HITACHI
SERVICE MANUAL

DVD PLAYER

SPECIFICATIONS AND PARTS ARE SUBJECT TO CHANGE FOR IMPROVEMENT

DVD PLAYER
April 2002 Digital Media Division, Tokai
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SPECIFICATIONS

Product type: DVD Player
Discs:
DVD video
Audio CD
Video CD
Output signal format: NTSC color
Frequency response
DVD (linear sound):
20 Hz to 22 kHz (sample rate: 48 kHz)
20 Hz to 44 kHz (sample rate: 96 kHz)
CD:
20 Hz to 20 kHz
Signal-to-noise ratio (S/N ratio)
CD: 110 dB (EIAJ)
Dynamic range
DVD (linear sound): 95 dB
CD: 94 dB (EIAJ)
Total distortion factor
CD: 0.005% (EIAJ)
Wow and flutter:
Below the measurement limitation (+/-0.001% W PEAK) (EIAJ)
Connections
S-Video output: Mini DIN 4-pin jack (75 ohm)
Video output: One RCA connector, 1 Vpp (75 ohm)
Coaxial digital audio output: One pin jack, 500mVpp (75 ohm)
Analog audio output: Two RCA connectors (one left channel, one right channel) 2 Vrms (47 k ohm)
Component video output: One pin jack (Y), 1 Vpp (75 ohm) Two pin jacks (Cr/Ps)/(Cr/Ps), 700mVpp (75 ohm)
Optical digital audio output: Optical connector
Power source: 120 V AC +/- 10%, 60 Hz +/- 0.5%
Power consumption: 17 W (standby: 2.2W)
Operating temperature: 5°C to 40°C
Dimensions:
W 17-1/8” (435mm)
H 2-15/16” (75mm)
D 8-1/2” (216mm)
Weight: 4.63 lbs (2.2kg)

*Designs and specifications are subject to change without notice.*
## COMPARISON OF MODELS

*: Same as on left

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<td><strong>Appearance</strong></td>
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<tr>
<td>Dimensional</td>
<td>435(W) x 75(H) x 216(D) mm</td>
<td>430(W) x 79(H) x 240(D) mm</td>
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<tr>
<td>Weight</td>
<td>2.1kg</td>
<td>4.2kg</td>
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<tr>
<td>Tray Panel</td>
<td>Silver</td>
<td>Black</td>
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<td>Black/Black</td>
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<tr>
<td>Hot Stamp</td>
<td>O</td>
<td>---</td>
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<td>Ultra Vision Badge</td>
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<td>---</td>
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<tr>
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<td></td>
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<td>Drive Speed</td>
<td>1x</td>
<td>←</td>
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<td>Laser</td>
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<td>1</td>
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<td>(Video Format)</td>
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<td>CD-R/CD-RW/DVD-R</td>
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<td>--- / --- / ---</td>
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<td>MP3</td>
<td>O</td>
<td>---</td>
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<td>3 (English, French, Spanish)</td>
<td>6 (English, French, Spanish, Italian, German, Dutch)</td>
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<td>Only switch Shuttle</td>
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<td>←</td>
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<td>PAL Disc NTSC Out</td>
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<td>←</td>
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<tr>
<td>Video Out Mode</td>
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<td>←</td>
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<tr>
<td>S-Video / Component</td>
<td>O / O / O</td>
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<td>/ Composite</td>
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<td>←</td>
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<td>Video D/A Converter</td>
<td>10bit</td>
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<tr>
<td>Black Level Select</td>
<td>O</td>
<td>←</td>
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<tr>
<td>Picture Control</td>
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<td>←</td>
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<td>Dolby Digital 5.1 ch Decode</td>
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<td>DTS Digital Out</td>
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<td>←</td>
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<td>Power on sound</td>
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<td>←</td>
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<td>2 to 128 (FORWARD/REWRITE)</td>
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<td>←</td>
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<td>O / ---</td>
<td>←</td>
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<td>Still Picture Select (Frame/Field)</td>
<td>Auto Only</td>
<td>O</td>
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<td>Disc Navigation</td>
<td>---</td>
<td>O</td>
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<tr>
<td>DVD Zoom x2 / x4 / x16</td>
<td>O / O / ---</td>
<td>←</td>
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<tr>
<td>Program and Random Play of DVD / VCD</td>
<td>---</td>
<td>O / O</td>
</tr>
<tr>
<td>A-B Repeat</td>
<td>O</td>
<td>←</td>
</tr>
<tr>
<td>Repeat</td>
<td>O</td>
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### Remote Controller

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<td>TV Control</td>
<td>O</td>
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### Accessory

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<tr>
<td>Remote Controller</td>
<td>O</td>
<td>←</td>
</tr>
<tr>
<td>Battery</td>
<td>O</td>
<td>←</td>
</tr>
<tr>
<td>AV Cable</td>
<td>O</td>
<td>←</td>
</tr>
<tr>
<td>S Cable</td>
<td>---</td>
<td>←</td>
</tr>
<tr>
<td>AC Socket</td>
<td>---</td>
<td>←</td>
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<tr>
<td>Warranty Card</td>
<td>O</td>
<td>←</td>
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LASER BEAM SAFETY PRECAUTIONS

This DVD player uses a pickup that emits a laser beam.

The laser beam is emitted from the location shown in the figure. When checking the laser diode, be sure to keep your eyes at least 30cm away from the pickup lens when the diode is turned on. Do not look directly at the laser beam.

Caution: Use of controls and adjustments, or doing procedures other than those specified herein, may result in hazardous radiation exposure.

Location: Inside Top of DVD mechanism.
IMPORTANT SAFETY PRECAUTIONS

Product Safety Notice

Some electrical and mechanical parts have special safety-related characteristics which are often not evident from visual inspection, nor can the protection they give necessarily be obtained by replacing them with components rated for higher voltage, wattage, etc. Parts that have special safety characteristics are identified by a ✷ symbol on schematics and in parts lists. Use of a substitute replacement that does not have the same safety characteristics as the recommended replacement part might create shock, fire, and/or other hazards. The Product's Safety is under review continuously and new instructions are issued whenever appropriate. Prior to shipment from the factory, our products are carefully inspected to confirm with the recognized product safety and electrical codes of the countries in which they are to be sold. However, in order to maintain such compliance, it is equally important to implement the following precautions when a set is being serviced.

Precautions during Servicing

A. Parts identified by the ✷ symbol are critical for safety. Replace only with part number specified.

B. In addition to safety, other parts and assemblies are specified for conformance with regulations applying to spurious radiation. These must also be replaced only with specified replacements. Examples: RF converters, RF cables, noise blocking capacitors, and noise blocking filters, etc.

C. Use specified internal wiring. Note especially:
   1) Wires covered with PVC tubing
   2) Double insulated wires
   3) High voltage leads

D. Use specified insulating materials for hazardous live parts. Note especially:
   1) Insulation tape
   2) PVC tubing
   3) Spacers
   4) Insulators for transistors

E. When replacing AC primary side components (transformers, power cord, etc.), wrap ends of wires securely about the terminals before soldering.

F. Observe that the wires do not contact heat producing parts (heatsinks, oxide metal film resistors, fusible resistors, etc.).

G. Check that replaced wires do not contact sharp edges or pointed parts.

H. When a power cord has been replaced, check that 5 - 6 kg of force in any direction will not loosen it.

I. Also check areas surrounding repaired locations.

J. Be careful that foreign objects (screws, solder droplets, etc.) do not remain inside the set.

K. Crimp type wire connector
   The power transformer uses crimp type connectors which connect the power cord and the primary side of the transformer. When replacing the transformer, follow these steps carefully and precisely to prevent shock hazards.
   Replacement procedure
   1) Remove the old connector by cutting the wires at a point close to the connector.
   Important: Do not re-use a connector. (Discard it.)
   2) Strip about 15 mm of the insulation from the ends of the wires. If the wires are stranded, twist the strands to avoid frayed conductors.
   3) Align the lengths of the wires to be connected. Insert the wires fully into the connector.
   4) Use a crimping tool to crimp the metal sleeve at its center. Be sure to crimp fully to the complete closure of the tool.

L. When connecting or disconnecting the internal connectors, first, disconnect the AC plug from the AC outlet.
Safety Check after Servicing

Examine the area surrounding the repaired location for damage or deterioration. Observe that screws, parts, and wires have been returned to their original positions. Afterwards, do the following tests and confirm the specified values to verify compliance with safety standards.

1. Clearance Distance

When replacing primary circuit components, confirm specified clearance distance (d) and (d’) between soldered terminals, and between terminals and surrounding metallic parts. (See Fig. 1)

Table 1 : Ratings for selected area

<table>
<thead>
<tr>
<th>AC Line Voltage</th>
<th>Clearance Distance (d) (d’)</th>
</tr>
</thead>
<tbody>
<tr>
<td>120 V</td>
<td>≥ 3.2mm (0.126 inches)</td>
</tr>
</tbody>
</table>

Note: This table is unofficial and for reference only. Be sure to confirm the precise values.

2. Leakage Current Test

Confirm the specified (or lower) leakage current between B (earth ground, power cord plug prongs) and externally exposed accessible parts (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.) is lower than or equal to the specified value in the table below.

Measuring Method (Power ON):
Insert load Z between B (earth ground, power cord plug prongs) and exposed accessible parts. Use an AC voltmeter to measure across the terminals of load Z. See Fig. 2 and the following table.

Table 2: Leakage current ratings for selected areas

<table>
<thead>
<tr>
<th>AC Line Voltage</th>
<th>Load Z</th>
<th>Leakage Current (i)</th>
<th>Earth Ground (B) to:</th>
</tr>
</thead>
<tbody>
<tr>
<td>120 V</td>
<td>0.15µF CAP. &amp; 1.5kΩ RES. Connected in parallel</td>
<td>≤0.5mA Peak</td>
<td>Exposed accessible parts</td>
</tr>
</tbody>
</table>

Note: This table is unofficial and for reference only. Be sure to confirm the precise values.
Circuit Board Indications

a. The output pin of the 3 pin Regulator ICs is indicated as shown.

b. For other ICs, pin 1 and every fifth pin are indicated as shown.

c. The 1st pin of every male connector is indicated as shown.

Instructions for Connectors

1. When you connect or disconnect the FFC (Flexible Foil Connector) cable, be sure to first disconnect the AC cord.

2. FFC (Flexible Foil Connector) cable should be inserted parallel into the connector, not at an angle.

How to Remove / Install Flat Pack-IC

1. Removal

With Hot-Air Flat Pack-IC Desoldering Machine:

(1) Prepare the hot-air flat pack-IC desoldering machine, then apply hot air to the Flat Pack-IC (about 5 to 6 seconds). (Fig. S-1-1)

(2) Remove the flat pack-IC with tweezers while applying the hot air.

(3) Bottom of the flat pack-IC is fixed with glue to the CBA; when removing entire flat pack-IC, first apply soldering iron to center of the flat pack-IC and heat up. Then remove (glue will be melted). (Fig. S-1-6)

(1) Release the flat pack-IC from the CBA using tweezers. (Fig. S-1-6)

Caution:

1. Do not supply hot air to the chip parts around the flat pack-IC for over 6 seconds because damage to the chip parts may occur. Put masking tape around the flat pack-IC to protect other parts from damage. (Fig. S-1-2)

2. The flat pack-IC on the CBA is affixed with glue, so be careful not to break or damage the foil of each pin or the solder lands under the IC when removing it.
With Soldering Iron:

(1) Using desoldering braid, remove the solder from all pins of the flat pack-IC. When you use solder flux which is applied to all pins of the flat pack-IC, you can remove it easily. (Fig. S-1-3)

(2) Lift each lead of the flat pack-IC upward one by one, using a sharp pin or wire to which solder will not adhere (iron wire). When heating the pins, use a fine tip soldering iron or a hot air desoldering machine. (Fig. S-1-4)

(3) Bottom of the flat pack-IC is fixed with glue to the CBA; when removing entire flat pack-IC, first apply soldering iron to center of the flat pack-IC and heat up. Then remove (glue will be melted). (Fig. S-1-6)

(4) Release the flat pack-IC from the CBA using tweezers. (Fig. S-1-6)

Note:
When using a soldering iron, care must be taken to ensure that the flat pack-IC is not being held by glue. When the flat pack-IC is removed from the CBA, handle it gently because it may be damaged if force is applied.

With Iron Wire:

(1) Using desoldering braid, remove the solder from all pins of the flat pack-IC. When you use solder flux which is applied to all pins of the flat pack-IC, you can remove it easily. (Fig. S-1-3)

(2) Affix the wire to a workbench or solid mounting point, as shown in Fig. S-1-5.

(3) While heating the pins using a fine tip soldering iron or hot air blower, pull up the wire as the solder melts so as to lift the IC leads from the CBA contact pads as shown in Fig. S-1-5.
2. Installation

(1) Using desoldering braid, remove the solder from the foil of each pin of the flat pack-IC on the CBA so you can install a replacement flat pack-IC more easily.

(2) The “●” mark on the flat pack-IC indicates pin 1. (See Fig. S-1-7.) Be sure this mark matches the 1 on the PCB when positioning for installation. Then presolder the four corners of the flat pack-IC. (See Fig. S-1-8.)

(3) Solder all pins of the flat pack-IC. Be sure that none of the pins have solder bridges.

Instructions for Handling Semi-conductors

Electrostatic breakdown of the semi-conductors may occur due to a potential difference caused by electrostatic charge during unpacking or repair work.

1. Ground for Human Body

Be sure to wear a grounding band (1MΩ) that is properly grounded to remove any static electricity that may be charged on the body.

2. Ground for Workbench

(4) Be sure to place a conductive sheet or copper plate with proper grounding (1MΩ) on the workbench or other surface, where the semi-conductors are to be placed. Because the static electricity charge on clothing will not escape through the body grounding band, be careful to avoid contacting semi-conductors with your clothing.

Example:

Pin 1 of the Flat Pack-IC is indicated by a “●” mark.

Fig. S-1-7

Presolder

CBA

Flat Pack-IC

Fig. S-1-8

Incorrect>

CBA

Grounding Band

1MΩ

Conductive Sheet or Copper Plate

Correct>
OPERATING CONTROLS AND FUNCTIONS

FRONT PANEL

REMOTE CONTROL

6. SKIP DOWN/REV Button
   Plays back from the beginning of the current chapter or track. Hold down to fast reverse playback.

7. SKIP UP/FWD Button
   Plays back from the beginning of the next chapter or track. Hold down to fast forward playback.

8. Shuttle Ring (REV/FWD)
   Turn to make rewind or fast forward speed faster in the forward or backward direction in the Play mode or Still mode. The further the Shuttle Ring is rotated, the faster the playback speed.

9. AUDIO Button
   Press to select a desired audio language or sound mode.

10. SUBTITLE Button
    Press to select a desired subtitle language.

11. SURROUND Button
    Press to select a desired subtitle language.

12. PAUSE/STEP Button
    Use when making settings while watching the display on a TV screen.

13. FF SEARCH Button
    Use to fast forward or reverse the selected track.

14. SETUP Button
    Display, Remote Sensor Window

15. VIDEO/TV Button
    TV POWER Button

16. VOL Button
    CH Button

17. TV Button
    DV RM Button

18. Top MENU Button
    DISPLAY Button

19. Numeric Buttons
    SUBTITLE Button

20. SEARCH MODE Button
    A-B REPEAT Button

21. SEARCH MODE Button
    REPEAT Button

22. MODE Button
    CLEAR Button

23. ZOOM Button
    ANGLE Button

24. CLEAN Button
    TV POWER Button

25. SURROUND Button
    PHONES LEVEL Button

26. PAUSE/STEP Button
    PHONES LEVEL Button

27. DISPLAY Button
    ENTER Button

28. STOP Button
    Arrow Buttons

29. RETURN Button
    VP SENS Button

30. MENU Button
    ERButton

31. ENTER Button
    FR SEARCH Button

32. Arrow Buttons
    PHONES Button

33. RETURN Button
    PHONES LEVEL Button

34. FR SEARCH Button
    PHONES Button

35. PHONES LEVEL Button
    To connect headphone (Not supplied) for personal listening.

36. PHONES Button
    To connect headphone (Not supplied) for personal listening.
### DISPLAYS DURING OPERATION

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power on</td>
<td>Power on</td>
</tr>
<tr>
<td>No disc inserted</td>
<td>No disc inserted</td>
</tr>
<tr>
<td>Tray open</td>
<td>Tray open</td>
</tr>
<tr>
<td>Tray closed</td>
<td>Tray closed</td>
</tr>
<tr>
<td>Loading the Disc</td>
<td>Loading the Disc</td>
</tr>
<tr>
<td>Power off</td>
<td>Power off</td>
</tr>
</tbody>
</table>

### LOADING THE BATTERIES

1. Open the battery compartment cover.

2. Insert two AA batteries, with each one oriented correctly.

3. Close the cover.

### Notes
- Do not mix alkaline and manganese batteries.
- Do not mix old and new batteries.
1. **DIGITAL AUDIO OUT JACKS:**
   Use either an optical or coaxial digital cable to connect to a compatible Dolby Digital receiver. Use to connect to a Dolby Digital decoder or DTS decoder.

2. **ANALOG AUDIO OUT JACKS**
   Connect to the Audio input jacks of A/V-compatible TV or wide screen TV, Stereo system.

3. **VIDEO OUT JACK**
   Use a video cable to connect one of the jack to Video input on your A/V-compatible TV or wide screen TV, Stereo system.

4. **COMPONENT VIDEO OUT JACKS**
   Use these jacks if you have a TV with Component Video in jacks. These jacks provide Cγ/Pγ, Cβ/Pβ and Y video. Along with S-Video, Component Video provides the best picture quality.

5. **S-VIDEO OUT JACK**
   Use the S-Video cable to connect this jack to the S-Video jack on your A/V-compatible TV or wide screen TV for a higher quality picture.

6. **PROGRESSIVE switch**

---

The DCDi (Directional Correlational De-interlacing) system of this DVD player produces smooth and natural video images, even if really dynamic, by eliminating the jagged edges. “DCDi” is a registered trademark of Faroudja, a division of Sage Inc.

Manufactured under license from Dolby Laboratories. “Dolby” and the double-D symbol are trademarks of Dolby Laboratories.

“DTS” and “DTS Digital Out” are trademarks of Digital Theater Systems, Inc.
FIRMWARE RENEWAL MODE

HOW TO UPDATE THE FIRMWARE VERSION

1. Turn the power on and remove the disc on the tray.
2. To put the DVD player into version up mode, press [9], [8], [7], [6], and [SEARCH MODE] buttons on the remote control unit in that order. The tray will open automatically.
   Fig. a appears on the screen and Fig. b appears on the VFD.

3. Load the disc for version up. (For closing the tray, only the "OPEN/CLOSE" button is available.)
4. The DVD player enters the F/W version up mode automatically. Fig. c appears on the screen and Fig. d appears on the VFD.

5. After programming is finished, the tray opens automatically. Fig. e appears on the screen and the checksum in (*3) of Fig. e appears on the VFD. (Fig. f)

   BE F/W VERSION UP MODE
   PLEASE INSERT A DISC FOR BE F/W VERSION UP.

   EXIT: POWER

   Fig. a Version Up Mode Screen

   BE - UP
   Fig. b VFD in Version Up Mode

   The DVD player can also enter the version up mode with the tray open. In this case, Fig. a will be shown on the screen while the tray is open.

3. Load the disc for version up. (For closing the tray, only the "OPEN/CLOSE" button is available.)
4. The DVD player enters the F/W version up mode automatically. Fig. c appears on the screen and Fig. d appears on the VFD.

   BE F/W VERSION UP MODE
   VERSION:********
   Reading...(*2)

   Fig. c Programming Mode Screen

   BE F/W VERSION UP MODE
   VERSION: ********
   COMPLETED SUM:7abc(*3)

   Fig. e Completed Program Mode Screen

   7abc
   Fig. f VFD upon Finishing the Programming Mode (Example)

The appearance shown in (*2) of Fig. c is described as follows:

<table>
<thead>
<tr>
<th>No.</th>
<th>Appearance</th>
<th>State</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Reading...</td>
<td>Sending files into the memory</td>
</tr>
<tr>
<td>2</td>
<td>Erasing...</td>
<td>Erasing previous version data</td>
</tr>
<tr>
<td>3</td>
<td>Programming...</td>
<td>Writing new version data</td>
</tr>
</tbody>
</table>

5. After programming is finished, the tray opens automatically. Fig. e appears on the screen and the checksum in (*3) of Fig. e appears on the VFD.

   BE F/W VERSION UP MODE
   VERSION: ********
   Reading... Sending files into the memory
   Erasing... Erasing previous version data
   Programming... Writing new version data

6. At this time, no buttons are available.

7. Turn the power on by pressing the power button and the tray will close.

HOW TO VERIFY THE FIRMWARE VERSION

1. After making sure that no disc is in unit, turn the power on.
2. Press [1], [2], [3], [4], and [DISPLAY] buttons on the remote control unit in that order. The B/E version appears on the VFD, and the F/E and B/E versions appear on TV screen.
TROUBLESHOOTING

FLOW CHART NO.1
The power cannot be turned on.(1)

Is the fuse normal?

Yes

No

Replace the fuse.

See FLOW CHART No.3 <The fuse blows out.>

Is normal state restored when once unplugged power cord is plugged again after several seconds.

Yes

No

Check for lead or short-circuiting of primary circuit component?
(Q1001, Q1003, D1001, D1002, D1004, D1005, D1011, T1001, C1003, C1005, etc.)

Is the EV 5V line voltage normal?

Yes

No

Check each rectifying circuit of secondary circuit.

Is the voltage of EV 12V, EV -30V and filament voltage normal?

Yes

No

FLOW CHART NO.2
The power cannot be turned on.(2)

Does the change from STANDBY LED indicate turn-off?

Yes

No

Check the SW2008 and POWER button line.

Is the supply voltage of 3.3V fed to Q2021?

Yes

No

Check the EV 3.3V line.

Is the supply voltage of 5V fed to pin(3) of IC2001?

Yes

No

Check the IC2001.

Is the "H" signal inputted at base of Q2021, when the POWER button activated on the DVD?

Yes

No

Check the line between the remote control receiver and the pin(125) of IC601.

Is the "H" signal inputted at base of Q2021, when the POWER button activated on the remote control unit?

Yes

No

Replace IC601.

The STANDBY LED indicate is flashing after 0.5 sec.

Yes (below, confirmed operating at LED turn-off of 0.5 sec. interval.)

Are the "P-CON-H" pulse outputted from the Pin(207) of IC601?

Yes

No

Replace IC601.

Is the P-CON switch circuit operated normally?
(Q1002, Q1005, Q1006, IC1002, D1036, D1046)

Yes

No

Check each component and if poor the replace.

No

FLOW CHART NO.3
The fuse blows out.

Is there leaking or short-circuited primary component?

Yes

No

Check for short-circuiting of rectifying diode and circuit in each rectifying circuit of secondary side.
FLOW CHART NO.4
When the output voltage fluctuates.

Does the secondary side photo coupler circuit operate normally?
No → Check the circuit and replace the parts. (IC1001, IC1006, D1048, D1015, etc.)
Yes

Does the primary side photo coupler circuit operate normally?
No → Check the circuit and replace the parts. (IC1001, IC1012, D1024, etc.)
Yes

Replace IC1001.

FLOW CHART NO.5
When buzz is heard from the vicinity of power circuit.

Check for short-circuiting of rectifying diode and circuit in each rectifying circuit of secondary side. (D1003, D1030, D1008, D1009, D1013, D1016, Q1002, IC1002, Q1007, Q1010, Q1011, Q1014, Q1004, etc.)

FLOW CHART NO.6
The fluorescent display tube does not light.

Is the supply voltage of 5V fed to pin(6) and pin(24) of IC2001?
No → Check the EV 5V line.
Yes

Is the supply voltage of -24V fed to pin(15) of IC2001?
No → Check the -FL -24V line.
Yes

Is there 500kHz oscillation at pin(26) of IC2001?
No → Check R2001, IC2001 and their periphery.
Yes

Check the signal lines of FIP DA, FIP CK, FIP CS of IC2001 and IC601?
No → Check or replace IC2001 and IC601.
Yes

Are the filament voltage applied between (1), (2) and (38), (39) of the fluorescent display tube? Also negative voltage applied between these pins and GND?
No → Check the power circuit, D1017, Q2023, Q2024 and Q2025.
Yes

Check the fluorescent display tube and its periphery?
No → Check that the fluorescent display tube is free from damages such as crack.

FLOW CHART NO.7
The key operation is disabled.

Is key switch contact and installation state normal?
No → Replace key switch.
Yes

Is the control voltage normally into the pins(3), (4), (7), (8), (9), (10), (11), (12), (13), (14) of IC2001?
FLOW CHART NO.8

No operation is possible from the infrared remote control.

Operation is possible from the DVD, but no operation is possible from the infrared remote control?

Is 5V voltage supplied to the pin(3) terminal of remote control receiver?

Is the "L" pulse sent out pin(1) terminal of receiver when the infrared remote control is activated?

Is pulse signal supplied to the pin(125) of IC601? (Although SEARCH(1), SEARCH(+), PLAY, STILL/PAUSE, STOP, POWER and OPEN/CLOSE button.)

Yes

Replace IC601.

No

Replace the remote control receiver.

Check the line between the remote control receiver and the pin(125) of IC601.

Yes

Replace IC601.

No

Check EV 5V line.

FLOW CHART NO.9

PON 12V is not outputted.

Is 12V voltage supplied at collector of Q1002?

Yes

Check the secondary circuit, AT 12V and the periphery circuit of Q1005 and Q1006.

No

Check the Q1002 periphery circuit.

Is voltage of 12V sent out from the emitter of Q1002.

Yes

Check for load circuit short-circuiting or leak.

No

Check the Q1002 periphery circuit.

Does the P-CON switch circuit operate normally? (Q1005, Q1006, D1036, etc.)

Yes

Replace IC1402.

No

Check each component and if poor the replace.

Are the "H" pulse inputted into Q1002.

Yes

Check or replace Q1005, Q1006.

No

Check EV 5V line.
FLOW CHART NO.10

PON 5V is not outputted. (PON 12V is possible.)

Is 5V voltage supplied at collector of Q1004?

Is voltage of 5V sent out from the collector of Q1004?

Check the Q1004 periphery circuit.

Is the "H" pulse inputted into the base of Q1004?

Replace Q1004.

No

Yes

No

Yes

FLOW CHART NO.11

EV -19V is not outputted.

Is -19V voltage supplied at the cathode of D1003?

Is voltage of -24V sent out from the anode of D1003?

Check the D1003 periphery circuit.

Replace D1003.

No

Yes

No

Yes

FLOW CHART NO.12

PON 3.3V(1), (2) is not outputted.

Is 4V voltage supplied at emitter of Q1011?

Is voltage of 3.3V sent out from collector of Q1011?

Check the Q1011 periphery circuit.

Does the P-CON switch circuit operate normally? (Q1005, Q1006, etc.)

Are the "H" pulse inputted into base of Q1011?

Replace Q1011.

No

Yes

No

Yes

No

Yes
FLOW CHART NO.13
PON 1.8V is not outputted. (PC 3.3V(1), (2) is possible)

Is 5V voltage supplied at pin(1) of IC1002? No → Check the secondary circuit, AT 5V line.
Yes → Check for load circuit short-circuiting of leak.

Is voltage of 1.8V sent out from the pin(2) of IC1002? No → Check the IC1002 periphery circuit.
Yes → Replace IC1002.

FLOW CHART NO.14
The disc tray cannot be opened and closed.
(For remote control is possible.)

Is 0V voltage supplied at pin(25) of CN1001 when the OPEN/CLOSE button is activated on the DVD? No → Check the SW2014 and OPEN/CLOSE KEY line.
Yes → Check waveform at pin 3 and pin 4 on IC2001 or replace it.

FLOW CHART NO.15
The disc tray cannot be opened and closed.

Is the signal from the pins(200, 201) of IC601 inputted into the pins(1, 2) of IC401? No → Check the TFWD/TREV signal line between IC401 and IC601.
Yes → Replace IC401.

Is loading motor drive voltage output from the pins(9, 10) of IC401? No → Check PC 8V line.
Yes → Is 9V voltage applied to the pins (7, 8, 20) of IC401?
No → Check the line between the IC401 and the loading motor.

Is the loading motor drive voltage applied to the terminal of loading motor? No → Check for mechanism and gear engagement and breakage.
Yes →

FLOW CHART NO.16
The [No Disc] indication. (In case of focus error)

Is FE signal outputted to the pin(22) of IC101 when the disc is set? No → Replace IC101.
Yes → Is there input signal on the pins(57–60) of IC101.
No → Check the connection of optical pickup cable. If it is normal, replace the optical pickup.

Is FE signal inputted into the pin(117) of IC201? No → Check or replace IC201?
Yes → Check the line between the IC101 and IC201.
FLOW CHART NO.17
The [No Disc] indication. (In case focus servo does not function.)

- Is the focus control signal outputted to the pin(115) of IC201?
  - Yes
  - No

  - Check the periphery circuit of pins(57, 78, 88, 99, 109, 116, 125, 143, 156, 162) of IC201 and power source. If it is normal, replace IC201.

- Is the focus control signal from the pin(115) of IC201 inputted into the pin(6) of IC401?
  - Yes
  - No

  - Check the focus control signal (DA0) line between the IC201 and IC401.

- Is the focus control drive voltage outputted from the pins(11, 12) of IC401?
  - Yes
  - No

  - Is 8V voltage applied to the pins(7, 8, 20) of IC401?
    - Yes
    - No

    - Replace IC401.

- Is the focus control drive voltage applied to the terminal of focus actuator?
  - Yes
  - No

  - Check the connection of optical pickup cable. If it is normal, replace the optical pickup.

FLOW CHART NO.18
The [No Disc] indication. (When the laser beam does not light.)

- Is the Q101 and Q102(LD POWER ON) drive signal(LDCOI and LDCOZ) outputted to the pins(2, 4) of IC101. (Checking of symptom.)
  - Yes
  - No

  - Check the line between the pins(2, 4) of IC101 and the base of Q101 through Q102.

- Is 5V voltage applied to the emitter of Q101 and Q102?
  - Yes
  - No

  - Check the 5V line.

- Is the 5V voltage supplied to the pin(12)(DVD) and pin(20)(CD) of pickup terminal?
  - Yes
  - No

  - Check the line between the Q101, Q102 and pickup terminal.

  - Check the connection of optical pickup cable. If it is normal, replace the optical pickup.

FLOW CHART NO.19
Both picture and sound do not operate normally.

- Set the disc on the disc tray.
  - Yes
  - No

  - Check the loading switch.

- Is it possible to hold normally the disc with the check?
  - Yes
  - No

  - Check for contamination of objective lens of optical pickup.

- Is the level of RF signal which is outputted from pin(35) of IC101, normal?
  - Yes
  - No

  - Replace the main PWB unit.

  - Replace the optical pickup unit.

  - Check the video amplifier unit and the audio amplifier unit. (IC1402, IC1201)
FLOW CHART NO.20

Picture do not operate normally.

Set the disc on the disc tray.

Are the video signals outputted to each pins of main unit connector CN701?
- CN701 7PIN CVBS
- CN701 5PIN S-Y
- CN701 6PIN S-C

Check the main unit. (IC601 periphery circuit.)

Check the line between each pins of main unit connector CN701 and each pins of IC1402.
- CN701 7PIN → IC1402 4PIN CVBS
- CN701 5PIN → IC1402 6PIN S-Y
- CN701 9PIN → IC1402 2PIN S-C

Are the video signals shown above input into each pins of IC1402?
- IC1402 4PIN CVBS
- IC1402 6PIN S-Y
- IC1402 2PIN S-C

Check the line between each pins of main unit connector CN701 and each pins of IC1402.
- CN701 7PIN → IC1402 4PIN CVBS
- CN701 5PIN → IC1402 6PIN S-Y
- CN701 9PIN → IC1402 2PIN S-C

Are the video signals outputted to each pins of IC1402?
- IC1402 30PIN CVBS
- IC1402 27PIN S-Y
- IC1402 33PIN S-C

Is 5V voltage applied to the pin (1, 3, 5, 34) of IC1402?

Check the peripheral circuit of JK1401 from the pin (33) of IC1402.

Are the video signals outputted to the specific output terminal?
- Are the composite video signals outputted to the VIDEO OUT terminal (JK1403)?
- Are the luminance signals outputted to the S-OUT terminal (JK1401)?
- Are the chroma signals outputted to the S-OUT terminal (JK1401)?

Check the peripheral circuit of JK1401 from the pin (27) of IC1402.

Check the peripheral circuit of JK1403 from the pin (30) of IC1402.

Check or replace IC1402?
FLOW CHART NO.21

Picture do not operate normally.

Set the disc on the disc tray.

Are the analog audio interface signals outputted to each pins of main unit connector CN701?

CN701 13PIN FL
CN701 15PIN FR

Are the analog audio interface signals inputted to each pins of IC1201.

IC1201 2PIN FL
IC1201 6PIN FR

Are the system control interface signals outputted to each pins of main unit connector CN701?

CN701 16PIN /AMUTE
CN701 14PIN /ZFR
CN701 12PIN /ZFL

Are the system control interface signals inputted to each pins of Q1203 and Q1204.

Q1203 BASE /ZFL
Q1204 BASE /ZFR
Q1203, Q1204 BASE /AMUTE

Are the audio signals outputted to the specific output terminal?
Are the audio signals outputted to the L/R OUT terminal (JK1201)?
CABINET DISASSEMBLY INSTRUCTIONS

1. Disassembly Flowchart

This flowchart indicates the disassembly steps to gain access to item(s) to be serviced. When reassembling, follow the steps in reverse order. Bend, route, and dress the cables as they were originally.

![Disassembly Flowchart Diagram]

2. Disassembly Method

<table>
<thead>
<tr>
<th>ID/LOC. No.</th>
<th>PART</th>
<th>REMOVAL</th>
<th>Fig. No.</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>[1] Top Cover</td>
<td></td>
<td>REMOVE/*UNHOOK/UNLOCK/RELEASE/UNPLUG/DESOLDER</td>
<td>5(S-1)</td>
<td>-</td>
</tr>
<tr>
<td>[3] Function CBA</td>
<td></td>
<td></td>
<td>8(S-2), Jog Button, Cross Button</td>
<td>-</td>
</tr>
<tr>
<td>[4] DVD Mecha</td>
<td></td>
<td></td>
<td>3(S-3), *CN101, *CN401</td>
<td>2, 2-1, 2-2, 2-3, 3</td>
</tr>
<tr>
<td>[5] Headphone CBA</td>
<td></td>
<td></td>
<td>(S-4), *4(L-4), *CN2701</td>
<td>-</td>
</tr>
<tr>
<td>[6] H/P Jack Holder</td>
<td></td>
<td></td>
<td>(S-5)</td>
<td>-</td>
</tr>
</tbody>
</table>

(1): Identification (location) No. of parts in the figures
(2): Name of the part
(3): Figure Number for reference
(4): Identification of parts to be removed, unhooked, unlocked, released, unplugged, unclamped, or desoldered.
P=Spring, L=Locking Tab, S=Screw, CN=Connector
*=Unhook, Unlock, Release, Unplug, or Desolder
e.g. 2(S-2) = two Screws (S-2), 2(L-2) = two Locking Tabs (L-2)
(5): Refer to “Reference Notes.”
Reference Notes

CAUTION 1: Locking Tabs (L-1), (L-2) and (L-3) are fragile. Be careful not to break them.

1-1. Connect the wall plug to an AC outlet and press the OPEN/CLOSE button to open the Tray.
1-2. Remove the Tray Panel by releasing two Locking Tabs (L-1).
1-3. Press the OPEN/CLOSE button again to close the Tray.
1-4. Press the POWER/STANDBY button to turn the power off and unplug an AC cord.
1-5. Disconnect connector CN2002.
1-7. Release two Locking Tabs (L-2). Then, release five Locking Tabs (L-3) (to do this, first release two Locking Tabs (A) at the side, and then three Locking Tabs (B) at the bottom.)

CAUTION 2: Electrostatic breakdown of the laser diode in the optical system block may occur as a potential difference caused by electrostatic charge accumulated on cloth, human body etc, during unpacking or repair work.

To avoid damage of pickup follow next procedures.
2-1. Slide out the pickup unit as shown in Fig. 5.
2-2. Short the three short lands of FPC cable with solder before removing the FFC cable (CN101) from it. If you disconnect the FFC cable (CN101), the laser diode of pickup will be destroyed. (Fig. 5)
2-3. Disconnect Connector (CN401). Remove three Screws (S-3) and lift the DVD Mecha. (Fig. 4)

CAUTION 3: When reassembling, confirm the FFC cable (CN101) is connected completely. Then remove the solder from the three short lands of FPC cable. (Fig. 5)
Short the three short lands by soldering.

View for A

OR

View for B

View for C

Fig. D5

Fig. D6

Fig. D7
HOW TO MANUAL EJECT

1. Remove the Top Case.

2. Insert the eject-bar (length = approximately 80 mm, diameter = approximately 3 mm) into the manual eject hole on the DVD Mecha. Then, press it until the tray is ejected.
EXPLODED VIEWS

Cabinet

See Electrical Parts List for parts with this mark.
Some Ref. Numbers are not in sequence.
## REPLACEMENT PARTS LIST

### Mechanical Parts List

<table>
<thead>
<tr>
<th>SYMBOL-NO</th>
<th>P-NO</th>
<th>DESCRIPTION</th>
<th>SYMBOL-NO</th>
<th>P-NO</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MECHANISM SECTION</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A1X</td>
<td>TJ15841</td>
<td>FRONT ASSEMBLY</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A2</td>
<td>TJ15673</td>
<td>TRAY ASSEMBLY</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A7</td>
<td>TJ15482</td>
<td>JOG SHUTTLE KEY</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A8</td>
<td>TJ15483</td>
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## Electrical Parts List

Note: Although some parts in the schematic diagrams have different names from those in the parts list, there is no problem in replacing parts.

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SCHEMATIC DIAGRAMS / CBA’S AND TEST POINTS

Standard Notes

WARNING

Many electrical and mechanical parts in this chassis have special characteristics. These characteristics often pass unnoticed and the protection afforded by them cannot necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts that have these special safety characteristics are identified in this manual and its supplements; electrical components having such features are identified by the mark "▲" in the schematic diagram and the parts list. Before replacing any of these components, read the parts list in this manual carefully. The use of substitute replacement parts that do not have the same safety characteristics as specified in the parts list may create shock, fire, or other hazards.

Capacitor Temperature Markings

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<td>-25°C to +85°C</td>
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<td>+30 - 80%</td>
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<td>-10°C to +70°C</td>
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Values in schematic diagrams

The values, dielectric strength (power capacitance) and tolerances of the resistors (excluding variable resistors) and capacitors are indicated in the schematic diagrams using abbreviations.

[ Resistors ]

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[ Capacitors ]

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[ Coils ]

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LIST OF CAUTION, NOTES, AND SYMBOLS USED IN THE SCHEMATIC DIAGRAMS ON THE FOLLOWING PAGES:

1. CAUTION:
   FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH THE SAME TYPE FUSE.
   ATTENTION: POUR UNE PROTECTION CONTINUE LES RISQES D'INCELE N'UTILISER QUE DES FUSIBLE DE MEMO TYPE.
   RISK OF FIRE-REPLACE FUSE AS MARKED.

2. CAUTION:
   Fixed Voltage (or Auto voltage selectable) power supply circuit is used in this unit.
   If Main Fuse (F1001) is blown, first check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply. Otherwise it may cause some components in the power supply circuit to fail.

3. Note:
   (1) Do not use the part number shown on the drawings for ordering. The correct part number is shown in the parts list, and may be slightly different or amended since the drawings were prepared.
   (2) To maintain original function and reliability of repaired units, use only original replacement parts which are listed with their part numbers in the parts list section of the service manual.

4. Wire Connectors
   (1) Prefix symbol "CN" means "connector" (can disconnect and reconnect).
   (2) Prefix symbol "CL" means "wire-solder holes of the PCB" (wire is soldered directly).

5. Mode: SP

6. Voltage indications for PLAY mode on the schematics are as shown below:

   Unit: Volts

   ![Voltage Indications Diagram]

   Indicates that the voltage is not consistent here.

7. How to read converged lines

   ![Distinction Area Diagram]

   Examples:
   1. "1-D3" means that line number "1" goes to area "D3".
   2. "1-B1" means that line number "1" goes to area "B1".

8. Test Point Information

   ![Test Point Diagram]

   : Indicates a test point with a jumper wire across a hole in the PCB.
   : Used to indicate a test point with a component lead on foil side.
   : Used to indicate a test point with no test pin.
   : Used to indicate a test point with a test pin.
Wiring Diagram

DVD MAIN CBA UNIT

PICK UP UNIT

FG CBA

FG SENSOR

TRAY-IN

TRAY-OUT

SPINDLE MOTOR

LOADING MOTOR

SW CBA

HEADPHONE JACK

AV CBA

PROGRESSIVE CBA UNIT

FUNCTION CBA

SWITCH CBA

RELAY CBA

DVD MECHA

OPTICAL AUDIO OUT

DIGITAL AUDIO OUT

VIDEO OUT

AUDIO OUT(R)

AUDIO OUT(L)

I/P SW

GND(DVD-PD)

GND(LD)

FASTS

S-VIDEO OUT

DIGITAL AUDIO OUT

OPTICAL

AUDIO

OUT(L)

OUT(R)

VIDEO

OUT

AC CORD

LOADING METER

TRAY IN

TRAY OUT

SW CBA

FUNCTION CBA

SWITCH CBA

HEADPHONE CBA

Wiring Diagram

AC CORD

LOADING MOTOR

TRAY OUT

SW CBA

FUNCTION CBA

SWITCH CBA

HEADPHONE CBA

Wiring Diagram

AC CORD

LOADING MOTOR

TRAY OUT

SW CBA

FUNCTION CBA

SWITCH CBA

HEADPHONE CBA
DVD Main 3/4 Schematic Diagram
DVD Main 4/4 Schematic Diagram
CAUTION!
Fixed voltage power supply circuit is used in this unit. 
If Main Fuse (F1001) is blown, check to see that all components in the power supply circuit 
are not defective before you connect the AC plug to the AC power supply. Otherwise it may 
cause some components in the power supply circuit to fail.

NOTE:
The voltage for parts in hot circuit is measured 
using hot GND as a common terminal.

CAUTION
FOR CONTINUED PROTECTION AGAINST FIRE HAZARD,
REPLACE ONLY WITH THE SAME TYPE FUSE.
ATTENTION : POUR UNE PROTECTION CONTINUE LES RISQUES 
D'INCELLE UTILISER QUE DES FUSIBLE DE MEMO TYPE.
RISK OF FIRE REPLACE FUSE AS MARKED.

"This symbol means fast operating fuse."
"Ce symbole représente un fusible à fusion rapide."

NOTE:
The voltage for parts in hot circuit is measured 
using hot GND as a common terminal.
AV 2/3 & Headphone Schematic Diagram
NOTE:
Input
CD: 1kHz PLAY (WF4~WF6)
DVD: POWER ON (STOP) MODE (WF1~WF3)
AV 3/3, Function & Switch Schematic Diagram

FL2001 MATRIX CHART

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</table>

AV CBA

FUNCTION CBA

UNLESS OTHERWISE SPECIFIED, ALL PIN NAMES ON 8150151-771 AND SWITCHES ARE DIAGRAMS OF KSMD548.
Function CBA Top View

Function CBA Bottom View

Headphone CBA Top View

Headphone CBA Bottom View
Switching power supply circuit is used in this unit. If Main Fuse (F1001) is blown, check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply. Otherwise it may cause some components in the power supply circuit to fail.

BECAUSE A HOT CHASSIS GROUND IS PRESENT IN THE POWER SUPPLY CIRCUIT, AN ISOLATION TRANSFORMER MUST BE USED. ALSO, IN ORDER TO HAVE THE ABILITY TO INCREASE THE INPUT SLOWLY, WHEN TROUBLESHOOTING THIS TYPE POWER SUPPLY CIRCUIT, A VARIABLE ISOLATION TRANSFORMER IS REQUIRED.
Switching power supply circuit is used in this unit. If Main Fuse (F1001) is blown, check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply. Otherwise it may cause some components in the power supply circuit to fail.

**CAUTION!**
Because a hot chassis ground is present in the power supply circuit, an isolation transformer must be used. Also, in order to have the ability to increase the input slowly, when troubleshooting this type power supply circuit, a variable isolation transformer is required.

---

**ATTENTION :** Pour une protection continue les risques d’incendie utiliser que des fusible de même type.

**RISK OF FIRE - REPLACE FUSE AS MARKED.**

*This symbol means fast operating fuse.*

```
4-1-15
```
DVD Signal Process Block Diagram

IC201 (DVD SIGNAL PROCESS)

FROM/TO RF SIGNAL PROCESS/SERVO BLOCK DIAGRAM

DATA SLICER

DVD DEMODULATOR

MEMORY MANAGER

VIDEO/AUDIO INTERFACE

FROM/TO SYSTEM CONTROL BLOCK DIAGRAM

CPU ADRESSES

CPU INTERFACE

DVD MAIN CBA UNIT

DATA/VIDEO/AUDIO SIGNAL

DVD DECODER

MEMORY MANAGER

FROM/TO SYSTEM CONTROL BLOCK DIAGRAM

CPU ADRESSES

CPU INTERFACE

DVD MAIN CBA UNIT

DATA/VIDEO/AUDIO SIGNAL
Video Block Diagram

IC601 (DVD HOST PROCESSOR)

- CPU
- CACHE SUBSYSTEM
- CENTRAL COMMAND PORT
- FRONT-END & LINK INTERFACE

Audio Decoder

SDRAM ARBITER

SDRAM FIFO

I/F

ST20 ARBITER & MEMORY CONTROLLER

Video Decoder

Video Filtering

DSD, SP DECODER & MIXING

OSD, SP DECODER & MIXING

DENC

FROM DVD SIGNAL PROCESS BLOCK DIAGRAM

FROM/TO PROGRESSIVE BLOCK DIAGRAM CN1801

IC602 (8Mbit FLASH MEMORY)

- A0 - A18
- D00 - D03
- W00 - W03
- DQ0 - DQ15
- AD00 - AD03
- AD04 - AD07
- AD08 - AD15
- WE
- CE
- WE
- OE
- ASC
- ADDR1 - ADDR20
- DATA0-DATA15
- ADDR1-ADDR20
- PARA0-PARA7
- ~

FROM/TO SYSTEM CONTROL BLOCK DIAGRAM

FROM/TO PROGRESSIVE BLOCK DIAGRAM CN1802

AV CBA

4-2-4
CAUTION!
Switching power supply circuit is used in this unit. If Main Fuse (F1001) is blown, check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply. Otherwise it may cause some components in the power supply circuit to fail.

NOTE:
The voltage for parts in hot circuit is measured using hot GND as a common terminal.

CAUTION!
For continued protection against fire hazard, replace only with the same type fuse.

ATTENTION: POUR UNE PROTECTION CONTINUE LES RISQUES D’INCELE N’UTILISER QUE DES FUSIBLE DE MEMO TYPE.

RISK OF FIRE - REPLACE FUSE AS MARKED.

-“This symbol means fast operating fuse.”

-“Ce symbole représente un fusible a fusion rapide.”

FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH THE SAME TYPE FUSE.

ATTENTION : POUR UNE PROTECTION CONTINUE LES RISQUES D’INCELE N’UTILISER QUE DES FUSIBLE DE MEMO TYPE.

RISK OF FIRE - REPLACE FUSE AS MARKED.

-“This symbol means fast operating fuse.”

-“Ce symbole représente un fusible a fusion rapide.”

4-2-7
SYSTEM CONTROL TIMING CHARTS

Tray close ~ Play / Play ~ Tray open

Eject key on → Tray close → Disc Rotation → Play → Tray open

- LSW2: 0V, +5V, +6V
- LSW1: 0V, +5V
- LM-: 0V, +6V
- LM+: 0V, +6V
- I/O (TL123): 0V, +5V
- SP (TP122): 0V, +2V
- TV (TL122): 0V, +2V

- Eject key on: +6V, 0V
- Disc Rotation: 4.4s
- Play: 2.0s, 1.2s, 1.7s, 700ms
- Tray open: 0V

- Disc Rotation
- 2.0s
- 1.2s
- 1.7s
- 700ms

- Tray close
- Tray open

4-3-1
## IC PIN FUNCTION DESCRIPTIONS

### IC2001 [ PT6315-S (-TP) ]

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<th>Pin No.</th>
<th>In/Out</th>
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<td>1</td>
<td>In</td>
<td>CLK</td>
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<td>K1</td>
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<td>K2</td>
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<td>Serial Data Input</td>
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LEAD IDENTIFICATIONS

Note:
A: Anode
K: Cathode
E: Emitter
C: Collector
B: Base
R: Reference
1 VCC
2 GND
3 OUT
HITACHI