

Panasonic®**ORDER NO.CHM1104019CE**

Service Manual

Blu-ray Disc Player

Model No. **DMP-BDT110GA**
DMP-BDT110GC
DMP-BDT110GN
DMP-BDT110GT
DMP-BDT110GW
DMP-BDT110PU
DMP-BDT110PX

Colour

Vol. 1

(K).....Black Type



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Contact Information
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1. This product includes software developed by the OpenSSL Project for use in the OpenSSL Toolkit.
(<http://www.openssl.org/>)
2. This product includes software developed by the University of California, Berkeley and its contributors.
3. FreeType code.
4. The Independent JPEG Group's JPEG software.

 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.

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1 Safety Precautions

1.1 General guidelines

1. 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.
2. After servicing, see to it that all the protective devices such as insulation barriers, insulation papers shields are properly installed.
3. After servicing, make the following leakage current checks to prevent the customer from being exposed to shock hazards.

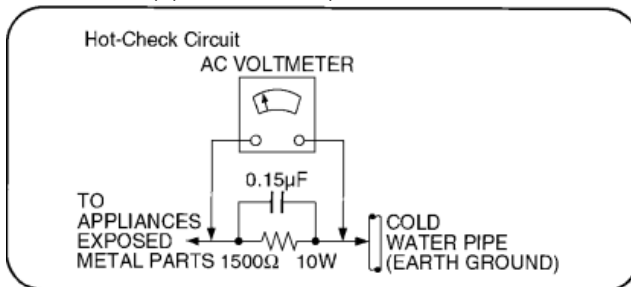
1.1.1 Leakage current cold check

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 1M Ω and 5.2M Ω .

When the exposed metal does not have a return path to the chassis, the reading must be ∞ .

1.1.2 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 1.5k Ω , 10 watts resistor, in parallel with a 0.15 μ F capacitors, between each exposed metallic part on the set and a good earth ground such as a water pipe, as shown in Figure 1.
3. Use an AC voltmeter, with 1000 ohms/volt 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 volts 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 milliamper. 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.



1.2 Caution for fuse replacement

(For English)

CAUTION:

Replace with the same type fuse:
(Manufacturer: Hollyland, Type: SCT, T2A, 250V)

(For Canadian French)

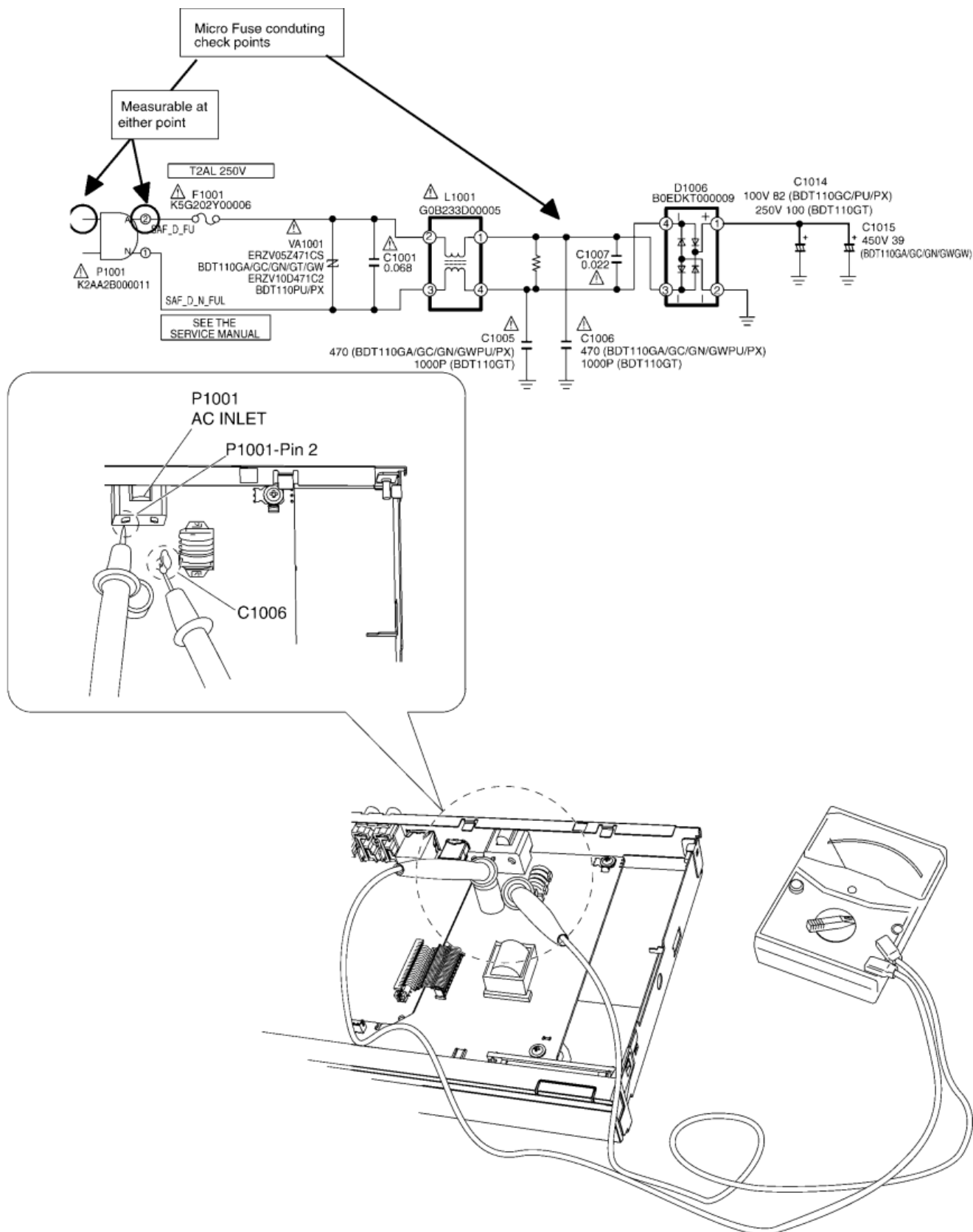
ATTENTION:

Utiliser un fusible de rechange de même type:
(Fabricant: Hollyland, Type: SCT, T2A, 250V)

1.2.1 Micro Fuse conducting check

This unit uses the Micro Fuse.

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



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-ampere and that 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 dealer.

CAUTION!

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 SAFELY.
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 stated below.

If in any doubt please consult a qualified electrician.

IMPORTANT

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

Blue: Neutral, Brown: Live.

As these colours 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 which is marked with the letter N or coloured Black or Blue.

The wire which is coloured Brown must be connected to the terminal which is marked with the letter L or coloured Brown or Red.

WARNING: DO NOT CONNECT EITHER WIRE TO THE EARTH TERMINAL WHICH IS MARKED WITH THE LETTER E, BY THE EARTH SYMBOL  OR COLOURED GREEN OR GREEN/YELLOW.

THIS PLUG IS NOT WATERPROOF—KEEP DRY.

Before use

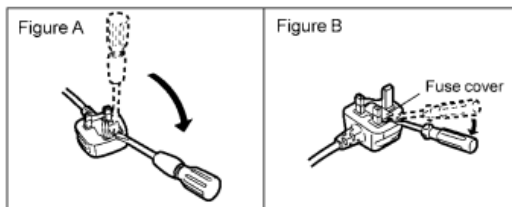
Remove the connector cover.

How to replace the fuse

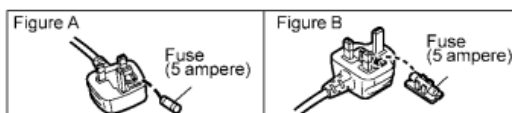
The location of the fuse differ according to the type of AC mains plug (figures A and B). Confirm the AC mains plug fitted and follow the instructions below.

Illustrations may differ from actual AC mains plug.

1. Open the fuse cover with a screwdriver.



2. Replace the fuse and close or attach the fuse cover.



2 Warning

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

Some semiconductor (solid state) devices can be damaged easily by static electricity. Such components commonly are called Electrostatic Sensitive (ES) Devices. Examples of typical ES devices are integrated circuits and some field-effect transistors and semiconductor "chip" components. The following techniques should be used to help reduce the incidence of component damage caused by 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 anti-static solder removal device. Some solder removal devices not classified as "anti-static (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 sufficient to damage an ES device).

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, 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.

2.2 Precaution of Laser Diode

CAUTION:

This product utilizes a laser diode with the unit turned "on", invisible laser radiation is emitted from the pickup lens.

Wave length: 790 nm (CDs)/ 655 nm (DVDs)/ 405 nm (BDs)

Maximum output radiation power from pickup: 100 μ W/VDE

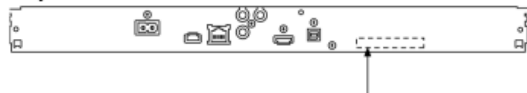
Laser radiation from the pickup lens is safety level, but be sure the followings:

1. Do not disassemble the optical pickup unit, since radiation from exposed laser diode is dangerous.
2. Do not adjust the variable resistor on the pickup unit. It was already adjusted.
3. Do not look at the focus lens using optical instruments.
4. Recommend not to look at pickup lens for a long time.

Only for BDT110GA/GC/GN/GT/GW/PU



Only for BDT110PX



Product complies with DHHS Rules 21 CFR Subchapter J in effect at date of manufacture. Panasonic Corporation
Kadoma, Osaka, Japan

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.

ACHTUNG:

Dieses Produkt enthält eine Laserdiode.

Im eingeschalteten Zustand wird unsichtbare Laserstrahlung von der Lasereinheit abgestrahlt.

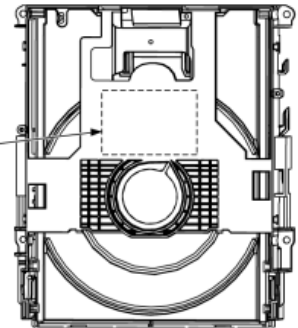
Wellenlänge: 790 nm (CDs)/ 655 nm (DVDs)/ 405 nm (BDs)

Maximale Strahlungsleistung der Lasereinheit: 100 μ W/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.

CAUTION -	VISIBLE AND INVISIBLE LASER RADIATION WHEN OPEN. DO NOT STARE INTO BEAM. (PDA 21 CFR 101.10.1.1.1.1)
CAUTION -	CLASS 1 LASER PRODUCT. LASER RADIATION WHEN OPEN. DO NOT VIEW DIRECTLY WITH OPTICAL INSTRUMENTS. (CLASS 1 LASER CLASS 1)
ATTENTION -	NE PAS REGARDER DIRECTEMENT A LAISSE D'INSTRUMENTS OPTIQUES. NE PAS REGARDER DIRECTEMENT A LAISSE D'INSTRUMENTS OPTIQUES.
FORSIGTIG -	SYNSUG OG USTYRIG LASERSTRÅLING KLASSE 1M. NÅR LASET ER ÅBENT, UNDDÅ AT SE LIGE PÅ MED OPTISKE INSTRUMENTER.
VARO -	KÄRTÄLLÖSÄ OLET ALTTERIN LUOKAN 1M NÄKYMÄ JA NÄKYMÄNÖNÄ LASERSTRÄLÄ.
VARO -	KÄRTÄLLÖSÄ OLET ALTTERIN LUOKAN 1M NÄKYMÄ JA NÄKYMÄNÖNÄ LASERSTRÄLÄ.
VARNING -	KLASSE 1M SYNSUG OG USTYRIG LASERSTRÅLING KLASSE 1M. NÅR LASET ER ÅBENT, UNDDÅ AT SE LIGE PÅ MED OPTISKE INSTRUMENTER.
VORSICHT -	BECHTBARE UND UNSICHTBARE LASERSTRÄHLUNG KLASSE 1M. WENN ABDECKUNG GEÖFFNET, NICHT DIREKT MIT OPTISCHEN INSTRUMENTEN BETRACHTEN.
注意 -	行方時有可及及不可見光線。避免光線照射。
注意 -	この製品は、レーザー光線（可視光線）を放射します。レーザー光線に直接見ると、目や皮膚にダメージを与える可能性があります。レーザー光線に直接見ると、目や皮膚にダメージを与える可能性があります。



2.3 Service caution based on legal restrictions

2.3.1 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 degrees C (86°F) more than that of the normal solder.

Definition of PCB Lead Free Solder being used

The letter of "PbF" is printed either foil side or components side on the PCB 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 PCB 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 PCB 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 degrees 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%

3 Service Navigation

3.1 Service Information

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 Digital P.C.B..

* Parts List for individual parts of Digital P.C.B..

3.2 Combination of Multiple Pressing on the Remote Control

Press multi-buttons (in combination) on the remote control simultaneously for operations, such as initialization or service mode, etc.

There are no multiple pressing functions on the previous remote controls, thus, please be sure to use the supplied remote control.

3.3 Entering Special Modes with Combination of Multiple Pressing on the Remote Control

Enter the following special modes by multiple pressing functions on the supplied remote control.

After entering each mode, switch to the desired menus for operation.

Disclosure mode	Nondisclosure mode 1	Nondisclosure mode 2
[OK] [Blue] [Yellow]	[6] [7] [Yellow]	[5] [9] [Red]
		

◆ **Menu switch:** ↓ mark.

Right cursor (remote control),
or
[Power] (main unit)

◆ **Operating menu:**

[OK] (remote control)
or
[O/C] (main unit)

※ Release from special modes automatically after the operation.

◆ **Release from special modes:**

- Press other buttons in no connection with the above operations.
- No operation for over 2 min.
- Press and hold [Power] on main unit (forced to turn off).

3.3.1 Disclosure mode (Combination of multiple pressing: [OK] [Blue] [Yellow])

Press and hold [OK] [Blue] [Yellow] on the remote control simultaneously for 5 sec., then "00 RET" is displayed on FL display window.

Power	Disc	FL display	Key operation	Function	Remarks
OFF	Yes/No	00 RET	No	No	
		↓			
		06 FT0	OK	Force tray open	When O/C button is invalid, the tray of BD Drive is forced to open. If the tray still cannot be opened in this mode, please refer to "6.1.2 When the Forcible Disc Eject can not be done " in Vol.1.
		↓			
		08 FIN	OK	Reset to factory default setting	Reset all to factory default settings, including Quick Start and Network related settings.
ON	Yes/No	00 RET	No	No	
	No	↓			
		03 VL	OK	Release from BD/DVD video play restriction	Release from the aging restriction on BD video and DVD video play.
		↓			
	Yes/No	04 PRG	OK (Press and hold)	Progressive initialization	Initialize the progressive settings, and switch to the interlaced display. Press and hold [Stop] (not [OK])(on the remote control or main unit) to switch to 10 OCL (setting shop lock mode)
	Yes/No	↓			
		07 DC	OK (Press and hold)	Deep Color initialization	Initialize Deep Color.
	Yes	10 OCL	OK	Shop lock mode setting/release ([O/C] is invalid/valid, while setting/release this mode.)	When 04 PRG is displayed, press and hold [Stop] (on the remote control or main unit) to switch to other displays. Press [OK] to only lock the tray switch. * Even turn ON/OFF the power, it is still in locking.
	Yes	↓			
		11 TFS	OK (Press and hold)	Touch Free Sensor ON/OFF	Setting to "ON" enables the tray to open/close with the Touch Free Sensor.

3.3.2 Nondisclosure mode 1 (Combination of multiple pressing: [6] [7] [Yellow])

Press and hold [6] [7] [Yellow] on the remote control simultaneously for 5 sec., then [50 RET] is displayed on FL display window.

Power	Disc	FL display	Key operation	Function	Remarks
ON	No	50 RET	No	No	
		↓			
		51 NOP	OK	No	When "51 NOP" is displayed, press and hold [Stop] (on the remote control or main unit) to switch to "52 BRE" (delete BD-ROM history settings)
		52 BRE	OK	BD-ROM history delete	When "51 NOP" is displayed, press and hold [Stop] (on the remote control or main unit) to switch to other displays. Press [OK] to delete BD video history.

3.3.3 Nondisclosure mode 2 (Combination of multiple pressing: [5] [9] [Red])

Press and hold [5] [9] [Red] on the remote control simultaneously for about 5 sec., then "70 RET" is displayed on FL display window.

Power	Disc	FL display	Key operation	Function	Remarks
OFF	Yes/No	70 RET	No	No	
		↓			
		80 SRV	OK	Switch to service mode	Press [OK], then "HELLO" is displayed, and wait about 30 sec. until "SERV" is displayed.
		↓			
		83 SDI	OK	CD/SD Diag	Do not apply in normal service.
ON	Yes/No	↓			
		91 SPD	OK	Special display	Do not apply in normal service.
		↓			
		92 F99	OK	F99 Validate/Invalidate switch	Do not apply in normal service.
		70 RET	No	No	
		↓			
		81 AIG	OK	Switch to aging mode	
		↓			
		83 SDI	OK	CD/SD Diag	Do not apply in normal service.
		↓			
		91 SPD	OK	Special display	Do not apply in normal service.
		↓			
		92 F99	OK	F99 Validate/Invalidate switch	Do not apply in normal service.

4 Specifications

Power supply:	AC220-240V, 50/60Hz (BDTGA/GC) AC220-240V, 50Hz (BDT110GN) AC110V, 60Hz (BDT110GT) AC110-240V, 50/60Hz (BDT110PU/PX)
Power consumption:	Approx. 11W (BDT110GA/GC/GN) Approx. 9.9W (BDT110GT) Approx. 13W (BDT110PU/PX)
in standby mode:	Approx. 0.2W (BDT110GA/GC/GN/PU/PX) Approx. 0.1W (BDT110GT)
in quick start standby mode:	Approx. 3.3W (BDT110GA/GC/GN) Approx. 3.2W (BDT110GT) Approx. 3.5W (BDT110PU/PX)
Operating temperature range:	+5°C to +35°C(+41 to +95°F)
Operating humidity range:	10% - 80%RH (no condensation)
Signal system:	PAL/NTSC (BDT110GA/GC/GN/GT) NTSC (BDT110PU/PX)
Video output:	
output level:	1.0Vp-p (75Ω)
output connector:	Pin jack (1 System)
Video performance:	
Horizontal resolution:	More than 500 lines
Video S/N ratio:	More than 65dB
Audio output:	
output level:	2 Vrms (1kHz, 0dB)
output connector:	Pin jack
number of connector:	2 channel 1 system
Audio performance:	
Frequency response:	
DVD(linear audio):	4Hz-22kHz (48kHz sampling) 4Hz-44kHz (96kHz sampling)
CD-Audio:	4Hz-20kHz
S/N ratio:	100dB
Dynamic range:	100dB
Total harmonic distortion:	0.004%
Digital audio output:	
Optical digital output:	Optical terminal
HDMI AV output:	
Output connector:	TypeA (19pin) 1 system
SD card slot:	
Connector:	1 system

USB slot:

USB2.0: 2 system
(BDT110GA/GN/GT/PU/PX)
1system
(BDT110GC)

Ethernet:

10BASE-T/100BASE-TX: 1 system

Regional Code: DVD: #3 (BDT110GA/GT)
DVD: #2 (BDT110GC) DVD: #4 (BDT110GN/PU) DVD: #1 (BDT110PX)
BD: Region A(BDTGA/GT/PU/PX)
BD: Region B(BDTGC/GN)

Media:**Playable discs:**

BD-Video (Blu-ray 3D, BD-ROM Version 2.4

BD-LIVE,

BONUSVIEW):

BD-RE: Version3 (Single Layer/Dual Layer), JPEG, MPO

BD-R: Version2 (Single Layer/Dual Layer), DivX(BDTGA/GC/GN/GT/PU *4, *5, *6), MKV(*4, *6, *7)

DVD-R: DVD-Video format (*1), DVD Video Recording format(*1), AVCHD format(*1), JPEG(*2), MPO(*2), MP3(*2), DivX(BDTGA/GC/GN/GT/PU *2, *3, *5, *6), MKV(*2, *3, *6, *7)

DVD-R DL: DVD-Video format (*1), DVD Video Recording format(*1), AVCHD format(*1), JPEG(*2), MPO(*2), MP3(*2), DivX(BDTGA/GC/GN/GT/PU *2, *3, *5, *6), MKV(*2, *3, *6, *7)

DVD-RW: DVD-Video format (*1), DVD Video Recording format(*1), AVCHD format(*1)

+R: Video(*1), AVCHD format(*1)

+R DL: Video(*1), AVCHD format(*1)

+RW: Video(*1), AVCHD format(*1)

DVD-Video: DVD-Video format

CD-Audio: CD-DA

CD-R/CD-RW: CD-DA, JPEG(*2), MPO(*2), MP3(*2), DivX(BDTGA/GC/GN/GT/PU *2, *5, *6), MKV(*2, *6, *7)

*1: Finalizing is necessary.

*2: ISO9660 level1 or 2(except for extended formats), Joliet.

This unit is compatible with multi-session.

This unit is not compatible with packet writing.

*3: UDF1.02 without ISO9660, UDF1.5 with ISO9660.

*4: UDF2.5.

*5: DivX Certified to play Divx video up to HD 1080p, including premium content.

GMC(Global Motion Compensation) is not supported.

*6: Maximum number of folders recognizable:300 folders.

(including the root folder)

Maximum number of files recognizable:200 files.

*7: MPEG-4 AVC (H.264) profile is up to High Profile, Level 4.

AAC-LC, MP3, Dolby Digital audio, DTS and PCM can be decoded.

SD card: SD Memory Card(*8) formatted FAT12, FAT16, FAT32(*9), exFAT(*10), JPEG, MPO, AVCHD format, MPEG-2

*8: includes SDHC, SDXC card.

includes miniSDTM Cards(need a miniSDTM Adaptor.)

includes microSDTM/microSDHC/microSDXC Cards(need a microSDTM Adaptor.)

*9: Not support long file name

*10: SDXC only.

USB device:

USB Standard: USB2.0 High Speed

Format: FAT12, FAT16, FAT32, MP3, JPEG, MPO, MKV, DivX(BDT110GA/GC/GN/GT/GW)

Contents:**JPEG:**

SD card, CD-R/RW, BD-RE, DVD-R, USB device:

Pixels: 34x34~8192x8192
 Sub Sampling: 4:2:2, 4:2:0
 Motion JPEG not supported
 SD card: JPEG conforming DCF(Design rule for Camera File system)
 Thawing Time: approx.2sec (7M pixels.)
 Maximum numbers of folders and files:

	CD	SD card	BD-RE	DVD-R	USB device
Maximum folders	500	500	500	500	500
Maximum files(*11)	10000	10000	10000	10000	10000

*11: Total of the JPEG and MPO

MP3:

CD-R, CD-RW, DVD-R, USB device:
 Compression rate: 32kbps~320kbps
 Sampling rate: 44.1kHz, 48kHz

AVCHD (H.264):

SD card, DVD: AVCHD format V1.0

HDMI: 480p(525p)/576p(625p)(BDT110GA/GC/GN/GT)/1080i(1125i)/720p(750p)/1080p(1125p)
 HDMI (V.1.4a with 3D, Content Type)
 (This unit supports "HDAVI Control 5" function.)

LASER Specification:

Class I LASER

Product:

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

Dimensions:

430mm(W) [Approx. 16 15/16"(W)]
 35mm(H) [Approx. 1 7/16"(H)]
 179mm(D) [Approx. 7 1/16"(D)](excluding the projecting parts)
 185mm(D) [Approx. 7 5/16"(D)](including the projecting parts)

Mass: Approx. 1.6 kg (3.52 lbs)

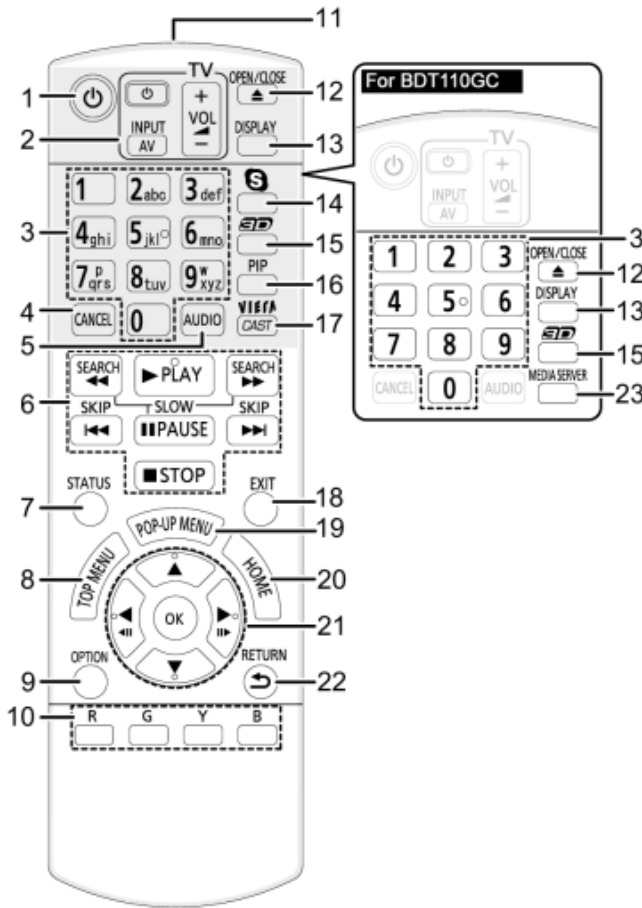
Solder: This model uses lead free solder(PbF).

Note: Specifications are subject to change without notice.

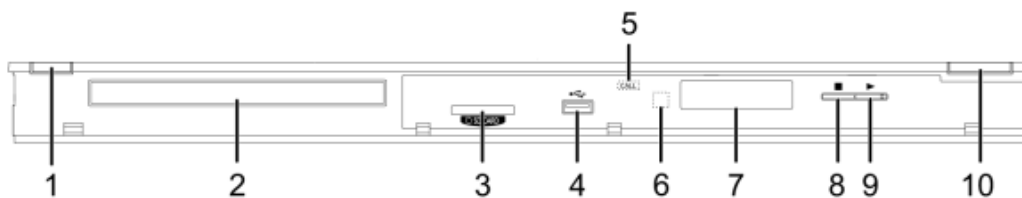
5 Location of Controls and Components

Control reference guide

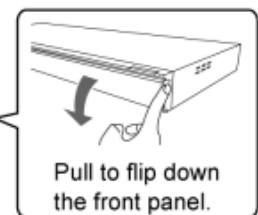
Only for BDT110GA/GC/GN/GT/GW



- 1 Turn the unit on and off
- 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
- 3 **Except for BDT110GC**
Select title numbers, etc./Enter numbers or characters
For BDT110GC
Select title numbers, etc./Enter numbers
- 4 Cancel
- 5 Select audio
- 6 Basic playback control buttons
- 7 Show status messages
- 8 Show Top menu/DIRECT NAVIGATOR
- 9 Show OPTION menu
- 10 Coloured buttons (red, green, yellow, blue)
These buttons are used when;
 - Operating a BD-Video disc that includes Java™ applications (BD-J).**Except for BDT110GC**
 - Operating contents of VIERA CAST
- 11 Transmit the remote control signal
- 12 Open or close the disc tray
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 malfunction.
- 13 Show playback menu
- 14 **Except for BDT110GC**
Start up a video communication
- 15 Set up 3D effects
- 16 **Except for BDT110GC**
Switch on/off Secondary Video (Picture-in-picture)
- 17 **Except for BDT110GC**
Displays the Home screen of the VIERA CAST
- 18 Exit the menu screen
- 19 Show Pop-up menu
- 20 Show HOME menu
- 21 Selection/OK, Frame-by-frame
- 22 Return to previous screen
- 23 **For BDT110GC** Start up the DLNA function

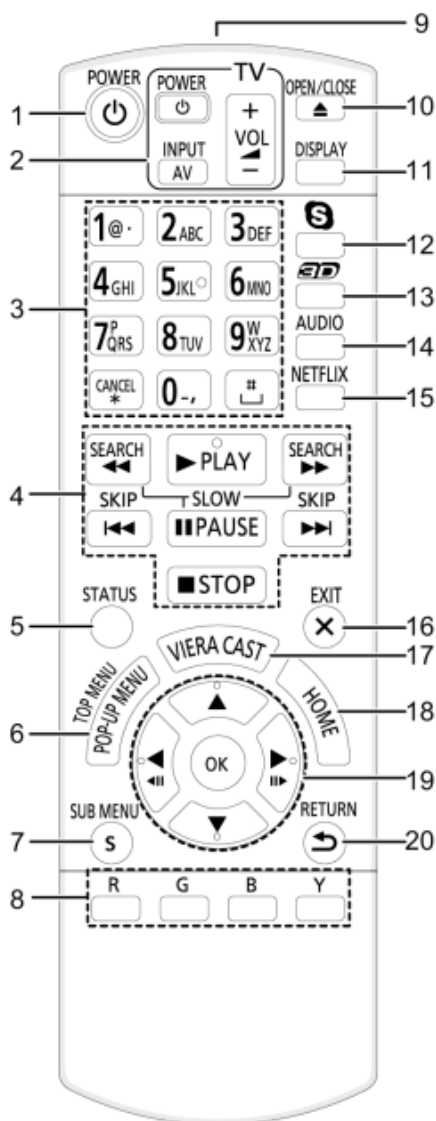


- 1 **Standby/on switch (⏻/⏻)**
Press to switch the unit from on to standby mode or vice versa. In standby mode, the unit is still consuming a small amount of power.
- 2 Disc tray
- 3 SD card slot
- 4 USB port
- 5 **Except for BDT110GC**
CALL LED
The LED will light up when this unit receives incoming call etc. of the video communication
- 6 Remote control signal sensor
Distance: Within approx. 7 m
Angle: Approx. 20° up and down, 30° left and right
- 7 Display
- 8 Stop
- 9 Start play
- 10 Open or close the disc tray



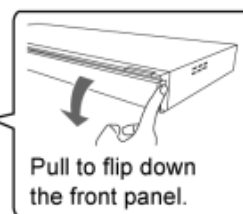
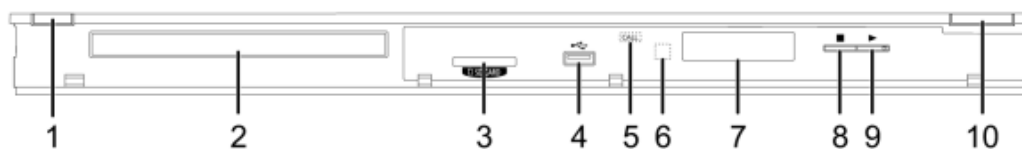
Control reference guide

Only for BDT110PU/PX



- 1 Turn the unit on and off
- 2 TV operation buttons
You can operate the Panasonic TV through the unit's remote control. (Depending on the TV these buttons may not work.)
[TV POWER] : Turn the television on and off
[AV] : Switch the input select
[+ - VOL] : Adjust the volume
- 3 Select title numbers, etc./Enter numbers or characters

[CANCEL] : Cancel
- 4 Basic playback control buttons
- 5 Show status messages
- 6 Show Pop-up menu/Top menu/Direct Navigator
- 7 Show sub menu
- 8 These buttons are used when;
 - Operating a BD-Video disc that includes Java™ applications (BD-J).
 - Operating contents of VIERA CAST.
- 9 Transmit the remote control signal
- 10 Open or close the disc tray
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 malfunction.
- 11 Show Playback menu
- 12 Start up a video communication
- 13 Setup 3D effects
- 14 Select audio
- 15 Show NETFLIX screen
- 16 Exit the menu screen
- 17 Displays the Home screen of the VIERA CAST
- 18 Show HOME menu
- 19 Selection/OK, Frame-by-frame
- 20 Return to previous screen



- 1 **POWER button (POWER ⏻/⏻)**
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 SD card slot
- 4 USB port
- 5
- 6 Remote control signal sensor
Distance: Within approx. 7 m (23 feet)
Angle: Approx. 20° up and down, 30° left and right
- 7 Display
- 8 Stop
- 9 Start play
- 10 Open or close the disc tray

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 Forcible Disc Eject

6.1.1.1 When the power can be turned off.

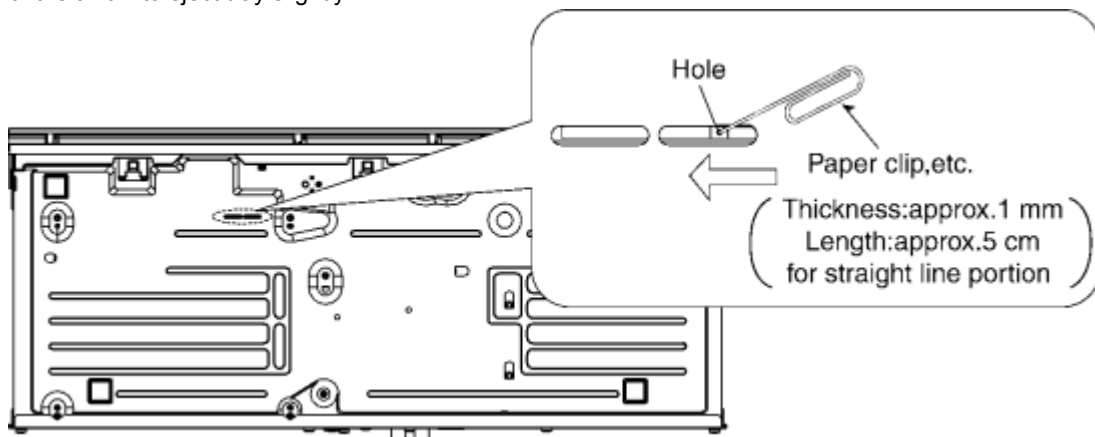
1. Turn off the power, press and hold [OK], [B] and [Y] on the remote control at the same time for more than 5 seconds.
-"00 RET" is displayed on the unit's display.
2. Repeatedly press [▶] on the remote control or [POWER] on the unit until "06 FTO" is displayed on the unit's display.
3. Press [OK] on the remote control or [OPEN/CLOSE] on the unit.

6.1.1.2 When the power can not be turned off.

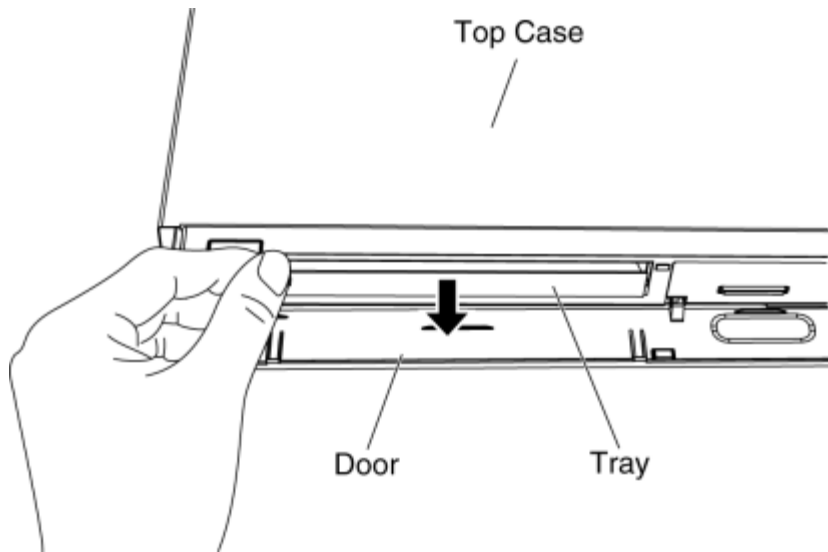
1. Press [POWER] key on the front panel for over 4 seconds to turn off the power forcibly, press and hold [OK], [B] and [Y] on the remote control at the same time for more than 5 seconds.
-"00 RET" is displayed on the unit's display.
2. Repeatedly press [▶] on the remote control or [POWER] on the unit until "06 FTO" is displayed on the unit's display.
3. Press [OK] on the remote control or [OPEN/CLOSE] on the unit.

6.1.2 When the Forcible Disc Eject can not be done.

1. Turn off the power and pull out AC cord.
2. Put deck so that bottom can be seen.
3. Insert the Paper clip, 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.



4. Put deck upward, and pick out Tray by finger.



7 Service Mode

7.1 Self-Diagnosis and Special Mode Setting

7.1.1 Self-Diagnosis 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 latest error code by transmitting [0] [1] of Remote Controller 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.

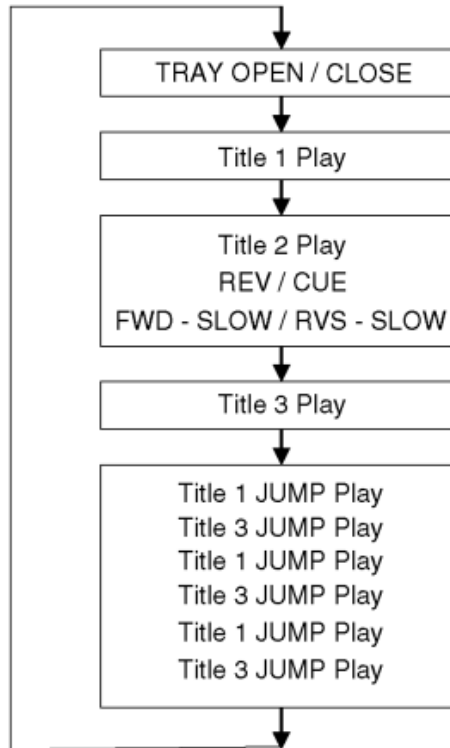
Error Code	Diagnosis contents	Description	Monitor Display	Automatic FL display
U30	Remote control code error	Display appears when main unit and remote controller codes are not matched.	No display	SET * * is remote controller code of the main unit. Display for 5 seconds.
U59	Abnormal inner temperature detected	Display appears when the drive temperature exceeds 70°C. The power is turned off forcibly. For 30 minutes after this, all key entries are disabled. The event is saved in memory as well.	No display	U59 "U59" is displayed for 30 minutes.
U71	HDMI incompatible error (HDMI incompatible)	Display this error when the equipment (compatible with DVI such as TV, amplifier etc.) connected to the unit by HDMI is incompatible with HDCP (High-bandwidth Digital Content Protection).	No display	U71
U72	HDMI connection error (communication error)	Display this error when there are any communication problems with the unit and the equipments (TV, amplifier ect.) connected to the unit by HDMI. (or when there is a problem with the HDMI cable). The display disappears only when the connection is released. Neither the button operation nor the passage of the fixed time disappear the display.	No display	U72 "U72" display disappears when error has been solved by Power OFF/ON of connecting equipment or by inserting/removing of HDMI cable.
U73	HDMI connection error (authentication error)	When authentication error occurs while the equipments (TV, amplifier etc.) are connected by HDMI. (or when there is a problem with the HDMI cable) The display disappears only when the connection is released. Neither the button operation nor the passage of the fixed time disappear the display.	No display	U73 "U73" display disappears when error has been solved by Power OFF/ON of connecting equipment or by inserting/removing of HDMI cable.
U76	Connection error	This error is displayed when equipment such as TVs or amplifiers connected to the unit with the HDMI cable do not correspond to the copyright protection. (The BD/DVD video where the copyright is protected cannot be played.)	No display	U76
U77	Illegal disc error	This error is displayed when it becomes impossible to reproduce because of copyright illegal information.	No display	U77
U88	Restoration is operation. (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 main unit operation normally is operating. It becomes possible to use as soon as not the breakdown but the U88 display disappears.	No display	U88 Display for 30 seconds.

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 display	No display
F34	Initialization error	When initialization error is detected after starting up main microprocessor, the power is turned off automatically. The event is saved in memory.	No display	No display
F58	Drive hardware error	When drive unit error is detected, the event is saved in memory.	No display	No display
F74	HDMI Device Key Communication error	This error is displayed when the information error is occurred at HDMI device key loading.	No display	F74
F75	HDMI Device Key Loading error	This error is displayed when the key of loaded is illegal at HDMI device key loading.	No display	F75
F99	Hang-up	Displayed when communication error has occurred between Main microprocessor and Timer microprocessor.	No display	F99 "F99" is displayed until the [POWER] key is pressed.
UNSUPPORT	Unsupported disc error	*An unsupported format disc was played, although the drive starts normally. *The data format is not supported, although the media type is supported. *Exceptionally in case of the disc is dirty.	"This disc is incompatible."	UNSUPPORT It is displayed for 5 seconds. The character indication flows sideways.
NO READ	Disc read error	*A disc is flawed or dirty. *A poor quality failed to start. *The track information could not be read.	"Cannot read. Please check the disc."	No READ
HARD ERR	Drive error	The drive detected a hard error.	"BD drive error."	HARD ERR It is display for 5 seconds. The character indication flows sideways.
SELF CHECK	Restoration operation	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.	No display	SELF CHECK The character indication flows sideways.
UNFORMAT	Unformatted disc error	This error is displayed when the unformatted DVD-RAM or DVD-RW recorded by another make of recorder is inserted.	No display	UNFORMAT This disc is not formatted properly. Format the disc in DISC MANAGEMENT?
PLEASE WAIT	Unit is in termination process	Unit is in termination process now. [BYE] is displayed and power will be turned off.	No display	PLEASEWAIT The character indication flows sideways.
No PLAY	When there is a viewing restriction on a BD-Video or DVD-Video.	Rating password is set.	No display	No PLAY

7.1.2 Special Modes Setting

Item		FL display	Key operation
Mode name	Description		Front Key
Rating password	The audiovisual level setting password is initialized to Level 8 .		① While the unit is on, press and hold [OK], [B] and [Y] on the remote control at the same time for more than 5 seconds. - "00 RET" is displayed on the unit's display.

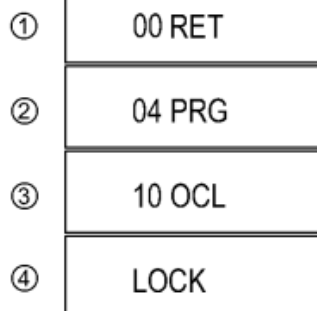
		① 00 RET ② 03 VL ③ INIT	② Repeatedly press [▶] on the remote control or [POWER] on the unit until "03 VL" is displayed on the unit's display. ③ Press [OK] on the remote control or [OPEN/CLOSE] on the unit.
Service Mode	Setting every kind of modes for servicing. *Details are described in 7.1.3. (BD) Service Mode at a glance .	② 70 RET ③ 80 SRV ④ HELLO – SERV	① Turn the power off. ② Press the [5] [9] and [R] button simultaneously for five seconds, then [70 RET] is displayed on FL. ③ Press the [▶] button to select until [80 SRV] is displayed on FL. ④ Press the [OK] button . *The command is transmitted by attached remote control.
BD-ROM history cleaning	< Persistent Storage> of BD-ROM standard is cleaned. Screen display: [The player's history data has been cleared.] is displayed for five seconds.	① 50 RET ② 51 NOP ③ 52 BRE	① When the power is on, disc is not in tray, press and hold [6], [7] and [Y] on the remote control at the same time for more than 5 seconds. - "50 RET" is displayed on the unit's display. ② Repeatedly press [▶] on the remote control or [POWER] on the unit until "51 NOP" is displayed on the unit's display. ③ Press and hold [STOP] on the remote control until "52 BRE" is displayed on the unit's display. ④ Press [OK] on the remote control or [OPEN/CLOSE] on the unit.
Forced disc eject	Removing a disc that cannot be ejected. The tray will open and unit will shift to P-off mode. While Demonstration Lock is being set, this Forced disc eject function is not accepted.	① 00 RET ② 06 FTO	① While the unit is off, press and hold [OK], [B] and [Y] on the remote control at the same time for more than 5 seconds. - "00 RET" is displayed on the unit's display. ② Repeatedly press [▶] on the remote control or [POWER] on the unit until "06 FTO" is displayed on the unit's display. ③ Press [OK] on the remote control or [OPEN/CLOSE] on the unit.
Forced power-off	When the power button is not effective while power is ON, turn off the power forcibly.	Display in P-off mode.	Press [POWER] key over than 10 seconds.
Aging	Perform sequence of modes as * Aging Description shown below continually.	Display following the then mode.	① Turn the power on. ② Press the [5] [9] and [R] button simultaneously for five seconds, then [70 RET] is displayed on FL. ③ Press the [▶] button to select until [81 AIG] is displayed on FL. ④ Press the [OK] button . *The command is transmitted by attached remote control. NOTE1: If the unit has hung-up because of pressing keys for over 10 seconds, once turn off the power, and re-execute this command. *When releasing Aging mode, press [POWER] key over 4 seconds.

Aging Contents (Example):

Demonstration
lock/unlock

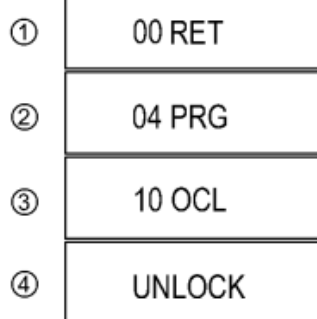
Ejection of the disc is prohibited.
The lock setting is effective until
unlocking the tray and not
released by [Main unit](#)
[initialization](#) of service mode.

*When lock the tray.



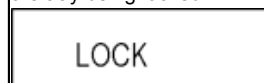
"LOCK" is displayed for 3 seconds.

*When unlock the tray.



"UNLOCK" is displayed for 3 seconds.

*When press [OPEN/CLOSE] key while
the tray being locked.



Display "LOCK" for 3 seconds.

- ① When the power is on, disc is in tray, press and hold [OK], [B] and [Y] on the remote control at the same time for more than 5 seconds. - "00 RET" is displayed on the unit's display.
- ② Repeatedly press [▶] on the remote control or [POWER] on the unit until "04 PRG" is displayed on the unit's display.
- ③ Press and hold [STOP] on the remote control until "10 OCL" is displayed on the unit's display.
- ④ Press [OK] on the remote control or [OPEN/CLOSE] on the unit.

- ① When the power is on, disc is in tray, press and hold [OK], [B] and [Y] on the remote control at the same time for more than 5 seconds. - "00 RET" is displayed on the unit's display.
- ② Repeatedly press [▶] on the remote control or [POWER] on the unit until "04 PRG" is displayed on the unit's display.
- ③ Press and hold [STOP] on the remote control until "10 OCL" is displayed on the unit's display.
- ④ Press [OK] on the remote control or [OPEN/CLOSE] on the unit.

Press [OPEN/CLOSE] key while the tray is being locked.

Progressive initialization	The progressive setting is initialized to Interlace.	① 00 RET ② 04 PRG	① When the power is on, press and hold [OK], [B] and [Y] on the remote control at the same time for more than 5 seconds. - "00 RET" is displayed on the unit's display. ② Repeatedly press [▶] on the remote control or [POWER] on the unit until "04 PRG" is displayed on the unit's display. ③ Press and hold [OK] on the remote control or [OPEN/CLOSE] on the unit.
Default setting	The date of Menu, Mode and EEPROM setting, etc. is set to the default condition in factory.	① 00 RET ② 08 FIN ③ HELLO "HELLO" is displayed 10 seconds.	① While the unit is off, press and hold [OK], [B] and [Y] on the remote control at the same time for more than 5 seconds. - "00 RET" is displayed on the unit's display. ② Repeatedly press [▶] on the remote control or [POWER] on the unit until "08 FIN" is displayed on the unit's display. ③ Press and hold [OK] on the remote control or [OPEN/CLOSE] on the unit for at least 3 seconds.

7.1.3 Service Modes at a glance

Information necessary for service can be displayed.

Service mode setting:

1. Turn the power off.
2. Press the [5] [9] and [R] button simultaneously for five seconds, then [70 RET] is displayed on FL.
3. Press the [▶] button to select until [80 SRV] is displayed on FL.
4. Press the [OK] button.
5. It is displayed on FL as [HELLO-->SERV].: It is shown to have entered the service mode.
6. The command is transmitted by attached remote control.

Method of making clear service mode: Press the power button (power off).

The display of information to each command is as follows.

NOTE:

Do not use it excluding the designated command.

Item		FL display	Key operation
Mode name	Description		(Remote controller key)
Release Items	Item of Service Mode executing is cancelled.	SERV_	Press [0] [0] or [Return] in service mode.
Error Code Display	Last Error Code of U/F held by Timer is displayed on FL. *Details are described in 7.1.1. Self-Diagnosis Functions .	⊙○○ *⊙shows U/F. ○○shows number. If any error history dose not exist, [F00] is displayed.	Press [0] [1] in service mode
ROM Version Display	The display contents are switched over every 5 seconds. 1. Region code 2. Main firm version 3. Timer firm version 4. Drive firm version 5. ROM correction version 6. BOO2 version 7. BOO3 version		Press [0] [2] in service mode

		1. NO_\$% \$: Region of DVD (Example: 1,2.....) %: Region of BD (Example: A,B.....) 2. **** 3. # # O**** # #: Timer firm version O: OEM ****: Product number of microcomputer 4. **** 5. *** 6. *** 7. ***	
Drive application check	Checking whether the drive is applicable drive or not.	When the drive is applicable drive. DRV OK When the drive is not applicable drive. DRV NG	Press [0] [3] in service mode.
Drive Check	Simple quality of BD drive	When BD drive is OK and a drive error is not stored in EEPROM. DRV OK When BD drive is NG or drive errors are stored in EEPROM. DRV NG *If the date of the present or the trouble occurred time is incorrect, it may be not able to judge correctly.	Press [3][8] in service mode.
Laser Used Time Indication	Check laser used time (hours) of drive.		Press [4] [1] in service mode.

		Laser used time: BD Playback BP**** Laser used time: BD Recording BR**** Laser used time: DVD Playback DP**** Laser used time: DVD Recording DR**** Laser used time: CD Playing CD**** ● (****) is the used time display in hour. ● Laser used time of BD/ DVD/ CD in Playback/Recording mode is counted.	
BD drive last error	BD drive error code display.	1. Error Number is displayed for 5 seconds. NO** 2. Time when the error has occurred is display for 5 seconds. YYMMDD YY: Year MM: Month DD: Date 3. Last drive error (1/2) is displayed for 5 seconds. ***** 00 : Bad disc 03 : Bad disc 04 : Bad disc or drive malfunction 4. Last drive error (2/2) is displayed for five seconds. ***** 5. Error occurring disc type is displayed for 5 seconds. DVD ROM DVD DVD-RAM (2.6GB) RAM26 DVD-R DVDR CD-R CDR CD DVD-RAM (4.7GB) RAM47 DVD-RW DVDRW	Press [4] [2] in service mode.
			In case that the maker

		CD-RW CDRW DVD+RW DVDPRW BD-RE BDRE Others MEDIA* * is displayed the respecod value from RTSC. 6. Disc maker ID is displayed for 5 seconds. ***** 7. Factor of drive error (hexadecimal) occurring is left displayed. * * + + & & * * : Error occurring operation code (This is not used) + + : Error occurring disc type <table><tr><td>00</td><td>DVD-ROM</td></tr><tr><td>01</td><td>CD</td></tr><tr><td>02</td><td>2.6GB DVD-RAM</td></tr><tr><td>03</td><td>4.7GB DVD-RAM</td></tr><tr><td>04</td><td>DVD-R</td></tr><tr><td>After 05</td><td>Others</td></tr></table>	00	DVD-ROM	01	CD	02	2.6GB DVD-RAM	03	4.7GB DVD-RAM	04	DVD-R	After 05	Others	cannot be identified, display is blackout.																																																																													
00	DVD-ROM																																																																																											
01	CD																																																																																											
02	2.6GB DVD-RAM																																																																																											
03	4.7GB DVD-RAM																																																																																											
04	DVD-R																																																																																											
After 05	Others																																																																																											
		&& : Error occurring disc situation <table><tr><th rowspan="2">Display</th><th colspan="4">Detail</th></tr><tr><th>Disc distinction</th><th>With or without Cartridge</th><th>Disc cart-ridge state</th><th>Size</th></tr><tr><td>00</td><td>OK</td><td>With</td><td>Not opened</td><td>12cm</td></tr><tr><td>10</td><td>OK</td><td>With</td><td>Not opened</td><td>8cm</td></tr><tr><td>20</td><td>OK</td><td>With</td><td>Opened</td><td>12cm</td></tr><tr><td>30</td><td>OK</td><td>With</td><td>Opened</td><td>8cm</td></tr><tr><td>40</td><td>OK</td><td>Without</td><td>Not opened</td><td>12cm</td></tr><tr><td>50</td><td>OK</td><td>Without</td><td>Not opened</td><td>8cm</td></tr><tr><td>60</td><td>OK</td><td>Without</td><td>Opened</td><td>12cm</td></tr><tr><td>70</td><td>OK</td><td>Without</td><td>Opened</td><td>8cm</td></tr><tr><td>80</td><td>NG</td><td>With</td><td>Not opened</td><td>12cm</td></tr><tr><td>90</td><td>NG</td><td>With</td><td>Not opened</td><td>8cm</td></tr><tr><td>A0</td><td>NG</td><td>With</td><td>Opened</td><td>12cm</td></tr><tr><td>B0</td><td>NG</td><td>With</td><td>Opened</td><td>8cm</td></tr><tr><td>C0</td><td>NG</td><td>Without</td><td>Not opened</td><td>12cm</td></tr><tr><td>D0</td><td>NG</td><td>Without</td><td>Not opened</td><td>8cm</td></tr><tr><td>E0</td><td>NG</td><td>Without</td><td>Opened</td><td>12cm</td></tr><tr><td>F0</td><td>NG</td><td>Without</td><td>Opened</td><td>8cm</td></tr></table> 8. When the last error doesn't exist . NO DATA	Display	Detail				Disc distinction	With or without Cartridge	Disc cart-ridge state	Size	00	OK	With	Not opened	12cm	10	OK	With	Not opened	8cm	20	OK	With	Opened	12cm	30	OK	With	Opened	8cm	40	OK	Without	Not opened	12cm	50	OK	Without	Not opened	8cm	60	OK	Without	Opened	12cm	70	OK	Without	Opened	8cm	80	NG	With	Not opened	12cm	90	NG	With	Not opened	8cm	A0	NG	With	Opened	12cm	B0	NG	With	Opened	8cm	C0	NG	Without	Not opened	12cm	D0	NG	Without	Not opened	8cm	E0	NG	Without	Opened	12cm	F0	NG	Without	Opened	8cm	
Display	Detail																																																																																											
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F0	NG	Without	Opened	8cm																																																																																								
CEC (H) output check	Check of the CEC terminal high output of HDMI.		Press [5] [5] in service mode.																																																																																									

		When the check is OK CECHOK When the check is NG CECHNG	
CEC (L) output check	Check of the CEC terminal low output of HDMI.	When the check is OK CECLOK When the check is NG CECLNG	Press [5] [6] in service mode.
Manufacturing Date	Read out the manufacturing date of the unit.	YYMMDD YY: Year MM: Month DD: Date	Press[6][1]in service mode.
Drive adjustment value initialization	Initialize the drive going to factory production adjustment values.	DP DP * * * * **** : password digits ((4) (5) (3) (6)) Initializing: DINI Successful adjustment value initialization and automatic adjustment time : DINIOK Failed at initialization and automatic adjustment adjustment : DINING When you enter the wrong password service mode initially (SERV __ __) to return.	Press[7][1]in service mode. Wirte remote control number key perform the initialization.
Tray OPEN/CLOSE Test	The BD drive tray is opened and closed repeatedly.	***** * is number of open/close cycle times.	Press [9] [1] in service mode *When releasing this mode, press the [POWER] button of Remote Controller more than 10 seconds.
Delete the Laser Used Time	Laser used time information stored in the memory of the unit is deleted.	CLR	Press [9] [5] in service mode.
Delete the Last Drive Error	Laser Drive Error information stored on the BD Drive is deleted.	CLR	Press [9] [6] in service mode.
Delete the Error History	Error History information stored on the unit is deleted.		Press [9] [7] in service mode.

		CLR	
Initialization of Error code	Last Error Code information stored by timer is deleted. (Write in F00)	CLR	Press [9] [8] in service mode.
Initialization of the Service Mode	Last Drive Error, Error History and Error code information stored on the unit are initialized to factory setting.	CLR	Press [9] [9] in service mode.
Release Service Mode	Release Service Mode and turns the Power Off.	Display in STOP (SS) mode. *****	Press [POWER] button on the front panel or Remote controller in service mode.

8 Service Fixture & Tools

Part Number	Description	Pcs	Compatibility
RFKZ0216	Extension Cable (Digital P.C.B. - Power P.C.B. / 23 Pin)	1	Same as BD60 Series
RFKZ0327	Extension Cable (Digital P.C.B. - SD P.C.B. / 15 Pin)	1	Same as XW350 Series
RFKZ03D01KS	Lead Free Solder (0.3mm/100g Reel)		Same as BD60 Series
RFKZ06D01KS	Lead Free Solder (0.6mm/100g Reel)		Same as BD60 Series
RFKZ10D01KS	Lead Free Solder (1.0mm/100g Reel))		Same as BD60 Series
RFKZ0316	Solder Remover (Lead free low temperature Solder/50g)		Same as BD60 Series
RFKZ0328	Flux		Same as BD60 Series

* The above parts are supplied by AVC-CSC-SPC.

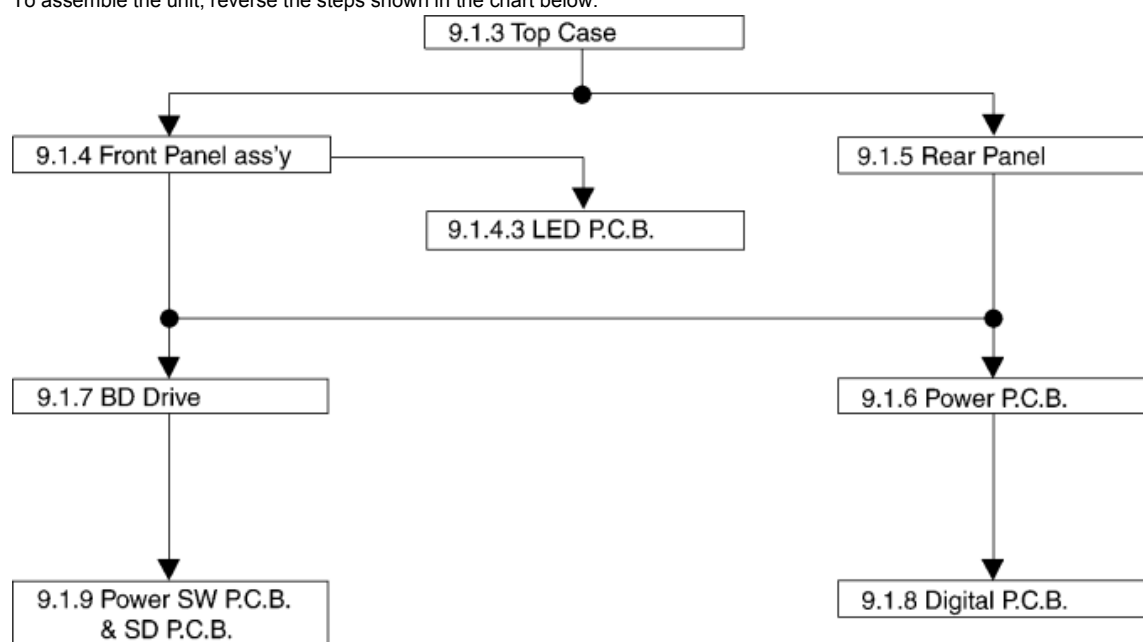
9 Disassembly and Assembly Instructions

9.1 Unit

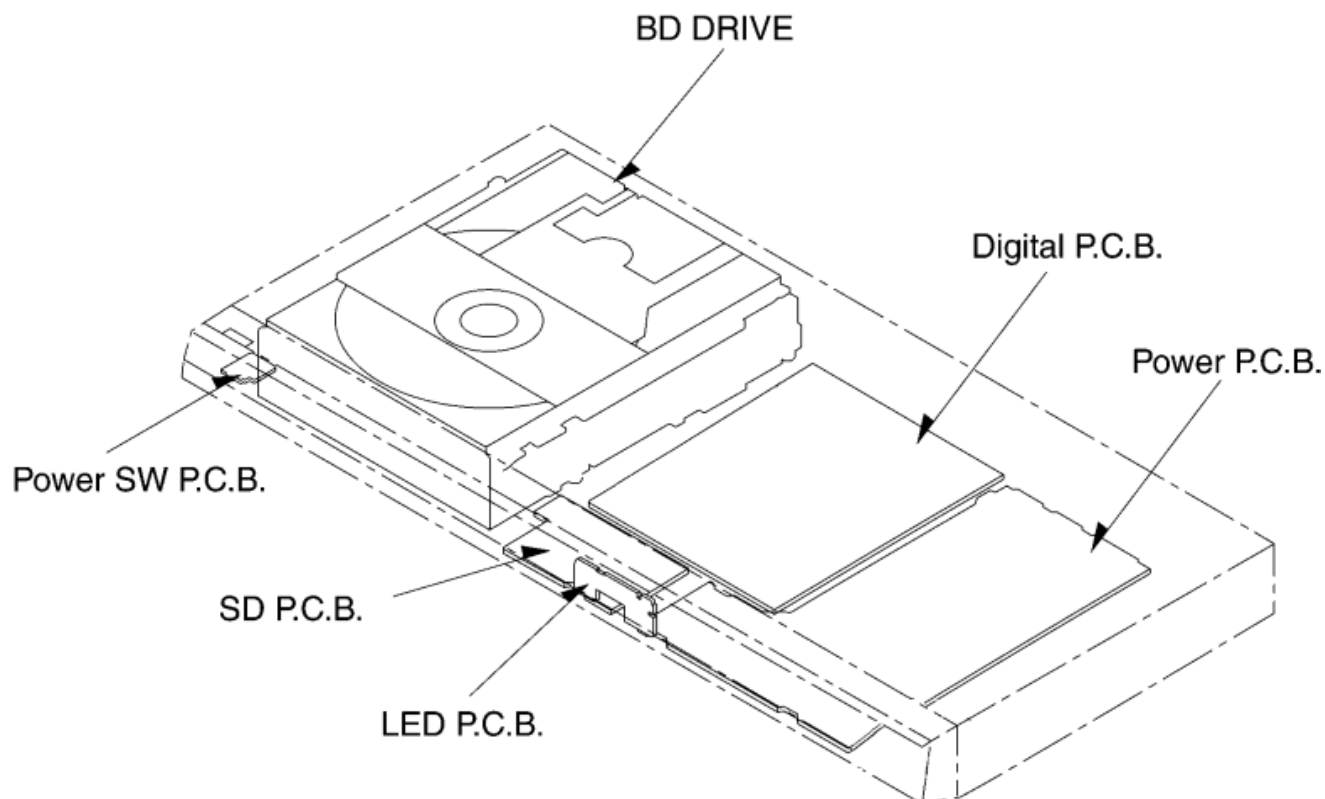
9.1.1 Disassembly Flow Chart

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.

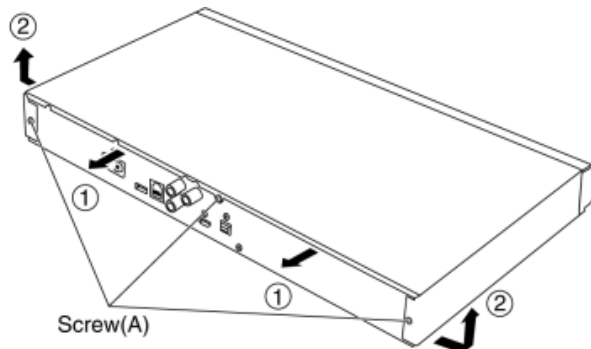


9.1.2 P.C.B. Positions

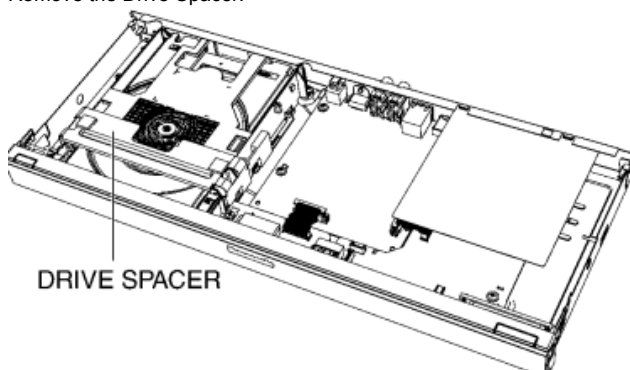


9.1.3 Top Case

1. Remove the 3 Screws (A).
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.



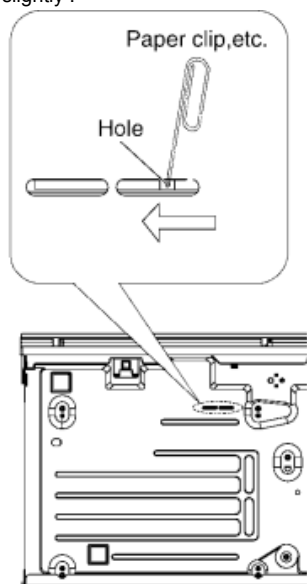
3. Remove the Drive Spacer.



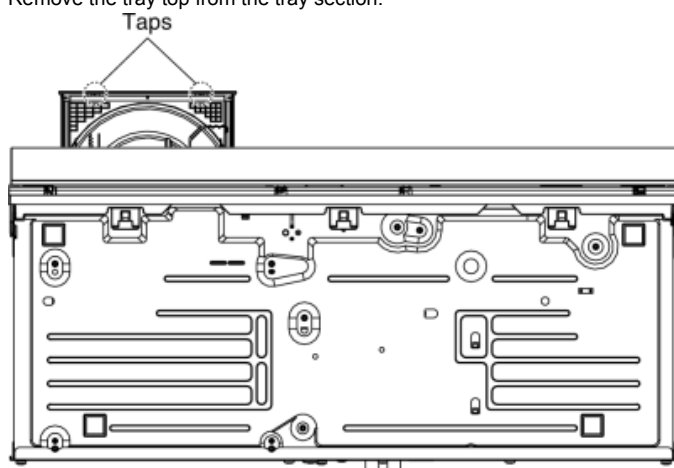
9.1.4 Front Panel ass'y

9.1.4.1 Tray Top

1. Put deck so that bottom can be seen.
2. Insert the Paper clip, 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 .

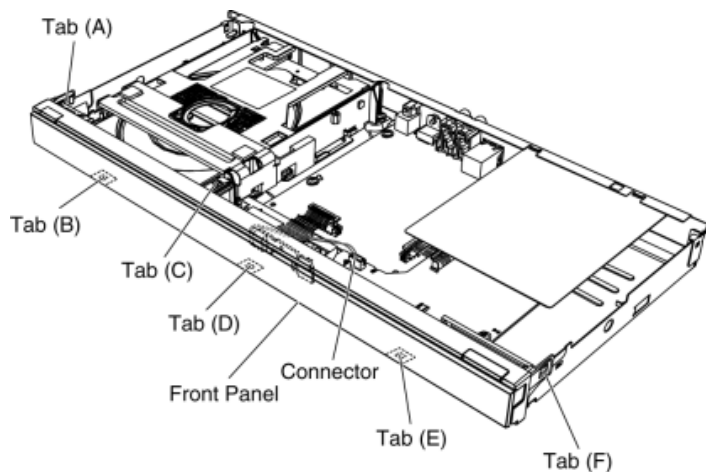


3. Remove the tray top from the tray section.



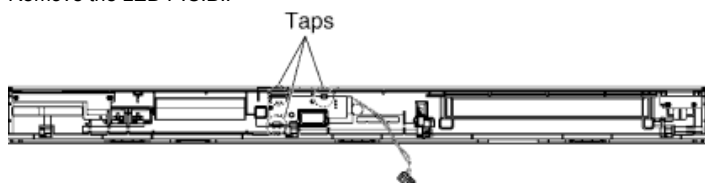
9.1.4.2 Front Panel

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



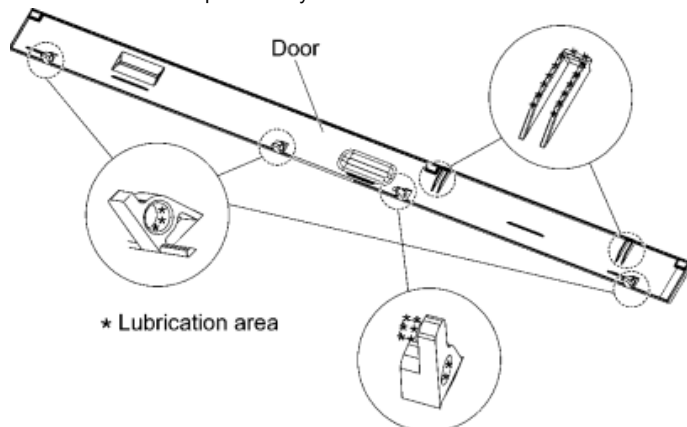
9.1.4.3 LED P.C.B.

1. Release the tabs.
2. Remove the LED P.C.B..



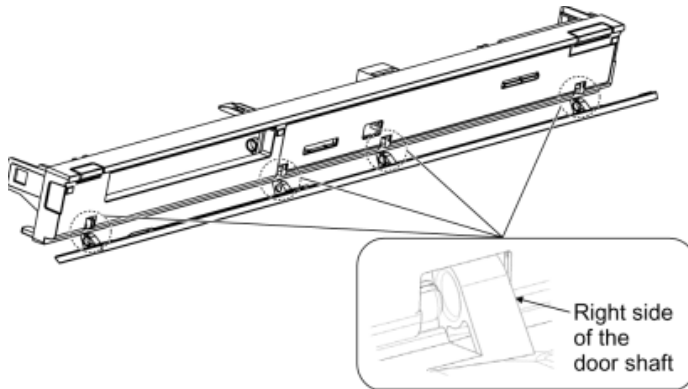
9.1.4.4 Application of the Lubricant to Door Ass'y

1. Lubrication points on door ass'y are shown in the figure as below.
2. Since the replaced parts are not lubricated, please apply lubricant to the specified points (RFKXGUD24).
3. Use Cotton Swab to spread thinly.

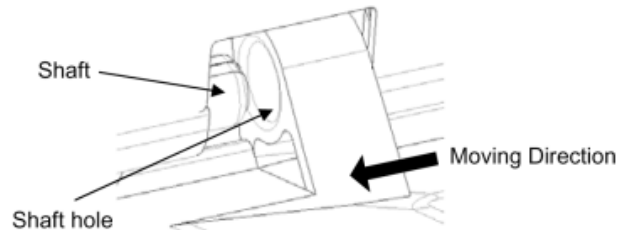


9.1.4.5 How to assemble Door ass'y.

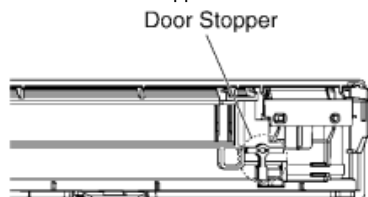
1. Lean the right side of the door shaft against the side of relevant holes of the front panel, and insert the door shaft into the hole of the front panel.



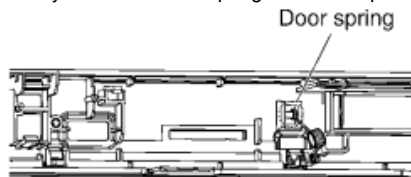
2. Move the door leftward, and insert the 4 shafts of the front panel into the shaft hole of the door.



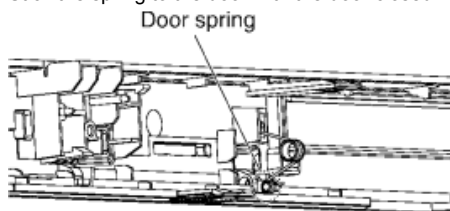
3. Install the door stopper.



4. Firstly attach the door spring to the front panel.

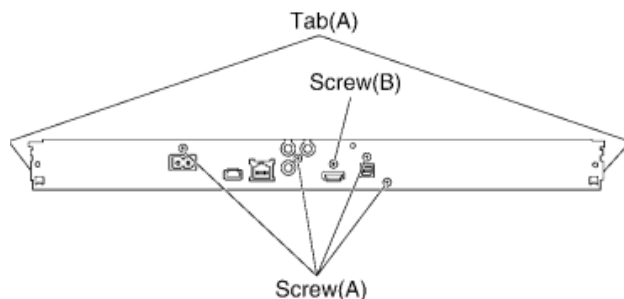


5. Stick the spring to the door with the door closed.



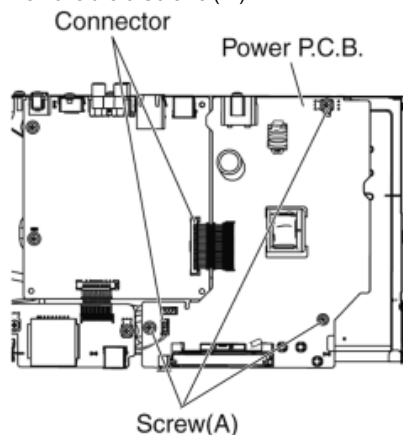
9.1.5 Rear Panel

1. Remove the 4 Screws (A) and Screw (B).
2. Unlock 2 locking Tabs (A) to remove the Rear Panel.



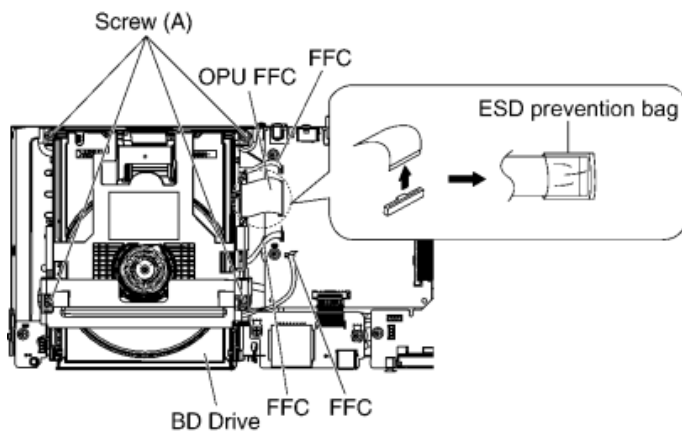
9.1.6 Power P.C.B.

1. Remove the 2 connectors.
2. Remove the 3 Screws (B).



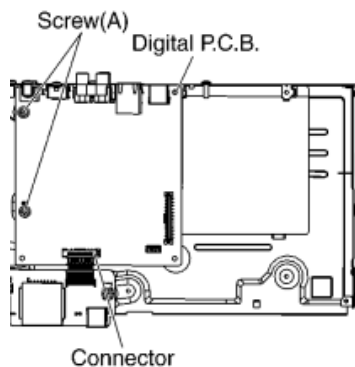
9.1.7 BD Drive

1. Remove the OPU FFC, and isolate it with an ESD prevention bag (RPFC0114) to prevent the laser diode from the ESD damage. (PX/PU only)
2. Remove the 3 FFCs.
3. Remove the 4 Screws (A) to remove BD Drive.



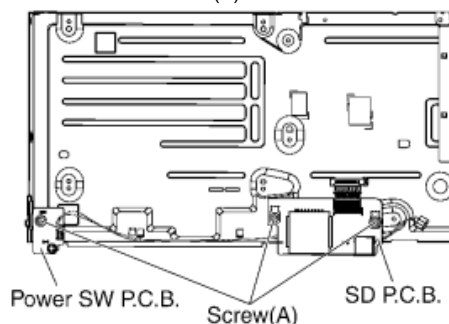
9.1.8 Digital P.C.B.

1. Remove the connector.
Remove the 2 Screws (A).



9.1.9 Power SW P.C.B. & SD P.C.B.

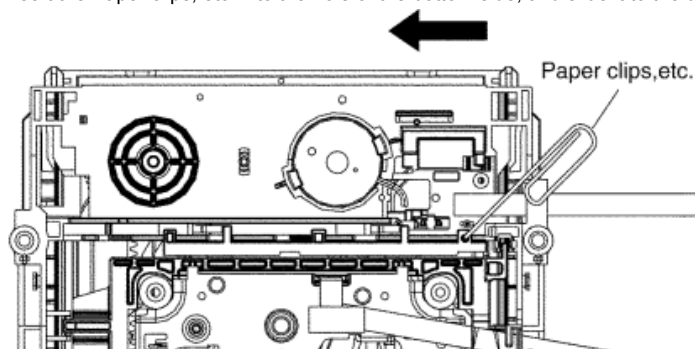
1. Remove the 3 Screws (A).



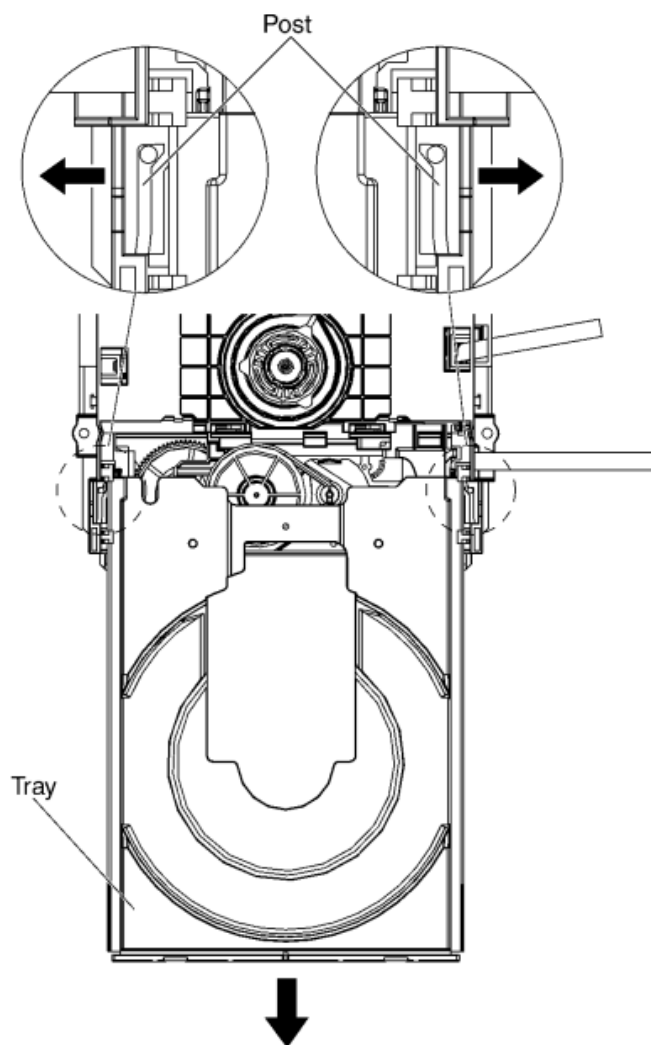
9.2 BD Drive

9.2.1 Tray

1. Insert the Paper clips, etc. into the hole of the bottom side, and slide it to the direction of arrow until it can be.

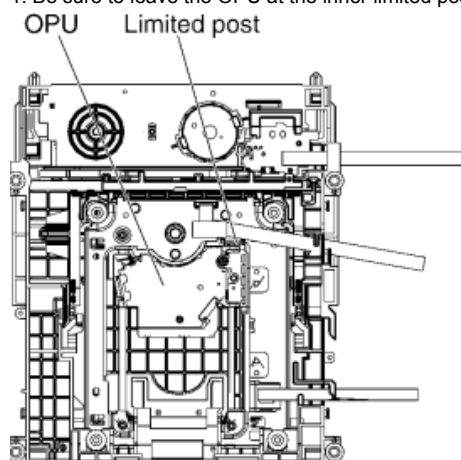


2. Pull the Tray to the direction of arrow until it can be.
3. Push the two posts in front of the mecha chassis to both sides of the drive to unlock the tray, and push it outward simultaneously.

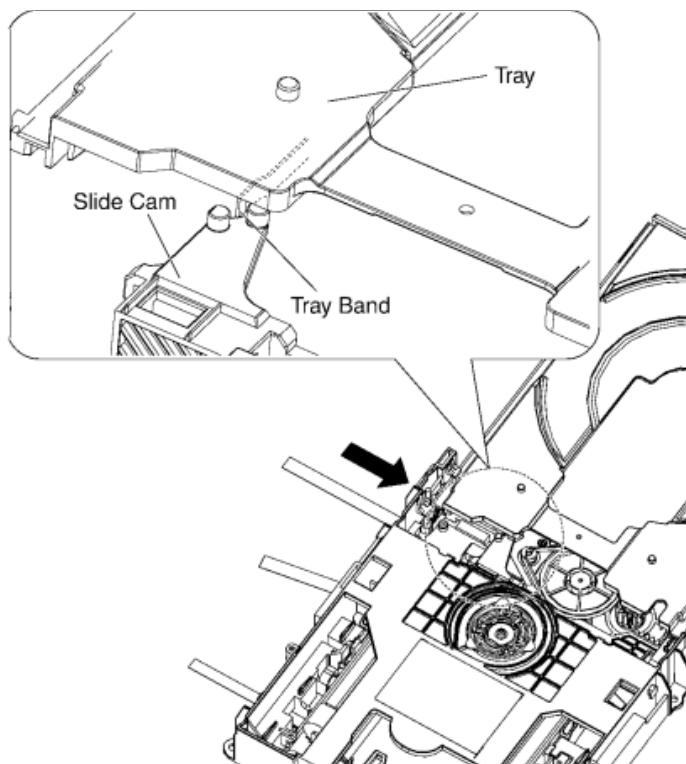


Notes when attaching the tray:

1. Be sure to leave the OPU at the inner limited posts.

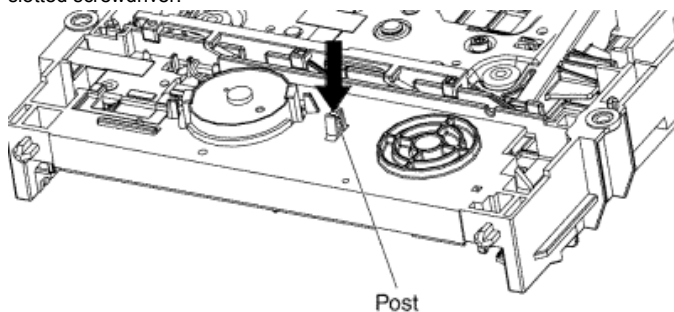


2. Push Slide cam to the left side slightly, and make sure the tray band is between the two posts of Slide cam when attaching the tray.

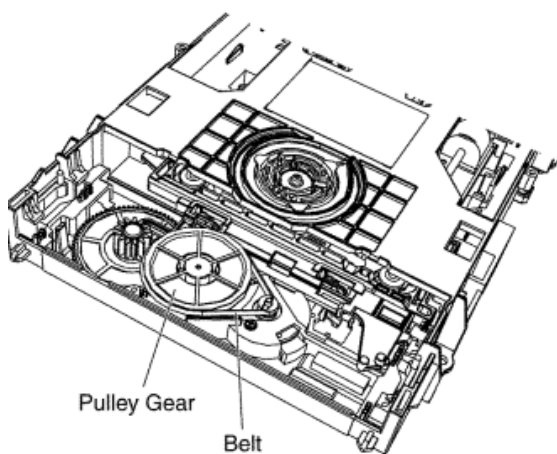


9.2.2 Pulley Gear, Belt

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

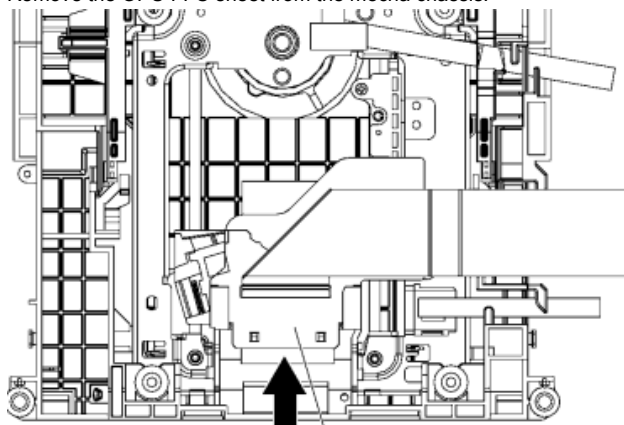


3. Remove the Pulley Gear and Belt.



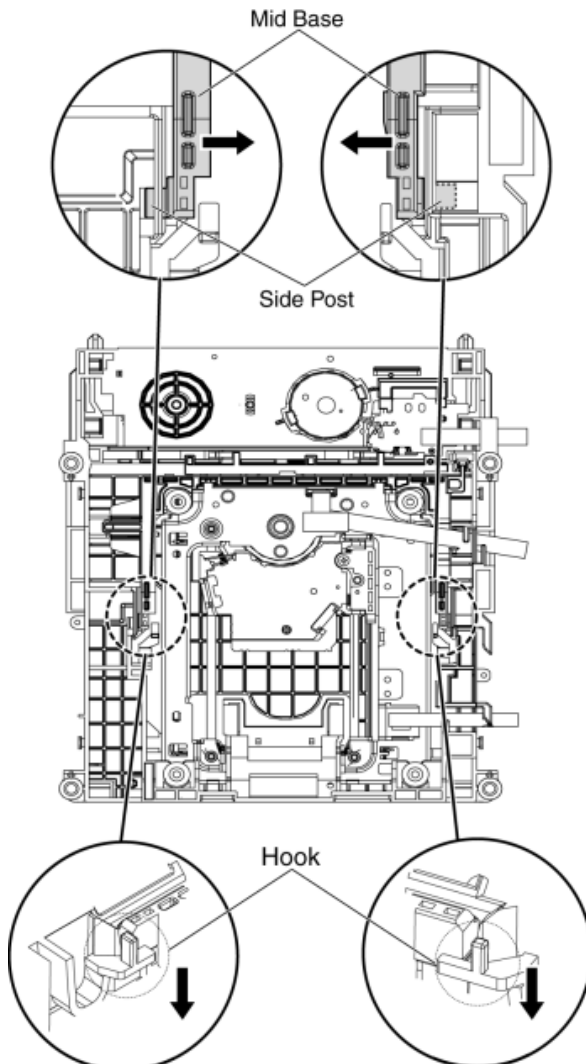
9.2.3 Slide Cam

1. Perform the step "Pulley Gear, Belt".
2. Remove the OPU FFC sheet from the mecha chassis.

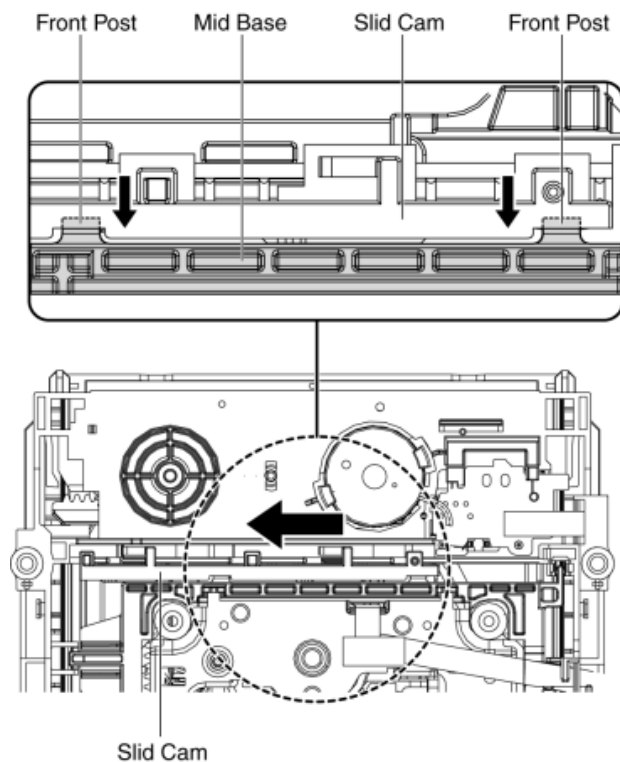


OPU FFC sheet

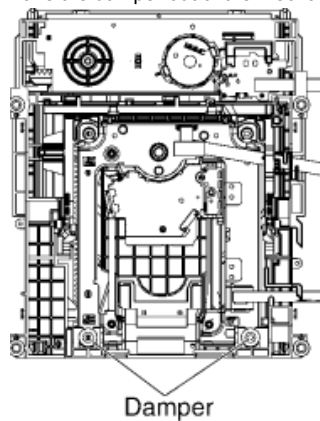
3. Pull the hooks at both sides to remove the side post on the mid base.



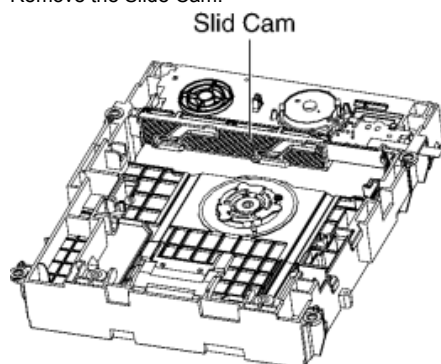
4. Slide the Slid cam in the direction as shown, and then take the front post out of the slide cam track.



5. Take the damper out of the mecha chassis and remove the Drive ass' y.

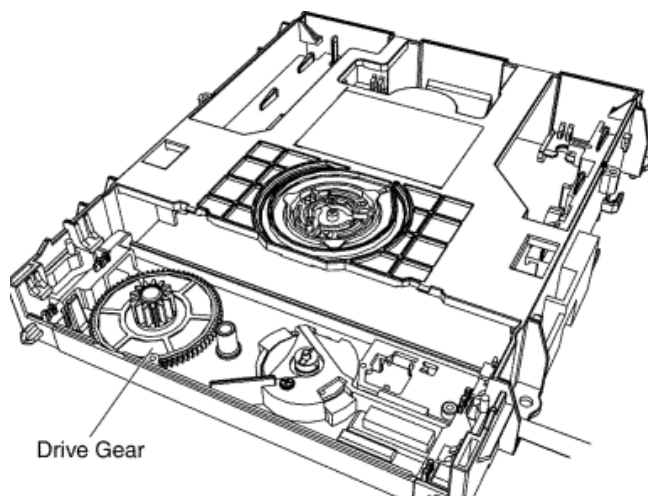


6. Remove the Slide Cam.

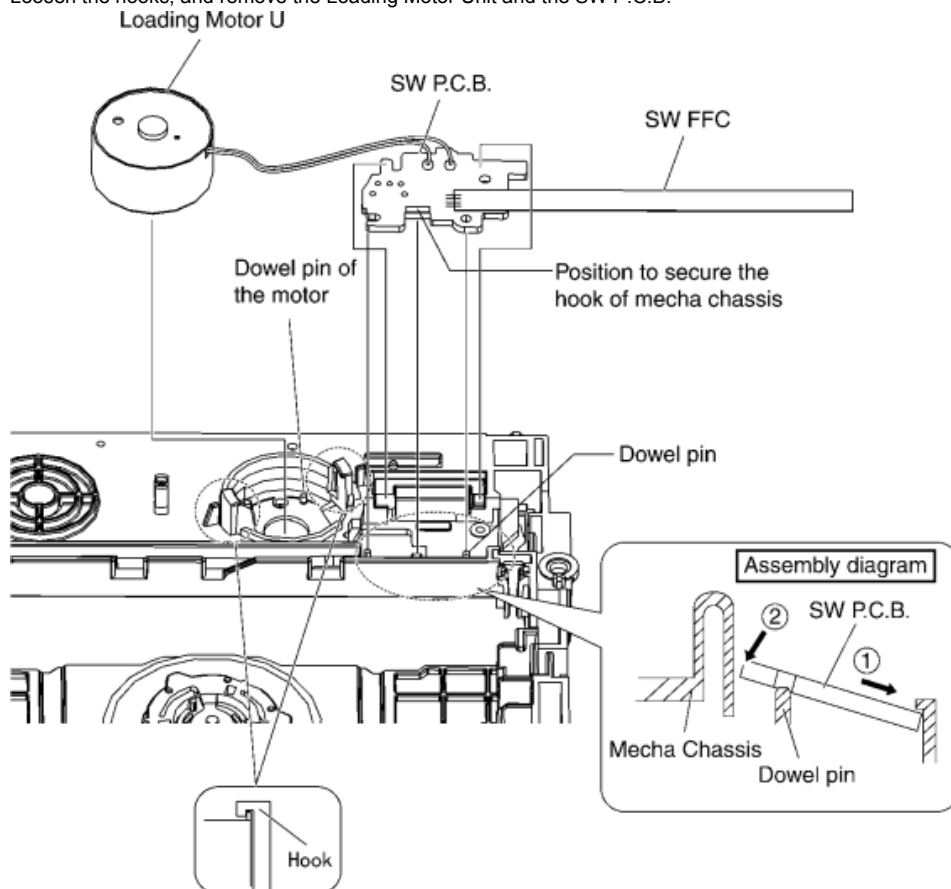


9.2.4 Drive Gear and Loading Motor

1. Perform the step " Slide Cam ".
2. Remove the Drive Gear.



3. Loosen the hooks, and remove the Loading Motor Unit and the SW P.C.B.



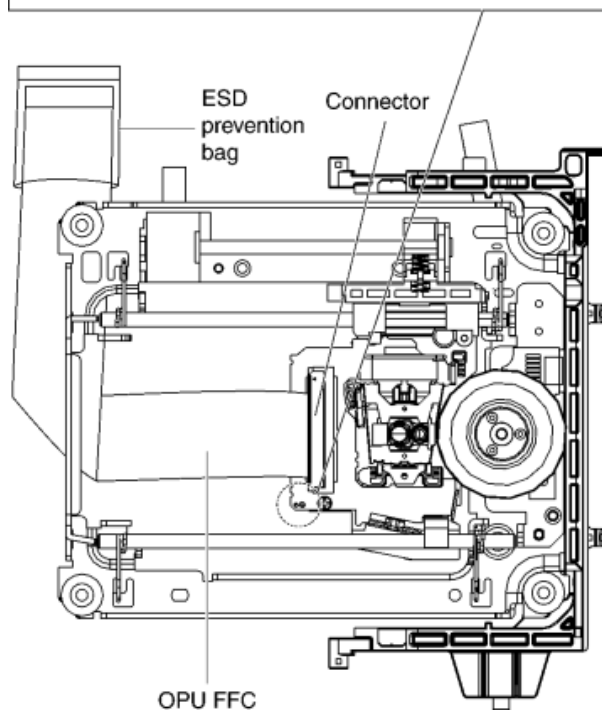
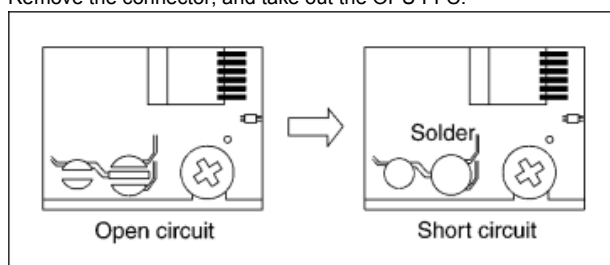
9.3 Traverse Unit

9.3.1 Drive Disassembly from the traverse unit, assembly of the optical pick-up unit, and precautions on ESD-preventive for PU/PX

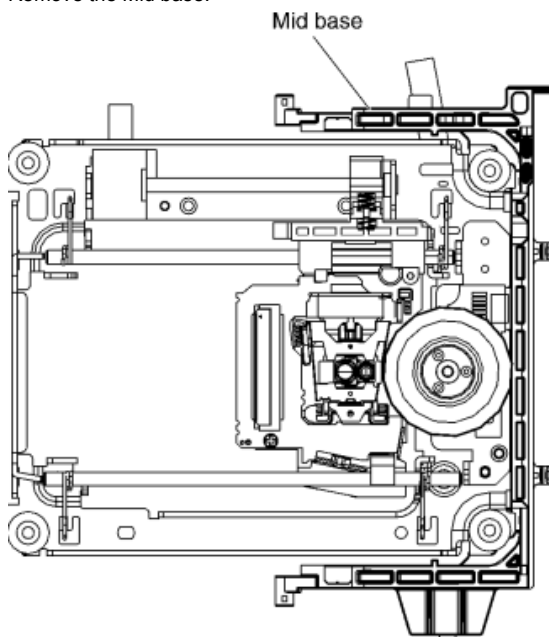
9.3.1.1 Disassembly

1. Before removing the optical pick-up unit, please apply an ESD prevention bag(RPFC0114) to the OPU FFC, and weld the short-circuit solder.
 1. Set the temperature of iron is 350°C.
 2. When using the iron head, do not apply a force more than 1N to the pad. Do not touch any other components around the welding spot.
 3. Welding should be applied less than 3 times.

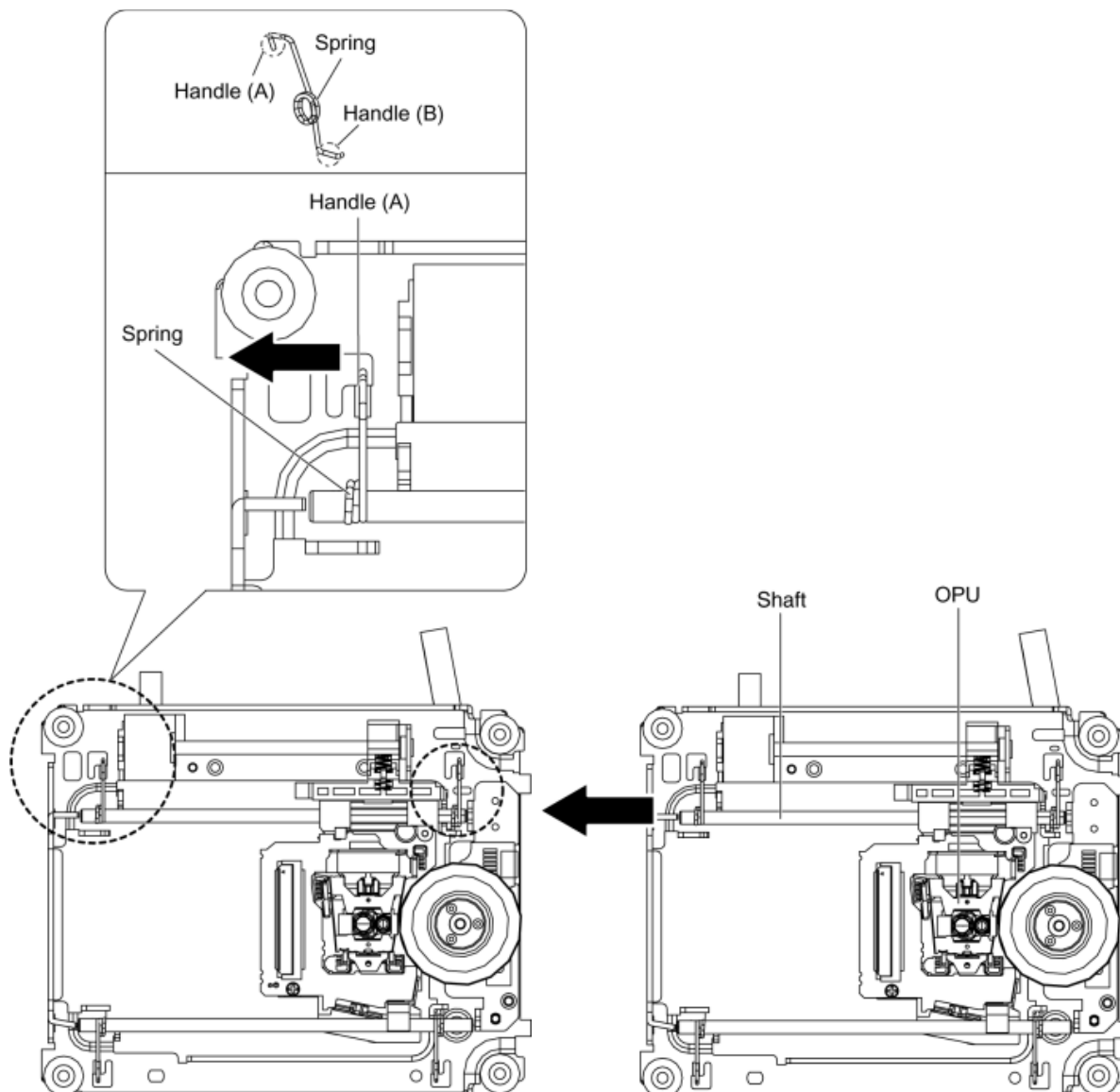
2. Remove the connector, and take out the OPU FFC.



3. Remove the Mid base.



4. Press down the handle A of the two springs, and remove the shaft with OPU.



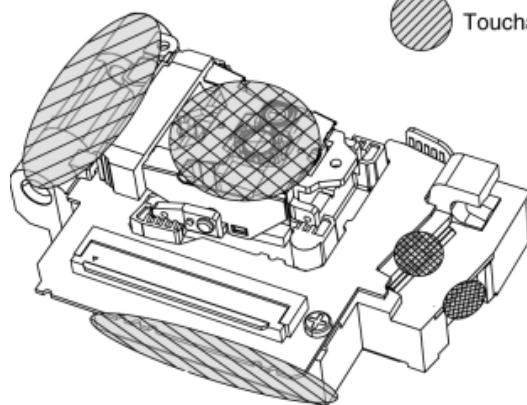
NOTE: In this action, finger stab needs to be put on. Do not touch any parts other than the positions marked in the Figure.

Untouchable

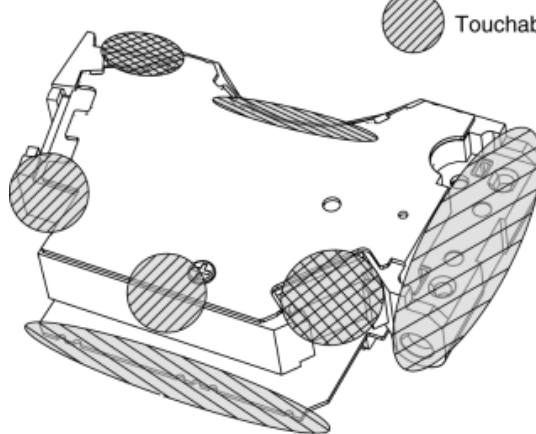
Touchable

Untouchable

Touchable



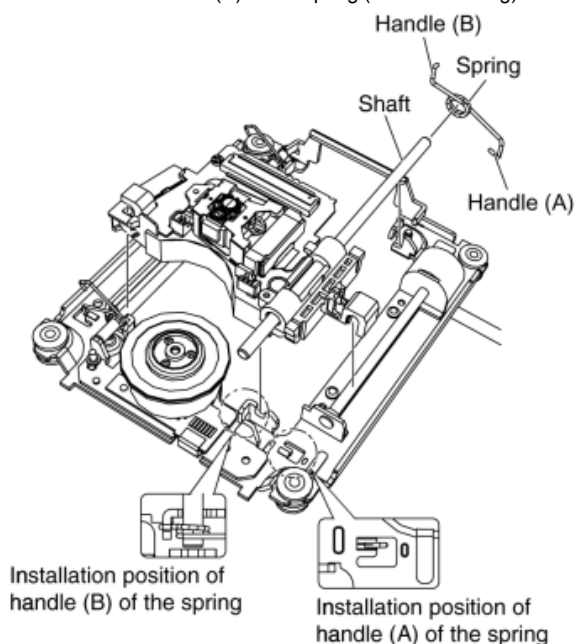
P.C.B end face and
the Base face



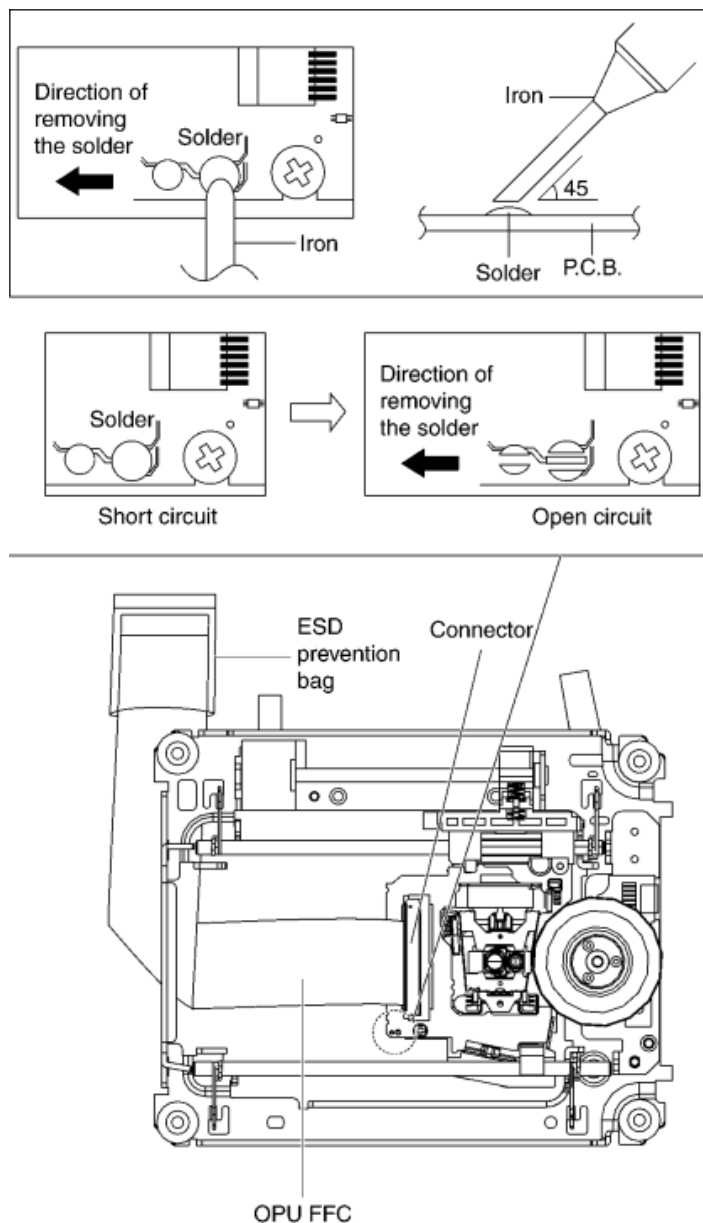
P.C.B end face

9.3.1.2 Assembly

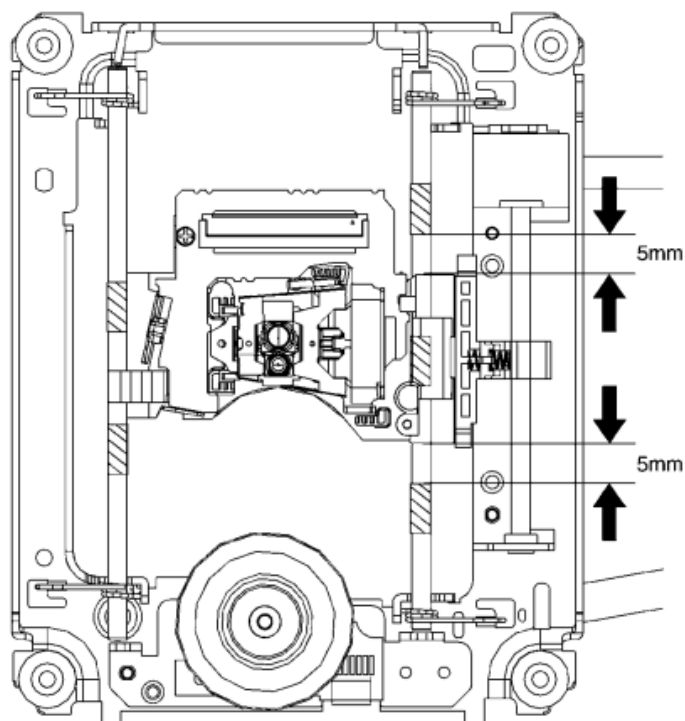
1. Insert the shaft into the shaft hole of the base, install the OPU to the auxiliary shaft, and then attach the nut piece unit onto the screw stem.
2. Assembly of spring .
 1. Insert the two springs to the ends of the shaft.
 2. Then insert the handle (B) of the spring into the spring holder (as shown in Fig).
 3. Press down the handle (A) of the spring (as shown in Fig) into the hole. .



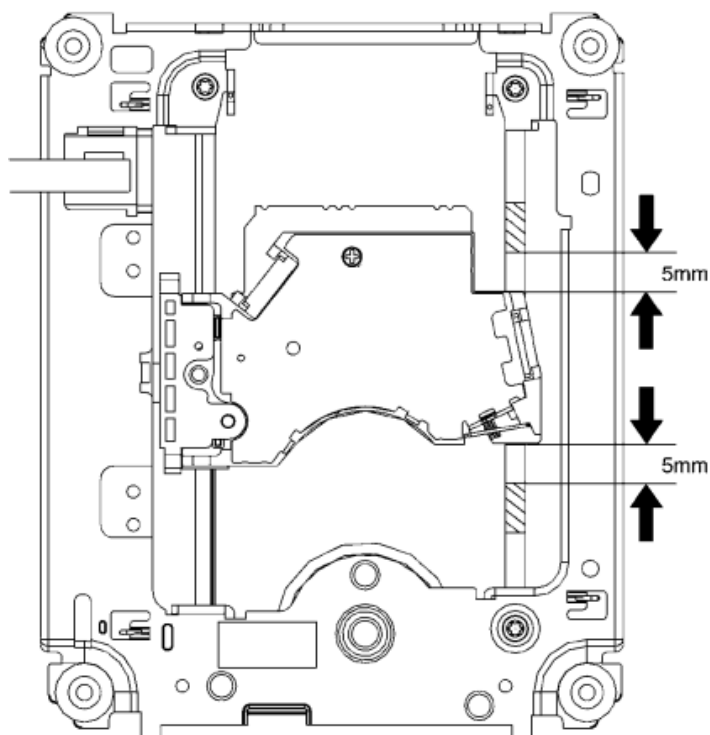
3. Insert FFC, and desolder the solder spot.
 1. Use the iron head with an angle as shown in Fig, remove the solder in the direction as shown.
 2. Set the temperature of iron below 350°C.
 3. When using the iron head, do not apply a force more than 1N to the pad. Do not touch any other components around the welding spot.
 4. Welding should be applied less than 3 times.



4. Apply the lubricants to the 7 points as shown in Figure.



 Application position of the greases

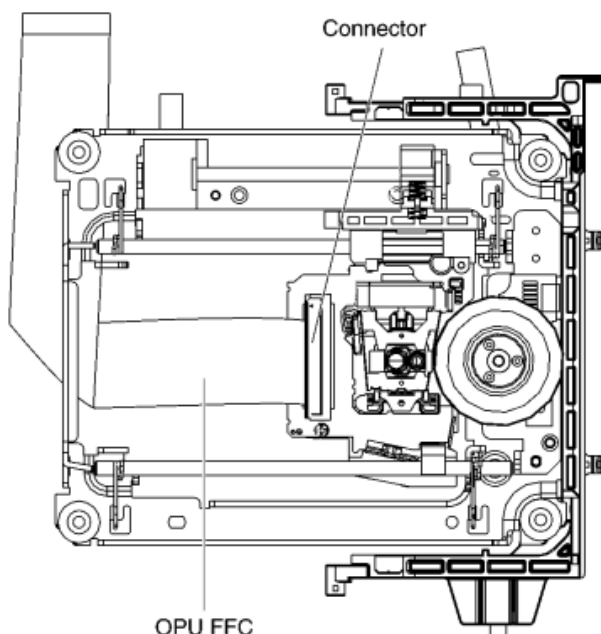


 Application position of the greases

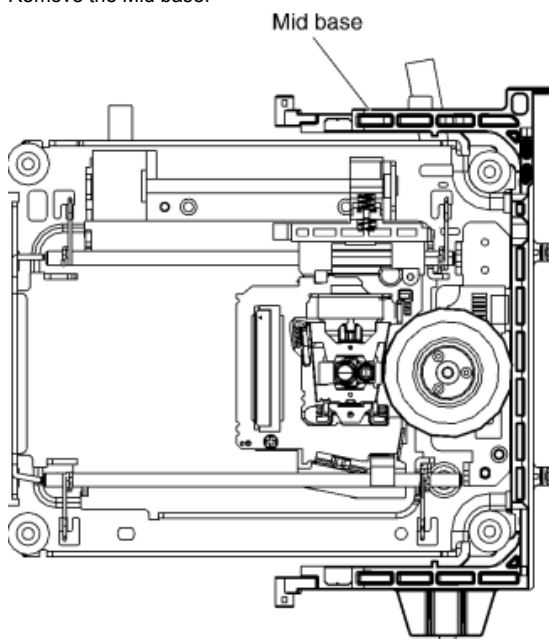
9.3.2 Disassembly from the traverse unit, assembly of the optical pick-up unit for GA/GC/GN/GT/GW

9.3.2.1 Disassembly

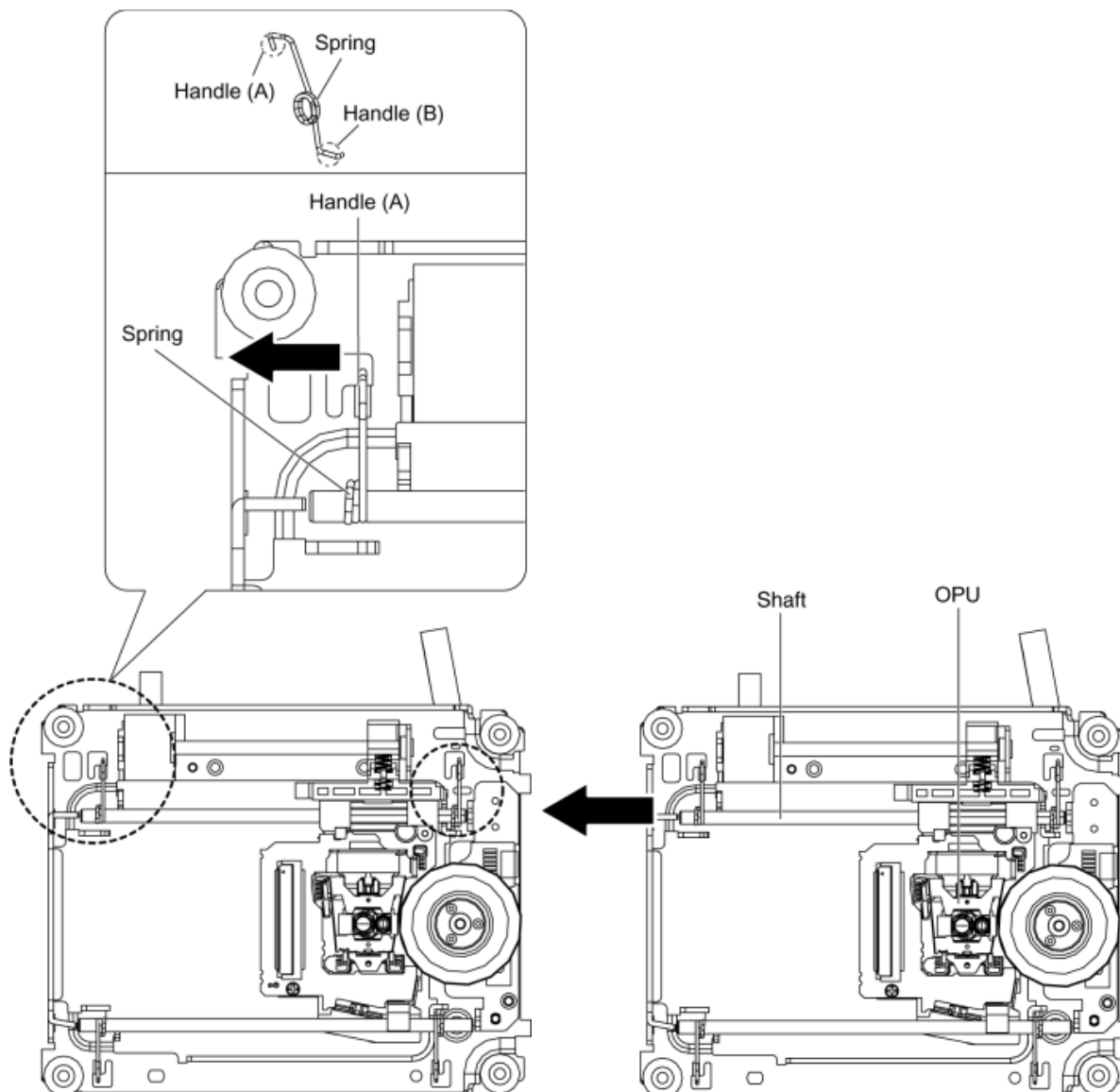
1. Remove the connector, and take out the OPU FFC.



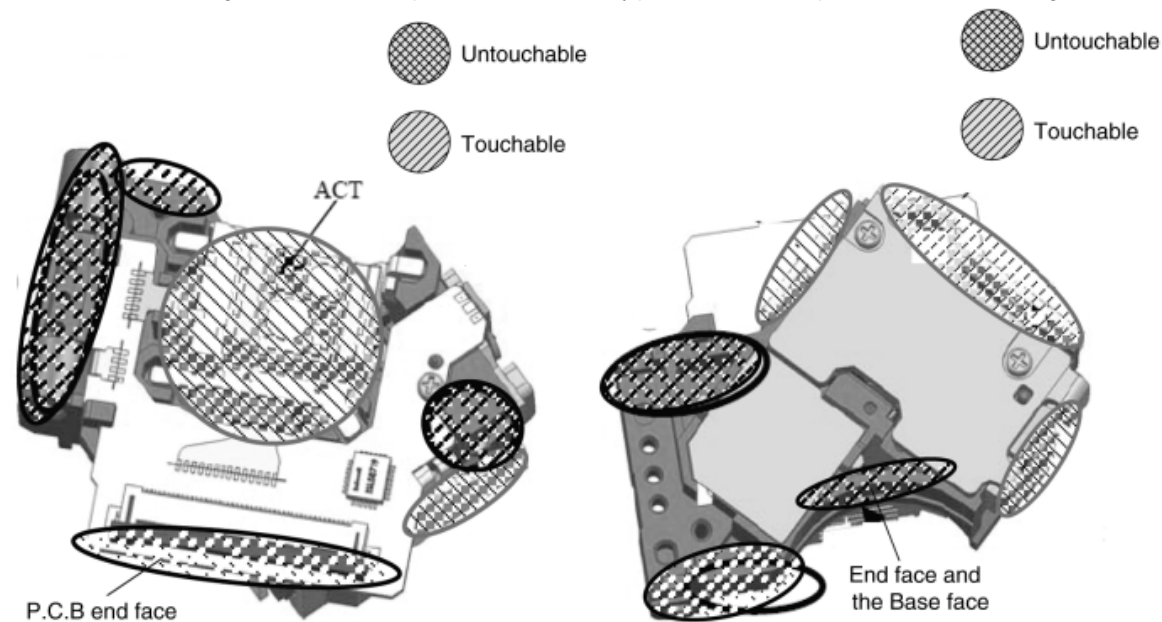
2. Remove the Mid base.



3. Press down the handle A of the two springs, and remove the shaft with OPU.

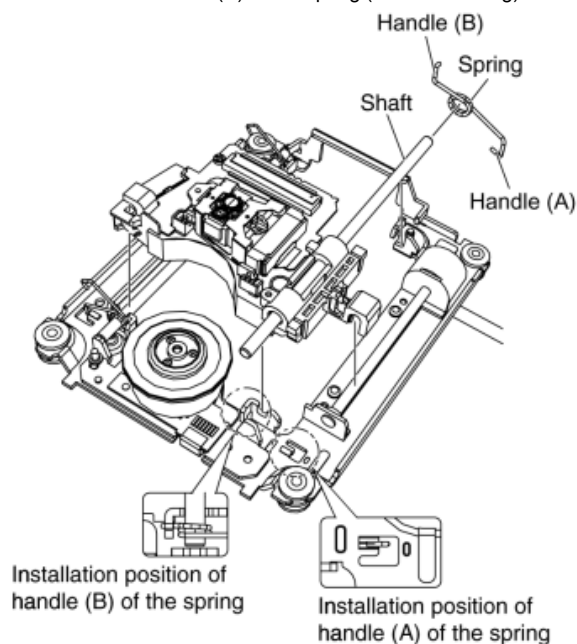


NOTE: In this action, finger stab needs to be put on. Do not touch any parts other than the positions marked in the Figure.

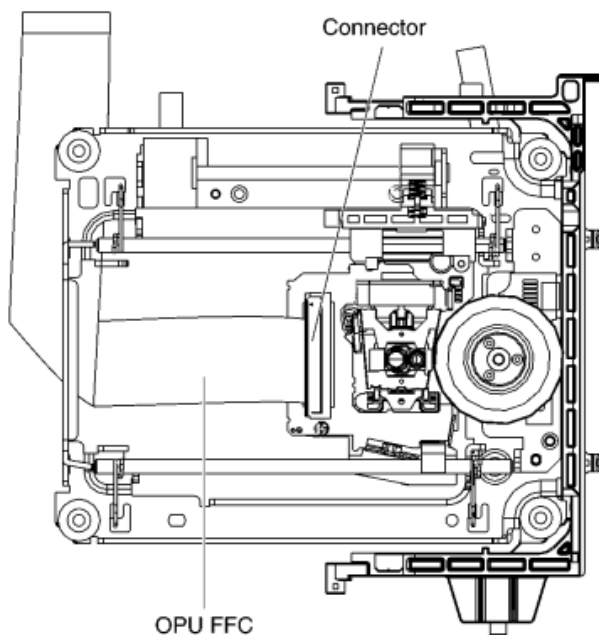


9.3.2.2 Assembly

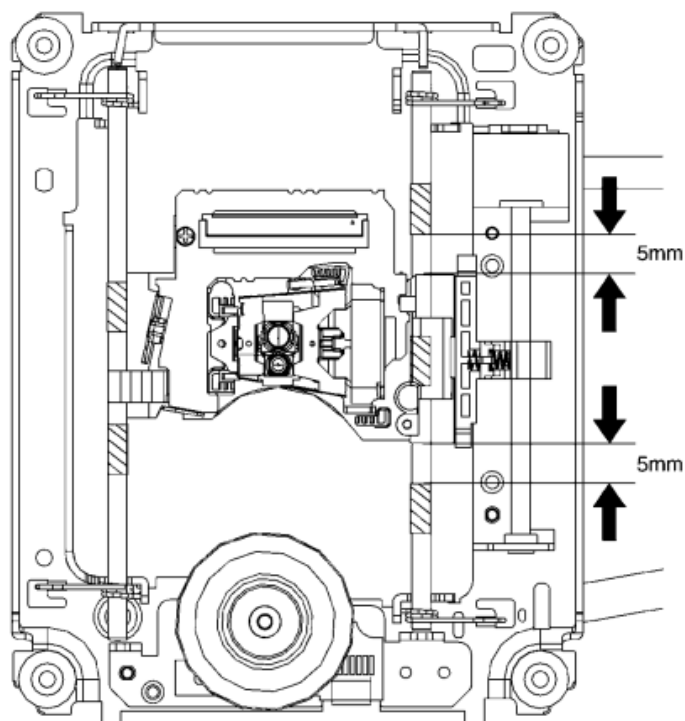
1. Insert the shaft into the shaft hole of the base, install the OPU to the auxiliary shaft, and then attach the nut piece unit onto the screw stem.
2. Assembly of spring .
 1. Insert the two springs to the ends of the shaft.
 2. Then insert the handle (B) of the spring into the spring holder (as shown in Fig).
 3. Press down the handle (A) of the spring (as shown in Fig) into the hole. .



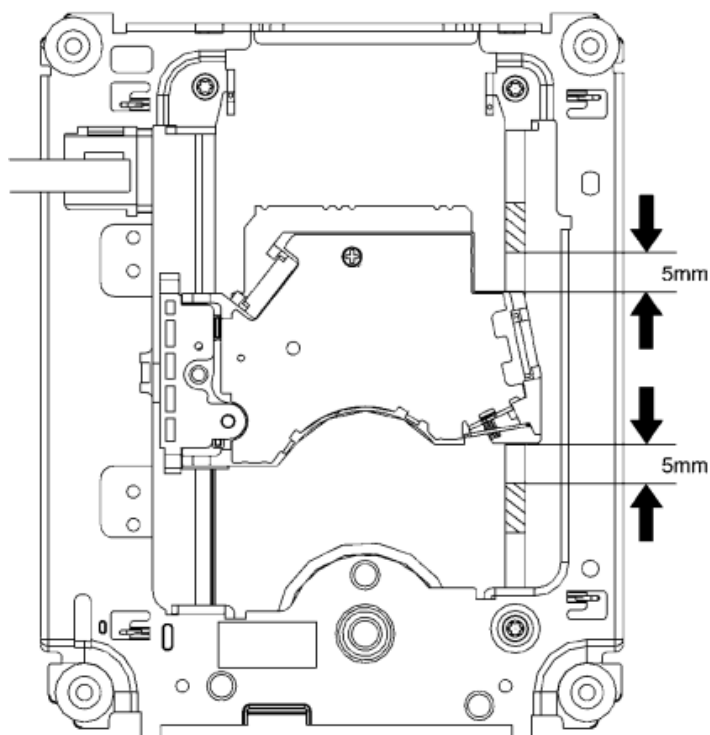
3. Insert FFC.



4. Apply the lubricants to the 7 points as shown in Figure.



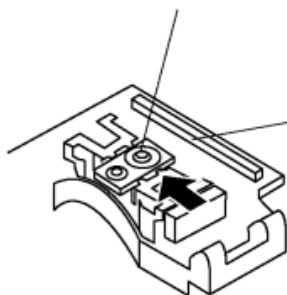
 Application position of the greases



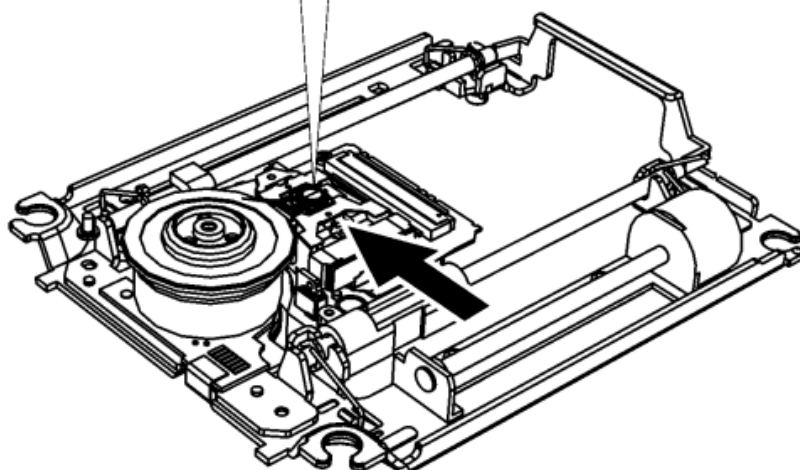
 Application position of the greases

9.3.3 How to Clean the Lens of Optical Pick-UP

Caution : Be sure to wipe a lens in the direction of arrow.

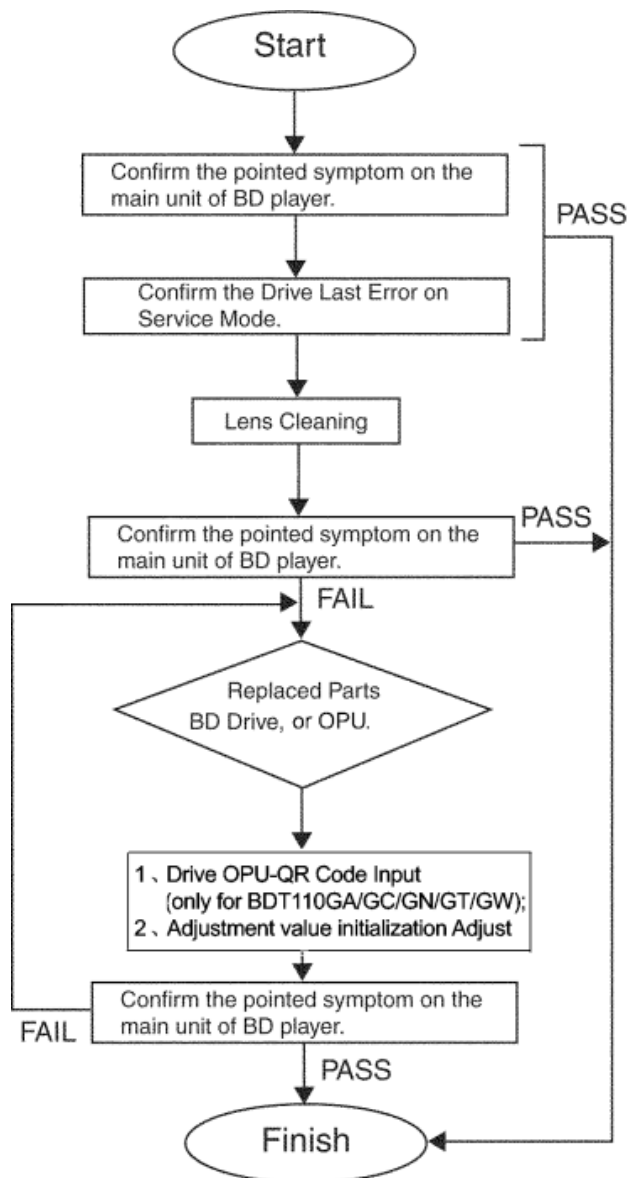


Gently wipe the object lens surface with a cotton swab slightly dampened with ethyl alcohol. Clean the lens until the cotton swab no longer picks up dirt. Finally, wipe the lens surface with a soft, dry cloth to remove any residual alcohol.



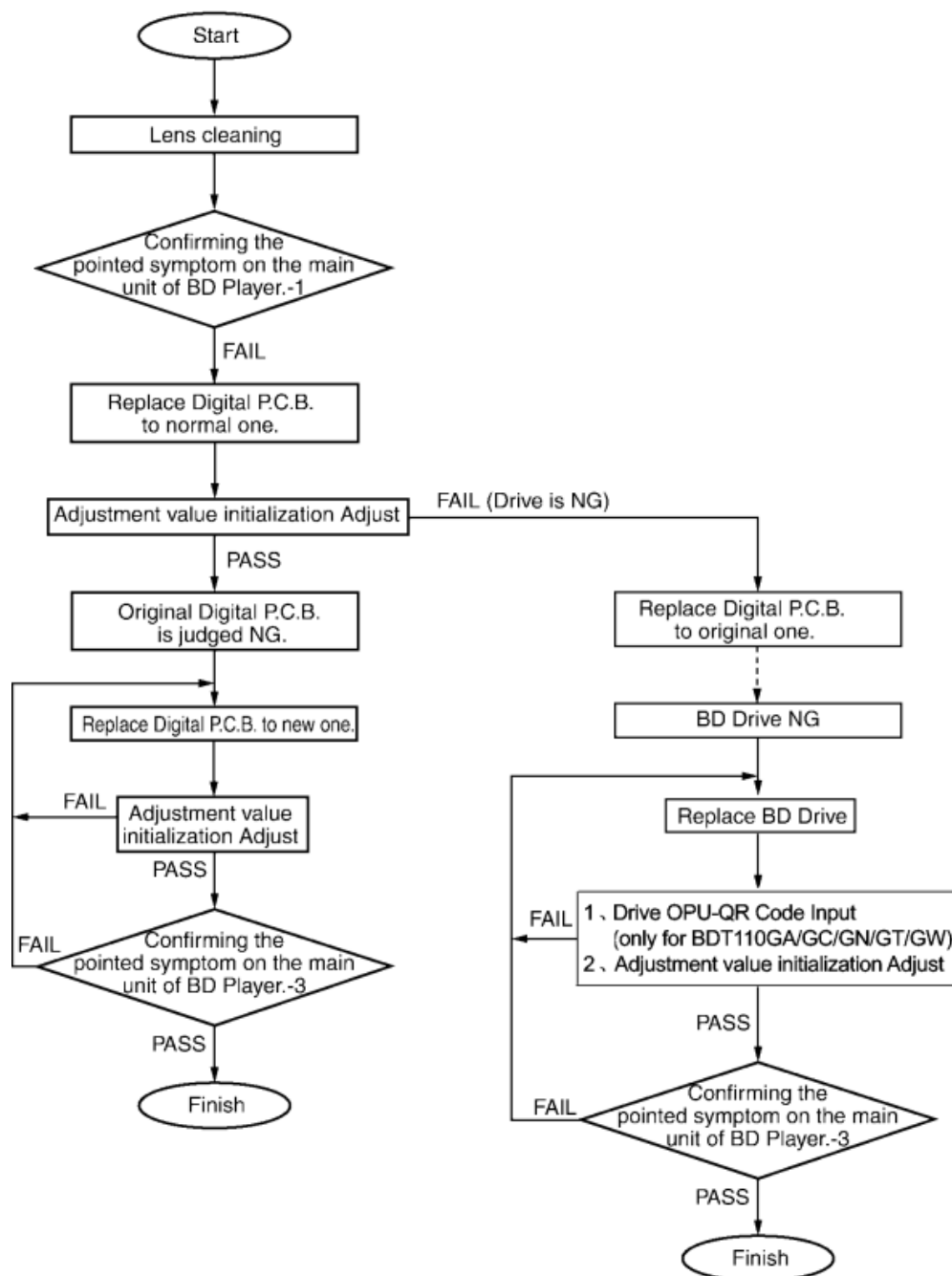
9.4 Adjustment of BD Drive

9.4.1 Repair Flowchart



9.4.2 Distinction Analysis

9.4.2.1 Distinction Analysis Flowchart



9.4.2.2 Analysis Procedures

1. Confirmation of pointed symptom -1
 - Confirm the pointed symptom of BD player occurs again after cleaning the lens.
2. Replacement of Digital P.C.B. with the normal P.C.B.
 - Replace the failed Digital P.C.B. with the normal P.C.B.
3. Confirmation of pointed symptom -2
 - Checking symptoms of failed disc in the procedure 1.
For this time,
PASS denotes the Digital P.C.B. is defective.
FAIL denotes the Optical Pick-up or mechanism are defective.
4. Replacement of Digital P.C.B. with the original one.
5. Pointed symptom -3
 - Recheck the pointed symptoms to see mechanism part is improved.
For this time,
In case of FAIL, go back to Replacement failure part 1 to confirm the pointed symptoms.

If it is PASS, it is finished.

9.4.3 Adjustment

9.4.3.1 Adjustment of BDT110GA/GC/GN/GT/GW

NOTE:

Please do the adjustment according to the following steps.

9.4.3.1.1 Drive OPU-QR Code write(72)

In the service mode, enter 6 digits QR Code after numeral keys ⑦② are input on the remote control.

①	②	③	④	⑤	⑥	
D	R	Q				Enter ⑦② in service mode.
*	*	*	*	*	*	Enter the 6 digits QR code on QR label(OPU). The operation cannot be terminated until all the 6 numbers is entered. If "000000" is entered, QR code write mode can be unlocked.
D	R	Q		O	K	QR code write success
D	R	Q		N	G	QR code write failure

6 digits QR code
location diagram



9.4.3.1.2 [Drive] Adjustment value initialization(71)

When the projector is being manufactured in the factory, the drive adjustment value is initialized.

In the service mode, enter 4 digits password (④⑤③⑥) after numeral keys ⑦① are input on the remote control, then initialization starts.

If password is entered by mistake, it will return to initial status in the service mode (SERV_).

①	②	③	④	⑤	⑥	
D	P	*	*	*	*	When a digit is entered, it is displayed in * (4 digits) (Blank shows when no password is being input)
D	I	N	I			(Enter ⑦① → Input a correct password of 4 digits), then initialization is performed.
D	I	N	I	O	K	When adjustment value is initialized and auto adjustment is ended normally.
D	I	N	I	N	G	When adjustment value is initialized and automatic adjustment is ended abnormally.

9.4.3.2 Adjustment of BDT110PU/PX

9.4.3.2.1 [Drive] Adjustment value initialization(71)

When the projector is being manufactured in the factory, the drive adjustment value is initialized.

In the service mode, enter 4 digits password (④⑤③⑥) after numeral keys ⑦① are input on the remote control, then initialization starts.

If password is entered by mistake, it will return to initial status in the service mode (SERV_).

①	②	③	④	⑤	⑥	
D	P	*	*	*	*	When a digit is entered, it is displayed in * (4 digits) (Blank shows when no password is being input)
D	I	N	I			(Enter ⑦① → Input a correct password of 4 digits), then initialization is performed.
D	I	N	I	O	K	When adjustment value is initialized and auto adjustment is ended normally.
D	I	N	I	N	G	When adjustment value is initialized and automatic adjustment is ended abnormally.

9.4.3.3 In the Case of Necessity the Adjustment

1. When the OPU ass'y is replaced.
2. When the Drive unit is replaced.

10 Measurements and Adjustments

10.1 Service Positions

NOTE:

For description of the disassembling procedure, see the section 9.

10.1.1 Checking and Repairing of Power P.C.B.

1. Top Case

Remove the 3 Screws (A).

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.

2. Front Panel ass'y

Remove the Tray top, Remove the connector.

Unlock 6 tabs turn and Remove Front Panel, then Remove the LED P.C.B..

3. Rear Panel

Remove 5 Screws (one of the HDMI) to remove the Rear Panel.

4. Power P.C.B.

Remove the Power SW P.C.B..

Disconnect the connector (23Pin) between Power P.C.B. and Digital P.C.B..

Remove 3 Screws to remove Power P.C.B., then Put Power P.C.B. on the Insulation Board.

Connecting the LED P.C.B. to the Power P.C.B. with original cable.

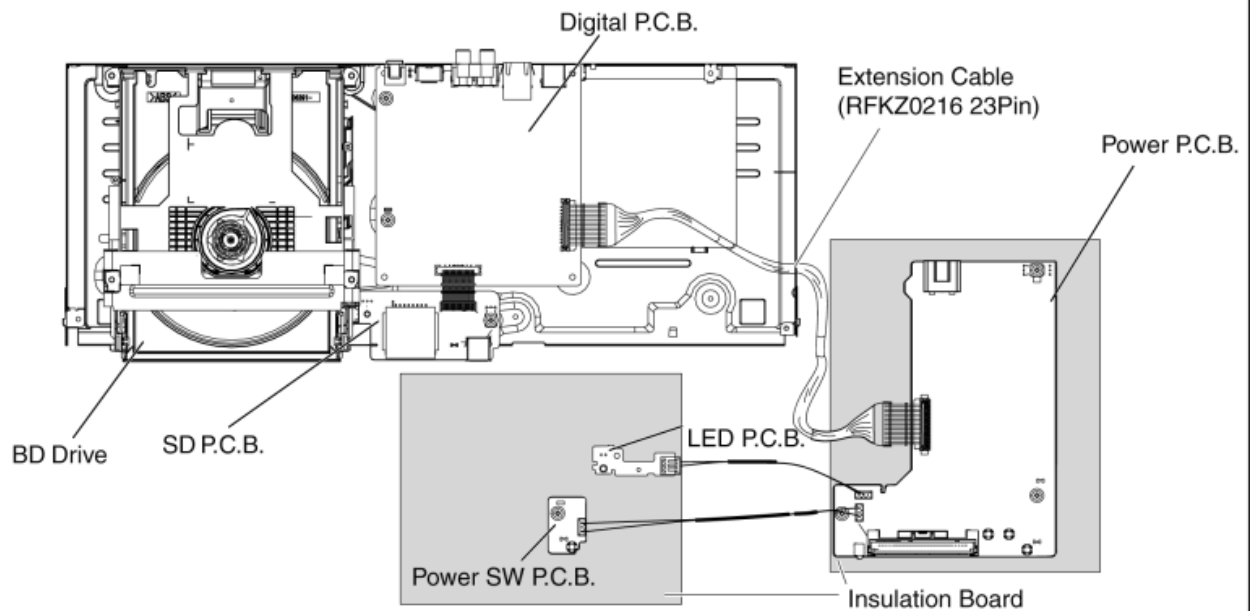
Connecting the Power SW P.C.B. to the Power P.C.B. with original cable.

Connect Extension Cables shown below.

Between Power P.C.B. and Digital P.C.B.:(RFKZ0216) 23 Pin

Caution :

1. Red wire should be connected to pin 1.



10.1.2 Checking and Repairing of Digital P.C.B.

1. Top Case

Remove the 3 Screws (A).

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.

2. Front Panel ass'y

Remove the Tray top. Remove the connector.

Unlock 6 tabs turn and Remove Front Panel. Remove the LED P.C.B..

3. Rear Panel

Remove 5 Screws (one of the HDMI) to remove the Rear Panel.

4. Digital P.C.B.

Disconnect the connector (15Pin) between SD P.C.B. and Digital P.C.B..

Disconnect the connector (23Pin) between Power P.C.B. and Digital P.C.B..

Remove 6 Screws to remove Digital P.C.B. and BD Drive, then Put Digital P.C.B. on the Insulation Board.

Connecting the LED P.C.B. to the Power P.C.B. with original cable.

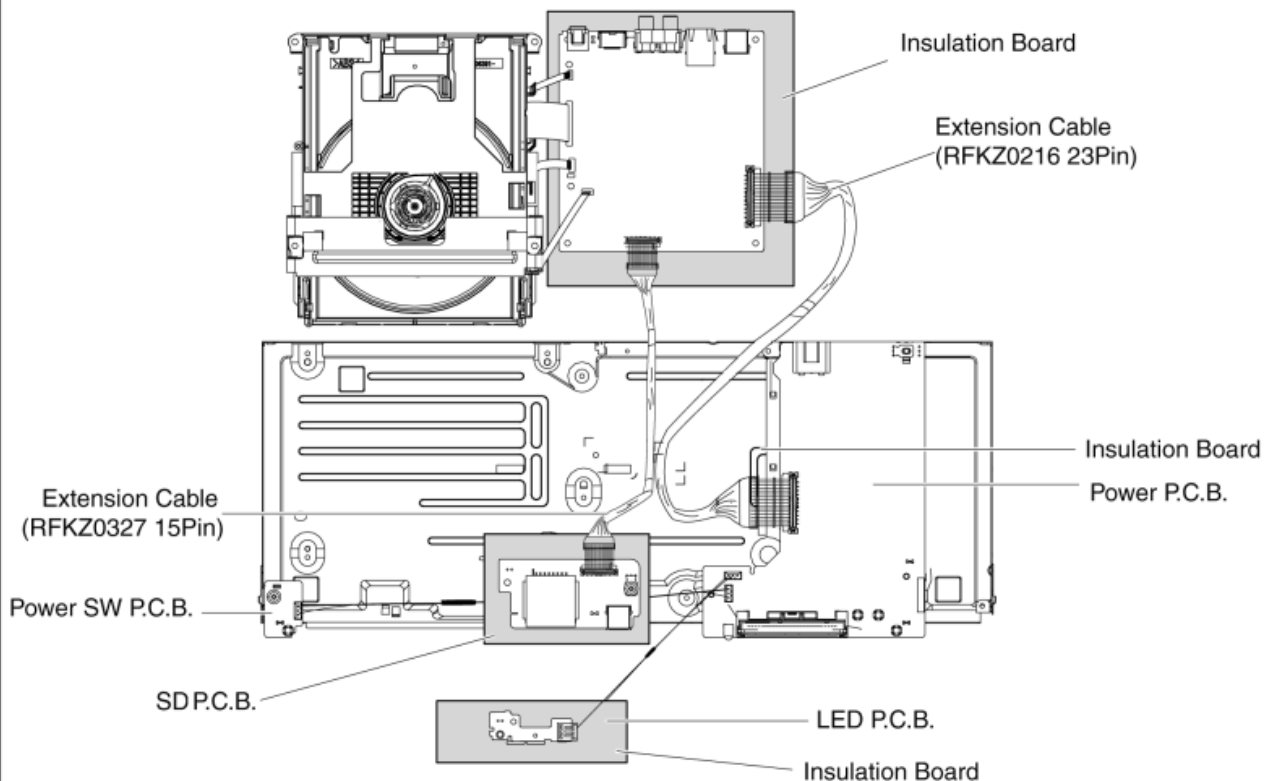
Connect Extension Cables shown below.

Between Power P.C.B. and Digital P.C.B.: (RFKZ0216) 23 Pin

Between SD P.C.B. and Digital P.C.B.: (RFKZ0327) 15 Pin

Caution :

1. Red wire should be connected to pin 1.



10.2 Caution for Replacing Parts

10.2.1 Items that should be done after replacing parts

✓: Necessary —: Unnecessary

Replacing Parts \ Items that Should be done	Updating Firmware (Note 1)
Digital P.C.B.	✓

Note 1:

Download latest Firmware and burn it on CD-R or CD-RW, and update Firmware.

10.2.2 Standard Inspection Specifications after Making Repairs

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

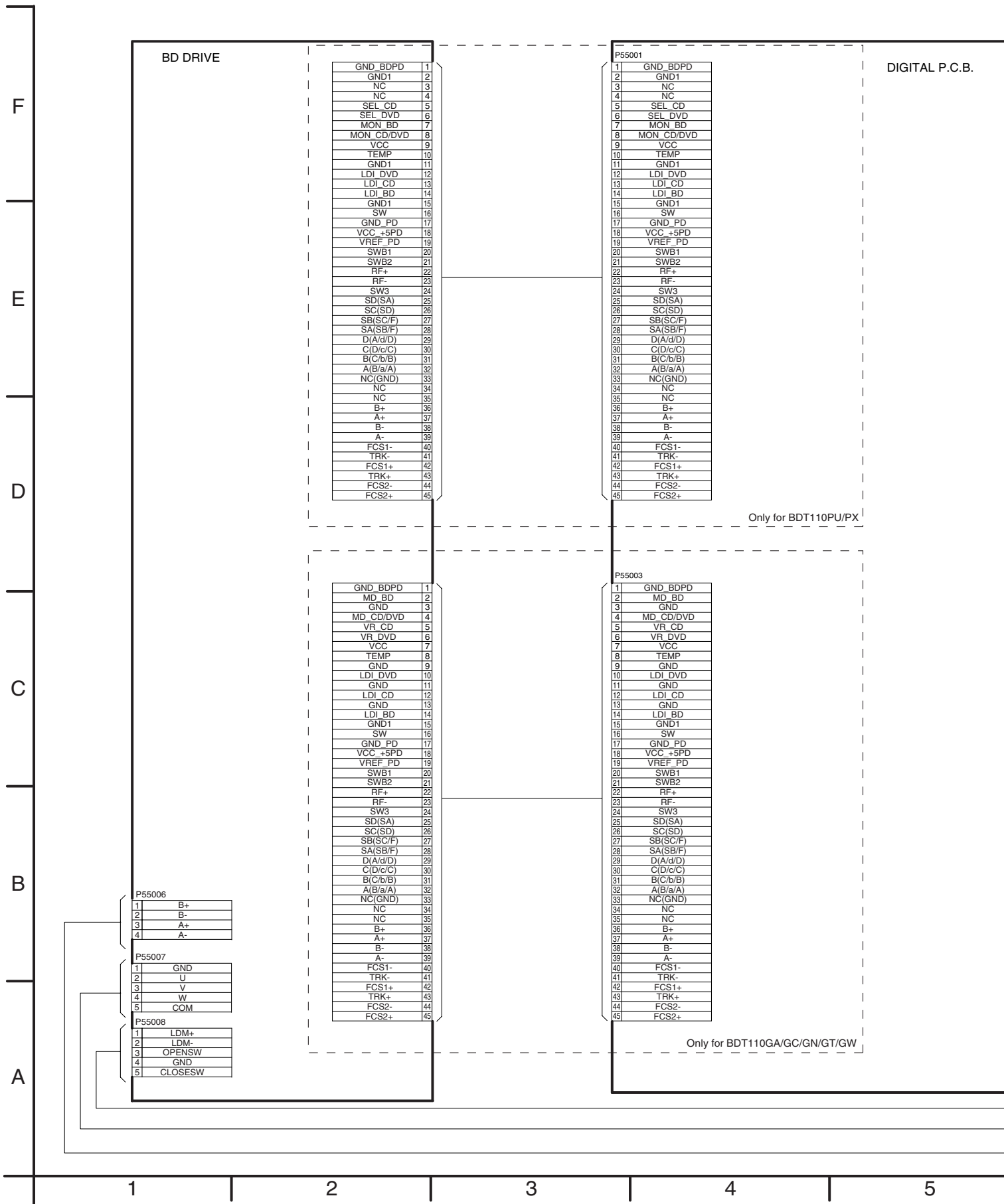
No.	Procedure	Item to Check
1	Turn on the power, and confirm items pointed out.	Items pointed out should reappear.
2	Insert RAM disc.	The Panasonic RAM disc should be recognized.
3	Perform playback for one minute using the RAM disc.	No abnormality should be seen in the picture, sound or operation.*Panasonic DVD-RAM disc should be used when recording and playback.
4	Perform playback for one minute using the BD-Video disc.	No abnormality should be seen in the picture, sound or operation.
5	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.
6	After checking and making repairs, upgrade the firmware to the latest version.	Make sure that [UPD OK] appears in the FL displays. *[UNSUPPORT] display means the unit is already updated to newest same version. Then version up is not necessary.
7	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 in the FL display. After checking it, turn the power off.

Use the following checklist to establish the judgement 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				

12 Schematic Diagram

12.1. Interconnection Schematic Diagram



DIGITAL P.C.B.

P58001	
FL_CLK	1
FL_CS	2
FL_TXD	3
BUZZER	4
PW_X_SW3.3V	5
BZ_DOWN_H	6
KEY2	7
KEY3	8
FL_DCDC_ON_H	9
KEY1	10
REMOCON	11
PW_X_SW12.2V	12
PW_X_SW12.2V	13
PW_X_SW12.2V	14
PW_X_SW12.2V	15
PW_X_SW5.9V	16
PW_X_SW5.9V	17
PW_X_SW5.9V	18
GND	19
GND	20
GND	21
GND	22
P_STNANDBY_H	23

POWER_SW P.C.B.	
PJ7551	
KEY_POWER	1
GND	2

LED P.C.B.	
PJ7301	
VCC	1
LED1	2
LED2	3

P59301	
GND	1
CMD	2
CLK	3
DAT3	4
DAT2	5
GND	6
DAT0	7
3.3V	8
DAT1	9
CD	10
WP	11
VBUS	12
DN	13
DP	14
FGND	15

B+	1
B-	2
A+	3
A-	4

GND	1
U	2
V	3
W	4
COM	5

LDM+	1
LDM-	2
OPENSW	3
GND	4
CLOSESW	5

POWER P.C.B.

P1102	
FL_CLK	1
FL_CS	2
FL_TXD	3
BUZZER	4
PW_X_SW3.3V	5
BZ_DOWN_H	6
KEY2	7
KEY3	8
FL_DCDC_ON_H	9
KEY1	10
REMOCON	11
PW_X_SW12.2V	12
PW_X_SW12.2V	13
PW_X_SW12.2V	14
PW_X_SW12.2V	15
PW_X_SW5.9V	16
PW_X_SW5.9V	17
PW_X_SW5.9V	18
GND	19
GND	20
GND	21
GND	22
P_STNANDBY_H	23



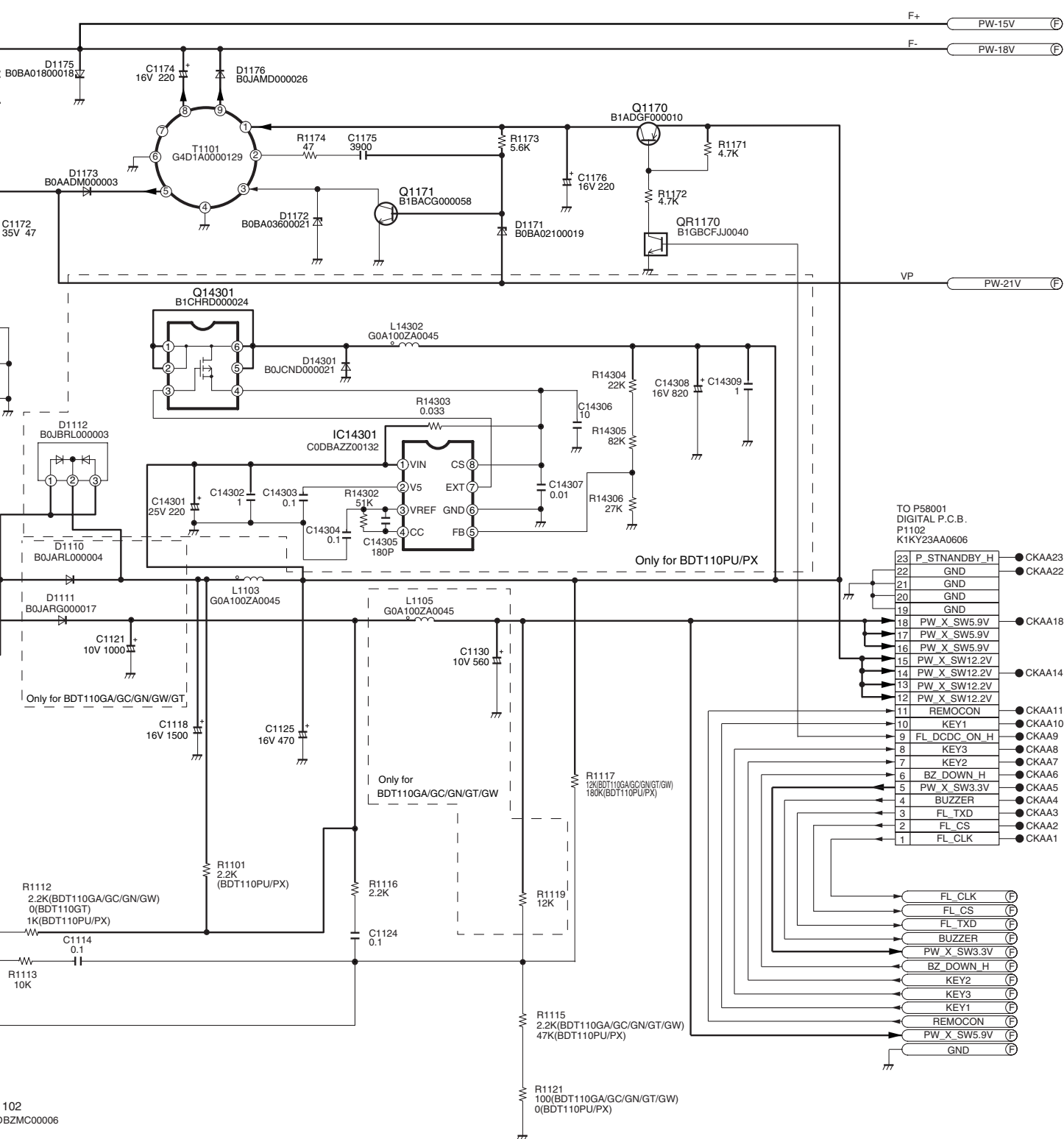
P7004	
KEY_POWER	1
GND	2
	3

P7001	
VCC	1
LED1	2
LED2	3

SD_USB P.C.B.

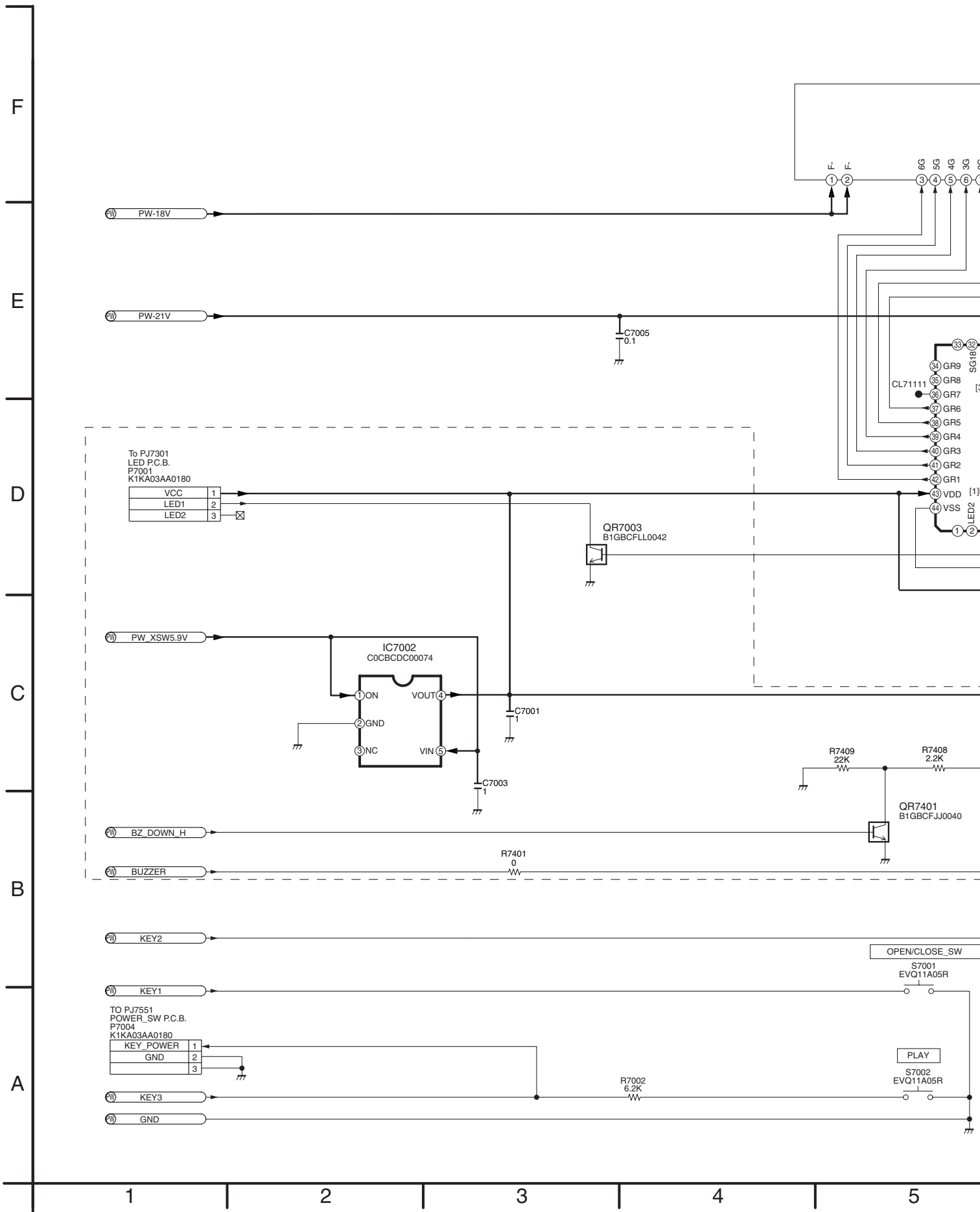
P6801	
GND	1
CMD	2
CLK	3
DAT3	4
DAT2	5
GND	6
DAT0	7
3.3V	8
DAT1	9
CD	10
WP	11
VBUS	12
DN	13
DP	14
FGND	15

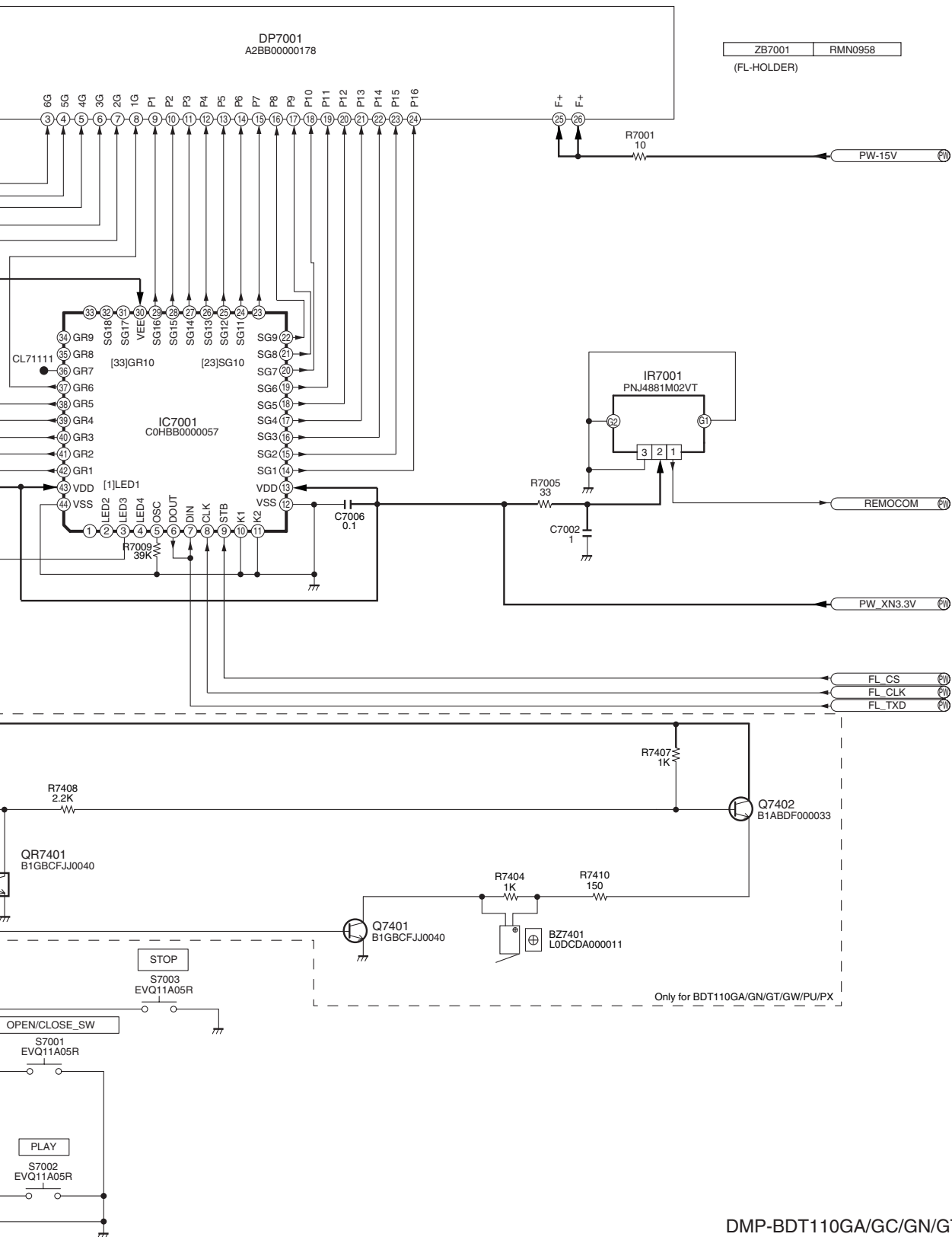
DMP-BDT110GA/GC/GN/GT/GW
DMP-BDT110PU/PX
INTERCONNECTION
SCHEMATIC DIAGRAM



DMP-BDT110GA/GC/GN/GT/GW
DMP-BDT110PU/PX
POWER_P SECTION
SCHEMATIC DIAGRAM

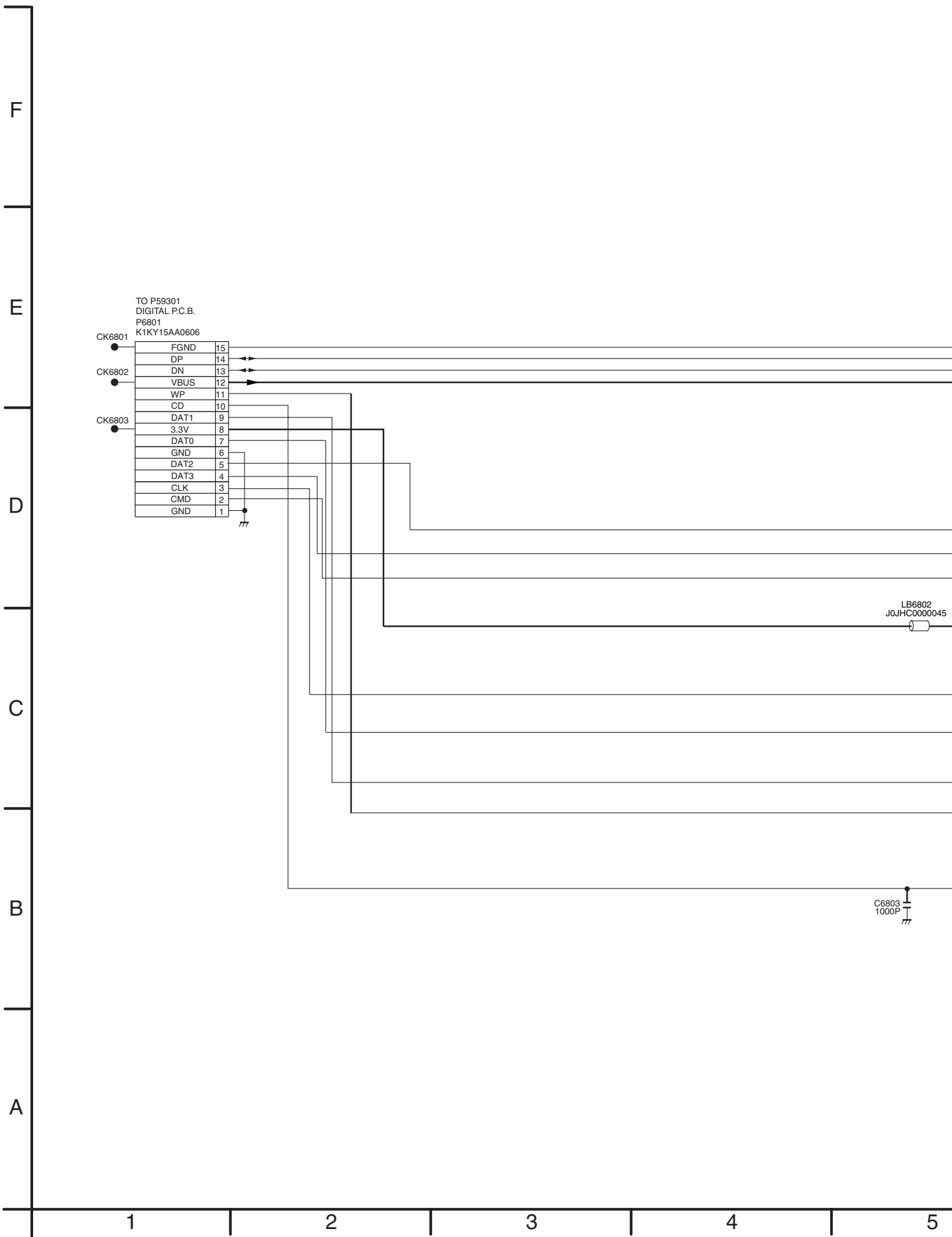
12.3. FL Section Schematic Diagram

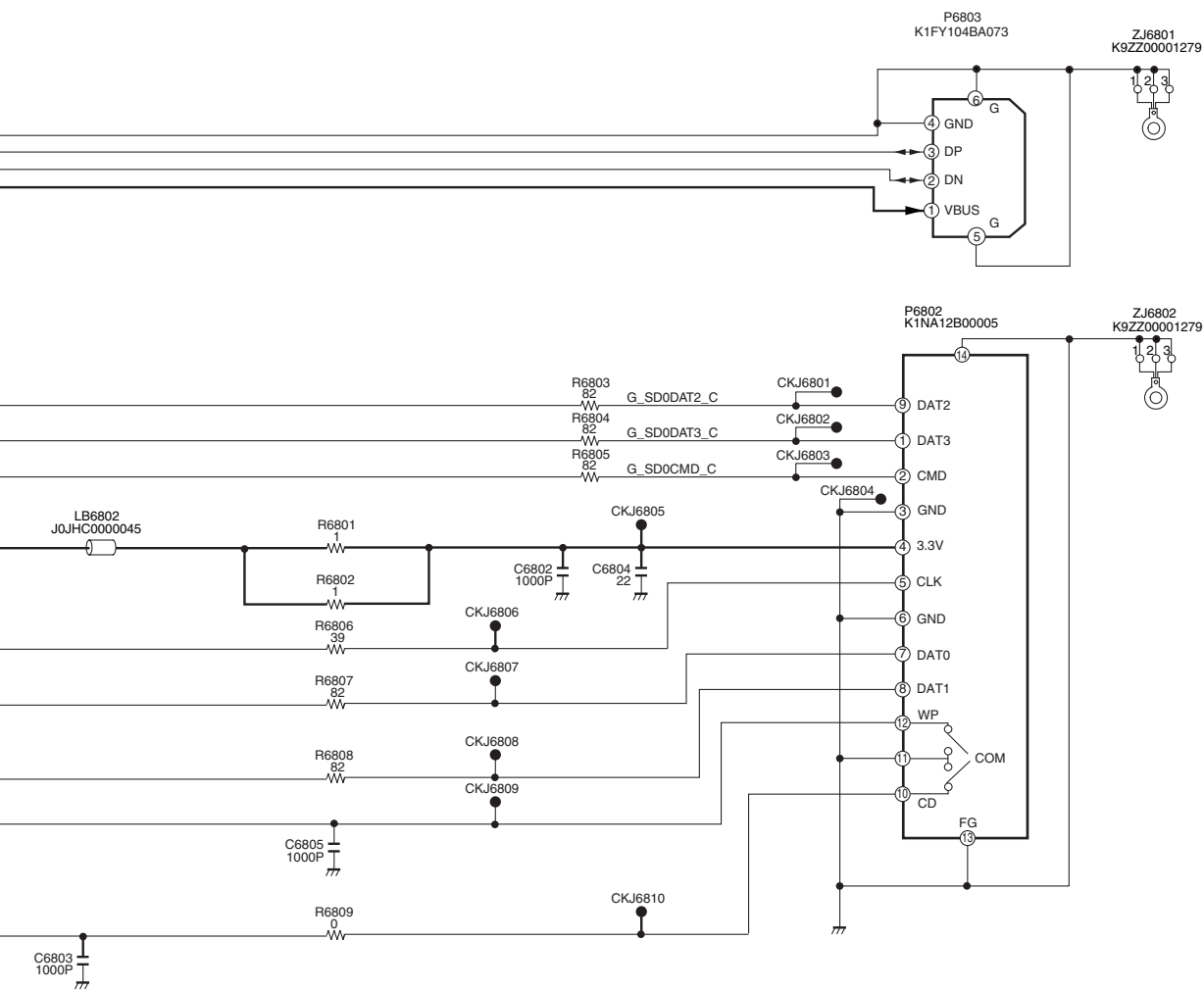




DMP-BDT110GA/GC/GN/GT/GW
DMP-BDT110PU/PX
FL SECTION
SCHEMATIC DIAGRAM

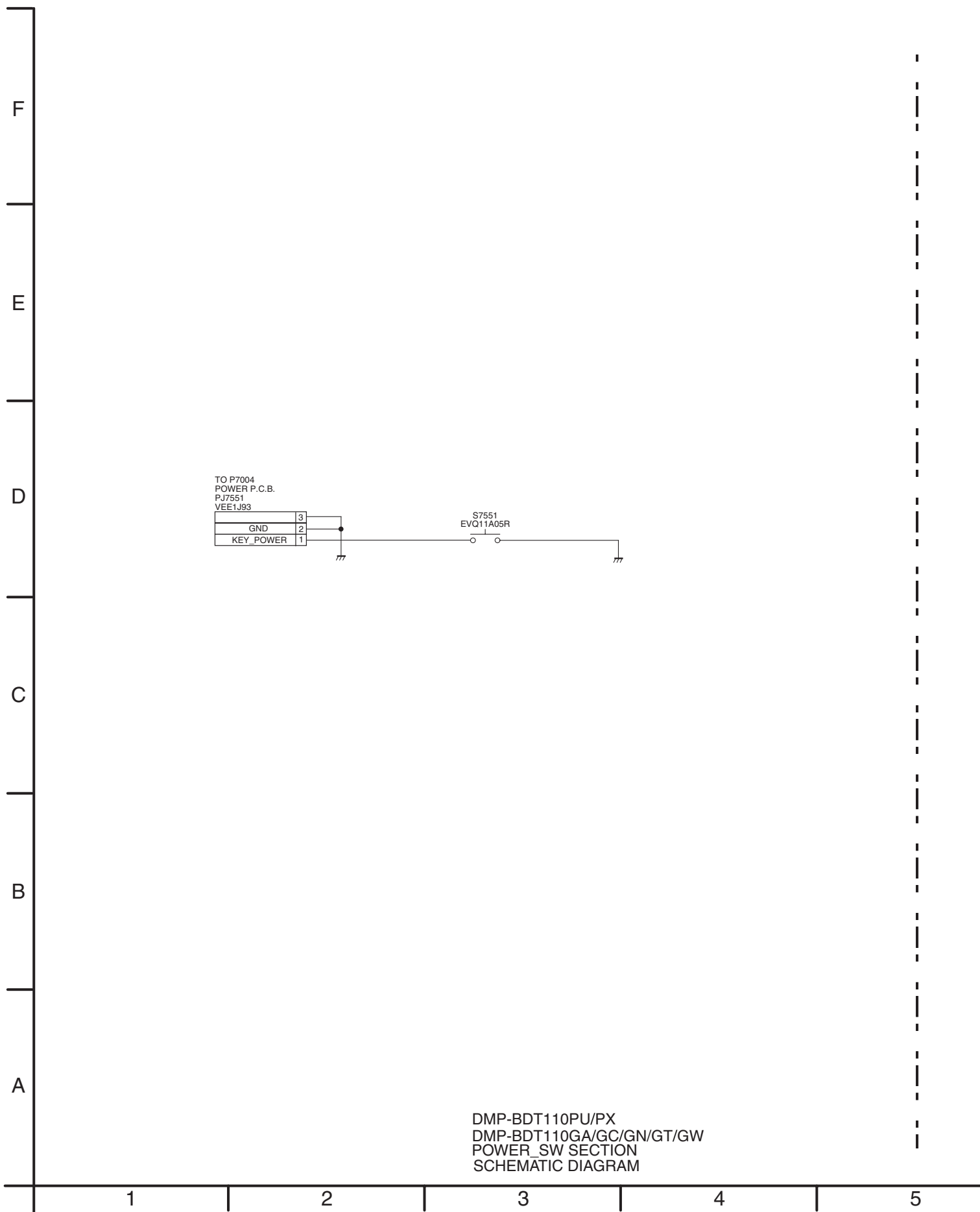
12.4. SD_USB Section Schematic Diagram

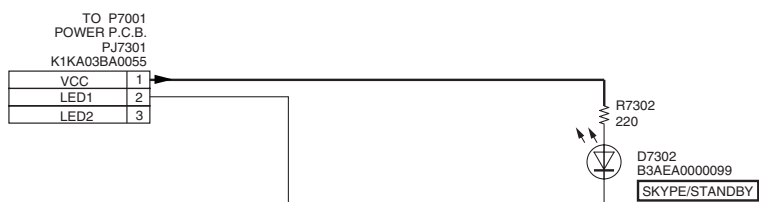




DMP-BDT110GA/GC/GN/GT/GW
DMP-BDT110PU/PX
SD_USB SECTION
SCHEMATIC DIAGRAM

12.5. POWER SW and LED Section Schematic Diagram





DMP-BDT110PU/PX
DMP-BDT110GA/GC/GN/GT/GW
LED SECTION
SCHEMATIC DIAGRAM

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
	CPUADR	CPU ADDRESS LATCH
	CPUADT	CPU ADDRESS DATA BUS
	CPUIRQ	CPU INTERRUPT REQUEST
	CPRD	CPU READ ENABLE
	CPWR	CPU WRITE ENABLE
	CS	CHIP SELECT
	CSYNCCIN	COMPOSITE SYNC IN
	CSYNCCOUT	COMPOSITE SYNC OUT
D	DACCK	D/A CONVERTER CLOCK
	DEEMP	DEEMPHASIS BIT ON/OFF
	DEMPH	DEEMPHASIS 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
	DREQ	DATA REQUEST
	DRESP	DATA RESPONSE
	DSC	DIGITAL SERVO CONTROLLER
	DSLIF	DATA SLICE LOOP FILTER
	DVD	DIGITAL VIDEO DISC

INITIAL/LOGO		ABBREVIATIONS
E	EC	ERROR TORQUE CONTROL
	ECR	ERROR TORQUE CONTROL
	ENCSEL	REFERENCE
	ETMCLK	ENCODER SELECT
	ETSCLK	EXTERNAL M CLOCK (81MHz/40.5MHz)
F	FBAL	EXTERNAL S CLOCK (54MHz)
	FCLK	FOCUS BALANCE
	FE	FRAME CLOCK
	FFI	FOCUS ERROR
	FEO	FOCUS ERROR AMP INVERTED INPUT
	FG	FOCUS ERROR AMP OUTPUT
	FSC	FREQUENCY GENERATOR
	FSCK	FREQUENCY SUB CARRIER
G	FS (384 OVER SAMPLING) CLOCK	
H	GND	COMMON GROUNDING (EARTH)
	HA0~UP	HOST ADDRESS
	HD0~UP	HOST DATA
	HINT	HOST INTERRUPT
	HRXW	HOST READ/WRITE

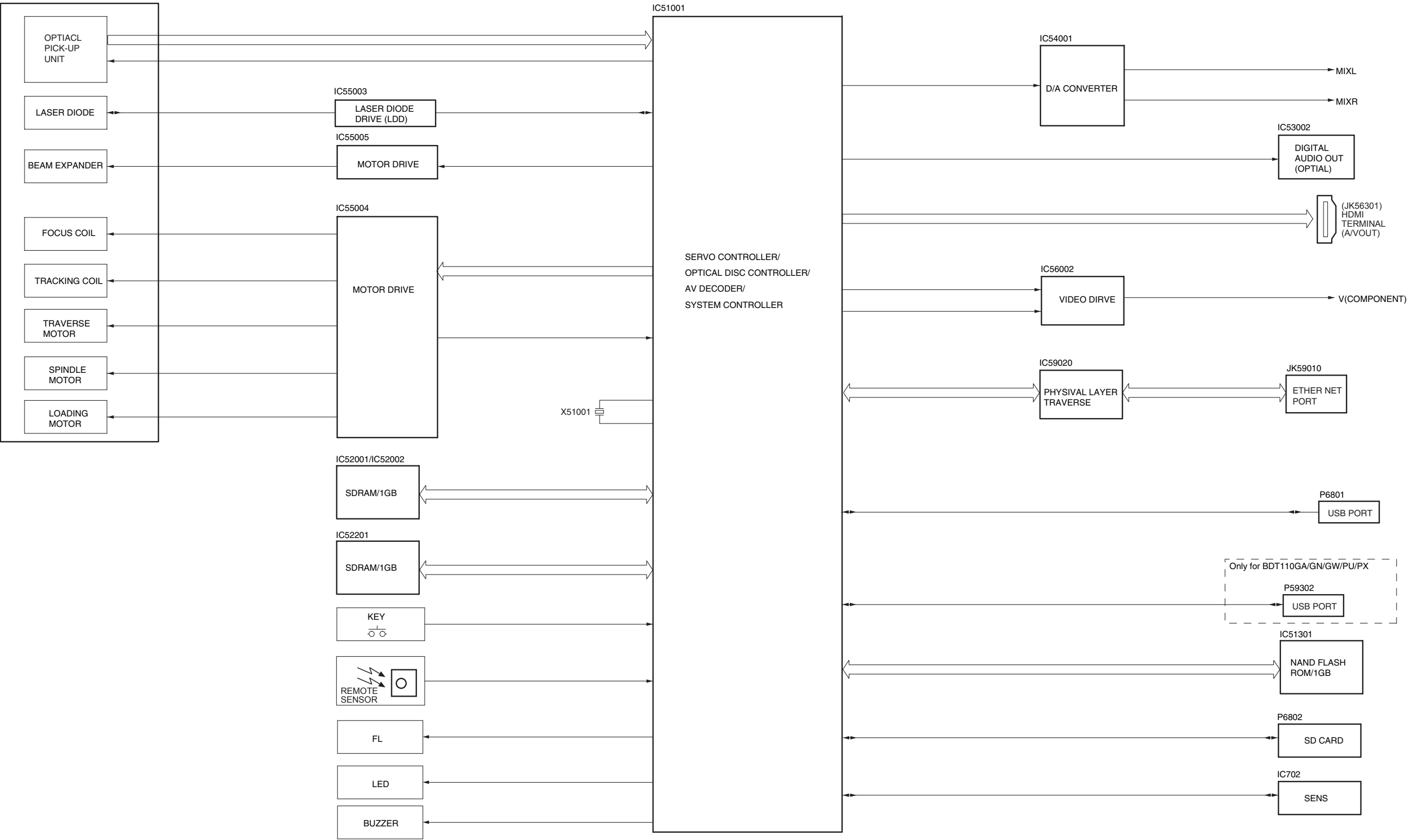
INITIAL/LOGO		ABBREVIATIONS
I	IECOUT	IEC958FORMATDATAOUTPUT
	IPFRAG	INTERPOLATIONFLAG
	IREF	I(CURRENT)REFERENCE
	ISEL	INTERFACEMODESELECT
L	LDON	LASERDIODECONTROL
	LPC	LASERPOWERCONTROL
	LRCK	LCH/RCHDISTINCTIONCLOCK
M	MA0~UP	MEMORYADDRESS
	MCK	MEMORYCLOCK
	MCKI	MEMORYCLOCKINPUT
	MCLK	MEMORYSERIALCOMMANDCLOCK
	MDATA	MEMORYSERIALCOMMANDDATA
	MDQ0~UP	MEMORYDATAINPUT/OUTPUT
	MDQM	MEMORYDATAI/OMASK
	MLD	MEMORYSERIALCOMMANDLOAD
	MPEG	MOVINGPICTUREEXPERTSGROUP
O	ODC	OPTICALDISCONTROLLER
	OFTR	OFFTRACKING
	OSCI	OSCILLATORINPUT
	OSCO	OSCILLATOROUTPUT
	OSD	ONSCREENDISPLAY
P	P1~UP	PORT
	PCD	CDTRACKINGPHASEDIFFERENCE
	PCK	PLLLOCK
	PDVD	DVDTRACKINGPHASEDIFFERENCE
	PEAK	CAP.FORPEAKHOLD
	PLLCLK	CHANNELPLLLOCK
	PLLOK	PLLLOCK
	PWMCTL	PWMOUTPUTCONTROL
	PWMDA	PULSEWAVEMOTORDRIVEA
	PWMOA,B	PULSEWAVEMOTOROUTA,B

INITIAL/LOGO		ABBREVIATIONS
R	RE	READENABLE
	RFENV	RFENVELOPE
	RFO	RFPHASEDIFFERENCEOUTPUT
	RS	(CD-ROM)REGISTERSELECT
	RSEL	RFPOLARITYSELECT
	RST	RESET
	RSV	RESERVE
S	SBIO,1	SERIALDATAINPUT
	SBO0	SERIALDATAOUTPUT
	SBT0,1	SERIALCLOCK
	SCK	SERIALDATACLOCK
	SCKR	AUDIOSERIALCLOCKRECEIVER
	SCL	SERIALCLOCK
	SCLK	SERIALCLOCK
	SDA	SERIALDATA
	SEG0~UP	FLSEGMENTOUTPUT
	SELCLK	SELECTCLOCK
	SEN	SERIALPORTENABLE
	SIN1,2	SERIALDATAIN
	SOUT1,2	SERIALDATAOUT
	SPDI	SERIALPORTDATAINPUT
	SPDO	SERIALPORTDATAOUTPUT
	SPEN	SERIALPORTTR/WENABLE
	SPRCLK	SERIALPORTREADCLOCK
	SPWCLK	SERIALPORTWRITECLOCK
	SQCK	SUBCODEQCLOCK
	SQCX	SUBCODEQDATAREADCLOCK
	SRDATA	SERIALDATA
	SRMADR	SRAMADDRESSBUS
	SRMDT0~7	SRAMDATABUS0~7
	SS	START/STOP
	STAT	STATUS
	STCLK	STREAMDATACLOCK
	STD0~UP	STREAMDATA
	STENABLE	STREAMDATAINPUTENABLE
	STSEL	STREAMDATAPOLARITYSELECT
	STVALID	STREAMDATAVALIDITY
	SUBC	SUBCODESERIAL
	SBCK	SUBCODECLOCK
	SUBQ	SUBCODEQDATA
	SYSCLK	SYSTEMCLOCK

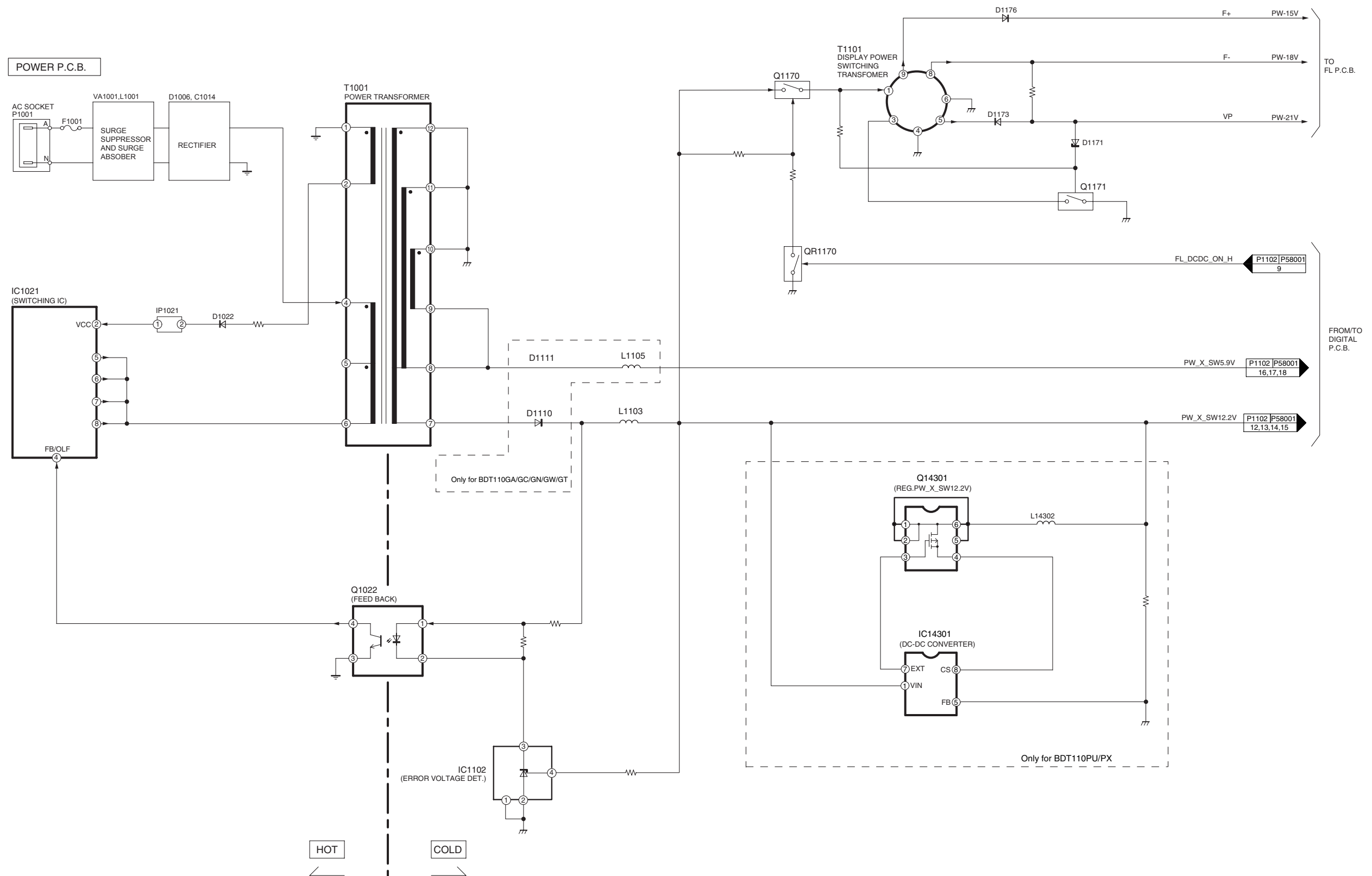
INITIAL/LOGO		ABBREVIATIONS
T	TE	TRACKING ERROR
	TIBAL	BALANCE CONTROL
	TID	BALANCE OUTPUT 1
	TIN	BALANCE INPUT
	TIP	BALANCE INPUT
	TIS	BALANCE OUTPUT 2
	TPSN	OP AMP INPUT
	TPSO	OP AMP OUTPUT
	TPSP	OP AMP INVERTED INPUT
	TRCRS	TRACK CROSS SIGNAL
	TRON	TRACKING ON
	TRSON	TRAVERSE SERVO ON

INITIAL/LOGO		ABBREVIATIONS
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

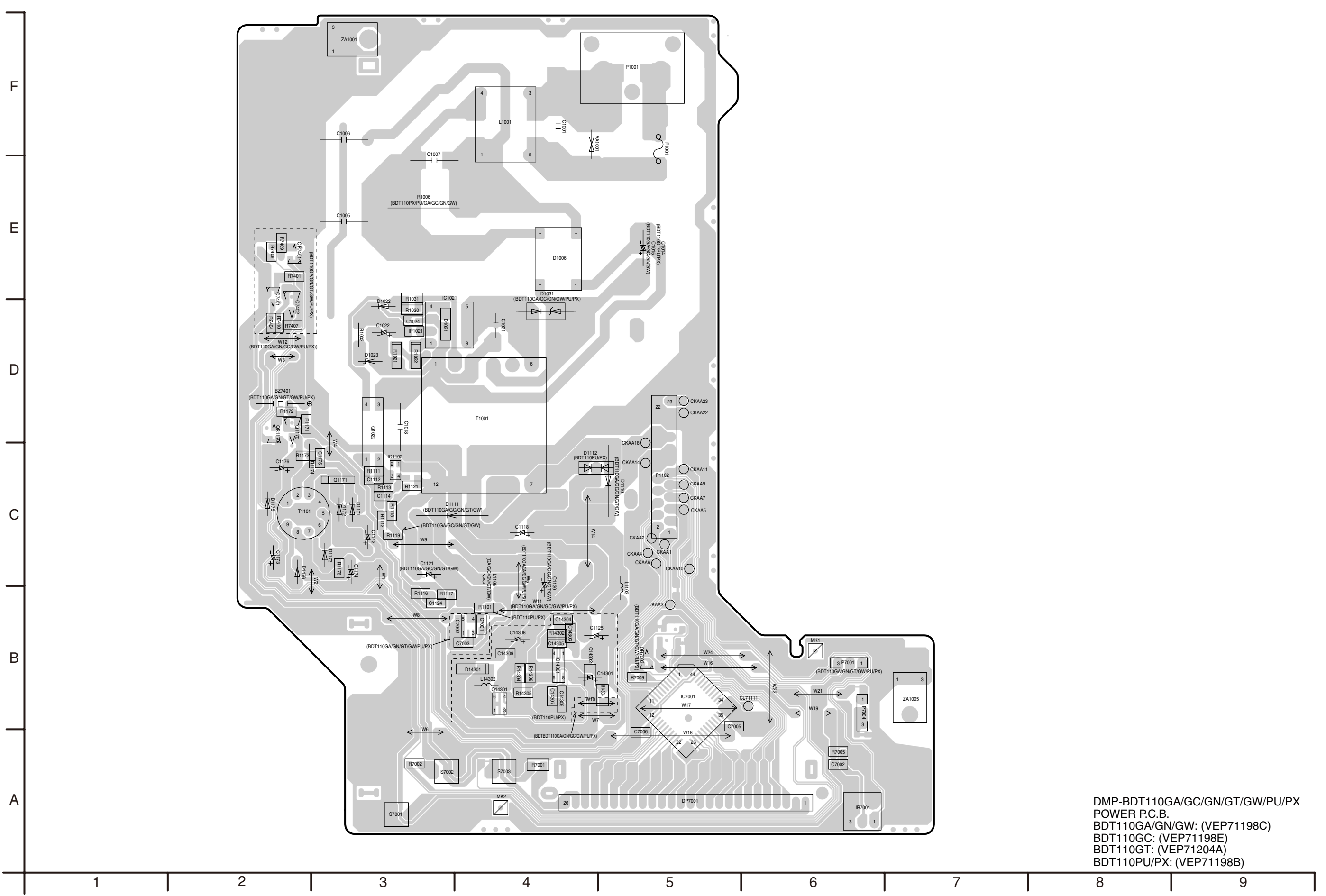
TRAVERSE MECHANISM UNIT



DMP-BDT110GA/GC/GN/GT/GW
DMP-BDT110PU/PX
OVERALL BLOCK DIAGRAM



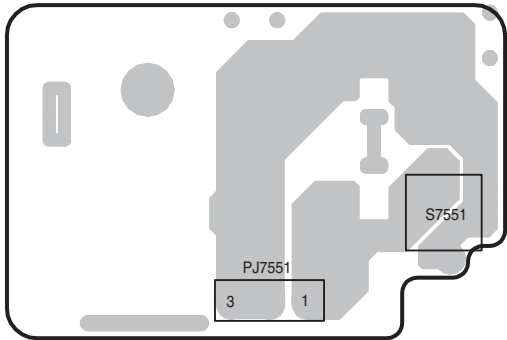
DMP-BDT110GA/GC/GN/GT/GW
DMP-BDT110PU/PX
POWER BLOCK DIAGRAM



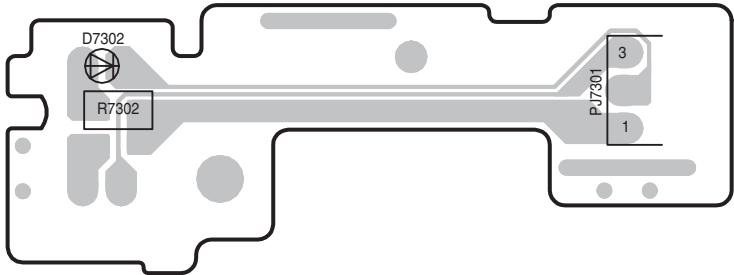
DMP-BDT110GA/GC/GN/GT/GW/PU/PX
POWER P.C.B.
BDT110GA/GN/GW: (VEP71198C)
BDT110GC: (VEP71198E)
BDT110GT: (VEP71204A)
BDT110PU/PX: (VEP71198B)

F
E
D
C
B
A

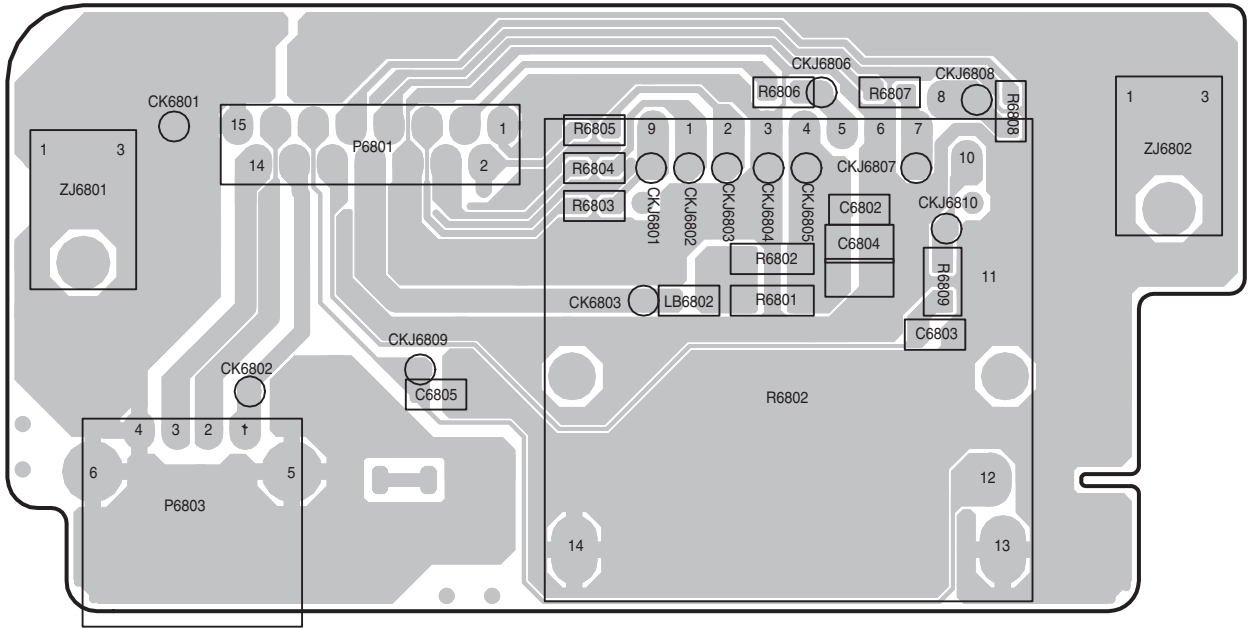
POWER SW P.C.B.
(FOIL SIDE)



LED P.C.B.
(FOIL SIDE)



SD P.C.B.
(FOIL SIDE)



F

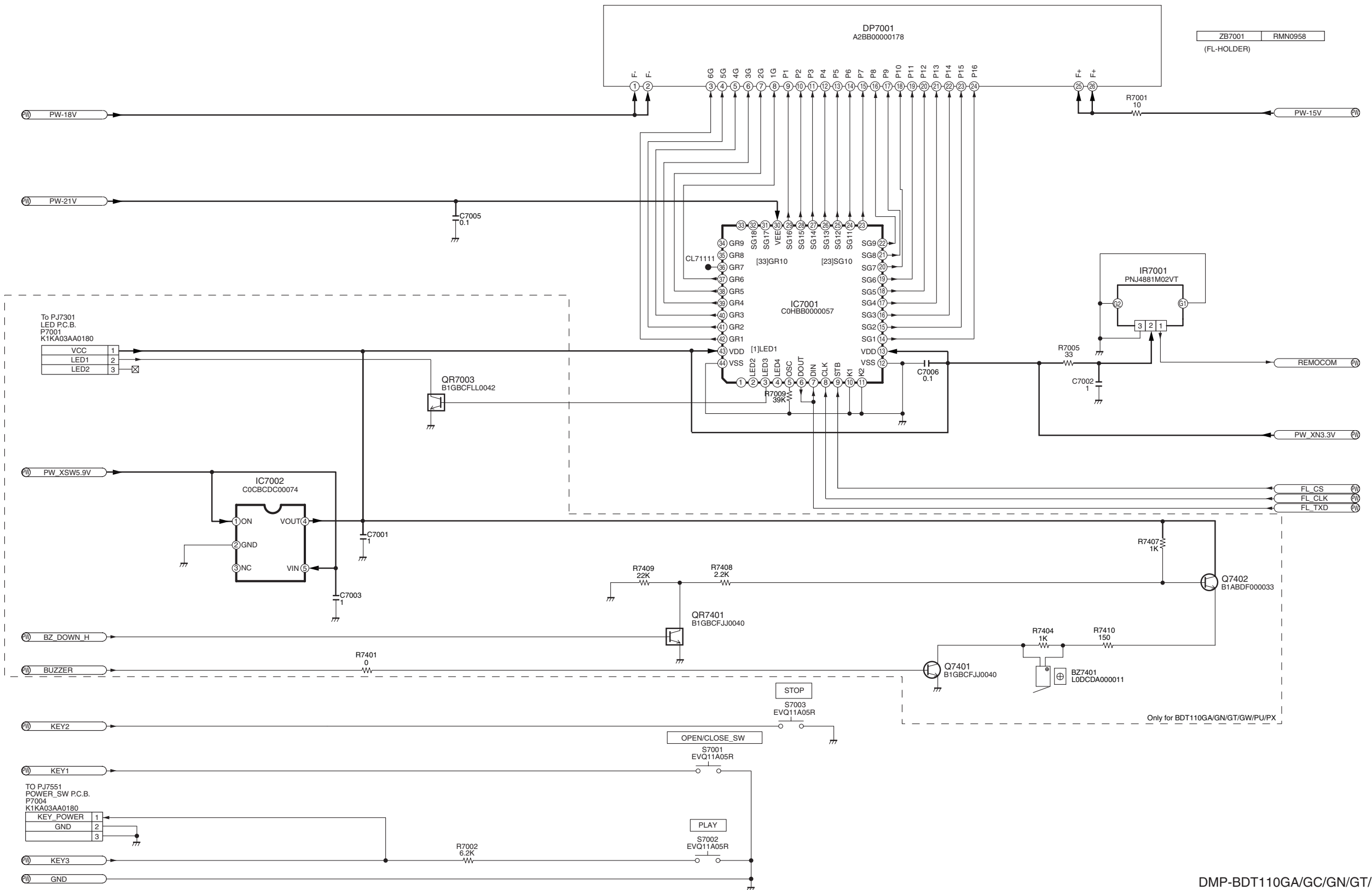
E

D

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DMP-BDT110GA/GC/GN/GT/GW
DMP-BDT110PU/PX
FL SECTION
SCHEMATIC DIAGRAM

F

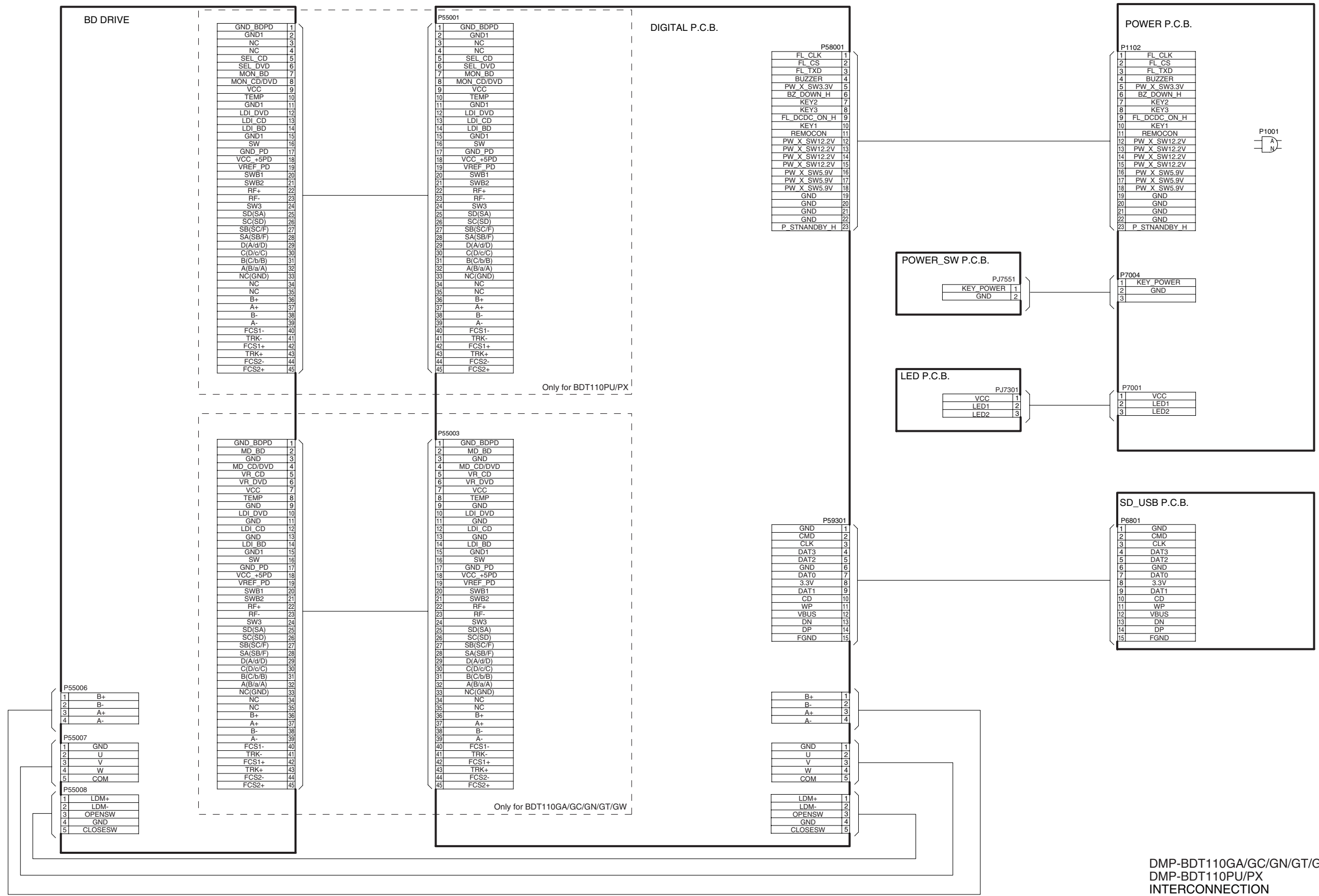
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DMP-BDT110GA/GC/GN/GT/GW
DMP-BDT110PU/PX
INTERCONNECTION
SCHEMATIC DIAGRAM

F

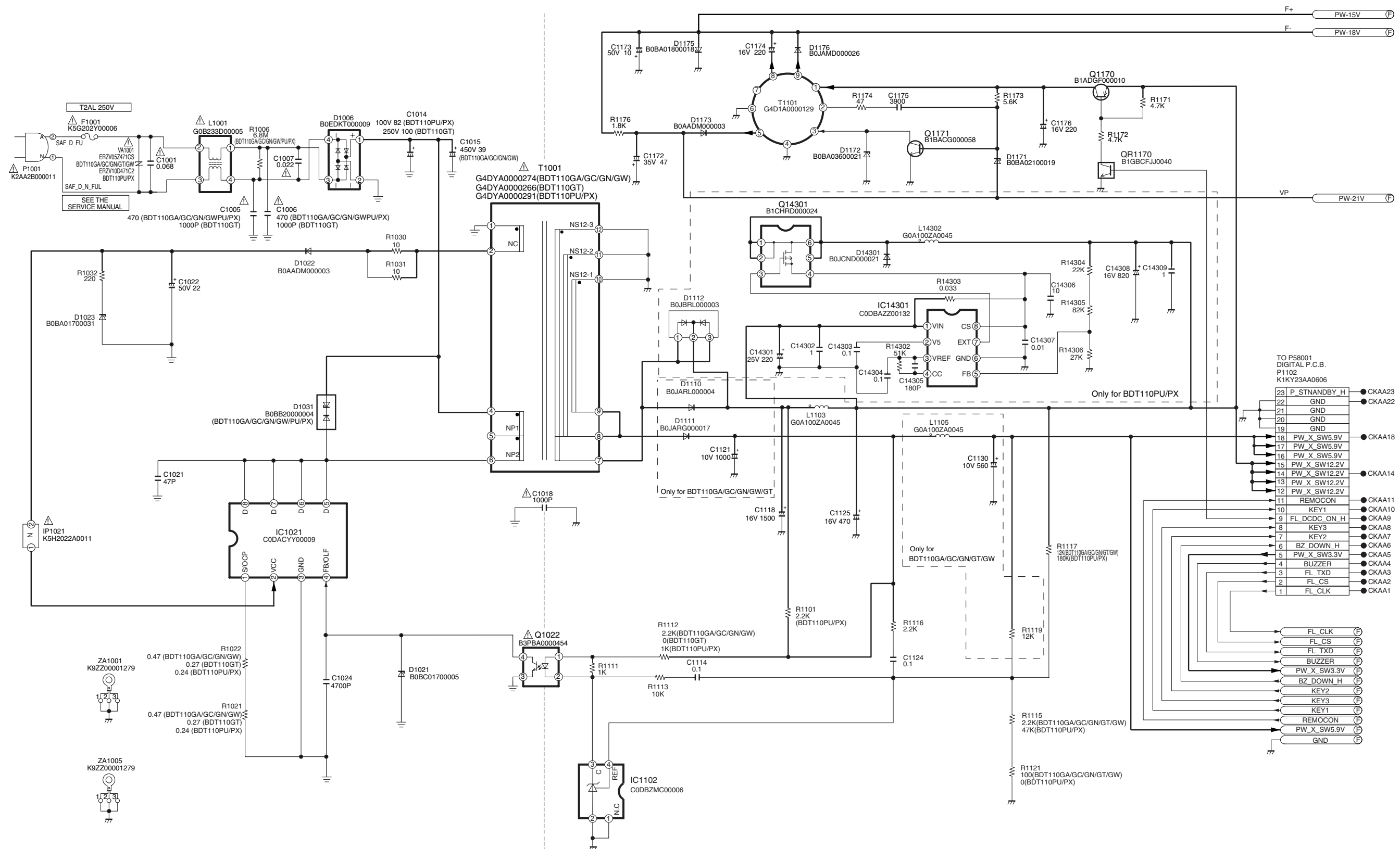
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DMP-BDT110GA/GC/GN/GT/GW
DMP-BDT110PU/PX
POWER_P SECTION
SCHEMATIC DIAGRAM

F

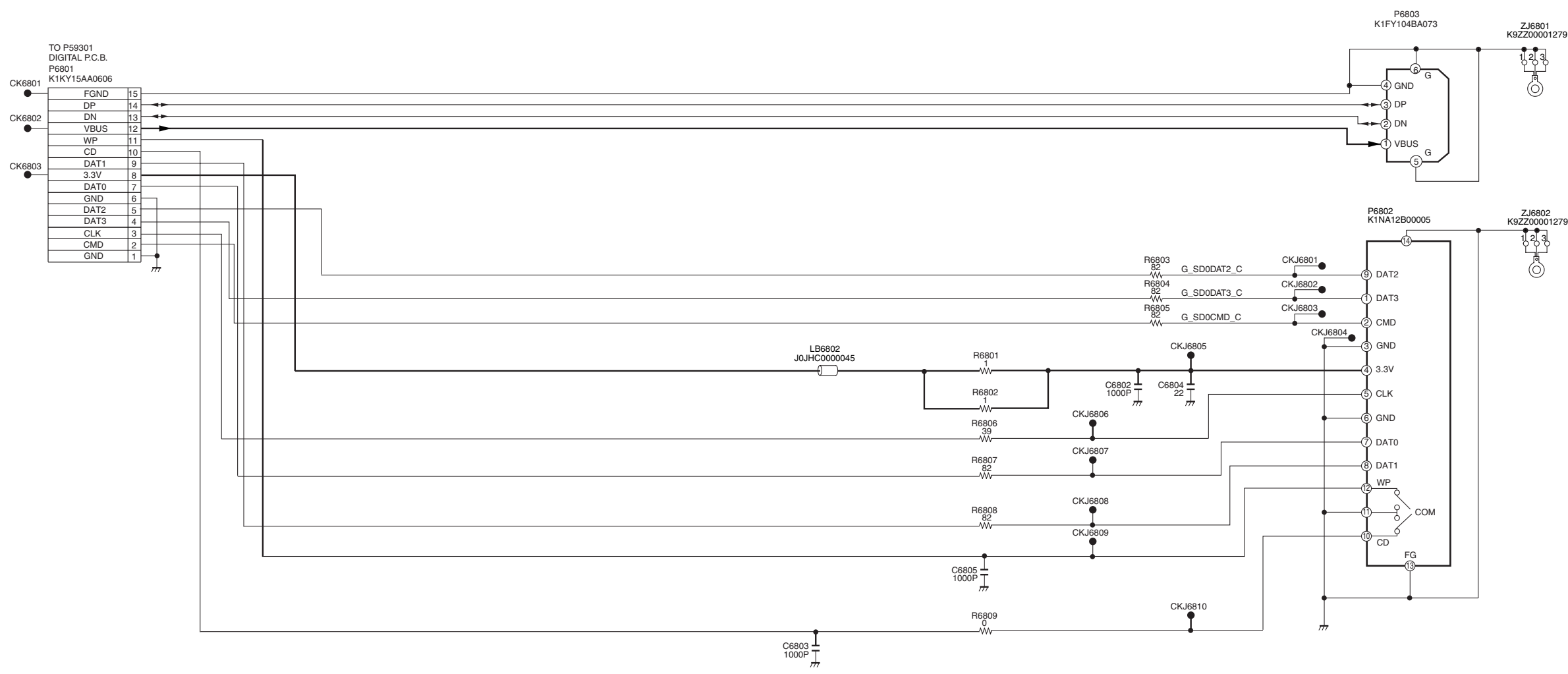
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DMP-BDT110GA/GC/GN/GT/GW
DMP-BDT110PU/PX
SD_USB SECTION
SCHEMATIC DIAGRAM

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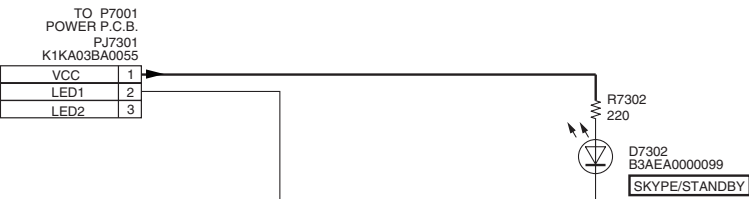
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DMP-BDT110PU/PX
DMP-BDT110GA/GC/GN/GT/GW
POWER_SW SECTION
SCHEMATIC DIAGRAM



DMP-BDT110PU/PX
DMP-BDT110GA/GC/GN/GT/GW
LED SECTION
SCHEMATIC DIAGRAM

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Ref No. MODE	IC1021									IC1102										
	1	2	3	4	5	6	7	8		1	2	3	4							
PLAY	0	0	0	0	3.1	3.1	3.1	3.1		0	0	3.6	2.4							
STOP	0	0	0	0	3.1	3.1	3.1	3.1		0	0	3.6	2.4							
Ref No. MODE	IC14301(BDT110PU/PX)																			
	1	2	3	4	5	6	7	8												
PLAY	12.2	4.5	0	1.2	1.3	0	0	11.8												
STOP	12.2	4.5	0	1.2	1.3	0	0	11.8												
Ref No. MODE	IC7001																			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
PLAY	0	0	0	0	0	0	3.3	3.3	0	0	0	0	3.3	-20	-20	-12	-20	-17	-20	0
STOP	0	0	0	0	0	0	3.3	3.3	0	0	0	0	3.3	-20	-20	-12	-20	-17	-20	0
Ref No. MODE																				
	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
PLAY	-15	-12	-12	-9	-15	-20	-18	-20	-10	-20	0	0	0	0	0	-18	-18	-18	-18	-18
STOP	-15	-12	-12	-9	-15	-20	-18	-20	-10	-20	0	-0	0	0	0	-18	-18	-18	-18	-18
Ref No. MODE	IC7001				IC7002(BDT110GA/GN/GT//GW/PU/PX)															
	41	42	43	44		1	2	3	4	5										
PLAY	-18	-18	3.3	0		5.9	0	0	5.0	5.8										
STOP	-18	3.3	3.3	0		5.9	0	0	5.0	5.8										
Ref No. MODE	Q14301(BDT110PU/PX)							Q1022					Q1170				Q1171			
	1	2	3	4	5	6		1	2	3	4		1	2	3		1	2	3	
PLAY	6	6	11.7	12.2	6	6		4.6	3.6	0	4.2		11.8	12.0	11.2		0.4	0	0	
STOP	6	6	11.7	12.2	6	6		4.6	3.6	0	4.2		11.8	12.0	11.2		0.4	0	0	
Ref No. MODE	Q7401				Q7402				QR1170				QR7003				QR7401			
	1	2	3		1	2	3		1	2	3		1	2	3		1	2	3	
PLAY	4.5	0	0		5	4.5	4.8		0	3.3	0		3.3	0	0		4.4	0	0	
STOP	4.5	0	0		5	4.5	4.8		0	3.3	0		3.3	0	0		4.4	0	0	

Model No. : DMP-BDT110GA/DMP-BDT110GC/DMP-BDT110GN/DMP-BDT110GT/DMP-BDT110GW/DMP-BDT110PU/DMP-BDT110PX Notice

Notes:

*Important safety notice:

Components identified by  mark have special characteristics important for safety.

Furthermore, special parts which have purposes of

fire-retardant (resistors), high-quality sound (capacitors), low-noise (resistors), etc. are used.

When replacing any of components, be sure to use only manufacture's specified parts shown in the parts list.

*Warning: This product uses a laser diode. Refer to caution statements.

*Capacity values are in microfarads (μF) unless specified otherwise, P=Pico-farads (pF), F=Farads (F).

*Resistance values are in ohms, unless specified otherwise, 1K=1,000 (OHM), 1M=1,000k (OHM).

*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.

*"(IA)-(IF)" marks in Remarks indicate languages of instruction manuals. [(IA): Traditional Chinese; (IB): English; (IC): Arabic;

(ID): Traditional Chinese; (IE): Spanish; (IF): English, Spanish]

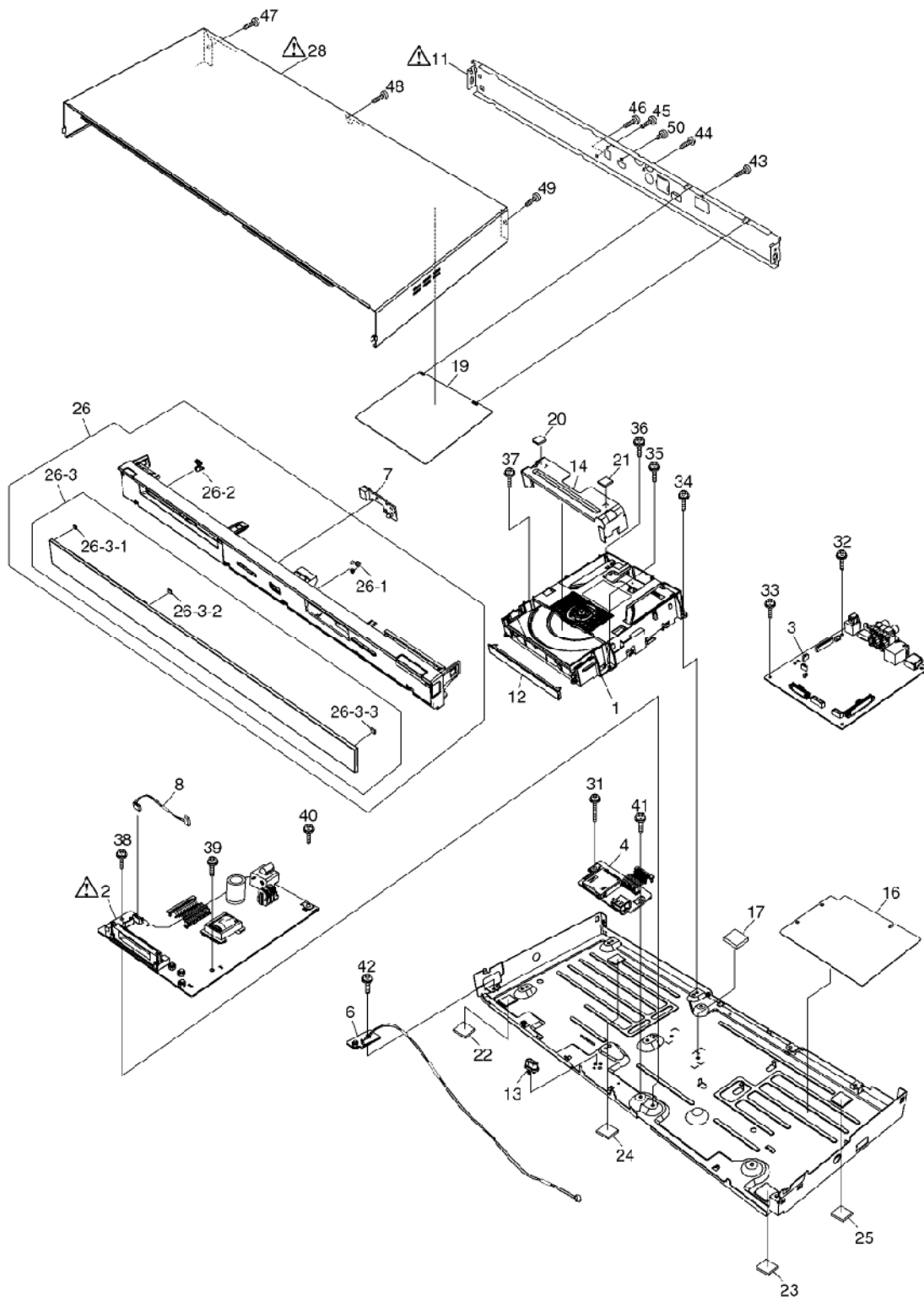
*All parts are supplied by CHPAVC.

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

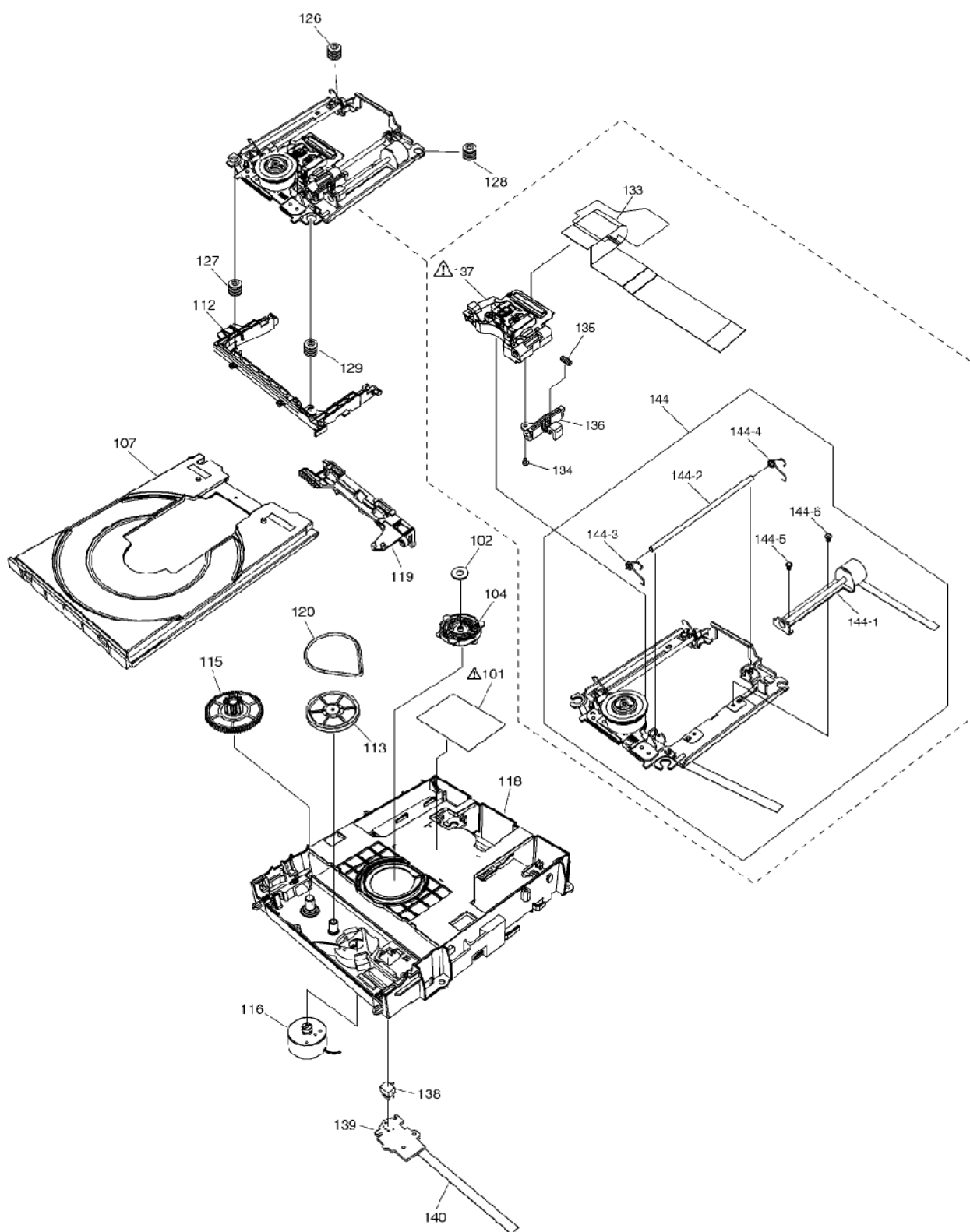
Notes:

*Parts indicated with "ADJ" in the Remarks column are necessary to adjustment value initialization adjust.

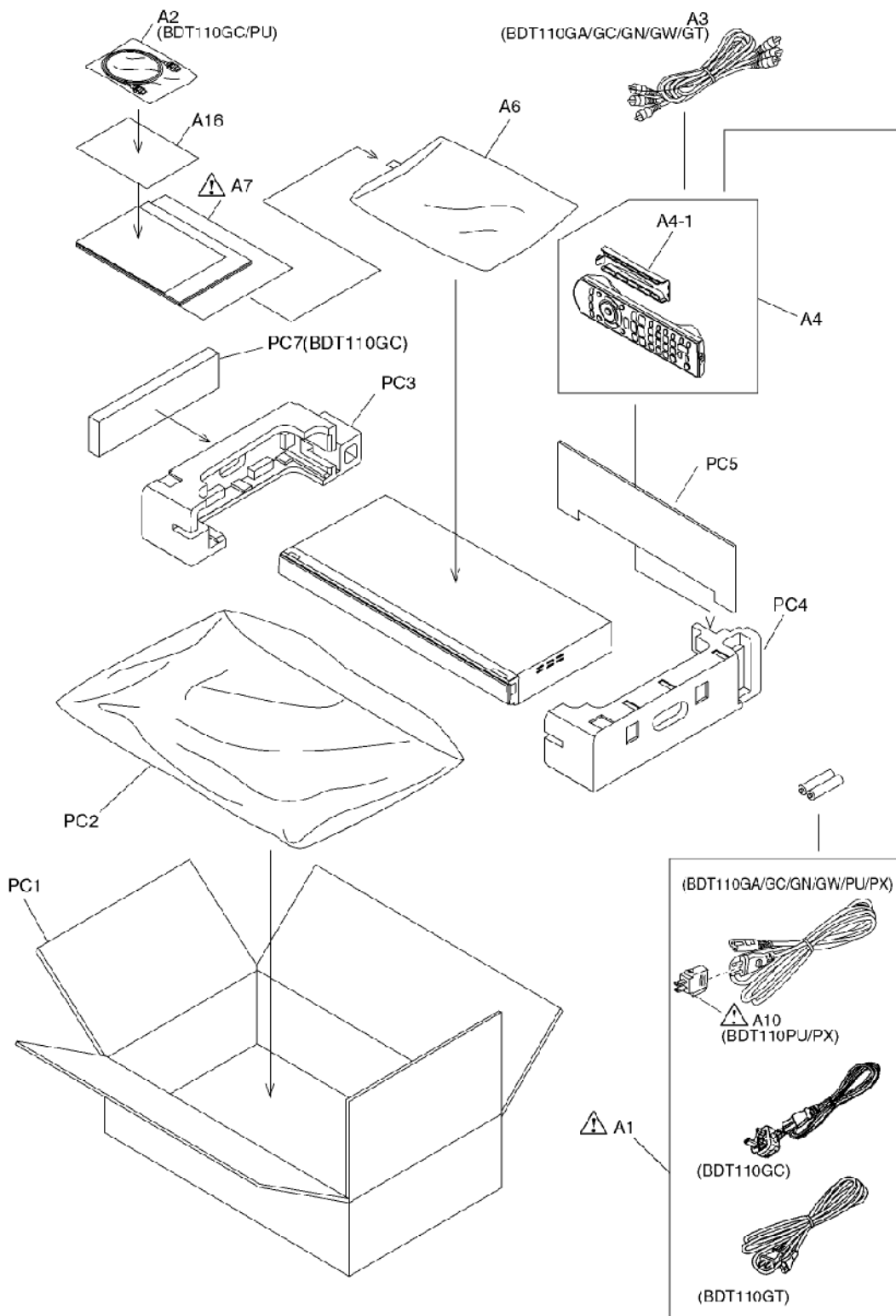
Model No. : DMP-BDT110GA/DMP-BDT110GC/DMP-BDT110GN/DMP-BDT110GT/DMP-BDT110GW/DMP-BDT110PU/DMP-BDT110PX Exploded View



Model No. : DMP-BDT110GA/DMP-BDT110GC/DMP-BDT110GN/DMP-BDT110GT/DMP-BDT110GW/DMP-BDT110PU/DMP-BDT110PX Mechanism View



Model No. : DMP-BDT110GA/DMP-BDT110GC/DMP-BDT110GN/DMP-BDT110GT/DMP-BDT110GW/DMP-BDT110PU/DMP-BDT110PX Packing View



Model No. : DMP-BDT110GA/DMP-BDT110GC/DMP-BDT110GN/DMP-BDT110GT/DMP-BDT110GW/DMP-BDT110PU/DMP-BDT110PX Parts List

Change	Safety	Ref. No.	Part No.	Part Name & Description	Q'ty	Remarks
CASING						
		1	VXY2130	BD DRIVE	1	BDT110GA/GC/GN/GW/GT
		1	VXY2122T	BD DRIVE	1	BDT110PU/PX
		2	VEP71198C	POWER P.C.B.	1	(RTL) E.S.D. BDT110GA/GN/GW
		2	VEP71198E	POWER P.C.B.	1	(RTL) E.S.D. BDT110GC
		2	VEP71204A	POWER P.C.B.	1	(RTL) E.S.D. BDT110GT
		2	VEP71198B	POWER P.C.B.	1	(RTL) E.S.D. BDT110PU/PX
		3	RFKB76234CAT	DIGITAL P.C.B.	1	(RTL) E.S.D. BDT110GA
		3	RFKB76234MT	DIGITAL P.C.B.	1	(RTL) E.S.D. BDT110GC
		3	RFKB76234CT	DIGITAL P.C.B.	1	(RTL) E.S.D. BDT110GN
		3	RFKB76234CWT	DIGITAL P.C.B.	1	(RTL) E.S.D. BDT110GW
		3	RFKB76234CTT	DIGITAL P.C.B.	1	(RTL) E.S.D. BDT110GT
		3	RFKB76234BT	DIGITAL P.C.B.	1	(RTL) E.S.D. BDT110PU
		3	RFKB76234AX	DIGITAL P.C.B.	1	(RTL) E.S.D. BDT110PX
		4	VEP70389A	SD P.C.B.	1	(RTL) E.S.D.
		6	VEP70390A	POWER SW P.C.B.	1	(RTL) E.S.D.
		7	VEP70421A	LED P.C.B.	1	(RTL) E.S.D.
		8	VEE1K27	POWER TO LED PCB CABLE	1	BDT110GA/GN/GW/GT/PU/PX
		11	RGR0414B-L1	REAR PANEL	1	BDT110GA
		11	RGR0414G-A1	REAR PANEL	1	BDT110GC
		11	RGR0414B-D1	REAR PANEL	1	BDT110GN
		11	RGR0414B-S	REAR PANEL	1	BDT110GW
		11	RGR0414B-F1	REAR PANEL	1	BDT110GT
		11	RGR0414B-G1	REAR PANEL	1	BDT110PU
		11	RGR0414B-F1	REAR PANEL	1	BDT110PX
		12	RGK2261-K	TRAY DOOR PANEL	1	
		13	RMX0404C	DRIVE SPACER	1	
		14	RMA2294	DRIVE SPACER	1	
		16	RMZ1201	BOTTOM CASE INSULATION SHEET	1	
		17	RSC0959	RADIATOR SHEET	1	
		19	RMZ1155-1	TOP CASE INSULATION SHEET	1	
		20	RKA0251-K	FOOT RUBBER	1	
		21	RKA0251-K	FOOT RUBBER	1	
		22	RKA0243-KJ	FOOT RUBBER	1	
		23	RKA0243-KJ	FOOT RUBBER	1	
		24	RKA0243-KJ	FOOT RUBBER	1	
		25	RKA0243-KJ	FOOT RUBBER	1	
		26	RYP1633A-K	FRONT PANEL ASS'Y	1	BDT110GA/GW/GN/GT
		26	RYP1633H-K	FRONT PANEL ASS'Y	1	BDT110GC
		26	RYP1633C-K	FRONT PANEL ASS'Y	1	BDT110PU
		26	RYP1633F-K	FRONT PANEL ASS'Y	1	BDT110PX
		26-1	RMB0921	DOOR SPRING	1	
		26-2	RMR2002-K	DOOR STOPPER	1	
		26-3	RYF0909-Q	DOOR ASS'Y	1	
		26-3-1	RMG0849-K	DAMPER	1	
		26-3-2	RMG0849-K	DAMPER	1	
		26-3-3	RMG0849-K	DAMPER	1	
		28	RKM0643-K	TOP CASE	1	
		31	RHD30164-J	SCREW	1	
		32	RHD30168-J	SCREW	1	
		33	RHD30168-J	SCREW	1	
		34	RHD30168-J	SCREW	1	
		35	RHD30168-J	SCREW	1	
		36	RHD30168-J	SCREW	1	
		37	RHD30168-J	SCREW	1	
		38	RHD30168-J	SCREW	1	
		39	RHD30168-J	SCREW	1	
		40	RHD30168-J	SCREW	1	
		41	RHD30168-J	SCREW	1	
		42	RHD30168-J	SCREW	1	
		43	RHD30119-L	SCREW	1	
		44	RHD30119-L	SCREW	1	

Model No. : DMP-BDT110GA/DMP-BDT110GC/DMP-BDT110GN/DMP-BDT110GT/DMP-BDT110GW/DMP-BDT110PU/DMP-BDT110PX Parts List

Change	Safety	Ref. No.	Part No.	Part Name & Description	Q'ty	Remarks
		45	RHD30119-L	SCREW	1	
		46	RHD30119-L	SCREW	1	
		47	RHD30119-L	SCREW	1	
		48	RHD30119-L	SCREW	1	
		49	RHD30119-L	SCREW	1	
		50	XSN3+4FJ	SCREW	1	
		101	VQL1V70-J	LASER CAUTION LABEL	1	
		102	VMA0V86	YOKE	1	
		104	VMD6392	CLAMPER	1	
		107	VMD6391	TRAY	1	
		112	VMD6494	MID BASE	1	
		113	VDG1756-1	PULLEY GEAR	1	
		115	VDG1757	MID GEAR	1	
		116	VEM0885	LOADING MOTOR U	1	
		118	VMD6389-1	MECHA CHASSIS	1	
		119	VMD6390	SLIDE CAM	1	
		120	VMG1720	BELT	1	
		126	VMG1966	DAMPER	1	
		127	VMG1966	DAMPER	1	
		128	VMG1966	DAMPER	1	
		129	VMG1966	DAMPER	1	
		133	VWJ2222-1	OPU FFC	1	
		134	VHD2268	NUT PIECE SCREW	1	
		135	VMB4004-J	NUT PIECE SPRING	1	
		136	VMD6395	NUT PIECE	1	
		137	RAF3800A-C	OPTICAL PICK-UP	1	ADJ BDT110GA/GC/GN/GW/GT
		137	L1BBZ0000006	OPTICAL PICK-UP	1	ADJ BDT110PU/PX
		138	K0L1CB000004	LEVER SWITCH	1	
		139	VJB70396	SW P.C.B.	1	E.S.D.
		140	VWJ2228-J	SW FFC	1	
		144	VXA8900-SER	TRAVERSE UNIT (WITHOUT OPU)	1	
		144-1	L6KAYYYH0006	STEPPING MOTOR	1	
		144-2	VMS8126	SHAFT	1	
		144-3	VMB4426	SHAFT SPRING	1	
		144-4	VMB4426	SHAFT SPRING	1	
		144-5	XTN2+4FFJ	STEPPING MOTOR SCREW	1	
		144-6	XTN2+4FFJ	STEPPING MOTOR SCREW	1	
ACCESSORY						
		A1	K2CP2CA00001	AC CORD	1	BDT110GA
		A1	K2CQ2CA00007	AC CORD	1	BDT110GA/GC/GW/GN/GT/GT
		A1	K2CZ3YY00005	AC CORD	1	BDT110GC
		A1	K2CJ2DA00014	AC CORD	1	BDT110GN
		A1	K2CA2CA00027	AC CORD	1	BDT110GT
		A2	K1HA19DA0007	HDMI CABLE	1	BDT110GC/PU
		A3	K2KYYYY00048	AV CORD	1	BDT110GN/GA/GC/GW/GT
		A4	N2QAYB000579	REMOTE CONTROL UNIT	1	BDT110GA/GN/GT/GW
		A4	N2QAYB000646	REMOTE CONTROL UNIT	1	BDT110GC
		A4	N2QAYB000608	REMOTE CONTROL UNIT	1	BDT110PU
		A4	N2QAYB000574	REMOTE CONTROL UNIT	1	BDT110PX
		A4-1	110300031300	BATTERY COVER	1	
		A6	RPFC0119-1	POLYETHYLENE BAG	1	
		A7	VQT3B78	OPERATING INSTRUCTIONS	1	(IA) BDT110GA
		A7	VQT3B77	OPERATING INSTRUCTIONS	1	(IB) BDT110GA/GC/GN/GW
		A7	VQT3B79	OPERATING INSTRUCTIONS	1	(IC) BDT110GC
		A7	VQT3B81	OPERATING INSTRUCTIONS	1	(ID) BDT110GT
		A7	VQT3B60	OPERATING INSTRUCTIONS	1	(IE) BDT110PU
		A7	VQT3B58-1	OPERATING INSTRUCTIONS	1	(IF) BDT110PX
		A10	K2DAYYY00002	POWER PLUG ADAPTOR	1	BDT110PU/PX
		A16	RQLS0434	CHINESE LABEL SHEET	1	BDT110GT
PACKING						
		PC1	RPG9428-1	PACKING CASE	1	BDT110GA
		PC1	RPG9429-1	PACKING CASE	1	BDT110GC

Model No. : DMP-BDT110GA/DMP-BDT110GC/DMP-BDT110GN/DMP-BDT110GT/DMP-BDT110GW/DMP-BDT110PU/DMP-BDT110PX Parts List

Change	Safety	Ref. No.	Part No.	Part Name & Description	Q'ty	Remarks
		PC1	RPG9427-1	PACKING CASE	1	BDT110GN
		PC1	RPG9579	PACKING CASE	1	BDT110GW
		PC1	RPG9431	PACKING CASE	1	BDT110GT
		PC1	RPG9426-2	PACKING CASE	1	BDT110PU
		PC1	RPG9425-1	PACKING CASE	1	BDT110PX
		PC2	RPF0536	POLYETHYLENE BAG	1	
		PC3	RPN2248A-1	CUSHION (A)	1	
		PC4	RPN2248B-1	CUSHION (B)	1	
		PC5	RPQ2772	PAD	1	
		PC7	RPQ2799	PAD	1	BDT110GC