

DVP-FX720

RMT-D183

SERVICE MANUAL

Ver. 1.4 2008.10



*AEP Model
UK Model
E Model
Australian Model
Russian Model
Saudi Arabia Model
New Zealand Model
Singapore Model
Thailand Model*

SPECIFICATIONS

System

Laser: Semiconductor laser

Signal format system: PAL (NTSC)

Audio characteristics

Frequency response: DVD VIDEO (PCM

48 kHz): 20 Hz to 22 kHz/

CD: 20 Hz to 20 kHz

Harmonic distortion: 0.01 %

Dynamic range: DVD VIDEO: 90 dB/

CD: 90 dB

Wow and flutter: Less than detected value
($\pm 0.001\%$ W PEAK)

Inputs/Outputs

VIDEO (video input/output):

Minijack (1)

Output 1.0 V_{p-p}/75 ohms

AUDIO (audio input/output)/OPTICAL

OUT (optical output):

Stereo minijack/optical minijack

combined (1)

Output 2.0 V_{rms}/47 kilohms

Recommended load impedance over
47 kilohms

PHONES (headphones) A/B:

Stereo minijack (2)

Liquid Crystal Display

Panel size: 7 inches wide (diagonal)

Driving system: TFT active matrix

Resolution: 480 × 234 (effective pixel rate:
more than 99.99%)

General

Power requirements:

DC 9.5 V (AC Adaptor/Car battery
adaptor)

DC 7.4 V (Battery pack)

Power consumption (DVD VIDEO

Playback):

18W (when used with a battery pack)

(Except E, Saudi Arabia, Singapore, Thai)

8W (when used with a battery pack)

(E, Saudi Arabia, Singapore, Thai)

7W (when used without a battery pack,
with a headphone)

Dimensions (approx.):

190 × 31.5 × 149.5 mm (width/height/
depth) incl. projecting parts

Mass (approx.): 730 kg

Operating temperature: 5°C to 35°C

Operating humidity: 25% to 80%

AC Adaptor: 100-240VAC, 50/60Hz

(Except E, Saudi Arabia,
Singapore, Thai)

110-240 V AC, 50/60 Hz

(E, Saudi Arabia, Singapore,
Thai)

Car Battery Adaptor: 12VDC

Supplied accessories

- Audio/video cord (mini plug × 2 ↔ phono
plug × 3) (1)

- Mains lead (1)

- AC adaptor (AC-FX150) (1)

(Except E, Saudi Arabia,
Singapore, Thai)

(AC-FX151) (1)

(E, Saudi Arabia, Singapore,
Thai)

- Car battery adaptor

(DCC-FX150) (1)

(Except E, Saudi Arabia, Singapore, Thai)

(DCC-FX151) (1)

(E, Saudi Arabia, Singapore, Thai)

- Battery pack (NP-FX120) (1)

- Remote (with battery) (1)

Desing and specifications are subject to
change without notice.



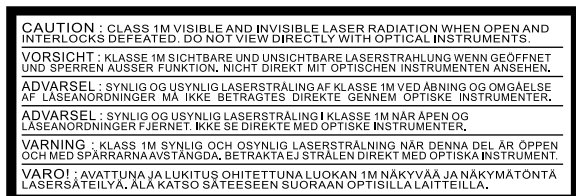
PORTABLE CD/DVD PLAYER

SONY®

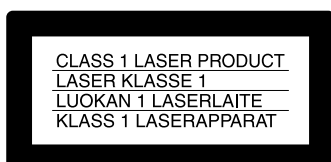
SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are “pinched” or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the B+ voltage to see it is at the values specified.



This label is located on the bottom of the unit (AEP, UK, New Zealand, Australian).



This CD/DVD player is a **CLASS 1 LASER PRODUCT**.

MARKING is located on the bottom of the unit (Except E, Saudi Arabia, Singapore, Thai).

CAUTION:

The use of optical instrument with this product will increase eye hazard.

CAUTION

Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

WARNING!!

WHEN SERVICING, DO NOT APPROACH THE LASER EXIT WITH THE EYE TOO CLOSELY. IN CASE IT IS NECESSARY TO CONFIRM LASER BEAM EMISSION, BE SURE TO OBSERVE FROM A DISTANCE OF MORE THAN 25 cm FROM THE SURFACE OF THE OBJECTIVE LENS ON THE OPTICAL PICK-UP BLOCK.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK \triangle OR DOTTED LINE WITH MARK \triangle ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

Unleaded solder

Boards requiring use of unleaded solder are printed with the lead-free mark (LF) indicating the solder contains no lead. (Caution: Some printed circuit boards may not come printed with the lead free mark due to their particular size.)



: LEAD FREE MARK

Unleaded solder has the following characteristics.

- Unleaded solder melts at a temperature about 40°C higher than ordinary solder.
Ordinary soldering irons can be used but the iron tip has to be applied to the solder joint for a slightly longer time.
Soldering irons using a temperature regulator should be set to about 350°C.
Caution: The printed pattern (copper foil) may peel away if the heated tip is applied for too long, so be careful!
- Strong viscosity
Unleaded solder is more viscous (sticky, less prone to flow) than ordinary solder so use caution not to let solder bridges occur such as on IC pins, etc.
- Usable with ordinary solder
It is best to use only unleaded solder but unleaded solder may also be added to ordinary solder.

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MEMO

SECTION 1 GENERAL

This section is extracted from instruction manual (3-274-988-11).

Precautions

Road safety

Do not use the monitor unit and headphones while driving, cycling, or operating any motorized vehicle. Doing so may create a traffic hazard and is illegal in some areas. It can also be potentially dangerous to play your headsets at high volume while walking, especially at pedestrian crossings. You should exercise extreme caution or discontinue use in potentially hazardous situations.

On safety

Should any solid object or liquid fall into the cabinet, unplug the player and have it checked by qualified personnel before operating it any further.

On power sources

- The player is not disconnected from the AC power source (mains) as long as it is connected to the wall outlet, even if the player itself has been turned off.
- If you are not going to use the player for a long time, be sure to disconnect the player from the wall outlet. To disconnect the AC power cord (mains lead), grasp the plug itself; never pull the cord.
- Do not touch the mains lead or the AC adaptor with wet hands. Doing so may cause shock hazard.

On temperature increases

Heat may build up inside the player during charging or if it is being used for a long time. This is not a malfunction.

On placement

- Place the player in a location with adequate ventilation to prevent heat build-up in the player.
- Do not place the player on a soft surface such as a rug that might block the ventilation holes.
- Do not place the player in a confined space such as a bookshelf or similar unit.
- To reduce the risk of fire, do not cover the ventilation of the apparatus with newspapers, tablecloths, curtains, etc.
- Do not place the player in a location near heat sources, or in a place subject to direct sunlight, excessive dust, sand, moisture, rain, or mechanical shock, or in a car with its windows closed.

On operation

- If the player is brought directly from a cold to a warm location, or is placed in a very damp room, moisture may condense on the lenses inside the player. Should this occur, the player may not operate properly. In this case, remove the disc and leave the player turned on for about half an hour until the moisture evaporates.
- When you move the player, take out any discs. If you don't, the disc may be damaged.
- Keep the lens on the player clean and do not touch it. Touching the lens may damage the lens and cause the player to malfunction. Leave the disc lid closed except when you insert or remove discs.

On Liquid Crystal Display

- Although manufactured with high precision technology, the LCD may occasionally display dots of various colours. That is not a malfunction.
- Do not wipe the LCD surface with wet cloth. If water enters, a malfunction may result.

- Do not place or drop any object onto the LCD surface. Also, do not apply pressure from hands or elbows.
- Do not damage the LCD surface with a cutter and sharp cutlery.
- Do not shut the LCD with the ballpoint etc. put on the disc lid.
- If the player is brought directly from a cold to a warm location, moisture may condense over the LCD surface. In which case, wipe out the moisture with tissue paper, etc., before use. However, moisture condensation will continue if the LCD surface is cold. Wait until the surface warms to room temperature.

On AC adaptor

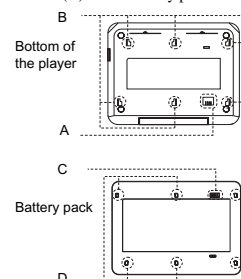
Install this system so that the mains lead can be unplugged from the wall socket immediately in the event of trouble.

- Use the supplied AC adaptor for this player, as other adaptors may cause a malfunction.
- Do not confine the AC adaptor in a closed place such as a bookshelf or an AV cabinet.
- Do not connect the AC adaptor to a traveler's electric transformer, which may generate heat and cause a malfunction.

On battery pack

- Certain countries may regulate disposal of the battery used to power this product. Please consult with your local authority.
- Because of the battery's limited life, its capacity gradually deteriorates over time and repeated use. Purchase a new one when the battery holds about only half the normal period.

- The battery may not be charged to its fullest capacity when charged for the first time, or when it has not been used for a long time. The capacity recovers after being charged and discharged several times.
- Do not leave the battery pack in a car or direct sunlight, where temperature goes up above 60 °C.
- Do not expose to water.
- Avoid short-circuiting the battery connecting jacks (A) located on the bottom of the player and the connecting jacks (C) on the battery pack with metal objects such as a necklace.
- Make sure dust or sand does not enter the battery connecting jacks (A) and the guide holes (B) located on the bottom of the player, and the connecting jacks (C) and the guide holes (D) on the battery pack.



On car adaptor

- Use the supplied car adaptor for this player, as other adaptors may cause a malfunction.
- Do not disassemble or reverse-engineer.
- Do not drop or apply shock.

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- Do not touch the metal parts, as it may cause a short and damage the car adaptor, especially if touched by other metal objects.
- Do not place the car adaptor in a location near heat sources, or in a place subject to direct sunlight or mechanical shock, or in a car with its windows closed.

On adjusting volume

Do not turn up the volume while listening to a section with very low level inputs or no audio signals. If you do, the speakers may be damaged when a peak level section is played.

On headphones

• Preventing hearing damage

Avoid using headphones at high volumes. Hearing experts advice against continuous, loud, and extended play. If you experience a ringing in your ears, reduce the volume or discontinue use.

• Showing consideration for others

Keep the volume at a moderate level. This will allow you to hear outside sounds and still be considerate to the people around you.

On cleaning

Clean the cabinet, panel, and controls with a soft cloth slightly moistened with a mild detergent solution. Do not use any type of abrasive pad, scouring powder or solvent such as alcohol or benzene.

On cleaning discs, disc/lens cleaners

Do not use cleaning discs or disc/lens cleaners (including wet or spray types). These may cause the apparatus to malfunction.

IMPORTANT NOTICE

Caution: This player is capable of holding a still video image or on-screen display image on your television screen indefinitely. If you leave the still video image or on-screen display image displayed on your TV for an extended period of time you risk permanent damage to your television screen. Plasma display panel televisions and projection televisions are susceptible to this.

If you have any questions or problems concerning your player, please consult your nearest Sony dealer.

About This Manual

- Instructions in this manual describe the controls on the remote. You can also use the controls on the player if they have the same or similar names as those on the remote.
- "DVD" may be used as a general term for DVD VIDEOS, DVD+RWs/DVD+Rs (+VR mode) and DVD-RWs/DVD-Rs (VR mode, video mode).
- The meaning of the icons used in this manual is described below:

Icons	Meaning
	Functions available for DVD VIDEOS and DVD+RWs/DVD+Rs in +VR mode or DVD-RWs/DVD-Rs in video mode
	Functions available for DVD-RWs/DVD-Rs in VR (Video Recording) mode
	Functions available for VIDEO CDs (including Super VCDs or CD-Rs/CD-RWs in video CD format or Super VCD format)
	Functions available for music CDs or CD-Rs/CD-RWs in music CD format
	Functions available for DATA CDs (CD-ROMs/CD-Rs/CD-RWs containing MP3 ^{*1} audio tracks, JPEG image files, and DivX [®] *2 video files)
	Functions available for DATA DVDs (DVD-ROMs/DVD+RWs/DVD+Rs/DVD-RWs/DVD-Rs containing MP3 ^{*1} audio tracks, JPEG image files, and DivX [®] *2 video files)
	Functions available for USB devices containing MP3 ^{*1} audio tracks, and JPEG image files

*1 MP3 (MPEG-1 Audio Layer III) is a standard format defined by ISO (International Organization for Standardization)/IEC (International Electrotechnical Commission) MPEG which compresses audio data.







*2 DivX[®] is a video file compression technology, developed by DivXNetworks, Inc.

*3 DivX, DivX Certified, and associated logos are trademarks of DivXNetworks, Inc. and are used under licence.

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This Player Can Play the Following Discs

Format of discs	
DVD VIDEO	
DVD-RW/-R (finalized disc)	 
DVD+RW/+R (finalized disc)	  
VIDEO CD/ Music CD	 
CD-RW/-R	 

“DVD+RW,” “DVD-RW,” “DVD+R,” “DVD-R,” “DVD VIDEO,” and “CD” logos are trademarks.

Note about CDs/DVDs

The player can play CD-ROMs/CD-Rs/CD-RWs recorded in the following formats:

- music CD format
- video CD format
- MP3 audio tracks, JPEG image files, and DivX video files of format conforming to ISO 9660* Level 1, or its extended format, Joliet
- KODAK Picture CD format

* A logical format of files and folders on CD-ROMs, defined by ISO (International Organization for Standardization).

The player can play DVD-ROMs/DVD+RWs/DVD-RWs/DVD+Rs/DVD-Rs recorded in the following format:

- MP3 audio tracks, JPEG image files, and DivX video files of format conforming to UDF (Universal Disk Format).

Example of discs that the player cannot play

The player cannot play the following discs:

- Blu-ray discs.
- Discs recorded in AVCHD format.
- HD DVDs.
- DVD-RAMs.
- CD-ROMs/CD-Rs/CD-RWs other than those recorded in the formats listed on this page.
- CD-ROMs recorded in PHOTO CD format.
- Data part of CD-Extras.
- DVD Audio discs.
- DATA DVDs that do not contain MP3 audio tracks, JPEG image files, or DivX video files.
- HD layer on Super Audio CDs.

Also, the player cannot play the following discs:

- A DVD VIDEO with a different region code.
- A disc that has a non-standard shape (e.g., card, heart).
- A disc with paper or stickers on it.
- A disc that has the adhesive of cellophane tape or a sticker still left on it.

Notes

- Notes about DVD+RWs/DVD+Rs, DVD-RWs/DVD-Rs or CD-Rs/CD-RWs

Some DVD+RWs/DVD+Rs, DVD-RWs/DVD-Rs, or CD-Rs/CD-RWs cannot be played on this player due to the recording quality or physical condition of the disc, or the characteristics of the recording device and authoring software.

The disc will not play if it has not been correctly finalized. For more information, refer to the operating instructions for the recording device. Note that some playback functions may not work with some DVD+RWs/DVD+Rs, even if they have been correctly finalized. In this case, view the disc by normal playback. Also some DATA CDs/DATA DVDs created in Packet Write format or multiple sessions cannot be played.

- **Notes about DVD+R DLs/DVD-R DLs**
MP3 and JPEG files recorded on the second layer of a DVD+R DL/-R DL (double layered) cannot be played.
DVD-R DL discs recorded in VR mode cannot be played.
- **Music discs encoded with copyright protection technologies**
This product is designed to playback discs that conform to the Compact Disc (CD) standard.
Recently, various music discs encoded with copyright protection technologies are marketed by some record companies. Please be aware that among those discs, there are some that do not conform to the CD standard and may not be playable by this product.
- **Note on DualDiscs**
A DualDisc is a two sided disc product which mates DVD recorded material on one side with digital audio material on the other side.
However, since the audio material side does not conform to the Compact Disc (CD) standard, playback on this product is not guaranteed.

Region code

It is the system that is used to protect copyrights. The region code is shown on the DVD VIDEO packages according to the region of sale. DVD VIDEOS labelled “ALL” or “2” will play on this player.



Note on playback operations of DVDs and VIDEO CDs

Some playback operations of DVDs and VIDEO CDs may be intentionally set by software producers. Since this player plays DVDs and VIDEO CDs according to the disc contents the software producers designed, some playback features may not be available. Also, refer to the instructions supplied with the DVDs or VIDEO CDs.

Copyrights

This product incorporates copyright protection technology that is protected by U.S. patents and other intellectual property rights. Use of this copyright protection technology must be authorized by Macrovision, and is intended for home and other limited viewing uses only unless otherwise authorized by Macrovision. Reverse engineering or disassembly is prohibited.

Trademarks

- Manufactured under license from Dolby Laboratories. Dolby and the double-D symbol are trademarks of Dolby Laboratories.
- Manufactured under license under U.S. Patent #: 5,451,942 & other U.S. and worldwide patents issued & pending. DTS and DTS Digital Out are registered trademarks and the DTS logos and Symbol are trademarks of DTS, Inc. © 1996-2007 DTS, Inc. All Rights Reserved.

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Preparations

Checking the Accessories

Check that you have the following items:

- Audio/video cord (mini plug Δ 2 ↔ phono plug Δ 3) (1)
- Mains lead (1)
- AC adaptor (1)
- Car battery adaptor (1)
- Battery pack (NP-FX120) (1)
- Remote (with battery) (1)

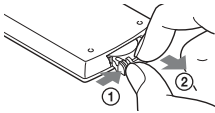
Using the Remote

When operating, point it at the remote sensor  on the player.

To replace the remote control battery


Insert a lithium battery CR2025 matching the ⊕ and ⊖ ends of the battery.

- 1 Pull out the battery holder (2) while pressing the lock lever (1).
- 3 Insert the new battery in the battery holder with the ⊕ side up and then push the holder fully.



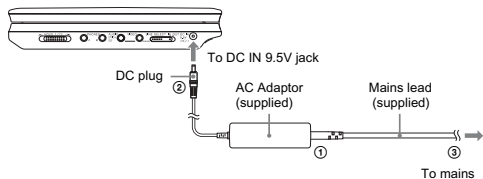
- 2 Remove the old battery.

Notes

- Do not expose the remote sensor  to direct sunlight or a lighting apparatus. Doing so may cause a malfunction.
- No button operation can be made, when the battery drains. If the remote does not work at all, change the battery and check the status.
- When disposing the used batteries, follow the battery maker’s instructions.

Connecting the AC Adaptor

Connect the AC adaptor (supplied) in the order of ① to ③ below.
To disconnect, follow the steps in reverse order.
See also "On AC adaptor" in "Precautions" (page 5).



Note
Stop playback before disconnecting the mains lead. Failure to do so may cause a malfunction.

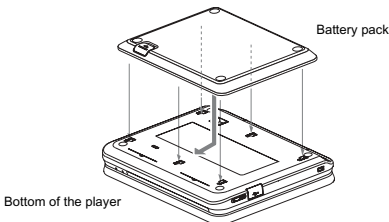
Preparations

Using with Battery Pack

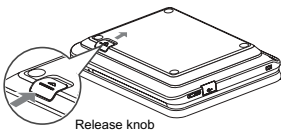
When a mains connection is not available, the player can be enjoyed with the battery pack (supplied) installed.
Please charge the battery pack before using it.
See also "On battery pack" in "Precautions" (page 5).

Installing the battery pack

- 1 Aligning the battery pack with the lines on the player's bottom, engage the hooks of the battery pack in the holes on the bottom of the player.
- 2 Slide the battery pack in the direction of the arrow until it clicks into place.



To remove the battery pack
Push the release knob and slide the battery pack in the direction of the arrow.



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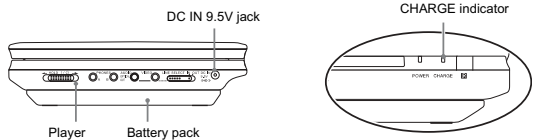
Notes

- Turn the player off before installing the battery pack.
- Do not remove the battery pack during playback.
- Do not touch the connecting points of the player and the battery pack. Doing so may cause a malfunction.
- Be careful not to drop the battery pack when installing and removing it.

Preparations


Charging the battery pack

- 1 Attach the battery pack to the player (page 14).
- 2 Connect the AC adaptor to the player, and then connect the mains lead into a mains (page 13).



When charging begins, the CHARGE indicator turns on.
When charging ends, the CHARGE indicator turns off.

- 3 After charging is finished, disconnect the mains lead from the mains and remove the AC adaptor.

To check the battery level
When the player is stopped, a battery indicator is displayed on the screen. Recharge the battery, when  is displayed or the CHARGE indicator flashes.



The battery indicator is not displayed when a DVD, VIDEO CD or JPEG file are being played. Stop the player and check the battery level.

Charging time and maximum playing time

Charging time (with the player turned off)	Playing time (with the display turned on)
Approx. 5 hours	Approx. 5 hours*

* This is the indication of the longest continuous playback on the following conditions.
– normal temperature (20°C)
– Headphone Use
– Set Backlight Adjustment to the Minimum
– Set "Digital Output" to "Off" in "Audio Setup."
Battery condition may reduce operating time.

15 16

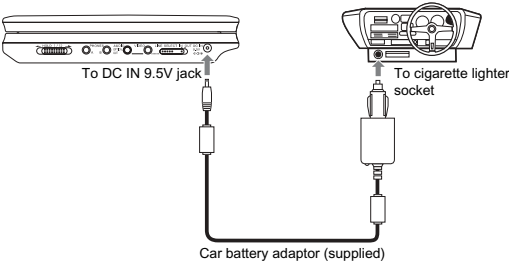
Notes

- The battery indicator does not appear on the screen when the AC adaptor is used or when inputting from external sources.
- Charging times may differ from that indicated above due to conditions of use, environment, and other factors. The recommended charge up surrounding temperature is in the 10-30°C range.

Preparations

Using With the Car Battery Adaptor

Use the car battery adaptor (supplied) to supply power from the cigarette lighter socket to the player. The adaptor is for a 12V car battery. Do not use it with a 24V car battery. The adaptor is also for use with negatively grounded cars. Do not use it with cars grounded positively.



Hint

If the car adaptor interferes with car operation, use a commercial cigarette lighter extension cord.

Notes

- Do not use the car adaptor if it has been dropped or damaged.
- Arrange the cord so as not to interfere with the driver. Also, do not place the LCD panel where the driver can watch.
- If the picture is not clear, keep the player away from the car battery adaptor.
- Use the car battery adaptor with the car engine running. If it is used with the car engine off, the car battery may become unusable.
- If the cigarette lighter socket is dirty with ash, etc, a bad connection may cause the plug to heat up. Always clean well before use.
- The car battery adaptor may heat up while charging or after a long period of use. That is not a malfunction.

After using the car battery adaptor

After turning the player off, disconnect the car battery adaptor from the cigarette lighter socket.

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Notes

- Do not turn off the car engine while the player is turned on. Doing so stops the power supply and may cause damage to the player.
- Disconnect the car battery adaptor after use. Since some cars supply power to the cigarette lighter socket even when the engine is turned off, the car battery may discharge over time.
- When disconnecting the car battery adaptor, hold the plug to pull it out.
- When listening to the car radio, disconnect the car battery adaptor from the cigarette lighter socket to avoid noise.

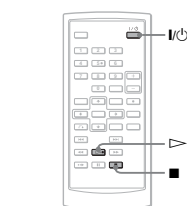
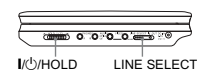
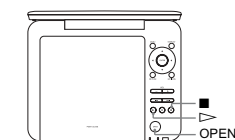
Preparations

Playing Discs



Depending on the DVD or VIDEO CD, some operations may be different or restricted.

Refer to the operating instructions supplied with the disc.
Connect the AC adaptor or install the battery pack.



1 Open the player's LCD panel.

Set the LINE SELECT switch on the player's right side to "OUT" and set the CD/DVD USB switch on the player's left side to "CD/DVD."

2 Press I/O on the remote or slide the I/O/HOLD switch of the player to "I/O."

The player turns on and the power indicator lights up in green.

3 Press the OPEN button on the player to open the disc lid.

4 Insert the disc to be played.

Push with the playback side down until it clicks.



5 Push the PUSH CLOSE on the player to shut the disc lid.

6 Press > • Playback starts.

- Some discs may start playing automatically after the disc lid is shut.
- Depending on the disc, a menu may appear on the screen. For DVD VIDEOS, see page 23. For VIDEO CDs, see page 26.
- After all titles have been played, the player will stop itself and the display will return to the menu screen.

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Notes

- If the disc is inserted with playback side up, a "No Disc" or "Cannot play this disc." message appears.
- Discs created on DVD recorders must be correctly finalized to play on this player. For more information about finalizing, refer to the operating instructions supplied with the DVD recorder.
- The disc may be still spinning when the disc lid is opened. Wait until the spinning stops before removing the disc.
- During operation, "⊗" may appear on the screen. This symbol indicates that a function explained in this operating instruction is not available on the current DVD VIDEO.
- Some DVD-RWs/DVD-Rs (VR mode) may take time before starting playback because of the recorded content.

To stop playback

Press ■.

Pressing ▷ again will start playback from the point you stopped (Resume Play). See page 22 for details.

To play from the beginning, press ■ twice, then press ▷.

To turn off the power

Press the remote's I/O button or slide the player's I/O/HOLD switch to "I/O."

To avoid accidental button operation on the player

Set the player's I/O/HOLD switch to "HOLD." All the buttons on the player are locked, while the button on the remote remains operable.

To play DTS sound tracks on a DVD VIDEO

- The player's speaker does not output DTS sound. When you play DTS sound tracks on a DVD VIDEO, connect the player to an AV amplifier (receiver) (page 49) and set up "DTS" in "Audio Setup" (page 44).
- If you connect the player to audio equipment such as an AV amplifier (receiver) without a DTS decoder, do not set "DTS" to "On" in "Audio Setup" (page 44). A loud noise may come out from the speakers, which may affect your ears or cause speaker damage.

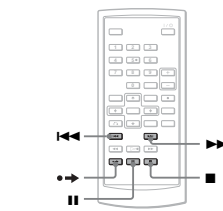
Notes

- A screen saver image appears when you leave the player in pause or stop without operation for more than 15 minutes. The image disappears when you press ▷. See page 42 for details.
- The player turns off, 15 minutes after starting the screen saver function (Auto Power Off).

Playing Discs

Additional playback operations

DVD Video DVD-R VCD CD DATA CD
DATA DVD USB



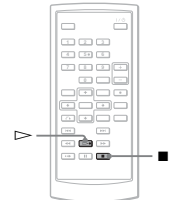
To	Operation
Stop	Press ■
Pause	Press II
Go to the next chapter, track, or scene in continuous play mode	Press ▶▶
Go back to the previous chapter, track, or scene in continuous play mode	Press ◀◀
Briefly fast forward the current scene*	Press ⏭ during playback.

* DVD VIDEOS, DVD-RWs/DVD-Rs (VR mode) only.
The above functions may not be used for some scenes.

Resuming playback from the point where you stopped the disc (Resume Play)

DVD-R VCD CD

When you stop playback, the player remembers the stop point and displays a message on the screen. You can resume from the same point by pressing ▷ again. Resume Play works even after the player is turned off, as long as the disc lid is kept closed.



1 While playing a disc, press ■ to stop playback.
A message appears.

2 Press ▷.
The player starts playback from the point you stopped in step 1.

Hints

- To play from the beginning of the disc, press ■ twice, then press ▷.
- When turning power on again after power off, resume play starts automatically.

Notes

- Depending on the stop point, Resume play may not start from exactly the same point.
- The point where you stopped playing is cleared when:

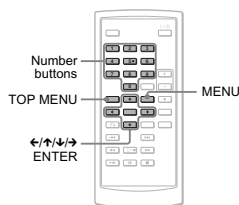
→continued 21

22

- you turn off the player while playing a DVD-RW/DVD-R (VR mode).
- you open the disc lid.
- you disconnect the battery pack and the AC adaptor.
- you switch LINE SELECT switch or CD/DVD USB switch.

Using the DVD's menu

A DVD is divided into long sections of a picture or a music feature called "titles." When you play a DVD containing several titles, you can select the title you want using the TOP MENU button. When you play DVDs that allow you to select items such as language for the sound and subtitles, select these items using the MENU button.



1 Press TOP MENU or MENU.

The disc's menu appears on the screen. The contents of the menu vary from disc to disc.

2 Press ◀/▶/◂/▸ or the number buttons to select the item you want to play or change.

3 Press ENTER.

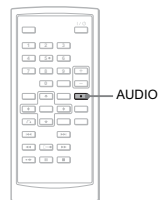
Note

Depending on the disc, you may not be able to use ◀/▶ of the player for the disc menu. In this case, use ◂/▸ on the remote.

Changing the sound

DVD Video DVD-R VCD CD

When playing a DVD VIDEO recorded in multiple audio formats (PCM, Dolby Digital, or DTS), you can change the audio format. If the DVD VIDEO is recorded with multilingual tracks, you can also change the language. With CDs or VIDEO CDs, you can select the sound from either the right or left channel and listen to the sound of the selected channel through both the right and left speakers. For example, when playing a disc containing a song with the vocals on the right channel and the instruments on the left channel, you can hear the instruments from both speakers by selecting the left channel.



1 Press AUDIO repeatedly to select the desired audio signal.

The default setting is underlined.

◆ When playing a DVD VIDEO

Depending on the DVD VIDEO, the choice of language varies. When the same language is displayed two or more times, the DVD VIDEO is recorded in multiple audio formats.

Playing Discs

◆ When playing a DVD-VR mode disc

The types of sound tracks recorded on a disc are displayed.

Example:

- 1.Main (main sound)
- 1.Sub (sub sound)
- 1.Main+Sub (main and sub sound)

◆ When playing a CD/VIDEO CD

- Stereo: the standard stereo sound
- Left: the sound of the left channel (monaural)
- Right: the sound of the right channel (monaural)

◆ When playing a Super VCD

- Stereo: the stereo sound of the audio track 1
- Left: the sound of the left channel of the audio track 1 (monaural)
- Right: the sound of the right channel of the audio track 1 (monaural)
- Stereo 1: the stereo sound of the audio track 2
- Left 1: the sound of the left channel of the audio track 2 (monaural)
- Right 1: the sound of the right channel of the audio track 2 (monaural)

Hints

- You can check of the current audio format (Dolby Digital, DTS, PCM, etc.) by pressing AUDIO repeatedly while playing a DVD VIDEO.
- You can switch the sound in the Playback Settings Display while playing a DVD (page 27).

Notes

- Depending on the disc, you may not be able to change the audio format, even if it is recorded in multiple audio formats.

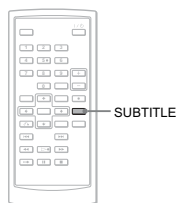
→continued 23

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Displaying the subtitles

DVDVideo DVDVR

If subtitles are recorded on the disc, you can change the subtitles or turn them on and off whenever you want while playing a DVD.



- 1 Press SUBTITLE repeatedly to select a setting.
Depending on the disc, the choice of language varies.

To turn off the subtitles

Select "Subtitle Off" in step 1.

Hint

You can switch the subtitles in the Playback Settings Display while playing a DVD (page 27).

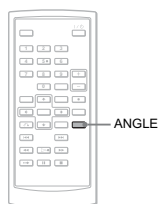
Notes

- Depending on the DVD VIDEO, you may not be able to change the subtitles even if multilingual subtitles are recorded on it. You also may not be able to turn them off.
- While you play a disc with subtitles, the subtitle may disappear when you press **▶**.

Changing the angles

DVDVideo

If various angles (multi-angles) for a scene are recorded on the DVD VIDEO, "ANGLE" appears on the screen. This means that you can change the viewing angle.



- 1 Press ANGLE repeatedly to select an angle number.
The scene changes to the selected angle.

Notes

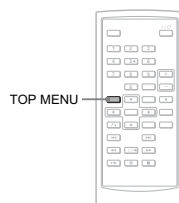
- Some DVD VIDEOS prohibit changing angles even when multi-angles are recorded.
- You cannot change angles during Slow Play or Scan Play.
- "ANGLE" (angle mark) does not appear when "Angle Mark" in "General Setup" is set to "Off" (page 42).

Playing Discs

Selecting "Original" or "Play List" on a DVD-RW/DVD-R

DVDVR

Some DVD-RWs/DVD-Rs in VR (Video Recording) mode have two types of title for playback: originally recorded titles (Original), and titles that can be created on recordable DVD players for editing (Play List). You can select the type of title to be played.



- 1 Press TOP MENU when the player is in stop mode.
The current mode appears. The TOP MENU button does not work when Resume Play is activated. Cancel the Resume Play status first by pressing **■** twice, and then press TOP MENU.
- 2 Switch the mode by pressing TOP MENU repeatedly.

Hint

You can check the current mode by pressing DISPLAY during playback. On the Playback Settings Display (page 27), "PL" or "ORG" will be displayed next to the title number.

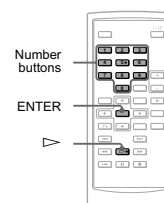
Notes

- When a disc containing a Playlist title is inserted, the player automatically starts playing the Playlist title.
- When no Playlist title is recorded, "ORG" appears in step 1. When you press TOP MENU once more, "O" appears.

Playing VIDEO CDs With PBC Functions (PBC Playback)

VCD

Some VIDEO CDs have Playback Control (PBC) functions allowing for interactive search or playback options.



- 1 Start playing a VIDEO CD with PBC functions.
The menu appears for your selection.
- 2 Press the number buttons to select the item number you want and press ENTER.
- 3 Follow the instructions on screen for interactive operations.
Refer to the instructions supplied with the disc, as the operating procedure may differ depending on the VIDEO CD.

→continued 25

26

Hint

To cancel the PBC function, set "PBC" to "Off" in "General Setup" (page 42) and then, open and close the disc lid.

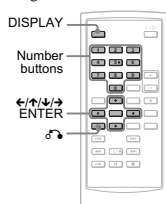
Note

Depending on the VIDEO CD, "Press ENTER" in step 2 may appear as "Press SELECT." In this case, press **▶**.

Using the Playback Settings Display

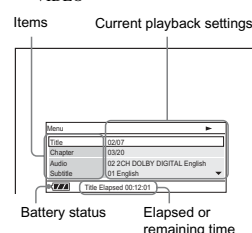
DVDVideo DVDVR

While playing a DVD, you can check the current playback settings on the screen. The Playback Settings Display also allows you to change sound, subtitle, and angle or search for a title or track by inputting numbers.



- 1 Press DISPLAY while playing a DVD.

The Playback Settings Display appears.
Example: When playing a DVD VIDEO



Playing Discs

The corresponding icon for Play, Pause, Search, or Slow Play is displayed in the upper right corner of the screen.
When a DVD-RW/DVD-R (VR mode) is played, "PL" or "ORG" is displayed next to the title number.

- 2 Press **↑/↓** to select the desired item and press ENTER.

- Title
- Chapter
- Audio
- Subtitle
- Angle
- T.Time
- C.Time
- Repeat
- Time Disp.

- 3 Press **↑/↓** to select the setting, and press ENTER.

To enter numbers, use the number buttons or **↑/↓**.

Note

Depending on the disc, you may not be able to set some options.

To turn off the display

Press DISPLAY or **⏮** RETURN.

Searching for a title/chapter, etc.

DVDVideo DVDVR

By entering the number or the time code, you can search a DVD by title or chapter.

- 1 Press **↑/↓** to select the search method on the Playback Settings Display, and press ENTER.

- Title
- Chapter
- T.Time*
- C.Time*

* You can search the title or chapter of a DVD VIDEO by entering the time code.

- 2 Press the number buttons or **↑/↓** to select the title or chapter number, and press ENTER.

The player starts playback from the selected number.

When you select "T.Time" or "C.Time" in step 1, "00:00:00" will appear on the screen. Enter the desired time code using the number buttons, and press ENTER. Playback starts from the entered time code. Elapsed or remaining time appears on the footer of the Playback Settings Display.

Hints

- You can use direct search without displaying the control menu. See page 30 for details.
- See page 30 for details about using direct search for a CD or VIDEO CD.

Notes

- The displayed title/chapter number is the same as the number recorded on the disc.
- Chapter times are not displayed when a DVD-RW/DVD-R (VR mode) is played. Chapter time will be displayed as "---:--:--".
- Depending on the disc, you may not be able to use the time code.

→continued 27

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Playing a DVD VIDEO repeatedly (Repeat Play)

DVDVideo

You can play all of the titles on a DVD VIDEO, or a single title or chapter repeatedly.

- 1 Select "Repeat" on the Playback Settings Display, and press ENTER.
- 2 Press \uparrow/\downarrow to select the setting, and press ENTER.
 - \leftarrow Chapter: repeats the current chapter.
 - \leftarrow Title: repeats the current title.
 - \leftarrow All: repeats all of the titles.

To return to normal play

Select "Off" in step 2.

Hint

When playing a VCD or CD repeatedly, use OPTIONS (page 31).

Note

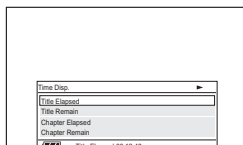
Depending on the disc, the Repeat function may not be available.

Checking the playing time and remaining time

DVDVideo

You can check the playing time and remaining time of the current title or chapter.

- 1 Select "Time Disp." on the Playback Settings Display, and press ENTER.



- 2 Press \uparrow/\downarrow to select the time information setting, and press ENTER.

- Title Elapsed
- Title Remain
- Chapter Elapsed
- Chapter Remain

Hint

See page 32 for details about displaying the elapsed time of a CD or VIDEO CD.

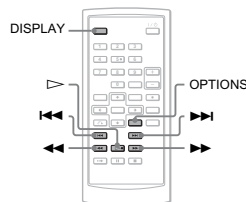
Notes

- In the case of DVD-RWs/DVD-Rs (VR mode), the playing time and remaining time of the chapter is not displayed.
- The default setting for "Time Disp." is "Title Elapsed." After selecting an other option of "Time Disp." and exiting from the Playback Settings Display, the "Title Elapsed" appears when the Playback Settings Display is re-entered.

Playing Discs

Searching for a Particular Point on a Disc (Search, Scan, Slow Play, Repeat Play, Random Play)

You can quickly locate a particular point on a disc by monitoring the picture or playing back slowly.



Notes

- Depending on the disc, you may not be able to perform some of the operations described.
- For DATA CDs/DATA DVDs, you can search for a particular point only on an MP3 audio track.

Locating a point quickly using the I<<</>>>I PREVIOUS/NEXT buttons (Search)

DVDVideo DVDVn VCD CD DATA CD
DATA DVD USB

During playback, press \ggg or \lll to go to the next or previous chapter/track/scene.

Hints

When you know the title or chapter number, you can search directly by entering these numbers using the number buttons.

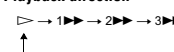
- While playing a DVD VIDEO, you can search for a title or chapter using the number buttons and ENTER. Press \leftarrow/\rightarrow to switch between title and chapter.
- While playing CDs/VIDEO CDs, you can search for a track using the number buttons and ENTER.

Locating a point quickly by playing a disc in fast forward or fast reverse (Scan)

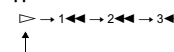
DVDVideo DVDVn VCD CD DATA CD
DATA DVD USB

Press \lll or \ggg to fast reverse or fast forward during playback. To return to normal play, press \triangleright . Each time you press \lll or \ggg during scan, the scan speed changes. With each press the indication changes as shown below.

Playback direction



Opposite direction



The "3" "3" "3" playback speed is faster than "2" "2" "2" and the "2" "2" "2" playback speed is faster than "1" "1" "1".

Hint

\leftarrow/\rightarrow on the player works the same as \lll/\ggg on the remote, and ENTER on the player works the same as \triangleright on the remote. This function is effective when you play back a DVD.

Notes

- No sound is output during Scan play for a DVD or VIDEO CD.
- Scan speed differs depending on the disc type.

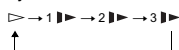
Watching frame by frame (Slow Play)

DVDVideo DVDVn VCD

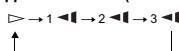
Press \lll or \ggg when the player is in pause mode. To return to normal speed, press \triangleright .

Each time you press \lll or \ggg during Slow Play, the playback speed changes. With each press the indication changes as follows:

Playback direction



Opposite direction (DVD only)



The "3" "3" "3" playback speed is slower than "2" "2" "2" and the "2" "2" "2" playback speed is slower than "1" "1" "1".

Note

Slow speed differs depending on the disc type.

Playing CD/VIDEO CD repeatedly or in random order (Repeat Play, Random Play)

VCD CD

You can play all of the tracks on a disc, or a single track repeatedly (Repeat Play).

Also, you can play the tracks in random order, too (Random Play).

- 1 Press OPTIONS repeatedly during playback to select the playback mode.

- \leftarrow Track: repeats the current track.
- \leftarrow All: repeats all tracks on the disc.
- Random: plays all tracks on the disc randomly.

To return to normal play

Select " \leftarrow Off" in step 1.

Hint

During Random Play, you can start playing other randomly selected track by pressing \ggg once.

Notes

- You cannot use Repeat Play and Random Play with VIDEO CDs or Super VCDs during PBC playback.
- Depending on the disc, Random Play may not be available.
- The same track may be repeated several times in Random Play.

Playing Discs

Checking the play information of the disc

DVDVideo DVDVn VCD CD

When playing a DVD

Press DISPLAY while playing a DVD, and then use the Playback Settings Display (page 27).

When playing a CD

Press DISPLAY. The playing track number/the total number of tracks and the elapsed time of the current track appear. Press DISPLAY repeatedly to switch the time information as below.

- Track Elapsed
- Track Remain
- Disc Elapsed
- Disc Remain

When playing a VIDEO CD

Press DISPLAY. The player displays "PBC On" (when you set "PBC" to "Off," the player displays the playing track number/the total number of tracks), the elapsed time, and the audio mode on the screen.

Note

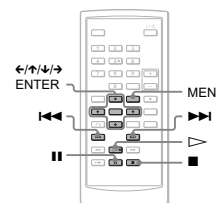
The player does not display "Disc Elapsed" or "Disc Remain" on the screen when playing a CD in Random Play.

Playing MP3 Audio Tracks or JPEG Image Files

DATA CD DATA DVD
USB

You can play MP3 audio tracks and JPEG image files on DATA CDs (CD-ROMs/CD-Rs/CD-RWs) or DATA DVDs (DVD-ROMs/DVD+RWs/DVD+Rs/DVD-RWs/DVD-Rs) or USB devices.

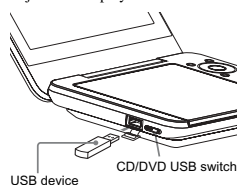
For playable MP3 audio files and JPEG image files, see page 54. When you insert DATA CDs and DATA DVDs, the list of albums appears.



To play back data on a USB device

- 1 Set the CD/DVD USB switch on the player's left side to "USB."

- 2 Connect the USB device to the USB jack on the player's left side.



To disconnect a USB device

- 1 Set the CD/DVD USB switch to "DVD/CD."
- 2 Disconnect a USB device.

Compatible Sony USB devices

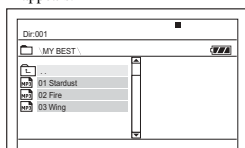
JPEG and MP3 file playback via USB port is confirmed with Sony's USB Memory Stick Reader/Writer and USB Flash drive "Pocket Bit." (Confirmed device: MSAC-US40, USM-EX series, USM-J series, USM-JX series, USM-H series)

Notes

- Do not disconnect the USB device while its access indicator is flashing. Doing so may cause data corruption or loss of data.
- The access indicator on some USB devices may keep flashing even after the data is transferred.
- USB devices which can connect to the player are flash memory and multiple card reader. Other devices (digital still camera, USB hub, etc.) cannot be connected. When an incompatible device is connected, "Cannot recognise the connected device." appears indicating that the device is unrecognizable.
- DATA CDs recorded in KODAK Picture CD format automatically start playing when inserted.

Playing an MP3 audio track

- 1 Press \uparrow/\downarrow to select an album on the list, and press ENTER. The list of tracks in the album appears.



- To go to the next or previous page, press \gg or \ll .
- To return to the list of albums, press \uparrow/\downarrow to select \square and press ENTER.

- 2 Press \uparrow/\downarrow to select the track you want to play, and press ENTER. Playback starts from the selected track.

To go to the next or previous MP3 audio track

Press \gg or \ll .

To stop playback

Press \blacksquare .

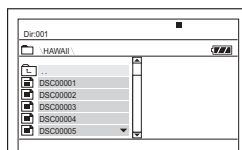
Notes

- The total albums and files the player can recognize is about 648.
- The number of albums in a disc the player can recognize is about 299.

Playing Discs

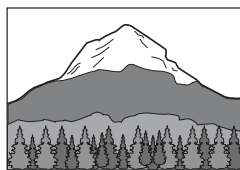
Playing a JPEG image file

- 1 Press \uparrow/\downarrow to select an album on the list, and press ENTER. The list of files in the album appears.



- To go to the next or previous page, press \gg or \ll .
- To return to the list of albums, press \uparrow/\downarrow to select \square and press ENTER.

- 2 Press \uparrow/\downarrow to select the image you want to view, and press ENTER. The selected image appears. Example:



To display the list of thumbnails

Press MENU when a file is displayed on the screen. The image files in the album appear in 12 subscreens with the displayed file in the lead.



- To move to the previous or next page of the thumbnail list display, select " \triangleleft Prev" or "Next \triangleright " under the screen.
- To exit the list of thumbnails, press MENU.

To go to the next or previous JPEG image file

Press \gg or \ll .

To rotate a JPEG image

Press $\leftarrow/\rightarrow/\uparrow/\downarrow$ while viewing the image. \uparrow : Reverses the image vertically (up and down).

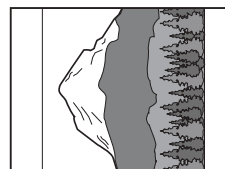
\leftarrow : Reverses the image horizontally (left and right).

\rightarrow : Rotates the image 90 degrees clockwise.

\leftarrow : Rotates the image 90 degrees counter clockwise.

Note that the view also returns to normal if you press \ll/\gg to go to the next or previous image.

Example: when \leftarrow is pressed once.



\rightarrow continued 33

34

To stop viewing the JPEG image

Press \blacksquare .

The display returns to the list of files.

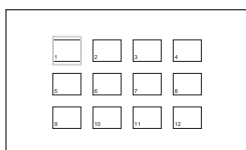
Notes

- Images may take time to appear due to the number of recorded files or the size of the folders. If no image appears after a few minutes, some of the files included may be too large.
- Some JPEG files, especially progressive JPEG files or JPEG files of 3,000,000 pixels or more, may take longer to display than others.
- The player cannot play the JPEG image file that is larger than 3078 (width) x 2048 (height) in normal mode, or more than 3,300,000 pixels in progressive JPEG. (Some progressive JPEG files cannot be displayed even if the size is within this specified capacity.)
- The total albums and files the player can recognize is about 648.
- The number of albums in a disc the player can recognize is about 299.

Enjoying JPEG Images as a Slide Show

You can play JPEG image files on a DATA CD or DATA DVD successively as a slide show.

- 1 While displaying the file you want to start a slideshow, press MENU. The list of thumbnails appears.



- 2 Press $\leftarrow/\rightarrow/\uparrow/\downarrow$ to select "Slide Show" at the bottom of the screen, and press ENTER.

A slideshow starts from the displayed file.

To pause slideshow

Press \blacksquare . By pressing \blacksquare again or \triangleright , you can return to slideshow.

To stop slideshow

Press \blacksquare or MENU.

Playing Discs

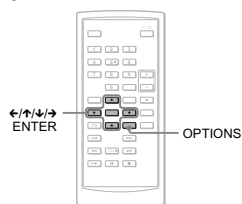
Adjusting the Picture Size and Quality

DVD Video

DVD Video VCD DATA CD DATA DVD

USB

You can adjust the picture displayed on the LCD screen. See "General Setup" (page 41), when outputting the video signal to TV, etc.



- 1 Press OPTION.

The Option Menu appears.

- 2 Press \uparrow/\downarrow to select "LCD Mode" and press ENTER.

The items for "LCD Mode" appear.

- 3 Press \uparrow/\downarrow to select items and press ENTER.

- LCD Aspect: Change the picture size. Select "Normal" or "Full" by pressing \uparrow/\downarrow .
- Backlight: Adjust the brightness of the LCD screen by pressing \leftarrow/\rightarrow .
- Contrast: Adjust the difference between light and dark areas by pressing \leftarrow/\rightarrow .

- Hue: Adjust the red and green colour balance by pressing \leftarrow/\rightarrow .
- Color: Adjust the richness of colours by pressing \leftarrow/\rightarrow .
- Default: Returns all settings to the factory defaults.

* In "Normal," the pictures are displayed in the original configuration, retaining the aspect ratio. For example, a 4:3 picture will have black bands on both sides, and the letterbox pictures recorded either in 16:9 or 4:3 will have black bands on all sides. In "Full," a 16:9 picture will be adjusted to fill the entire screen.

Hints

- The screen turns off automatically when the LCD panel is closed.
- You can see the settings for the display in "General Setup" (page 41).

Notes

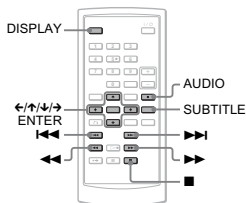
- The screen size you can select differs depending on the DVD.
- You cannot select "Normal" for a DVD recorded in "16:9."
- You cannot adjust the picture size and quality when playing a VIDEO CD with "PBC" set to "Off."
- You can select "Normal" or "Full" by pressing OPTION repeatedly when inputting from external sources.

Enjoying DivX® Videos

Playing DivX Video Files

You can play DivX video files on DATA CDs (CD-ROMs/CD-Rs/CD-RWs) and DATA DVDs (DVD-ROMs/DVD+RWs/DVD+Rs/DVD-RWs/DVD-Rs).

When you insert DATA CDs and DATA DVDs, the list of albums appears.



Notes

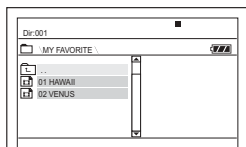
- When the selected file is not supported, "Data Error (DivX)" displays on the screen and the file will not be played.
- Depending on the DivX video file, the picture may pause or be unclear. In which case, it is recommended that you create the file at a lower bit rate. If the sound is still noisy, MP3 is the recommended audio format. Note, however, this player does not conform to WMA (Windows Media Audio) format.
- Because of the compression technology used for DivX video files, it may take some time after you press (play) for the picture to appear.
- Depending on the DivX video file, the sound may not match the pictures on the screen.

- The player's speaker does not output DTS sound. When you play DTS sound tracks on a DivX video file, connect the player to an AV amplifier (receiver) (page 49) and set up "DTS" in "Audio Setup" (page 44).
- Depending on the DivX video file, you may not be able to perform some operations.

Playing a DivX video file

- Press to select an album on the list, and press ENTER.

A list of files in the album appears.



- To go to the next or previous page, press or .
- To return to the list of albums, press to select and press ENTER.

- Press to select the file you want to play, and press ENTER. Playback starts from the selected file.

To go to the next or previous DivX video file

Press or .

To locate a point quickly by playing DivX video files in fast forward or fast reverse (Scan)

Press or repeatedly to select the required speed for the search mode during playback.

Enjoying DivX® Videos

To watch frame by frame (Slow Play)

Press repeatedly in pause mode to select the required slow motion speed.

To display the playback information

Press DISPLAY repeatedly. The playback information changes as follow order, "Title Elapsed," "Title Remain," "Display Off," and "Subtitle."

To change the sound

Press AUDIO repeatedly during playback to select the desired audio signal. If "No Audio" appears, the player does not support the audio signal format contained in the disc.

To change the subtitles

Press SUBTITLE during playback. Press , and ENTER during displaying the subtitle information.

To stop playback

Press .

Hint

If the number of viewing times is preset, you can play the DivX video files as many times as the preset number. The following occurrences are counted:

- when the player is turned off. This includes when the player is automatically turned off by the Auto Power Off function. Press instead of to stop viewing.
- when the disc lid is opened.
- when another file is played.

Note

The slow reverse function is prohibited.

About DivX Video Files

DivX® is a video file compression technology, developed by DivX, Inc. This product is an official DivX® Certified product.

You can play DATA CDs and DATA DVDs that contain DivX video files.

DATA CDs and DATA DVDs that the player can play

This player only plays DATA CDs whose logical format is ISO 9660 Level 1 or Joliet, and DATA DVDs of Universal Disk Format (UDF). Refer to the instructions supplied with the disc drives and the recording software (not supplied) for details on the recording format.

Note

The player may not be able to play some DATA CDs/DATA DVDs created in the Packet Write format or multiple sessions.

DivX video files that the player can play

The player can play data that is recorded in DivX format, and which has the extension ".AVI," or ".DIVX." The player will not play files with the extension ".AVI" or ".DIVX" if they do not contain a DivX video.

Notes

- The player may not play a DivX video file when the file consists of two or more DivX video files combined.
- The player cannot play a DivX video file of size more than 720 (width) Δ 576 (height)/ 2 GB.

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- Depending on the DivX video file, the picture may be unclear or the sound may skip.
- The player cannot play some DivX video files that are longer than 3 hours.
- The player can display a file name up to 14 characters. Any characters after the 14th character do not appear on the screen.
- Characters that are not displayable appear as "x."
- Depending on the disc, a file name that is not displayable appears as "x."
- You cannot display correctly the CD-R/CD-RW file names written in the UDF file system.

About playback order of DivX video files

Note that the playback order may not be applicable, depending on the software used for creating the DivX video file, or if there are more than 299 albums and 648 DivX video files in each album. See "About playback order of albums, tracks, and files" (page 55).

Enjoying DivX® Videos

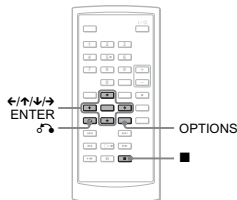
Settings and Adjustments

Using the Setup Display

By using the Setup Display, you can make various adjustments to items such as picture and sound. You can also set a language for the subtitles and the Setup Display, among other things. For details on each Setup Display item, see pages from 41 to 46.

Note

Playback settings stored in the disc take priority over the Setup Display settings, and not all of the functions described may work.



- Press OPTIONS when the player is in stop mode.

The Option Menu appears.

The Setup Display does not appear if Resume Play is activated. Cancel the Resume Play status first by pressing twice, and then press OPTIONS.

- Press to select "Setup," then press ENTER.

The items for "Setup" appear.

General Setup		
TV Display	16 : 9	
Angle Mark	On	
Screen Saver	On	
PBC	On	
DivX	Default	
Select: ENTER Cancel RETURN		

- Press to select the desired Setup item from: "General Setup," "Audio Setup," "Language Setup," or "Parental Control," then press ENTER.

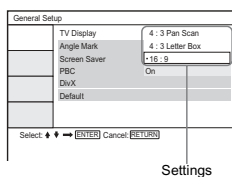
The Setup item is selected. Example: "General Setup"

Selected item		
General Setup		
TV Display	16 : 9	
Angle Mark	On	
Screen Saver	On	
PBC	On	
DivX	Default	
Select: ENTER Cancel RETURN		

Setup items

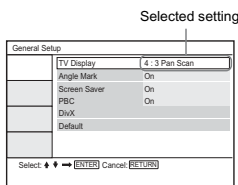
4 Press \uparrow/\downarrow to select an item, then press ENTER.

The settings for the selected item appear.
Example: "TV Display"



5 Press \uparrow/\downarrow to select a setting, then press ENTER.

The setting is selected and setup is complete.
Example: "4:3 Pan Scan"

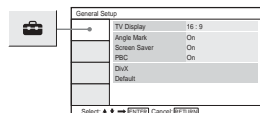


To turn off the Setup Display
Press OPTIONS or δ RETURN twice.

Settings for the Display (General Setup)

Choose playback display options and settings according to the TV to be connected.

Select "General Setup" in the Setup Display. To use the display, see "Using the Setup Display" (page 40).
The default settings are underlined.



◆ TV Display (DVD only)

Selects the aspect ratio of the connected TV (4:3 standard or wide).

4:3 Pan Scan	Select this when you connect a 4:3 screen TV. Automatically displays a wide picture on the entire screen and cuts off the portions that do not fit.
4:3 Letter Box	Select this when you connect a 4:3 screen TV. Displays a wide picture with bands on the upper and lower portions of the screen.
16:9	Select this when you connect a wide-screen TV or a TV with a wide mode function.

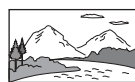
4:3 Pan Scan



4:3 Letter Box



16:9



Note

Depending on the DVD, "4:3 Letter Box" may be selected automatically instead of "4:3 Pan Scan" or vice versa.

◆ Angle Mark

Displays the angle mark when you can change the viewing angles during playback of DVDs recorded with multi-angles.

On	Display the angle mark.
Off	Hide the angle mark.

◆ Screen Saver

The screen saver image appears when you leave the player in pause or stop mode for 15 minutes. The screen saver will help prevent your display device from becoming damaged (ghosting). Press \triangleright to turn off the screen saver.

On	Activates the screen saver function.
Off	Deactivates the screen saver function.

◆ PBC

By using the PBC (Playback Control) function, you can enjoy playing interactive programmes and programmes with search functions (page 26). This set up is effective when you play back VIDEO CDs with the PBC function. Set up becomes available by opening and closing the disc lid after setting.

On	By the PBC function, you can play back VIDEO CDs via the menu screen.
Off	Turn off the PBC function.

◆ DivX

Displays the registration code for this player. For more information, go to <http://www.divx.com> on the Internet.

◆ Default

Each function returns to its original factory settings. Note that all of your settings will be lost.

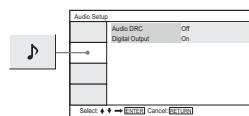
→ continued 41

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Settings for the Sound (Audio Setup)

"Audio Setup" allows you to set the sound according to the playback and connection conditions.

Select "Audio Setup" in the Setup Display. To use the display, see "Using the Setup Display" (page 40).
The default settings are underlined.



◆ Audio DRC (Dynamic Range Control) (DVD only)

Makes the sound clear when the volume is turned down when playing a DVD that conforms to "Audio DRC."
This function affects the output from the following jacks:

- AUDIO jack
- OPTICAL OUT jack only when "Dolby Digital" is set to "Downmix PCM" (page 43).

On	Makes low sounds clear even if you turn the volume down.
Off	Normally select this position.

◆ Digital Output

Selects if audio signals are output via the OPTICAL OUT jack.

On	Normally select this position. When you select "On," see "Setting the digital output signal" for further settings.
Off	The influence of the digital circuit upon the analog circuit is minimal.

Setting the digital output signal

Switches the method of outputting audio signals when you connect an audio equipment such as an AV amplifier (receiver) with the OPTICAL OUT jack. For connection details, see page 48. After setting "Digital Output" to "On," select "Dolby Digital" and "DTS." If you connect a component that is incompatible with the selected audio signal, a loud noise (or no sound) may be heard from the speakers, damaging your ears or speakers.

◆ Dolby Digital (DVD only)

Selects the type of Dolby Digital signal.

Downmix PCM	Select this when the player is connected to an audio component without a built-in Dolby Digital decoder.
Dolby Digital	Select this when the player is connected to an audio component with a built-in Dolby Digital decoder.

◆ MPEG (DVD only)

Selects the type of MPEG audio signal.

PCM	Select this when the player is connected to an audio component without a built-in MPEG decoder. If you play multi-channel MPEG audio sound tracks, only the Front (L) and Front (R) signals will be output from your two front speakers.
MPEG	Select this when the player is connected to an audio component with a built-in MPEG decoder.

◆ DTS

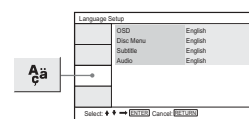
Selects whether or not to output DTS signals.

On	Select this when the player is connected to an audio component with a built-in DTS decoder.
Off	Select this when the player is connected to an audio component without a built-in DTS decoder.

Setting the Display or Sound Track Language (Language Setup)

"Language Setup" allows you to set various languages for the on-screen display or sound track.

Select "Language Setup" in the Setup Display. To use the display, see "Using the Setup Display" (page 40).



◆ OSD (On-Screen Display)

Switches the display language on the screen.

◆ Disc Menu (DVD VIDEO only)

Switches the language for the disc's menu. When you select "Original," the language given priority in the disc is selected.

◆ Subtitle (DVD VIDEO only)

Switches the subtitle language. When you select "Off," no subtitle is displayed.

◆ Audio (DVD VIDEO only)

Switches the language of the sound track. When you select "Original," the language given priority in the disc is selected.

→ continued 43

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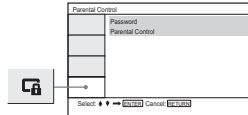
Note

If you select a language in "Disc Menu," "Subtitle," or "Audio" that is not recorded on the DVD VIDEO, one of the recorded languages will be automatically selected.

Parental Control Settings (Parental Control)

Playback of some DVD VIDEOS can be limited, by the parental control function.

Select "Parental Control" in the Setup Display. To use the display, see "Using the Setup Display" (page 40).



Settings and Adjustments

◆ Password

Enter or change a password. By setting a password, you can limit playback of a DVD that has the parental control function. When the Password option is first accessed, enter a new password (you do not need to enter the old password.).

◆ Parental Control

The lower the setting value, the stricter the limitation.

To set the parental control, you need the selected password in "Password," therefore first set the password in the set up.

Changing the password

- 1 Press \uparrow/\downarrow to select "Password" in the Parental Control setting display, and press ENTER.

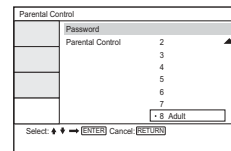
- 2 Select "Change," and press ENTER.
The display for entering the password appears.
- 3 Enter your current 6-digit password in the "Old Password" box.
- 4 Enter your new 6-digit password in the "New Password" box.
- 5 Enter your new 6-digit password once again in the "Verify Password" box, then press ENTER to confirm.

If you make a mistake entering your password

Press CLEAR, or press \leftarrow to return one by one before pressing ENTER in step 5, and then re-enter the password.

Setting the parental control (limited playback) DVDVideo

- 1 Press \uparrow/\downarrow to select "Parental Control" in the Parental Control setting display, and press ENTER.
The display for setting the playback limitation level appears.

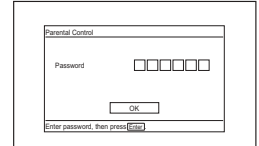


- 2 Press \uparrow/\downarrow to select the limitation level (1-8), and press ENTER.

The lower the value, the stricter the limitation.

The display for entering the password appears.

- 3 Enter or re-enter your 6-digit password using the number buttons, then press ENTER.



Parental Control setting is complete.

To play a disc for which Parental Control is set

- 1 Insert the disc and press \triangleright .
The display for entering your password appears.
- 2 Enter your 6-digit password using the number buttons, then press ENTER.
The player starts playback.

If you forget your password

Remove the disc and repeat the steps outlined in "Changing the password" (page 45). Enter "136900" in the "Old Password" box, and then enter your new 6-digit password in the "New Password" box and "Verify Password" box.

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Notes

- When you play discs which do not have the Parental Control function, playback cannot be limited on this player.
- Depending on the disc, you may be asked to change the parental control level while playing the disc. In this case, enter your password, then change the level. If the Resume Play mode is cancelled, the level returns to the previous level.

Settings and Adjustments

Hookups

Connecting to another device

To switch LINE SELECT (IN/OUT) switch

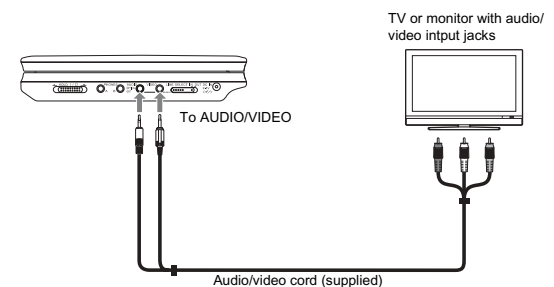
LINE SELECT IN: Input images or audio from an exterior device. The "Line in" message will be displayed on the LCD screen until the signal from the exterior device is received.

LINE SELECT OUT: Sends the playback signal from this player to a TV.

Notes

- Plug cords securely to prevent noise.
- Refer to the instructions supplied with the components to be connected.
- You cannot connect this player to a TV that does not have a video input jack.
- Be sure to disconnect the mains lead of each component before connecting.
- Connect the player to the TV directly. Image quality may suffer when the video output from the player is passed through a video deck on to a TV.

Connecting to TV monitor



To send the playback signal to a TV or a monitor

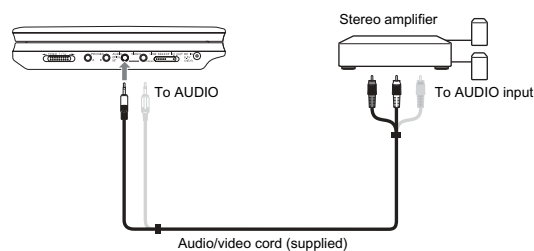
- 1 Set the LINE SELECT switch on the player's right side to "OUT."

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Connecting to an AV amplifier (receiver)

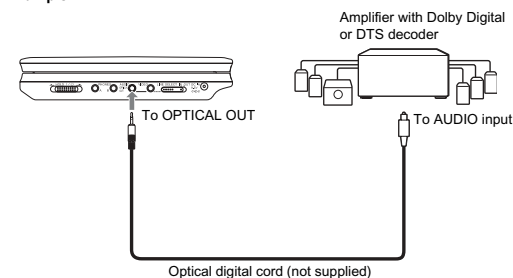
Example 1



To send the playback signal to an AV amplifier (receiver)

- 1 Set the LINE SELECT switch on the player's right side to "OUT."
* The yellow plug is used for video signals (page 48).

Example 2

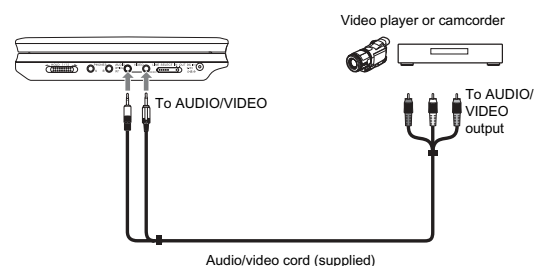


To send the playback signal to an AV amplifier (receiver)

- 1 Set the LINE SELECT switch on the player's right side to "OUT."
- 2 Set "Digital Output" to "On" in "Audio Setup" (page 43).

Hookups

Connecting to Video Player or Camcorder



To receive the playback signal from a Video Player or Camcorder

- 1 Set the LINE SELECT switch on the player's right side to "IN."

Note

Set the LINE SELECT switch to "OUT" after use. You cannot play back on the player if the switch is set to "IN."

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Additional Information

Troubleshooting

If you experience any of the following difficulties while using the player, use this troubleshooting guide to help remedy the problem before requesting repairs. Should any problem persist, consult your nearest Sony dealer (For customers in the USA only).

Power

The power is not turned on.

- Check that the mains lead is connected securely.
- When using with the battery pack, check that the battery pack is sufficiently charged.

Picture

There is no picture/picture noise appears.

- The disc is dirty or flawed.
- The brightness is set at minimum. Set the brightness in "LCD Mode" (page 36).
- When you play discs, set the LINE SELECT switch to "OUT." When you send the playback signal to other device, set the LINE SELECT switch to "OUT." When you receive the playback signal from other device, set the LINE SELECT switch to "IN" (page 48).
- Re-connect the connecting cord securely.
- The connecting cords are damaged.
- Check the connection to your TV (page 48) and switch the input selector on your TV so that the signal from the player appears on the TV screen.

- The player is connected to the COMPONENT VIDEO IN (Y, Pb, Pr) jacks of high-vision TV.
- If the picture output from your player goes through your video deck to get to your TV or if you are connected to a combination TV/VIDEO player, the copy-protection signal applied to some DVD programmes could affect picture quality.

The picture does not fill the screen, even though the aspect ratio is set in "TV Display" under "General Setup."

- The aspect ratio of the disc is fixed on your DVD.

The black points appear and the red, blue, green points remain on the LCD.

- This is a structural property of the LCD and not malfunction.

Sound

There is no sound.

- The player is in pause mode or in Slow Play mode.
- The player is in fast forward or fast reverse mode.
- While playing a Super VCD on which the audio track 2 is not recorded, no sound will come out when you select "Stereo 1," "Left 1," or "Right 1."
- Re-connect the connecting cord securely.
- The connecting cord is damaged.
- The player is connected to the wrong input jack on the amplifier (receiver) (page 49).
- The amplifier (receiver) input is not correctly set.
- If the audio signal does not come through the OPTICAL OUT jack, check the audio settings (page 43).

Additional Information

The sound volume is low.

- The sound volume is low on some DVDs. The sound volume may improve if you set "Audio DRC" in "Audio Setup" to "On" (page 43).

Operation

The remote does not function.

- The batteries in the remote are weak.
- There are obstacles between the remote and the player.
- The distance between the remote and the player is too far.
- The remote is not pointed at the remote sensor on the player.
- Direct sunlight or strong illumination is striking the remote sensor.

Nothing happens when buttons are pressed.

- The player's I/O/HOLD switch is set on "HOLD" (page 21).

The disc does not play.

- The disc is turned over. Insert the disc with the playback side facing down.
- The disc is not set correctly.
- The player cannot play certain discs (page 9).
- The region code on the DVD does not match the player (page 10).
- Moisture has condensed inside the player (page 4).
- The player cannot play a recorded disc that is not correctly finalized (page 9).
- Parental Control has been set. Change the setting.
- The CD/DVD USB switch on the player's left side is set to "USB."
- The LINE SELECT switch on the player's right side is set to "IN."

The player starts playing the disc automatically.

- The disc features an auto playback function.

Playback stops automatically.

- While playing discs with an auto pause signal, the player stops playback at the auto pause signal.

Some functions such as Stop, Search, Scan, Slow Play, Repeat Play, or Random Play cannot be performed.

- Depending on the disc, you may not be able to do some of the operations above. Refer to the operating instructions supplied with the disc.

The language for the sound track cannot be changed.

- Try using the DVD's menu instead of the direct selection button on the remote (page 23).
- Multilingual tracks are not recorded on the DVD being played.
- The DVD prohibits the changing of the language for the sound track.

The subtitle language cannot be changed or turned off.

- Try using the DVD's menu instead of the direct selection button on the remote (page 23).
- Multilingual subtitles are not recorded on the DVD being played.
- The DVD prohibits the changing of subtitles.

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The angles cannot be changed.

- ➔ Try using the DVD's menu instead of the direct selection button on the remote (page 23).
- ➔ Multi-angles are not recorded on the DVD being played.
- ➔ The angle can only be changed when the "ANGLE" indicator lights up on the screen (page 25).
- ➔ The DVD prohibits changing of the angles.

The MP3 audio track cannot be played (page 54).

- ➔ The DATA CD is not recorded in an MP3 format that conforms to ISO 9660 Level 1 or Joliet.
- ➔ The DATA DVD is not recorded in MP3 format that conforms to UDF (Universal Disk Format).
- ➔ The MP3 audio track does not have the extension ".MP3."
- ➔ The data is not formatted in MP3 even though it has the extension ".MP3."
- ➔ The data is not MPEG-1 Audio Layer III data.
- ➔ The player cannot play audio tracks in mp3PRO format.
- ➔ The MP3 audio track is damaged.

The JPEG image file cannot be played (page 54).

- ➔ The DATA CD is not recorded in a JPEG format that conforms to ISO 9660 Level 1 or Joliet.
- ➔ The DATA DVD is not recorded in JPEG format that conforms to UDF (Universal Disk Format).
- ➔ The JPEG image file does not have the extension ".JPEG."
- ➔ The data is not formatted in JPEG even though it has the extension ".JPEG."
- ➔ The JPEG image file format does not conform to DCF (page 55).
- ➔ The image is larger than 3078 (width) × 2048 (height) in normal mode, or more than 3,300,000 pixels in progressive JPEG. (Some progressive JPEG files cannot be displayed even if the file size is within this specified capacity.)
- ➔ The JPEG image file is damaged.

The DivX video file cannot be played.

- ➔ The file is not created in DivX format.
- ➔ The file has an extension other than ".AVI" or ".DIVX."
- ➔ The DATA CD (DivX video)/DATA DVD (DivX video) is not created in a DivX format that conforms to ISO 9660 Level 1 or Joliet/UDF.
- ➔ The DivX video file is larger than 720 (width) × 576 (height).

The album/track/file names are not displayed correctly.

- ➔ The player can only display numbers and alphabet. Other characters are displayed as ".*."

Additional Information

The disc does not start playing from the beginning.

- ➔ Repeat Play or Random Play is selected (pages 29 and 31).
- ➔ Resume play has taken effect (page 22).

The player does not operate properly.

- ➔ When static electricity, etc., causes the player to operate abnormally, unplug the player.

About MP3 Audio Tracks and JPEG Image Files

MP3 is audio compression technology that satisfies the ISO/IEC MPEG regulations. JPEG is image compression technology.

You can play DATA CDs/DATA DVDs that contain MP3 audio tracks or JPEG image files.

DATA CDs/DATA DVDs that the player can play

You can play back DATA CDs (CD-ROMs/CD-Rs/CD-RWs) or DATA DVDs (DVD-ROMs/DVD+RWs/DVD+Rs/DVD-RWs/DVD-Rs) recorded in MP3 (MPEG-1 Audio Layer III) and JPEG format.

However, this player only plays DATA CDs whose logical format is ISO 9660 Level 1 or Joliet, and DATA DVDs of Universal Disk Format (UDF). Refer to the instructions supplied with the disc drives and the recording software (not supplied) for details on the recording format.

Note

The player may not be able to play some DATA CDs/DATA DVDs created in the Packet Write format or multiple sessions.

➔ continued 53

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MP3 audio track or JPEG image file that the player can play

The player can play the following tracks and files:

- MP3 audio tracks with the extension ".MP3."
- JPEG image files with the extension ".JPEG" or ".JPG."
- JPEG image files that conform to the DCF* image file format.

* "Design rule for Camera File system": Image standards for digital cameras regulated by JEITA (Japan Electronics and Information Technology Industries Association).

Notes

- Change the extension to ".jpg," for files with ".jpe" or ".jpeg" extension.
- The player will play any data with the extension ".MP3," ".JPG," or ".JPEG," even if they are not in MP3 or JPEG format. Playing this data may generate a loud noise which could damage your speaker system.
- The player does not conform to audio tracks in mp3PRO format.
- Some JPEG files cannot be played.
- The player can display a file or track name up to 14 characters. Any characters after the 14th character do not appear on the screen.
- Characters that are not displayable appear as ".*."
- Depending on the disc, a file or track name that is not displayable appears as ".*."
- You cannot display correctly the CD-R/CD-RW file names written in the UDF file system.
- When playing an MP3 audio track recorded in VBR mode, you cannot display the bit rate correctly.

About playback order of albums, tracks, and files

Tracks and files within an album play in the order of the recorded media (CD-R etc.).

Hint

Since a disc with many tracks takes longer to start playback, it is recommended that you create albums with no more than two tracks.

Notes

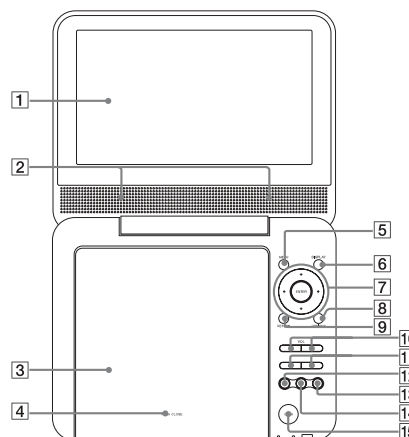
- The player can recognize up to 299 albums (including albums that do not contain MP3 audio tracks and JPEG image files). The player will not play any albums beyond the 299th album.
- The player can recognize a combined total of up to 648 files, tracks, and albums. The player will not play beyond the 648th file, track or album.
- Depending on the writing condition of the disc, the total number of files, tracks, and albums recognizable may be fewer than 648.
- The Album List displays only the currently playing album name. Any album located on the upper layer is displayed as ".*."

Additional Information

Index to Parts and Controls

For more information, see the pages indicated in parentheses.

Upper view

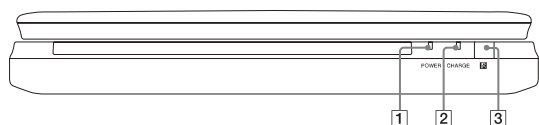


- 1 LCD panel
- 2 Speaker (21)
- 3 Disc lid (20)
- 4 PUSH CLOSE (20)
- 5 MENU button (23)
- 6 DISPLAY button (27)
- 7 < / > / < / > buttons, ENTER button (23)
- 8 OPTIONS button (30)

- 9 RETURN button (27)
- 10 VOL -/+ (sound volume) buttons
- 11 << / >> (previous/next) buttons (22)
- 12 > (play) button (20)
- 13 ■ (stop) button (21)
- 14 || (pause) button (22)
- 15 OPEN button (20)

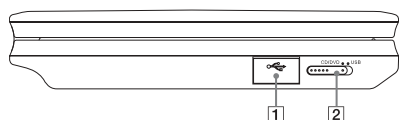
Additional Information

Front view



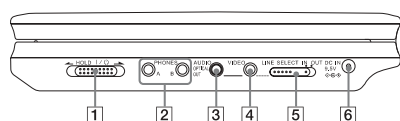
- 1 POWER indicator (20)
- 2 CHARGE indicator (16)
- 3 (remote sensor) (12)

Left view



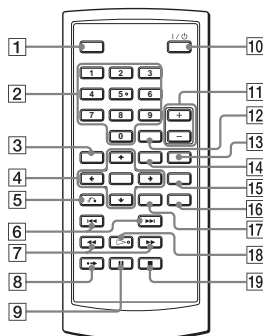
- 1 USB jack (32)
- 2 CD/DVD USB switch (20)

Right view



- 1 I/O (on/standby)/HOLD switch (20)
- 2 PHONES (headphone) jack A, B
- 3 AUDIO (input/output) jack/OPTICAL OUT (optical output) jack (48, 49)
- 4 VIDEO (input/output) jack (48)
- 5 LINE SELECT (IN/OUT) switch (20)
- 6 DC IN 9.5V (AC adaptor input) jack (13)

Remote



- 1 DISPLAY button (27)
- 2 Number buttons (23)*
- 3 TOP MENU button (23)
- 4 </> buttons, ENTER button (23)
- 5 RETURN button (27)
- 6 << >> PREV (previous)/NEXT buttons (22)
- 7 <<< >>> (scan/slow) buttons (30)
- 8 >>> ADVANCE button (22)
- 9 || PAUSE button (22)
- 10 I/O (on/standby) button (20)
- 11 VOL +/- (sound volume) buttons
- 12 CLEAR button (45)
- 13 AUDIO button (23)*
- 14 MENU button (23)
- 15 SUBTITLE button (25)
- 16 ANGLE button (25)
- 17 OPTIONS button (30)
- 18 > PLAY button (20)*
- 19 ■ STOP button (21)

* Use the tactile dot as a reference when operating the player. The number 5 button has a tactile dot.

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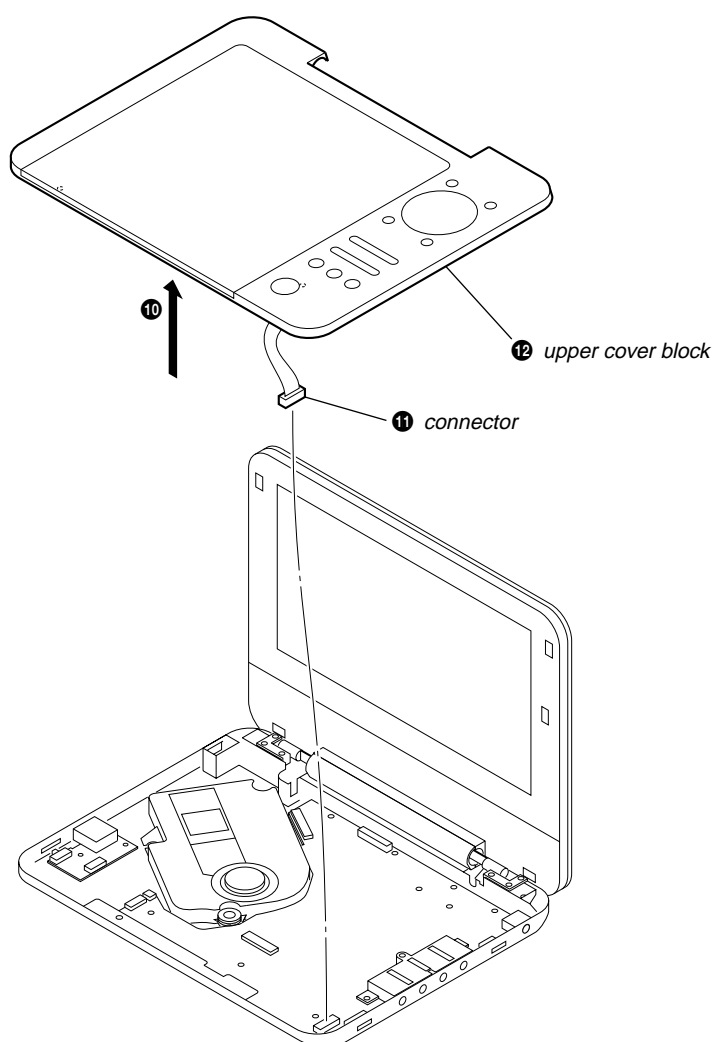
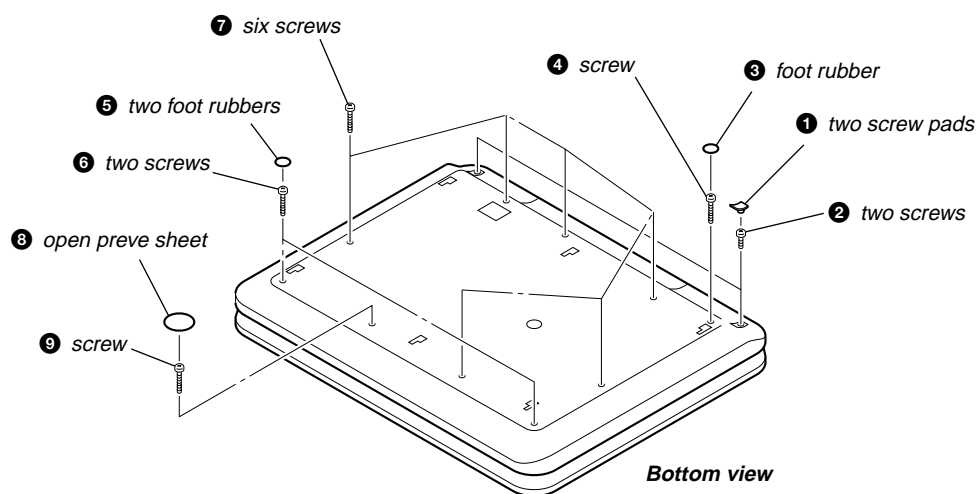
V

VIDEO CD 8, 10, 20

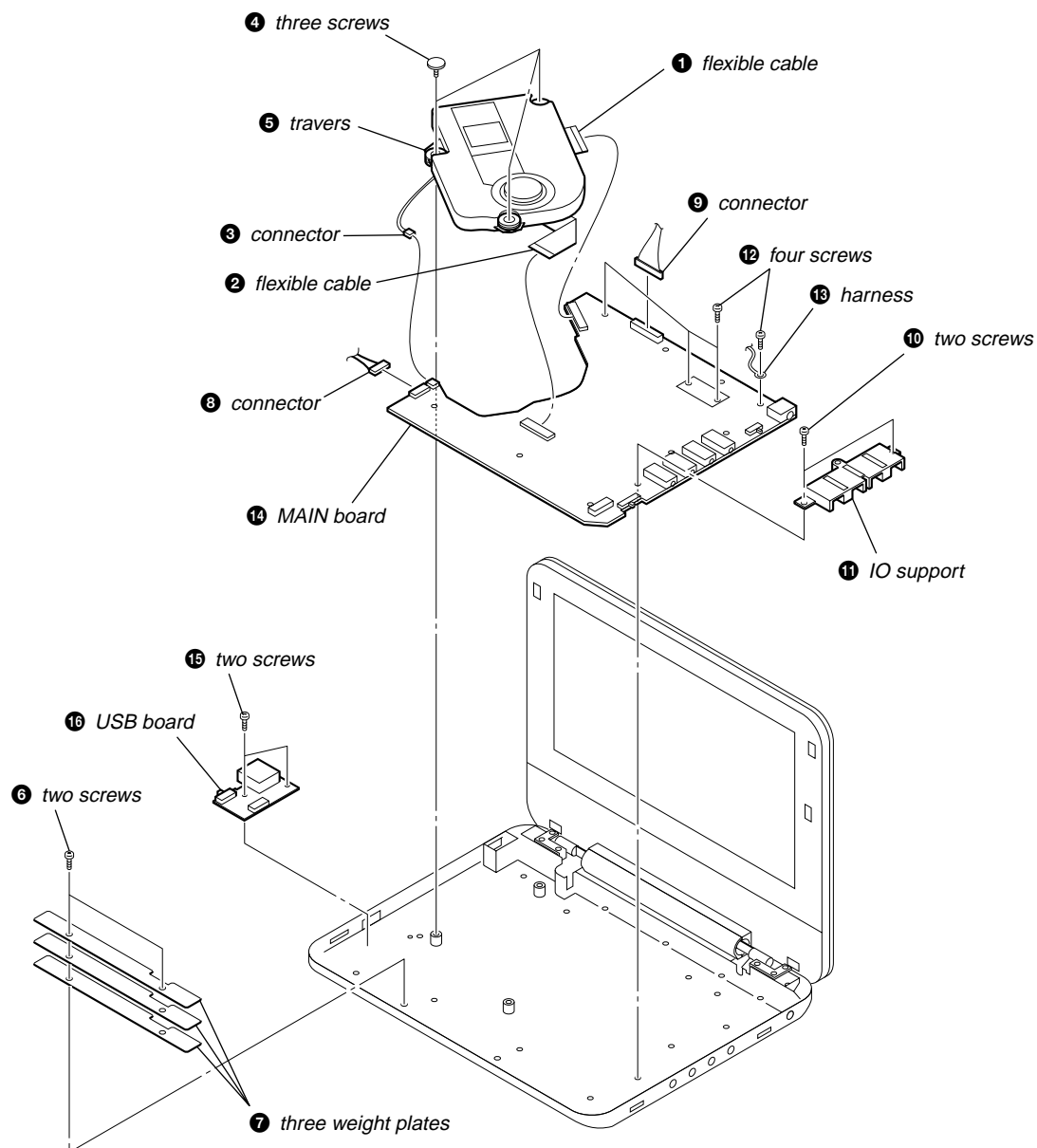
SECTION 2 DISASSEMBLY

Note: Follow the disassembly procedure in the numerical order given.

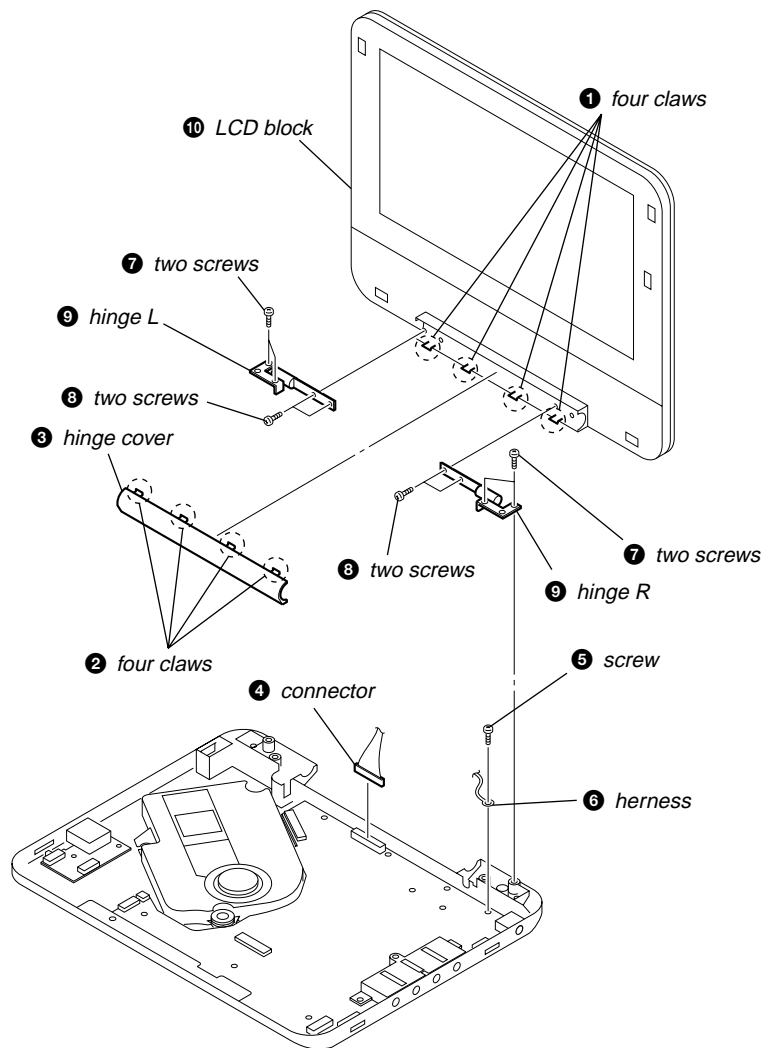
2-1. UPPER COVER BLOCK



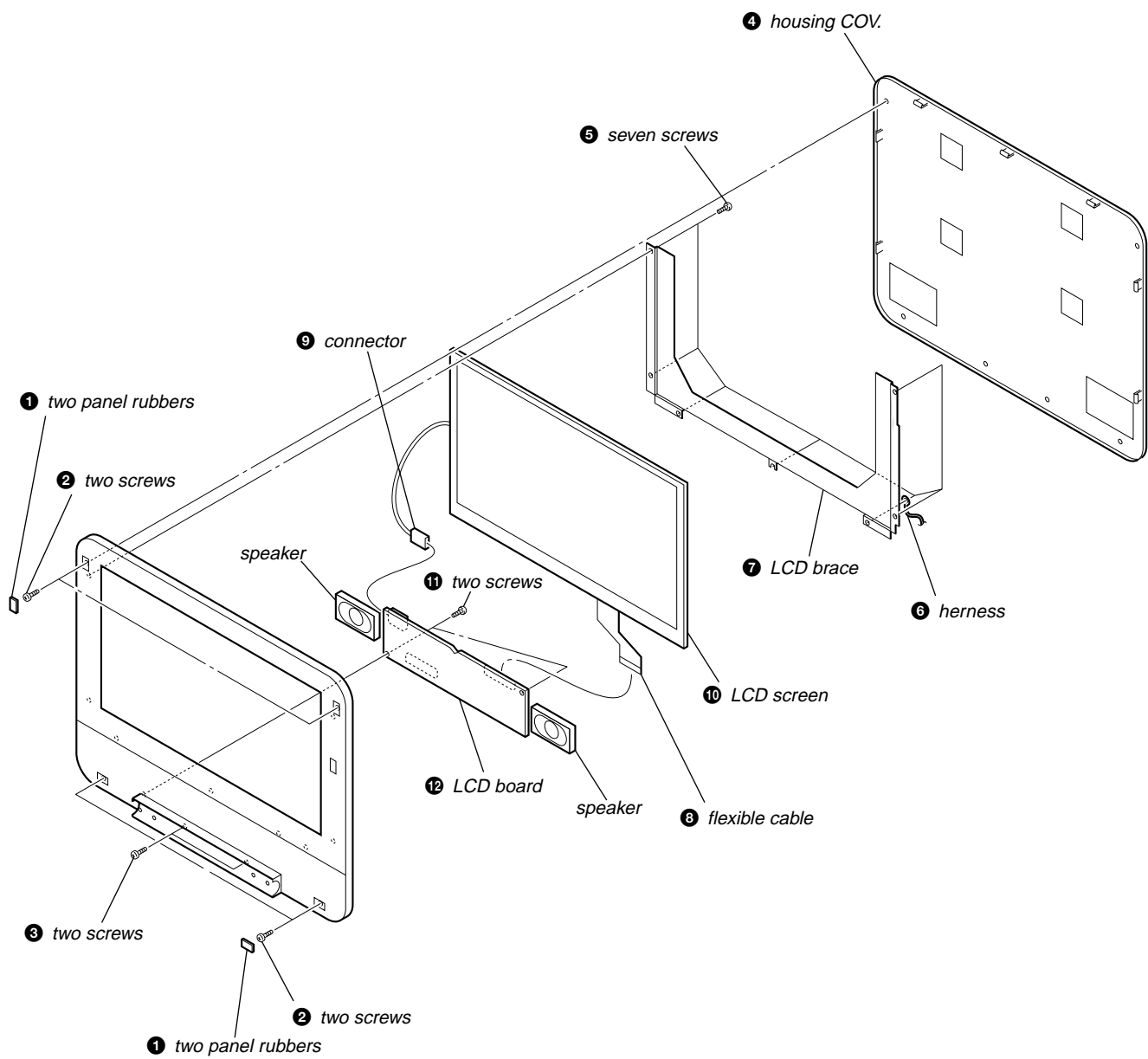
2-2. MAIN BOARD, USB BOARD



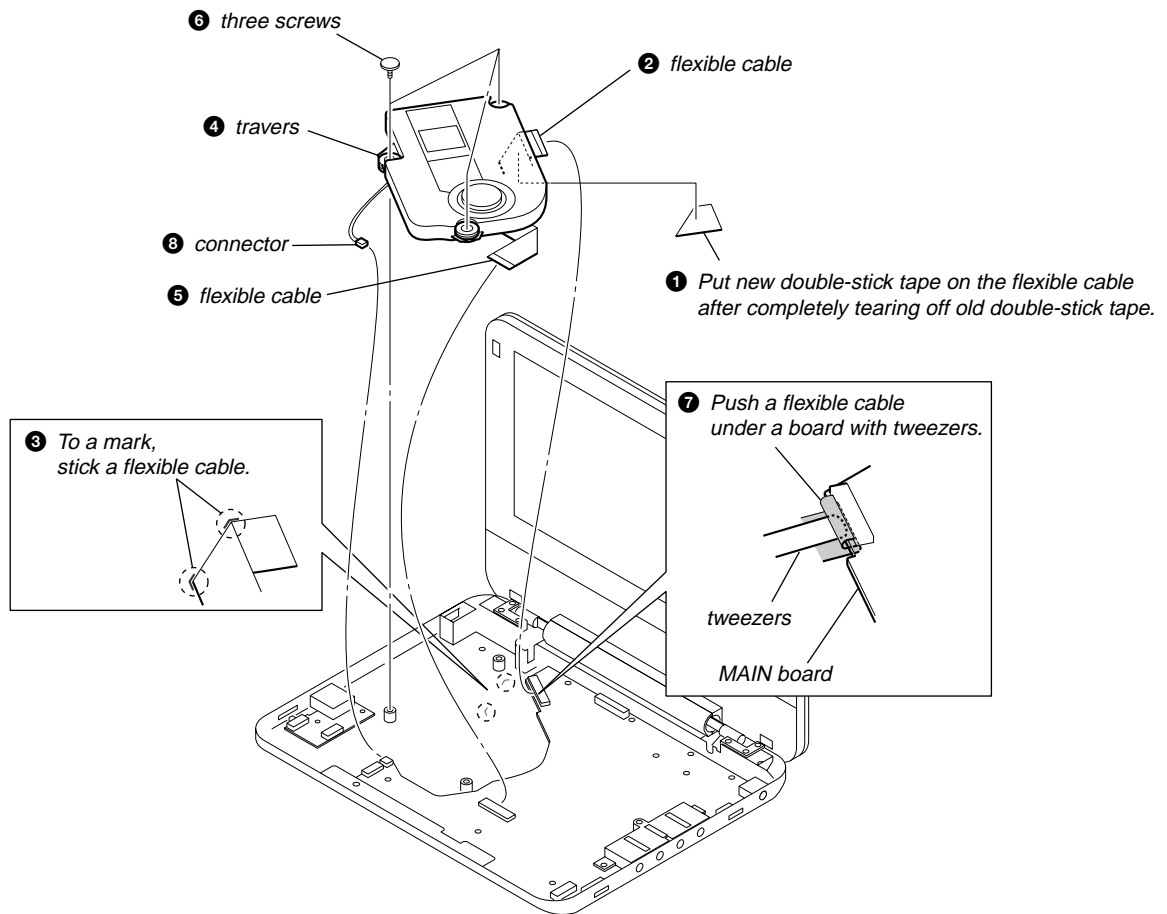
2-3. LCD BLOCK



2-4. LCD BOARD



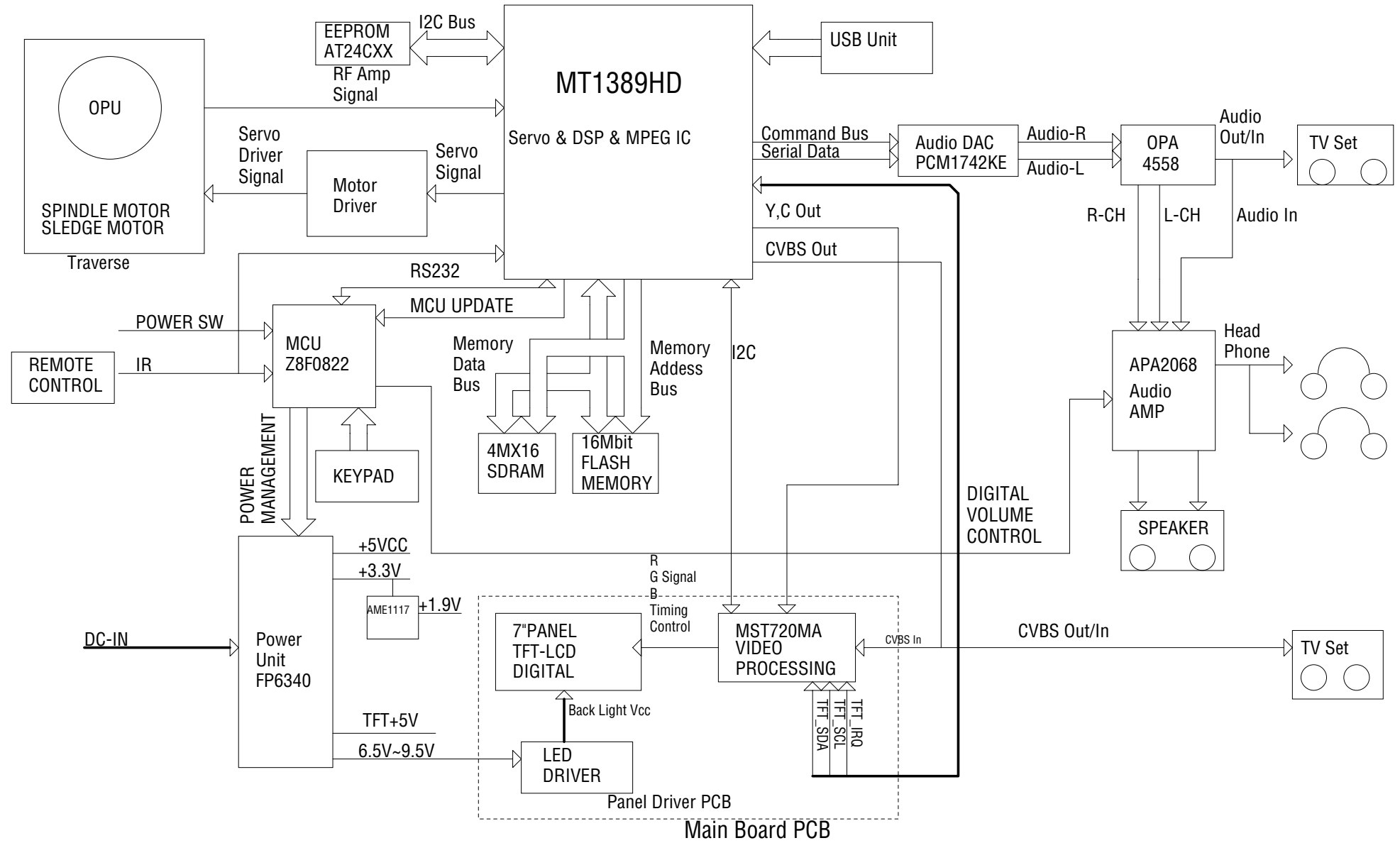
2-5. INSTALLATION OF TRAVERS



MEMO

SECTION 3 BLOCK DIAGRAMS

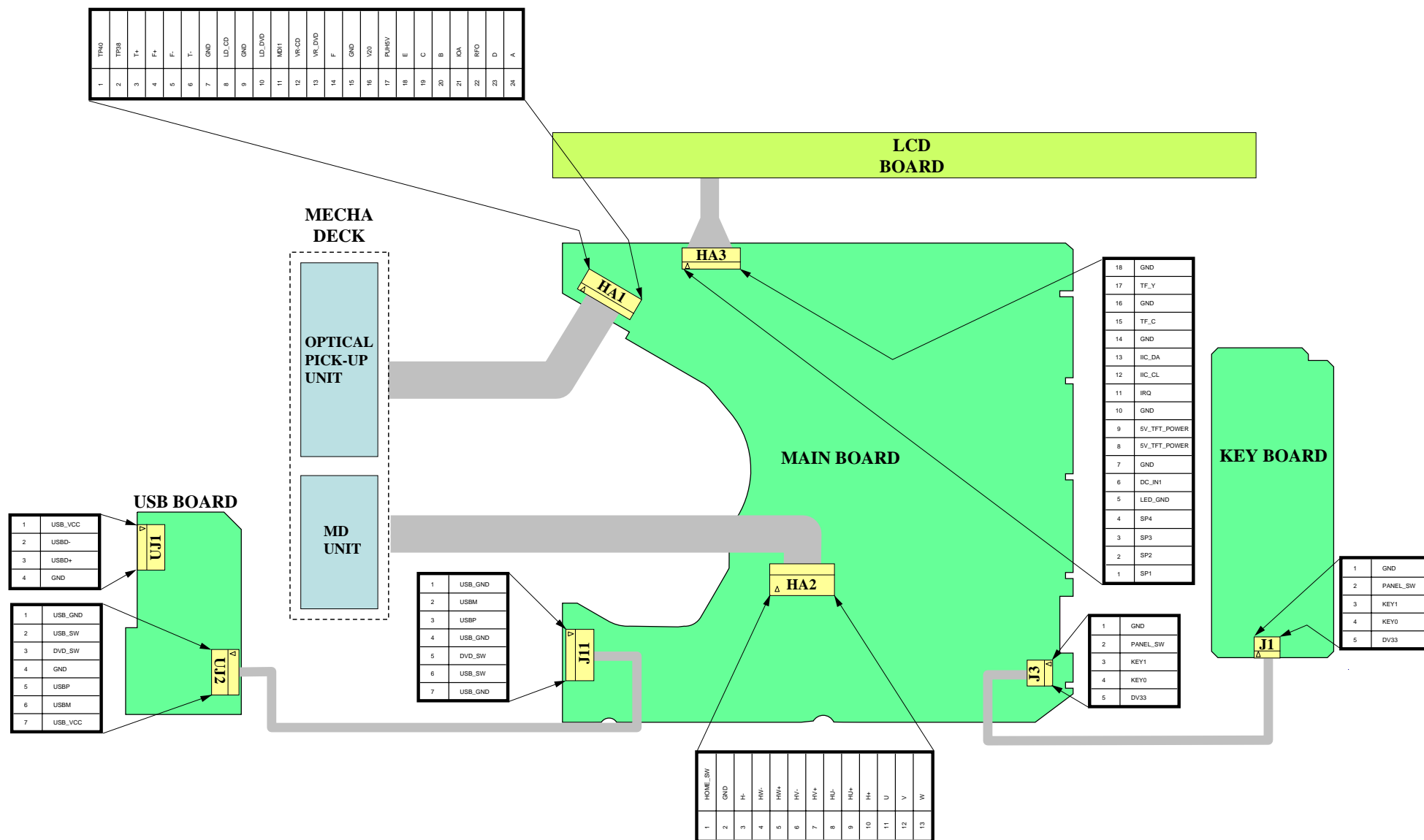
3-1. OVEALL BLOCK DIAGRAM



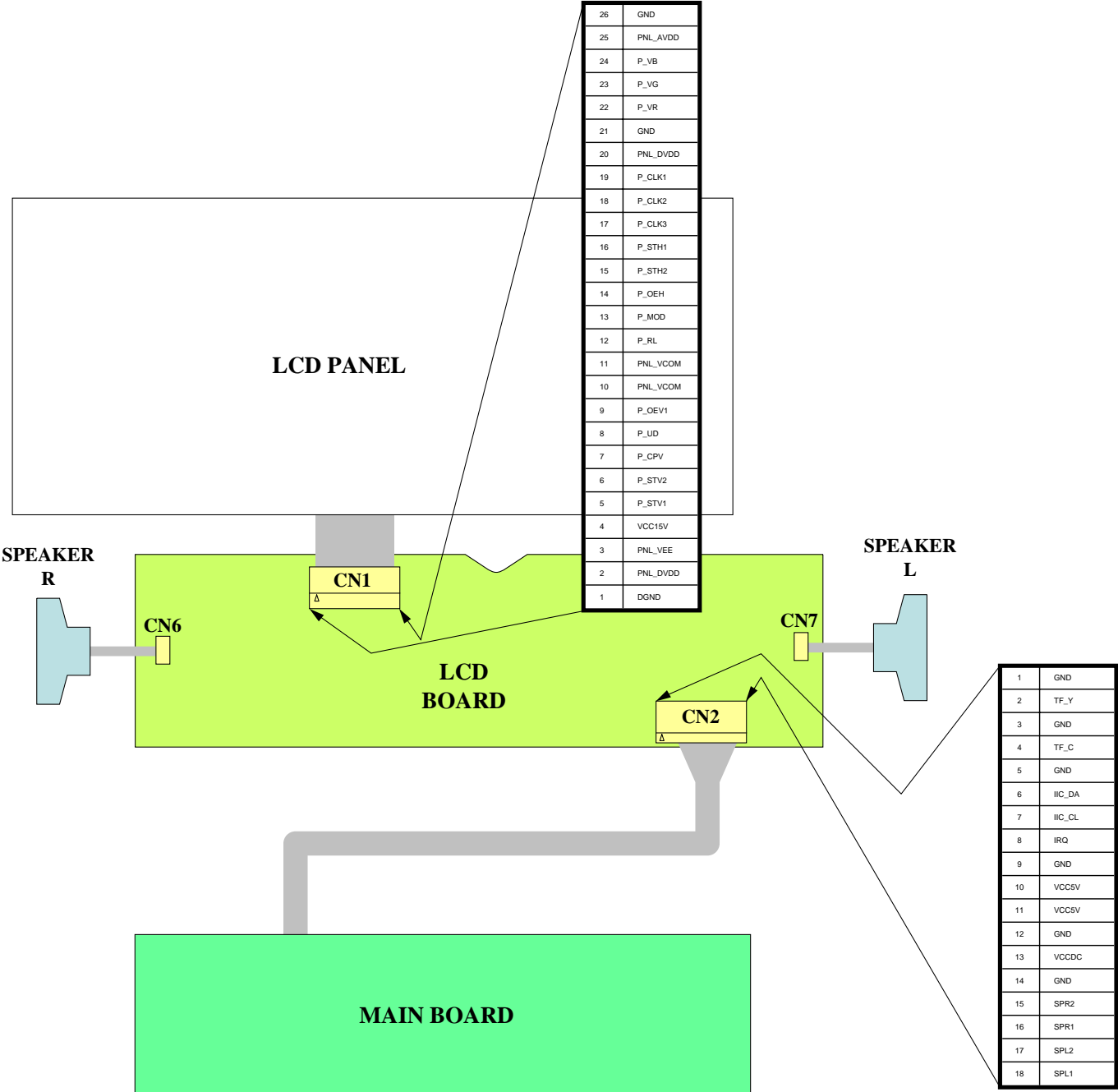
MEMO

SECTION 4 SCHEMATIC DIAGRAMS

4-1. FRAME (1/2)



FRAME (2/2)

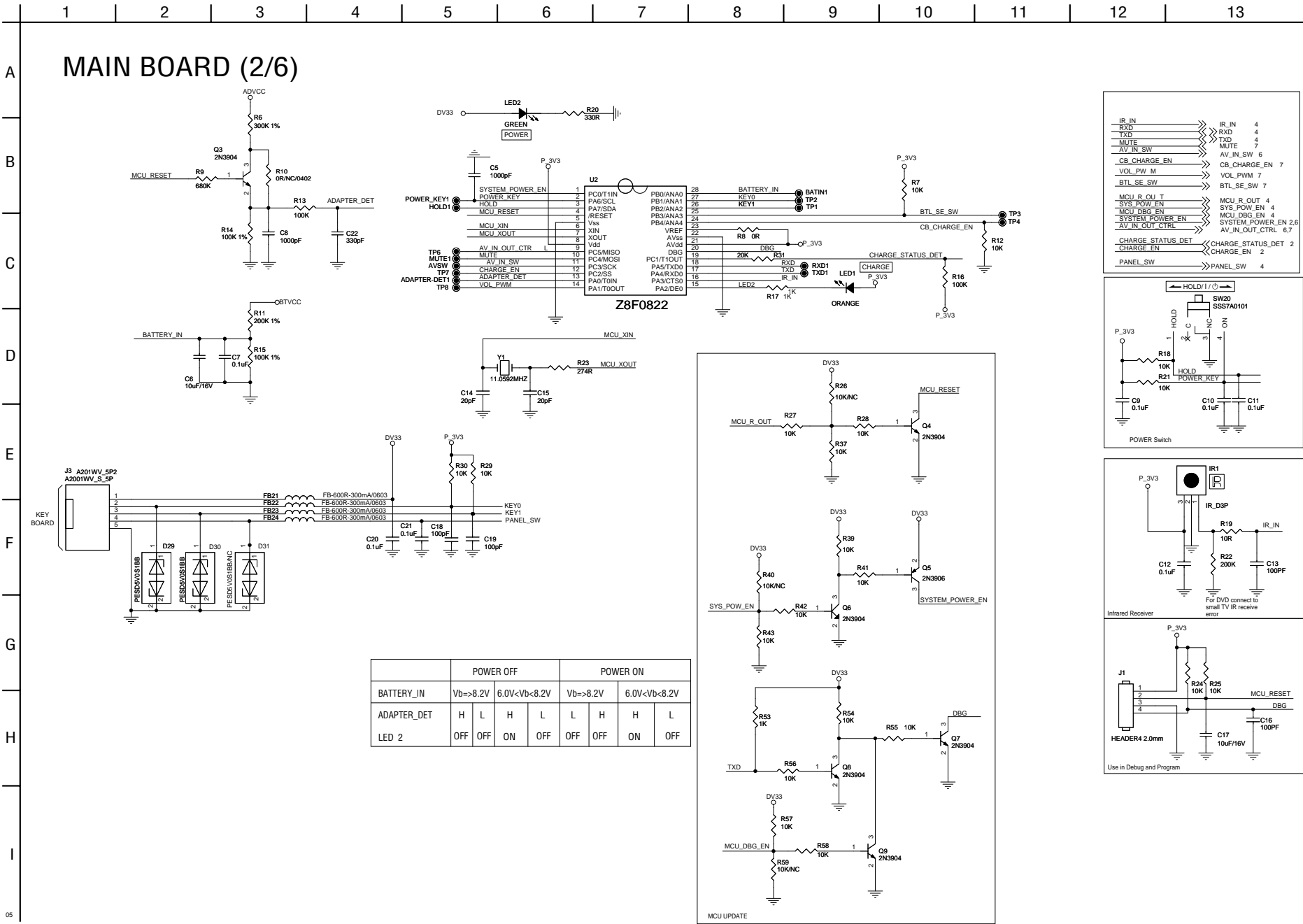


FRAME (2/2)

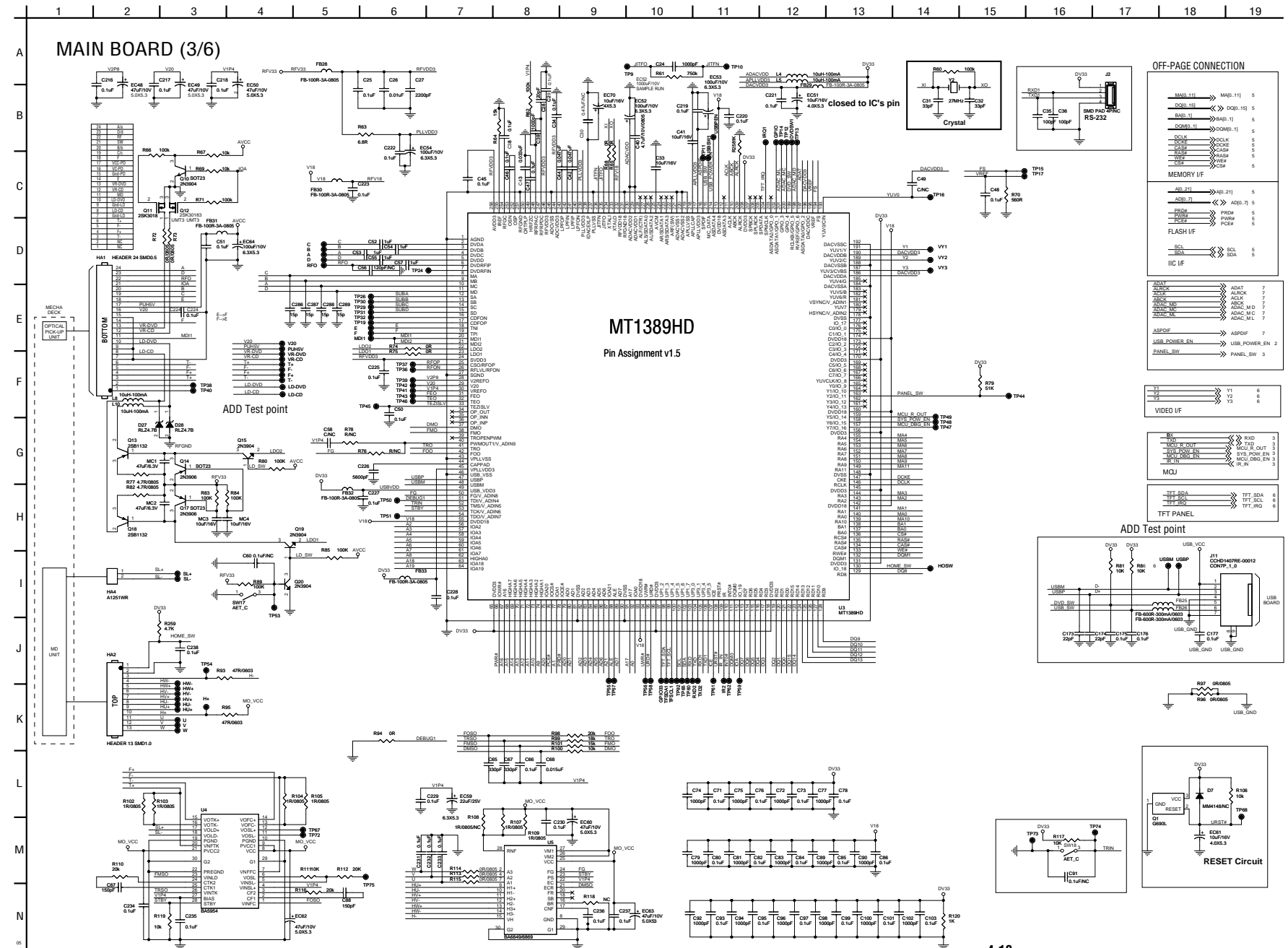
4-5



4-3. MCU & KEY • See page 5-3 for printed wiring board.



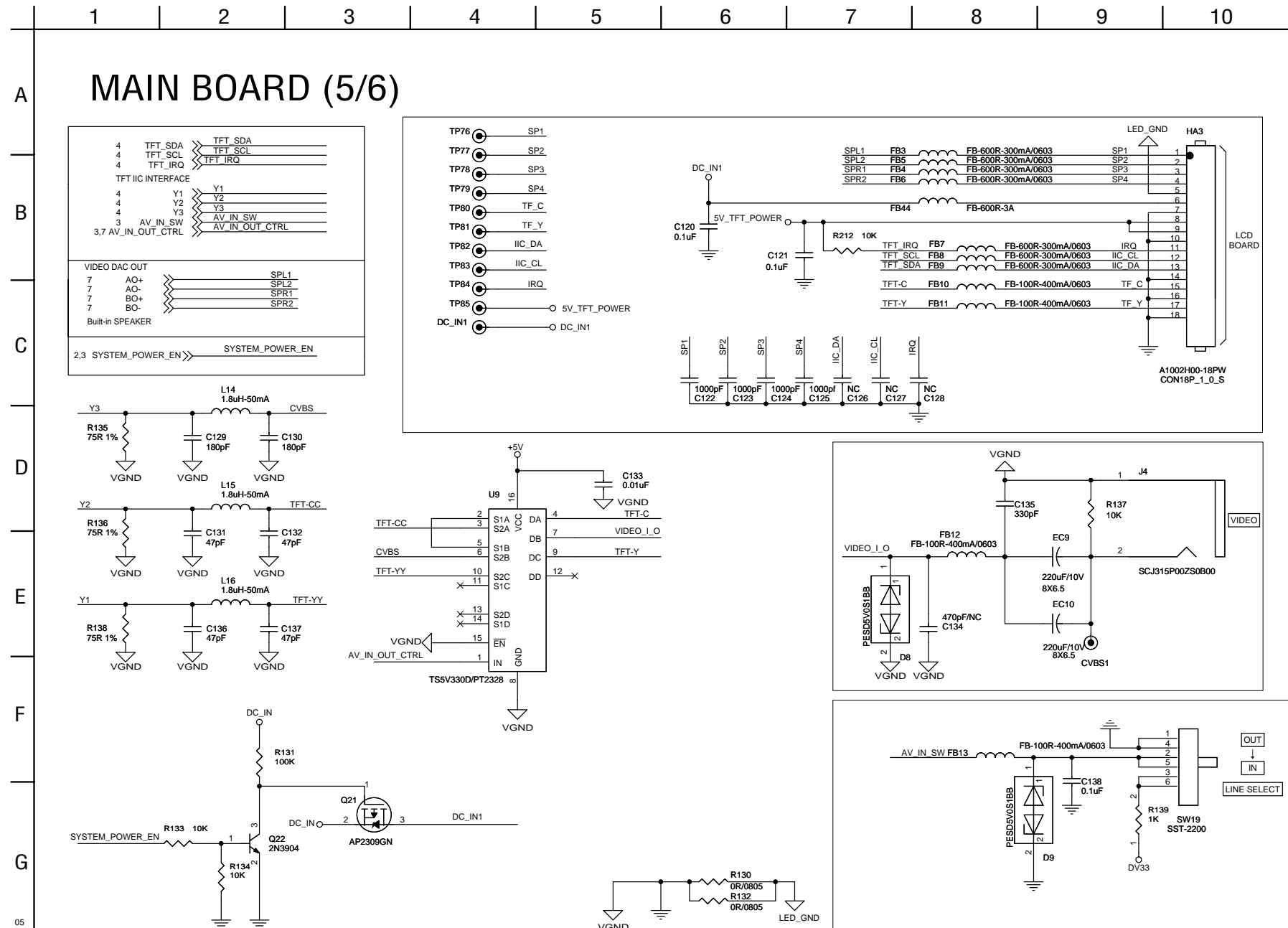
4-4. DVD SERVO & DSP MT1389HD • See page 5-3 for printed wiring board.



4-11



4-6. VIDEO OUT & PANEL CONNECT • See page 5-3 for printed wiring board.



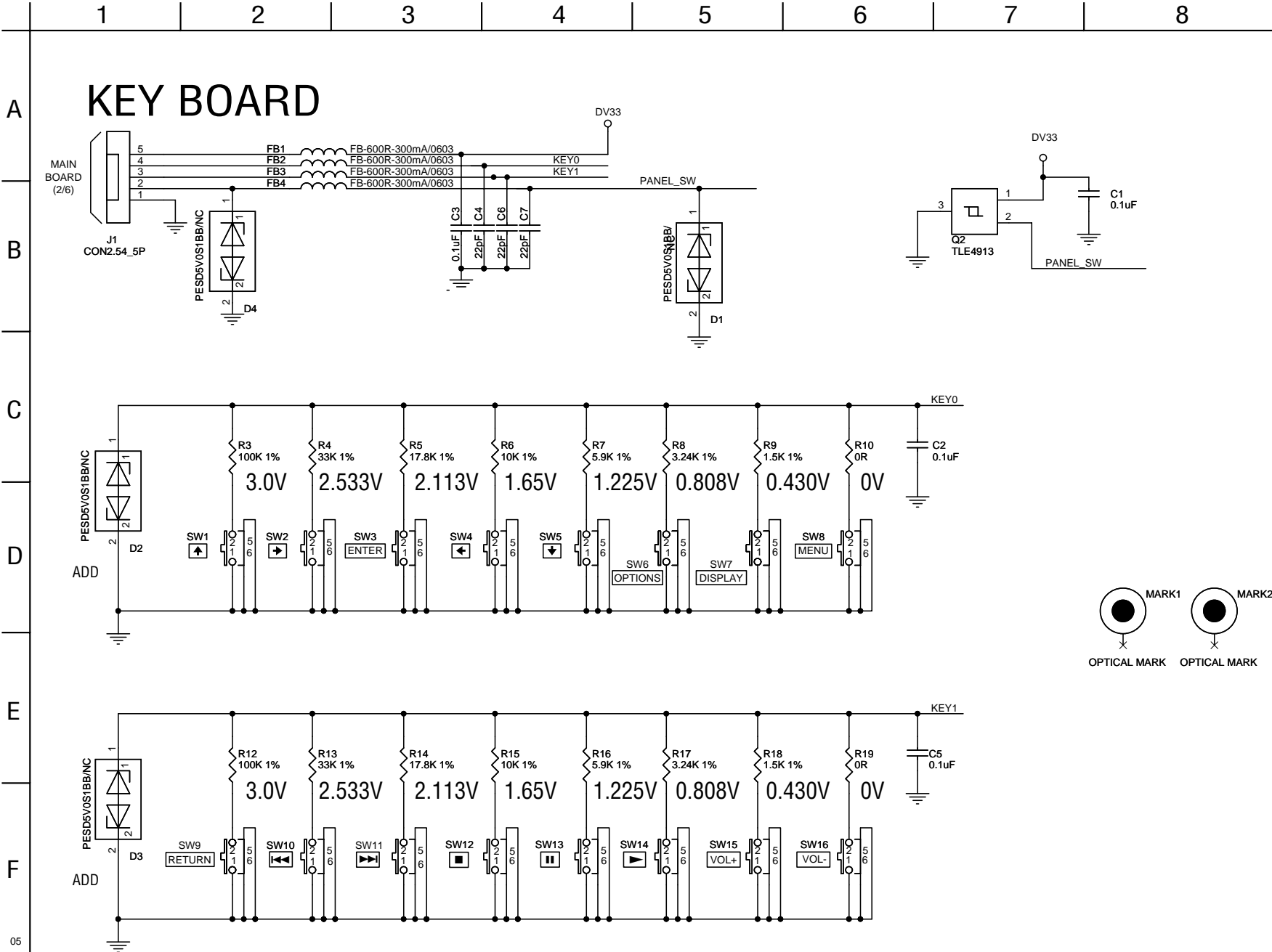


4-17

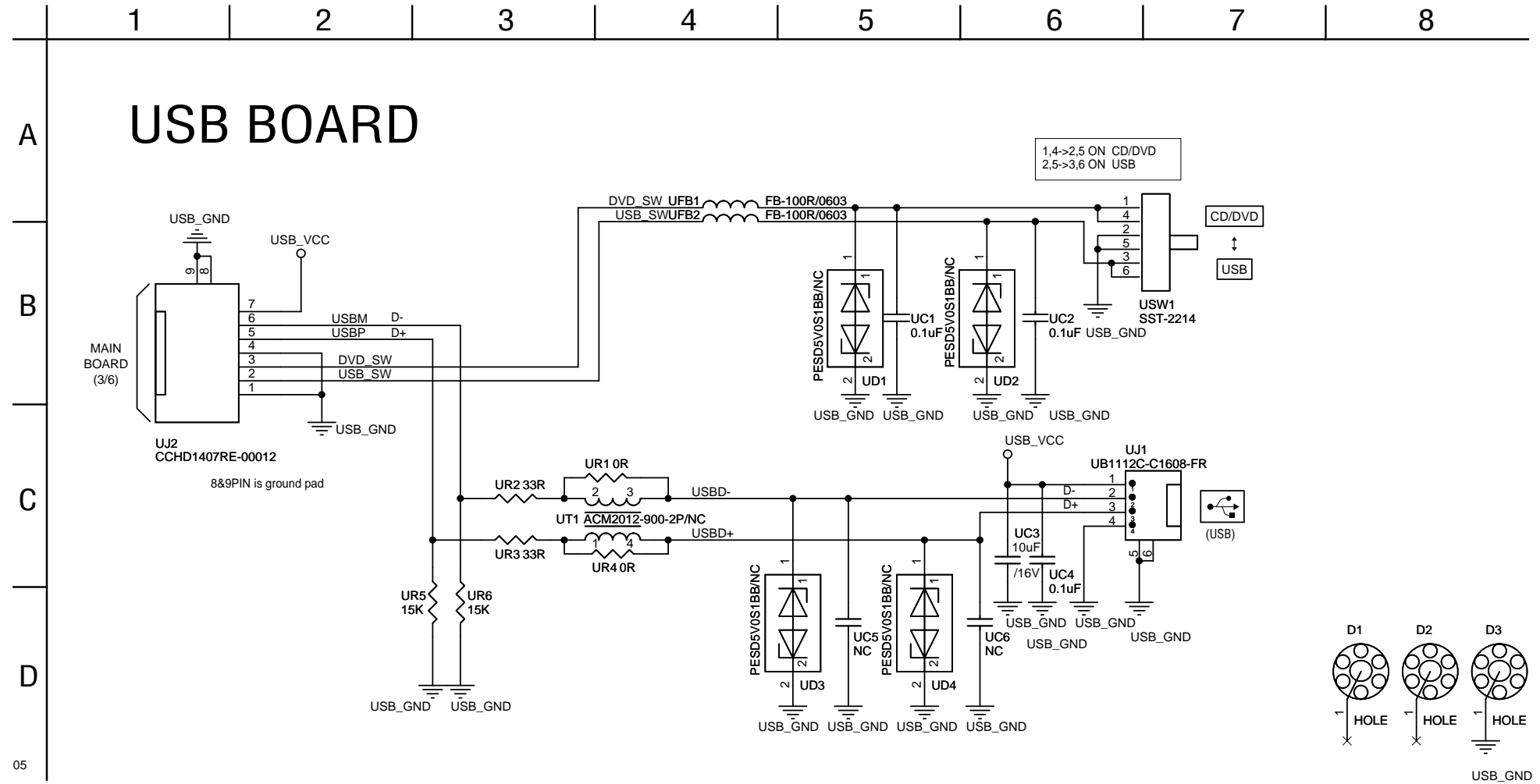


T-CON
LCD

4-9. KEY & HALL SW • See page 5-9 for printed wiring board.



4-10. USB PORT & MODE SW • See page 5-10 for printed wiring board.

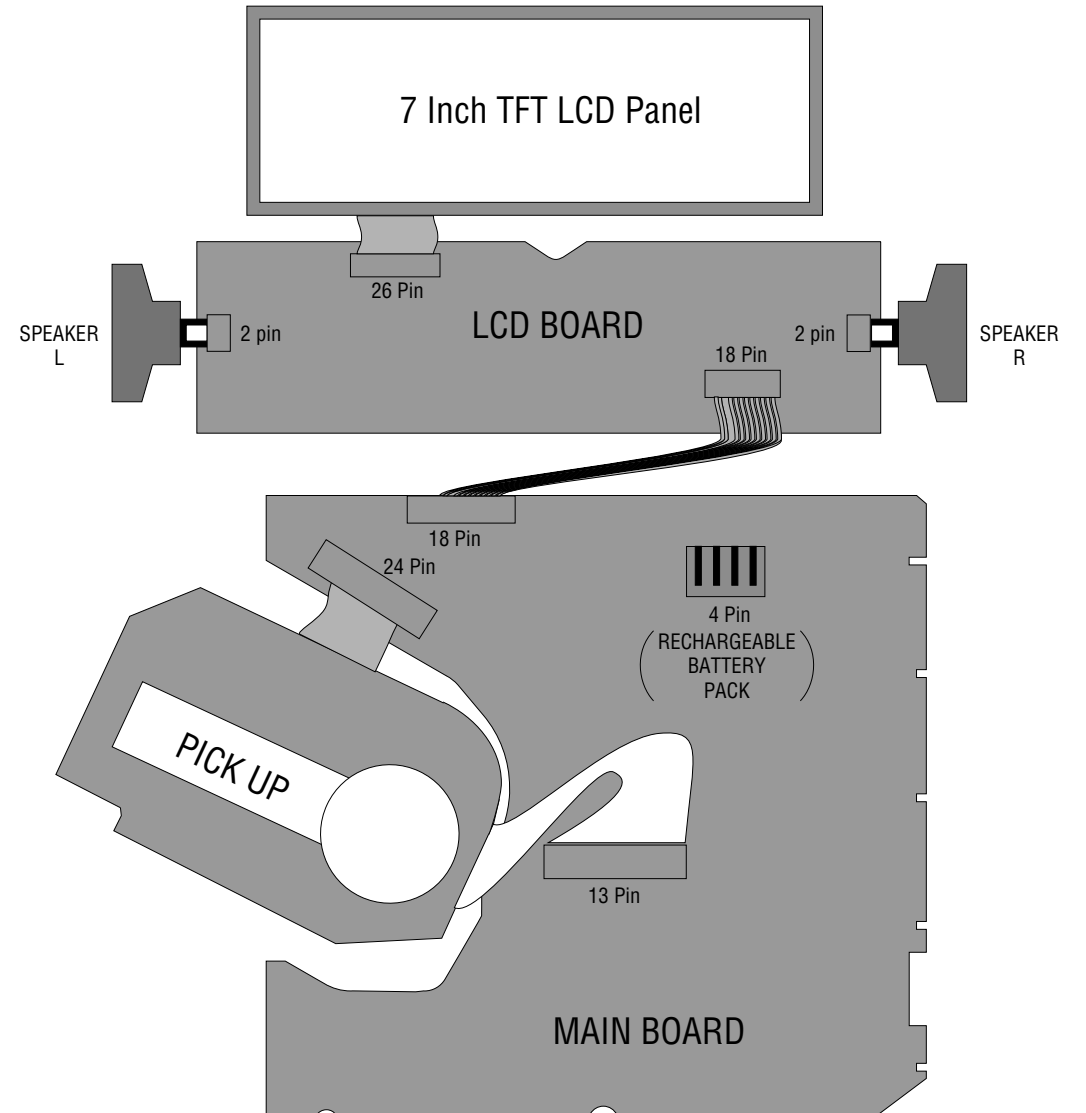
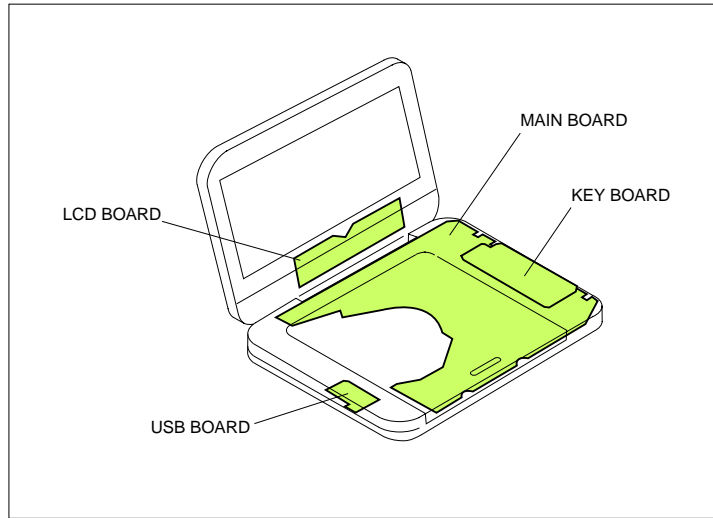


05

MEMO


SECTION 5 PRINTED WIRING BOARDS

5-1. CIRCUIT BOARDS LOCATION



5-2. MAIN BOARD

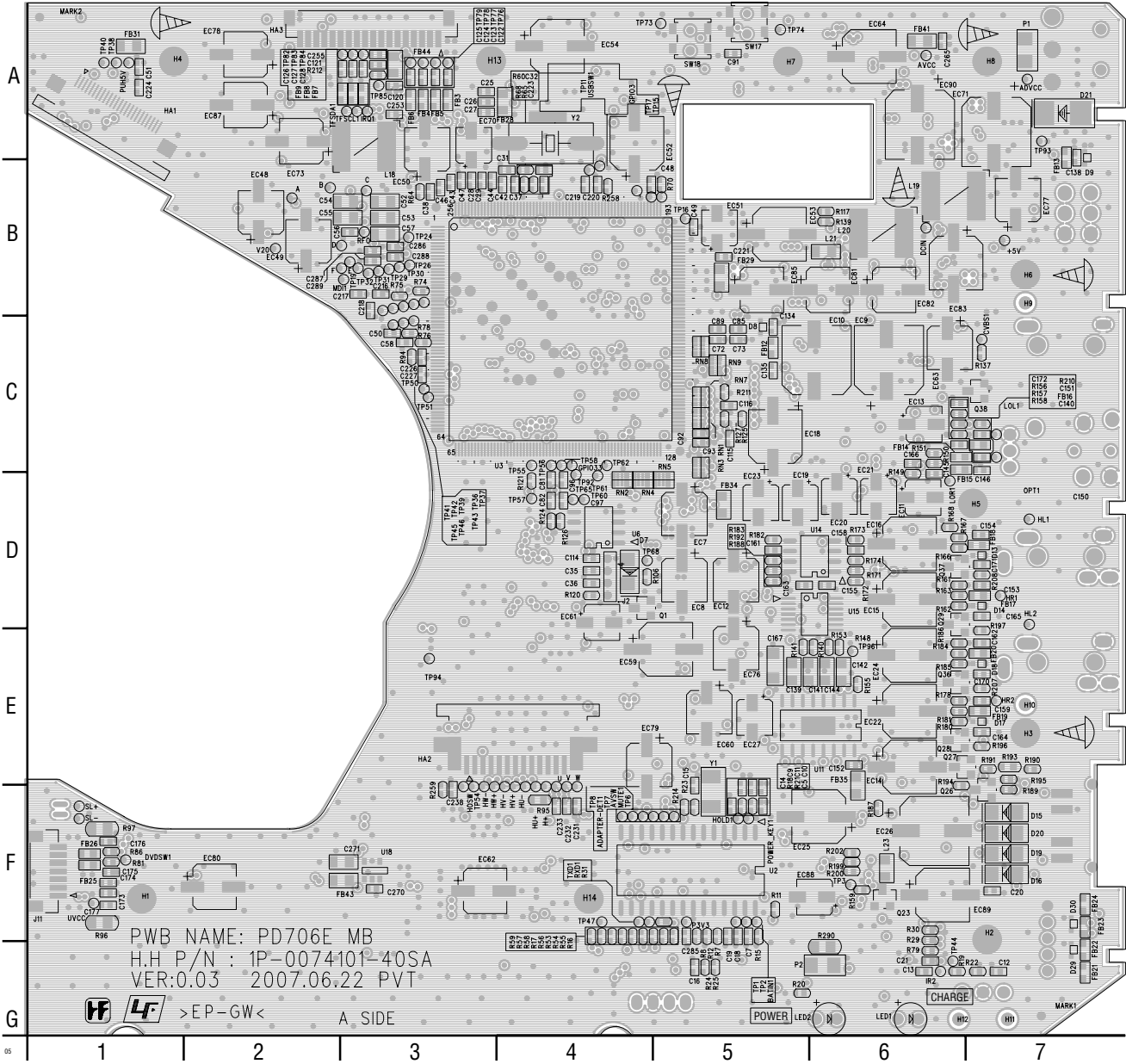
There are a few cases that the part isn't mounted in this model is printed on this diagram.

: Uses unleaded solder. • See page 5-1 for circuit boards location.

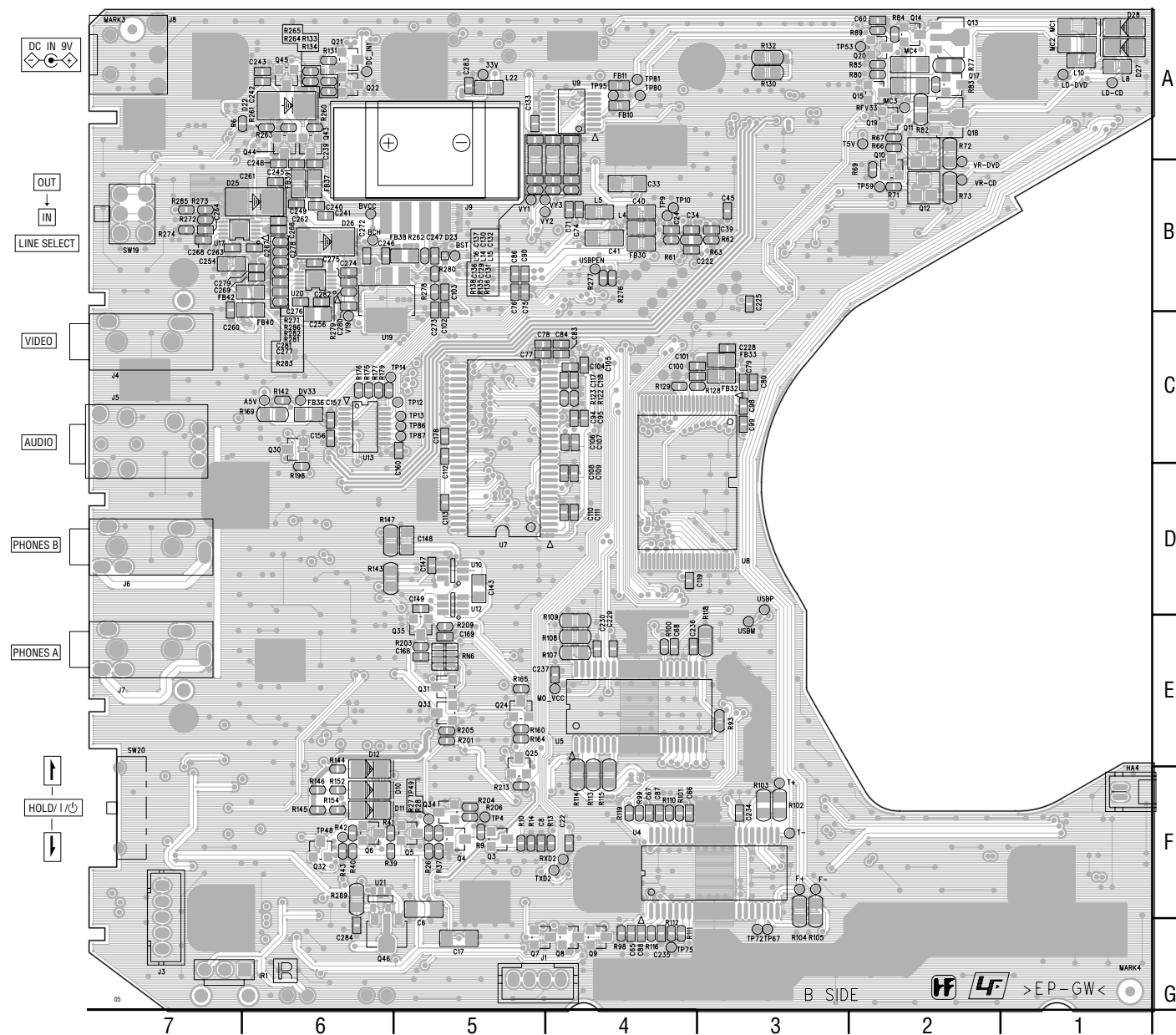
MAIN BOARD (SIDE A)

MAIN BOARD (SIDE A)

D8	C-5
D9	B-7
D13	D-7
D14	D-7
D15	F-7
D16	F-7
D17	E-7
D18	E-7
D19	F-7
D20	F-7
D21	A-7
D29	G-7
D30	F-7
HA1	A-1
HA2	E-3
HA3	A-2
J11	F-1
Q1	D-4
Q23	F-6
Q26	F-7
Q27	E-6
Q28	E-6
Q29	D-6
Q36	E-6
Q37	D-6
Q38	C-7
U2	F-5
U3	C-3
U6	D-4
U11	E-5
U14	D-6
U15	D-6
U18	F-3



MAIN BOARD (SIDE B)




MAIN BOARD (SIDE B)

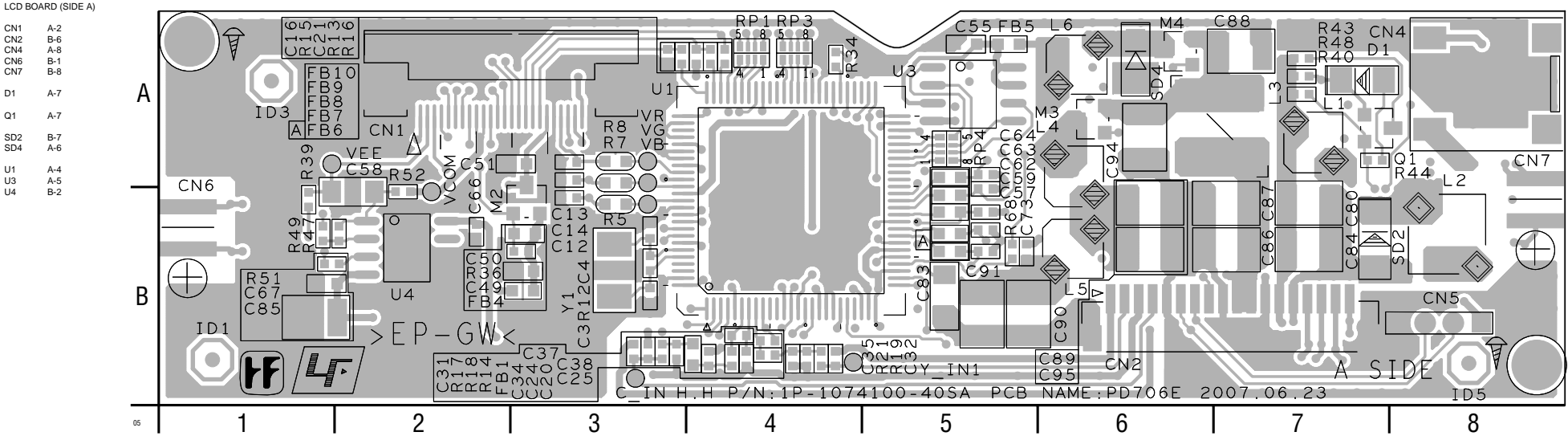
D10	F-6
D11	F-6
D12	F-6
D22	A-6
D23	B-5
D25	B-7
D26	B-6
D27	A-1
D28	A-1
HA4	F-1
J4	C-7
J5	C-7
J6	D-7
J7	E-7
J8	A-7
J9	B-5
Q3	F-5
Q4	F-5
Q5	F-5
Q6	F-6
Q7	G-5
Q8	G-4
Q9	G-4
Q10	B-2
Q11	A-2
Q12	B-2
Q13	A-2
Q14	A-2
Q15	A-2
Q17	A-2
Q18	A-2
Q19	A-2
Q20	A-2
Q21	A-6
Q22	A-6
Q24	E-5
Q25	E-5
Q30	C-6
Q31	E-5
Q32	F-6
Q35	E-5
Q43	A-6
Q44	A-6
Q45	A-6
Q46	F-6
U4	F-4
U5	E-4
U7	D-5
U8	D-4
U9	A-4
U10	D-5
U13	C-6
U17	B-7
U19	C-6
U20	B-6
U21	F-6

5-3. LCD BOARD

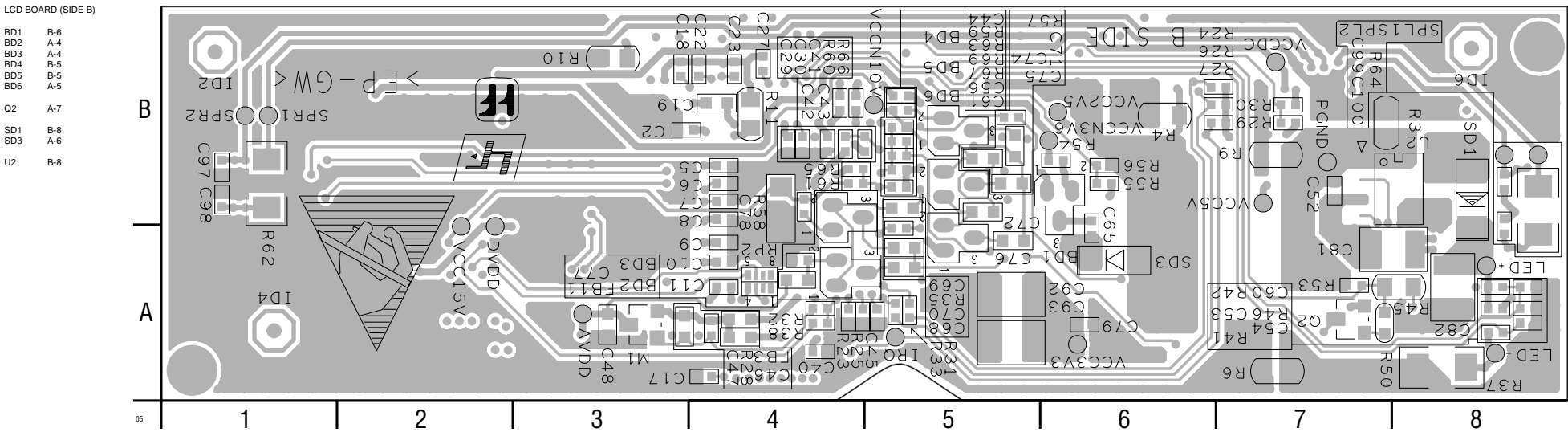
There are a few cases that the part isn't mounted in this model is printed on this diagram.

: Uses unleaded solder. • See page 5-1 for circuit boards location.


LCD BOARD (SIDE A)



LCD BOARD (SIDE B)

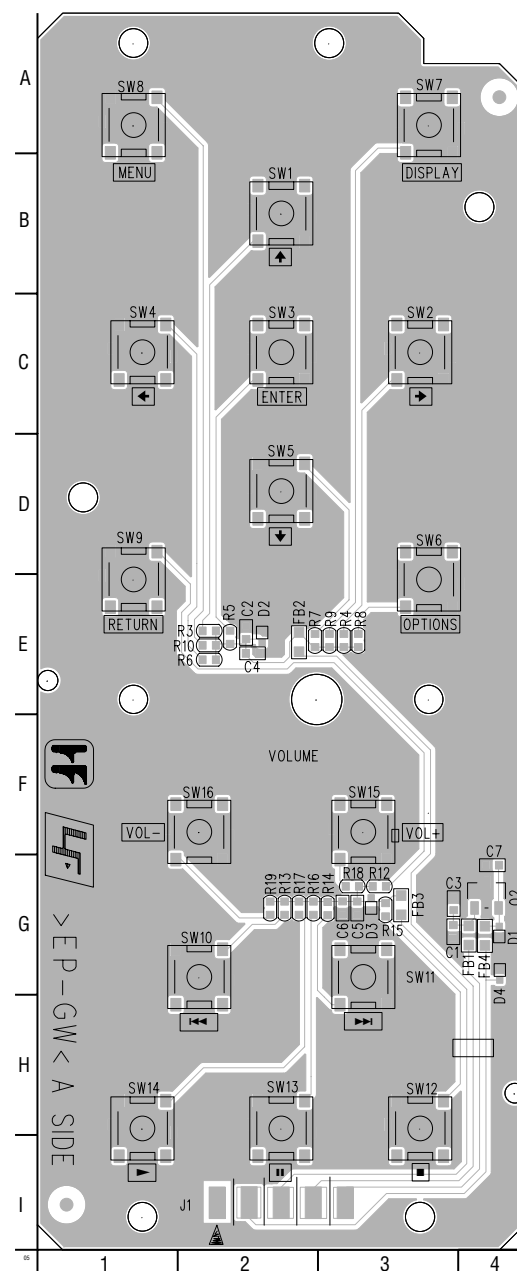


5-4. KEY BOARD, USB BOARD

: Uses unleaded solder. • See page 5-1 for circuit boards location.

There are a few cases that the part isn't mounted in this model is printed on this diagram.

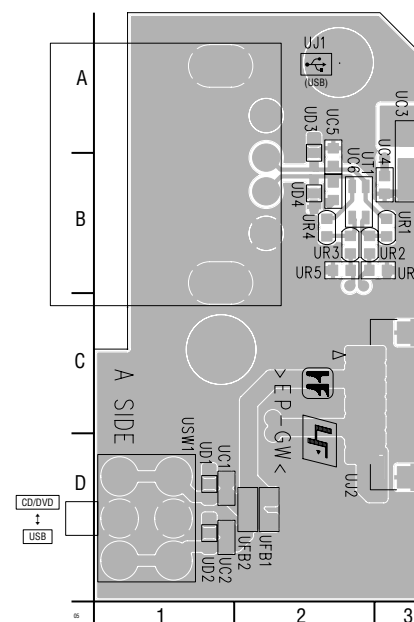
KEY BOARD



KEY BOARD

D1	G-4
D4	G-4
J1	I-2
Q2	G-4

USB BOARD



USB BOARD

UJ1	A1
UJ2	C3

MEMO

SECTION 6

WAVEFORMS AND CIRCUIT VOLTAGE

6-1. WAVEFORMS

1. Spindle control waveform (No disc condition)

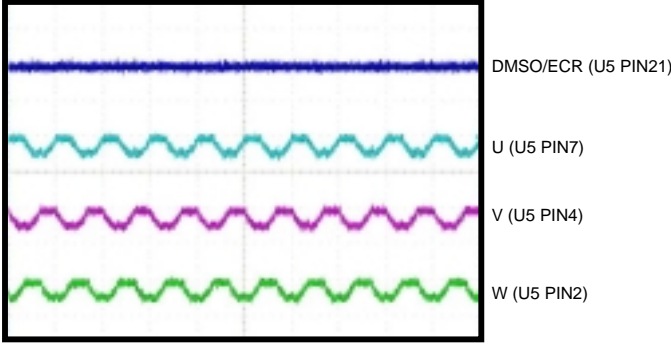


Fig 6-1

2. Tracking control relate signal (system checking-cd)

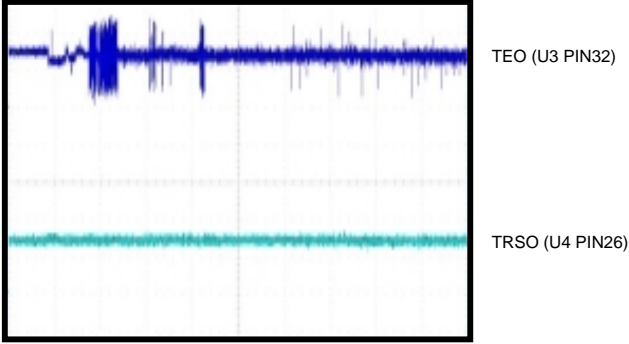


Fig 6-2

3. Tracking control relate signal (system checking-dvd)

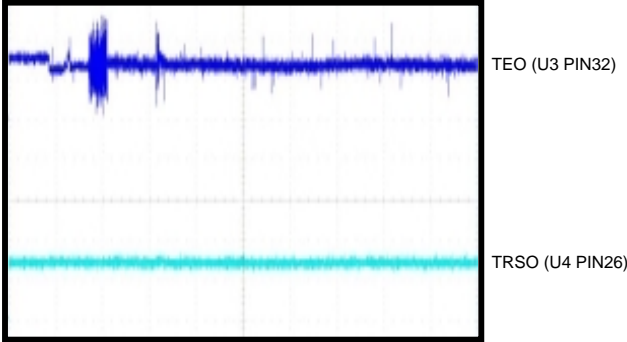


Fig 6-3

4. Audio output from IC (L/R)

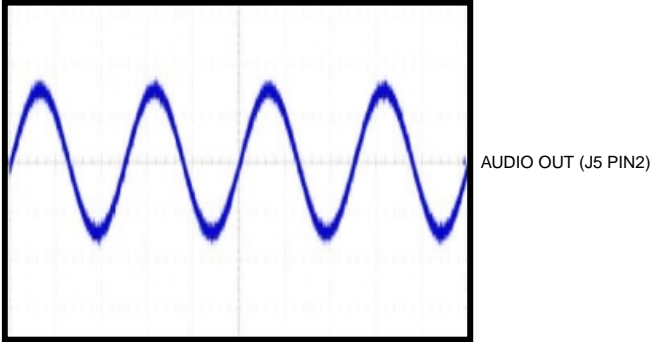


Fig 6-4

5. Audio related signal

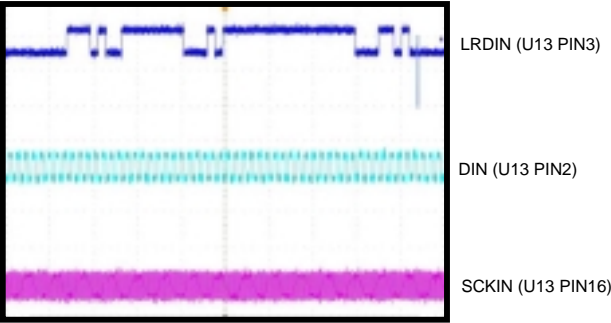


Fig 6-5

6. Video output waveform (CVBS)

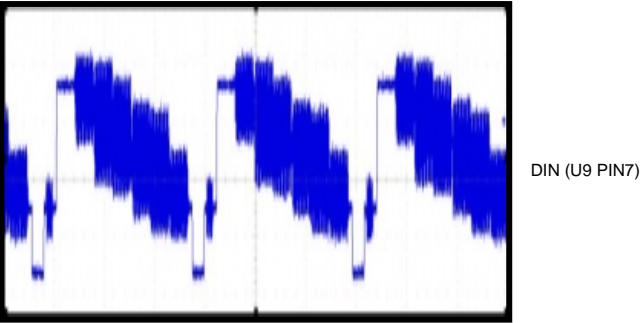


Fig 6-6

7. Video output waveform (Y/C)

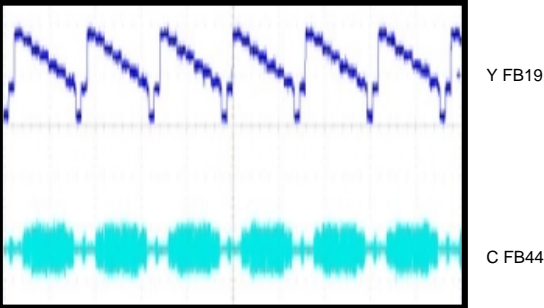


Fig 6-7

8. RF waveform

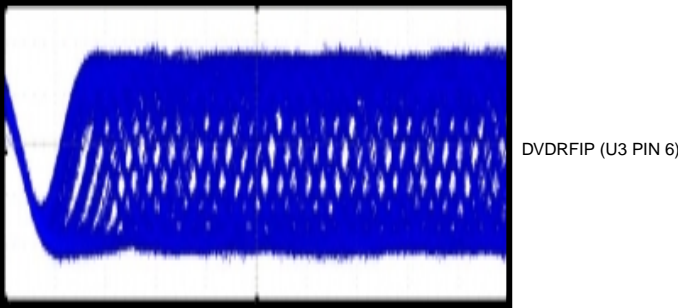


Fig 6-8

6-2. CIRCUIT VOLTAGE CHART

U3 (MT1389 MPEG)			U3 (MT1389 MPEG)			U3 (MT1389 MPEG)			U3 (MT1389 MPEG)			U3 (MT1389 MPEG)			U3 (MT1389 MPEG)		
PIN	STOP	PLAY	PIN	STOP	PLAY	PIN	STOP	PLAY	PIN	STOP	PLAY	PIN	STOP	PLAY	PIN	STOP	PLAY
1	0	0	51	0	0	101	3.266	3.269	151	0.041	0.026	201	3.256	3.267	251	0	0
2	0.236	0	52	3.262	0	102	3.266	3.263	152	1.114	1.143	202	0.036	0.039	252	1.68	1.661
3	0.17	0.028	53	0.032	3.212	103	3.302	3.282	153	1.591	1.601	203	0.014	0.034	253	1.684	1.673
4	0.157	0.029	54	0.002	3.246	104	3.026	3.027	154	1.597	1.611	204	2.641	5.027	254	0.983	1.43
5	0.159	0.034	55	1.923	1.905	105	2.723	2.707	155	1.038	1.051	205	3.26	3.404	255	0.896	0.899
6	1.75	1.695	56	2.045	2.022	106	3.262	3.269	156	3.263	3.255	206	3.26	3.247	256	3.262	3.265
7	1.749	1.696	57	1.801	1.848	107	0.014	0.053	157	1.992	1.993	207	0.03	0.034			
8	2.192	2.037	58	2.553	1.963	108	3.263	3.268	158	0	0	208	3.262	3.272			
9	2.003	2.039	59	2.533	2.172	109	2.772	2.978	159	0	0	209	1.535	1.524			
10	2.005	2.035	60	1.558	2.141	110	2.772	2.726	160	1.912	1.928	210	1.585	1.649			
11	2.193	2.047	61	0.825	1.963	111	3.263	2.892	161	3.536	3.536	211	1.586	1.608			
12	0.807	1.03	62	0.023	1.542	112	3.254	0.047	162	2.614	2.65	212	0.009	0.034			
13	0.81	1.027	63	0.037	0.822	113	1.635	1.321	163	3.228	3.229	213	1.909	1.927			
14	0.775	1.031	64	0.042	0.04	114	0.13	0.633	164	3.238	3.156	214	0.036	0.039			
15	0.687	1.033	65	3.263	3.269	115	1.2	0.866	165	3.238	2.65	215	2.955	2.965			
16	0.642	1.047	66	3.262	3.268	116	0.804	1.15	166	3.238	3.126	216	1.643	1.651			
17	0.616	1.038	67	0.089	0.107	117	1.048	1.261	167	3.263	3.024	217	3.26	3.27			
18	2.013	2.023	68	0.216	0.561	118	3.262	3.271	168	3.263	3	218	1.277	1.84			
19	2.009	2.006	69	0.108	0.897	119	0.883	1.18	169	3.262	3.547	219	0	0			
20	0.003	0.177	70	3.262	2.853	120	0.94	1.083	170	3.262	3.272	220	0	0			
21	0.005	0.177	71	0	3.052	121	0.97	1.207	171	3.072	3.564	221	0	0			
22	3.227	3.226	72	3.262	2.876	122	0.123	1.166	172	2.969	2.667	222	3.224	3.223			
23	3.246	3.013	73	0.029	0	123	1.604	1.457	173	3.324	3.132	223	1.612	1.612			
24	3.267	3.255	74	0.027	1.638	124	1.095	1.177	174	3.263	0	224	1.61	1.612			
25	2.809	2.747	75	0.026	0.026	125	1.29	0.955	175	0.011	2.878	225	1.591	1.591			
26	2.073	1.763	76	0.025	0.022	126	1.064	1.146	176	0.026	3.342	226	1.613	1.612			
27	0	0	77	0.008	2.01	127	0.805	0.804	177	0.042	3.342	227	1.595	1.612			
28	2.779	2.705	78	0.008	0.024	128	0.852	1.004	178	0	0	228	1.739	1.613			
29	2.03	2	79	3.268	1.451	129	0.961	1.264	179	0.052	0.03	229	3.249	3.259			
30	1.395	1.378	80	3.257	1.605	130	2.554	3.242	180	3.258	2.796	230	3.249	3.259			
31	1.435	1.187	81	0	0	131	3.262	3.272	181	3.258	3.242	231	0	0			
32	1.549	1.308	82	3.267	1.153	132	2.955	2.963	182	0.556	0.897	232	1.906	1.923			
33	1.551	1.311	83	3.267	1.051	133	3.242	3.251	183	0.558	0.943	233	0.697	0.701			
34	0.214	0.348	84	3.268	1.532	134	3.116	3.125	184	0	0	234	0.703	0.621			
35	0.347	1.238	85	3.267	1.816	135	3.211	3.201	185	0.554	0.516	235	0.53	0.971			
36	1.051	1.238	86	3.267	1.993	136	3.067	3.076	186	3.257	3.268	236	1.122	0.965			
37	1.399	1.378	87	2.921	2.993	137	0.928	0.893	187	0.96	0.937	237	0	0			
38	1.399	1.372	88	0	1.2	138	0.933	0.896	188	0	0	238	0.029	0.038			
39	1.399	1.377	89	3.267	0.962	139	0.035	0.046	189	1.348	0.667	239	3.204	3.201			
40	1.397	1.377	90	0	0	140	0.167	0.177	190	3.256	3.266	240	3.059	1.671			
41	1.394	1.017	91	0	0.076	141	0.97	1.043	191	0.96	0.473	241	0.008	1.581			
42	1.394	1.372	92	1.553	1.922	142	1.912	1.809	192	0	0	242	1.598	0			
43	0	0	93	1.929	1.922	143	0.987	2.428	193	1.959	1.99	243	1.041	1.578			
44	1.806	0	94	1.927	2.816	144	1.013	1.52	194	1.302	1.315	244	3.262	3.265			
45	3.263	1.827	95	3.19	3.245	145	3.262	3.272	195	1.298	1.315	245	0	0			
46	0	0	96	3.266	0	146	1.584	1.605	196	3.256	3.267	246	3.262	3.265			
47	0.866	0.795	97	0	0.015	147	3.262	3.27	197	0.035	0.039	247	0.255	2.305			
48	0.451	0.69	98	3.262	5.033	148	0	0	198	0.035	0.039	248	1.358	1.345			
49	3.265	3.26	99	0	5.033	149	0.015	0.042	199	3.258	3.269	249	3.244	1.544			
50	3.746	2.051	100	0	2.706	150	0.041	0.069	200	3.257	3.267	250	1.397	1.866			

U7 (SDRAM)			U7 (SDRAM)		
PIN	STOP	PLAY	PIN	STOP	PLAY
1	3.266	3.263	51	0.078	1.449
2	1.017	1.612	52	0	0
3	3.266	3.266	53	0.056	0.591
4	1.032	0.579	54	0	0
5	0.079	1.133			
6	0	0			
7	0.05	1.249			
8	0.052	1.109			
9	3.267	3.265			
10	0.079	1.156			
11	0.076	1.121			
12	0	0			
13	0.053	1.078			
14	3.267	3.265			
15	3.259	2.945			
16	3.264	3.242			
17	3.261	3.117			
18	3.26	3.208			
19	3.256	3.062			
20	0.062	1.109			
21	0.07	0.906			
22	0.043	0.033			
23	0.306	0.607			
24	1.492	0.944			
25	1.458	1.024			
26	1.592	1.703			
27	3.267	3.264			
28	0	0			
29	1.592	1.475			
30	1.577	1.065			
31	1.578	1.602			
32	1.56	1.4			
33	1.559	1.266			
34	0.039	0.042			
35	0.045	0.059			
36	0.003	0			
37	3.266	3.265			
38	1.583	1.555			
39	3.26	2.961			
40	0.003	0			
41	0	0			
42	0.6	0.963			
43	3.267	3.266			
44	0.077	0.609			
45	0.08	1.007			
46	0	0			
47	0.05	1.065			
48	0.05	1.203			
49	3.267	3.266			
50	0.079	0.734			

U8 (FLASH)		
PIN	STOP	PLAY
1	0.107	0.118
2	2.25	2.241
3	2.41	2.401
4	1.51	1.735
5	1.97	2.061
6	1.497	1.503
7	1.167	0.889
8	1.64	2.495
9	0.026	0.026
10	0.045	0.106
11	3.266	3.258
12	3.266	0
13	0	0
14	0	0
15	1.02	0
16	0.04	0.041
17	0.83	0.822
18	2.47	1.979
19	2.18	1.998
20	2.27	2.141
21	3.26	2.172
22	3.26	1.963
23	0.84	1.849
24	3.26	2.024
25	2.179	1.982
26	0.025	0
27	0	0
28	0.023	0
29	1.881	1.564
30	0.307	0.393
31	0.287	1.739
32	1.056	0.39
33	0.294	1.751
34	0.378	0.43
35	0.296	0
36	1.375	0
37	0.031	0
38	3.266	0
39	0.021	0
40	2.001	2.133
41	0.247	0
42	1.607	0
43	0.267	0
44	2.434	1.75
45	0.233	0
46	0	0
47	0	0
48	0	0.8

U2 (MCU Z8F0822)		
PIN	STOP	PLAY
1	3.261	3.228
2	3.301	3.261
3	3.301	3.261
4	3.297	3.257
5	0	0
6	1.588	1.584
7	1.834	1.733
8	3.304	3.262
9	3.262	3.261
10	3.293	3.293
11	3.27	3.264
12	3.032	3.016
13	2.376	2.379
14	2.175	1.637
15	3.3	3.26
16	2.773	2.729
17	3.026	3.02
18	3.3	0.038
19	3.263	3.259
20	3.3	3.26
21	3.3	3.262
22	0	0
23	3.3	3.263
24	3	2.993
25	3.3	3.262
26	3.241	3.216
27	3.241	3.215
28	0.134	1.388

U15 (74HC4066)		
PIN	STOP	PLAY
1	0	0
2	0	0
3	0	0
4	0	0
5	5.046	5.094
6	5.046	5.094
7	-4.965	-4.924
8	0	0
9	0	0
10	0	0
11	0	0
12	5.042	5.094
13	5.042	5.094
14	5.095	5.134

U11 (APA2068KA)		
PIN	STOP	PLAY
1	0	0
2	3.012	2.952
3	2.498	2.496
4	2.488	2.489
5	0	0
6	2.503	2.501
7	4.023	0
8	0	0
9	2.536	2.535
10	5.1	5.096
11	2.536	2.535
12	0	0
13	4.632	2.825
14	2.533	2.532
15	5.12	5.098
16	2.541	2.54

U14 (4558)		
PIN	STOP	PLAY
1	0	0
2	0	0
3	0	0
4	-4.86	-4.859
5	0	0
6	0	0
7	0	0
8	4.988	4.99

U6 (EEPROM 24C16)		
PIN	STOP	PLAY
1	0	0
2	0	0
3	0.037	0.074
4	0	0
5	3.266	3.26
6	3.266	3.26
7	0	0
8	3.266	3.26

U5 (BA6849)		
PIN	STOP	PLAY
1	0	0
2	0	3.762
3	0	0
4	0	3.765
5	0	0
6	0	0
7	0	3.767
8	0	0
9	1.142	3.121
10	1.132	3.123
11	1.132	3.101
12	1.136	3.1
13	1.161	3.147
14	1.184	3.154
15	1.106	1.184
16	0	0
17	0	0.581
18	0	0
19	0	0
20	5.3	0.021
21	1.399	1.463
22	1.395	1.369
23	0.133	3.205
24	4.023	2.055
25	5.312	5.064
26	5.323	5.063
27	5.306	5.064
28	5.27	5.051

U4 (BA5954)		
PIN	STOP	PLAY
1	1.281	1.387
2	1.107	2.522
3	0.204	2.52
4	1.373	1.369
5	0.765	1.373
6	0.626	1.37
7	0.102	2.512
8	5.097	5.081
9	5.098	5.081
10	0	0
11	0.228	2.525
12	0.23	2.521
13	1.105	2.519
14	0.24	2.543
15	0.197	2.529
16	1.111	2.529
17	1.1	2.579
18	1.101	2.57
19	2.367	0
20	1.138	2.513
21	0.727	5.064
22	0	0
23	1.305	1.375
24	0.19	2.519
25	1.106	2.521
26	1.283	1.366
27	1.379	1.369
28	0.041	3.228

U13 (PCM1742 KE)		
PIN	STOP	PLAY
1	1.653	1.645
2	0.052	0.044
3	1.544	1.539
4	0	0
5	3.266	3.261
6	4.881	4.828
7	2.447	2.435
8	2.412	2.401
9	0	0
10	2.411	2.416
11	3.266	3.259
12	3.266	3.259
13	0.051	0.044
14	3.262	3.255
15	3.262	3.255
16	1.62	1.595

U18 (PT2328-X(L))		
PIN	STOP	PLAY
1	3.262	3.26
2	1.596	1.481
3	1.748	1.413
4	1.96	1.412
5	1.746	1.487
6	1.615	1.423
7	1.95	1.456
8	0	0
9	0.943	1.468
10	0.943	1.467
11	3.35	1.294
12	3.3	1.234
13	3.3	1.214
14	3.3	1.244
15	0	0
16	5.2	5.136

SECTION 7

IC PIN FUNCTION DESCRIPTION

7-1. MPEG/DSP/RF PIN FUNCTION (MAIN BOARD U3: MT1389HD)

Pin number	Name	I/O	Description
1	AGND	-	Analog ground
2	DVDA	I	AC coupled input path A
3	DVDB	I	AC coupled input path B
4	DVDC	I	AC coupled input path C
5	DVDD	I	AC coupled input path D
6	DVDRFIP	I	AC coupled DVD RF signal
7	DVDRFIN	I	TP45
8	MA	I	DC coupled main-beam RF signal input A
9	MB	I	DC coupled main-beam RF signal input B
10	MC	I	DC coupled main-beam RF signal input C
11	MD	I	DC coupled main-beam RF signal input D
12	SA	I	DC coupled sub-beam RF signal input A
13	SB	I	DC coupled sub-beam RF signal input B
14	SC	I	DC coupled sub-beam RF signal input C
15	SD	I	DC coupled sub-beam RF signal input D
16	CDFON	I	TP52
17	CDFOP	I	TP53
18	TNI	I	3 beam satellite PD signal negative input
19	TPI	I	3 beam satellite PD signal positive input
20	MDI1	I	Laser power monitor input
21	MDI2	I	Laser power monitor
22	LDO2	O	Laser driver output
23	LDO1	O	Laser driver output
24	SVDD3	-	Analog power 3.3V
25	CSO	O	Positive main beam summing output
26	RFLVL	O	Negative main beam summing output
27	SGND	-	Analog ground
28	V2REFO	O	Reference voltage 2.8V
29	V20	O	Reference voltage 2.0V
30	VREFO	O	Reference voltage 1.4V
31	FEO	O	Focus error monitor output
32	TEO	O	Tracking error monitor output
33	TEZISLV	O	TE Slicing Level
34	OP_OUT	O	TP162
35	OP_INN	I	TP163
36	OP_INP	I	TP164
37	DMO	O	Disk motor control output. PWM output.
38	FMO	O	Feed motor control. PWM output.
39	TROPENPWM	(-)	N.C.
40	PWMOUT1 / V_ADIN9	O	1stGeneral PWM output, or Version AD input 9
41	TRO	O	Tracking servo output. PDM output of tracking servo compensator
42	FOO	O	Focus servo output. PDM output of focus servo compensator
43	VPLLVS	-	Analog ground for VPLL
44	CAPPAD	I	Capacitance connection
45	VPLLVDD3	-	Analog 3.3V Power for VPLL
46	USB_VSS	-	USB ground pin
47	USBP	I	USB port DPLUS analog pin
48	USBM	I	USB port DMINUS analog pinPin

Pin number	Name	I/O	Description
49	USB_VDD3	-	USB Power pin 3.3V
50	FG/V_ADIN8	I	Motor Hall sensor input, or Version AD input 8
51	TDI/V_ADIN4	I/O	Serial interface port 3 data-out Version AD input port 4 GPIO
52	TMS/V_ADIN5	I/O	Serial interface port 3 data-in Version AD input port 5 GPIO
53	TCK/V_ADIN6	I/O	Serial interface port 3 clock pin Version AD input port 6 GPIO
54	TDO/V_ADIN7	I/O	Serial interface port 3 chip-select Version AD input port 7 GPO
55	DVDD18	-	1.8V power pin for internal
56	IOA2	I/O	Microcontroller address 2 / IO
57	IOA3	I/O	Microcontroller address 3 / IO
58	IOA4	I/O	Microcontroller address 4 / IO
59	IOA5	I/O	Microcontroller address 5 / IO
60	IOA6	I/O	Microcontroller address 6 / IO
61	IOA7	I/O	Microcontroller address 7 / IO
62	HIGHA0	I/O	Microcontroller address 8
63	IOA18	I/O	Flash address 18 / IO
64	IOA19	I/O	Flash address 19 / IO
65	DVDD3	-	3.3V power pin for internal
66	$\overline{\text{IOWR}}$	I/O	Flash write enable, active low / IO
67	A16	O	Flash address 16
68	HIGHA7	I/O	Microcontroller address 15
69	HIGHA6	I/O	Microcontroller address 14
70	HIGHA5	I/O	Microcontroller address 13
71	HIGHA4	I/O	Microcontroller address 12
72	HIGHA3	I/O	Microcontroller address 11
73	HIGHA2	I/O	Microcontroller address 10
74	HIGHA1	I/O	Microcontroller address 9
75	IOA20	I/O	Flash address 20 / IO
76	$\overline{\text{IOCS}}$	I/O	Flash chip select, active low / IO
77	IOA1	I/O	Microcontroller address 1 / IO
78	$\overline{\text{IOOE}}$	I/O	Flash output enable, active low / IO
79	AD0	I/O	Microcontroller address/data 0
80	AD1	I/O	Microcontroller address/data 1
81	DVSS	-	Ground pin for internal
82	AD2	I/O	Microcontroller address/data 2
83	AD3	I/O	Microcontroller address/data 3
84	AD4	I/O	Microcontroller address/data 4
85	AD5	I/O	Microcontroller address/data 5
86	AD6	I/O	Microcontroller address/data 6
87	IOA21/V_ADIN0	I/O	Flash address 21 / IO
88	ALE	I/O	Microcontroller address latch enable
89	AD7	I/O	Microcontroller address/data 7
90	DVSS	-	Ground pin for internal digital circuitry
91	A17	I/O	Flash address 17
92	IOA0	I/O	Microcontroller address 0 / IO
93	DVDD18	-	1.8V power pin for internal
94	$\overline{\text{UWR}}$	I/O	Microcontroller write strobe, active low
95	$\overline{\text{URD}}$	I/O	Microcontroller read strobe, active low
96	DVDD3	-	3.3V power pin for internal

Pin number	Name	I/O	Description
97	UP1_2	I/O	Microcontroller port 1-2
98	UP1_3	I/O	Microcontroller port 1-3
99	UP1_4	I/O	Microcontroller port 1-4
100	UP1_5	I/O	TP168
101	UP1_6	I/O	Microcontroller port 1-6 I2C clock pin
102	UP1_7	I/O	Microcontroller port 1-7 I2C data pin
103	UP3_0	I/O	Microcontroller port 3-0 8032 RS232 RXD
104	UP3_1	I/O	Microcontroller port 3-1 8032 RS232 TXD
105	UP3_4	I/O	Microcontroller port 3-4 Hardwired RD232 RXD I2C clock pin
106	UP3_5	I/O	Microcontroller port 3-5 Hardwired RD232 TXD I2C data pin
107	ICE	I	Microcontroller ICE mode enable
108	$\overline{\text{PRST}}$	I	Power on reset input, active low
109	IR	I	IR control signal
110	$\overline{\text{INT0}}$	I/O	Microcontroller external interrupt 0, active
111	DQM0	I/O	Data mask 0
112	IO_19	I/O	GPIO
113	RD7	I/O	DRAM data 7
114	RD6	I/O	DRAM data 6
115	RD5	I/O	DRAM data 5
116	RD4	I/O	DRAM data 4
117	RD3	I/O	DRAM data 3
118	DVDD3	-	3.3V power pin for internal
119	RD2	I/O	DRAM data 2
120	RD1	I/O	DRAM data 1
121	RD0	I/O	DRAM data 0
122	RD15	I/O	DRAM data 15
123	RD14	I/O	DRAM data 14
124	RD13	I/O	DRAM data 13
125	RD12	I/O	DRAM data 12
126	RD11	I/O	DRAM data 11
127	RD10	I/O	DRAM data 10
128	RD9	I/O	DRAM data 9
129	RD8	I/O	DRAM data 8
130	IO_18	I/O	GPIO
131	DVDD3	-	3.3V power pin for internal
132	DQM1	I/O	Data mask 1
133	$\overline{\text{RWE}}$	O	DRAM Write enable, active low
134	$\overline{\text{CAS}}$	O	DRAM column address strobe, active low
135	$\overline{\text{RAS}}$	O	DRAM row address strobe, active low
136	$\overline{\text{RCS}}$	O	DRAM chip select, active low
137	BA0	I/O	DRAM bank address 0
138	BA1	I/O	DRAM bank address 1
139	RA10	I/O	DRAM address 10
140	RA0	I/O	DRAM address 0
141	RA1	I/O	DRAM address 1
142	DVDD18	-	1.8V power pin for internal
143	RA2	I/O	DRAM address 2
144	RA3	I/O	DRAM address 3

Pin number	Name	I/O	Description
145	DVDD3	-	3.3V power pin for internal
146	RCLK	I/O	DRAM clock
147	CKE	O	DRAM clock enable
148	DVSS	-	Ground pin for internal digital circuitry
149	RA11	I/O	DRAM address 11
150	RA9	I/O	DRAM address 9
151	RA8	I/O	DRAM address 8
152	RA7	I/O	DRAM address 7
153	RA6	I/O	DRAM address 6
154	RA5	I/O	DRAM address 5
155	RA4	I/O	DRAM address 4
156	DVDD3	-	3.3V power pin for internal
157	Y_7/IO_16	I/O	Digital Video output Y bit 7 GPIO
158	Y_6/IO_15	I/O	Digital Video output Y bit 6 GPIO
159	Y_5/IO_14	I/O	Digital Video output Y bit 5 GPIO
160	DVDD18	-	1.8V power pin for internal
161	Y_4/IO_13	I/O	Digital Video output Y bit 4 GPIO
162	Y_3/IO_12	I/O	Digital Video output Y bit 3 GPIO
163	Y_2/IO_11	I/O	Digital Video output Y bit 2 GPIO
164	Y_1/IO_10	I/O	Digital Video output Y bit 1 GPIO
165	Y_0/IO_9	I/O	Digital Video output Y bit 0 GPIO
166	YUVCLK/IO_8	I/O	Digital Video output Clock GPIO
167	C_7/IO_7	I/O	Digital Video output C bit 7 GPIO
168	C_6/IO_6	I/O	Digital Video output C bit 6 GPIO
169	C_5/IO_5	I/O	Digital Video output C bit 5 GPIO
170	DVDD3	-	3.3V power pin for internal
171	C_4/IO_4	I/O	Digital Video output C bit 4 GPIO
172	C_3/IO_3	I/O	Digital Video output C bit 3 GPIO
173	C_2/IO_2	I/O	Digital Video output C bit 2 GPIO
174	DVDD18	-	1.8V power pin for internal
175	C_1/IO_1	I/O	Digital Video output C bit 1 GPIO
176	C_0/IO_0	I/O	Digital Video output C bit 0 GPIO
177	IO_17	I/O	GPIO
178	DVSS	-	Ground pin for internal
179	HSYN/V_ADIN2	I/O	Horizontal sync for video-input
180	YUV7	I/O	Microcontroller external interrupt
181	VSYNC/V_ADIN1	I/O	Vertical sync input/output While no External TV-encoder
182	YUV6/R	O	TP160
183	YUV5/B	O	TP159
184	DACVSSA	-	Ground pin for VIDEO DAC circuitry
185	YUV4/G	O	TP158
186	DACVDDA	-	3.3V power pin for VIDEO DAC circuitry
187	YUV3/CVBS	O	Video data output bit 3 Analog composite output
188	DACVSSB	-	Ground pin for VIDEO DAC circuitry
189	YUV2/C	O	Video data output bit 2 Analog chroma output
190	DACVddb	-	3.3V power pin for VIDEO DAC circuitry
191	YUV1/Y	O	Video data output bit 1 Analog Y output
192	DACVSSC	-	Ground pin for VIDEO DAC circuitry

Pin number	Name	I/O	Description
193	YUV0/CIN	O	Video data output bit 0 Compensation capacitor
194	FS	O	Full scale adjustment
195	VREF	O	Bandgap reference voltage
196	DACVDDC	-	3.3V power pin for VIDEO DAC circuitry
197	ASDATA0/GPO_2	I/O	Audio serial data 0 (Front-Left/Front-Right) DSD data left channel Trap value in power-on reset
198	RVREF/GPIO_6	I/O	GPIO
199	RCLKB/GPIO_5	I/O	GPIO
200	GPIO_4	I/O	GPIO
201	GPIO_3	I/O	GPIO
202	ASDATA1/GPO_1	I/O	TP155
203	ASDATA2/GPO_2	I/O	TP152
204	SPMCLK	I/O	KEYSCAN C6
205	SPDATA	I/O	KEYSCAN C7
206	SPLRCK	I/O	ADAC MC
207	SPBCK	I/O	TP165
208	DVDD3	-	3.3V power pin for internal
209	ALRCK	I/O	Audio left/right channel clock Trap value in power-on reset: I) 1 : use external 373 II) 0: use internal 373
210	ABCK	O	Audio bit clock Phase de-modulation
211	ACLK	O	Audio DAC master clock
212	ASDATA3	I/O	TP152
213	DVDD18	-	1.8V power pin for internal
214	ASDATA4	I/O	TP151
215	MC_DATA	I/O	Inout PD SMT
216	SPDIF	O	SPDIF output
217	APLLVDD3	-	3.3V Power pin for audio clock circuitry
218	APLLCAP	O	APLL External
219	APLLVSS	-	Ground pin for audio clock circuitry
220	ADACVSS2	-	Ground pin for AUDIO DAC circuitry
221	ADACVSS1	-	Ground pin for AUDIO DAC circuitry
222	ARF (SW)	O	AUDIO DAC Sub-woofer channel output While internal AUDIO DAC not used: GPIO
223	ARS/SDATA3	O	TP149
224	AR/SDATA1	O	AUDIO DAC Right channel output While internal AUDIO DAC not used: a. SDATA1
225	AVCM	O	AUDIO DAC reference voltage
226	AL/SDATA2	O	AUDIO DAC Left Surround channel output While internal AUDIO DAC not used: a. SDATA2
227	ALS/SDATA 0	O	TP148
228	ALF/(CTR)	O	TP147
229	ADACVDD1	-	3.3V power pin for AUDIO DAC circuitry
230	ADACVDD2	-	3.3V power pin for AUDIO DAC circuitry
231	RFGND18	-	Analog ground
232	RFVDD18	-	Analog power 1.8V
233	XTALO	O	27M crystal out
234	XTALI	I	27M crystal in
235	JITFO	O	The output terminal of RF jitter meter.
236	JITFN	I	The input terminal of RF jitter meter.
237	PLLSS	-	Ground pin for data PLL and related analog circuitry.

Pin number	Name	I/O	Description
239	PLLVD3	-	3.3V power pin for data PLL and related analog circuitry.
240	LPFON	O	The negative output of loop filter amplifier
241	LPFIP	I	The positive input terminal of loop filter amplifier.
242	LPFIN	I	The negative input terminal of loop filter amplifier.
243	LPFOP	O	The positive output of loop filter amplifier
244	ADCVD3	-	Analog 3.3V Power for ADC
245	ADCVSS	-	Analog ground for ADC
246	RFVD3	-	Analog Power
247	RFRPDC	O	RF ripple detect output
248	RFRPAC	I	RF ripple detect input(through AC-coupling)
249	HRFZC	I	High frequency RF ripple zero crossing
250	CRTPLP	O	Defect level filter capacitor connecting
251	RFGND	-	Analog Power
252	OSP	O	RF Offset cancellation capacitor connecting
253	OSN	O	RF Offset cancellation capacitor connecting
254	RFGC	O	RF AGC loop capacitor connecting for DVD-ROM
255	IREF	I	RF path. Connect an external 15K resistor to this pin and
256	AVDD3	-	Analog power 3.3V

7-2. FRONT MICOM PIN FUNCTION (MAIN BOARD U2: Z8F0822)

Pin number	Name	I/O	Description
1	PC0/T1IN	O	SYSTEM POWER EN
2	PA6/SCL	I	POWER KEY
3	PA7/SDA	I	HOLD
4	/RESET	I	MCU RESET
5	Vss	-	Ground pin
6	XIN	I	MCU XIN
7	XOUT	O	MCU XOUT
8	Vdd	-	3.3V
9	PC5/MISO	O	MUTE
10	PC4/MOSI	I	Battery detect
11	PC3/SCK	I	AV IN SW
12	PC2/SS	O	CHARGE EN
13	PA0/T0IN	I	ADAPTER_DET
14	PA1/T0OUT	O	VOL_PWM
15	PA2/DE0	I	LED2 (CHARGE)
16	PA3/CTS0	I	IR_IN
17	PA4/RXD0	I/O	TXD
18	PA5/TXD0	I/O	RXD
19	PC1/T1OUT	O	SE
20	DBG	I	DBG
21	AVdd	-	3.3V
22	AVss	-	Ground pin
23	VREF	-	3.3V
24	PB4/ANA4	O	cb charge enable
25	PB3/ANA3	O	S MUTE
26	PB2/ANA2	I	AUDIO_DTC
27	PB1/ANA1	I	LED1 (POWER)
28	PB0/ANA0	I	Battery IN

MEMO

SECTION 8

ELECTRICAL ADJUSTMENT

This section describes procedures and instructions necessary for adjusting electrical circuits in this set.

Instruments required:

- 1) Color monitor TV
- 2) Oscilloscope 1 or 2 phenomena, band width over 100 MHz, with delay mode
- 3) Frequency counter (over 8 digits)
- 4) Digital voltmeter
- 5) Standard commander (RMT-D183)
- 6) DVD reference disc
 - HLX-501 (J-6090-071-A) (dual layer) (NTSC)
 - HLX-503 (J-6090-069-A) (single layer) (NTSC)
 - HLX-504 (J-6090-088-A) (single layer) (NTSC)
 - HLX-505 (J-6090-089-A) (dual layer) (NTSC)
 - HLX-506 (J-6090-077-A) (single layer) (PAL)
 - HLX-507 (J-6090-078-A) (dual layer) (PAL)

8-1. STANDARD VIDEO LEVEL

1. Checking Video Output Level

<Purpose>

This checks whether Video Output level satisfy the NTSC standard. If it is not correct, the brightness will be too large or small.

Mode	Play
Signal	Check the Color-bar (100%) signal on DVD reference disc
Measurement Point	LINE OUT (VIDEO) connector (75 Ω terminated)
Measuring Instrument	Oscilloscope
Specification	1.00 ± 0.05 Vp-p

Checking method:

- 1) Confirm that the Video Output level is 1.00 ± 0.05 Vp-p.



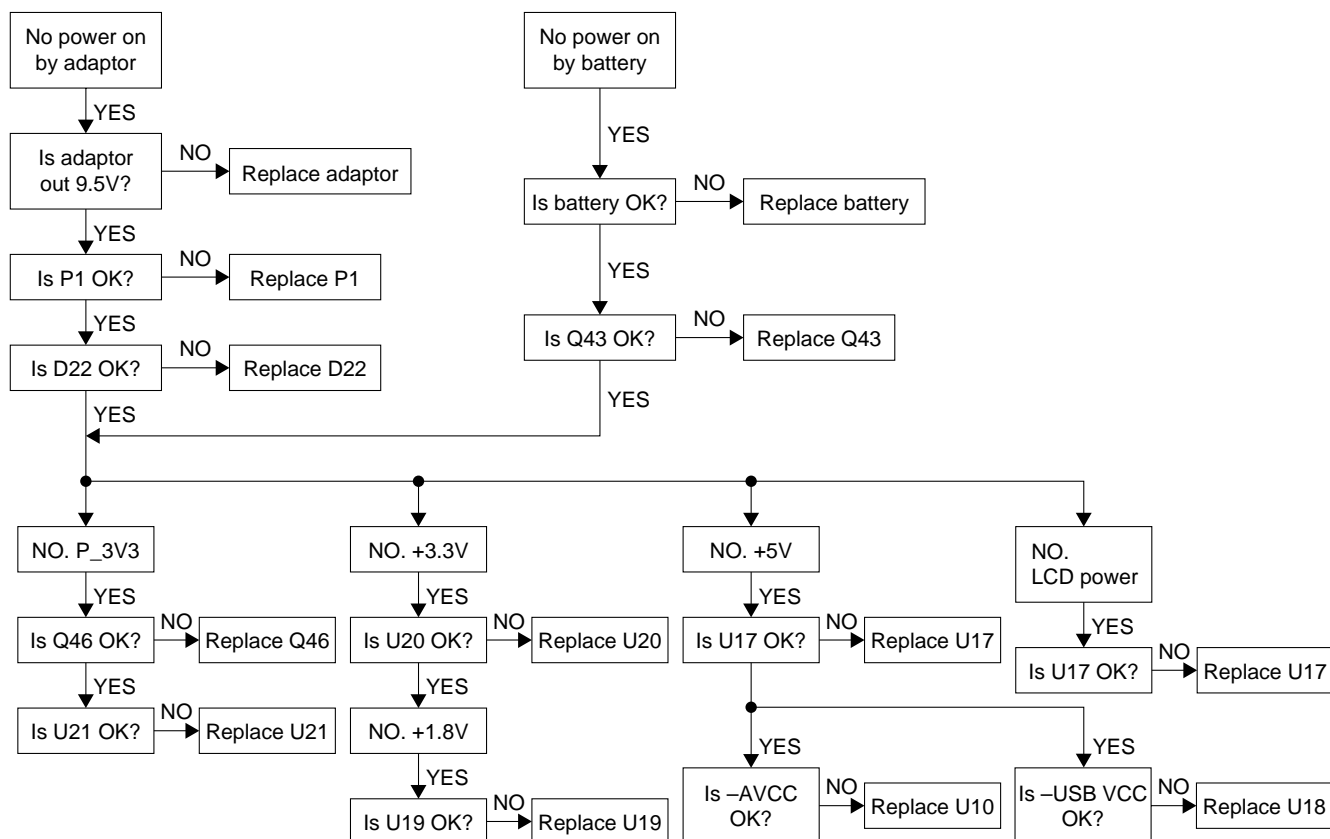
Figure 8-1

MEMO

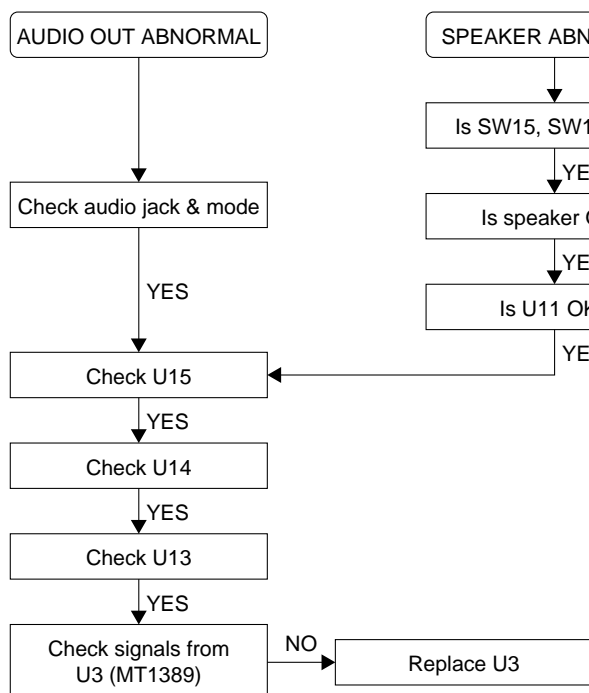
SECTION 9 TROUBLESHOOTING

9-1. ELECTRICAL TROUBLE SHOOTING GUIDE

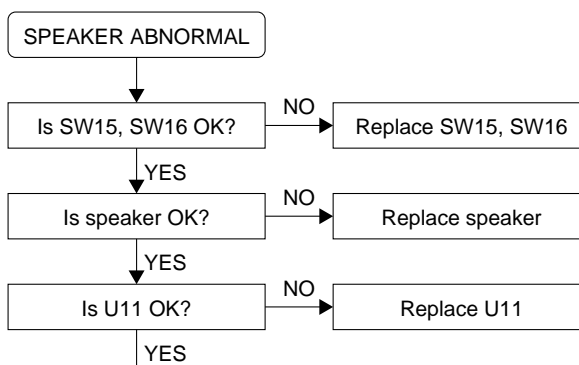
1. A. Power (DC-DC Converter) circuit



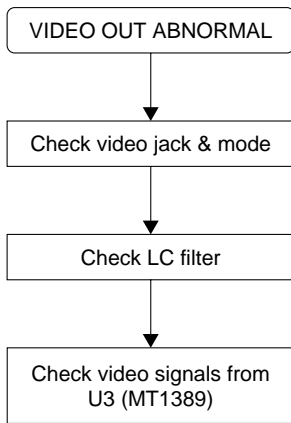
B. Audio out abnormal



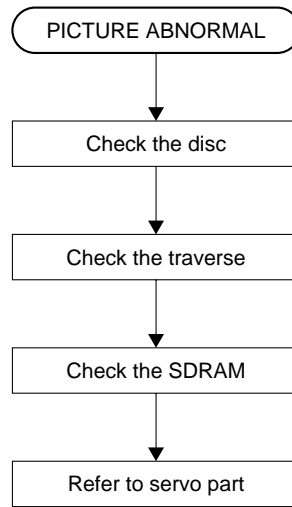
C. Speaker abnormal



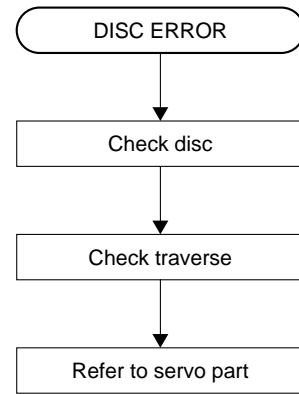
D. Video out abnormal



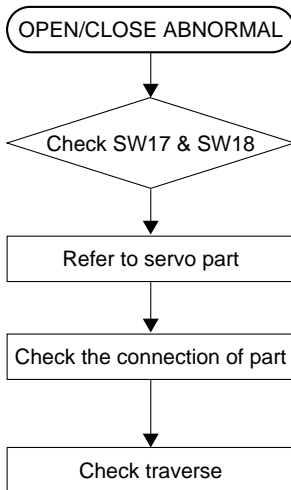
E. Picture abnormal



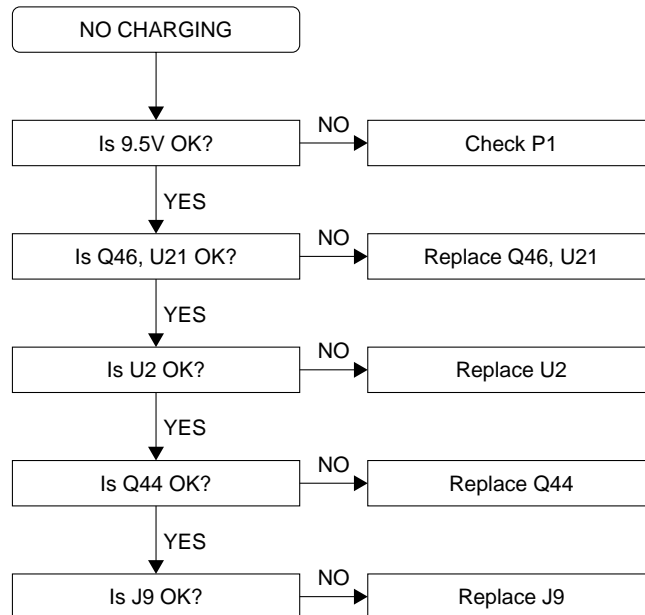
F. Disc error



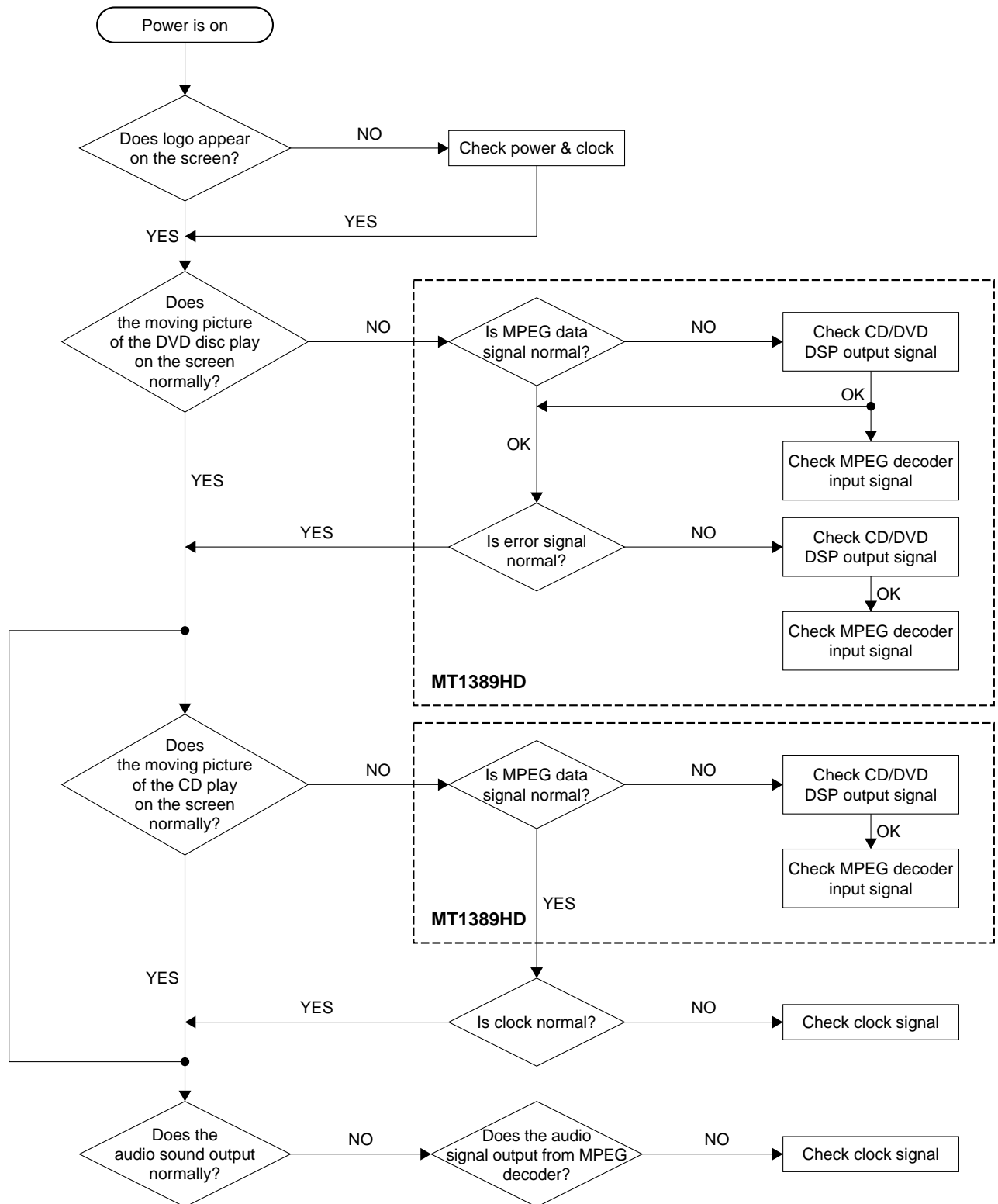
G. Open/close abnormal



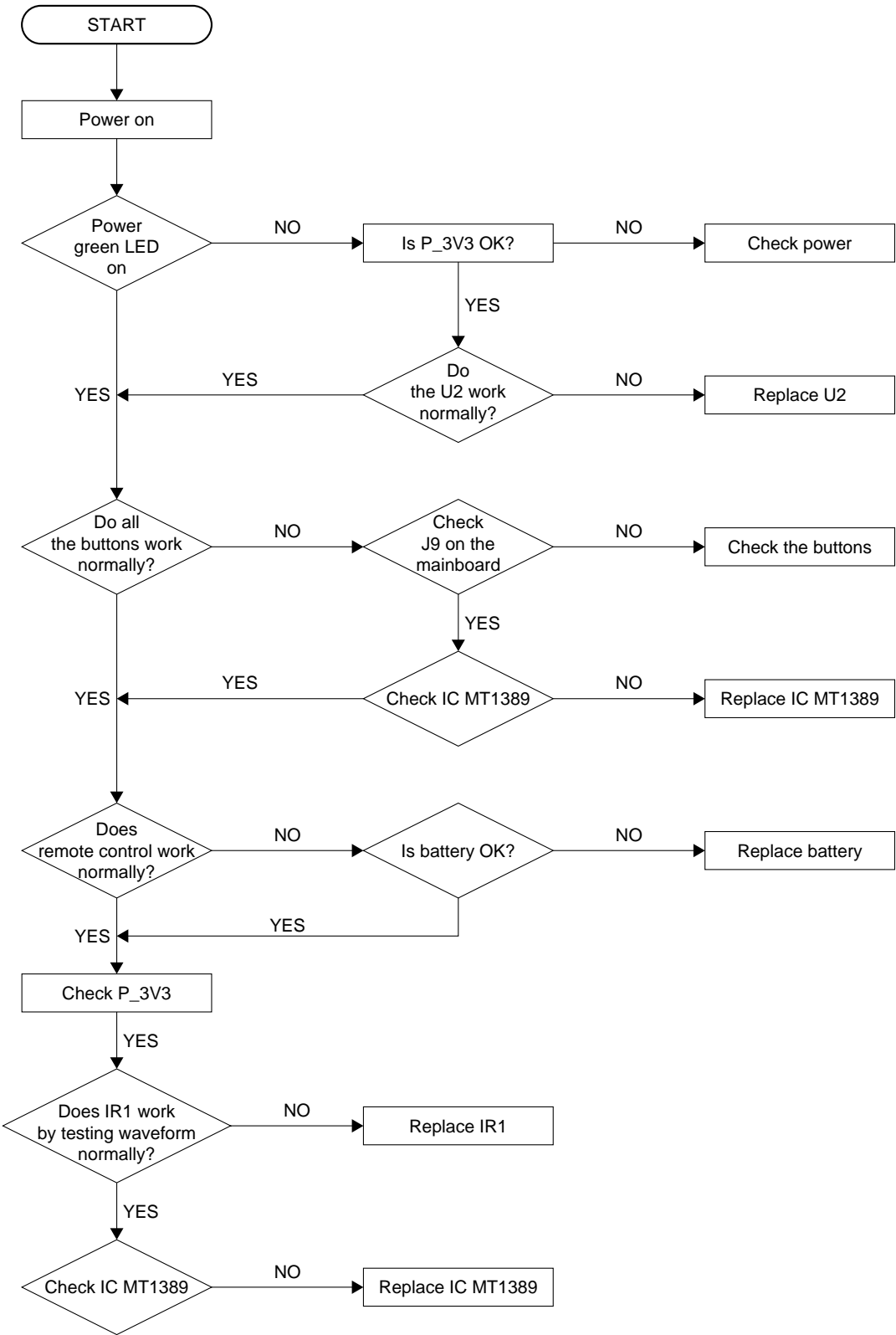
H. Charging circuit



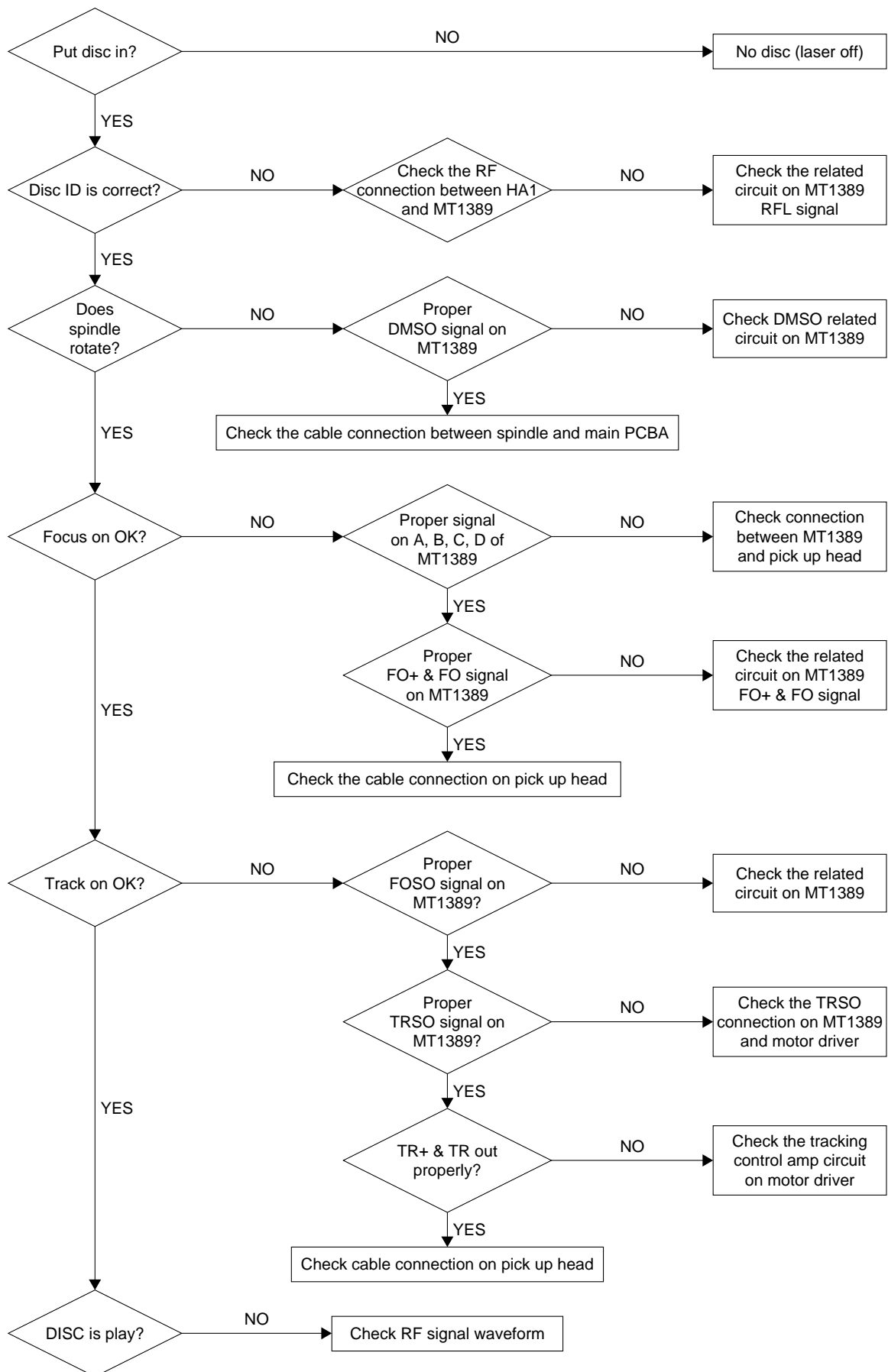
2. MPEG Circuit



3. Front Circuit (Dogotrpm & key)



4. RF/Servo Circuit



9-2. LCD TROUBLE SHOOTING GUIDE



SECTION 10

REPAIR PARTS LIST

10-1. EXPLODED VIEWS



NOTE:

- -XX and -X mean standardized parts, so they may have some difference from the original one.
 - Color Indication of Appearance Parts
Example:
KNOB, BALANCE (WHITE) . . . (RED)
- ↑

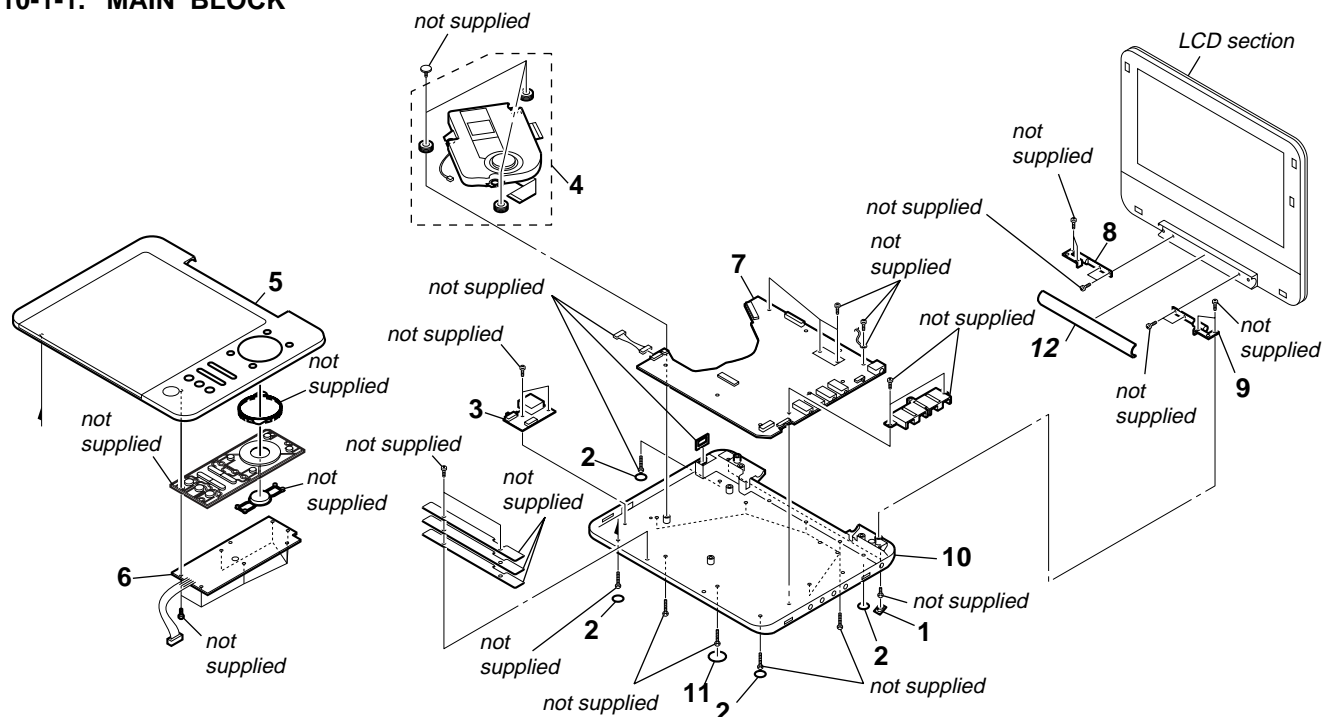
Parts Color

↑

Cabinet's Color
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
 - The mechanical parts with no reference number in the exploded views are not supplied.
 - Accessories and packing materials are given in the last of the electrical parts list.

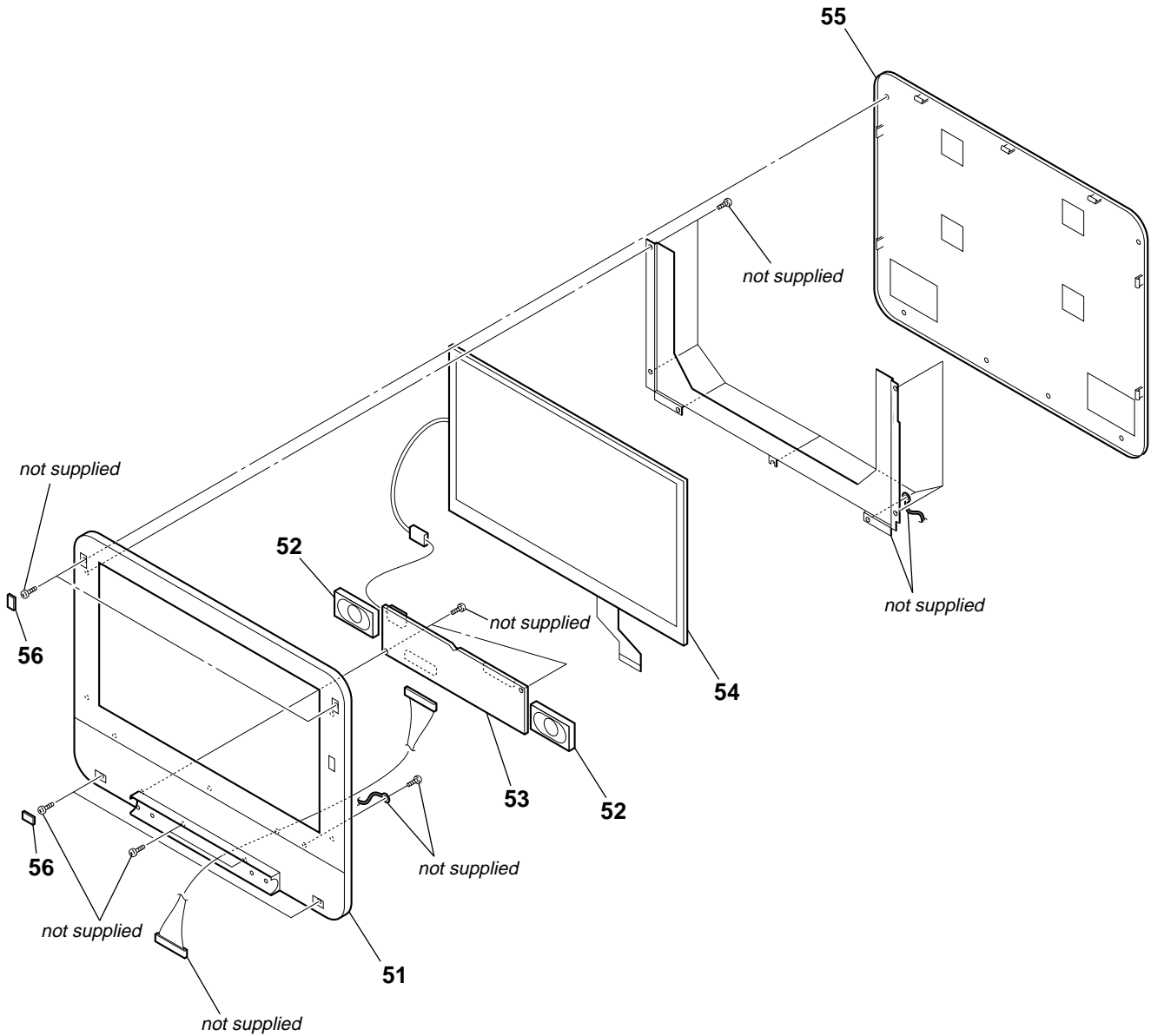
The components identified by mark  or dotted line with mark  are critical for safety.
Replace only with part number specified.

10-1-1. MAIN BLOCK



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
1	9-885-116-16	SCREW PAD (091-0001-510)		10	9-885-118-65	BOTTOM PANEL WITH LABEL (RED) (AEP, UK)	
2	9-885-103-46	FOOT RUBBER (091-0001-261)		10	9-885-118-66	BOTTOM PANEL WITH LABEL (RED) (Russian)	
3	A-1382-944-A	USB BOARD, COMPLETE (02-06040451-00)		10	9-885-118-70	BOTTOM PANEL WITH LABEL (BLUE)	
△ 4	9-885-116-08	TRAVERS (2Q010SQ00-770-G)					(AEP, UK)
5	A-1382-938-A	UPPER COVER ASSY (030-0001-645)		10	9-885-118-71	BOTTOM PANEL WITH LABEL (BLUE)	(Russian)
		(EXCEPT E)		10	9-885-118-82	BOTTOM PANEL WITH LABEL (PINK) (E)	
5	A-1443-019-A	UPPER COVER ASSY (030-0002-645) (E)		10	9-885-118-83	BOTTOM PANEL WITH LABEL (RED) (E)	
6	A-1382-943-A	KEY BOARD, COMPLETE (02-06040452-00)		10	9-885-118-99	BOTTOM PANEL WITH LABEL (PINK)	(Russian)
7	A-1382-941-A	MAIN BOARD, COMPLETE (02-01041064-00)		10	9-885-120-09	BOTTOM PANEL WITH LABEL (WHITE)	(New Zealand, Australian)
		(AEP, UK)					
7	A-1382-942-A	MAIN BOARD, COMPLETE (02-01041065-00)		10	9-885-120-12	BOTTOM PANEL WITH LABEL (PINK)	(New Zealand, Australian)
		(Russian)					
7	A-1443-020-A	MAIN BOARD, COMPLETE (02-01041066-00)		10	9-885-120-14	BOTTOM PANEL WITH LABEL (BLUE)	(New Zealand, Australian)
		(E)					
7	A-1510-355-A	MAIN BOARD, COMPLETE (02-01041067-00)					
		(Singapore, Thai)		10	9-885-121-14	BOTTOM PANEL WITH LABEL (PINK)	(Singapore, Thai)
7	A-1545-553-A	MAIN BOARD, COMPLETE (02-01041072-00)		10	9-885-121-17	BOTTOM PANEL WITH LABEL (BLUE)	(Singapore, Thai)
		(New Zealand, Australian)					
7	A-1551-421-A	MAIN BOARD, COMPLETE (02-01041073-00)		10	9-885-121-22	BOTTOM PANEL WITH LABEL (WHITE)	(Saudi Arabia)
		(Saudi Arabia)		10	9-885-121-25	BOTTOM PANEL WITH LABEL (PINK)	(Saudi Arabia)
8	9-885-115-87	HINGE L (023-0001-6844)		10	9-885-121-27	BOTTOM PANEL WITH LABEL (BLUE)	(Saudi Arabia)
9	9-885-115-88	HINGE R (023-0001-6845)					
10	9-885-116-32	BOTTOM PANEL WITH LABEL (WHITE)					
		(AEP, UK)					
10	9-885-116-33	BOTTOM PANEL WITH LABEL (WHITE) (RUS)					
10	9-885-116-73	BOTTOM PANEL WITH LABEL (WHITE) (E)					
10	9-885-117-12	BOTTOM PANEL WITH LABEL (WHITE)		11	9-885-108-32	SHEET, OPEN PREVE (086-0001-041)	
		(Singapore, Thai)		12	9-885-115-91	HINGE COVER (013-0001-6840)	
10	9-885-118-61	BOTTOM PANEL WITH LABEL (PINK)					
		(AEP, UK)					

10-1-2. LCD BLOCK



The components identified by mark Δ or dotted line with mark Δ are critical for safety. Replace only with part number specified.

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
51	A-1382-935-A	BEZEL COVER ASSY (030-0001-563)		55	A-1539-323-A	HOUSING COV. ASSY (030-0003-564) (PINK)	
52	9-885-115-85	SPEAKER (570201C00-600-G)		55	A-1539-337-A	HOUSING COV. ASSY (030-0002-564) (RED)	
53	A-1382-936-A	LCD BOARD, COMPLETE (02-06040450-00)		55	A-1539-344-A	HOUSING COV. ASSY (030-0004-564) (BLUE)	
Δ 54	9-885-115-86	LCD SCREEN (AT070TN07V.A)		56	9-885-115-90	PANEL RUBBER (090-0001-1198)	
55	A-1382-933-A	HOUSING COV. ASSY (030-0001-564) (WHITE)					

KEY

LCD

MAIN

USB

10-2. ELECTRICAL PARTS LIST

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
All resistors are in ohms.
METAL: Metal-film resistor.
METAL OXIDE: Metal oxide-film resistor.
F: nonflammable
- Not all of the parts for POWER BLOCK (ZSSR107G/ZSSR107H) are listed.

- Items marked “*” are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
In each case, u: μ , for example:
uA. . . : μ A. . . uPA. . . : μ PA. . .
uPB. . . : μ PB. . . uPC. . . : μ PC. . .
uPD. . . : μ PD. . .
- CAPACITORS
uF: μ F
- COILS
uH: μ H

The components identified by mark Δ or dotted line with mark Δ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board.

Ref. No.	Part No.	Description	Remark
	A-1382-943-A	KEY BOARD, COMPLETE (02-06040452-00) *****	
	A-1382-936-A	LCD BOARD, COMPLETE (02-06040450-00) *****	
	A-1382-941-A	MAIN BOARD, COMPLETE (02-01041064-00) (AEP, UK)	
	A-1382-942-A	MAIN BOARD, COMPLETE (02-01041065-00) (Russian)	
	A-1443-020-A	MAIN BOARD, COMPLETE (02-01041066-00) (E)	
	A-1510-355-A	MAIN BOARD, COMPLETE (02-01041067-00) (Singapore, Thai)	
	A-1545-553-A	MAIN BOARD, COMPLETE (02-01041072-00) (New Zealand, Australian)	
	A-1551-421-A	MAIN BOARD, COMPLETE (02-01041073-00) (Saudi Arabia) *****	
	A-1382-944-A	USB BOARD, COMPLETE (02-06040451-00) *****	
		MISCELLANEOUS *****	
Δ 4	9-885-116-08	TRAVERS (2Q010SQ00-770-G)	
52	9-885-115-85	SPEAKER (570201C00-600-G)	
Δ 54	9-885-115-86	LCD SCREEN (AT070TN07V.A)	
		ACCESSORIES & PACKING MATERIALS *****	
	3-274-988-11	MANUAL, INST. (086-0001-8497) (ENGLISH) (AEP, UK)	
	3-274-988-21	MANUAL, INST. (086-0002-8497) (FRENCH) (AEP)	
	3-274-988-31	MANUAL, INST. (086-0003-8497) (GERMAN) (AEP)	
	3-274-988-41	MANUAL, INST. (086-0004-8497) (SPANISH) (AEP)	

Ref. No.	Part No.	Description	Remark
	3-274-988-51	MANUAL, INST. (086-0005-8497) (ITALIAN) (AEP)	
	3-274-988-61	MANUAL, INST. (086-0006-8497) (DUTCH) (AEP)	
	3-274-988-71	MANUAL, INST. (086-0007-8497) (RUSSIAN) (Russian)	
	3-274-989-11	MANUAL, INST. (086-0008-8497) (SPANISH) (E)	
	3-274-989-21	MANUAL, INST. (086-0009-8497) (ENGLISH) (Singapore, Thai)	
	3-274-989-31	MANUAL, INST. (086-0010-8497) (THAI) (Thai)	
	3-274-989-41	MANUAL, INST. (085-0001-2070) (ENGLISH) (New Zealand, Australian)	
	3-274-989-51	MANUAL, INST. (085-0001-2363) (ENGLISH, ARABIC) (Saudi Arabia)	
Δ	9-885-103-56	AV CABLE (010-0001-206)	
Δ	9-885-105-72	POWER CODE (073-0003-2029) (E)	
	9-885-105-82	POWER CODE (073-0002-2029) (AEP, Russian, Saudi Arabia, Singapore)	
Δ	9-885-105-83	POWER CODE (073-0004-2029) (UK)	
Δ	9-885-105-84	POWER CODE (073-0006-2029) (New Zealand, Australian)	
Δ	9-885-116-47	POWER CODE (073-0007-2029) (Thai)	
	9-885-108-32	SHEET, OPEN PREVE (086-0001-041)	
	9-885-110-68	REMOCON RMT-D183 (1-885-110-68)	
	9-885-115-77	DCC-FX151 (G12PCL-513-0031) (E, Saudi Arabia, Singapore, Thai)	
	9-885-113-61	DCC-FX150 (G12PCL-513-0021) (AEP, UK, Russian)	
	9-885-116-65	DCC-FX150 (G12PCL-513-0041) (New Zealand, Australian)	
	9-885-116-23	NP-FX120 (890201C01-815-G) (EXCEPT New Zealand, Australian)	
	9-885-120-06	NP-FX120 (890201C02-815-G) (New Zealand, Australian)	
Δ	9-885-116-48	AC-FX151 (SYBR019H831LFA) (E, Saudi Arabia, Singapore, Thai)	
Δ	9-885-116-64	AC-FX150 (SYBR019H832LFA) (AEP, UK, Russian, New Zealand, Australian)	

REVISION HISTORY

[illegible]