

# JVC

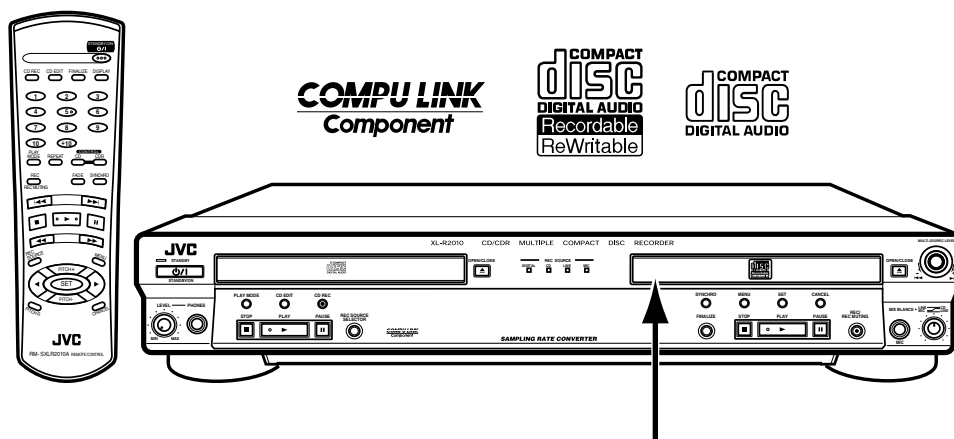
## SERVICE MANUAL

### CD/CDR MULTIPLE COMPACT DISC RECORDER

# XL-R2010BK

#### Area Suffix

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



#### <ATTENTION of CD-R/RW mechanism unit>

Because the CD-R/RW mechanism unit is a unit exchange,  
Moreover, the [Disassembly method],[Adjustment method],[Description of major ICs],  
[Standard schematic diagram],[Printed circuit board],[Block diagram] of the CD-R/RW  
mechanism unit is not described.

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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.

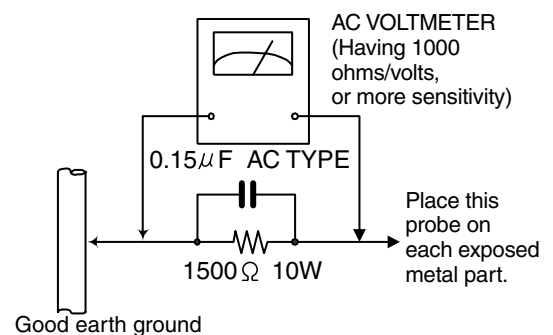
Do not use a line isolation transformer during this check.

- 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  $\Omega$  10W resistor paralleled by a 0.15  $\mu$ 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)

## 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. Grounding to prevent damage by static electricity

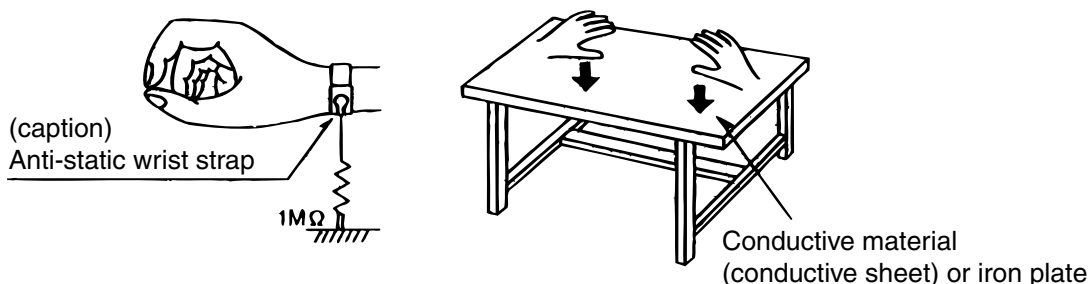
Static electricity in the work area can destroy the optical pickup (laser diode) in devices such as CD players. Be careful to use proper grounding in the area where repairs are being performed.

#### 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.

#### 1.2. Ground yourself

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



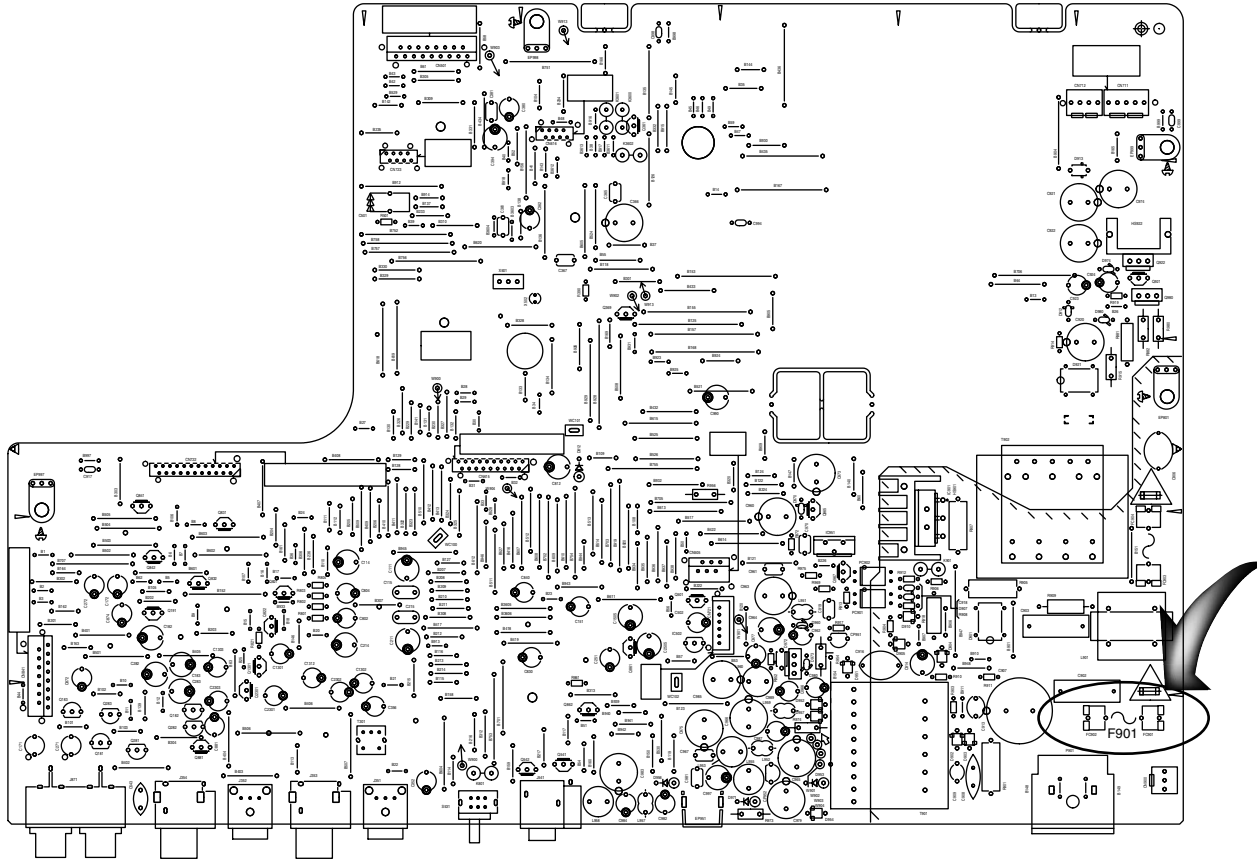
#### 1.3. Handling the optical pickup

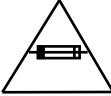
1. In order to maintain quality during transport and before installation, both sides of the laser diode on the replacement optical pickup are shorted. After replacement, return the shorted parts to their original condition. (Refer to the text.)
2. Do not use a tester to check the condition of the laser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


### 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 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

# Importance Admistering point on the Safety



<p><b>Full Fuse Replacement Marking</b></p> <p>Graphic symbol mark (This symbol means fast blow type fuse.)</p>  <p>should be read as follows ;</p>
<p><b>FUSE CAUTION</b></p>
<p><b>FOR CONTINUED PROTECTION AGAINST RISK OF FIRE, REPLACE ONLY WITH SAME TYPE AND RATING OF FUSES ;</b></p> <p><b>F901 : 1.6 A / 125 V</b></p>

<p><b>Marquage Pour Le Remplacement Complet De Fusible</b></p> <p>Le symbole graphique (Ce symbole signifie fusible de type à fusion rapide.)</p>  <p>doit être interprété comme suit ;</p>
<p><b>PRECAUTIONS SUR LES FUSIBLES</b></p>
<p><b>POUR UNE PROTECTION CONTINUE CONTRE DES RISQUES D'INCENDIE, REMPLACER SEULEMENT PAR UN FUSIBLE DU MEME TYPE ;</b></p> <p><b>F901 : 1.6 A / 125 V</b></p>

## Precautions for Service

### Handling of Traverse Unit and Laser Pickup

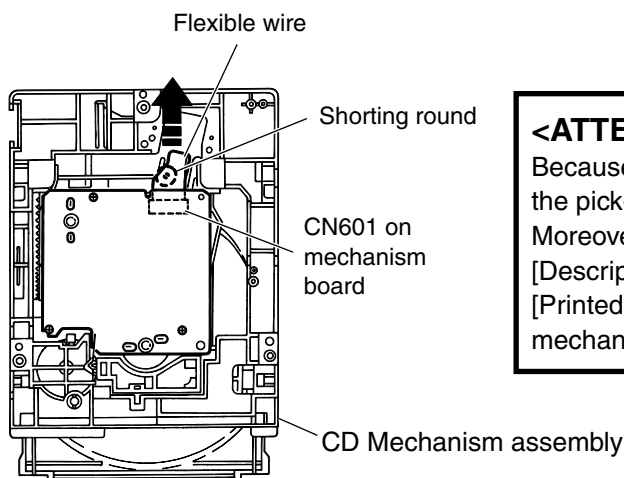
1. Do not touch any peripheral element of the pickup or the actuator.
2. The traverse unit and the pickup are precision devices and therefore must not be subjected to strong shock.
3. Do not use a tester to examine the laser diode. (The diode can easily be destroyed by the internal power supply of the tester.)
4. To replace the traverse unit, pull out the metal short pin for protection from charging.
5. When replacing the pickup, after mounting a new pickup, remove the solder on the short land which is provided at the center of the flexible wire to open the circuit.
6. Half-fixed resistors for laser power adjustment are adjusted in pairs at shipment to match the characteristics of the optical block.  
Do not change the setting of these half-fixed resistors for laser power adjustment.

### Destruction of Traverse Unit and Laser Pickup by Static Electricity

Laser diodes are easily destroyed by static electricity charged on clothing or the human body. Before repairing peripheral elements of the traverse unit or pickup, be sure to take the following electrostatic protection:

1. Wear an antistatic wrist wrap.
2. With a conductive sheet or a steel plate on the workbench on which the traverse unit or the pick up is to be repaired, ground the sheet or the plate.
3. After removing the flexible wire from the connector (CN601), short-circuit the flexible wire by the metal clip.
4. Short-circuit the laser diode by soldering the land which is provided at the center of the flexible wire for the pickup. After completing the repair, remove the solder to open the circuit.

**Please refer to [ Removing the mechanism board ] and [ Removing the pickup ] of the Disassembly method < CD Mechanism assembly >.**



#### <ATTENTION of CD-R/RW mechanism unit>

Because the CD-R/RW mechanism unit is a unit exchange, the pick-up need not be detached alone. Moreover, the [Disassembly method],[Adjustment method],[Description of major ICs],[Standard schematic diagram],[Printed circuit board],[Block diagram] of the CD-R/RW mechanism unit is not described.

# Disassembly method

## <Main body>

### ■ Removing the top cover (See Fig.1)

1. Remove the four screws **A** on both sides of the body.
2. Remove the two screws **B** on the back of the body.
3. Remove the top cover from behind in the direction of the arrow while pulling its sides outwards. Disengage the three joints **a** with the front panel section.

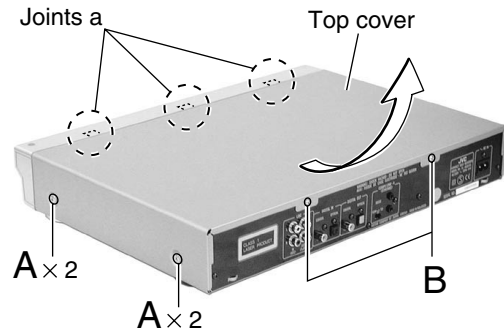


Fig.1

### ■ Removing the fitting of the CD mechanism section (See Fig.2 to 5)

- Prior to performing the following procedure, remove the top cover.
1. Insert a Philips screwdriver into the hole of the chassis base on the bottom and turn it as shown in the figure. The tray will move forward.
  2. Pull out the tray manually.
  3. Release the joint **b** on each side of the fitting upward, then remove the fitting from the tray.
  4. Push and return the tray.

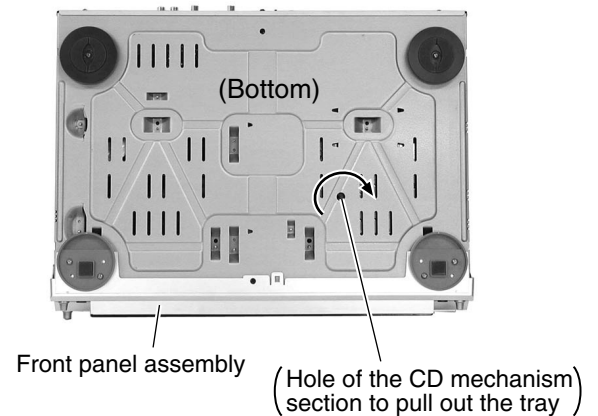


Fig.2

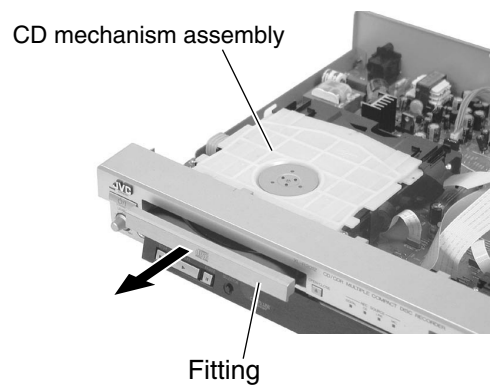


Fig.3

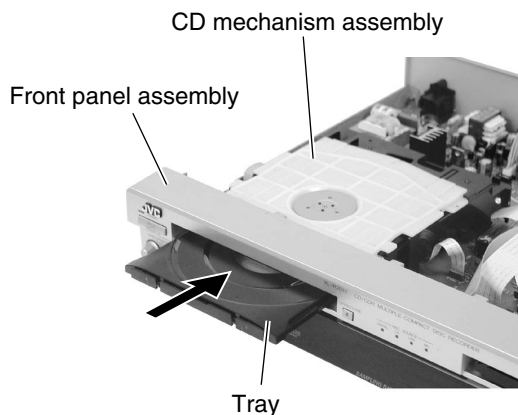


Fig.5

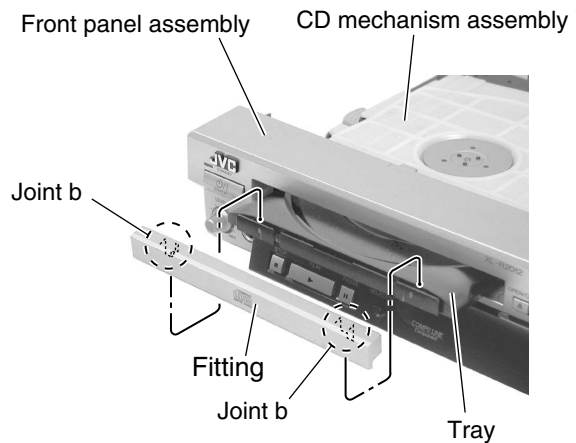


Fig.4

**■ Removing the fitting of the CD-R/RW mechanism section (See Fig.6 to 9)**

· Prior to performing the following procedure, remove the top cover.

1. Push the slide cam **c** until it stops through the slot on the left side of the CD-R/RW mechanism assembly.
2. Pull out the tray manually.
3. Release the joint **d** on each side of the fitting upward, then remove the fitting from the tray.
4. Push and return the tray.

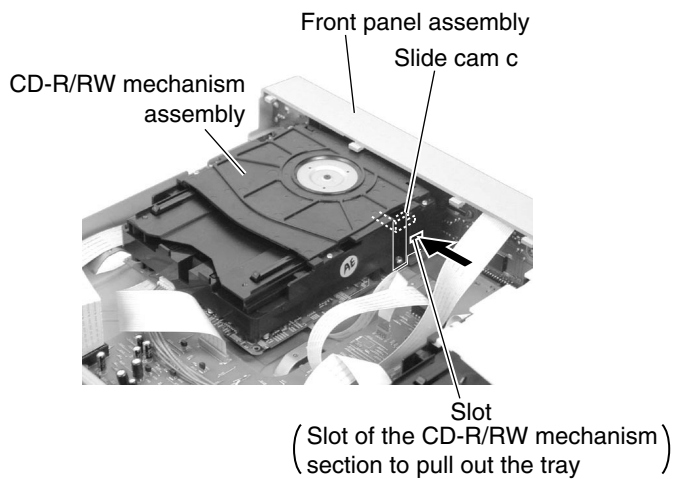


Fig.6

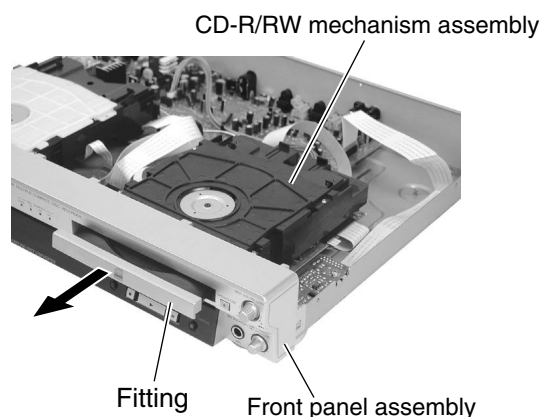


Fig.7

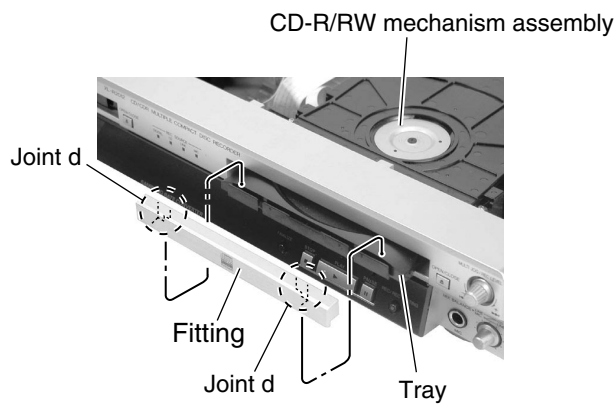


Fig.8

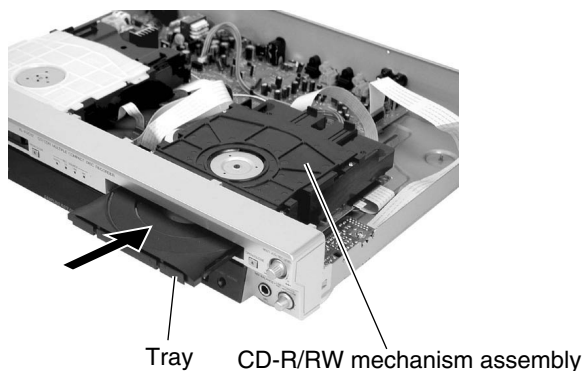


Fig.9

**■ Removing the front panel assembly  
(See Fig.10 to 14)**

• Prior to performing the following procedure, remove the top cover and both fittings of the CD mechanism section and the CD-R/RW mechanism section.

1. Disconnect the card wires from connector CN501, CN841 and the wires from CN711 and CN712 on the main board from above.
2. Remove the screw **C** and the screw **D** attaching the headphone board and the mic board on the top of the body.
3. Remove the four screws **E** attaching the right and left foot at the bottom.
4. Remove the two screws **F** and the screw **G** attaching the front panel assembly at the bottom.
5. Disengage the joint **e** on the bottom and the joints **f** on each side of the body to release the front panel assembly from the chassis base using a slotted screwdriver. Then remove the front panel assembly toward the front.

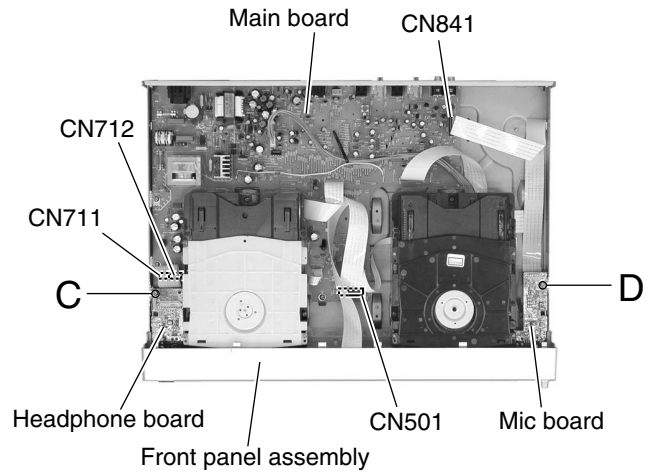


Fig.10

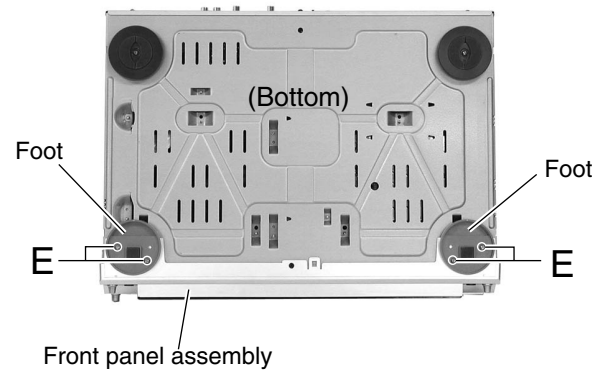


Fig.11

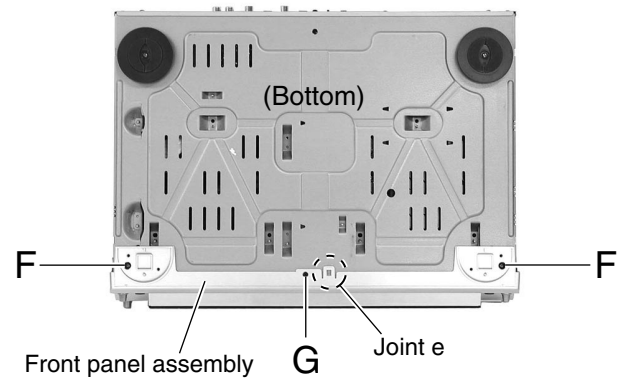


Fig.12

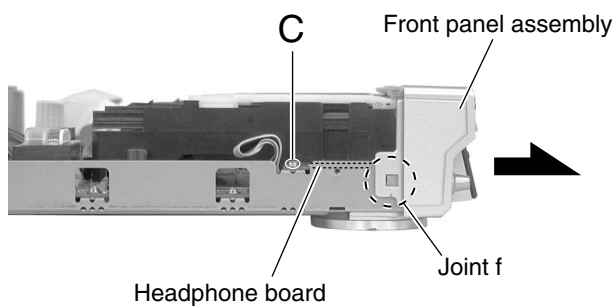


Fig.14

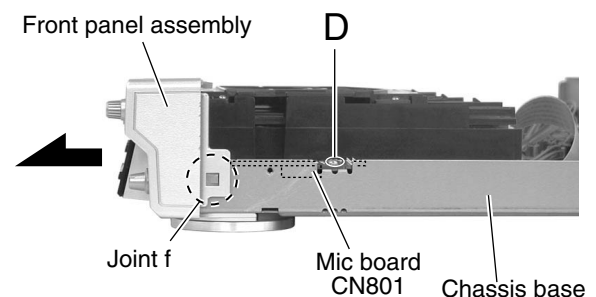


Fig.13



### ■ Removing the CD mechanism assembly (See Fig.15)

• Prior to performing the following procedure, remove the top cover and the fitting.  
(Remove the front panel assembly is easy to work.)

1. Disconnect the card wire from connector CN615 and CN616 on the main board from above.
2. Remove the three screws **H** attaching the CD mechanism assembly.

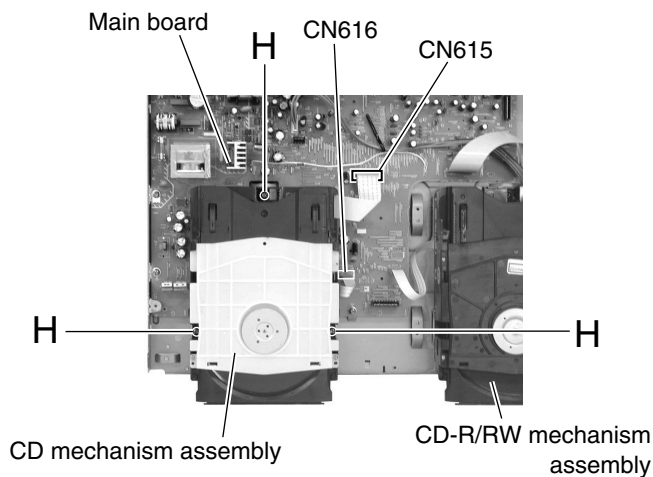


Fig.15

### ■ Removing the CD-R/RW mechanism assembly (See Fig.16)

• Prior to performing the following procedure, remove the top cover and the fitting.  
(Remove the front panel assembly is easy to work)

1. Disconnect the wire from connector CN721 and the card wires from CN722 and CN723 on the main board from above.
2. Remove the three screws **I** attaching the CD-R/RW mechanism assembly.

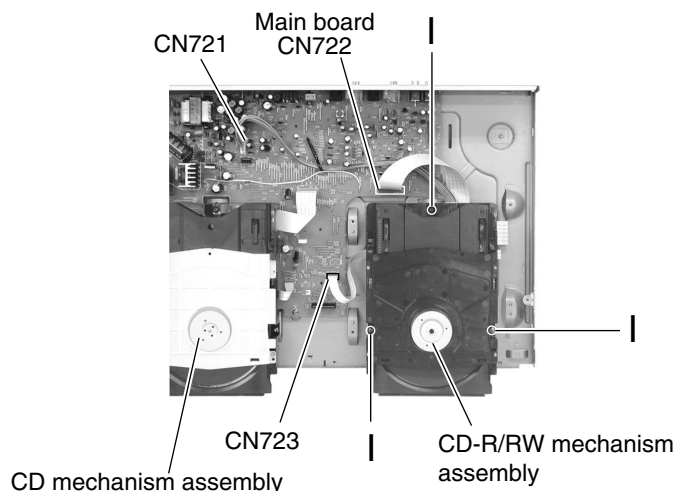


Fig.16

### ■ Removing the rear panel (See Fig.17)

• Prior to performing the following procedure, remove the top cover.

1. Remove the three screws **J** and the eight screws **K** on the back of the body.

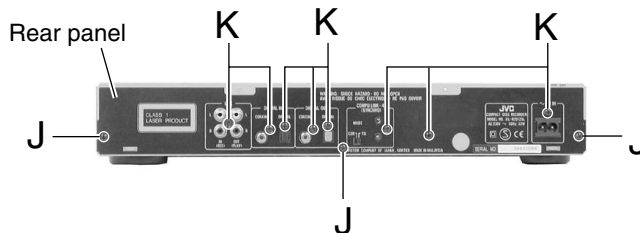


Fig.17

### ■ Removing the main board (See Fig.18)

• Prior to performing the following procedure, remove the top cover, the front panel assembly, the CD mechanism assembly, the CD-R/RW mechanism assembly and the rear panel.

1. Remove the four screws **L** attaching the main board.

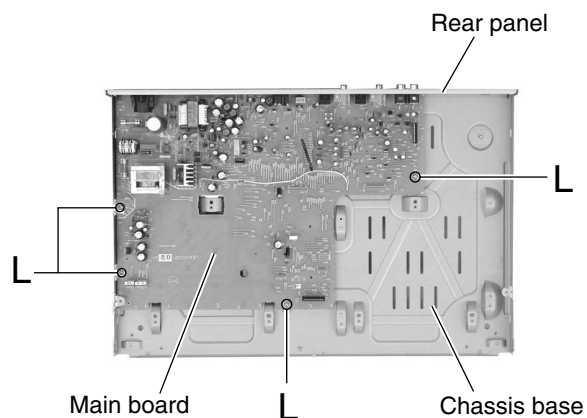


Fig.18

## <Front panel assembly>

### ■ Removing the headphone board / power switch board (See Fig.19 to 21)

1. Pull out the volume knob on the front panel assembly.
2. Remove the two screws **M** attaching the headphone board bracket and the three screws **N** attaching the power switch board. Remove the headphone board and the power switch board at the same time.
3. Pull out the stopper attaching the headphone board bracket in the direction of the arrow.

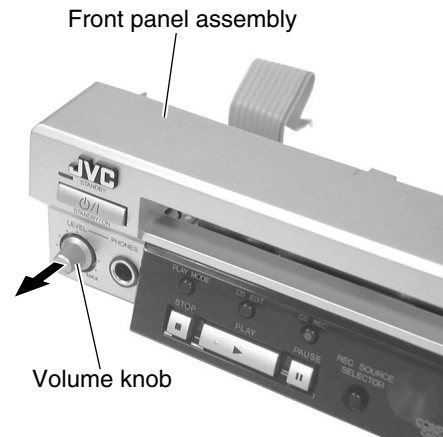


Fig.19

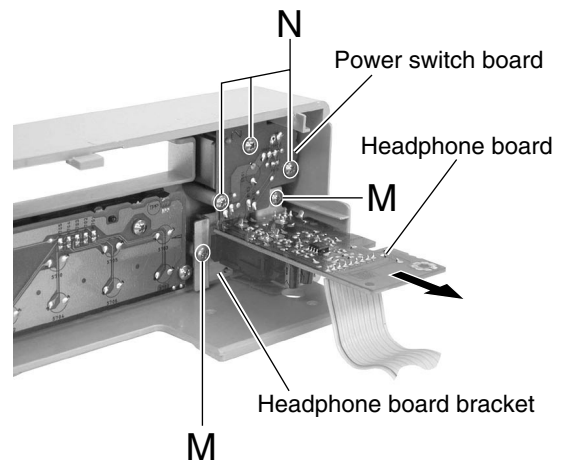


Fig.20

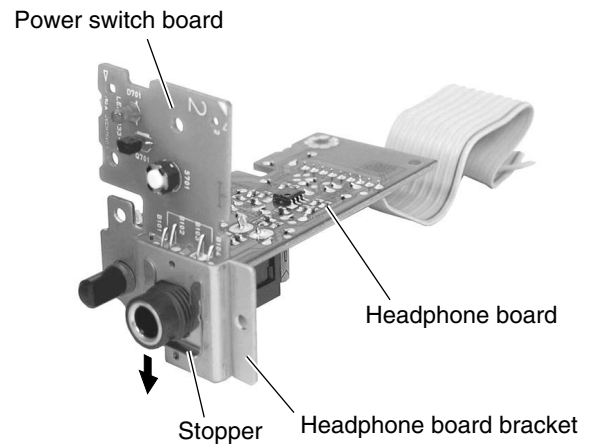


Fig.21

**■ Removing the mic board / jog dial board  
(See Fig.22 to 24)**

1. Pull out the jog dial knob and the mix balance knob on the front panel assembly.
2. Remove the two screws **O** attaching the mic board bracket and the three screws **P** attaching the jog dial board. Remove the mic board and the jog dial board at the same time.
3. Pull out the stopper attaching the mic board bracket in the direction of the arrow.

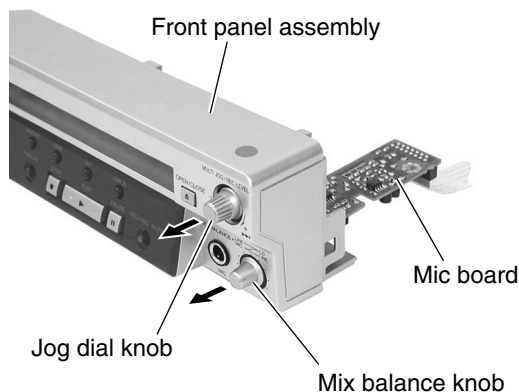


Fig.22

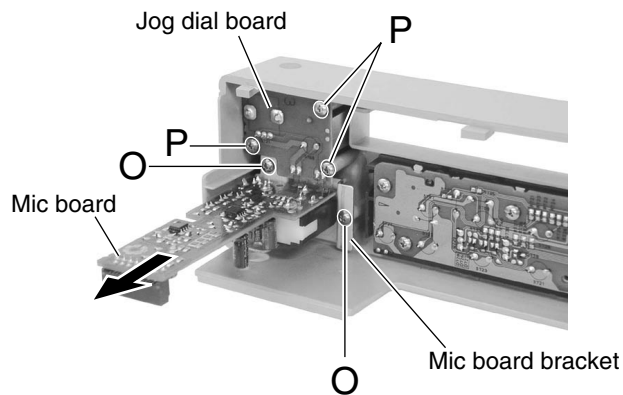


Fig.23

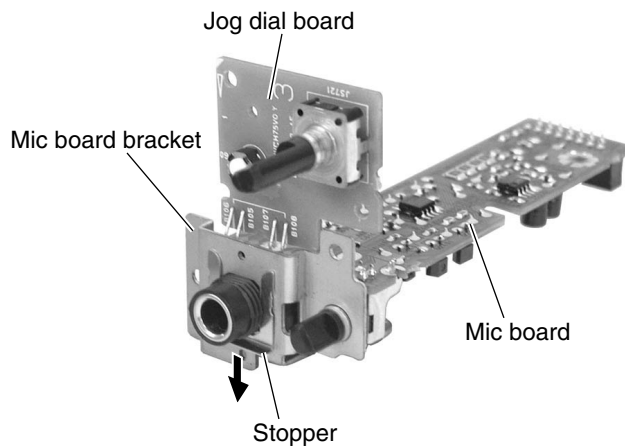


Fig.24

**■ Removing the front board (See Fig.25)**

1. Remove the nine screws **Q** on the back of the front panel assembly.

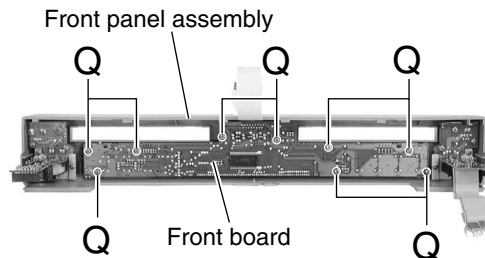


Fig.25

<CD Mechanism assembly>

■ Removing the clamber base assembly and tray (See Figs. 1 to 5)

1. Remove the two screws **A** attaching the clamber base assembly from the top of the CD mechanism assembly.
2. Move the clamber base assembly diagonally upwards as indicated by the arrow to release it from the two hooks **a**.
3. Turn the idle gear in the arrow-marked direction from the upper side of the CD mechanism assembly. Accordingly, the traverse mechanism assembly moves downwards.

Note: When drawing out the tray, shift down the traverse mechanism assembly to the position where the tray does not contact the turn table assembly of the traverse mechanism assembly.

4. Draw out the tray frontwards for removing it.

Note: When reinstalling the tray:

- Turn the idle gear so that the part **b** of the tray gear is positioned in the part **c** shown in Fig. 4. (Eject position)
- Engage the right and left hooks **d** and **e** of the tray with the right and left grooves of the loading mechanism assembly respectively for retaining the tray.

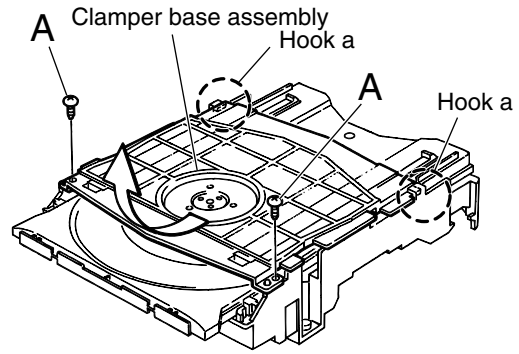


Fig. 1

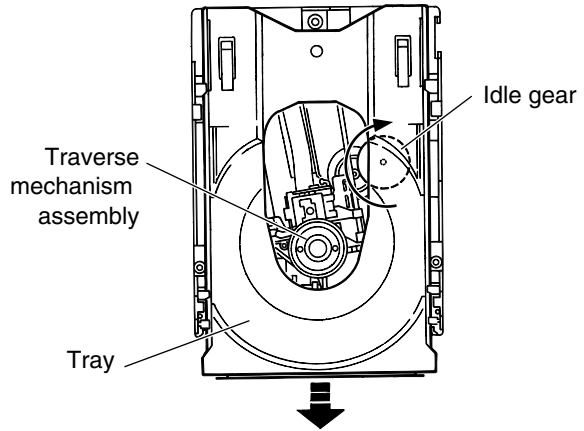


Fig. 2

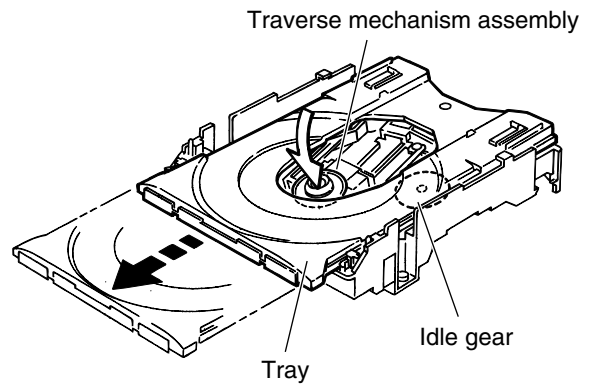


Fig. 3

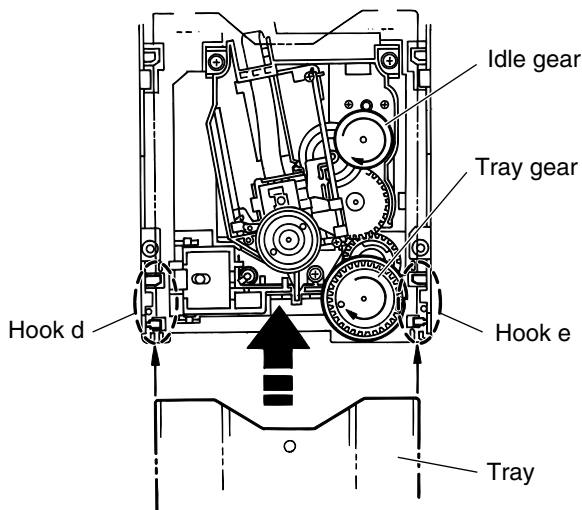


Fig. 5

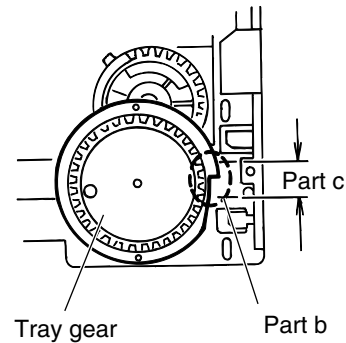


Fig. 4

## ■ Removing the traverse mechanism assembly (See Figs. 6 to 9)

- Remove the clamber base assembly and tray.

Reference: The traverse mechanism assembly can be removed without removal of the mechanism board.

1. If the traverse mechanism assembly is lowered and it is located out of the PLAY position, turn the idle gear in the arrow-marked direction so that the hole in the part **f** of the tray gear meets the hole on the loading base assembly. (Set the traverse mechanism assembly at the PLAY position.)
2. Remove the three screws **B** attaching the traverse mechanism assembly and then remove the traverse mechanism assembly upwards from the front side.
3. At the same time, remove the spring from the groove of the CH. base assembly in the part **g** of the traverse mechanism assembly.

Note: When reinstalling the traverse mechanism assembly:

- Check to see if the spring is properly engaged with groove of the CH. base assembly in the part **g** of the traverse mechanism assembly.
- After making sure that the three insulators of the traverse mechanism assembly are properly set on the bosses of the loading base assembly's guide, fasten them with the screws.

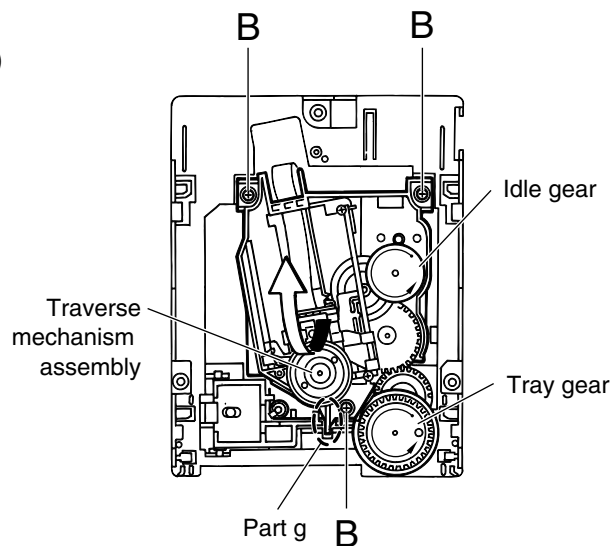


Fig. 6

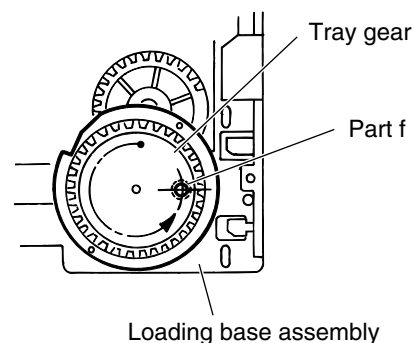


Fig. 7

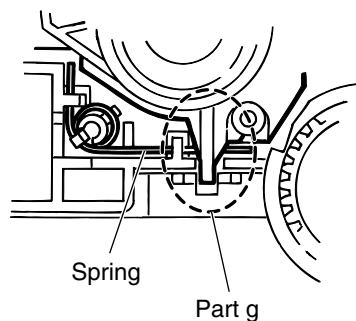


Fig. 8

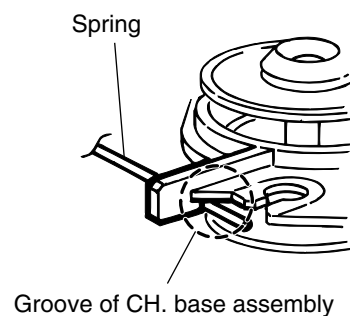


Fig. 9

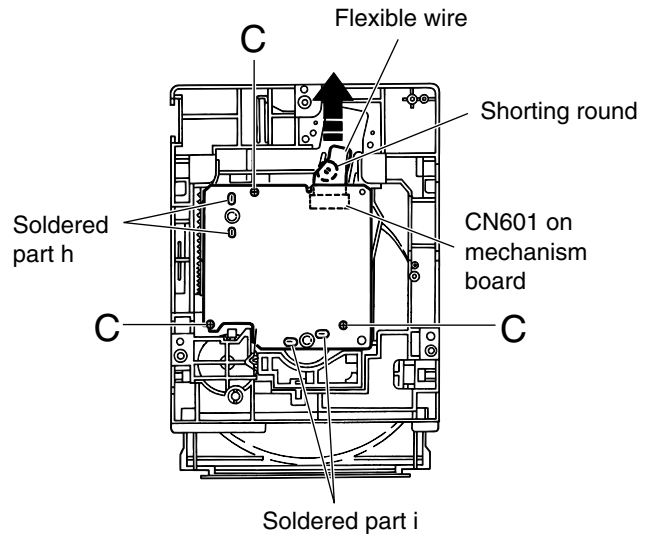
■ **Removing the mechanism board**  
 (See Fig 10)

Reference: The mechanism board can be removed without removal of the traverse mechanism assembly.

Note: Before disconnecting the flexible wire coming from the pickup from the connector, be sure to solder its shorting round.  
 If the flexible wire is connected without soldering, it may cause breakdown of the pickup.

1. Solder the shorting round of the flexible wire connected with the mechanism board from the back of the mechanism assembly.
2. Disconnect the flexible wire from the connector CN601 on the mechanism board.
3. Remove the three screws **C** attaching the mechanism board.
4. Unsolder the two points of the part **h** and two point of the part **i** of the mechanism board. Then, remove the mechanism board upwards.

Note: When reinstalling the mechanism board, connect the flexible wire coming from the pickup to the connector first and then remove the solder from the shorting round of the flexible wire.



**Fig. 10**

## ■ Removing the pickup (See Figs. 11 to 14)

- Remove the clamper base assembly and tray.
- Remove the traverse mechanism assembly.

Reference: The pickup can be removed without removal of the mechanism board.

Note: Before disconnecting the flexible wire coming from the pickup from the connector, be sure to solder its shorting round.  
If the flexible wire is connected without soldering, it may cause breakdown of the pickup.

1. Solder the shorting round of the flexible wire connected with the mechanism board from the back of the traverse mechanism assembly.
2. Disconnect the flexible wire from the connector CN601 on the mechanism board.
3. Turn the idle gear in the arrow-marked direction from the top of the traverse mechanism assembly so that the pickup assembly is shifted to the reverse side of the turn table assembly.  
Move the pickup assembly until the part **j** of the rack plate in the lower part of the pickup assembly comes out of the CH. base assembly.
4. Remove the two screws **D** attaching the shaft of the pickup assembly. Next, disengage the part **k** from the CH. base assembly and then remove the pickup assembly together with the shaft.
5. Pull the shaft out of the pickup.
6. Remove the two screws **E** attaching the rack plate from the pickup.
7. Remove the screw **F** attaching the P.S. spring from the pickup.

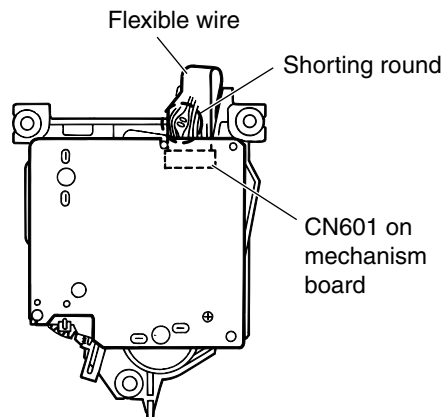


Fig. 11

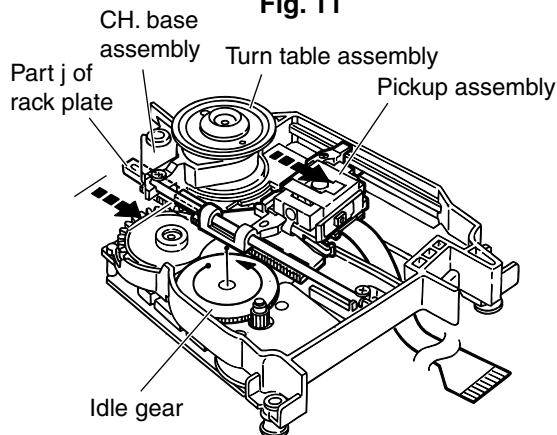


Fig. 12

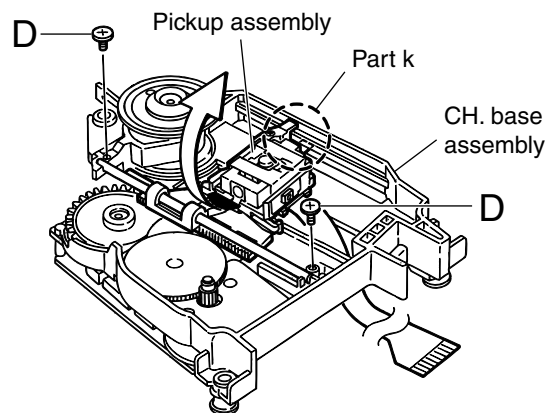


Fig. 13

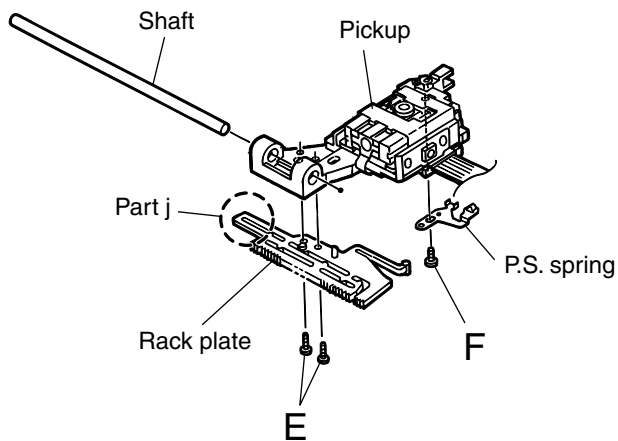


Fig. 14

■ Reinstalling the pickup assembly  
(See Figs. 15 and 16)

Reference: Refer to the explanation of "Removing the Pickup" on the preceding page.

1. Fit the P.S. spring and rack plate to the pickup.
2. Insert the shaft into the pickup.
3. Engage the part **k** of the pickup assembly with the CH. base assembly first, and set the part **j** of the rack plate in the opening **l** next. Then, reinstall the pickup assembly while shifting it to the turn table side (inward) so that the part **m** of the rack plate is positioned as shown in Fig. 16.
4. Move the pickup assembly to the center position and fasten the shaft with the two screws **D**. (Make sure that the part **n** of the rack plate is correctly engaged with the middle gear.)
5. After passing the flexible wire coming from the pickup through the opening of the CH. base assembly, connect it to the connector CN601.

Note: When reinstalling the pickup assembly, remove the solder from the shorting round after connecting the flexible wire coming from the pick to the connector CN601.

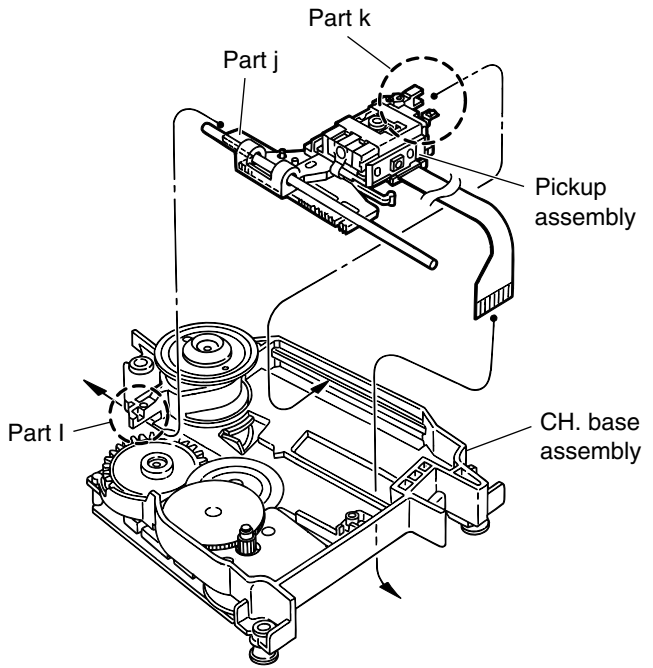


Fig. 15

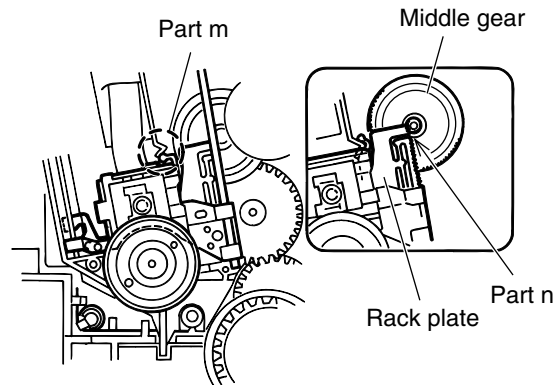


Fig. 16

■ Removing the feed motor assembly  
(See Fig. 17)

- Remove the clamper base assembly and tray.
- Remove the mechanism board.

Remove the two screws **G** attaching the feed motor assembly from the top of the mechanism assembly.

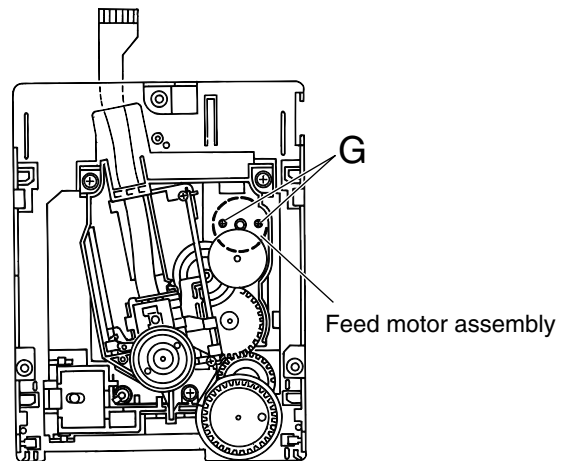


Fig. 17



# Confirm method of operation

## ■ Check mode (All lighting FL display)

<Setting method>

"STANDBY/ON" key is pushed while pushing "REC/REC MUTING" key by the stand-by state.

<Release method>

The key to "STANDBY/ON" is pushed.

(Please set the above-mentioned again to light all FL displays again after the check mode is made clear after pulling out the power cord once.)

## ■ All release of set content

All content of the item in the following set is returned to initial state. (State of factory shipment)

<Setting method>

"STANDBY/ON" key is pushed while pushing "REC SOURCE SELECTOR" key by the stand-by state.

### [Set items]

The program of the program play is deleted.

The content of the registration of the listening editing and the program editing is deleted.

The repeat setting is turned off.

Release of disc lock

A current unit is set to the CD mechanism unit side.

The play mode of CD mechanism unit is made a normal mode.

The pitch control setting is turned off.

The selection of the recording source is made DIGITAL of CD.

DUB-SPEED setting is made HIGH.

AUTO TRACK setting is turned ON.

TRACK SPACE setting is turned ON.

CONVERTER setting is turned ON.

D-IN SYNCHRO setting is START

FINALIZE setting is OFF

## ■ Service menu

The running operation and the version of the firmware can be confirmed by the undermentioned method.

(Does not use excluding "SYSTEM\_AGING" and "READ\_VERSION" by the item displayed in the service menu.)

<Setting method of service menu>

1. "STANDBY/ON" key is pushed while pushing "FINALIZE" key by the stand-by state.

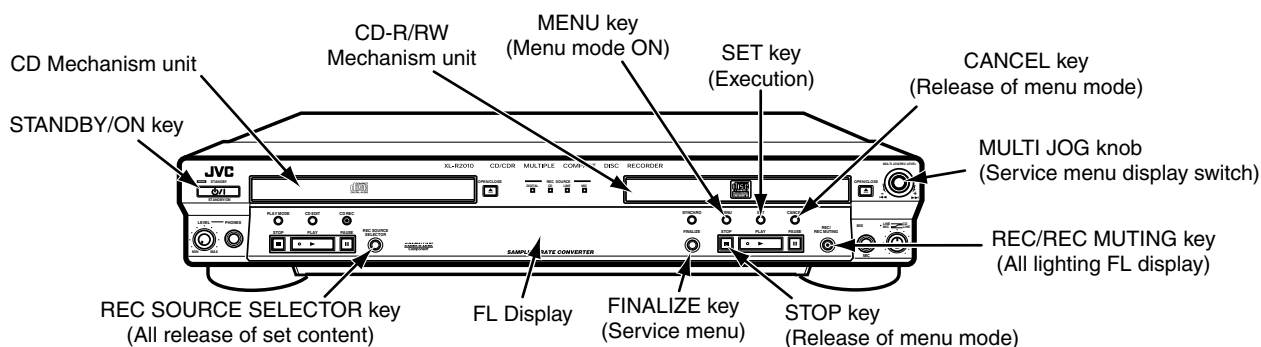
2. When the blinking display of the disc distinction ends, "MENU" key is pushed.

The menu display changes if "MULTI JOG" knob of the main body is turned.

3. The execution of the each item is completed or either "CANCEL" key, "CD-RW STOP" key or "MENU" key is pushed when going out of the menu mode.

<Release method>

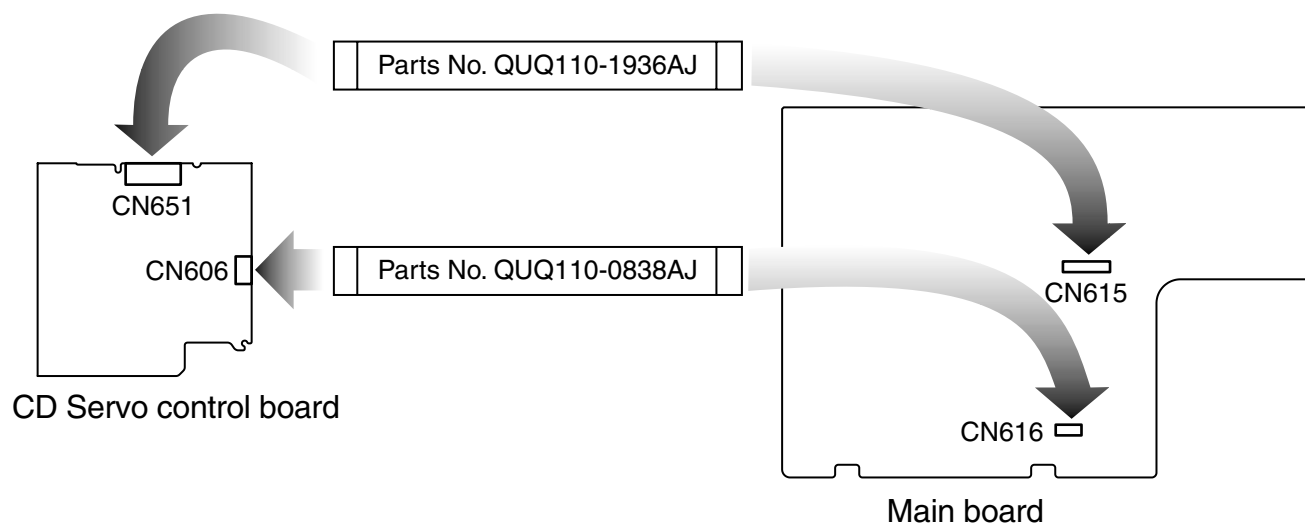
If "STANDBY/ON" key is pushed, and the power supply is turned off once, becomes a normal menu.





## ■ Extension cord for diagnosis of CD mechanism unit

It is an extension cord to operate with the CD mechanism unit removed from the main body. Each connector is connected by the extension cord and used as shown in the figure below.



# Description of major ICs

## ■ AN22000A-W(IC601):RF & SERVO AMP

### 1. Pin layout

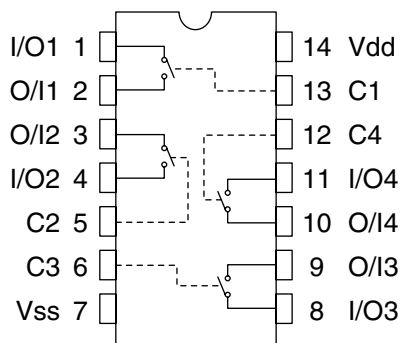
PD	1	32	A
LD	2	31	C
VCC	3	30	B
RFN	4	29	D
RFOUT	5	28	PDF
RFIN	6	27	PDE
CAGC	7	26	TBAL
ARF	8	25	FBAL
CEA	9	24	GCTRL
3TOUT	10	23	FEOUT
CBDO	11	22	FEN
BDO	12	21	TEN
COFTR	13	20	TEOUT
OFTR	14	19	TEBPF
RFDET	15	18	VDET
GND	16	17	VREF

### 2. Pin function

Pin No.	Symbol	Description	Pin No.	Symbol	Description
1	PD	APC Amp. Input terminal	16	GND	Connect to ground
2	LD	APC Amp. Output terminal	17	VREF	VREF output terminal
3	VCC	Power supply terminal	18	VDET	VDET output terminal
4	RFN	RF addition Amp. Reversing input terminal	19	TEBPF	VDET input terminal
5	RF OUT	RF addition Amp. Output terminal	20	TEOUT	TE Amp. output terminal
6	RF IN	AGC input terminal	21	TEN	TE Amp. reversing input terminal
7	C.AGC	Terminal of connection of capacity of AGC loop filter.	22	FEN	FE Amp. reversing input terminal
			23	FEOUT	FE Amp. output terminal
8	ARF	AGC output terminal	24	GCTRL	Terminal GCTL & APC
9	CEA	Capacity connection terminal for HPF-Amp.	25	FBAL	FBAL control terminal
10	3TOUT	3TENV output terminal	26	TBAL	TBAL control terminal
11	CBDO	Capacity connection terminal for RF shade side envelope detection	27	PDE	Tracking signal input terminal 1
			28	PDF	Tracking signal input terminal 2
12	BDO	BDO output terminal	29	D	Focus signal input terminal 4
13	COFTR	Capacity connection terminal for RF discernment side envelope detection	30	B	Focus signal input terminal 2
			31	C	Focus signal input terminal 3
14	OFTR	OFTR output terminal	32	A	Focus signal input terminal 1
15	RFDET	RFDET output terminal			

## ■ BU4066BCF-X(IC821,IC831,IC841,IC861):Source selector

### 1. Pin layout & block diagram

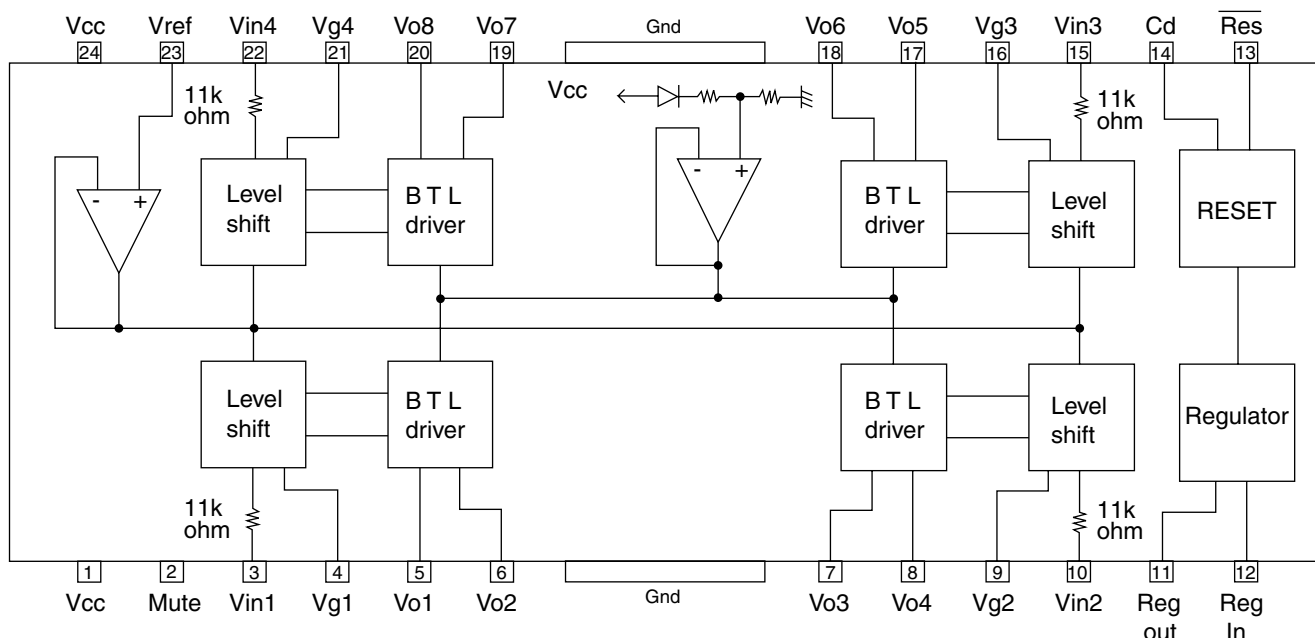


### 2. Truth table

Control	Switch
H	ON
L	OFF

## ■ LA6541-X (IC801) : Focus & Spindle & Feed & Tracking BTL driver

### 1. Pin layout & Block diagram

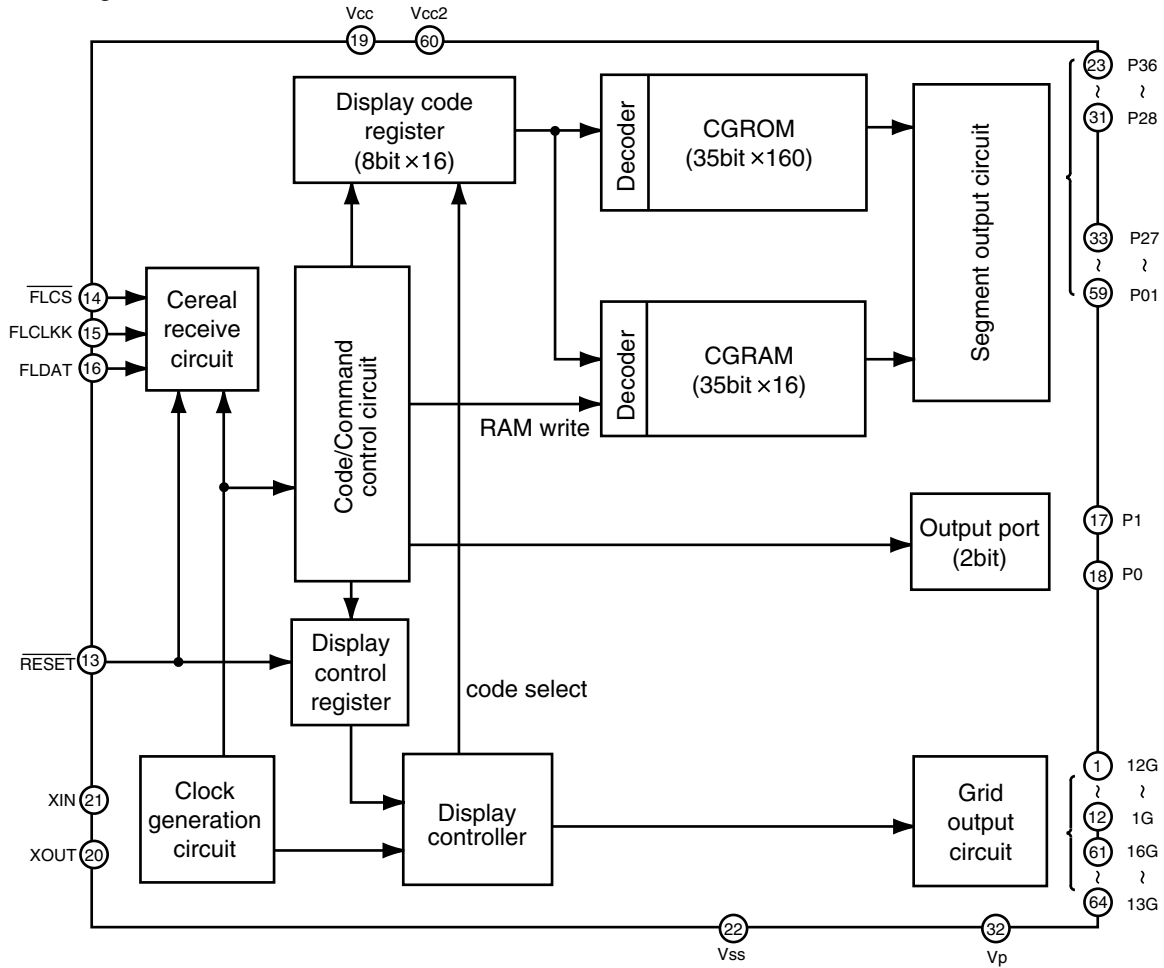


### 2. Pin function

Pin No.	Symbol	Description
1	Vcc	Power supply (Shorted to pin 24)
2	Mute	All BTL amplifier outputs ON/OFF
3	Vin1	BTL AMP 1 input pin
4	Vg1	BTL AMP 1 input pin (For gain adjustment)
5	Vo1	BTL AMP 1 input pin (Non inverting side)
6	Vo2	BTL AMP 1 input pin (Inverting side)
7	Vo3	BTL AMP 2 input pin (Inverting side)
8	Vo4	BTL AMP 2 input pin (Non inverting side)
9	Vg2	BTL AMP 2 input pin (For gain adjustment)
10	Vin2	BTL AMP 2 input pin
11	Reg Out	External transistor collector (PNP) connection. 5V power supply output
12	Reg In	External transistor (PNP) base connection
13	$\overline{\text{Res}}$	Reset output
14	Cd	Reset output delay time setting (Capacitor connected externally)
15	Vin3	BTL AMP 3 input pin
16	Vg3	BTL AMP 3 input pin (For gain adjustment)
17	Vo5	BTL AMP 3 output pin (Non inverting side)
18	Vo6	BTL AMP 3 output pin (Inverting side)
19	Vo7	BTL AMP 4 output pin (Inverting side)
20	Vo8	BTL AMP 4 output pin (Non inverting side)
21	Vg4	BTL AMP 4 output pin (For gain adjustment)
22	Vin4	BTL AMP 4 output pin
23	Vref	Level shift circuit's reference voltage application
24	Vcc	Power supply (Shorted to pin 1)

■ M66004FP-X(IC721):FL Driver

1. Block diagram

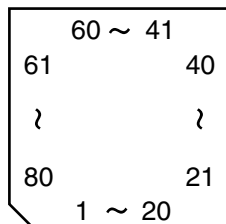


2. Pin function

Pin.No.	Symbol	I/O	Description
1~12	12G~1G	O	FL grid control signal output.
13	SRST	I	Reset signal input
14	FLCS	I	Chip select signal input.
15	FLCLK	I	Shift clock signal input.
16	FLDATA	I	Serial data input.
17	P1	O	Output port (static operation)
18	P0	O	Output port (static operation)
19	VCC1	-	Power supply for internal logic.
20	XOUT	O	Clock signal output.
21	XIN	I	Clock signal input.
22	VSS	-	Connect to ground.
23~31	P36~P28	O	FL Segment control signal output.
32	VP	-	Power supply.
33~59	P27~P01	O	FL Segment control signal output.
60	VCC2	-	Power supply for grid output and segment output.
61~64	16G~13G	O	FL grid control signal output.

## ■ MN662790RSC(IC651):Digital servo & processor

### 1.Pin layout



### 2.Pin function

MN662790RSC (1/2)

Pin No.	Symbol	I/O	Description
1	BCLK	O	Bit clock output for SRDATA
2	LRCK	O	Identifying signal output of L,R
3	SRDATA	O	Serial data output
4	DVDD1	-	Power supply for digital circuit
5	DVSS1	-	Connect to ground for digital circuit
6	TX	O	Digital audio interface output signal
7	MCLK	I	Micom command clock signal input
8	MDATA	I	Micom command data signal input
9	MLD	I	Micom command load signal input L:load
10	SENSE	-	Non connect
11	FLOCK	-	Non connect
12	TLOCK	-	Non connect
13	BLKCK	O	Sub code block clock signal (Command execution : CD-TEXT data readout enabling signal (DQSY) output)
14	SQCK	I	Export clock signal input for sub code Q resistor
15	SUBQ	O	Sub code Q data output
16	DMUTE	I	Muting input H:muting
17	STAT	O	Status signal output
18	LSI_RST	I	Reset signal input L:reset
19	SMCK	O	Clock signal output MSEL is H : 8.4672 MHz MSEL is L : 4.2336 MHz
20	CSEL	I	Oscillation frequency specification terminal H:33.8688 MHz L:16.9344 MHz
21	TEST2	-	TEST2 terminal usually : open
22	TVD	O	Traverse drive output
23	PC	-	Non connect
24	ECM	O	Spindle motor drive signal output (Compulsion mode output)
25	ECS	O	Spindle motor drive signal output (Servo error signal output)
26	VDETMON	-	Non connect
27	TRD	O	Tracking drive signal output
28	FOD	O	Focus drive signal output
29	VREF	-	Reference voltage for DA output section
30	FBAL	O	Focus balance adjust signal output
31	TBAL	O	Tracking balance adjust signal output
32	FE	I	Focus error signal input (analog input)
33	TE	I	Tracking error signal input (analog input)
34	RFENV	I	RF Envelope signal input (analog input)
35	TEST3	I	TEST3 Terminal usually : Fixation L
36	OFT	I	Off track signal input H : off track
37	TRCRS	I	Track cross signal input (analog input)
38	RFDET	I	RF detection signal input L : detection
39	BDO	I	Dropout signal input H : dropout
40	LDON	-	Non connect

## 2.Pin function

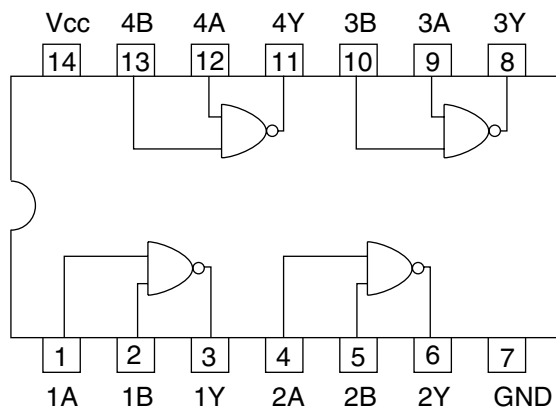
MN662790RSC (2/2)

Pin No.	Symbol	I/O	Functions
41	PLLF2	I/O	Terminal for loop filter characteristic switch for PLL
42	DSLBD A	-	Non connect
43	WVEL	-	Non connect
44	ARF	I	RF Signal output
45	IREF	I	Standard electric current input terminal
46	DRF	I	Bias terminal for DSL
47	DSL F	I/O	Loop filter terminal for DSL
48	PLL F	I/O	Loop filter terminal for PLL
49	VCO F	I/O	Loop filter terminal for VCO
50	AVDD2	-	Power supply terminal for analog circuit
51	AVSS2	-	Connect to ground terminal for analog circuit
52	EFM	-	Non connect
53	DSL B	O	PLL extraction clock output
54	VCO F2	I/O	Loop filter terminal for VCO
55	SUBC	O	Sub code serial output
56	SBCK	I	Clock signal input for sub code serial output
57	VSS	-	Connect to ground terminal for oscillation circuit
58	X1	I	Oscillation circuit input terminal f=16.9344 MHz, 33.8688 MHz
59	X2	O	Oscillation circuit output terminal f=16.9344 MHz, 33.8688 MHz
60	VDD	-	Power supply terminal for oscillation circuit
61	BYTCK	-	Non connect
62	LDON	O	Laser ON signal output H : ON
63	GCTRL	O	General I/O port
64	IPFLAG	-	Non connect
65	FLAG	O	Flag signal output
66	CLVS	-	Non connect
67	CRC	-	Non connect
68	DEMPH	O	De-emphasis detection signal output
69	RESY	-	Non connect
70	IOSEL	I	Mode switch terminal
71	TEST	I	TEST terminal usually : H
72	AVDD1	-	Power supply terminal for analog circuit (for audio output section)
73	OUTL	O	Lch audio output
74	AVSS1	-	Connect to ground terminal for analog circuit (for audio output section)
75	OUTR	O	Rch audio output
76	DQSY	I	RF signal polarity specification terminal
77	VCC5V	-	Power supply terminal (5V)
78	PSEL	O	IOSEL=H TEST terminal IOSEL=L SRDATA input
79	MSEL	O	IOSEL=H SMCK terminal output (frequency switch terminal) IOSEL=L LRCK input
80	SSEL	O	IOSEL=H SUBQ terminal output mode switch terminal IOSEL=L BCLK input



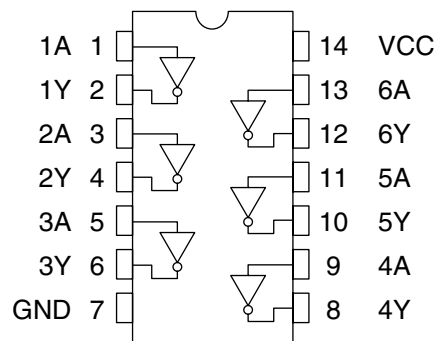
■ **TC74HC00AF-W(IC301,IC311):Digital I/O selector**

Pin layout & block diagram



■ **TC74HCU04AF-W(IC331):Digital input selector**

1.Pin layout & block diagram

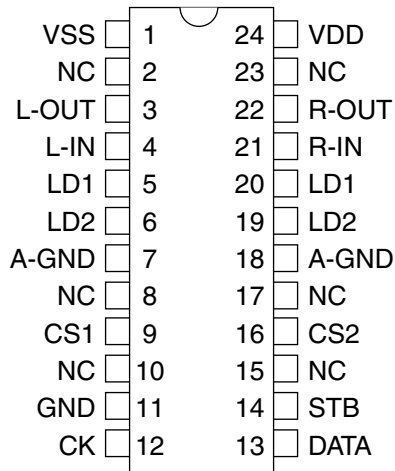


2.Truth table

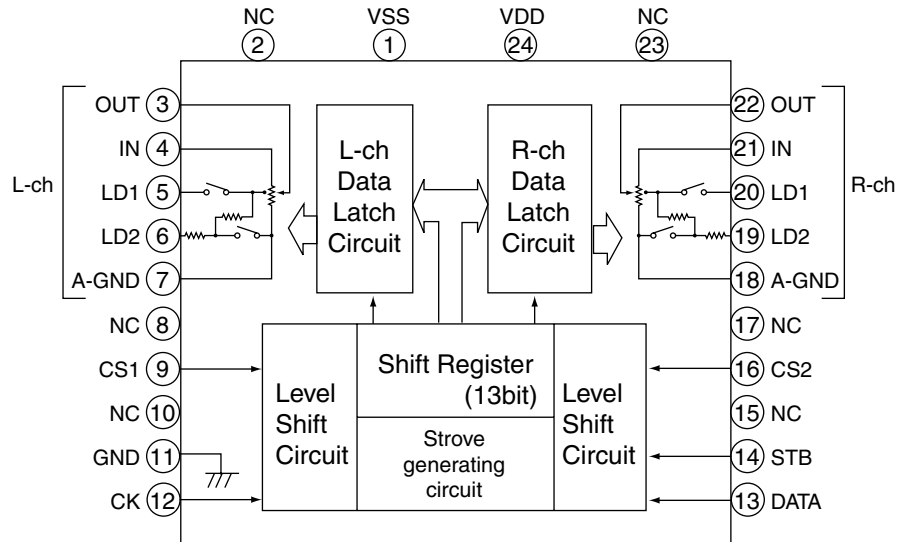
A	Y
L	H
H	L

**TC9412AF-X(IC891) : Rec Level**

1.Pin layout



2.Block diagram

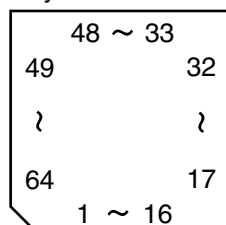


3.Pin functions

Pin No.	Symbol	Description
1	VSS	Negative power supply terminal
2	NC	Non connect
3	L-OUT	L-ch Volume output terminal
4	L-IN	L-ch Volume input terminal
5	LD1	L-ch Loudness tap output terminal
6	LD2	L-ch Loudness tap output terminal
7	A-GND	L-ch Analog ground
8	NC	Non connect
9	CS1	Chip select input terminal
10	NC	Non connect
11	GND	Digital ground
12	CK	Data transfer clock input terminal
13	DATA	Volume setup serial data input terminal
14	STB	Data write strobe input terminal
15	NC	Non connect
16	CS2	Chip select terminal
17	NC	Non connect
18	A-GND	R-ch Analog ground
19	LD2	R-ch Loudness tap output terminal
20	LD1	R-ch Loudness tap output terminal
21	R-IN	R-ch Volume input terminal
22	R-OUT	R-ch Volume output terminal
23	NC	Non connect
24	VDD	Positive power supply terminal

## ■ UPD780024AGKB21(IC251) : Unit microcomputer

### 1.Pin layout



### 2.Pin function

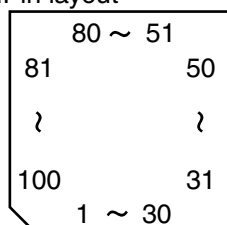
UPD780024AGKB21 1/2

Pin No.	Symbol	I/O	Description
1	P50/A8	-	Connect to ground
2	P59/A9	-	Non connect
3	MCS	-	Pull-up +B
4	MRDY	-	Non connect
5	CDINDEX	-	Non connect
6	CDEMP	I	Detection of CD emphasis
7	CDTNO	I	Detection of CD track number
8	CDCOPY	I	Detection of CD copy
9	VSS0	-	Connect to ground
10	VDD0	-	Power supply terminal
11	P30	-	Non connect
12	P31	-	Non connect
13	P32	-	Non connect
14	MUTE	O	Muting output
15	SUBQ	I	Sub-code Q data input from IC651
16	P35/SO31	-	Non connect
17	SQCK	O	Clock output for sub-code Q resistor to IC651
18	KCMND	O	Kick command data output
19	MSTAT	O	CD control to IC801 (status output)
20	MCLK	I	CD control from IC801 (command clock input)
21	RXDO	I	Digital data input
22	TXDO	O	Digital data output
23	P25/SCK0	-	Connect to ground
24	VDD1	-	Power supply terminal
25	AVSS	-	Connect to ground
26	KEY1	I	Key input 1
27	KEY2	I	Key input 2
28	PCHK	I	parity check
29	P14/AN14	-	Connect to ground
30	P13/AN13	-	Connect to ground
31	/OPEN	I	OPEN switch input
32	/REST	I	REST switch input
33	P10/AN10	-	Connect to ground
34	AVREF	-	Standard voltage for analog circuit (connect to power supply terminal for analog circuit)
35	AVDD	-	Power supply terminal for analog circuit
36	/RESET	I	CD control from IC801 (reset input)

Pin No.	Symbol	I/O	Description
37	XT2	-	Non connect
38	XT1	-	Connect to power supply terminal
39	IC	O	Control of flash microcomputer
40	X2	-	Connect with external oscillator
41	X1	-	Connect with external oscillator
42	VSS1	-	Connect to ground
43	FLAG	I	Flag signal input from IC651
44	BLKCK	I	Sub-code,block,clock signal input from IC651
45	/RFDET	I	RF signal amplitude detection input terminal
46	EQx2	O	x2 equalizer switch
47	EQx4	O	x4 equalizer switch
48	VCOx4	-	Non connect
49	OPEN	I	Tray open detection
50	/CLOSE	I	Tray close detection
51	IREFx4	O	Electric current switch of x4 DSP
52	P75/BUZ	-	Non connect
53	/RESET	O	Reset signal output to IC651 L:reset
54	STAT	I	Status signal input from IC651
55	/DMUTE	O	Muting signal output to IC651
56	/P.ON	O	Power ON/OFF switch signal output to IC291
57	MLD	O	Microcomputer command load signal output to IC651
58	MDATA	O	Microcomputer command data output to IC651
59	MCLK	O	Microcomputer command clock signal output to IC651
60	CLKSW	-	Non connect
61	JIG	-	Non connect
62	JIG	-	Non connect
63	JIG	-	Non connect
64	JIG	-	Connect to ground

## ■ UPD784214AGF523(IC501):System controller

### 1.Pin layout



### 2.Pin function

UPD784214AGF523 1/2

Pin No.	Symbol	I/O	Description
1~3	NC	-	Non connect
4	TEST-	I	Test mode input terminal L : Test mode
5	VR_STB	O	Strobe signal output to IC891
6	VR_DATA	O	Data output to IC891
7	VR_CK	O	Clock signal output to IC891
8	NC	-	Non connect
9	VDD	-	Power supply terminal +5V
10,11	CS1/CS2	I	Chip select terminal
12,13	JOGA/JOGB	I	Multi jog dial A/B input
14	FLDAT	O	Serial data output to FL driver
15	FLCLK	O	Shift clock signal output to FL driver
16	FLCS	O	Chip select signal output to FL driver L : data output
17~19	MPLAY/REC/STOP	-	Non connect
20	DIN_COA	O	When digital input is coaxial for output H
21	AIN_HI	O	LINE IN gain control output H : high gain
22	VPP	-	Connect to ground
23	DIG_LED	O	Digital LED control signal output
24	CD_LED	O	CD LED control signal output
25	LIN_LED	O	Line IN LED control signal output
26	MIC_LED	O	MIC LED control signal output
27	LLEVE	-	Non connect
28	MIXBL	I	Mix balance volume level input
29	DIN_OPT	O	When digital input is optical for output H
30	SMUTE	O	System muting signal output
31	DACMUTE	-	Non connect
32	CD_DRT	O	It is a power output to the direct connection of analog recording source 3CD to the A/D input of CD-RW as for L
33	SCD	O	Analog recording source 3CD select control output L : selected 3CD
34,35	SLIN1/SLIN2	O	Analog recording source select control output
36	SMIC	O	Analog recording source MIC select control output L : selected MIC
37	VDD	-	Power supply terminal +5V (connects with the backup capacitor at power supply off.)
38	X2	O	Main system clock output terminal 10MHz
39	X1	I	Main system clock input terminal 10MHz
40	VSS	-	Connect to ground
41	XT2	O	Sub clock output terminal 32.768KHz
42	XT1	I	Sub clock input terminal 32.768KHz

## 2.Pin function

UPD784214AGF523 2/2

Pin No.	Symbol	I/O	Description
43	RESET	I	Reset signal input
44	REM	I	Remote control signal input
45	NC	-	Non connect
46	ACON	I	The AC power supply existence detection terminal L : No AC power supply (backup mode) H : AC power supply having (normal mode : Backup mode Release)
47	CDR_RREQ	I	Request demand input from CD-RW unit
48	NC	-	Non connect
49	DOCD	O	Output select control H : selected 3CD L : selected CD-RW
50	SLCDR	O	Output select control H : selected CD-RW L : selected 3CD
51	AVDD	-	Power supply terminal +5V (connects with the backup capacitor at power supply off.)
52	AVREF0	-	Power supply terminal +5V
53~56	KEY1~4	I	Operation switch input terminal 1~4
57	NC	-	Non connect
58	3CDINR	I	3CD analog signal level input (for Rch level meter)
59	3CDINL	I	3CD analog signal level input (for Lch level meter)
60	MODE	I	DCS mode setting switch input
61	AVSS	-	Connect to ground
62	DCSI	I	DCS command input
63	DCSO	O	DCS command output
64	AVREF1	-	Power supply terminal +5V
65	NBUSI	I	Connect to Q541
66	NBUSO	-	Non connect
67	ASCK2	-	Connect to ground
68	STAT	I	3CD status input
69	COMD	O	3CD command output
70	ASCK1	I	Connect to ground
71	SRST	O	System reset signal output L : active
72	POWER	O	System power supply control terminal / standby LED control H : power OFF / LED turning off L : power ON / LED lighting
73	CDR_DTI	I	Serial data input from CD-RW unit
74	CDR_DTO	O	Serial data output to CD-RW unit
75	XDR_ACLK	I	Clock signal input from CD-RW unit
76	CDR_SREQ	O	Request signal output to CD-RW unit L : active
77	SYS_RDY	O	System ready output to CD-RW unit L : active
78	NC	-	Non connect
79	DACPD	O	DAC power down control output
80	NC	-	Non connect
81	3CD_RES	O	Reset signal output to 3CD unit micom (IC251)
82	NC	-	Non connect
83	DOCDR	O	Output select control H : selected CD-RW L : selected 3CD
84~97		-	Non connect
98	CDRRST	O	Reset signal output to CD-RW unit L : reset ON
99	STBY_LED	O	Standby LED control signal output L : lighting
100	VSS	-	Connect to ground

**JVC**

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