<table>
<thead>
<tr>
<th>MODEL</th>
<th>JP</th>
<th>E3</th>
<th>E2</th>
<th>EK</th>
<th>E2A</th>
<th>E1C</th>
<th>E1K</th>
<th>EUT</th>
</tr>
</thead>
<tbody>
<tr>
<td>DBP-1610</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
</tr>
</tbody>
</table>

**BLU-RAY DISC/DVD VIDEO PLAYER**

• For purposes of improvement, specifications and design are subject to change without notice.

• Please use this service manual with referring to the operating instructions without fail.

• Some illustrations using in this service manual are slightly different from the actual set.
SAFETY PRECAUTIONS

The following check should be performed for the continued protection of the customer and service technician.

LEAKAGE CURRENT CHECK

Before returning the unit to the customer, make sure you make either (1) a leakage current check or (2) a check to chassis resistance check. If the leakage current exceeds 0.5 mA, or if the resistance from chassis to either side of the power cord is less than 460 kohms, the unit is defective.

LASER RADIATION

Class 1M vs be and no laser radiation when open.
Do not view directly using instruments.

CAUTION

Please heed the points listed below during servicing and inspection.

☉ Heed the cautions!
Spots requiring particular attention when servicing, such as the cabinet, parts, chassis, etc., have caution nd cated on the schematics. Be sure to heed these cautions and the instructions.

☉ Caution concerning electric shock!
(1) An AC voltage is impressed on this set, so touching internal metal parts when the set is energized can cause electric shock. Take care to avoid electric shock, for example, by using an originating transformer and gloves when servicing the set energized, unplugging the power cord when replacing the parts, etc.
(2) There are high voltage parts inside. Handle with extra care when the set is energized.

☉ Caution concerning disassembly and assembly!
Through great care taken when manufacturing the parts from sheet metal, there may be some rare cases of burrs on the edges of parts which could cause injury if fingers are moved across them. Use gloves to protect your hands.

☉ Only use designated parts!
The set's parts have specific safety properties (fire resistance, voltage resistance, etc.). For replacement parts, be sure to use parts which have the same properties. In particular, for important safety parts that are marked on the wiring diagrams and parts lists, be sure to use the designated parts.

☉ Be sure to mount parts and arrange the wires as they were originally!
For safety seasons, some parts use tape, tubes or other insulation at the metal parts, and some parts are mounted away from the surface of printed circuit boards. Care should be taken when these parts are used to keep voltage parts away from heat and high voltage parts, so be sure to set everything back as it was or given instructions.

☉ Inspect for safety after servicing!
Check that all screws, parts and wires removed or disconnected for servicing have been put back in the right positions, inspect that no parts around the area that has been serviced have been negatively affected, conduct an inspection on the external metal connectors and between the bads of the power plug, and otherwise check that safety is ensured.

(Insulation check procedure)
Unplug the power cord from the power outlet, disconnect the antenna, plugs, etc., and turn the power switch on. Using a 500V insulation resistance tester, check that the plug and the externally exposed metal parts (antenna terminal, headphones terminal, input terminal, etc.) is 1MQ or greater. If the test is not passed, the set must be inspected and repaired.

Concerning important safety parts

Many of the electrical and structural parts used in the set have specific safety properties. In most cases these properties are difficult to distinguish by sight, and using replacement parts with higher ratings (rated power and withstand voltage) does not necessarily guarantee that safety performance will be preserved. Parts with safety properties are designated as shown in the wiring diagrams and parts lists. Be sure to replace them with parts that have the designated part number.

(1) Schematic diagrams ..... Indicated by the mark.
(2) Parts ..... Indicated by the mark.

Us ng parts other than the des gnated parts cou ld resu lt n eectrc shock, fires or other dangerous situat ons.
WIRE ARRANGEMENT

If wires are untied or moved to perform adjustment or parts replacement etc., be sure to rearrange them neatly as they were originally bundled or placed afterward. Otherwise, incorrect arrangement can be a cause of noise generation.

Wire arrangement viewed from the top
SPECIFICATIONS

SIGNAL SYSTEM
NTSC color

APPLICABLE DISCS
(1) BD/DVD-Video Discs
   1-layer 12cm single-sided discs, 2-layer 12cm single-sided discs, 2-layer 12cm double-sided discs
   (1 layer per side)
(2) BD-RE/BD-R (Recorded in BDMV format)
   1-layer 12cm single-sided discs, 2-layer 12cm single-sided discs
   1-layer 8cm single-sided discs, 2-layer 8cm single-sided discs
(3) DVD-R
   1-layer 12cm single-sided discs, 2-layer 12cm single-sided discs
   1-layer 8cm single-sided discs, 2-layer 8cm single-sided discs
(4) DVD-RW
   1-layer 12cm single-sided discs
   1-layer 8cm single-sided discs
(5) Compact discs (audio CD)
   12cm discs, 8cm discs
(6) CD-RW/-R
   12cm discs, 8cm discs

APPLICABLE MEMORY CARDS
(1) SD Memory Card
(2) SDHC Memory Card
(3) miniSD Card
(4) microSD Card

VIDEO OUTPUT
Y output level: 1Vp-p (75Ω/ohms)
Output connectors: Pin jack, 1 set

COMPONENT OUTPUT
Y output level: 1Vp-p (75Ω/ohms)
Pb/Cb output level: 0.7Vp-p (75Ω/ohms)
Pr/Cr output level: 0.7Vp-p (75Ω/ohms)
Output connectors: Pin jacks, 1 set

HDMI OUTPUT
Output jack: 19-pin HDMI terminal, 1 set
HDMI ver. 1.3a (Deep Color, Dolby Digital Plus, Dolby TrueHD, DTS-HD)

ETHERNET TERMINAL
10BASE-T/ 100BASE-TX
ANALOG AUDIO OUTPUT
Output level: 2Vrms (10kΩ/kohms)
2 channel (L, R) output connector: Pin jacks, 1 set

AUDIO OUTPUT PROPERTIES
(1) Frequency response
   1 BDs (linear PCM) : 20Hz to 22kHz (48kHz sampling)
                      : 20Hz to 44kHz (96kHz sampling)
                      : 20Hz to 88kHz (192kHz sampling)
   2 DVDs (linear PCM) : 20Hz to 22kHz (48kHz sampling)
                      : 20Hz to 44kHz (96kHz sampling)
   3 CDs
     : 20Hz to 20kHz
(2) S/N ratio : 115dB
(3) Total harmonic distortion : 1kHz 0.004%
(4) Dynamic range : 100dB (BD/DVD) / 98dB (CD)

DIGITAL AUDIO OUTPUT
Coaxial digital output: Pin jack, 1 set

POWER SUPPLY
AC 120V, 60Hz

POWER CONSUMPTION
30W (Standby: 0.6W)

MAXIMUM EXTERNAL DIMENSIONS
W : 435mm (17-3/16”)
H : 106mm (4-3/16”)
D : 309.3mm (12-3/16”)
(including protruding parts)

MASS
4.1 kg (9.1 lbs)

REMOTE CONTROL
RC-1128
Infrared pulse type
Supply: DC 3V, 2 R6/AA batteries
External dimensions:
   W : 52mm (2-1/16”)
   H : 227mm (8-15/16”)
   D : 30mm (1-3/16”)
Mass: 138g (0.3 lbs) (including batteries)

* For purposes of improvement, specifications and design are subject to change without notice.
LASER BEAM SAFETY PRECAUTIONS

This BD 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 30 cm 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 BD mechanism.
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>(\geq 3\text{mm}(d)) (\geq 4\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. 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>One side of power cord plug prongs ((B)) to:</th>
</tr>
</thead>
<tbody>
<tr>
<td>120 V</td>
<td>2k(\Omega) 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>
<tr>
<td></td>
<td>50k(\Omega) RES. Connected in parallel</td>
<td>(\leq 0.7\text{mA AC Peak}) (\leq 2\text{mA DC})</td>
<td>A/V Input, Output</td>
</tr>
</tbody>
</table>

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

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.

Pb (Lead) Free Solder
When soldering, be sure to use the Pb free solder.

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)

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

CAUTION:
1. The Flat Pack-IC shape may differ by models. Use an appropriate hot-air flat pack-IC desoldering machine, whose shape matches that of the Flat Pack-IC.

2. 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)
3. 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)
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.
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. S-1-6)
5. 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.

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 pin 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 (1 MΩ) that is properly grounded to remove any static electricity that may be charged on the body.

2. Ground for Workbench

Be sure to place a conductive sheet or copper plate with proper grounding (1 MΩ) 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.
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.

2. Disassembly Method

<table>
<thead>
<tr>
<th>ID/Loc. No.</th>
<th>Part</th>
<th>Fig. No.</th>
<th>Remove/*Unhook/Unlock/Release/Unplug/Desolder</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>[1]</td>
<td>Top Cover</td>
<td>D1</td>
<td>9(S-1)</td>
<td>---</td>
</tr>
<tr>
<td>[2]</td>
<td>Tray Panel</td>
<td>D2</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>[4]</td>
<td>Front A CBA</td>
<td>D2</td>
<td>*CN3001</td>
<td>---</td>
</tr>
<tr>
<td>[5]</td>
<td>Front B CBA</td>
<td>D2</td>
<td></td>
<td>---</td>
</tr>
<tr>
<td>[6]</td>
<td>Front Bracket</td>
<td>D3</td>
<td>7(S-3), (S-4)</td>
<td>---</td>
</tr>
<tr>
<td>[7]</td>
<td>SD CBA</td>
<td>D3</td>
<td>2(S-5), *CN5001</td>
<td>---</td>
</tr>
<tr>
<td>[8]</td>
<td>Rear Panel</td>
<td>D4</td>
<td>5(S-6), (S-7), 2(S-8), (S-9), (S-10), 8(S-11), 2(S-12), *CN1006</td>
<td>---</td>
</tr>
<tr>
<td>[9]</td>
<td>Motor DC Fan</td>
<td>D4</td>
<td></td>
<td>---</td>
</tr>
<tr>
<td>[10]</td>
<td>Inlet CBA</td>
<td>D4</td>
<td>*CN1001</td>
<td>---</td>
</tr>
</tbody>
</table>

Note:
(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.”

About tightening screws
When tightening screws, tighten them with the following torque.

Torque

0.45 ± 0.05 N·m
Reference Note

1. How to remove tray panel
   1) Connect the wall plug to an AC outlet and press the [A] button to open the tray.
   2) To lift up, the tray panel is removed.
   3) Press the [A] button again to close the tray.
   4) Press the [ON/STANDBY] button to turn the power off.
   5) Unplug an AC cord.

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

3. The BD Main CBA & BD Mechanism Assembly is adjusted as a unit at factory. Therefore, do not disassemble it. Replace the BD Main CBA & BD Mechanism Assembly as a unit.
3. How to Eject Manually

1. Remove the Top Cover.
2. Insert a screwdriver, etc. into the straightly so that the Portion A is pushed.
3. Pull the tray out manually and remove a disc.
HOW TO INITIALIZE THE BLU-RAY DISC PLAYER

To put the program back at the factory-default, initialize the BD player as the following procedure.

1. Turn the power on.
2. Remove the disc on the tray and close the tray.
3. Press [1], [2], [3], [4], and [DISPLAY] buttons on the remote control unit in that order.
   Fig. a appears on the screen.
   
   `Version Info`
   
   | F/W Name | : ******* |
   | Version  | : **:* |
   | Region   | : *:* |

   EEPROM CLEAR <STOP>  EXIT <POWER>

   Fig. a

4. Press [ ] button on the remote control unit.
   Fig. b appears on the screen and Fig. c appears on the VFD.
   
   `Version Info`
   
   | F/W Name | : ******* |
   | Version  | : **:* |
   | Region   | : *:* |

   EEPROM CLEAR : OK
   EEPROM CLEAR <STOP>  EXIT <POWER>

   Fig. b

5. To exit this mode, press [POWER OFF] button.

   **CLEAR**
   
   Fig. c
FIRMWARE RENEWAL MODE

Note: The file extension of the available firmware is "b20".

1. Turn the power on and remove the disc on the tray and close the tray.
2. To put the BD player into version up mode, press [9], [8], [7], [6], and [POP UP MENU/MENU] 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.
4. The BD player enters the F/W version up mode automatically. Fig. c appears on the screen and Fig. d appears on the VFD. Make sure to insert the proper F/W for the state of this model.

5. After programming is finished, the checksum on the VFD (Fig. f).

6. Unplug the AC cord from the AC outlet. Then plug it again.
7. Turn the power on.
8. Press [1], [2], [3], [4], and [DISPLAY] buttons on the remote control unit in that order. Fig. g appears on the screen.

The appearance shown in (*1) 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>Now Loading...</td>
<td>Loading the disc</td>
</tr>
<tr>
<td>2</td>
<td>Reading...</td>
<td>Sending files into the memory. After reading, automatically the tray opens.</td>
</tr>
<tr>
<td>3</td>
<td>See FL Display</td>
<td>Writing new version data, the progress will be displayed as shown in Fig. e.</td>
</tr>
</tbody>
</table>

Fig. e VFD in Version Up Mode
Checksum appears on the VFD then the tray will open automatically. Remove the disc on the tray. At this time, no button is available.

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

Fig. g
9. Press [ ] button on the remote control unit.
   Fig. h appears on the screen and Fig. i appears on the VFD.

   
   "*****" differ depending on the models.

   **Version Info**
   
<table>
<thead>
<tr>
<th>FW Name</th>
<th>Version</th>
<th>Region</th>
</tr>
</thead>
<tbody>
<tr>
<td>:******</td>
<td>:.<em>.</em></td>
<td>:.*</td>
</tr>
</tbody>
</table>

   EEPROM CLEAR : OK
   EEPROM CLEAR <STOP>  EXIT <POWER>

   Fig. h

   **CLEAR**
   Fig. i

   To exit this mode, press [POWER OFF] button.
FIRMWARE RENEWAL MODE (Network Update)

1. Press [SETUP] button on the remote control unit in stop mode.
2. Use [< / >] button to select “CUSTOM”, then press [ENTER] button.
3. Use [< / >] button to select “Other”, then press [ENTER] button.
   Confirmation message will appear.
5. Use [△ / ▽] button to select “Yes”, then press [ENTER] button.
   This unit will start checking for the latest firmware version.

**NOTE:**
If any error message concerning the network environment appears, please confirm the setting of your unit according to the error message. If you need to change any of your network environmental setting in order to execute the update, please contact to the internet service provider.

6. Confirmation message will appear.
   Use [△ / ▽] button to select “Yes”, then press [ENTER] button.
   The unit will start downloading the latest firmware version.

7. When the download completes, confirmation message will appear.
   Press [ENTER] button.
   The unit will start updating the firmware version.
   It may take a while to complete the updating.
   (Please wait until “100%” appears on the front panel display.)

8. After updating finishes, this unit will restart and open the disc tray automatically.

How to Verify the Firmware Version

1. Turn the power on.
2. Remove the disc on the tray and close the tray.
3. Press [1], [2], [3], [4], and [DISPLAY] buttons on the remote control unit in that order.
   Fig. j appears on the screen.

4. To exit this mode, press [POWER OFF] button.

| F/W Name | *••••• |
| Version  | ••••• |
| Region   | ••• |

Fig. j

“•••••” differ depending on the models.

EXIT <POWER> EEPROM CLEAR <STOP>
# SERVICE MODE

Service Mode

<table>
<thead>
<tr>
<th>1st level</th>
<th>2nd level</th>
<th>3rd level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 MECHA TEST</td>
<td>1 Tray Aging</td>
<td></td>
<td>Aging of tray open/close</td>
</tr>
<tr>
<td></td>
<td>2 TOC Read</td>
<td></td>
<td>TOC reading</td>
</tr>
<tr>
<td></td>
<td>3 Heat Run</td>
<td></td>
<td>Tray close -&gt; TT1 payback -&gt; TT10 payback -&gt; Tray open -&gt; Tray close</td>
</tr>
<tr>
<td>2 VFD/LED TEST</td>
<td>1 A On</td>
<td></td>
<td>Turning on a VFD (The power LED lights red)</td>
</tr>
<tr>
<td></td>
<td>2 A Off</td>
<td></td>
<td>Turning off a VFD (The power LED lights green)</td>
</tr>
<tr>
<td>3 ERROR RATE</td>
<td></td>
<td></td>
<td>Displaying Error rate during payback</td>
</tr>
<tr>
<td>4 LD TEST</td>
<td>1 LD Power</td>
<td>1 Off</td>
<td>Turning off LD</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2 BD</td>
<td>Turning on BD LD</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3 DVD</td>
<td>Turning on DVD LD</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4 CD</td>
<td>Turning on CD LD</td>
</tr>
<tr>
<td></td>
<td>2 Operating Time</td>
<td></td>
<td>Displaying LD Operation Time (with clear function)</td>
</tr>
<tr>
<td>5 CHANNEL TEST</td>
<td>1 TEST TONE</td>
<td>1 Center/Subwoofer/ Front LR</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2 Surround LR/ Surround Back LR</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2 Front Lch</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3 Center</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4 Front Rch</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5 Surround Rch</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>6 Surround Back Rch</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>7 Surround Back Lch</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>8 Surround Lch</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>9 Subwoofer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 SD CARD TEST</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 DEFAULT SETTING</td>
<td></td>
<td></td>
<td>Default setting</td>
</tr>
</tbody>
</table>

**Note:** If some test are performed continuously, any error will occur
Entering Service Mode
In power on condition, no discs and tray close, it will be entered into service mode by the following operation using
the remote controller. However, it will not be entered when Media Select Item is SD Memory.

Service Mode by using remote controller
Press the following buttons on the remote controller in power on condition, no discs and tray close;
[2]->[5]->[8]->[0]->[CLEAR]

Release from Service Mode
Press the [POWER OFF] button to turn off power.

Screen saver/Auto Power Off in Service Mode
These functions are not performed in Service Mode.
After entering, Fig. k appears on the screen and Fig. l appears on the VFD.

Available button in service mode

<table>
<thead>
<tr>
<th>Button</th>
<th>condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENTER</td>
<td>Enter the next level</td>
</tr>
<tr>
<td>POWER OFF</td>
<td>Turn the power off (when the service mode is completed)</td>
</tr>
<tr>
<td>1–7</td>
<td>Enter the selected item (next level)</td>
</tr>
<tr>
<td>OTHER</td>
<td>Not available</td>
</tr>
</tbody>
</table>

Note: Press the number key to select items. Or, press the cursor button (up/down) to select items and press
[ENTER] button.

<table>
<thead>
<tr>
<th>INDICATION</th>
<th>DESCRIPTION</th>
<th>REMARK</th>
</tr>
</thead>
<tbody>
<tr>
<td>F/W Name</td>
<td>Model Name</td>
<td>E5K***D, etc.</td>
</tr>
<tr>
<td>Region</td>
<td>BD region - DVD region</td>
<td>A-1, etc.</td>
</tr>
<tr>
<td>Release Ver.</td>
<td>Release version</td>
<td>D.jpp, etc.</td>
</tr>
</tbody>
</table>
TRAY LOCK MODE

Tray Lock Mode prevents the tray opening or closing to prevent disc theft in demo mode.

Enter this mode using the following procedure.

1. Confirm that the TV Monitor is connected.

2. With playback stopped, press [SETUP], [TOP MENU], [3], [AUDIO], [0] and [SETUP] buttons on the remote control unit in that order. "Trade-On" appears in the upper right corner on the screen, and Fig. a appears on the VFD for 2 seconds.

3. To exit this mode, press [SETUP], [TOP MENU], [3], [AUDIO], [0] and [SETUP] buttons on the remote control unit in that order. "Trade-Off" appears in the upper right corner on the screen, and Fig. b appears on the VFD for 2 seconds.
REMOTE LOCK MODE

SETTING MENU:

Remote Lock Off Mode:
This mode receives an input signal from the remote control unit or from the Remote In-Jack on the rear panel.

Remote Lock On Mode:
This mode does not receive an input signal from the remote control unit or from the Remote In-Jack on the rear panel.

Perform the setting using the following procedure.
1. Press [POWER ON] and [STOP] buttons on the front panel simultaneously for over 3 seconds to set "Remote Lock Mode" and display mode.
2. Press [STILL/PAUSE] button on the front panel to set to "On" or "Off". When "Remote Lock On", "Remote Lock On" will appear in the upper right corner on the screen and appears on the VFD.

Lock-On
Fig. a VFD
When "Remote Lock Off", "Remote Lock Off" will appear in the upper right corner on the screen and appears on the VFD.

Lock-OFF
Fig. b VFD
a. If [STILL/PAUSE] button is not pressed for 2 seconds or any other button is pressed within 2 seconds, the unit will be released from "Remote Lock Mode".
b. When initializing, set the Remote Lock Mode "off".
TROUBLESHOOTING

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

Is the fuse normal? No

Is normal state restored when once unplugged power cord is plugged again after several seconds? No

Is the EV+5V line voltage normal? No

Check each rectifying circuit of the secondary circuit and service it if defective.

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? No

Check D1021, IC1002, IC1004 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. (D1025, D1028, D1030, D1031, D1032, D1033, IC1008, IC1009, IC1010, Q1009, Q1010, Q1011, Q1013, Q2636)

FLOW CHART NO.5
FL is not outputted.

Is 35V voltage supplied to the emitter of Q2602? No

Is the "L" signal outputted to the collector of Q2603? No

Check Q2601, Q2602, D2603 and their periphery, and service it if defective.
FLOW CHART NO.6
P-ON+5V (1) is not outputted.
   Is 5V voltage inputted to the emitter of Q1011? Yes
      No
   Is 4.5V voltage inputted to the base of Q1011? Yes
      No
   Replace Q1011.

FLOW CHART NO.7
P-ON+5V (2) is not outputted.
   Is 5V voltage inputted to the emitter of Q1009? Yes
      No
   Is 4.5V voltage inputted to the base of Q1009? Yes
      No
   Replace Q1009.

FLOW CHART NO.8
P-ON+10.5V is not outputted.
   Is 14V voltage inputted to the collector of Q1013? Yes
      No
   Is 11V voltage inputted to the base of Q1013? Yes
      No
   Replace Q1013.

FLOW CHART NO.9
P-ON+1.2V is not outputted.
   Is 5V voltage supplied to Pin(3) of IC1009? Yes
      No
   Is the "L" signal inputted to the base of Q1015? Yes
      No
   Check IC1009, Q1015 and their periphery, and service it if defective.

FLOW CHART NO.10
P-ON+3.3V is not outputted.
   Is 5V voltage supplied to Pin(1) of IC1008? Yes
      No
   Is "L" signal outputted to the collector of Q1005? Yes
      No
   Check IC1008, D1040 and their periphery circuit, and service it if defective.
FLOW CHART NO.11
P-ON+1.8V is not outputted.

Is 5V voltage inputted to Pin(3) of IC1010? Yes

Is "L" signal outputted to the base of Q1016? Yes

Check IC1010, Q1016 and their periphery, and service it if defective.

No

Check D1025, D1030, D1031, C1029, C1034 and their periphery, and service it if defective.

No

Check PWSW2 line and their periphery, and service it if defective.

FLOW CHART NO.12
P-ON+14.5V is not outputted.

Is 15V voltage inputted to the emitter of Q1010? Yes

Is 14V voltage inputted to the base of Q1010? Yes

Replace Q1010.

No

Check D1028, C1026, L1003 and their periphery, and service it if defective.

No

Check Q1008 and PWSW4 line and service it if defective.

FLOW CHART NO.13
The fluorescent display tube does not light up.

Is 3.3V voltage supplied to Pin(24) of FL3001? Yes

Is 9V voltage supplied to Pin(1,2) of FL3001? Yes

Is 10V voltage supplied to the emitter of Q2604? Yes

Replace Q2604.

No

Check the EV+3.3V line and service it if defective.

No

Is 9V voltage inputted to the base of Q2604? Yes

Check D1033, C1028, R1032, R1033 and their periphery, and service it if defective.

No

Replace Q2604.

Check Q2603 and FL-SW line and service it if defective.

No

Is 5V voltage supplied to Pin(29,30) of FL3001? Yes

Replace FL3001.

FLOW CHART NO.14
The key operation is not functioning.

Are the contact point and the installation state of the key switches (SW3001, SW3101, SW3102, SW3104, SW3106, SW3108, SW3110-3113) normal? Yes

When pressing each switches (SW3001, SW3101, SW3102, SW3104, SW3106, SW3108, SW3110-3113), do the voltage of Pin(1, 62) of IC2000 increase? Yes

Replace IC2000.

No

Re-install the switches (SW3001, SW3101, SW3102, SW3104, SW3106, SW3108, SW3110-3113) correctly or replace the poor switch.

No

Check the switches (SW3001, SW3101, SW3102, SW3104, SW3106, SW3108, SW3110-3113) and their periphery, and service it if defective.
**FLOW CHART NO.15**

No operation is possible from the remote control unit. (Operation is possible from the unit.)

- **Is 5V voltage supplied to Pin(2) of RS3001 (remote control receiver)?**
  - Yes: Replace the BD Main CBA & BD Mechanism Assembly.
  - No: **Is the "L" pulse sent out Pin(1) of RS3001 (remote control receiver) when the remote control unit is activated?**
    - Yes: Check the line between the RS3001 (remote control receiver) and the Pin(27) of IC2000, and service it if defective.
    - No: **Is the "L" pulse inputted to the Pin(27) of IC2000?**
      - Yes: Replace IC2000.
      - No: Check EV+5V line and service it if defective.

---

**FLOW CHART NO.16**

The disc tray cannot be opened and closed. (It can be done using the remote control unit.)

- **Is the normal control voltage inputted to Pin(62) of IC2000? Refer to "FLOW CHART NO.14" <The key operation is not functioning.>**
  - Yes: Replace the BD Main CBA & BD Mechanism Assembly.
  - No: Replace the "OPEN/CLOSE" switch (SW3101).

---

**FLOW CHART NO.17**

The disc tray cannot be opened and closed. [No Disc] indicated.
Both functions of picture and sound do not operate normally.

- Yes: Replace the BD Main CBA & BD Mechanism Assembly.
Are the video signals outputted to each pin of IC4000?

Yes

Replace IC4000.

No

Are the video signals shown above inputted into each pin of IC4000?

Yes

Check the line between each pin of CN4000 and each pin of IC4000, and service it if defective.

No

CN4000 3PIN → IC4000 8PIN VIDEO-Y(I/P)

CN4000 5PIN → IC4000 10PIN VIDEO-Pb/Cb

CN4000 7PIN → IC4000 12PIN VIDEO-Pr/Cr

Are the video signals outputted to each pin of IC4000?

Yes

Replace the BD Main CBA & BD Mechanism Assembly.

No

Are the video signals shown above inputted into each pin of IC4000?

Yes

Check the line between each pin of CN4000 and each pin of IC4000, and service it if defective.

No

CN4000 3PIN → IC4000 8PIN VIDEO-Y(I/P)

CN4000 5PIN → IC4000 10PIN VIDEO-Pb/Cb

CN4000 7PIN → IC4000 12PIN VIDEO-Pr/Cr

Are the video signals outputted to the specific output terminal?

Yes

Are the component video signals outputted to the VIDEO OUT terminal (JK4002, JK4003, JK4005)?

No

Check the periphery of the VIDEO OUT terminal (JK4002, JK4003, JK4005) from Pin(15, 17, 20) of IC4000 and service it if defective.

Are the composite video signals outputted to the VIDEO OUT terminal (JK4004)?

No

Check the periphery of the VIDEO OUT terminal (JK4004) from Pin(25) of IC4000 and service it if defective.
FLOW CHART NO.19

Audio is not outputted normally. (JK2200, JK2201)

Set the disc on the disc tray, and playback.

Are the analog audio signals outputted to each pin of CN2007?

CN2007  22PIN  AUDIO(L)
CN2007  24PIN  AUDIO(R)

No  Replace the BD Main CBA & BD Mechanism Assembly.

Yes

Are the analog audio signals inputted to each pin of IC2200?

IC2200  6PIN  AUDIO(L)
IC2200  2PIN  AUDIO(R)

No  Replace the BD Main CBA & BD Mechanism Assembly.

Yes

Is the "H" level mute signal outputted to CN2007?

CN2007  19PIN  AUDIO(L)-MUTE
CN2007  20PIN  AUDIO(R)-MUTE

No  Check each line between each pin of CN2007 and the pin of IC2200, and service it if detective.

CN2007  22PIN → IC2200  6PIN  AUDIO(L)
CN2007  24PIN → IC2200  2PIN  AUDIO(R)

Yes

Is the signal at Pin(24) of IC2000 "H"?

Yes

Are the analog audio signals outputted to each pin of IC2200?

IC2200  7PIN  AUDIO(L)
IC2200  1PIN  AUDIO(R)

No  Replace IC2200.

Yes

Are the audio signals outputted to the audio terminal (JK2200, JK2201)?

No  Check the periphery between Pin(1,7) of IC2200 and the audio terminal (JK2200, JK2201), and service it if detective.

Yes
BD Mechanism Replacement Guidelines

The guidelines describe how to determine whether a BD Mechanism Assembly is defective or not. Confirm that the main function is eliminated after replacing the defective BD Mechanism Assembly with a new one.

*The BD Mechanism Assembly should be acceptable when the following test disc can be played successfully:

| BD-ROM | BLX-201S3(SEY) chp12 |

*Select [4: LD Test] and [2: Operating Time] in Service Mode. If the Operating Time shows 3,000 hours or more, the BD Mechanism Assembly should be determined that it has reached the end of its life.

Replacement of BD Main CBA & BD Mechanism Assembly
1. Remove the Top Cover, Tray Panel, Front Assembly, Front Bracket, Video CBA and AV PCB Holder.
2. Disconnect Connectors and replace the BD Main CBA & BD Mechanism Assembly.
   Refer to CABINET DISASSEMBLY INSTRUCTIONS.
System Control Block Diagram

- IC2000 (EEPROM)
- IC6903 (SUB MICRO CONTROLLER)
- IC6001

- CN2002, CN3002
- FL3001 (VFD)
- 15 15KEY -2
- 16 16KEY -1
- 12 12REMOTE
- 66 FL-RESET
- 55 FL-STB
- 44 FL-SCL
- 33 FL-SDA

- XRST
- XTRST

- CN4001, CN2005
- 10 10SUB-TXD
- 99 SYS-RESET
- 11 11SUB-RXD

- 18 18STANDBY/POWER-LED
- D3003

- POWER
- FRON A CBA
- BD MAIN CBA
- AUDIO CBA

- RS3001
- REMOTE SENSOR

- 27
- 49
- 34
- 33

- 3
- 60
- 14
- 15 SUB-TXD
- 16

- AE32
- T34

- SUB-RXD

- 28 CEC-IN
- 30 CEC-OUT

- 13

- MUTE2

- 3
- 8MHz
- XTAL

- Q2619

- JK7501

- PWSW4

- FAN-LOCK

- TO POWER SUPPLY

- ETHERNET INTERFACE

- IC6401

- EV+3.3V

- IC6701

- P-ON+1.8V

- ETHERNET JACK

- RX(+)
- TX(-)

- JK6401

- ETHERNET INTERFACE

- IC5550 (PHOTO COUPLER)

- Q5551, Q5552
**NOTE:**

The voltage for parts in hot circuits is measured using hot GND as a common terminal.


**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.

**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 resistance values are indicated in ohms \((K = 10^3, M = 10^6)\).

3. Resistor wattages are 1/4W or 1/6W unless otherwise specified.

4. All capacitance values are indicated in \(\mu\text{F} \) \((P = 10^{-6} \mu\text{F})\).

5. All voltages are DC voltages unless otherwise specified.
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 MEME TYPE.
   RISK OF FIRE-REPLACE FUSE AS MARKED.

   ![Symbol for fast operating fuse]

   This symbol means fast operating fuse.
   Ce symbole represente un fusible a fusion rapide.

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

   ![Diagram of voltage indications]

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

5. How to read converged lines

   ![Diagram of line numbering]

   Distinction Area
   Line Number
   (1 to 3 digits)

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

6. Test Point Information

   ![Diagram of test point symbols]

   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.
May cause some components in the power supply circuit to fail.

“Ce symbole représente un fusible à fusion rapide.”

In order to use this appliance safely, only use fuses of the same type.

Risk of fire - replace fuse as marked.

“This symbol means fast operating fuse.”
WAVEFORMS

WF1  Pin 9 of CN4000

WF2  Pin 7 of CN4000

WF3  C4018 PLUS LEAD

WF4  Pin 22 of CN2007

WF5  Pin 11 of CN4000

NOTE:
Input Signal (DVD)
VIDEO: 75% COLOR BAR
AUDIO: 1KHz, 0dB
LEAD IDENTIFICATIONS

1: Anode
2: Cathode
3: Emitter
4: Collector

Note:
A: Anode
K: Cathode
E: Emitter
C: Collector
B: Base
R: Reference
G: Gate
D: Drain
S: Source
**PARTS LIST OF EXPLODED VIEW**

* Parts for which "nsp" is indicated on this table cannot be supplied.
* PW B ASSY for which "nsp" is indicated on this table cannot be supplied. When repairing the PW B ASSY, check the board parts table and order replacement parts.
* The parts listed below are for maintenance only; they might differ from the parts used in the unit in appearances or dimensions.

<table>
<thead>
<tr>
<th>Ref. No.</th>
<th>Part No.</th>
<th>Part Name</th>
<th>Remarks</th>
<th>Q'ty</th>
<th>New</th>
</tr>
</thead>
<tbody>
<tr>
<td>9H2189002290D</td>
<td>AV ASSEMBLY</td>
<td>1VSA22251</td>
<td></td>
<td>1</td>
<td>*</td>
</tr>
<tr>
<td></td>
<td>- VIDEO CBA</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- AUDIO CBA</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>- FRONT A CBA</td>
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<td></td>
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<tr>
<td></td>
<td>- FRONT B CBA</td>
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</tr>
<tr>
<td>9H2189002300D</td>
<td>POWER ASSEMBLY</td>
<td>1VSA22246</td>
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<tr>
<td></td>
<td>- POWER SUPPLY CBA</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- REMOTE JACK CBA</td>
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<tr>
<td></td>
<td>- SD CBA</td>
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</tr>
<tr>
<td></td>
<td>- INLET CBA</td>
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</tr>
<tr>
<td>1B1</td>
<td>9H2309002280D</td>
<td>BD MAIN CBA &amp; BD MECHANISM ASSEMBLY</td>
<td>N77D1BUN</td>
<td></td>
<td>*</td>
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<tr>
<td>A1X</td>
<td>9H2402002230D</td>
<td>FRONT ASSEMBLY E5K1C1UD</td>
<td>1VM123602</td>
<td>1</td>
<td>*</td>
</tr>
<tr>
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<tr>
<td>A2</td>
<td>nsp</td>
<td>CHASSIS E5K1AUD</td>
<td>1VM021192</td>
<td>1</td>
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<tr>
<td>A3</td>
<td></td>
<td>TOP COVER E5K1AUD</td>
<td>1VM021193</td>
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<td>A4</td>
<td></td>
<td>REAR PANEL E5K11C1UD</td>
<td>1VM227738</td>
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<td>A6</td>
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<td>FOOT ASSEMBLY E5H501UD</td>
<td>1VM430199A</td>
<td>4</td>
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<tr>
<td>A8</td>
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<td>TRAY PANEL ASSEMBLY E5K1AUD</td>
<td>1VM227177</td>
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<tr>
<td>A21</td>
<td>nsp</td>
<td>LABEL SERIAL NO. E57E0UD</td>
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<tr>
<td>A22</td>
<td>nsp</td>
<td>LICENSE LABEL E5K1AUD</td>
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<td>1</td>
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<tr>
<td>B2</td>
<td>nsp</td>
<td>FRONT BRACKET(B2 DENON MOLD) E5K1C1UD</td>
<td>S/No.~04800</td>
<td>1</td>
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<tr>
<td></td>
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<td>1VM330757</td>
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<tr>
<td>B2</td>
<td>nsp</td>
<td>FRONT BRACKET(B2 DENON MOLD) E5K1C1UD</td>
<td>S/No.04801~</td>
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<tr>
<td></td>
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<td>1VM330757C</td>
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</tr>
<tr>
<td>B4</td>
<td>nsp</td>
<td>POWER HOLDER E5K1AUD</td>
<td>1VM122880</td>
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<td>B39</td>
<td>nsp</td>
<td>LEAD CLAMPER 100MM</td>
<td>1790356</td>
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<tr>
<td>B70</td>
<td>nsp</td>
<td>HIMELON TAPE(5X40) E5K1AUD</td>
<td>1VM431686</td>
<td>1</td>
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<tr>
<td>B71</td>
<td>nsp</td>
<td>HIMELON TAPE(5X25) E5K1AUD</td>
<td>1VM431688</td>
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<td>nsp</td>
<td>AV PCB BRACKET E5K1AUD</td>
<td>1VM226905</td>
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<td>B73</td>
<td>nsp</td>
<td>LOADER BRACKET E5K1AUD</td>
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## PARTS LIST OF PACKING & ACCESSORIES

* Parts for which "nsp" is indicated on this table cannot be supplied

* The parts listed below are for maintenance only, might differ from the parts used in the unit in appearances or dimensions

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