

Service Manual

DVD Home Theater Sound System



SB-W340 (Silver)
SB-HW150 (Black)

SB-HS151

SB-HS151

Remote control transmitter

SB-HC150

SB-HF150

SA-PT160

SB-HF150

SA-PT160E
SA-PT160EB
SA-PT160EG

Colour

(S).....Silver Type (For E/EG only)

(K).....Black Type (For E/EB/EG)

Specifications

Main unit SA-PT160E/EB/EG

●GENERAL

Power Supply: AC 230 V - 240 V, 50Hz (EB)
AC 230 V, 50Hz (E/EG)

Power Consumption: 105 W

Power Consumption in Standby Mode: approx. 1 W

Dimensions (W×H×D): 430×60×342 mm

Mass: This unit 3 kg

Operating Temperature Range: 0°C to +40°C

Operating Humidity Range: 35% to 80% RH (no condensation)

●AMPLIFIER SECTION

RMS Output Power: Dolby Digital Mode

Front Ch: 55 W per channel (5 Ω), 1 kHz, 10% THD

Surround Ch: 55 W per channel (5 Ω), 1 kHz, 10% THD

Center Ch: 55 W per channel (5 Ω), 1 kHz, 10% THD

Subwoofer Ch: 55 W per channel (5 Ω), 1 kHz, 10% THD

55 W per channel (5 Ω), 100 Hz, 10 % THD

Total RMS Dolby Digital mode power: 330 W

DIN Output Power: Dolby Digital Mode

Front Ch: 25 W per channel (5 Ω), 1 kHz, 1% THD

Surround Ch: 25 W per channel (5 Ω), 1 kHz, 1% THD

Center Ch: 25 W per channel (5 Ω), 1 kHz, 1% THD

Subwoofer Ch: 25 W per channel (5 Ω), 100 Hz, 1 % THD

Total DIN Dolby Digital mode power: 150 W

●FM TUNER, TERMINALS SECTION

Preset Memory: FM 30 stations

Frequency Modulation (FM)

Frequency range: 87.50-108.00 MHz
(50-kHz step)

Sensitivity: 1.8 μV (IHF)

S/N 26 dB: 1.4 μV

Antenna terminals: 75 Ω (unbalanced)

●USB SECTION

USB Port:

USB standard: USB 2.0 full speed

Media file format support: MP3 (*.mp3)

WMA (*.wma)

JPEG (*.Jpg, *.JPEG)



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USB device file system: MPEG4 (*.asf) (For E/EG only)
 FAT12
 FAT16
 FAT32

USB Port power: 500 mA (Max)

● **DISC SECTION (E/EG areas)**

Discs played (8 cm or 12 cm):

- (1) DVD [DVD-Video, DivX (*1, *2)]
- (2) DVD-RAM [DVD-VR, MP3 (*2, *6), JPEG (*2, *3), MPEG4 (*2, *4), DivX (*1, *2)]
- (3) DVD-R [DVD-Video, DVD-VR, MP3 (*2, *6), JPEG (*2, *3), MPEG4 (*2, *4), DivX (*1, *2)]
- (4) DVD-R DL [DVD-Video, DVD-VR]
- (5) DVD-RW [DVD-Video, DVD-VR, MP3 (*2, *6), JPEG (*2, *3), MPEG4 (*2, *4), DivX (*1, *2)]
- (6) +R/+RW [Video]
- (7) +R DL [Video]
- (8) CD, CD-R/RW [CD-DA, Video CD, SVCD (*5), MP3 (*2, *6), WMA (*2, *7), JPEG (*2, *3), MPEG4 (*2, *4), DivX (*1, *2)]

*1 Plays all versions of DivX® video (including DivX®6) with standard playback of DivX® media files. Certified to the DivX Home Theater Profile.

*2 The total combined maximum number of recognizable audio, picture and video contents and groups: 4000 audio, picture and video contents and 400 groups.

*3 Exif Ver 2.1 JPEG Baseline files

●Picture resolution: between 160 x 120 and 6144 x 4096 pixels (Sub sampling is 4:0:0, 4:2:0, 4:2:2, or 4:4:4). Extremely long and narrow pictures may not be displayed.

*4 MPEG4 data recorded with the Panasonic SD multi cameras or DVD video recorders.

●Conforming to SD VIDEO specifications (ASF standard)/MPEG4 (Simple Profile) video system/G.726 audio system.

*5 Conforming to IEC62107

*6 MPEG-1 Layer 3, MPEG-2 Layer 3

*7 Windows Media Audio Ver.9.0 L3

●Not compatible with Multiple Bit Rate (MBR)

● **DISC SECTION (EB area)**

Discs played (8 cm or 12 cm):

- (1) DVD [DVD-Video]
- (2) DVD-RAM [DVD-VR, MP3 (*1, *4), JPEG (*1, *2)]
- (3) DVD-R [DVD-Video, DVD-VR, MP3 (*1, *4), JPEG (*1, *2)]
- (4) DVD-R DL [DVD-Video, DVD-VR]
- (5) DVD-RW [DVD-Video, DVD-VR, MP3 (*1, *4), JPEG (*1, *2)]
- (6) +R/+RW [Video]
- (7) +R DL [Video]
- (8) CD, CD-R/RW [CD-DA, Video CD, SVCD (*3), MP3 (*1, *4), WMA (*1, *5), JPEG (*1, *2)]

*1 The total combined maximum number of recognizable audio and picture contents and groups: 4000 audio and picture contents and 400 groups.

*2 Exif Ver 2.1 JPEG Baseline files

●Picture resolution: between 160 x 120 and 6144 x 4096 pixels (Sub sampling is 4:0:0, 4:2:0, 4:2:2, or 4:4:4). Extremely long and narrow pictures may not be displayed.

*3 Conforming to IEC62107

*4 MPEG-1 Layer 3, MPEG-2 Layer 3

*5 Windows Media Audio Ver.9.0 L3

●Not compatible with Multiple Bit Rate (MBR)

Pick up

Wavelength (DVD/CD): 662/785 nm

Laser power (DVD/CD): CLASS 1/CLASS 1M

Audio output (Disc)

Number of channels: 5.1 ch (FL, FR, C, SL, SR, SW)

● **VIDEO SECTION**

Video System: PAL 625/50, PAL 525/60, NTSC

Composite Video Output:

●Output level: 1 Vp-p (75 Ω)

●Terminal: Scart jack (1 system)

S-video Output:

●Y output level: 1 Vp-p (75 Ω)

●C output level: PAL; 0.3 Vp-p (75 Ω)

NTSC; 0.286 Vp-p (75 Ω)

●Terminal: Scart jack (1 system)

RGB Video Output:

●R output level: 0.7 Vp-p (75 Ω)

●G output level: 0.7 Vp-p (75 Ω)

●B output level: 0.7 Vp-p (75 Ω)

●Terminal: Scart jack (1 system)

Note:

1. Specifications are subject to change without notice. Mass and dimensions are approximate.
2. Total harmonic distortion is measured by the digital spectrum analyzer.

Solder:

This model uses lead free solder (PbF).

Mechanism:

This model uses DL2SU (Single tray) mechanism.

Power Supply:

This unit uses Switching Mode Power Supply (SMPS).

System	SC-PT160E/EB/EG-K	SA-PT160E/EG-S
Main unit	SA-PT160E/EB/EG-K	SA-PT160E/EG-S
Front speakers	SB-HF150P-K*1	SB-HF150E-S*1
Surround speakers	SB-HS151P-K*1	SB-HS151E-S*1
Center speaker	SB-HC150P-K*1	SB-HC150E-S*1
Subwoofer speaker	SB-HW150P-K*1	SB-W340E-S*1

Refer to their respective original service manuals for *1

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WMA is a compression format developed by Microsoft Corporation. It achieves the same sound quality as MP3 with a file size that is smaller than that of MP3.

* This product is licensed under the MPEG-4 Visual patent portfolio license for the personal and non-commercial use of a consumer for (i) encoding video in compliance with the MPEG-4 Visual Standard ("MPEG-4 Video") and/or (ii) decoding MPEG-4 Video that was encoded by a consumer engaged in a personal and non-commercial activity and/or was obtained from a video provider licensed by MPEG LA to provide MPEG-4 Video. No license is granted or shall be implied for any other use. Additional information including that relating to promotional, internal and commercial uses and licensing may be obtained from MPEG LA, LLC. See <http://www.mpegla.com>.

* Official DivX® Certified product.

Plays all versions of DivX® video (including DivX®6) with standard playback of DivX® media files.



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* For E/EG only

■ Built-in decoders

You can play discs with these symbols.



⚠ 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, carry out 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 $1M\Omega$ and $5.2M\Omega$.
When the exposed metal does not have a return path to the chassis, the reading must be ∞

1.1.2. LEAKAGE CURRENT HOT CHECK

1. Plug the AC cord directly into the AC outlet. Do not use an isolation transformer for this check.
2. Connect a $1.5k\Omega$, 10 watts resistor, in parallel with a $0.15\mu F$ 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 milliamp. 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.

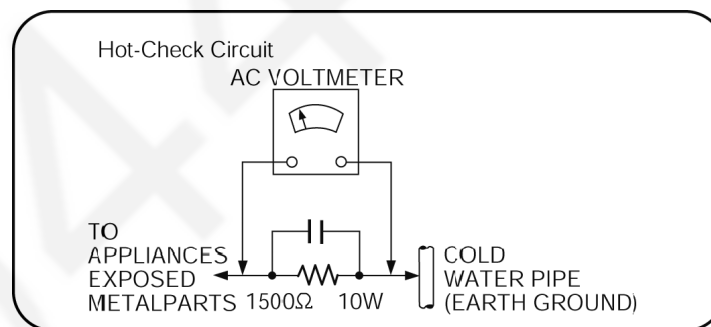


Figure 1

1.2. Before Repair and Adjustment (Using SMPS Module P.C.B.)

This unit uses Switching Mode Power Supply (SMPS) Module P.C.B. to provide the necessary voltages for the unit.

Caution:

DO NOT SHORT-CIRCUIT DIRECTLY (with a screwdriver blade, for instance), as this may destroy solid state devices. After repairs are completed, restore power gradually using a variac, to avoid overcurrent.

Current consumption at AC 230 V, 50 Hz in NO SIGNAL mode volume minimal should be ~ 650 mA. (For E/EG)

Current consumption at AC 230V~240V, 50 Hz in NO SIGNAL mode volume minimal should be ~ 650 mA. (For EB)

Note:

It is advisable to replace the SMPS Module P.C.B. as a unit.

1.3. Protection Circuitry

The protection circuitry may have operated if either of the following conditions are noticed:

- No sound is heard when the power is turned on.

- Sound stops during a performance.

The function of this circuitry is to prevent circuitry damage if, for example, the positive and negative speaker connection wires are "shorted", or if speaker systems with an impedance less than the indicated rated impedance of the amplifier are used.

If this occurs, follow the procedure outlines below:

1. Turn off the power.
2. Determine the cause of the problem and correct it.
3. Turn on the power once again after one minute.

Note:

When the protection circuitry functions, the unit will not operate unless the power is first turned off and then on again.

1.4. Safety Parts Information

Safety Parts List:

There are special components used in this equipment which are important for safety.

These parts are marked by \triangle in the Schematic Diagrams & 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.

Table 1

Ref. No.	Part No.	Part Name & Description	Remarks
16	RGRX0058E-P	REAR PANEL	[M] E/EG-S/K \triangle
16	RGRX0058E-Q	REAR PANEL	[M] EB-K \triangle
28	RKMX0107-1S3	TOP CABINET	[M] E/EG-S \triangle
28	RKMX0107-K3	TOP CABINET	[M] E/EB/EG-K \triangle
40	N0AZ6GE00005	SMPS MODULE	[M] (RTL) \triangle
340	RAE2023Z-S	TRAVERSE UNIT	[M] (RTL) \triangle
L1002	J0JBC0000015	INDUCTOR	[M] \triangle
L1003	J0JBC0000015	INDUCTOR	[M] \triangle
L1004	J0JBC0000015	INDUCTOR	[M] \triangle
L1005	J0JBC0000015	INDUCTOR	[M] \triangle
L5101	G0AR65Y00001	CHOKE COIL	[M] \triangle
L5102	G0AR65Y00001	CHOKE COIL	[M] \triangle
L5103	G0AR65Y00001	CHOKE COIL	[M] \triangle
L5104	G0AR65Y00001	CHOKE COIL	[M] \triangle
L5201	G0AR65Y00001	CHOKE COIL	[M] \triangle
L5202	G0AR65Y00001	CHOKE COIL	[M] \triangle
L5203	G0AR65Y00001	CHOKE COIL	[M] \triangle
L5204	G0AR65Y00001	CHOKE COIL	[M] \triangle
L5301	G0AR65Y00001	CHOKE COIL	[M] \triangle
L5302	G0AR65Y00001	CHOKE COIL	[M] \triangle
L5303	G0AR65Y00001	CHOKE COIL	[M] \triangle
L5304	G0AR65Y00001	CHOKE COIL	[M] \triangle
A2	K2CQ2CA00007	AC CORD	[M] E/EG-S/K \triangle
A2	K2CT3CA00004	AC CORD	[M] EB-K \triangle

1.5. Caution for AC Cord

(For United Kingdom)

(EB area code model only)

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 \perp OR COLOURED GREEN OR GREEN/YELLOW.

THIS PLUG IS NOT WATERPROOF—KEEP DRY.

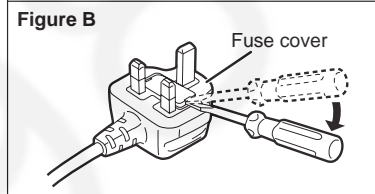
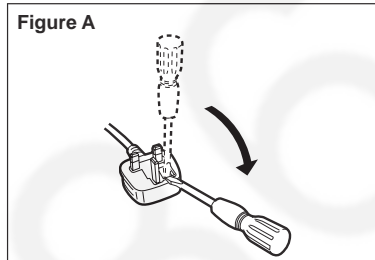
Before use

Remove the connector cover.

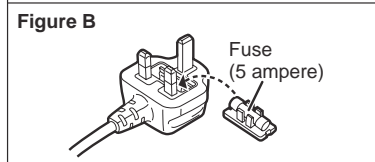
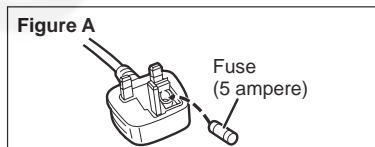
How to replace the fuse

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 Prevention of Electro Static Discharge (ESD) to Electrostatically Sensitive (ES) Devices

Some semiconductor (solid state) devices can be damaged easily by static electricity. Such components commonly are called Electrostatically Sensitive (ES) Devices. Examples of typical ES devices are 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 electro static 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 (ESD) sufficient to damage an ES device).

3 Precaution of Laser Diode

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.

CAUTION: This product utilizes a laser diode with the unit turned "on", invisible laser radiation is emitted from the pick-up lens.
Wave length: **662nm(DVD)/785nm(CD)**
Maximum output radiation power from pick-up: 100 μ W/VDE

Laser radiation from the pick-up unit is safety level, but be sure the followings:

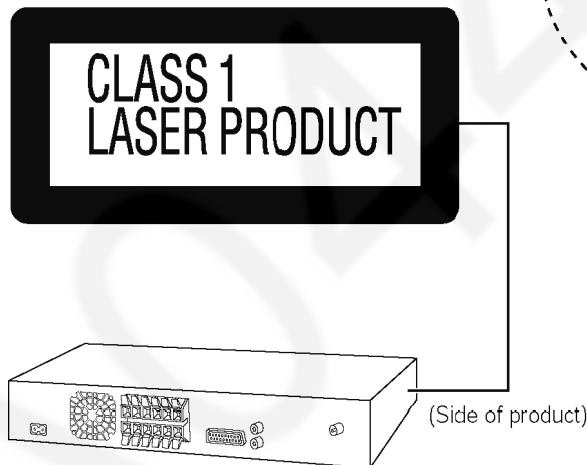
1. Do not disassemble the pick-up unit, since radiation from exposed laser diode is dangerous.
2. Do not adjust the variable resistor on the pick-up unit. It was already adjusted.
3. Do not look at the focus lens using optical instruments.
4. Recommend not to look at pick-up lens for a long time.

ACHTUNG: Dieses Produkt enthält eine Laserdiode. Im eingeschalteten Zustand wird unsichtbare Laserstrahlung von der Lasereinheit adgestrahlt.

Wellenlänge: **662nm(DVD)/785nm(CD)**
Maximale Strahlungsleistung der Lasereinheit: 100 μ W/VDE

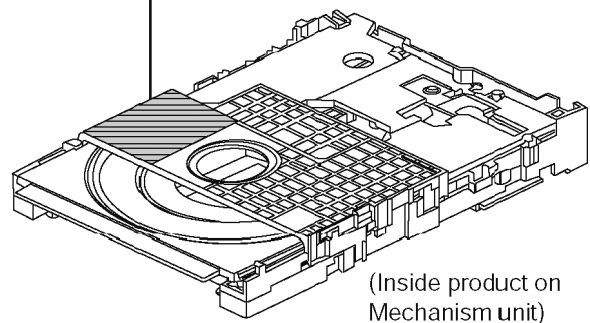
Die strahlung der Lasereinheit ist ungefährlich, wenn folgende Punkte beachtet werden:

1. Die Lasereinheit nicht zerlegen, da die Strahlung an der freigelegten Laserdiode gefährlich ist.
2. Den werksseitig justierten Einstellregler der Lasereinheit nicht verstellen.
3. Nicht mit optischen Instrumenten in die Fokussierlinse blicken.
4. Nicht über längere Zeit in die Fokussierlinse blicken.



LASER CAUTION LABEL

CAUTION	- LASER RADIATION WHEN OPEN. DO NOT STARE INTO BEAM.	FOA 21 CFR / Class
CAUTION	- CLASS 1M VISIBLE AND INVISIBLE LASER RADIATION WHEN OPEN. DO NOT VIEW DIRECTLY WITH OPTICAL INSTRUMENTS.	IEC60825-1 +A2 Class 1M
WARNING	- KLASSE 1M SYNLIG OCH OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD. BETRÄKTA EJ STRÅLEN DIREKT GENOM OPTISKT INSTRUMENT.	
FORSIGTIG	- SYNLIG OG OSYNLIG LASERSTRÅLING KLASSE 1M. NÄR LÅGET ER ÅBENT. UNDGÅ AT SE LIGE PÅ MED OPTISKE INSTRUMENTER.	
VARO!	- AVAATTAESSA OLET ALLTTIIN LUOKAN 1M NÄKYVÄÄ JA NÄKYMÄTÖNTÄ. LASERSÄTELYÄ. ÄLÄ KATSO OPTISELLÄ LAITTEELLA SUORAAN SÄTEESEEN.	
VORSICHT	- SICHTBARE UND UNSICHTBARE LASERSTRÄHLUNG KLASSE 1M, WENN ABDECKUNG GEOFFNET. NICHT DIREKT MIT OPTISCHEN INSTRUMENTEN BETRACHTEN.	
ATTENTION	- RAYONNEMENT LASER VISIBLE ET INVISIBLE, CLASSE 1M, EN CAS D'OUVERTURE. NE PAS REGARDER DIRECTEMENT A L'UNDE D'INSTRUMENTS D'OPTIQUE.	
注意	- ここを開くと可視及び不可視レーザー光が放射されます。 ビームを避たり、望遠鏡等しをしないでください。	
注意	- 打开時可见及不可見激光辐射。避免光学仪器。 GB7241.1-2001GB 类 RQJXS0076	



4 About Lead Free Solder (PbF)

4.1. Service caution based on legal restrictions

4.1.1. 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.
RFKZ03D01K------(0.3mm 100g Reel)
RFKZ06D01K------(0.6mm 100g Reel)
RFKZ10D01K------(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%

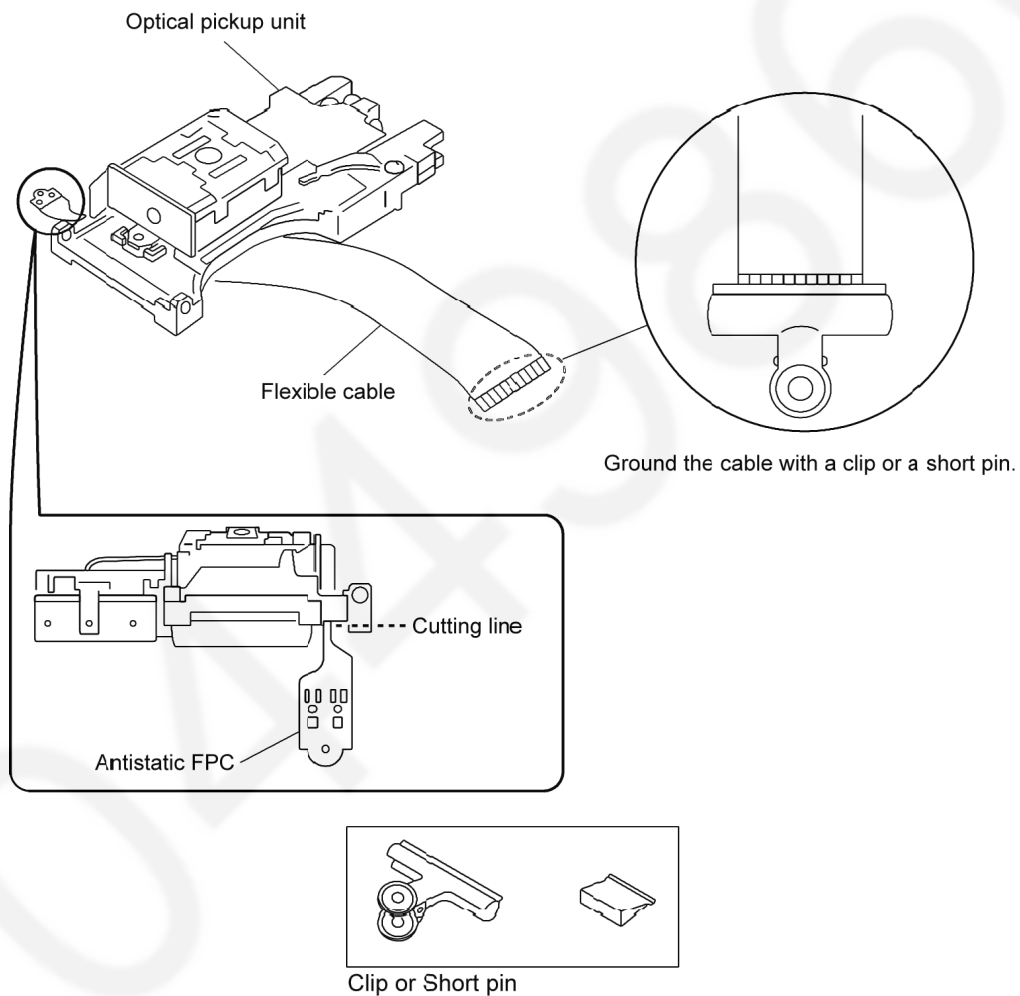
5 Handling Precautions for Traverse Unit

The laser diode in the optical pickup unit may break down due to static electricity of clothes or human body. Special care must be taken avoid caution to electrostatic breakdown when servicing and handling the laser diode.

5.1. Cautions to Be Taken in Handling the Optical Pickup Unit

The laser diode in the optical pickup unit may be damaged due to electrostatic discharge generating from clothes or human body. Special care must be taken avoid caution to electrostatic discharge damage when servicing the laser diode.

1. Do not give a considerable shock to the optical pickup unit as it has an extremely high-precise structure.
2. To prevent the laser diode from the electrostatic discharge damage, the flexible cable of the optical pickup unit removed should be short-circuited with a short pin or a clip.
3. The flexible cable may be cut off if an excessive force is applied to it. Use caution when handling the flexible cable.
4. The antistatic FPC is connected to the new optical pickup unit. After replacing the optical pickup unit and connecting the flexible cable, cut off the antistatic FPC.



5.2. Grounding for electrostatic breakdown prevention

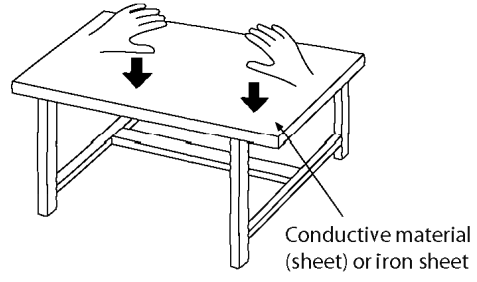
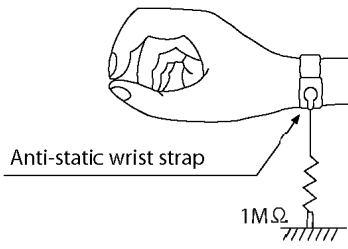
Some devices such as the DVD player use the optical pickup (laser diode) and the optical pickup will be damaged by static electricity in the working environment. Proceed servicing works under the working environment where grounding works is completed.

5.2.1. Worktable grounding

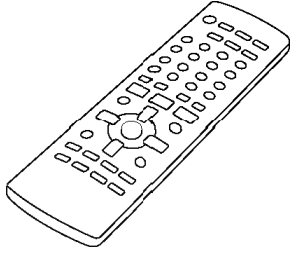
1. Put a conductive material (sheet) or iron sheet on the area where the optical pickup is placed, and ground the sheet.

5.2.2. Human body grounding

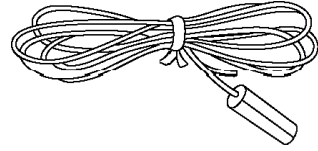
1. Use the anti-static wrist strap to discharge the static electricity form your body.



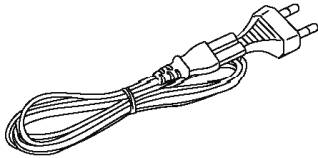
6 Accessories



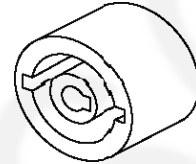
Remote Control



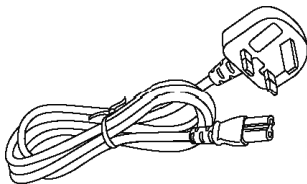
FM indoor antenna



AC cord
(For E, EG areas)



Antenna plug
adaptor
(For EB area only)



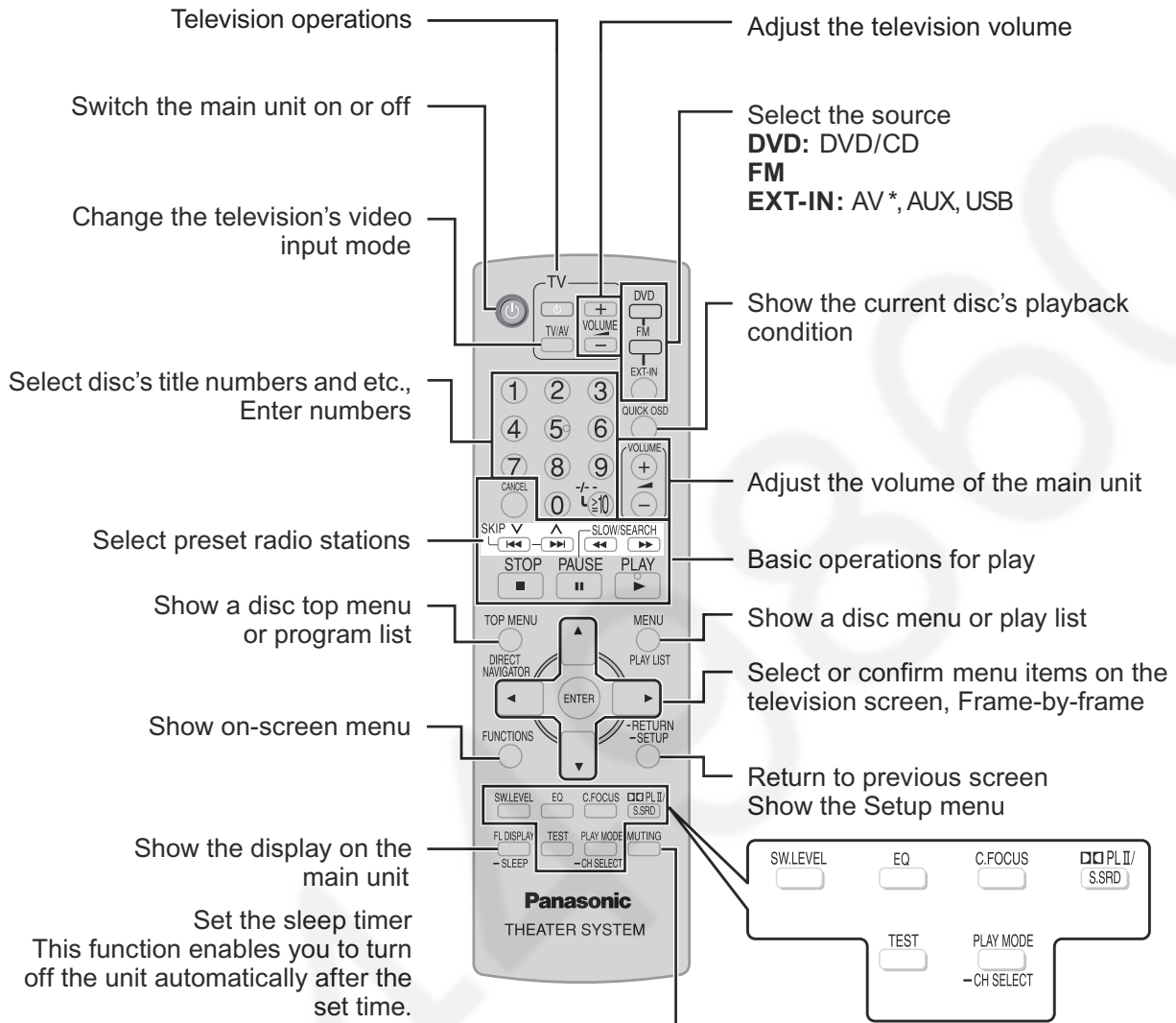
AC cord
(For EB area only)



Speaker
cable stickers

7 Operation Procedures

7.1. Remote Control Key Buttons Operations



Set the sleep timer
 This function enables you to turn off the unit automatically after the set time.

→ SLEEP 30 → SLEEP 60 →
 OFF ← SLEEP 120 ← SLEEP 90

To cancel the timer

Press and hold [-SLEEP] to select "OFF".

To confirm the remaining time

Press and hold [-SLEEP] again.

To mute the sound

To cancel

- Press [MUTING] again or adjust the volume.
- Muting is cancelled when you switch the unit to standby.

* AV works only when the scart cable is connected.

7.2. Main Unit Key Buttons Operations

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.

⏪/⏩, ⏮/⏭ / √ **TUNING** ^
 Skipping or slow-search play,
 Select the radio stations

Remote Control Signal Sensor

▲ **OPEN/CLOSE**
 Open or close the disc tray

AC supply indicator [AC IN]
 This indicator lights when the unit is connected to the AC mains supply.

Display

+ , - VOLUME
 Turn the volume up or down

🔌 **USB port**
 Connect a USB device

SELECTOR
 DVD/CD → USB → FM → AV* →
 AUX → Returns to DVD/CD

■ /-TUNE MODE/-FM MODE

Stop playback,
 Select the tuning mode,
 Adjust the FM reception condition

▶ /MEMORY

Disc playback,
 Memorize the receiving radio stations (28)

*"AV" works only when the scart cable is connected.

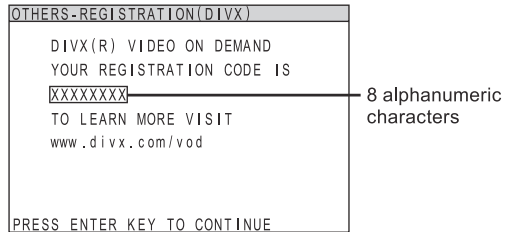
7.3. About DivX VOD Content (For E, EG areas only)

DivX Video-on-Demand (VOD) content is encrypted for copyright protection. In order to play DivX VOD content on this unit, you first need to register the unit.

Follow the online instructions for purchasing DivX VOD content to enter the unit's registration code and register the unit. For more information about DivX VOD, visit www.divx.com/vod.

■ Display the unit's registration code

(OI page 23, "REGISTRATION (DIVX)" in "OTHERS" tab)



- We recommend that you make a note of this code for future reference.
- After playing DivX VOD content for the first time, another registration code is then displayed in "REGISTRATION (DIVX)". Do not use this registration code to purchase DivX VOD content. If you use this code to purchase DivX VOD content, and then play the content on this unit, you will no longer be able to play any content that you purchased using the previous code.

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

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

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

When playing this content

- The number of remaining plays is reduced by one if you press [⏏] or press and hold [-SETUP].
- you press [■, STOP]. (Press [⏏, PAUSE] to pause play.)
- you press [⏮, ⏭] (skip) or [⏪, ⏩] (slow/search) etc. and arrive at another content or the start of the content being played.
- Resume (OI page 15, Stop) function does not work.

7.4. USB Connection and Operation

Optional USB connection and operation

WMA MP3 JPEG MPEG4

The USB connectivity enables you to connect and play tracks or files from USB mass storage class devices. Typically, USB memory devices. (Bulk only transfer)

Preparation

Before connecting any USB mass storage device to the unit, ensure that the data stored therein has been backed up.

It is not recommended to use a USB extension cable. The USB device is not recognised by this unit.

1 Connect the USB mass storage device (not included).

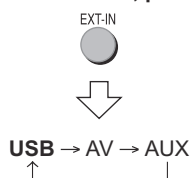


USB enabled device

(not included)

It is not recommended to use a USB extension cable. The device connected via the cable will not be recognised by this unit.

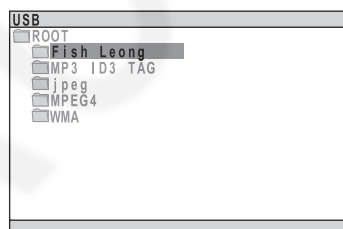
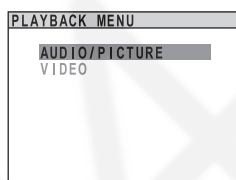
2 To select "USB" as the source, press several times.



Select the desired item for playback.



Example:

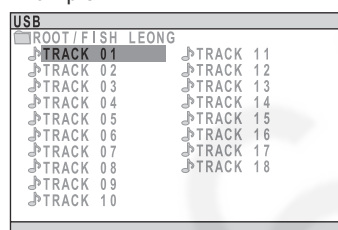


3 Adjust the volume of the main unit.



4 Begin playback by selecting the track from the USB mass storage device.

Example:



To return to the previous screen

Press [-RETURN].

For other operating functions, they are similar as those described on "DISC OPERATION". (Refer to the O/I Book)

Compatible Devices

- Devices which are defined as USB mass storage class:
 - USB devices that support bulk only transfer.
 - USB devices that support USB 2.0 full speed.

Supported Formats

	File name	File extension
Still pictures	JPG*1	.jpg .jpeg
Music	MP3 WMA	.mp3 .wma
Video	MPEG4*2	.asf

*1 It may not be possible to play all the files due to the condition on how they were created.

*2 For Panasonic D-Snap/DIGA.

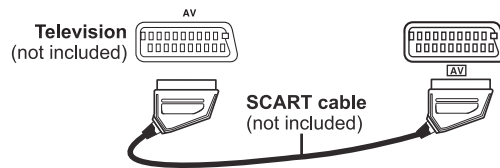
Note

- CBI (Control/Bulk/Interrupt) is not supported.
- Digital Cameras that use PTP protocol or which require additional program installation when connected to a PC are not supported.
- A device using NTFS file system is not supported. [Only FAT 16/32 (File Allocation Table 16/32) file system is supported].
- Depending on the sector size, some files may not work.
- It will not operate with Janus enabled MTP (Media Transfer Protocol) devices.
- Maximum folder: 256 folders
- Maximum file: 4000 files
- Maximum file name: 12 characters
- Maximum folder name: 12 characters
- Only one memory card will be selected when connecting a multiport USB card reader. Typically the first memory card inserted.

7.5. Audio and Video Connections

7.5.1. Television with Scart Terminal

■ Television with SCART terminal



■ Using the SCART (AV) terminal

To improve picture quality, you can change the video signal output from the SCART (AV) terminal from "RGB" to either "VIDEO" or "S-VIDEO" to suit the type of television you are using. Select "VIDEO" or "S-VIDEO" from "VIDEO OUT-SCART" in "VIDEO" tab

This connection will also enable you to play audio from your television through your home theater system. Refer to "Operating other equipment" (Refer to the O/I book).

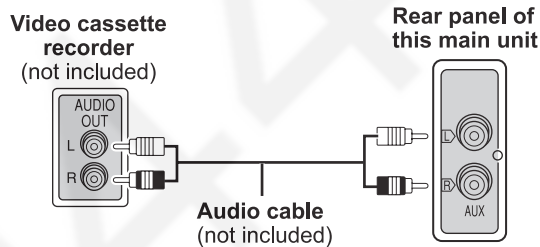
*1 For E, EG areas

*2 For EB area only

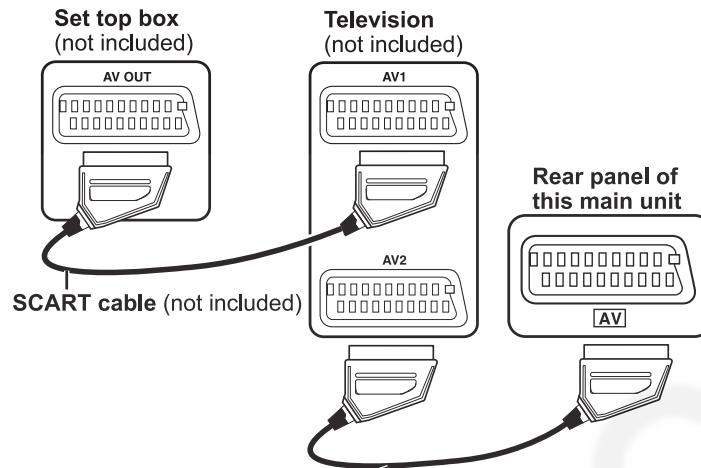
7.5.2. Audio Connection for Video Cassette Recorder or Television

Press [EXT-IN] to select "AUX" as the source to operate the audio input.

This audio connection will enable you to play audio from your video cassette recorder through your home theater system.



7.5.3. Connection for Set Top Box



SCART cable (not included)

- To listen to the sound from the television, select the appropriate audio out (example: Monitor) on the television.




Sound from the television

- Press [EXT-IN] to select the "AV" audio input from the remote control.




7.6. Disc Information

7.6.1. Disc Playability (Media)

Discs that can be played

Disc	Logo	Indicated in these instructions by	Remarks
DVD-Video		DVD-V	High quality movie and music discs.
Video CD		VCD	Music discs with video. Including SVCD (Conforming to IEC62107).
CD		CD	Music discs.

■ Recorded Discs (○: Playable, ×: Not playable)

Disc	Logo	Recorded on a DVD video recorder, etc.		Recorded on a personal computer, etc.					Finalizing ^{×6}
		DVD-VR ^{×2}	DVD-V ^{×4}	WMA	MP3	JPEG	MPEG4 ^{×10}	DivX ^{×9×10}	
DVD-RAM		○	—	×	○	○	○ ^{×8}	○	Not necessary
DVD-R/RW		○	○	×	○	○	○	○	Necessary
DVD-R DL		○ ^{×3}	○	×	×	×	×	×	Necessary
+R/+RW	—	×	(○) ^{×5}	×	×	×	×	×	Necessary
+R DL	—	×	(○) ^{×5}	×	×	×	×	×	Necessary
CD-R/RW ^{×1}	—	—	—	○	○	○	○	○	Necessary ^{×7}

- It may not be possible to play all the above-mentioned discs in some cases due to the type of disc, the condition of the recording, the recording method, or how the files were created [Item 7.6.2 File Extension Type Support (WMA/MP3/JPEG/*MPEG4/*DivX)]

^{×1} This unit can play CD-R/RW recorded with CD-DA or Video CD format.

^{×2} Discs recorded on DVD video recorders or DVD video cameras, etc. using Version 1.1 of the Video Recording Format (a unified video recording standard).

^{×3} Discs recorded on DVD video recorders or DVD video cameras using Version 1.2 of the Video Recording Format (a unified video recording standard).

^{×4} Discs recorded on DVD video recorders or DVD video cameras using DVD-Video Format.

^{×5} Recorded using a format different from DVD-Video Format, therefore, some functions cannot be used.

^{×6} A process that allows play on compatible equipment. To play a disc that is displayed as "Necessary" on this unit, the disc must first be finalized on the device it was recorded on.

^{×7} Closing the session will also work.

^{×8} MPEG4 data recorded with the Panasonic SD multi cameras or DVD video recorders [conforming to SD VIDEO specifications (ASF standard)/MPEG4 (Simple Profile) video system/G.726 audio system].

^{×9} Functions added with DivX ultra are not supported.

^{×10} For E, EG areas only

Note about using a DualDisc

- The digital audio content side of a DualDisc does not meet the technical specifications of the Compact Disc Digital Audio (CD-DA) format so playback may not be possible.

■ Discs that cannot be played

DVD-RW version 1.0, DVD-Audio, DVD-ROM, CD-ROM, CDV, CD-G, SACD, Photo CD, DVD-RAM that cannot be removed from their cartridge, 2.6-GB and 5.2-GB DVD-RAM, and "Chaoji VCD" available on the market including CVD, DVCD and SVCD that do not conform to IEC62107.

■ Video systems

- This unit can play PAL and NTSC, but your television must match the system used on the disc.
- PAL discs cannot be correctly viewed on an NTSC television.
- This unit can convert NTSC signals to PAL 60 for viewing on a PAL television.

7.6.2. File Extension Type Support (WMA/MP3/JPEG/*MPEG4/*DivX)

Tips for making data discs

- When there are more than eight groups, the eighth group onwards will be displayed on one vertical line in the menu screen.
- There may be differences in the display order on the menu screen and computer screen.
- This unit cannot play files recorded using packet write.

DVD-RAM

- Discs must conform to UDF 2.0.

DVD-R/RW

- Discs must conform to UDF bridge (UDF 1.02/ISO9660).
- This unit does not support multi-session. Only the default session is played.

CD-R/RW

- Discs must conform to ISO9660 level 1 or 2 (except for extended formats).
- This unit supports multi-session but if there are many sessions it takes more time for play to start. Keep the number of sessions to a minimum to avoid this.

Naming folders and files

Files are treated as contents and folders are treated as groups on this unit.

At the time of recording, prefix folder and file names. This should be with numbers that have an equal number of digits, and should be done in the order you want to play them (this may not work at times). Files must have the extension (➔ see below).

WMA (Extension: ".WMA" or ".wma")

- Compatible compression rate: between 48 kbps and 320 kbps.
- You cannot play WMA files that are copy-protected.
- This unit does not support Multiple Bit Rate (MBR).

MP3 (Extension: ".MP3" or ".mp3")

- Compatible compression rate: between 32 kbps and 320 kbps.
- This unit does not support ID3 tags.
- Compatible sampling rates:
 - DVD-RAM, DVD-R/RW: 11.02, 12, 22.05, 24, 44.1 and 48 kHz
 - CD-R/RW: 8, 11.02, 12, 16, 22.05, 24, 32, 44.1 and 48 kHz

JPEG (Extension: ".JPG", ".jpg", ".JPEG" or ".jpeg")

- JPEG files taken on a digital camera that conform to DCF Standard (Design rule for Camera File system) Version 1.0 are displayed. Files that have been altered, edited or saved with computer picture editing software may not be displayed.
- This unit cannot display moving pictures, MOTION JPEG and other such formats, and still pictures other than JPEG (Example: TIFF), or play pictures with attached audio.

* **MPEG4** (Extension: ".ASF" or ".asf")

- You can play MPEG4 data [conforming to SD VIDEO specifications (ASF standard)/MPEG4 (Simple Profile) video system/G.726 audio system] recorded with Panasonic SD multi cameras or DVD video rec orders with this unit.
- The recording date may differ from that of the actual date.

* **DivX** (Extension: ".DIVX", ".divx", ".AVI" or ".avi")

- You can play all versions of DivX[®] video (including DivX[®] 6) [DivX video system/MP3, Dolby Digital or MPEG audio system] with standard playback of DivX[®] media files. Functions added with DivX Ultra are not supported.
- GMC (Global Motion Compensation) is not supported.
- DivX files greater than 2 GB or have no index may not be played properly on this unit.
- This unit supports all resolutions up to maximum of 720 x 480 (NTSC)/720 x 576 (PAL).
- You can select up to eight types of audio and subtitles on this unit.

* For E, EG areas only

8 Self-Diagnosis and Special Mode Setting

8.1. Service Mode Summary Table

The service modes can be activated by pressing various button combination on the main unit and remote control unit.

Below is the summary for the various modes for checking:

Player buttons	Remote control unit buttons	Application	Note
[STOP]	[0]	Error code check.	(Refer to the section "8.2.1. Service Mode Table 1" for more information.)
	[5]	Jitter checking.	
	[PAUSE]	Initial setting of laser drive current.	
	[FUNCTIONS]	DVD laser drive current check.	(Refer to the section "8.2.2. Service Mode Table 2" for more information.)
	[1]	ADSC internal RAM data check.	
	[3]	CD laser drive current check.	
	[6]	Region display and mode.	(Refer to the section "8.2.3. Service Mode Table 3" for more information.)
	[7]	Micro-processor firmware version check.	
	[≥ 10]	Initialization of the player (factory setting is restored). Used after replacement of Micro-processor (DV5 LSI) IC, FLASH ROM IC (IC8651), EEPROM IC (IC8611) and DVD Module P.C.B.	
	[8]	DVD Module P.C.B. firmware version check.	(Refer to the section "8.2.4. Service Mode Table 4" for more information.)
	[EQ]	CPPM/CRM keys check.	
	[ENTER]	DVD Module P.C.B. reset.	(Refer to the section "8.2.5. Service Mode Table 5" for more information.)
	[▲]	Timer 1 check.	
	[▼]	Timer 1 reset.	
[▶]	Timer 2 check.		
	[◀]	Timer 2 reset.	

Note:

An error code will be canceled if a power supply is turned OFF.

*1: CPPM is the copy guard function beforehand written in the disk for protection of copyrights.

*2: CEC is the consumer electronic control used for high-level user control of HDMI-connected devices.

*3: HDCP is the specification developed to control digital audio & video contents transmission for DVI or HDMI connections.


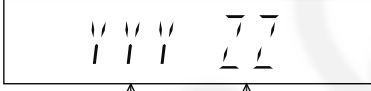

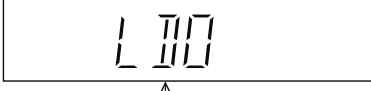

8.2. Service Mode Table

By pressing various button combinations on the main unit and remote control unit, you can activate the various service modes for checking.

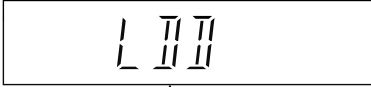
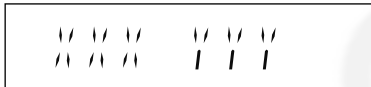

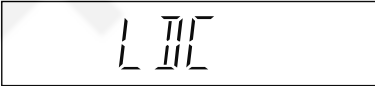
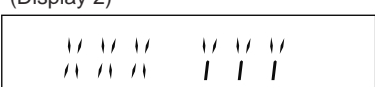
Special Note:

- Due to the limitations of the no. characters that can be shown on the FL Display, the "FL Display" button on the remote control unit can be used to show the two display pages. (Display 1 / Display 2).
- Refer to Section 7.1 for the section on "Remote Control Key Buttons Operations".






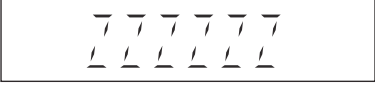

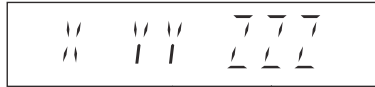
8.2.1. Service Mode Table 1

Item		FL Display	Key Operation
Mode Name	Description		Front Key
Jitter check	<p>Jitter check. Jitter rate is measured and displayed. Measurement is repeatedly done in the cycle of one second. Read error counter starts from zero upon mode setting. When target block data failed to be read out, the counter advances by one increment. When the failure is caused by minor error, it may be corrected when retried to enable successful reading. In this case, the counter advances by one. When the error persists even after retry, the counter may jump by two or more.</p> <p>FL Display sequence: Display 1→2.</p>	<p>(Display 1)</p>  <p>Jitter rate is shown in decimal notation to one place of decimal. Focus drive value is shown in hexadecimal notation.</p> <p>(Display 2)</p> 	<p>In STOP (no disc) mode, press [STOP] button on the main unit, and [5] button on the remote control unit. Press [POWER] button to exit.</p> <p>Press [FL Display] on remote control unit for next page (FL Display).</p>
Error code check	<p>Error code check The latest error code stored in the EEPROM IC is displayed.</p> <p>Note: Refer to "Section 8.3 DVD Self Diagnostic Function-Error Code" for more detailed information on the error codes.</p>	 <p>Error code (play_err) is expressed in the following convention. Error code = 0 x DAXX is expressed: → DVDnn U12 Error code = 0 x DBXX is expressed: → DVDnn H12 Error code = 0 x DXXX is expressed: → DVDnn F123 Error code = 0 x 0000 is expressed: → DVDnn F--- * "xx" denotes the error code</p>	<p>In STOP (no disc) mode, press [STOP] button on the main unit, and [0] button on the remote control unit. * With pointing of cursor up and down on display. Cancelled automatically 5 seconds later. To exit, press [POWER] button on main unit or remote control.</p>
Initial setting of laser drive current	<p>Initial setting of laser drive current. Initial current value for the DVD laser and CD laser is separately saved in the EEPROM IC.</p> <p>FL Display sequence: Display 1→2.</p>	<p>(Display 1)</p>  <p>The value denotes the current in decimal notation.</p> <p>(Display 2)</p>  <p>The above example shows the initial current is XXXmA and YYYmA for CD laser and DVD laser respectively when the laser is switched on.</p>	<p>In STOP (no disc) mode, press [STOP] button on the main unit, and [PAUSE] button on the remote control unit. Cancelled automatically 5 seconds later.</p> <p>Press [FL Display] on remote control unit for next page (FL Display) on values of laser drive current.</p>

8.2.2. Service Mode Table 2

Item		FL Display	Key Operation
Mode Name	Description		Front Key
DVD laser drive current measurement	<p>DVD laser drive current measurement. DVD laser drive current is measured and the result is displayed together with the initial value stored in the EEPROM IC.</p> <p>After the measurement, DVD laser emission is kept on. It is turned off when POWER key is switched off.</p> <p>FL Display sequence: Display 1→2.</p>	<p>(Display 1)</p>  <p>DVD laser current measurement mode</p> <p>The value denotes the current in decimal notation.</p> <p>(Display 2)</p>  <p>DVD Laser Initial Value DVD Laser Value</p> <p>The above example shows the initial current is XXXmA and the measured value is YYYmA.</p>	<p>In STOP (no disc) mode, press [STOP] button on the main unit, and [FUNCTIONS] button on the remote control unit. Cancelled automatically 5 seconds later.</p> <p>Press [FL Display] on remote control unit for next page (FL Display) on values of dvd drive current.</p>
ADSC internal RAM data check	<p>ADSC internal RAM data check. ADSC internal RAM data is read out and displayed.</p>	 <p>Address RAM data for specified address</p> <p>The value is shown in hexadecimal notation. The above example shows the data in ADSC address FBOh is XXXXh.</p>	<p>In STOP (no disc) mode, press [STOP] button on the main unit, and [1] button on the remote. To exit, press [POWER] button.</p>
CD laser drive current measurement	<p>CD laser drive current measurement. CD laser drive current is measured and the result is displayed together with the initial value stored in the EEPROM IC.</p> <p>After the measurement, CD laser emission is kept on. It is turned off when POWER key is switched off.</p> <p>FL Display sequence: Display 1→2.</p>	<p>(Display 1)</p>  <p>CD laser current measurement mode</p> <p>The value denotes the current in decimal notation.</p> <p>(Display 2)</p>  <p>CD laser initial value CD laser value</p> <p>The above example shows the initial current is 0XXmA and the measured value is 0YYmA.</p>	<p>In STOP (no disc) mode, press [STOP] button on the main unit, and [3] button on the remote control unit. Cancelled automatically 5 seconds later.</p> <p>Press [FL Display] on remote control unit for next page. (FL Display)</p>

8.2.3. Service Mode Table 3

Item		FL Display	Key Operation
Mode Name	Description		Front Key
Micro-processor firmware version display & EEPROM checksum display.	<p>Micro-processor firmware version display & EEPROM checksum display. EEPROM checksum is only available due to existence of EEPROM IC.</p> <p>Note: Condition 1/2/3 shows the state of EEPROM IC.</p> <p>FL Display sequence: Display 1→2→3.</p>	<p>(Display 1)</p>  <p>(Display 2)</p>  <p>↑ Opecon Version ↑ EEPROM Checksum (If applicable, refer below.)</p> <p>(Condition 1)</p>  <p>If the version of the EEPROM does not match, [NG] is displayed.</p> <p>(Condition 2)</p>  <p>(a) If there is NO EEPROM header string OR (b) If there is no EEPROM (no data is received by Micro-processor), [NO] is displayed.</p> <p>(Condition 3)</p>  <p>If the EEPROM version matches, checksum [YYYY] is displayed.</p> <p>(Display 3)</p> 	<p>In STOP (no disc) mode, press [STOP] button on the main unit, and [7] button on the remote control unit. Cancelled automatically 5 seconds later.</p> <p>Press [FL Display] button on remote control unit for next page. (FL Display)</p>
Initialization	<p>Initialization. User settings are cancelled and player is initialized to factory setting. It is necessary when after replacement of Micro-processor (DV5 LSI) IC, FLASH ROM IC (IC8651), EEPROM IC (IC8611) & DVD Module P.C.B.</p>		<p>In STOP (no disc) mode, press [STOP] button on the main unit, and [≥10] button on the remote control unit. Cancelled automatically 5 seconds later.</p>
Region display	<p>Region code display, TV broadcasting system & the model no. information.</p> <p>Note: Refer to Figure 2 for "Video Design Information".</p>	 <p>↑ Model No. Information ↑ N: NTSC / 6: PAL60 ↑ N: no PAL / P: PAL ↑ Region No.: 0-8</p>	<p>In STOP (no disc) mode, press [STOP] button on the main unit, and [6] button on the remote control unit. Cancelled automatically 5 seconds later.</p>

Model Series	Country Region	Region Code	TV Broadcasting System	Product		
				Signal System (Default)	Region Display (Default)	OSD Menu Language
P, PC, PX	USA, Canada, PX	1	NTSC	NTSC (*A)	1PN	English, Spanish, Canadian French
(S)	Japan	2	NTSC	NTSC (*A)	2PN	Japanese, English
E	Europe	2	PAL	PAL (*C)	2P6	English, French, German, Spanish, Polish, Russian, Czech, Hungarian
EB, EG	Europe	2	PAL	PAL (*C)	2P6	English, French, German, Italian, Spanish, Polish, Swedish, Dutch
GC, GS	Middle East	2	PAL	PAL (*C)	2P6	English, French, German, Spanish, Polish, Russian, Czech, Hungarian
GCS, GD, GT, GCT	South East Asia, Korea, Taiwan	3	PAL NTSC	NTSC (*B)	3PN	English, Traditional Chinese
GN	New Zealand, Australia	4	PAL	PAL (*C)	4P6	English, French, German, Italian, Spanish, Polish, Swedish, Dutch
PL, GCP, LB	Central/South/Latin America	4	NTSC	NTSC (*D)	4PN	English, Spanish, French, Brazilian Portuguese
EE	CIS	5	SECAM	PAL (*C)	5P6	English, French, German, Spanish, Polish, Russian, Czech, Hungarian
GK	China	6	PAL	NTSC (*B)	6PN	English, Simplified Chinese

NTSC (*A)

Source	Output
Screen Saver	NTSC
NTSC disc	NTSC
PAL disc	PAL (DVD-V)
	NTSC (DVD-A/VCD)

NTSC (*B)

Source	Output
Screen Saver	NTSC
NTSC disc	NTSC (default)
PAL disc	PAL60
	PAL60

PAL (*C)

Source	Output
Screen Saver	PAL
NTSC disc	PAL60 (default)
	NTSC
PAL disc	PAL

NTSC (*D)

Source	Output
Screen Saver	NTSC
NTSC disc	NTSC
PAL disc	NTSC

Explanation of Display

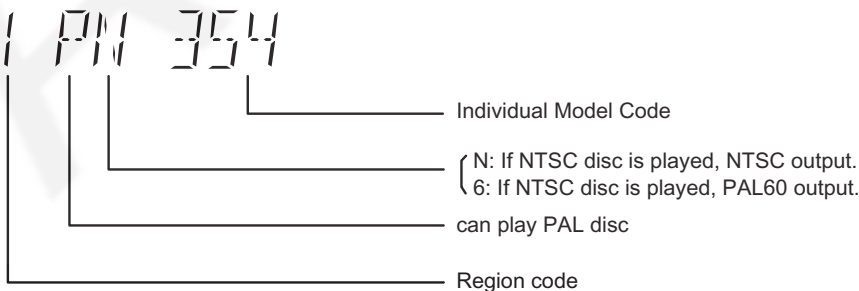
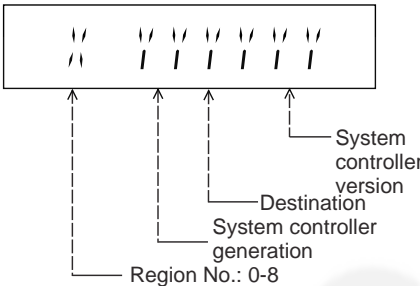
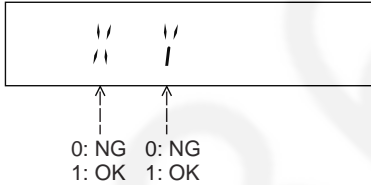
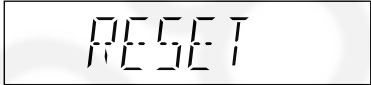

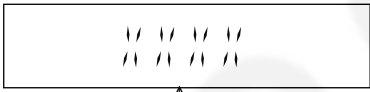





Figure 2

8.2.4. Service Mode Table 4

Mode Name	Item	FL Display	Key Operation
	Description		Front Key
DVD Module P.C.B. firmware version display	<p>DVD Module P.C.B. firmware version is displayed on the FL Display. The firmware version can be updated using recovery disc.</p> <p>Note: It is necessary to check for firmware version before carrying out the version up using the disc.</p>		<p>In STOP (no disc) mode, press [STOP] button on the main unit, and [8] button on the remote control unit. Cancelled automatically 5 seconds later.</p>
CPPM/CRM Keys Check	<p>CPPM/CRM refers to the Content Protection for Recordable Media and Pre-Recorded Media. It displays the existence of the keys as "1" or "0". OK: Existing of keys. NG: Non existing of keys.</p>		<p>In STOP (no disc) mode, press [STOP] button on the main unit, and [EQ] button on the remote control unit. Cancelled automatically 5 seconds later.</p>
DVD Module P.C.B. Reset	<p>To reset DVD Module P.C.B. This process is used when the DVD Module P.C.B. or FLASH ROM IC is replaced with a new one.</p>		<p>While in initialization mode, press & hold [STOP] button on the main unit, follow by [ENTER] button on the remote control unit. Cancelled automatically 5 seconds later.</p>

8.2.5. Service Mode Table 5

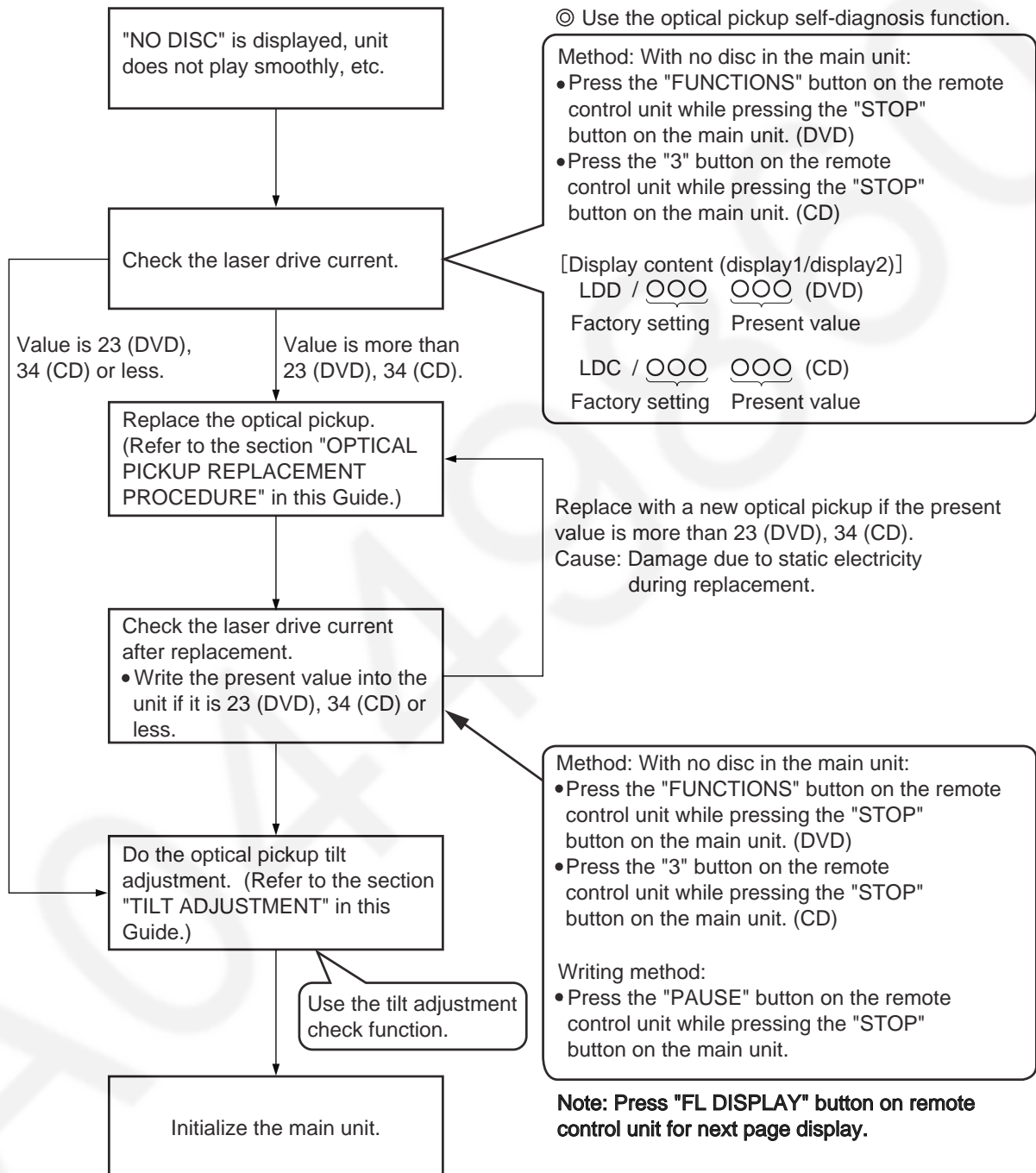
Item		FL Display	Key Operation
Mode Name	Description		Front Key
Timer 1 check	<p>Timer 1 check Laser operation timer is measured separately for DVD laser and CD laser.</p> <p>FL Display sequence: Display 1→2.</p>	<p>(Display 1)</p>  <p>DVD laser usage time</p> <p>Shown to the above is DVD laser usage time, and to the below is CD laser usage time. Time is shown in 4 digits of decimal notation in a unit of 10 hours. "0000" will follow "9999". (DVD laser)</p> <p>(Display 2)</p>  <p>CD laser usage time</p> <p>Time is shown in 4 digits of decimal notation in a unit of 10 hours. "0000" will follow "9999". (CD laser)</p>	<p>In STOP (no disc) mode, press [STOP] button on the main unit, and [▲] button on the remote control unit. Cancelled automatically 5 seconds later.</p> <p>Press [FL Display] button for next page of FL Display.</p>
Timer 1 reset	<p>Timer 1 reset Laser operation timer of both DVD laser and CD laser is reset all at once.</p>	 <p>Time is shown in 4 digits of decimal notation in a unit of 10 hours. It will clear to "0000" upon reset.</p>	<p>While displaying Timer 1 data, press [STOP] button on the main unit, and [▼] button on the remote control unit. Cancelled automatically 5 seconds later</p>
Timer 2 check	<p>Timer 2 check Spindle motor operation timer</p>	 <p>Time is shown in 5 digits of decimal notation in a unit of 1 hour. "00000" will follow "99999".</p>	<p>In STOP (no disc) mode, press [STOP] button on the main unit, and [▶] button on the remote control unit. Cancelled automatically 5 seconds later.</p>
Timer 2 reset	<p>Timer 2 reset Spindle motor operation timer</p>	 <p>Time is shown in 5 digits of decimal notation in a unit of 1 hour. It will be cleared to "00000" upon activating this.</p>	<p>While displaying Timer 2 data, press [STOP] button on the main unit, and [◀] button on the remote control unit. Cancelled automatically 5 seconds later.</p>

8.2.6. Optical Pick-up Self-Diagnosis

The optical pickup self-diagnosis function and tilt adjustment check function have been included in this unit. When repairing, use the following procedure for effective self-diagnosis and tilt adjustment. Be sure to use the self-diagnosis function before replacing the optical pickup when "NO DISC" is displayed. As a guideline, you should replace the optical pickup when the value of the laser drive current is more than 55.

Note:

Press the power button to turn on the power, and check the value within three minutes before the unit warms up. (Otherwise, the result will be incorrect.)





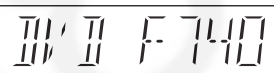


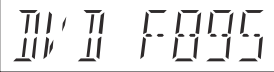
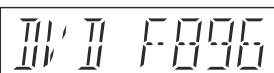
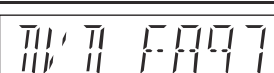

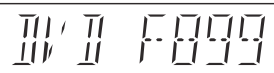


8.3. DVD Self Diagnostic Function-Error Code

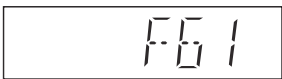
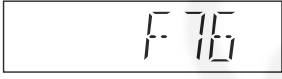
8.3.1. Mechanism Error Code Table

Error Code	Diagnosis Contents	Description of error	Automatic FL Display	Remarks
H01	Tray loading error	The tray opening and closing is abnormal. CLOSE and OPEN of the tray cannot be carried out properly. Loading motor error, DV5 LSI IC (IC8001) error.		Press [■ STOP] on main unit for next error. (OPEN time: OPEN → CLOSE → OPEN → H01 at CLOSE: CLOSE → OPEN → CLOSE → H01)
H02	Spindle servo error	The spindle servo/motor is abnormal. The FG pulse is abnormal. CLV servo error.		Press [■ STOP] on main unit for next error.
H03	Traverse servo error	The traverse is abnormal. (Traverse servo, DV5 LSI IC (IC8001), TRV motor error.)		Press [■ STOP] on main unit for next error.
H04	Tracking servo error	Tracking coil NG (OPU unit abnormal), DV5 LSI IC (IC8001) error.		Press [■ STOP] on main unit for next error.
H05	Seek time out error	It is not possible to access the disc. TOC cannot read. Abnormal disc etc. Pickup abnormal or disk is dirty. (TRV motor error, DV5 LSI IC (IC8001) error.)		Press [■ STOP] on main unit for next error.
H07	Driver IC thermal shut down	The spindle motor is abnormal. (short between brushes)		Press [■ STOP] on main unit for next error.
H15	Disc tray open detection switch failure	The disc tray cannot be opened & it closes spontaneously.		Press [■ STOP] on main unit for next error.
H16	Disc tray close detection switch failure	The disc tray cannot be closed & it opens spontaneously.		Press [■ STOP] on main unit for next error.
U11	Focus servo error	Focus coil, FE signal error.		Press [■ STOP] on main unit for next error. (Unfinalized DVD-R is likely to become U11.)
U15	Unfinalized DVD-R			
F500	DSC error	DV5 LSI IC (IC8001) stops in the occurrence of servo error (startup, focus error, etc)		Press [■ STOP] on main unit for next error.
F506	Invalid media	Disc is flipped over, TOC unreadable, incompatible disc.		Press [■ STOP] on main unit for next error.
F620	OPU unit abnormality temperature	Laser protection at high temperature.		Press [■ STOP] on main unit for next error.
F621	OPU unit circuitry temperature	Laser protection at circuit failure.		Press [■ STOP] on main unit for next error.

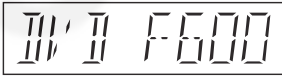
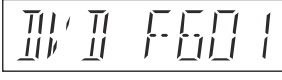
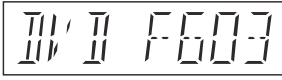
8.3.2. DVD Module Error Code Table

Error Code	Diagnosis Contents	Description of error	Automatic FL Display	Remarks
U702	DVD/DVI I2C communication error	The communication error of I2C when connecting it with DVD/DVI. For instance, when EDID information to which information on the TV set side has been described cannot be read, it is generated.		Press [■ STOP] on main unit for next error.
U703	DVD/DVI attestation error	When attestation (HDCP) with the TV side fails when connecting it with DVD/DVI, it is generated.		Press [■ STOP] on main unit for next error.
U704	DVD/DVI SRM Riborcerar	It is generated at the equipment to which the TV set is Riborced when connecting it with DVD/DVI.		Press [■ STOP] on main unit for next error.
U705	DVD/DVI SRM disk falsification check error	It is generated at the time of it is time when illegal the SRM data of the reproducing disk (verify error), when connecting it with DVD/DVI.		Press [■ STOP] on main unit for next error.
F740	DVD device key	I2C error when writing DVD Key device into transmitter.		Press [■ STOP] on main unit for next error.
F893	FLASH ROM IC data falsification error	Firmware error, DV5.0 LSI IC (IC8651) error.		Press [■ STOP] on main unit for next error.
F894	EEPROM IC abnormality error	When failing in the access to EEPROM IC located in the DVD Module P.C.B. (IC8611)		Press [■ STOP] on main unit for next error.
F895	Language area abnormal	Firmware version agreement check for factory preset setting failure prevention.		Press [■ STOP] on main unit for next error.
F896	No existence model	Firmware version agreement check for factory preset setting failure prevention.		Press [■ STOP] on main unit for next error.
F897	Initialization error	Incomplete initialization after writing of new firmware (Factory preset setting failure prevention)		Press [■ STOP] on main unit for next error.
F898	Disagreement of hardware and software	Unsuitable combination of AV Decoder, SDRAM & FLASH ROM IC (firmware).		Press [■ STOP] on main unit for next error.
F899	The communication specification disagreement between micro-processor	Unsuitable combination of number of system com and panel com used. (Firmware)		Press [■ STOP] on main unit for next error.

8.3.3. Power Supply Error Code Table

Error Code	Diagnosis Contents	Description of error	Automatic FL Display	Remarks
F61	The abnormalities in an output or power supply circuit of POWER AMP	In normal operation, when DCDET2 goes to "L" (Low) (Not during POWER OFF condition), F61 appears on FL Display and PCONT goes to "L" (Low). This is due to speaker output has DC voltage or fan is not working.		Press [■ STOP] on main unit for next error.
F76	Abnormality in the output voltage of stabilized power supply	In normal operation when DCDET1 is detected "L" (Low) for two consecutive times, F76 is displayed on FL for 2 seconds and after that PCONT will be turned to "L" (Low). This is due to any of the DC voltages (+9V, +7V, -7V, +5V, +5.3V etc.) not available.		Press [■ STOP] on main unit for next error.

8.3.4. ECC Error Code Table

Error Code	Diagnosis Contents	Description of error	Automatic FL Display	Remarks
F600	Administrative information cannot be acquired by the recovery error.	It becomes impossible NaviPack etc. were done, and not to be able to acquire necessary information in the navigation's changing due to wound etc. of DISC, and to have done the reproduction transition.		Press [■ STOP] on main unit for next error.
F601	Irregular sector ID was demanded.	It tried to access the position that did not exist on DISC by the recording error etc. of authoring.		Press [■ STOP] on main unit for next error.
F603	KEYDET cannot be acquired by the recovery error.	The data for decoding copyright protection (CSS) cannot be acquired due to wound etc. of DISC, and it is not possible to reproduce.		Press [■ STOP] on main unit for next error.

8.3.5. USB Error Code Table

Error Code	Diagnosis Contents	Description of error	Automatic FL Display	Remarks
F650	USB device: Devices other than mass storage	Devices other than the mass storage class are connected.		Press [■ STOP] on main unit for next error.
F651	USB device: Non-Full Speed Device	The device that the transfer rate did not correspond to Full Speed was connected.		Press [■ STOP] on main unit for next error.
F652	USB device: Interface NG	The device in the interface (subclass) outside correspondence was connected. (correspondence interface) 001b: Reduced Block Commands (RBC) 010b: SFF-8020i. MMC-2 (ATAPI) 110b: SCSI transparent command set.		Press [■ STOP] on main unit for next error.
F655	USB device: Overcurrent detection	The overcurrent of 500mA or more was detected in VDD USB, and the USB device driver function was intercepted. (To intercept the current.)		Press [■ STOP] on main unit for next error.

8.4. Sales Demonstration Lock Function

This function prevents discs from being lost when the unit is used for sales demonstrations by disabling the disc eject function. "LOCKED" is displayed on the unit, and ordinary operation is disabled.

8.4.1. Setting

• Prohibiting removal of disc

1. Select the DVD/CD function.
2. At POWER ON condition, press and hold down the ■ button and the power button on the player for at least three seconds. (The message, "___LOCKED_" appears when the function is activated.)

Note:

OPEN/CLOSE ▲ is invalid and the player displays "___LOCKED_" while the lock function mode is entered.

• Prohibiting operation of selector and disc

1. Select the DVD/CD function.
2. At POWER ON condition, press and hold down the ► button and the power button on the player for at least three seconds. (The message, "___LOCKED_" appears when the function is activated.)

Note:

The following buttons are invalid and the player displays "___LOCKED_" while the lock function mode is entered.

Player	▲, ■, SELECTOR, ►►►/ , ►►►, ◀◀◀/ ◀◀◀
Remote controller unit	NUMERIC KEYS 0-9, ≥10, ■, ■■, ►►►, ◀◀◀, ►►►, ◀◀◀, FUNCTIONS, TOP MENU/DIRECT NAVIGATOR, RETURN/SETUP, FL DISPLAY/SLEEP, MUTING, MENU/PLAY LIST, TEST, EXT-IN, FM, UP, DOWN, LEFT & RIGHT

8.4.2. Cancellation

The lock can be cancelled by the same procedure as used in setting. ("UNLOCKED" is displayed on cancellation. Disconnecting the power cable from power outlet does not cancel the lock.)

8.5. Service Precautions

8.5.1. Recovery after the DVD player is repaired

- When the FLASH ROM IC or DVD Module P.C.B. is replaced, carry out the recovery processing to optimize the drive.
Playback the recovery disk to process the recovery automatically.
- Recovery disc (Product number: RFKZD03R005) [SPG]
- Performing recovery process
 1. Load the recovery disc RFKZD03R005 on to the player and run it.
 2. Recovery is performed automatically. When it is finished, a message appears on the screen.
 3. Remove the recovery disc.
 4. Turn off the power.
 5. Initialize the player.

8.5.2. Firmware version-up of the DVD player

- The firmware of the DVD player may be renewed to improve the quality including operability and playability to the substandard discs.processing to optimize the drive.
The recovery disc has also firmware version-up.
- After version-up, recovery processing is executed automatically.
- Part number of the recovery disc for version-up will be noticed when it is supplied.
- Updating firmware
 1. Load the recovery disc on to the player and run it.
 2. Firmware version of the player is automatically checked. Appropriate message appears whenever necessary.
 3. Using remote controller's cursor key, select whether version updating is to be done or not. (Selection of Yes/No)
 4. a. If Yes is selected, version updating is performed.
b. If No is selected, only recovery is performed.
 5. a. When updating is finished, remove the disc according to the message appearing on the screen.
b. Remove the disc according to the message appearing on the screen.
 6. Turn off the power.

Note:

If the AC power supply is shut out during version-up due to a power failure, the version-up is improperly carried out. In such a case, replace the FLASH ROM IC and carry out the version-up again.

8.5.3. DVD Module P.C.B. Reset

- When after replacing FLASH ROM IC or DVD Module P.C.B., FL displays error code " DVD F897". This means the unit is not initialized properly and the following process needs to be carry out.
- Procedures:
 1. Press ≥ 10 on remote control while pressing "STOP" button on main unit. (To enter into initialization)
 2. FL display show "INIT"
 3. While still pressing "STOP" button on main unit, press "ENTER" on remote control. (To reset the unit)
 4. FL will display "RESET" before FL display will change to TOC reading again.
 5. Power off unit. Unplug the AC cord.
 6. Power on the unit. It should be no problem. If problem persist check on the DVD Module P.C.B. or FLASH ROM IC.

9 Assembling and Disassembling

“ATTENTION SERVICER”

Be careful when disassembling and servicing.

Some chassis components may have sharp edges.

Special Note:

1. This section describes the disassembly procedures for all the major printed circuit boards and main components.
2. Before the disassembly process was carried out, do take special note that all safety precautions are to be carried out. (Ensure that no AC power supply is connected during disassembling.)
3. For assembly after operation checks or replacement, reverse the respective procedures. Special reassembly procedures are described only when required.
4. The Digital Amp IC may have high temperature after prolonged use.
5. Use caution when removing the top cabinet and avoid touching heat sinks located in the unit

**CAUTION: HOT!!
PLEASE DO NOT
TOUCH THE HEAT SINK**

6. This unit uses Switching Mode Power Supply (SMPS) Module P.C.B. for providing the voltage supply. It is advisable to replace as a unit. Do not attempt to replace any individual components on board.
7. Select items from the following index when checks or replacement are required.
 - Disassembly of Top Cabinet
 - Disassembly of DVD Lid (When taking out disc manually)
 - Disassembly of Front Panel
 - Disassembly of Volume P.C.B.
 - Disassembly of Panel P.C.B.
 - Disassembly of USB P.C.B.
 - Disassembly of Rear Panel
 - Disassembly of DVD Mechanism Unit
 - Disassembly of DVD Module P.C.B.
 - Disassembly of USB Relay P.C.B.
 - Disassembly of Main P.C.B. & Tuner Extent P.C.B.
 - Replacement of Digital Amp IC (IC5100/IC5200/IC5300)
 - Replacement of Regulator IC (IC2903)
 - Disassembly of SMPS Module P.C.B.
 - Disassembly of Tuner Extent P.C.B.

CAUTION NOTE:

Please use original screw and at correct locations.

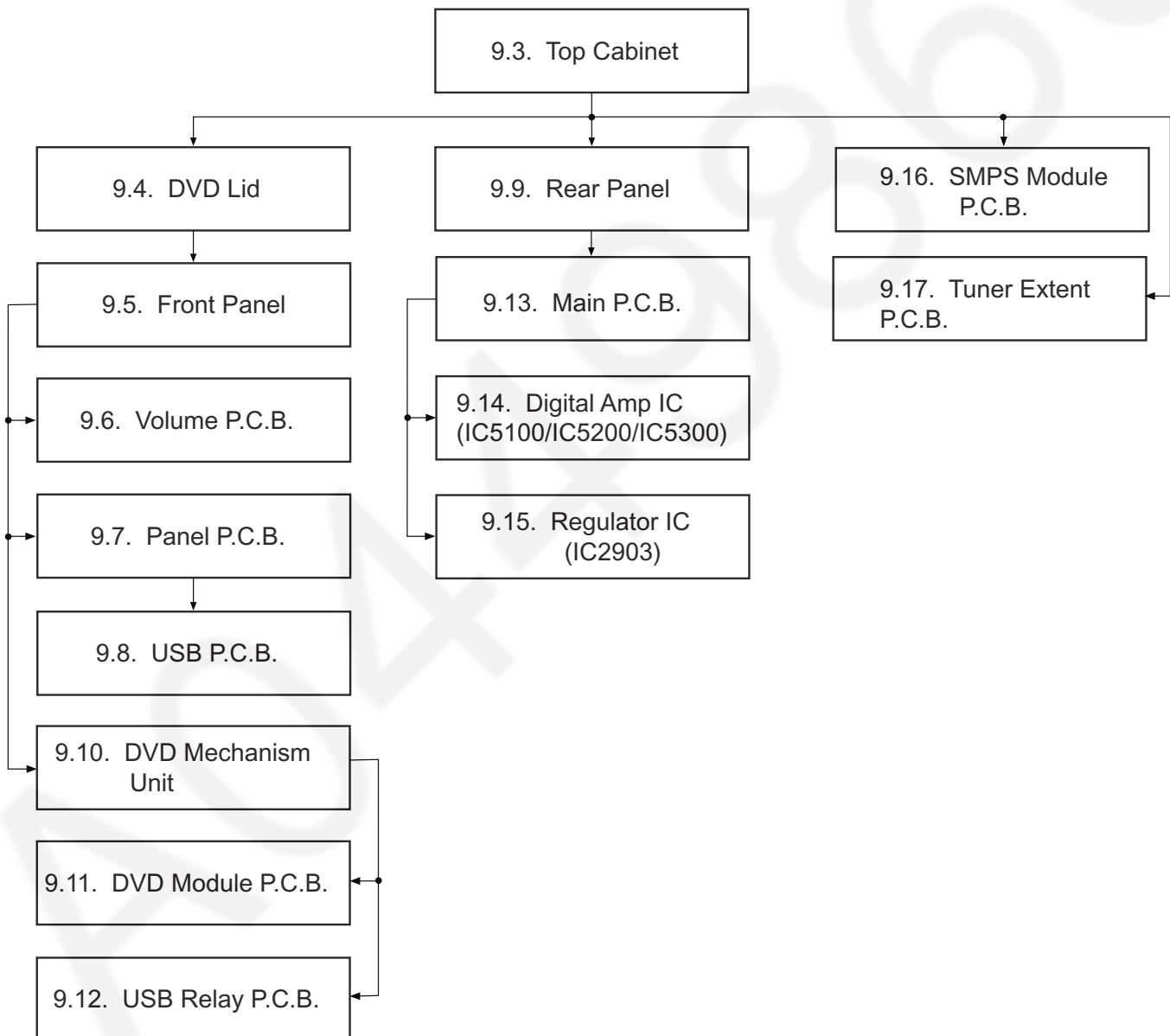
Below shown is part no. of different screw types used:

- | | |
|---------------------------------|----------------------|
| a :RHD30007-1SJ (E/EG-S) | e :XTV2+6GFJ |
| :RHD30007-K2J (E/EB/EG-K) | f :RHD30111-3 |
| b :RHD30119-S | g :XTB3+8JFJ |
| c :RHD26046 | h :XTN26+6GFJ |
| d :RHDV30006 | |

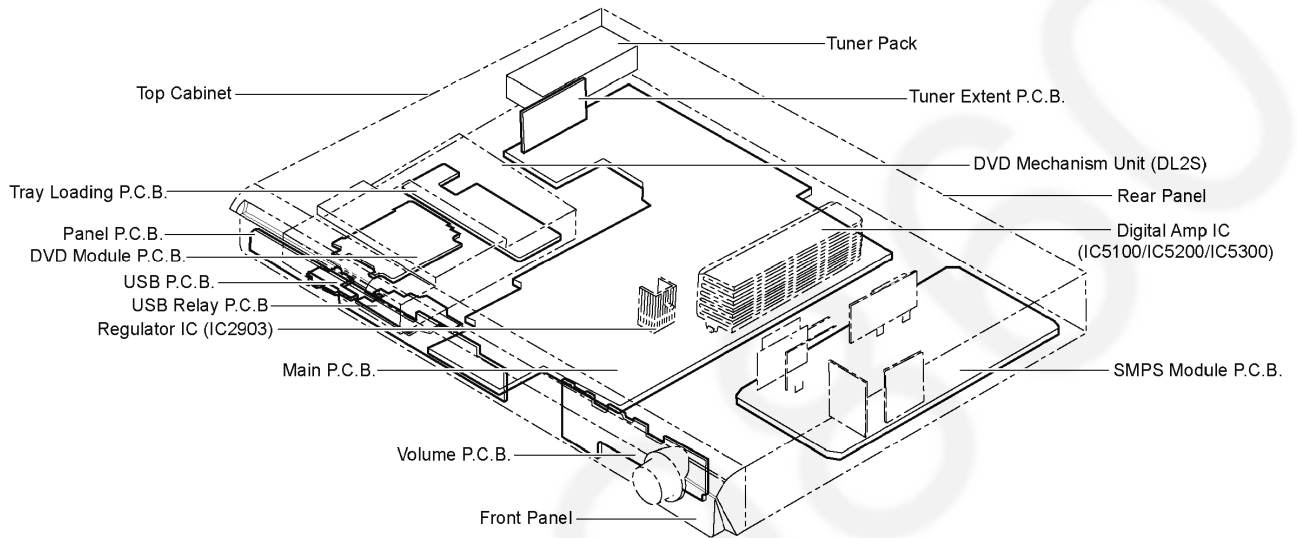
● **SMPS Module P.C.B. Replacement:**

1. This model uses **SMPS Module P.C.B.** to provide the necessary supply voltages for the unit.
2. It is advisable to replace the **SMPS Module P.C.B.** once upon detecting of non-working conditions. Do not attempt to repair or replace it by components.
3. **Non-working conditions include:**
 - **With AC supply but no supply voltages after checking at CN2 and/or CN3 respectively.**
 - **Broken fuse. (Substitute compatible part for fuse: K5D312BNA005)**
 - **Wire connection problem.**
 - **Non-working parts in SMPS Module P.C.B. (Check components)**

9.1. Disassembly Flow Chart

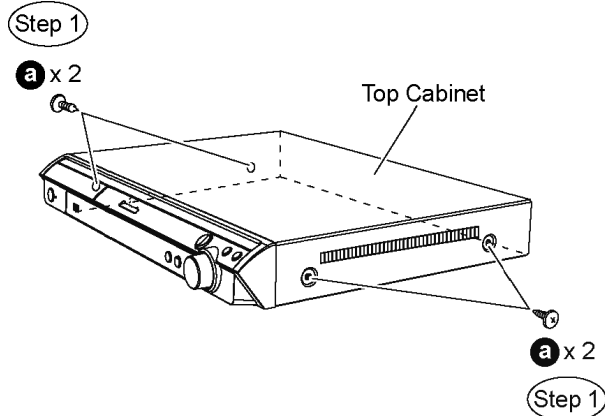


9.2. Main Components and P.C.B. Locations



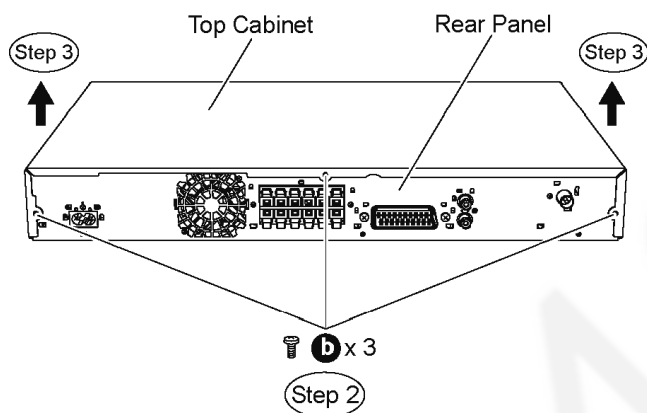
9.3. Disassembly of Top Cabinet

Step 1 Remove 4 screws.



Step 2 Remove 3 screws at the rear panel

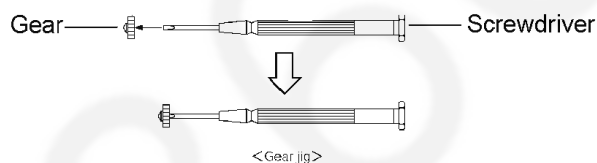
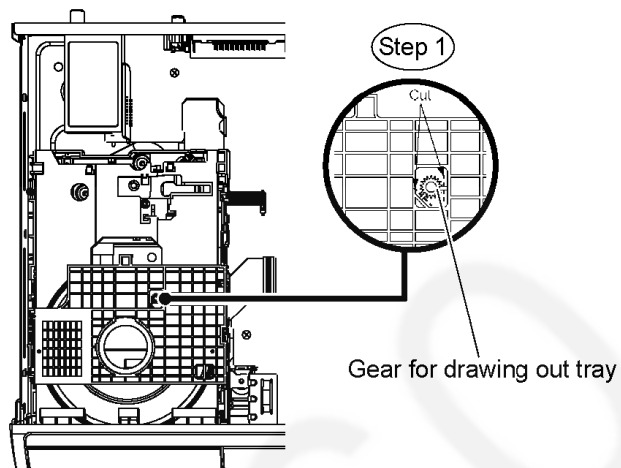
Step 3 Lift up and remove the top cabinet.



9.4. Disassembly of the DVD Lid (When taking out disc manually)

- Follow (Step 1) to (Step 3) of Item 9.3.

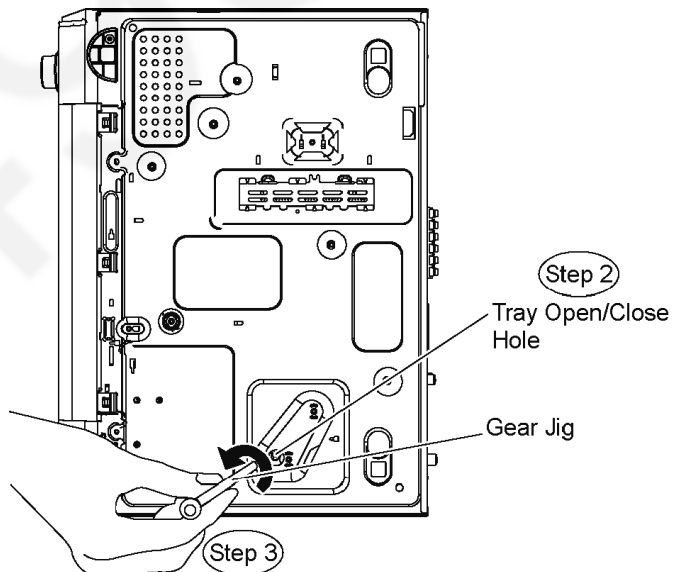
Step 1 Detach the gear (For drawing out tray) from the mechanism unit. It inserts a screw driver in the gear. (The gear jig)



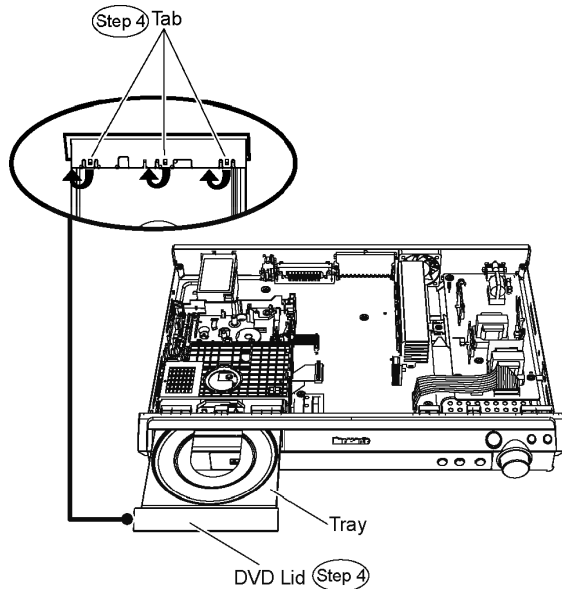
Step 2 Insert the gear jig into the tray open/ close hole.

Step 3 Turn the gear jig counterclockwise to open the tray.

Note : Do not use force to push the tray backwards as it can damage the mechanism unit.



Step 4 Release the tabs and remove the DVD lid.



Note: You can return the tray by turning the gear jig clockwise.

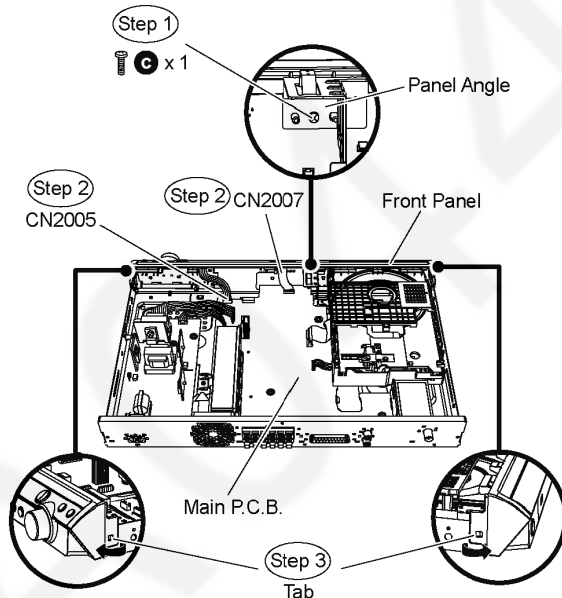
9.5. Disassembly of Front Panel

- Follow (Step 1) to (Step 3) of Item 9.3.
- Follow (Step 1) to (Step 4) of Item 9.4.

Step 1 Remove 1 screw from the panel angle.

Step 2 Detach FFC cables from the connectors (CN2005 & CN2007) on Main P.C.B.

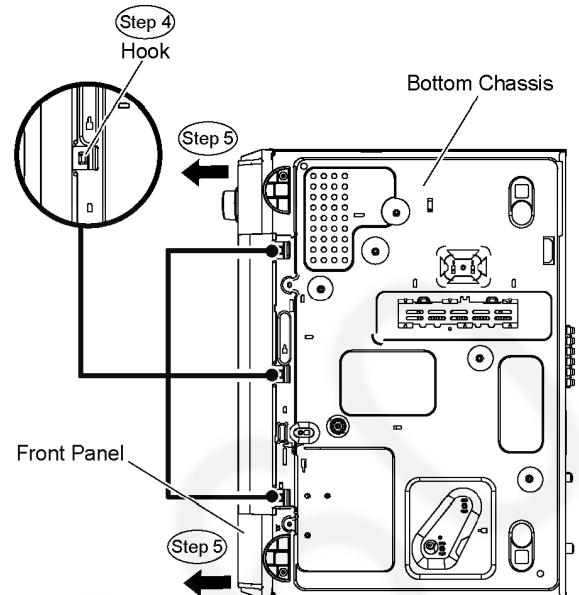
Step 3 Release the tab on each side of the front panel.



Step 4 Upset the unit and release 3 hooks at the bottom chassis.

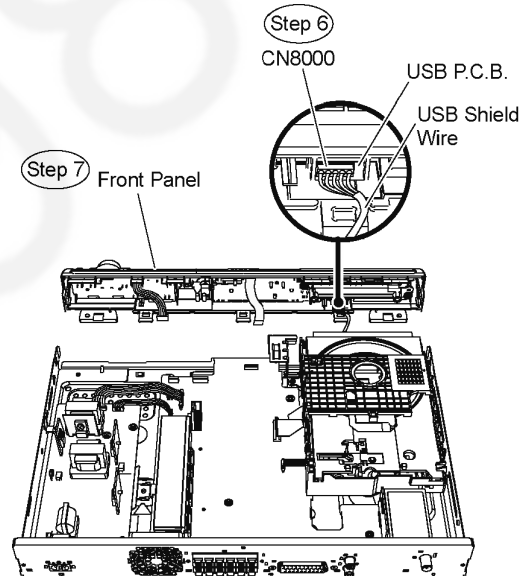
Step 5 Detach the front panel slightly forward in the direction of arrow.

Caution: Do not attempt to exert strong force when detaching the front panel.



Step 6 Detach USB shield wire from the connector (CN8000) on USB P.C.B.

Step 7 Remove the front panel.

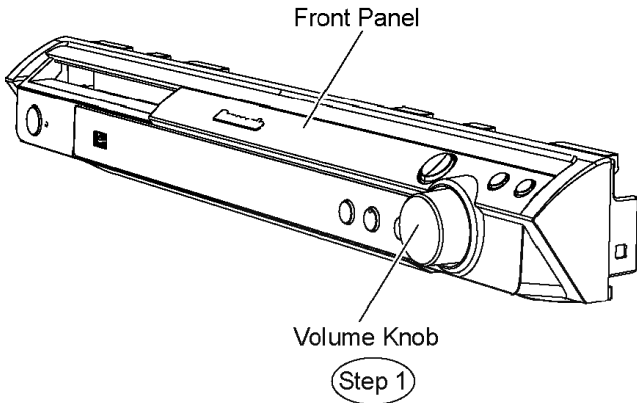


Special Note : Avoid placing the set in a position that might cause damage to the jacks when removing the front panel.

9.6. Disassembly of Volume P.C.B.

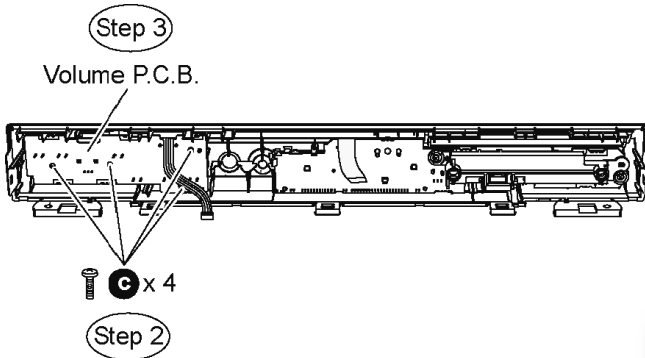
- Follow (Step 1) to (Step 3) of Item 9.3.
- Follow (Step 1) to (Step 4) of Item 9.4.
- Follow (Step 1) to (Step 7) of Item 9.5.

Step 1 Remove the volume knob.



Step 2 Remove 4 screws from Volume P.C.B..

Step 3 Remove Volume P.C.B.



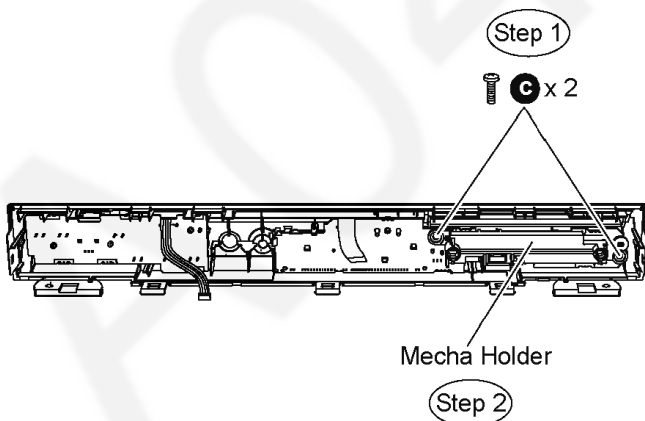
9.7. Disassembly of Panel P.C.B.

- Follow (Step 1) to (Step 3) of Item 9.3.
- Follow (Step 1) to (Step 4) of Item 9.4.
- Follow (Step 1) to (Step 7) of Item 9.5.

- Disassembly of Mecha Holder.

Step 1 Remove 2 screws.

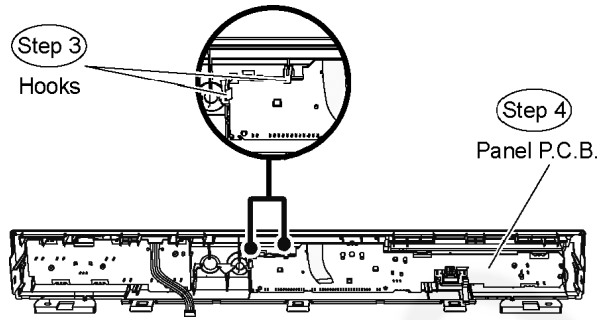
Step 2 Remove the mecha holder.



- Disassembly of Panel P.C.B.

Step 3 Release 2 hooks.

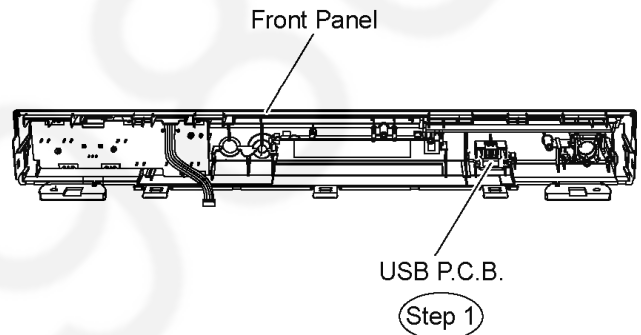
Step 4 Remove Panel P.C.B.



9.8. Disassembly of USB P.C.B.

- Follow (Step 1) to (Step 3) of Item 9.3.
- Follow (Step 1) to (Step 4) of Item 9.4.
- Follow (Step 1) to (Step 7) of Item 9.5.
- Follow (Step 1) to (Step 4) of Item 9.7.

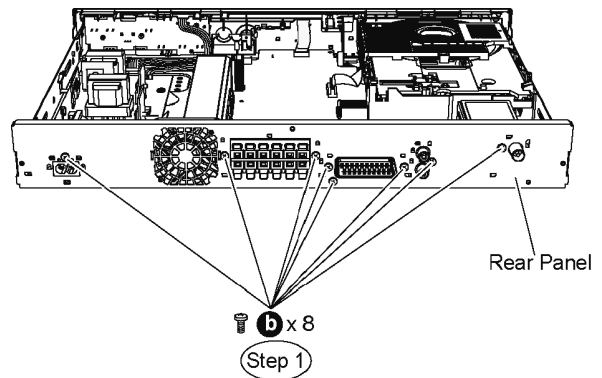
Step 1 Remove USB P.C.B.



9.9. Disassembly of Rear panel

- Follow (Step 1) to (Step 3) of Item 9.3.

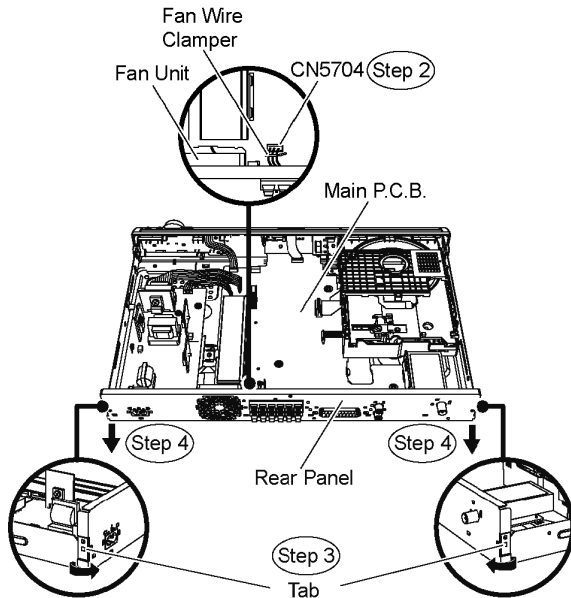
Step 1 Remove 8 screws from the rear panel.



Step 2 Remove the fan wire clammer to detach the fan unit connector (CN5704) on Main P.C.B.

Step 3 Release the tab on each side of the rear panel in the direction of arrows.

Step 4 Remove the rear panel.

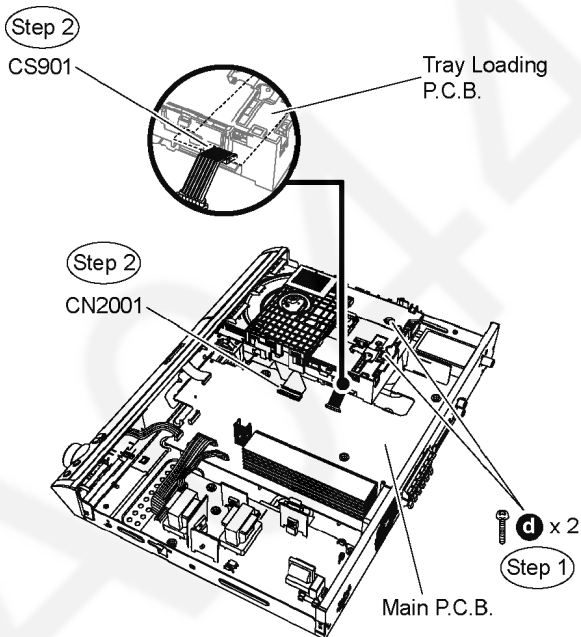


9.10. Disassembly of DVD Mechanism Unit

- Follow (Step 1) to (Step 3) of Item 9.3.
- Follow (Step 1) to (Step 4) of Item 9.4.

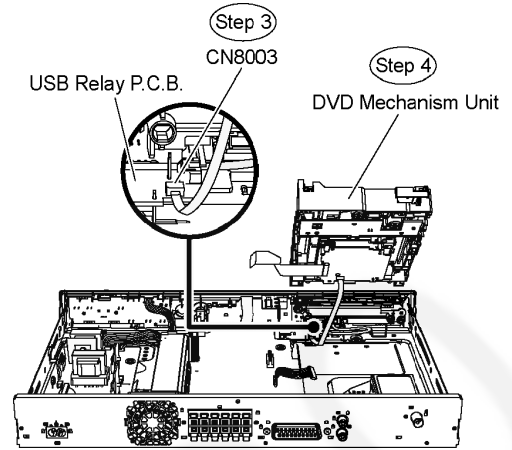
Step 1 Remove 2 screws from the DVD mechanism unit.

Step 2 Detach FFC cable from the connectors (CN2001) on Main P.C.B. and (CS901) on Tray Loading P.C.B.



Step 3 Lift up the DVD mechanism unit and detach FFC cable from the connector (CN8003) on USB Relay P.C.B..

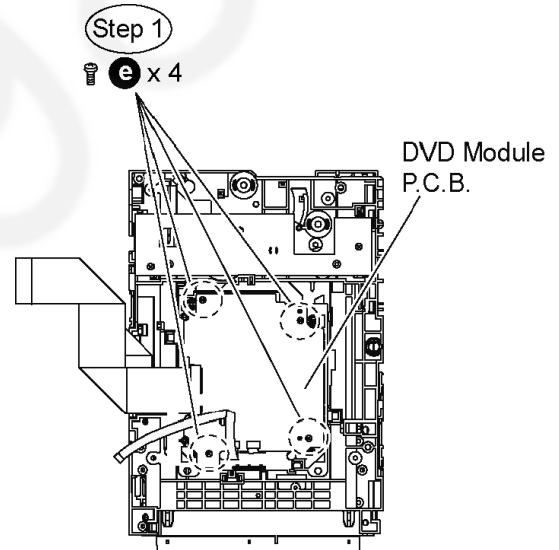
Step 4 Remove DVD mechanism unit.



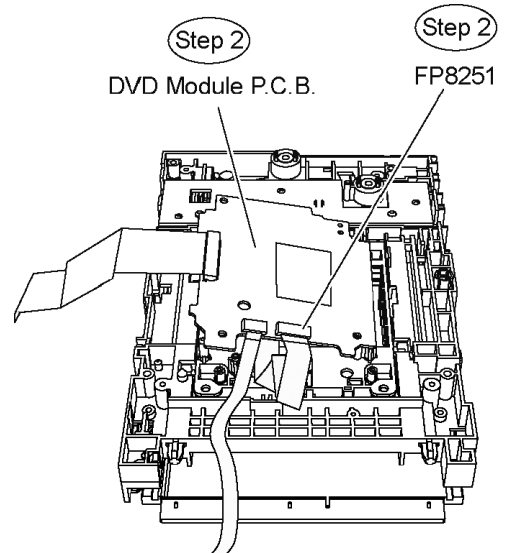
9.11. Disassembly of DVD Module P.C.B.

- Follow (Step 1) to (Step 3) of Item 9.3.
- Follow (Step 1) to (Step 4) of Item 9.4.
- Follow (Step 1) to (Step 4) of Item 9.10.

Step 1 Remove 4 screws from DVD Module P.C.B.

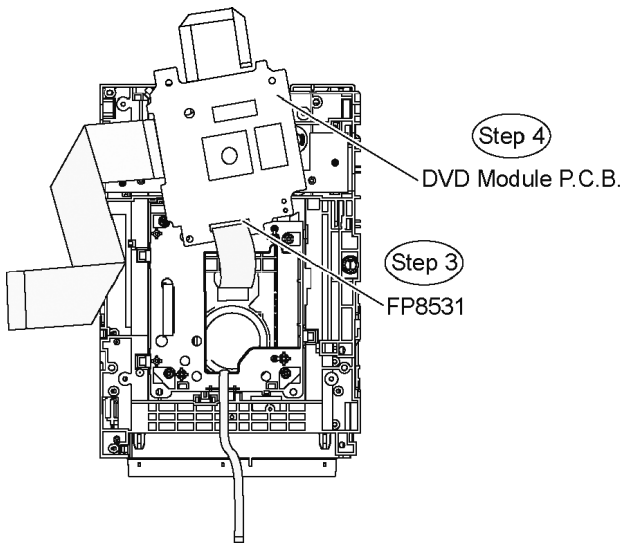


Step 2 Lift up DVD Module P.C.B. and detach FFC cable from the connector (FP8251).



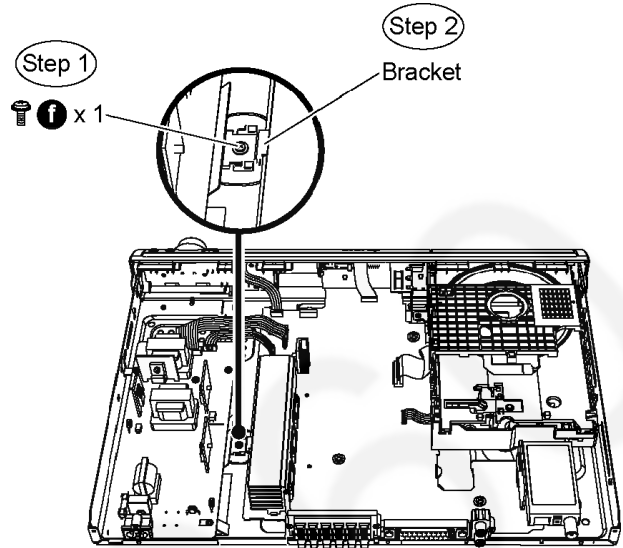
Step 3 Turn over DVD Module P.C.B. and detach FFC cable from the connector (FP8531).

Step 4 Remove DVD Module P.C.B.



Step 1 Remove 1 screw from the bracket.

Step 2 Remove the bracket.



• Disassembly of Main P.C.B.

Caution : Do not use strong or excessive force to avoid damage to FFC cables.

Step 3 Remove 4 screws on Main P.C.B.

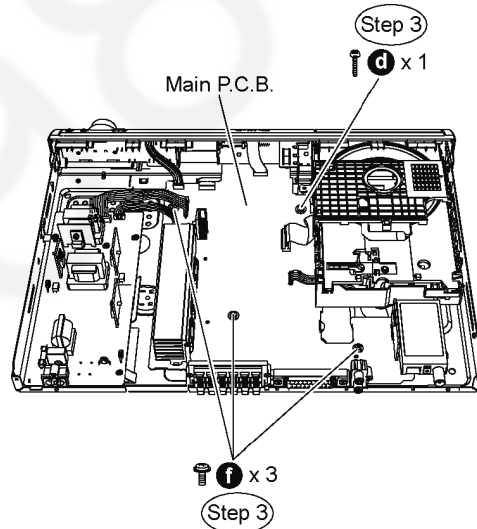
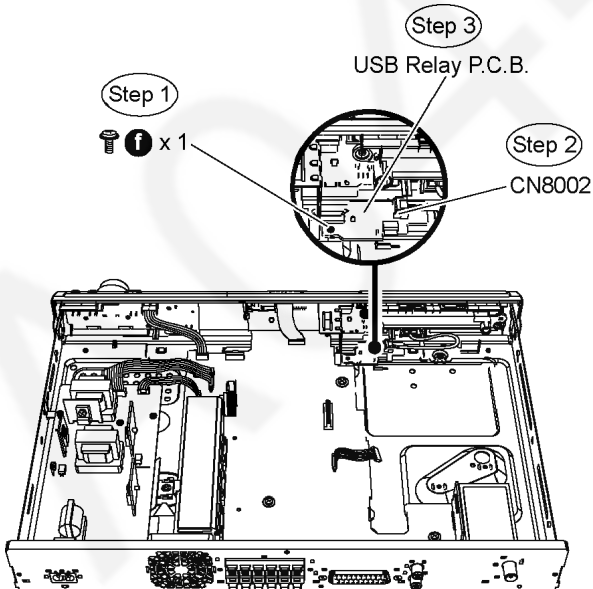
9.12. Disassembly of USB Relay P.C.B.

- Follow (Step 1) to (Step 3) of Item 9.3.
- Follow (Step 1) to (Step 4) of Item 9.4.
- Follow (Step 1) to (Step 4) of Item 9.10.

Step 1 Remove 1 screw.

Step 2 Detach FFC cable from the connector (CN8002).

Step 3 Lift up and remove USB Relay P.C.B.

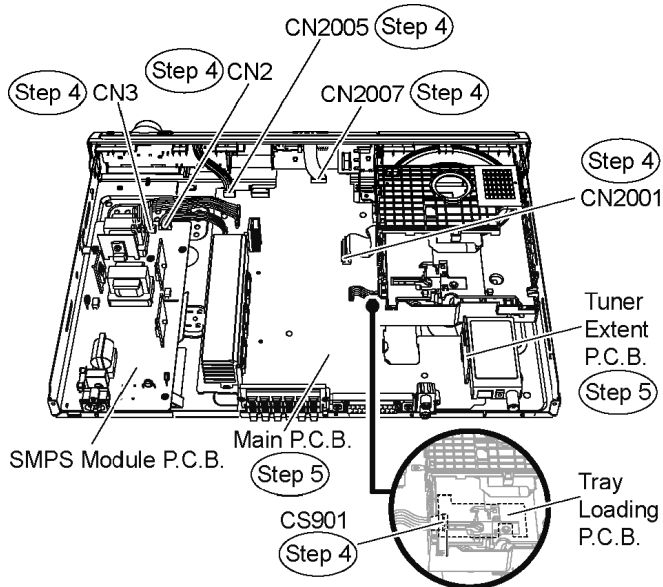


Step 4 Detach FFC cable from the connectors (CN2 & CN3) on SMPS Module P.C.B., (CN2001, CN2005 & CN2007) on Main P.C.B. and (CS901) on Tray Loading P.C.B.

Step 5 Remove Main P.C.B.

9.13. Disassembly of Main P.C.B.

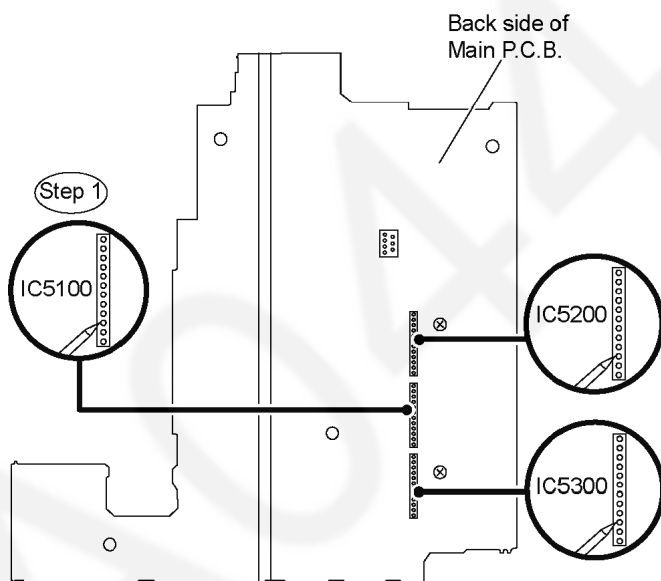
- Follow (Step 1) to (Step 3) of Item 9.3.
- Follow (Step 1) to (Step 4) of Item 9.9.
- Disassembly of Bracket.



9.14. Replacement of Digital Amp IC (IC5100/IC5200/IC5300)

- Follow (Step 1) to (Step 3) of Item 9.3.
- Follow (Step 1) to (Step 4) of Item 9.9.
- Follow (Step 1) to (Step 5) of Item 9.13.

Step 1 Desolder pins of the digital amp IC (IC5100) on the back side of Main P.C.B.

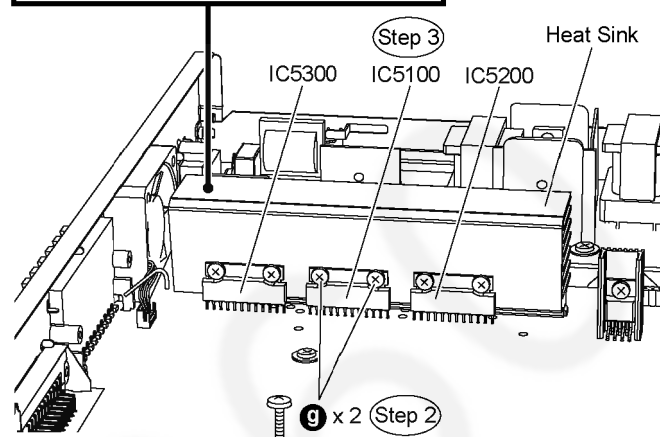


Step 2 Remove 2 screws from the digital amp IC (IC5100).

Step 3 Remove the digital amp IC (IC5100) from the heatsink unit.

Caution : Handle the heatsink unit with caution due to its high temperature after prolonged use. Touching it may lead to injuries.

**CAUTION: HOT!!
PLEASE DO NOT
TOUCH THE HEAT SINK**

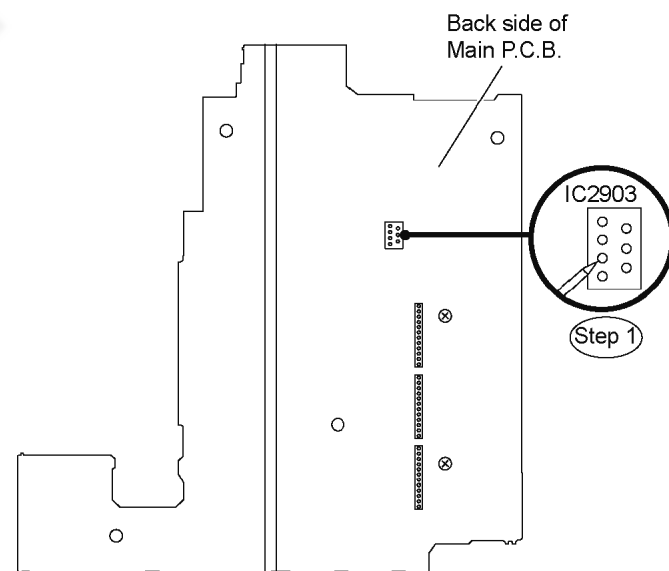


Note : For replacement of IC5200 & IC5300, repeat the (Step 1) to (Step 3). Refer to the diagrams of Main P.C.B. (Item 20.2) for the location of the parts.

9.15. Replacement of Regulator IC (IC2903)

- Follow (Step 1) to (Step 3) of Item 9.3.
- Follow (Step 1) to (Step 4) of Item 9.9.
- Follow (Step 1) to (Step 5) of Item 9.13.

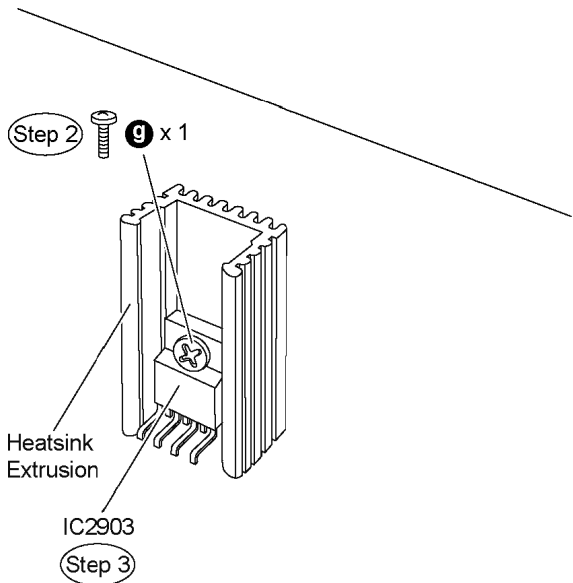
Step 1 Desolder pins of the regulator IC (IC2903) on the back side of Main P.C.B.



Step 2 Remove 1 screw from the regulator IC (IC2903).

Step 3 Remove the regulator IC (IC2903) from the heatsink extrusion.

Caution : Handle the heatsink extrusion with caution due to its high prolonged use. Touching it may lead to injuries.



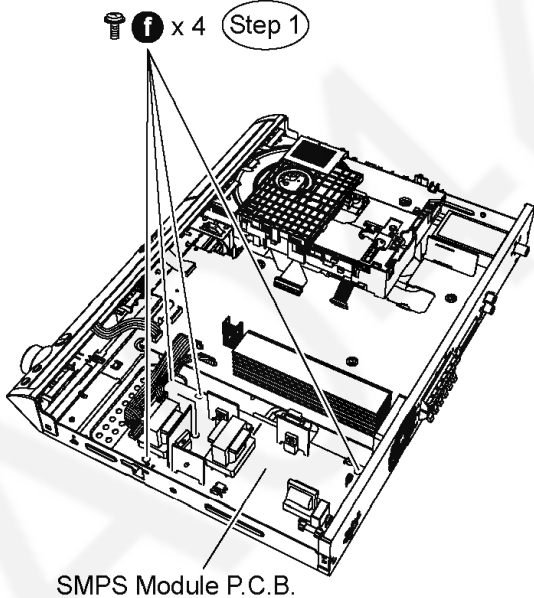
Note : Refer to the diagrams of Main P.C.B. (Item 20.2) for the location of the part.

9.16. Disassembly of SMPS Module P.C.B.

- Follow (Step 1) to (Step 3) of Item 9.3.

Caution Note: The SMPS Module P.C.B. is advisable to be replaced as a unit. Do not attempt to replace any individual components on board.

Step 1 Remove 4 screws from SMPS Module P.C.B.

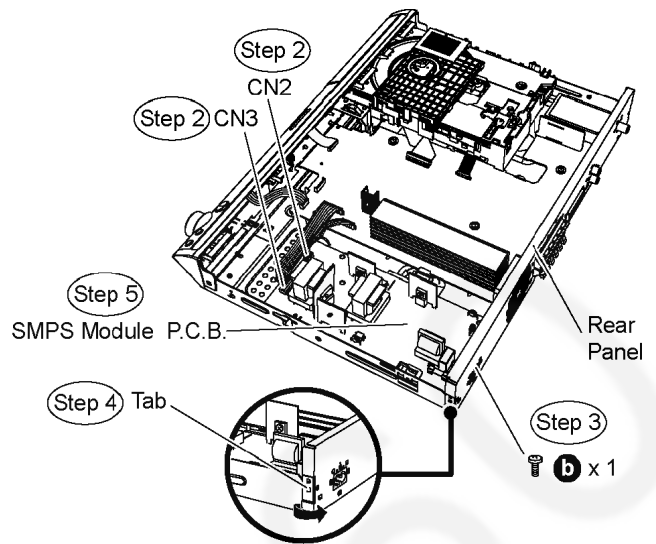


Step 2 Detach FFC cable from the connectors (CN2 & CN3) on SMPS Module P.C.B.

Step 3 Remove 1 screw from the rear panel.

Step 4 Release tab of the rear panel in the direction of arrow.

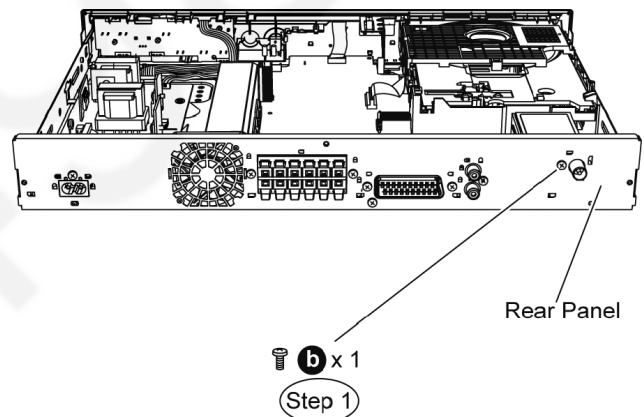
Step 5 Remove SMPS Module P.C.B.



9.17. Disassembly of Tuner Extent P.C.B.

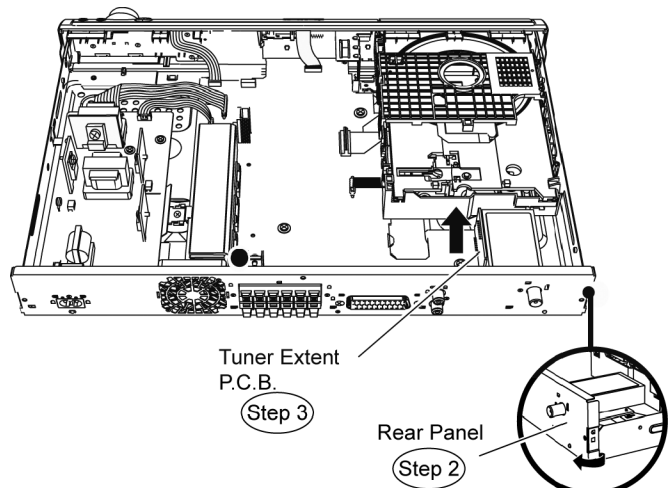
- Follow (Step 1) to (Step 3) of Item 9.3.

Step 1 Remove 1 screw at the rear panel.



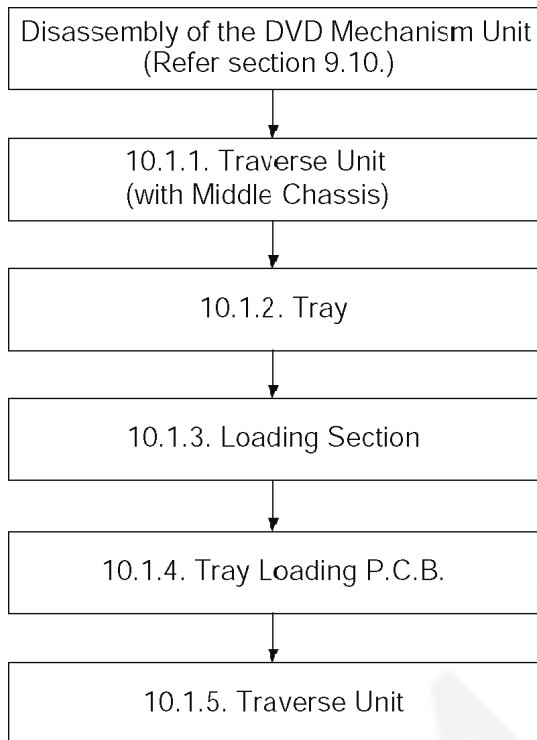
Step 2 Release the tab of the rear panel in the direction of arrow.

Step 3 Remove the Tuner Extent P.C.B. in the direction of arrow.



10 Assembly and Disassembly of DVD Mechanism Unit

10.1. Disassembly Procedure

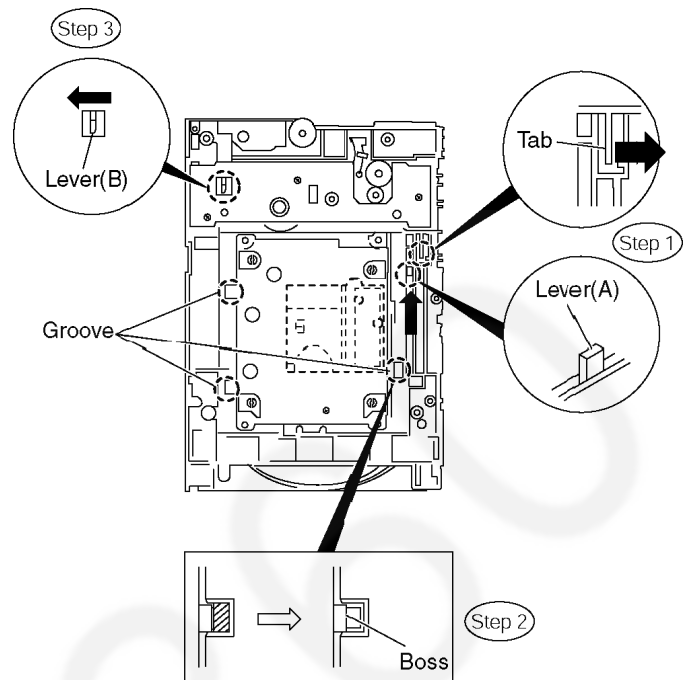


10.1.1. Disassembly of Traverse Unit (with Middle Chassis)

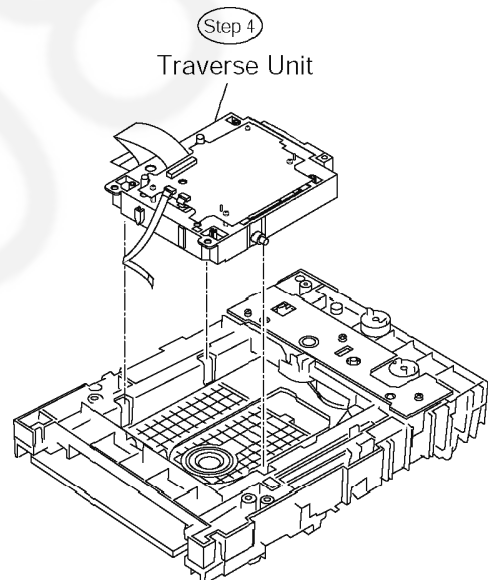
Step 1 Slide the lever (A) in the arrow direction (to the opposite side) till it stops.

Step 2 Slide the lever (A) further by bending the tab at the right side of the lever A in the right direction. (The right groove opens and the boss becomes seen.)

Step 3 Open the lever (B) to left. (The 2 grooves at the left side open.).

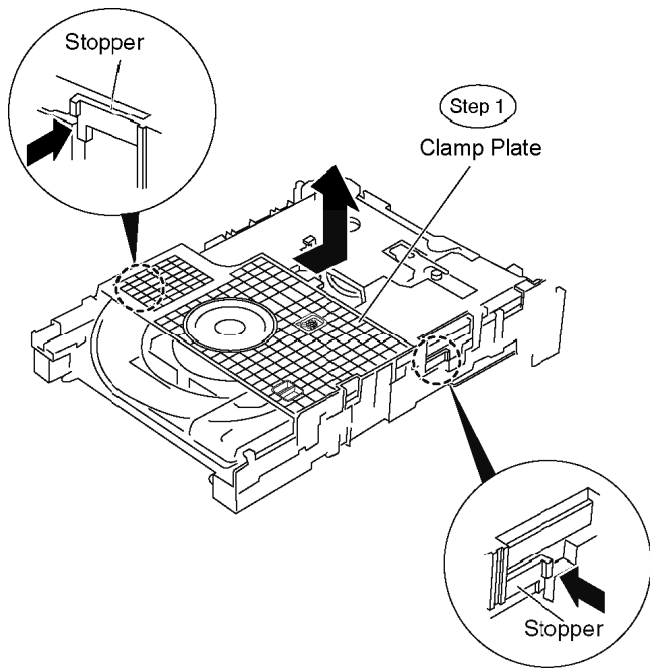


Step 4 Remove the traverse unit.



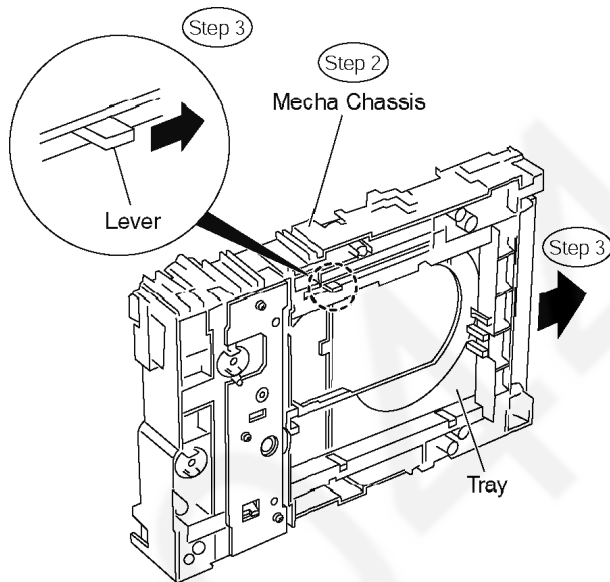
10.1.2. Disassembly of Tray

Step 1 Slide the clamp plate while pressing the stopper in the arrow direction, and remove the clamp plate.

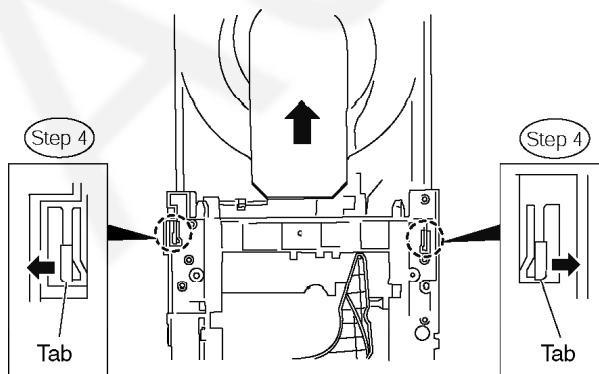


Step 2 Raise the mecha chassis vertically.

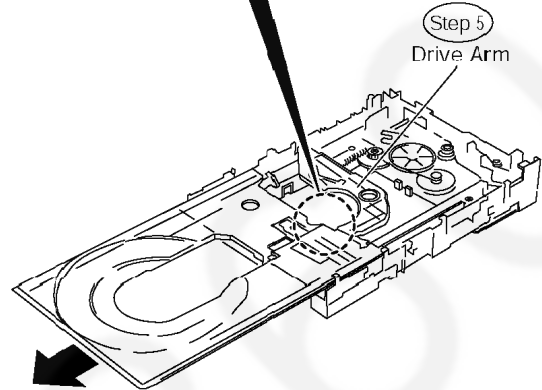
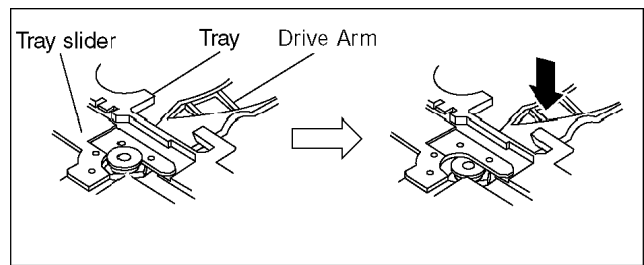
Step 3 Slide the lever in the arrow direction till it stops and pull the tray out.



Step 4 Spread the tabs at the both sides and pull the tray out. (The tray slides a little forward and stops.)



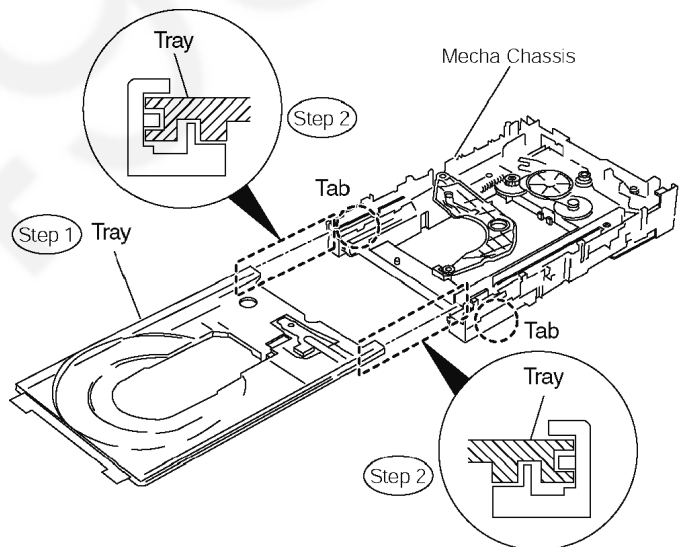
Step 5 Remove the drive arm concave phase from the tray slider and tray.



●(Assembly of the tray unit)

Step 1 Insert a part of the tray into the unit sliding over the groove on the mecha chassis.

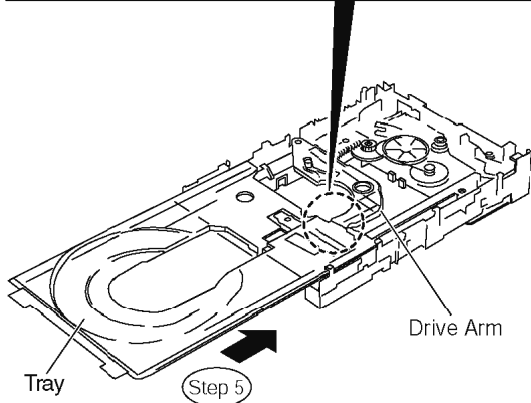
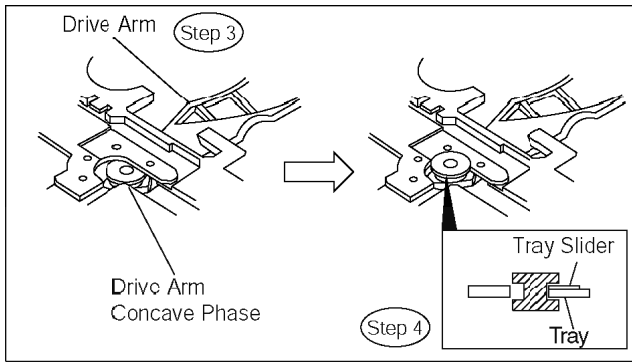
Step 2 Insert the tray to the point before the tab of the mecha chassis.



Step 3 Hook the drive arm concave phase over the tray and the tray slider.

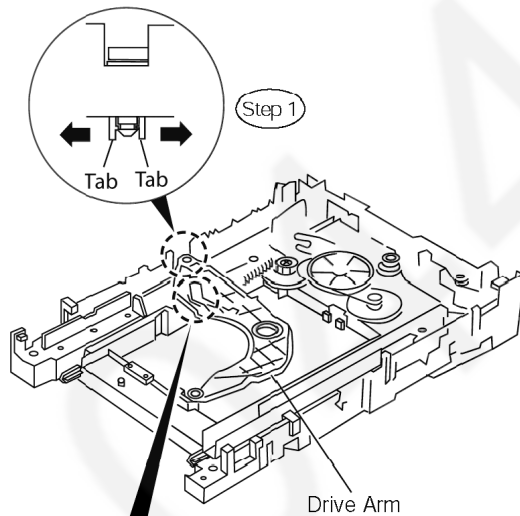
Step 4 Press in the tray.

Step 5 Make sure that the tray and the drive arm move smoothly.

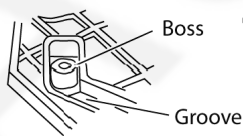


10.1.3. Disassembly of Loading Section

Step 1 Spread the tabs at the both sides and push out the drive arm.



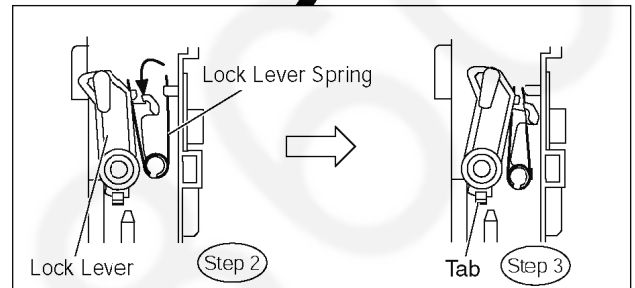
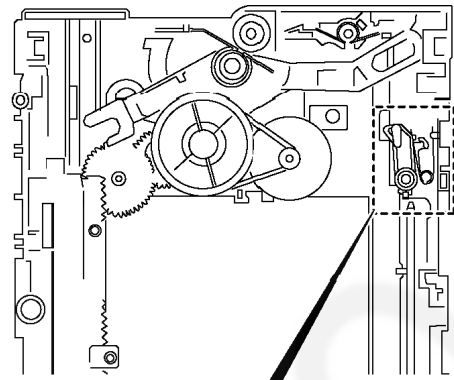
■ Important point in installing the drive rack



- Install the boss of the drive rack into the drive arm groove securely.

Step 2 Hook the lock lever spring on the lock lever projection part temporarily.

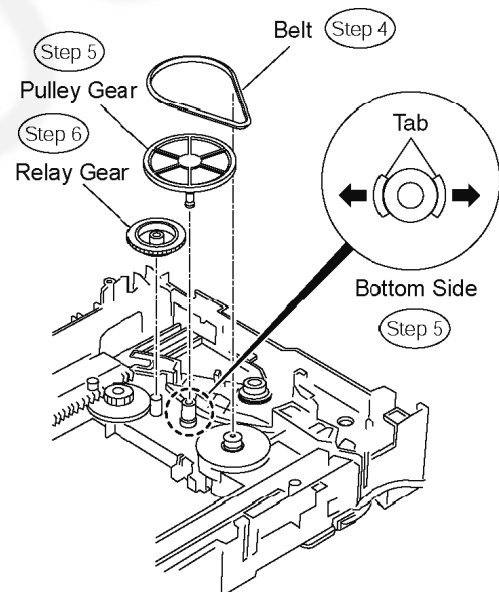
Step 3 Unlock the tab and remove the lock lever.



Step 4 Remove the belt.

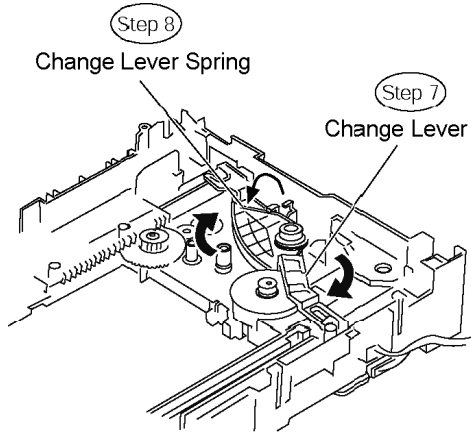
Step 5 Unlock the tab and remove the pulley gear.

Step 6 Remove the relay gear.

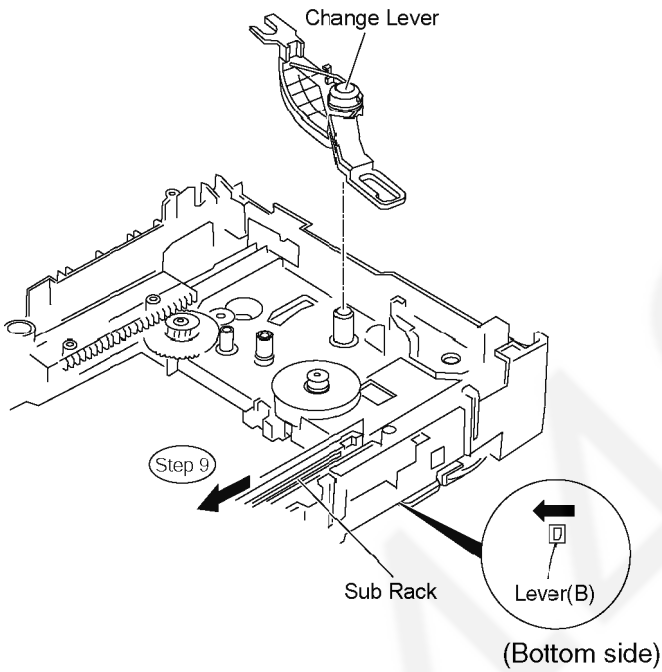


Step 7 Turn the change lever in the arrow direction till it stops.

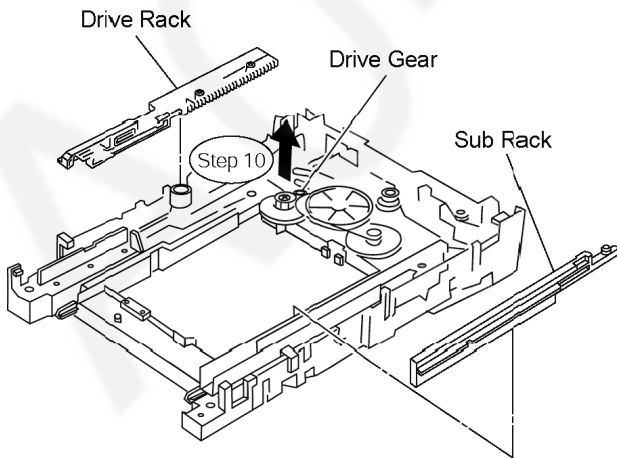
Step 8 Hook the change lever spring on the change lever project part temporarily.



Step 9 Pull the lever (B) at the bottom side in the direction of arrow and remove the change lever.



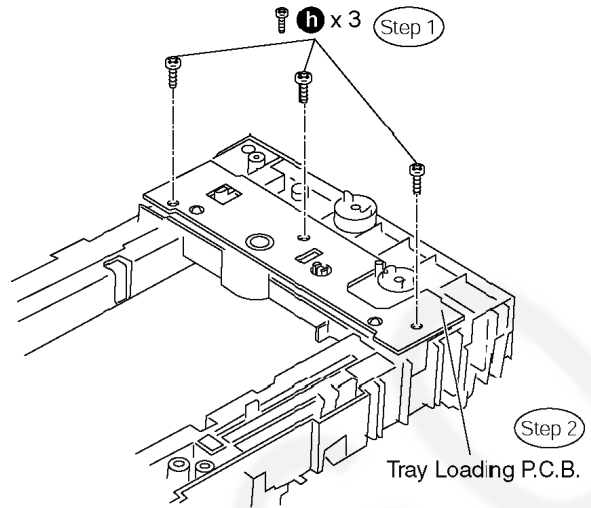
Step 10 Remove the drive rack, the sub rack and the drive gear in the direction of arrow.



10.1.4. Disassembly of Tray Loading P.C.B.

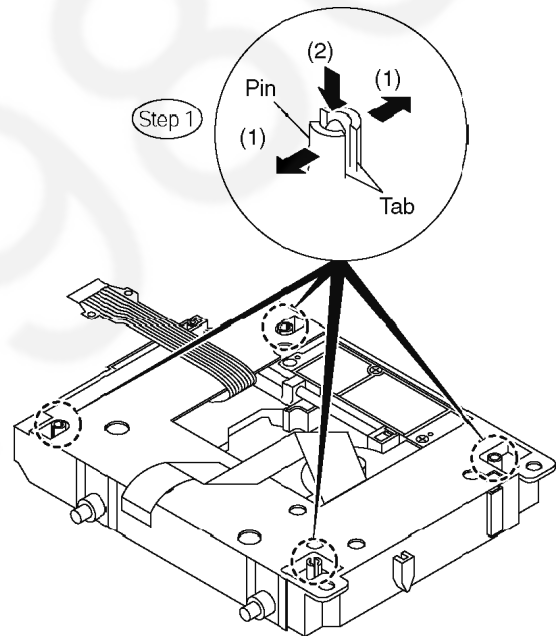
Step 1 Remove 3 screws

Step 2 Remove Tray Loading P.C.B.

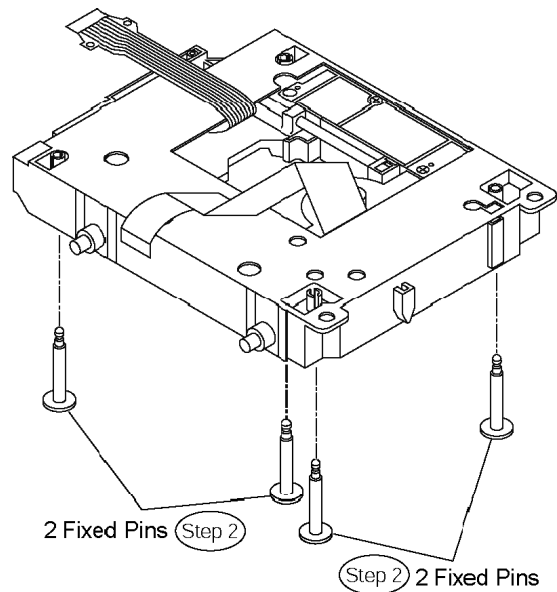


10.1.5. Disassembly of Traverse Unit

Step 1 Spread the tabs to push in the pin in the direction of arrows.

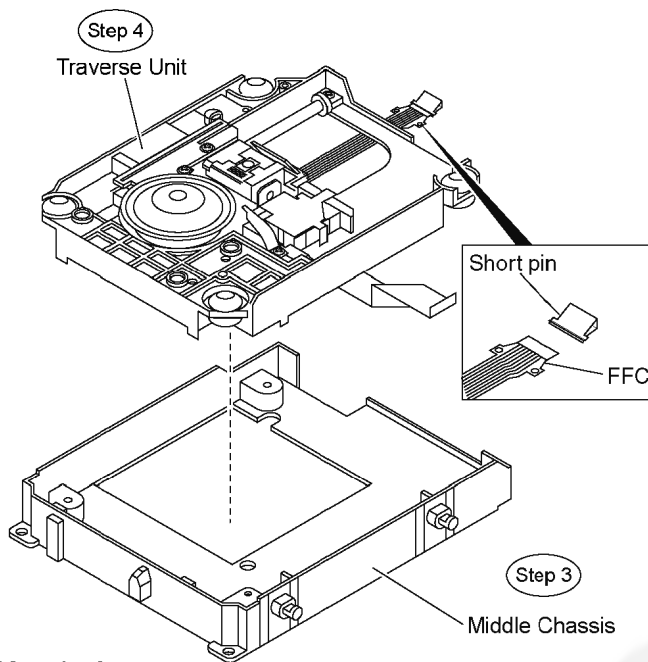


Step 2 Remove 4 fixed pins.



Step 3 Remove the middle chassis.

Step 4 Remove the traverse unit.



[Caution]

Insert the short pin into the FFC of the optical pickup unit.
[See "Caution to be taken in handling the optical pickup unit"]

11 Service Position

11.1. Checking & Repairing Panel P.C.B.

Step 1 Remove the top cabinet.

Step 2 Remove the DVD lid.

Step 3 Disassemble the front panel.

Step 4 Disassemble the the Panel P.C.B.

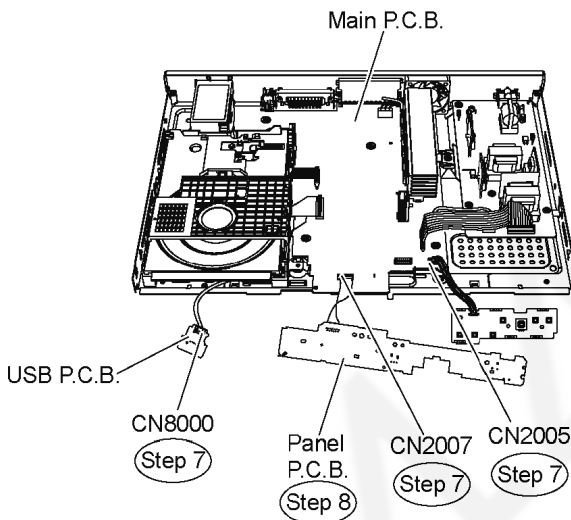
Step 5 Disassemble the the Volume P.C.B.

Step 6 Disassemble the USB P.C.B.

Note: Refer to items in Chapter 9 for disassembly procedures of respective Part & P.C.B.

Step 7 Connect FFC cable at the connectors (CN2005 & CN2007) on Main P.C.B. and (CN8000) on USB P.C.B.

Step 8 Turn over Panel P.C.B. horizontally and place it according to the diagram shown below.



11.2. Checking & Repairing Main P.C.B.

Step 1 Remove the top cabinet.

Step 2 Remove the DVD lid.

Step 3 Disassemble the front panel.

Step 4 Disassemble the Panel P.C.B.

Step 5 Disassemble the Volume P.C.B.

Step 6 Disassemble the USB P.C.B.

Step 7 Disassemble the DVD mechanism unit.

Step 8 Disassemble the USB Relay P.C.B.

Step 9 Disassemble the rear panel.

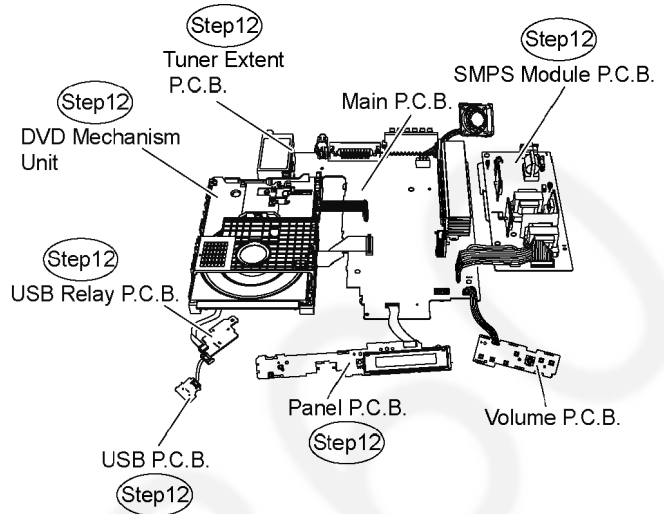
Step 10 Disassemble the Main P.C.B. & Tuner Extent P.C.B.

Step 11 Disassemble the SMPS Module P.C.B.

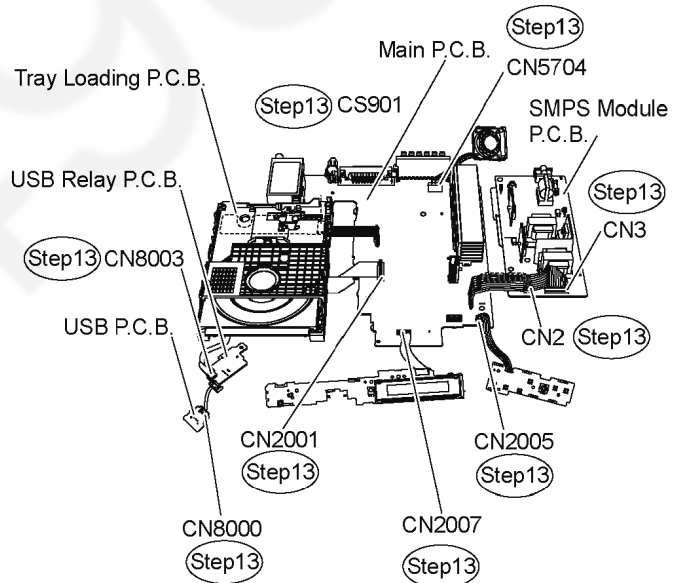
Note : Refer to items in Chapter 9 for disassembly procedures of respective Part and P.C.B.

Step 12 Position Panel P.C.B., Volume P.C.B., USB P.C.B.,

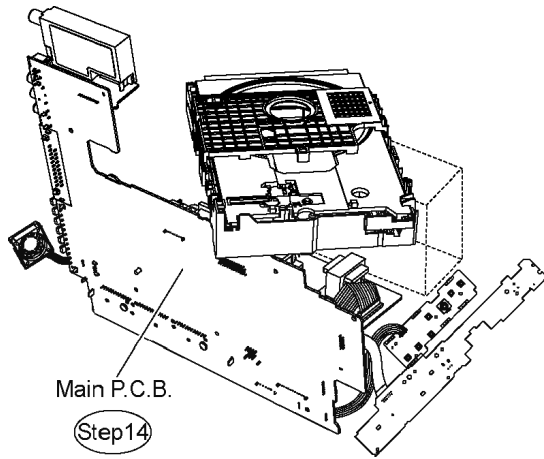
DVD mechanism unit, USB Relay P.C.B., SMPS Module P.C.B., Main P.C.B. & Tuner Extent P.C.B. according to diagram shown below.



Step 13 Connect FFC cable at the connectors (CN2001, CN2005, CN2007 & CN5704) on Main P.C.B., (CS901) on Tray Loading P.C.B., (CN2 & CN3) on SMPS Module P.C.B., (CN8000) on USB P.C.B. and (CN8003) on USB Relay P.C.B.



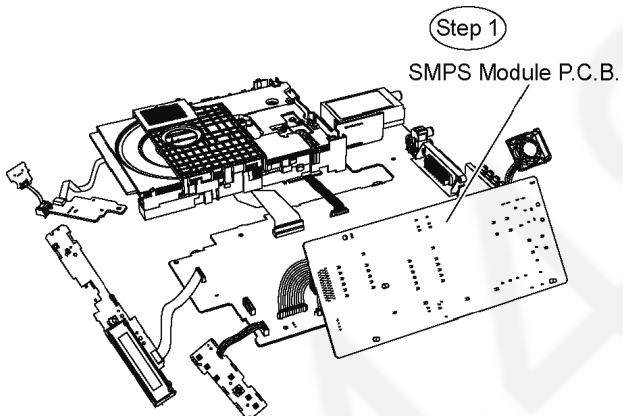
Step 14 Turn over the Main P.C.B. vertically and place it according to the diagram.



11.3. Checking & Repairing SMPS Module P.C.B.

- Follow (Step 1) to (Step 13) of Item 11.2.

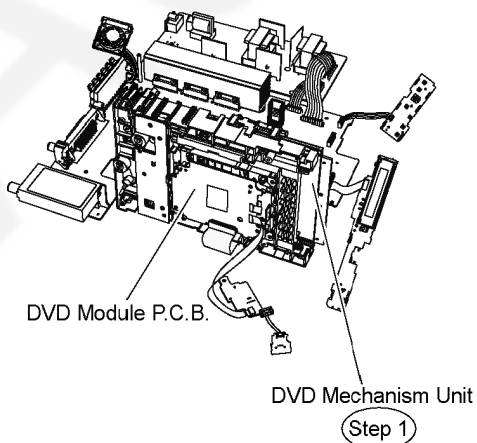
Step 1 Turn over the SMPS Module P.C.B. according to the diagram shown below.



11.4. Checking & Repairing DVD Module P.C.B.

- Follow (Step 1) to (Step 13) of Item 11.2.

Step 1 Turn over the DVD mechanism unit according to the diagram shown below.



12 Measurements and Adjustments

12.1. Service Tools and Equipment

Application	Name	Number
Tilt adjustment	DVD test disc	DVDT-S20 [SPG]
	TORX screw driver (T6)	Available on sales route. (T6) or RFKZ0185 [SPG]
Others	Grease	RFKXPG641 [SPG]
Confirmation	CD test disc	PVCD-K06 or any other commercially available disc
	VCD test disc	PVCD-K06 or any other commercially available disc
	Recovery disc	RFKZD03R005 [SPG]

12.2. Important points in adjustment

12.2.1. Important points in optical adjustment

- Before starting optical adjustment, be sure to take anti-static measures.
- Optical pickup tilt adjustment is needed after replacement of the following components.

1. Optical pickup unit
2. Spindle motor unit
3. Optical pickup peripheral parts

Notes

Adjustment is generally unnecessary after replacing other parts of the traverse unit. However, make adjustment if there is a noticeable degradation in picture quality. Optical adjustments cannot be made inside the optical pickup. Adjustment is generally unnecessary after replacing the traverse unit.

12.2.2. Important points in electrical adjustment

- Follow the adjustment procedures described in this manual.

12.3. Storing and handling of test discs

- Surface precision is vital for DVD test discs. Be sure to store and handle them carefully.
1. Do not place discs directly onto the workbench, etc., after use.
 2. Handle discs carefully in order to maintain their flatness. Place them into their case after use and store them vertically. Store discs in a cool place where they are not exposed to direct sunlight or air from air conditioners.
 3. Accurate adjustment will not be possible if the disc is warped when placed on a surface made of glass, etc. If this happens, use a new test disc to make optical adjustments.
 4. If adjustment is done using a warped disc, the adjustment will be incorrect and some discs will not be playable.

12.4. Optical adjustment

12.4.1. Optical pickup tilt adjustment

Measurement point	Adjustment point	Mode	Disc
	Tangential adjustment screw Tilt adjustment screw	T01 (inner periphery) play T30 (center periphery) T43 (outer periphery) play	DVDT-S20 [SPG]
Measuring equipment		Adjustment value	
None (Main unit display for servicing is used.)		Adjust to the minimum jitter value.	

12.4.1.1. Adjustment procedure

1. While pressing STOP button on the main unit, press "5" on the remote control unit.
2. Confirm that "J_ xxx/yyy_ zz" (display1/display2) is shown on the front display.

For your information:

"yyy" and "zz" shown to the right have nothing to do with the jitter value. "yyy" is the error counter, while "zz" is the focus drive value.

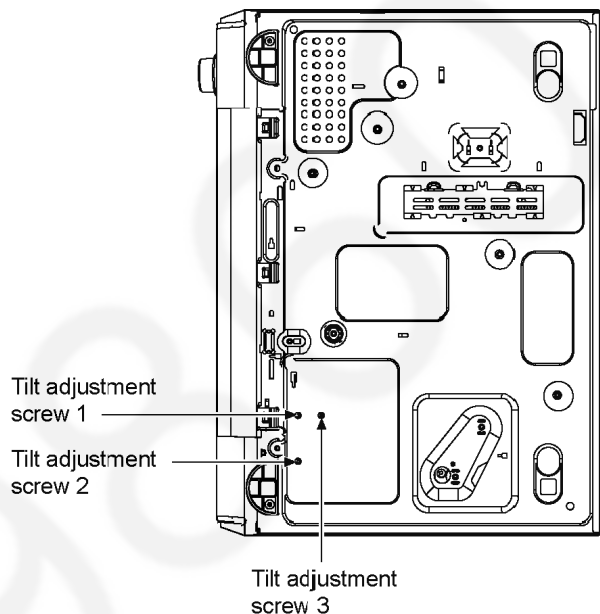
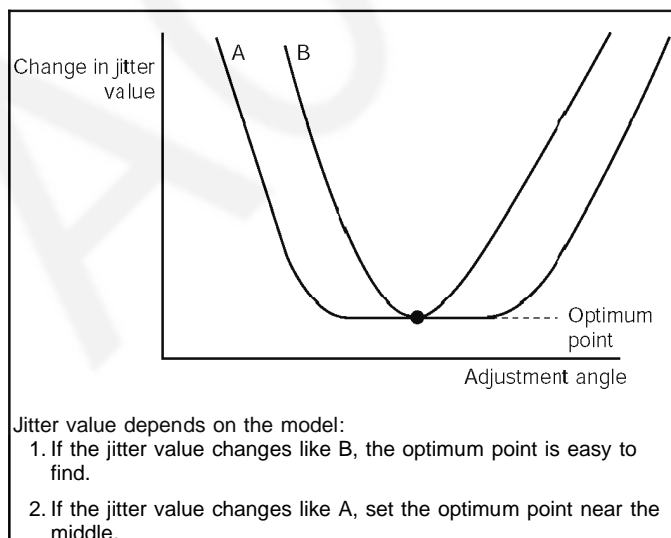
Note:

Jitter value appears on the front display.

3. Play test disc T30 (center periphery).
4. Adjust tangential adjustment screw so that the jitter value is minimized.
5. Play test disc T30 (center periphery).
6. Adjust tilt adjustment screw 1 so that the jitter value is minimized.
7. Play test disc T30 (center periphery).
8. Adjust tilt adjustment screw 2 so that the jitter value is minimized.
9. Repeat adjusting tilt adjustment screws 1 and 2 alternately until the jitter value is minimized.

12.4.1.2. Important points

1. Make tangential adjustment first, and then make tilt adjustment.
2. Repeat adjusting two or three times to find the optimum point.
3. Finish the procedure with tilt adjustment.

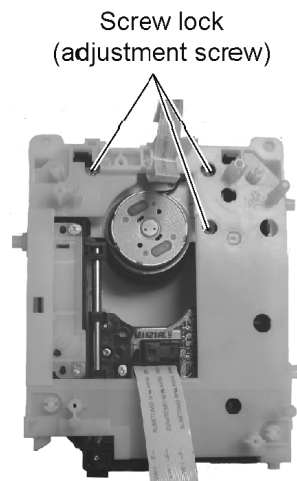


12.4.1.3. Check after adjustment

Play test disc or any other disc to make sure there is no picture degradation in the inner, middle and outer peripheries, and no audio skipping. After adjustment is finished, lock each adjustment screw in position using screw lock.

12.4.1.4. Procedure for screw lock

1. After adjustment, remove top cover, tray, clamper base and traverse unit in this sequence.
2. Lay the traverse unit upside down, and fix adjustment screw with screw lock.
3. After fixing, reassemble traverse unit, clamper base, tray and top cover.



13 Abbreviations

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
ASYN	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
	CSYN	COMPOSITE SYNC IN
	CSYNOUT	COMPOSITE SYNC OUT
	D	DACCK
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
DSL		DATA SLICE LOOP FILTER
DVD		DIGITAL VIDEO DISC

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

INITIAL/LOGO		ABBREVIATIONS
R	RE	READ ENABLE
	RFENV	RF ENVELOPE
	RFO	RF PHASE DIFFERENCE OUTPUT
	RS	(CD-ROM) REGISTER SELECT
	RSEL	RF POLARITY SELECT
	RST	RESET
S	RSV	RESERVE
	SBI0, 1	SERIAL DATA INPUT
	SBO0	SERIAL DATA OUTPUT
	SBT0, 1	SERIAL CLOCK
	SCK	SERIAL DATA CLOCK
	SCKR	AUDIO SERIAL CLOCK RECEIVER
	SCL	SERIAL CLOCK
	SCLK	SERIAL CLOCK
	SDA	SERIAL DATA
	SEG0-UP	FL SEGMENT OUTPUT
	SELCLK	SELECT CLOCK
	SEN	SERIAL PORT ENABLE
	SIN1, 2	SERIAL DATA IN
	SOUT1, 2	SERIAL DATA OUT
	SPDI	SERIAL PORT DATA INPUT
	SPDO	SERIAL PORT DATA OUTPUT
	SPEN	SERIAL PORT R/W ENABLE
	SPRCLK	SERIAL PORT READ CLOCK
	SPWCLK	SERIAL PORT WRITE CLOCK
	SQCK	SUB CODE Q CLOCK
	SQCX	SUB CODE Q DATA READ CLOCK
	SRDATA	SERIAL DATA
	SRMADR	SRAM ADDRESS BUS
	SRMDT0-7	SRAM DATA BUS 0-7
	SS	START/STOP
	STAT	STATUS
	STCLK	STREAM DATA CLOCK
	STD0-UP	STREAM DATA
	STENABLE	STREAM DATA INPUT ENABLE
	STSEL	STREAM DATA POLARITY SELECT
STVALID	STREAM DATA VALIDITY	
SUBC	SUB CODE SERIAL	
SBCK	SUB CODE CLOCK	
SUBQ	SUB CODE Q DATA	
SYSCLK	SYSTEM CLOCK	
T	TE	TRACKING ERROR
	TIBAL	BALANCE CONTROL
	TID	BALANCE OUTPUT 1
	TIN	BALANCE INPUT
	TIP	BALANCE INPUT
	TIS	BALANCE OUTPUT 2
	TPSN	OP AMP INPUT
	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
W	VSS	SOURCE POWER SUPPLY VOLTAGE
	WAIT	BUS CYCLE WAIT
	WDCK	WORD LOCK
	WEH	WRITE ENABLE HIGH
X	WSR	WORD SELECT RECEIVER
	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	

14 Voltage and Waveform Chart

14.1. DVD Module P.C.B.

Ref No.	IC8001																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
CD PLAY	1.2	1.4	1.5	0	0	3.4	1.8	1.3	1.4	1.2	1.3	0	1.1	1	0	3.4	1.3	1.1	1.9	0.7
Ref No.	IC8001																			
MODE	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
CD PLAY	0.6	0.4	2.3	0.5	1.4	2.6	2	0.8	1.8	0.7	3.4	0	3.4	0.7	1.1	1.5	1.6	1.8	1.4	2
Ref No.	IC8001																			
MODE	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
CD PLAY	1.8	0	0	1.3	0	3.4	3.4	3.4	3.4	1.7	0	3.4	2.8	2.8	3	3.4	3.2	3.2	0	3.2
Ref No.	IC8001																			
MODE	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
CD PLAY	0.1	0	0	0.8	0.1	1.9	1.6	0	3.2	3.2	0	3.2	3.2	0	0.1	0	0	0	0	0
Ref No.	IC8001																			
MODE	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
CD PLAY	0	0	1.2	3.2	0.8	2.3	0	1.8	0	0.5	1.8	3.3	2.2	2.2	1.8	1.8	1.7	1.7	1.7	1.7
Ref No.	IC8001																			
MODE	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120
CD PLAY	0	0	0.4	0.1	0.2	1.9	3.3	0	2.2	1.7	2.6	2.6	2.6	2.6	2.7	2.7	2.4	2.5	2.5	2.5
Ref No.	IC8001																			
MODE	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140
CD PLAY	1.8	2.0	2	1.7	0	1.7	1.7	3.4	0.9	0.9	0.4	3.3	2.4	1	1	2.4	0	0.4	0.9	0
Ref No.	IC8001																			
MODE	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160
CD PLAY	3.4	3.4	0	0	0	0	3.4	1.5	1.7	1.7	0.9	1.7	0	3.4	1.5	1.6	0	1.3	3	3.1
Ref No.	IC8001																			
MODE	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180
CD PLAY	2.9	3.2	2.9	3.1	0	3.4	3.2	3.1	3	3	3.1	3	0	3.4	3.2	3	3.1	2.9	2.9	2.9
Ref No.	IC8001																			
MODE	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200
CD PLAY	3.3	0	1.6	3.4	1.6	0	1.3	3.3	3.3	3.2	3.1	0.1	2.1	0	0	3	1.5	0	0	1.6
Ref No.	IC8001																			
MODE	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216				
CD PLAY	3.4	0.1	2.2	0.1	0	3.4	0.3	1.6	1.6	0	1.2	1.8	2.7	2.5	1.4	1				
Ref No.	IC8051																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
CD PLAY	3.3	3.1	3.4	3.2	3.1	0	3.1	3.3	3.4	3	3	0	2.9	3.4	2.9	3.3	3.3	3.3	3.2	2.2
Ref No.	IC8051																			
MODE	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
CD PLAY	1.6	0	0.1	0.4	0.4	1.6	3.4	0	1.6	1.8	1.7	1.7	0.1	0.1	0.1	0	3.4	1.5	2.9	0
Ref No.	IC8051																			
MODE	41	42	43	44	45	46	47	48	49	50	51	52	53	54						
CD PLAY	0	3.1	3.4	3.2	3.1	0	3	3.2	3.4	2.9	2.9	0	3	0						
Ref No.	IC8111																			
MODE	1	2	3	4	5	6	7	8												
CD PLAY	3.4	-	0.1	-	4.4	-	-	4.7												
Ref No.	IC8151																			
MODE	1	2	3	4	5															
CD PLAY	2.5	2.5	0	1.3	0.8															
Ref No.	IC8251																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
CD PLAY	1.7	1.7	1.7	2.2	2.2	1.8	0	5.1	3.3	0	2.4	2.8	2.6	2.6	4.1	4.3	4.8	3.7	0	3.3
Ref No.	IC8251																			
MODE	21	22	23	24	25	26	27	28	29	30										
CD PLAY	8.9	8.8	1.7	1.7	1.7	1.7	3.3	5.1	0	0										
Ref No.	IC8421																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
CD PLAY	0	3.3	2.9	3.3	1.6	0.9	1.7	1.7	5.2	0	0.9	0.1	0.1	0	2.5	2.5	5.2	0	2.5	2.5
Ref No.	IC8421																			
MODE	21	22	23	24	25	26	27	28												
CD PLAY	2.5	2.5	5.2	0	2.6	2.5	2.6	5.1												
Ref No.	IC8601																			
MODE	1	2	3	4																
CD PLAY	1.2	3.3	0	0																
Ref No.	IC8606																			
MODE	1	2	3	4	5															
CD PLAY	3.3	3.3	0	0	-															
Ref No.	IC8611																			
MODE	1	2	3	4	5	6	7	8												
CD PLAY	0	0	0	0	3.2	3.3	0	3.3												

Ref No.	IC8651																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
CD PLAY	1.1	1.0	1.8	1.0	1.7	2.3	1.3	1.8	1.2	0.1	3.3	3.3	3.3	3.3	1.6	1.6	0.6	1.2	1.5	1.7
Ref No.	IC8651																			
MODE	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
CD PLAY	1.8	1.8	2	1.9	0	2	0	2.5	1.7	1.1	0.8	1.6	1.0	1.6	2.3	1.4	3.3	1.7	1.1	1.4
Ref No.	IC8651																			
MODE	41	42	43	44	45	46	47	48												
CD PLAY	1.6	1.7	1.7	2	1.9	0	3.3	0.8												
Ref No.	IC8691					IC8695					IC9003									
MODE	1	2	3	4	5		1	2	3	4	5		1	2	3	4	5	6		
CD PLAY	3	3	0	4.6	5.1		2.7	2.7	0	4.2	5.1		1.6	0.1	1.6	1.7	3.3	1.6		
Ref No.	IC9005																			
MODE	1	2	3	4	5	6	7	8												
CD PLAY	0.1	5.1	5.1	3.3	2.2	3.3	0.1	3.4												
Ref No.	Q8321				Q8325				Q8331				Q8335				Q8341			
MODE	E	C	B		E	C	B		E	C	B		E	C	B		E	C	B	
CD PLAY	1.1	0	0.4		1.5	0	0.9		1.1	0	0.4		1.6	0	0.9		1.5	0	0.9	
Ref No.	Q8551				Q8552				Q8561				Q8562							
MODE	E	C	B		E	C	B		E	C	B		E	C	B					
CD PLAY	0.1	4.6	0.1		0.1	4.6	4.6		1.9	3.5	1.3		3.5	4.1	4.1					
Ref No.	QR8111							QR8420							QR8571					
MODE	1	2	3	4	5	6		E	C	B		E	C	B						
CD PLAY	0.1	0.1	1.4	0.1	0.1	4.4		0	0.1	4.0		3.4	3.3	0.1						

SA-PT160E/EB/EG DVD MODULE P.C.B.

14.2. Main P.C.B.

Ref.No.	IC1101																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
CD PLAY	4.8	0	0	2.1	4.6	1.6	0	1.6	2.2	4.8	0.1	0	0	0	0.1	4.8	2.6	2.6	0	3.7
STANDBY	4.8	0	0	2.1	4.6	1.6	0	1.6	2.2	4.8	0.1	0	0	0	0.1	4.8	2.6	2.6	0	3.7
Ref.No.	IC1101										IC1102									
MODE	21	22	23	24	25	26	27	28	29	30	31	32		1	2	3	4	5	6	
CD PLAY	0	0	3.5	3.5	0	1.3	1.3	0	1.4	1.6	0	0		0	2.4	4.8	2.8	0	2.5	
STANDBY	0	3.7	3.7	0	1.3	1.3	0	1.4	1.6	0	2.3	0		0	2.5	4.8	2.4	0	2.4	
Ref.No.	IC2004																			
MODE	1	2	3	4	5	6	7	8												
CD PLAY	-	5.2	0	0	0	0	0	-												
STANDBY	-	5.2	0	0	0	0	0	-												
Ref.No.	IC2018																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
CD PLAY	0	2.2	4	3.6	0	2.8	0	0	0	0	0	4.2	2.4	0	2.5	5.1	5.1	5.1	3.2	0
STANDBY	0	5	5.1	5.2	0	5	0	0	0	0	0	5.1	2.5	0	2.5	5.1	5.1	5.1	3.2	0
Ref.No.	IC2018																			
MODE	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
CD PLAY	5.2	0	0	0	0	0	0	4.4	4.1	2.7	0	0	0	0	5.2	5.2	5.1	5.2	0	5.1
STANDBY	5.2	0	0	0	0	0	0	4.5	4.1	2.8	0	0	0	0	5.2	5.2	5.1	5.2	0	5.1
Ref.No.	IC2018																			
MODE	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
CD PLAY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
STANDBY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ref.No.	IC2018																			
MODE	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
CD PLAY	0	5.1	0	0	5.1	0	5.1	5.1	0	5.2	5.1	0	0	0	0	0	0	0	0	5.1
STANDBY	0	5.1	0	0	5.1	0	5.1	5	5	5.2	5.1	0	0	0	0	0	0	0	4.6	5
Ref.No.	IC2018																			
MODE	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
CD PLAY	0	0	5.1	0	4.1	2.5	1.9	5.2	2.6	0.4	5.2	1.7	3.1	4.8	2.1	0	5.2	5.2	5.1	5.1
STANDBY	0	0	5.1	0	4.1	2.3	2	5.2	2.6	0.4	5.2	1.7	3.1	4.8	2.1	0	5.2	5.2	5.1	5.1
Ref.No.	IC2102																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
CD PLAY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
STANDBY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ref.No.	IC2102																			
MODE	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
CD PLAY	0	0	0	0	0	0	0	0	0	0	0	0.1	0	0	0	0	0	0	0	0.1
STANDBY	0	0	0	0	0	0	0	0	0	0	0	0.1	0	0	0	0	0	0	0	0.1
Ref.No.	IC2102																			
MODE	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
CD PLAY	0	0	0	0	0	0	0	0	0	1.3	0	0	0	0.1	0	0	0	0	0	0
STANDBY	0	0	0	0	0	0	0	0	0	1.4	0	0	0	0.1	0	0	0	0	0	0
Ref.No.	IC2102																			
MODE	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
CD PLAY	0	-0.1	0	0	4.8	0	5.6	0	0	0	0	0	0	0	0	0	0	0	0	0
STANDBY	0	-0.1	0	0	4.8	0	5.6	0.1	0	0	0	0	0	0	0	0	0	0	0	0
Ref.No.	IC2102																			
MODE	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
CD PLAY	0	0	0	0	-6.2	6.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
STANDBY	0	0	0	0	-6.4	6.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ref.No.	IC2903																			
MODE	1	2	3	4	5	6														
CD PLAY	1.6	0	1.7	1.7	3.4	1.7														
STANDBY	1.6	0	1.7	1.7	3.4	1.7														
Ref.No.	IC5100																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12								
CD PLAY	25.9	12.7	0	12.6	4.7	0	0	0	0	12.7	0	12.7								
STANDBY	26.0	12.8	0	12.7	4.7	0	0	0	3.0	12.8	0	12.8								
Ref.No.	IC5200																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12								
CD PLAY	25.9	12.7	0	12.7	4.7	0	0	0	3.0	12.7	0	12.7								
STANDBY	26.0	12.7	0	12.7	4.7	0	0	0	3.0	12.8	0	12.7								
Ref.No.	IC5300																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12								
CD PLAY	25.9	12.7	0	13.0	4.7	0	0	0	0	12.7	0	12.8								
STANDBY	25.6	12.7	0	12.7	4.6	0	0	0	3.0	12.7	0	12.8								
Ref.No.	Q1001				Q1002				Q1003				Q1004				Q1005			
MODE	E	C	B		E	C	B		E	C	B		E	C	B		E	C	B	
CD PLAY	0	0	0		0.1	12.5	0.1		11.9	13.0	12.6		0	12.6	0		12.0	13.0	12.6	
STANDBY	3.4	3.3	0		0.1	12.5	0.1		11.9	13.0	12.6		0	12.6	0		12.3	12.7	12.7	
Ref.No.	Q1006				Q1007				Q1008				Q1100							
MODE	1	2	3	4	5	6		E	C	B		E	C	B		E	C	B		
CD PLAY	4.9	4.9	4.9	0	0	0.1		12.0	12.0	0.1		0	4.3	0		0	0	-4.6		
STANDBY	4.9	4.9	4.9	0.1	0	0.1		12.3	-	12.3		0	4.3	0		0	0	0.7		
Ref.No.	Q1200			Q2003			Q2004			Q2006			Q2030							
MODE	E	C	B		E	C	B		E	C	B		E	C	B		E	C	B	
CD PLAY	0	0	4.6		0	2.2	0		0	0	4.5		1.1	0	0.5		0	0	4.7	
STANDBY	0	0	0.7		0	0.1	0		0	0	0		0	0	0		0	0	4.6	
Ref.No.	Q2805			Q2905			Q2906			Q2907			Q2910							
MODE	E	C	B		E	C	B		E	C	B		E	C	B		E	C	B	
CD PLAY	4.3	5.4	4.9		0	5.2	0		-7.5	-23.3	-7.0		-6.3	-21.0	-6.8		12.9	21.2	13.5	
STANDBY	0	0	0		0	5.2	0		-7.5	-23.3	-7.0		-6.9	-21.0	-6.4		12.9	21.2	13.5	
Ref.No.	Q2914			Q2974																
MODE	E	C	B		E	C	B													
CD PLAY	3.2	3.5	3.7		-21.8	-25.4	-22.4													
STANDBY	3.2	3.2	3.8		-21.7	-25.3	-22.3													
Ref.No.	Q3003			Q3008			Q3009													
MODE	E	C	B		E	C	B		E	C	B									
CD PLAY	1.6	1.6	0		0	0	0.6		0	0.2	0.2									
STANDBY	1.6	1.6	0		0	0	0.6		0	0.1	0									
Ref.No.	Q5740			Q5741			Q5742													
MODE	E	C	B		E	C	B		E	C	B									
CD PLAY	8.9	17.1	9.5		0	4.9	0		0	0.1	0.7									
STANDBY	8.9	17.1	9.5		0	4.9	0		0	0.1	0.7									
Ref.No.	Q5744			Q5745			Q5746													
MODE	1	2	3		1	2	3	4		E	C	B								
CD PLAY	0	4.6	0.1		5.6	4.4	0	0.4		0	0.1	4.8								
STANDBY	0	4.6	0.1		5.6	4.4	0	0.4		0	0.1	4.8								

14.3. Panel P.C.B.

Ref No.	IC6901																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
CD PLAY	0	0	0	0	2.9	2.2	1.8	4	2.3	2.2	2.2	0	5	-24.4	-22	-24.4	-24.4	-19.6	-19.8	-15
STANDBY	0	0	0	0	2.9	2.1	1.9	4	2.2	2.2	2.2	0	5	-24.4	-24.4	-22	-24.4	-14.9	-19.6	-12.5
Ref No.	IC6901																			
MODE	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
CD PLAY	-24.4	-24.4	-24.3	-17.2	-14.8	-24.4	-24.4	-24.4	14.8	-24.8	-15	-22	-22.3	-22.2	-22.2	-22.2	-22.2	-22.2	-22.2	-22.2
STANDBY	-24.3	-24.3	-24.3	-17.2	-14.9	-24.3	-24.3	-24.3	-17.2	-24.8	-15	-15	-22.2	-22.2	-22.2	-22.2	-22.2	-22.2	-22.2	-22.2
Ref No.	IC6901																			
MODE	41	42	43	44																
CD PLAY	-22.2	-22.2	5	0																
STANDBY	-22.2	-22.2	5	0																

SA-PT160E/EB/EG PANEL P.C.B.

14.4. Tray Loading & SMPS Module P.C.B.

Ref No.	IC904																			
MODE	1	2	3	4	5	6	7	8	9											
CD PLAY	5.1	7.5	0.6	7.5	0	7.5	0.6	2.8	5.1											
STANDBY	5.1	7.6	0.6	7.6	0	7.6	0.6	2.8	5.1											

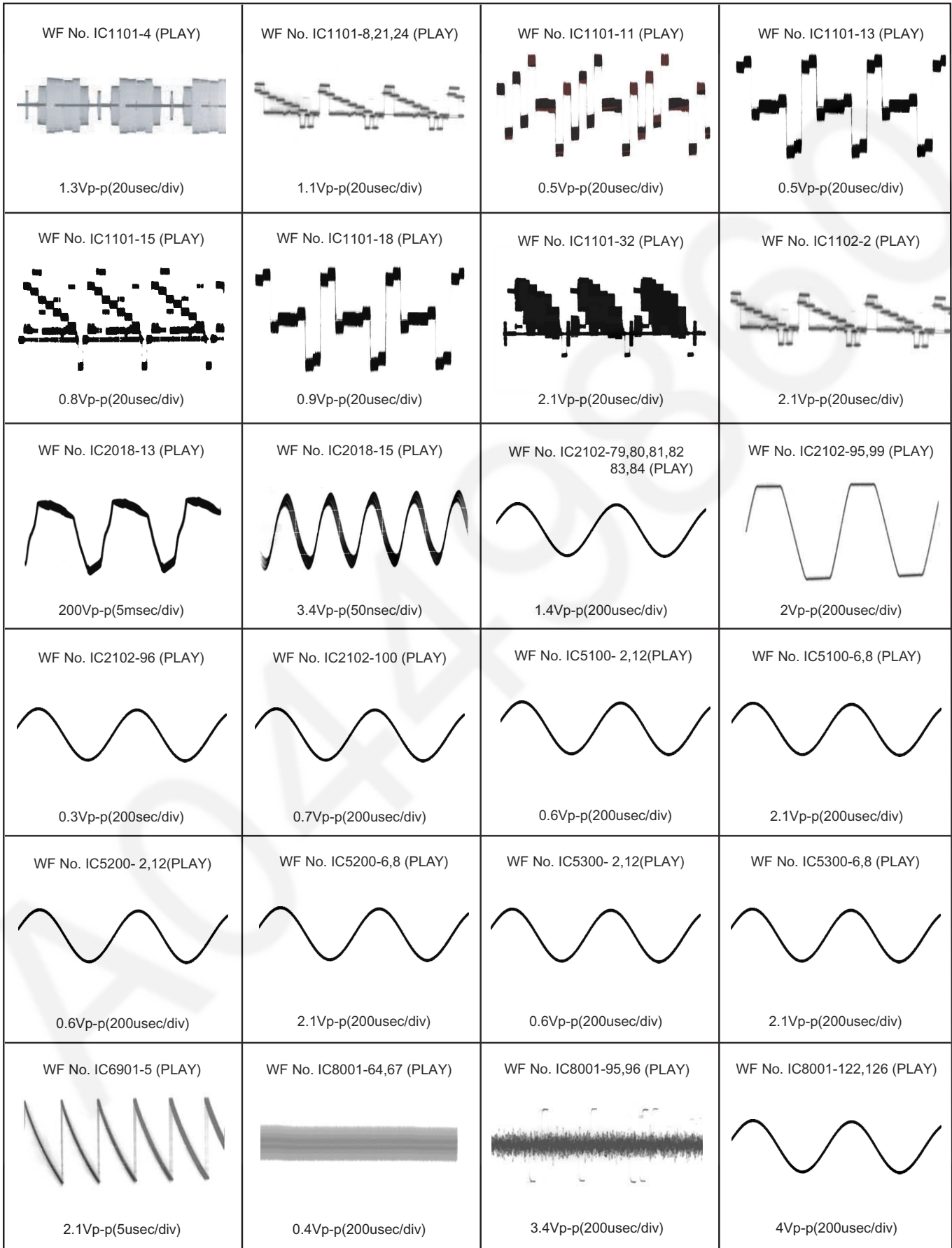
SA-PT160E/EB/EG TRAY LOADING P.C.B.

Ref No.	CN2				CN3																
MODE	1	2	3	4	1	2	3	4	5	6	7	8	9	10	11						
CD PLAY	18.5	18.5	0	0	6	3.5	0	10.5	0	0	5	-12.3	-16.1	5.2	24.7						
STANDBY	18.5	18.5	0	0	6	3.5	0	10.5	0	0	5	-12.2	-16.0	5.2	-24.7						

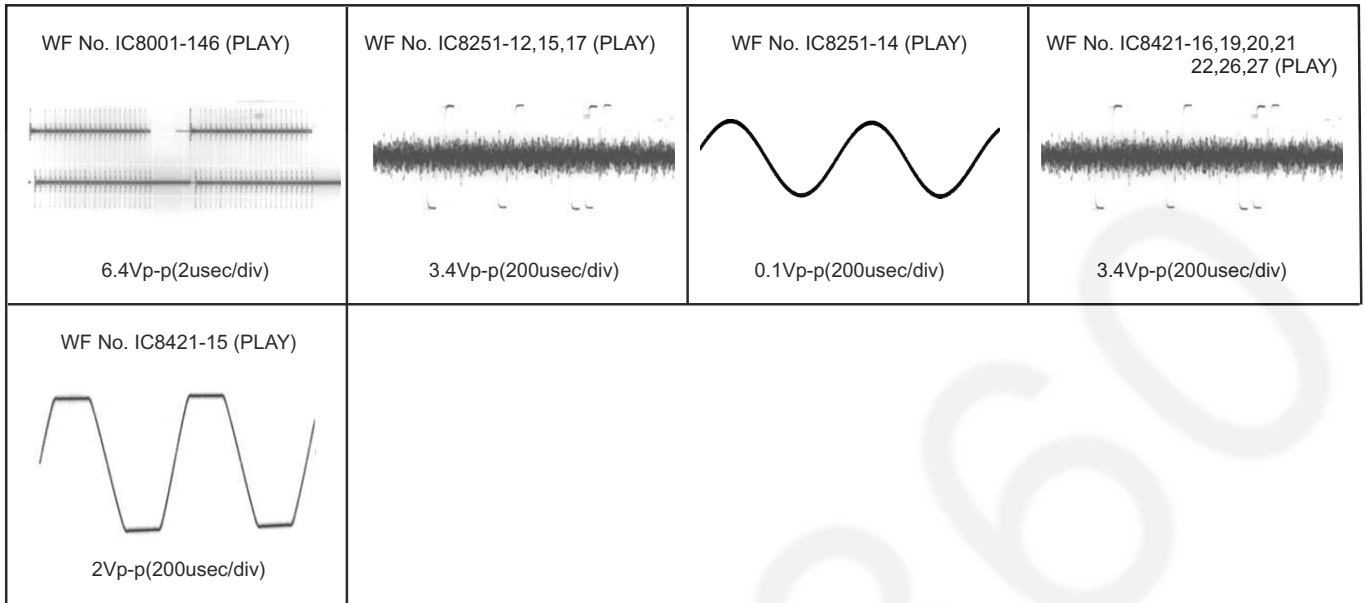
SA-PT160E/EB/EG SMPS MODULE P.C.B.

14.5. Waveform Chart

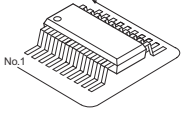
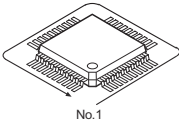
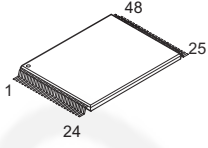
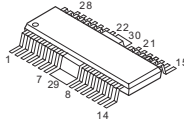
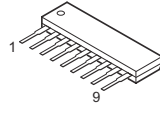
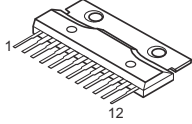
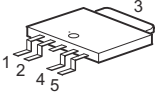
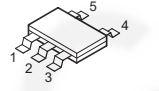
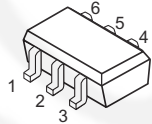
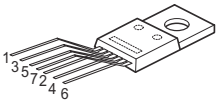
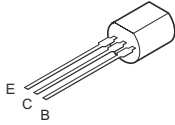
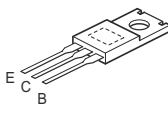
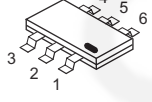
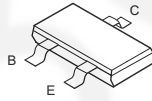
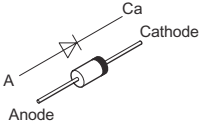
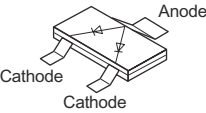
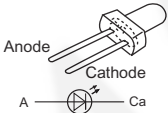
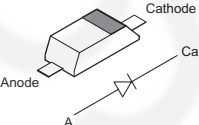
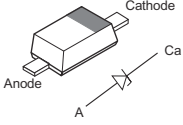
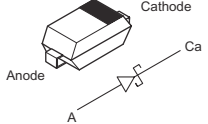
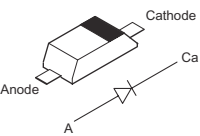
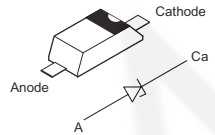
14.5.1. Waveform 1



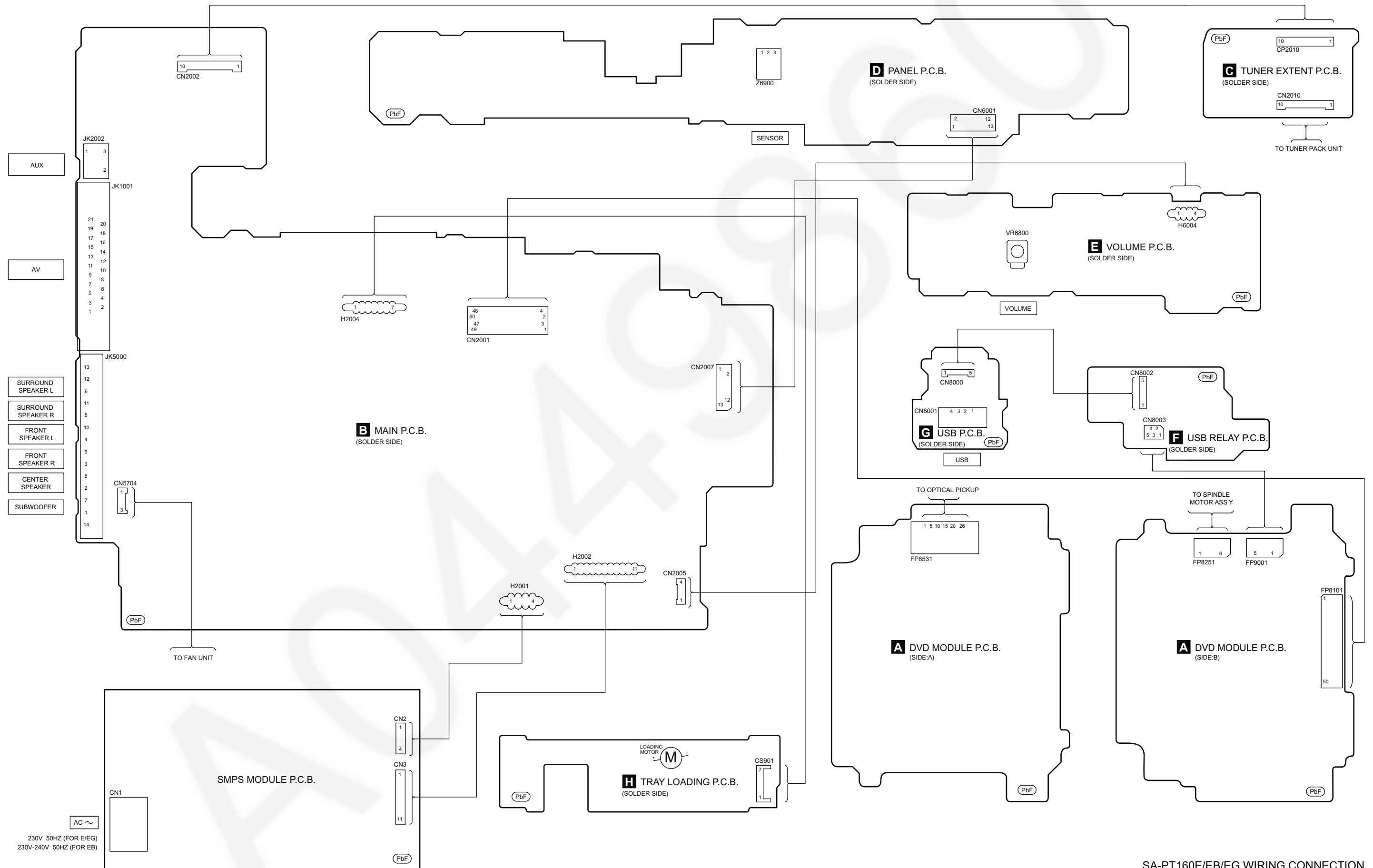
14.5.2. Waveform 2



15 Illustration of IC's, Transistors and Diodes

 <p>C0CBCBD00018 (8p) C0DBZYE00002 (8p) C0EBA0000029 (4p) C0FBBK000050 (28p) C0JBAB000908 (6p)</p>		<p>C1AB00001731 (6p) C3ABPG000145 (54p) C9ZB00000461 (32p)</p>		 <p>C0HBB0000057 (44p) C1AB00002463 (100p) C2CBYY000438 (100p) MN2DS0018MP (216p)</p>		<p>RFKWMHC0B320</p> 	
<p>C0GBG0000048</p> 	<p>C0GAY0000013</p> 	<p>AN17831A</p> 	<p>C0DBEHG00006</p> 	<p>C0EBE0000456 C0JBAA000502</p> 	<p>XP0621400L (6p)</p> 		
<p>AN30071A-NM</p> 	<p>B1ACKD000005</p> 	<p>B1BACG000023 B1BCCG000002</p> 	<p>XN0460100L</p> 	<p>B1ABCF000176 B1ABGC000005</p> 	<p>B1ADCE000012 B1ADCF000001 B1ADGB000008 B1GBCFJJ0051 B1GDCFJJ0047 UNR511V00L UNR521100L 2SD1819A0L 2SB1218ARL</p>		
<p>B0EAKM000117</p> 	<p>B0ADCJ000020</p> 	<p>B3AAA0000803</p> 	<p>MA2J11100L MA2J72800L</p> 	<p>MAZ82200ML</p> 	<p>B0JCPD000025</p> 		
<p>B0ACCK000005</p> 		<p>B0BC01200019 B0BC013A0007 B0BC3R400001 B0BC7R500001</p> 					

16 Wiring Connection Diagram

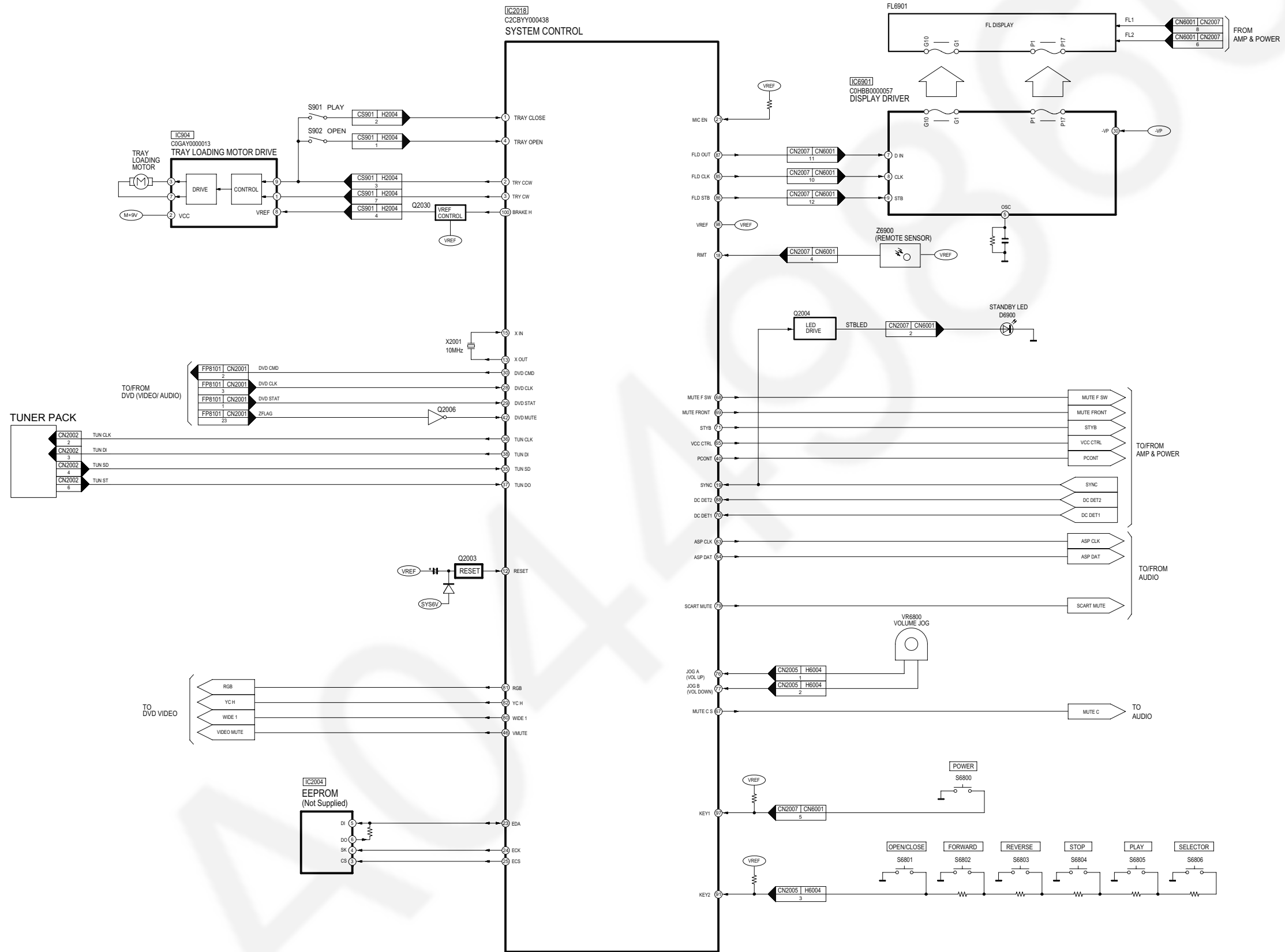


SA-PT160E/EB/EG WIRING CONNECTION





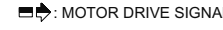
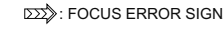
A044498860

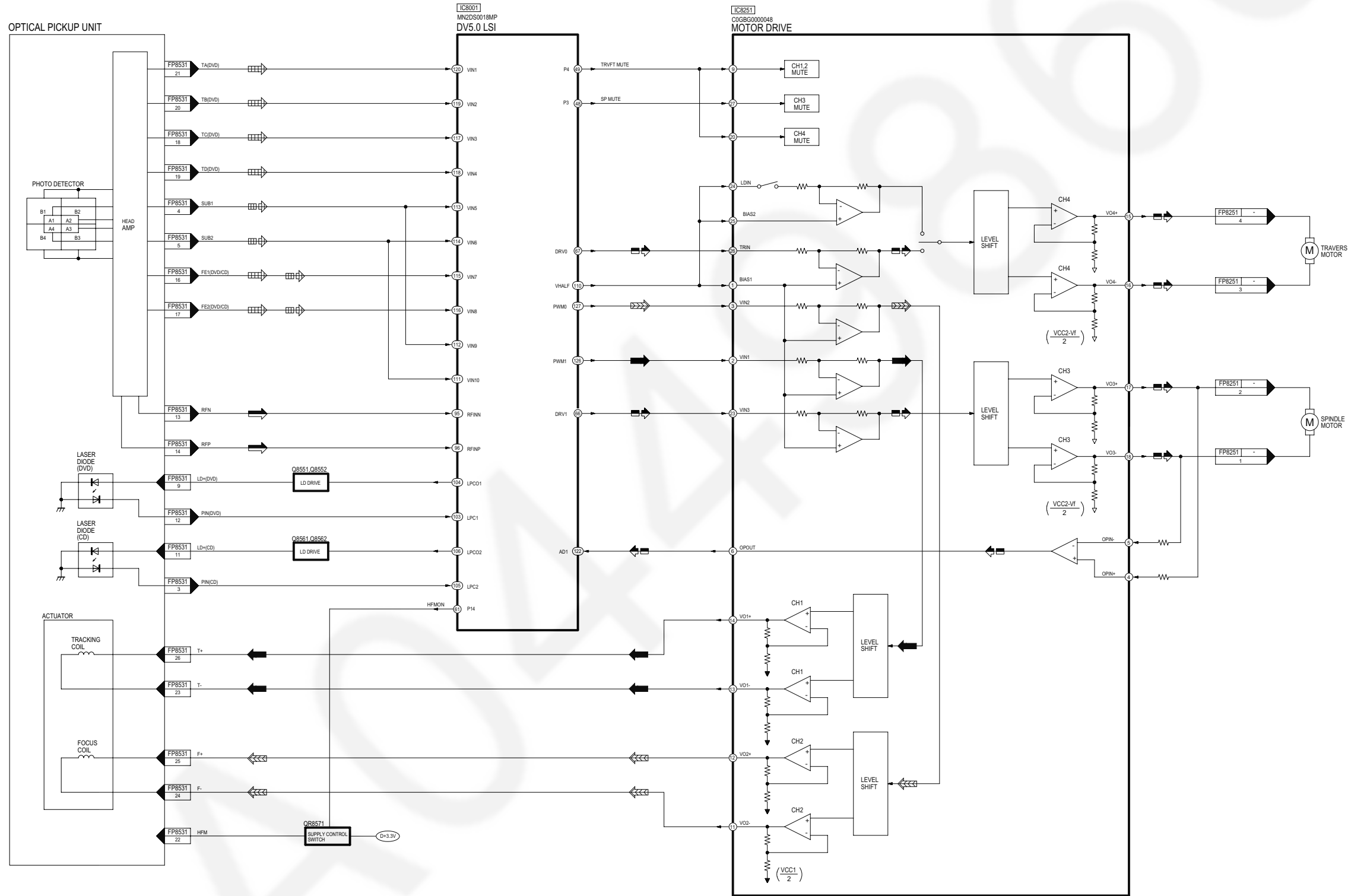
17 Block Diagram

17.1. System Control



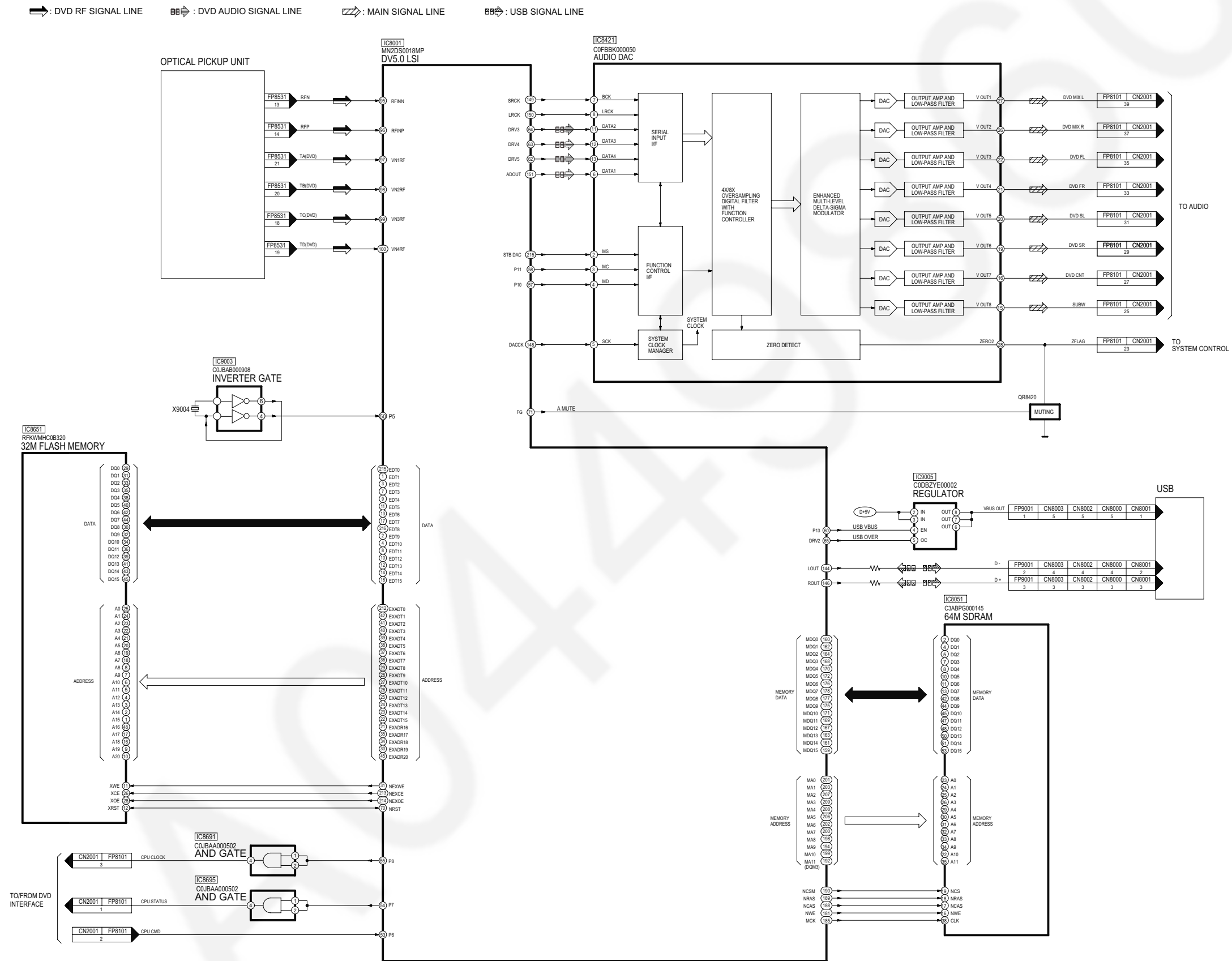
17.2. DVD (Servo)

 : CD HEAD SIGNAL LINE
  : DVD RF SIGNAL LINE
  : TRACKING ERROR SIGNAL LINE
 : DVD HEAD SIGNAL LINE
  : MOTOR DRIVE SIGNAL LINE
  : FOCUS ERROR SIGNAL LINE



SA-PT160E/EB/EG DVD (SERVO) BLOCK DIAGRAM

17.3. DVD (Audio)

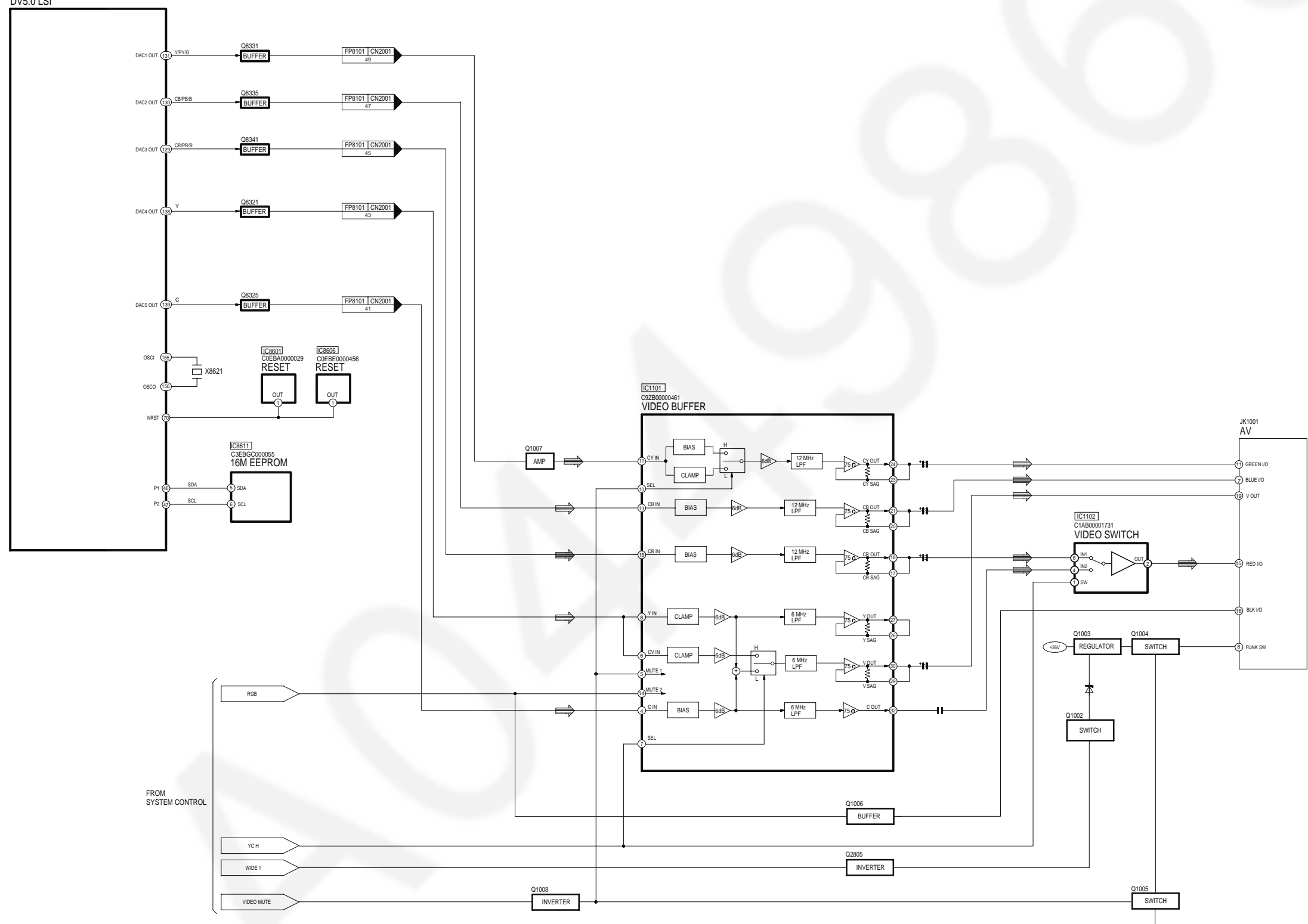


SA-PT160E/EB/EG DVD (AUDIO) BLOCK DIAGRAM

17.4. DVD (Video)

⇒ : DVD VIDEO SIGNAL LINE

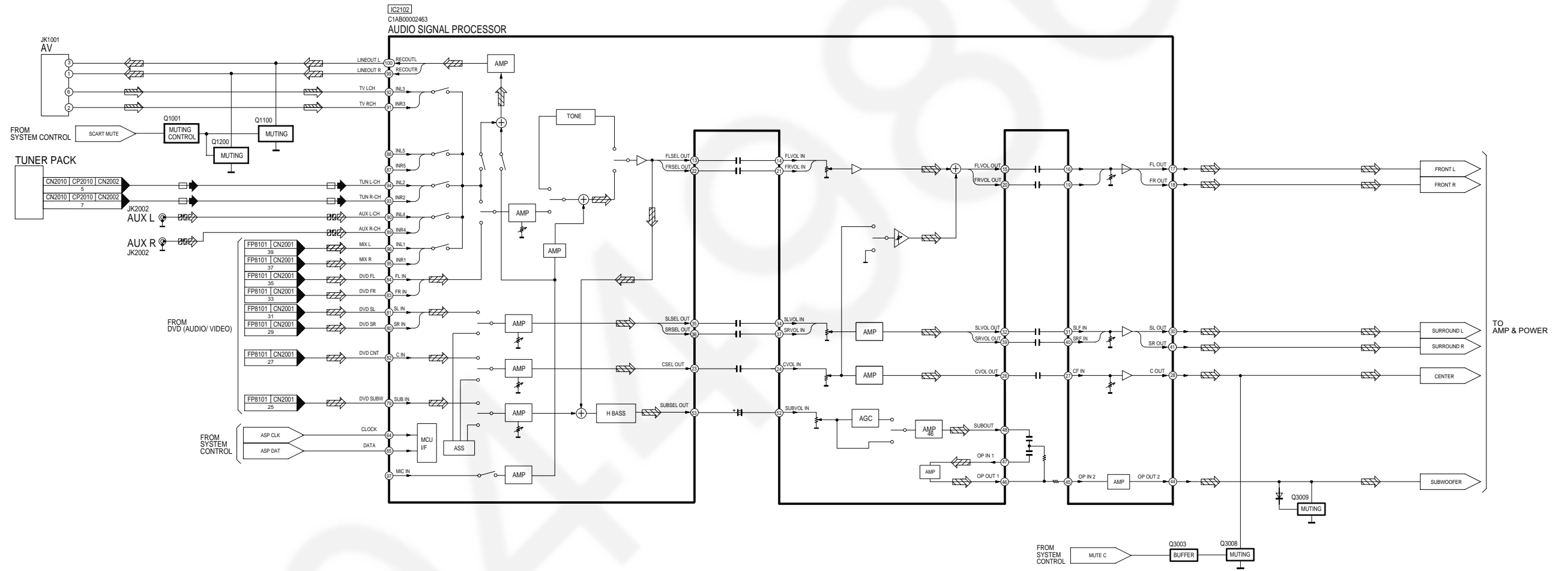
IC8001
MN2DS0018MP
DV5.0 LSI



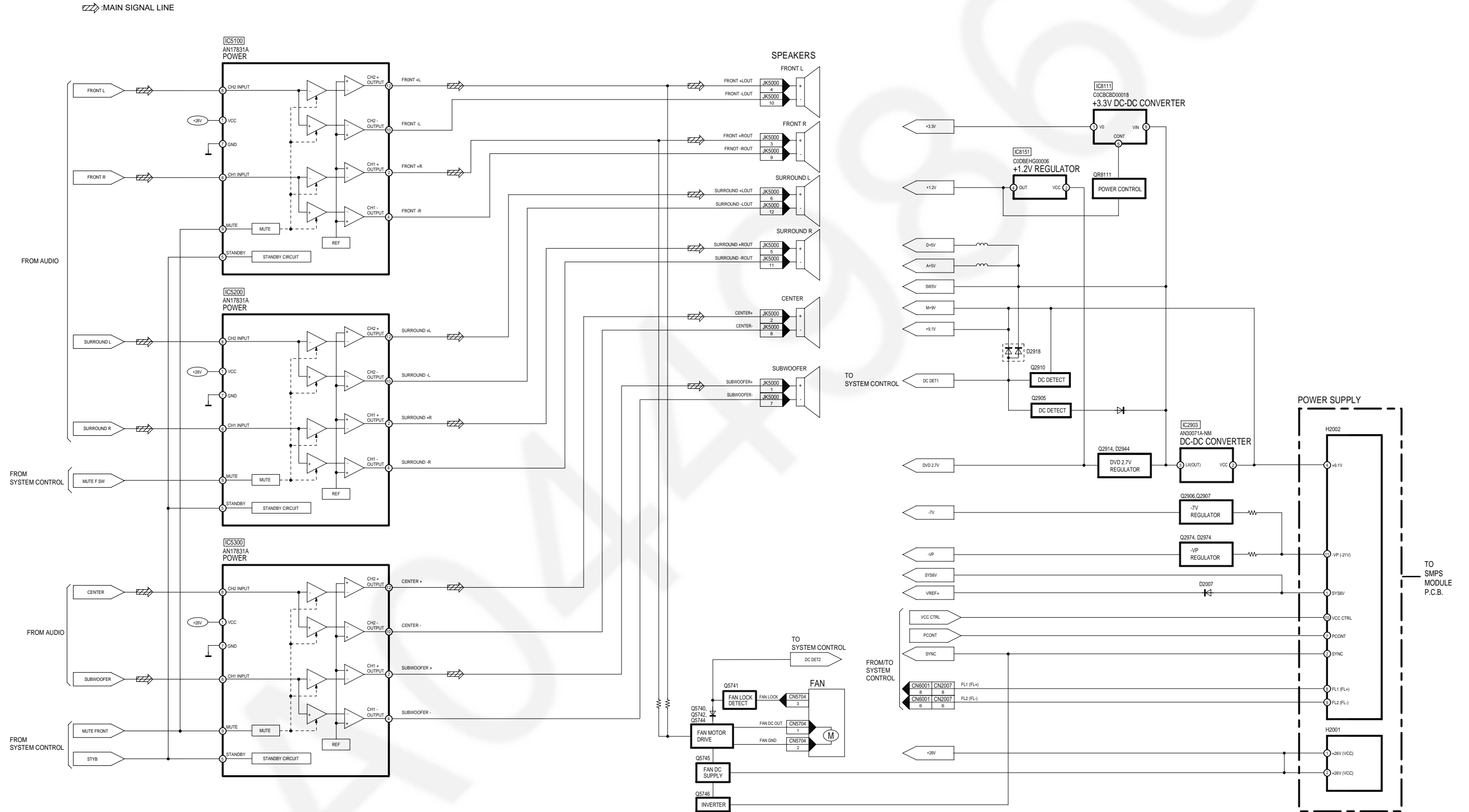
SA-PT160E/EB/EG DVD VIDEO BLOCK DIAGRAM

17.5. Audio

:MAIN SIGNAL LINE
 :FM SIGNAL LINE
 :AUX SIGNAL LINE
 :TV AUDIO SIGNAL LINE



17.6. Amp & Power













SA-PT160E/EB/EG AMP & POWER BLOCK DIAGRAM

18 Schematic Diagram Notes


- This schematic diagram may be modified at any time with the development of new technology.

Notes:

S901:	Play switch.
S902:	Open switch.
S6800:	Power switch ( /).
S6801:	Open / close switch ( Open / Close).
S6802:	Forward switch ( /  / TUNING ).
S6803:	Reverse switch ( /  / TUNING ).
S6804:	Stop switch ( / -TUNE MODE / — FM MODE).
S6805:	Play switch ( / Memory).
S6806:	Selector switch.
VR6800:	Volume jog.

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

- 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 manufacturer's specified parts shown in the parts list.

- **Resistor**

Unit of resistance is OHM [Ω] (K=1,000, M=1,000,000).

- **Capacitor**

Unit of capacitance is μ F, unless otherwise noted. F=Farad, pF=Pico-Farad

- **Coil**


Unit of inductance is H, unless otherwise noted.


- *

For indication only.


- Voltage and signal line

 : +B signal line

 : -B signal line


 : USB signal line

 : DVD RF signal line


 : Motor Drive signal line

 : DVD Audio signal line


 : DVD Video signal line


 : CD Head signal line


 : DVD Head signal line

 : Main signal line

 : Tracking Error signal line

 : Focus Error signal line

 : FM signal line

 : AUX signal line

 : TV Audio signal line

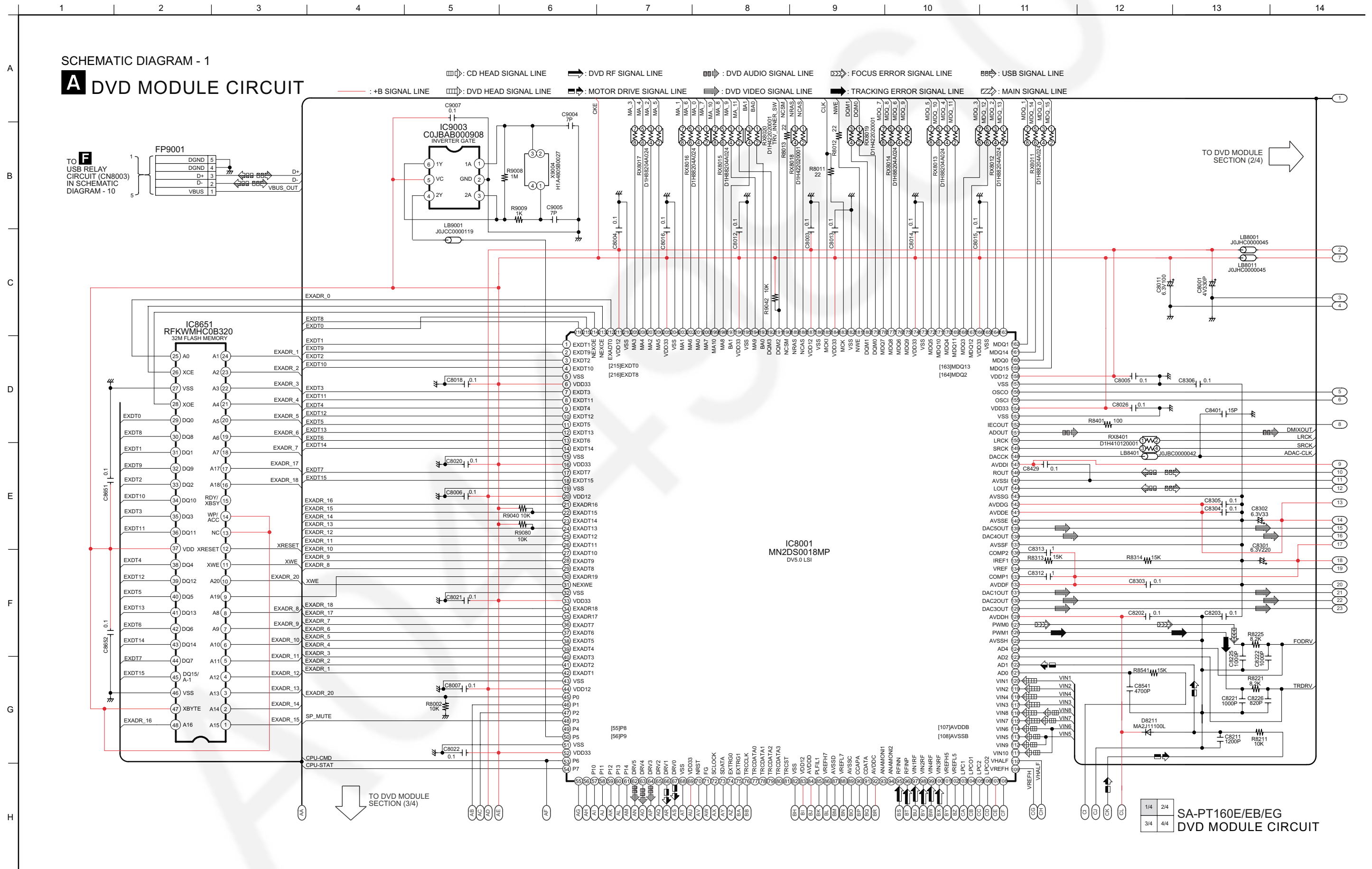
Special Note:

This model uses Switching Mode Power Supply (SMPS) for powering two providing necessary voltages. It is supplied as a module assembly unit. As such, there is no schematic drawings included in this technical document. The fuse located in the SMPS Module can be replaced using substitute compatible part.
Fuse part no.: K5D312BNA005
(Manufacturer: Littelfuse) 250V, T5AH

A044498860

19 Schematic Diagram

19.1. DVD Module Circuit

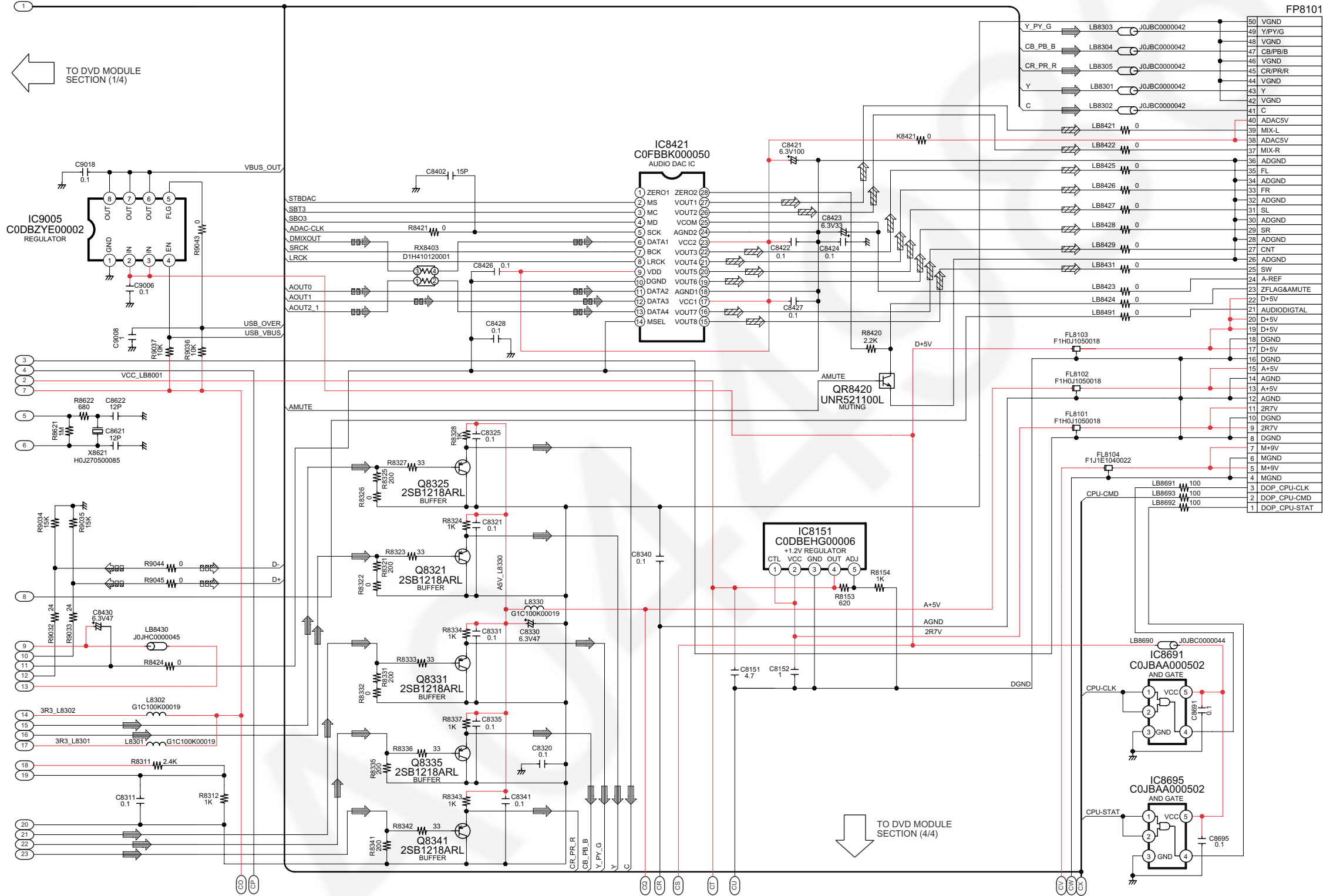


15 16 17 18 19 20 21 22 23 24 25 26 27 28

SCHMATIC DIAGRAM - 2

A DVD MODULE CIRCUIT

— : +B SIGNAL LINE
 : CD HEAD SIGNAL LINE
 : DVD HEAD SIGNAL LINE
 : DVD RF SIGNAL LINE
 : MOTOR DRIVE SIGNAL LINE
 : DVD AUDIO SIGNAL LINE
 : DVD VIDEO SIGNAL LINE
 : FOCUS ERROR SIGNAL LINE
 : TRACKING ERROR SIGNAL LINE
 : USB SIGNAL LINE
 : MAIN SIGNAL LINE

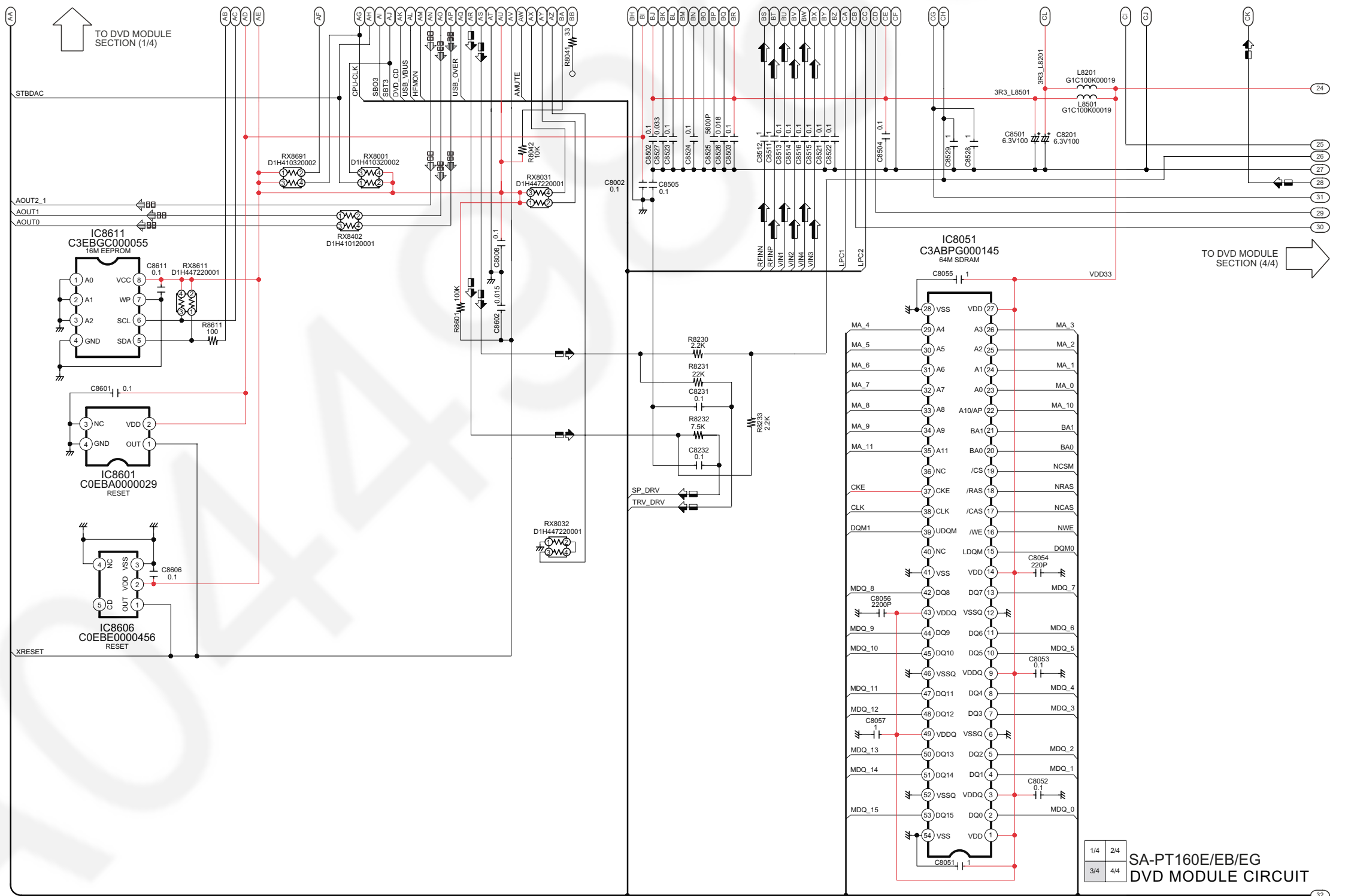


B TO MAIN CIRCUIT (CN2001) IN SCHEMATIC DIAGRAM - 6

1/4 2/4
3/4 4/4
SA-PT160E/EB/EG
DVD MODULE CIRCUIT

SCHEMATIC DIAGRAM - 3

A DVD MODULE CIRCUIT



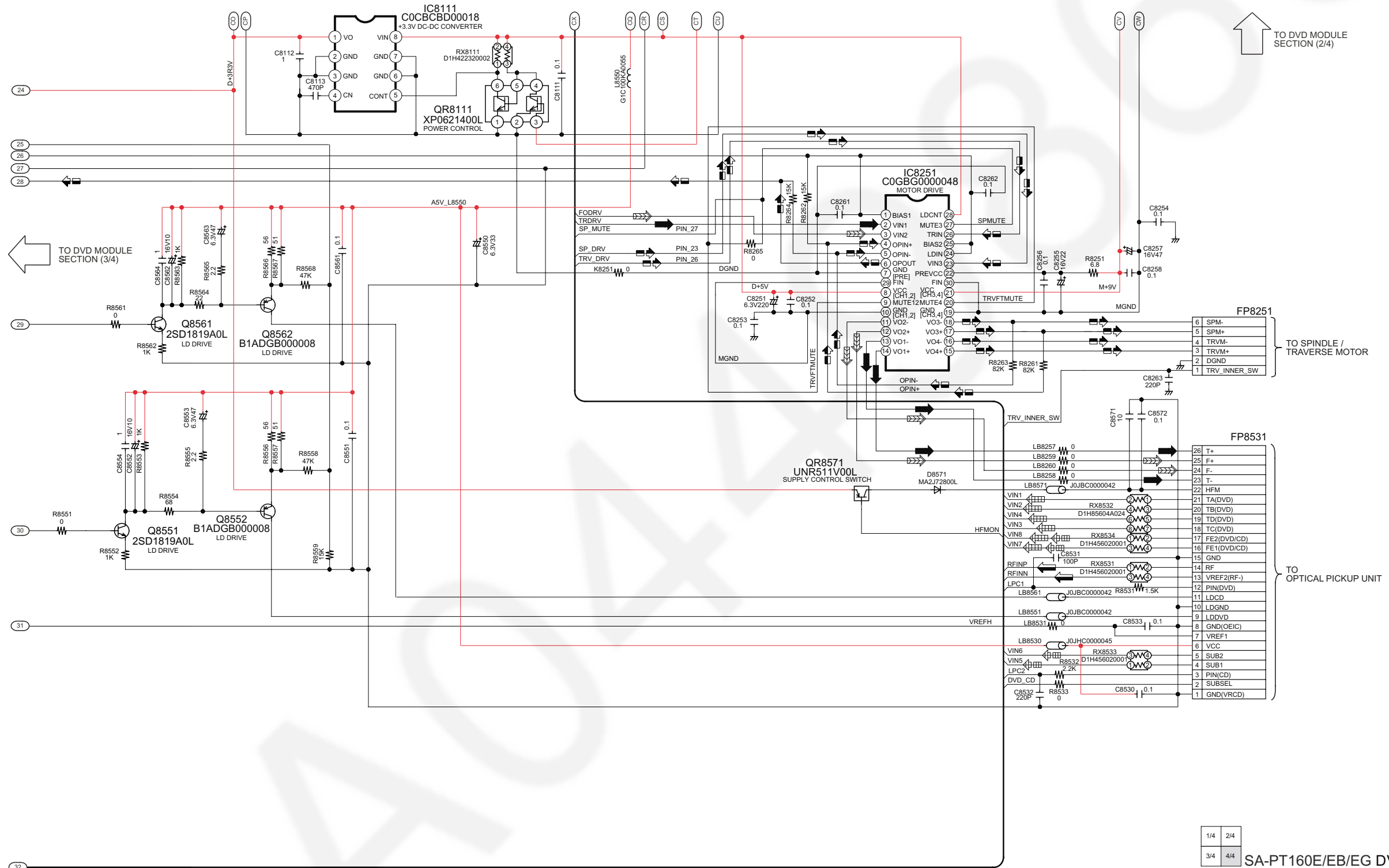
1/4	2/4
3/4	4/4

SA-PT160E/EB/EG
DVD MODULE CIRCUIT

SCHEMATIC DIAGRAM - 4

A DVD MODULE CIRCUIT

 : CD HEAD SIGNAL LINE
 : DVD RF SIGNAL LINE
 : DVD AUDIO SIGNAL LINE
 : FOCUS ERROR SIGNAL LINE
 : USB SIGNAL LINE
 : +B SIGNAL LINE
 : DVD HEAD SIGNAL LINE
 : MOTOR DRIVE SIGNAL LINE
 : DVD VIDEO SIGNAL LINE
 : TRACKING ERROR SIGNAL LINE
 : MAIN SIGNAL LINE



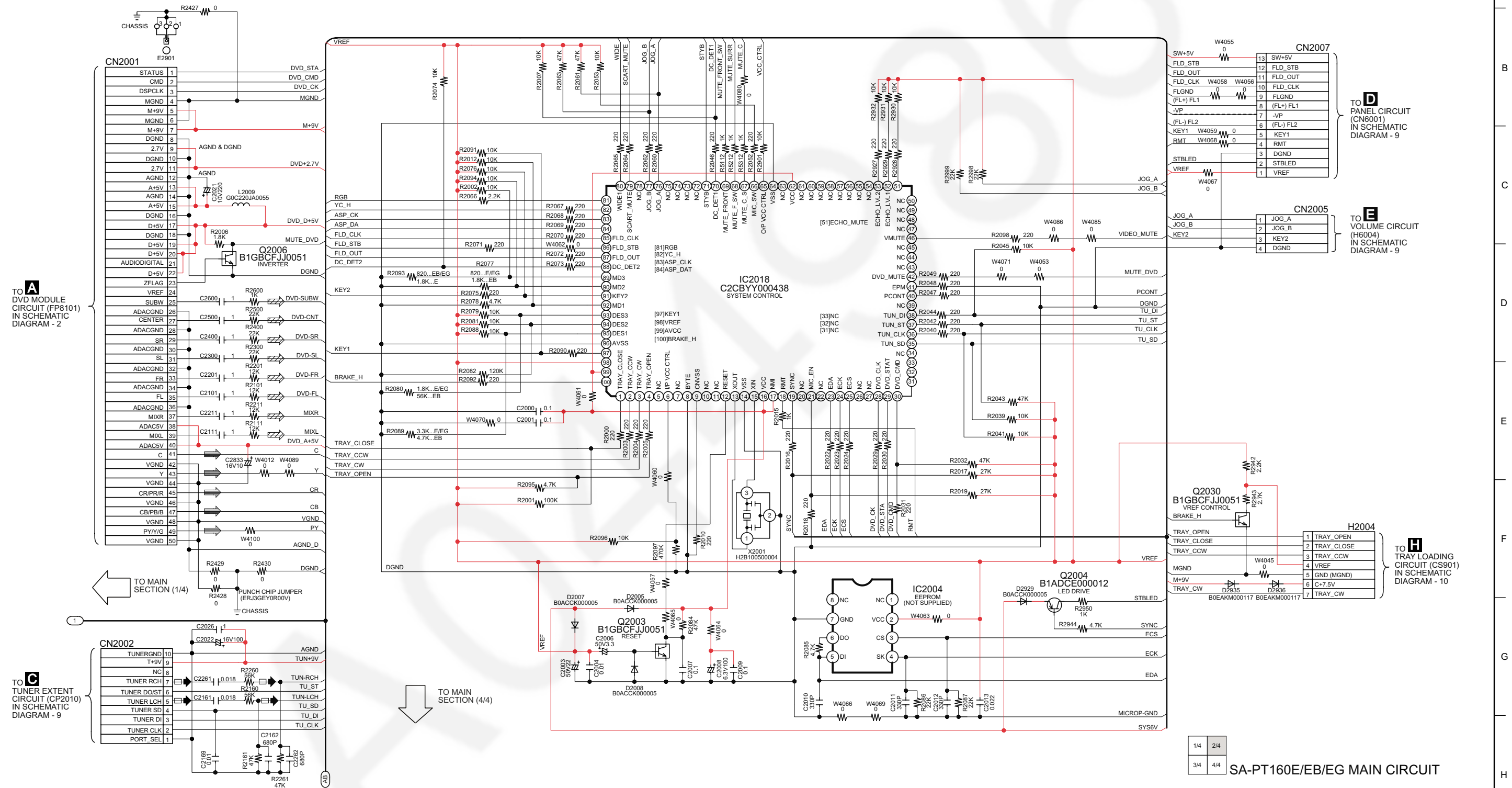
1/4	2/4
3/4	4/4

SA-PT160E/EB/EG DVD MODULE CIRCUIT

SCHEMATIC DIAGRAM - 6

B MAIN CIRCUIT

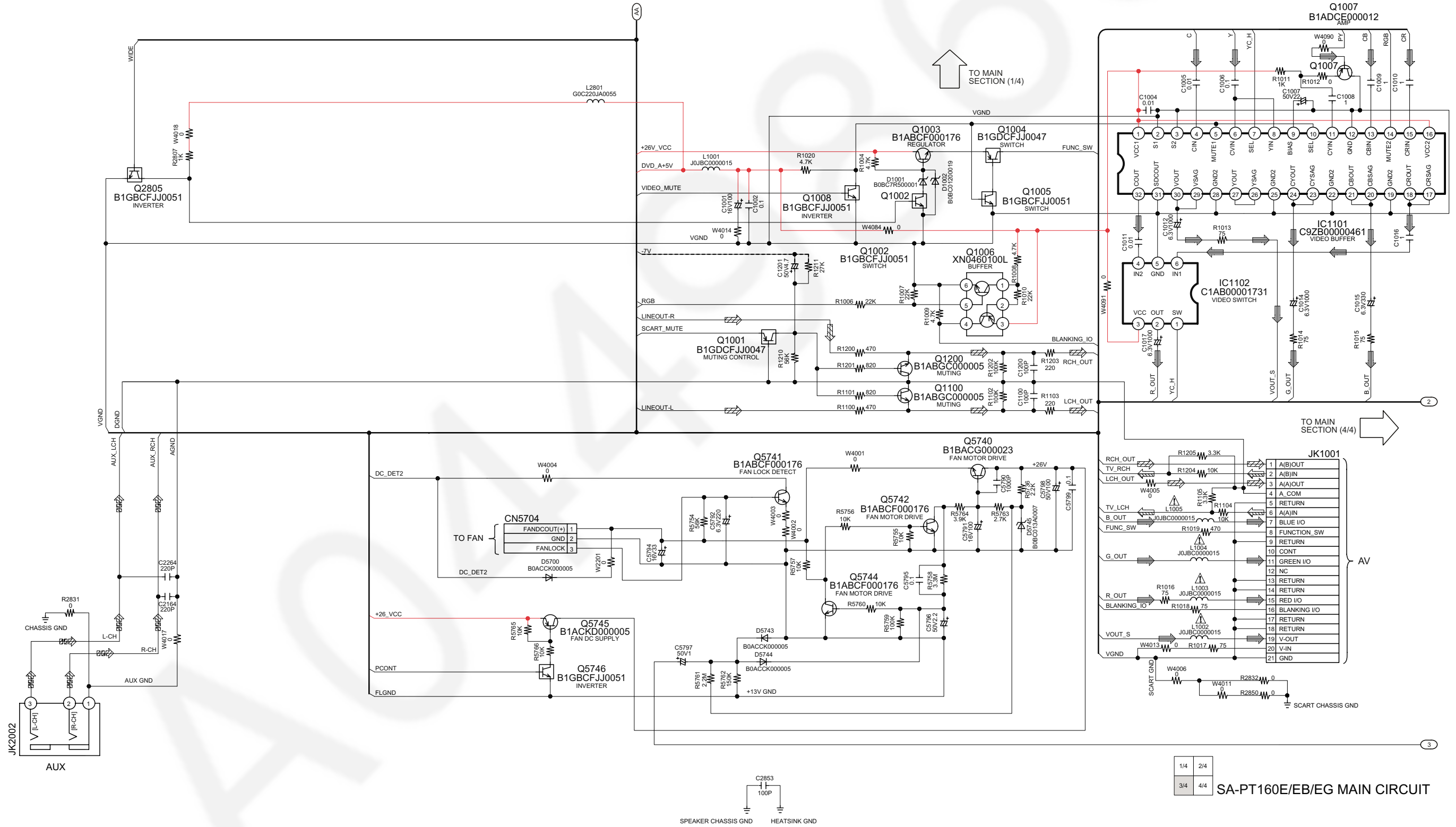
—+B SIGNAL LINE - - -B SIGNAL LINE :MAIN SIGNAL LINE :DVD VIDEO SIGNAL LINE :FM SIGNAL LINE :AUX SIGNAL LINE :TV AUDIO SIGNAL LINE



SCHEMATIC DIAGRAM - 7

B MAIN CIRCUIT

—+B SIGNAL LINE —-B SIGNAL LINE ⇨:MAIN SIGNAL LINE ⇨:DVD VIDEO SIGNAL LINE ◻:FM SIGNAL LINE ⇨:AUX SIGNAL LINE ⇨:TV AUDIO SIGNAL LINE



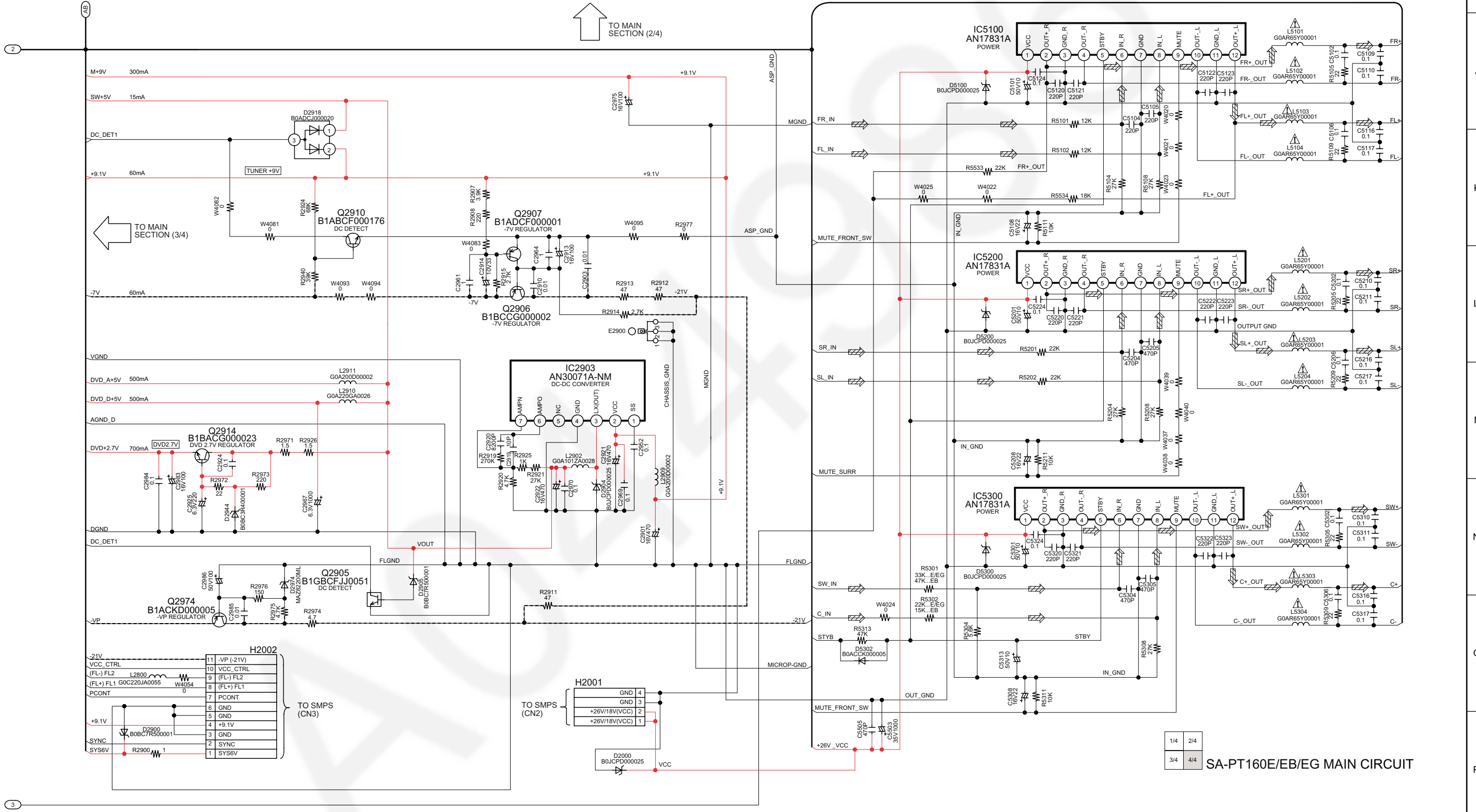
1/4	2/4
3/4	4/4

SA-PT160E/EB/EG MAIN CIRCUIT

SCHEMATIC DIAGRAM - 8

B MAIN CIRCUIT

— :+B SIGNAL LINE - - - :B SIGNAL LINE ⇨ :MAIN SIGNAL LINE ⇨ :DVD VIDEO SIGNAL LINE ◻ :FM SIGNAL LINE ⇨ :AUX SIGNAL LINE ⇨ :TV AUDIO SIGNAL LINE



1/4	2/4
3/4	4/4

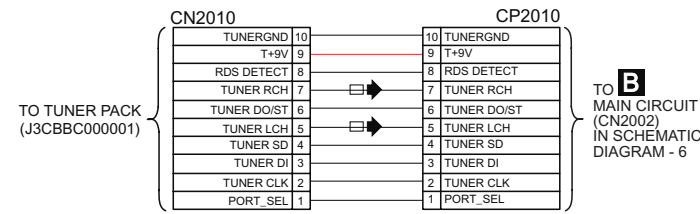
SA-PT160E/EB/EG MAIN CIRCUIT

19.3. Tuner Extent, Panel & Volume Circuit

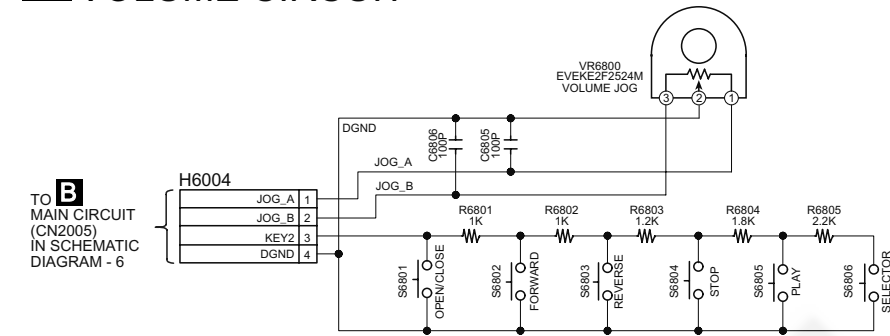
SCHEMATIC DIAGRAM - 9

C TUNER EXTENT CIRCUIT

— :+B SIGNAL LINE ◻ :FM SIGNAL LINE

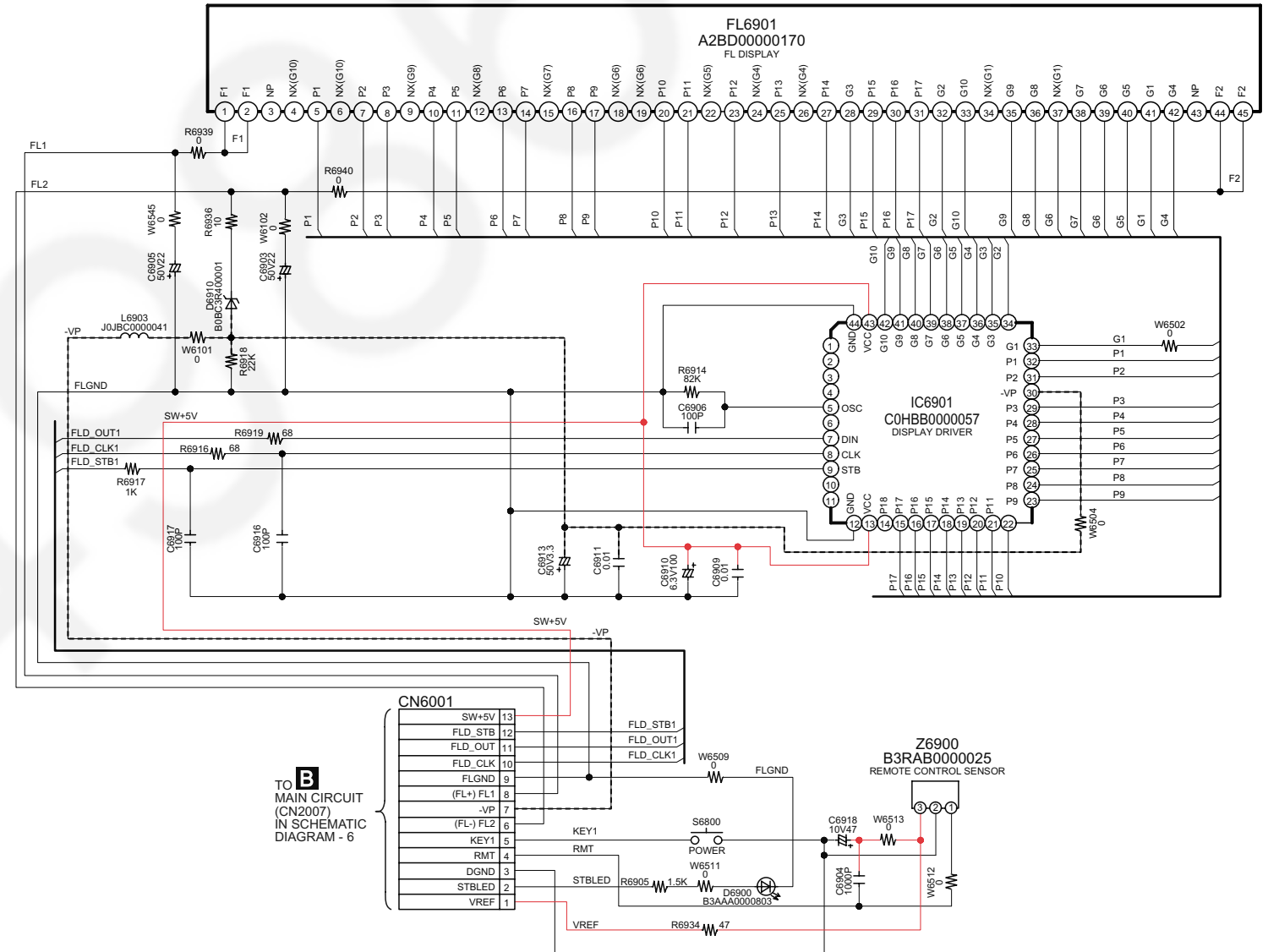


E VOLUME CIRCUIT



D PANEL CIRCUIT

— :+B SIGNAL LINE - - - :B SIGNAL LINE



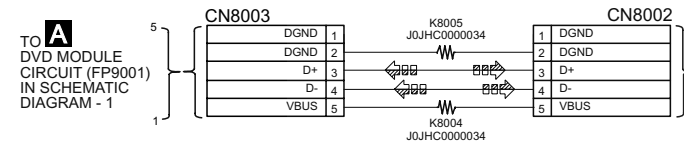
SA-PT160E/EB/EG TUNER EXTENT / PANEL / VOLUME CIRCUIT

19.4. USB Relay, USB, Tray Loading Circuit

SCHEMATIC DIAGRAM - 10

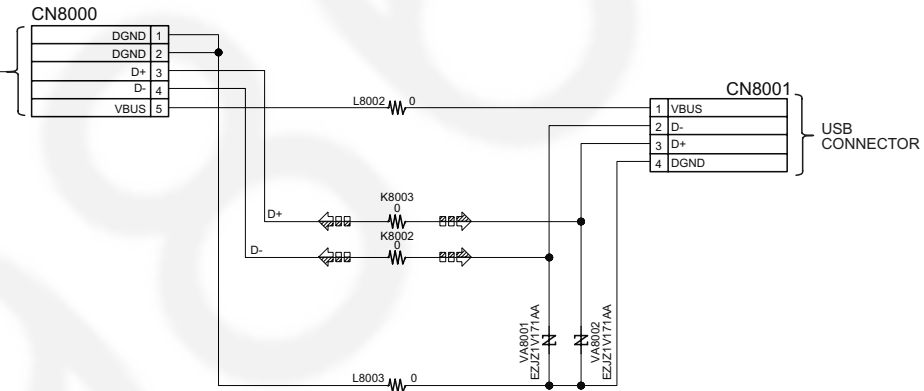
F USB RELAY CIRCUIT

⚡ :USB SIGNAL LINE



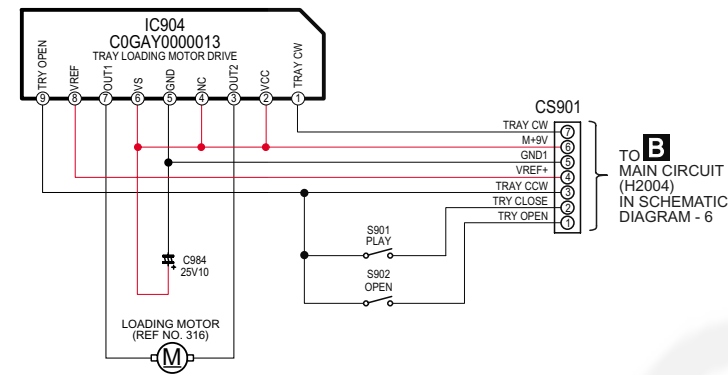
G USB CIRCUIT

⚡ :USB SIGNAL LINE



H TRAY LOADING CIRCUIT

— :+B SIGNAL LINE



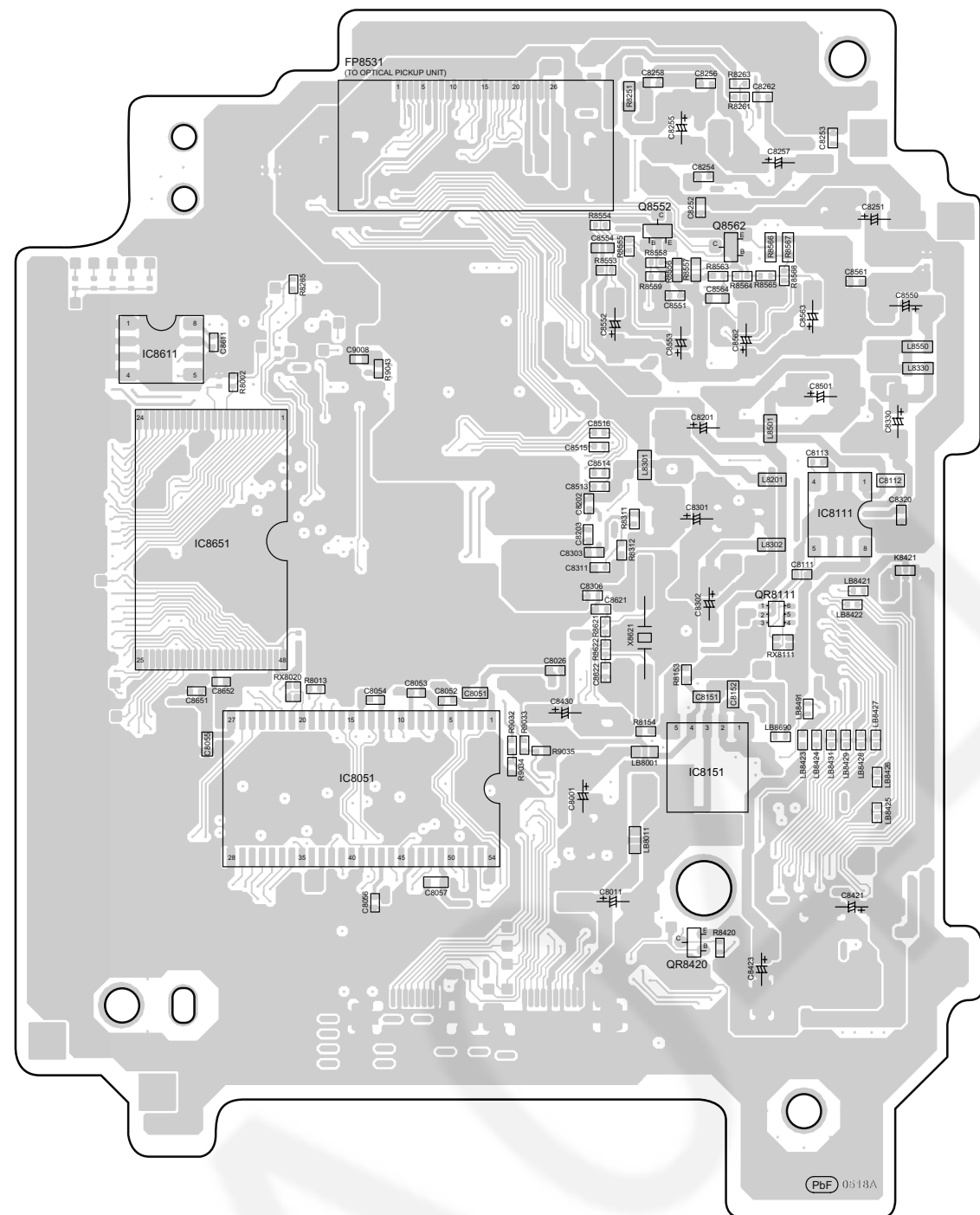
B TO MAIN CIRCUIT (H2004) IN SCHEMATIC DIAGRAM - 6

20 Printed Circuit Board

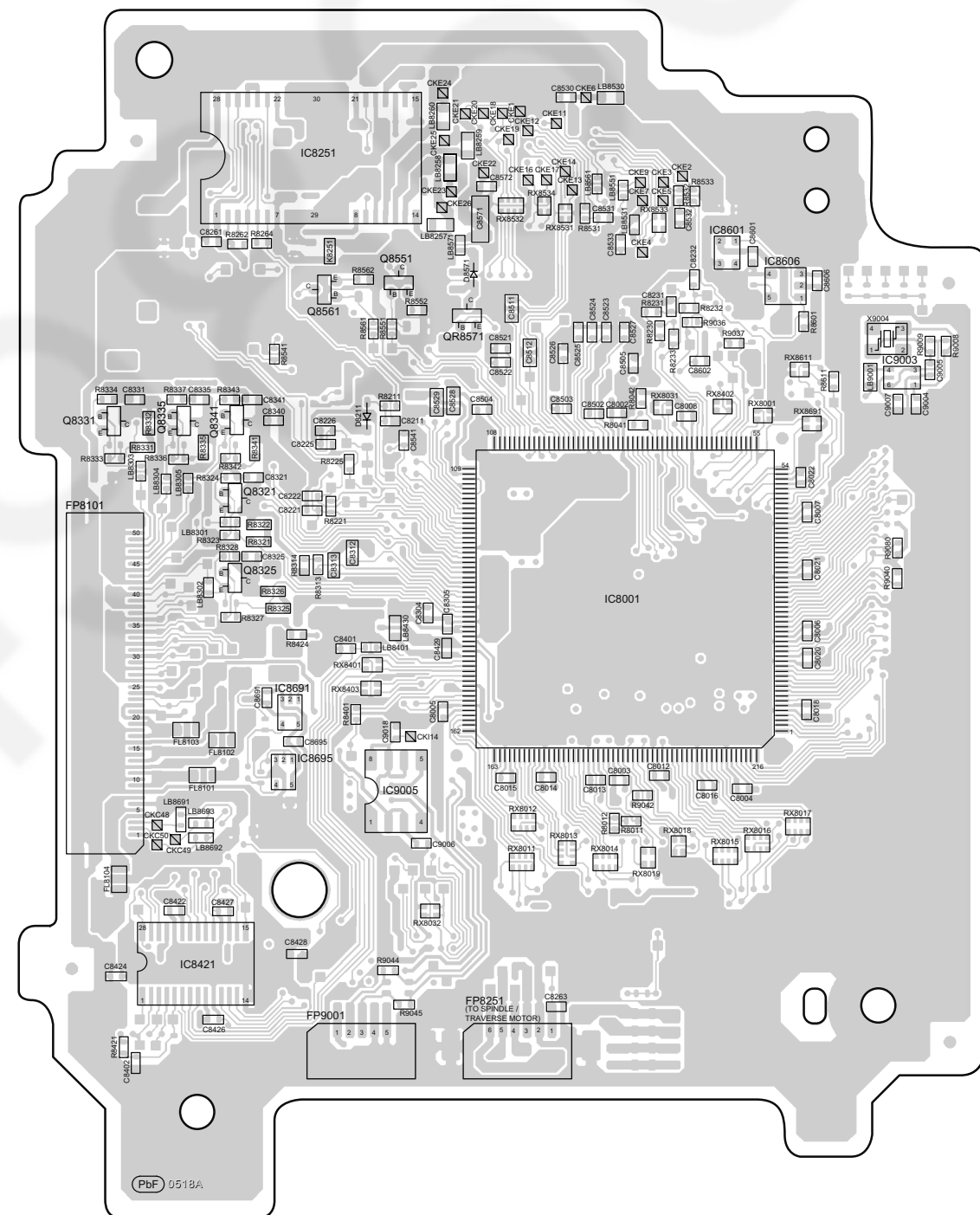
20.1. DVD Module P.C.B.

A DVD MODULE P.C.B (REPX0562A)

H
G
F
E
D
C
B
A



(SIDE A)



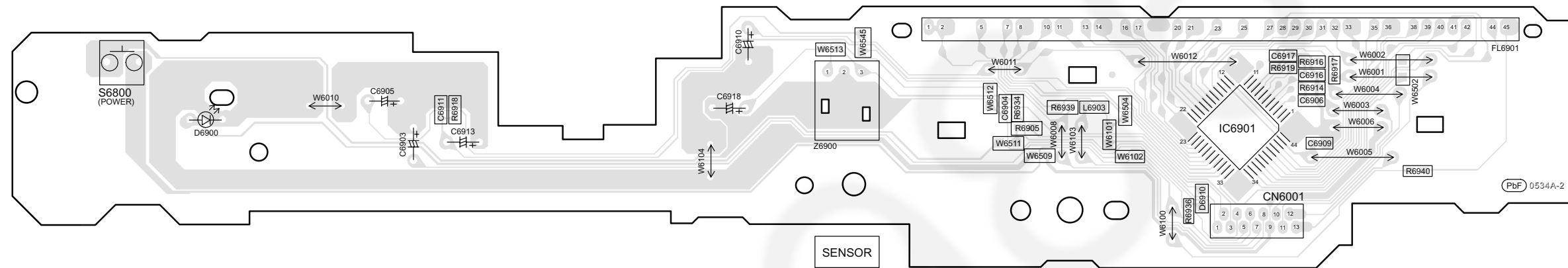
(SIDE B)

1 2 3 4 5 6 7 8 9 10 11 12 13

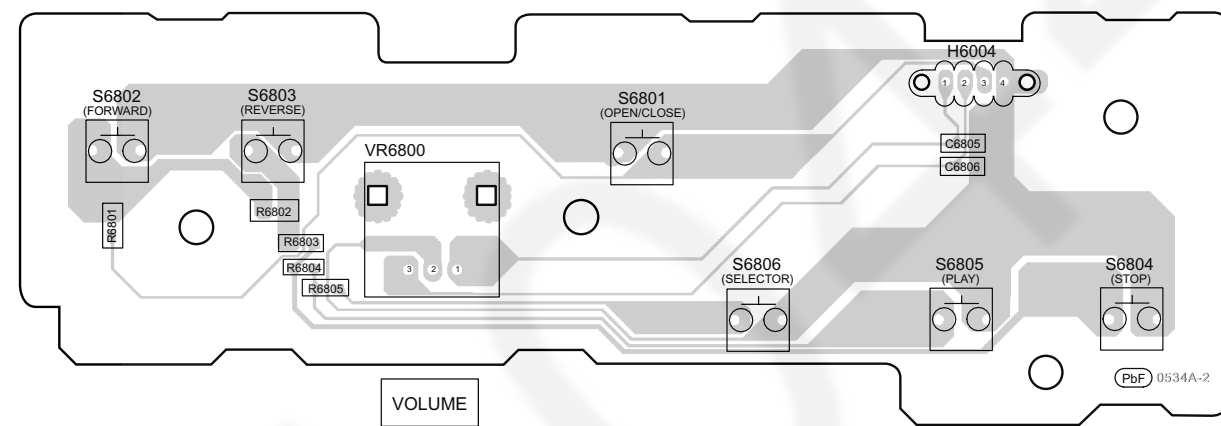
20.3. Panel, Volume & Tuner Extent P.C.B.

H
G
F
E
D
C
B
A

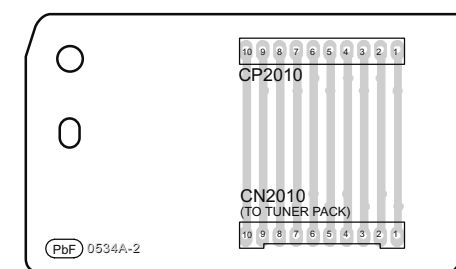
D PANEL P.C.B. (REPX0581G...E)
(REPX0581B...EB)
(REPX0581A...EG)



E VOLUME P.C.B. (REPX0581G...E)
(REPX0581B...EB)
(REPX0581A...EG)



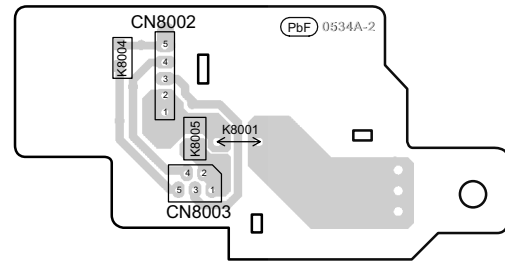
C TUNER EXTENT P.C.B. (REPX0581G...E)
(REPX0581B...EB)
(REPX0581A...EG)



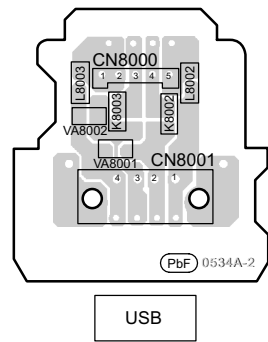
1 2 3 4 5 6 7 8 9 10 11 12 13

20.4. USB, USB Relay & Tray Loading P.C.B.

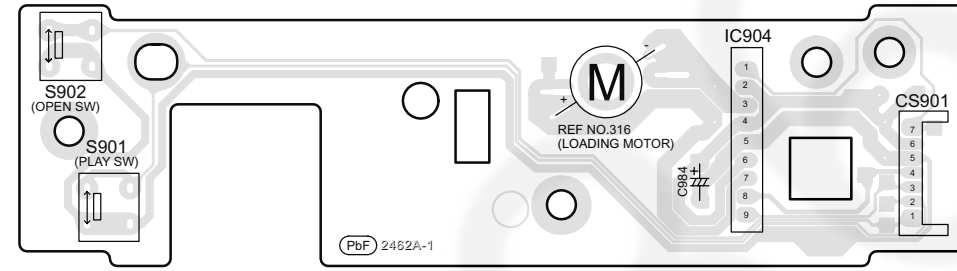
F USB RELAY P.C.B. (REPX0581G...E)
(REPX0581B...EB)
(REPX0581A...EG)



G USB P.C.B. (REPX0581G...E)
(REPX0581B...EB)
(REPX0581A...EG)



H TRAY LOADING P.C.B. (REP4238A)



H
G
F
E
D
C
B
A

1 2 3 4 5 6 7 8 9 10 11 12 13

21 Basic Troubleshooting Guide

21.1. Basic Troubleshooting Guide for Traverse Unit (DVD Module P.C.B)

Problems	Checking Points	Checking Components
1) Distorted picture or abnormal sound is heard during the initialization	a) Check SDRAM address, data bus, CLK and other control signals waveform	IC8051
	b) Check video signals	LB8301, R8321, R8322, LB8302, R8325, R8326
	c) Check audio DAC circuitry * Compare the above with OK condition DVD module P.C.B.	IC8421 *Check for solder short and/or component missing/damaged
2) No TOC / Long TOC	a) Check motor driver circuitry (+5V)	IC8251 Pin 8, 21
	b) Check laser drive circuitry (Voltages & current)	Q8551, Q8552, Q8561, Q8562
	c) Check LSI IC connection to motor drive circuitry *Compare the above with OK condition DVD Module P.C.B.	IC8001 Pin 66, 67 * Check for solder short and/or component missing/damaged
3) Disc not spinning 4) Traverse not moving 5) Traverse and spindle abnormal movement	a) Check connection from DVD Module to Traverse unit	FP8251
	b) Check motor driver circuitry on the voltages and control signals *Compare the above with OK condition DVD Module P.C.B	IC8251 *Check for solder short and/or component damaged
6) Cannot read the disc but spindle motor is spinning - Cannot read CD/DVD	a) Check laser drive circuitry (voltages and current) - Check CD Laser Drive - Check DVD Laser Drive * Check voltages and LD current and compare with OK condition DVD Module P.C.B.	Q8551, Q8552, LB8531 (For DVD Laser Drive current) Q8561, Q8562, LB8561 (For CD Laser Drive current)
7) Block Noise during play	a) Check SDRAM address and data bus signal	IC8051
8) Jitter out of specification	a) Check LD current b) Check OPU (Change to other unit and confirmed operating condition)	OPU Unit (Traverse unit), FPC connection
9) Cannot read data from USB	a) Check USB connector & FFC b) Check LSI O/P c) Check IC supply (+5V)	FP9001 IC8001 Pin 144, 146 IC9005 Pin 2, 3

21.2. Basic Troubleshooting Guide for SMPS/MAIN/PANEL

Problems	Checking Points	Checking Components
1) No power supply to unit	a) Check AC cord connection (open/short)	
	b) Check fuse F1 on SMPS Module P.C.B.	F1
	c) Check supply voltage to Main P.C.B. from SMPS Module P.C.B. (+5V/±7V/2.7V)	H2002 Pin 1, 4, 8, 9, 11
	d) Check cable connection between SMPS Module & Main P.C.B.	
	e) Check DC voltage (+9.1V)	IC2903, L2909 Pin 2, 3
2) No FL Display	a) Check supply voltage (Refer to Item 1) checking points	
	b) Check SYS6V to IC2018	IC2018 Pin 16
	c) Check oscillator circuit	X2001, IC2018 Pin13, 16
	d) Check soldering condition	IC2018, IC6901, FL6901
3) No audio output	a) Check speaker connection * Solderability condition	JK5000
	b) Check amplifier IC circuit (audio output)	IC5100, IC5200, IC5300 Pin 4, 10
	b) Check supply to amplifier IC	IC5100, IC5200, IC5300 Pin 1

23 Terminal Function of ICs

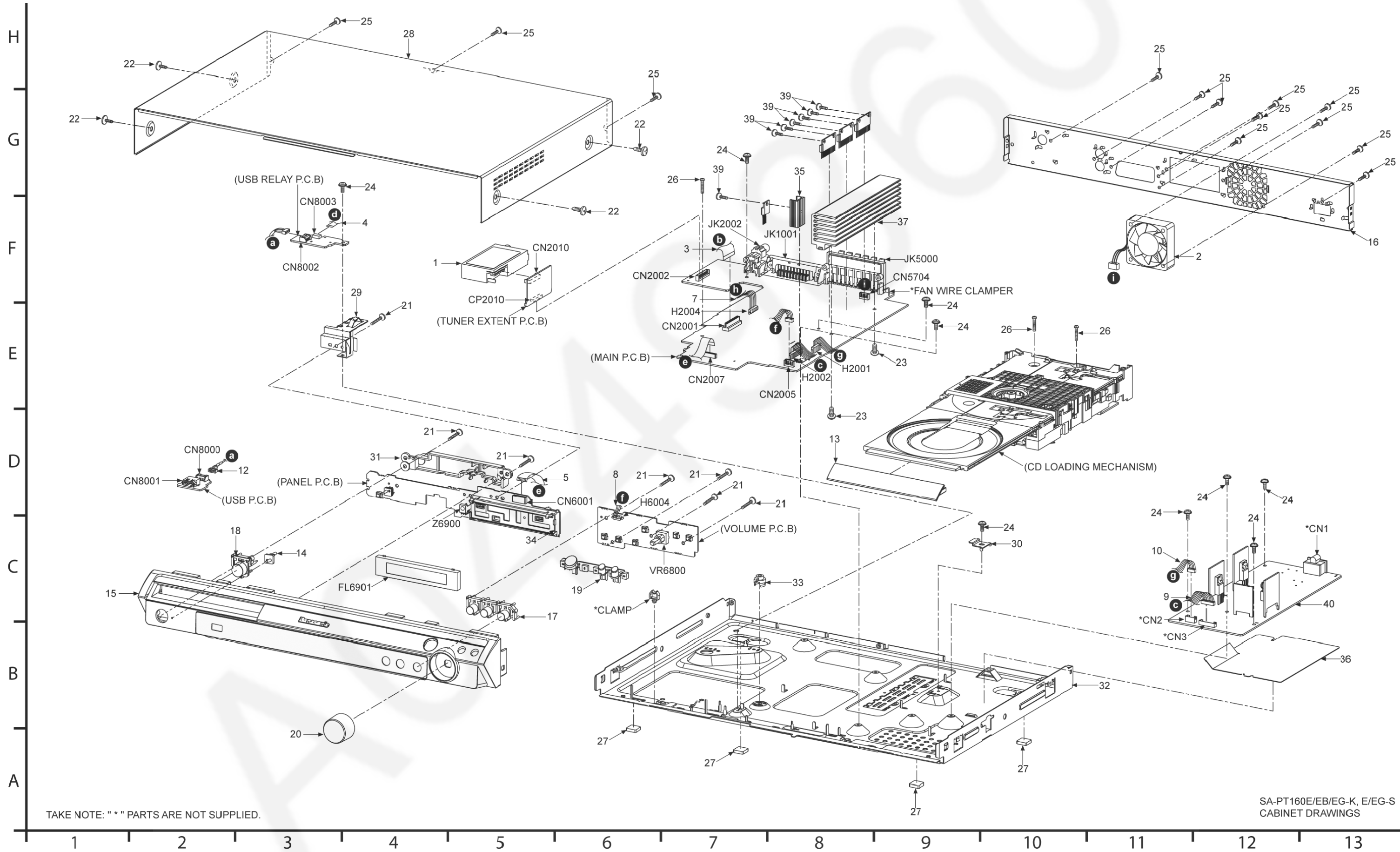
23.1. IC2018 (C2CBYY000438): System Control IC

Pin No.	Terminal Name	I/O	Function
1	TRAY_CLOSE	I	LOADING MECHA CLOSE SW (L: SW ON)
2	TRAY_CCW	O	Terminal for tray control 1
3	TRAY_CW	O	Terminal for tray control 2
4	TRAY_OPEN	I	LOADING MECHA OPEN SW (L: SW ON)
5	NC	-	MIC Insertion Detect (if MIC_EN = 1)
6	I/P VCC_CTRL	I	Input Power Supply Control
7	NC	-	No Connection
8	BYTE	-	VSS (GND)
9	CNVSS	-	VSS (GND)
10	NC	-	No Connection
11	NC	-	RDS Enable (H = Enable, L = Disable)
12	RESET	I	SYSTEM RESET INPUT
13	XOUT	-	MAIN CLOCK OUTPUT (10.0MHZ)
14	VSS	-	GND (0V)
15	XIN	-	MAIN CLOCK INPUT (10 MHZ)
16	VCC	-	POWER SUPPLY (5V)
17	NMI	I	CONNECT TO VCC EXTERNAL INTERRUPT I/P
18	RMT	I	REMOCON INPUT
19	SYNC	I	AC FAILURE DETECT INPUT
20	NC	-	No Connection
21	MIC_EN	I	Microphone Enable (L=Disable, H=Enable)
22	NC	-	No Connection
23	EDA	I/O	DATA signal for the EEPROM
24	ECK	O	CLOCK signal for the EEPROM
25	ECS	O	LAT signal for the EEPROM
26	NC	-	No Connection
27	NC	-	No Connection
28	DVD_CLK	I	CLK signal for the DVD Module
29	DVD_STAT	I	STATUS signal from the DVD Module
30	DVD_CMD	O	CMD signal for the DVD Module
31	NC	-	No Connection
32	NC	-	No Connection
33	NC	-	No Connection
34	NC	-	No Connection
35	TUN_SD	I	Tuner Station Detect
36	TUN_CLK	O	I2C Clock for Tuner
37	TUN_ST	I	Stereo Detect
38	TUN_DI	O	I2C Data for Tuner
39	NC	-	No Connection
40	PCONT	O	Control Signal for Power Relay
41	EPM	I	CONNECTED TO GROUND VIA RESISTOR
42	DVD_MUTE	I	Signal from DVD module control mute circuit
43	NC	-	No Connection
44	NC	-	No Connection
45	NC	-	No Connection
46	VMUTE	O	Video Mute Control
47	NC	-	No Connection
48	NC	-	No Connection
49	NC	-	No Connection
50	NC	-	No Connection
51	ECHO_MUTE	O	ECHO MUTING CONTROL
52	ECHO_LVL1	O	ECHO LEVEL CONTROL 1
53	ECHO_LVL2	O	ECHO LEVEL CONTROL 2
54	NC	-	No Connection

Pin No.	Terminal Name	I/O	Function
55	NC	-	No Connection
56	NC	-	No Connection
57	NC	-	No Connection
58	NC	-	No Connection
59	NC	-	No Connection
60	NC	-	No Connection
61	NC	-	No Connection
62	VCC	-	POWER SUPPLY 5.0V
63	NC	-	No Connection
64	VSS	-	GND (0V)
65	O/P VCC_CTRL	O	Ouput VCC Supply Control
66	MIC_SW	O	PULL UP RESISTOR TO SUPPLY
67	MUTE_C_S	O	Center and Surround L & R Mute
68	MUTE_F_SW	O	Front L & R Mute and SubWoofer Mute
69	MUTE_FRONT	O	Front Mute
70	DC_DET1	I	DC Detection circuit 1
71	STYB	O	Standby Mode
72	NC	-	No Connection
73	NC	-	No Connection
74	NC	-	No Connection
75	NC	-	No Connection
76	JOG_A	I	Signal A from Volume JOG
77	JOG_B	I	Signal B from Volume JOG
78	NC	-	No Connection
79	SCART_MUTE	O	Line out for SCART terminal
80	WIDE1	O	Control Signal for the WIDE function
81	RGB	I	Mute signal 1 for Video output
82	YC_H	O	Control signal for the video signal Mix
83	ASP_CLK	O	Clock Signal for 6 Channel ASP IC
84	ASP_DAT	O	Data Signal for ASPC IC
85	FLD_CLK	O	Clock Signal for the FL Driver
86	FLD_STB	O	FL Strobe
87	FLD_OUT	O	FL Data Out
88	DC_DET2	I	DC Detection circuit 2
89	MD3	I	Model Code 3
90	MD2	I	Model Code 2
91	KEY 2	I	Key 2 line input
92	MD1	I	Model Code 1
93	DES3	I	DVD Region Setting
94	DES2	I	Model Selector
95	DES1	I	REGION Setting for Tuner
96	AVSS	-	Analog Power Supply Input
97	KEY1	I	Key 1 Line input
98	VREF	-	Reference Voltage Input
99	AVCC	-	Analog Power Supply Input
100	BRAKE_H	O	Terminal for tray control 3

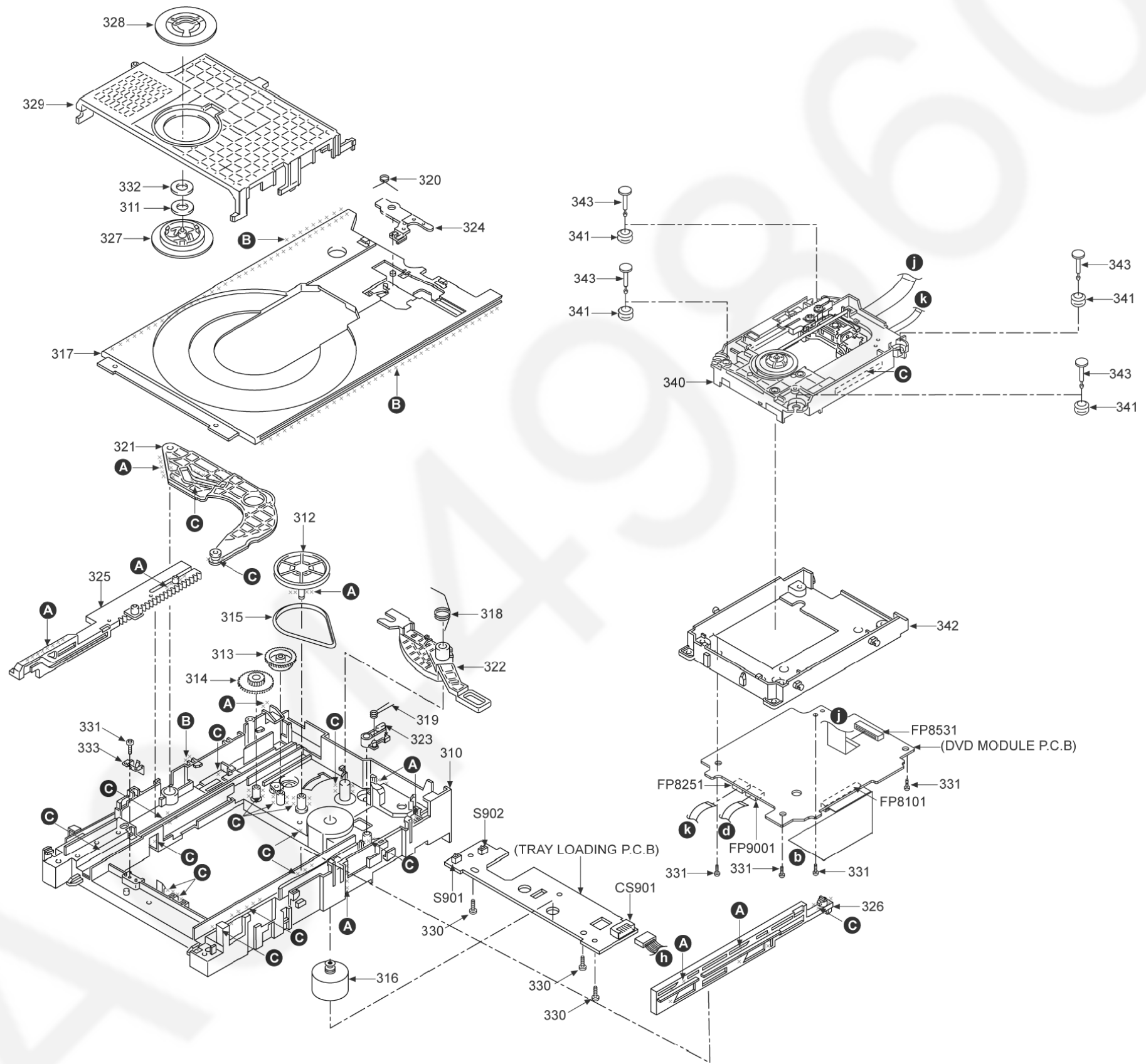
24 Exploded Views

24.1. Cabinet Parts Location



TAKE NOTE: "*" PARTS ARE NOT SUPPLIED.

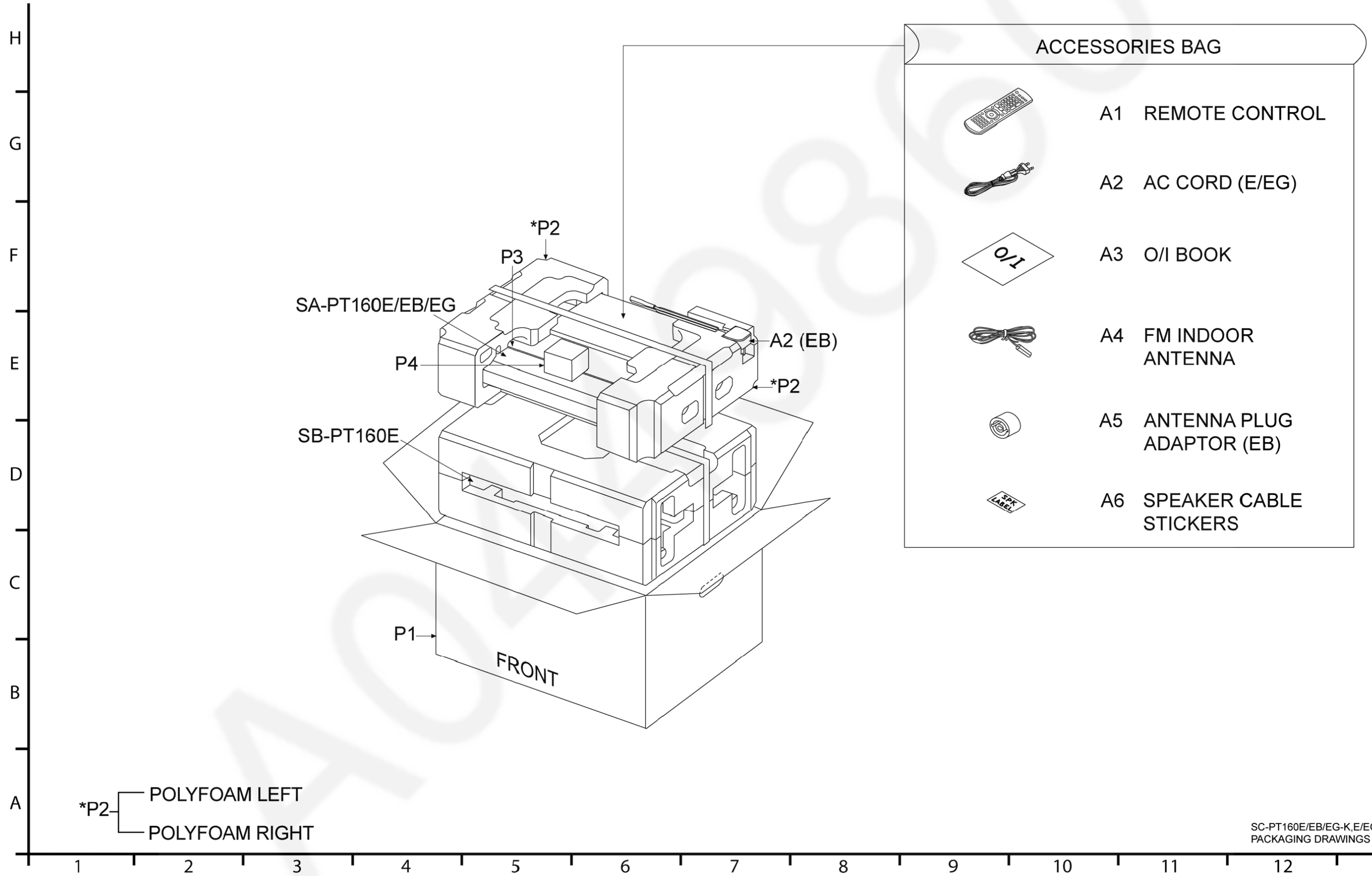
SA-PT160E/EB/EG-K, E/EG-S
CABINET DRAWINGS



		PART NUMBER
A	GREASE	RFKXPG641
B	HANARL	VFK1784
C	DRYSURF	RFKXGUD24

SA-PT160E/EB/EG-K, E/EG-S
CD LOADING MECHANISM DRAWINGS

24.2. Packaging



A044498860

25 Replacement Parts List

Notes:

*Important safety notice:

Components identified by \triangle mark have special characteristics important for safety purpose.

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.

ACHTUNG:

- Die Lasereinheit nicht zerlegen.

- Die Lasereinheit darf nur gegen eine vom Hersteller spezifizierte Einheit ausgetauscht werden.

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

*The parenthesized indications in the Remarks columns specify the model names and areas. (Refer to the cover page)

*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.

*Parts mentioned [M] are supplied from PAVCSG.

*Parts mentioned [SPG] are supplied from PAVC.

Note:

The SMPS Module P.C.B. is replaced as a unit if upon confirmation that is not working in proper condition.

Check for all voltages for confirmation. (Refer to Section 14.4). Replace fuse as specified if found broken. (Substitute Fuse Part No. K5D312BNA005)

25.1. Component Parts List

Ref. No.	Part No.	Part Name & Description	Remarks
		CABINET AND CHASSIS	
1	J3CBBC000001	TUNER PACK	[M]
2	L6FAJJCCH0007	FAN MOTOR	[M]
3	REEX0726	50P FFC CABLE (MECHA)	[M]
4	REEX0679	5P FFC CABLE (MECHA-USB)	[M]
5	REEX0736	13P FFC WIRE (FL)	[M]
7	REXX0384-J	7P FLAT WIRE (DVD)	[M]
8	REXX0519	4P FLAT WIRE (VOL)	[M]
9	REXX0520	11P FLAT WIRE (MN)	[M]
10	REXX0521	4P FLAT WIRE (MN)	[M]
12	REXX0589	5P USB WIRE	[M]
13	RGKX0325A-S1	DVD LID	[M] E/EG-S
13	RGKX0325A1K1	DVD LID	[M] E/EB/EG-K
14	RGLX0128-Q	LIGHTING CHIP	[M]
15	RFKGAPT160ES	FRONT PANEL ASS`Y	[M] E/EG-S
15	RFKGAPT160EB	FRONT PANEL ASS`Y	[M] EB-K
15	RFKGAPT160EG	FRONT PANEL ASS`Y	[M] EG/E-K
16	RGRX0058E-P	REAR PANEL	[M] E/EG-S/K △
16	RGRX0058E-Q	REAR PANEL	[M] EB-K △
17	RGUX0665-S	POWER BUTTON	[M] E/EG-S
17	RGUX0665-1K	POWER BUTTON	[M] E/EB/EG-K
18	RGUX0666-S	FUNCTION BUTTON	[M] E/EG-S
18	RGUX0666-1K	FUNCTION BUTTON	[M] E/EB/EG-K
19	RGUX0676-S	OPEN CLOSE BUTTON	[M] E/EG-S
19	RGUX0676-1K	OPEN CLOSE BUTTON	[M] E/EB/EG-K
20	RGWX0076-S	VOLUME KNOB	[M] E/EG-S
20	RGWX0076-1KJ	VOLUME KNOB	[M] E/EB/EG-K
21	RHD26046	SCREW	[M]
22	RHD30007-1S1	SCREW	[M] E/EG-S
22	RHD30007-K2J	SCREW	[M] E/EB/EG-K
23	RHD30092-1	SCREW	[M]
24	RHD30111-3	SCREW	[M]
25	RHD30119-S	SCREW	[M]
26	RHDV30006	SCREW	[M]
27	RKA0059-K	LEG FELT	[M]
28	RKMX0107-1S3	TOP CABINET	[M] E/EG-S △
28	RKMX0107-K3	TOP CABINET	[M] E/EB/EG-K △
29	RMAX0086-2	PANEL ANGLE	[M]
30	RMAX0101	BRACKET	[M]
31	RMAX0108-1	MECHA HOLDER	[M]
32	RMKX0117-4	BOTTOM CHASSIS	[M]
33	RMNX0109	PCB SPACER	[M]
34	RMNX0149	FL HOLDER	[M]
35	RMXX0191A	HEATSINK EXTRUSION	[M]
36	RMZZ0029	MAIN PCB INSULATOR	[M]
37	RXXX0090	HEATSINK UNIT	[M]
39	XTB3+8JFJ	SCREW	[M]

Ref. No.	Part No.	Part Name & Description	Remarks
40	N0AZ6GE00005	SMPs MODULE	[M] (RTL) △
		TRAVERSE DECK	
310	RMK0591A	MECHA CHASSIS	[M]
311	RHM0003-J	MAGNET	[M]
312	RDG0547	PULLEY GEAR	[M]
313	RDG0548-1	RELAY GEAR	[M]
314	RDG0549	DRIVE GEAR	[M]
315	RDV0070	BELT	[M]
316	REM0133	MOTOR UNIT	[M]
317	RGQ0395-K1	TRAY	[M]
318	RME0350	CHANGE LEVER SPRING	[M]
319	RME0351A	LOCK LEVER SPRING	[M]
320	RME0353	TRAY SLIDER SPRING	[M]
321	RML0627-2	DRIVE ARM	[M]
322	RML0628	CHANGE LEVER	[M]
323	RML0629	LOCK LEVER	[M]
324	RML0631	TRAY SLIDER	[M]
325	RMM0247-3	DRIVE RACK	[M]
326	RMM0248	SUB RACK	[M]
327	RMR1446-X	CLAMPER	[M]
328	RMR1447-X	MAGNET HOLDER	[M]
329	RMR1468-K	CLAMP PLATE	[M]
330	XTN26+6GFJ	SCREW	[M]
331	XTV2+6GFJ	SCREW	[M]
332	XWG6FFJ	WASHER	[M]
333	RMCO387	SUPPORT SPRING	[M]
340	RAE2023Z-S	TRAVERSE UNIT	[M] (RTL) △
341	RMG0598A-K	FLOATING RUBBER	[M]
342	RMR1596-X2	MIDDLE CHASSIS	[M]
343	RMS0789	FIXED PIN	[M]
		PRINTED CIRCUIT BOARDS	
PCB1	REPX0562A	DVD MODULE P.C.B	[M] (RTL)
PCB2	REPX0581G	MAIN P.C.B	[M] (RTL) E
	REPX0581B	MAIN P.C.B	[M] (RTL) EB
	REPX0581A	MAIN P.C.B	[M] (RTL) EG
PCB3	REPX0581G	TUNER EXTENT P.C.B	[M] (RTL) E
	REPX0581B	TUNER EXTENT P.C.B	[M] (RTL) EB
	REPX0581A	TUNER EXTENT P.C.B	[M] (RTL) EG
PCB4	REPX0581G	VOLUME P.C.B	[M] (RTL) E
	REPX0581B	VOLUME P.C.B	[M] (RTL) EB
	REPX0581A	VOLUME P.C.B	[M] (RTL) EG
PCB5	REPX0581G	PANEL P.C.B	[M] (RTL) E
	REPX0581B	PANEL P.C.B	[M] (RTL) EB
	REPX0581A	PANEL P.C.B	[M] (RTL) EG
PCB6	REPX0581G	USB P.C.B	[M] (RTL) E
	REPX0581B	USB P.C.B	[M] (RTL) EB

Ref. No.	Part No.	Part Name & Description	Remarks
	REPX0581A	USB P.C.B	[M] (RTL) EG
PCB7	REPX0581G	USB RELAY P.C.B	[M] (RTL) E
	REPX0581B	USB RELAY P.C.B	[M] (RTL) EB
	REPX0581A	USB RELAY P.C.B	[M] (RTL) EG
PCB8	REP4238A	TRAY LOADING MOTOR P.C.B	[M] (RTL)
		INTEGRATED CIRCUITS	
IC904	C0GAY0000013	IC TRAY LOADING MOTOR DRIVE	[M]
IC1101	C9ZB00000461	IC VIDEO BUFFER	[M]
IC1102	CLAB00001731	IC VIDEO SWITCH	[M]
IC2018	C2CBYY000438	IC SYSTEM CONTROL	[M]
IC2102	CLAB00002463	IC AUDIO SOUND PROCESSOR	[M]
IC2903	AN30071A-NM	IC DC-DC CONVERTER	[M]
IC5100	AN17831A	IC POWER	[M]
IC5200	AN17831A	IC POWER	[M]
IC5300	AN17831A	IC POWER	[M]
IC6901	COHBB0000057	IC DISPLAY DRIVER	[M]
IC8001	MN2DS0018MP	IC DV5.0 LSI	[M]
IC8051	C3ABPG000145	IC 64M SDRAM	[M]
IC8111	C0CBCBD00018	IC +3.3V DC-DC CONVERTER	[M]
IC8151	C0DBEHG00006	IC +1.2V REGULATOR	[M]
IC8251	C0GBG0000048	IC MOTOR DRIVE	[M]
IC8421	C0FBBK000050	IC AUDIO DAC	[M]
IC8601	COEBA0000029	IC RESET	[M]
IC8606	COEBE0000456	IC RESET	[M]
IC8651	RFKWMHCOB320	32M FLASH MEMORY	[SPG]
IC8691	COJBAA000502	IC AND GATE	[M]
IC8695	COJBAA000502	IC AND GATE	[M]
IC9003	COJBAB000908	IC INVERTER GATE	[M]
IC9005	C0DBZYE00002	IC REGULATOR	[M]
		TRANSISTORS	
Q1001	B1GDCFJJ0047	TRANSISTOR	[M]
Q1002	B1GBCFJJ0051	TRANSISTOR	[M]
Q1003	B1ABCF000176	TRANSISTOR	[M]
Q1004	B1GDCFJJ0047	TRANSISTOR	[M]
Q1005	B1GBCFJJ0051	TRANSISTOR	[M]
Q1006	XN0460100L	TRANSISTOR	[M]
Q1007	BLADCE000012	TRANSISTOR	[M]
Q1008	B1GBCFJJ0051	TRANSISTOR	[M]
Q1100	B1ABGC000005	TRANSISTOR	[M]
Q1200	B1ABGC000005	TRANSISTOR	[M]
Q2003	B1GBCFJJ0051	TRANSISTOR	[M]
Q2004	BLADCE000012	TRANSISTOR	[M]
Q2006	B1GBCFJJ0051	TRANSISTOR	[M]
Q2030	B1GBCFJJ0051	TRANSISTOR	[M]
Q2805	B1GBCFJJ0051	TRANSISTOR	[M]
Q2905	B1GBCFJJ0051	TRANSISTOR	[M]
Q2906	B1BCCG000002	TRANSISTOR	[M]
Q2907	BLADCF000001	TRANSISTOR	[M]
Q2910	B1ABCF000176	TRANSISTOR	[M]
Q2914	B1BACG000023	TRANSISTOR	[M]
Q2974	BLACKD000005	TRANSISTOR	[M]
Q3003	B1GDCFJJ0047	TRANSISTOR	[M]
Q3008	B1ABGC000005	TRANSISTOR	[M]
Q3009	B1ABCF000176	TRANSISTOR	[M]
Q5740	B1BACG000023	TRANSISTOR	[M]
Q5741	B1ABCF000176	TRANSISTOR	[M]
Q5742	B1ABCF000176	TRANSISTOR	[M]
Q5744	B1ABCF000176	TRANSISTOR	[M]
Q5745	BLACKD000005	TRANSISTOR	[M]
Q5746	B1GBCFJJ0051	TRANSISTOR	[M]
Q8321	2SB1218ARL	TRANSISTOR	[M]
Q8325	2SB1218ARL	TRANSISTOR	[M]
Q8331	2SB1218ARL	TRANSISTOR	[M]

Ref. No.	Part No.	Part Name & Description	Remarks
Q8335	2SB1218ARL	TRANSISTOR	[M]
Q8341	2SB1218ARL	TRANSISTOR	[M]
Q8551	2SD1819A0L	TRANSISTOR	[M]
Q8552	BLADGB000008	TRANSISTOR	[M]
Q8561	2SD1819A0L	TRANSISTOR	[M]
Q8562	BLADGB000008	TRANSISTOR	[M]
QR8111	XP0621400L	TRANSISTOR	[M]
QR8420	UNR521100L	TRANSISTOR	[M]
QR8571	UNR511V00L	TRANSISTOR	[M]
		DIODES	
D1001	B0BC7R500001	DIODE	[M]
D1002	B0BC01200019	DIODE	[M]
D2000	B0JCPD000025	DIODE	[M]
D2001	B0EAKM000117	DIODE	[M]
D2002	B0EAKM000117	DIODE	[M]
D2005	B0ACCK000005	DIODE	[M]
D2007	B0ACCK000005	DIODE	[M]
D2008	B0ACCK000005	DIODE	[M]
D2900	B0BC7R500001	DIODE	[M]
D2904	B0JCPD000025	DIODE	[M]
D2905	B0BC7R500001	DIODE	[M]
D2918	B0ADCJ000020	DIODE	[M]
D2929	B0ACCK000005	DIODE	[M]
D2935	B0EAKM000117	DIODE	[M]
D2936	B0EAKM000117	DIODE	[M]
D2944	B0BC3R400001	DIODE	[M]
D2974	MAZ82200ML	DIODE	[M]
D3001	B0ACCK000005	DIODE	[M]
D5100	B0JCPD000025	DIODE	[M]
D5200	B0JCPD000025	DIODE	[M]
D5300	B0JCPD000025	DIODE	[M]
D5302	B0ACCK000005	DIODE	[M]
D5700	B0ACCK000005	DIODE	[M]
D5743	B0ACCK000005	DIODE	[M]
D5744	B0ACCK000005	DIODE	[M]
D5745	B0BC013A0007	DIODE	[M]
D6900	B3AAA0000803	DIODE	[M]
D6910	B0BC3R400001	DIODE	[M]
D8211	MA2J11100L	DIODE	[M]
D8571	MA2J72800L	DIODE	[M]
		VARIABLE RESISTOR	
VR6800	EVEKE2F2524M	VOLUME JOG	[M]
		VARISTORS	
VA8001	EZJZ1V171AA	CHIP VARISTOR	[M]
VA8002	EZJZ1V171AA	CHIP VARISTOR	[M]
		SWITCHES	
S901	RSH1A044-1A	SW PLAY	[M]
S902	RSH1A044-1A	SW OPEN	[M]
S6800	EVQ21405R	SW POWER	[M]
S6801	EVQ21405R	SW OPEN/CLOSE	[M]
S6802	EVQ21405R	SW FORWARD	[M]
S6803	EVQ21405R	SW REVERSE	[M]
S6804	EVQ21405R	SW STOP	[M]
S6805	EVQ21405R	SW PLAY	[M]
S6806	EVQ21405R	SW SELECTOR	[M]
		CONNECTORS	
CN2001	K1MY50AA0029	50P CONNECTOR	[M]
CN2002	K1KA10AA0031	10P CONNECTOR	[M]
CN2005	K1KA04AA0193	4P CONNECTOR	[M]
CN2007	K1MN13AA0003	13P CONNECTOR	[M]
CN2010	K1KA10AA0031	10P CONNECTOR	[M]
CN5704	K1KA03AA0301	3P CONNECTOR	[M]
CN6001	K1MN13BA0004	13P CONNECTOR	[M]

Ref. No.	Part No.	Part Name & Description	Remarks
CN8000	K1KA05BA0061	5P CONNECTOR	[M]
CN8001	K1FY104B0011	USB CONNECTOR	[M]
CN8002	K1KA05BA0061	5P CONNECTOR	[M]
CN8003	K1MY05BA0130	5P CONNECTOR	[M]
CP2010	K1KB10B00042	10P CONNECTOR	[M]
CS901	K1KA07BA0061	7P CONNECTOR	[M]
FP8101	K1MN50BA0173	50P CONNECTOR	[M]
FP8251	K1MN06BA0148	6P CONNECTOR	[M]
FP8531	K1MY26BA0025	26P CONNECTOR	[M]
FP9001	K1MN05BA0148	5P CONNECTOR	[M]
		COILS	
K8004	J0JHC0000034	INDUCTOR	[M]
K8005	J0JHC0000034	INDUCTOR	[M]
L1001	J0JBC0000015	INDUCTOR	[M]
L1002	J0JBC0000015	INDUCTOR	[M] △
L1003	J0JBC0000015	INDUCTOR	[M] △
L1004	J0JBC0000015	INDUCTOR	[M] △
L1005	J0JBC0000015	INDUCTOR	[M] △
L2009	G0C220JA0055	FIXED INDUCTOR	[M]
L2800	G0C220JA0055	FIXED INDUCTOR	[M]
L2801	G0C220JA0055	FIXED INDUCTOR	[M]
L2902	G0A101ZA0028	CHOKE COIL	[M]
L2909	G0A200D00002	CHOKE COIL	[M]
L2910	G0A220GA0026	CHOKE COIL	[M]
L2911	G0A200D00002	CHOKE COIL	[M]
L5101	G0AR65Y00001	CHOKE COIL	[M] △
L5102	G0AR65Y00001	CHOKE COIL	[M] △
L5103	G0AR65Y00001	CHOKE COIL	[M] △
L5104	G0AR65Y00001	CHOKE COIL	[M] △
L5201	G0AR65Y00001	CHOKE COIL	[M] △
L5202	G0AR65Y00001	CHOKE COIL	[M] △
L5203	G0AR65Y00001	CHOKE COIL	[M] △
L5204	G0AR65Y00001	CHOKE COIL	[M] △
L5301	G0AR65Y00001	CHOKE COIL	[M] △
L5302	G0AR65Y00001	CHOKE COIL	[M] △
L5303	G0AR65Y00001	CHOKE COIL	[M] △
L5304	G0AR65Y00001	CHOKE COIL	[M] △
L6903	J0JBC0000041	INDUCTOR	[M]
L8201	G1C100K00019	CHIP COIL	[M]
L8301	G1C100K00019	CHIP COIL	[M]
L8302	G1C100K00019	CHIP COIL	[M]
L8330	G1C100K00019	CHIP COIL	[M]
L8501	G1C100K00019	CHIP COIL	[M]
L8550	G1C100KA0055	CHIP INDUCTOR	[M]
LB8001	J0JHC0000045	COIL	[M]
LB8011	J0JHC0000045	COIL	[M]
LB8301	J0JBC0000042	CHIP BEAD	[M]
LB8302	J0JBC0000042	CHIP BEAD	[M]
LB8303	J0JBC0000042	CHIP BEAD	[M]
LB8304	J0JBC0000042	CHIP BEAD	[M]
LB8305	J0JBC0000042	CHIP BEAD	[M]
LB8401	J0JBC0000042	CHIP BEAD	[M]
LB8430	J0JHC0000045	COIL	[M]
LB8530	J0JHC0000045	COIL	[M]
LB8551	J0JBC0000042	CHIP BEAD	[M]
LB8561	J0JBC0000042	CHIP BEAD	[M]
LB8571	J0JBC0000042	CHIP BEAD	[M]
LB8690	J0JBC0000044	HIGH LOSS INDUCTOR	[M]
LB9001	J0JCC0000119	CHIP INDUCTOR	[M]
		COMPONENT COMBINATION	
Z6900	B3RAB0000025	REMOTE SENSOR	[M]
		OSCILLATORS	
X2001	H2B100500004	CRYSTAL OSCILLATOR	[M]
X8621	H0J270500085	CRYSTAL OSCILLATOR	[M]
X9004	H1A4805B0027	CRYSTAL OSCILLATOR	[M]
		DISPLAY TUBE	
FL6901	A2BD00000170	FL DISPLAY	[M]

Ref. No.	Part No.	Part Name & Description	Remarks
		HOLDERS	
H2001	K1YF04000001	4P CABLE HOLDER	[M]
H2002	K1YZ11000002	11P CABLE HOLDER	[M]
H2004	K1YZ07000001	7P CABLE HOLDER	[M]
H6004	K1YZ04000002	4P CABLE HOLDER	[M]
		JACKS	
JK1001	K1FY121B0002	JK AV SCART	[M]
JK2002	K2HA2YYA0002	JK AUX	[M]
JK5000	K4AC12B00003	JK SPEAKER	[M]
		EARTH TERMINALS	
E2900	K4CZ01000027	TERMINAL	[M]
E2901	K4CZ01000027	TERMINAL	[M]
		CHIP JUMPERS	
K4027	D0GBR00JA008	0 1/16W	[M] EG-S
K4029	D0GBR00JA008	0 1/16W	[M] EB-K
K4033	D0GBR00JA008	0 1/16W	[M] E/EG-S
K8002	D0GBR00JA008	0 1/16W	[M]
K8003	D0GBR00JA008	0 1/16W	[M]
K8251	D0GBR00JA008	0 1/16W	[M]
K8421	D0GBR00JA008	0 1/16W	[M]
L8002	D0GDR00JA017	0 1/10W	[M]
L8003	D0GDR00JA017	0 1/10W	[M]
LB8257	D0GBR00JA008	0 1/16W	[M]
LB8258	D0GBR00JA008	0 1/16W	[M]
LB8259	D0GBR00JA008	0 1/16W	[M]
LB8260	D0GBR00JA008	0 1/16W	[M]
LB8421	ERJ2GE0R00X	0 1/16W	[M]
LB8422	ERJ2GE0R00X	0 1/16W	[M]
LB8423	ERJ2GE0R00X	0 1/16W	[M]
LB8424	ERJ2GE0R00X	0 1/16W	[M]
LB8425	ERJ2GE0R00X	0 1/16W	[M]
LB8426	ERJ2GE0R00X	0 1/16W	[M]
LB8427	ERJ2GE0R00X	0 1/16W	[M]
LB8428	ERJ2GE0R00X	0 1/16W	[M]
LB8429	ERJ2GE0R00X	0 1/16W	[M]
LB8431	ERJ2GE0R00X	0 1/16W	[M]
LB8491	ERJ2GE0R00X	0 1/16W	[M]
LB8531	ERJ2GE0R00X	0 1/16W	[M]
W2201	D0GDR00JA017	0 1/10W	[M]
W4001	D0GDR00JA017	0 1/10W	[M]
W4002	D0GDR00JA017	0 1/10W	[M]
W4003	D0GBR00JA008	0 1/16W	[M]
W4004	D0GBR00JA008	0 1/16W	[M]
W4005	D0GBR00JA008	0 1/16W	[M]
W4006	D0GDR00JA017	0 1/10W	[M]
W4007	D0GBR00JA008	0 1/16W	[M]
W4011	D0GDR00JA017	0 1/10W	[M]
W4012	D0GBR00JA008	0 1/16W	[M]
W4013	D0GDR00JA017	0 1/10W	[M]
W4014	D0GDR00JA017	0 1/10W	[M]
W4017	D0GDR00JA017	0 1/10W	[M]
W4018	D0GBR00JA008	0 1/16W	[M]
W4020	D0GBR00JA008	0 1/16W	[M]
W4021	D0GDR00JA017	0 1/10W	[M]
W4022	D0GDR00JA017	0 1/10W	[M]
W4023	D0GDR00JA017	0 1/10W	[M]
W4024	D0GBR00JA008	0 1/16W	[M]
W4025	D0GDR00JA017	0 1/10W	[M]
W4026	D0GBR00JA008	0 1/16W	[M]
W4028	D0GBR00JA008	0 1/16W	[M]
W4034	D0GDR00JA017	0 1/10W	[M]
W4037	D0GDR00JA017	0 1/10W	[M]
W4038	D0GBR00JA008	0 1/16W	[M]

Ref. No.	Part No.	Part Name & Description	Remarks
W4039	DOGDR00JA017	0 1/10W	[M]
W4040	DOGBR00JA008	0 1/16W	[M]
W4042	DOGBR00JA008	0 1/16W	[M]
W4043	DOGBR00JA008	0 1/16W	[M]
W4045	DOGDR00JA017	0 1/10W	[M]
W4047	DOGDR00JA017	0 1/10W	[M]
W4048	DOGDR00JA017	0 1/10W	[M]
W4049	DOGBR00JA008	0 1/16W	[M]
W4050	DOGDR00JA017	0 1/10W	[M]
W4053	DOGDR00JA017	0 1/10W	[M]
W4054	DOGBR00JA008	0 1/16W	[M]
W4055	DOGBR00JA008	0 1/16W	[M]
W4056	DOGBR00JA008	0 1/16W	[M]
W4057	DOGBR00JA008	0 1/16W	[M]
W4058	DOGBR00JA008	0 1/16W	[M]
W4059	DOGDR00JA017	0 1/10W	[M]
W4060	DOGBR00JA008	0 1/16W	[M]
W4061	DOGBR00JA008	0 1/16W	[M]
W4062	DOGBR00JA008	0 1/16W	[M]
W4063	DOGDR00JA017	0 1/10W	[M]
W4064	DOGDR00JA017	0 1/10W	[M]
W4065	DOGDR00JA017	0 1/10W	[M]
W4066	DOGDR00JA017	0 1/10W	[M]
W4067	DOGBR00JA008	0 1/16W	[M]
W4068	DOGDR00JA017	0 1/10W	[M]
W4069	DOGDR00JA017	0 1/10W	[M]
W4070	DOGDR00JA017	0 1/10W	[M]
W4071	DOGDR00JA017	0 1/10W	[M]
W4080	DOGDR00JA017	0 1/10W	[M]
W4081	DOGBR00JA008	0 1/16W	[M]
W4082	DOGBR00JA008	0 1/16W	[M]
W4083	DOGBR00JA008	0 1/16W	[M]
W4084	DOGBR00JA008	0 1/16W	[M]
W4085	DOGBR00JA008	0 1/16W	[M]
W4086	DOGDR00JA017	0 1/10W	[M]
W4089	DOGBR00JA008	0 1/16W	[M]
W4090	DOGBR00JA008	0 1/16W	[M]
W4091	DOGBR00JA008	0 1/16W	[M]
W4093	DOGBR00JA008	0 1/16W	[M]
W4094	DOGDR00JA017	0 1/10W	[M]
W4095	DOGBR00JA008	0 1/16W	[M]
W4096	DOGDR00JA017	0 1/10W	[M]
W4100	DOGDR00JA017	0 1/10W	[M]
W6101	DOGDR00JA017	0 1/10W	[M]
W6102	DOGBR00JA008	0 1/16W	[M]
W6502	DOGDR00JA017	0 1/10W	[M]
W6504	DOGDR00JA017	0 1/10W	[M]
W6509	DOGBR00JA008	0 1/16W	[M]
W6511	DOGDR00JA017	0 1/10W	[M]
W6512	DOGDR00JA017	0 1/10W	[M]
W6513	DOGBR00JA008	0 1/16W	[M]
W6545	DOGDR00JA017	0 1/10W	[M]
W7000	DOGBR00JA008	0 1/16W	[M]
W7001	DOGBR00JA008	0 1/16W	[M]
W7002	DOGBR00JA008	0 1/16W	[M]
		PACKING MATERIALS	
P1	RPGX1919-1	PACKING CASE	[M] E-S
P1	RPGX1920-1	PACKING CASE	[M] EG-S
P1	RPGX1916-1	PACKING CASE	[M] E-K
P1	RPGX1917-1	PACKING CASE	[M] EG-K
P1	RPGX1918-1	PACKING CASE	[M] EB-K
P2	RPNX0369-1	POLYFOAM	[M]
P3	RPFX0058-1J	MIRAMAT BAG	[M]
P4	RPNX0446	POLYFOAM SUPPORT	[M]
		ACCESSORIES	
A1	N2QAYB000091	REMOTE CONTROL	[M]
A1-1	RKK-HTR0051K	R/C BATTERY COVER	[M]

Ref. No.	Part No.	Part Name & Description	Remarks
A2	K2CQ2CA00007	AC CORD	[M] E/EG-S/K △
A2	K2CT3CA00004	AC CORD	[M] EB-K △
A3	RQTX0110-E	O/I BOOK (Sp)	[M] EG-S/K
A3	RQTX0111-B	O/I BOOK (En)	[M] E-S/K
A3	RQTX0118-D	O/I BOOK (It/ Fr)	[M] EG-S/K
A3	RQTX0119-H	O/I BOOK (Du/Sw/Da)	[M] EG-S/K
A3	RQTX0121-R	O/I BOOK (Po/Cz)	[M] E-K/S
A3	RQTX0122-B	O/I BOOK (En)	[M] EB-K
A4	RSA0007-M	FM INDOOR ANTENNA	[M]
A5	K1YZ02000013	ANTENNA PLUG ADAPTOR	[M] EB-K
A6	RQCA0968	SPEAKER CABLE STICKER	[M]
		RESISTORS	
LB8691	D0GA101JA023	100 1/16W	[M]
LB8692	D0GA101JA023	100 1/16W	[M]
LB8693	D0GA101JA023	100 1/16W	[M]
R1004	D0GB472JA008	4.7K 1/16W	[M]
R1006	D0GB223JA008	22K 1/16W	[M]
R1007	D0GB223JA008	22K 1/16W	[M]
R1008	D0GB472JA008	4.7K 1/16W	[M]
R1009	D0GB472JA008	4.7K 1/16W	[M]
R1010	D0GB223JA008	22K 1/16W	[M]
R1011	D0GB102JA008	1K 1/16W	[M]
R1012	DOGBR00JA008	0 1/16W	[M]
R1013	ERJ3GEYF750V	75 1/10W	[M]
R1014	ERJ3GEYF750V	75 1/10W	[M]
R1015	ERJ3GEYF750V	75 1/10W	[M]
R1016	ERJ3GEYF750V	75 1/10W	[M]
R1017	ERJ3GEYF750V	75 1/10W	[M]
R1018	ERJ3GEYF750V	75 1/10W	[M]
R1019	D0GB471JA008	470 1/16W	[M]
R1020	D0GB472JA008	4.7K 1/16W	[M]
R1100	D0GB471JA008	470 1/16W	[M]
R1101	D0GB821JA008	820 1/16W	[M]
R1102	D0GB104JA008	100K 1/16W	[M]
R1103	D0GB221JA007	220 1/10W	[M]
R1104	D0GB103JA007	10K 1/10W	[M]
R1105	D0GB332JA007	3.3K 1/10W	[M]
R1200	D0GB471JA008	470 1/16W	[M]
R1201	D0GB821JA008	820 1/16W	[M]
R1202	D0GB104JA008	100K 1/16W	[M]
R1203	D0GB221JA007	220 1/10W	[M]
R1204	D0GB103JA007	10K 1/10W	[M]
R1205	D0GB332JA007	3.3K 1/10W	[M]
R1210	D0GB563JA008	56K 1/16W	[M]
R1211	D0GB273JA007	27K 1/10W	[M]
R2000	D0GB221JA007	220 1/10W	[M]
R2001	D0GB104JA008	100K 1/16W	[M]
R2002	D0GB103JA007	10K 1/10W	[M]
R2003	D0GB221JA007	220 1/10W	[M]
R2004	D0GB221JA007	220 1/10W	[M]
R2005	D0GB221JA007	220 1/10W	[M]
R2006	D0GB182JA008	1.8K 1/16W	[M]
R2007	D0GB103JA007	10K 1/10W	[M]
R2010	D0GB221JA007	220 1/10W	[M]
R2012	D0GB103JA007	10K 1/10W	[M]
R2015	D0GB102JA008	1K 1/16W	[M]
R2016	D0GB221JA007	220 1/10W	[M]
R2017	D0GB273JA007	27K 1/10W	[M]
R2018	D0GB221JA007	220 1/10W	[M]
R2019	D0GB273JA007	27K 1/10W	[M]
R2022	D0GB221JA007	220 1/10W	[M]
R2023	D0GB221JA007	220 1/10W	[M]
R2024	D0GB221JA007	220 1/10W	[M]

Ref. No.	Part No.	Part Name & Description	Remarks
R2029	D0GB221JA007	220 1/10W	[M]
R2030	D0GB221JA007	220 1/10W	[M]
R2031	D0GB221JA007	220 1/10W	[M]
R2032	D0GB473JA008	47K 1/16W	[M]
R2039	D0GB103JA007	10K 1/10W	[M]
R2040	D0GB221JA007	220 1/10W	[M]
R2041	D0GB103JA007	10K 1/10W	[M]
R2042	D0GB221JA007	220 1/10W	[M]
R2043	D0GB473JA008	47K 1/16W	[M]
R2044	D0GB221JA007	220 1/10W	[M]
R2045	D0GB103JA007	10K 1/10W	[M]
R2046	D0GB221JA007	220 1/10W	[M]
R2047	D0GB221JA007	220 1/10W	[M]
R2048	D0GB221JA007	220 1/10W	[M]
R2049	D0GB221JA007	220 1/10W	[M]
R2052	D0GB221JA007	220 1/10W	[M]
R2053	D0GB103JA007	10K 1/10W	[M]
R2060	D0GB221JA007	220 1/10W	[M]
R2061	D0GB473JA008	47K 1/16W	[M]
R2062	D0GB221JA007	220 1/10W	[M]
R2063	D0GB473JA008	47K 1/16W	[M]
R2064	D0GB221JA007	220 1/10W	[M]
R2065	D0GB221JA007	220 1/10W	[M]
R2066	D0GB222JA008	2.2K 1/16W	[M]
R2067	D0GB221JA007	220 1/10W	[M]
R2068	D0GB221JA007	220 1/10W	[M]
R2069	D0GB221JA007	220 1/10W	[M]
R2070	D0GB221JA007	220 1/10W	[M]
R2071	D0GB221JA007	220 1/10W	[M]
R2072	D0GB221JA007	220 1/10W	[M]
R2073	D0GB221JA007	220 1/10W	[M]
R2074	D0GB103JA007	10K 1/10W	[M]
R2075	D0GB221JA007	220 1/10W	[M]
R2076	D0GB103JA007	10K 1/10W	[M]
R2077	D0GB821JA008	820 1/16W	[M] E/EG- S/K
R2077	D0GB182JA008	1.8K 1/16W	[M] EB- K
R2078	D0GB472JA008	4.7K 1/16W	[M]
R2079	D0GB103JA007	10K 1/10W	[M]
R2080	D0GB182JA008	1.8K 1/16W	[M] E/EG- S/K
R2080	D0GB563JA008	56K 1/16W	[M] EB- K
R2081	D0GB103JA007	10K 1/10W	[M]
R2082	D0GB124JA008	120K 1/10W	[M]
R2084	D0GB473JA008	47K 1/16W	[M]
R2085	D0GB472JA008	4.7K 1/16W	[M]
R2086	D0GB223JA008	22K 1/16W	[M]
R2087	D0GB223JA008	22K 1/16W	[M]
R2088	D0GB103JA007	10K 1/10W	[M]
R2089	D0GB332JA007	3.3K 1/10W	[M] E/EG- S/K
R2089	D0GB472JA008	4.7K 1/16W	[M] EB- K
R2090	D0GB221JA007	220 1/10W	[M]
R2091	D0GB103JA007	10K 1/10W	[M]
R2092	D0GB221JA007	220 1/10W	[M]
R2093	D0GB182JA008	1.8K 1/16W	[M] E- S/K
R2093	D0GB821JA008	820 1/16W	[M] EG- S/K
R2094	D0GB103JA007	10K 1/10W	[M]
R2095	D0GB472JA008	4.7K 1/16W	[M]
R2096	D0GB103JA007	10K 1/10W	[M]
R2097	D0GB474JA008	470K 1/16W	[M]
R2098	D0GB221JA007	220 1/10W	[M]
R2101	D0GB123JA007	12K 1/10W	[M]
R2111	D0GB123JA007	12K 1/10W	[M]
R2112	D0GB123JA007	12K 1/10W	[M]
R2113	D0GB472JA008	4.7K 1/16W	[M]
R2114	D0GB472JA008	4.7K 1/16W	[M]

Ref. No.	Part No.	Part Name & Description	Remarks
R2115	D0GB103JA007	10K 1/10W	[M]
R2160	D0GB563JA008	56K 1/16W	[M]
R2161	D0GB473JA008	47K 1/16W	[M]
R2164	D0GB103JA007	10K 1/10W	[M]
R2165	D0GB332JA007	3.3K 1/10W	[M]
R2185	D0GB103JA007	10K 1/10W	[M]
R2191	D0GB682JA008	6.8K 1/16W	[M]
R2194	D0GB273JA007	27K 1/10W	[M]
R2201	D0GB123JA007	12K 1/10W	[M]
R2211	D0GB123JA007	12K 1/10W	[M]
R2212	D0GB123JA007	12K 1/10W	[M]
R2214	D0GB472JA008	4.7K 1/16W	[M]
R2215	D0GB103JA007	10K 1/10W	[M]
R2218	D0GB472JA008	4.7K 1/16W	[M]
R2260	D0GB563JA008	56K 1/16W	[M]
R2261	D0GB473JA008	47K 1/16W	[M]
R2264	D0GB103JA007	10K 1/10W	[M]
R2265	D0GB332JA007	3.3K 1/10W	[M]
R2285	D0GB103JA007	10K 1/10W	[M]
R2291	D0GB682JA008	6.8K 1/16W	[M]
R2294	D0GB273JA007	27K 1/10W	[M]
R2300	D0GB223JA008	22K 1/16W	[M]
R2301	D0GB182JA008	1.8K 1/16W	[M]
R2302	D0GB103JA007	10K 1/10W	[M]
R2303	D0GB103JA007	10K 1/10W	[M]
R2304	D0GB123JA007	12K 1/10W	[M]
R2307	D0GB182JA008	1.8K 1/16W	[M]
R2312	D0GB103JA007	10K 1/10W	[M]
R2336	D0GB123JA007	12K 1/10W	[M]
R2339	D0GB563JA008	56K 1/16W	[M]
R2400	D0GB223JA008	22K 1/16W	[M]
R2401	D0GB182JA008	1.8K 1/16W	[M]
R2402	D0GB103JA007	10K 1/10W	[M]
R2403	D0GB103JA007	10K 1/10W	[M]
R2404	D0GB123JA007	12K 1/10W	[M]
R2405	D0GB562JA008	5.6K 1/16W	[M]
R2406	D0GB562JA008	5.6K 1/16W	[M]
R2407	D0GB182JA008	1.8K 1/16W	[M]
R2411	D0GBR00JA008	0 1/16W	[M]
R2412	D0GB103JA007	10K 1/10W	[M]
R2427	D0GBR00JA008	0 1/16W	[M]
R2428	D0GBR00JA008	0 1/16W	[M]
R2429	D0GBR00JA008	0 1/16W	[M]
R2430	D0GBR00JA008	0 1/16W	[M]
R2436	D0GB123JA007	12K 1/10W	[M]
R2439	D0GB563JA008	56K 1/16W	[M]
R2500	D0GB223JA008	22K 1/16W	[M]
R2501	D0GB682JA008	6.8K 1/16W	[M]
R2502	D0GB103JA007	10K 1/10W	[M]
R2503	D0GB682JA008	6.8K 1/16W	[M]
R2510	D0GB153JA007	15K 1/10W	[M]
R2511	D0GB123JA007	12K 1/10W	[M]
R2512	D0GB563JA008	56K 1/16W	[M]
R2600	D0GB102JA008	1K 1/16W	[M]
R2601	D0GB473JA008	47K 1/16W	[M]
R2606	D0GB103JA007	10K 1/10W	[M]
R2607	D0GB103JA007	10K 1/10W	[M]
R2608	D0GB563JA008	56K 1/16W	[M]
R2609	D0GB152JA007	1.5K 1/10W	[M]
R2610	D0GB563JA008	56K 1/16W	[M]
R2611	D0GB122JA007	1.2K 1/10W	[M]
R2612	D0GB563JA008	56K 1/16W	[M]
R2617	D0GB223JA008	22K 1/16W	[M]
R2619	ERJ3GEYJ203V	20K 1/10W	[M]
R2620	D0GB123JA007	12K 1/10W	[M]
R2621	D0GB393JA008	39K 1/16W	[M]
R2626	D0GB104JA008	100K 1/16W	[M]
R2627	D0GB683JA008	68K 1/16W	[M]
R2807	D0GB102JA008	1K 1/16W	[M]
R2831	D0GBR00JA008	0 1/16W	[M]
R2832	D0GBR00JA008	0 1/16W	[M]
R2850	D0GBR00JA008	0 1/16W	[M]
R2900	D0GB1R0JA007	1.0 1/10W	[M]

Ref. No.	Part No.	Part Name & Description	Remarks
R2901	D0GB103JA007	10K 1/10W	[M]
R2907	D0GB392JA008	3.9K 1/16W	[M]
R2908	D0GB221JA007	220 1/10W	[M]
R2911	ERG2SJ470E	47 2W	[M]
R2912	ERG2SJ470E	47 2W	[M]
R2913	ERG2SJ470E	47 2W	[M]
R2914	D0GB272JA008	2.7K 1/16W	[M]
R2915	D0GB272JA008	2.7K 1/16W	[M]
R2919	ERJ3GEYJ274V	270K 1/10W	[M]
R2920	ERJ3GEYF472V	4.7K 1/10W	[M]
R2921	ERJ3GEYF273V	27K 1/10W	[M]
R2924	D0GB683JA008	68K 1/16W	[M]
R2925	ERJ3GEYF102V	1K 1/10W	[M]
R2926	ERX2SJ1R5E	1.5 2W	[M]
R2927	D0GB221JA007	220 1/10W	[M]
R2928	D0GB221JA007	220 1/10W	[M]
R2929	D0GB221JA007	220 1/10W	[M]
R2930	D0GB103JA007	10K 1/10W	[M]
R2931	D0GB103JA007	10K 1/10W	[M]
R2932	D0GB103JA007	10K 1/10W	[M]
R2940	D0GB393JA008	39K 1/16W	[M]
R2942	D0GB222JA008	2.2K 1/16W	[M]
R2943	D0GB272JA008	2.7K 1/16W	[M]
R2944	D0GB472JA008	4.7K 1/16W	[M]
R2950	D0GB102JA008	1K 1/16W	[M]
R2952	ERJ3GEYJ8R2V	8.2 1/10W	[M]
R2960	D0GD6R8JA017	6.8 1/10W	[M]
R2971	ERX2SJ1R5E	1.5 2W	[M]
R2972	D0GB220JA008	22 1/16W	[M]
R2973	D0GB221JA007	220 1/10W	[M]
R2974	ERD2FCVJ4R7T	4.7 1/4W	[M]
R2975	D0GB472JA008	4.7K 1/16W	[M]
R2976	D0GB151JA007	150 1/10W	[M]
R2977	D0GBR00JA008	0 1/16W	[M]
R2998	D0GB223JA008	22K 1/16W	[M]
R2999	D0GB223JA008	22K 1/16W	[M]
R3003	D0GB822JA008	8.2K 1/16W	[M]
R3005	D0GB223JA008	22K 1/16W	[M]
R3006	D0GB102JA008	1K 1/16W	[M]
R3007	D0GB273JA007	27K 1/10W	[M]
R3008	D0GB103JA007	10K 1/10W	[M]
R3009	D0GB102JA008	1K 1/16W	[M]
R3014	D0GB563JA008	56K 1/16W	[M]
R3015	D0GB563JA008	56K 1/16W	[M]
R5101	D0GB123JA007	12K 1/10W	[M]
R5102	D0GB123JA007	12K 1/10W	[M]
R5104	D0GB273JA007	27K 1/10W	[M]
R5105	ERG2SJ220E	22 2W	[M]
R5108	D0GB273JA007	27K 1/10W	[M]
R5109	ERG2SJ220E	22 2W	[M]
R5111	D0GB103JA007	10K 1/10W	[M]
R5112	D0GB102JA008	1K 1/16W	[M]
R5201	D0GB223JA008	22K 1/16W	[M]
R5202	D0GB223JA008	22K 1/16W	[M]
R5204	D0GB273JA007	27K 1/10W	[M]
R5205	ERG2SJ220E	22 2W	[M]
R5208	D0GB273JA007	27K 1/10W	[M]
R5209	ERG2SJ220E	22 2W	[M]
R5211	D0GB103JA007	10K 1/10W	[M]
R5212	D0GB102JA008	1K 1/16W	[M]
R5301	ERJ3GEYJ333V	33K 1/10W	[M] E/EG-S/K
R5301	D0GB473JA008	47K 1/16W	[M] EB-K
R5302	D0GB223JA008	22K 1/16W	[M] E/EG-S/K
R5302	D0GB153JA007	15K 1/10W	[M] EB-K
R5304	D0GB562JA008	5.6K 1/16W	[M]
R5305	ERG2SJ220E	22 2W	[M]
R5308	D0GB273JA007	27K 1/10W	[M]
R5309	ERG2SJ220E	22 2W	[M]

Ref. No.	Part No.	Part Name & Description	Remarks
R5311	D0GB103JA007	10K 1/10W	[M]
R5312	D0GB102JA008	1K 1/16W	[M]
R5313	D0GB473JA008	47K 1/16W	[M]
R5533	D0GB223JA008	22K 1/16W	[M]
R5534	D0GB183JA008	18K 1/16W	[M]
R5736	D0GB222JA008	2.2K 1/16W	[M]
R5754	D0GB563JA008	56K 1/16W	[M]
R5755	D0GB103JA007	10K 1/10W	[M]
R5756	D0GB103JA007	10K 1/10W	[M]
R5757	D0GB103JA007	10K 1/10W	[M]
R5758	ERJ3GEYJ335V	3.3M 1/10W	[M]
R5759	D0GB104JA008	100K 1/16W	[M]
R5760	D0GB103JA007	10K 1/10W	[M]
R5761	D0GB225JA008	2.2M 1/16W	[M]
R5762	D0GB154JA007	150K 1/10W	[M]
R5763	D0GB272JA008	2.7K 1/16W	[M]
R5764	D0GB392JA008	3.9K 1/16W	[M]
R5765	D0GB103JA007	10K 1/10W	[M]
R5766	D0GB103JA007	10K 1/10W	[M]
R6801	D0GB102JA008	1K 1/16W	[M]
R6802	D0GB102JA008	1K 1/16W	[M]
R6803	D0GB122JA007	1.2K 1/10W	[M]
R6804	D0GB182JA008	1.8K 1/16W	[M]
R6805	D0GB222JA008	2.2K 1/16W	[M]
R6905	D0GB152JA007	1.5K 1/10W	[M]
R6914	D0GB823JA008	82K 1/16W	[M]
R6916	D0GB680JA007	68 1/10W	[M]
R6917	D0GB102JA008	1K 1/16W	[M]
R6918	D0GB223JA008	22K 1/16W	[M]
R6919	D0GB680JA007	68 1/10W	[M]
R6934	D0GB470JA008	47 1/16W	[M]
R6936	D0GB100JA007	10 1/10W	[M]
R6939	D0GBR00JA008	0 1/16W	[M]
R6940	D0GBR00JA008	0 1/16W	[M]
R8002	D0GA103JA023	10K 1/16W	[M]
R8011	D0GA220JA023	22 1/16W	[M]
R8012	D0GA220JA023	22 1/16W	[M]
R8013	D0GA220JA023	22 1/16W	[M]
R8041	D0GA330JA023	33 1/16W	[M]
R8042	D0GA103JA023	10K 1/16W	[M]
R8153	ERJ2RHD621X	620 1/16W	[M]
R8154	ERJ2RHD102X	1K 1/16W	[M]
R8211	D0GA103JA023	10K 1/16W	[M]
R8221	D0GA822JA023	8.2K 1/16W	[M]
R8225	D0GA822JA023	8.2K 1/16W	[M]
R8230	D0GA222JA023	2.2K 1/16W	[M]
R8231	D0GA223JA023	2.2K 1/16W	[M]
R8232	D0GA752JA023	7.5K 1/16W	[M]
R8233	D0GA222JA023	2.2K 1/16W	[M]
R8251	D0GD6R8JA017	6.8 1/10W	[M]
R8261	D0GA823JA023	82K 1/16W	[M]
R8262	D0GA153JA023	15K 1/16W	[M]
R8263	D0GA823JA023	82K 1/16W	[M]
R8264	D0GA153JA023	15K 1/16W	[M]
R8265	ERJ2GE0R00X	0 1/16W	[M]
R8311	ERJ2RHD242X	2.4K 1/16W	[M]
R8312	ERJ2RHD102X	1K 1/16W	[M]
R8313	ERJ2RHD153X	15K 1/16W	[M]
R8314	ERJ2RHD153X	15K 1/16W	[M]
R8321	ERJ3RBD201V	200 1/16W	[M]
R8322	D0GBR00JA008	0 1/16W	[M]
R8323	D0GA330JA023	33 1/16W	[M]
R8324	ERJ2RHD102X	1K 1/16W	[M]
R8325	ERJ3RBD201V	200 1/16W	[M]
R8326	D0GBR00JA008	0 1/16W	[M]
R8327	D0GA330JA023	33 1/16W	[M]
R8328	ERJ2RHD102X	1K 1/16W	[M]
R8331	ERJ3RBD201V	200 1/16W	[M]
R8332	D0GBR00JA008	0 1/16W	[M]
R8333	D0GA330JA023	33 1/16W	[M]
R8334	ERJ2RHD102X	1K 1/16W	[M]
R8335	ERJ3RBD201V	200 1/16W	[M]
R8336	D0GA330JA023	33 1/16W	[M]

Ref. No.	Part No.	Part Name & Description	Remarks
R8337	ERJ2RHD102X	1K 1/16W	[M]
R8341	ERJ3RBD201V	200 1/16W	[M]
R8342	D0GA330JA023	33 1/16W	[M]
R8343	ERJ2RHD102X	1K 1/16W	[M]
R8401	D0GA101JA023	100 1/16W	[M]
R8420	D0GA222JA023	2.2K 1/16W	[M]
R8421	ERJ2GE0R00X	0 1/16W	[M]
R8424	ERJ2GE0R00X	0 1/16W	[M]
R8531	D0GA152JA023	1.5K 1/16W	[M]
R8532	D0GA222JA023	2.2K 1/16W	[M]
R8533	ERJ2GE0R00X	0 1/16W	[M]
R8541	D0GA153JA023	15K 1/16W	[M]
R8551	ERJ2GE0R00X	0 1/16W	[M]
R8552	D0GA102JA023	1K 1/16W	[M]
R8553	D0GA102JA023	1K 1/16W	[M]
R8554	ERJ2GEJ680X	68 1/16W	[M]
R8555	D0GA2R2JA023	2.2 1/16W	[M]
R8556	D0GB560JA007	56 1/10W	[M]
R8557	D0GB510JA007	51 1/10W	[M]
R8558	D0GA473JA023	47K 1/16W	[M]
R8559	D0GA153JA023	15K 1/16W	[M]
R8561	ERJ2GE0R00X	0 1/16W	[M]
R8562	D0GA102JA023	1K 1/16W	[M]
R8563	D0GA102JA023	1K 1/16W	[M]
R8564	D0GA220JA023	22 1/16W	[M]
R8565	D0GA2R2JA023	2.2 1/16W	[M]
R8566	D0GB560JA007	56 1/10W	[M]
R8567	D0GB510JA007	51 1/10W	[M]
R8568	D0GA473JA023	47K 1/16W	[M]
R8601	D0GA104JA023	100K 1/16W	[M]
R8611	D0GA101JA023	100 1/16W	[M]
R8621	D0GA105JA023	1M 1/16W	[M]
R8622	ERJ2RHD681X	680 1/16W	[M]
R9008	D0GA105JA023	1M 1/16W	[M]
R9009	ERJ2RHD102X	1K 1/16W	[M]
R9032	ERJ2RKD240X	24 1/16W	[M]
R9033	ERJ2RKD240X	24 1/16W	[M]
R9034	D0GA153JA023	15K 1/16W	[M]
R9035	D0GA153JA023	15K 1/16W	[M]
R9036	D0GA103JA023	10K 1/16W	[M]
R9037	D0GA103JA023	10K 1/16W	[M]
R9040	D0GA103JA023	10K 1/16W	[M]
R9042	D0GA103JA023	10K 1/16W	[M]
R9043	ERJ2GE0R00X	0 1/16W	[M]
R9044	ERJ2GE0R00X	0 1/16W	[M]
R9045	ERJ2GE0R00X	0 1/16W	[M]
R9080	D0GA103JA023	10K 1/16W	[M]
RX8001	D1H410320002	RESISTOR NETWORK	[M]
RX8011	D1H88204A024	RESISTOR NETWORK	[M]
RX8012	D1H88204A024	RESISTOR NETWORK	[M]
RX8013	D1H88204A024	RESISTOR NETWORK	[M]
RX8014	D1H88204A024	RESISTOR NETWORK	[M]
RX8015	D1H88204A024	RESISTOR NETWORK	[M]
RX8016	D1H88204A024	RESISTOR NETWORK	[M]
RX8017	D1H88204A024	RESISTOR NETWORK	[M]
RX8018	D1H422020001	RESISTOR NETWORK	[M]
RX8019	D1H422020001	RESISTOR NETWORK	[M]
RX8020	D1H422020001	RESISTOR NETWORK	[M]
RX8031	D1H447220001	RESISTOR NETWORK	[M]
RX8032	D1H447220001	RESISTOR NETWORK	[M]
RX8111	D1H422320002	RESISTOR NETWORK	[M]
RX8401	D1H410120001	RESISTOR NETWORK	[M]
RX8402	D1H410120001	RESISTOR NETWORK	[M]
RX8403	D1H410120001	RESISTOR NETWORK	[M]
RX8531	D1H456020001	RESISTOR NETWORK	[M]
RX8532	D1H85604A024	RESISTOR NETWORK	[M]
RX8533	D1H456020001	RESISTOR NETWORK	[M]
RX8534	D1H456020001	RESISTOR NETWORK	[M]
RX8611	D1H447220001	RESISTOR NETWORK	[M]
RX8691	D1H410320002	RESISTOR NETWORK	[M]
		CAPACITORS	

Ref. No.	Part No.	Part Name & Description	Remarks
C984	ECA1EAK100XE	10 25V	[M]
C1001	F2A1C101A180	100uF 16V	[M]
C1002	F1H1H104A013	0.1uF 50V	[M]
C1004	F1H1H103A219	0.01uF 50V	[M]
C1005	F1H1H103A219	0.01uF 50V	[M]
C1006	F1H1H104A013	0.1uF 50V	[M]
C1007	F2A1H220A182	22uF 50V	[M]
C1008	F1H1C105A097	1uF 16V	[M]
C1009	F1H1C105A097	1uF 16V	[M]
C1010	F1H1C105A097	1uF 16V	[M]
C1011	F1H1H103A219	0.01uF 50V	[M]
C1012	F2A0J102A016	1000uF 6.3V	[M]
C1014	F2A0J102A016	1000uF 6.3V	[M]
C1015	ECA0JM331B	330uF 6.3V	[M]
C1016	F1H1C105A097	1uF 16V	[M]
C1017	F2A0J102A016	1000uF 6.3V	[M]
C1100	F1H1H101A230	100pF 50V	[M]
C1200	F1H1H101A230	100pF 50V	[M]
C1201	F2A1H4R7A213	4.7uF 50V	[M]
C2000	F1H1H104A013	0.1uF 50V	[M]
C2001	F1H1H104A013	0.1uF 50V	[M]
C2003	F2A1H220A182	22uF 50V	[M]
C2004	F1H1H103A219	0.01uF 50V	[M]
C2006	ECA1HM3R3B	3.3uF 50V	[M]
C2007	F1H1C104A042	0.1uF 16V	[M]
C2008	F2A0J101A181	100uF 6.3V	[M]
C2009	F1H1H104A013	0.1uF 50V	[M]
C2010	F1H1H331A013	330pF 50V	[M]
C2011	F1H1H331A013	330pF 50V	[M]
C2012	F1H1H331A013	330pF 50V	[M]
C2013	F1H1H223A219	0.022uF 50V	[M]
C2017	F1H1H103A219	0.01uF 50V	[M]
C2018	F2A1C470A180	47uF 16V	[M]
C2019	F2A1C470A180	47uF 16V	[M]
C2020	F1H1H103A219	0.01uF 50V	[M]
C2021	ECA1AM221B	220uF 10V	[M]
C2022	F2A1C101A180	100uF 16V	[M]
C2023	ECJ1VB1H221K	220pF 50V	[M]
C2024	ECJ1VB1H221K	220pF 50V	[M]
C2026	F1H1A105A025	1uF 10V	[M]
C2101	F1H1C105A097	1uF 16V	[M]
C2111	F1H1C105A097	1uF 16V	[M]
C2112	F1H1H471A219	470pF 50V	[M]
C2114	F1H1H223A219	0.022uF 50V	[M]
C2115	F1H1H153A219	0.015uF 50V	[M]
C2116	F1H1H472A219	4700pF 50V	[M]
C2117	F1H1H473A783	0.047uF 50V	[M]
C2118	F1H1C224A068	0.22uF 16V	[M]
C2119	F1H1C105A097	1uF 16V	[M]
C2120	F1H1C393A001	0.039uF 16V	[M]
C2121	F1H1H473A783	0.047uF 50V	[M]
C2161	F1H1C183A001	0.018uF 16V	[M]
C2162	ECJ1VB1H681K	680pF 50V	[M]
C2164	ECJ1VB1H221K	220pF 50V	[M]
C2165	F1H1H102A219	1000pF 50V	[M]
C2169	F1H1H103A219	0.01uF 50V	[M]
C2172	F1H1H101A230	100pF 50V	[M]
C2183	F1H1A105A025	1uF 10V	[M]
C2195	F1H1A105A025	1uF 10V	[M]
C2201	F1H1C105A097	1uF 16V	[M]
C2211	F1H1C105A097	1uF 16V	[M]
C2212	F1H1H471A219	470pF 50V	[M]
C2214	F1H1H223A219	0.022uF 50V	[M]
C2215	F1H1H153A219	0.015uF 50V	[M]
C2216	F1H1H472A219	4700pF 50V	[M]
C2217	F1H1H473A783	0.047uF 50V	[M]
C2218	F1H1C224A068	0.22uF 16V	[M]
C2219	F1H1C105A097	1uF 16V	[M]
C2220	F1H1C393A001	0.039uF 16V	[M]
C2221	F1H1H473A783	0.047uF 50V	[M]
C2261	F1H1C183A001	0.018uF 16V	[M]
C2262	ECJ1VB1H681K	680pF 50V	[M]
C2264	ECJ1VB1H221K	220pF 50V	[M]

Ref. No.	Part No.	Part Name & Description	Remarks
C2265	F1H1H102A219	1000pF 50V	[M]
C2272	F1H1H101A230	100pF 50V	[M]
C2283	F1H1A105A025	1uF 10V	[M]
C2295	F1H1A105A025	1uF 10V	[M]
C2300	F1H1A105A025	1uF 10V	[M]
C2301	F1H1A105A025	1uF 10V	[M]
C2302	F1H1C3330001	0.033uF 16V	[M]
C2303	F1H1H473A783	0.047uF 50V	[M]
C2304	F2A1C100A180	10uF 16V	[M]
C2305	F1H1H332A013	3300pF 50V	[M]
C2306	F1H1A105A025	1uF 10V	[M]
C2307	F2A1C100A180	10uF 16V	[M]
C2308	F1H1H223A219	0.022uF 50V	[M]
C2309	ECJ1VB1C823K	0.082uF 16V	[M]
C2312	F1H1A105A025	1uF 10V	[M]
C2323	F1H1H101A230	100pF 50V	[M]
C2324	F1H1H222A219	2200pF 50V	[M]
C2400	F1H1A105A025	1uF 10V	[M]
C2401	F1H1A105A025	1uF 10V	[M]
C2402	F1H1C3330001	0.033uF 16V	[M]
C2403	F1H1H473A783	0.047uF 50V	[M]
C2404	F2A1C100A180	10uF 16V	[M]
C2405	F1H1H332A013	3300pF 50V	[M]
C2406	F1H1A105A025	1uF 10V	[M]
C2407	F2A1C100A180	10uF 16V	[M]
C2408	F1H1H223A219	0.022uF 50V	[M]
C2410	F2A1C101A180	100uF 16V	[M]
C2412	F1H1A105A025	1uF 10V	[M]
C2423	F1H1H101A230	100pF 50V	[M]
C2424	F1H1H222A219	2200pF 50V	[M]
C2500	F1H1A105A025	1uF 10V	[M]
C2501	F1H1C105A097	1uF 16V	[M]
C2502	F1H1H473A783	0.047uF 50V	[M]
C2503	F1H1H473A783	0.047uF 50V	[M]
C2506	F1H1A105A025	1uF 10V	[M]
C2507	F1H1H471A219	470pF 50V	[M]
C2524	F1H1H682A219	6800pF 50V	[M]
C2600	F1H1A105A025	1uF 10V	[M]
C2601	F1H1H223A219	0.022uF 50V	[M]
C2605	F1H1H473A783	0.047uF 50V	[M]
C2606	F2A1C100A180	10uF 16V	[M]
C2607	F2A1H220A182	22uF 50V	[M]
C2608	F2A1C100A180	10uF 16V	[M]
C2609	F1H1C224A068	0.22uF 16V	[M]
C2610	F1H1A474A025	0.47uF 10V	[M]
C2611	ECJ1VB1H123K	0.012uF 50V	[M]
C2612	F1H1H332A013	3300pF 50V	[M]
C2615	F1H1H222A219	2200pF 50V	[M]
C2617	F1H1A154A037	0.15uF 10V	[M]
C2619	F2A1H100A182	10uF 50V	[M]
C2624	F1H1H682A219	6800pF 50V	[M]
C2724	F1H1H182A219	1800pF 50V	[M]
C2833	F2A1C100A180	10uF 16V	[M]
C2853	F1H1H101A230	100pF 50V	[M]
C2901	F2A1C4710045	470uF 16V	[M]
C2903	F1H1H103A219	0.01uF 50V	[M]
C2910	F1H1H103A219	0.01uF 50V	[M]
C2913	F2A1C101A180	100uF 16V	[M]
C2914	F2A1A330A159	33uF 10V	[M]
C2919	F1H1H100A017	10pF 50V	[M]
C2920	ECJ1VB1H822K	8200pF 50V	[M]
C2921	F2A1C4710045	470uF 16V	[M]
C2922	EEUF1C471B	470uF 16V	[M]
C2924	F1H1H104A013	0.1uF 50V	[M]
C2925	F2A0J221A181	220uF 6.3V	[M]
C2952	F1H1H104A013	0.1uF 50V	[M]
C2961	F1H1A105A025	1uF 10V	[M]
C2964	F1H1A105A025	1uF 10V	[M]
C2967	F2A0J102A016	1000uF 6.3V	[M]
C2969	F1H1H104A013	0.1uF 50V	[M]
C2970	F1H1H104A013	0.1uF 50V	[M]
C2975	F2A1C101A180	100uF 16V	[M]
C2983	F2A1C101A180	100uF 16V	[M]

Ref. No.	Part No.	Part Name & Description	Remarks
C2984	F1H1H104A013	0.1uF 50V	[M]
C2985	F1H1H103A219	0.01uF 50V	[M]
C2986	ECA1HM101B	100uF 50V	[M]
C3005	F1H1A105A025	1uF 10V	[M]
C3006	F2A1H100A182	10uF 50V	[M]
C3007	F2A1H100A182	10uF 50V	[M]
C3009	F2A1H100A182	10uF 50V	[M]
C5101	F2A1H100A182	10uF 50V	[M]
C5102	F1H1C104A042	0.1uF 16V	[M]
C5104	ECJ1VB1H221K	220pF 50V	[M]
C5105	ECJ1VB1H221K	220pF 50V	[M]
C5106	F1H1C104A042	0.1uF 16V	[M]
C5108	ECA1CM220B	22uF 16V	[M]
C5109	F1H1H104A013	0.1uF 50V	[M]
C5110	F1H1H104A013	0.1uF 50V	[M]
C5116	F1H1H104A013	0.1uF 50V	[M]
C5117	F1H1H104A013	0.1uF 50V	[M]
C5120	ECJ1VB1H221K	220pF 50V	[M]
C5121	ECJ1VB1H221K	220pF 50V	[M]
C5122	ECJ1VB1H221K	220pF 50V	[M]
C5123	ECJ1VB1H221K	220pF 50V	[M]
C5124	F1H1H104A013	0.1uF 50V	[M]
C5201	F2A1H100A182	10uF 50V	[M]
C5202	F1H1C104A042	0.1uF 16V	[M]
C5204	F1H1H471A219	470pF 50V	[M]
C5205	F1H1H471A219	470pF 50V	[M]
C5206	F1H1C104A042	0.1uF 16V	[M]
C5208	ECA1CM220B	22uF 16V	[M]
C5210	F1H1H104A013	0.1uF 50V	[M]
C5211	F1H1H104A013	0.1uF 50V	[M]
C5216	F1H1H104A013	0.1uF 50V	[M]
C5217	F1H1H104A013	0.1uF 50V	[M]
C5220	ECJ1VB1H221K	220pF 50V	[M]
C5221	ECJ1VB1H221K	220pF 50V	[M]
C5222	ECJ1VB1H221K	220pF 50V	[M]
C5223	ECJ1VB1H221K	220pF 50V	[M]
C5224	F1H1H104A013	0.1uF 50V	[M]
C5301	F2A1H100A182	10uF 50V	[M]
C5302	F1H1C104A042	0.1uF 16V	[M]
C5304	F1H1H471A219	470pF 50V	[M]
C5305	F1H1H471A219	470pF 50V	[M]
C5306	F1H1C104A042	0.1uF 16V	[M]
C5308	ECA1CM220B	22uF 16V	[M]
C5310	F1H1H104A013	0.1uF 50V	[M]
C5311	F1H1H104A013	0.1uF 50V	[M]
C5313	F2A1H100A182	10uF 50V	[M]
C5316	F1H1H104A013	0.1uF 50V	[M]
C5317	F1H1H104A013	0.1uF 50V	[M]
C5320	ECJ1VB1H221K	220pF 50V	[M]
C5321	ECJ1VB1H221K	220pF 50V	[M]
C5322	ECJ1VB1H221K	220pF 50V	[M]
C5323	ECJ1VB1H221K	220pF 50V	[M]
C5324	F1H1H104A013	0.1uF 50V	[M]
C5503	ECA1VM102B	1000uF 35V	[M]
C5505	F1H1H471A219	470pF 50V	[M]
C5790	F1H1H102A219	1000pF 50V	[M]
C5791	F2A1C101A180	100uF 16V	[M]
C5792	F2A0J221A181	220uF 6.3V	[M]
C5794	ECA1CM330B	33uF 16V	[M]
C5795	F1H1H104A013	0.1uF 50V	[M]
C5796	ECA1HM2R2B	2.2uF 50V	[M]
C5797	F2A1H1R0A213	1.0uF 50V	[M]
C5798	ECA1HM101B	100uF 50V	[M]
C5799	F1H1H104A013	0.1uF 50V	[M]
C6805	F1H1H101A720	100pF 50V	[M]
C6806	F1H1H101A720	100pF 50V	[M]
C6903	F2A1H220A182	22uF 50V	[M]
C6904	F1H1H102A219	1000pF 50V	[M]
C6905	F2A1H220A182	22uF 50V	[M]
C6906	F1H1H101A720	100pF 50V	[M]
C6909	F1H1H103A219	0.01uF 50V	[M]
C6910	F2A0J101A181	100uF 6.3V	[M]
C6911	F1H1H103A219	0.01uF 50V	[M]

Ref. No.	Part No.	Part Name & Description	Remarks
C6913	ECALHM3R3B	3.3uF 50V	[M]
C6916	F1H1H101A720	100pF 50V	[M]
C6917	F1H1H101A720	100pF 50V	[M]
C6918	F2A1A470A159	47uF 10V	[M]
C8001	EEEEGA331WP	330pF 4V	[M]
C8002	F1G1C104A083	0.1uF 16V	[M]
C8003	F1G1C104A083	0.1uF 16V	[M]
C8004	F1G1C104A083	0.1uF 16V	[M]
C8005	F1G1C104A083	0.1uF 16V	[M]
C8006	F1G1C104A083	0.1uF 16V	[M]
C8007	F1G1C104A083	0.1uF 16V	[M]
C8008	F1G1C104A083	0.1uF 16V	[M]
C8011	F2G0J101A066	100pF 6.3V	[M]
C8012	F1G1C104A083	0.1uF 16V	[M]
C8013	F1G1C104A083	0.1uF 16V	[M]
C8014	F1G1C104A083	0.1uF 16V	[M]
C8015	F1G1C104A083	0.1uF 16V	[M]
C8016	F1G1C104A083	0.1uF 16V	[M]
C8018	F1G1C104A083	0.1uF 16V	[M]
C8020	F1G1C104A083	0.1uF 16V	[M]
C8021	F1G1C104A083	0.1uF 16V	[M]
C8022	F1G1C104A083	0.1uF 16V	[M]
C8026	F1G1C104A083	0.1uF 16V	[M]
C8051	F1H0J1050013	1uF 6.3V	[M]
C8052	F1G1A1040006	0.1uF 10V	[M]
C8053	F1G1C104A083	0.1uF 16V	[M]
C8054	ECJ0EC1H221J	220pF 50V	[M]
C8055	F1H0J1050013	1uF 6.3V	[M]
C8056	F1G1E2220001	2200pF 25V	[M]
C8057	F1H0J1050013	1uF 6.3V	[M]
C8111	F1G1A1040006	0.1uF 10V	[M]
C8112	F1H0J1050013	1uF 6.3V	[M]
C8113	F1G1E4710001	470pF 25V	[M]
C8151	F1H0J4750005	4.7uF 6.3V	[M]
C8152	F1H1C105A097	1uF 16V	[M]
C8201	F2G0J101A066	100pF 6.3V	[M]
C8202	F1G1A1040006	0.1uF 10V	[M]
C8203	F1G1A1040006	0.1uF 10V	[M]
C8211	ECJ0EB1E122K	2200pF 25V	[M]
C8221	F1G1E1020001	1000pF 25V	[M]
C8222	F1G1E1020001	1000pF 25V	[M]
C8225	F1G1E1020001	1000pF 25V	[M]
C8226	ECJ0EB1E821K	820pF 25V	[M]
C8231	F1G1A1040006	0.1uF 10V	[M]
C8232	F1G1A1040006	0.1uF 10V	[M]
C8251	F2G0J221A065	220pF 6.3V	[M]
C8252	F1G1C104A083	0.1uF 16V	[M]
C8253	F1G1C104A083	0.1uF 16V	[M]
C8254	F1G1C104A083	0.1uF 16V	[M]
C8255	F2G1C220A037	220pF 16V	[M]
C8256	F1G1C104A083	0.1uF 16V	[M]
C8257	F2G1C470A076	47pF 16V	[M]
C8258	F1G1C104A083	0.1uF 16V	[M]
C8261	F1G1C104A083	0.1uF 16V	[M]
C8262	F1G1C104A083	0.1uF 16V	[M]
C8263	ECJ1VB1H221K	220pF 50V	[M]
C8301	F2G0J221A031	220pF 6.3V	[M]
C8302	F2G0J330A031	33pF 6.3V	[M]
C8303	F1G1A1040006	0.1uF 10V	[M]
C8304	F1G1A1040006	0.1uF 10V	[M]
C8305	F1G1A1040006	0.1uF 10V	[M]
C8306	F1G1A1040006	0.1uF 10V	[M]
C8311	F1G1A1040006	0.1uF 10V	[M]
C8312	F1H0J1050013	1uF 6.3V	[M]
C8313	F1H0J1050013	1uF 6.3V	[M]
C8320	F1G1C104A083	0.1uF 16V	[M]
C8321	F1G1A1040006	0.1uF 10V	[M]
C8325	F1G1A1040006	0.1uF 10V	[M]
C8330	F2G0J470A031	47pF 6.3V	[M]
C8331	F1G1A1040006	0.1uF 10V	[M]
C8335	F1G1A1040006	0.1uF 10V	[M]
C8340	F1G1C104A083	0.1uF 10V	[M]
C8341	F1G1A1040006	0.1uF 10V	[M]

Ref. No.	Part No.	Part Name & Description	Remarks
C8401	F1G1H150A565	15pF 50V	[M]
C8402	F1G1H150A565	15pF 50V	[M]
C8421	F2G0J101A083	100pF 6.3V	[M]
C8422	F1G1C104A083	0.1uF 16V	[M]
C8423	F2G0J330A083	33pF 6.3V	[M]
C8424	F1G1C104A083	0.1uF 16V	[M]
C8426	F1G1C104A083	0.1uF 16V	[M]
C8427	F1G1C104A083	0.1uF 16V	[M]
C8428	F1G1C104A083	0.1uF 16V	[M]
C8429	F1G1C104A083	0.1uF 16V	[M]
C8430	F2G0J470A031	47pF 6.3V	[M]
C8501	F2G0J101A031	100pF 6.3V	[M]
C8502	F1G1C104A083	0.1uF 16V	[M]
C8503	F1G1C104A083	0.1uF 16V	[M]
C8504	F1G1C104A083	0.1uF 16V	[M]
C8505	F1G1C104A083	0.1uF 16V	[M]
C8511	F1H0J1050013	1uF 6.3V	[M]
C8512	F1H0J1050013	1uF 6.3V	[M]
C8513	F1G1A1040006	0.1uF 10V	[M]
C8514	F1G1A1040006	0.1uF 10V	[M]
C8515	F1G1A1040006	0.1uF 10V	[M]
C8516	F1G1A1040006	0.1uF 10V	[M]
C8521	F1G1A1040006	0.1uF 10V	[M]
C8522	F1G1A1040006	0.1uF 10V	[M]
C8523	F1G1C104A083	0.1uF 16V	[M]
C8524	F1G1C104A083	0.1uF 16V	[M]
C8525	F1G1C562A039	5600pF 16V	[M]
C8526	ECJ0EB1C183K	0.018uF 16V	[M]
C8527	F1G1A333A013	0.033uF 10V	[M]
C8528	F1H0J1050013	1uF 6.3V	[M]
C8529	F1H0J1050013	1uF 6.3V	[M]
C8530	F1G1C104A083	0.1uF 16V	[M]
C8531	F1G1H101A566	100pF 50V	[M]
C8532	ECJ0EC1H221J	220pF 50V	[M]
C8533	F1G1C104A083	0.1uF 16V	[M]
C8541	F1G1E4720002	4700pF 25V	[M]
C8550	F2G0J330A031	33pF 6.3V	[M]
C8551	F1G1C104A083	0.1uF 16V	[M]
C8552	F2G1C100A072	10pF 16V	[M]
C8553	F2G0J470A031	47pF 6.3V	[M]
C8554	F1H0J1050013	1uF 6.3V	[M]
C8561	F1G1C104A083	0.1uF 16V	[M]
C8562	F2G1C100A072	10pF 16V	[M]
C8563	F2G0J470A031	47pF 6.3V	[M]
C8564	F1H0J1050013	1uF 6.3V	[M]
C8571	F1K1A106A020	10uF 10V	[M]
C8572	F1G1C104A083	0.1uF 16V	[M]
C8601	F1G1C104A083	0.1uF 16V	[M]
C8602	F1G1C153A039	0.015uF 16V	[M]
C8606	F1G1C104A083	0.1uF 16V	[M]
C8611	F1G1C104A083	0.1uF 16V	[M]
C8621	F1G1H120A444	12pF 50V	[M]
C8622	F1G1H120A444	12pF 50V	[M]
C8651	F1G1C104A083	0.1uF 16V	[M]
C8652	F1G1C104A083	0.1uF 16V	[M]
C8691	F1G1C104A083	0.1uF 16V	[M]
C8695	F1G1C104A083	0.1uF 16V	[M]
C9004	ECJ0EC1H070D	7pF 50V	[M]
C9005	ECJ0EC1H070D	7pF 50V	[M]
C9006	F1G1A1040006	0.1uF 10V	[M]
C9007	F1G1C104A083	0.1uF 16V	[M]
C9008	F1H1C105A097	1uF 16V	[M]
C9018	F1G1A1040006	0.1uF 10V	[M]
FL8101	F1H0J1050018	1uF 6.3V	[M]
FL8102	F1H0J1050018	1uF 6.3V	[M]
FL8103	F1H0J1050018	1uF 6.3V	[M]
FL8104	F1J1E1040022	0.1uF 25V	[M]