CONTENTS

1. Precautions
2. Reference Information
3. Product Specification
4. Operating Instructions
5. Disassembly and Reassembly
6. Circuit Descriptions
7. Troubleshooting
8. Exploded Views
9. Replacement Parts List updated 11/19/02
10. Block Diagram
11. PCB Diagrams
12. Wiring Diagram
13. Schematic Diagrams
1. Precautions

1-1 Safety Precautions

1) Before returning an instrument to the customer, always make a safety check of the entire instrument, including, but not limited to, the following items:

(1) Be sure that no built-in protective devices are defective or have been defeated during servicing. (1) Protective shields are provided to protect both the technician and the customer. Correctly replace all missing protective shields, including any remove for servicing convenience.
(2) When reinstalling the chassis and/or other assembly in the cabinet, be sure to put back in place all protective devices, including, but not limited to, nonmetallic control knobs, insulating fish papers, adjustment and compartment covers/shields, and isolation resistor/capacitor networks. Do not operate this instrument or permit it to be operated without all protective devices correctly installed and functioning.
(3) Leakage Current Hot Check—With the instrument completely reassembled, plug the AC line cord directly into a 120V AC outlet. (Do not use a isolation transformer during this test.) Use a leakage current tester or a metering system that complies with American National Standards institute (ANSI) C101.1 Leakage Current for Appliances and Underwriters Laboratories (UL) 1270 (40.7). With the instrument's AC switch first in the ON position and then in the OFF position, measure from a known earth ground (metal water pipe, conduit, etc.) to all exposed metal parts of the instrument (antennas, handle brackets, metal cabinets, screwheads, metallic overlays, control shafts, etc.), especially any exposed metal parts that offer an electrical return path to the chassis. Any current measured must not exceed 0.5mA. Reverse the instrument power cord plug in the outlet and repeat the test. See Fig. 1-1.

Any measurements not within the limits specified herein indicate a potential shock hazard that must be eliminated before returning the instrument to the customer.

(4) Insulation Resistance Test Cold Check—(1) Unplug the power supply cord and connect a jumper wire between the two prongs of the plug. (2) Turn on the power switch of the instrument. (3) Measure the resistance with an ohmmeter between the jumpered AC plug and all exposed metallic cabinet parts on the instrument, such as screwheads, antenna, control shafts, handle brackets, etc. When an exposed metallic part has a return path to the chassis, the reading should be between 1 and 5.2 megohm. When there is no return path to the chassis, the reading must be infinite. If the reading is not within the limits specified, there is the possibility of a shock hazard, and the instrument must be re- pared and rechecked before it is returned to the customer. See Fig. 1-2.
2) Read and comply with all caution and safety related notes non or inside the cabinet, or on the chassis.

3) Design Alteration Warning-Do not alter or add to the mechanical or electrical design of this instrument. Design alterations and additions, including but not limited to, circuit modifications and the addition of items such as auxiliary audio output connections, might alter the safety characteristics of this instrument and create a hazard to the user. Any design alterations or additions will make you, the service, responsible for personal injury or property damage resulting therefrom.

4) Observe original lead dress. Take extra care to assure correct lead dress in the following areas: (1) near sharp edges, (2) near thermally hot parts (be sure that leads and components do not touch thermally hot parts), (3) the AC supply, (4) high voltage, and (5) antenna wiring. Always inspect in all areas for pinched, out-of-place, or frayed wiring. Do not change spacing between a component and the printed-circuit board. Check the AC power cord for damage.

5) Components, parts, and/or wiring that appear to have overheated or that are otherwise damaged should be replaced with components, parts and/or wiring that meet original specifications. Additionally, determine the cause of overheating and/or damage and, if necessary, take corrective action to remove any potential safety hazard.

6) 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 shading, an ( ) or a ( ) on schematics and parts lists. Use of a substitute replacement that does not have the same safety characteristics as the recommended replacement part might created shock, fire and/or other hazards. Product safety is under review continuously and new instructions are issued whenever appropriate.
1-2 Servicing Precautions

**CAUTION**: Before servicing Instruments covered by this service manual and its supplements, read and follow the Safety Precautions section of this manual.

**Note**: If unforeseen circumstances create conflict between the following servicing precautions and any of the safety precautions, always follow the safety precautions. Remember: Safety First.

1-2-1 General Servicing Precautions

(1) a. Always unplug the instrument's AC power cord from the AC power source before (1) removing or reinstalling any component, circuit board, module or any other instrument assembly, (2) disconnecting any instrument electrical plug or other electrical connection, (3) connecting a test substitute in parallel with an electrolytic capacitor in the instrument.

b. Do not defeat any plug/socket B+ voltage interlocks with which instruments covered by this service manual might be equipped.

c. Do not apply AC power to this instrument and/or any of its electrical assemblies unless all solid-state device heat sinks are correctly installed.

d. Always connect a test instrument's ground lead to the instrument chassis ground before connecting the test instrument positive lead. Always remove the test instrument ground lead last.

**Note**: Refer to the Safety Precautions section ground lead last.

(2) The service precautions are indicated or printed on the cabinet, chassis or components. When servicing, follow the printed or indicated service precautions and service materials.

(3) The components used in the unit have a specified flame resistance and dielectric strength. When replacing components, use components which have the same ratings. Components identified by shading, by ( ) or by ( ) in the circuit diagram are important for safety or for the characteristics of the unit. Always replace them with the exact replacement components.

(4) An insulation tube or tape is sometimes used and some components are raised above the printed wiring board for safety. The internal wiring is sometimes clamped to prevent contact with heating components. Install such elements as they were.

(5) After servicing, always check that the removed screws, components, and wiring have been installed correctly and that the portion around the serviced part has not been damaged and so on. Further, check the insulation between the blades of the attachment plug and accessible conductive parts.

1-2-2 Insulation Checking Procedure

Disconnect the attachment plug from the AC outlet and turn the power ON. Connect the insulation resistance meter (500V) to the blades of the attachment plug. The insulation resistance between each blade of the attachment plug and accessible conductive parts (see note) should be more than 1 Megohm.

**Note**: Accessible conductive parts include metal panels, input terminals, earphone jacks, etc.
1-3 ESD Precautions

Electrostatically Sensitive Devices (ESD)

Some semiconductor (solid state) devices can be damaged easily by static electricity. Such components commonly are called Electrostatically Sensitive Devices (ESD). Examples of typical ESD devices are integrated circuits and some field-effect transistors and semiconductor chip components. The following techniques should be used to help reduce the incidence of component damage caused by static electricity.

1. Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any electrostatic charge on your body by touching a known earth ground. Alternatively, obtain and wear a commercially available discharging wrist strap device, which should be removed for potential shock reasons prior to applying power to the unit under test.

2. After removing an electrical assembly equipped with ESD devices, place the assembly on a conductive surface such as aluminum foil, to prevent electrostatic charge buildup or exposure of the assembly.

3. Use only a grounded-tip soldering iron to solder or unsolder ESD devices.

4. Use only an anti-static solder removal devices. Some solder removal devices not classified as "anti-static" can generate electrical charges sufficient to damage ESD devices.

5. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ESD devices.

6. Do not remove a replacement ESD device from its protective package until immediately before your are ready to install it. (Most replacement ESD devices are packaged with leads electrically shorted together by conductive foam, aluminum foil or comparable conductive materials).

7. Immediately before removing the protective materials from the leads of a replacement ESD device, touch the protective material to the chassis or circuit assembly into which the device will be installed.

CAUTION: Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.

8. Minimize bodily motions when handling unpackaged replacement ESD devices. (otherwise harmless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity sufficient to damage an ESD device).
1-4 Handling the optical pick-up

The laser diode in the optical pick up may suffer electrostatic breakdown because of potential static electricity from clothing and your body.

The following method is recommended.
(1) Place a conductive sheet on the work bench (The black sheet used for wrapping repair parts.)

(2) Place the set on the conductive sheet so that the chassis is grounded to the sheet.

(3) Place your hands on the conductive sheet(This gives them the same ground as the sheet.)

(4) Remove the optical pick up block

(5) Perform work on top of the conductive sheet. Be careful not to let your clothes or any other static sources to touch the unit.

♦ Be sure to put on a wrist strap grounded to the sheet.
♦ Be sure to lay a conductive sheet made of copper etc. Which is grounded to the table.

(6) Short the short terminal on the PCB, which is inside the Pick-Up ASS'Y, before replacing the Pick-Up. (The short terminal is shorted when the Pick-Up Ass'y is being lifted or moved.)

(7) After replacing the Pick-up, open the short terminal on the PCB.
1-5 Pick-up disassembly and reassembly

### 1-5-1 Disassembly

1) Remove the power code.
2) Disassemble the Deck-Assy.
3) Solder land 2 points short on Pick-up. (See Fig. 1-4)
4) Disassembly the Pick-up.

**Note:** If the assembly and disassembly are not done in correct sequence, the Pick-up may be damaged.

### 1-5-2 Assembly

1) Replace the Pick-up.
2) Remove the soldering 2 points on Pick-up.
3) Reassemble the Deck-Assy.

---

**Fig. 1-4**

---

**SOLDER LAND 2 POINTS SHORT**
## 3. Product Specifications

<table>
<thead>
<tr>
<th>GENERAL</th>
<th>Power Requirements</th>
<th>AC 120V, 60Hz</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Power Consumption</td>
<td>15W</td>
</tr>
<tr>
<td></td>
<td>Weight</td>
<td>2.7kg</td>
</tr>
<tr>
<td></td>
<td>Dimensions</td>
<td>W 430mm X D 240mm X H 79mm</td>
</tr>
<tr>
<td></td>
<td>Operating Temperature Range</td>
<td>+5°C ~ +35°C</td>
</tr>
<tr>
<td></td>
<td>Operating Humidity Range</td>
<td>10% to 75%</td>
</tr>
</tbody>
</table>

| DISC   | DVD (Digital Versatile Disc) | Reading Speed : 3.49 m/s |
|        | Approx. Play Time (Single Sided, Single Layer Disc) : 135 min. |
|        | CD : 12Cm (Compact Disc)     | Reading Speed : 1.2 to 1.4 m/s |
|        | Maximum Play Time : 74min.   |
|        | CD : 8Cm (Compact Disc)      | Reading Speed : 1.2 to 1.4 m/s |
|        | Maximum Play Time : 20min.   |
|        | VCD : 12Cm                  | Reading Speed : 1.2 to 1.4 m/s |
|        | Maximum Play Time : 74min. (Video + Audio) |

| Video Output | Composite Video | 1 channel : 1.0Vp-p (75ohm load) |
|              | Component Video | Y : 1.0Vp-p (75ohm load) |
|              | Pr : 0.70Vp-p (75ohm load) |
|              | Pb : 0.70Vp-p (75ohm load) |
|              | S-Video          | Luminance Signal : 1Vp-p (75ohm load) |
|              | Chrominance Signal : 0.286Vp-p (75ohm load) |

| Audio Output | 2 Channel | L (1/L), R (2/R) |
|              | * Frequency Response | 48kHz Sampling : 4Hz to 22kHz |
|              | 96kHz Sampling : 4Hz to 44kHz |
|              | * S/N Ratio | 110dB |
|              | * Dynamic Range | 100dB |
|              | * Total Harmonic Distortion | 0.004% |

*: Nominal specification
4. Operating Instructions

**Description-Front Panel**

**Front Panel Controls**

1. POWER/STANDBY □/□
   - When the unit is first plugged in, the indicator lights. When POWER/STANDBY □/□ is pressed, the lamp goes out and the player is turned on.

2. DISC TRAY
   - Press ▲ OPEN/CLOSE to open and close the disc tray.

3. DISPLAY
   - Operation indicators are displayed here.

4. ▲ OPEN/CLOSE
   - Press to open and close the disc tray.

5. ▶/□ (PLAY/PAUSE)
   - Begin or pause disc play.

6. ■ (STOP)
   - Stops disc play.

7. ▶▶/◀◀ (SKIP/SEARCH)
   - Use to skip a scene or music.
   - If this button is held down for approx. two seconds, it will switch to the search button: thereafter, each time the button is pressed, the search speed will switch to 2X, 4X, 8X, 16X, 32X, 128X, after which SKIP will be restored.

**Front Panel Display**

1. You can now select different viewing points of the scene recorded by different cameras (Multi Angle).

2. Disc type indicators
   - Reverse playback / Pause / Forward playback
   - Lights when 3D sound is turned on.

3. DVD: Title number

4. DVD: Chapter number.

5. Video/Audio CD: Track number

6. Repeat play mode

7. Linear PCM audio output

8. Dolby Digital audio output

9. DTS (Digital Theater System) audio output (Digital only)

10. MPEG-2 Audio output

11. Displays various messages concerning operations such as PLAY, STOP, LOAD, RANDOM...

12. no DISC : No disc loaded.

13. OPEN : The disc tray is open.

14. LOAD : Player is loading disc information.
**Tour of the Remote Control**

- **DVD Function Buttons**
  - **DVD POWER Button**
    - Turns the player on and off.
  - **A-B REPEAT Button**
    - Marks a segment to repeat between A and B.
  - **REPEAT Button**
    - Allows you to repeat play a title, chapter, track, or disc.
  - **MODE Button**
    - Allows you to program a specific order.
  - **RETURN Button**
    - Returns to a previous menu.
  - **ANGLE Button**
    - Accesses various camera angles on a disc.
  - **SUBTITLE Button**
    - Accesses various subtitles on a disc.
  - **MENU Button**
    - Brings up the Menu on a disc.
  - **ENTER/DIRECTION Button** (UP/DOWN or LEFT/RIGHT Button)
    - To view the first picture of each chapter(DVD) or track(VCD).
  - **STEP Button**
    - Advances playback one frame at a time.
  - **STOP Button**
    - To stop playback.
  - **SEARCH Buttons**
    - Allows you to search forward/backward through a disc.
  - **SURROUND Button**
    - To activate the 3D sound.
  - **BOOKMARK Button**
    - To rapidly return to a location of disc.
  - **OPEN/CLOSE Button**
    - To open or close the disc tray.
  - **NUMBER Buttons**
  - **ZOOM Button**
    - To magnify part of picture.
  - **CLEAR Button**
    - Removes menus or status displays from the screen.
  - **DISPLAY Button**
    - Displays the current disc mode.
  - **AUDIO Button**
    - Accesses various audio functions on a disc.
  - **TOP MENU Button**
    - Brings up the Top Menu on a disc.
  - **SETUP Button**
    - Brings up the DVD player's Setup menu.
  - **SKIP Buttons**
    - Skip the, Chapter, or Track.
  - **PLAY/PAUSE Button**
    - Begin/Pause disc play.

---

**How to handle the remote control**

- Operate the remote control within the following area, in a straight line from the signal detecting eye of the player and an angle of 30°.
Tour of the Remote Control
—DV-P313U—

How to handle the remote control
- Operate the remote control within the following area, in a straight line from the signal detecting eye of the player and an angle of 30°.

DVD Function Buttons

1 DVD POWER Button
   - Turns the player on and off.
2 NUMBER Buttons
3 REPEAT Button
   - Allows you to repeat play a title, chapter, track, or disc.
4 A-B REPEAT Button
   - Marks a segment to repeat between A and B.
5 SETUP Button
   - Brings up the DVD player's Setup menu.
6 MODE Button
   - Allows you to program a specific order.
7 SEARCH Buttons
   - Allows you to search forward/backward through a disc.
8 STOP Button
   - To stop playback.
9 SKIP Buttons
   - Skip the, Chapter, or Track.
10 MENU Button
   - Brings up the Menu on a disc.
11 TOP MENU Button
   - Brings up the Top Menu on a disc.
12 STEP Button
   - Advances playback one frame at a time.
13 AUDIO Button
   - Accesses various audio functions on a disc.
14 OPEN/CLOSE Button
   - To open or close the disc tray.
15 3D SOUND Button
   - To activate the 3D sound.
16 ZOOM Button
   - To magnify part of picture.
17 CLEAR Button
   - Removes menus or status displays from the screen.
18 BOOKMARK Button
   - To rapidly return to a location of disc.
19 PLAY/PAUSE Button
   - Begin/Pause disc play.
20 RETURN Button
   - Returns to a previous menu.
21 DISPLAY Button
   - Displays the current disc mode.
22 ANGLE Button
   - Accesses various camera angles on a disc.
23 SUBTITLE Button
   - Accesses various subtitles on a disc.
Description - Rear Panel

**Rear Panel**

- **DIGITAL AUDIO OUT JACK**
  - Use either an optical or coaxial digital cable to connect to a compatible Dolby Digital receiver. Use to connect to an A/V Amplifier that contains a Dolby Digital decoder or DTS decoder.

- **MIXED AUDIO OUT JACKS**
  - Connect to the Audio input jacks of your television, audio/video receiver.

- **VIDEO OUT JACK**
  - Use a video cable to connect one of the jack to the Video input on your television.

- **S-VIDEO OUT JACK**
  - Use the S-Video cable to connect this jack to the S-Video jack on your television for a higher quality picture. The S-Video must be selected in the VIDEO OUT SELECT SWITCH.

- **COMPONENT VIDEO OUT JACKS**
  - Use these jacks if you have a TV with Component Video jacks. These jacks provide Pr, Pb and Y video. Along with S-Video, Component Video provides the best picture quality. The Y, Pb, Pr must be selected in the VIDEO OUT SELECT SWITCH.

- **VIDEO OUT SELECT SWITCH**
  - Use the switch to set video out.
  - If the Y, Pb or Pr is selected, the S-Video may not work.
  - If the S-Video is selected, the Y, Pb or Pr may not work.
5. Disassembly and Reassembly

5-1 Cabinet and PCB

Note: Reassembly in reverse order.

5-1-1 Top Cabinet Removal

1) Remove 3 Screws ① on the back Top Cabinet.
2) Lift up the Top Cabinet in direction of arrow.

Fig. 5-1 Top Cabinet Removal
Disassembly and Reassembly

5-1-2 Door-Tray Removal

1) Supply power and open Tray ①.
2) Disassemble the Door-Tray ② in direction of arrow "A".
3) Close Tray ① and power off.

*Note*: If Tray ① doesn’t open, insert a Screw driver ④ into the Emergency hole ③ (as shown in detailed drawing) and then push it in the direction of arrow “B”. Open Tray manually.

Fig. 5-2 Door-Tray Removal
5-1-3 Ass'y Front-Cabinet Removal

1) Remove Ass'y Front-Cabinet 1.

Fig. 5-3 Ass'y Front-Cabinet Removal
5-1-4 Ass'y Deck Removal

1) Disconnect Flat-Cable, Connect-Wire from DCN1, DCN2 on Main PCB.
2) Remove 3 Screws ① from the Ass'y Deck and lift it up.
5-1-5 Main PCB, Jack PCB Removal

1) Remove 2 Screws ① and lift up the Jack PCB ②.
2) Remove 3 Screws ③ and lift up the Main PCB ④.

Fig. 5-5 Main PCB, Jack PCB Removal
5-2 PCB Location

Fig. 5-6 PCB Location
## 5-3 Connector Diagram

![Connector Diagram](image)

<table>
<thead>
<tr>
<th>NO.</th>
<th>CONNECTOR NO.</th>
<th>DIRECTION</th>
<th>CONNECTOR NO.</th>
<th>NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>FLAT-CABLE</td>
<td>DECK PCB → CI1 → MAIN PCB</td>
<td>DCN1</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>CONNECT-WIRE (HCN1)</td>
<td>HOUSING PCB → CI2 → MAIN PCB</td>
<td>DCN2</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>CN8</td>
<td>MAIN PCB → CI3 → JACK PCB</td>
<td>DCN1</td>
<td>6</td>
</tr>
<tr>
<td>7</td>
<td>PCN1</td>
<td>MAIN PCB → CI4 → JACK PCB</td>
<td>PCNS1</td>
<td>8</td>
</tr>
<tr>
<td>9</td>
<td>FCN1</td>
<td>MAIN PCB → CI5 → JACK PCB</td>
<td>CN2-S</td>
<td>10</td>
</tr>
</tbody>
</table>

*Fig. 5-7 Connector Diagram*
5-4 Deck

5-4-1 Tray Disc Removal

1) Insert a Screw Driver ① into Emergency Hole ② and push the Slider Housing ③ in the direction arrow "A".
2) When the Tray Disc ④ comes out a little, pull it in the direction arrow "B" by hand.
3) Pull the Tray Disc ④ to disassemble, while simultaneously pushing 2 Stoppers ⑤ (left, right) in the direction arrow "C", "D".

Fig. 5-8 Tray Disc Removal
5-4-2 Ass'y P/U Deck Removal

1) Disconnect DCN2 ①, DCN3 ②.
2) Lift down the Assy P/U Deck ③ while simultaneously pushing 2 Hooks ④, ⑤ in the direction of arrow "A", "B".

Fig. 5-9 Ass'y P/U Deck Removal
5-4-3 Housing Ass’y Removal

1) Remove Belt ①.
2) Push the Hook ② in the direction arrow “A” and lift up Pulley Gear ③.
3) Push the Slider Housing ⑤ in the direction arrow “B” and lift up the Gear Tray ④.
4) Lift up the Slider Housing ⑤.
5) Remove the soldering ⑦ of 2 points (Red, Black).
6) Remove 2 Screws ⑥ and lift down the Motor Load Assy ⑧.
7) Push the 3 Hooks ⑨ bottom side in the direction arrow “C” and lift up the Housing PCB ⑩.
8) Push the Hooks ① and remove Deck PCB ⑫.

Fig. 5-10 Housing Ass’y Removal
5-4-4 Sub Chassis Removal

1) Remove the Soldering of Motor Feed (+, - wire) ①.
2) Remove the 4 Screws ②.
3) Lift up the Ass’y Brkt Deck ③.

Fig. 5-11 Sub Chassis Removal
5-4-5 Ass’y Brkt Deck Removal

1) Remove Washer 1.
2) Remove Gear Feed B 2, Gear Feed A 3.
3) Remove 2 Screws 4.
5) Remove 1 Screw 7.
6) Remove 2 Screws 8.
7) Remove 3 Spring Spindle 9 and Motor Spindle Ass’y 10.

Fig. 5-12 Ass’y Brkt Deck Removal
7. Troubleshooting

**No Disc recognition**

- LD is outputted from object lens at play key input?
  - Yes
  - No
  - **B**

  - No focus incoming and no disc occurs.
    - **A**

**No focus incoming**

- FE in SIC1-25 is within specified range?
  - Yes
  - No
    - Check RIC1 and A, B, C, D input.

  - SIC3-26, 27 output are normal?
    - Yes
    - **Check open state from SIC3 to pick-up.**
    - **Yes**
    - **No**
      - Check SIC3.
Troubleshooting

No pick-up home positioning

Check the Sled Motor and connection

LED +, SLED - normal?

Yes

No

Check MIC1

No pick-up home positioning

SLD, SIC 1-34 output is normal?

Yes

No

Check SIC3

NO LD CD ON

RIC 1-21 is 5V?

No

Yes

Current exceeds 0.1A?

Yes

No

LD out pick-up replace.

Divide RQ1 emitter terminal voltage and 5V real voltage difference into 10ohm.
No Search Operation

MIRR, SIC1-157 output is normal?
Yes
No

RFAGCO, RIC1-72 output level is normal?
Yes
No
Check RIC1 peripheral circuit.

Actual velocity occurs at SIC1-34 terminal?
Yes
No
Check SIC1 peripheral circuit.

Actual velocity occurs at SIC4-32, 33 terminal?
Yes
No
Check SIC3 peripheral circuit.

TE occurs in search range?
No
Yes
Focus On?

See "Fine Seek Check"

FINE SEEK Check

FINE SEEK MIRR signal (RIC1-46) is missing?
Yes
No
Check RIC1 Peripheral circuit.

TZCO signal (SIC1-24) is occurs?
Yes
No
Check SIC1 Peripheral circuit.

Track incoming is delayed?
Yes
No
Time out due to many jump counts.

TE is within 2V and 3V?
No
Yes
Check SIC1-33 output is normal?

Pick-up transfer smooth.
Yes
No
Check MECHA.

SIC3-28, 29 terminal outputs are normal?
Yes
No
Check SIC3 peripheral circuit.

Check RIC1-26 terminal.

Check RIC1 peripheral circuit.

Check SIC1 peripheral circuit.

Check DCN1 and pick-up.
Abnormal rotation of disc motor

Input of RF signal is normal? (SIC1-15)
  Yes
  No
  RIC1-71 output is normal?
    Yes
    Check RIC1 peripheral circuit and A, B, C, D.
    No
    RIC1-70 output are normal?
      Yes
      Check RIC1 soldering and power.
      No
      After resoldering SIC1.
      Check path to RIC1 and SIC1.

SPD output is normal? (SIC1-35)
  Yes
  No
  Check SIC3 soldering and power.

SIC3-2 output (FG) is normal?
  Yes
  No
  Check SIC3 soldering and power.

SIC3-9 signal MON is "H"?
  Yes
  Check SIC1, MIC1.
  No
  Check or replace disc motor.

No Tray open/close

MIC1-6, 8 is Open; "L", "L"?
  Yes
  Check SIC3-35, 36 output at open/close
  No
  Check signal line state from SIC3-35, 36 to tray motor.

MIC1-6, 8 is Close; "H", "H"?
  Yes
  Check SIC3.
  No
  Micom (MIC1) error.
Troubleshooting

**CD/VCD/DVD L/R output error**
(Mixed Audio output)

1. **Normal DATA 0 is input in AIC1-3?**
   - Yes
   - No
     - **Analog output of AIC1-9, 10, 11, 12 is normal?**
       - Yes
       - No
         - **Check AVJ2 peripheral soldering shot.**
         - **Check ZIC1-121 output.**

2. **Check ZIC1-125 output.**
   - (CD/VCD: 16.9344MHz, DVD: 18.432MHz)

3. **AOP1-1, 7 output is normal?**
   - Yes
   - No
     - **Base terminal level of A01, A03 are “L”?**
       - Yes
       - No
         - **Check AVJ2 peripheral soldering shot.**
         - **Check FIC1-47 mute.**

**Digital output error**

1. **Output in ZIC1-127 is normal?**
   - Yes
   - No
     - **Check ZIC1 peripheral circuit.**

2. **Output in AIC3-6, 8, 10 is normal?**
   - Yes
   - No
     - **Check AVJ4, ACJ5 peripheral soldering shot.**
     - **Check AIC3.**
No Power (120 Voltage) (Standby LED OFF)

- PFD01 error? - Yes: Replace fuse. No: PDS01 voltage is missing?
  - No: Check PRF10.

No Power (Free Voltage) (Standby LED OFF)

- PFD01 error? - Yes: Replace fuse. No: PDS01 voltage is missing?
  - No: Check PDS01 - 04.
  - No: Check 2’d voltage.
**Troubleshooting**

**Y/Pr/Pb output error**

1. **VSW1 video select switch is down position?**
   - Yes: Move the select switch to down position.
   - No: Check the soldering of VSW1.

2. **VR121 of VSW1 is low state?**
   - Yes: Check the connection between pin 38 in FIC1 and VR121.
   - No: Check the soldering of VSW1.

3. **Pin 38 in FIC1 is high state?**
   - Yes: Check the connection between pin 38 in FIC1 and VR121.
   - No: Check the soldering of VSW1.
8. Exploded View

8-1 Cabinet Assembly ............................................................... 8-2
8-2 Deck Assembly ................................................................. 8-3
8-1 Cabinet Assembly
8-2 Deck Assembly

Exploded Views
## 9. Replacement Parts List

### 1. MECHINICAL PARTS LIST

<table>
<thead>
<tr>
<th>SYMBOL NO</th>
<th>P-NO</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>101</td>
<td>TS16321</td>
<td>MECHA ASSY(DVD)</td>
</tr>
<tr>
<td>102</td>
<td>TE13371</td>
<td>CORD,POWER</td>
</tr>
<tr>
<td>103</td>
<td>TJ14991</td>
<td>PANEL,FRONT [P315U]</td>
</tr>
<tr>
<td>103</td>
<td>TJ14992</td>
<td>PANEL,FRONT [P313U]</td>
</tr>
<tr>
<td>104</td>
<td>TJ15001</td>
<td>COVER, TOP [P315U]</td>
</tr>
<tr>
<td>104</td>
<td>TJ15002</td>
<td>COVER, TOP [P313U]</td>
</tr>
<tr>
<td>105</td>
<td>TJ15011</td>
<td>DOOR ASSY</td>
</tr>
<tr>
<td>106</td>
<td>TJ15021</td>
<td>PANEL, REAR</td>
</tr>
<tr>
<td>107</td>
<td>TJ15031</td>
<td>BELT, PUULEY</td>
</tr>
<tr>
<td>108</td>
<td>TJ15041</td>
<td>FOOT, FRONT</td>
</tr>
<tr>
<td>109</td>
<td>TJ15051</td>
<td>HOLDER, CORD</td>
</tr>
<tr>
<td>H106</td>
<td>TS16341</td>
<td>MOTOR, LOAD</td>
</tr>
<tr>
<td>H200</td>
<td>TS16371</td>
<td>DECK, BRACKET</td>
</tr>
<tr>
<td>H207</td>
<td>TS16351</td>
<td>MOTOR, SPINDLE</td>
</tr>
<tr>
<td>H210</td>
<td>TS16361</td>
<td>MOTOR, FEED</td>
</tr>
<tr>
<td>H220</td>
<td>TS16391</td>
<td>PICK UP ASSY</td>
</tr>
<tr>
<td>001</td>
<td>TS16301</td>
<td>PWB ASSY MAIN</td>
</tr>
<tr>
<td>002</td>
<td>TS16311</td>
<td>PWB ASSY JACK</td>
</tr>
</tbody>
</table>

### 2. ELECTRICAL PARTS LIST

<table>
<thead>
<tr>
<th>SYMBOL NO</th>
<th>P-NO</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>△PCD02</td>
<td>TA14311</td>
<td>CERAMIC DISC 3.3nF</td>
</tr>
<tr>
<td>△PCD03</td>
<td>TA14311</td>
<td>CERAMIC DISC 33nF</td>
</tr>
<tr>
<td>△PCR01</td>
<td>TA14301</td>
<td>CERAMIC DISC 10nF</td>
</tr>
<tr>
<td>△PCR02</td>
<td>TA14311</td>
<td>CERAMIC DISC 3.3nF</td>
</tr>
<tr>
<td>△PCS03</td>
<td>TA14341</td>
<td>CERAMIC DISC 100PF</td>
</tr>
<tr>
<td>△PER10</td>
<td>TA14291</td>
<td>CAPACITOR 150UF 200V</td>
</tr>
<tr>
<td>AD54</td>
<td>TC11651</td>
<td>DIODE 1N4148</td>
</tr>
<tr>
<td>AD55</td>
<td>TC11651</td>
<td>DIODE 1N4148</td>
</tr>
<tr>
<td>FD10</td>
<td>TC11651</td>
<td>DIODE 1N4148</td>
</tr>
<tr>
<td>PDR11</td>
<td>TC11651</td>
<td>DIODE 1N4148</td>
</tr>
<tr>
<td>PDR12</td>
<td>TC11651</td>
<td>DIODE 1N4148</td>
</tr>
<tr>
<td>△PDS01</td>
<td>TC11631</td>
<td>DIODE 1T5</td>
</tr>
<tr>
<td>△PDS02</td>
<td>TC11631</td>
<td>DIODE 1T5</td>
</tr>
<tr>
<td>△PDS03</td>
<td>TC11631</td>
<td>DIODE 1T5</td>
</tr>
<tr>
<td>△PDS04</td>
<td>TC11631</td>
<td>DIODE 1T5</td>
</tr>
<tr>
<td>PDS11</td>
<td>TC11661</td>
<td>DIODE UF4007</td>
</tr>
<tr>
<td>PDS51</td>
<td>TC11651</td>
<td>DIODE 1N4148</td>
</tr>
<tr>
<td>AIC1</td>
<td>TC11775</td>
<td>IC AK4382VT</td>
</tr>
<tr>
<td>AIC3</td>
<td>TC11481</td>
<td>IC M74HC04</td>
</tr>
<tr>
<td>AOP1</td>
<td>TC11511</td>
<td>IC 4560</td>
</tr>
<tr>
<td>FIC1</td>
<td>TC11761</td>
<td>IC UPD780232</td>
</tr>
<tr>
<td>FIC2</td>
<td>TC11541</td>
<td>IC 7545</td>
</tr>
<tr>
<td>FIC4</td>
<td>TC11791</td>
<td>MODULE, REMOCON</td>
</tr>
<tr>
<td>MIC1</td>
<td>TC11361</td>
<td>IC 95C265</td>
</tr>
<tr>
<td>MIC2</td>
<td>TC11294</td>
<td>EPROM [P315U]</td>
</tr>
<tr>
<td>MIC7</td>
<td>TC11401</td>
<td>IC 7SET00</td>
</tr>
<tr>
<td>PIC1</td>
<td>TC11701</td>
<td>IC 1365</td>
</tr>
<tr>
<td>△PICS1</td>
<td>TC11591</td>
<td>PHOTO COUPLER PC123</td>
</tr>
<tr>
<td>PICS2</td>
<td>TC11581</td>
<td>IC KA431Z</td>
</tr>
<tr>
<td>PICS3</td>
<td>TC11551</td>
<td>IC 7908</td>
</tr>
<tr>
<td>PICS4</td>
<td>TC11561</td>
<td>IC 78R08</td>
</tr>
<tr>
<td>PICS5</td>
<td>TC11781</td>
<td>IC 3RD13</td>
</tr>
<tr>
<td>RIC1</td>
<td>TC11711</td>
<td>IC KS1462</td>
</tr>
<tr>
<td>SIC1</td>
<td>TC11721</td>
<td>IC KS1454</td>
</tr>
<tr>
<td>SIC2</td>
<td>TC11731</td>
<td>IC 416C256</td>
</tr>
<tr>
<td>SIC3</td>
<td>TC11441</td>
<td>IC KA3017</td>
</tr>
<tr>
<td>SIC4</td>
<td>TC11741</td>
<td>IC 7ST08</td>
</tr>
<tr>
<td>VIC1</td>
<td>TC11771</td>
<td>IC 1540</td>
</tr>
<tr>
<td>ZIC1</td>
<td>TC11461</td>
<td>IC ZIVA4.1</td>
</tr>
<tr>
<td>ZIC2</td>
<td>TC11471</td>
<td>IC 3617161</td>
</tr>
<tr>
<td>ZIC4</td>
<td>TC11481</td>
<td>IC M74HC04</td>
</tr>
<tr>
<td>△PQR11</td>
<td>TC11611</td>
<td>SEMICONDUCTOR C5039F</td>
</tr>
<tr>
<td>PQR12</td>
<td>TC11621</td>
<td>TRANSISTOR KTC3203</td>
</tr>
<tr>
<td>△PVA1</td>
<td>TC11641</td>
<td>SEMICONDUCTOR SVC471D</td>
</tr>
<tr>
<td>SY1</td>
<td>TE13881</td>
<td>CRYSTAL 33.8688MHZ</td>
</tr>
</tbody>
</table>

### ACCESSORIES

<table>
<thead>
<tr>
<th>SYMBOL NO</th>
<th>P-NO</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>802</td>
<td>TS15543</td>
<td>Remote, DV-RM300, [DV-P313U]</td>
</tr>
<tr>
<td>802</td>
<td>TS16331</td>
<td>Remote, DV-RM310, [DV-P315U]</td>
</tr>
<tr>
<td>803</td>
<td>TE13361</td>
<td>CABLE, AV</td>
</tr>
<tr>
<td>SYMBOL NO</td>
<td>P-NO</td>
<td>DESCRIPTION</td>
</tr>
<tr>
<td>-----------</td>
<td>--------</td>
<td>--------------------------</td>
</tr>
<tr>
<td>ZY1</td>
<td>TE13891</td>
<td>CRYSTAL 27HMZ</td>
</tr>
<tr>
<td>MY1</td>
<td>TE13871</td>
<td>CRYSTAL 20HMZ</td>
</tr>
<tr>
<td>△PTD1</td>
<td>TA14191</td>
<td>TRANSFORMER</td>
</tr>
<tr>
<td>AVJ1</td>
<td>TE13931</td>
<td>JACK</td>
</tr>
<tr>
<td>AVJ2</td>
<td>TE13941</td>
<td>JACK</td>
</tr>
<tr>
<td>AVJ4</td>
<td>TE14191</td>
<td>JACK</td>
</tr>
<tr>
<td>AVJ5</td>
<td>TE13961</td>
<td>CONNECTOR</td>
</tr>
<tr>
<td>CN1</td>
<td>TE14011</td>
<td>CONNECTOR</td>
</tr>
<tr>
<td>CN1A</td>
<td>TE14001</td>
<td>CONNECTOR</td>
</tr>
<tr>
<td>CN8</td>
<td>TE13381</td>
<td>CONNECTOR(35P)</td>
</tr>
<tr>
<td>DCN1A</td>
<td>TE14001</td>
<td>CONNECTOR</td>
</tr>
<tr>
<td>FY1</td>
<td>TE13901</td>
<td>RESONATOR 5MHZ</td>
</tr>
<tr>
<td>HSW1</td>
<td>TE14021</td>
<td>SWITCH</td>
</tr>
<tr>
<td>△PCNS2</td>
<td>TE14291</td>
<td>CONNECTOR</td>
</tr>
<tr>
<td>△PFD01</td>
<td>TE13401</td>
<td>FUSE</td>
</tr>
<tr>
<td>PICS6</td>
<td>TE13911</td>
<td>FUSE 1A 50V</td>
</tr>
<tr>
<td>PICS7</td>
<td>TE13911</td>
<td>FUSE 1A 50V</td>
</tr>
<tr>
<td>△PLS01</td>
<td>TA14201</td>
<td>FILTER,LINE</td>
</tr>
<tr>
<td>SVJ1</td>
<td>TE13951</td>
<td>JACK</td>
</tr>
<tr>
<td>SW1</td>
<td>TE13981</td>
<td>SWITCH,TACT</td>
</tr>
<tr>
<td>SW2</td>
<td>TE13991</td>
<td>SWITCH,TACT</td>
</tr>
<tr>
<td>VFD1</td>
<td>TE13921</td>
<td>DISPLAY</td>
</tr>
<tr>
<td>VSW1</td>
<td>TE13971</td>
<td>SWITCH,SLIDE</td>
</tr>
</tbody>
</table>
10. Block Diagram

DECK ASS’Y (DP-7)

- Spindle/Sled/Tray Motor
- Pick-up & I/V Amp

SIC4 (KA3017)
Actuator & Motor Driver

MIC4 2K EEPROM
Main Controller

MIC1 (TMP91219F)
RF Amp & DPD

MIC2 8M EPROM

MIC3 1M SDRAM

2K2 2M DRAM

ICI1 (ZiVA-4.1)
A/V Decoder

MIC1 (KS1454)
Servo + DSP

RF Amp & DPD

Remote Control
FLT Display

VIC1 (MM1540)

A/V Decoder
AC3 & MPEG 5.1

MIC2 4M DRAM

MIC1 (KS1454)

Audio DSP

VC1 (AK4382)
2-CH Audio DAC

Post Filter

VCBS

Y/B/Pb

AIC1 (AK4382)
2-CH Audio DAC

Post Filter

Lt

Rt

Lt

Rt

Yout

CVBS

B/Pb

G/Y

Optical

Coaxial
11. PCB Diagrams

11-1 Main - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - 11-2
11-2 Jack - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - 11-3
11-3 Deck - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - 11-4
11-4 Housing - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - 11-4
13. Schematic Diagrams

13-1 Power
13-2 AV-Decoder/Main-Micom/Key
13-3 Servo
13-4 Video
13-5 Audio
13-6 Front-Micom/VFD Display
13-7 Deck

Block Identification of PCB

Main PCB (Component Side)

Jack PCB (Conductor Side)
13-6 Front-Micom/VFD Display