JVC

SERVICE MANUAL

CD/CDR MULTIPLE COMPACT DISC RECORDER

XL-R5010BK

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

K2 INTERFACE **COMPU LINK Component** **COMPACT DISC DIGITAL AUDIO Recordable ReWritable** **COMPACT DISC DIGITAL AUDIO** **3-CD PLAY & EXCHANGE**
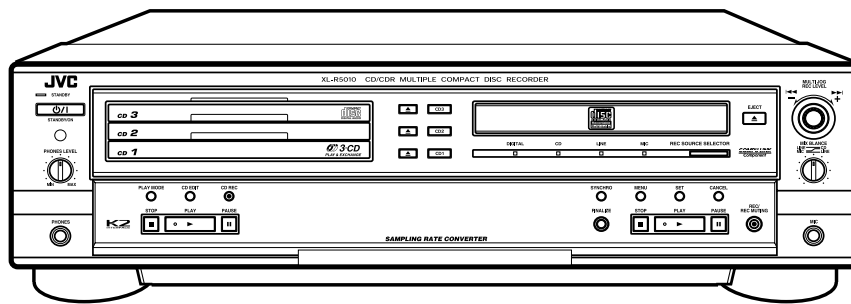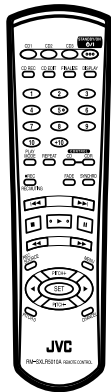
Contents

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 (⚠) 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 0.15μF 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.).

AC VOLTMETER
(Having 1000 ohms/volts, or more sensitivity)

0.15μF AC TYPE

Place this probe on each exposed metal part.

$1500\,\Omega$ 10W

Good earth ground
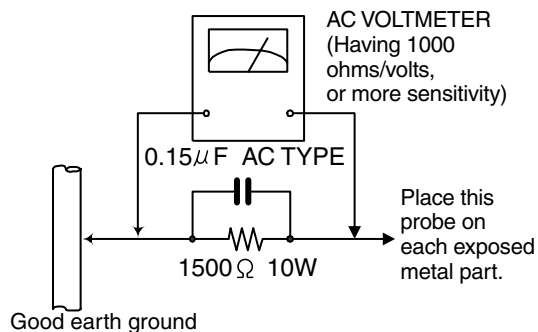
Warning

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 "⚠" 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.

## 1.1. 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.

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

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

(caption)
Anti-static wrist strap

$1M\Omega$

Conductive material
(conductive sheet) or iron plate
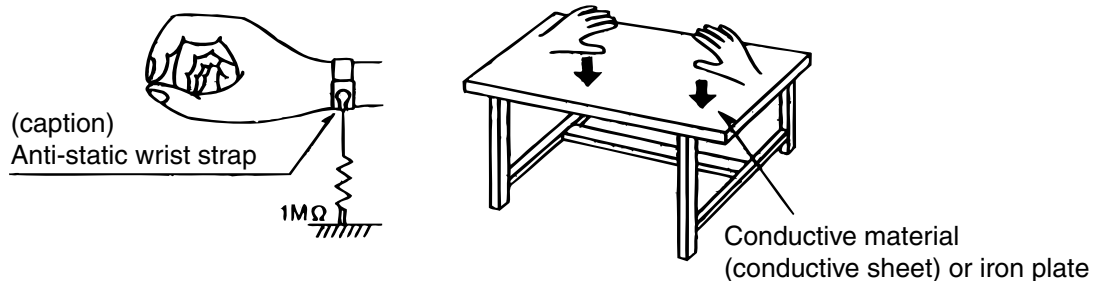
1.1.3. Handling the optical pickup
1. In order to maintain quality during transport and before installation, both sides of the laser diode on the replacement optical pickup are shorted. After replacement, return the shorted parts to their original condition. (Refer to the text.)

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

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

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

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

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

Importance Admistering point on the Safety
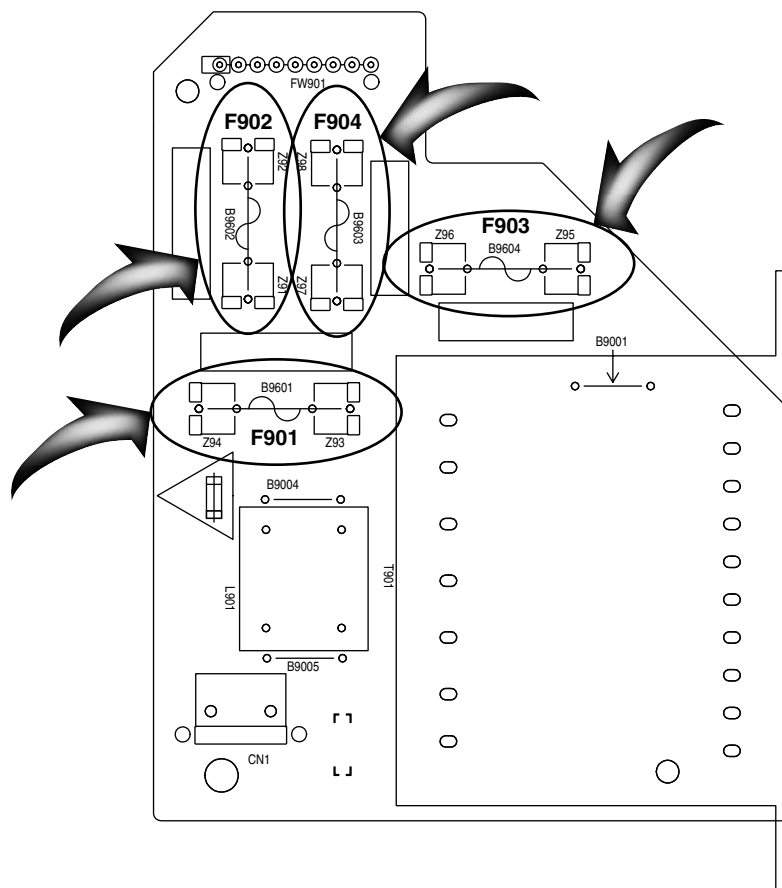
Full Fuse Replacement Marking	Marquage Pour Le Remplacement Complet De Fusible
Graphic symbol mark (This symbol means fast blow type fuse.)	Le symbole graphique (Ce symbole signifie fusible de type á fusion rapide.)
should be read as follows ;	doit être interprété comme suit ;
FUSE CAUTION	**PRECAUTIONS SUR LES FUSIBLES**
FOR CONTINUED PROTECTION AGAINST RISK OF FIRE, REPLACE ONLY WITH SAME TYPE AND RATING OF FUSES ;	POUR UNE PROTECTION CONTINUE CONTRE DES RISQUES D'INCENDIE, REMPLACER SEULEMENT PAR UN FUSIBLE DU MEME TYPE ;
F901,F902 : 1 A / 125 V **F903,F904 : 2 A / 125 V**	**F901,F902 : 1 A / 125 V** **F903,F904 : 2 A / 125 V**
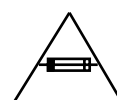
Precautions for Service

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 "Fig.4" of "Disassembly
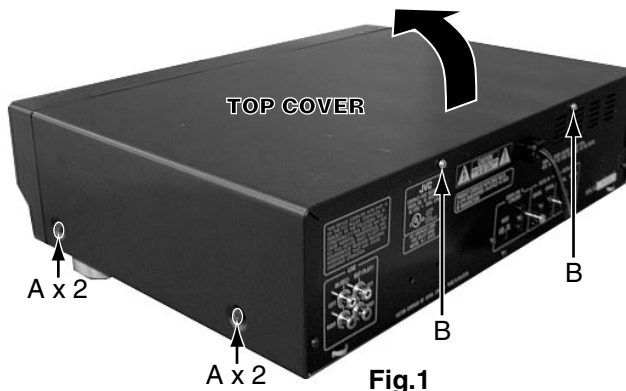method <Changer mechanism assembly>" for details.**
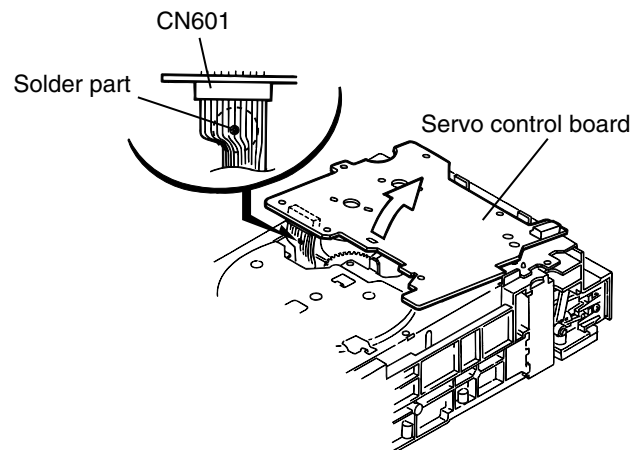
Disassembly method

<Main body>

■ Removing the top cover (see Fig.1)

1. Remove the four screws **A** attaching the top cover on both sides of the body.

2. Remove the two screws **B** attaching the top cover on the back of the body.

3. Remove the top cover from the body by lifting the rear part of the top cover.

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

Fig.1

■ Removing the changer mechanism assembly (see Fig.2~4)

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

1. Disconnect the card wire from connector CN615 and CN616 on the main board respectively.

2. Remove the four screws **C** attaching the changer mechanism assembly.

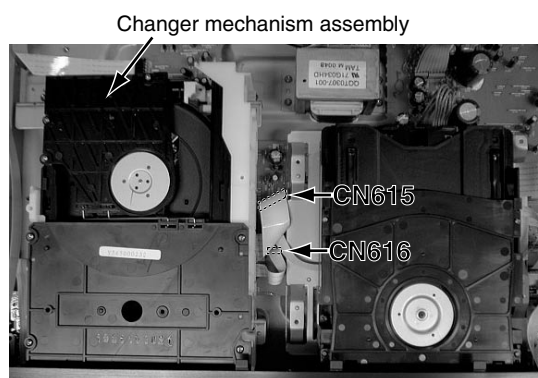3. Remove the changer mechanism assembly from the body by lifting the rear part of the changer mechanism assembly.
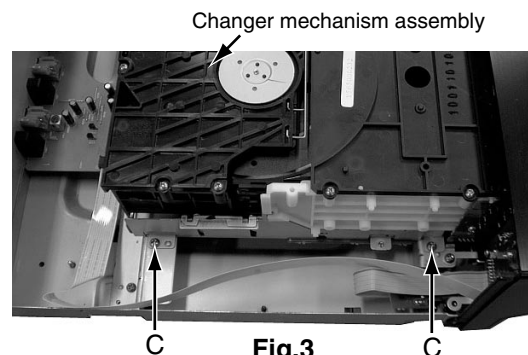

Changer mechanism assembly

Fig.2

Changer mechanism assembly
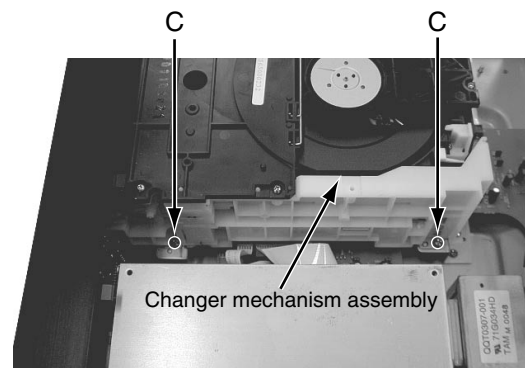
Fig.3

Changer mechanism assembly

Fig.4

■ Removing the CD recording mechanism assembly (see Fig.5~7)

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

*There is no need to remove the changer mechanism assembly.

1.Remove the three screws **E** attaching the CD recording mechanism assembly.

2.Disconnect the card wire from connector CN702 and CN703 on the servo control board respectively.

3.Disconnect the connect wire from connector CN701 on the servo control board.

4.Remove the five screws **F** attaching the mechanism chassis

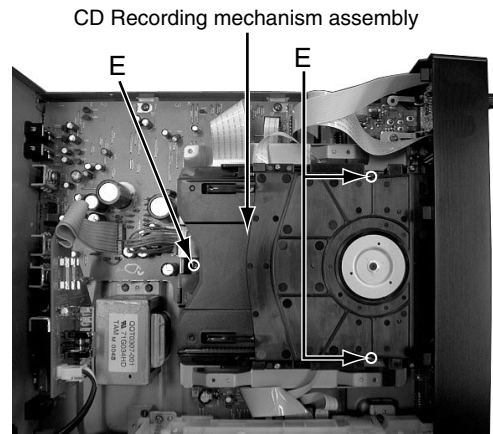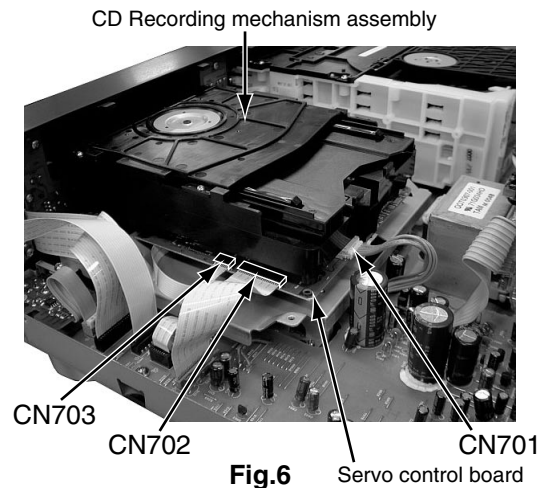CD Recording mechanism assembly

E   E

Fig.5

CD Recording mechanism assembly

CN703

CN702   CN701

Fig.6   Servo control board
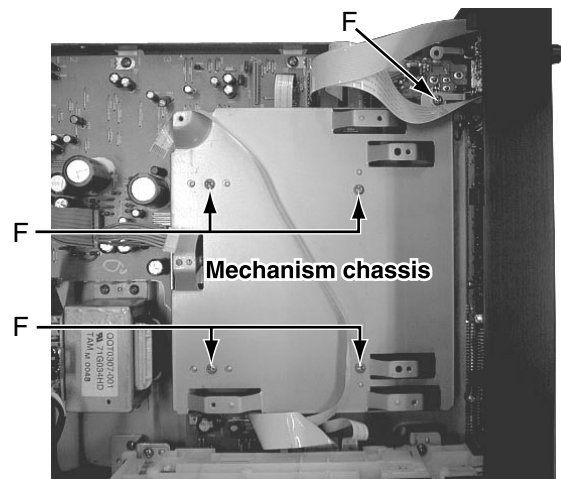
F

F

Mechanism chassis

F

Fig.7

■ Removing the front panel assembly
(see Fig.8~10)

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

*There is no need to remove the changer mechanism assembly and CD recording mechanism assembly.

1. Remove the tree screws **G** attaching the front panel assembly on the bottom of the body.

2. Remove the one screw **H** attaching the headphone jack bracket.

3. Remove the one screw **I** attaching the mic jack bracket.

4. Disconnect the card wire from connector CN711, CN841 and CN501 on the main board respectively.

5. Disconnect the flat wire from connector CN601 on the main board from mic board.

6. Hook **a** and **b** are removed respectively, and the front panel assembly is removed.

Hook a
Hook b
Hook b
G
Front panel assembly
Hook a
G

Fig.8

H
CN711

Front panel assembly

Fig.9

I

Mic board
CN601
CN501
CN841

Fig.10
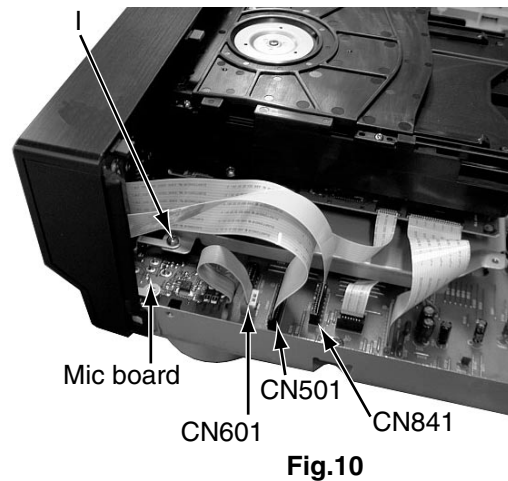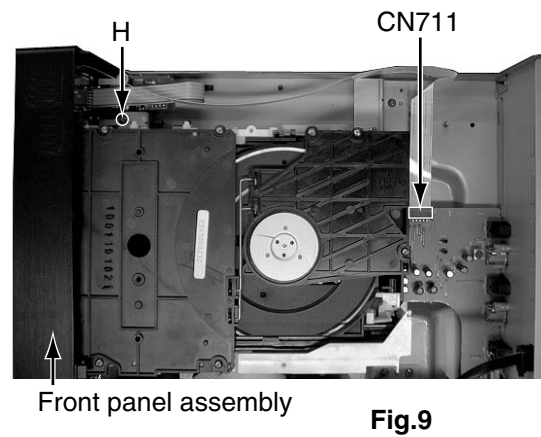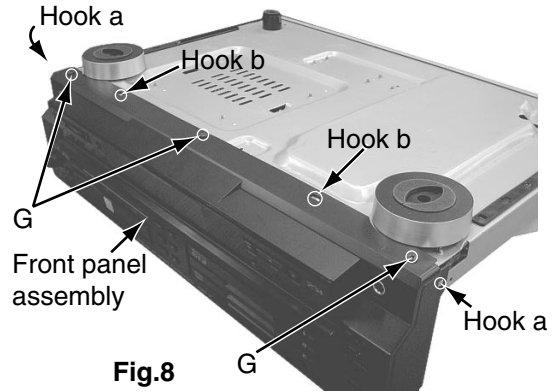
■ Removing the rear panel (see Fig.11,12)

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

1.Remove the ten screws **J** attaching the rear panel.

2.Disconnect the power cord from connector CN1 on the power supply board.

Fig.11

Power supply board   CN1   Power cord
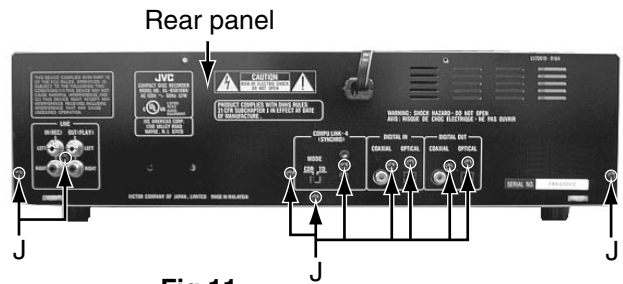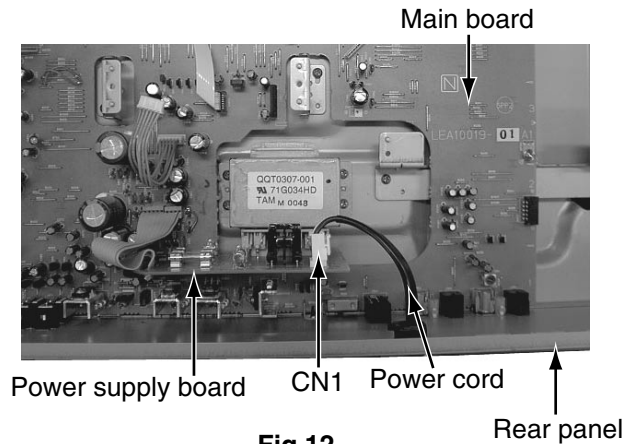
Rear panel

Fig.12

■ Removing the main board and power supply board (see Fig.13)

*Prior to performing the following procedure, remove the top cover, front panel assembly, changer mechanism assembly, CD recording mechanism assembly and rear panel.

1.Remove the four screws **K** attaching the power transformer.

2.Disconnect the flat wire from connector CN901 and CN902 on the main board.

3.Remove the six screws **L** attaching the main board.

CN901,CN902   Power transformer
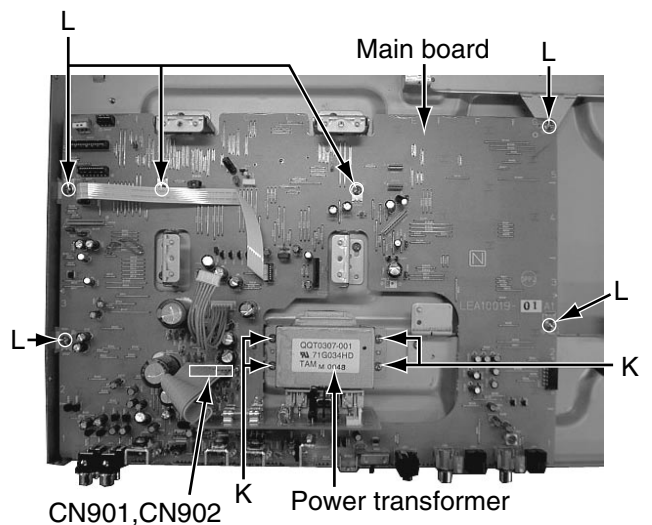
Fig.13

<Changer mechanism assembly>

■Removing the servo control board
(See Fig.1 to 4)

ATTENTION: Make sure the sub chassis unit is locating at the lowest position. If not,perform the following procedure from 1 to 3.

1. Insert a screwdriver into the sub chassis slot on the back of the body and push the slider (R) toward the front.

2. From the top of the body, slide the hook and the slider (R) forward until they stop.

3. From the right side of the body, slide the slide cam (L) backward until it stops. The sub chassis unit will move to the lowest position.

4. From the bottom of the body, unsolder each soldered part **a** and **b** of the motors on the servo control board.

5. Remove the five screws **A** attaching the servo control board.

6. Disconnect connector CN610 on the servo control board from the tray select switch board to suspend the servo control board tentatively. Solder the part **c** of the flexible wire connected to connector CN601 on the underside of the servo control board.

7. Disconnect the flexible wire from connector CN601 and remove the servo control board from the body.

ATTENTION: In case of disconnecting the flexible wire without soldering, the CD pick up may be damaged.

ATTENTION: When reassembling, make sure the cam switch boss of the servo control board is fitted to the slot **p** of the control cam on the bottom of the body (Refer to Fig.3-1).

Slot
Sub chassis unit
Slide cam (L)

Fig.1

Slider (R)
Hook
Slide cam (L)

Fig.2

Tray select switch board
Cam switch
CN610
Solder part a
Solder part b
A
A
A
A
A
Servo control board
CN601

Fig.3-1

Cam switch boss
Control cam
Slot p
Gear base unit
Main board

Fig.3-2

CN601
Solder part c
Servo control board
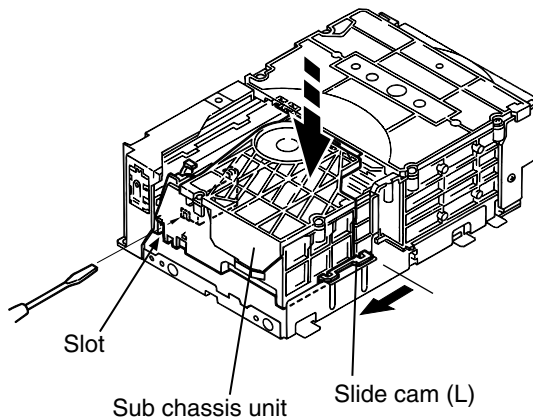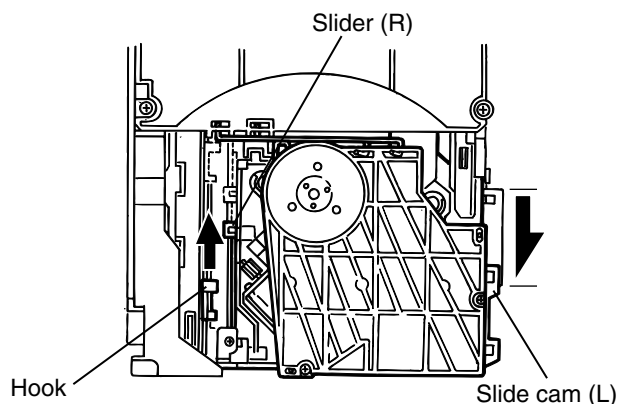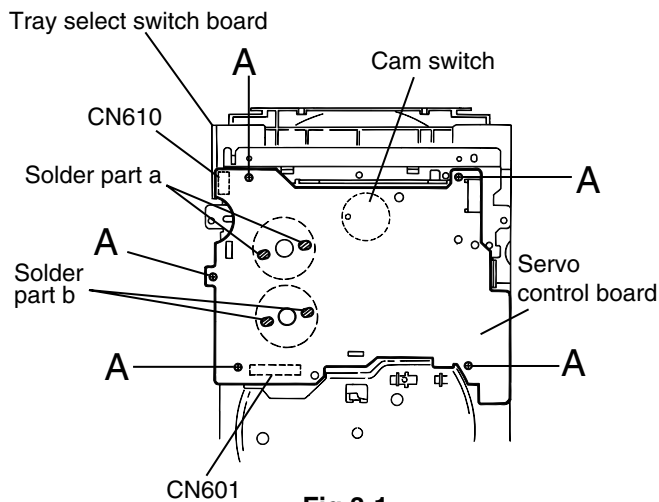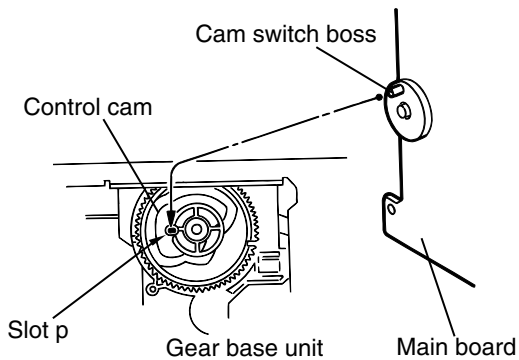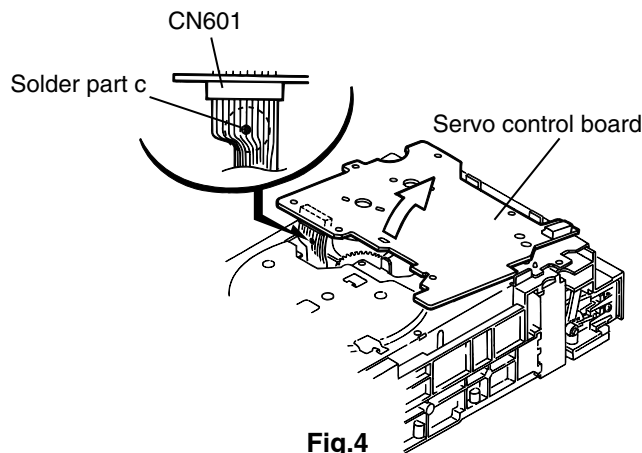
Fig.4

■Removing the tray unit (See Fig.5 to 8)

※ The tray unit can be removed despite the position of the sub chassis unit, but the lowest position is recommended to expedite the work.

1. Remove the four screws **B** attaching the top cover on the top of the body.

2. Remove the top cover with the two rods attached to the top cover and the clamper base unit.

3. Pull the lock lever of the return spring on the right side of the body to eject the tray unit.

4. From the top of the body, release the tray from the joint hook marked **d** (Push the tray toward the front).

5. Release the stoppers on both sides in the direction of the arrow and pull out the tray unit from the body.

   ATTENTION: Pull out the tray unit from the top tray 3 in sequence.

Top cover

B   B

Rod

Clamper base unit

Fig.5

Top cover

Rod

Clamper base unit

Fig.6

Tray
Both

Tray unit

Tray

Both

Tray unit

Joint d

Hook   Tray   Hook   Tray

Tray

Fig.8

Tray 3

Return spring

Lock lever
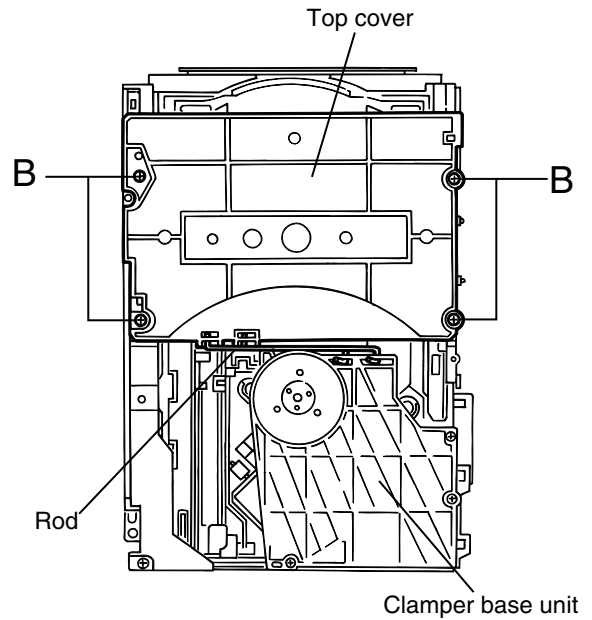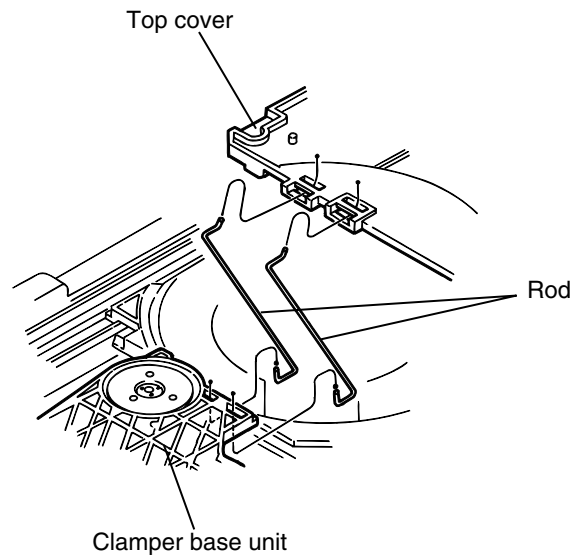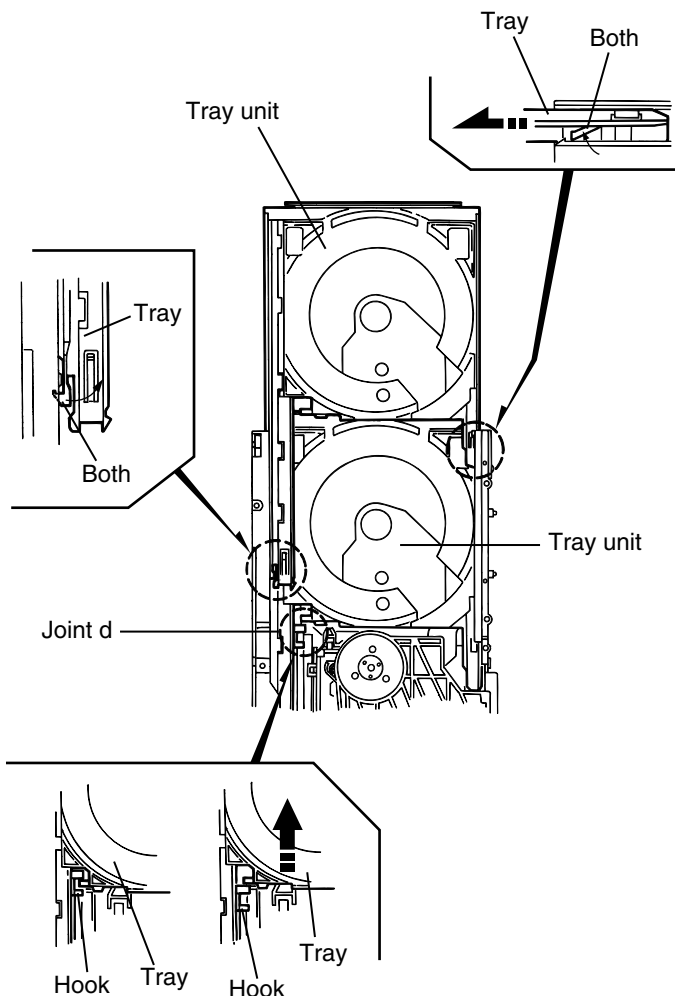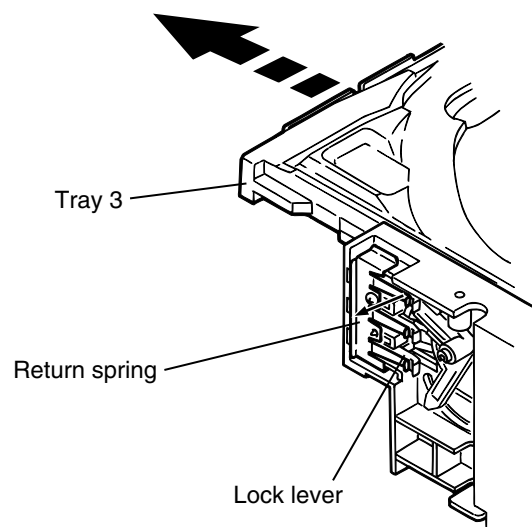
Fig.7

■Removing the side unit (L) and (R)
(See Fig.9-1 to 9-5)

・Prior to performing the following procedures, remove the servo control board, the top cover and the tray unit.

1. Remove the two screws **C** attaching the side unit (L).

2. Slide and remove the side unit (L) toward the front while releasing the two joints **e** and the joint **f** with the chassis unit.

3. Slide the slide cam (L) toward the front until it stops to place the sub chassis unit at the top position.

    ATTENTION: The side unit (R) can be removed when the sub chassis unit is located at the top position.

4. Turn the hook gear counterclockwise to move the slide hook and the slider (R) backward until they stop.

5. Remove the three screws **D** attaching the side unit (R). Raise the side unit (R) upward and release the joint **g** with the chassis unit and the boss from the select arm marked **h**. Then remove the side unit (R) from the body.

    ATTENTION: When reassembling, make sure the boss is fitted to the select arm marked **h**.

Fig.9-1

Fig.9-2

Fig.9-3

Fig.9-4

Fig.9-5
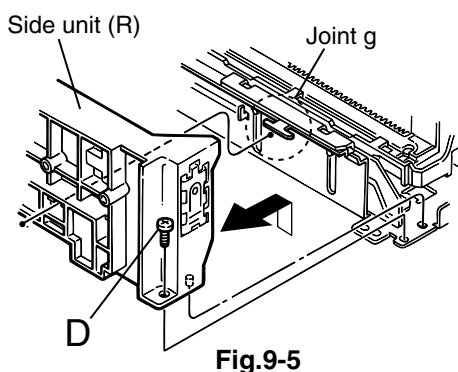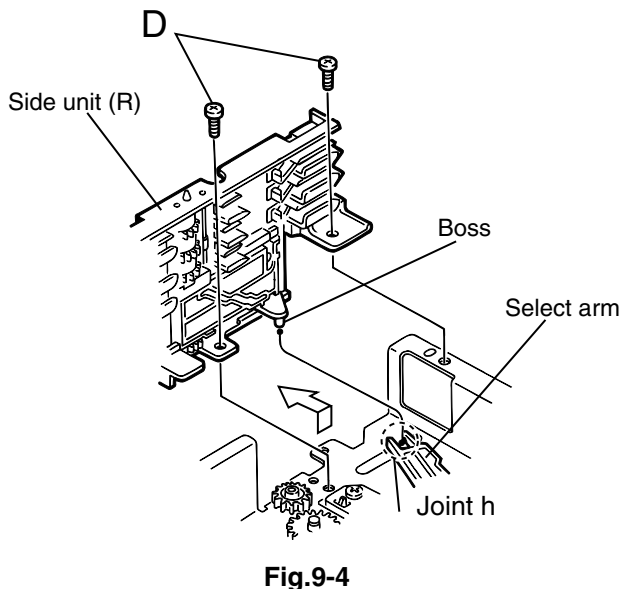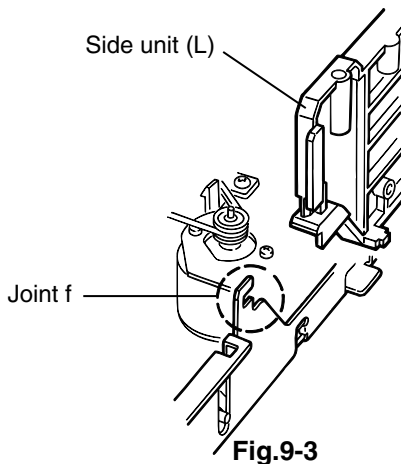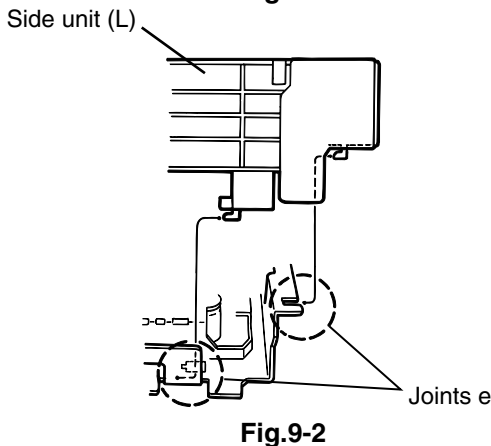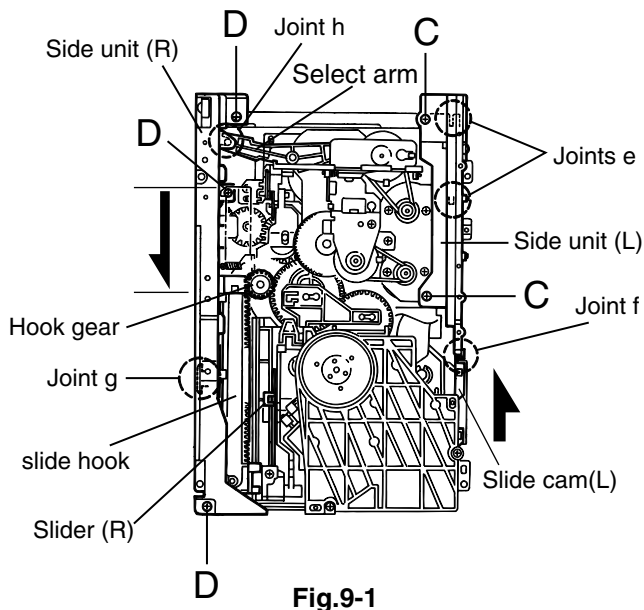
■Removing the sub chassis unit
(See Fig.10 to 12)

· Prior to performing the following procedures, remove the servo control board, the top cover, the tray unit, the side unit (L) and the side unit (R).

1. Turn the hook gear counterclockwise to move the slide hook and the slider (R) backward until they stop.

2. Slide the slide cam (L) and the slide cam (R) in the direction of the arrow until they stop.

   (The notches of each slide cam are fitted to the pins on both sides of the sub chassis unit.)

3. Detach the sub chassis unit upward.

   ATTENTION: When reassembling, turn the hook gear of the chassis unit counterclockwise until it stops and slide the slide hook and the slider (R) of the sub chassis unit backward until they stop.

Slide cam (L)

Slide cam (R)

Sub chassis unit

Fig.10

Sub chassis unit

Pin

Pin

Slide cam (L)

Notch

Fig.11

Slider (R)

Hook gear

slide hook
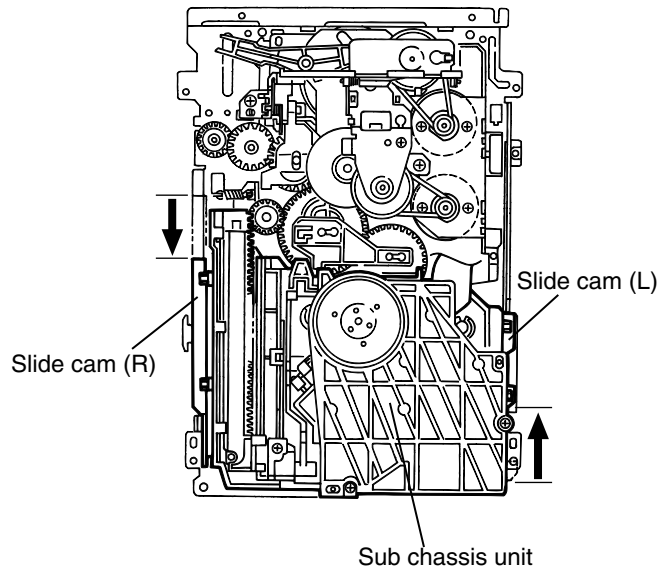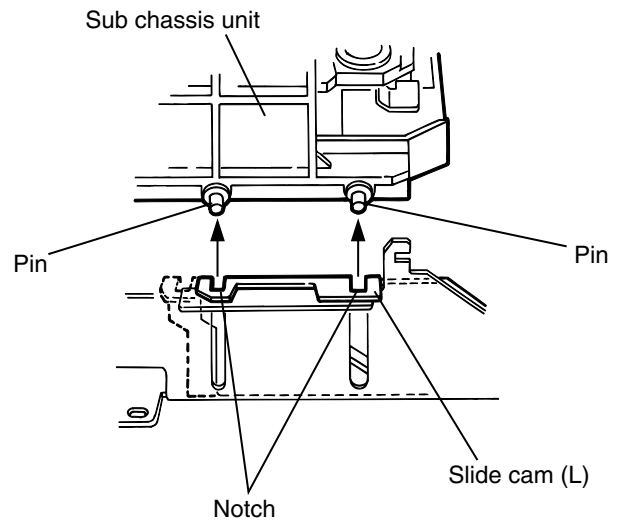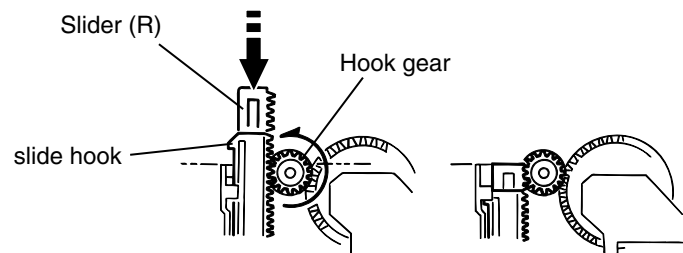
Fig.12

■Removing the flap base unit and the gear base unit (See Fig.13 and 14)

・Prior to performing the following procedures, remove the servo control board, the top cover, the tray unit, the side unit (L) and the side unit (R).

1. Remove the screw **E** attaching the flap base unit. Release the joint tabs **i** and **j**, then remove the flap base unit from the body.

2. Remove the belts from the two pulleys on the gear base unit.

3. Remove the three screws **F** and remove the gear base unit from the body.

Flap base unit
Joint tab j   Joint tab i
E
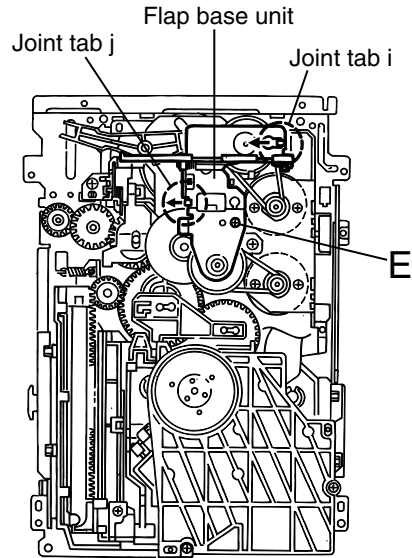
Fig.13

■Removing the motors (See Fig.15)

・Prior to performing the following procedure, remove the main board.

1. Remove the belts from the two pulleys.

2. Remove the four screws **G** and detach each motor from the body.

F   Gear base unit
F
Belt
F
Belt

Fig.14

Motor
G
G
Motor
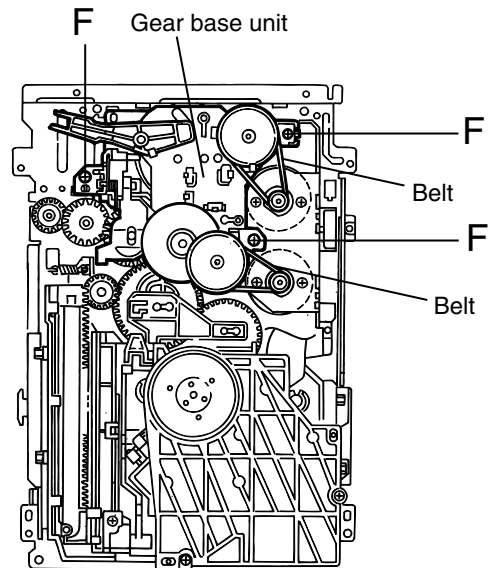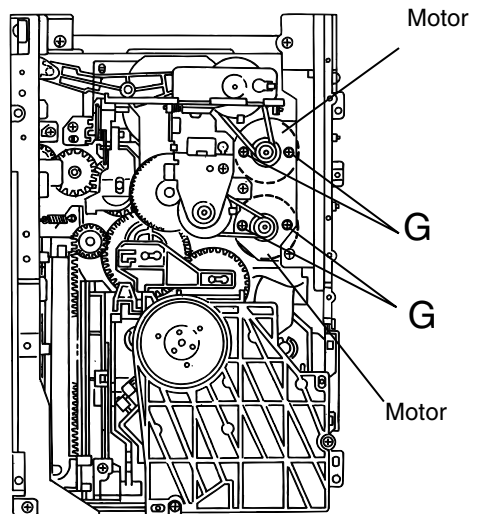
Fig.15

■Removing the pickup (See Fig.16 to 20)

1. From the top of the body, remove the three screws **H** attaching the clamper base unit.

2. Remove the clamper base unit with the two rods attached to the clamper base unit and the top cover.

3. Turn the screw shaft gear marked **k** in the direction of the arrow to move the pickup unit.

4. Remove the screw **I** attaching the shaft holder.

5. Move the screw shaft in the direction of the arrow and release it from the joint **I**. Then release it from the joint **m** with the pickup holder. Detach the pickup with the screw shaft.

6. Solder the part **n** of the flexible board on the underside of the pickup. After soldering, disconnect the flexible wire connected to the pickup (In case of disconnecting the flexible wire without soldering, it may cause damage to the CD pickup).

7. Remove the two screws **J** attaching the rack arm to the pickup unit.

8. Pull out the screw shaft from the pickup.

Top cover
Rod
H
H
Clamper base unit

Fig.16

Clamper base
Rods
Top cover

Fig.17

Flexible board
Part n (soldering)

Fig.19

Rack arm
J
Screw shaft
Pickup

Fig.20

k
Joint m
Shaft holder
I
Joint I
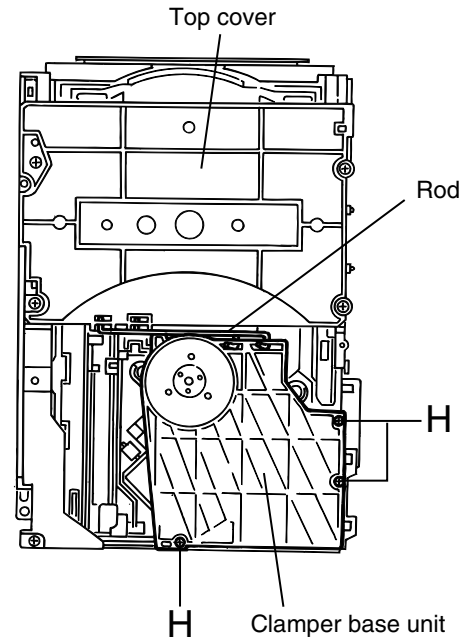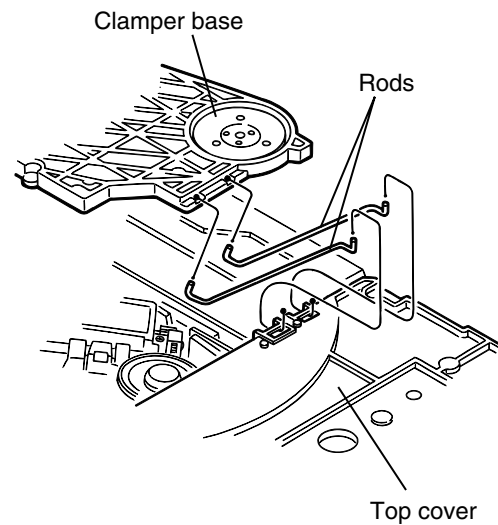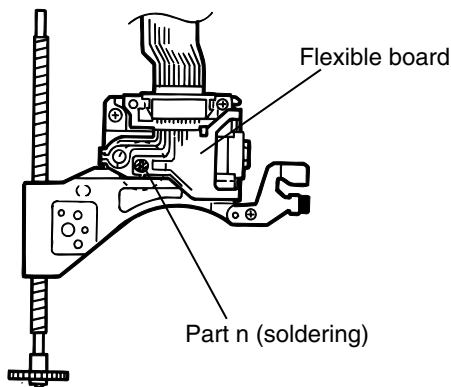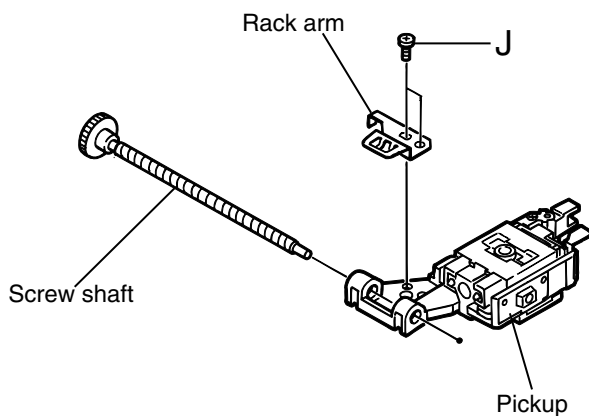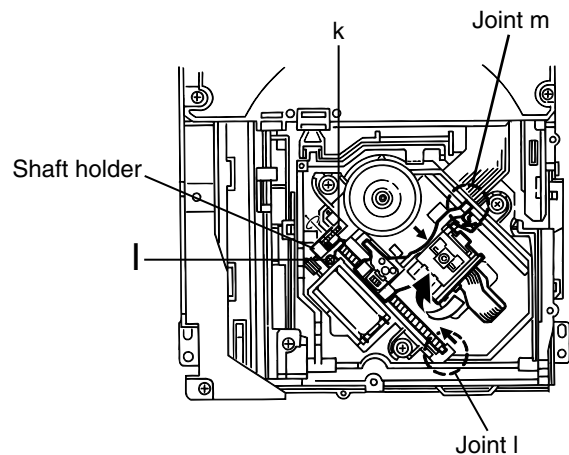
Fig.18

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

・ Prior to performing the following procedure, remove the servo control board and the clamper base unit.

1. Remove the three screws **K** attaching the traverse mechanism assembly.

2. Detach the rear part of the traverse mechanism assembly upward to release the joint **o** with the sub chassis unit. Then remove the assembly from the body.
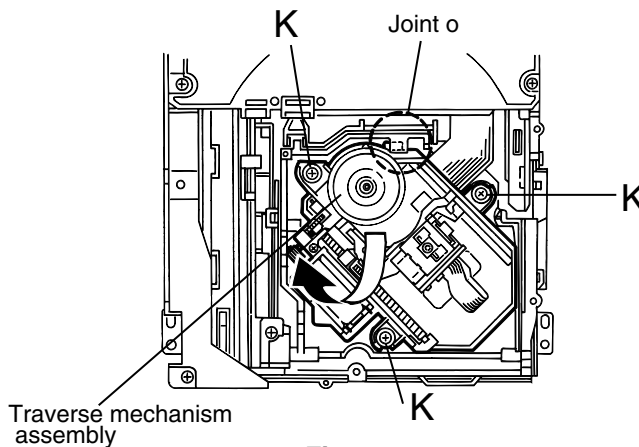
Fig.21

■ Removing the feed motor (See Fig.22)

・ Prior to performing the following procedure, remove the traverse mechanism assembly.

1. Remove the screw **L** attaching the feed motor.
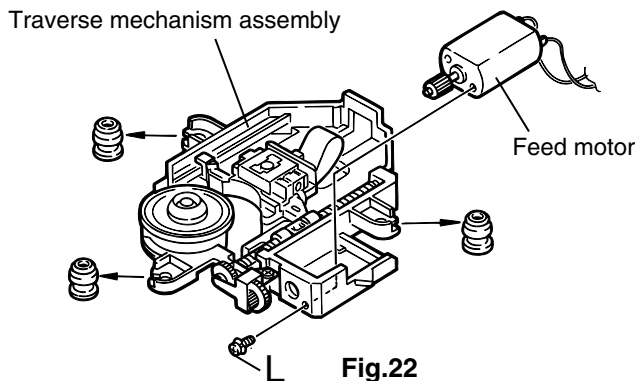
Fig.22

■ Removing the tray select switch board (See Fig.5,6 and 23)

1. Remove the four screws **B** attaching the top cover on the top of the body.

2. Remove the top cover with the two rods attached to the top cover and the clamper base unit.

3. Remove the screw **M** on the right side of the body.
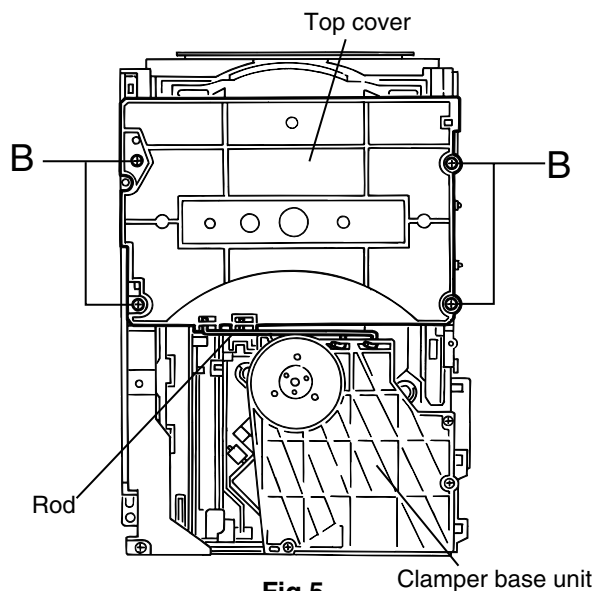
Fig.5
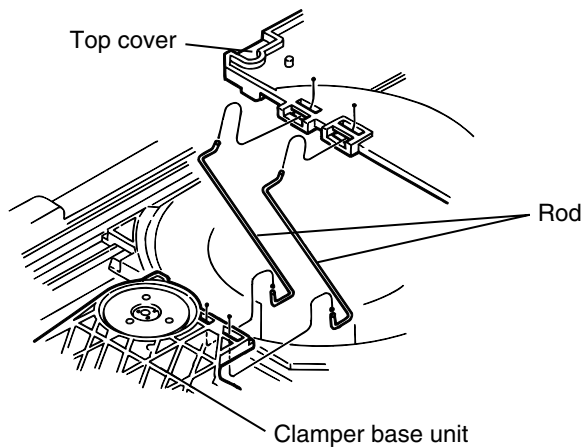
Fig.6
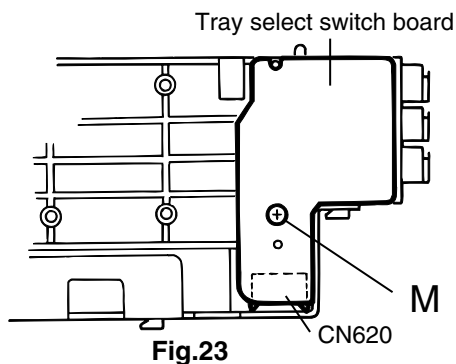
Fig.23

Confirm method of operation

■ Check mode

All lighting FL display and reducing time operation of clock

<Setting method of all lighting FL display>
    "STANDBY/ON" key is pushed while pushing "REC/REC MUTING" key by the stand-by state.

<Setting method of reducing time operation of clock>
    FL display is put into the state of all lighting by the method of the above-mentioned, and "STANDBY/ON" key is pushed afterwards.
    The clock display comes to advance during one minute a second in actual time when changing to this mode.
    Because other operation can do the normal operation, Uses for the confirmation of the operation of the timer function etc.

<Release method>
    "STANDBY/ON" key is pushed while pushing "REC/REC MUTING" key.

■ 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]
    Deletion of time setting
    The setting of the timer is deleted.
    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
    The unit of busy is adjusted to the changer mechanism side.
    The play mode of changer mechanism 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
    FINALISE setting is ON

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

<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 disk 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.

■ Running operation

When this mode is executed, the operation of the recording and the playback is repeated.
Please use to confirm operation.

It is necessary to put the recorded disk or CD-DA in tray 1 of changer mechanism beforehand to execute this item, and put CD-RW of the blank disk in recording mechanism.

<Setting method of running operation>
    1."Service menu" is made to be displayed on the FL display referring to the above-mentioned.
    2."SYSTEM_AGING" is made to turn "MULTI JOG" knob, and to be displayed on the FL display.
    3.The undermentioned operation starts when "SET" key is pushed.

The undermentioned control becomes possible according to the content of the disk turned on to tray 1
of changer mechanism.
    * The time required of operation of running once
    * Movement frequency of pick-up

1 Disc recording
↓
Finalize
↓
CD-RW is playback to the last minute.
↓
DISC ERASE for CD-RW.
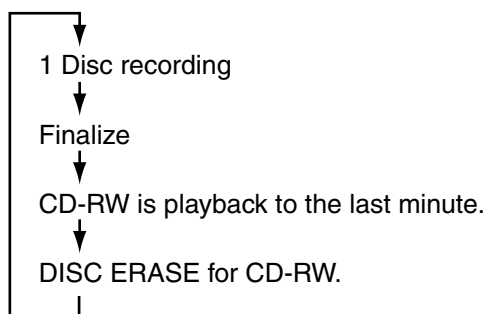
F L display becomes " ＊ ＊ ＊ ＊ ", and the frequency to which the running operation is done is displayed by the figure when "STOP" key is pushed to the running working or interrupted because of the error etc.

■ Display of version number

When this item is executed, version number "system controller", "CD recording unit", and "3CD changer unit" respectively is displayed in FL display for five seconds.
When five seconds pass, this mode is automatically made clear.

FL Display

＊＊＊＿＊＊＊＿＊＊＊＿＿

3CD Changer unit version number
CD Recording unit version number
System controller version number
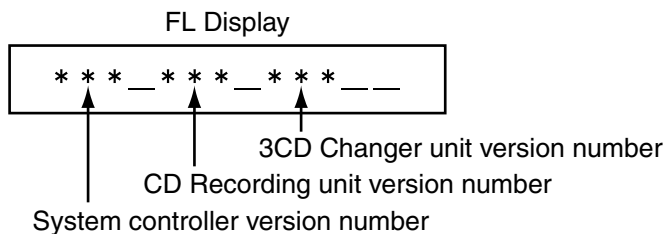
It is displayed instead of version number when failing in reading version number, "000".

■ Extension cord for diagnosis of changer mechanism unit

There is an extension cord to diagnose changer mechanism unit.
The undermentioned connector is connected, and used mutually.

Changer
mechanism unit   Main board

CN651   CN615

Parts No. QUQ110-1936AJ

CN606   CN616

Parts No. QUQ110-0836AJ
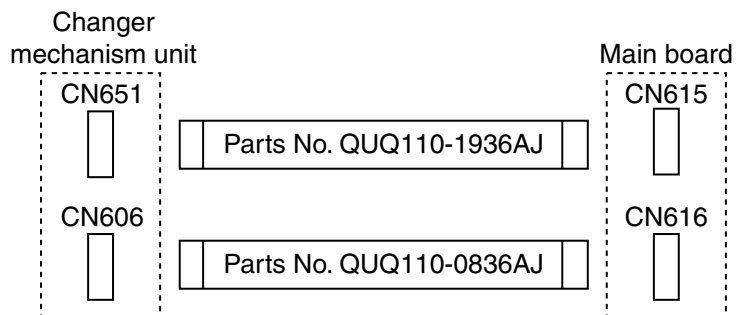
Description of major ICs

■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

```
  I/O1  1          14  Vdd
  O/I1  2          13  C1
  O/I2  3          12  C4
  I/O2  4          11  I/O4
   C2   5          10  O/I4
   C3   6           9  O/I3
   Vss  7           8  I/O3
```
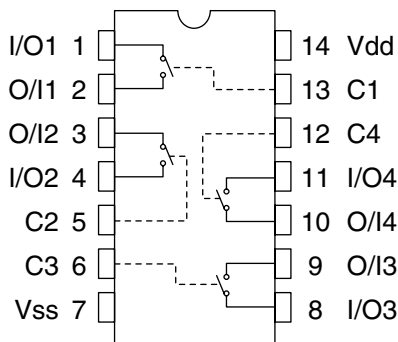
2.Truth table

Control	Switch
H	ON
L	OFF

■ JCE8001(IC363):K2 Interface

1.Pin layout

```
        ┌───┐
M3  ┤ 1   24 ├ VDD
M5  ┤ 2   23 ├ M2
DI3 ┤ 3   22 ├ DO3
DI2 ┤ 4   21 ├ DO2
DI1 ┤ 5   20 ├ DO1
SYI ┤ 6   19 ├ SYO
BCI ┤ 7   18 ├ BCO
M4  ┤ 8   17 ├ GND
M6  ┤ 9   16 ├ XO
CKO ┤10   15 ├ XI
CKOB┤11   14 ├ VDD
GND ┤12   13 ├ M1
        └───┘
```
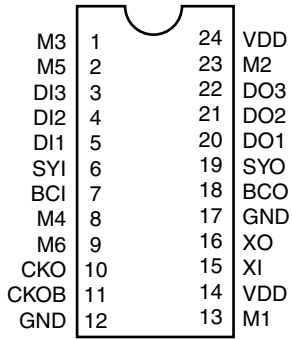
2.Pin function

No.	Symbol	I/O	Function
1,2	M3,M5	-	Non connect
3~5	DI3~1	I	Data input3~1
6	SYI	I	Input
7	BCI	I	Clock signal input
8	M4	I	Control signal 4
9	M6	I	Non connect
10	CKO	-	Non connect
11	CKOB	-	Non connect
12	GND	-	Connects with the ground
13	M1	I	Control signal 1
14	VDD	-	Power supply terminal + 5V
15	XI	I	Clock input
16	XO	O	Clock output
17	GND	-	Connects with the ground
18	BCO	O	signal output
19	SYO	O	Signal output
20~22	DO1~3	O	Data output 1~3
23	M2	-	Non connect
24	VDD	-	Power supply terminal +5V

■ LB1641 (IC851,IC852) : DC Motor driver

1. Pin layout

```
GND  ┤ 1
OUT1 ┤ 2
P1   ┤ 3
VZ   ┤ 4
IN1  ┤ 5
IN2  ┤ 6
VCC1 ┤ 7
VCC2 ┤ 8
P2   ┤ 9
OUT2 ┤10
```
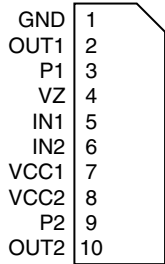
2. Truth table

Input		Output		Mode
IN1	IN2	OUT1	OUT2	
0	0	0	0	Brake
1	0	1	0	CLOCKWISE
0	1	0	1	COUNTER-CLOCKWISE
1	1	0	0	Brake

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

Pin layout & block diagram
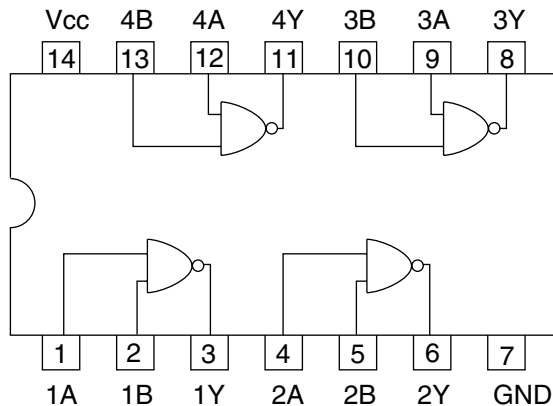
■ LA6541-X (IC801) : Focus & Spindle & Feed & Tracking BTL driver

1. Pin layout & Block diagram
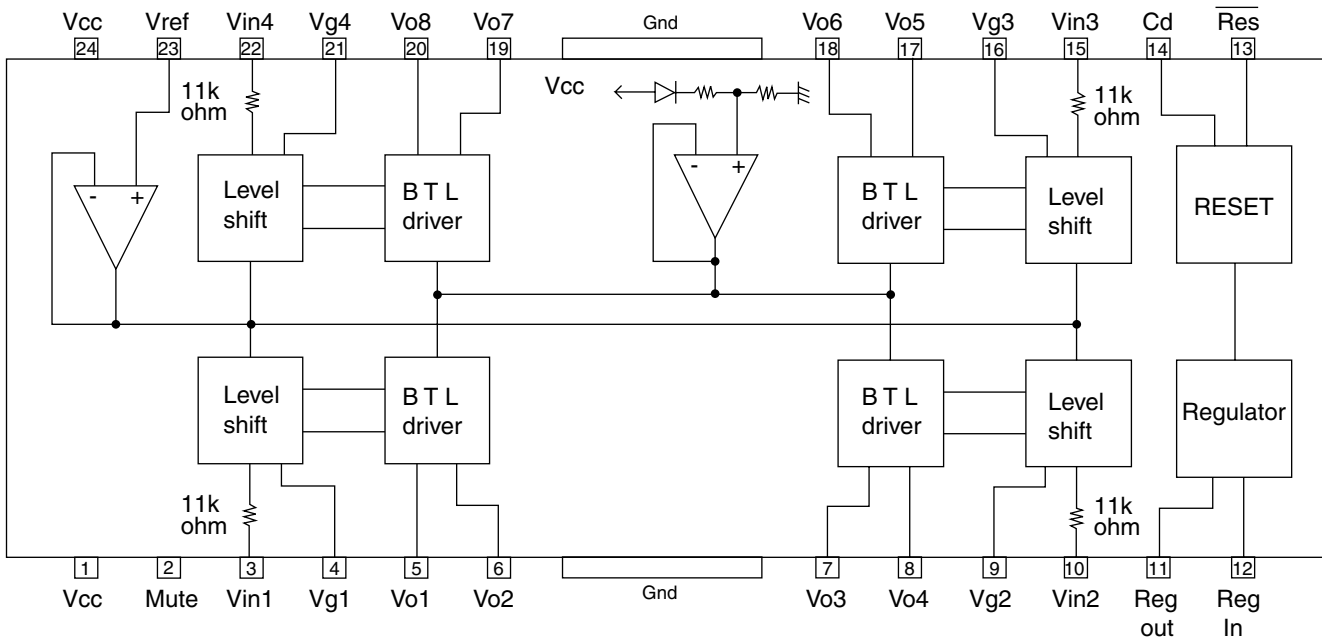
2. Pin function

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	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)

XL-R5010BK

■ M66004SP(IC721):FL Driver

1.Block diagram
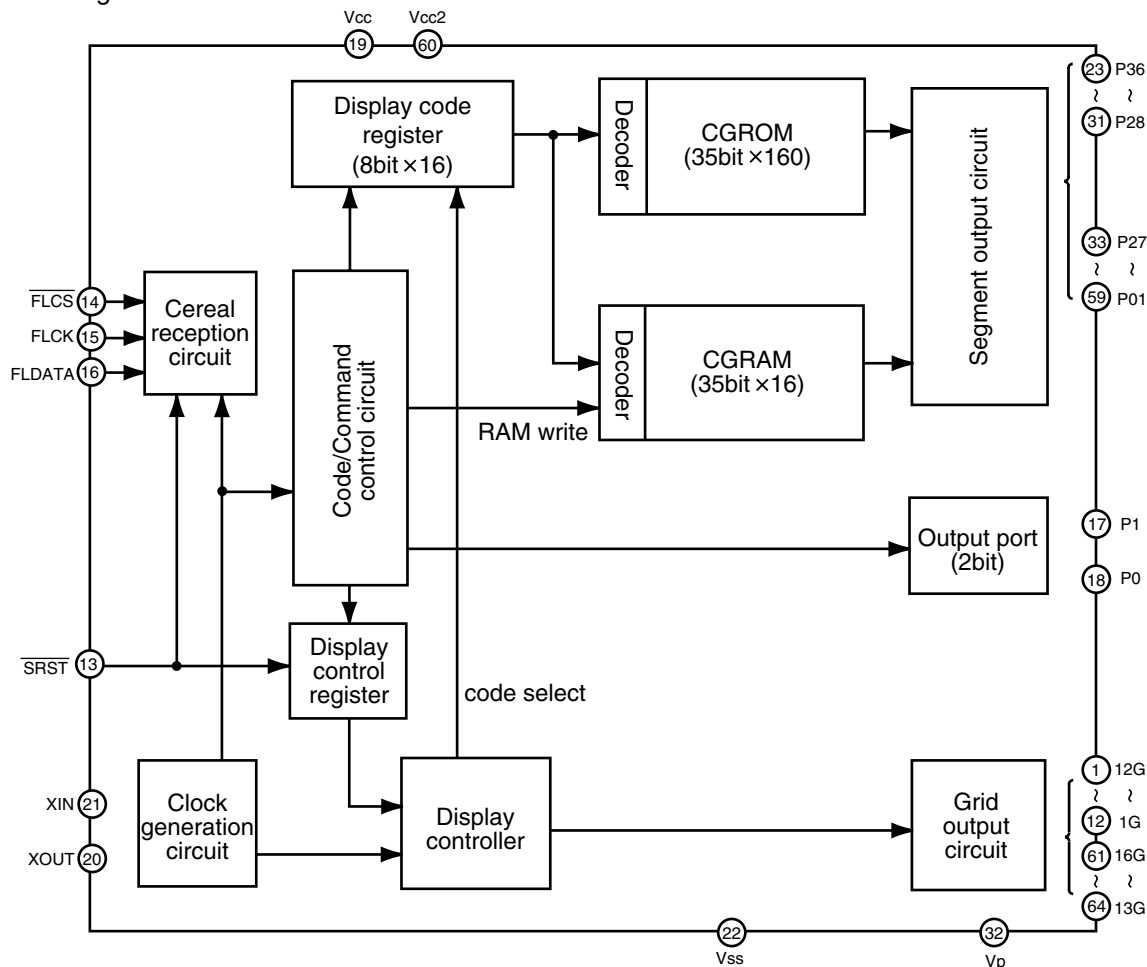
2.Pin function

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.

1-22

■ MN662790RSC(IC651):Digital servo & processor

1.Pin layout

```
        60 ～ 41
   61              40
   ⟨               ⟨
   80              21
        1 ～ 20
```
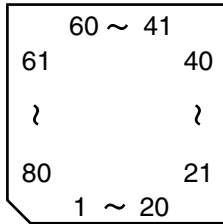
2.Pin function

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 resister
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

XL-R5010BK

2.Pin function

Pin No.	Symbol	I/O	Functions
41	PLLF2	I/O	Terminal for loop filter characteristic switch for PLL
42	DSLBDA	-	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	DSLF	I/O	Loop filter terminal for DSL
48	PLLF	I/O	Loop filter terminal for PLL
49	VCOF	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	DSLB	O	PLL extraction clock output
54	VCOF2	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

■ TC74HCT08AF(IC364):CMOS

1.Pin layout & block diagram

1A	1		14	VCC
1B	2		13	4B
1Y	3		12	4A
2A	4		11	4Y
2B	5		10	3B
2Y	6		9	3A
GND	7		8	3Y
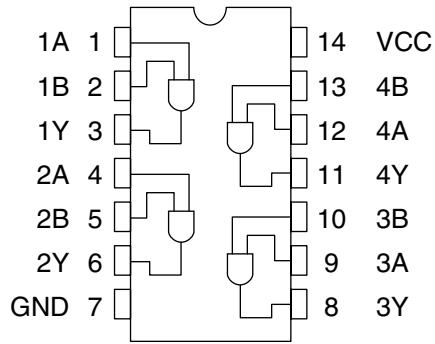
2.Truth table

A	B	Y
L	L	L
L	H	L
H	L	L
H	H	H

■ TC74HCU04AF-W(IC331):Digital input selector

1.Pin layout & block diagram

1A	1		14	VCC
1Y	2		13	6A
2A	3		12	6Y
2Y	4		11	5A
3A	5		10	5Y
3Y	6		9	4A
GND	7		8	4Y
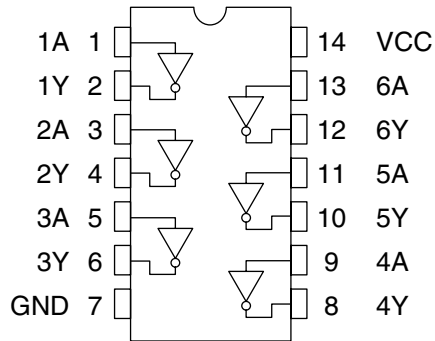
2.Truth table

A	Y
L	H
H	L

XL-R5010BK

■TC9412AF(IC891) : Rec Level
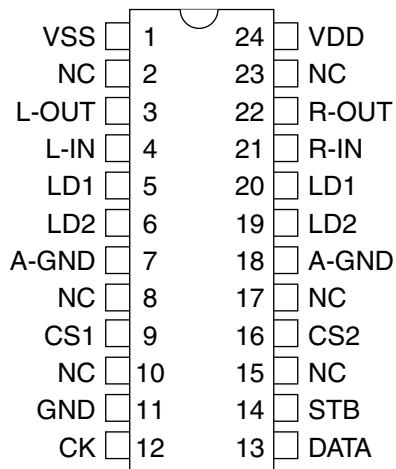
1.Pin layout   2.Block diagram
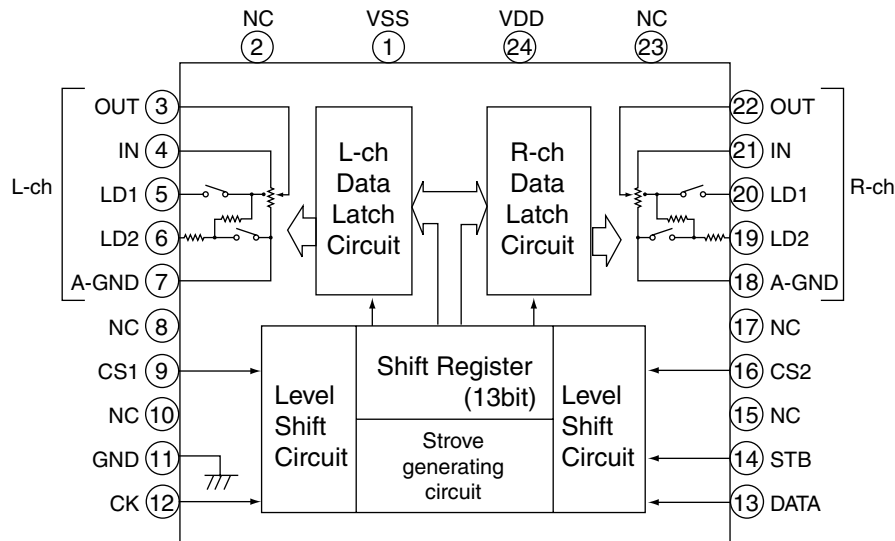
3.Pin functions

Pin No.	Symbol	Description
1	VSS	Negative power supply temrinal
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

■ UPD780076GK502(IC251):Unit microcomputer

1.Pin layout

```
     48 ~ 33
49              32
 ⁊               ⁊
64              17
     1 ~ 16
```
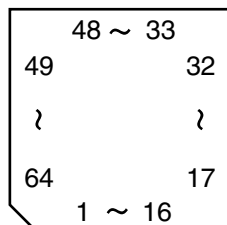
2.Pin function   UPD780076GK502 1/2

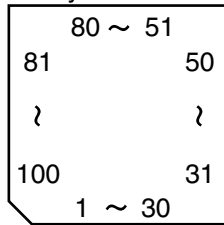| Pin No.	Symbol	I/O	Description
1	E2SCK	O	Serial clock output to IC201
2	E2SDL	I/O	Serial data input/output with IC201
3	MCS	I	Communication method selection input from system microcomputer L : Synchronization H : Asynchronous
4	MRDY	O	Signal output to system microcomputer by which command can be received L→H : Status output enable H→L : command can be received
5	ITRVP3	I	Play position switch (SW3) detection input
6	ITRVP2	I	Play position switch (SW2) detection input
7	ITRVP1	I	Play position switch (SW1) detection input
8	ITRYSoc	I	Sub tray open/close detection switch input
9	VSS0	-	Connect to ground
10	VDD0	-	Power supply terminal (+)
11	RESET	I	REST switch detection input (traverse mechanism)
12,13		-	Non connect
14	ICAMP1	I	Cam switch position 1 input
15	KCMND/TXD	I/O	Command input from system microcomputer (synchronization) or status output (asynchronous)
16	MSTAT/RXD	I/O	Status output to system microcomputer (synchronization) or command input (asynchronous)
17	KCLK	I	System microcomputer data/serial/clock input
18	SUBQ	I	Sub code Q data input
19	CDCOPY	O	Right or wrong of CD copy signal output
20	SQCK	O	Clock output for sub code Q register
21	CDINDEX	O	CD index information
22	CDTNO	O	CD track information
23	ICAMP2	I	Cam switch position 2 input
24	VDD1	-	Power supply terminal (+)
25	AVSS	-	Connect to ground for A/D converter
26	VDET_LEVEL	I	Input for vibration detecting changeable level
27	KEY2	I	Output voltage monitor of regulator (IC291)
28	TRY3CLOSE	I	Main tray 3 close switch detection input
29	TRY3OPEN	I	Main tray 3 open switch detection input
30	TRY2CLOSE	I	Main tray 2 close switch detection input
31	TRY2OPEN	I	Main tray 2 open switch detection input
32	TRY1OPEN	I	Main tray 1 open switch detection input
33	TRY1CLOSE	I	Main tray 1 close switch detection input
34	AVREF	-	Standard voltage of A/D converter and analog power supply
35	CAM_CW	O	Cam motor drive signal output (clockwise)
36	RESET	I	System reset input

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Pin No.	Symbol	I/O	Description
37	XT2	-	Non connect
38	XT1	I	Sub system clock oscillation terminal
39	IC	I	Connect to ground
40	X2	O	Main system clock output
41	X1	I	Main system clock input
42	VSS1	-	Connect to ground
43	FLAG	I	Flag (C1 error) signal input
44	BLKCK	I	Sub code/block/clock signal input
45	RFDET	I	RF signal detection input
46	CAM_CCW	O	Cam motor drive signal output (counterclockwise)
47	ACT_CCW	O	Actuator motor drive signal output (counterclockwise)
48	ACT_CW	O	Actuator motor drive signal output (clockwise)
49		-	Non connect
50	EQX2	O	Equalizer switch output (H:one time velocity L:double-speed/four time velocity)
51	ICAMP3	I	Cam switch position 3 input
52	ICAMP4	I	Cam switch position 4 input
53	RESET	O	Reset output to IC651
54	STAT	I	Status signal input from IC651
55	DMUTE	O	Muting output to IC651 H : muting
56	P.ON	O	Control signal output of 3.5V regulator (IC291)
57	MLD	O	Command load signal output to IC651
58	MDATA	O	Command data signal output to IC651
59	MCLK	O	Command clock signal output to IC651
60	CLKSW	O	Clock output control terminal to the outside
61	EQX4	I	Equalizer switch output (H:one time velocity/double-speed L:four time velocity)
62,63		-	Non connect
64	DR_MUTE	O	Driver IC muting output H : muting

■ UPD784214AGF514(IC501):System controller

1.Pin layout

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      80 ～ 51
  81            50
   ~             ~
  100           31
       1 ～ 30
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2.Pin function

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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	MIXBL	-	Non connect
28	LLEVE	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

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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		-	Power supply terminal 5V
85~90	GND	-	Connect to ground
91	CS3	I	Chip select terminal
92~97	GND	-	Connect to ground
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

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