



ELECTROCOMPANIET

If music really matters...



EMP 1

Balanced Multifformat Player

Owner's Manual

ENG

Owner's manual

EMP-1 Reference

Multi Player

Warning:

To avoid risk of fire or electric shock, do not expose this appliance to rain or moisture.

Verify line voltage before use.

Do not remove cover. No user serviceable parts inside.

Refer servicing to qualified service personal.

The warranty is void if non-authorized personnel tamper with the product.

Use only authorized Electrocompaniet service center.

Intro

1. The story of *Electrocompaniet*

The early days...

At an AES conference in 1973, Dr. Matti Ojala presented a paper describing a distortion that he termed Transient Intermodulation (TIM). Attending this conference was Svein Erik Børja, a Norwegian record and broadcasting producer and a great audio enthusiast. The seminar held by Dr. Ojala on TIM provided Svein Erik with an explanation of the audible imperfections he had experienced from audio amplifiers. Svein Erik Børja brought the AES papers to Electrocompaniet, and asked if we could make an amplifier based on Dr. Ojala's theory.

A few prototype amplifiers were made and the sound, compared to other transistor amplifiers, was encouraging. But Svein Erik Børja, being the perfectionist he was, felt that this amplifier design approach had a greater potential. At that time we did not know too much about high-end audio designs. This gave an element of neutrality to our research, which we believe contributed to the amplifier's success. We consider our audio designers from that time to have been the first in what may be called the new 'TIM-free' school.

The next 3 years went to further research and design improvement. During this time we had to develop a new 'language' to translate what we were hearing, into practical design parameters (distortion, frequency response etc.) A new mathematical equation was developed to better describe the AC (music) characteristics of the transistor, rather than the normal DC characteristics. The result of this work culminated in the launch of our first 2 x 25W unit, "The 2 Channel Audio Power Amplifier." The final approval came in 1976 when the American 'bible', The Audio Critic magazine, tested the amplifier and wrote: "Audio freaks – eat your hearts out. This is the world's best sounding amplifier."

Since these early days, Electrocompaniet's designs have been continually improved and our product programme has steadily grown. Today we are represented in 36 countries worldwide and our products are considered to be among the very best in the audio industry. The vision that drove us in the early days has stayed:

If the music really matters....

Intro

2. *The Design Concept*

Thank you for purchasing this fine audio equipment. First of all we will give you a small introduction to the ideas behind the EMP-1

Technically, a CD (or a DVD) is a simple construction, built up with a lot of digital information, represented by only two states - zero or one. The main work for the first section of the EMP-1 is to read this information. The EMP-1 have a buffer that reads from the CD with a higher speed than necessary. If there is some inconsistent information the system has time to read it again, and correct the missing data. With this technique errors introduced by the CD mechanics are removed. As long as the first stage of the process has a perfect copy of the information on the CD there is a basis for the next stage.

The next stage is to sample rate the information. This process removes possible jitter and also makes sure that all parts of the DAC get the correct information, at correct time.

The last step is to convert the digital signal into an analog signal. This is done in two stages. First the PCM signal is up sampled to 192kHz. This signal is then up sampled again to 312 kHz if selected (Factory setting is 192kHz). After this the High Qualities DAC converted the digital information to an analog signal.

After this process the signal passes trough the fully balanced, symmetrical, state-of-the-art internal analog output stage - ready to be connected to your system.

Intro

3. General Information

Notes About Discs

- This player is designed for use with the following discs: Super Audio CD (SA-CD), DVD-Video, Video CD, SuperVideo CD, Audio CD, CD-R, CD-RW, DVD+RW, DVD+R, DVD-R and DVD-RW.

This player can play:

- MP3 and picture (Kodak. JPEG) files recorded on CD-R(W).
 - JPEG/ISO 9660format
 - Maximum 30 character display
- DivX® disc on CD-R(W)/ DVD+R(W)/ DVD-R(W)
- CD-R and CD-RW cannot be played unless finalized.
- Some discs cannot be played depending on the recording conditions, such as the PC environment and application software. The characteristics and condition of some discs: materials, scratches, curvature, etc.. may result in playback failure.
- Be sure to use only CD-R and CD-RW discs made by reliable manufacturers.
- Do not use any non-standard shaped discs (heart-shaped, etc.).
- Do not use discs with tape, seals, or paste on their surface. Doing so may damage this player.
- Do not use discs affixed with labels printed by a commercially available label printer.
- Photo CD, CD-ROM, DVD-ROM, DVD-RAM, CDV and nonstandard CD discs cannot be played on this unit.

Cleaning Discs

- When a disc becomes dirty, clean it with a cleaning cloth. Wipe the disc from the center out. Do not wipe in a circular motion.
- Do not use solvents such as benzine, thinner, commercially available cleaners, or antistatic spray intended for analog records.

4. Patent Information

Manufactured under license from Dolby Laboratories. “Dolbv”, “Pro Logic” and the double-D symbol are trademarks of Dolby Laboratories.



“DTS” and “DTS Digital Surround” are registered trademarks of Digital Theater Systems, Inc.



“DivX”, “DivX Certified”, and associated logos are trademarks of DivX Networks, Inc and are used under license.



“DCDi” is a trademark of Faroudja, a division of Genesis Microchip, Inc.



HDMI, the HDMI logo and High Definition Multimedia Interface are trademarks or registered trademark of HDMI Licensing LLC.

Unpacking the unit

5. Unpacking the EMP-1

Immediately upon receipt of the EMP-1, inspect the carton for possible damage during shipment. The carton and packaging have been designed to provide the safest possible protection for transport of this player. Unpack the unit carefully. Save all packaging materials for future shipment.

The contents of the carton

1 pcs Electrocompaniet EMP 1 – Universal Player
1 pcs AC mains cord.
1 pcs Inspection card.
1 pcs Remote control
2 pcs Batteries

Note !

The EMP 1 are designed to be used together with the new ECT-2, the advanced RF remote controller; sold as a separate product. However, if you do not have this unit we have included a standard IR controller.

Before startup

Before connecting the EMP 1 to the mains, check that the main voltage indicated on the rear panel corresponds to the line voltage in the territory where you intend to use the unit.

How to avoid damages

Do not under any circumstances connect or disconnect equipment when power is turned on.

How to avoid noise problems

The EMP 1 contains delicate circuits that are made to make a crystal clear, detailed sound. Make sure all signal cables to the player have maximal distance to cables to/from television. If possible the television should be connected to a separate power outlet, with filter to the rest of your high end equipment. Television often have a lot of magnetic stray fields that can be picked up by cables in your system. The unit should not be placed near main transformers, TV sets, etc. Care should also be taken regarding placement of the interconnect cables. Do not run interconnect cables in parallel with main cords or speaker cables. Keep interconnect cables as short as possible.

Important notes

For optimal sonic performance, the EMP 1 should be burned in for a minimum time of 72 hours. The easiest way to burn in your EMP 1 is to put a disc in REPEAT mode with the rest of your system turned off.

In daily operation, switch off the EMP 1 player by using the STANDBY button on the remote. If the EMP 1 has been switched off, allow two hours of warm-up to optimize sonic performance.

Due to high class A operation in all Electrocompaniet designs, it is normal for the EMP 1 to feel warm. Proper ventilation is important. The EMP 1 should never be completely covered. A good rule of thumb is to allow at least 3 – 5 cm of air sidewise and 5 – 8 cm above the EMP 1. It's not recommended to install the unit into a cabinet. It's absolute not possible to install the unit into a closed cabinet. This will make the system to fault, and also reduce the lifetime dramatically.

Connecting the EMP 1

6. Connectors on the rear side



Analog

Connect the left output to the left input on the preamplifier or the integrated amplifier. Connect the right output to the right input on the preamplifier or the integrated amplifier. Connect the Center, Sub woofer, and Surround left/right if you want to use the EMP 1 in a surround setup.

Digital Output

Connect a 75 Ohm unbalanced digital signal cable from S/P-DIF to the digital input on the preamplifier or the integrated amplifier.

HDMI Output

Use a standard High Quality HDMI cable for connection to your projector or television

Component Output

If you don't have a HDMI media, use this output for connection to you projector and television. Use the switch to select progressive or inter latched signal. After changing of this switch, the system need to be reset.

Mains

Check that the mains voltage printed on the rear panel corresponds with the line voltage in the territory you intend to use the EMP 1. After this is checked out, connect the AC main cord to the power inlet on the rear side.

Front panel controls

The power on/off button is localized in the center of the front panel. Generally, we recommend that you use the Standby button located on the remote control. When not using the EMP 1 for a long period, turn the main switch off and disconnect the unit from the mains outlet.

The four navigator buttons on the right front panel have the following functions:

Top button = play/pause
Right button = next
Left button = previous
Lower button = stop / eject – hold the button pressed to eject the disc.



Functional Overview

7. Remote Control

S. MODE

- Selects a sound mode: Stereo, Virtual Surround or Multi-channel.
- Changes the SA-CD play back area

TOP MENU

- Displays the top-level disc menu (DVD)
- moves back to the previous menu (VCD)

MENU

- Accesses the disc's root-menu (for DVDs)
- Switches PBC on/off (for VCDs)

FUNCTION ◀▶▲▼

- (left/right/up/down) Selects an item in the currently displayed menu

FUNCTION ◀▶

- Search backward or forward (DVD only)

PREV/NEXT ◀▶

- Moves to the previous or next chapter or track
- Search back/forward, press and hold

STOP/EJECT

- Stops playback (short)
- Eject disk (long)

PLAY ▶

- Starts playback

PLAY ▶||

- Pauses playback temporarily
- frame-by-frame playback



O/I

- Turns this player into the standby mode.

0-9 numeric keypad

- Selects numbered items in the currently displayed menu

ON SCR

- Accesses or clears the player's On Screen Display menu

SETUP

- Accesses or clears the player's setup menu

SUBTITLE

- Selects the language for subtitles

ZOOM

- Enlarges the video image

AUDIO

- Selects the audio language or format selector

REPEAT

- Repeats the chapter, track, title, disc or all discs

A-B

- Repeats a specific segment

SHUFFLE

- Plays tracks in random order

SCAN

- Plays the first & seconds or less of each track/chapter on the disc

OK

- Acknowledges the menu selection

Getting Started

8. Remote Control, Inserting batteries



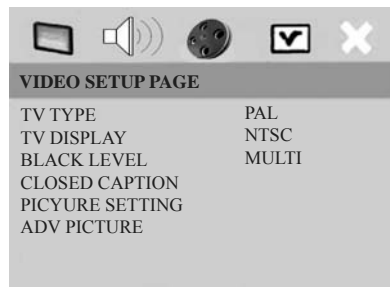
- 1 Open the battery compartment
- 2 Insert two type R06 or AA batteries, following the indications (+/-) inside the compartment.
- 3 Close the cover.

9. Turning on the Power

- 1 Connect the AC power cord to an AC outlet.
- 2 Turn on your TV and AV receiver.
- 3 Select the appropriate input source at the AV receiver that was used to connect to this player. Refer to the owner's manual for your component for details.
- 4 Turn on this player.
- 5 Set the TV to the correct Video IN channel. (e.g. EXT1, EXT2, AV1, AVZ AUDIO/VIDEO, ecc. Refer to the owner's manual for your TV for details.)
 - The front display lights up and the default screen appears on the TV.

10. Selecting a color system for your TV

This player is compatible with both NTSC and PAL video formats. Select the color system that matches your TV.



- 1 Press SETUP
- 2 Press ► repeatedly to select [VIDEO SETUP PAGE].
- 3 Press ▲▼ to highlight [TVTYPE], then press ►

Getting Started

- Press **▲▼** to highlight one of the options below:

PAL

Select this if the connected TV is a PAL system TV. It will change video signals of NTSC discs and output them in PAL format

NTSC

Select this if the connected TV is an NTSC system. It will change video signals of PAL discs and output them in NTSC format.

MULTI

Select this if the connected TV is compatible with both NTSC and PAL formats (a multi-system TV). The output format will be in accordance with the video signals of the disc.

10.5 Select an item and press ENTER/OK.

Notes:

Before changing the current TV Standard setting, ensure that your TV supports the 'selected TV type' system.

If the picture does not display properly on your TV, wait 15 seconds for auto recover to activate

Video output format

Disc Format	TV Type	Output Format (progressive ON)	
		Y Pb Pr	CVBS/S-video
NTSC	PAL	576p	480i
	NTSC	480p	480i
	MULTI	480p	480i
PAL	PAL	576p	575i
	NTSC	480p	575i
	MULTI	576p	575i

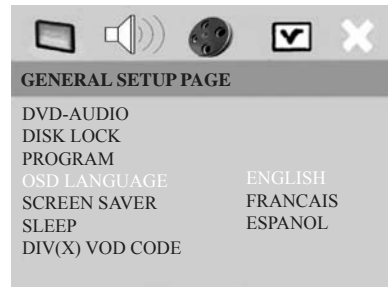
Note:

When Scan mode is set to PROGRESSIVE, CVBS/S-video output will depend on the format of disc

11. Setting Language Preference

You can select your own preferred language settings. This player will automatically switch to your preferred language for you whenever you load a disc. If the language selected is not available on the disc, the disc's default language will be used instead. The OSD language in the system menu will remain once selected.

Setting the OSD Language



- Press **SETUP**
- Press **◀▶** to select [GENERAL SETUP PAGE].
- Press **▲▼** to highlight [OSD LANGUAGE], then press **▶**
- Press **▲▼** to select a language and press ENTER/OK

Getting Started

12. Setting the menu language



- 1 Press STOP ■ twice, then press SETUP.
- 2 Press ► repeatedly to select [PREFERENCE PAGE].
- 3 Press ▲▼ to highlight the options below one at a time, then press ►
 - AUDIO (disc's sound track)
 - SUBTITLE (disc's subtitles)
 - DISC MENU (disc's menu)
- 4 Press ▲▼ to select a language, then press ENTER/OK

Note

If the language you want is not in the list: Select [OTHERS], then use the numeric keypad (0-9) on the remote control to enter the 4-digit language code (see "Language Code" on page 36) and press ENTER/OK

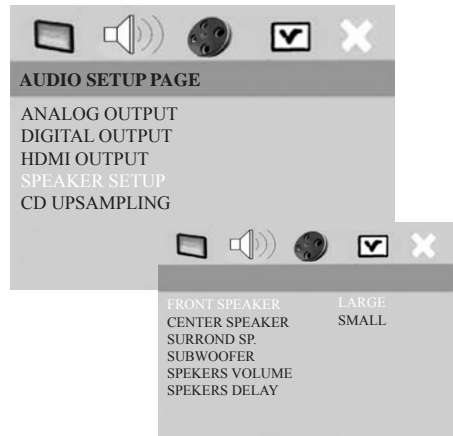
13. Setting Speaker Channels

You can adjust the delay times (for center and surround speakers only) and the volume level for individual speakers. These adjustment let you optimize the sound of your system to best suit your surroundings and setup.

IMPORTANT:

Speaker settings are only available for multi-channel audio output.

- 1 Press SETUP
- 2 Press ► repeatedly to select [AUDIO SETUP PAGE].
- 3 Press ▲▼ to highlight [SPEAKER SETUP], then press ►.



- 4 Enter a submenu by pressing ►.
- 5 Press ▲▼ to highlight one of the options, then press OK.

Note !

If you have EC4.9 in your system, use the more advanced speaker volume and balance setting included in that system.

Getting Started

- 6 Select the corresponding setup that fit to your installation for the Front, Center and surround speakers.

OFF

(Only for CENTER and SURROUND speakers)

Select when no Center speakers are connected and you want the sound to be routed to the left/right front speakers (Stereo).

LARGE

Select if the connected speakers can reproduce low frequency signals below 120 Hz.

SMALL

Select if the connected speakers cannot reproduce low frequency signals below 120 Hz.

[SUB WOOFER]

ON

Select when a sub woofer is connected.

OFF

Select when no sub woofer is connected.

[SPEAKERS VOLUME]

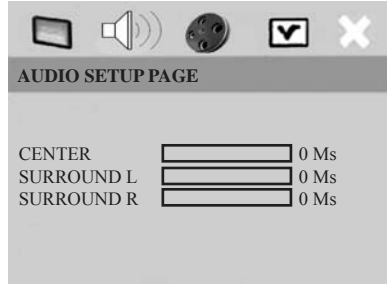
Volume level setting for individual speakers (-6dB ~ +6dB).

Note !

If you have EC4.9 in your system, use the more advanced speaker volume and balance setting included in that system.

[SPEAKERS DELAY]

Delay time settings in relation to the listening position distance for center and surround speakers (0 MS~1S MS).



Press ◀▶ to adjust the setting that best suits your surround sound needs.

Press ENTER/OK to confirm.

Notes:

Use a longer delay time setting when the surround speakers are closer to the listener than the front speakers.

A test tone will be automatically generated to help you judge the sound level of each speaker

Disc Operation - General

14. Basic Playback

- 1 Press any button at the front panel to wake up the unit
- 2 On the front panel, press and hold ▼ for two second to open the disc loading tray.
- 3 Place the chosen discs in the tray, printed side up.
- 4 Press ▲ to close and play.
The disc tray closes and playback starts automatically.

Important:

- If the inhibit icon (⊙ or X) appears on the TV screen when a button is pressed, the function for that button is not available on the current disc or at the current time.
- Depending on the DVD or VIDEO CD disc, some operations may operate differently or be restricted.
- Do not push on the disc tray or put any objects other than discs on the disc tray. Doing so may cause the disc player to malfunction

15. General Operation

Unless otherwise stated, all operations described here are carried out using the remote control for this player.

Pausing playback

- 1 During playback, press PAUSE II
 - Playback will pause and the sound will be muted.
- 2 Press PAUSE II again to select the next picture frame.
- 3 To resume normal playback, press PLAY ►

Selecting a track/chapter

Press ◀▶ or use the numeric keypad (0-9) to key in a track/chapter number.

During repeat playback of a track/chapter, pressing ◀▶ will replay the same track/chapter.

Searching backward/forward

Press and hold ◀▶, then press PLAY ► to resume normal playback.

While searching, pressing ◀▶ again will increase the search speed.

Note:

For MP3, WMA and DivX®, the search function allows you to search the track currently being played.

Stopping playback

Press STOP/EJECT ■

Disc Operation - Repeat/Shuffle

Repeat Function

Repeat (DVD-V)

Each time you press REPEAT, the front display changes as follows:

RPT CHAP: repeats the current chapter
↓
RPT TITLE: repeats the current title
↓
RPT DISC: repeats the entire disc
↓
RPT OFF: exits repeat mode

Repeat (CD)

When playing CD, each time you press REPEAT, the front display changes as follows;

RPT TRACK: repeats the current track
↓
RPT DISC: repeats the entire disc
↓
RPT OFF Exit repeat mode

Repeating (AB)

- 1 While playing a disc, press A-B at your chosen starting point.
- 2 Press A-B again at your chosen end point.
 - A and B can be set only within the same chapter/track.
 - The section will now repeat continuously.
- 3 To exit the sequence, press A-B.

Shuffle

(Except DVD/VCD/SVCD)

With the Shuffle function, you can play tracks in random order. Each time you press SHUFFLE, the front display changes as follows:

SHF : repeats the current chapter
↓
SHF RPT : repeats the current title
↓
SHF OFF: exits repeat mode

- 1 During playback, press SHUFFLE repeatedly to select between SHUFFLE DISC, and SHUFFLE OFF.

- The selected mode appears in the display for several seconds.
- In SHUFFLE DISC mode, all tracks on the disc currently playing are played in random order. For Hybrid SA-CDs, tracks on the SA-CD layer are played by default.

Disc Operation - Video Playback

Using the disc menu

Depending on the disc, a menu may appear on the TV screen once you load the disc.

To select a playback feature or item

- Use ◀▶▲▼ or the numeric keypad (0-9) on the remote control, then press ENTER/OK to start playback.

To access or clear the menu

- Press MENU on the remote control.

Zooming in

This function allows you to enlarge the picture on the TV screen and pan through the enlarged picture.

- 1 During playback, press ZOOM repeatedly to display the picture at different scales.
 - Use ◀▶▲▼ to pan through the enlarged picture.
 - Playback will continue.
- 2 Press ZOOM repeatedly to return to the original size.

Resuming playback from the last stopped point

You can resume playback of the last 10 discs, even if the disc was ejected or this player's power switched off.

- 1 Load one of the last 10 discs.
 - LOADING appears.
- 2 Press PLAY▶ and the disc will be played back from the last stopping point

To cancel resume mode

In stop mode, press STOP/EJECT ■ again.

On-Screen Display (OSD)

The OSD menu shows disc playback information (e.g., the title or chapter number, elapsed playing time or audio/ subtitle language). A number of operations are possible without interrupting disc playback.

- 1 During playback, press ON SCR.
 - A list of available disc information appears on the TV screen.

DVD

MENU	
TITLE	02/14
CHAPTER	02/14
AUDIO	5.1CH
SUBTITLE	ENG
BITRATE 16	TOTAL ELAPSED 0:02/25

VCD/SVCD

MENU	
TRACK	02/14
DISC TIME	0:49:17
TRACK TIME	0:03:43
REPEAT	OFF
BITRATE 16	TOTAL ELAPSED 0:02/25

- 2 Press ▲▼ to view the information and press ENTER/OK to access the selected item.
- 3 Use the numeric keypad (0-9) to input the number/time or press ▲▼ to make the selection, then press ENTER/OK to confirm.
 - Playback will change to the chosen time or to the selected title/chapter/track.

Title/Chapter/Track selection (DVD/VCD)

- 1 Press ▲▼ to select [TITLE] or [CHAPTER](DVD) or [TRACK](VCD)
- 2 Press ENTER/OK.
- 3 Select a title, chapter or track number using the numeric keypad (0-9).

Disc Operation - Video Playback

Time Search (DVD/VCD)

- 1 Press ▲▼ to select [TT TIME] or [CHTIME] (DVD) or [TRACKTIME] or [DISCTIME] (VCD).
 - [TT TIME] refers to the total time of the current title, and the [CH TIME] refers to the total time of the current chapter.
- 2 Press ENTER/OK.
- 3 Enter hours, minutes and seconds from left to right using the numeric keypad (0-9) (e.g. 0:34:27).

Audio/Subtitle/Angle (DVD discs)

You can change [AUDIO], [SUBTITLE] or [ANGLE] if these functions are available on the disc you are playing.

- 1 Press ▲▼ to select [AUDIO], [SUBTITLE] or [ANGLE].
- 2 Press ENTER/OK
- 3 For Audio and Subtitle:
Press ▲▼ to highlight your selection and press ENTER/OK
OR
For Angle:
Select an angle using the numeric keypad (0-9).

Repeat/Time Display (DVD/VCD)

- 1 Press ▲▼ to select [REPEAT] or [TIME DISP.].
- 2 Press ENTER/OK
- 3 Press ▲▼ to highlight your selection and press ENTER/OK

Title/Group selection and time search (DVD-Audio)

Each time you press ON SCREEN, the front display changes as follows:
Display Example

```
GROUP 01/05 TRACK 01/15 0:10:00
GROUP 01 /05 TRACK x/15
GROUP 01/05 TIME xx : xx
TRACK 01/15 TIME xx : xx
```

Displays the current group number/total number, the current track number/total number and elapsed playing time.

To select a track/group:

- 1 Use ◀▶ to highlight GROUP or TRACK.
- 2 Enter a group/track number using the numeric keypad (0-9).
- 3 Press ENTER/OK to confirm the selection, or wait for about 5 seconds without performing any operation.

To search for a time in a group:

Enter hours, minutes and seconds from left to right using the numeric keypad (0-9).

Note:

When searching (or a time in a group/track, if you enter a time outside the total time for the group/track currently being played, ⊙ INPUT INVALID is displayed

Time display (CD)

Each time you press ON SCR, the time display changes as follows:

```
TOTAL ELAPSED
TOTAL REMAIN
TOTAL ELAPSED
SINGLE REMAIN
```


Disc Operation- Special DVD Features

16. Special DVD Features

Playing by title

- 1 Press MENU
 - The disc title menu appears on the TV screen.
- 2 Use ◀▶▲▼ or the numeric keypad (0-9) to select a play option.
- 3 Press ENTER/OK to confirm.

Camera angle

Press ANGLE repeatedly to select the desired angle.

Audio

Changing the audio language and/or format. Press AUDIO repeatedly to select an audio language.

Subtitles

Press SUBTITLE repeatedly to select a subtitle language.

Disc Operation - Special VCD and SVCD features

17. Special VCD and SVCD Features

Playback control (PBC)

For VCD with Playback control (PBC) feature (version 2.0 only)

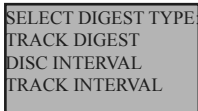
- Press MENU to toggle between PBC ON and PBC OFF.
- If you select PBC ON, the disc menu (if available) will appear on the TV.
- Use the ◀▶ or the numeric keypad (0-9) to select a play option.
- During playback, pressing TOP MENU/RETURN will return to the menu screen (if PBC is selected).

If you want to skip the index menu and playback directly from the beginning,

- Press MENU on the remote control to switch off PBC.

Preview function

- 1 Press SCAN.
- 2 Press ▲▼ to highlight [TRACK DIGEST],[DISC INTERVAL] or [TRACK INTERVAL].
- 3 Press ENTER/OK to open one option.

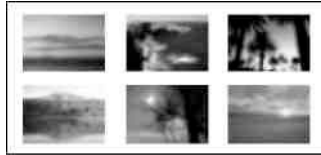


TRACK DIGEST

This function minimizes the picture for every track and displays six at a time on the screen to help you view the tracks on the disc.

DISC INTERVAL

This function is used to divide a disc into six parts at regular intervals, and display them on one page to help you preview the entire disc.



(Example of 6 thumbnails in the display)

- 1 Use ◀▶▲▼ to select a track or use the numeric keypad (0-9) to input the selected track number next to [SELECT].
- 2 Press ◀▶ to open the previous or next page.
- 3 Press ENTER/OK to confirm.

To quit the preview function

- Use ◀▶▲▼ to highlight [EXIT] and press ENTER/OK to confirm.

To return to the preview menu

- Use ◀▶▲▼ to highlight [MENU] and press ENTER/OK to confirm.

For CD:

- In stop mode, press SCAN on the remote control.
- Each track will be played for a few seconds.

5. Disc Operation - Super Audio Cd (SA-CD)

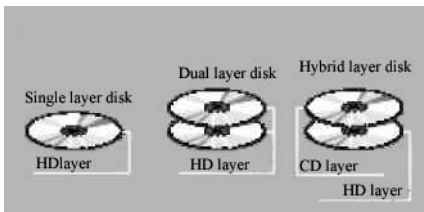
18. SA-CDs (Super Audio CDs)

The SA-CD standard is based on Direct Stream Digital (DSD) technology. This new direct-stream digital format comprises a 1-bit system that has a digital sampling frequency 64 times higher than that of conventional audio CDs.

There are three types of SA-CD discs: single-layer, dual-layer and hybrid discs. Each type may contain up to two areas of recorded information: a High Quality Stereo area and a High Quality Multi-channel area.

- A single layer disc can contain both information areas.
- A dual layer disc can contain both information areas. Double the information can be stored on the disc, thanks to the second layer.
- A hybrid disc can contain both information areas, and also a second, standard CD layer, making it playable on standard CD players,

On a hybrid disc we have:
CD layer that plays on any CD player
High Quality DSD Stereo or
High Quality DSD Multi-channel



Playing discs

- 1 Load the disc.
Playback starts automatically.
 - The TV screen displays the current playing status and track list for the current playback area.
- 2 Playback stops at the end of the disc.
- 3 To stop playback, press STOP/EJECT

Changing the SA-CD playback area and layer

You can change the SA-CD playback area by pressing S.MODE, and then change the playback layer by pressing AUDIO.

- On hybrid discs (with SA-CD and CD layers), the player will always start playing the SA-CD layer (multi-channel area).
- You can switch between the SACD multi-channel and SA-CD stereo areas by pressing S.MODE

OR

- 1 Press ◀ and select the folder using ▲▼, then press ENTER/OK.
- 2 Press ▲▼ to select a track.
- 3 Press ENTER/OK to confirm.

- To switch between the SA-CD layer and the CD layer, press AUDIO while playback is stopped.
- The SA-CD indicator lights only when the SA-CD layer is selected.

Notes:

SA-CD Text is not supported.

You cannot change the analog output setting during SA-CD playback (see "Audio Setup Menu" on page 28).

5. Disc Operation - Audio CD / Picture CD

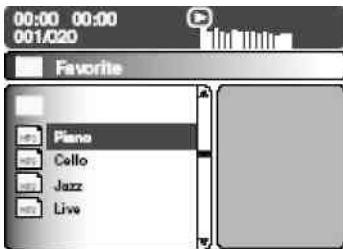
Playing discs

- 1 Load the disc.
 - Playback starts automatically.
 - The TV screen displays the number of tracks for selection and the current playback status.
- 2 Playback stops at the end of the disc.
- 3 To stop playback, press STOP/EJECT

19. Playing MP3/DivX/JPEG/Kodak Picture CDs

General Operation

- 1 Load the disc.
 - The disc reading time may exceed 30 seconds due to the complexity of the directory/file configuration.
 - The data disc menu appears on the TV screen.
- 2 Playback will start automatically. If not, press PLAY ►



During playback, you can:

- Press ◀▶ to select another track/file in the current folder.
- Press PAUSE II to pause playback.

Note:

It may not be possible to play certain MP3/JPEG/DivX discs due to the configuration and characteristics of the disc or condition of the recording.

Selecting a folder and track/file

- 1 Press ▲▼ to select the folder and press ENTER/OK to open the folder.
- 2 Press ▲▼ to select a track/file.
- 3 Press ENTER/OK to confirm.
 - Playback will start from the selected file to the end of the folder.

Special Picture Disc Features

- 1 Load the picture disc (Kodak Picture CD or JPEG).
 - For Kodak discs, the slide show begins.
 - For JPEG discs, the picture menu appears on the TV screen.
- 2 Press PLAY to start the slide-show.

5. Disc Operation - Audio CD / Picture CD

20. Preview Function (JPEG)

This function displays the content of the current folder or the entire disc.

- 1 Press STOP/EJECT during playback.
 - 12 thumbnail pictures appear on the TV screen.



- 2 Press ◀▶ to display the other pictures on the previous/next page.
- 3 Use ◀▶▲▼ to highlight one of the pictures and press ENTER/OK to start playback.
- 4 Press MENU to return to the picture CD menu.

Zooming pictures

- 1 During playback, press ZOOM repeatedly to display the picture at different scales.
- 2 Use ◀▶▲▼ to view the zoomed picture.

Playback with multi-angles

During playback, press ◀▶▲▼ to rotate the picture on the TV screen.

- ◀ : rotates the picture anti-clockwise
- ▶ : rotates the picture clockwise
- ▲ : flips the picture vertically
- ▼ : flips the picture horizontally

Scan Effect

- Press ANGLE repeatedly to choose a scan effect.
- Various scan effects appear in the top left corner of the TV screen.

Playing MP3 music and JPEG pictures simultaneously

- 1 Load a disc that contains both music and picture data.
 - The disc menu appears on the TV screen.
- 2 Select an MP3 track
- 3 During MP3 music playback, select a picture from the TV screen and press PLAY ▶
 - The picture files will be played back one after another until the end of the folder.
- 4 To quit simultaneous playback, press MENU, then STOP/EJECT ■

Note:

- Some files on Kodak or JPEG discs may be distorted during playback due to the configuration and characteristics of the disc.

Setup Menu - General

21. General Setup menu

- 1 Press SETUP
- 2 Press ◀ ▶ to select the 'General Setup' icon.
- 3 Press ENTER/OK to confirm

Note!

Setup is carried out via the TV, enabling you to customize this player to suit your own particular requirements.

Locking/Unlocking the disc for viewing

Not all discs are rated or coded by the manufacturer of the disc. You can prevent playback of a specific disc by locking the disc. You can lock up to 40 discs on this player.

- 1 In 'GENERAL SETUP PAGE', press ▲ ▼ to highlight [DISC LOCK], then press PLAY ▶.

LOCK

Select this to block playback of the current disc. Subsequent access to a locked disc requires a six-digit password. The default password is '000 000' (see "Changing the password" on page 35).

UNLOCK

Select this to unlock the disc and allow future playback.

- 2 Press ▲ ▼ to select a setting, then press ENTER/OK to confirm your selection.

22. Programming disc track and discs

Program: Track (except Picture CD/MP3/WMA/DivX®)

You can playback the contents of a disc in the order you want by programming the tracks to be played. You can store up to 20 tracks.

- 1 In 'GENERAL SETUP PAGE', press ▲ ▼ to highlight [PROGRAM], then press PLAY ▶ to select [FTS].
- 2 Press ENTER/OK to confirm

PROGRAM TR (01-17)			
1	04	6	-
2	10	7	-
3	11	8	-
4	-	9	-
5	-	10	-
EXIT		NEXT	

Setup Menu - General

23. To input your favorite tracks/chapt.

- 1 Use the numeric keypad (0-9) to enter a valid track/chapter number.
- 2 Use ◀▶▲▼ to move the cursor to the next position.
 - If the track number is more than ten, press ▶▶ to open the next page and proceed with programming or,
 - Use ◀▶▲▼ to highlight [NEXT] on the program menu, then press ENTER/OK.
- 3 Repeat steps 1-2 to input another track/chapter number.

To remove a track

- 4 Use ◀▶▲▼ to move the cursor to the track you want to remove.
- 5 Press ENTER/OK to remove this track from the program menu.

Note:

On SA-CO discs, you can program tracks on the CD layer.

Program: Disc

You can playback discs in the order you want by programming the discs to be played. You can store up to 5 discs.

- 1 In 'GENERAL SETUP PAGE', press ▲▼ to highlight [PROGRAM], then press ▶ to select [FDS],
- 2 Press ENTER/OK to confirm.



To input your favorite discs

- 1 Use the numeric keypad (0-9) to enter a valid disc number.
- 2 Use ◀▶▲▼ to move the cursor to the next position.
- 3 Repeat steps 1-2 to input another disc number.

If you want to remove a disc

- 4 Use ◀▶▲▼ to move the cursor to the disc you want to remove.
- 5 Press 0 on the numeric keypad (0-9) to remove this disc from the program menu.

To start program playback

Use ◀▶▲▼ to highlight [START] on the program menu, then press ENTER/OK

- Playback starts for the selected tracks or discs in the programmed sequence.

To exit program playback

Use ◀▶▲▼ to highlight [EXIT] on the program menu, then press ENTER/OK

Setup Menu - General

24. OSD Language

This menu contains various language options for the screen's display language.

Screen Saver

This function is used to turn the screen saver on or off.

- 1 In 'GENERAL SETUP PAGE', press ▲ ▼ to highlight [SCREEN SAVER], then press PLAY ►.

ON

Select this if you wish to turn off the TV screen when disc playback is stopped or paused for more than 15 minutes.

OFF

Select this to disable the screen saver function.

- 2 Press ▲ ▼ to select a setting, then press ENTER/OK to confirm your selection.

25. Sleep Timer

This feature automatically sets the DVD player in standby mode after the period you set has elapsed.

- 1 In 'GENERAL SETUP PAGE', press ▲ ▼ to highlight [SLEEP], then press ►.
- 2 Press ▲ ▼ to select a setting.
 - You can select from 15, 30, 45 and 60 minutes. Select [OFF] to cancel the sleep timer function.
- 3 Press ENTER/OK to confirm your selection.

26. DivX®VOD registration code

Yamaha provides you with the DivX®VOD (Video On Demand) registration code that allows you to rent and purchase videos using the DivX®VOD service. For more information, visit at www.divx.com/vod.

- 1 In 'GENERAL SETUP PAGE', press ▲ ▼ to highlight [DIVX(R) VOD CODE], then press ►.
 - The registration code appears.
- 2 Press ENTER/OK to exit
- 3 Use the registration code to purchase or rent the videos from DivX®VOD service at www.divx.com/vod. Follow the instructions and download the video onto a CD-R for playback on this player.

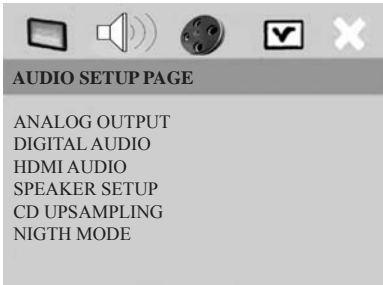
Notes:

All videos downloaded from DivX®VOD can only be played back on this player. The time search function is not available during DivX movie playback.

Setup Menu - Audio

27. Audio Setup Menu

- 1 Press SETUP
- 2 Press ◀▶ to select the 'Audio Setup' icon.
- 3 Press ENTER/OK to confirm



28. Setting the analog output

Set Analog Output to match your player's playback capability.

- 1 In 'AUDIO SETUP PAGE', press ◀▶ to highlight [ANALOG OUTPUT], then press ▶.

STEREO

Select this to change the channel output to stereo, which only delivers sound from the two front speakers and sub woofer.

VIRTUAL SURR

Select this to reproduce the surround channels virtually.

MULTI-CHANNEL

Select this setting when using a multi channel audio/(video) receiver with 6 channel inputs. In this mode, the player performs DTS decoding or Dolby Digital 5.1-channel decoding when applicable, and Dolby Pro Logic decoding on DVD-Video, Video-CD and Audio CD discs with 2-channel sound cracks. No Dolby Pro Logic decoding is done which Super Audio CD discs.

- 2 Press ◀▶ to select a setting, then press ENTER/OK to confirm your selection.

29. Setting the digital output

The options included in Digital Audio are: 'Digital Output' and 'LPCM Output'.

- 1 In 'AUDIO SETUP PAGE', press ▲▼ to highlight [DIGITAL AUDIO], then press ▶.
- 2 Press ▲▼ to highlight an option.
- 3 Enter a submenu by pressing ▶.
- 4 Move the cursor by pressing ▲▼ to highlight the selected item.

DIGITAL OUTPUT

Set the digital output according to your optional audio component connections.

OFF

Select to turn off the digital output.

ALL

Select if you have connected your DIGITAL AUDIO OUT to a multi-channel decoder/receiver.

PCM ONLY

Select only if your receiver is not capable of decoding multi-channel audio signals.

LPCM OUTPUT

Select if you have connected this player to a PCM-compatible receiver via a digital terminal, such as the coaxial or optical terminals. In this case, you may need to adjust LPCM Output. Discs are recorded at a certain sampling rate. The higher the sampling rate, the better the sound quality.

48 kHz

Select to playback discs recorded at the sampling rate of 48 kHz. All 96 kHz PCM data streams (if available) will be converted to 48 kHz.

96 kHz

Select to playback discs recorded at the sampling rate of 96 kHz. If the 96 kHz disc is copy protected, the digital output will automatically be converted to a sampling rate of 48 kHz

Setup Menu - Audio

30. Setting the HDMI audio

If you are not using the HDMI audio output, you should set this to [Off]. If the monitor/receiver connected to this player using HDMI does not support HDMI audio signal input, set this to [Off].

In 'AUDIO SETUP PAGE', press ▲ ▼ to highlight [HDMI AUDIO], then press OK.

Notes:

- *Super Audio CD signals cannot be output using HDMI.*
- *This player can output following audio signals using HDMI: 32/44.1/48 kHz, 2ch linear PCM signals and bit stream signals {Dolby Digital, DTS and MPEG}.*
- *When audio signals are being output by HDMI-compatible components, digital output signals are muted.*

ON

Select this to turn on the HDMI audio output

OFF

Select this to turn off the HDMI audio output

Speaker Setup

This menu contains setup options for audio output so that you can set your speakers to reproduce high quality sur round sound. For details, see page 13.

CD upsampling info

This feature allows you to convert your music CD to a higher sampling rate using sophisticated digital signal processing for better sound quality. If you have activated the upsampling function, the player will automatically switch to stereo mode.

CD Upsampling

- 1 In AUDIO SETUPPAGE press ▲ ▼ to highlight [CD UPSAMPLING], then press OK

OFF

Select this to disable CD-upsampling.

88.2 kHz (X2)

Select this to convert the sampling rate of CDs to twice that of the original.

176.4 kHz (X4)

Select this to convert the sampling rate of CDs to four times that of the original.

- 2 Press AT to select a setting, then press ENTER/OK to confirm your selection.

Note:

This setting is only valid for signals output from the analog jacks.

Night Mode

In this mode, high volume output is softened and low volume output brought upward to an audible level. It is useful for watching your favorite action movie without disturbing others at night.

- 1 In AUDIOSETUP PAGE press ▲ ▼ to highlight [NIGHT MODE], then press OK

ON

Select this to level out the volume. This feature is only available for movies with Dolby Digital mode.

OFF

Select this when you want to enjoy the full dynamic range of surround sound.

- 2 Press ▲ ▼ to select a setting, then press ENTER/OK to confirm your selection.

Setup Menu - Video

31. Video Setup Menu

- 1 Press SETUP
- 2 Press ◀▶ to select 'Video Setup' icon,
- 3 Press ENTER/OK to confirm



TV Type

This menu contains options for selecting a color system that matches your TV. For details.

32. Setting the TV display

Set the aspect ratio of this player to match the TV you have connected. The format you select must be available on the disc. If it is not, the TV display setting will not affect the picture during playback.

- 1 In 'VIDEO SETUP PAGE', press ▲▼ to highlight [TV DISPLAY], then press OK
- 2 Press ▲▼ to highlight one of the options below:

4:3 PAN SCAN

Select this if you have a normal TV and want both sides of the picture to be trimmed or formatted to fit your TV screen.



4:3 LETTER BOX

Select this if you have a normal TV. In this case, a wide picture with black binds on the upper and lower portions of the TV screen will be displayed.



16:9

Select this if you have a wide-screen TV



- 3 Select an item and press OK.

33. Selecting the black level

If you set the TV type to NTSC, set Black level shift to ON. This will improve the color contrast during playback. The black level setting has no effect if the TV type is set to PAL.

- 1 In 'VIDEO SETUP PAGE' press ▲▼ to highlight [BLACK LEVEL], then press OK

ON

Select this to enhance the black level.

OFF

Select this for the standard black level setting.

- 2 Press ▲▼ to select a setting, then press ENTER/OK to confirm your selection.

Setup Menu - Video

34. Closed Caption

Closed captions are data hidden in the video signals of specific discs, and are invisible without the use of a special decoder. The difference between subtitles and captions is that subtitles are intended for hearing persons and captions are for the hearing impaired. Subtitles rarely show all of the audio. For example, captions show sound effects (e.g., “phone ringing” and “footsteps”), while subtitles do not. Before you select this function, please ensure that the disc contains closed caption information and your TV set also supports this function.

- 1 In VIDEO SETUP PAGE, press ▲▼ to highlight [CLOSED CAPTION], then press OK

ON

To enable the closed caption function.

OFF

To disable the closed caption function.

- 2 Press ▲▼ to select a setting, then press OK to confirm your selection.

35. Picture settings

This player comes with three predefined sets of picture color settings and one personal setting that you can define yourself. This function is available for interlace output only.

- 1 In VIDEO SETUP PAGE, press ▲▼ to highlight [PICTURE SETTING], then press OK

STANDARD

Select this for the standard picture setting.

BRIGHT

Select this to make the TV picture brighter.

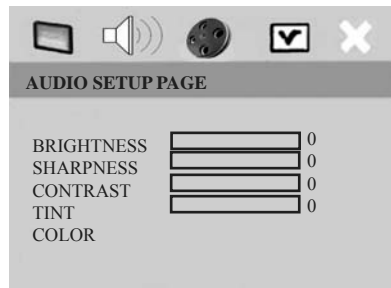
SOFT

Select this to make the TV picture softer.

PERSONAL

Select this to personalize your picture color by adjusting the brightness, contrast, tint and color (saturation).

- 2 Press ◀▶ to select a setting, then press OK to confirm your selection.
- 3 If you select [PERSONAL], then proceed to steps 4-7:
 - The ‘PERSONAL PICTURE SETUP’ menu appears.
- 4 Press ▲▼ to select one of the following options.



BRIGHTNESS

Increase the value to brighten the picture or vice versa. Zero (0) is the average setting value.

SHARPNESS

Increase the value to sharpen the picture or vice versa. Zero (0) is the average setting value.

CONTRAST

Increase the value to sharpen the picture or vice versa. Zero (0) is the average contrast setting value.

TINT

Increase the value to darken the picture or vice versa. Zero (0) is the average setting value.

Setup Menu - Video

COLOR

Increase the value to enhance the color in your picture or vice versa. Zero (0) is the average color setting value.

- 5 Press ◀▶ to adjust the setting that best suits your personal preference.
- 6 Repeat steps 4-5 to adjust other color features.
- 7 Press OK to confirm.

36. *Advanced picture settings*

This player allows you to fine-tune the following video parameters. We recommend setting the aspect ratio on your TV if the function is available.

- 1 In VIDEO SETUP PAGE, press ▲▼ to highlight [ADV PICTURE], then press OK.
- 2 Press ▲▼ to highlight an option.
- 6 Enter a submenu by pressing OK.
- 7 Move the cursor by pressing ▲▼ to highlight the selected item.

DCDi

DCDi (Directional Correction Deinterlacing) computes and tracks the angle of the screen edge to fill in the missing pixel on the TV screen. DCDi will optimize the image quality significantly, especially during the slow motion playback. This function is available for progressive scan output only.

OFF

Select to deactivate this function.

ON

Select to activate this function.

GAMMA

Enables you to adjust the intensity of the picture non-linearly. A positive value enables you to bring out low level detail in dark scenes, while a negative value emphasizes contrast. This function is not available when using an HDMI-compatible component.
-7 to +7

CHROMMA DELAY

The chroma (color) and luminance (brightness) signals are not synchronized. The Chroma Delay setting allows you to adjust the advance delay of the chroma signal to yield a perfectly clear picture. This function is not available when using an HDMI-compatible component
-3 to +3

PSCAN FORMAT

Set the aspect ratio of the projected images on the screen. This function is only available for progressive scan and HDMI video output.

NL STRETCH

Select to display 4:3 image on the 16:9 screen without stretching.

4:3 PILLAR BOX

Select for display of 4:3 image on the 16:9 screen with non-linear stretching (Center position of screen is stretched less than the side).

OFF

No aspect ratio adjustment is made when this option is selected.

Setup Menu - Video

37. HDMI VIDEO

Enables you to adjust the resolution depending on the monitor you are using. You can use this function only when the HDMI output terminal is connected to a HDMI-compatible component.

Notes:

- While HDMI video signals are being output, component video is muted.
- For settings other than [AUTO], HDMI video output may not display properly if a resolution output setting not supported by the HDMI-compatible monitor you are using is set.

To return to the initial setting:

- 1 Press STOP/EJECT to open the disc tray.
- 2 Press ◀
- 3 Press AUDIO

Do not perform this operation while playing back a disc on this player.

- When [DIGITAL AUDIO] is set to [OFF] on this player, PCM signals are still output if [HDMI AUDIO] is set to [ON] and a HDMI connection is established between the monitor and receiver.
- When [DIGITAL AUDIO] is set to [ALL] on this player, PCM signals are still output if the monitor and receiver only support the PCM format.

480 P

480 progressive-scan video

576P

576 progressive-scan video

720P

720 progressive-scan video

1080I

1080 interlace video

AUTO

Setting Examples

		Playback disc		
		Squeezed 16:9 video	4:3 Monitor	
HDMI video	TV shape	Monitor Setting	PSCAN format	Monitor Setting
480p	16:9	Squeeze Full Through	OFF	Normal Through Dolby Dot 4:3 Through Squeeze
576P				
720p	16:9	Squeeze Normal Through Dolby d	4:3 Pillar Box	
1080i				
Auto	The resolution is automatically selected to match the monitor you are using. Set [TV TYP], [PSCAN FORMAT] and your monitor setting to match the selected resolution.			

- Depending on the monitor you are using, the monitor setting names may differ from those shown above.
- If the monitor you are using has an aspect ratio of 4:3 and is only capable of either 480p or 576p resolution, select [4:3 PAN SCAN] or [4:3 LETTER BOX].
- If the aspect ratio you desire is not available, select the most suitable setting from: [4:3 PILLAR BOX], [NLJ_SRETCH] and [OFF].
- Depending on the monitor you are using, this setting may appear as “Squeeze” or “Full”.
- 720P/1080I supports 60-Hz video signals.

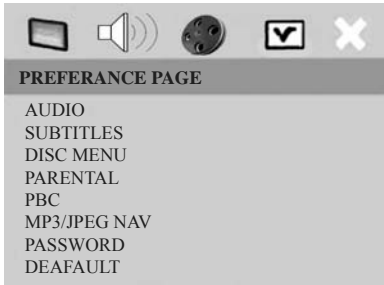
TRUE LIFE

Produces more dynamic picture by increasing the picture contrast and the color intensity. This function is available for progressive scan output only.
0 to +5

Setup Menu - Preference

38. Preference Setup Menu

- 1 Press STOP to stop playback then press SETUP.
- 2 Press ◀▶ to select the Preference Setup icon.
- 3 Press OK to confirm.



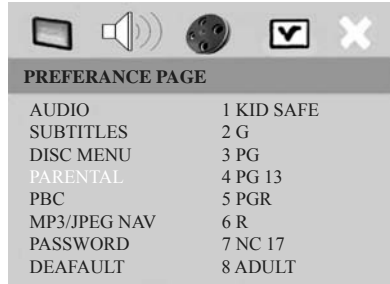
Audio, Subtitle, Disc Menu

These menus contain various language options for the audio, subtitles and disc menus recorded on the DVD. For details, see page 13.

Restricting playback with Parental Control

Some DVDs may have a parental level assigned to the complete disc or to certain scenes on the disc. This feature lets you set a playback limitation level. The rating levels are from 1 to 6 and are country dependent. You can prohibit the playing of certain discs that are not suitable for your children or play certain discs in alternative scenes for certain discs.

- 1 In PREFERENCE PAGE, press ▲▼ to highlight [PARENTAL], then press OK



- 2 Press ▲▼ to highlight a rating level for the disc inserted and press ENTER/OK.
 - To disable parental controls and have all discs play, select [8 ADULT].
- 3 Use the numeric keypad (0-9) to enter the six-digit password (see “Changing the password” on page 35).
 - DVDs that are rated above the level you selected will not play unless you enter the six-digit password.

Notes:

- VCD, SVCD, CD, SA-CD have no level indication, so the parental control function has no effect with these types of discs. This also applies to most illegal DVO discs.
- Some DVDs are not encoded with a rating though the movie rating may be printed on the disc cover. The rating level feature does not work for such discs.

39. PBC (Playback Control)

You can set PBC to ON or OFF. This feature is available only on Video CD 2.0 with the playback control (PBC) feature. For details, see page 20.

Setup Menu - Preference

40. MP3/JPEG menu

MP3/JPEG Navigator can be set only if the disc has recorded with a menu. It allows you to select different display menus for easy navigation.

- 1 In 'PREFERENCE PAGE', press ▲▼ to highlight [MP3/JPEG NAV], then press OK

WITHOUT MENU

Select this to display all the files contained in the MP3/Picture CD.

WITH MENU

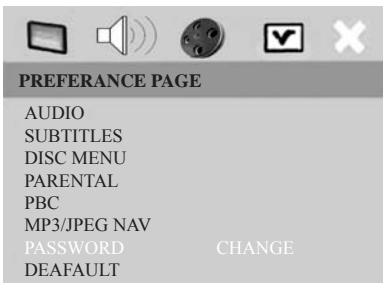
Select this to display only the folder menu of the MP3/Picture CD.

- 2 Press ▲▼ to select a setting, then press OK to confirm your selection.

41 Changing the password

The same password is used for both Parental Control and Disc Lock. Enter your six-digit password when prompted on the screen. The default password is 000 000.

- 1 In PREFERENCE PAGE, press ▲▼ to high light [PASSWORD], then press OK to select [CHANGE].



- 2 Press OK to enter the password change page



- 3 Use the numeric keypad (0-9) to enter your old six-digit password.
 - When doing this for the first time, enter '000 000'.
 - If you forget your old six-digit password, enter '000 000'.
- 4 Enter the new six-digit password.
- 5 Enter the new six-digit password a second time to confirm.
 - The new six-digit password is now valid.
- 6 Press OK to confirm.

43. Restoring to original settings

Setting the DEFAULT function will reset all options and your personal settings to the factory defaults, except your Password for Parental Control and Disc Lock.

- 1 In PREFERENCE PAGE, press ▲▼ to highlight [DEFAULT], then press OK to select
- 2 Press OK to confirm.
 - All settings are reset to the factory defaults.

Technical data

Output impedance		100 ohm
Output level	Balanced, 0dBFS	4.5Vrms
Noise floor	20 - 20 kHz	< - 130 dB
Frequency deviation	20 - 20 kHz	< 0.05 dB
Channel separation		> 110 dB
THD + N	20 - 20 kHz	< 0.002%
IMD		TBD
Digital/Analog Conversion		24 bit, 192 kHz
Compatible formats		CD, HDCD, SACD, DVD, MP3, SVCD, VCD, WMA, DIVX, Picture CD, JPEG
Dynamic Range		
Dimensions	W x D x H	483 x 410 x 75 mm 19 x 16.1 x 3 inches
Weight		14 kg
Power consumption	No Load or signal	60W
Audio Outputs		6 ch. balanced line out (XLR)
Digital Outputs		75 ohm S/PDIF RCA
Specifications are subject to change without further notice.		

44. Glossary

Analog: Sound that has not been turned into numbers. Analog sound varies, while digital sound has specific numerical values. These jacks send audio through two channels, the left and right.

Aspect ratio: The ratio of vertical and horizontal sizes of a displayed image. The horizontal vs. vertical ratio of conventional TVs is 4:3, and that of widescreens is 16:9.

AUDIO OUT Jacks: Jacks on the back of the DVD System that send audio to another system (TV, Stereo, etc.).

Bit Rate: The amount of data used to hold a given length of music, measured in kilobits per second, or kbps. Or the speed at which you record. Generally the higher the bit rate, or the higher the recording speed, the better the sound quality. However, higher bit rates use more space on a Disc.

Chapter: Sections of a picture or a music piece on a DVD that are smaller than [k]les. [k]les composed of several chapters. Each chapter is assigned a chapter number enabling you to locate the chapter you want.

Component Video Out Jacks: Jacks on the back of the DVD System that send high-quality video to a TV that has Component Video In jacks (R/G/B, Y/Pb/Pr, etc.).

Disc menu: A screen display prepared for allowing selection of images, sounds, subtitles, multi-angles, etc., recorded on a DVD.

Digital: Sound that has been converted into numerical values. Digital sound is available when you use the DIGITAL AUDIO OUT COAXIAL or OPTICAL jacks. These jacks send audio through multiple channels. Instead of just two channels as analog does.

DivX 3.11/4x/5x: The DivX code is a patent pending, MPEG-4 based video compression technology, developed by DivX Networks, Inc. that can shrink digital video to sizes small enough to be transported over the Internet, while maintaining high visual quality.

Dolby Digital: A surround sound system developed by Dolby Laboratories containing up to six channels of digital audio (front left and right, surround left and right, center and subwoofer).

DTS: Digital Theatre Systems. This is a surround sound system, but it is different from Dolby Digital. The formats were developed by different companies.

JPEG: A very common digital still picture format. A still-picture data compression system proposed by the Joint Photographic Expert Group, which features small decrease in image quality in spite of its high compression ratio.

MP3: A file format with a sound data compression system. MP3 is the abbreviation of Motion Picture Experts Group 1 (or MPEG-1) Audio Layer 3. By using MP3 format, one CD-R or CD-RW can contain about 10 times as much data volume as a regular CD can.

Multichannel: DVD is specified to have each sound track constitute one sound field. Multichannel refers to a structure of sound tracks having three or more channels.

Parental Control: A function of the DVD to limit playback of the disc by the age of the users according to the limitation level in each country. The limitation varies from disc to disc. When it is activated, playback will be prohibited if the software's level is higher than the user-set level.

PCM (Pulse Code Modulation): A system for converting analog sound signal to digital signal for later processing with no data compression used in conversion.

Playback Control (PBC): Refers to the signal recorded on video CDs or SVCDs for controlling reproduction. By using menu screens recorded on a Video CD or SVCD that supports PBC, you can enjoy interactive-type software as well as software having a search function.

Progressive Scan: It displays all the horizontal lines of a picture at one time, as a signal frame. This system can convert the interfaced video from DVD into progressive format for connection to a progressive display. It dramatically increases the vertical resolution.

Region code: A system for allowing disc to be played back only in the region designated beforehand. This player will only play discs that have compatible region codes. You can find the region code of your player by looking on the product label. Some discs are compatible with more than one region (or ALL regions).

S-video: Produces a clear picture by sending separate signals for the luminance and the color. You can use S-video only if your TV has S-video In jack.

Super Audio CD (SA-CD): This audio format is based upon the current CD standards but includes a greater amount of information that provides higher quality sound. There are three types of discs: single layer, double layer and hybrid discs. The hybrid disc contains both standard audio CD and Super Audio CD information.

Surround: A system for creating realistic three dimensional sound fields full of realism by arranging multiple speakers around the listener.

Tide: The longest section of a picture or music feature on DVD, music, etc. In video software, or the entire album in audio software. Each title is assigned a title number enabling you to locate the title you want.

VIDEO OUT jack: Jack on the back of the DVD System that sends video to a TV.

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