Service Manual

Blu-ray Disc Player

Model No. DMP-BD45EB
DMP-BD45EE
DMP-BD45EF
DMP-BD45EG
DMP-BD65EB
DMP-BD65EF
DMP-BD65EG

The illustration shows the image of DMP-BD65.

Notes: These model's BDP/Digital P.C.B. Module are
DMP-BD45EB : RFKNBD45EBT
DMP-BD45EE : RFKNBD45EET
DMP-BD45EF : RFKNBD45EFT
DMP-BD45EG : RFKNBD45EGT
DMP-BD65EB : RFKNBD65EBT
DMP-BD65EF : RFKNBD65EFT
DMP-BD65EG : RFKNBD65EGT

Caution:
Pairing of BD Drive and Digital P.C.B. as "BDP/Digital P.C.B. Module" have to be replaced together.
If the either BD Drive or Digital P.C.B. is changed, BD Drive unit has to be re-aligned.
Because the alignment data for BD Drive Unit is stored in Digital P.C.B.

Vol. 1
Colour
[DMP-BD45]
(K)...........Black Type

[DMP-BD65]
(K)...........Black Type
(S)...........Silver Type (only EG)

⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

■ IMPORTANT SAFETY NOTICE ■

There are special components used in this equipment which are important for safety. These parts are marked by ⚠ in the Schematic Diagrams, Circuit Board Diagrams, Exploded Views and Replacement Parts List. It is essential that these critical parts should be replaced with manufacturer's specified parts to prevent shock, fire or other hazards. Do not modify the original design without permission of manufacturer.

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1 Safety Precautions

1.1. General Guidelines

1. **IMPORTANT SAFETY NOTICE**

   There are special components used in this equipment which are important for safety. These parts are marked by

   ⚠ in the Schematic Diagrams, Circuit Board Layout, Exploded Views and Replacement Parts List. It is essential that these critical parts should be replaced with manufacturer's specified parts to prevent X-RADIATION, shock, fire, or other hazards. Do not modify the original design without permission of manufacturer.

2. An Isolation Transformer should always be used during the servicing of AC Adaptor whose chassis is not isolated from the AC power line. Use a transformer of adequate power rating as this protects the technician from accidents resulting in personal injury from electrical shocks. It will also protect AC Adaptor from being damaged by accidental shorting that may occur during servicing.

3. When servicing, observe the original lead dress. If a short circuit is found, replace all parts which have been overheated or damaged by the short circuit.

4. After servicing, see to it that all the protective devices such as insulation barriers, insulation papers shields are properly installed.

5. After servicing, make the following leakage current checks to prevent the customer from being exposed to shock hazards.

1.2. Leakage Current Cold Check

1. Unplug the AC cord and connect a jumper between the two prongs on the plug.

2. Measure the resistance value, with an ohmmeter, between the jumpered AC plug and each exposed metallic cabinet part on the equipment such as screwheads, connectors, control shafts, etc. When the exposed metallic part has a return path to the chassis, the reading should be between 1 MΩ and 5.2 MΩ. When the exposed metal does not have a return path to the chassis, the reading must be infinity.

1.3. Leakage Current Hot Check (See Figure 1.)

1. Plug the AC cord directly into the AC outlet. Do not use an isolation transformer for this check.

2. Connect a 1.5 kΩ, 10 W resistor, in parallel with a 0.15 μF capacitor, between each exposed metallic part on the set and a good earth ground, as shown in Figure 1.

3. Use an AC voltmeter, with 1 kΩ/V or more sensitivity, to measure the potential across the resistor.

4. Check each exposed metallic part, and measure the voltage at each point.

5. Reverse the AC plug in the AC outlet and repeat each of the above measurements.

6. The potential at any point should not exceed 0.75 V RMS. A leakage current tester (Simpson Model 229 or equivalent) may be used to make the hot checks, leakage current must not exceed 1/2 mA. In case a measurement is outside of the limits specified, there is a possibility of a shock hazard, and the equipment should be repaired and rechecked before it is returned to the customer.
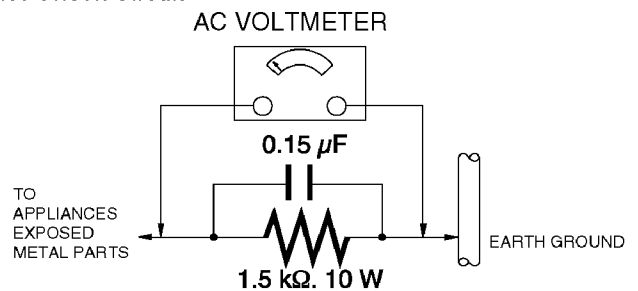
Hot-Check Circuit

Figure. 1

2 Warning

2.1. Prevention of Electrostatic Discharge (ESD) to Electrostatically Sensitive (ES) Devices

Some semiconductor (solid state) devices can be damaged easily by static electricity. Such components commonly are called Electrostatically Sensitive (ES) Devices.

> Examples of typical ES devices are IC (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 electrostatic discharge (ESD).

1. Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any ESD on your body by touching a known earth ground. Alternatively, obtain and wear a commercially available discharging ESD wrist strap, 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 ES 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 ES devices.
4. Use only an antistatic solder removal device. Some solder removal devices not classified as "antistatic (ESD protected)" can generate electrical charge sufficient to damage ES devices.
5. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ES devices.
6. Do not remove a replacement ES device from its protective package until immediately before you are ready to install it. (Most replacement ES devices are packaged with leads electrically shorted together by conductive foam, aluminum foil or comparable conductive material).
7. Immediately before removing the protective material from the leads of a replacement ES 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 ES 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 (ESD) sufficient to damage an ES device).

2.2. Caution for AC Cord (For EB)

2.2.1. Information for Your Safety

IMPORTANT

Your attention is drawn to the fact that recording of pre-recorded tapes or discs or other published or broadcast material may infringe copyright laws.

WARNING

To reduce the risk of fire or shock hazard, do not expose this equipment to rain or moisture.

CAUTION

To reduce the risk of fire or shock hazard and annoying interference, use the recommended accessories only.

FOR YOUR SAFETY

DO NOT REMOVE THE OUTER COVER

To prevent electric shock, do not remove the cover. No user serviceable parts inside. Refer servicing to qualified service personnel.

2.2.2. Caution for AC Mains Lead

For your safety, please read the following text carefully.

This appliance is supplied with a moulded three-pin mains plug for your safety and convenience.
A 5-ampere fuse is fitted in this plug.
Should the fuse need to be replaced please ensure that the replacement fuse has a rating of 5 amperes and it is approved by ASTA or BSI to BS1362
Check for the ASTA mark or the BSI mark on the body of the fuse.

If the plug contains a removable fuse cover you must ensure that it is refitted when the fuse is replaced.
If you lose the fuse cover, the plug must not be used until a replacement cover is obtained.
A replacement fuse cover can be purchased from your local Panasonic Dealer.

If the fitted moulded plug is unsuitable for the socket outlet in your home then the fuse should be removed and the plug cut off and disposed of safety.
There is a danger of severe electrical shock if the cut off plug is inserted into any 13-ampere socket.

If a new plug is to be fitted please observe the wiring code as shown below.
If in any doubt, please consult a qualified electrician.

2.2.2.1. Important

The wires in this mains lead are coloured in accordance with the following code:

Blue	Neutral
Brown	Live

As the colours of the wires in the mains lead of this appliance may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows:

The wire which is coloured BLUE must be connected to the terminal in the plug which is marked with the letter N or coloured BLACK.

The wire which is coloured BROWN must be connected to the terminal in the plug which is marked with the letter L or coloured RED.

Under no circumstances should either of these wires be connected to the earth terminal of the three pin plug, marked with the letter E or the Earth Symbol.

Earth Symbol	⏚

2.2.2.2. Before Use

Remove the Connector Cover as follows.

2.2.2.3. How to Replace the Fuse

1. Remove the Fuse Cover with a screwdriver.

2. Replace the fuse and attach the Fuse cover.

2.3. Precaution of Laser Diode

CAUTION

This product utilizes a laser diode with the unit turned "on", invisible laser radiation is emitted from the pick-up lens.
Wave length: 790 nm (CDs)/ 655 nm (DVDs)/ 405 nm (BDs)
Maximum output radiation power from pick-up: 100 μW/VDE
Laser radiation from the pick-up lens is safety level, but be sure the followings:
1. Do not disassemble the optical pick-up unit, since radiation from exposed laser diode is dangerous.
2. Do not adjust the variable resistor on the pick-up unit. It was already adjusted.
3. Do not look at the focus lens using optical instruments.
4. Recommend not to look at pick-up lens for a long time.

ACHTUNG

Dieses Produkt enthält eine Laserdiode.
Im eingeschalteten Zustand wird unsichtbare Laserstrahlung von der Laserinheit abgestrahlt.
Wellenlänge: 790 nm (CDs)/ 655 nm (DVDs)/ 405 nm (BDs)
Maximale Strahlungsleistung der Lasereinheit: 100 μW/VDE
Die Strahlung der Lasereinheit ist ungefährlich, wenn folgende Punkte beachtet werden:
1. Die Lasereinheit nicht zerlegen, da die Strahlung an der freigelegten Laserdiode gefährlich ist.
2. Den werkseitig justierten Einstellregler der Lasereinheit nicht verstellen.
3. Nicht mit optischen Instrumenten in die Fokussierlinse blicken.
4. Nicht über längere Zeit in die Fokussierlinse blicken.

The illustration shows image of DMP-BD65.


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CLASS 1
LASER PRODUCT
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LUOKAN 1 LASERLAITE
KLASS 1 LASER APPARAT

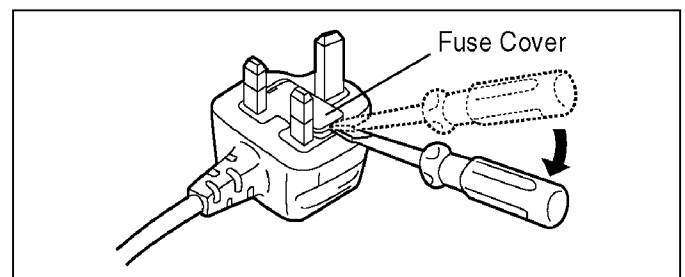| CAUTION | VISIBLE AND INVISIBLE LASER RADIATION WHEN OPEN. DO NOT STARE INTO BEAM. FDA 21 CFR/Class II (IIa) |
CAUTION	CLASS 1M VISIBLE AND INVISIBLE LASER RADIATION WHEN OPEN. DO NOT VIEW DIRECTLY WITH OPTICAL INSTRUMENTS. IEC60825-1 +A2/CLASS 1M
ATTENTION	RAYONNEMENT LASER VISIBLE ET INVISIBLE, CLASSE 1M, EN CAS D'OUVERTURE. NE PAS REGARDER DIRECTEMENT À L'AIDE D'INSTRUMENTS D'OPTIQUE.
FORSIGTIG	SYNLIG OG USYNLIG LASERSTRÅLING KLASSE 1M, NÅR LÅGET ER ÅBENT. UNDGÅ AT SE LIGE PÅ MED OPTISKE INSTRUMENTER.
VARO	AVATTAESSA OLET ALTTIINA LUOKAN 1M NÄKYVÄÄ JA NÄKYMÄTÖNTÄ LASERSÄTEILYÄ. ÄLÄ KATSO OPTISELLA LAITTEELLA SUORAAN SÄTEESEEN.
VARNING	KLASS 1M SYNLIG OCH OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD. BETRAKTA EJ STRÅLEN DIREKT GENOM OPTISKT INSTRUMENT.
VORSICHT	SICHTBARE UND UNSICHTBARE LASERSTRAHLUNG KLASSE 1M, WENN ABDECKUNG GEÖFFNET. NICHT DIREKT MIT OPTISCHEN INSTRUMENTEN BETRACHTEN.
注意	打开时有可见及不可见激光辐射。避免光束照射。
注意	ここを開くと可視及び不可視レーザー光が出ます。ビームを見たり、触れたりしないでください。 VQL1Y70

CAUTION!
THIS PRODUCT UTILIZES A LASER.
USE OF CONTROLS OR ADJUSTMENTS OR PERFORMANCE OF PROCEDURES OTHER THAN THOSE SPECIFIED HEREIN MAY RESULT IN HAZARDOUS RADIATION EXPOSURE.

2.4. Service Caution Based On Legal Restrictions

This service manual contains technical information, which allow service personnel's to understand and service this model.
Please place orders using the parts list and not the drawing reference numbers.
If the circuit is changed or modified, the information will be followed by service manual to be controlled with original service manual.

2.4.1. General Description About Lead Free Solder (PbF)

The lead free solder has been used in the mounting process of all electrical components on the printed circuit boards used for this equipment in considering the globally environmental conservation.
The normal solder is the alloy of tin (Sn) and lead (Pb). On the other hand, the lead free solder is the alloy mainly consists of tin (Sn), silver (Ag) and Copper (Cu), and the melting point of the lead free solder is higher approx.30°C (86°F) more than that of the normal solder.

Distinction of P.C.B. Lead Free Solder being used

The letter of "PbF" is printed either foil side or components side on the P.C.B. using the lead free solder.(See right figure)	PbF

Service caution for repair work using Lead Free Solder (PbF)
- The lead free solder has to be used when repairing the equipment for which the lead free solder is used.
  (Definition: The letter of "PbF" is printed on the P.C.B. using the lead free solder.)
- To put lead free solder, it should be well molten and mixed with the original lead free solder.
- Remove the remaining lead free solder on the P.C.B. cleanly for soldering of the new IC.
- Since the melting point of the lead free solder is higher than that of the normal lead solder, it takes the longer time to melt the lead free solder.
- Use the soldering iron (more than 70W) equipped with the temperature control after setting the temperature at 350±30°C (662±86°F).

Recommended Lead Free Solder (Service Parts Route.)
- The following 3 types of lead free solder are available through the service parts route.
  RFKZ03D01KS----------(0.3mm 100g Reel)
  RFKZ06D01KS----------(0.6mm 100g Reel)
  RFKZ10D01KS----------(1.0mm 100g Reel)

Note
   * Ingredient: tin (Sn) 96.5%, silver (Ag) 3.0%, Copper (Cu) 0.5%, Cobalt (Co) / Germanium (Ge) 0.1 to 0.3%

2.5.   Static Electricity Protection Measures

• The laser diode in the traverse unit (optical pick-up) may break down due to potential difference caused by static electricity of clothes or human body.
  So, be careful of electrostatic breakdown during repair of the traverse unit (optical pick-up).

2.6.   Ground for electrostatic breakdown prevention

• As for parts that use optical pick-up (laser diode), the optical pick-up is destroyed by the static electricity of the working environment.
  Repair in the working environment that is grounded.

2.6.1.   Work table grounding

• Put a conductive material (sheet) or steel sheet on the area where the traverse unit (optical pick-up) is placed, and ground the sheet.

2.6.2.   Human body grounding

• Use the anti-static wrist strap to discharge the static electricity from your body.

Wrist strap
(Anti-static bracelet)

$1M\Omega$

Iron plate or some metals
to conduct electricity

2.6.3.   When exchange the BDP/Digital P.C.B. Module

• Do not remove the FFC while replacing the BDP/Digital P.C.B.Modile.
  Keep the BDP Drive and the Digital P.C.B. connecting with it.
  After repaired, keep the BDP/Digital Module connected during the process of return which is replaced.
  The FFC should be returned together and not removed.

2.6.4.   When exchange the BDP Drive

• Before remove the ESD prevention bag, make sure to use the anti-static wrist strap to discharge the static electricity when replace the BDP Drive.
  Note:
      The ESD prevention bag is used to replace the original short-circuit point.
      It can be removed while placing the BDP Drive.

3 Service Navigation

3.1. Service Infomation

This service manual contains technical information which will allow service personnel's to understand and service this model.
Please place orders using the parts list and not the drawing reference numbers.

If the circuit is changed or modified, this information will be followed by supplement service manual to be filed with original service manual.

1. This service manual does not contain the following information, because of the impossibility of servicing at component level.
   • Schematic Diagram, Block Diagram and P.C.B. layout of BDP/Digital P.C.B. Module.
   • Parts List for individual parts of BDP/Digital P.C.B. Module.
   • Exploded View and Parts List for individual parts of BDP/Digital P.C.B. Module.

2. The following category are recycle module part. Please send them to Central Repair Center.
   • BDP/Digital P.C.B. Module (DMP-BD45EB: RFKNBD45EBT)
   • BDP/Digital P.C.B. Module (DMP-BD45EE: RFKNBD45EET)
   • BDP/Digital P.C.B. Module (DMP-BD45EF: RFKNBD45EFT)
   • BDP/Digital P.C.B. Module (DMP-BD45EG: RFKNBD45EGT)
   • BDP/Digital P.C.B. Module (DMP-BD65EB: RFKNBD65EBT)
   • BDP/Digital P.C.B. Module (DMP-BD65EF: RFKNBD65EFT)
   • BDP/Digital P.C.B. Module (DMP-BD65EG: RFKNBD65EGT)

3. The module and digital P.C.B. for BDP model is offered respectively for the market maintenance.
   For the information about pairing adjustment of the module and digital P.C.B., please refer to "11.2.4. How to adjust the BDP/Digital P.C.B. Module".

3.2. Caution for DivX

Please will always pass the customer "Warning for Customers Who Use the DivX Video-on-Demand content." with the product and get it when you unavoidably exchange FLASH ROM or P.C.B. including FLASH ROM (When the product is exchanged, it is the same.).

You must use print attached to service part (FLASH ROM or P.C.B. including FLASH ROM) or must use copy of print below as "Warning for Customers Who Use the DivX Video-on-Demand content."

Information needed without fail for the customer for whom it is used continuing DivX Video-on-Demand Service to "Manual for the customer" is recorded.

Appendix:

*Parts that memorize user's information are only FLASH ROM.

*The registration of Registration Code is possible for half a year up to 6 recorders up to 10 recorders a year.

About DivX Video-on-Demand Control

ABOUT DIVX VIDEO-ON-DEMAND:

This DivX Certified® device must be registered in order to play DivX Video-on-Demand (VOD) content.

To generate the registration code, locate the DivX VOD section in the device setup menu.

Go to vod.divx.com with this code to complete the registration process and learn more about DivX VOD.

● It is not possible to playback DivX VOD content recorded on the USB device.

Display the unit's registration code.

DivX Registration

You must register this unit to play protected DivX videos.

The registration code is necessary to register this unit.

Registration Code XXXXXXXXX ── 10 alphanumeric characters

Please register at www.divx.com/vod/

● After playing DivX VOD content for first time, the registration code is not displayed.

● If you purchase DivX VOD content using a registration code different from this unit's code, you will not be able to play this content. ("Authorisation Error." is displayed.)

Cancel the unit's registration.

Press [◄, ►] to select "Yes" in "DivX Registration".

Use the deregistration code to cancel the registration in www.divx.com.

Regarding DivX VOD content that can only be played a set number of times

Some DivX VOD content can only be played a set number of times. When you play this content, the remaining number of plays is displayed. You cannot play this content when the number of remaining plays is zero. ("Rental Expired." is displayed.)

● The remaining number of plays decreases each time a program is played. However, when playing from the point where play was previously stopped, the remaining number of plays does not decrease due to the resume play function.

Registration Code is memorized in FLASH ROM (Digital P.C.B.).

If exchange above P.C.B. or FLASH ROM, new registration Code differ from previous Registration Code will be generated.

In this case if your customer uses DivX Video-on-Demand service, he/she will no longer be able to play any content that he/she purchased under that same registration code.

Therefore your customer will need to obtain and register the new registration code.

*Copy this page and cut on the dotted line and give the lower half to your customer.

- -

Warning for Customers Who Use the DivX Video-on-Demand content.

1. The registration code has been changed for the repair of the product or the product exchange.
2. Obtain and register a new registration code, otherwise you will no longer be able to play DivX Video-on-Demand content.
3. Follow the procedure on the DivX Video-on-Demand web site to register at http://vod.divx.com/.

*If you do not use the DivX Video-on-Demand content, please ignore this warning.

4   Specifications

Power supply: AC 220 - 240 V, 50 Hz

Power consumption:
Approx. 20 W (DMP-BD65)
Approx. 19 W (DMP-BD45)

In standby mode: Approx. 0.2 W
In quick start standby mode: Approx. 7 W

Operating temperature range: +5°C to +35°C
Operating humidity range: 10 % to 80 % RH (no condensation)
Signal system: PAL/NTSC
Video output:
Output level: 1.0 Vp-p (75 Ω)
Output connector: Pin jack (1 system)

Component video output:
(1080i/720p/480p/480i:60 Hz)
(1080i/720p/576p/576i:50 Hz)
(DMP-BD65 only)
Y output level: 1.0 Vp-p (75 Ω)
P$_B$ output level: 0.7 Vp-p (75 Ω)
P$_R$ output level: 0.7 Vp-p (75 Ω)
Output connector: Pin jack (Y:green, P$_B$:blue, P$_R$:red)
(1 system)

Video performance:
Horizontal resolution: More than 500 lines
Video S/N ratio: More than 65 dB
Audio output:
Output level: 2 Vrms (1 kHz, 0 dB)
Output connector: Pin jack
Number of connectors: 2 channel
1 system

Audio performance:
Frequency response:
DVD(linear audio): 4 Hz - 22 kHz (48 kHz sampling)
4 Hz - 44 kHz (96 kHz sampling)
CD-Audio: 4 Hz - 20 kHz
S/N ratio: 115 dB
Dynamic range: 100 dB
Total harmonic distortion: 0.003 %
Digital audio output:
Optical digital output: Optical terminal
HDMI AV output:
Output format: 1080p/1080i/720p/576p/480p
Output connector: TypeA (19 pin)
HDMI (V.1.4, Content Type)
This unit supports "HDAVI control 5"
function.

SD card slot:
Connector: 1 system
USB slot:
USB2.0: 1 system
Ethernet:
(DMP-BD65 only)
10BASE-T/100BASE-TX: 1 system
Optical pick-up: System with 2 lenses
Wave length: 790 nm (CDs)/655 nm (DVDs)/
405 nm (BDs)

LASER Specification
Class 1 LASER Product:
Wave length: 790 nm (CDs)/655 nm (DVDs)/
405 nm (BDs)
Laser power: No hazardous radiation is emitted
with the safety protection

Region management
information:
DVD-Video: region number "2" or "ALL"
BD-Video: region code B
Media:
Playable discs:

BD-Video: Video
BD-RE: Video, JPEG
BD-R: Video, DivX
DVD-Video: Video
DVD-RAM: Video, AVCHD, JPEG
DVD-R: Video, AVCHD, JPEG, MP3, DivX
DVD-R DL: Video, AVCHD, JPEG, MP3, DivX
DVD-RW: Video, AVCHD
+R/+RW/+R DL: Video, AVCHD
Music CD: Music [CD-DA]
CD-R/CD-RW: Music [CD-DA], JPEG, MP3, DivX
SD card:
SD Memory Card
(from 8MB to 2GB): MPEG2, AVCHD, JPEG
SDHC Memory Card
(from 4GB to 32GB): MPEG2, AVCHD, JPEG
SDXC Memory Card
(48GB, 64GB): MPEG2, AVCHD, JPEG
USB device:
USB device: DivX, MP3, JPEG
(up to 128GB)
Contents:
JPEG:
SD card, CD-R, CD-RW, DVD-RAM, DVD-R, DVD-R DL, BD-RE,
USB device:
Picture resolution: between 34x34 and 8192x8192
pixels
(sub sampling is 4:2:2 or 4:2:0)
MP3:
CD-R, CD-RW, DVD-R, DVD-R DL, USB device:
Compression rate: 32 kbps - 320 kbps
Sampling rate: 44.1 kHz / 48 kHz
DivX:
BD-R, DVD-R, DVD-R DL, CD-R, CD-RW, USB device:
Picture resolution: Up to 1920 x 1080 pixels

Dimensions: 430mm(W) x 199mm(D) x 49mm(H)
(excluding the projecting parts)
430mm(W) x 207mm(D) x 49mm(H)
(including the projecting parts)
Mass: Approx. 1.9 kg

Solder: This model uses lead free solder
(PbF).
Note: Specifications are subject to change
without notice.

4.1. Others (Licenses)

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Contact Information
cdrequest@am-linux.jp

Source code is also freely available to you and any other member of the public via our website below.
http://www.am-linux.jp/dl/JPRCBW98

5 Location of Controls and Components

1 Power Button
2 **TV operation buttons**
  You can operate the TV through the unit's remote control.
  [⏻ TV] : Turn the television on and off
  [AV] : Switch the input select
  [+ − VOL] : Adjust the volume
  [∧ ∨ CH] : Channel select
3 Number buttons and CANCEL button
4 DISPLAY button
5 PIP(Picture-in-picture) button
6 Basic playback control buttons
7 STATUS button
8 POP-UP MENU button
9 TOP MENU/DIRECT NAVIGATOR button
10 OPTION button
11 Coloured buttons (red, green, yellow, blue)
  These buttons are used when;
  ● Operating a BD-Video disc that includes Java™
    applications (BD-J).
  ● Displaying "Title View" and "Album View" screens.
  ● Operating contents of VIERA CAST. BD65
12 Transmit the remote control signal
13 OPEN/CLOSE button
  CAUTION
  Do not place objects in front of the unit. The disc tray may
  collide with objects when it is opened, and this may cause
  injury.
14 Volume up/down button (Amplifier/receiver)
15 AUDIO button
16 RE-MASTER button
17 Select drive (BD/DVD/CD, SD card or USB device) button
18 BD65 VIERA CAST button
19 EXIT button
20 FUNCTION MENU button
21 Selection/OK, Frame-by-frame buttons
22 RETURN button
23 BD45 SECONDARY AUDIO button

1 **Standby/on switch (⏻/I)**
  Press to switch the unit from on to standby mode or vice
  versa. In standby mode, the unit is still consuming a small
  amount of power.
2 Disc tray
3 Display

⬭	SD	USB
Disc indicator	SD card indicator	USB device indicator

The indicator blinks when reading data from a disc, a card
or a USB device, or writing data to a card.

4 Remote control signal sensor
  Distance: Within approx. 7 m
  Angle: Approx. 20° up and down, 30° left and right
5 Open or close the disc tray
6 SD card slot
7 USB port
8 Stop
9 Start play

6 Operating Instructions

6.1. Taking out the Disc from BD Drive Unit when the Disc cannot be ejected by OPEN/CLOSE button

6.1.1. When the power can be turned off.

6.1.1.1. When the power can be turned off.

1. Turn the unit off, then press and hold [OK], [Yellow] and [Blue] buttons on the remote control simultaneously for 5 seconds.
   - "00 RET" is displayed on the unit's FL display.
2. Repeatedly press the right cursor button on the remote Control or Power button on the unit until "06 FTO" is displayed on the unit's FL display.
3. Press [OK] button on the remote control or [OPEN/CLOSE] button on the unit.

6.1.1.2. When the power can not be turned off.

Press [POWER] button on the unit for over 4 seconds to turn off the power forcibly, and step 1 to 3 above.

6.1.2. When the Forcible Disc Eject can not be done.

1. Turn off the power and pull out AC cord.
2. Remove the Top Case.
3. Put the unit so that bottom can be seen.
4. Insert paper clips, etc. into the hole on the bottom of BD Drive and slide the paper clips, etc. in the direction of the arrow to eject tray slightly.

5. Pull the unit upward, and push out Tray by paperclips, etc. or minus screw driver (small).

6.2. Micro Fuse Conducting Check

This unit uses the Micro Fuse.
Check the Micro Fuse conducting using the Tester at the check points below.

7 Multiple Pressing Function

7.1. About the Multiple Pressing of the Unit's Remote Control

The remote control which included this unit is possible pressing multiple buttons simultaneously (Multiple Pressing function), and can operate for the customer's initial settings and the Service Mode, etc.
The Multiple Pressing function is not available for conventional models' remote control. Use the remote control included this unit.

7.2. How to enter the Special Modes using the Multiple Pressing Function of the Unit's Remote Control

For pressing the multiple buttons of the remote control, this unit can be entering each of the following special modes.
After entering each mode, and then go to the menu you want to run.

Open Mode	Privately Mode 1	Privately Mode 2
[OK] [Yellow] [Blue]	[6] [7] [Yellow]	[5] [9] [Red]

- **Move the menus for each mode:** ⬇ mark
    Press [Right Cursor] button (Remote Cont.) or [Power] button (Unit)

- **Execute**
    Press [OK] button (Remote Cont.) or [Open/Close] button (Unit)
    * After executing the menu will automatically exit the special mode.

- **How to exit from the special modes**
    - Press the unrelated buttons for the operation.
    - No operation for 2 minutes or more.
    - Press and hold [Power] button on the unit.(Forcible Power Off)

7.2.1. Open Mode (Remote Cont. Buttons: [OK] [Yellow] [Blue])

When pressing the 3 buttons, [OK], [Yellow] and [Blue] simultaneously for 5 seconds, "00 RET" is displayed on the FL display.

Unit's Power	DISC	FL display	Execute key	Function	Descriptions
OFF	Yes / No	00 RET ⬇	-	-	
		06 FTO ⬇	[OK]	Forced Tray Open	When the [Open/Close] button does not work, open the disc tray forcible. If still close, refer to "6. 1. 2. When the Forcible Disc Eject can not be done.".
		08 FIN	[OK] (Press and Hold)	Restore the factory settings	All settings included Quick Start setting and Network settings are restored the factory settings.
ON	Yes / No	00 RET ⬇	-	-	-
	No	03 VL ⬇	[OK]	BD / DVD video viewing unrestricted	The parental control of BD Video and DVD Video are cancelled.
	Yes / No	04 PRG ⬇	[OK] (Press and Hold)	Initialization of the Progressive Setting	Initialize the Progressive setting and switch the display mode to the Interlace mode. When pressing and holding the [Stop] button (remote control / main unit) instead of the [OK] button, current menu is moved to "10 OCL" (Disc Tray Lock/Unlock setting).
	Yes / No	05 P/N ⬇	[OK] (Press and Hold)	Switch the TV System	Switch the TV system to another one. If the current TV system is PAL, NTSC is switched to, and vice versa.
	Yes / No	07 DC ⬇	[OK] (Press and Hold)	Initialization of the Deep Colour setting	Initialize the Deep Colour setting.
	Yes	10 OCL	[OK]	Disk Tray Lock / Unlock setting (Setting for [Open/Close] button valid /invalid)	While "04 PRG" is displayed, press and hold the [Stop] button (remote control / main unit) is move to this menu. Press the [OK] button for locking /unlocking the disc tray. • If no disc in drive, "NoDisc" is displayed and cannot be locked. • Lock state is retained even if power off.

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7.2.2. Privately Mode 1 (Remote Cont. Buttons: [6] [7] [Yellow])

When pressing the 3 buttons, [6], [7] and [Yellow] simultaneously for 5 seconds, "50 RET" is displayed on FL display.

Unit's Power	DISC	FL display	Execute key	Function	Descriptions
ON	Yes / No	50 RET	-	-	-
		⇩			
		51 NOP	[OK]	-	When "51 NOP" is displayed and pressing and holding the [Stop] button (remote control / main unit), current menu is moved to "52 BRE" (BD-ROM set of clear history).
		⇩			
		52 BRE	[OK]	Delete the playback history of BD-Video	While "51 NOP" is displayed, press and hold the [Stop] button (remote control / main unit) is move to this menu. Press the [OK] button for deleting the playback history of BD-Video.

7.2.3. Privately Mode 2 (Remote Cont. Buttons: [5] [9] [Red])

When pressing the 3 buttons, [5], [9] and [Red] simultaneously for 5 seconds, "70 RET" is displayed on FL display.

Unit's Power	DISC	FL display	Execute key	Function	Descriptions
OFF	Yes / No	70 RET	-	-	-
		⇩			
		80 SRV	[OK]	Enter the Service Mode	Press the [OK] button then "HELLO" is displayed on the FL display. Wait about 30 seconds for displaying "SERV" on the FL display.
		⇩			
		83 SDI	[OK]	CD/SD Diag	Not used in field service.
		⇩			
		91 SPD	[OK]	Special Display	Not used in field service.
		⇩			
		92 F99	[OK]	Select valid/invalid of the F99 function.	Not used in field service.
ON	Yes / No	70 RET	-	-	-
		⇩			
		81 AIG	[OK]	Enter the Ageing Mode	
		⇩			
		83 SDI	[OK]	CD/SD Diag	Not used in field service.
		⇩			
		91 SPD	[OK]	Special Display	Not used in field service.
		⇩			
		92 F99	[OK]	Select valid/invalid of the F99 function.	Not used in field service.

8 Service Mode

8.1. About the Service Mode

Informations necessary for service can be displayed.

8.1.1. How to enter the Service Mode

Turn the Unit off.
↓
Press the [5], [9] and [Red] buttons of the Remote Control simultaneously for 5 seconds.
↓
"70 RET" is displayed on FL display.
↓
Press the Right Cursor button (Remote Cont.) or the [Power] button (Unit).
↓
"80 SRV" is displayed on FL display.
↓
Press the [OK] button (Remote Cont.) or the [Open/Close] button (Unit).
↓
"HELLO" is displayed on FL display.
↓
(Wait for about 30 seconds)
↓
"SERV" is displayed on FL display.

8.1.2. How to exit the Service Mode

Press and hold the [Power] button (remote control or unit).

>>> The Service Mode is terminated and automatically turns the unit off.

8.2.   Service Mode List

The display of information to each command is as follows.

Note:

   Do not use it excluding the designated command.

Key operation (remote control keys)	Mode name	FL display (Example)	Descriptions
[0] [0]	Release Items	**SERV**	Item of Service Mode executing is cancelled.
[0] [1]	Self -Diagnosis Display	**UXX or FXX** (F99)	Last Error Code of U/F held by memory is displayed on FL display. (XX: 2 digits numeric) *Details are described in "Self-Diagnosis Functions".
[0] [2]	ROM Version Display	**NO_#$_** (NO 2B)	#: Region of DVD (Example: 1,2 ...) $: Region of BD (Example: A,B ...) (Display for 5 seconds.)
		****__ (2620)	Main firm version (Display for 5 seconds.)
		***_**_ (210 PE)	Timer firm version (Display for 5 seconds.)
		****__ (5106)	Drive firm version (Display for 5 seconds.)
		***___ (000)	Timer ROM correction version (Display for 5 seconds.)
		___*** (209)	B002 version (Display for 5 seconds.)
		___*** (243)	B003 version (Until pressing any key, the display remains.)
[0] [3]	Loaded Drive Correction Check Display	**DRV OK**	The loaded drive is correspondence to the model.
		DRV NG	The loaded drive is not correspondence to the model.
[3] [4]	Save the error histories to SD card	**NODATA**	No information
		ERROR	The error history cannot save the SD card.
		NOCARD	The SD card cannot be recognized.
		FIN	Save end.
[3] [8]	Quick check of the BD drive error history	**DRV OK**	No error history and still drive OK.
		DRV NG	There are some error history, and still drive no good.
[4] [1]	Laser Used Time Display Check laser used time (hours) of drive. When the use time exceeds 9999 hours, it is displayed as **9999.	**BP****** (BP 0)	BD playback laser used time ****: Hour unit
		BR 0	Not used (Don't care this value.)
		DP**** (DP 0)	DVD playback laser used time ****: Hour unit
		DR 0	Not used (Don't care this value.)
		CD**** (CD 0)	CD playback laser used time ****: Hour unit

Key operation (remote control keys)	Mode name	FL display (Example)	Descriptions
[4] [2]	Drive Last Error Display	NO_**_ (NO 2A)	Error Number is displayed for 5 seconds.
		******	Not used (Don't care this value.)
		****** (031600)	Last drive error is displayed (1/2)
		****** (450402)	Last drive error is displayed (2/2)
		XXXXXX (BDROM)	Error occurring disc type is displayed for 5 seconds. BDROM: BD-ROM(BD-Video) BDRE: BD-RE BDR: BD-R DVD: DVD-Video RAM26: DVD-RAM(2.6G) RAM47: DVD-RAM(4.7G) DVDR: DVD-R DVDRW: DVD-RW DVDPR: DVD+R DVDPRW:DVD+RW CD: CD CDR: CD-R CDRW: CD-RW MEDIA *: Error of other disc types (*: RTSC responded value)
		******	Disc maker ID of error occurring is displayed for 5 seconds. (In case that the maker cannot be identified, display is black out for 5 seconds.)
		**$$## (hexadecimal)	Factor of drive error **: Error occurring operation code
			Factor of drive error $$: Error occurring disk type
			Factor of drive error ##: Error occurring disk situation
		NODATA	No drive last error information.
[4] [6]	TILT Value	DI$*** DM$*** DO$***	Measurements of TILT value for DVD-R $: + or -
[4] [7]	BEX Value	BL0*** BL1***	Measurements of BEX value for DVD-RE (Dual Layer)
[4] [8]	PD Balance	1F****	FE amplitude regularization (0 - 9999)
		2F****	FE symmetry (0 - 9999)
		3F *	Number of reflection sides (0 - 9)
		ERROR	Measurements failure

Key operation (remote control keys)	Mode name	FL display (Example)	Descriptions
[4] [9] (Please follow the procedure and operate.)	DVD Playback Jitter	***	The amount of the LBA jitter at the position in which the playback began from the stop is measured. [Procedure] 1. Playback start. (Use playback possible disc.) 2. The playback point is moved to the place to be measured. (Use [SKIP] and [SLOW/SEARCH] button) 3. Push the [PAUSE] button, at the position to be measured. Afterwards, the following operation is done. [STOP] - [PLAYBACK] - [STILL] 4. Press remote control buttons [4] [9]. 5. The amount of jitter is displayed.
[5] [5]	CEC(H) Output Check	**CECHOK** **CECHNG**	Check of the CEC terminal high output of HDMI.
[5] [6]	CEC(L) Output Check	**CECLOK** **CECLNG**	Check of the CEC terminal low output of HDMI.
[6] [5]	Quick analysis error history	**DRV NG**	According to the error history, the loaded drive failures occurred within 4 weeks. (The result is valid that the date is set correctly.)
		DRV OK	According to the error history, the loaded drive failures occurred more than 4 weeks. (The result is valid that the date is set correctly.)
		OK	No error histories
		NO DATA	No information
[6] [6]	Save the log spool to SD card The user operation history of the remote control is saved to the SD card.	**NO DATA**	No information
		ERROR	The log spool cannot be saved to SD card.
		NOCARD	The SD card cannot be recognized.
		FIN	Save end
[6] [9]	Save the error history and log spool to SD card The error and user operation history of the remote control are saved to the SD card.	**NO DATA**	No information
		ERROR	The error history and log spool cannot save the SD card.
		NOCARD	The SD card cannot be recognized.
		FIN	Save end
[9] [1]	Open and Close test of the disc tray	****** (000003)	Repeat the opening and closing the disc tray. (The current numbers of Open/Close is displayed on the FL display.) Press the [Power] button (Remote Control or unit) for exit the test.
[9] [5]	Initialization of the Laser Used Time	**CLR**	Laser Used Time information stored in the memory of the unit is initialized to factory setting.
[9] [6]	Initialization of the Last Drive Error	**CLR**	Last Drive Error stored on the BD Drive is deleted.
[9] [7]	Initialization of the Error History	**CLR**	Error History information stored on the unit is deleted.
[9] [8]	Initialization of the Error Code	**CLR**	Last Error Code information stored by timer is deleted.
[9] [9]	Initialization of the Service Mode	**CLR**	Last Drive Error, Error History and Error Code information stored on the unit are initialized to factory setting.

8.3.   Self-Diagnostics Functions

8.3.1.   Self-Diagnostics Functions

Self-Diagnosis Function provides information for errors to service personnel by Self-Diagnosis Display when any error has occurred.

U** and F** are stored in memory and held.

You can check last error code by transmitting [0] [1] of Remote Control in Service Mode.

Automatic Display on FL will be cancelled when the power is turned off or AC input is turned off during self-diagnosis display is ON.

Error Code	Diagnosis contents	Description	FL display	On Screen
U30	Remote control code error	This error is displayed when main unit is different from remote control codes.	**U30 *** "*" is remote control code of the main unit. Displays for 5 seconds.	Not displayed
U59	Abnormal inner temperature detected	This error is displayed when the internal temperature of the unit exceeds the margin of safety. The power is turned off forcibly. For 30 minutes after this, the [Power] button operation is disabled.	**U59** Displays for 30 seconds.	Not displayed
U71	HDMI incompatible error (HDCP incompatible)	This error is displayed when it turns on power and HDMI equipment (TV, amplifier etc.) connection error is occurred. (or when there is a problem with the HDMI cable) *HDCP: High-bandwidth Digital Content Protection This error display disappears only when the connection is released. Neither the button operation nor the passage of the fixed time disappear the display.	**U71**	Not displayed
U72	HDMI connection error (communication error)	This error is displayed when there are any communication problems with the unit and the equipment (TV, amplifier etc.) connected to the unit by HDMI. (or when there is a problem with the HDMI cable) This error display disappears only when the connection is released. Neither the button operation nor the passage of the fixed time disappear the display.	**U72**	Not displayed
U73	HDMI connection error (authentication error)	This error is displayed when authentication error occurs while the equipment (TV, amplifier etc.) are connected by HDMI. (or when there is a problem with the HDMI cable) This error display disappears only when the connection is released. Neither the button operation nor the passage of the fixed time disappear the display.	**U73**	Not displayed

Error Code	Diagnosis contents	Description	FL display	On Screen
U76	connection error	This error is displayed when equipment such as TV, amplifier etc. connected with this unit with the HDMI cable do not correspond to the copyright protection. (The BD/DVD video where the copyright is protected cannot be played.)	U76	Not displayed
U77	Illegal disc error	This error is displayed when it becomes impossible to reproduce because of copyright illegal information.	U77	Not displayed
U88	Restoration is operating (When the disc is in the disc tray)	This error is displayed when there is a disc in the disc tray or abnormality is confirmed during playback. It is shown that the restoration to return the unit operation normally is operating. It becomes possible to use as soon as not the breakdown but the U88 display disappears.	U88	Not displayed
F00	No error information	Initial setting for error code in memory. (Error code Initialization is possible with error code initialization and main unit initialization.)	No automatic display. It can be displayed in service mode pressing [0] [1].	Not displayed
F34	Microprocessor initialization error	When detected, the power is turned off forcibly, but the event is saved in memory.	No automatic display. It can be displayed in service mode pressing [0] [1].	Not displayed
F58	Drive hardware error	This error is displayed when drive unit error (motor errors, traverse unit error, etc.) is detected. The power is turned off forcibly, but the event is saved in memory.	No automatic display. It can be displayed in service mode pressing [0] [1].	Not displayed
F74	HDIM Device Key Communication error.	HDMI connection could not be authenticated due to a transfer malfunction. Factor of HDMI Device key-load failure - When HDMI LSI is damaged. - When device key information recorded is damaged.	F74	Not displayed
F75	HDMI Device Key Information error	HDMI connection could not be authenticated due to an internal data malfunction. Factor of HDMI Device key-load failure - When HDMI LSI is damaged. - When device key information recorded is damaged	F75	Not displayed
F99	Hang-up	Displayed when communication error has occurred between Main microprocessor (IC51001) and Timer microprocessor (IC57001).	F99 Displayed is left until the [POWER] button is pressed.	Not displayed

Error Code	Diagnosis contents	Description	FL display	On Screen
UNSUPPORT	Unsupported disc error	This error is displayed when the following are detected. 1. When the unsupported format disc is reproduced. 2. When the unsupported format data saved in the supported format disc. 3. When it becomes impossible to read because the quality of the disc is bad.	UNSUPPORT	"This disc is incompatible." Display for 5 seconds.
NO READ	Disc read error	This error is displayed when the following are detected. 1. When the disc is dirty or damaged. 2. When failing in reading the track information. 3. When the drive error occurs.	NoREAD	"Cannot read. Please check the disc." Display for 5 seconds.
HARD ERR	Drive error	This error is displayed when the drive detected a hard error.	HARD ERR	"BD drive error." Display for 5 seconds.
SELF CHECK	Restoration is operating.	Since the power cord fell out during a power failure or operation, it is under restoration operation. It will OK, if a display disappears automatically. If a display does not disappear, there is the possibility that defective Digital P.C.B. / BD Drive unit.	SELF CHECK	Not displayed
UNFORMAT	Unformatted disc error	This error is displayed when the unformatted DVD-RAM/DVD-RW or DVD-RW recorder by another make of recorder is inserted.	UNFORMAT	Not displayed When pressing the [Play] button, "This disc is not formatted properly. Cannot be played." is displayed.
NO PLAY	When there is a viewing restriction on a BD-Video or DVD-Video.	Rating password is set.	NoPLAY	"Cannot play. Change the rating limit in Setup to play the disc." is displayed.

9   Service Fixture & Tools

Part No.	Uses	Pcs	Compatibility
RFKZ0215	Extension Cable (Power P.C.B. - FL P.C.B. / 12 Pin)	1	Same as BR570 Series
RFKZ0216	Extension Cable (Power P.C.B. - Digital P.C.B. / 23 Pin)	1	Same as BR570 Series
RFKZ03D01KS	Lead Free Solder (0.3mm/100g Reel)		Same as BD60/80 Series
RFKZ06D01KS	Lead Free Solder (0.6mm/100g Reel)		Same as BD60/80 Series
RFKZ10D01KS	Lead Free Solder (1.0mm/100g Reel)		Same as BD60/80 Series
RFKZ0316	Solder Remover (Lead free low temperature Solder/50g)		Same as BD60/80 Series
RFKZ0328	Flux		Same as BD60/80 Series

10 Disassembly and Assembly Instructions

10.1. Unit

10.1.1. Disassembly Flow Chart

The following chart is the procedure for disassembling the casing and inside parts for internal inspection when carrying out the servicing.

To assemble the unit, reverse the steps shown in the chart below.

```
                        ┌─────────────────────────┐
                        │  10. 1. 3. Top Case      │
                        └─────────────────────────┘
          ┌──────────────────────┴──────────────────────┐
          ▼                                              ▼
┌─────────────────────────┐                  ┌─────────────────────────┐
│ 10. 1. 4. Front Panel   │───┐              │ 10. 1. 6. Rear Panel    │
└─────────────────────────┘   │              └─────────────────────────┘
          │                    ▼
          │         ┌──────────────────────────────────────────┐
          │         │ 10. 1. 5. Power SW P.C.B. and  FL P.C.B.  │
          │         └──────────────────────────────────────────┘
          │                                              │
          ▼                                              ▼
┌─────────────────────────────────┐        ┌─────────────────────────┐
│ 10. 1. 7. BDP/Digital P.C.B. Module │    │ 10. 1. 8. Power P.C.B.  │
└─────────────────────────────────┘        └─────────────────────────┘
```

10.1.2. P.C.B. Positions

10.1.3. Top Case

1. Remove the 2 screws (A) and 3 screws (B).
2. Slide Top Case rearward and open the both ends at rear side of the Top Case a little and lift the Top Case in the direction of the arrows.

10.1.4. Front Panel

1. Unlock 6 tabs (A) - (F) turn.
   Pull with the Front Panel in the direction of your side.

10.1.5. Power SW P.C.B. and FL P.C.B.

10.1.5.1. Power SW P.C.B. and FL P.C.B.

1. Remove the screw (A).
2. Remove the Power SW P.C.B.
3. Remove the 2 screws (B).
4. Remove the FL P.C.B..

10.1.5.2. How to assemble the Tray door ass'y

1. Attach the Tray door spring to Tray door ass'y.

2. Attach Tray door ass'y in order from [1] to [2].
   [1]: Insert the shaft to the hole.
   [2]: Insert the shaft to the hole.

3. Confirm the Tray door spring is attached as following.

Tray door spring

10.1.6.   Rear Panel

1. Remove the 4 screws (A) and screw (B).
2. Unlock 2 locking tabs (A) to remove the Rear Panel.

Screw (B)
(BD65 Only)
Tab (A)   Screw (A)   Tab (A)

10.1.7.   BDP/Digital P.C.B. Module

Caution:
Replacing the pair of BD Drive and Digital P.C.B. as "BDP/Digital P.C.B. Module" is recommended.
If the BD Drive unit alone or the Digital P.C.B. alone is replaced, the replaced BD Drive unit has to be re-adjusted because of the adjustment data is stored in Digital P.C.B..
For the Drive Adjustment method, see "11. 2. 4. How to adjust the BDP/Digital P.C.B. Module".

* To prevent electrostatic damage to the optical pick-up, please replace without removing FFCs between BD Drive unit and Digital P.C.B.

CASE 1:
When replacing the pair of BD Drive and Digital P.C.B. (Do not remove OPU FFC and 18 pin FFC between BD Drive and Digital P.C.B.)

1. Remove the connector (A).
2. Remove the 3 screws (A) to remove Digital P.C.B..
3. Remove the 4 screws (B) to remove BD Drive.

Screw (B)   Connector (A)
(BD65 Only)
BDP/Digital   Screw (A)
P.C.B. Module

4. Put Digital P.C.B. on BD Drive and remove BDP/Digital P.C.B. Module.

BDP/Digital P.C.B. Module

CASE 2:

> **When replacing the BD Drive alone or the Digital P.C.B. alone. (Not replacing as "BDP/Digital P.C.B. Module".)**

> **Caution:**
> After replacing, the Drive Adjustment is required.
> (Not only BD Drive alone has replaced, but also Digital P.C.B. alone has replaced, the Drive Adjustment is always required.
> Please see "11. 2. 4. How to adjust the BDP/Digital P.C.B. Module" and adjust the drive.

1. Remove the OPU FFC, and isolate it with an ESD prevention bag (RPFC0114).

2. Remove the 18 pin FFC.
3. Remove the connector (A).

4. Remove the 4 screws (A) to remove BD Drive.
5. Remove the 3 screws (B) to remove Digital P.C.B..

Caution for assemble:

> When remove the ESD prevention bag, do not touch the OPU FFC conductive surface to avoid ESD damage.

10.1.8.   Power P.C.B.

1. Remove the connector (A).
2. Remove the 3 screws (A) to remove Power P.C.B..

10.2. BD Drive

Caution:

When disassembling the BD Drive, worn the anti-static wrist strap then be care to electrostatic discharge for prevention of the electrostatic damage to optical pick-up.

10.2.1. Upper Base Ass'y

1. Remove the 4 Screws (A), and push the Hook in.

2. Lift up the Upper Base Ass'y, and pull it out to the direction of arrow.

10.2.2. Tray

1. Perform the step "10. 2. 1. Upper Base Ass'y".
2. Insert the paper clips, etc. into the hole of the bottom side, and slide it to the direction of arrow until it can be.

3. Pull the Tray to the direction of arrow until it can be.

4. Insert the paper clips, etc. into the hole of the Tray at 45 degrees, and lean it to the direction of arrow with pushing the dotted point of the tray forward.

5. Insert the paper clips, etc. into the Tray as below figure, lift up the lever using the Eject Pin while pushing the dotted point of the Tray.

10.2.3. Pulley Gear, Belt

1. Perform the step "10. 2. 2. Tray".
2. Push the Post to the direction of arrow by using the slotted screwdriver.

3. Remove the Pulley Gear and Belt.

10.2.4. Slide Cam

1. Perform the step "10. 2. 3. Pulley Gear, Belt".
2. Remove the Sheet.
3. Disconnect the 3 FFCs.
4. Remove the 2 Screws (B) and the Angle.
5. Remove the Drive P.C.B..

Caution:
Though the Drive P.C.B. is not supplied as replacement parts, it must be removed for after disassembling.

6. Open the connector lock, and disconnect the FFC.
7. Remove the 2 Screws (C), and remove the Traverse Base Ass'y with spreading the 2 hooks to the direction of arrows.

8. Remove the Slide Cam.

Slide Cam

10.2.5. Intermediate Gear, Drive Gear and Loading Motor

1. Perform the step "10. 2. 4. Slide Cam".
2. Remove the Intermediate Gear and Drive Gear.
3. Remove the Screw (D).

Drive Gear
Intermediate Gear
Screw (D)

4. Remove the Screw (E), and remove the Switch P.C.B. with the Loading Motor.
   Remove the 2 soldering points, and remove the Loading Motor.

Loading Motor   Screw (E)
Solder   Switch P.C.B.

10.2.6. Grease

Apply (B) on the back side.
Same as the other side.

(A) (Same as the other side.)

(Back side of the Tray)

LUBRICATION POINTS

When the above parts are replaced, apply the recommended lubricants or adhesive for better maintenance of the unit.

Mark	Kind of lubricant	Part No.
Ⓐ	Grease	RFKZ0484
Ⓑ	hanarl	RFKZ0441
Ⓒ	Grease	RFKXPG641

10.2.7. How to Clean the Lens of the Optical Pick-UP

After performing the step "10. 2. 1. Upper Base Ass'y", clean the lens of the Optical Pick-UP.

Cotton Swab

Gently wipe the object lens surface with cotton swab slightly dampened with ethyl alcohol.
Clean the lens until the cotton swab no longer picks up dirt.

• Finally, wipe the lens surface with a soft, dry cloth to remove any residual alcohol.

Caution:
Be sure to wipe a lens in the direction of arrow.
May damage the optical pick-up and wipe the contrary.

If the stain is bad, please clean the turntable.

10.2.8. How to Clean up the Turntable

When "NoREAD" is displayed in FL display, clean up the Turntable according to the following steps.

Turntable

1. Blow the dust from the Turntable in the blower.
   (Do not strongly blow it.)

   CAUTION:
   Before blowing, move the optical pickup to outer position.

2. Put one drop of isopropyl or ethyl alcohol to clean cotton swab.
   (Using a fresh cotton swab does not use chemicals or additives.)

3. Using the cotton swab, wipe out the dust on the Turntable.
   (Be careful not touching the surface of Turntable directly.)

11 Measurements and Adjustments

For description of the disassembling procedure, see the "10 Disassembly and Assembly Instructions".

11.1. Service Positions

11.1.1. Checking and repairing of Power P.C.B.

1. Top Case
- Remove 3 Screws on rear
- Remove 2 Screws on side.
- Remove Top Case.

⬇

2. Front Panel
- Unlock the 6 Tabs that is locking the Front Panel and Bottom Chassis, and remove the Front Panel.

⬇

3. Rear Panel
- Remove the 5 Screws (One of for HDMI) fixing the Rear Panel.
- Unlock the 2 Tabs that is locking the Rear Panel and Bottom Chassis, and remove the Rear Panel.

⬇

4. Power P.C.B.
- Disconnect the Connector (23 pin) between Power P.C.B. and Digital P.C.B..
  (Disconnect the Digital P.C.B. side only. Power P.C.B. side cannot disconnect.)
- Remove the 3 Screws, and remove the Power P.C.B..
- Put the Power P.C.B. on the Insulation Board up to foil side of P.C.B..

⬇

5. Connect Extension Cables shown below.
Between Power P.C.B. and FL P.C.B.: (RFKZ0215) 12 pin
Between Power P.C.B. and Digital P.C.B.: (RFKZ0216) 23 pin

Caution:
Red wire should be connected to pin1.

Insulation Board   Foil side of Power P.C.B.

Digital P.C.B.

Extension Cable
(RFKZ0216) 23 pin

Extension Cable
(RFKZ0215) 12 pin

11.1.2. Checking and Repairing of BDP/Digital P.C.B. Module

1. Top Case
- Remove 3 Screws on rear
- Remove 2 Screws on side.
- Remove Top Case.

⬇

2. Front Panel
- Unlock the 6 Tabs that is locking the Front Panel and Bottom Chassis, and remove the Front Panel.

⬇

3. Rear Panel
- Remove the 5 Screws (One of for HDMI) fixing the Rear Panel.
- Unlock the 2 Tabs that is locking the Rear Panel and Bottom Chassis, and remove the Rear Panel.

⬇

4. BDP/Digital P.C.B. Module
- Disconnect the Connector (23 pin) between Power P.C.B. and Digital P.C.B..
  (Disconnect the Digital P.C.B. side only. Power P.C.B. side cannot disconnect.)
- Remove the 3 Screws fixing the Digital P.C.B..
- Remove the 4 Screws fixing the BD Drive.
- Put the Insulation Board on BD Drive, and put the Digital P.C.B. on Insulation Board.

⬇

5. Connect Extension Cables shown below.
  Between Power P.C.B. and FL P.C.B.: (RFKZ0215) 12 pin
  Between Power P.C.B. and Digital P.C.B.: (RFKZ0216) 23 pin

Caution:
  Red wire should be connected to pin1.

Extension Cable (RFKZ0216) 23 pin · Power P.C.B. · Insulation Board · BDP/Digital P.C.B. Module · Extension Cable (RFKZ0215) 12 pin

11.2. Adjustment of BDP/Digital P.C.B. Module

11.2.1. Checking out symptoms and repair of BDP/Digital P.C.B. Module

When replacing or repairing the BD Drive unit alone or the Digital P.C.B. alone, please perform the work according to following checking sequence.

```
                    ┌──────────────┐
                    │    Start     │
                    └──────┬───────┘
                           │
                           ▼
              ◇ Confirm the          No Good
              pointed symptom. ──────────────┐
                    │                         ▼
                    │ OK           ◇ Confirm the Drive    No Good
                    │              Last Error on ──────────────┐
                    │              Service Mode.               │  When the Turntable is dirty,
                    │                    │ OK                  │  and may cause media read
                    │                    │          ┌──────────▼─────────┐  error etc..
                    │                    │          │ Clean-up the Turntable and │
                    │                    │          │ BD Drive inside.   │
                    │                    │          └──────────┬─────────┘
                    │                    │                     ▼
        ┌───────────▼──────────┐         │          ◇ Confirm the pointed  No Good
        │ Clean-up the Turntable and BD │ │           symptom. ──────────────┐
        │ Drive inside.        │         │                 │ OK             │
        └──────────────────────┘         │                 │     ┌──────────▼─────────┐
                    │                     │                 │     │ Replace the Digital P.C.B. │
                    │                     │                 │     │ with normal one.   │
                    │                     │                 │     └──────────┬─────────┘
                    │                     │                 │                ▼
                    │                     │                 │     ┌──────────────────┐
                    │                     │                 │     │ Drive Adjustment │
                    │                     │                 │     └──────────┬───────┘
                    │                     │                 │                ▼
                    │                     │                 │     ◇ Confirm the pointed  No Good
                    │                     │                 │      symptom. ──────────────┐
                    │                     │                 │           │ OK             │
                    │                     │                 │           │     ┌──────────▼─────────┐
                    │                     │                 │           │     │ Replace the Digital P.C.B. with │
                    │                     │                 │           │     │ original one.      │
                    │                     │                 │           │     └──────────┬─────────┘
```

When the Turntable is dirty, and may cause media read error etc..

If replacing the Digital P.C.B. with normal one and pointed symptom occurs, the Drive unit is defective.

- OPU is defective.
  → Replace the Drive.
- Exterior parts of Drive or Mechanism are defective.
  → Replace the defective parts.

Drive Adjustment

◇ Confirm the pointed symptom. — No Good

OK

┌──────────────┐
│   Finish   │
└──────────────┘

11.2.2. In the Case of Necessity the Adjustment

1. When the BD Drive is replaced.
2. When the Digital P.C.B. is replaced.

11.2.3. List of Service Tools

11.2.3.1. Adjustment/Inspection Tools

No.	Category	Part Name	Part No.	Compatibility
1	Instrumention tool	Serial cable	RFKZ0139	
2	Disc	DVD-RAM test disc (X5RAM-BPS)	RFKZ0514	
3		BD-ROM test disc (VFF0396)	RFKZ0515	
4		CD-ROM test disc (CD-ROM-B01)	RFKZ0516	

11.2.3.2. Commercial Tools Required

No.	Category	Part Name	Part No.	Compatibility
5	Instrumention tool	PC (OS: Windows XP)		
6		SD Card (written the SD DIAG) within 128 MB to 2 GB (Format as FAT & FAT16) Note: SDHC/SDXC card cannot be used.		

11.2.4. How to adjust the BDP/Digital P.C.B. Module

The adjustment may not resume. If interrupt the adjustment, start from the beginning phase.

< Adjustment Frow Chart >

Preparation:
   Before starting the adjustment, install the adjustment software to PC and copy the SD DIAG software to SD card.
Note:
   This adjustment software can be downloaded from "Support Information from NWBG/VDBG-AVC" web-site in "TSN system",
   together with instructions of "BD Drive Adjustment" including preparations and connections etc.

1. Connect the Serial cable (RFKZ0139) between serial port connector (P51601) on the Digital P.C.B. and PC's serial port.
   • Confirm the PC's serial port number (COM1, COM2, etc.) connected to serial cable (RFKZ0139), the port number may be set after this procedure.

Serial Port (P51601)

2. Start the Adjustment software, then click the [Start(S)].

[Selection of Model Name]
3. Select the model number and click the [OK] button.
   • If several other model names might appear, please select the sure model number for the adjustment.

[Setting of Adjustment]
4. Click the [Utility] button.

5. Click the [COM Setup] button.

6. Select the COM number that connect the serial cable (RFKZ0139) and click the [OK] button.

7. Click the [Exit] button.

8. Click the [Adjustment] button.

40

[The Diag Adjustment (SD Diag) start]

9. When below message displayed, perform followings:
   a. Insert the SD Diag card to SD card slot.
   b. Set the RFKZ0139 SW into "ON".
   c. Click the [OK] button.

10. When below message displayed, perform followings:
    a. Connect the power cable to the unit.
    b. Press the [POWER] button of the unit.
    c. Click the [OK] button.

- If the BD Drive has replaced before, the following replaced date message is displayed, click the [OK] button for closing the window.

11. The unit is turned on, then "DIAG" is displayed at FL display and automatically begins adjustment.
12. When below message displayed, perform followings:
    a. Remove the SD Diag card from the SD card slot.
    b. Disconnect the power cable from the unit.
    c. Click the [OK] button.

[LPC Adjustment]

13. When below message displayed, perform followings:
    a. Set the RFKZ0139 SW into "OFF".
    b. Connect the power cable to the unit.
    c. Click the [OK] button.

14. The unit is automatically turned on. After a while the FL display displays "TEST" and automatically begins adjustment.
    When the adjustment is completed, the display is changed to "ADJ1OK".

[DVD-RAM Adjustment]

15. The disc tray is automatically opened and the following message is displayed, set the DVD-RAM test disc (X5RAM-BPS) on the tray and click the [OK] button.

When clicking the [OK] button, the tray is automatically closed. After a while the FL display displays "ADJ2" and automatically begins adjustment.
When the adjustment is completed, the display is changed to "ADJ2OK".
Caution:
Do not press the [OPEN/CLOSE] button of the unit.

16. The disc tray is automatically opened and the following message is displayed, remove the DVD-RAM test disc (X5RAM-BPS) on the tray and click the [OK] button.

[BD-ROM Adjustment]

17. When the following message is displayed, set the BD-ROM test disc (VFF0396) on the tray, then click the [OK] button.

When clicking the [OK] button, the tray is automatically closed. After a while the FL display displays "ADJ3" and automatically begins adjustment.
When the adjustment is completed, the display is changed to "ADJ3OK".
Caution:
    Do not press the [OPEN/CLOSE] button of the unit.

18. The disc tray is automatically opened and the following message is displayed, remove the BD-ROM test disc (VFF0396) on the tray and click the [OK] button.

[CD-ROM Adjustment]

19. When the following message is displayed, set the CD-ROM test disc (CD-ROM-B01) on the tray, then click the [OK] button.

When clicking the [OK] button, the tray is automatically closed.
The FL display displays "TEST" and after a while the display changes to "CDDA" and adjustment is automatically begun.
When the adjustment is completed, the display is changed to "TEST".
Caution:
    Do not press the [OPEN/CLOSE] button of the unit.

20. The disc tray is automatically opened and the following message is displayed, remove the CD-ROM test disc (CD-ROM-B01) on the tray and click the [OK] button.

When clicking the [OK] button, the tray is automatically closed. The FL display displays "FACT" and after a while the display changes to "FACTOK" and re-changed to "P OFF".

[Finishing the Drive Adjustment]

21. When below message displayed, perform followings:
    a. Confirm "P OFF" is displayed at the FL Display.
    b. Disconnect the power cord from the unit.
    c. Click the [OK] button.

22. Click the [Exit] button.

23. Click the [Exit] button.

24. Click the [Exit(E)] button.

The Drive Adjustment is finished.

11.2.5. When the latest data is updated to TSN

The data file of the adjustment software may be update because of a firmware update of the machine or other reason.
In such case, perform the following steps and use the latest data.

1. Download the latest data to PC.
2. Click the "Spec Setup" button before the step 7.

3. Open the downloaded data and click the "New" button. Then retrieve the data.

4. Select the latest data and click the "OK" button.

5. Go back the step 7 and click the "Exit" button.

11.3. Caution for Replacing Parts

After replacing the Digital P.C.B., [TEST] is displayed, so, once power off again to on.

11.3.1. Caution after replacing parts

After replacing the BDP/Digital P.C.B. Module, must be update Firmware.

11.3.2. Standard Inspect Specifications after Repairs

After making repairs, we recommend performing the following inspection, to check normal operation.

No	Procedures	Item to Check
1	Turn on the power, and confirm items pointed out.	Items pointed out should reappear.
2	Insert DVD-RAM disc.	The Panasonic DVD-RAM disc should be recognized
3	Perform playback for one minute using the DVD-RAM disc.	No abnormality should be seen in the picture, sound and operation. * Panasonic DVD-RAM disc should be used when playback.
4	If a problem is caused by a BD-Video disc, VCD, DVD-R, DVD Video, Audio-CD, or MP3, playback the test disc.	No abnormality should be seen in the picture, sound or operation.
5	After checking and making repairs, upgrade the firmware to the latest version.	Make sure that [UPD OK] appears on the FL displays. * [UNSUPPORT] display means the unit is already updated to newest same version. Then version up is not necessary.
6	Transfer [9] [9] in the service mode setting, and initialize the service settings (return various settings and error information to their default values. The laser time is not included in this initialization)	Make sure that [CLR] appears on the FL display. After checking it, turn the power off.
7	After replacing the BD Drive, transfer [9] [5] in the service mode setting, and initialize the laser used time.	Make sure that [CLR] appears on the FL display. After checking it, turn the power off.

Use the following checklist to establish the judgment criteria for the picture and sound.

Item	Contents	Check		Item	Contents	Check
Picture	Block noise			Sound	Distorted sound	
	Crosscut noise				Noise (static, background noise, etc.)	
	Dot noise				The sound level is too low.	
	Picture disruption				The sound level is too high.	
	Not bright enough				The sound level changes.	
	Too bright					
	Flickering colour					
	Colour fading					

Service Manual

Diagrams and Replacement Parts List

Blu-ray Disc Player

Model No.

DMP-BD45EB

DMP-BD45EE

DMP-BD45EF

DMP-BD45EG

DMP-BD65EB

DMP-BD65EF

DMP-BD65EG

Vol. 1
Colour
[DMP-BD45]
(K)...........Black Type
[DMP-BD65]
(K)...........Black Type
(S)...........Silver Type (only EG)

S1. About Indication of The Schematic Diagram

S1.1. Important Safety Notice

COMPONENTS IDENTIFIED WITH THE MARK ⚠ HAVE THE SPECIAL CHARACTERISTICS FOR SAFETY. WHEN REPLACING ANY OF THESE COMPONENTS USE ONLY THE SAME TYPE.

1. Although reference number of the parts is indicated on the P.C.B. drawing and/or schematic diagrams, it is NOT mounted on the P.C.B. when it is displayed with "$" mark.

2. It is only the "Test Round" and no terminal (Pin) is available on the P.C.B. when the TP (Test Point) indicated as "●" mark.

3. The voltage being indicated on the schematic diagram is measured in "Standard-Playback" mode when there is no specify mode is mentioned.

4. Although the voltage and waveform available on here is measured with standard frame, it may be differ from actual measurement due to modification of circuit and so on.

5. The voltage being indicated here may be include observational-error (deviation) due to internal-resistance and/or reactance of equipment. Therefore, handle the value indicated on here as reference.

6. Use the parts number indicated on the Replacement Parts List .

7. Indication on Schematic diagrams:

Circuit name being connected.

OFTR   FEP

This signal is connected to the FEP schematic diagram.

Name of Signal

Table of contents

S2. Voltage and Waveform Chart

Note) Indicated voltage values are the standard values for the unit measured by the DC electronic circuit tester (high-impedance) with the chassis taken as standard.
Therefore, there may exist some errors in the voltage values, depending on the internal impedance of the DC circuit tester.

S2.1. Power P.C.B.

REF No.	PIN No.	PB	STOP	REF No.	PIN No.	PB	STOP
IC1021	1	2.0	2.0	P1102	6	3.3	3.3
IC1021	2	1.5	1.5	P1102	7	3.3	3.3
IC1021	3	0.0	0.0	P1102	8	3.3	3.3
IC1021	4	16.2	16.2	P1102	9	3.3	3.3
IC1021	5	0.0	0.0	P1102	10	3.3	3.3
IC1021	6	-	-	P1102	11	3.3	3.3
IC1021	7	300.0	300.0	P1102	12	5.9	5.9
IC1021	8	-	-	P1102	13	5.9	5.9
IC1021	9	23.0	24.5	P1102	14	5.9	5.9
IC1102	1	-	-	P1102	15	0.0	0.0
IC1102	2	0.0	0.0	P1102	16	0.0	0.0
IC1102	3	8.3	8.3	P1102	17	0.0	0.0
IC1102	4	2.5	2.5	P1102	18	0.0	0.0
IC1130	1	4.5	4.5	P1102	19	12.1	12.1
IC1130	2	0.0	0.0	P1102	20	12.1	12.1
IC1130	3	0.0	0.0	P1102	21	12.1	12.1
IC1130	4	1.2	1.2	P1102	22	12.1	12.1
IC1130	5	1.3	1.3	P1102	23	3.3	3.3
IC1130	6	0.6	0.6	P1103	1	-18.5	-18.5
IC1130	7	5.5	5.6	P1103	2	3.3	3.3
IC1130	8	5.4	5.4	P1103	3	-15.6	-15.6
IC1130	9	1.2	1.3	P1103	4	-20.0	-20.0
IC1130	10	0.0	0.0	P1103	5	3.3	3.3
IC1130	11	0.0	0.0	P1103	6	3.3	3.3
IC1130	12	4.5	4.5	P1103	7	3.3	3.3
IC1130	13	6.0	5.9	P1103	8	3.3	3.3
IC1130	14	7.4	7.4	P1103	9	3.3	3.3
IC1130	15	11.0	10.9	P1103	10	3.3	3.3
IC1130	16	12.1	12.1	P1103	11	3.3	3.3
Q1022	1	9.3	9.3	P1103	12	0.0	0.0
Q1022	2	8.3	8.3	T1001	1	300.0	300.0
Q1022	3	0.0	0.0	T1001	2	60.0	67.0
Q1022	4	1.5	1.5	T1001	3	24.0	30.0
Q1023	1	1.2	1.2	T1001	-	-	-
Q1023	2	0.0	0.0	T1001	5	0.0	0.0
Q1023	3	0.0	0.0	T1001	6	0.5	0.5
Q1023	4	0.0	0.0	T1001	7	0.1	0.1
Q1131	1	5.9	5.9	T1001	8	0.1	0.1
Q1131	2	5.9	5.9	T1001	9	0.1	0.1
Q1131	3	10.9	10.9	T1001	10	0.0	0.0
Q1131	4	12.1	12.1	T1001	11	0.0	0.0
Q1131	5	5.9	5.9	T1001	12	0.0	0.0
Q1131	6	5.9	5.9	T1101	1	12.0	12.0
Q1170	1	11.4	11.4	T1101	2	0.0	0.0
Q1170	2	12.1	12.1	T1101	3	12.0	12.0
Q1170	3	12.0	12.0	T1101	4	0.0	0.0
Q1171	1	0.0	0.0	T1101	5	-0.2	-0.2
Q1171	2	12.0	12.0	T1101	6	0.0	0.0
Q1171	3	-0.3	-0.3	T1101	7	0.3	0.3
Q10101	1	0.1	0.1	T1101	8	-18.5	-18.5
Q10101	2	0.0	0.0	T1101	9	-18.5	-18.5
Q10101	3	6.5	6.4				
QR1101	1	3.3	3.3				
QR1101	2	0.0	0.0				
QR1101	3	0.0	0.0				
QR1131	1	3.3	3.3				
QR1131	2	0.0	0.0				
QR1131	3	0.0	0.0				
QR1170	1	3.3	3.3				
QR1170	2	0.0	0.0				
QR1170	3	0.0	0.0				
P1102	1	-	-				
P1102	2	3.3	3.3				
P1102	3	3.3	3.3				
P1102	4	3.3	3.3				
P1102	5	3.3	3.3				

\<IC1021\>

\<T1001\>

S3. Block Diagram

S3.1. Power Supply Block Diagram

DMP-BD45/BD65 POWER SUPPLY CIRCUIT BLOCK DIAGRAM

S3.2. Timer Block Diagram

DMP-BD45/BD65 TIMER CIRCUIT BLOCK DIAGRAM

S3.3. Analog Video/Audio Block Diagram

S4. Schematic Diagram

S4.1. Interconnection Diagram

POWER P.C.B.

AC IN — P1001

1	A
2	N

P1103

1	F-
2	X_SW3R3V
3	F+
4	VP
5	FL_CS
6	FL_CLK
7	FL_TXD
8	REMOCON
9	KEY2
10	KEY1
11	KEY3
12	GND

P1102

NC	1
PW_X_SW3R3V	2
FL_CS	3
FL_CLK	4
FL_TXD	5
REMOCON	6
KEY2	7
KEY1	8
KEY3	9
FL_DCDC_ON_H	10
DR_P_ON_H	11
PW_X_SW5R9V	12
PW_X_SW5R9V	13
PW_X_SW5R9V	14
GND	15
GND	16
GND	17
GND	18
PW_X_SW12R2V	19
PW_X_SW12R2V	20
PW_X_SW12R2V	21
PW_X_SW12R2V	22
SP_SAVE_L	23

FL P.C.B.

P7001

1	F-
2	X_SW3R3V
3	F+
4	VP
5	FL_CS
6	FL_CLK
7	FL_TXD
8	REMOCON
9	KEY2
10	KEY1
11	KEY3
12	GND

PJ7004 — POWER SW

1	KEY POWER
2	GND

DIGITAL P.C.B.

P58001

1	NC
2	PW_X_SW3R3V
3	FL_CS
4	FL_CLK
5	FL_TXD
6	REMOCON
7	KEY2
8	KEY1
9	KEY3
10	FL_DCDC_ON_H
11	DR_P_ON_H
12	PW_X_SW5R9V
13	PW_X_SW5R9V
14	PW_X_SW5R9V
15	GND
16	GND
17	GND
18	GND
19	PW_X_SW12R2V
20	PW_X_SW12R2V
21	PW_X_SW12R2V
22	PW_X_SW12R2V
23	SP_SAVE_L

P55001

FCS2+	1
FCS2-	2
TRK+	3
FCS1+	4
TRK-	5
FCS1-	6
A-	7
B-	8
A+	9
B+	10
GND_PD	11
GND_PD	12
GND_PD	13
A(C/c/C)	14
B(C/b/B)	15
C(A/a/A)	16
D(D/d/D)	17
SA(F+J/e3+f3/E2)	18
SB(E+I/e2+f2/E1)	19
SC(H+L/e1+f1/F1)	20
SD(G+K/e4+f4/F2)	21
SW3	22
RF+	23
RF-	24
SWB2	25
SWB1	26
VREF_PD	27
VCC_+5PD	28
GND_PD	29
SW	30
GND	31
LDI_BD	32
GND	33
LDI_CD	34
GND	35
LDI_DVD	36
GND	37
TEMP	38
VCC	39
VR_DVD	40
VR_CD	41
MD_DVDCD	42
GND	43
MD_BD	44
GND_BDFPD	45

P55002

A-	1
B-	2
B+	3
A+	4
GND	5
GND	6
W	7
V	8
U	9
VH+	10
U+	11
U-	12
VH-	13
CLOSESW	14
GND	15
OPENSW	16
LDM+	17
LDM-	18

BD DRIVE UNIT

DMP-BD45/BD65 INTERCONNECTION DIAGRAM

S4.2. Power_Wide (P) Schematic Diagram

VariationCategory

	D	B	C
C1014	F2B2W4700003	F2B2W4700003	F2B2G6200010
C1021	F1B3D1B1A011	F1B3D1B1A011	F1A3D100A009
C1023	F1H1H471A792 |F1H1H471A004	F1H1H471A792 |F1H1H471A004	F1H1H222A013 |F1H1H222A219
C1024	F1H1H101A004 |F1H1H1010005	F1H1H101A004 |F1H1H1010005	$
C1026	F1H1H222A013 |F1H1H222A219	F1H1H222A013 |F1H1H222A219	F1H1H222A013 |F1H1H222A219
D1029	B0BA01200046	B0BA01200046	B0BA9R900005
R1019	$	$	$
R1021	$ (10K)	$ (10K)	100K
R1022	ERX2SJR33E	ERX2SJR33E	ERX2SZJR18E
R1023	10K	10K	10K
R1024	15K[G]	15K[G]	22K[G]
R1030	3900	3900	0
R1032	4700[G]	4700[G]	3300[G]
R1033	4700[G]	4700[G]	3900[G]
R1041	100K	100K	22K
T1001	G4D2A0000314	G4D2A0000314	G4D2A0000316
VA1001	ERZV05Z471CS	ERZV05Z471CS	ERZV10D471C2
ZA1021	$	$	VSC6159
ZA1023	VSC5603-A	VSC5603-A	$

Modify Category

	Variation	Type
1	BD45EG/EF/EE/EB, BD65EG/EF/EB	D
2	BD45GN/GA/GC/GW/GK, BD65GN	B
3	BD45GT, BD45PU, BD65PU, BD65PX	C

CAUTION: FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH THE SAME TYPE 2A 250V FUSE.
ATTENTION: POUR UNE PROTECTION CONTINUE LES RISQUES D' INCENDIE N' UTILISERQUE DES FUSIBLE DE MEME TYPE 2A 250V.

2A 250V

HOT   COLD

S-8

F2A1C221B111 16V C1176
or

D1175
B0BA01800019
C1174
F2A1C221B111
D1176
B0JAMD000026
R1178
16V

D1174
$ [B0AADM000003]

R1171
4700

Q1170
B1AD6F000010
or

C1175
F1H1H392A013
or

R1176G
470
B0AADM000003
D1173
T1101
G4D1A0000129
R1173
5600

R1172
4700

R1177
$[47K]
C1171
$[F2A1H1006040]
R1175
$[47K]
C1172
F2A1V470A83T
35V
R1174
ERDS2TJ470T
D1172
B0BA0360002I
Q1171
D1171
B0BA0210001I9

QR1170
B1GBCFJJ0040
or
or

C1134 50V12P
F1H1H120A004
or

IC1130
CODBAYY00624

ZA1112
VSC6221

D1110
RADIATION
ZA1111
XYN3-J8FJ
G1 G2

EN VIN
EXT-Up
SEL/SYNC VB
GND
Vref/SS LX
CC V5
FB EXT-Lo
RS+ GND
RS- OSC

C1132 16V0.1
F1H1C104A07I
or
C1137 16V0.1
F1H1C104A07I
or

L1105
G0A100ZA0045
R1145
DIBFR027000I

Q1131
B1CHRD000024
(CPH6350)

R1131
33K[G]

R1132
2700[G]

C1133 50V0.015
F1H1H53A013
or

C1136 16V0.1
F1H1C104A07I
or

C1139A
F1K1C106A062
or

R1142
82K[G]

R1144
5600[G]

LB1131
J0JH2000004B

C1140
16V

R1133 10K[G]
R1134 220K[G]
R1135 27K[G]
R1128 $[F1K1C106A062]
R1136 27K(D)
R1138 27K(D)
R1137 470K(D)
R1139 470K(D)
C1138 $[F1K1C106A062]
C1139
F2A1G210000B [6V02O.U6]

D1110
B0JBSL000002

C1130
F1K1C106A002
or

R1141
220K
R1143
470K (D)

C1135 50V220P
F1H1H221A004

D1131
B0JOMD000014
D1132
B0JOMD000014

QR1131
B1GBCFNND041

R1146
$[1M0]

K1101
$[VWAJ07V5-10]

C1141 16V0.1
F1H1C104A07I
or

S-9

L1103
GDA100H00025

C1110 F2A1C1520021 16V1500J6
C1121 F2A1C1520021 16V1500J6
C1125
F2A1C102A236 16V

23	SP_SAVE_L	CKAA23
22	PW_X_SW12R2V	CKAA22
21	PW_X_SW12R2V	
20	PW_X_SW12R2V	
19	PW_X_SW12R2V	
18	GND	CKAA18
17	GND	
16	GND	
15	GND	
14	PW_X_SW5R9V	CKAA14
13	PW_X_SW5R9V	
12	PW_X_SW5R9V	
11	DDR_ON_H	CKAA11
10	FL_DCDC_ON_H	CKAA10
9	KEY3	CKAA9
8	KEY1	CKAA8
7	KEY2	CKAA7
6	REMOCON	CKAA6
5	FL_TXD	CKAA5
4	FL_CLK	CKAA4
3	FL_CS	CKAA3
2	PW_X_SW3R3V	CKAA2
1	NC	CKAA1

P1102
K1KY23AA0606

P1103
K1KB12B00040

DMP-BD45EG/BD65EG Series
Power_Wide
Schematic Diagram (P)

3/4

L1103
G0A100H00025

C1118
F2A1C150D021
16V150D.JG
16V

C1121
F2A1C150D021
16V150D.JG
16V

C125
F2A1C102A336
16V

R1112
2200

R1113
10K

C1114
F1H1C104A07I

R1116
2200

R1118
330(D)

R1119
18K(D)

C1124

F1H1C104A07I

R1114
$(220K)

R1115
4700(D)

C1101
022)

IC1102
C0DB2BK000006
[MM1431C]JRE]

REF
C
N.C

R1104
4700

Pin	Signal		Net
15	GND		
14	PW_X_SW5R9V	⊙	CKAA14
13	PW_X_SW5R9V		
12	PW_X_SW5R9V		
11	DDR_ON_H	⊙	CKAA11
10	FL_DCDC_ON_H	⊙	CKAA10
9	KEY3	⊙	CKAA9
8	KEY1	⊙	CKAA8
7	KEY2	⊙	CKAA7
6	REMOCON	⊙	CKAA6
5	FL_TXD	⊙	CKAA5
4	FL_CLK	⊙	CKAA4
3	FL_CS	⊙	CKAA3
2	PW_X_SW3R3V	⊙	CKAA2
1	NC	⊙	CKAA1

P1102
K1KY23AA0606

P1103
K1KB12B00C40

Pin	Signal		Net
1	F-	⊙	CKAB2
2	X_SW3R3V	⊙	CKAB3
3	F+	⊙	CKAB4
4	VP	⊙	CKAB5
5	FL_CS	⊙	CKAB6
6	FL_CLK	⊙	CKAB7
7	FL_TXD	⊙	CKAB8
8	REMOCON	⊙	CKAB9
9	KEY2	⊙	CKAB10
10	KEY1	⊙	CKAB11
11	KEY3	⊙	CKAB12
12	GND		

Confidential
Until   2010/06/30

DMP-BD45EG/BD65EG Series
Power_Wide
4/4
Schematic Diagram (P)

11   12   13   14   15   16   17   18   19   20   21

G

F

E

D

C

B

A

POWER SW

S7551
EVQ11A06R

PJ7551
$[REZ1969]

2PIN FLAT CABLE 2.5mm PITCH

Confidential
Until 2010/06/30

OPEN/CLOSE SW

S7004
EVQ11A05R

S7002
EVQ11A05R
PLAY

S7003
EVQ11A05R
STOP

IC7001

DP7001

STANDBY LED

FL HOLDER
ZB7001

2PIN FLAT CABLE 2.5mm PITCH
PJ7004

KEY_POWER
GND

Confidential
Until 2010.06.30

Variation	Type
DMP-BD45P,PU,OT,GN,GA,GC,GK/DMP-BD45PU/DMP-BD65P,PC,PX,GN/DMP-BD65SP	A
DMP-BD45GK	B
DMP-BD45EG,EF,EB,EE/DMP-BD65EG-K,EG-S,EF,EB	E
DMP-BD65	D

	A	B	C	D
D7002	$[B3AAA0001018]	B3AAA0001018	$[B3AAA0001018]	$[B3AAA0001018]
PJ7004	REZ1969	REZ1969	REZ1970	REZ1970
Q7002	$[B1ABDF000033]	B1ABDF000033 2SD0601AQL	$[B1ABDF000033]	$[B1ABDF000033]
R7010	$[3300]	3300	$[3300]	$[3300]
R7011	$[47K]	47K	$[47K]	$[47K]
R7013	$[22][150]	150[22]	$[22][150]	$[22][150]
ZB7001	RMN0937	RMN0937	RMN0937-J	RMN0937

DMP-BD45EG/BD65EG Series
Power_SW
Schematic Diagram

DMP-BD45EG/BD65EG Series
FL
Schematic Diagram (F)

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |

S5. Print Circuit Board

S5.1. Power P.C.B.

LG1002

LG1001

LG1001

LG1005

LG1008

LG1009 LG1012

D1006

R1041

C1024

R1030

D1042

D1010

D1031

R1023

R1022

R1033

R1021 R1031

C1026

D1026

D1023

R1024

D1021

R1029

R1028

R1042

S-15

(Component Side)

DMP-BD45EG/BD65EG Series
Power P.C.B.
(Component Side)

3/4

(Foil Side)

DMP-BD45EG/BD65EG Series
Power P.C.B.
(Foil Side)
4/4

(Component Side)

(Component Side)

(Foil Side)

(Foil Side)

DMP-BD45EG/BD65EG Series
Power_SW P.C.B.

DMP-BD45EG/BD65EG Series
FL P.C.B.

S6. Abbreviation

INITIAL/LOGO		ABBREVIATIONS
A	A0~UP	ADDRESS
	ACLK	AUDIO CLOCK
	AD0~UP	ADDRESS BUS
	ADATA	AUDIO PES PACKET DATA
	ALE	ADDRESS LATCH ENABLE
	AMUTE	AUDIO MUTE
	AREQ	AUDIO PES PACKET REQUEST
	ARF	AUDIO RF
	ASI	SERVO AMP INVERTED INPUT
	ASO	SERVO AMP OUTPUT
	ASYNC	AUDIO WORD DISTINCTION SYNC
B	BCK	BIT CLOCK (PCM)
	BCKIN	BIT CLOCK INPUT
	BDO	BLACK DROP OUT
	BLKCK	SUB CODE BLOCK CLOCK
	BOTTOM	CAP. FOR BOTTOM HOLD
	BYP	BYPATH
	BYTCK	BYTE CLOCK
C	CAV	CONSTANT ANGULAR VELOCITY
	CBDO	CAP. BLACK DROP OUT
	CD	COMPACT DISC
	CDSCK	CD SERIAL DATA CLOCK
	CDSRDATA	CD SERIAL DATA
	CDRF	CD RF (EFM) SIGNAL
	CDV	COMPACT DISC-VIDEO
	CHNDATA	CHANNEL DATA
	CKSL	SYSTEM CLOCK SELECT
	CLV	CONSTANT LINEAR VELOCITY
	COFTR	CAP. OFF TRACK
	CPA	CPU ADDRESS
	CPCS	CPU CHIP SELECT
	CPDT	CPU DATA
	CPH1~3	CLOCK PULSE SOURCE DRIVE
	CPUADR	CPU ADDRESS LATCH
	CPUADT	CPU ADDRESS DATA BUS
	CPUIRQ	CPU INTERRUPT REQUEST
	CPRD	CPU READ ENABLE
	CPV	GATE DRIVER CLOCK PULSE
	CPWR	CPU WRITE ENABLE
	CS	CHIP SELECT
	CSYNCIN	COMPOSITE SYNC IN
	CSYNCOUT	COMPOSITE SYNC OUT
D	DACCK	D/A CONVERTER CLOCK
	DEEMP	DE-EMPHASIS BIT ON/OFF
	DEMPH	DE-EMPHASIS SWITCHING
	DIG0~UP	FL DIGIT OUTPUT
	DIN	DATA INPUT
	DMSRCK	DM SERIAL DATA READ CLOCK
	DMUTE	DIGITAL MUTE CONTROL
	DO	DROP OUT
	DOUT0~UP	DATA OUTPUT
	DRF	DATA SLICE RF (BIAS)
	DRPOUT	DROP OUT SIGNAL

INITIAL/LOGO		ABBREVIATIONS
	DREQ	DATA REQUEST
	DRESP	DATA RESPONSE
	DSC	DIGITAL SERVO CONTROLLER
	DSLF	DATA SLICE LOOP FILTER
	DVD	DIGITAL VIDEO DISC
E	EC	ERROR TORQUE CONTROL
	ECR	ERROR TORQUE CONTROL REFERENCE
	ENCSEL	ENCODER SELECT
	ETMCLK	EXTERNAL M CLOCK (81MHz/40.5MHz)
	ETSCLK	EXTERNAL S CLOCK (54MHz)
F	FBAL	FOCUS BALANCE
	FCLK	FRAME CLOCK
	FE	FOCUS ERROR
	FFI	FOCUS ERROR AMP INVERTED INPUT
	FEO	FOCUS ERROR AMP OUTPUT
	FG	FREQUENCY GENERATOR
	FSC	FREQUENCY SUB CARRIER
	FSCK	FS (384 OVER SAMPLING) CLOCK
G	GND	COMMON GROUNDING (EARTH)
H	HA0~UP	HOST ADDRESS
	HD0~UP	HOST DATA
	HINT	HOST INTERRUPT
	HRXW	HOST READ/WRITE
I	IECOUT	IEC958 FORMAT DATA OUTPUT
	IPFRAG	INTERPOLATION FLAG
	IREF	I (CURRENT) REFERENCE
	ISEL	INTERFACE MODE SELECT
L	LDON	LASER DIODE CONTROL
	LPC	LASER POWER CONTROL
	LRCK	L CH/R CH DISTINCTION CLOCK
M	MA0~UP	MEMORY ADDRESS
	MCK	MEMORY CLOCK
	MCKI	MEMORY CLOCK INPUT
	MCLK	MEMORY SERIAL COMMAND CLOCK
	MDATA	MEMORY SERIAL COMMAND DATA
	MDQ0~UP	MEMORY DATA INPUT/OUTPUT
	MDQM	MEMORY DATA I/O MASK
	MLD	MEMORY SERIAL COMMAND LOAD
	MPEG	MOVING PICTURE EXPERTS GROUP
O	ODC	OPTICAL DISC CONTROLLER
	OEH	SOURCE DRIVER OUTPUT ENABLE
	OEV 1, 2	GATE DRIVER OUTPUT ENABLE
	OFTR	OFF TRACKING
	OSCI	OSCILLATOR INPUT
	OSCO	OSCILLATOR OUTPUT
	OSD	ON SCREEN DISPLAY
P	P1~UP	PORT
	PCD	CD TRACKING PHASE DIFFERENCE
	PCK	PLL CLOCK
	PDVD	DVD TRACKING PHASE DIFFERENCE
	PEAK	CAP. FOR PEAK HOLD
	PLLCLK	CHANNEL PLL CLOCK
	PLLOK	PLL LOCK

INITIAL/LOGO		ABBREVIATIONS
	PWMCTL	PWM OUTPUT CONTROL
	PWMDA	PULSE WAVE MOTOR DRIVE A
	PWMOA, B	PULSE WAVE MOTOR OUT A, B
R	RE	READ ENABLE
	RFENV	RF ENVELOPE
	RFO	RF PHASE DIFFERENCE OUTPUT
	RS	(CD-ROM) REGISTER SELECT
	RSEL	RF POLARITY SELECT
	RST	RESET
	RSV	RESERVE
S	SBI0, 1	SERIAL DATA INPUT
	SBO0	SERIAL DATA OUTPUT
	SBT0, 1	SERIAL CLOCK
	SCK	SERIAL DATA CLOCK
	SCKR	AUDIO SERIAL CLOCK RECEIVER
	SCL	SERIAL CLOCK
	SCLK	SERIAL CLOCK
	SDA	SERIAL DATA
	SEG0~UP	FL SEGMENT OUTPUT
	SELCLK	SELECT CLOCK
	SEN	SERIAL PORT ENABLE
	SIN1, 2	SERIAL DATA IN
	SOUT1, 2	SERIAL DATA OUT
	SPDI	SERIAL PORT DATA INPUT
	SPDO	SERIAL PORT DATA OUTPUT
	SPEN	SERIAL PORT R/W ENABLE
	SPRCLK	SERIAL PORT READ CLOCK
	SPWCLK	SERIAL PORT WRITE CLOCK
	SQCK	SUB CODE Q CLOCK
	SQCX	SUB CODE Q DATA READ CLOCK
	SRDATA	SERIAL DATA
	SRMADR	SRAM ADDRESS BUS
	SRMDT0~7	SRAM DATA BUS 0~7
	SS	START/STOP
	STAT	STATUS
	STCLK	STREAM DATA CLOCK
	STD0~UP	STREAM DATA
	STENABLE	STREAM DATA INPUT ENABLE
	STH	SOURCE START PULSE
	STSEL	STREAM DATA POLARITY SELECT
	STV	GATE DRIVER SCAN START PULSE
	STVALID	STREAM DATA VALIDITY
	SUBC	SUB CODE SERIAL
	SBCK	SUB CODE CLOCK
	SUBQ	SUB CODE Q DATA
	SYSCLK	SYSTEM CLOCK
T	TE	TRACKING ERROR
	TIBAL	BALANCE CONTROL
	TID	BALANCE OUTPUT 1
	TIN	BALANCE INPUT
	TIP	BALANCE INPUT
	TIS	BALANCE OUTPUT 2
	TPSN	OP AMP INPUT

INITIAL/LOGO		ABBREVIATIONS
	TPSO	OP AMP OUTPUT
	TPSP	OP AMP INVERTED INPUT
	TRCRS	TRACK CROSS SIGNAL
	TRON	TRACKING ON
	TRSON	TRAVERSE SERVO ON
V	VBLANK	V BLANKING
	VCC	COLLECTOR POWER SUPPLY VOLTAGE
	VCDCONT	VIDEO CD CONTROL (TRACKING BALANCE)
	VDD	DRAIN POWER SUPPLY VOLTAGE
	VFB	VIDEO FEED BACK
	VREF	VOLTAGE REFERENCE
	VSS	SOURCE POWER SUPPLY VOLTAGE
W	WAIT	BUS CYCLE WAIT
	WDCK	WORD CLOCK
	WEH	WRITE ENABLE HIGH
	WSR	WORD SELECT RECEIVER
X	X	X' TAL
	XALE	X ADDRESS LATCH ENABLE
	XAREQ	X AUDIO DATA REQUEST
	XCDROM	X CD ROM CHIP SELECT
	XCS	X CHIP SELECT
	XCSYNC	X COMPOSITE SYNC
	XDS	X DATA STROBE
	XHSYNCO	X HORIZONTAL SYNC OUTPUT
	XHINT	XH INTERRUPT REQUEST
	XI	X' TAL OSCILLATOR INPUT
	XINT	X INTERRUPT
	XMW	X MEMORY WRITE ENABLE
	XO	X' TAL OSCILLATOR OUTPUT
	XRE	X READ ENABLE
	XSRMCE	X SRAM CHIP ENABLE
	XSRMOE	X SRAM OUTPUT ENABLE
	XSRMWE	X SRAM WRITE ENABLE
	XVCS	X V-DEC CHIP SELECT
	XVDS	X V-DEC CONTROL BUS STROBE
	XVSYNCO	X VERTICAL SYNC OUTPUT

S7. Replacement Parts List

Note: 1.* Be sure to make your orders of replacement parts according to this list.

2. IMPORTANT SAFETY NOTICE
   Components identified with the mark ⚠ have the special characteristics for safety.
   When replacing any of these components, use only the same type.

3. Unless otherwise specified,
   All resistors are in OHMS, K=1,000 OHMS. All capacitors are in MICRO-FARADS (uf), P=uuF.

4. The marking (RTL) indicates the retention time is limited for this item. After the discontinuation
   of this assembly in production, it will no longer be available.

5. Parts indicated with "JIG and ADJ." in the Remarks column are necessary to adjust the
   BDP/Digital P.C.B. This adjustment software can be downloaded from "Support Information
   from NWBG/VDBG-PAVC" web-site in "TSN system", together with instructions of "BD Drive
   Adjustment" including preparations and connections etc.

**E.S.D. standards for Electrostatically Sensitive Devices, refer to "PREVENTION OF
ELECTROSTATIC DISCHARGE (ESD) TO ELECTROSTATICALLY SENSITIVE (ES) DEVICES"
section.**

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
##	VEP71166D	POWER P.C.B.	1	(RTL) E.S.D.
##	VEP70320B	POWER SW P.C.B.	1	(RTL) E.S.D.
##	VEP70321E	FL P.C.B.	1	(RTL) E.S.D.
##	RFKB76200FT	DIGITAL P.C.B.	1	65EG (RTL) E.S.D.
				(JIG & ADJ.)
##	RFKB76200LT	DIGITAL P.C.B.	1	65EB EF (RTL) E.S.D.
				(JIG & ADJ.)
##	RFKB76200CT	DIGITAL P.C.B.	1	45EG (RTL) E.S.D.
				(JIG & ADJ.)
##	RFKB76200KT	DIGITAL P.C.B.	1	45EB,EE,EF (RTL) E.S.D.
				(JIG & ADJ.)
##	VEP71166D	POWER P.C.B.		(RTL) E.S.D.
⚠ C1001	F0CAF683A021	100V 0.068P	1	
⚠ C1005	F1B2G4710001	400V 470P	1	
⚠ C1006	F1B2G4710001	400V 470P	1	
⚠ C1009	F0CAF683A021	100V 0.068P	1	
C1014	F2B2W4700003	450V 47U	1	
⚠ C1018	F1BAF1020020	1000P	1	
⚠ C1019	F1B2G6810001	400V 680U	1	
C1021	F1B3D181A011	180P	1	
C1023	F1H1H471A792	50V 470P	1	
C1024	F1H1H101A004	50V 100P	1	
C1025	F2A1V6800002	35V 68U	1	
C1026	F1H1H222A013	50V 2200P	1	
C1031	F1B3D222A011	2000V 2200P	1	
C1114	F1H1C104A071	16V 0.1U	1	
C1118	F2A1C1520021	16V 1500U	1	
C1121	F2A1C1520021	16V 1500U	1	
C1124	F1H1C104A071	16V 0.1U	1	
C1125	F2A1C102A236	16V 1000U	1	
C1131	F1K1C106A062	16V 10U	1	
C1132	F1H1C104A071	16V 0.1U	1	
C1133	F1H1H153A013	50V 0.015U	1	
C1134	F1H1H120A004	50V 12P	1	
C1135	F1H1H221A004	50V 220P	1	
C1136	F1H1C104A071	16V 0.1U	1	
C1137	F1H1C104A071	16V 0.1U	1	
C1140	F2A1C8210008	16V 820U	1	
C1141	F1H1C104A071	16V 0.1U	1	
C1172	F2A1V470A831	35V 47U	1	
C1173	F2A1H100B040	50V 10U	1	
C1174	F2A1C221B111	16V 220U	1	
C1175	F1H1H392A013	50V 3900	1	
C1176	F2A1C221B111	16V 220U	1	
D1006	B0EDKT000009	DIODE	1	E.S.D.
D1012	B0HADV000001	DIODE	1	E.S.D.
D1021	B0HADV000001	DIODE	1	E.S.D.
D1023	B0BC03200002	DIODE	1	E.S.D.
D1025	B0BA01600007	DIODE	1	E.S.D.
D1026	B0ACCK000005	DIODE	1	E.S.D.
D1027	B0HAGM000006	DIODE	1	E.S.D.
D1029	B0BA01200046	DIODE	1	E.S.D.
D1031	B0ACCK000005	DIODE	1	E.S.D.
D1032	B0ACCK000005	DIODE	1	E.S.D.
D1110	B0JBSL000002	DIODE	1	E.S.D.
D1131	B0JCMD000014	DIODE	1	E.S.D.
D1132	B0JCMD000014	DIODE	1	E.S.D.
D1171	B0BA02100019	DIODE	1	E.S.D.
D1172	B0BA03600021	DIODE	1	E.S.D.
D1173	B0AADM000003	DIODE	1	E.S.D.
D1175	B0BA01800019	DIODE	1	E.S.D.
D1176	B0JAMD000026	DIODE	1	E.S.D.
⚠ F1001	K5G202Y00006	FUSE	1	
IC1021	C0DACZH00017	IC	1	E.S.D.
IC1102	C0DBZMC00006	IC	1	E.S.D.
IC1130	C0DBAYY00624	IC	1	E.S.D.
⚠ L1001	G0B233D00005	COIL	1	
⚠ L1002	G0B233D00005	COIL	1	
L1103	G0A100H00025	COIL 10UH	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
L1105	G0A100ZA0045	COIL	1	
LB1021	J0JKB0000003	COIL	1	
LB1131	J0JHC0000048	COIL	1	
LB7003	J0JYC0000070	COIL	1	
⚠ P1001	K2AA2B000017	AC INLET	1	
P1102	K1KY23AA0606	CONNECTOR(23P)	1	
P1103	K1KB12B00040	CONNECTOR(12P)	1	
⚠ Q1022	B3PBA0000454	TRANSISTOR	1	E.S.D.
⚠ Q1023	B3PBA0000454	TRANSISTOR	1	E.S.D.
Q1131	B1CHRD000024	TRANSISTOR	1	E.S.D.
Q1170	B1ADGF000010	TRANSISTOR	1	E.S.D.
Q1171	B1BACG000058	TRANSISTOR	1	E.S.D.
Q10101	B1ABDF000033	TRANSISTOR	1	E.S.D.
QR1101	B1GBCFLL0042	TRANSISTOR	1	E.S.D.
QR1131	B1GBCFNN0041	TRANSISTOR	1	E.S.D.
QR1170	B1GBCFJJ0040	TRANSISTOR	1	E.S.D.
R1006	D0BF685JA030	6.8M	1	
R1011	ERG2SJ104P	2W 100K	1	
R1012	ERG2SJ104P	2W 100K	1	
R1013	ERG1SJ222E	1W 2.2K	1	
R1022	ERX2SJR33E	2W 0.33	1	
R1023	ERJ3GEYJ103V	1/10W 10K	1	
R1024	ERJ3GEYG153V	1/10W 15K	1	
R1026	ERDS2TJ221T	1/4W 220	1	
R1028	ERJ6GEYJ100V	1/8W 10	1	
R1029	ERJ6GEYJ100V	1/8W 10	1	
R1030	ERJ3GEYJ392V	1/10W 3.9K	1	
R1032	ERJ3GEYG472V	1/10W 4.7K	1	
R1033	ERJ3GEYG472V	1/10W 4.7K	1	
R1041	ERJ3GEYJ104V	1/10W 100K	1	
R1042	ERJ3GEYJ104V	1/10W 100K	1	
R1104	ERJ3GEYJ472V	1/10W 4.7K	1	
R1111	ERJ3GEYJ102V	1/10W 1K	1	
R1112	ERJ3GEYJ222V	1/10W 2.2K	1	
R1113	ERJ3GEYJ103V	1/10W 10K	1	
R1115	ERJ3RBD472V	1/16W 4.7K	1	
R1116	ERJ3GEYJ222V	1/10W 2.2K	1	
R1118	ERJ3RBD331V	1/16W 330	1	
R1119	ERJ3RBD183V	1/16W 18K	1	
R1131	ERJ3GEYG333V	1/10W 33K	1	
R1132	ERJ3GEYG272V	1/10W 2.7K	1	
R1133	ERJ3GEYG103V	1/10W 10K	1	
R1134	ERJ3GEYG224V	1/10W 220K	1	
R1135	ERJ3GEYG273V	1/10W 27K	1	
R1136	ERJ3RBD273V	1/16W 27K	1	
R1137	ERJ3RED474V	1/16W 470K	1	
R1138	ERJ3RBD273V	1/16W 27K	1	
R1139	ERJ3RED474V	1/16W 470K	1	
R1141	ERJ3GEYJ224V	1/10W 220K	1	
R1142	ERJ3GEYG823V	1/10W 82K	1	
R1143	ERJ3RED474V	1/16W 470K	1	
R1144	ERJ3GEYG562V	1/10W 5.6K	1	
R1145	D1BFR0270001	1/2W 0.027	1	
R1171	ERJ3GEYJ472V	1/10W 4.7K	1	
R1172	ERJ3GEYJ472V	1/10W 4.7K	1	
R1173	ERJ3GEYJ562V	1/10W 5.6K	1	
R1174	ERDS2TJ470T	1/4W 47	1	
R1176	ERJ3GEYJ471V	1/10W 470	1	
⚠ T1001	G4D2A0000314	TRANSFORMER	1	
T1101	G4D1A0000129	TRANSFORMER	1	
⚠ VA1001	ERZV05Z471CS	VARISTOR	1	
W201	ERJ6GEY0R00V	1/8W 0	1	
ZA1001	K9ZZ00001279	EARTH PLATE	1	
ZA1022	XYN3+J8FJ	SCREW	1	
ZA1023	VSC5603-A	HEAT SINK	1	
ZA1111	XYN3+J8FJ	SCREW	1	
ZA1112	VSC6221	HEAT SINK	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks	Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
##	VEP70320B	POWER SW P.C.B.		(RTL) E.S.D.					
S7551	EVQ11A05R	SWITCH	1						
##	VEP70321E	FL P.C.B.		(RTL) E.S.D.					
C7002	F1H1A105A028	10V 1U	1						
C7004	F1H1C104A071	16V 0.1U	1						
C7005	F1H1H104A783	50V 0.1U	1						
C7006	F1H1C104A071	16V 0.1U	1						
DP7001	A2BD00000195	DISPLAY TUBE	1						
IC7001	C0HBB0000061	IC	1	E.S.D.					
IR7001	PNA4861M01VT	REMOTE SENSOR	1						
P7001	K1KA12B00136	CONNECTOR(12P)	1						
PJ7004	REZ1970	WIRE	1						
R7002	ERJ3GEYJ622V	1/10W 6.2K	1						
R7003	ERJ3GEYJ222V	1/10W 2.2K	1						
R7005	ERJ3GEYJ330V	1/10W 33	1						
R7009	ERJ3GEYJ104V	1/10W 100K	1						
S7001	EVQ11A05R	SWITCH	1						
S7002	EVQ11A05R	SWITCH	1						
S7003	EVQ11A05R	SWITCH	1						
W751	ERJ6GEY0R00V	1/8W 0	1						
ZB7001	RMN0937-J	FL HOLDER	1						

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks	Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
1	VEP71166D	POWER P.C.B.	1	(RTL) E.S.D.					
2	VEP70320B	POWER SW P.C.B.	1	(RTL) E.S.D.					
3	VEP70321E	FL P.C.B.	1	(RTL) E.S.D.					
⚠ 4	RGR0397D-A1	REAR PANEL	1	65EG,EB,EF					
⚠ 4	RGR0397E-A1	REAR PANEL	1	45EG,EB,EF					
⚠ 4	RGR0397E-D1	REAR PANEL	1	45EE					
5	RMX0437	INSULATION SHEET	1						
6	RMZ1082-J	BARRIER	1						
7	RSC0851	HEAT TRANSFER SHEET	1						
8	RSC0854	HEAT TRANSFER SHEET	1						
9	RGQ0564-KJ	LSI COVER	1						
10	RKA0206A-KJ	LEG	1						
11	RKA0206A-KJ	LEG	1						
12	RKA0206A-KJ	LEG	1						
13	RKA0206A-KJ	LEG	1						
14	RYP1557-K	FRONT PANEL ASS'Y 1	1	65EGK,EBK,EFK					
14	RYP1561-S	FRONT PANEL ASS'Y 1	1	65EGS					
14	RYP1552-K	FRONT PANEL ASS'Y 1	1	45EGK,EBK,EEK,EFK					
14-1	RGU2670-KJ	OPEN/CLOSE BUTTON	1	(-K)					
14-1	RGU2670-SJ	OPEN/CLOSE BUTTON	1	(-S)					
14-2	RGU2671-KJ	PLAY BUTTON	1						
14-3	RGU2672-KJ	POWER BUTTON	1	(-K)					
14-3	RGU2672-SJ	POWER BUTTON	1	(-S)					
14-4	RKF0872-KJ	SD CARD / USB DOOR	1	(-K)					
14-4	RKF0872-SJ	SD CARD / USB DOOR	1	(-S)					
14-5	RYF0886-K	TRAY DOOR ASS'Y	1	BD65					
14-5	RYF0885-K	TRAY DOOR ASS'Y	1	BD45					
14-5-1	RMB0877	TRAY DOOR SPRING	1						
14-6	RYQ0749-Q	FRONT WINDOW ASS'Y	1	BD65					
14-6	RYQ0748-Q	FRONT WINDOW ASS'Y	1	BD45					
⚠ 18	RKM0623-KJ	TOP CASE	1	(-K)					
⚠ 18	RKM0623-SJ	TOP CASE	1	(-S)					
19	RFKNBD45EGT	BDP/DIGITAL P.C.B. MODULE	1	45EG E.S.D.					
19	RFKNBD45EFT	BDP/DIGITAL P.C.B. MODULE	1	45EF E.S.D.					
19	RFKNBD45EBT	BDP/DIGITAL P.C.B. MODULE	1	45EB E.S.D.					
19	RFKNBD45EET	BDP/DIGITAL P.C.B. MODULE	1	45EE E.S.D.					
19	RFKNBD65EGT	BDP/DIGITAL P.C.B. MODULE	1	65EG E.S.D.					
19	RFKNBD65EFT	BDP/DIGITAL P.C.B. MODULE	1	65EF E.S.D.					
19	RFKNBD65EBT	BDP/DIGITAL P.C.B. MODULE	1	65EB E.S.D.					
19-1	VWJ2058-1	FFC(18P)	1						
19-2	RFKB76200FT	DIGITAL P.C.B.	1	65EG (RTL) E.S.D.					
				(JIG & ADJ.)					
19-2	RFKB76200LT	DIGITAL P.C.B.	1	65EB EF (RTL) E.S.D.					
				(JIG & ADJ.)					
19-2	RFKB76200CT	DIGITAL P.C.B.	1	45EG (RTL) E.S.D.					
				(JIG & ADJ.)					
19-2	RFKB76200KT	DIGITAL P.C.B.	1	45EB,EE,EF (RTL) E.S.D.					
				(JIG & ADJ.)					
⚠ 19-3	VXY2079T	DRIVE UNIT	1	(JIG & ADJ.)					
31	RHD30101-1	SCREW	1						
32	RHD30101-1	SCREW	1						
33	RHD30101-1	SCREW	1						
34	RHD30101-1	SCREW	1						
35	RHD30101-1	SCREW	1						
36	RHD30101-1	SCREW	1						
37	RHD30101-1	SCREW	1						
38	RHD30101-1	SCREW	1						
39	RHD30101-1	SCREW	1						
40	RHD30101-1	SCREW	1						
41	RHD30119-L	SCREW	1						
42	RHD30119-L	SCREW	1						
43	RHD30119-L	SCREW	1						
44	RHD30119-L	SCREW	1						
45	XSN3+4FJ	SCREW	1						
46	RHD26045	SCREW	1						
47	RHD26045	SCREW	1						
48	RHD26045	SCREW	1						
49	RHD30113-1K	SCREW	1	(-K)					
49	RHD30113	SCREW	1	(-S)					
50	RHD30113-1K	SCREW	1	(-K)					
50	RHD30113	SCREW	1	(-S)					
51	RHD30119-L	SCREW	1						
52	RHD30119-L	SCREW	1						
53	RHD30119-L	SCREW	1						

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks	Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
⚠ 101	VQL1V70	LASER CAUTION LABEL	1						
102	VMA0V86	YOKE	1						
103	VMD5751	UPPER BASE	1						
104	VMD5752-1J	DRIVE GEAR	1						
105	VMT1981	DUST COVER A	1						
106	VMZ3737-J	CLAMP COVER	1						
107	VXA8619	TRAY ASS'Y	1						
108	XTV26+10GFJ	SCREW	1						
109	XTV26+10GFJ	SCREW	1						
110	XTV26+10GFJ	SCREW	1						
111	XTV26+10GFJ	SCREW	1						
112	VMD5753-1	MID BASE	1						
113	VDG1713-J	PULLEY GEAR	1						
114	VDG1714	MID GEAR	1						
115	VDG1715-J	DRIVE GEAR	1						
116	VEM0871	LOADING MOTOR ASS'Y	1						
117	VHD1653-1	SCREW	1						
118	VMD5748-1	MECHA CHASSIS	1						
119	VMD5749	SLIDE CAM	1						
120	VMG1809	BELT	1						
121	VMT1982	DUST COVER B	1						
122	VHD1518-1	SCREW	1						
123	VHD1518-1	SCREW	1						
124	VHD1518-1	SCREW	1						
125	VHD1518-1	SCREW	1						
126	VMG1883	DAMPER	1						
127	VMG1883	DAMPER	1						
128	VMG1883	DAMPER	1						
129	VMG1883	DAMPER	1						

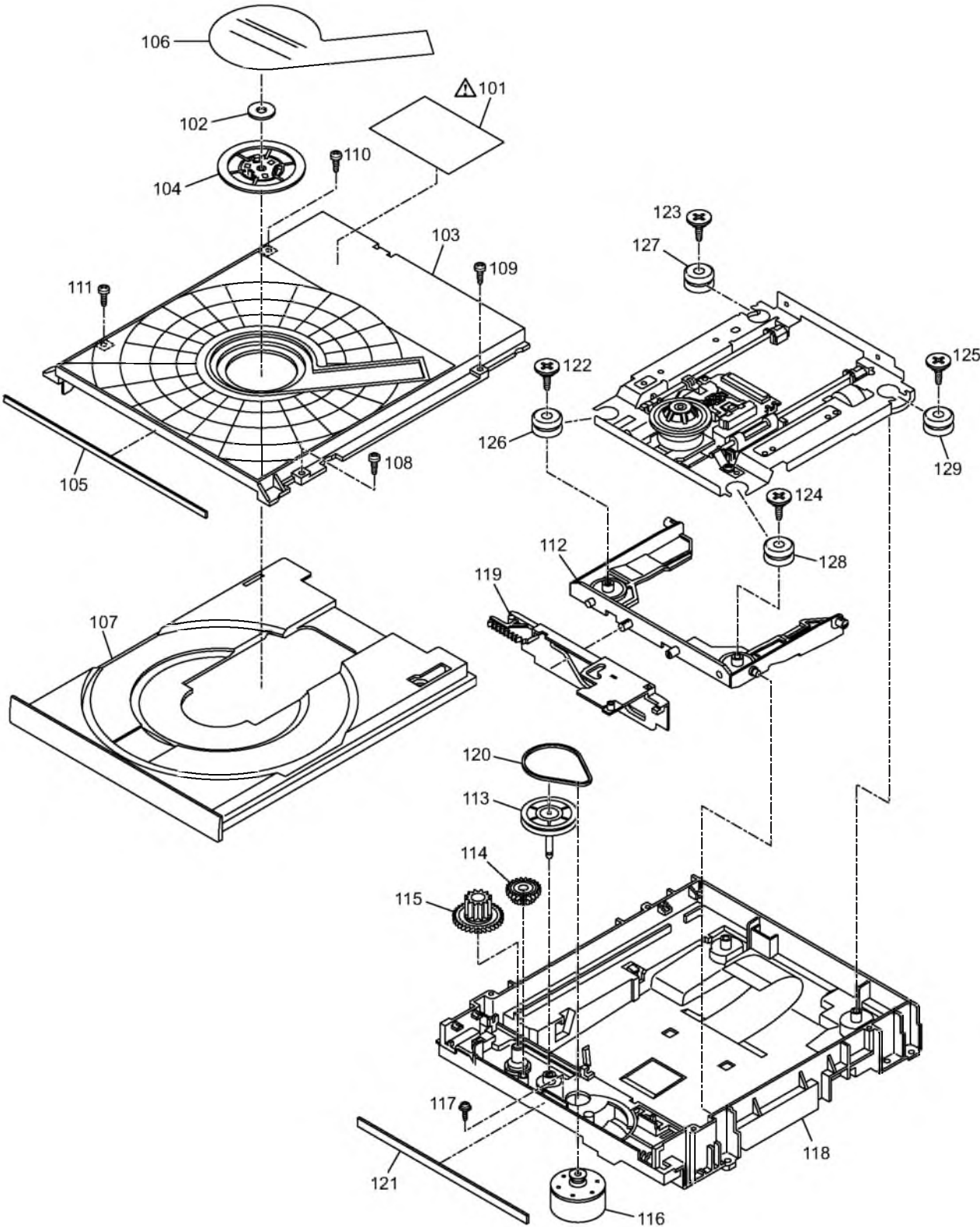| Ref.No.	Part No.	Part Name & Description	Pcs	Remarks	Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
⚠ A1	RJA0043-1C	AC POWER SUPPLY CORD	1	65EG,EF, 45EG,EE,EF					
⚠ A1	K2CT2YY00003	AC POWER SUPPLY CORD	1	65EB, 45EB					
A3	N2QAKB000077	REMOTE CONTROL	1	BD65					
A3	N2QAKB000079	REMOTE CONTROL	1	BD45					
A3-1	100300055200	BATTERY COVER	1						
⚠ A5	VQT2L13	OPERATING INSTRUCTIONS	1	65EG, 45EG (IA)					
⚠ A5	VQT2H96	OPERATING INSTRUCTIONS	1	65EG, 45EG (IB)					
⚠ A5	VQT2H94	OPERATING INSTRUCTIONS	1	65EB, 45EB (IC)					
⚠ A5	VQT2H95	OPERATING INSTRUCTIONS	1	65EF, 45EF (ID)					
⚠ A5	VQT2H97	OPERATING INSTRUCTIONS	1	45EE (IE)					
A6	VFF0537	CD-ROM	1	65EG, 45EG					
PC1	RPFD0009	POLYETHYLENE BAG	1	65EG, 45EG					
PC1	RPFD0008	POLYETHYLENE BAG	1	65EB,EF, 45EB,EE,EF					
PC2	RPQ2627	PAD	1						
PC3	RPF0488	MIRAMAT BAG	1						
PC4	RPG9025	PACKING CASE	1	65EGK					
PC4	RPG9059	PACKING CASE	1	65EGS					
PC4	RPG9061	PACKING CASE	1	65EBK					
PC4	RPG9060	PACKING CASE	1	65EFK					
PC4	RPG9026	PACKING CASE	1	45EGK					
PC4	RPG9063	PACKING CASE	1	45EBK					
PC4	RPG9027	PACKING CASE	1	45EEK					
PC4	RPG9062	PACKING CASE	1	45EFK					
PC5	RPN2148-J	CUSHION	1						
PC7	XZB15X30A04Z	POLYETHYLENE BAG	1						

S8. Exploded View

S8.1. Frame and Casing Section

S8.2. Mechanism Section

S8.3. Packing Parts and Accessories Section