1-1 LASER BEAM SAFETY PRECAUTIONS

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

Do not look directly at the laser beam coming from the pickup or allow it to strike against your skin.

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.
1-2 IMPORTANT SAFETY PRECAUTIONS

1-2-1 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.

1-2-2 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.
1-2-3 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. 1-2-1)

Table 1-2-1: Ratings for selected area

<table>
<thead>
<tr>
<th>AC Line Voltage</th>
<th>Clearance Distance (d) (d’)</th>
</tr>
</thead>
<tbody>
<tr>
<td>110 to 240 V (Auto) [DV-P588A(S)/P588A(ME)], 240 V [DV-P588A(AU)]</td>
<td>( \geq 3\text{mm}(d) ) ( \geq 6\text{mm}(d’) )</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. 1-2-2 and the following table.

Table 1-2-2: Leakage current ratings for selected areas

<table>
<thead>
<tr>
<th>AC Line Voltage</th>
<th>Load Z</th>
<th>Leakage Current (i)</th>
<th>One side of power cord plug prongs (B) to:</th>
</tr>
</thead>
<tbody>
<tr>
<td>110 to 240 V (Auto) [DV-P588A(S)/P588A(ME)], 240 V [DV-P588A(AU)]</td>
<td>2kΩ RES. Connected in parallel</td>
<td>( \leq 0.7\text{mA AC Peak} ) ( \leq 2\text{mA DC} )</td>
<td>RF or Antenna terminals</td>
</tr>
</tbody>
</table>

**Note:** This table is unofficial and for reference only. Be sure to confirm the precise values.
1-3 STANDARD NOTES FOR SERVICING

1-3-1 Circuit Board Indications
1. The output pin of the 3 pin Regulator ICs is indicated as shown.

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

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

1-3-2 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.

1-3-3 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. 1-3-1)

   (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. 1-3-6)

   (4) Release the flat pack-IC from the CBA using tweezers. (Fig. 1-3-6)

   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. 1-3-2)
   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. 1-3-3)

![Fig. 1-3-3]

(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. 1-3-4)

![Fig. 1-3-4]

(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. 1-3-6)

(4) Release the flat pack-IC from the CBA using tweezers. (Fig. 1-3-6)

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. 1-3-3)

(2) Affix the wire to a workbench or solid mounting point, as shown in Fig. 1-3-5.

![Fig. 1-3-5]

(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. 1-3-5.

(4) 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. 1-3-6)

(5) Release the flat pack-IC from the CBA using tweezers. (Fig. 1-3-6)
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. 1-3-7.) 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. 1-3-8.)

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

1-3-4 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

(1) 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. 1-3-7

Presolder

Fig. 1-3-8
1-4 NOTES WHEN USING SERVICE MANUAL

The following shows the contents to be noted when using service manual:

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

<table>
<thead>
<tr>
<th>Mark</th>
<th>Capacity change rate</th>
<th>Standard temperature</th>
<th>Temperature range</th>
</tr>
</thead>
<tbody>
<tr>
<td>(B)</td>
<td>±10%</td>
<td>20°C</td>
<td>-25~+85°C</td>
</tr>
<tr>
<td>(F)</td>
<td>+30 - 80%</td>
<td>20°C</td>
<td>-25~+85°C</td>
</tr>
<tr>
<td>(SR)</td>
<td>±15%</td>
<td>20°C</td>
<td>-25~+85°C</td>
</tr>
<tr>
<td>(Z)</td>
<td>+30 - 80%</td>
<td>20°C</td>
<td>-10~+70°C</td>
</tr>
</tbody>
</table>

Capacitors and transistors are represented by the following symbols.

Notes:

1. Do not use the part number shown on these drawings for ordering. The correct part number is shown in the parts list, and may be slightly different or amended since these drawings were prepared.
2. All voltages are DC voltages unless otherwise specified.

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 ]

<table>
<thead>
<tr>
<th>Item</th>
<th>Indication</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value</td>
<td></td>
</tr>
<tr>
<td>K</td>
<td>Ω</td>
</tr>
<tr>
<td>M</td>
<td>Ω, MΩ</td>
</tr>
<tr>
<td>Power capacitance</td>
<td>No indication............1/4W,1/6W</td>
</tr>
<tr>
<td>All capacitances other than the above are indicated in schematic diagrams.</td>
<td></td>
</tr>
</tbody>
</table>

[ Capacitors ]

<table>
<thead>
<tr>
<th>Item</th>
<th>Indication</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value</td>
<td></td>
</tr>
<tr>
<td>pF</td>
<td></td>
</tr>
<tr>
<td>Dielectric strength</td>
<td>No indication..............50V</td>
</tr>
<tr>
<td>All dielectric strengths other than 50V are indicated in schematic diagrams.</td>
<td></td>
</tr>
</tbody>
</table>

[ Coils ]

<table>
<thead>
<tr>
<th>Item</th>
<th>Indication</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value</td>
<td></td>
</tr>
<tr>
<td>μH</td>
<td></td>
</tr>
<tr>
<td>mH</td>
<td></td>
</tr>
</tbody>
</table>
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.

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 defec-
tive 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. Voltage indications for PLAY mode on the schematics are as shown below:

![Diagram showing voltage indications for PLAY mode](Image)

The same voltage for both PLAY & STOP modes
Indicates that the voltage is not consistent here.

6. How to read converged lines

1-D3

Distinction Area
Line Number
(1 to 3 digits)
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".

7. Test Point Information

- 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.
2-1 SPECIFICATIONS

Product type: DVD Player

Discs: DVD video
Video CD
Audio CD

Output signal format: PAL colour/ NTSC colour

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 (JEITA)

Dynamic range
DVD (linear sound): 95 dB
CD: 94 dB (JEITA)

Total distortion factor
CD: 0.005% (JEITA)

Wow and flutter: Below the measurement limitation (+/-0.001% W PEAK) (JEITA)

Connections
S-Video output: Mini DIN 4-pin jack (75 ohm)
Video output: One RCA connector/ EURO A/V jack, 1 Vp-p (75 ohm)
Coaxial digital audio output: One pin jack, 500mVp-p (75 ohm)
Analog audio output: Two RCA connectors (one left channel, one right channel)/ EURO A/V jack, 2 Vrms (47k ohm)
Optical digital audio output: Optical connector
RGB video output: EURO A/V jack (R)/(G)/(B), 700 mVp-p (75 ohm)

Power source: AC 110-240 V, 50 Hz [ DV-P588A(S)/(ME) ]
AC 240 V, 50 Hz [ DV-P588A(AU) ]

Power consumption: 15 W (standby: 5 W)

Operating temperature: 41°F to 104°F (5°C to 40°C)

Dimensions:
W 17-1/8” (435 mm)
H 2-1/4” (55 mm)
D 8-5/16” (211 mm)

Weight: 3.8 lbs (1.8 kg)

● Designs and specifications are subject to change without notice.
### 2-2 COMPARISON OF MODELS

The halftone parts are the differences from the previous model.

<table>
<thead>
<tr>
<th>ITEM</th>
<th>DV-P588A(S)/P588A(ME)/P588A(AU)</th>
<th>DV-P388A(S)/P388A(ME)/P388A(AU)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>APPEARANCE</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dimensional</td>
<td>435(W) x 55(H) x 211(D) mm</td>
<td>435(W) x 75(H) x 216(D) mm</td>
</tr>
<tr>
<td>Weight</td>
<td>1.8 kg</td>
<td>2.1 kg</td>
</tr>
<tr>
<td>Tray Panel</td>
<td>Clear</td>
<td>Silver</td>
</tr>
<tr>
<td>Color Front / Button</td>
<td>Silver/Silver</td>
<td>Black/Silver</td>
</tr>
<tr>
<td>Hot Stamp</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Ultra Vision Badge</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td><strong>GENERAL</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drive Speed</td>
<td>1x</td>
<td>1x</td>
</tr>
<tr>
<td>Laser</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>DVD/VCD/SVCD/CD-DA</td>
<td>O / O / --- / O</td>
<td>O / O / --- / O</td>
</tr>
<tr>
<td>CD-R/CD-RW/DVD-R (Video Format)</td>
<td>O / O / O</td>
<td>O / O / O</td>
</tr>
<tr>
<td>DVD-RAM (VR Format)</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>MP3</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>OSD languages</td>
<td>2 (English, Chinese) [(ME)/(AU)]</td>
<td>2 (English, Chinese)</td>
</tr>
<tr>
<td>Jog Shuttle on Front</td>
<td>---</td>
<td>Only switch shuttle</td>
</tr>
<tr>
<td>Headphone Jack / Volume</td>
<td>--- / ---</td>
<td>--- / ---</td>
</tr>
<tr>
<td><strong>VIDEO</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PAL Disc NTSC Out</td>
<td>O</td>
<td>---</td>
</tr>
<tr>
<td>Video Out Mode NTSC/PAL/PAL60</td>
<td>O / O / O</td>
<td>--- / O / O</td>
</tr>
<tr>
<td>S-Video / Component / Composite</td>
<td>O / O / O</td>
<td>O / O / O</td>
</tr>
<tr>
<td>Video D/A Converter</td>
<td>10bit</td>
<td>10bit</td>
</tr>
<tr>
<td>Black Level Select</td>
<td>---</td>
<td>O</td>
</tr>
<tr>
<td>Picture Control</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Progressive Out</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td><strong>AUDIO</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Audio D/A Converter</td>
<td>192kHz / 24bit</td>
<td>192kHz / 24bit</td>
</tr>
<tr>
<td>Digital Audio Out Optical / Coaxial</td>
<td>O / O</td>
<td>O / O</td>
</tr>
<tr>
<td>Dolby Digital 5.1 ch Decode</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>DTS Digital Out</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>Virtual Surround</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>Dynamic Range Compression (Dolby Digital)</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>DVD Audio</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Power on sound</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td><strong>TRICK PLAY</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Search Speed</td>
<td>2 to 100 (FORWARD/REWIND)</td>
<td>2 to 60 (FORWARD/REWIND)</td>
</tr>
<tr>
<td>Slow Speed</td>
<td>1/16, 1/8, 1/2 (FORWARD/REWIND)</td>
<td>1/16, 1/8, 1/2 (FORWARD only)</td>
</tr>
<tr>
<td>IP Search (Smooth 2x Play)</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>2x Play with Audio</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Step Forward / Reverse</td>
<td>O / ---</td>
<td>O / ---</td>
</tr>
<tr>
<td>Still Picture Select (Frame/Field)</td>
<td>Auto Only</td>
<td>Auto Only</td>
</tr>
<tr>
<td>ITEM</td>
<td>DV-P588A(S)/P588A(ME)/P588A(AU)</td>
<td>DV-P388A(S)/P388A(ME)/P388A(AU)</td>
</tr>
<tr>
<td>------</td>
<td>-------------------------------</td>
<td>----------------------------------</td>
</tr>
<tr>
<td>Disc Navigation</td>
<td>O</td>
<td>---</td>
</tr>
<tr>
<td>DVD Zoom x2 / x4 / x16</td>
<td>O / O / ---</td>
<td>O / O / ---</td>
</tr>
<tr>
<td>Program and Random Play of DVD / VCD</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>A-B Repeat</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>Repeat</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>Resume Play</td>
<td>O (Resume is not effected after power off)</td>
<td>O</td>
</tr>
<tr>
<td>Front Panel Display Dimmer</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>Screen Saver</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>Auto Power Off</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>Jog Shuttle on Remote</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>TV Control</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>
2-3 OPERATING CONTROLS AND FUNCTIONS

FRONT PANEL

1. ○/I (POWER/STANDBY)
   To switch the player to ON or OFF
   (As to the indication of the Operate switch, “I” indicates
   ON and “○” indicates electrical power STANDBY)
2. ▼/▲ (SKIP/FR)
   Goes to previous chapter or track during playback;
   press and hold for 1.5 seconds for a reverse search
3. ► (PLAY)
   To start or resume disc playback
4. ▶/▼ (FF/SKIP)
   Goes to next chapter or track during playback; press
   and hold for 1.5 seconds for a forward search
5. ■ (STOP)
   To stop playback
6. ▲ (OPEN/CLOSE)
   To open/close the disc tray
7. Disc tray
8. Display

REAR PANEL

1. ANALOG AUDIO OUT JACKS
   Connect to the Audio input jacks of A/V-compatible TV
   or wide screen TV, Stereo system.
2. 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, DTS decoder or MPEG
   decoder.
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
   Connect to a TV with Component video in jacks.
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.
1. **SURROUND**
   Press to activate the virtual sound.

2. **/ (POWER/STANDBY)**
   to switch the player to ON or OFF
   (As to the indication of the Operate switch, "I" indicates ON and "O" indicates electrical power STANDBY)

3. **A-B REPEAT**
   Repeats playback of a selected section.

4. **REPEAT**
   Repeats playback of the current disc, title, chapter or track.

5. **MODE**
   to set up programmed or random playback (Audio CD)
   to set virtual surround during playback

6. **ZOOM**
   enlarge DVD and Video CD image

7. **CLEAR**
   8. **ANGLE**
      select DVD camera angle

9. **MENU**
   to display the menu of the DVD disc

10. **ENTER**
    acknowledge menu selection

11. **Arrow Buttons (↓↑→←)**
    Move the cursor and determines its position.

12. **RETURN**
    to return previous or remove setup menu

13. **SKIP**
    goes to previous chapter or track during playback

14. **(STOP)**
    to stop playback

15. **(PAUSE/STEP)**
    Press to pause Disc playback. Press repeatedly to advance the DVD picture step by step (or one frame at a time).

16. **(PLAY)**
    to start or resume disc playback

17. **DISC NAVIGATION**
    Press to display the first scenes of each chapter of the title being played.

18. **SUBTITLE**
    Press to select the desired subtitle language.

19. **TOP MENU**
    Press to call up the title menu.

20. **DISPLAY**
    Press to access or remove the display screen during DVD, Audio CD or Video CD playback.

21. **AUDIO**
    Press to select a desired audio language or sound mode.

22. **Numerical Buttons**
    Press to directly select a Title/Chapter(DVD)/Track (Audio CD/Video CD) for playback.

23. **(OPEN/CLOSE)**
    to open/close the disc tray

24. **SEARCH MODE**
    Press to access or remove the Search display, which allows you to go directly to a specific Title/Chapter/Track/Time/Marker.
Troubleshooting is how to service for the specifying malfunction or poor parts. Detect malfunction or poor parts and service as the following charts.

**FLOW CHART NO.1**

- The power cannot be turned on.

  - Is the fuse normal? Yes
    - Is normal state restored when once unplugged power cord is plugged again after several seconds? Yes
      - Is the EV+3.3V line voltage normal? Yes
        - Check each rectifying circuit of the secondary circuit and service it if defective.
      - No
    - No
      - See FLOW CHART No.2 <The fuse blows out.>
          - Check if there is any leak or short-circuiting on the primary circuit component, and service it if defective. (Q1001, Q1003, T1001, D1001, D1002, D1004, D1005, D1011, C1003, C1005)

**FLOW CHART NO.2**

- The fuse blows out.

  - Check the presence that the primary component is leaking or shorted and service it if defective.
  - Check the presence that the rectifying diode or circuit is shorted in each rectifying circuit of secondary side, and service it if defective.

  - After servicing, replace the fuse.

**FLOW CHART NO.3**

- When the output voltage fluctuates.

  - Does the photo coupler circuit on the secondary side operate normally? Yes
    - Check IC1001, D1012, D1024 and their periphery, and service it if defective.
  - No
    - Check IC1001, IC1006, D1015, D1048 and their periphery, and service it if defective.

**FLOW CHART NO.4**

- When buzz sound can be heard in the vicinity of power circuit.

  - Check if there is any short-circuit on the rectifying diode and the circuit in each rectifying circuit of the secondary side, and service it if defective. (D1003, D1006, D1008, D1016, D1030, IC1002, Q1002, Q1004, Q1011, Q1050: DV-P588A(AU) only)

**FLOW CHART NO.5**

- FL is not outputted.

  - Is -24V voltage supplied to the anode of D1003? Yes
    - Check if there is any leak or short-circuit on the loaded circuit, and service it if defective.
  - No
    - Check D1003 and periphery circuit, and service it if defective.
FLOW CHART NO.6

- P-ON+9V is not outputted.
  - Is 9V voltage supplied to the emitter of Q1002?
    - Yes: Replace Q1002.
    - No: Is the voltage of base on Q1002 lower than the voltage of emitter on Q1002 when turning the power on?
      - Yes: Replace Q1002.
      - No: Check D1030, D1048, L1009, C1035, C1048 and the periphery circuit, and service it if defective.
  - Replace Q1002.

FLOW CHART NO.7 (DV-P588A(AU) only)

- EV+9V is not outputted.
  - Is 9V voltage supplied to the collector of Q1050?
    - Yes: Replace Q1050.
    - No: Is the "H" pulse inputted into the base of Q1050?
      - Yes: Replace Q1050.
      - No: Check D1030, D1048, L1009, C1035, C1048, R1097 and the periphery circuit, and service it if defective.
  - Replace Q1050.

FLOW CHART NO.8

- P-ON+5V is not outputted. (EV+9V is outputted normally.)
  - Is the "H" pulse inputted into the base of Q1004?
    - Yes: Replace Q1004.
    - No: Check R1068 and D1046, and service it if defective.
  - Replace Q1004.

FLOW CHART NO.9

- P-ON+3.3V (EV+3.3V) is not outputted. (P-ON+9V is outputted normally.)
  - Is 3.3V voltage supplied to the collector of Q1011?
    - Yes: Replace Q1011 and R1067.
    - No: Check D1008, D1015, C1007, C1038 and the periphery circuit, and service it if defective.
  - Replace Q1011 and R1067.

FLOW CHART NO.10

- EV+5V is not outputted.
  - Is EV+9V outputted normally?
    - Yes: Check D1047 and the periphery circuit, and service it if defective.
    - No: Refer to "FLOW CHART NO.6" <EV+9V is not outputted.>
  - Check D1047 and the periphery circuit, and service it if defective.

FLOW CHART NO.11

- EV+1.5V is not outputted.
  - Is approximately 2.5V voltage supplied to Pin(1) of IC1002?
    - Yes: Replace IC1002.
    - No: Check D1006, C1014, C1050, and their periphery, and service it if defective.
FLOW CHART NO.12

The fluorescent display tube does not light up.

- Is 3.3V voltage supplied to Pin(6) and Pin(24) of IC2001?
  - Yes
  - No → Check the EV+3.3V line and service it if detective.
- Is the voltage of approximately -24V to -28V supplied to Pin(15) of IC2001?
  - Yes
  - No → Check the -FL (-28V) line and service it if detective.
- Is there 500kHz oscillation at Pin(26) of IC2001?
  - Yes
  - No → Check R2015, IC2001 and their periphery, and service it if detective.
- Are the filament voltage supplied between Pins(1, 2) and Pins(34, 35) of the fluorescent display tube? And the negative voltage applied between these pins and GND?
  - Yes
  - No → Check D1016, D1017, R1079, C1018, and their periphery, and service it if detective.
- Replace the fluorescent display tube.

FLOW CHART NO.13

The key operation is not functioning.

- Are the contact point and the installation state of the key switches (SW2002, 2003, 2005-2008) normal?
  - Yes
  - No → Re-install the switches (SW2002, 2003, 2005-2008) correctly or replace the poor switch.
- When pressing each switches (SW2002, 2003, 2005-2008), do the voltage of each pin of IC2001 (shown below) switch to 75mV from 6mV?
  - Yes
  - No → Check the switches (SW2002, 2003, 2005-2008) and their periphery, and service it if detective.
- Replace IC2001.

FLOW CHART NO.14

No operation is possible from the remote control unit.

- Operation is possible from the DVD, but no operation is possible from the remote control unit.
  - Yes
  - No → Check EV+5V line and service it if detective.
- Is 5V voltage supplied to the Pin(3) terminal of the infrared remote control receiver (RM2001)?
  - Yes
  - No → Replace the infrared remote control receiver (RM2001). Or replace the remote control unit.
- Is the "L" pulse sent out Pin(1) terminal of receiver (RM2001) when the infrared remote control is activated?
  - Yes
  - No → Check the line between Pin(1) of the infrared remote control receiver (RM2001) and Pin(22) of CN1001, and service it if detective.
- Is the "L" pulse signal supplied to the Pin(22) of CN1001?
  - Yes
  - No → Replace DVD Main CBA.
FLOW CHART NO.15
The disc tray cannot be opened and closed. (It can be done using the remote control unit.)

Does the voltage of Pin(4) on IC2001 become 75mV when pressing "OPEN/CLOSE" button on the unit?

No → Replace the "OPEN/CLOSE" button (SW2005).

Yes → Refer to "FLOW CHART NO.16" <The disc tray cannot be opened and closed.>

FLOW CHART NO.16
The disc tray cannot be opened and closed.

Replace the DVD Main CBA.

No improve can be found.

No → Original DVD Main CBA is poor.

Yes → Replace the DVD Mecha.

FLOW CHART NO.17
[No Disc] indicated. (When the focus error occurs.)

Replace the DVD Main CBA.

No improve can be found.

No → Original DVD Main CBA is poor.

Yes → Replace the DVD Mecha.

FLOW CHART NO.18
[No Disc] indicated. (When the focus servo is not functioning.)

Replace the DVD Main CBA.

No improve can be found.

No → Original DVD Main CBA is poor.

Yes → Replace the DVD Mecha.

FLOW CHART NO.19
[No Disc] indicated. (When the laser beam does not light up.)

Replace the DVD Main CBA.

No improve can be found.

No → Original DVD Main CBA is poor.

Yes → Replace the DVD Mecha.
FLOW CHART NO.20
Both functions of picture and sound do not operate normally.

- Replace the DVD Main CBA.

No improvement can be found. Yes

- No improvement can be found. Replace the DVD Mecha.

No

Original DVD Main CBA is poor.

FLOW CHART NO.21
Picture does not appear normally.

- Set the disc on the disc tray, and playback.

Are the video signals outputted to each pin of CN1601 on the AV CBA?

- No

Replace the DVD Main CBA or DVD Mecha.

Yes

- Yes

Check the line between each pin of CN1601 and each pin of IC1401 on the AV CBA, and service it if detective.

Are the video signals shown above inputted into each pin of IC1401?

- No

Replace the DVD Main CBA or DVD Mecha.

Yes

- Yes

Is 5V voltage applied to the pin(1, 24) of IC1401?

- No

Replace IC1401. Check P-ON+5V line and service it if detective.

Are the video signals outputted to each pin of IC1401?

- No

Replace IC1401. Check P-ON+5V line and service it if detective.

Yes

- Yes

Are the video signals outputted to the specific output terminal?

- No

Check the periphery of JK1401 from Pin (23) of IC1401 and service it if detective.

Are the luminance signals outputted to the S-OUT terminal (JK1401)?

- No

Check the periphery of JK1401 from Pin (18) of IC1401 and service it if detective.

Are the chroma signals outputted to the S-OUT terminal (JK1401)?

- No

Check the periphery of JK1404 from Pins (13, 15, 18) of IC1401 and service it if detective.

Are the component video signals outputted to the VIDEO OUT terminal (JK1404)?

- No

Check the periphery of JK1404 from Pin(21) of IC1401 and service it if detective.

Are the composite video signals outputted to the VIDEO OUT terminal (JK1404)?

- No

Check the periphery of JK1404 from Pin(21) of IC1401 and service it if detective.
FLOW CHART NO.22

Audio is not outputted.

Set the disc on the disc tray, and playback.

Are the analog audio signals outputted to each pin of CN1601 on AV CBA?

CN1601 11PIN AUDIO-L
CN1601 13PIN AUDIO-R

Yes

Are the analog audio signals outputted to each pin of IC1201?

IC1201 2PIN AUDIO-L
IC1201 6PIN AUDIO-R

Yes

Are the "H" level mute signal outputted to CN1601 on AV CBA?

CN1601 10PIN A-MUTE
CN1601 14PIN A-R-MUTE
CN1601 12PIN A-L-MUTE

No

CN1601 11PIN → IC1201 2PIN AUDIO-L
CN1601 13PIN → IC1201 6PIN AUDIO-R

No

Replace the DVD Main CBA or DVD Mecha.

Yes

Are the audio signals outputted to the specific output terminal?

Are the audio signals outputted to the audio terminal (JK1404)?

No

Replace IC1201.

Yes

Check each line between each pin of CN1601 and each pin of IC1201 on AV CBA, and service it if detective.

No

Replace the DVD Main CBA or DVD Mecha.

No

Replace the DVD Main CBA or DVD Mecha.

No

Check the periphery between Pins(1,7) of IC1201 and JK1404, and service it if detective.
3-2 FIRMWARE RENEWAL MODE

3-2-1 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. 3-2-1 appears on the screen and Fig. 3-2-2 appears on the VFD.

   The DVD player can also enter the version up mode with the tray open. In this case, Fig. 3-2-1 will be shown on the screen while the tray is open.

3. Load the disc for version up.
4. The DVD player enters the F/W version up mode automatically. Fig. 3-2-3 appears on the screen and Fig. 3-2-4 appears on the VFD.

   The appearance shown in (*2) of Fig. 3-2-3 is described as follows:


5. After programming is finished, the tray opens automatically. Fig. 3-2-5 appears on the screen and the checksum in (*3) of Fig. 3-2-5 appears on the VFD.

   (Fig. 3-2-6)

   At this time, no buttons are available.

6. Unplug the AC cord from the AC outlet. Then plug it again.
7. To finish this mode, press [POWER] button.

3-2-2 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.
3. Turn the power off to reset the unit.

   Note:
   If the firmware has been changed, etc., we will use Service News, etc. to report on how to obtain new firmware data and create an upgraded disc.
4-1 CABINET DISASSEMBLY INSTRUCTIONS

4-1-1 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.

4-1-2 Disassembly Method

- Identification (location) No. of parts in the figures
- Name of the part
- Figure Number for reference
- 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), (L-3) and (L-4) 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 button to turn the power off and unplug an AC cord.

1-5. 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.)

1-6. Release three Locking Tabs (L-4). Then remove the Front Assembly.

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. Disconnect Connector (CN301). Remove three Screws (S-2) and lift the DVD Mecha. (Fig. 4-1-3)

2-2. Slide out the pickup unit as shown in Fig. 4-1-4.

2-3. Short the three short lands of FPC cable with solder before removing the FFC cable (CN201) from it. If you disconnect the FFC cable (CN201), the laser diode of pickup will be destroyed.

(Fig. 4-1-4)

CAUTION 3: When reassembling, confirm the FFC cable (CN201) is connected completely. Then remove the solder from the three short lands of FPC cable.

(Fig. 4-1-4)
Fig. 4-1-1

[1] Top Cover

Fig. 4-1-2

[2] Front Assembly

Fig. 4-1-3

[3] DVD Mecha

Fig. 4-1-4

[4] AV CBA

Fig. 4-1-5

[5] DVD Main CBA

[6] Function CBA

Desolder from bottom

Short the three short lands by soldering
To Remove the Disc manually

1. Remove the Top Cover.
2. Rotate the roulette in the direction of the arrow as shown below.
## 5-2 REPLACEMENT PARTS LIST

### 5-2-1 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>
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<tr>
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<td><strong>MECHANISM SECTION</strong></td>
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<td>A1X</td>
<td>TS18571</td>
<td>FRONT ASSEMBLY [P588A(S)]</td>
<td>A1X</td>
<td>TS18572</td>
<td>FRONT ASSEMBLY [P588A(ME)/P588A(AU)]</td>
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<td>A2</td>
<td>TS18383</td>
<td>TRAY ASSEMBLY</td>
<td>A13</td>
<td>TJ16981</td>
<td>FOOT(REAR)</td>
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<td>A15</td>
<td>TS18384</td>
<td>MAIN CHASSIS</td>
<td>A16</td>
<td>TJ16832</td>
<td>TOP COVER(SILVER)</td>
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<tr>
<td>A17</td>
<td>TJ17001</td>
<td>REAR PANEL [P588A(S)]</td>
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<td>TJ17002</td>
<td>REAR PANEL [P588A(ME)]</td>
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<td>DVD MECHA (THIN TYPE)</td>
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<td>TJ16837</td>
<td>HOLDER, MAIN PCB</td>
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<td>SCREW (3X8)</td>
<td>2L031</td>
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<td>TJ15892</td>
<td>SCREW (M3X8)</td>
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<td>REMOTE CONTROL UNIT</td>
<td>X5</td>
<td>TJ15698</td>
<td>AV CORD</td>
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</table>
# 5-2-2 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.*

<table>
<thead>
<tr>
<th>SYMBOL-NO</th>
<th>P-NO</th>
<th>DESCRIPTION</th>
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CAUTION!
Fixed voltage (or Auto voltage selectable) 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.
3 WAVEFORMS

NOTE:
Input
CD: 1kHz PLAY
(WF4–WF6)
DVD: POWER ON (STOP) MODE
(WF1–WF3)
**CAUTION!**
Fixed voltage (or Auto voltage selectable) power supply circuit is used in this unit. If the 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 the components in the power supply circuit to fail.

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

**NOTE:**
The voltage for parts in hot circuit is measured using hot GND as a common terminal.
CAUTION!
Fixed voltage (or Auto voltage selectable) 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
FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH THE SAME TYPE FUSE.

NOTE:
The voltage for parts in hot circuit is measured using hot GND as a common terminal.
4-3 Function CBA Top/Bottom View

FUNCTION CBA Top View

FUNCTION CBA Bottom View
5-4 Power Supply Block Diagram

CAUTION!
Fixed voltage (or Auto voltage selectable) 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.
6 SYSTEM CONTROL TIMING CHARTS

Tray Close ~ Play / Play ~ Tray Open

- Tray OUT (TL220)
- Tray IN (TL221)
- Sled Drive (TP303)
- Disc Drive (TP301)
- Focus Drive (TP304)
- Tracking Drive (TP302)
### 7 IC PIN FUNCTION DESCRIPTIONS

**IC2001 [ PT6313-S-TP ]**

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8 LEAD IDENTIFICATIONS

NJM4558D
KIA4558P

MM1622XJBE

PT6313-S-TP

KIA431-AT

0C-0805T*002
GP1FA513TZ

PQ070XF01SZ

LTV-817(B,C)-F

Note:
A: Anode
K: Cathode
E: Emitter
C: Collector
B: Base
R: Reference
G: Gate
D: Drain
S: Source
HITACHI