

JVC

SERVICE MANUAL

DVD VIDEO PLAYER

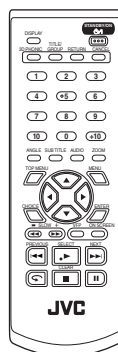
XV-N30BK,XV-N33SL

Area Suffix (XV-N30BK)

J ----- U.S.A.
 C ----- Canada
 UJ ----- U.S.A Military
 B ----- U.K.
 E ----- Continental Europe
 EN ----- Northern Europe
 EV ----- Eastern Europe
 EE ----- Russian Federation

Area Suffix (XV-N33SL)

J ----- U.S.A.
 C ----- Canada
 UJ ----- U.S.A Military
 B ----- U.K.
 E ----- Continental Europe
 EN ----- Northern Europe
 EV ----- Eastern Europe
 EE ----- Russian Federation
 US ----- Singapore
 UG - Turkey,South Africa,Egypt
 UX ----- Saudi Arabia
 UP ----- Korea
 UF ----- China
 UB ----- Hong Kong
 A ----- Australia
 UW ----- Brazil,Mexico,Peru
 UY ----- Argentina



For only Europe

MPEG Multichannel

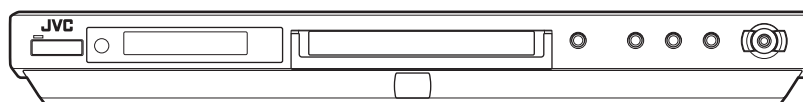
DVD
VIDEO

DOLBY
DIGITAL

3D
3D-PHONIC

dtS
DIGITAL OUT

COMPACT
disc
SUPER VIDEO



This illustration is XV-N30BK for U.S.A.

TABLE OF CONTENTS

1	Important Safety Precautions	1-3
2	Disassembly method	1-8
3	Adjustment.	1-15
4	Description of major ICs.	1-24

SPECIFICATION

(For U.S.A.)

General

Readable discs	DVD VIDEO, DVD-R (Video format), DVD-RW (Video format), +RW (Video format), SVCD, Video CD, Audio CD (CD-DA), MP3 format, CD-R/RW (CD-DA, SVCD, Video CD, MP3 format)
Video format	NTSC

Other

Power requirements	AC 120 V, 60 Hz
Power consumption	10.4 W (POWER ON) 0.7 W (STANDBY mode)
Mass	2.1 kg (4.7 lbs)
Dimensions (W x H x D)	435mm x 53mm x 248.4mm (17-3/16 inch x 2-1/8 inc x 9-13/16 inch)

Video outputs

COMPONENT (pin jacks)	Y Output: 1.0 Vp-p (75 ohm)
	Pb/Pr Output: 0.7Vp-p (75 ohm)
VIDEO OUT (pin jack)	1.0 Vp-p (75 ohm)
S-VIDEO OUT (S jack)	Y Output: 1.0 Vp-p (75 ohm)
	C Output: 286 mVp-p (75 ohm)
Horizontal resolution	500 lines or more

Audio outputs

ANALOG OUT (pin jack)	2.0 Vrms (10 kohm)
DIGITAL OUT (COAXIAL)	0.5 Vp-p (75 ohm termination)
DIGITAL OUT (OPTICAL)	-21 dBm to -15 dBm (peak)

Audio characteristics

Frequency response	CD (sampling frequency 44.1 kHz):2 Hz to 20 kHz
	DVD (sampling frequency 48 kHz):2 Hz to 22 kHz (4 Hz to 20 kHz for DTS and Dolby Digital bitstream signals)
	DVD (sampling frequency 96 kHz):2 Hz to 44 kHz
Dynamic range	16 bit: More than 98 dB
	20 bit: More than 100 dB
	24 bit: More than 100 dB
Wow and flutter	Unmeasurable (less than + 0.002%)
Total harmonic distortion	less than 0.006%

- Specifications and appearance are subject to change without prior notice.
- Manufactured under license from Dolby Laboratories. "Dolby" and the double-D symbol are trademarks of Dolby Laboratories.
- Manufactured under license from Digital Theater Systems, Inc. "DTS" and "DTS Digital Surround" are registered trademarks of Digital Theater Systems, Inc.

SECTION 1

Important Safety Precautions

1.1 Safety Precautions

- (1) This design of this product contains special hardware and many circuits and components specially for safety purposes. For continued protection, no changes should be made to the original design unless authorized in writing by the manufacturer. Replacement parts must be identical to those used in the original circuits. Services should be performed by qualified personnel only.
- (2) Alterations of the design or circuitry of the product should not be made. Any design alterations of the product should not be made. Any design alterations or additions will void the manufacturers warranty and will further relieve the manufacture of responsibility for personal injury or property damage resulting therefrom.
- (3) Many electrical and mechanical parts in the products have special safety-related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in the Parts List of Service Manual. Electrical components having such features are identified by shading on the schematics and by (Δ) on the Parts List in the Service Manual. The use of a substitute replacement which does not have the same safety characteristics as the recommended replacement parts shown in the Parts List of Service Manual may create shock, fire, or other hazards.
- (4) The leads in the products are routed and dressed with ties, clamps, tubings, barriers and the like to be separated from live parts, high temperature parts, moving parts and/or sharp edges for the prevention of electric shock and fire hazard. When service is required, the original lead routing and dress should be observed, and it should be confirmed that they have been returned to normal, after reassembling.

(5) Leakage shock hazard testing)

After reassembling the product, always perform an isolation check on the exposed metal parts of the product (antenna terminals, knobs, metal cabinet, screw heads, headphone jack, control shafts, etc.) to be sure the product is safe to operate without danger of electrical shock.

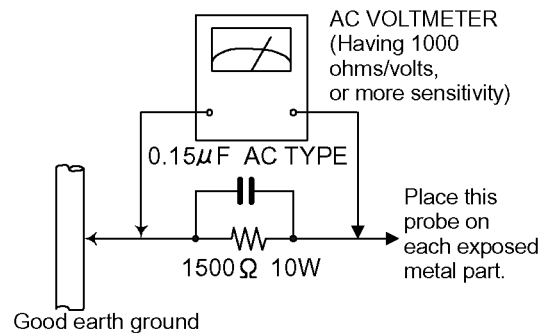
Do not use a line isolation transformer during this check.

- Plug the AC line cord directly into the AC outlet. Using a "Leakage Current Tester", measure the leakage current from each exposed metal parts of the cabinet, particularly any exposed metal part having a return path to the chassis, to a known good earth ground. Any leakage current must not exceed 0.5mA AC (r.m.s.).
- Alternate check method
Plug the AC line cord directly into the AC outlet. Use an AC voltmeter having, 1,000 ohms per volt or more sensitivity in the following manner. Connect a 1,500 ohm 10W resistor paralleled by a 0.15 μ F AC-type capacitor between an

exposed metal part and a known good earth ground.

Measure the AC voltage across the resistor with the AC voltmeter.

Move the resistor connection to each exposed metal part, particularly any exposed metal part having a return path to the chassis, and measure the AC voltage across the resistor. Now, reverse the plug in the AC outlet and repeat each measurement. Voltage measured any must not exceed 0.75 V AC (r.m.s.). This corresponds to 0.5 mA AC (r.m.s.).



1.2 Warning

- (1) This equipment has been designed and manufactured to meet international safety standards.
- (2) It is the legal responsibility of the repairer to ensure that these safety standards are maintained.
- (3) Repairs must be made in accordance with the relevant safety standards.
- (4) It is essential that safety critical components are replaced by approved parts.
- (5) If mains voltage selector is provided, check setting for local voltage.

1.3 Caution

Burrs formed during molding may be left over on some parts of the chassis.

Therefore, pay attention to such burrs in the case of pre-forming repair of this system.

1.4 Critical parts for safety

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

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

1.5 Preventing static electricity

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

1.5.1 Grounding to prevent damage by static electricity

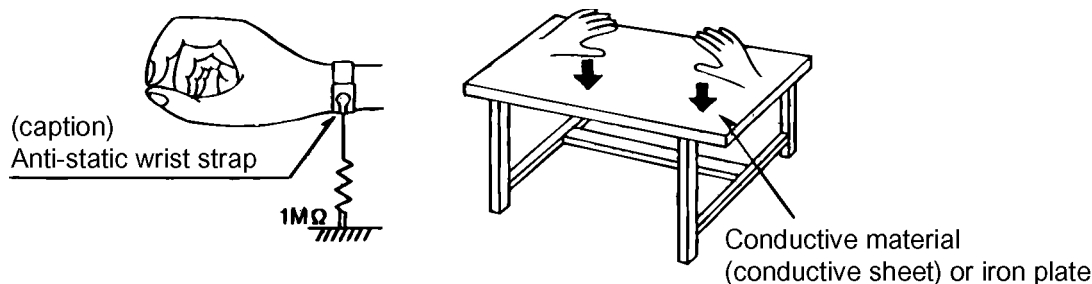
Static electricity in the work area can destroy the optical pickup (laser diode) in devices such as DVD players. Be careful to use proper grounding in the area where repairs are being performed.

(1) Ground the workbench

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

(2) Ground yourself

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



(3) Handling the optical pickup

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

1.6 Handling the traverse unit (optical pickup)

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

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

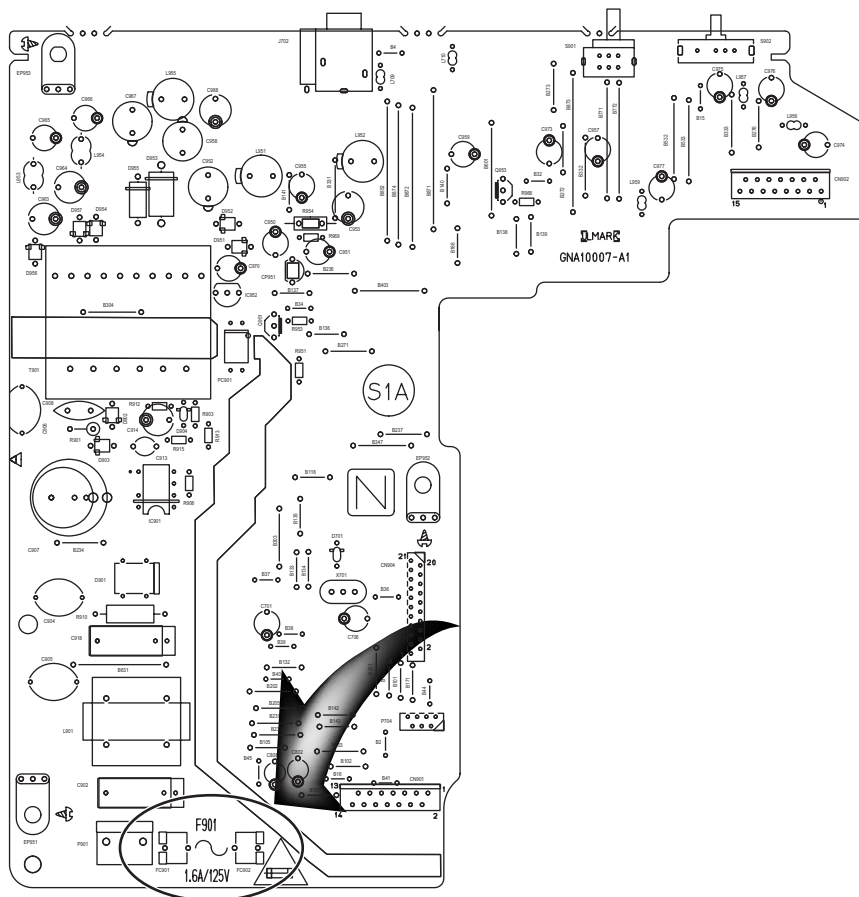
(3) Handle the flexible cable carefully as it may break when subjected to strong force.

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

1.7 Precautions of the safe use of battery (Only XV-N30BK for U.S.A.)

- Store the battery in a place where children cannot reach.
If a child accidentally swallows the battery, consult a doctor immediately.
- Do not recharge, short, disassemble or heat the battery or dispose of it in a fire.
Doing any of these things may cause the battery to give off heat, crack, or start a fire.
- Do not leave the battery with other metallic materials.
Doing this may cause the battery to give off heat, crack, or start a fire.
- When throwing away or saving the battery, wrap it in tape and insulate; otherwise, the battery may start to give off heat, crack, or start a fire.
- Do not poke the battery with tweezers or similar tools.
Doing this may cause the battery to give off heat, crack, or start a fire.
- Dispose of batteries in the proper manner, according to federal, state, and local regulations.

1.8 Importance admistering point on the safety



Full Fuse Replacement Marking

Graphic symbol mark
(This symbol means fast blow type fuse.)



should be read as follows ;

FUSE CAUTION

FOR CONTINUED PROTECTION AGAINST RISK
OF FIRE, REPLACE ONLY WITH SAME TYPE
AND RATING OF FUSES ;

F901 : 1.6 A / 125 V

Marquage Pour Le Remplacement Complet De Fusible

Le symbole graphique (Ce symbole signifie
fusible de type à fusion rapide.)



doit être interprété comme suit ;

PRECAUTIONS SUR LES FUSIBLES

POUR UNE PROTECTION CONTINUE CONTRE
DES RISQUES D'INCENDIE, REMPLACER
SEULEMENT PAR UN FUSIBLE DU MEME TYPE ;

F901 : 1.6 A / 125 V

1.9 Important for laser products

- (1) **CLASS 1 LASER PRODUCT**

(2) **DANGER** : Invisible laser radiation when open and interlock failed or defeated. Avoid direct exposure to beam.

(3) **CAUTION** : There are no serviceable parts inside the Laser Unit. Do not disassemble the Laser Unit. Replace the complete Laser Unit if it malfunctions.

(4) **CAUTION** : The compact disc player uses invisible laser radiation and is equipped with safety switches which prevent emission of radiation when the drawer is open and the safety interlocks have failed or are defeated. It is dangerous to defeat the safety switches.
- (5) **CAUTION** : If safety switches malfunction, the laser is able to function.

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

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

VARNING
Osynlig laserstrålning är denna del är öppnad och spärren är urkopplad. Betrakta ej strålen.

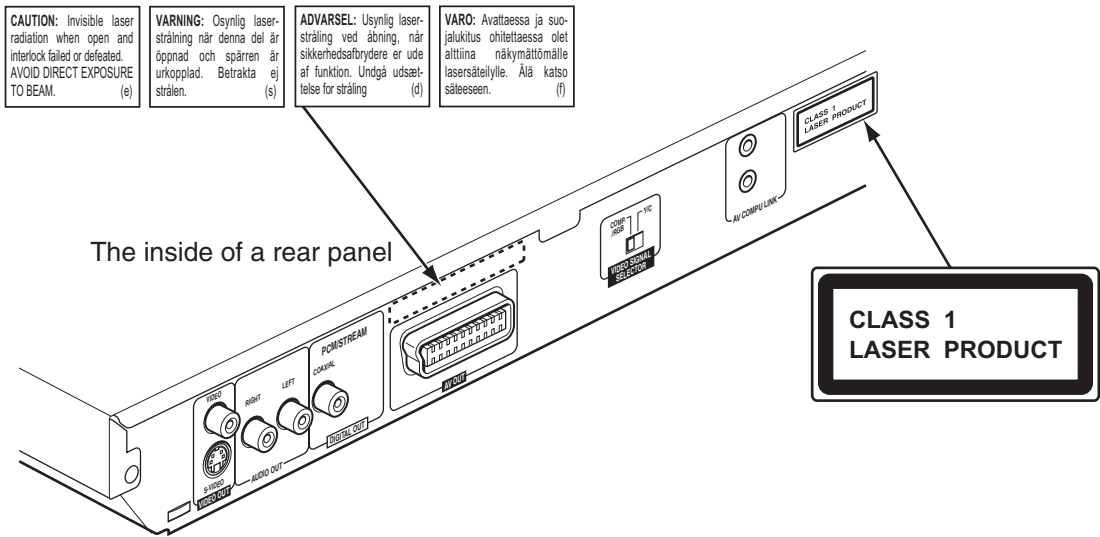
VARO
Avattaessa ja suojalukitus ohitettaessa olet alttiina näkymättömälle lasersäteilylle. Älä katso säteeseen.

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

ADVARSEL
Usynlig laserstrålning ved åbning, når sikkerhedsbryteren er avsluttet. unngå utsettelse for stråling.

REPRODUCTION AND POSITION OF LABEL and PRINT

WARNING LABEL and PRINT



1.10 Precautions for Service

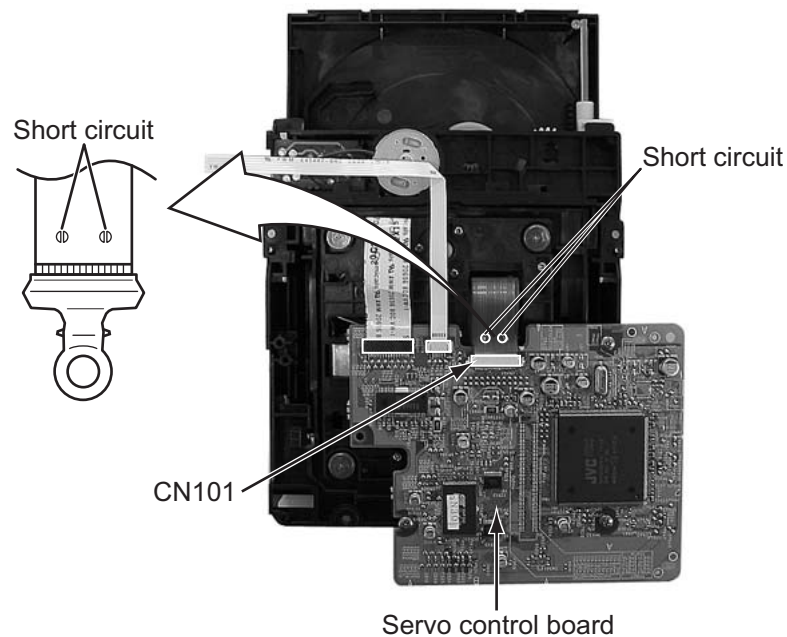
1.10.1 Handling of Traverse Unit and Laser Pickup

- (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.

1.10.2 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 (CN101), 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.



SECTION 2

Disassembly method

There is a part different from the photograph according to the model and the destination though explains this disassembly method by using XV-N30BK for U.S.A.

2.1 Main body section

2.1.1 Removing the top cover (See Figure 1)

- (1) Remove the two screws **A** attaching the top cover on both sides of the main body.
- (2) Remove the three screws **B** attaching the top cover on the back of the main body.
- (3) Raise the both sides and lower part of the rear of the top cover, with opening them slightly in an outward direction. And the top cover will be removed.



Fig.1

2.1.2 Removing the front panel assembly (See Figure 2, Figure 3, Figure 4)

- Prior to performing the following procedure, remove the top cover.
 - There is no need to remove the mechanism assembly.
- (1) Insert a kind of screwdriver in a hole located in the right side of mechanism assembly, and push a lever until it cannot be inserted any further.
 - (2) And then, a tray will come out. Remove the tray in an upper direction, with slightly opening the lower part of fitting in an outward direction.
 - (3) Disconnect the card wire from connector CN901 on the power supply board.
 - (4) Hook **a** and **b** are removed respectively, and the front panel assembly is removed.

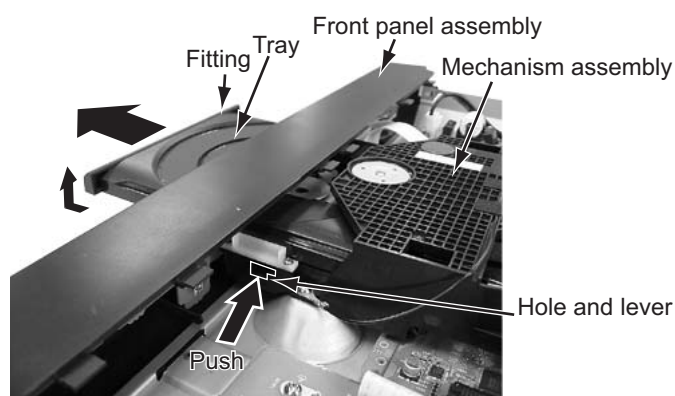


Fig.2

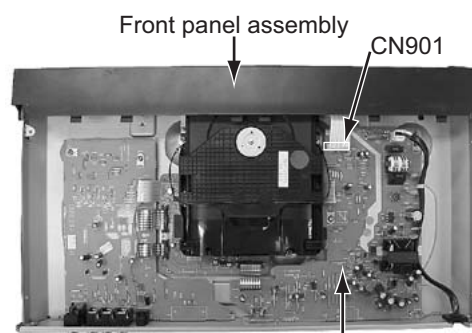


Fig.3

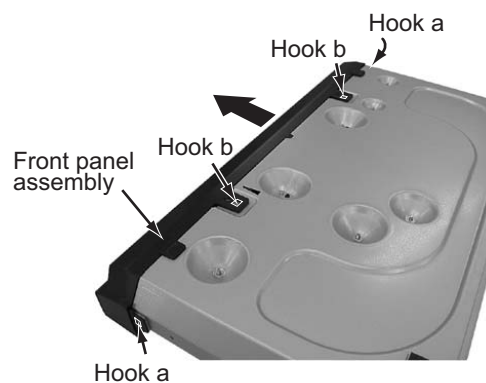
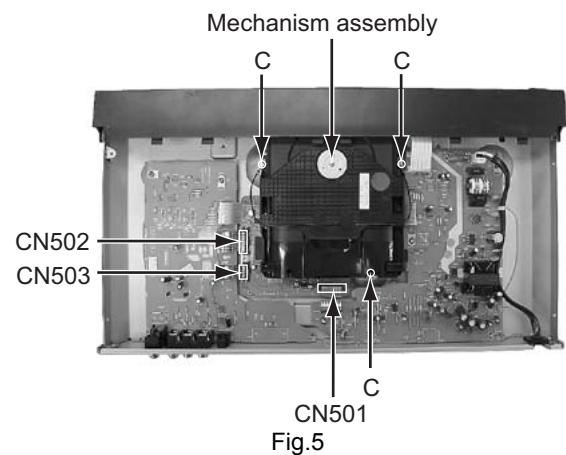


Fig.4

2.1.3 Removing the mechanism assembly (See Figure 2, Figure 5)

- Prior to performing the following procedure, remove the top cover.
- There is no need to remove the front panel assembly.
 - (1) Insert a kind of screwdriver in a hole located in the right side of mechanism assembly, and push a lever until it cannot be inserted any further.
 - (2) And then, a tray will come out. Remove the tray in an upper direction, with slightly opening the lower part of fitting in an outward direction.
 - (3) Remove the three screws **C** attaching the mechanism assembly.
 - (4) Disconnect the wire from connector CN501, CN502, CN503 on the servo control board respectively.
 - (5) Remove the mechanism assembly by lifting the rear part of the mechanism assembly.

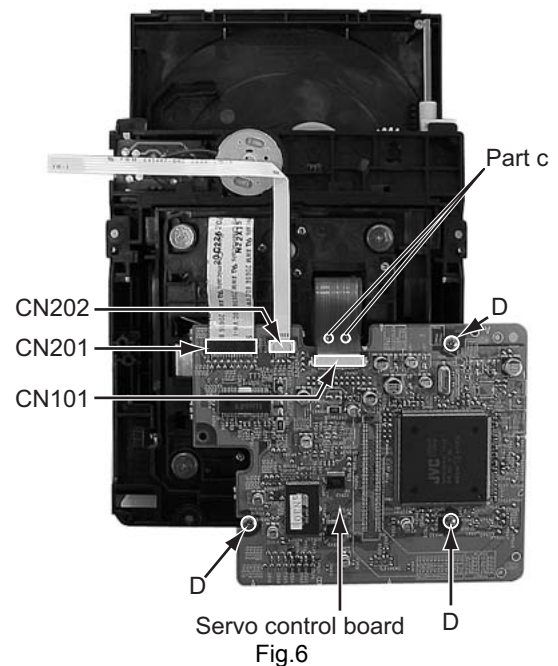


2.1.4 Removing the servo control board (See Figure 6)

- Prior to performing the following procedure, remove the mechanism assembly.
 - (1) Remove the three screws **D** attaching the servo control board.
 - (2) Disconnect the card wire from connector CN201, CN202 on the servo control board.
 - (3) Disconnect the flexible wire from connector CN101 on the servo control board from pick-up unit.

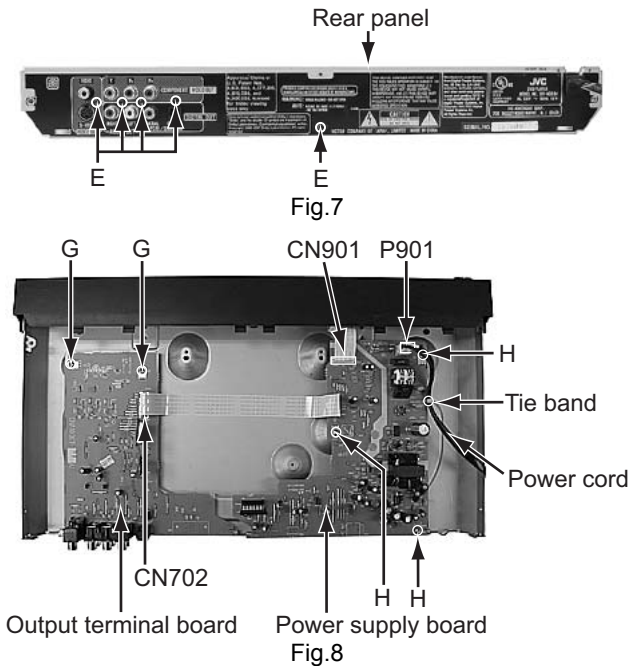
ATTENTION:

At this time, please extract the wire after short-circuited of two places on the wire in part **c** with solder. Please remove the solder two places of part **c** after connecting the wire with CN101 when reassembling.



2.1.5 Removing the rear panel (See Figure 7, Figure 8)

- Prior to performing the following procedure, remove the top cover.
- (1) Remove the five screws **E** attaching the rear panel.
- (2) Disconnect the power cord from connector P901 on the power supply board
- (3) Remove tie band.



2.1.6 Removing the output terminal board and power supply board. (See Figure 8)

- Prior to performing the following procedure, remove the top cover/mechanism assembly/rear panel.
- (1) Remove the two screws **G** attaching the output terminal board.
- (2) Disconnect the card wire from connector CN702 on the output terminal board.
- (3) Remove the three screws **H** attaching the power supply board.
- (4) Disconnect the card wire from connector CN901 on the power supply board.

2.2 Loading mechanism assembly

2.2.1 Removing the tray (See Figure 1, Figure 2, Figure 3, Figure 4, Figure 5, Figure 6)

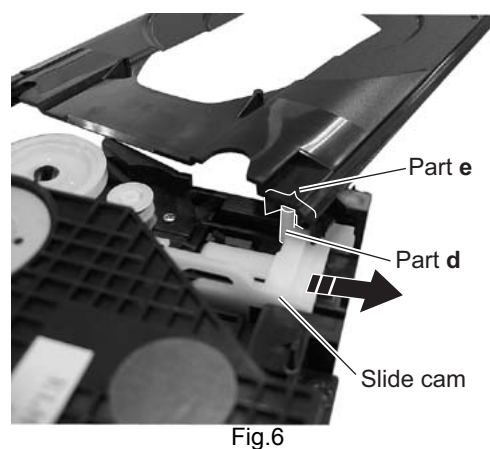
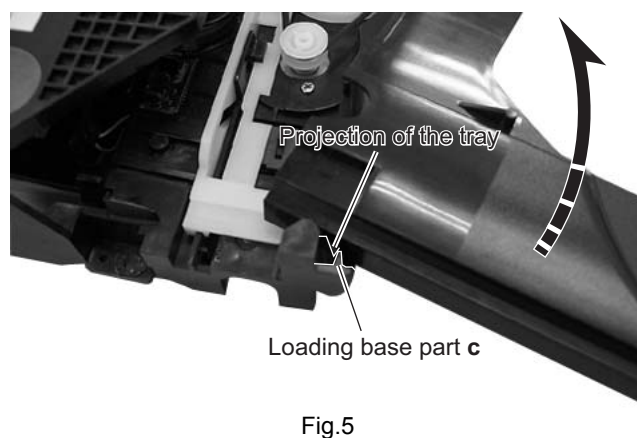
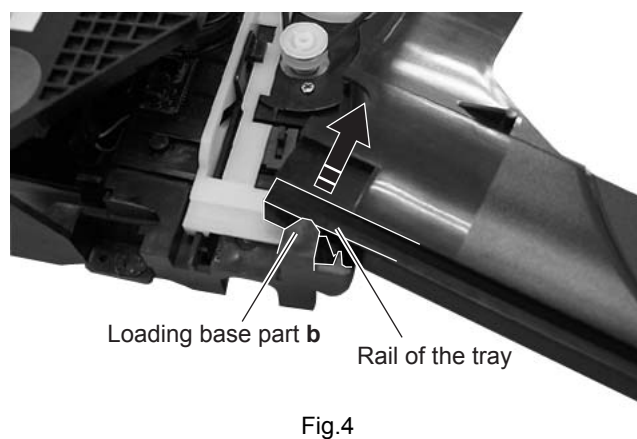
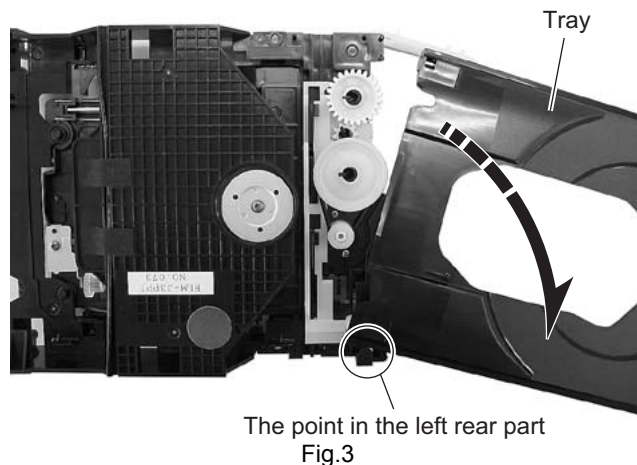
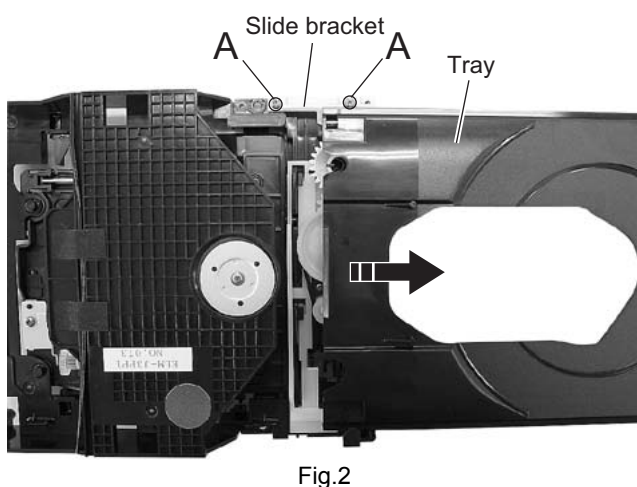
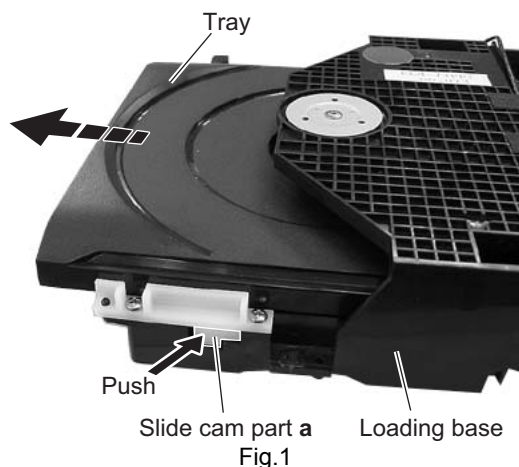
- (1) Push **a** of the slide cam on the hole in the right side of the loading base by using a driver until it stops. (See Figure 1.)
- (2) The tray comes out. Pull the tray in a front direction until it stops.
- (3) Remove the two screws **A** attaching the slide bracket. (See Figure 2.)
- (4) Tilt the tray in a direction of the arrow around the point in the left rear part of the tray. (See Figure 3.)
- (5) The rail of the tray is removed from **b** of the loading base. Then, remove the tray upward. (See Figure 4.)

Attaching the tray:

Engage **c** of the loading base to the projection of the tray while tilting the tray to the left. Turn the tray in a direction of the arrow, and attach the slide bracket. (See Figure 5.)

Note:

Prior to the procedure above, move the slide cam in a direction of the arrow so that **d** of the slide cam can be inserted in **e** of the tray. (See Figure 6.)



2.2.2 Removing the traverse mechanism assembly (See Figure 7)

Reverse the loading mechanism assembly. Remove the four screws **B** attaching the traverse mechanism assembly. Remove the traverse mechanism assembly upward.

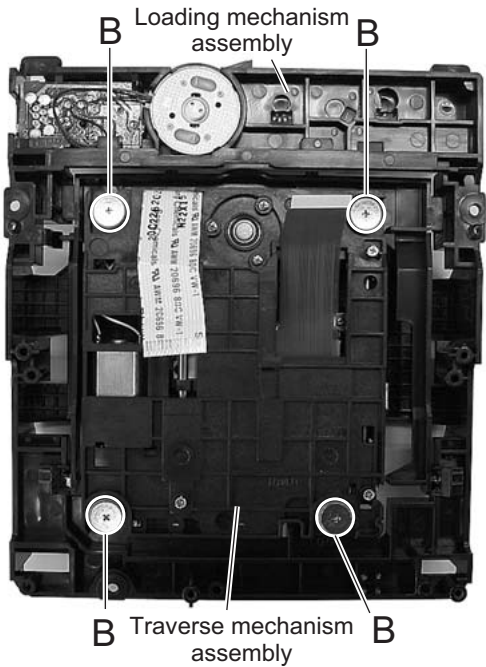


Fig.7

2.2.3 Removing the elevator (See Figure 8 and Figure 9)

- Prior to the following procedure, remove the traverse mechanism assembly.
- (1) Remove the two arms of the elevator from the two parts **f** by moving the arms in a direction of the arrow.
- (2) Pull out the elevator in a rear direction.

Attaching the elevator:

Engage the two holes **g** to the two shafts on the front part of the elevator. And then, attach the elevator.

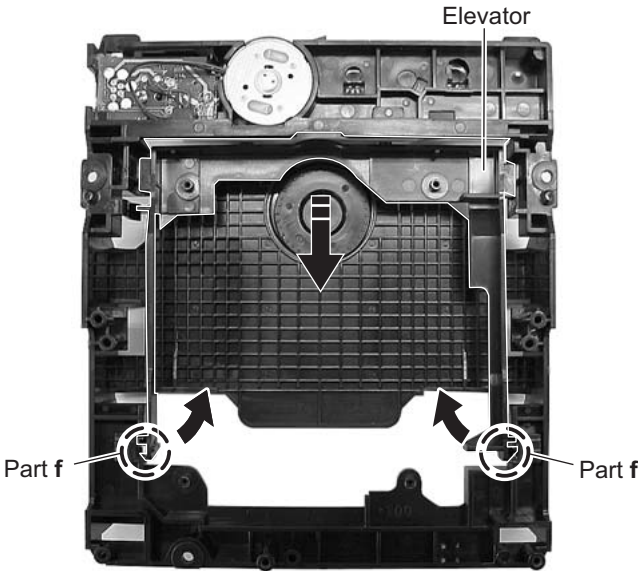


Fig.8

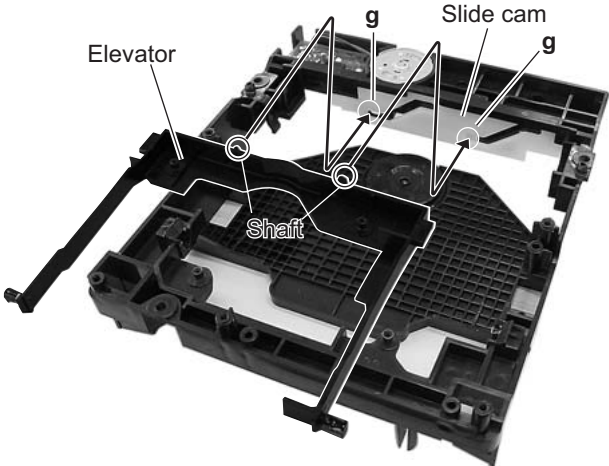


Fig.9

2.2.4 Removing the loading motor (See Figure 10 and Figure 11)

- Prior to the following procedure, remove the tray, the traverse mechanism assembly, and the elevator.
- (1) Remove the belt from the pulley.
 - (2) Remove two screws **C** attaching the loading motor.
 - (3) Remove two solders **h** on the switch board.

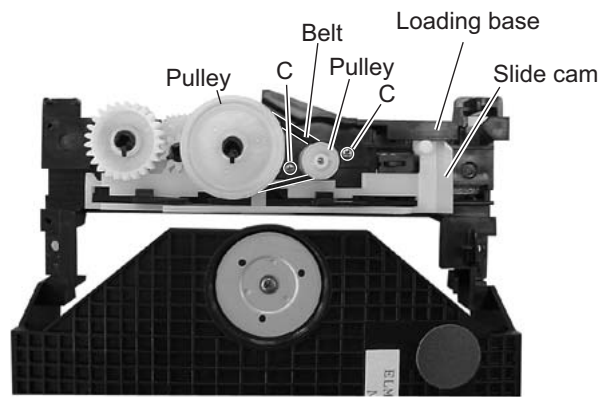


Fig.10

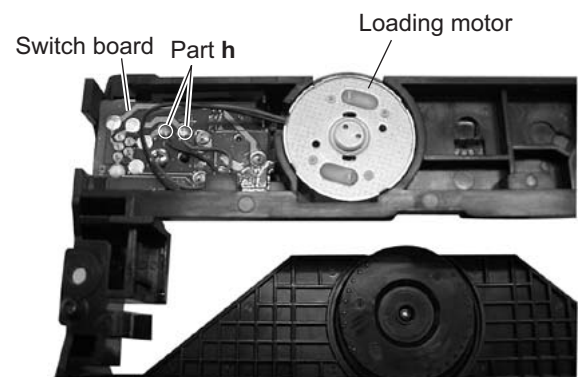


Fig.11

2.3 Traverse mechanism assembly

2.3.1 Removing the pickup (See Figure 12, Figure 13, and Figure 14)

- Prior to the following procedure, remove the traverse mechanism assembly.
 - (1) Remove one screw **D** attaching the plate.
 - (2) Remove the plate and the leaf spring.
 - (3) Lift **i** of the shaft **1**, and pull out the shaft **1** from **j**.
 - (4) Remove **k** of the pickup from the shaft **2**.

Attaching the pickup:

- (1) Engage **k** of the pickup to the shaft **2**.

Note:

- As Figure 14 shows, the spring must come under the shaft **2**.
- (2) Insert the shaft **1** in **j**, and attach the shaft **1** to **i**.
 - (3) Attach the leaf spring, and then attach the plate. Fix the leaf spring and the plate by using the screw **D**.

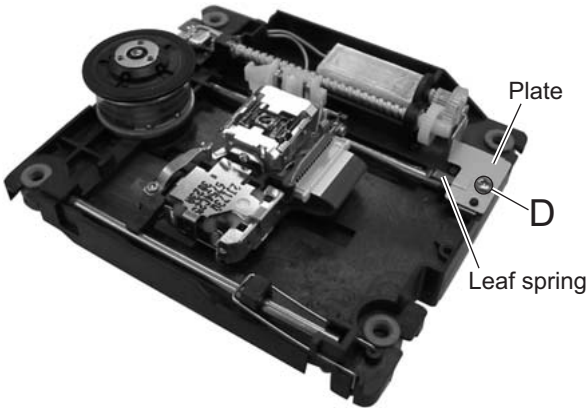


Fig.12

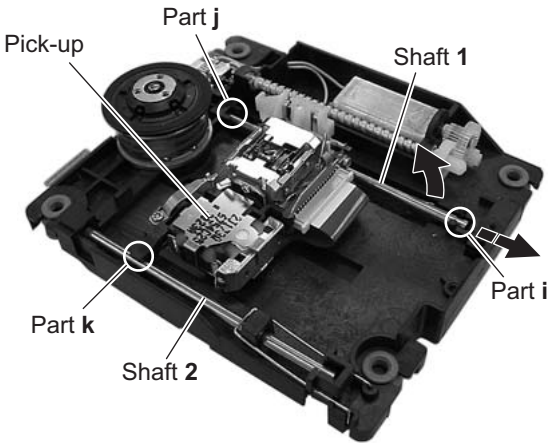


Fig.13

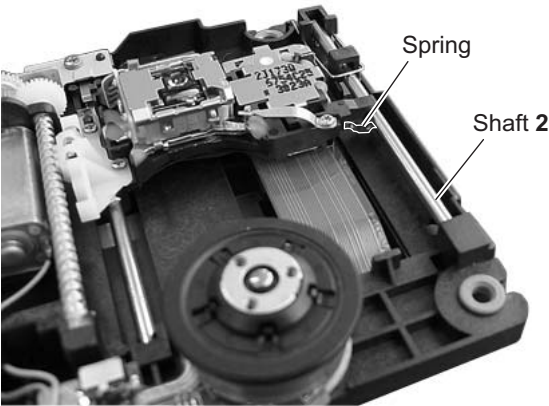


Fig.14

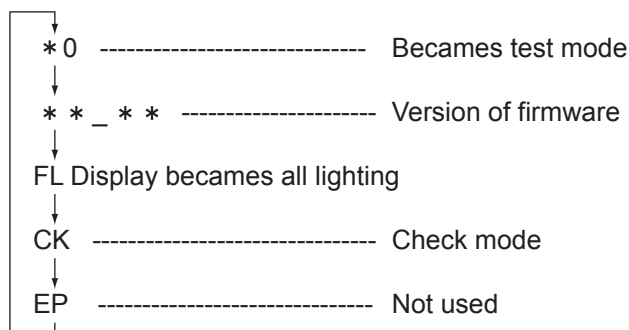
SECTION 3 Adjustment

3.1 Test mode setting method

- (1) Unplug the power plug.
- (2) Insert power plug into outlet while pressing both "PLAY" key and "STOP" key of the main body.
- (3) The FL display shows "*0", and the main body turns to test mode. "*" means the destination, and "0" means parameter adjustment status.
- (4) To release test mode, press "POWER" key of the main body.

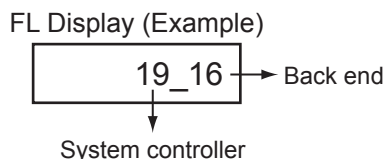
NOTE:

Each pressing of "CHOICE" key of the remote controller in test mode changes the mode as follows.



3.2 Method of displaying version of firmware

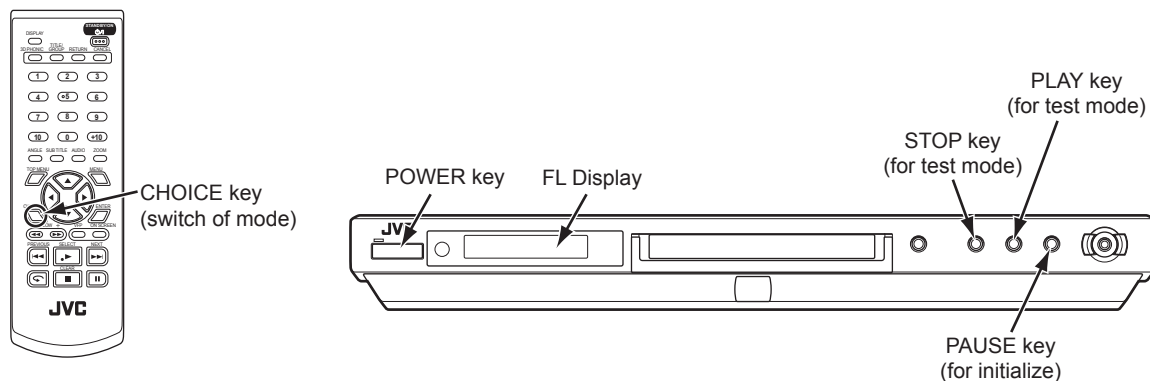
- (1) Set the main body at test mode.
- (2) Press "CHOICE" key of the remote controller once. Then, version number and alphabetical letter of the system controller and the back end are displayed in the FL display as follows:



3.3 Initialization method

Please initialize according to the following procedures in the following case:

- Just after you upgrade the firmware.
 - After you confirm the symptoms that a customer points out. First Initialize, and then confirm whether the symptoms are improved or not.
 - After servicing, before returning the main body to a customer. (Initialized main body should be returned to a customer.)
- (1) Set the main body at test mode.
 - (2) Press "PAUSE" key of the main body.
 - (3) When initialization is completed, the FL display changes from "*0" to "*00".
(The left "0" of "00" is not always "0". It shows parameter adjustment status.)



3.4 All-initialization method

Please perform all-initialization according to the following procedures in the following case:

- Just after you exchange the pick-up.
- Just after you exchange the spindle motor.
- Just after you exchange the traverse mechanism base.

NOTE:

Please perform all-initialization when you exchange the parts above and also when you remove the parts above.

- Just after the flap adjustment of the pick-up guide shaft
 - (1) Set the main body at test mode.
 - (2) Press and hold "BACKWARD SKIP" key of the main body for more than 2 seconds.
 - (3) When all-initialization is completed, the FL display changes from "*0" to "*33".

NOTE:

After all-initialization, be sure to perform optimization adjustment of Front End parameter.

3.5 Optimization adjustment of Front End parameter

Adjustment to optimize Front End parameter must be performed in each mechanism assembly of this model for high-speed starting. Please perform optimization according to the following procedures just after all-initialization is completed and when FL display shows anything except "*0" (For example when FL display shows "*1", "*2", and "*3") at test mode.

- (1) Press "POWER" key of the main body to turn the main body on (not to set the main body at test mode).
- (2) Insert the test disc VT-501 or commercial dual-layer DVD software.
- (3) Remove the disc when the FL display changes from "READ" to disc information.
- (4) Perform the same procedures as in (2) and (3) above by using the test disc CTS-1000 or commercial CD-DA software.
- (5) Set the main body at test mode, and check that the FL display shows "*0".

NOTE:

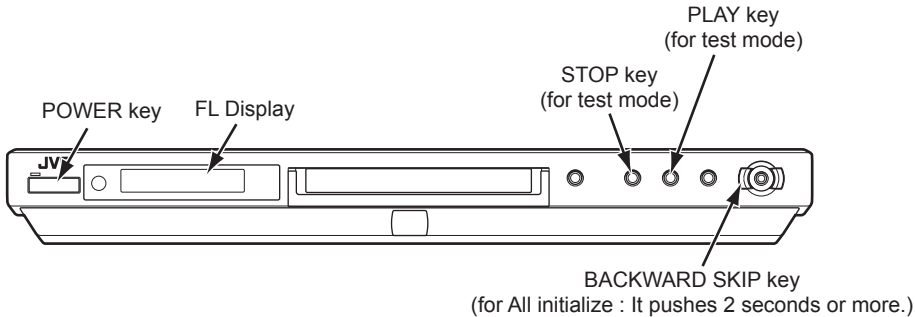
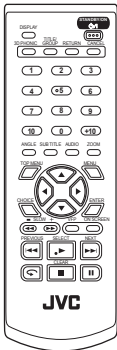
Status of this adjustment can be judged by the number displayed at test mode as follows:

DVD adjustment	CD adjustment	FL display at test mode
Adjusted	Adjusted	*0
Not adjusted	Adjusted	*1
Adjusted	Not adjusted	*2
Not adjusted	Not adjusted	*3

NOTE:

As for a disc used for adjustment,

- Disc should be mounted. ("Mounting" means to display "READ" after the disc is inserted and then display the disc information.) Disc need not be played.
- If you do not have test disc either VT-501 (DVD) or CTS-1000 (CD-DA), use a commercial disc (for DVD, dual-layer software) after seeing and checking that the disc is neither curved nor foreseen that it may shake at the time of playback. If you use a disc with bad features, starting time may be slow or disc may not be read.



3.6 Display of current value of laser

- (1) Set the main body at test mode.
- (2) Press "CHOICE" key of the remote controller three times. Then, FL display is displayed "CK".
- (3) The laser current value can be switched between the value of CD and that of DVD by pressing the following key of the remote controller.

FL Display (Example)

2530

Remote controller "4" key --- Laser of CD
Remote controller "5" key --- Laser of DVD

The number shown in the FL display shows mA of current value of laser.

The first two numbers ("25" in "2530") shows current value of laser at the time of adjustment after the latest all-initialization, 25mA in this example.

The last two numbers ("30" in "2530") shows the present current value of laser, 30mA in this example.

The first two numbers ("25" in "2530") usually shows current value of laser at the time of shipment, so you can see how the product has been deteriorated by comparing the first two numbers ("25" in "2530") and the last two numbers ("30" in "2530").

CD:

The laser current value of 49 mA or less is normal.

The laser current value of over 50 mA is not normal. Laser diode of the pickup has been deteriorated.

DVD:

The laser current value of 64 mA or less is normal.

The laser current value of over 65 mA is not normal. Laser diode of the pickup has been deteriorated.

To return to test mode, press "STOP" key of the main body.

3.7 Display of jitter value

- (1) Set the main body at test mode.
- (2) Press "CHOICE" key of the remote controller three times. Then, FL display is displayed "CK".
- (3) Insert the test disk (VT-501), and press "PLAY" key of the main body.
- (4) After a few seconds, press "6" of the remote controller. Then, the jitter value is displayed on the LCD display as follows.

FL Display (Example)

Reference values to judge whether the jitter is allowable or not are displayed, instead of actual jitter values.

3.8 Flap adjustment of the pick-up guide shaft

Please perform flap adjustment of the pick-up guide shaft in the following case:

- Just after you exchange the pick-up.
- Just after you exchange the spindle motor.
- Just after you exchange the traverse mechanism base.

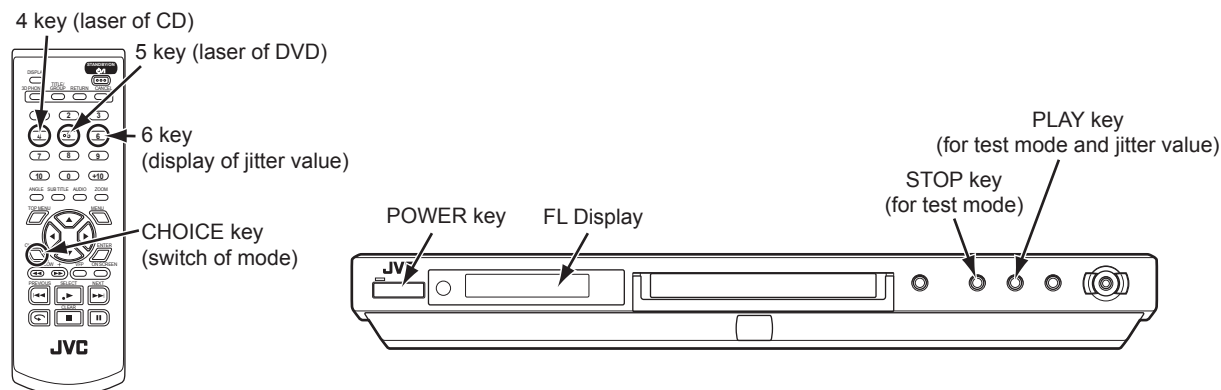
NOTE:

Please perform flap adjustment of the pick-up guide shaft when you exchange the parts above and also when you remove the parts above.

- When the reading accuracy of the signal is bad (There is a block noise in the screen, Screen stops in the outer circumference of a disc, etc.)

ATTENTION:

Adjustment procedures will be informed of you in JVC Service Bulletin.



3.9 Upgrading of firmware

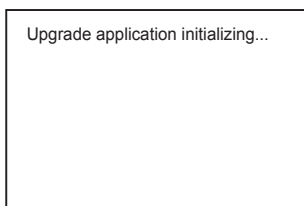
The latest firmware for upgrading is updated in "Optical disc CSG" page in JS-net.

At the time of service, compare the version of the product and the latest version, and upgrade the old version into the latest version.

- (1) Press "POWER" key of the main body to turn the main body on
- (2) Insert the upgrade disc.
- (3) When FL display of the main body changes from "READ" to "UP", press "cursor UP" key (▲) of the remote controller.
- (4) The entire screen becomes blue, and upgrading starts.
- (5) The tray opens automatically. Remove the upgrade disc.
- (6) The screen returns to the normal screen. Then, press "POWER" key of the main body. When the stand-by indicator is lighted, upgrading is completed.
- (7) Set the main body at test mode, and perform initialization. Then, confirm the version of the firmware.



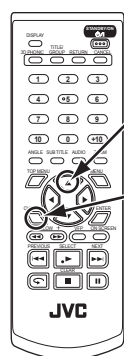
After inserting the up-grade disc



While upgrading (blue screen)

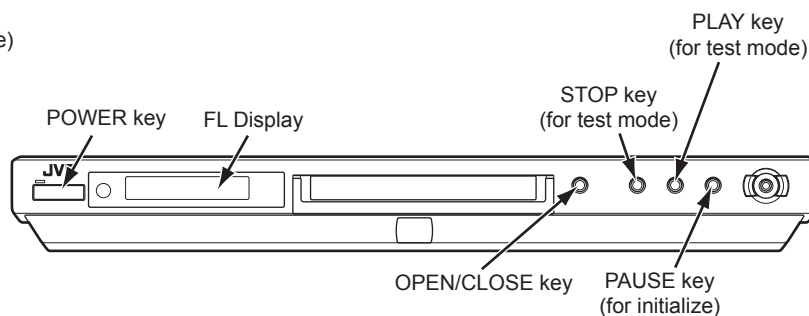


When up-grade is completed



UP key
(for firmware upgrade)

CHOICE key
(switch of mode)



POWER key

FL Display

STOP key
(for test mode)

PLAY key
(for test mode)

OPEN/CLOSE key

PAUSE key
(for initialize)

3.10 Attention when pick-up is exchanged

- (1) Flexible wire, pick-up spring, switch actuator, and lead spring are removed from an old pick-up (broken the one).

Guide:

Flexible wire, pick-up spring and switch actuator, lead spring are removed without each decomposing while assembled.

- (2) The above-mentioned parts are installed in a new pick-up (non-defective article).
- (3) A flexible wire is inserted in the connector which has taken side with the pick-up, and solder is put up to short land part "a" two places on a flexible wire.
- (4) The electrostatic breakdown protection circuit attached to the pick-up is cut.

ATTENTION:

Please cut the electrostatic breakdown protection circuit attached to the pick-up after solder is put up to two places on a flexible wire short land part "a" of the insertion of a flexible wire this time in the connector without fail.

The procedure might be mistaken and if solder has not surely adhered to two places on a flexible wire short land part "a", the laser diode in the pick-up be destroyed again.

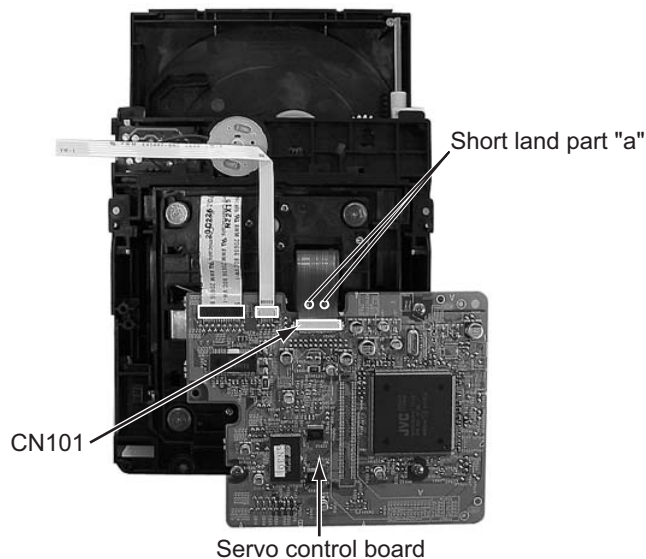
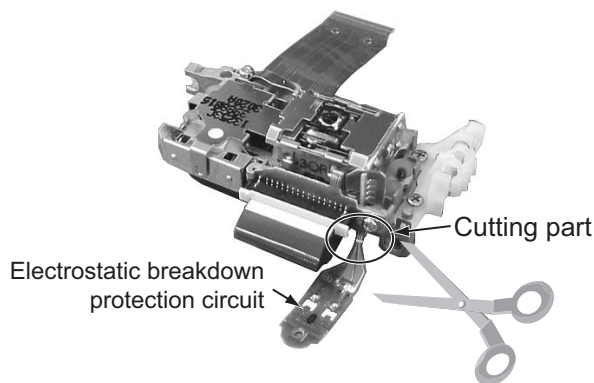
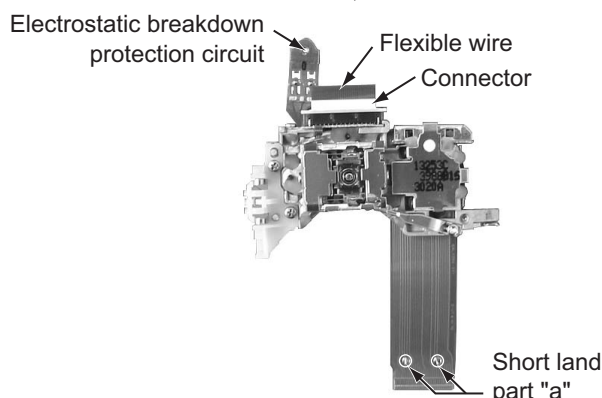
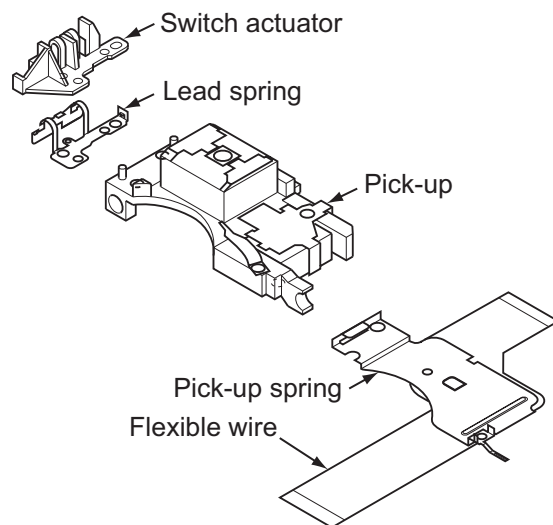
- (5) The pick-up is installed in the traverse mechanism.
- (6) A flexible wire is connected with connector CN101 on the servo control board by installing the traverse mechanism in the loading mechanism.
- (7) Solder in two places on a flexible wire in part "a" is removed.

ATTENTION :

Please remove solder in two places in part "a" after connecting a flexible wire with connector CN101 on the servo control board without fail this time.

When the procedure is mistaken, the laser diode in the pick-up might be destroyed.

Please remove solder in two places in part "a" surely.



3.11 Confirm method of operation

Please confirm the operation of the undermentioned item after doing the repair and the upgrade of the firmware.

Initialize	Refer to the initialization method.
All-initialize	Refer to the All-initialization method.
Parameter adjustment status	Set the main body at test mode, and check that the FL display shows "*0".
Opening picture check (Power ON)	It should be display "JVC"
Muting working	The noise must not be had to the performance beginning when you push "PLAY" button or at ON/STANDBY.
FL Display	The mark and the logo, etc. displayed by each operation must be displayed correctly. FL Display should light correctly without any unevenness.
All Function button	All function buttons should worked correctly with moderate click feeling.
Open and close movement of tray	When press OPEN/CLOSE button the tray should move smoothly without any noise.
Remote controller unit working	Check the correctly operation in use of remote controller unit.
Reading of TOC	Be not long in the malfunction.
Search	Both forward-searches and backward-searches should be able to be done. Do not stop be searching or after the search.
Skip	Both forward-skip and backward-skip should be able to be done. Do not stop be after the skip.
Playback	Do not find abnormality etc. of tone quality and the picture quality.
Most outside TITLE playback check	Play VT-501 TITLE 59 CHAPTER 1 , check normal playback.

3.12 Troubleshooting

3.12.1 Servo volume

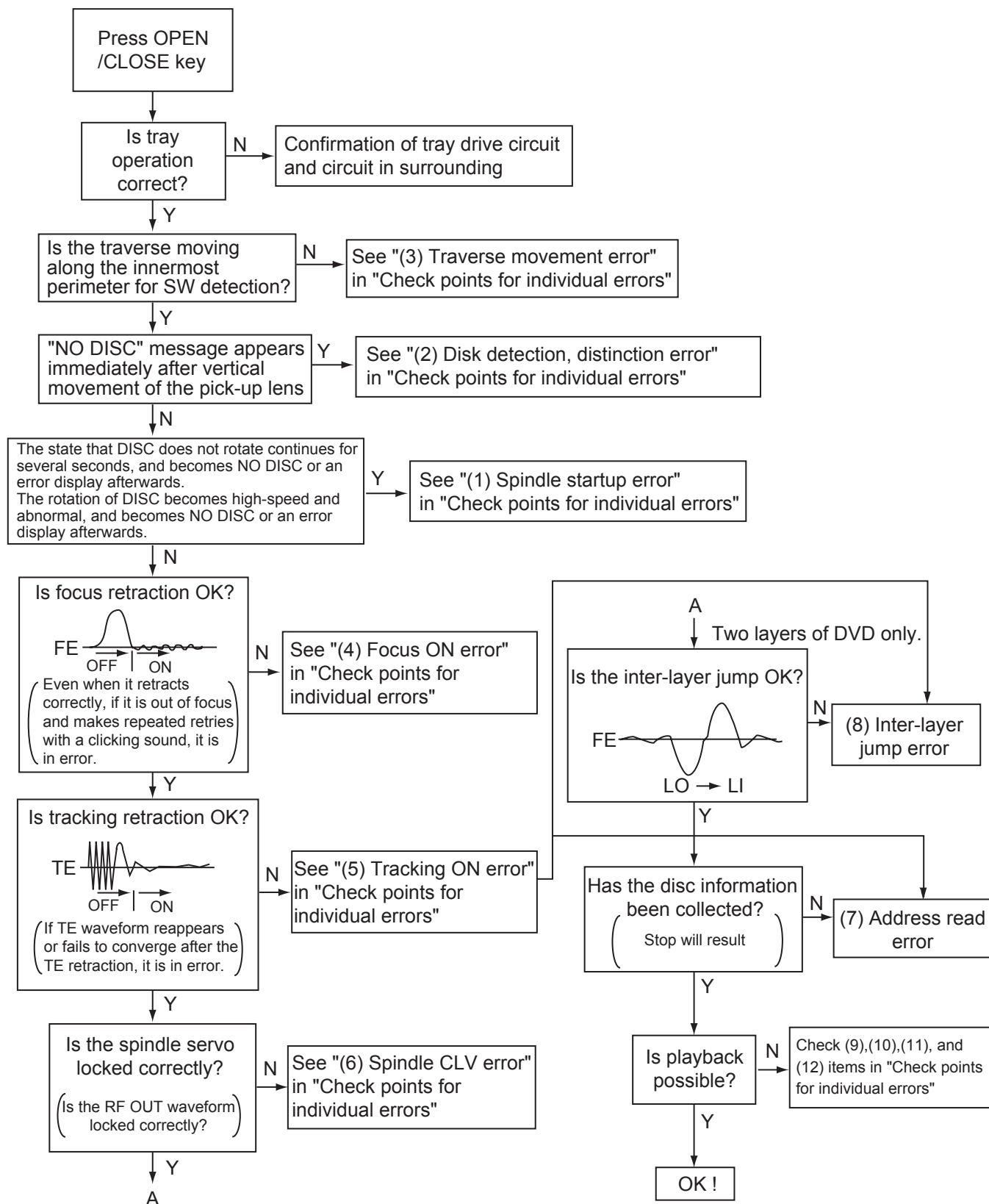


Fig.1

3.13 Check points for each error

3.13.1 Spindle start error

(1) Defective spindle motor

- Are there several ohms resistance between each pin of CN201 "5-6", "6-7", "5-7"?
(The power supply is turned off and measured.)
- Is the sign wave of about 100mVp-p in the voltage had from each terminal?
[CN201"9"(H1+), "10"(H1-), "11"(H2+), "12"(H2-), "13"(H3+), "14"(H3-)]

(2) Defective spindle motor driver (IC251)

- Has motor drive voltage of a sine wave or a rectangular wave gone out to each terminal (SM1~3) of CN201"5,6,7" and IC251"2,4,7"?
- Is FG pulse output from the terminal of IC251"24"(FG) according to the rotation of the motor?
- Is it "L (about 0.9V)" while terminal of IC251"15"(VH) is rotating the motor?

(3) Has the control signal come from servo IC or the microcomputer?

- Is it "L" while the terminal of IC251"18"(SBRK) is operating?
Is it "H" while the terminal of IC251"23"(/SPMUTE) is operating?
- Is the control signal input to the terminal of IC251"22"(EC)?
(changes from VHALF voltage while the motor is working.)
- Is the VHALF voltage input to the terminal of IC251"21"(ECR)?

(4) Is the FG signal input to the servo IC?

- Is FG pulse input to the terminal of IC301"69"(FG) according to the rotation of the motor?

3.13.2 Disc Detection, Distinction error (no disc, no RFENV)

- Laser is defective.
- Front End Processor is defective (IC101).
- APC circuit is defective. --- Q101, Q102.
- Pattern is defective. --- Lines for CN101 - All patterns which relate to pick-up and patterns between IC101
- IC101 --- For signal from IC101 to IC301, is signal output from IC101 "21" (ASOUT) and IC101 "36" (RFENV) and IC101 "20" (FEOUT)?

3.13.3 Traverse movement NG

(1) Defective traverse driver

- Has the voltage come between terminal of CN101 "1" and "2" ?

(2) Defective BTL driver (IC201)

- Has the motor drive voltage gone out to IC201"17" or "18"?

(3) Has the control signal come from servo IC or the microcomputer?

- Is it "H" while the terminal of IC201"9"(STBY1) ?
- TRSDRV Is the signal input? (IC301 "67")

(4) TRVSW is the signal input from microcomputer? (IC301 "56")

3.13.4 Focus ON NG

- Is FE output ? --- Pattern, IC101
- Is FODRV signal sent ? (R209) --- Pattern, IC301 "115"
- Is driving voltage sent ?
- IC201 "13", "14" --- If NG, pattern, driver, mechanical unit .
- Mechanical unit is defective.

3.13.5 Tracking ON NG

- When the tracking loop cannot be drawn in, TE shape of waves does not settle.
- Mechanical unit is defective.
Because the self adjustment cannot be normally adjusted, the thing which cannot be normally drawn in is thought.
- Periphery of driver (IC201)
Constant or IC it self is defective.
- Servo IC (IC301)
When improperly adjusted due to defective IC.

3.13.6 Spindle CLV NG

- IC101 -- "27"(ARF-), "26(ARF+).
- Does not the input or the output of driver's spindle signal do the grip?
- Has the tracking been turned on?
- Spindle motor and driver is defective.
- Additionally, "IC101 and IC301" and "Mechanism is defective(jitter)", etc. are thought.

3.13.7 Address read NG

- Besides, the undermentioned cause is thought though specific of the cause is difficult because various factors are thought.
Mechanism is defective. (jitter)
IC301
The disc is dirty or the wound has adhered.

3.13.8 Between layers jump NG (double-layer disc only)

Mechanism defective
Defect of driver's IC(IC201)
Defect of servo control IC(IC301)

3.13.9 Neither picture nor sound is output

(1) It is not possible search

- Has the tracking been turned on?
- To "(5) Tracking ON NG" in "Check points for each error" when the tracking is not normal.
- Is the feed operation normal?
To "(3) traverse movement NG" in "Check points for each error" when it is not normal.
Are not there caught of the feeding mechanism etc?

3.13.10 Picture is distorted or abnormal sound occurs at intervals of several seconds.

Is the feed operation normal?
Are not there caught of the feeding mechanism etc?

3.13.11 Others

- The image is sometimes blocked, and the image stops.
- The image is blocked when going to outer though it is normal in surroundings in the disk and the stopping symptom increases.
There is a possibility with bad jitter value for such a symptom.

3.13.12 CD During normal playback operation

(1) Is TOC reading normal?

- Displays total time for CD-DA.
- Shifts to double-speed mode for V-CD

(2) Is playback afterwards possible?

(3) When can not do a normal playback

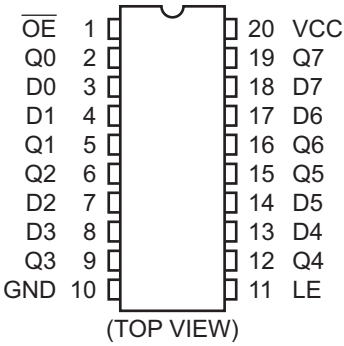
- --:-- is displayed during FL search.
According to [It is not possible to search] for DVD(9), check the feed and tracking systems.
- No sound is output although the time is displayed.(CA-DA)
DAC, etc, other than servo.
- The passage of time is not stable, or picture is abnormal.(V-CD)
- The wound of the disc and dirt are confirmed.

SECTION 4

Description of major ICs

4.1 74LCX373MTC-X (IC512,IC513) : Octal D-type latch

• Pin layout



• Pin function

Symbol	Description
D0~D7	Data inputs
LE	Latch enable input
\overline{OE}	Output enable input
Q0~Q7	3-State latch outputs

• Truth table

INPUTS			OUTPUT
LE	\overline{OE}	Dn	Qn
X	H	X	Z
H	L	L	L
H	L	H	H
L	L	X	Q0

H = HIGH Voltage level

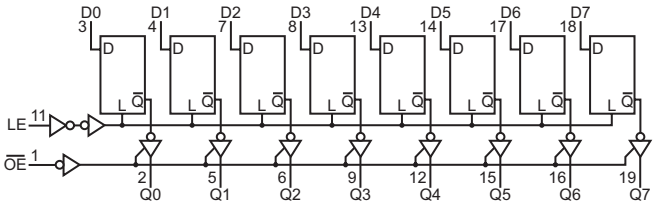
L = LOW Voltage level

Z = High impedance

X = Immaterial

Q0 = Previous Q0 before HIGH to LOW transition of latch enable

• Block diagram

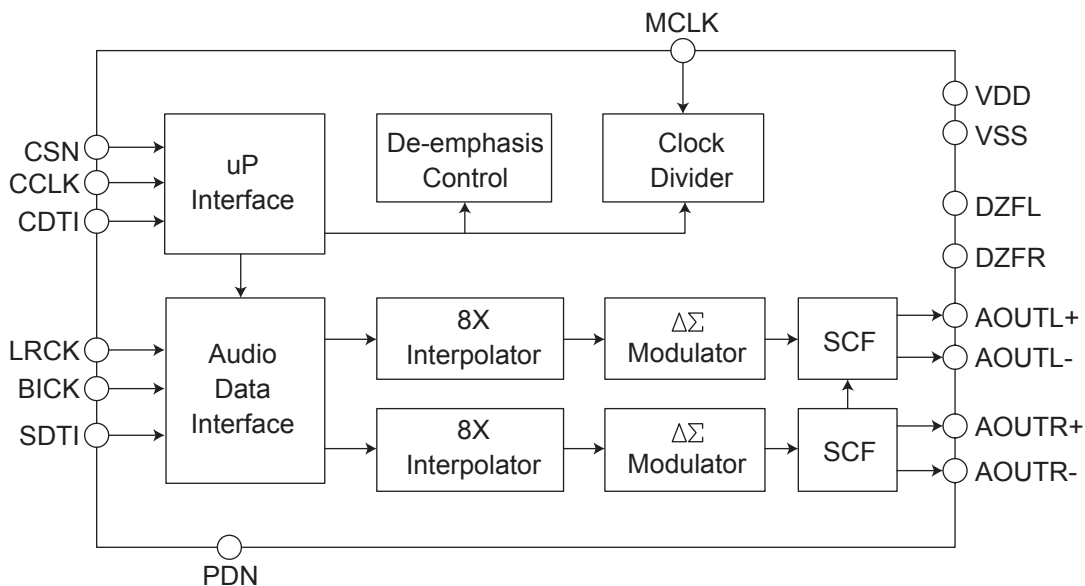


4.2 AK4381VT-X (IC121) : 2ch DAC

- Pin layout

MCLK	1	16	DZFL
BICK	2	15	DZFR
SDTI	3	14	VDD
LRCK	4	13	VSS
PDN	5	12	AOUTL+
CSN	6	11	AOUTL-
CCLK	7	10	AOUTR+
CDTI	8	9	AOUTR-

- Block diagram

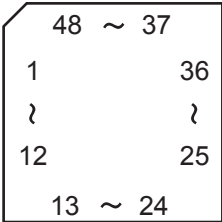


- Pin functions

Pin No.	Symbol	I/O	Description
1	MCLK	I	Master clock input terminal
2	BICK	I	Audio serial data clock terminal
3	SDTI	I	Audio serial data input terminal
4	LRCK	I	L/R Clock terminal
5	PDN	I	Power down mode terminal
6	CSN	I	Chip select
7	CCLK	I	Control data input terminal
8	CDTI	I	Control data input terminal
9	AOUTR-	O	Rch negative analog output terminal
10	AOUTR+	O	Rch positive analog output terminal
11	AOUTL-	O	Lch negative analog output terminal
12	AOUTL+	O	Lch positive analog output terminal
13	VSS	-	Connect to ground
14	VDD	-	Power supply terminal
15	DZFR	O	Rch data zero input detection terminal
16	DZFL	O	Lch data zero input detection terminal

4.3 AN8708FHK(IC101):Frontend processor

- Pin layout

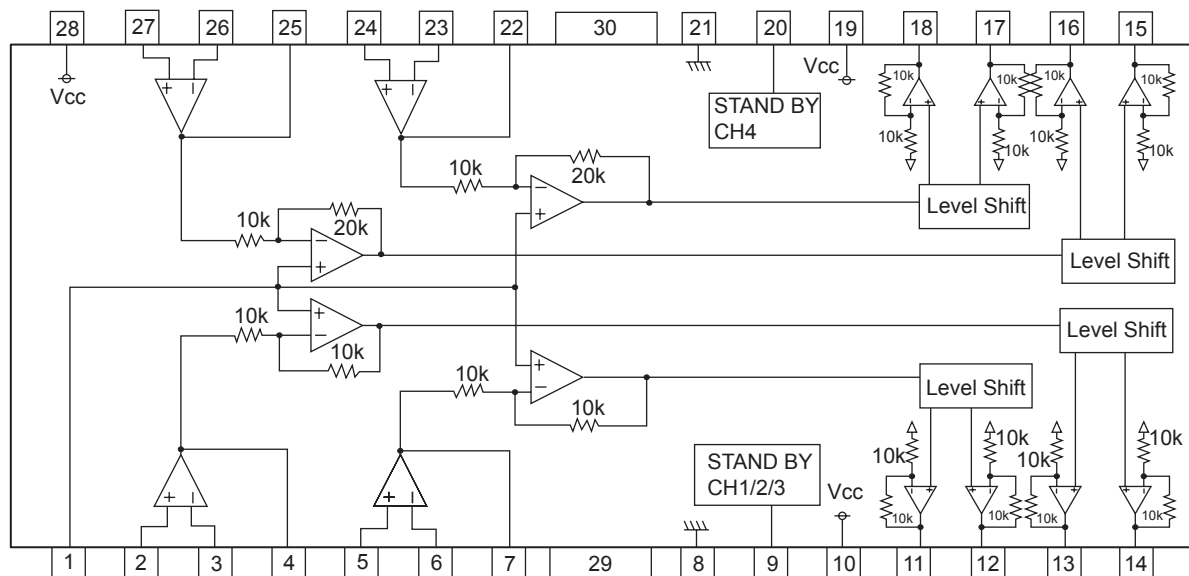


- Pin function

Pin No.	Symbol	I/O	Description
1	GND1	-	Connect to ground
2	LPC1	I	Laser input terminal (DVD)
3	LPC01	O	Laser drive output terminal (DVD)
4	LPC2	I	Laser input terminal (CD)
5	LPC02	O	Laser drive output terminal (CD)
6	FBAL	I	Focus balance control terminal
7	TBAL	I	Tracking balance control terminal
8	POFLT	O	Track detection filter terminal
9	SEN	I	SEN (Serial data input terminal)
10	SCK	I	SCK (Serial data input terminal)
11	STDI	I/O	STDI (Serial data input/output terminal)
12	VRE18	-	RF Standard voltage filter
13	TE	O	Tracking error signal output terminal
14	VSS	-	Connect to ground
15	OFTR	O	OFTR output
16	BDO	O	BDO output
17	VDD	-	Power supply terminal 3 (3.3V)
18	RSCL	-	Source terminal of standard current
19	GND2	-	Connect to ground
20	FE	O	Focus error signal output terminal
21	FS	O	Focus addition signal output terminal
22	VHALF	O	VHALF Voltage output terminal
23	MIRSL	O	MIRROR Slow envelope detection terminal
24	BDOSL	O	BDO Slow envelope detection terminal
25	VCC2	-	Power supply terminal 2 (3.3V)
26	FLTOP	O	Filter amplifier positive output terminal
27	FLTON	O	Filter amplifier negative output terminal
28	SAG	O	SAG Cancel detention terminal
29	DCAGC	O	FLT-DC Cut filter terminal
30	AGCG	O	AGC Amp.gain control terminal
31	TESTSG	I	TEST signal input terminal
32	RFINP	I	RF signal positive input terminal
33	RFINN	I	RF signal negative input terminal
34	DCRF	O	Filter terminal for RF all addition AMP.DC cut
35	PEAK	O	Peak envelope detection filter terminal
36	RFENV	O	RF Envelope output terminal
37	VCC1	-	Power supply terminal 2 (5V)
38,39	VIN5,6	I	Internal four division (CD) RF input terminal 1,2
40,41	VIN7,8	I	External two division (DVD) RF input terminal 1,2
42	VREF	-	VREF Voltage output terminal
43~46	VIN1~4	I	Internal four division (DVD) RF input terminal 1~4
47,48	VIN9,10	I	Three beam sub (CD) input terminal 1,2

4.4 BA5983FM-X (IC201) : 4-channel driver

- Block diagram



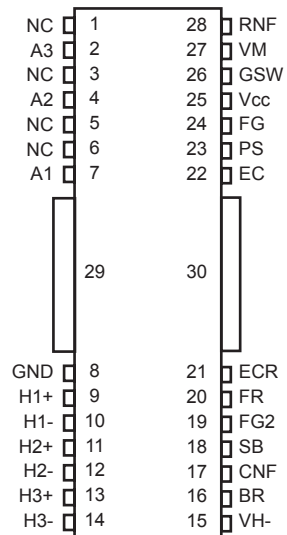
- Pin function

Pin No.	Symbol	I/O	Description
1	BIAS IN	I	Input for Bias-amplifier
2	OPIN1(+)	I	Non inverting input for CH1 OP-AMP
3	OPIN1(-)	I	Inverting input for CH1 OP-AMP
4	OPOUT1	O	Output for CH1 OP-AMP
5	OPIN2(+)	I	Non inverting input for CH2 OP-AMP
6	OPIN2(-)	I	Inverting input for CH2 OP-AMP
7	OPOUT2	O	Output for CH2 OP-AMP
8	GND	-	Substrate ground
9	STBY1	I	Input for CH1/2/3 stand by control
10	PowVcc1	-	Vcc for CH1/2 power block
11	VO2(-)	O	Inverted output of CH2
12	VO2(+)	O	Non inverted output of CH2
13	VO1(-)	O	Inverted output of CH1
14	VO1(+)	O	Non inverted output of CH1
15	VO4(+)	O	Non inverted output of CH4

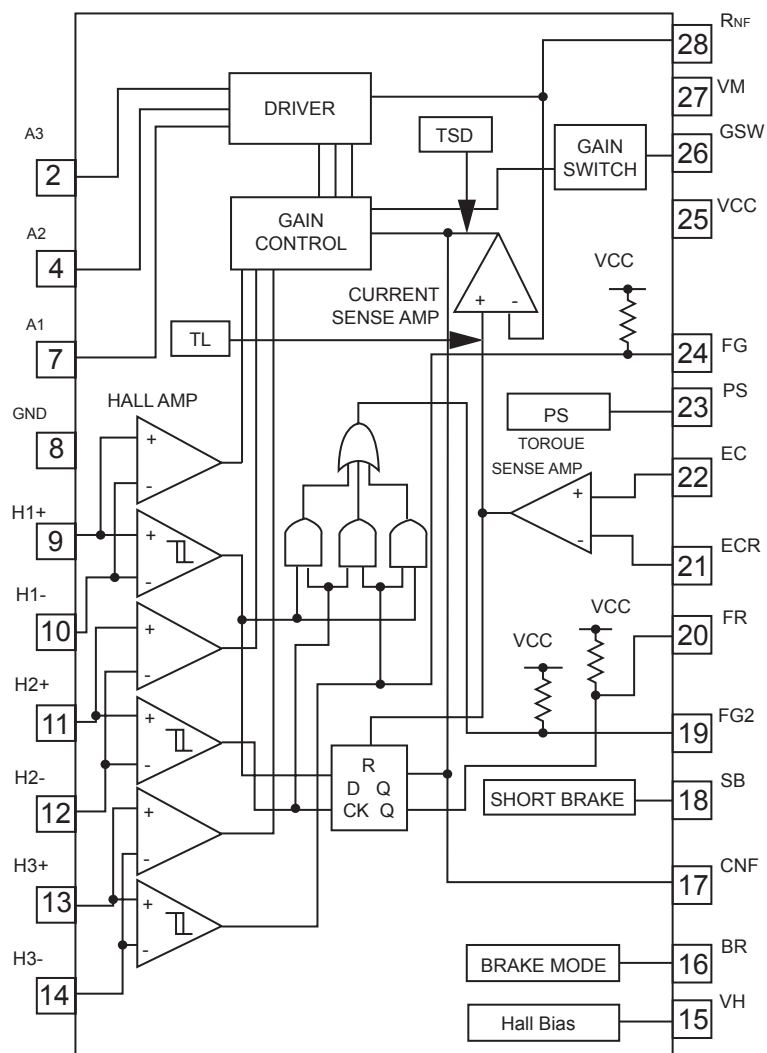
Pin No.	Symbol	I/O	Description
16	VO4(-)	O	Inverted output of CH4
17	VO3(+)	O	Non inverted output of CH3
18	VO3(-)	O	Inverted output of CH3
19	PowVcc2	-	Vcc for CH3/4 power block
20	STBY2	I	Input for Ch4 stand by control
21	GND	-	Substrate ground
22	OPOUT3	O	Output for CH3 OP-AMP
23	OPIN3(-)	I	Inverting input for CH3 OP-AMP
24	OPIN3(+)	I	Non inverting input for CH3 OP-AMP
25	OPOUT4	O	Output for CH4 OP-AMP
26	OPIN4(-)	I	Inverting input for CH4 OP-AMP
27	OPIN4(+)	I	Non inverting input for CH4 OP-AMP
28	PreVcc	-	Vcc for pre block
29		-	Connect to ground
30		-	Connect to ground

4.5 BA6664FM-X (IC251) : Spindle motor driver

- Pin layout



- Block diagram

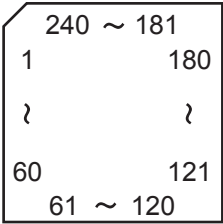


- Pin function (BA6664FM-X)

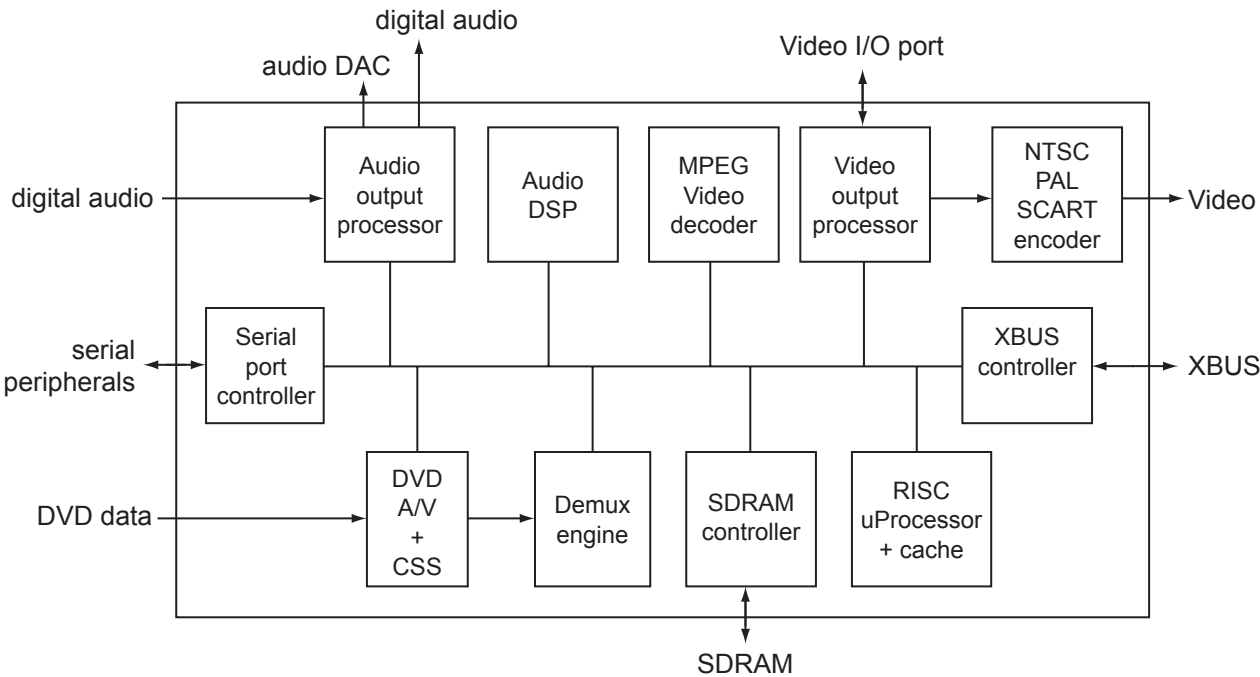
Pin No.	Symbol	I/O	Description
1	NC	-	Non connect
2	A3	O	Output 3 for spindle motor
3	NC	-	Non connect
4	A2	O	Output 2 for spindle motor
5	NC	-	Non connect
6	NC	-	Non connect
7	A1	O	Output 1 for spindle motor
8	GND	-	Connect to ground
9	H1+	I	Positive input for hall input AMP 1
10	H1-	I	Negative input for hall input AMP 1
11	H2+	I	Positive input for hall input AMP 2
12	H2-	I	Negative input for hall input AMP 2
13	H3+	I	Positive input for hall input AMP 3
14	H3-	I	Negative input for hall input AMP 3
15	VH	I	Hall bias terminal
16	BR	-	Non connect
17	CNF	-	Capacitor connection pin for phase compensation
18	SB	I	Short brake terminal
19	FG2	-	Non connect
20	FR	-	Non connect
21	ECR	I	Torque control standard voltage input terminal
22	EC	I	Torque control voltage input terminal
23	PS	O	Start/stop switch (power save terminal)
24	FG	O	FG signal output terminal
25	VCC	-	Power supply for signal division
26	GSW	O	Gain switch
27	VM	-	Power supply for driver division
28	RNF	O	Resistance connection pin for output current sense
29		-	Connect to ground
30		-	Connect to ground

4.6 JCE8044(IC501):AV Decoder

- Pin layout



- Block diagram



- Pin function

Pin No.	Symbol	I/O	Description
1	VDDio	-	Power supply terminal 3.3V
2,3	MD10,11	I/O	SDRAM Data bus terminal
4	VDD	-	Power supply terminal 1.8V
5	MD12	I/O	SDRAM Data bus terminal
6	VSSio	-	Connect to ground
7~9	MD13~15	I/O	SDRAM Data bus terminal
10	VDDio	-	Power supply terminal 3.3V
11	DQM1	O	SDRAM Data byte enable
12,13	MA9,8	O	SDRAM Address bus terminal
14	VSSio	-	Connect to ground
15,16	MA7,6	O	SDRAM Address bus terminal
17	VSS	-	Connect to ground
18	MA5	O	SDRAM Address bus terminal
19	VDDio	-	Power supply terminal 3.3V
20,21	MA4,3	O	SDRAM Address bus terminal
22	MCLK	O	SDRAM Clock output
23	VSSio	-	Connect to ground
24	CKE	O	SDRAM Clock enable output

Pin No.	Symbol	I/O	Description
25,26	MA2,1	O	SDRAM Address bus terminal
27	VDDio	-	Power supply terminal 3.3V
28	MA0	O	SDRAM Address bus terminal
29	MA10	O	SDRAM Address bus terminal
30	MA11	-	Non connect
31	VSSio	-	Connect to ground
32,33	MA12,13	O	SDRAM Address bus, reserved for terminal compatibility with 64Mb SDRAM
34	VDD	-	Power supply terminal 1.8V
35	CS0	O	SDRAM Primary bank chip select
36	VDDio	-	Power supply terminal 3.3V
37	RAS	O	SDRAM Command bit
38	CAS	O	SDRAM Command bit
39	WE	O	SDRAM Command bit
40	VSSio	-	Connect to ground
41	DQM0	O	SDRAM Data byte enable
42	DQM2	O	SDRAM Data byte enable
43	MD16	I/O	SDRAM Data bus terminal
44	VDDio	-	Power supply terminal 3.3V
45,46	MD17,18	I/O	SDRAM Data bus terminal
47	VSS	-	Connect to ground
48	MD19	I/O	SDRAM Data bus terminal
49	VSSio	-	Connect to ground
50~52	MD20~22	I/O	SDRAM Data bus terminal
53	VDDio	-	Power supply terminal 3.3V
54~56	MD23~25	I/O	SDRAM Data bus terminal
57	VSSio	-	Connect to ground
58~61	MD26~29	I/O	SDRAM Data bus terminal
62	VDDio	-	Power supply terminal 3.3V
63,64	MD30,31	I/O	SDRAM Data bus terminal
65	DQM3	O	SDRAM Data byte enable
66	CS1	O	SDRAM Extension bank chip select
67	VSSD	-	Connect to ground
68	SPDIF	O	S/PDIF Digital audio output terminal
69	VSSio	-	Connect to ground
70	ADC	I	Digital audio input for digital micro; can be used as GPIO
71	AOUT3	O	Serial audio output data to audio DAC for left and right channels for down-mix
72	AOUT2	O	Serial audio output data to audio DAC for surround left and right channels
73	AOUT1	O	Serial audio output data to audio DAC for center and LFE channels
74	AOUT0	O	Serial audio output data to audio DAC for left and right channels
75	VDDio	-	Power supply terminal 3.3V
76	PCMCLK	O	Audio DAC PCM sampling clock frequency, common clock for DACs and ADC
77	VDD	-	Power supply terminal 1.8V
78	ACLK	O	Audio interface serial data clock, common clock for DACs and AD converter
79	LRCLK	O	Left / right channel clock, common clock for DACs and ADC
80	SRST	O	Active low RESET signal for peripheral reset
81	RSTP	I	RESET_Power : from system, used to reset frequency synthesizer and rest of chip

Pin No.	Symbol	I/O	Description
82	VSSio	-	Connect to ground
83	RXD1	I	UART1 Serial data input from external serial device, used for IR receiver
84	SSPIN1	I/O	SSP1 Data in or 16X clock for USART function in UART1
85	VSS	-	Connect to ground
86	SSPOUT1	I/O	SSP1 Data out or UART1 data-terminal-ready signal
87	SSPCLK1	I/O	SSP1 Clock or UART1 clear-to -send signal
88	SSPCLK0	I/O	SSP0 Clock or request-to-send function in UART1
89	VDD	-	Power supply terminal 1.8V
90	SSPIN0	I/O	SSP0 Data in or 16X clock for USART function in UART0
91	VDDio	-	Power supply terminal 3.3V
92	SSPOUT0	I/O	SSP0 Data out or UART0 data-terminal-ready signal
93	TXD0	I/O	UART0 Serial data output to an external serial device
94	RXD0	I	UART0 Serial data input from external serial device
95	CTS0	I/O	UART0 Clear-to-send signal
96	RTS0	I/O	UART0 Request-to-send signal
97	VSSio	-	Connect to ground
98	CXI	I	Crystal input terminal for on-chip oscillator or system input clock
99	CXO	O	Crystal output terminal for on-chip oscillator
100	OSCVSS	-	Connect to ground for oscillator
101	OSCVDD	-	Power supply terminal for oscillator 1.8V
102	MVCKVDD	-	Power supply terminal for main and video clock PLL 3.3V
103	SCEN	I	Scan chain test enable
104	MVCKVSS	-	Connect to ground for main and video clock PLL
105	ACLKVSS	-	Connect to ground for audio clock PLL
106	SCMD	I	Scan chain test mode
107	ACLKVDD	-	Power supply terminal for audio clock PLL 3.3V
108	VDDDAK	-	Power supply terminal for DAC digital 1.8V
109	VSSDAC	-	Connect to ground for DAC digital
110	Cr/R	O	Video signal output (Cr output : composite/component Red output)
111	IOM	O	Cascaded DAC differential output used to dump current into external resistor for power
112	C/Cb/B	O	Video signal output (Chrominance output for NTSC/PAL S-Video Cb output for component Blue output)
113	VAA3	-	Power supply terminal for DAC analog 3.3V
114	Y/G	O	Video signal output (Luminance for S-Video and component Green output)
115	VSSA	-	Connect to ground for DAC analog
116	VREF	-	Non connect
117	VAA	-	
118	CVBS/C	O	Video signal output (Composite video Chrominance output for S-Video)
119	RSET	O	Current setting resistor of output DACs
120	COMP	O	Compensation capacitor connection
121	VSS	-	Connect to ground
122	VCLK	-	Non connect
123	DISCSTP	-	Non connect
124	DISCSET	-	Non connect
125	VDDio	-	Power supply terminal 3.3V
126	SLEEP	-	Non connect
127	TRVSW	-	Non connect

Pin No.	Symbol	I/O	Description
128	HFMON	-	Non connect
129	SBAK	-	Non connect
130	HAGUP	-	Non connect
131	VI02	-	Non connect
132	VSSio	-	Connect to ground
133	DRVMUTE	-	Non connect
134	SPMUTE	-	Non connect
135	VDD	-	Power supply terminal 1.8V
136~139	AD31~28	I/O	Multiplexed address / data bus terminal
140	VDDio	-	Power supply terminal
141~144	AD27~24	I/O	Multiplexed address / data bus terminal
145	PWE3	I/O	Byte write enable for FLASH,EEPROM,SRAM or peripherals terminal
146	AD23	I/O	Multiplexed address / data bus terminal
147	VSSio	-	Connect to ground
148~153	AD22~17	I/O	Multiplexed address / data bus terminal
154	VDDio	-	Power supply terminal 3.3V
155	AD16	I/O	Multiplexed address / data bus terminal
156	PWE2	I/O	Byte write enable for FLASH,EEPROM,SRAM or peripherals terminal
157~158	AD15,14	I/O	Multiplexed address / data bus terminal
159	VDD	-	Power supply terminal 1.8V
160	SCLK	O	External bus clock used for programmable host peripherals
161	ACK	I/O	Programmable WAIT/ACK/RDY control
162	VSSio	-	Connect to ground
163~168	AD13~8	I/O	Multiplexed address / data bus terminal
169	VDDio	-	Power supply terminal 3.3V
170	PWE1	I/O	Byte write enable for FLASH,EEPROM,SRAM or peripherals terminal
171	VSS	-	Connect to ground
172~176	AD7~3	I/O	Multiplexed address / data bus terminal
177	VSSio	-	Connect to ground
178~180	AD2~0	I/O	Multiplexed address / data bus terminal
181	VDDio	-	Power supply terminal 3.3V
182	PWE0	I/O	Byte write enable for FLASH,EEPROM,SRAM or peripherals terminal
183	ALE	I/O	Address latch enable
184~187	LA0~3	I/O	Latched address 0~3
188	VSSio	-	Connect to ground
189	RD	I/O	Read terminal
190	LHLDA	O	Bus hold acknowledge in slave mode
191	LHLD	I	Bus hold request from external master in slave mode
192	VDD	-	Power supply terminal 1.8V
193	PCS0	O	Peripheral chip select 0, generally used for enabling the program store ROM/FLASH
194~195	XI01,02	I/O	Programmable general purpose external input/output
196	VDDio	-	Power supply terminal 3.3V
197~200	XI03~06	I/O	Programmable general purpose external input/output
201	VSS	-	Connect to ground
202	SODCCS	I	SODC Chip select
203	ADSCIRQ	I	Interrupt input

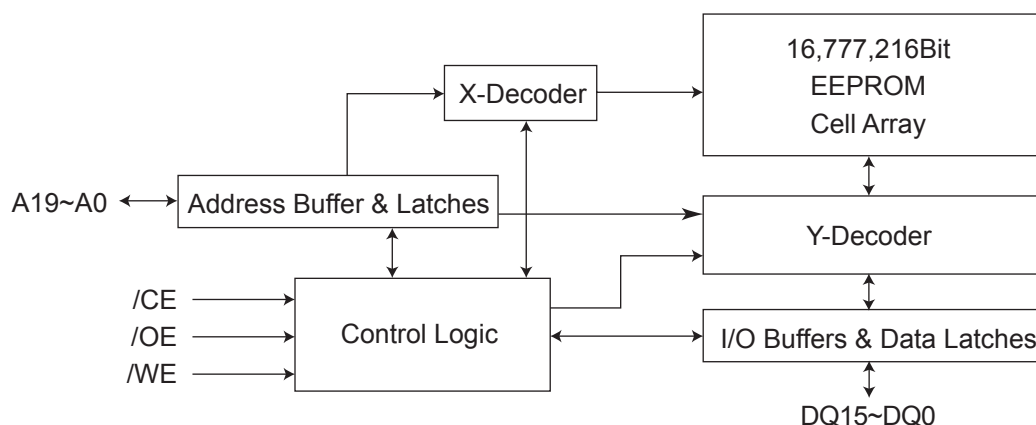
Pin No.	Symbol	I/O	Description
204	VSSio	-	Connect to ground
205	XI09	I/O	Programmable general purpose external input/output
206~208	XID10~12	I/O	Programmable general purpose external input/output
209	ODCIRQ	I	Interrupt input
210	VDDio	-	Power supply terminal 3.3V
211	ODCIRQ2	I	Interrupt input
212	VDD	-	Power supply terminal 1.8V
213	DSYNC	I	DVD Parallel mode sector sync
214	ODCIRQ2	I	Interrupt input
215	DCLK	I	Data sampling clock
216	DSTB	I	Parallel mode data valid, serial mode left/right clock
217	DVD0	I	DVD Drive parallel data port
218	VSSio	-	Connect to ground
219~223	DVD1~5	I	DVD Drive parallel data port
224	VDDio	-	Power supply terminal 3.3V
225226	DVD6,7	I	DVD Drive parallel data port
227	MD0	I/O	SDRAM Data bus terminal
228	VSSio	-	Connect to ground
229	MD1	I/O	SDRAM Data bus terminal
230	VSS	-	Connect to ground
231232	MD2,3	I/O	SDRAM Data bus terminal
233	VDDio	-	Power supply terminal 3.3V
234~236	MD4~6	I/O	SDRAM Data bus terminal
237	VSSio	-	Connect to ground
238~240	MD7~9	I/O	SDRAM Data bus terminal

4.7 SST39VF160-7DD (IC509) : 16M EEPROM

- Pin layout

A15	1	48	A16
A14	2	47	/BYTE
A13	3	46	Vss
A12	4	45	D15
A11	5	44	D7
A10	6	43	D14
A9	7	42	D6
A8	8	41	D13
A19	9	40	D5
NC	10	39	D12
/WE	11	38	D4
/RST	12	37	VCC
NC	13	36	D11
NC	14	35	D3
R/B	15	34	D10
A18	16	33	D2
A17	17	32	D9
A7	18	31	D1
A6	19	30	D8
A5	20	29	D0
A4	21	28	/OE
A3	22	27	Vss
A2	23	26	/CE
A1	24	25	A0

- Block diagram

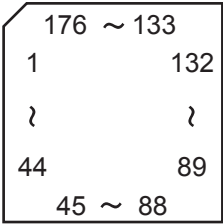


- Pin function

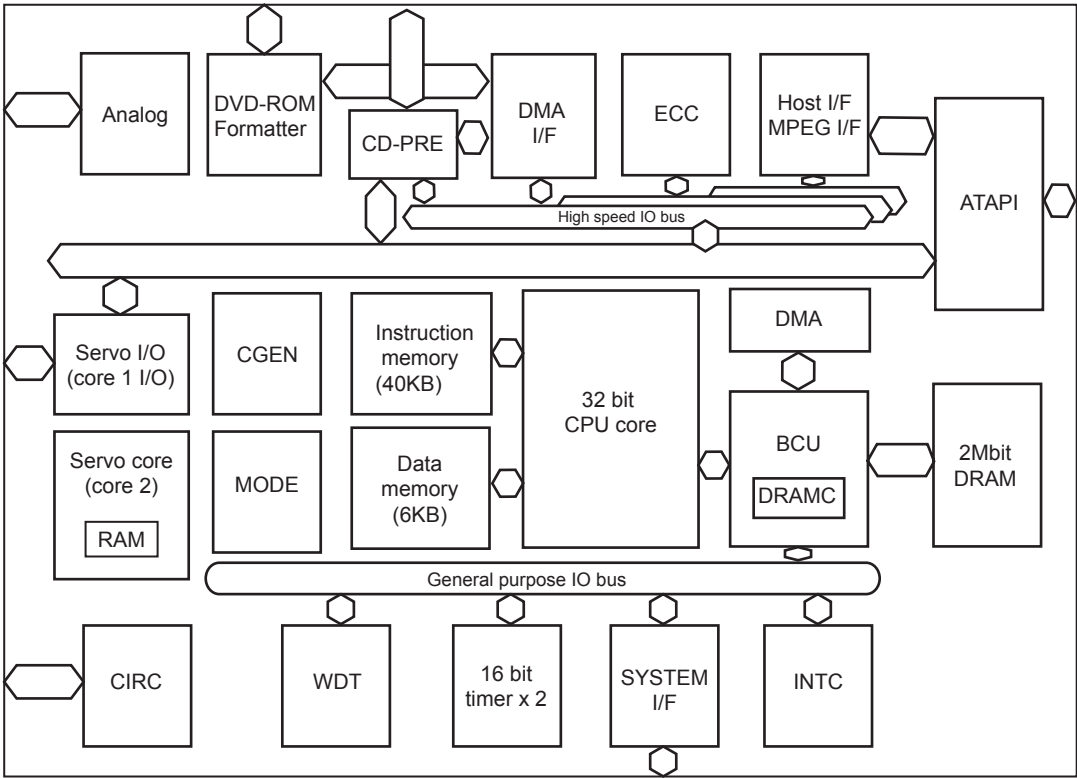
Symbol	Pin name	Function
A19~A0	Address Inputs	To provide memory addresses. During sector erase A19~A11 address lines will select the sector. During block erase A19~A15 address lines will select the block.
DQ15~DQ0	Data Input/Output	To output data during read cycles and receive input data during write cycles. Data is internally latched during a write cycle. The outputs are in tri-state when /OE or /CE is high.
/CE	Chip Enable	To activate the device when /CE is low.
/OE	Output Enable	To gate the data output buffers.
/WE	Write Enable	To control the write operations.
VCC	Power Supply	To provide 3-volt supply (2.7V-3.6V).
Vss	Ground	Connect to ground
NC	No Connection	

4.8 MN103S26EGB-H (IC301) : Super optical disc controller

- Terminal layout



- Block diagram



- Pin function

Pin No.	Symbol	I/O	Description
1,2	NINT0,1	O	Interruption of system control 0,1
3	VDD3	-	Power supply terminal for I/O(3.3V)
4	VSS	-	Connect to ground
5	NINT2	O	Interruption of system control 2
6	WAITDOC	O	Wait control of system control
7	NMPST	O	Reset of system control (Non connect)
8	DASPST	I	Setting of initial value of DASP signal
9~17	CPUADR17~9	I	System control address
18	VDD18	-	Power supply terminal for I/O (1.8V)
19	VSS	-	Connect to ground
20	DRAMVDD18	-	Power supply terminal for DRAM (1.8V)
21	DRAMVSS	-	Connect to ground for DRAM
22~30	CPUADR8~0	I	System control address
31	VDD3	-	Power supply terminal for I/O (3.3V)
32	VSS	-	Connect to ground
33	DRAMVDD3	-	Power supply terminal for DRAM (3.3V)

Pin No.	Symbol	I/O	Description
34	NCS	I	System control chip select
35	NWR	I	Writing system control
36	NRD	I	Read signal input from system controller
37~44	CPUDT7~0	I/O	System control data
45	CLKOUT1	-	Non connect
46	MMOD	I	Test mode switch signal
47	NRST	I	System reset
48	MSTPOL	I	Master terminal polarity switch input
49	SCLOCK	-	Non connect
50	SDATA	-	Non connect
51	OFTR	I	Off track signal input
52	BDO	I	Drop out signal input
53	SDOUT	I/O	Serial data input/output terminal
54	CPSCK	O	Clock output for serial data
55	FEPEN	O	Front end processor serial enable signal output
56	PWM4	I	Traverse mechanism inner circumference detect switch
57	VDD3	-	Power supply terminal for I/O (3.3V)
58	DRAMVDD18	-	Power supply terminal for DRAM (1.8V)
59	DRAMVSS	-	Connect to ground for DRAM
60	VSS	-	Connect to ground
61	WOBBLEFIL	-	Non connect
62	PWM6	O	Connect to pick up unit
63	PWM7	O	Short brake terminal
64	PWM8	-	Non connect
65	TBAL	O	Tracking balance adjustment output
66	FBAL	O	Focus balance adjustment output
67	TRSDRV	O	Traverse drive output
68	SPDRV	O	Spindle drive output
69	FG	I	Motor FG input
70	TILTP	-	Non connect
71	TILT	-	Non connect
72	TILTN	-	Non connect
73	TX	O	Digital output signal
74	DTRD	-	Non connect
75	IDGT	-	Non connect
76	VDD18	-	Power supply terminal for I/O (1.8V)
77	VSS	-	Connect to ground
78	VDD3	-	Power supply terminal for I/O (3.3V)
79	OSCI1	I	Oscillation input 16.9MHz
80	OSCO1	O	Oscillation output 16.9MHz
81	VSS	-	Connect to ground
82	TSTSG	O	Calibration signal
83	VFOSHORT	O	VFO short output
84	JLINE	O	J-line setting output
85	AVSS	-	Connect to ground for analog circuit
86	ROUT	-	Non connect

Pin No.	Symbol	I/O	Description
87	LOUT	-	Non connect
88	AVDD	-	Power supply terminal for analog circuit (3.3V)
89	VCOF	I	JFVCO control voltage
90	TRCRS	I	Input signal for track cross formation
91	CMPIN	-	Non connect
92	LPFOUT	-	Non connect
93	LPFIN	I	Pull-up to VHALF
94	AVSS	-	Connect to ground for analog circuit
95	HPFOUT	-	Non connect
96	FPFIN	I	HPF input
97	CSLFLT	I	Pull-up to VHALF
98	RFDIF	-	Non connect
99	AVDD	-	Power supply terminal for analog circuit (3.3V)
100	PLFLT2	I	Connect to capacitor 2 for PLL
101	PLFLT1	I	Connect to capacitor 1 for PLL
102	AVSS	-	Connect to ground for analog circuit
103	RVI	I	Connect to resistor for VREF reference current source
104	VREFH	I	Reference voltage input (2.2V)
105	PLPG	-	Non connect
106	VHALF	I	Reference voltage input (1.65V)
107,108	DSL2,1	I	Connect to capacitor 2,1 for DSL
109	AVDD	-	Power supply terminal for analog circuit (3.3V)
110	NARF	I	Equivalence RF-
111	ARF	I	Equivalence RF+
112	JITOUT	O	Output for jitter signal monitor
113	AVSS	-	Connect to ground for analog circuit
114	DAC0	O	Tracking drive output
115	DAC1	O	Focus drive output
116	AVDD	-	Power supply terminal for analog circuit (3.3V)
117	AD0	I	Focus error input
118	AD1	I	Phase difference/3 beams tracking error
119	AD2	I	AS : Full adder signal
120	AD3	I	RF envelope input
121	AD4	I	DVD laser current control terminal
122	AD5	I	
123	AD6	I	CD laser current control terminal
124	TECAPA	-	Non connect
125	VDD3	-	Power supply terminal for I/O (3.3V)
126	VSS	-	Connect to ground
127	MONI0	-	Connect to TP306
128	MONI1	-	Connect to TP307
129	MONI2	-	Connect to TP308
130	MONI3	-	Connect to TP309
131	NEJECT	I/O	Eject detection
132	NTRYCTL	I/O	Tray close detection
133	NDASP	I/O	ATAPI drive active / slave connect I/O

Pin No.	Symbol	I/O	Description
134	NCS3FX	I	ATAPI host chip select
135	NCS1FX	I	ATAPI host chip select
136	DA2	O	Data sampling clock output
137	DA0	I/O	ATAPI host address 0
138	NPDIAG	I/O	ATAPI slave master diagnosis input
139	DA1	I/O	ATAPI host address 1
140	NIOCS16	-	Non connect
141	INTRQ	O	ATAPI host interruption output
142	NDMACK	I	ATAPI host DMA characteristic
143	VDD3	-	Power supply terminal I/O (3.3V)
144	VSS	-	Connect to ground
145	IORDY	-	Non connect
146	NIORD	I/O	ATAPI host read
147	NIOWR	-	Non connect
148	DMARQ	-	Non connect
149	HDD15	I/O	ATAPI host data 15
150	HDD0	I/O	ATAPI host data 0
151	HDD14	I/O	ATAPI host data 14
152	VDD18	-	Power supply terminal for I/O (1.8V)
153	PO	I	Connect to ground
154	UATASEL	I	Connect to ground
155	VSS	-	Connect to ground
156	VDD3	-	Power supply terminal for I/O (3.3V)
157	HDD1	I/O	ATAPI host data 1
158	HDD13	I/O	ATAPI host data 13
159	HDD2	I/O	ATAPI host data 2
160	HDD12	I/O	ATAPI host data 12
161	HDD3	I/O	ATAPI host data 3
162	VDD3	-	Power supply terminal for I/O (3.3V)
163	VSS	-	Connect to ground
164	HDD11	I/O	ATAPI host data 11
165	HDD4	I/O	ATAPI host data 4
166	HDD10	I/O	ATAPI host data 10
167	HDD5	I/O	ATAPI host data 5
168	HDD9	I/O	ATAPI host data 9
169	VDD3	-	Power supply terminal for I/O (3.3V)
170	VSS	-	Connect to ground
171~173	HDD6~8	I/O	ATAPI host data 6~8
174	VDDH	-	Reference power supply for ATAPI (5.0V)
175	NRESET	I	ATAPI host reset input
176	MASTER	I	ATAPI master / slave select

4.9 UPD789074MC-020(IC701):System controller

• Pin layout

NTB	1	30	GAINCNT
S/COMP	2	29	FASTPLAY
VPP	3	28	NC
RESET	4	27	E/OTHER
X2	5	26	LMUTE
X1	6	25	AVCO
VSS	7	24	P.ON/STANDB
VDD	8	23	CPURST
TCLOSE	9	22	MUTE
TOPEN	10	21	FLDIN
AVCI	11	20	FLDOUT
REMO	12	19	FLCLK
SWCLOSE	13	18	FLSTB
SWOPEN	14	17	INTP
RXD	15	16	TXD

• Pin function

Pin No.	Symbol	I/O	Description
1	NTB	I	NTSC(L)/PAL(H) switching signal input
2	S/COMP	I	S(L)/COMPONENT(H) output switching signal input
3	VPP	-	The power supply for on board to writing
4	RESET	I	Reset input (L:reset)
5	X2	-	Clock (5MHz)
6	X1	-	Clock (5MHz)
7	VSS	-	Connect to ground
8	VDD	-	Power supply terminal +3.3V
9	TCLOSE	O	PWM signal output for tray close
10	TOPEN	O	PWM signal output for tray open
11	AVCI	I	AV Compulink control data input
12	REMO	I	Remote control signal input
13	SWCLOSE	I	Tray switch signal input 1 L:Full open L:Movement H:Full close
14	SWOPEN	I	Tray switch signal input 2 L:Full open H:Movement H:Full close
15	RXD	I	Decoder serial communication data input
16	TXD	O	Decoder serial communication data output
17	INTP	O	Decoder serial communication interruption signal output
18	FLSTB	O	FL Driver strobe output
19	FLCLK	O	FL Driver clock output
20	FLDOUT	I	Data input from FL Driver
21	FLDIN	O	Data output to FL Driver
22	MUTE	O	Audio muting output H:muting
23	CPURST	O	LSI Reset output L:reset
24	P.ON/STANDB	O	Power ON output
25	AVCO	O	AV Compulink control data output
26	LMUTE	O	Motor driver muting output H:mute
27	E/OTHER	I	Europe specification (H)/except Europe specification switching signal input
28	NC	O	Not use
29	FASTPLAY	O	Quick playback LED (green) signal output
30	GAINCNT	O	The signal output for KARAOKE switching L:At normal H:At KARAOKE



VICTOR COMPANY OF JAPAN, LIMITED
AV & MULTIMEDIA COMPANY OPTICAL DISC CATEGORY 1644, Shimotsuruma, Yamato, Kanagawa 242-8514, Japan

