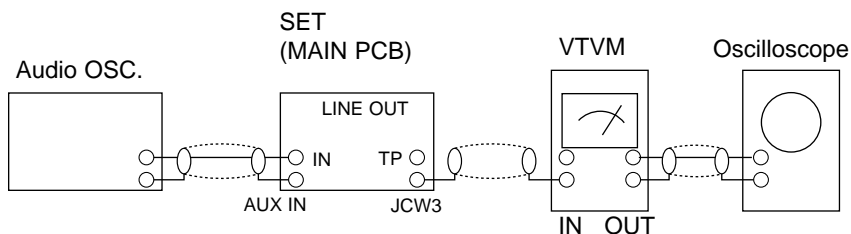


Figure 1-8

2-2 To Adjust Playback Level / REC

Notes

- 1) Before the actual adjustment, clean the play/recording head.
- 2) Measuring tape :
 - i) VT-703 (10kHz AZIMUTH control)
 - ii) AC-225
 - iii) VT-724 (1kHz Reference level)
- 3) The cassette deck is connections as shown in figure 1-7.

Arrangement of adjusting positions

Main board section (Forward side)

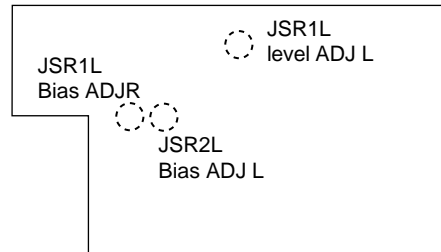


Figure. 1-9

1. Adjust Deck A Play Level

Step	Item	Pre-Setup Condition	Pre-Setup	To Adjust	Standard	Remark
1	AZIMUTH	SPK OUT (VTVM is connected to the scope)	After putting VT-703 into Deck A 1) Press FWD PLAY button. 2) Press RVS PLAY button.	Turn the control screw to as shown in Figure 1-6.	Max output and same phase (both channels)	After adjustment secure it with REGION LOCK. Adjust AZIMUTH when you exchange the head.

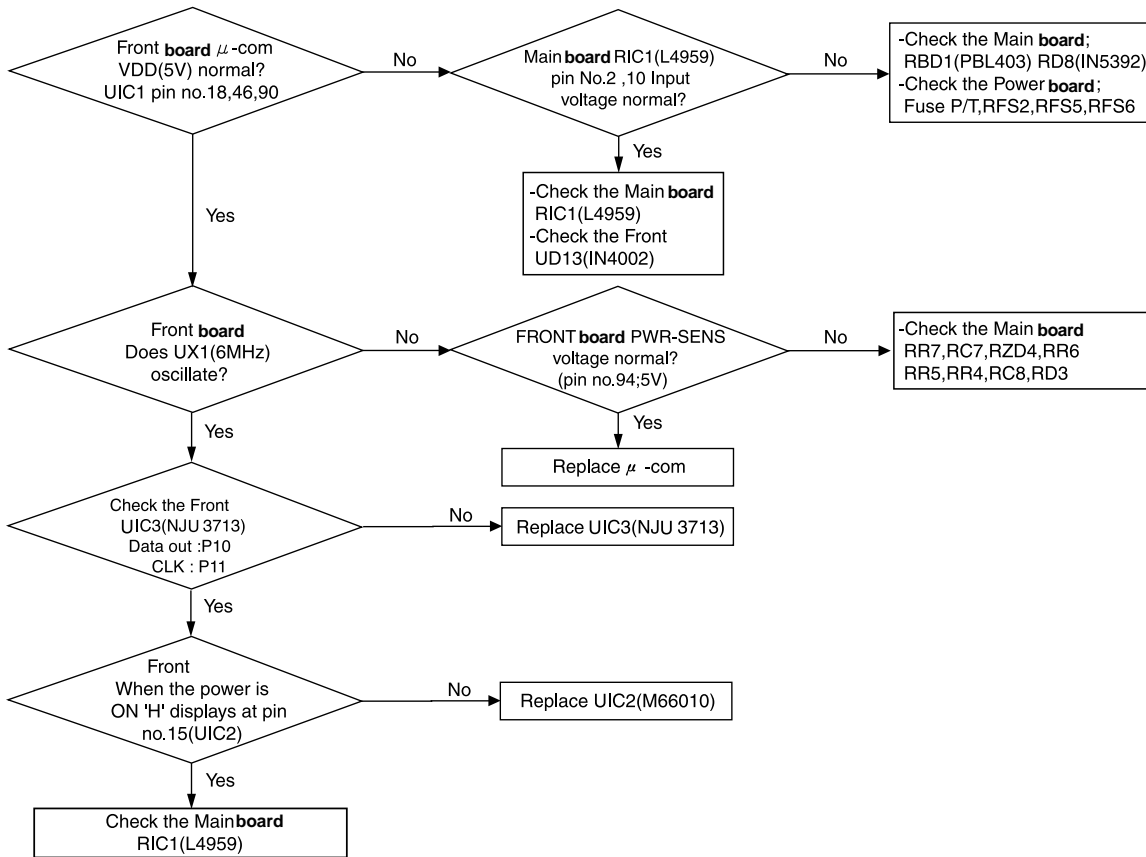
2. Adjust Deck B Play Level / REC BIAS

Step	Item	Pre-Setup Condition	Pre-Setup	To Adjust	Standard	Remark
1	AZIMUTH	SPK OUT (VTVM is connected to the scope)	After putting VT-703 into Deck B 1) Press FWD PLAY button. 2) Press RVS PLAY button.	Turn the control screw to as shown in Figure 1-6.	Max output and same phase (both channels)	After adjustment secure it with REGION LOCK. Adjust AZIMUTH when you exchange the head.
2	Recording Bias Voltage	Fig 1-8	After putting AC-225 into Deck B 1) Press REC PLAY button. 2) MAIN board JCW3, connected to VTVM	Turn JSR2L, JSR2R to the right and left	7mV	
3	Reference level	SPK OUT (VTVM is connected to the scope)	After putting VT-724 into Deck B Press PLAY button.	Turn JSR1L to the right and left Figure 1-7, 1-9.	Output of the left channel is combined in the level of the right channel	

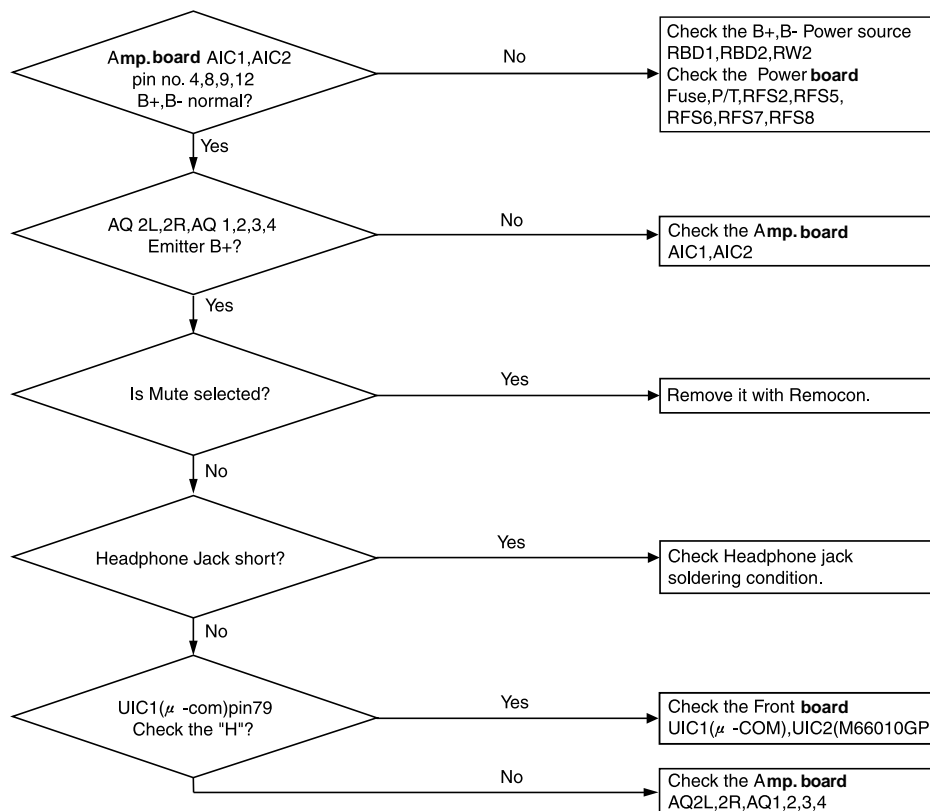
Troubleshooting

1. Amplifier

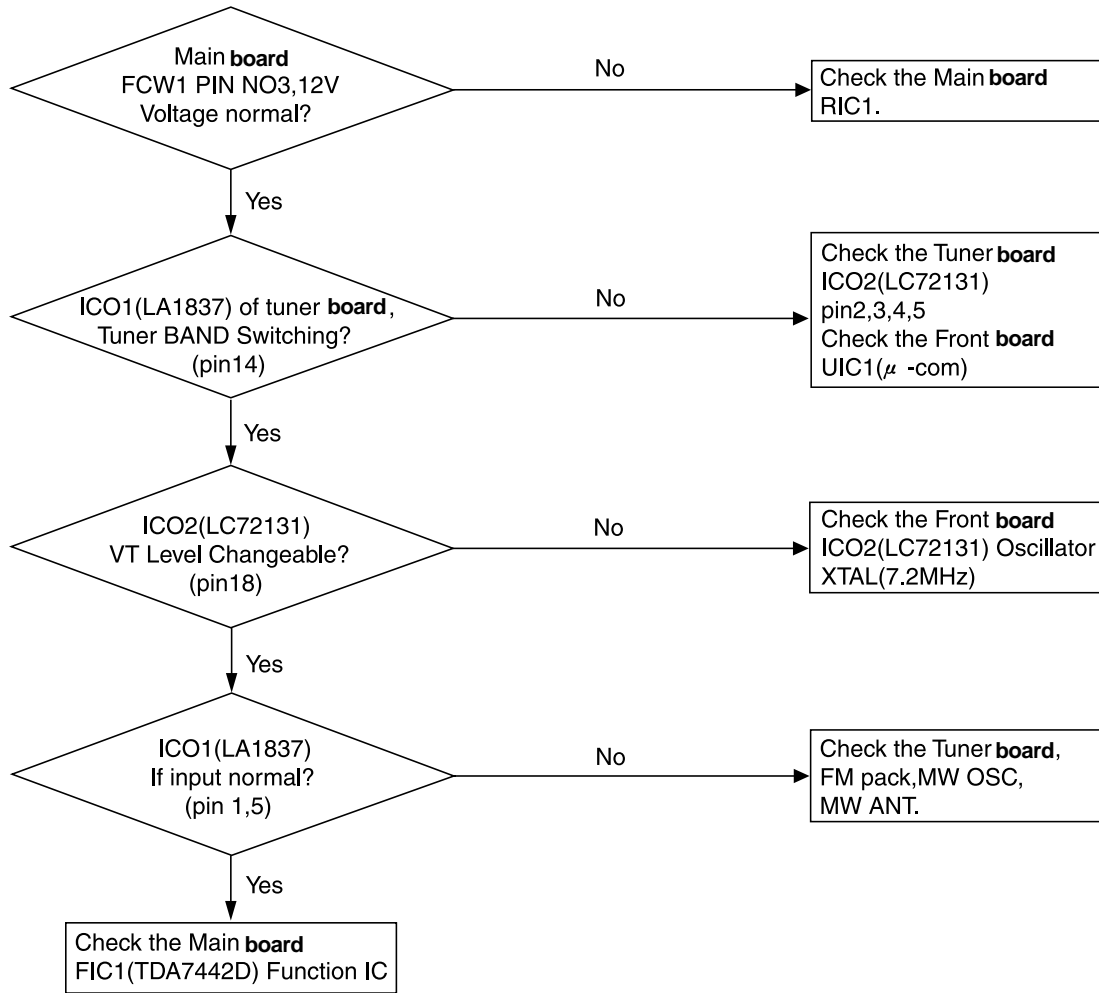
Power Malfunction



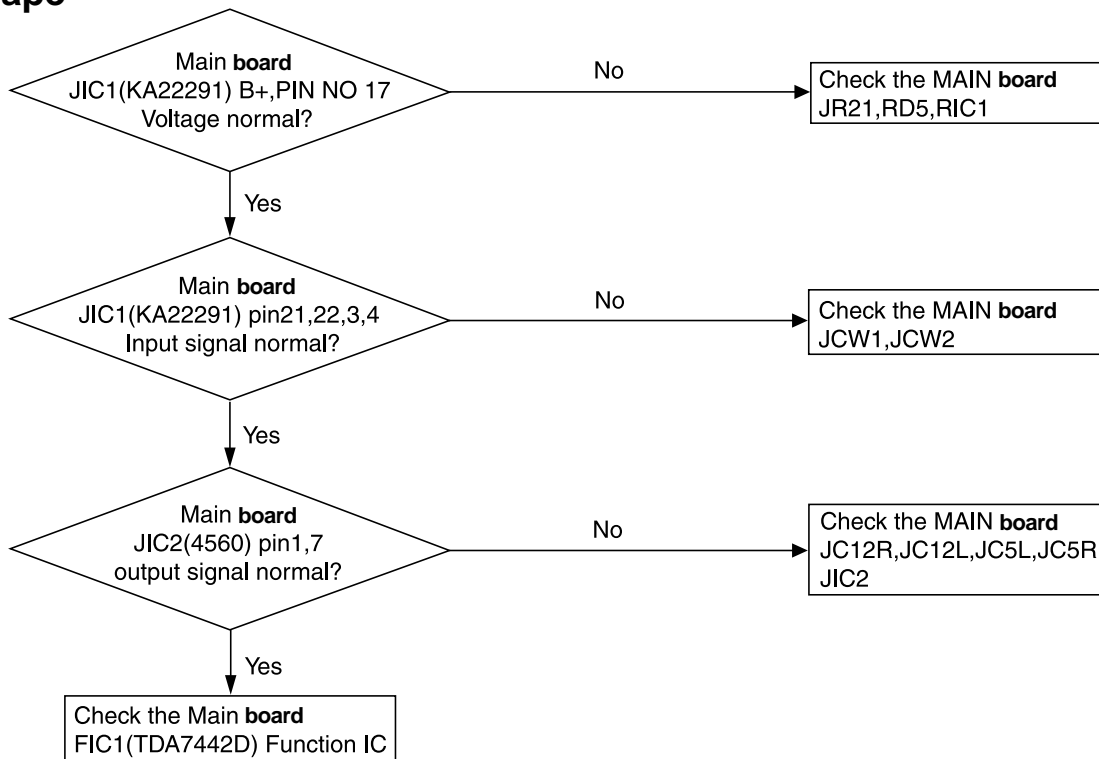
No Output



2. Tuner Malfunction (FM/AM)



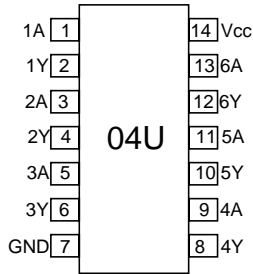
3. Tape



Description of major ICs

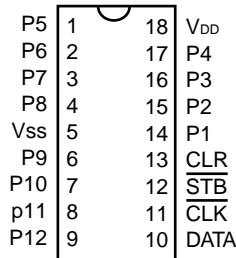
■ 74HCU04 (OIC1) : Optical

1.Pin layout

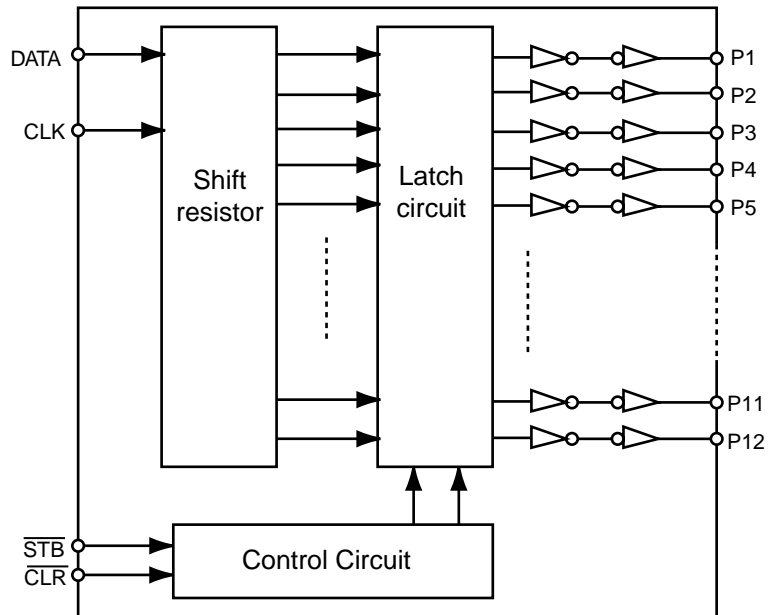


■ NJU3713 (UIC3) : L.E.D. driver

1.Pin layout



2.Block diagram

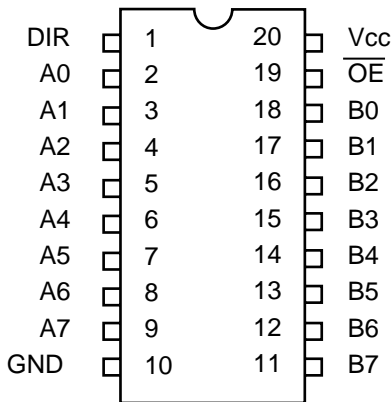


3.Pin function

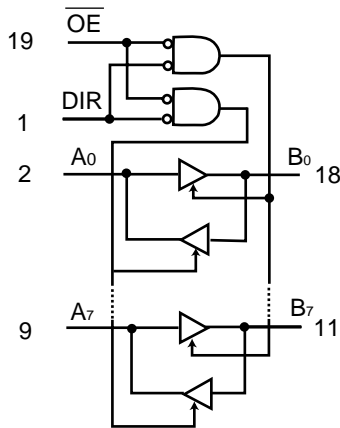
PIN No.	I/O	Symbol	Function
1~4	O	P5, P6, P7, P8	Parallel conversion data output terminal.
5	-	Vss	Connect to GND.
6~9	O	P9, P10, P11, P12	Parallel conversion data output terminal.
10	O	DATA	Serial data input terminal.
11	I	CLK	Clock signal input terminal.
12	I	STB	Strobe signal input terminal.
13	I	CLR	Clear signal input terminal.
14	O	P1	Parallel conversion data output terminal.
15	O	P2	Parallel conversion data output terminal.
16~17	O	P3, P4,	Parallel conversion data output terminal.
18	-	VDD	Power supply terminal.

■ **74HCT245 (U15) : Octal bus transceiver; 3-state**

1. Pin layout



2. Block diagram



Inputs		Inputs / outputs	
\overline{OE}	DIR	A _n	B _n
L	L	A = B	inputs
L	H	inputs	B = A
H	X	Z	Z

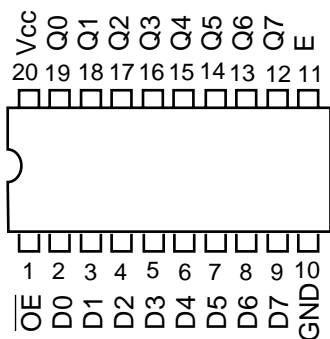
- 1. H = High voltage level
- L = Low voltage level
- X = don't care
- Z = high impedance OFF - state

3. Pin function

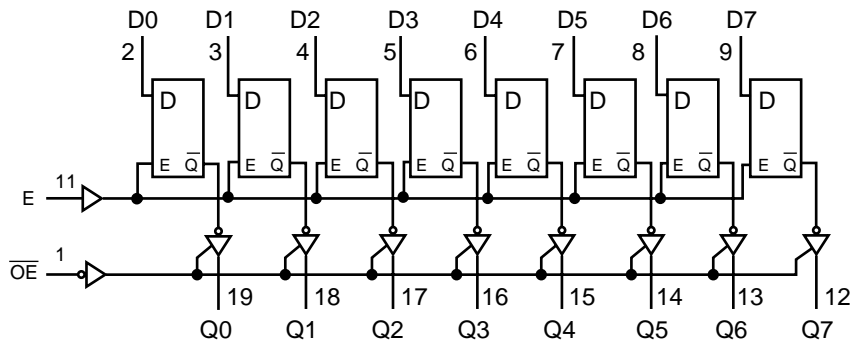
Pin No.	I/O	Symbol	Function
1	-	DIR	Direction control
2, 3, 4, 5, 6, 7, 8, 9	I/O	A0 ~A7	Data inputs / outputs
10	-	GND	Ground
18, 17, 16, 15, 14, 13, 12, 11	I/O	B0~B7	Data inputs / outputs
19	I/O	\overline{OE}	Outputs enable inputs (active LOW)
20	-	Vcc	positive supply voltage

■ **74LVT573 (U10, 11, 12) : Logic / flip flop**

1. pin layout

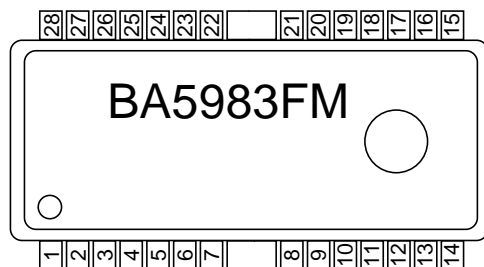


2. Block diagram

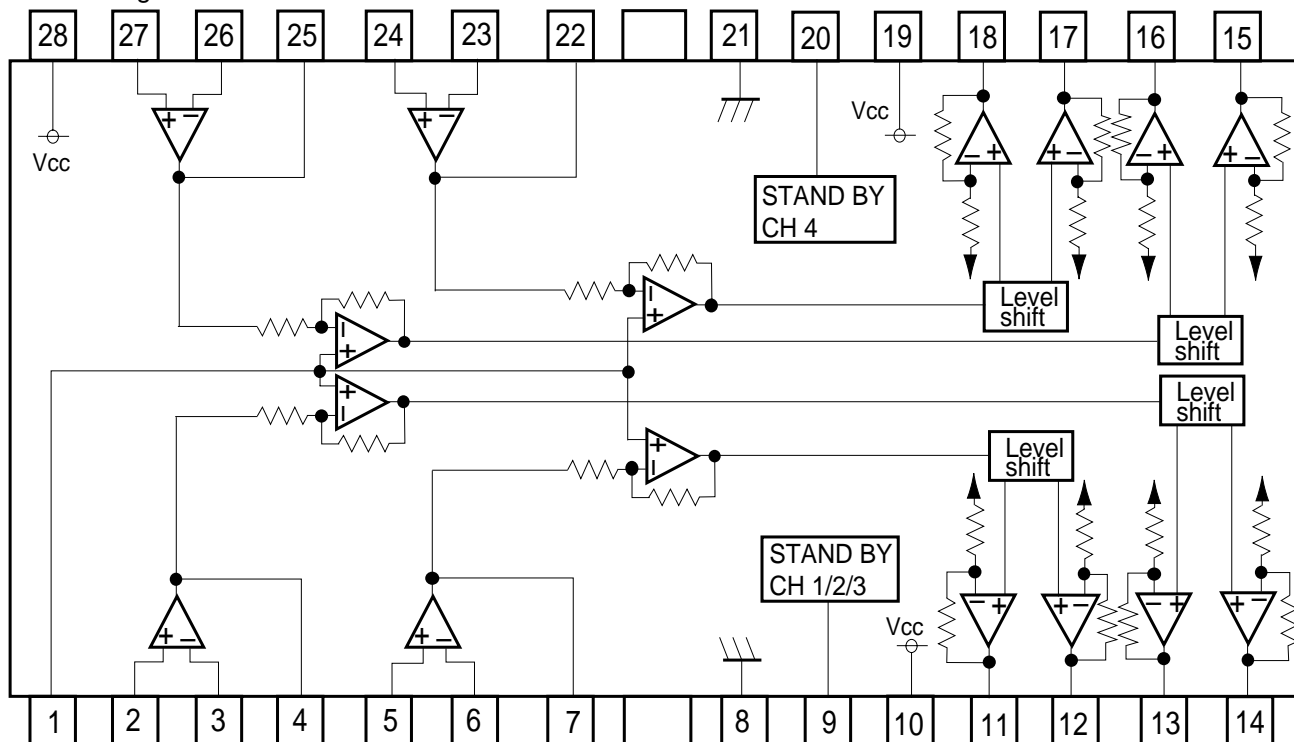


■ BA5983FM (DIC1) : Feed motor

1.Pin layout



2.Block diagram

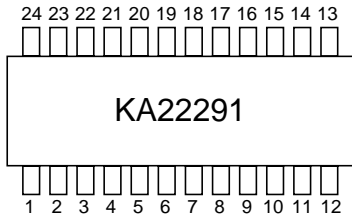


3.Pin function

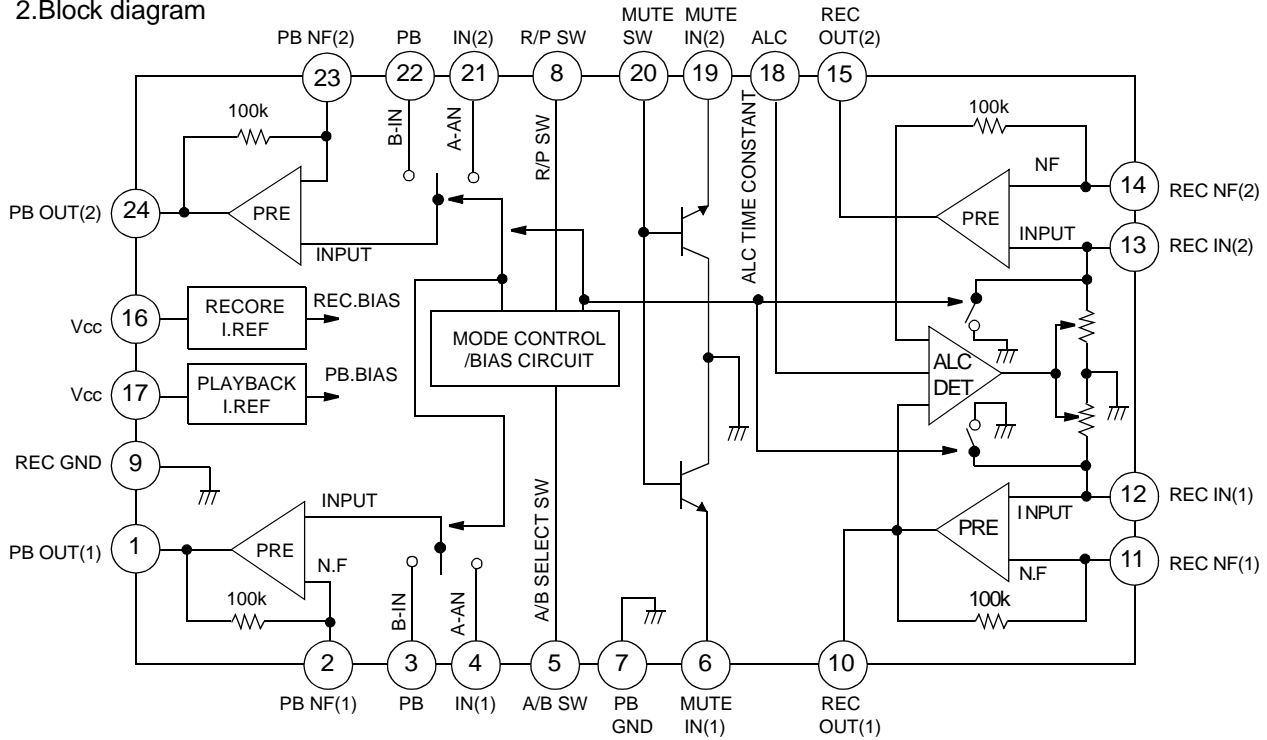
Pin No	Symbol	I/O	Function	Pin No	Symbol	I/O	Function
1	BIAS IN	I	Input for Bias-amplifier	15	VO4	O	Non Inverted output of ch4
2	OPIN	I	Non inverting input for ch1	16	VO4	O	Inverted output of ch4
3	OPIN	I	Inverting input for ch1	17	VO3	O	Non inverted output ch3
4	OPOUT	O	Output for ch1 op-amp	18	VO3	O	Inverted output of ch3
5	OPIN2	I	Non inverting input for ch2	19	PowVcc2	-	Vcc for ch3/4 power block
6	OPIN2	I	Inverting input for ch2	20	STBY2	I	Input for ch4 stand by control
7	OPOUT2	O	Output for fh2 op-amp	21	GND	-	Substrate ground
8	GND	-	Substrate ground	22	OPOUT3	O	Output for ch3 op-amp
9	STBY1	I	Input for ch1/2/3	23	OPIN3	I	Inverting input for ch3 op-amp
10	PowVcc1	-	Vcc for ch1/2 power block	24	OPIN3	I	Non inverting input for ch3
11	VO2	O	Inverted output of ch2	25	OPOUT4	O	Output for ch4 op-amp
12	VO2	O	Non inverted output of ch2	26	OPIN4	I	Inverting input for ch4 op-amp
13	VO1	O	Inverted output of ch1	27	OPIN4	I	Non inverting input for ch4
14	VO1	O	Non inverted output of ch1	28	PreVcc	-	Vcc for pre block

■ KA22291 (JIC1) : PB/REC Pre. amp.

1.Pin layout

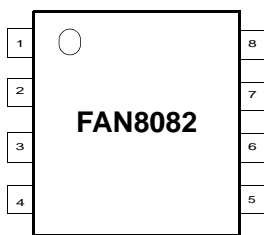


2.Block diagram

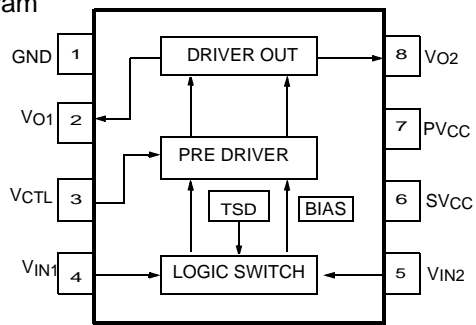


■ FAN8082 (DIC2,DIC3) : DC motor driver

1.Pin layout



2. Block diagram

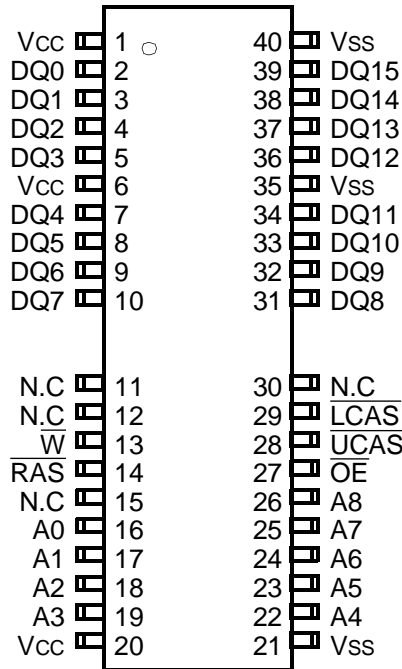


3. Pin function

Pin Number	Pin Name	I/O	Pin Function Description
1	GND	-	Ground
2	VO1	O	Output 1
3	VCTL	I	Motor speed control
4	VIN1	I	Input 1
5	VIN2	I	Input 2
6	SVCC	-	Supply voltage (Signal)
7	PVCC	-	Supply voltage (Power)
8	VO2	O	Output 2

■ 416C254 (SIC1) : CMOS DRAM

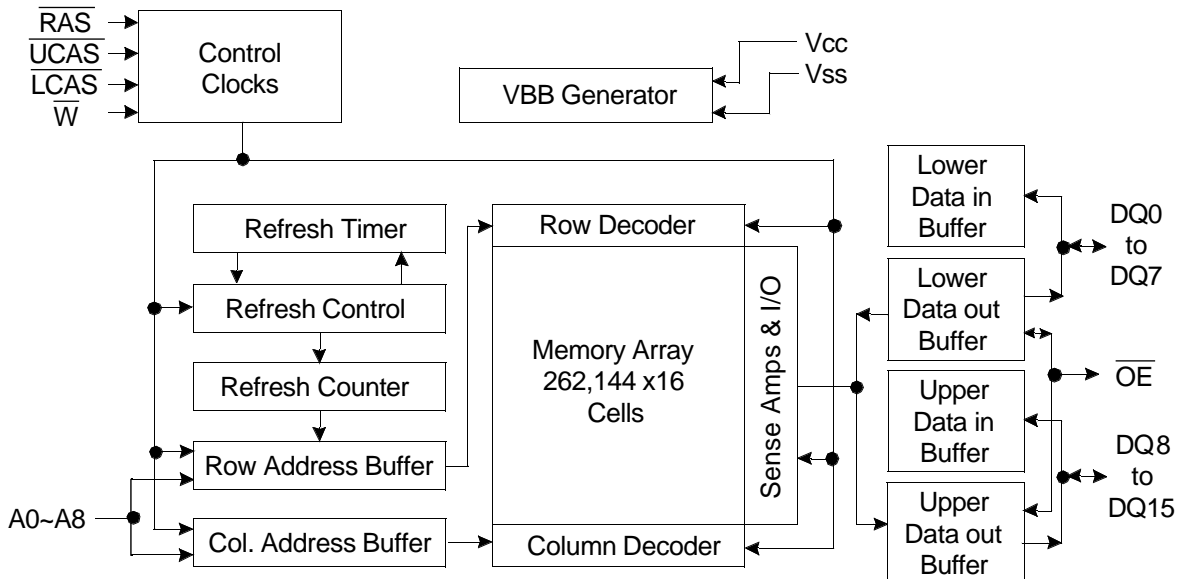
1. Pin layout



2. Pin function

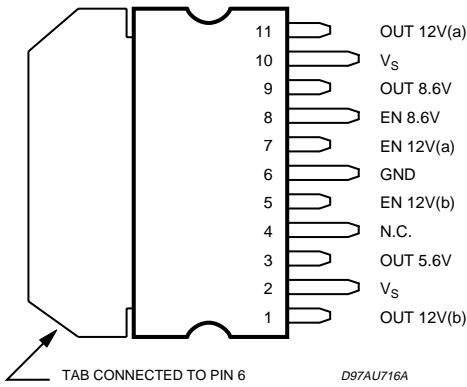
Pin No.	Symbol	I/O	Function
16~19	A0~A3	I	Address Inputs
22~26	A4~A8	I	Address Inputs
2~5	DQ0~3	I/O	Data In/Out
7~10	DQ4~7	I/O	Data In/Out
31~34	DQ8~11	I/O	Data In/Out
36~39	DQ12~15	I/O	Data In/Out
35,40	Vss	-	Ground
14	$\overline{\text{RAS}}$	-	Row Address Strobe
28	$\overline{\text{UCAS}}$	-	Upper Column Address Strobe
29	$\overline{\text{LCAS}}$	--	Lower Column Address Strobe
13	$\overline{\text{W}}$	I	Read/Write Input
27	$\overline{\text{OE}}$	O	Data Output Enable
1,20	Vcc	-	Power(+5V)
		-	Power(+3.3V)
11,12	N.C	-	No Connection

3. Block diagram

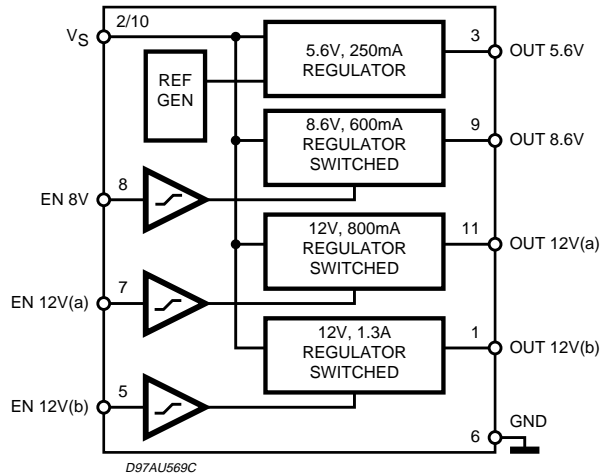


■ L4959 (RIC1) : Voltage regulator

1.Pin layout



2.Block diagram



3.Pin function

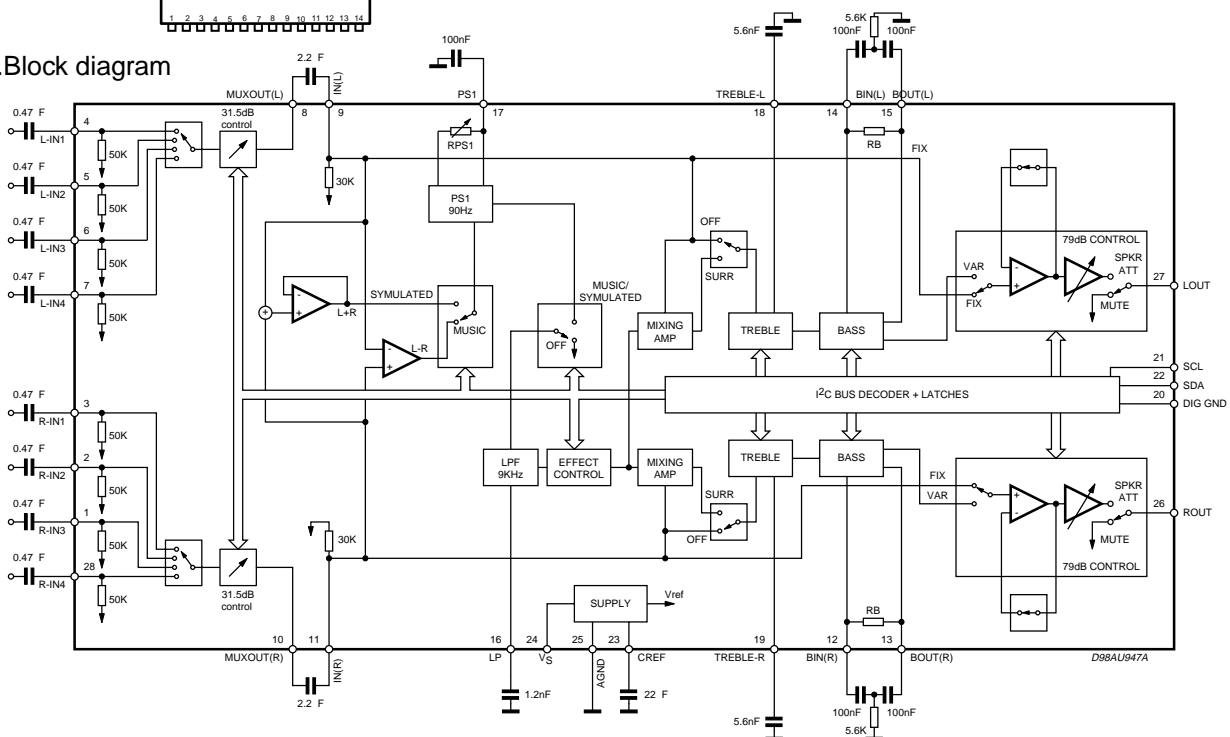
Pin No.	Symbol	Function
1	OUT 12V (b)	12V/1.3A SWITCHED OUTPUT VOLTAGE
2	V _S	Supply Voltage
3	OUT 5.6V	5.6V/250mA OUTPUT VOLTAGE
4	N.C.	not connected
5	EN 12V (b)	Enable 12V/1.3A SWITCHED OUTPUT VOLTAGE
6	GND	Ground
7	EN 12V (a)	Enable 12V/0.8A SWITCHED OUTPUT VOLTAGE
8	EN 8.6V	Enable 8.6V/0.6A SWITCHED OUTPUT VOLTAGE
9	OUT 8.6	8.6V/0.6A SWITCHED OUTPUT VOLTAGE
10	V _S	Supply Voltage
11	OUT 12V (a)	12V/0.8A SWITCHED OUTPUT VOLTAGE

■ TDA7442D (FIC1) : Audio processor

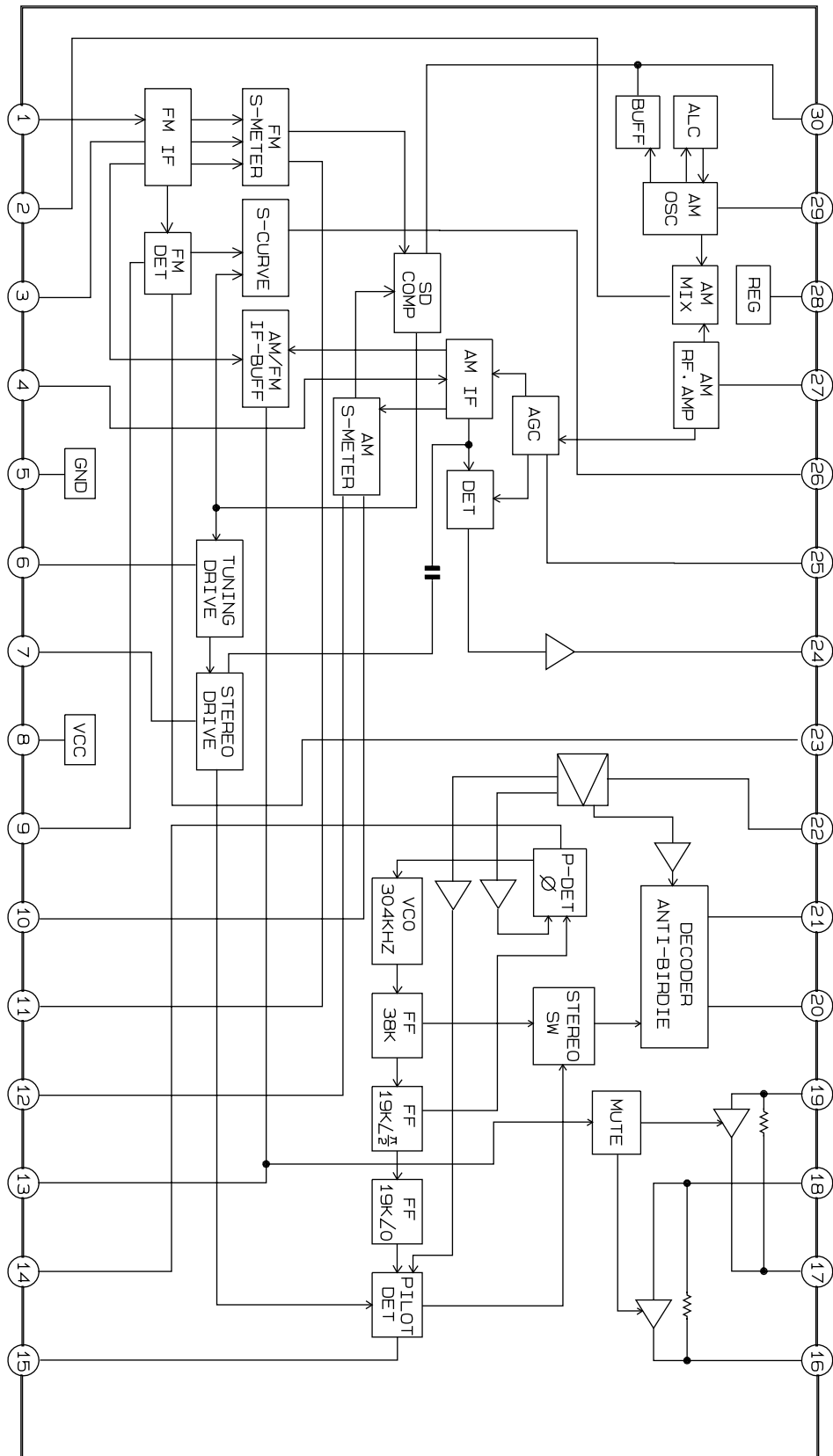
1.Pin layout



2.Block diagram



■ LA1837 (ICO1) : FM IF/DET AM RF/IF/DET

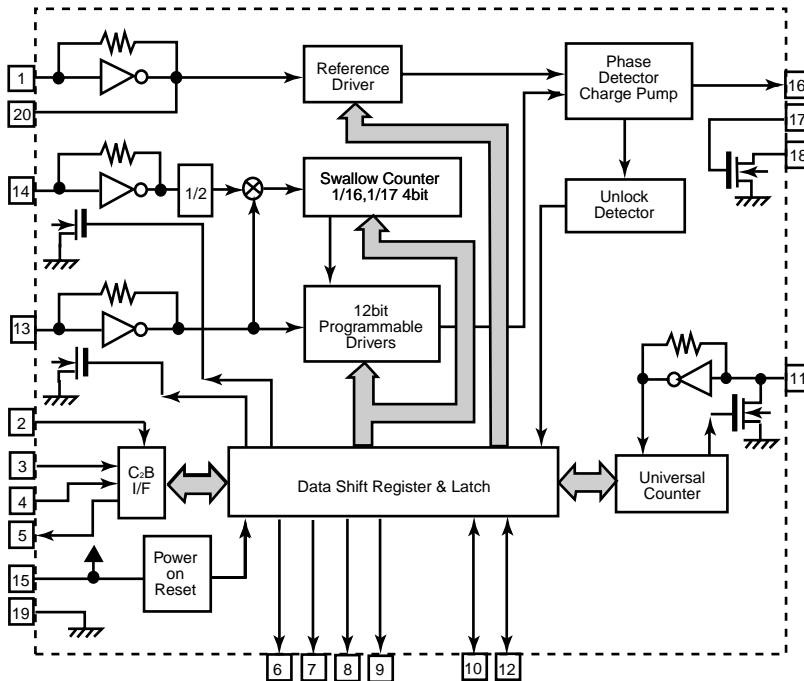


■ LC72131M (ICO2) : PLL frequency synthesizer

1. Pin layout

XIN	1	20	XOUT
CE	2	19	Vss
DI	3	18	AOUT
CL	4	17	AIN
DO	5	16	PD
BO1	6	15	VDD
BO2	7	14	FMIN
BO3	8	13	AMIN
BO4	9	12	IO2
IO1	10	11	IFIN

2. Block diagram

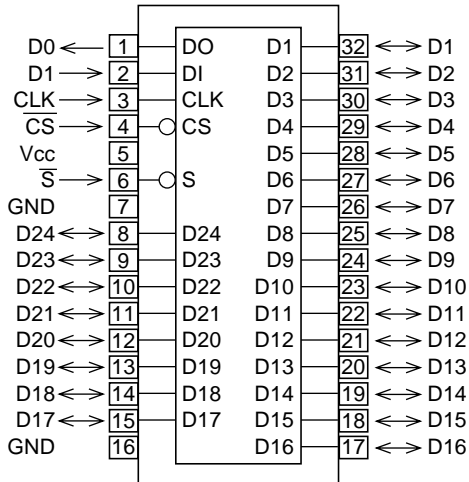


3. Pin function

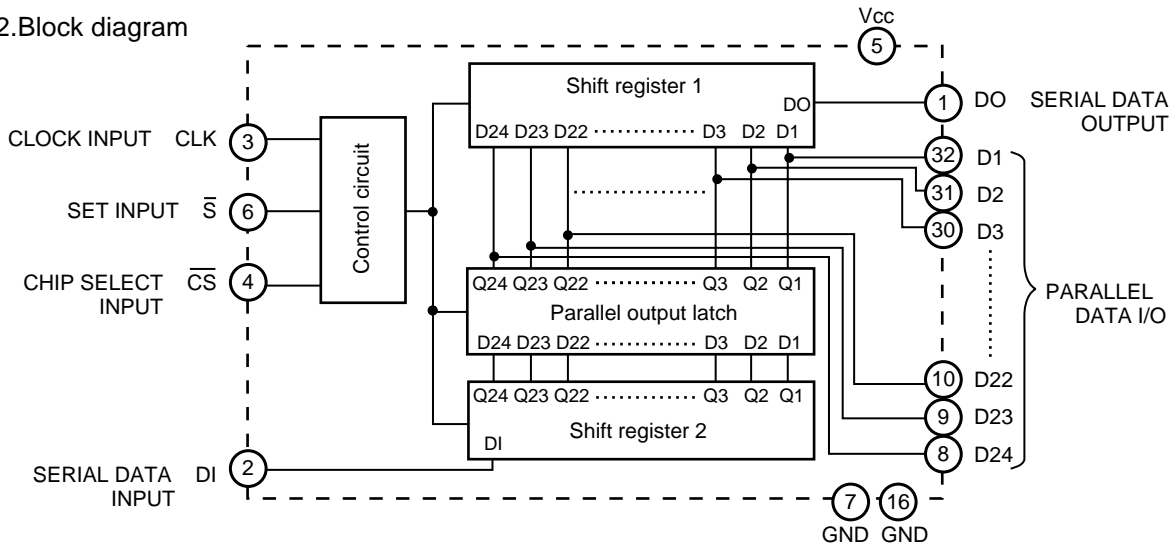
Pin No.	Symbol	I/O	Function	Pin No.	Symbol	I/O	Function
1	XIN	I	X'tal oscillator connect (4.5MHz/7.2MHz)	11	IFIN	I	IF counter signal input
2	CE	-	Chip enable	12	IO2	I/O	I/O port
3	DI	I	Input data	13	AMIN	I	AM Local oscillator signal input
4	CL	I	Clock	14	FMIN	I	FM Local oscillator signal input
5	DO	O	Output data	15	VDD	I	Power supply(VDD=4.5-5.5V)
6	BO1	O	Output port	16	PD	O	Charge pump output
7	BO2	O	Output port	17	AIN	I	Low-pass filter
8	BO3	O	Output port	18	AOUT	O	Amplifier Tr
9	BO4	O	Output port	19	GND	-	Connected to GND
10	IO1	I/O	I/O port	20	XOUT	I	X'tal oscillator connect (4.5MHz/7.2MHz)

■ M66010 (UIC2) : I/O control

1.Pin layout

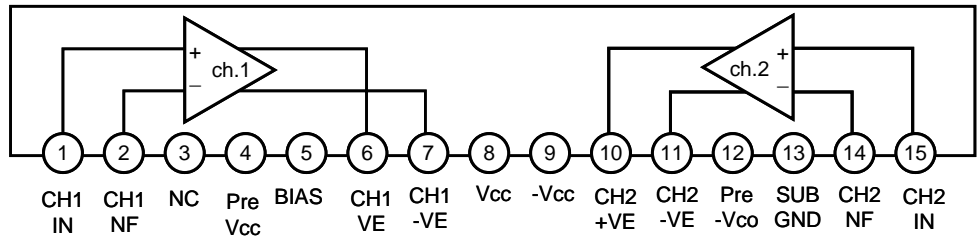
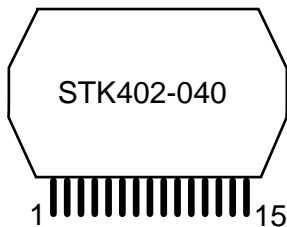


2.Block diagram



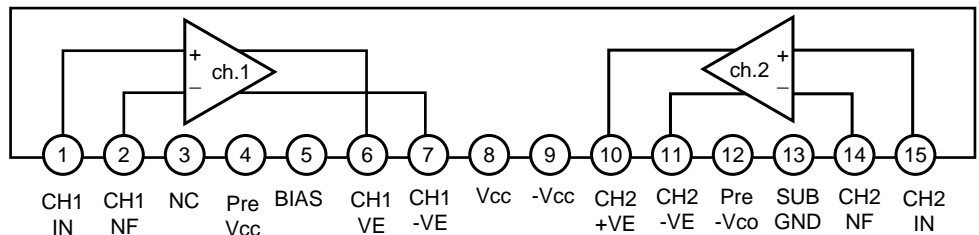
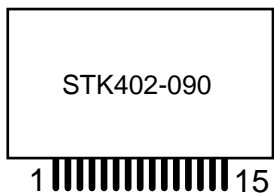
■ STK402-040 (AIC1) : 2channel AF power amp.

1.Pin layout



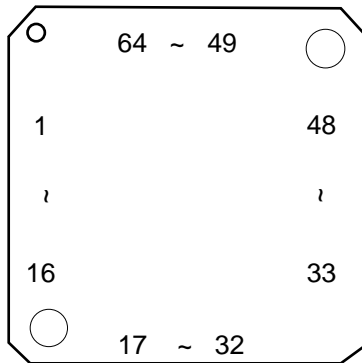
■ STK402-090 (AIC2) : 2channel AF power amp.

1.Pin layout



■ SP3721A (RIC1) : DVD driver

1.Pin layout



2.Pin Function (1/2)

Pin No.	Symbol	I/O	Function
1	DVDRFP	I	RF Signal Inputs. Differential RF signal attenuator input pins.
2	DVDRFN		
3,4	PD1,PD2	I	CD Photo detector Interface Inputs. Inputs from the CD photo detector error outputs.
5~6	A2,B2	I	Photo Detector Interface Inputs. AC coupled inputs for the DPD from the main beam Photo detector matrix outputs.
7~ 8	C2,D2		
9	CP	I/O	Differential Phase tracking LPF pin. An external capacitance is connected between this pin and the CN pin.
10	CN	I/O	Differential Phase tracking LPF pin. An external capacitance is connected between this pin and the CP pin.
11~14	A,B,C,D	I	Photo Detector Interface Inputs. Inputs from the main beam Photo detector matrix outputs.
15~16	E,F	I	CD tracking Error Inputs. Inputs from the CD photo detector error outputs.
17	CDTE	-	CD Tracking. E-F Opamp output for feedback.
18	VCI2	-	Reference Voltage input. DC bias voltage input for the servo input reference.
19	NC	-	No Connect.
20	VNB	-	Ground. Ground pin for the servo block.
21	DVDPD	I	APC Input. DVD APC input pin from the monitor photo diode.
22	DVDLD	O	APC output. DVD APC output pin to control the laser power.
23	CDPD	I	APC Input. DVD APC input pin from the monitor photo diode.
24	CDLD	O	APC output. DVD APC output pin to control the laser power.
25	LDON#	I	APC output. on/off. APC output control pin. A low level activates the LD output. (open high)
26	VC	-	Reference Voltage output. This pin provides the internal DC bias reference voltage (+2.5+ fix). Output impedance is less than 50 ohms.
27	VCI	-	Reference Voltage input. DC bias voltage input for the servo input reference.
28	VPB	-	Power. Power supply pin for the servo block.
29	MIRR	O	Mirror Detect Output. Mirror Detect comparator output. Pseudo CMOS output.
30	MP	-	MIRR signal Peak hold pin. An external capacitance is connected to between this pin and VPB.
31	MB	-	MIRR signal Bottom hold pin. An external capacitance is connected to between this pin and VPB.
32	FDCHG#	I	Low Impedance Enable. A TTL compatible input pin that activates the FDCHG switches. A low level activates the switches and the falling edge of the internal FDCHG triggers the fast decay for the NIRR bottom hold circuit. (open high)
33	MLPF	-	MIRR signal LPF pin. An external capacitance is connected between this pin and VPB.

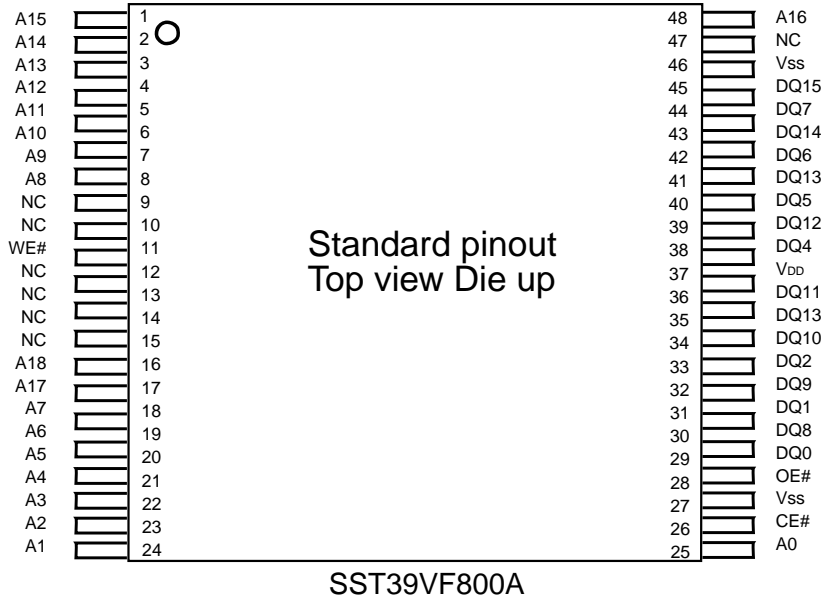
Pin Function (2/2)

SP3721A

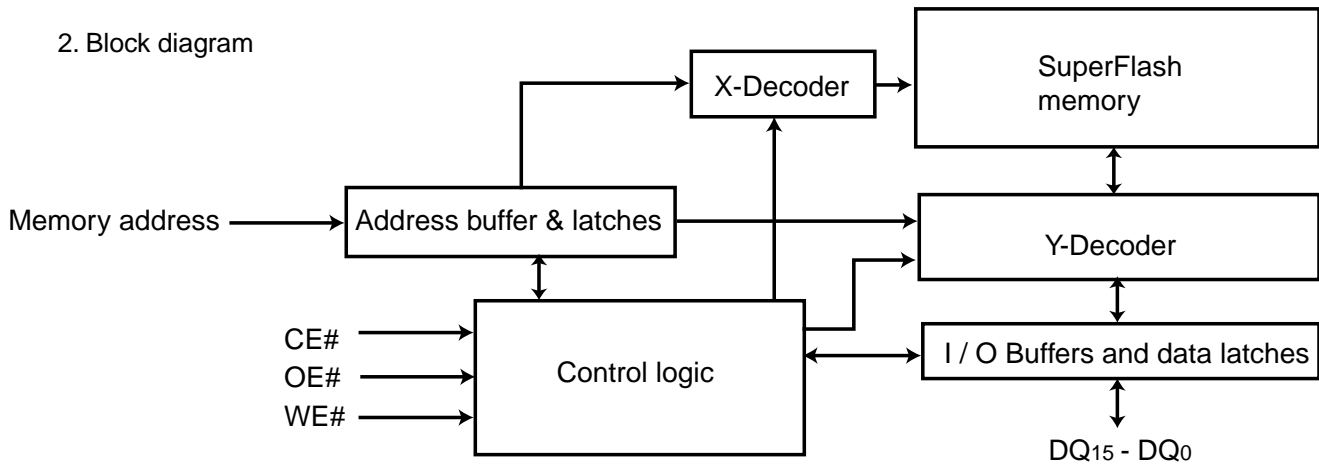
Pin No.	Symbol	I/O	Function
34	MEVO	O	SIGO Bottom Envelope Output. Bottom envelope for Mirror detection.
35	MIN	I	RF signal Input for Mirror. AC coupled inputs for the mirror detection circuit from the pull-in signal output. (PI)
36	PI	O	Pull-in Signal Output. The summing signal output of A,B,C,D or PD1, PD2 for mirror detection. Reference to VCI.
37	DFT	O	Defect Output. Pseudo CMOS output. When a defect is detected, the DFT output goes high. Also the servo AGC output can be monitored at this pin, When CAR bits 7-4 are '0011'.
38	TPH	-	PI Top Hold pin. An external capacitance is connected between this pin and VPB.
39	MEV	-	SIGO Bottom Envelope pin. An external capacitance is connected between this pin and VPB.
40	MEI	I	Mirror Envelope Input. The SIGO envelope input pin.
41	TE	O	Tracking Error Signal Output. Tracking error output reference to VCI.
42	FE	O	Focusing Error Signal Output. Focus error output reference to VCI.
43	CE	O	Center Error Signal Output. Center error out put reference to VCI.
44	LCN	-	Center Error LPF pin. An external capacitance is connected between this pin and the LCP pin.
45	LCP	-	Center Error LPF pin. An external capacitance is connected between this pin and the LCN pin.
46	SCLK	I	Serial Clock. Serial Clock CMOS input. The clock applied to this pin is synchronized with the data applied to SDATA. (Not to be left open).
47	SDATA	I/O	Serial Data. Serial data bi-directional CMOS pin. NRZ programming data for the internal registers is applied to this input. (Not to be left open)
48	SDEN	I	Serial Data Enable. Serial enable CMOS input. A high level input enables the serial port. (Not to be left open)
49	HOLD1	I	Hold Control. ATTL compatible control pin which, when pulled high, disables the RF AFC charge pump and holds the RE AGC amplifier gain at its present value. (open high)
50	VNA	-	Ground. Ground pin for the RF block and serial port.
51	FNN	O	Differential Normal Output. Filter normal outputs.
52	FNP	O	Differential Normal Output. Filter normal outputs.
53	DIP	I	Analog inputs for RF Single Buffer. Differential analog inputs to the RF single-ended output buffer and full wave rectifier.
54	DIN	I	Analog inputs for RF Single Buffer. Differential analog inputs to the RF single-ended output buffer and full wave rectifier.
55	RX	-	Reference Resistor Input. An external 8.2 kohm, 1% resistor is connected from this pin to ground to establish a precise PTAT (proportional to absolute temperature) reference current for the filter.
56	BYP	I/O	The RF AGC integration capacitor CBYP, is connected between BYP and VPA.
57	SIGO	O	Single Ended Normal Output. Single-ended RF output.
58	VPA	-	Power. Power supply pin for the RF block and serial port.
59	AIP	I	AGC Amplifier Inputs. Differential AGC amplifier input pins.
60	AIN	I	AGC Amplifier Inputs. Differential AGC amplifier input pins.
61	ATON	O	Differential Attenuator Output. Attenuator outputs.
62	ATOP	O	Differential Attenuator Output. Attenuator outputs.
63	CDRF	I	RF Signal Input. Single-ended RF signal attenuator input pin.
64	CDRFDC	O	CD RF Signal Output. Single ended CD RF summing output.

■ SST39VF800A (U6) : 8M bits multi-purpose flash

1.Pin layout

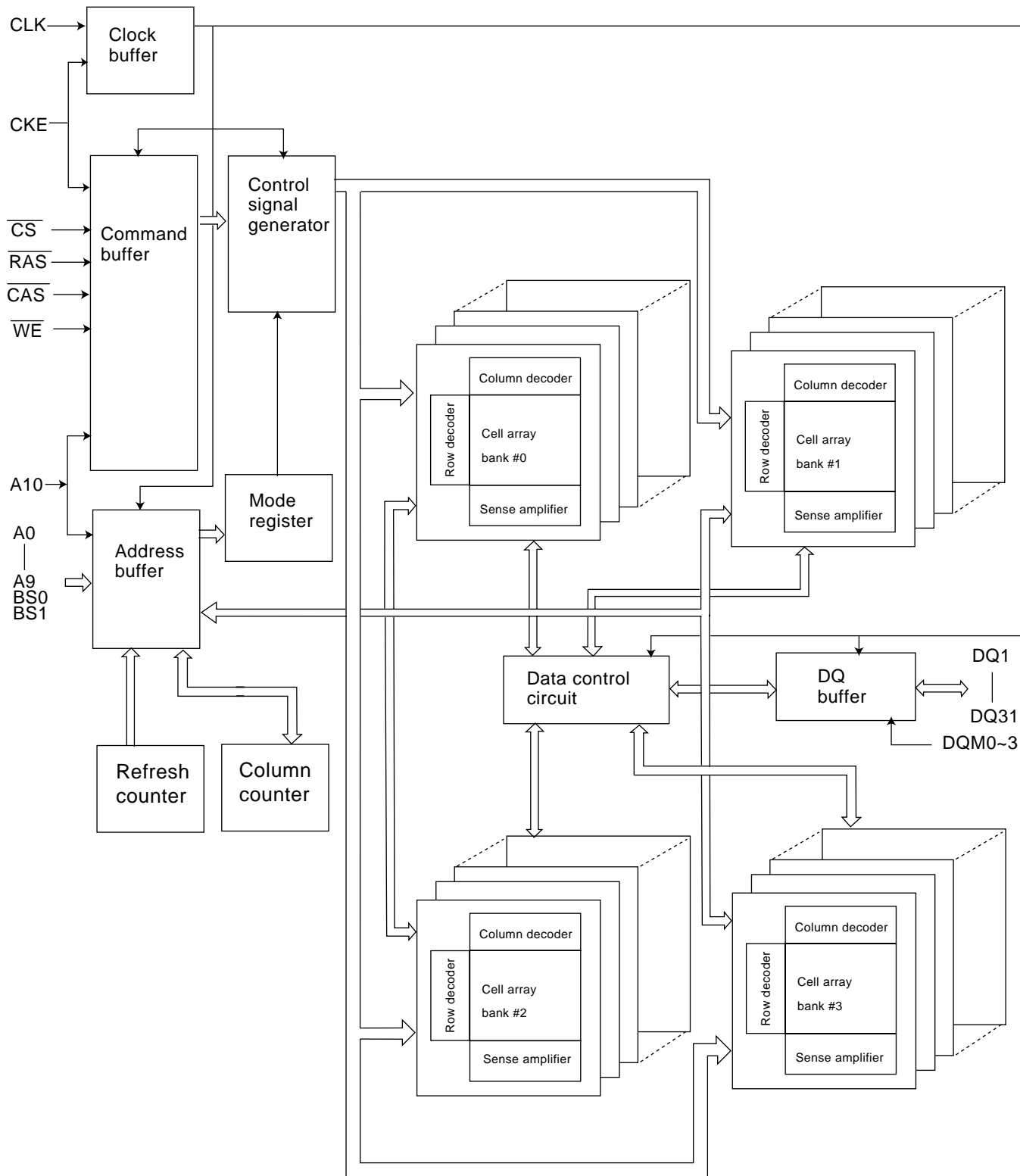


2. Block diagram



■ W986432DH-7 (U5) : 32 Bits SDRAM

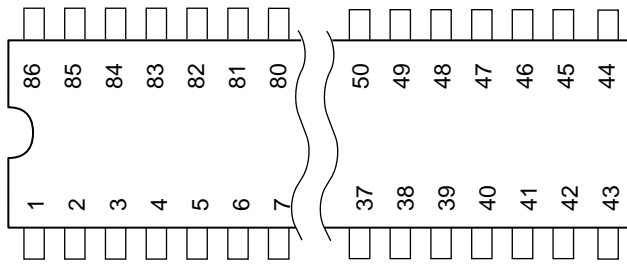
1. Block diagram



NOTE:

The cell array configuration is 2048 * 256 * 32

2.Pin layout



3.Pin function

Pin No.	I/O	Symbol	Function
1	-	Vcc	Power for input buffers and logic circuit inside DRAM. (+3.3V)
2	I/O	DQ0	Multiplexed pins for data out put and input.
3	I/O	VccQ	Separated power from VCC, to improve DQ noise immunity. (+3.3V)
4~5	I/O	DQ1~DQ2	Multiplexed pins for data out put and input.
6	I/O	VssQ	Separated power from VSS, to improve DQ noise immunity.
7~8	I/O	DQ3~DQ4	Multiplexed pins for data out put and input.
9	I/O	VccQ	Separated power from VCC, to improve DQ noise immunity.
10~11	I/O	DQ5~DQ6	Multiplexed pins for data out put and input.
12	I/O	VssQ	Separated power from VSS, to improve DQ noise immunity.
13	I/O	DQ7	Multiplexed pins for data out put and input.
14	-	NC	No connection
15	-	Vcc	Power for input buffers and logic circuit inside DRAM. (+3.3V)
16	I/O	DQM0	The output buffer is placed at Hi-Z (with latency of 2) when DQM is sampled high in read cycle. In write cycle, sampling DQM high will block the write operation with zero latency.
17	-	\overline{WE}	Referred to \overline{RAS}
18	-	\overline{CAS}	Referred to \overline{RAS}
19	-	\overline{RAS}	Command input. When sampled at the rising edge of the clock \overline{RAS} , \overline{CAS} and \overline{WE} define the operation to be executed.
20	-	\overline{CS}	Disable or enable the command decoder. When command decoder is disabled, new command is ignored and previous operation continues.
21	-	NC	No connection
22~23	-	BS0	Select bank to activate dining row address latch time, or bank to read / write during address latch time.
	-	BS1	
24~27	-	A0~A10	Multiplexed pins for row and column address. Row address: Ao-A10. Column address:A0-A7.A10 is sampled during a recharge command to determine if all banks are to be recharged or bank selected by BS0, BS1.
28	I/O	DQM2	The output buffer is placed at Hi-Z (with latency of 2) when DQM is sampled high in read cycle. In write cycle, sampling DQM high will block the write operation with zero latency.
29	-	Vcc	Power for input buffers and logic circuit inside DRAM. (+3.3V)
30	-	NC	No connection
31	I/O	DQ16	Multiplexed pins for data out put and input.
32	I/O	VssQ	Separated power from VSS, to improve DQ noise immunity.
33~34	I/O	DQ17~18	Multiplexed pins for data out put and input.
35	I/O	VssQ	Separated power from VCC, to improve DQ noise immunity.

Pin No.	I/O	Symbol	Function
36~37	I/O	DQ19~20	Multiplexed pins for data out put and input.
38	I/O	VssQ	Separated power from VSS, to improve DQ noise immunity.
39~40	I/O	DQ21~22	Multiplexed pins for data out put and input.
41	-	VccQ	Separated power from VCC, to improve DQ noise immunity. (+3.3V)
42	I/O	DQ23	Multiplexed pins for data out put and input.
43	-	Vcc	Power for input buffers and logic circuit inside DRAM. (+3.3V)
44	-	Vss	Ground for input buffers and logic circuit inside DRAM.
45	I/O	DQ24	Multiplexed pins for data out put and input.
46	I/O	VssQ	Separated power from VSS, to improve DQ noise immunity.
47~48	I/O	DQ25~26	Multiplexed pins for data out put and input.
49	-	VccQ	Separated power from VCC, to improve DQ noise immunity. (+3.3V)
50~51	I/O	DQ27~28	Multiplexed pins for data out put and input.
52	I/O	VssQ	Separated power from VSS, to improve DQ noise immunity.
53~54	I/O	DQ29~30	Multiplexed pins for data out put and input.
55	-	VccQ	Separated power from VCC, to improve DQ noise immunity. (+3.3V)
56	I/O	DQ31	Multiplexed pins for data out put and input.
57	-	NC	No connection
58	-	Vss	Ground for input buffers and logic circuit inside DRAM.
59	I/O	DQM3	The output buffer is placed at Hi-Z (with latency of 2) when DQM is sampled high in read cycle. In write cycle, sampling DQM high will block the write operation with zero latency.
60~66	-	A3~A9	Multiplexed pins for row and column address. Row address: Ao-A10. Column address:A0-A7.A10 is sampled during a recharge command to determine if all banks are to be recharged or bank selected by BS0, BS1
67	-	CKE	CKE controls the clock activation and deactivation. When CKE is low, Power Down rising edge of clock.
68	I	CLK	System clock used to sample inputs on the rising edge of clock.
69~70	-	NC	No connection
71	I/O	DQM1	The output buffer is placed at Hi-Z (with latency of 2) when DQM is sampled high in read cycle. In write cycle, sampling DQM high will block the write operation with zero latency.
72	-	Vss	Ground for input buffers and logic circuit inside DRAM.
73	I/O	NC	No connection
74	I/O	DQ8	Multiplexed pins for data out put and input.
75	I/O	VccQ	Separated power from VCC, to improve DQ noise immunity. (+3.3V)
76~77	I/O	DQ9~10	Multiplexed pins for data out put and input.
78	I/O	VssQ	Separated power from VSS, to improve DQ noise immunity.
79~80	I/O	DQ11~12	Multiplexed pins for data out put and input.
81	I/O	VccQ	Separated power from VCC, to improve DQ noise immunity. (+3.3V)
82~83	I/O	DQ13~14	Multiplexed pins for data out put and input.
84	I/O	VssQ	Separated power from VSS, to improve DQ noise immunity.
85	I/O	DQ15	Multiplexed pins for data out put and input.
86	-	Vss	Ground for input buffers and logic circuit inside DRAM.



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