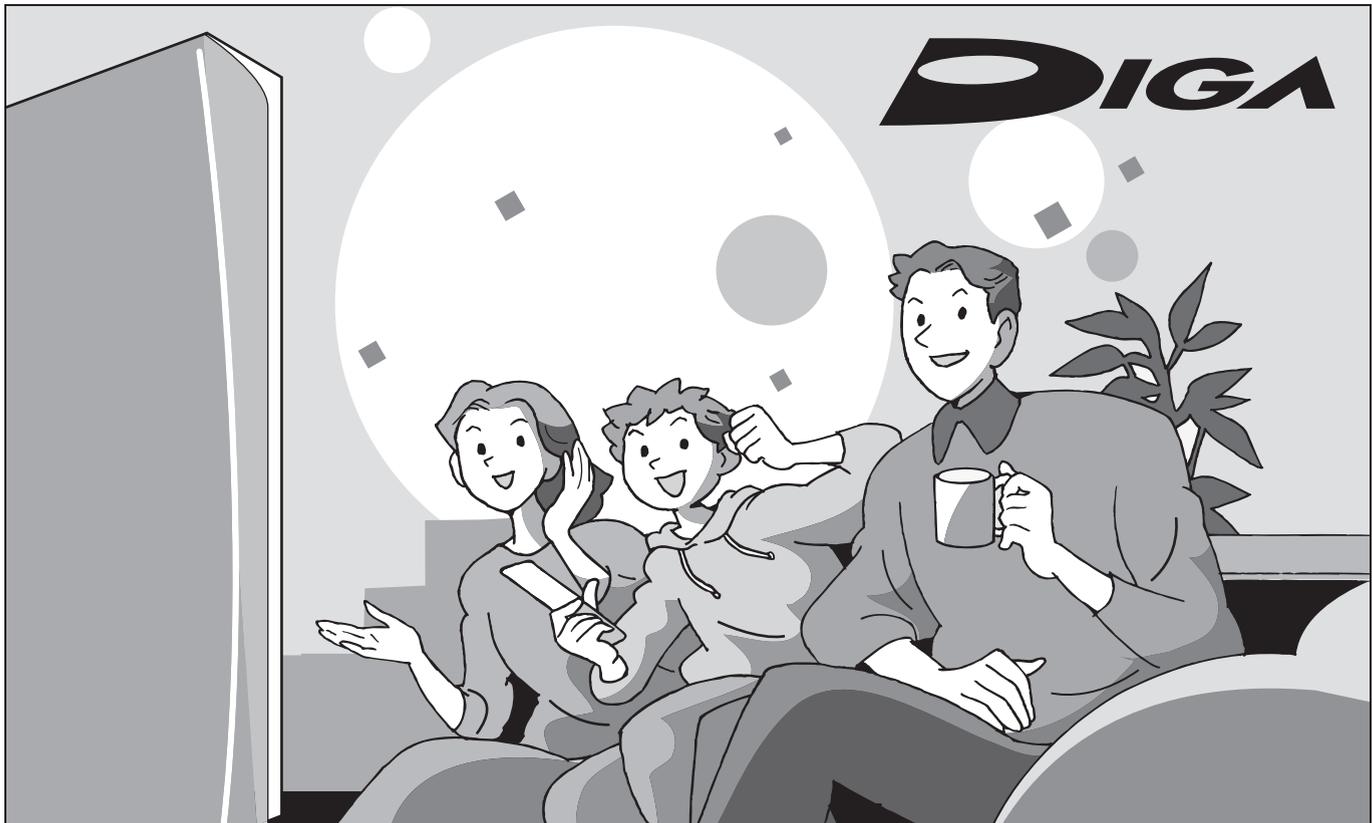
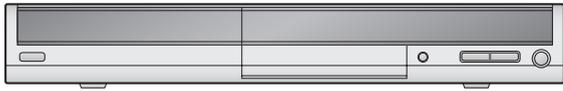


Panasonic®

Operating Instructions

DVD Recorder

Model No. **DMR-ES20**



Dear customer

Thank you for purchasing this product. For optimum performance and safety, please read these instructions carefully.

Before connecting, operating or adjusting this product, please read the instructions completely. Please keep this manual for future reference.

Region number supported by this unit

Region numbers are allocated to DVD players and software according to where they are sold.

- The region number of this unit is "1".
- The unit will play DVDs marked with labels containing "1" or "ALL".

Example:



If you have any questions contact

In the U.S.A.: 1-800-211-PANA(7262)

In Canada: 1-800-561-5505

For U.S.A. only

The warranty can be found on page 43.

For Canada only

The warranty can be found on page 43.

La referencia rápida en español se puede encontrar en la página 44-47.

Getting started

Recording

Playing back

Editing

Transfer (Dubbing)

Convenient functions

Reference

Español

CAUTION!

THIS PRODUCT UTILIZES A LASER.
USE OF CONTROLS OR ADJUSTMENTS OR PERFORMANCE OF PROCEDURES OTHER THAN THOSE SPECIFIED HEREIN MAY RESULT IN HAZARDOUS RADIATION EXPOSURE. DO NOT OPEN COVERS AND DO NOT REPAIR YOURSELF. REFER SERVICING TO QUALIFIED PERSONNEL.

CAUTION!

DO NOT INSTALL OR PLACE THIS UNIT IN A BOOKCASE, BUILT-IN CABINET OR IN ANOTHER CONFINED SPACE. ENSURE THE UNIT IS WELL VENTILATED. TO PREVENT RISK OF ELECTRIC SHOCK OR FIRE HAZARD DUE TO OVERHEATING, ENSURE THAT CURTAINS AND ANY OTHER MATERIALS DO NOT OBSTRUCT THE VENTILATION VENTS.

WARNING:

TO REDUCE THE RISK OF FIRE, ELECTRIC SHOCK OR PRODUCT DAMAGE, DO NOT EXPOSE THIS APPARATUS TO RAIN, MOISTURE, DRIPPING OR SPLASHING AND THAT NO OBJECTS FILLED WITH LIQUIDS, SUCH AS VASES, SHALL BE PLACED ON THE APPARATUS.

THE FOLLOWING APPLIES ONLY IN THE U.S.A.

Note to CATV system installer:

This reminder is provided to call the CATV system installer's attention to Article 820-40 of the NEC that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of cable entry as practical.

The socket outlet shall be installed near the equipment and easily accessible or the mains plug or an appliance coupler shall remain readily operable.



CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN



CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE SCREWS. NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

DANGER	- VISIBLE AND INVISIBLE LASER RADIATION WHEN OPEN. AVOID DIRECT EXPOSURE TO BEAM. (FDA 21 CFR)
CAUTION	- VISIBLE AND INVISIBLE LASER RADIATION WHEN OPEN. AVOID EXPOSURE TO BEAM. (IEC60825-1)
ATTENTION	- RAYONNEMENT LASER VISIBLE ET INVISIBLE EN CAS D'OUVERTURE. EXPOSITION DANGEREUSE AU FAISCEAU.
ADVARSEL	- SYNLIG OG USYNLIG LASERSTRÅLING VED ÅBNING. UNDGÅ UDSÆTTELSE FOR STRÅLING.
VARO!	- AVATTAESSA OLET ALLTTIINA NÄKYVÄÄ JA NÄKYMÄTÖN LASERSÄTELYLLE. ÄLÄ KATSO SÄTEESEEN.
VARNING	- SYNLIG OCH USYNLIG LASERSTRÅLING NÄR DENNA DEL ÄR ÖPPNAD. BETRÄKTA EJ STRÅLEN.
ADVARSEL	- SYNLIG OG USYNLIG LASERSTRÅLING NÄR DEKSEL ÅPNES. UNNGÅ EKSPONERING FOR STRÅLEN.
VORSICHT	- SICHTBARE UND UNSICHTBARE LASERSTRÄHLUNG, WENN ABDECKUNG GEÖFFNET, NICHT DEM STRAHL AUSSETZEN.
注意	- 打开时有可见及不可见激光辐射。避免激光束照射。
注意	- ここを開くと可視及び不可視のレーザー光が出ます。ビームを直接見たり、触れたりしないでください。 ROLS0233

(Inside of product)

IMPORTANT SAFETY INSTRUCTIONS

Read these operating instructions carefully before using the unit. Follow the safety instructions on the unit and the applicable safety instructions listed below. Keep these operating instructions handy for future reference.

- 1) Read these instructions.
- 2) Keep these instructions.
- 3) Heed all warnings.
- 4) Follow all instructions.
- 5) Do not use this apparatus near water.
- 6) Clean only with dry cloth.
- 7) Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
- 8) Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
- 9) Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding-type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
- 10) Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
- 11) Only use attachments/accessories specified by the manufacturer.
- 12) Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
- 13) Unplug this apparatus during lightning storms or when unused for long periods of time.
- 14) Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.



Useful features

This DVD recorder records high quality images to rapid random access capable DVD-RAM media.

This has resulted in many new features that outperform older tape formats. The following information summarizes a few of these features.

Quick Start

About 1 Sec. after turning on the unit, you can start recording on DVD-RAM.

Instant recording

You no longer need to search for empty disc space. By pressing the recording button, the unit finds available recording space and begins recording right away.

There is no need to worry about overwriting already recorded content.

Instant play

There is no need to rewind or search forward. Direct Navigator guides you to the beginning of the recorded video immediately.

Chasing playback

There is no need to wait until recording is complete. Without stopping recording, you can play the video currently being recorded from its beginning.

Simultaneous Recording and Playback

While recording, you can play another video program that was recorded previously.

Time Slip

During play and also while recording, you can jump to the scene you wish to view by specifying the skip time.

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Reference

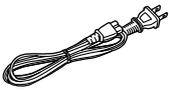
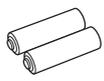
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Accessories

Please check and identify the supplied accessories. Use numbers indicated in parentheses when asking for replacement parts. (Product numbers correct as of June 2005. These may be subject to change.)

Only for U.S.A.: To order accessories, refer to "Accessory Purchases" on page 43.

Only for Canada: To order accessories, call the dealer from whom you have made your purchase.

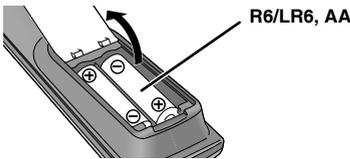
<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>	
1	Remote control (N2QAKB000055)	1	AC power supply cord (K2CB2CB00018)	1	75 Ω coaxial cable (K2KZ2BA00001)	2	Batteries for remote control	1	Audio/video cable (K2KA6BA00003)
			• For use with this unit only. Do not use it with other equipment. Also do not use the cords for other equipment with this unit.		<input type="checkbox"/>				
				1	DVD-RAM disc				

(U.S.A. only)
Product Registration Card
 Please complete and return the included product registration card, or register via the Internet at: <http://www.prodreg.com/panasonic/>

The remote control

Batteries

- Insert so the poles (+ and -) match those in the remote control.
- Do not use rechargeable type batteries.
- Do not mix old and new batteries.
- Do not use different types at the same time.
- Do not heat or expose to flame.
- Do not take apart or short circuit.
- Do not attempt to recharge alkaline or manganese batteries.
- Do not use batteries if the covering has been peeled off.



Mishandling of batteries can cause electrolyte leakage which can damage items the fluid contacts and may cause a fire.

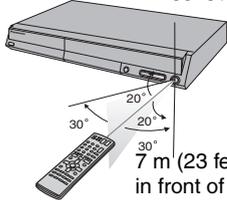
Remove if the remote control is not going to be used for a long period of time. Store in a cool, dark place.

Note

If you cannot operate the unit or television using the remote control after changing the batteries, please re-enter the codes (→ page 14).

Use

Remote control signal sensor



Discs you can use for recording and play [12 cm (5") / 8 cm (3")]

(Chart continues on page 5.)

Disc type	DVD-RAM	DVD-R (DVD-Video format)
	<ul style="list-style-type: none"> 4.7 GB/9.4 GB, 12 cm (5") 2.8 GB, 8 cm (3") 	<ul style="list-style-type: none"> 4.7 GB, 12 cm (5") 1.4 GB, 8 cm (3")
Logo		
Indication in these instructions	RAM	Before finalizing -R
		After finalizing DVD-V
Main use	Re-writable discs	One time recording discs (recordable until the disc is full)
Maximum recording time (→ page 16, Recording modes and approximate recording times)	Approx. 8 hours (Approx. 16 hours on double-sided disc*1)	Approx. 8 hours
Play on other players	Only on DVD-RAM compatible players. It is not possible to finalize the disc. (→ page 31)	Only after finalizing the disc. (→ page 31)
What you can do on this unit		
Chasing playback	Yes	No
Recording broadcasts that allow one copy	Yes (CPRM (→ page 36) compatible discs only.)	No
Recording both Main and SAP of MTS broadcast	Yes	No Only one is recorded (→ page 33, Select MTS)
Recording 16:9 aspect picture	Yes	No (The picture is recorded in 4: 3 aspect.)
Enter program (title) name	Yes	Yes
Erase program (title)	Yes (Available space increases after erasing.)	Yes (Available space does not increase after erasing.)

- We recommend using Panasonic discs. We recommend using DVD-RAM discs with cartridges to protect them from scratches and dirt.
- You may not be able to record to DVD-R, DVD-RW and +R discs on this unit or play them due to the condition of the recording.
- You cannot record programs that allow "One time only recording" to CPRM compatible DVD-R and DVD-RW discs on this unit.
- You can use high speed recording compatible discs on this unit.

Play-only discs [12 cm (5") / 8 cm (3")]

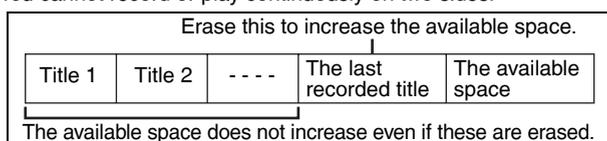
(Chart continues on page 5.)

Disc type	DVD-Video	DVD-RW (DVD Video Recording format)	+RW
Logo			—
Indication in these instructions	DVD-V	-RW(VR)	DVD-V
Instructions	High quality movie and music discs	DVD-RW recorded on another DVD Recorder*3 <ul style="list-style-type: none"> You can play programs that allow "One time only recording" if they have been recorded to a CPRM compatible disc. By formatting (→ page 30) the disc, you can record to it in DVD-Video format and play it on this unit. 	+RW recorded on another DVD Recorder*3
		• It may be necessary to finalize the disc on the equipment used for recording.	

- The producer of the material can control how discs are played. So you may not always be able to control play as described in these operating instructions. Read the disc's instructions carefully.

*1 You cannot record or play continuously on two sides.

*2



*3 Play may be impossible on some CD-R, CD-RW, DVD-RW or +RW discs due to the condition of the recording.

*4 You can play still pictures (JPEG), CD-DA, Video CD and MP3 format data recorded on CD-R/RW. Close the session or finalize the disc after recording.

(Chart continues from page 4.)

DVD-RW (DVD-Video format)		+R	
<ul style="list-style-type: none"> • 4.7 GB, 12 cm (5") • 1.4 GB, 8 cm (3") 		<ul style="list-style-type: none"> • 4.7 GB, 12 cm (5") 	
			
Before finalizing	-RW(V)	Before finalizing	+R
After finalizing	DVD-V	After finalizing	DVD-V
Re-writable discs		One time recording discs (recordable until the disc is full)	
Approx. 8 hours		Approx. 8 hours	
Only after finalizing the disc. (→ page 31)		Only after finalizing the disc. (→ page 31)	
No		No	
No		No	
No Only one is recorded (→ page 33, Select MTS)		No Only one is recorded (→ page 33, Select MTS)	
No (The picture is recorded in 4: 3 aspect.)		No (The picture is recorded in 4: 3 aspect.)	
Yes		Yes	
Yes (Available space on DVD-RW (DVD-Video format) increases only when the last recorded title is erased.)*2		Yes (Available space does not increase after erasing.)	

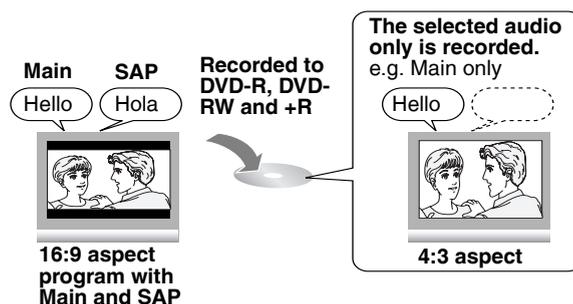
Discs that cannot be played

- 2.6 and 5.2 GB DVD-RAM, 12 cm (5")
- 3.95 and 4.7 GB DVD-R for Authoring
- DVD-R recorded in DVD Video Recording format
- DVD-R (DVD-Video format), DVD-RW (DVD-Video format), +R recorded on another unit and not finalized (→ page 36).
- PAL discs
- DVD-Video with a region number other than "1" or "ALL"
- DVD-Audio
- Blu-ray
- DVD-ROM, DVD-R DL, +R DL, +R (8 cm), CD-ROM, CDV, CD-G, Photo CD, CVD, SVCD, SACD, MV-Disc, PD, DivX Video Disc, etc.

Using DVD-R, DVD-RW, and +R on this unit

Restrictions with DVD-R, DVD-RW, and +R

- 16:9 aspect programs are recorded in 4:3 aspect.
- The Main or SAP only can be recorded for MTS broadcasts.
- Playing the disc on other DVD players is not possible before finalizing.



Therefore, follow the steps below when you use DVD-R, DVD-RW and +R.

■ When recording an SAP program to DVD-R, DVD-RW and +R

Select the audio to record before recording. (→ page 33)

Some television programs are broadcast in SAP (Secondary Audio Program). You have to select the audio recording type before recording them to DVD-R, DVD-RW and +R.

■ Playing the disc on other DVD players

The disc must be finalized after recording. (→ page 31)

It is necessary to finalize DVD-R, DVD-RW and +R on this unit after recording titles to them. You can then play them as a commercially sold DVD-Video. However, the discs become play-only and you can no longer record.*

*You can record again if you format DVD-RW.

DVD Video Recording format

This is a recording method which allows you to freely record and edit television broadcasts and so on.

- Digital broadcasts that allow "One time only recording" can be recorded to a CPRM compatible disc. You can record to CPRM compatible DVD-RAM on this unit.
 - Play is only possible on a compatible DVD player.
- Use a DVD-RAM to record in the DVD Video Recording format.**

DVD-Video format

This recording method is the same as commercially available DVD-Video.

- Digital broadcasts that allow "One time only recording" cannot be recorded.
 - These can be played on a DVD player. However programs recorded on this unit must be finalized to be played on other DVD players.
- Use a DVD-R or DVD-RW to record in the DVD-Video format.**

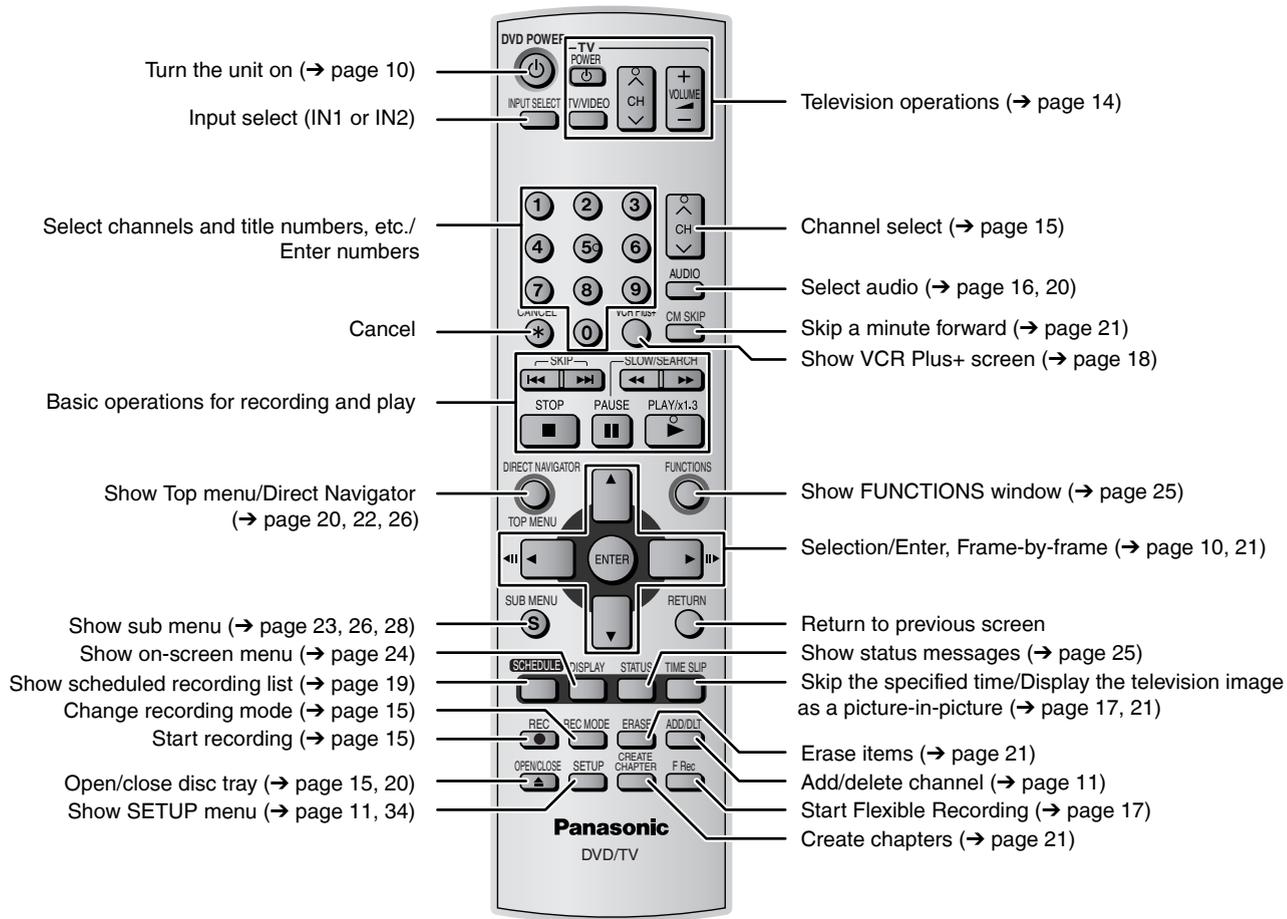
(Chart continues from page 4.)

Audio CD		Video CD
		
CD		VCD
Music and audio recorded (including CD-R/RW*3*4)	CD-R and CD-RW*3*4 with music recorded in MP3 Still pictures (JPEG) recorded on CD-R and CD-RW*3*4	Music and video recorded (including CD-R/RW*3*4)

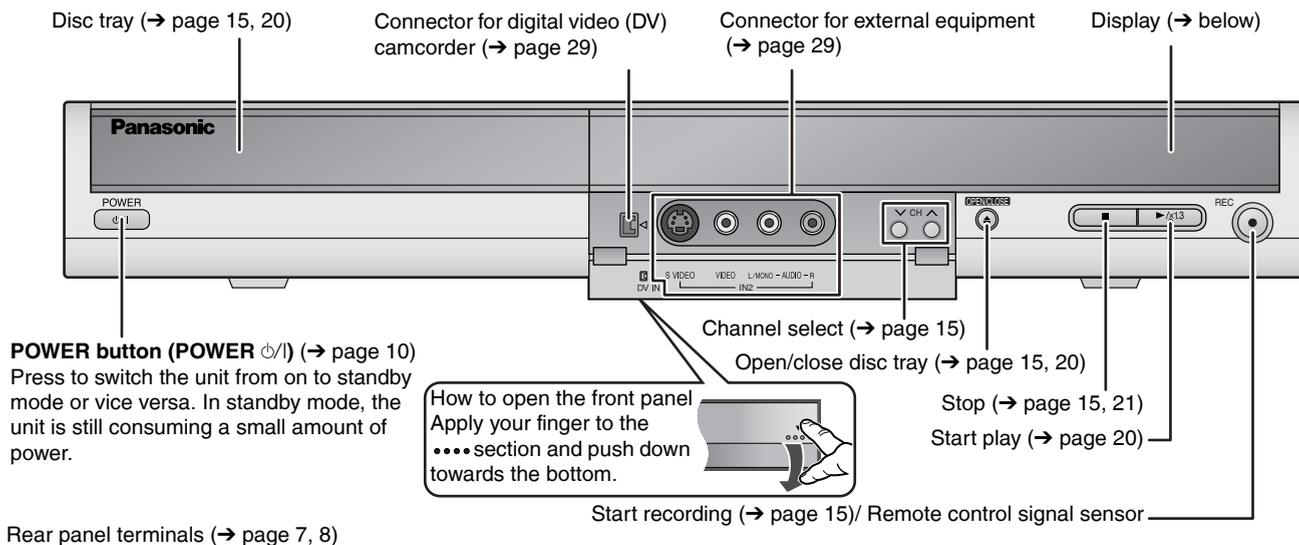
Note about using a DualDisc

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

Remote control

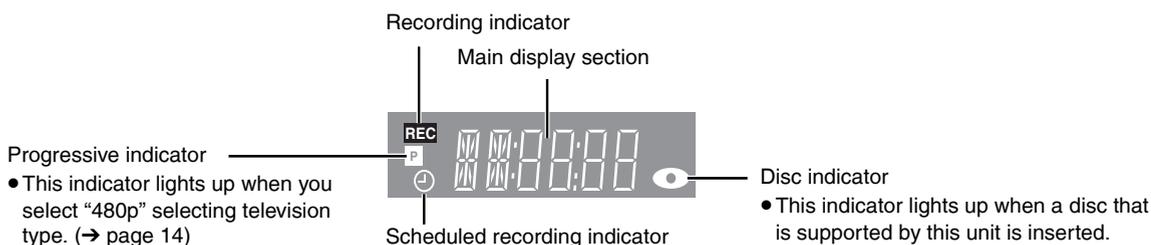


Main unit



Rear panel terminals (→ page 7, 8)

The unit's display



STEP 1 Connection

- The equipment connections described are examples. Visit Panasonic's homepage for more information about connection methods. (This is in English only.)
http://www.panasonic.com/consumer_electronics/dvd_recorder/dvd_connection.asp
- Before doing any connection, turn off all equipment and read the appropriate operating instructions.
- Peripheral equipment and optional cables are sold separately unless otherwise indicated.

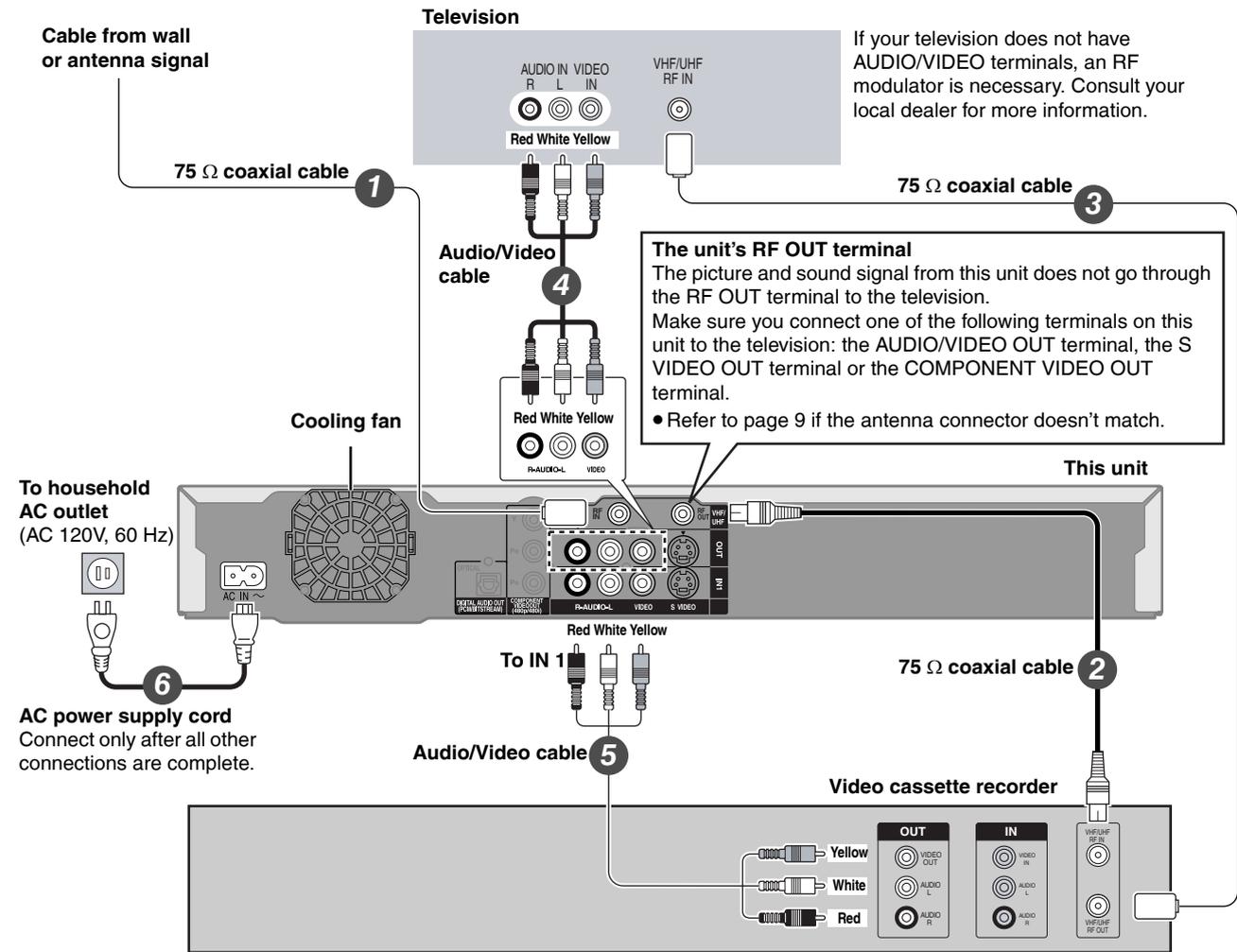
Connection with a television and video cassette recorder

The connection will allow the video cassette recorder to be used for playback when this unit is turned off. For optimum operation, it is recommended that this unit be connected as shown below.

To enjoy even higher picture quality

You can enjoy even higher picture quality, if your television has an S VIDEO IN or COMPONENT VIDEO IN terminal. (→ page 8)

———— indicates included accessories.
———— indicates accessories not included.

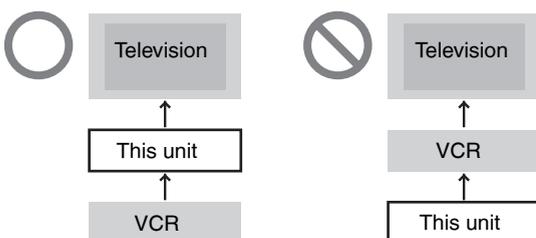


When the unit is not to be used for a long time

To save power, unplug it from the household AC outlet. This unit consumes a small amount of power, even when it is turned off (approx. 15.7 W).

Connect the unit directly to the television

Video signals fed through video cassette recorders will be affected by copyright protection systems and the picture will not be shown correctly on the television.



- When connecting to a television with a built in VCR, connect to the input terminals on the television side, not the VCR side.

Quick Start (→ page 32)

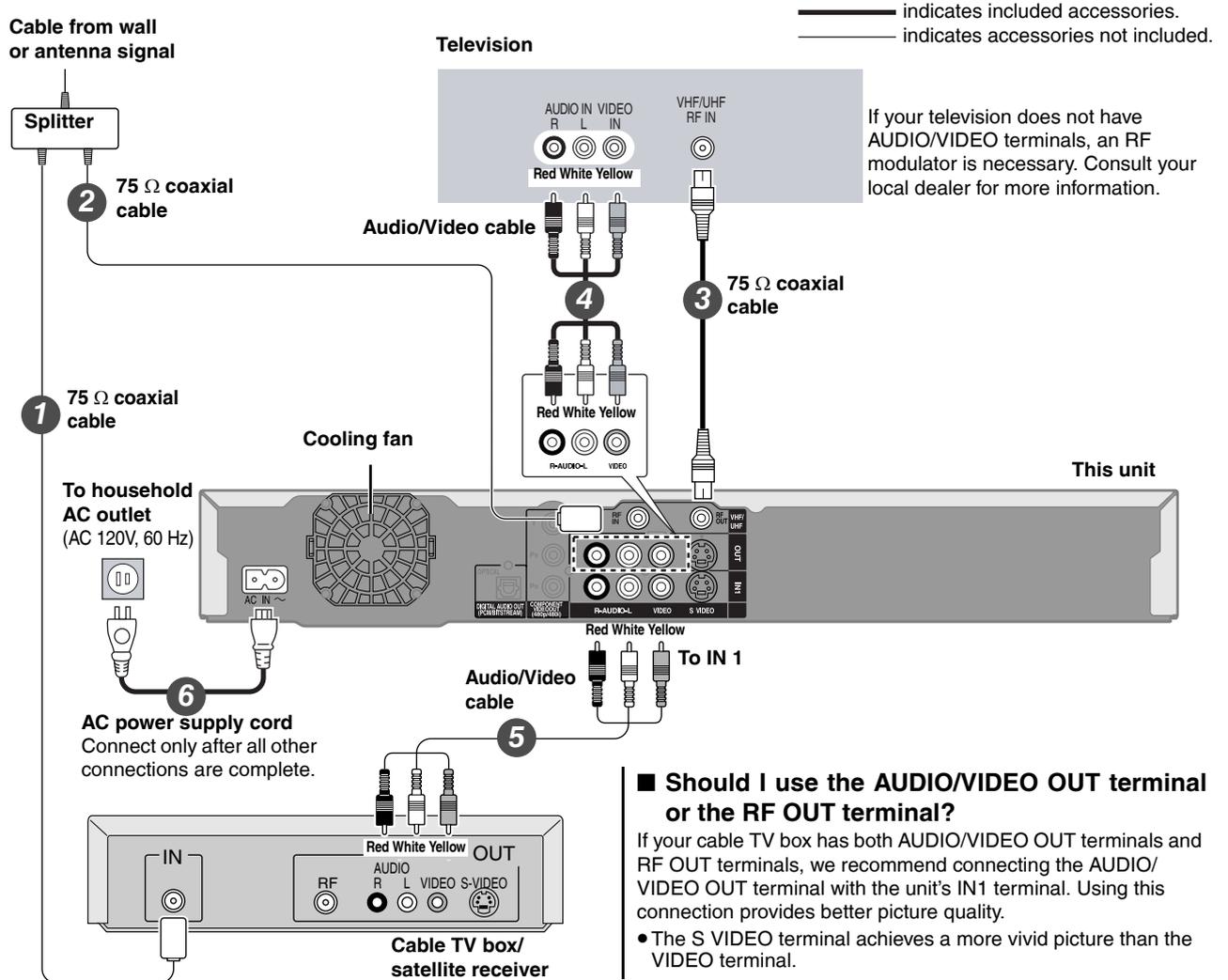
1 Sec. Quick Start for Recording on DVD-RAM*

*From the power off state, recording on DVD-RAM starts about 1 second after first pressing [POWER ⏻/I] and then sequentially pressing [● REC] (Quick Start).

STEP 1 Connection

Connection with a cable TV box/satellite receiver

- You need to subscribe to a cable TV service to enjoy viewing their programming.
 - Consult your service provider regarding appropriate cable TV box.
- The connection will allow the video cassette recorder to be used for playback when this unit is turned off. For optimum operation, it is recommended that this unit be connected as shown below.



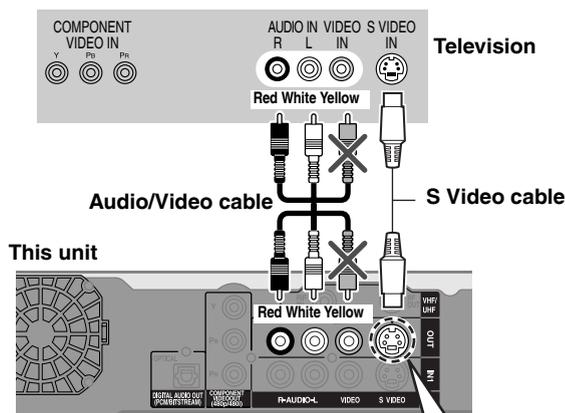
■ Should I use the AUDIO/VIDEO OUT terminal or the RF OUT terminal?

If your cable TV box has both AUDIO/VIDEO OUT terminals and RF OUT terminals, we recommend connecting the AUDIO/VIDEO OUT terminal with the unit's IN1 terminal. Using this connection provides better picture quality.

- The S VIDEO terminal achieves a more vivid picture than the VIDEO terminal.

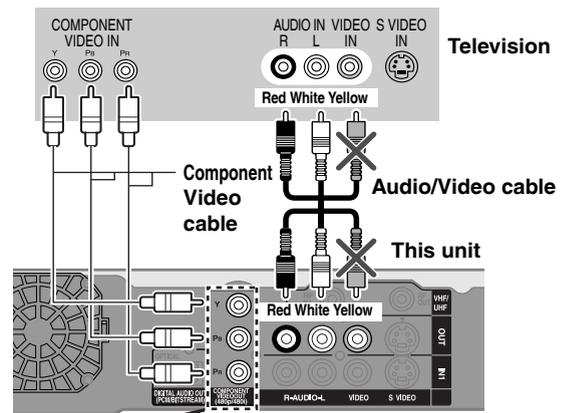
To enjoy higher picture quality

Connecting to the S VIDEO IN terminal



S VIDEO OUT terminal
 Connect to S VIDEO IN terminal on the television through an S Video cable.
 The S VIDEO OUT terminal achieves a more vivid picture than the VIDEO OUT terminal. (Actual results depend on the television.)

Connecting to the COMPONENT VIDEO IN terminal



COMPONENT VIDEO OUT terminal
 Connect to COMPONENT VIDEO IN terminals on the television through a component video cable. These terminals can be used for either interlace or progressive output (→ page 36) and provide a purer picture than the S VIDEO OUT terminal.
 • Connect to terminals of the same color.

Connecting an amplifier or system component

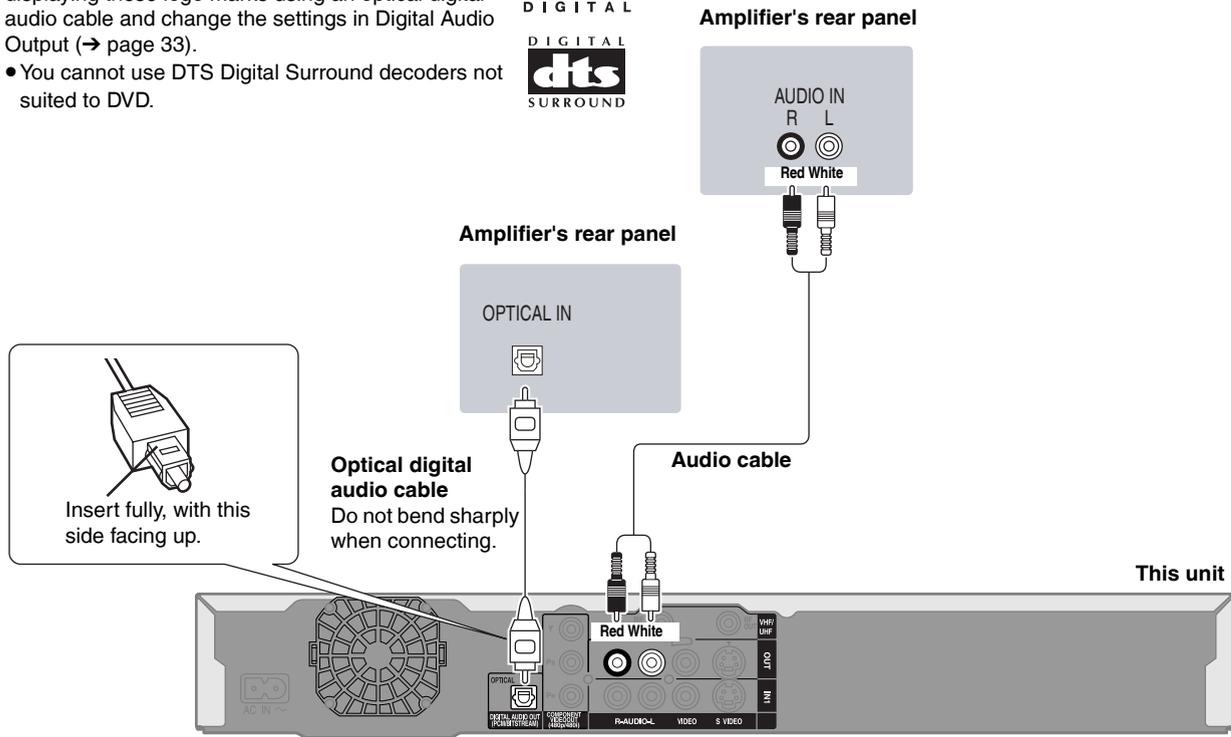
■ To enjoy multi-channel surround sound on DVD-Video

Connect an amplifier with a built-in decoder displaying these logo marks using an optical digital audio cable and change the settings in Digital Audio Output (→ page 33).

- You cannot use DTS Digital Surround decoders not suited to DVD.



■ Connection to a stereo amplifier



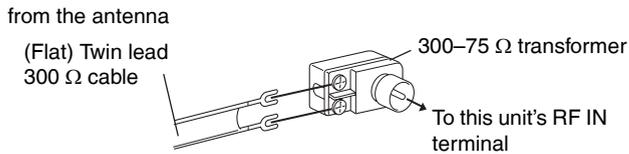
If the antenna connector doesn't match

Other antenna connections to the unit

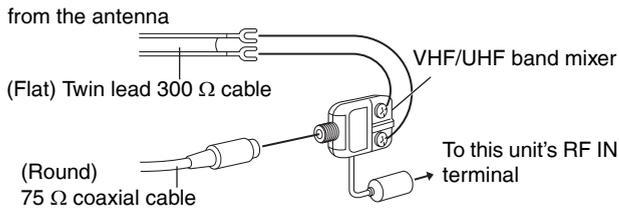
Use one of the following connections to suit the antenna lead.

- If your television has both lead and coaxial VHF terminals, use the lead connection to minimize signal loss.

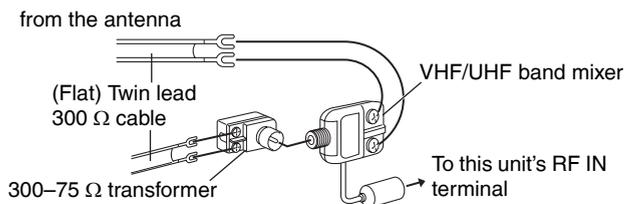
■ A single twin lead



■ A twin lead and a coaxial cable



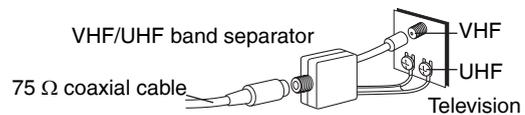
■ Two twin leads



Other antenna connections from the unit to the television

Use one of the following connections to suit the antenna terminals on your television. Refer to the television's operating instructions.

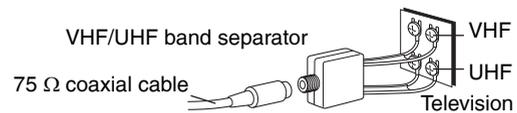
■ A twin lead and coaxial plug terminal



■ A twin lead terminal

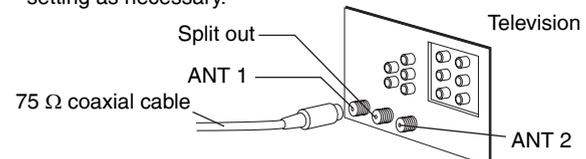


■ Two twin lead terminals

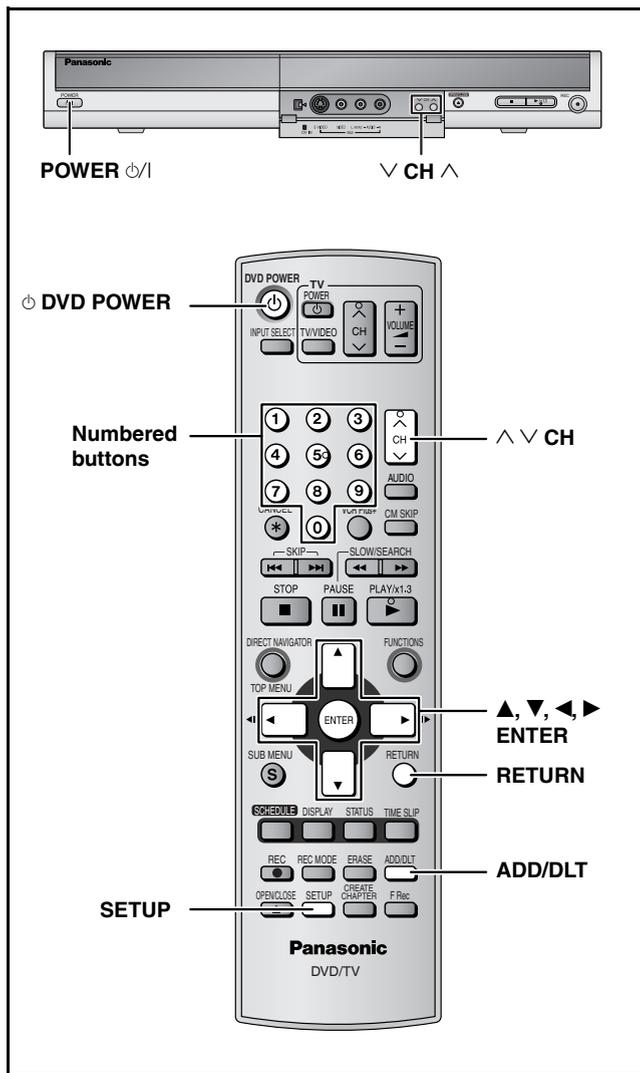


■ Multiple antenna terminals

- Connect to one of the ANT terminals, then change the television's setting as necessary.



STEP 2 Plug-in Auto Tuning



After plugging the unit into your household AC outlet and pressing [DVD POWER] to turn the unit on for the first time, the unit assists you to set the on-screen language, and automatically tunes in all the channels it can receive and sets the clock.

The unit automatically determines the type of transmission (airwaves or cable) and puts them into channels as follows.

	Band	Channel
Antenna Mode (Airwaves)	VHF	2-13
	UHF	14-69
CableTV Mode (Cable)	VHF	2-13
	CATV LOW BAND	95-99
	CATV MID/SUPER BAND	14-36
	CATV HYPER BAND	37-65
	ULTRA BAND	66-94 100-125
	SPECIAL CATV CHANNEL	1

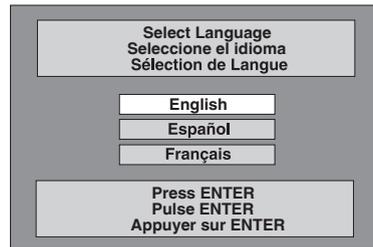
Note

If you connect the unit through a cable TV box or satellite receiver (→ page 8), tune to your local PBS for Auto Clock Setting to work. If there is no local PBS, set the clock manually (→ page 34, Set Clock Manually).

Preparation

Turn on the television and select the appropriate video input on the television (ex. Video 1) to suit the connections to this unit.

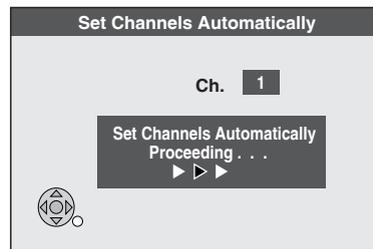
1 Press [DVD POWER].



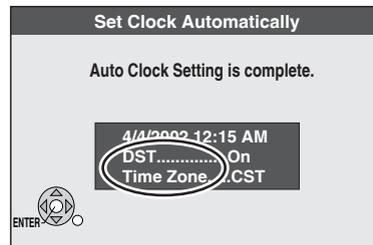
2 Press [▲, ▼] to select the language and press [ENTER].

- If you mistakenly select the wrong language, press and hold [▲ CH] and [▼ CH] on the main unit at the same time for more than 5 seconds. The setting is reset. Press [DVD POWER] and select the language again.

3 Press [ENTER] to start Plug-in Auto Tuning.



The unit then proceeds with Auto Clock Setting. The time is displayed when finished.



- DST, Daylight Saving Time, shows the summertime setting.
- Time Zone shows the time difference from Greenwich Mean Time (GMT).

EST (Eastern Standard Time) = GMT -5
 CST (Central Standard Time) = GMT -6
 MST (Mountain Standard Time) = GMT -7
 PST (Pacific Standard Time) = GMT -8
 AST (Alaska Standard Time) = GMT -9
 HST (Hawaii Standard Time) = GMT -10
 For other areas: xx hr

4 Press [ENTER].

■ If the clock is an hour slower or faster than the actual time

Select “-1” or “+1” in “Adjust Time Zone” in the SETUP menu (→ page 34).

■ If the unit couldn't set the clock automatically

Set the time manually (→ page 34, Set Clock Manually).

■ To start Plug-in Auto Tuning again (after relocation, for example)

Signal source, channel caption, and VCR Plus+ guide channel settings all revert to the default values when you perform the procedure below. Scheduled recording settings are also cleared.

When the unit is on and stopped

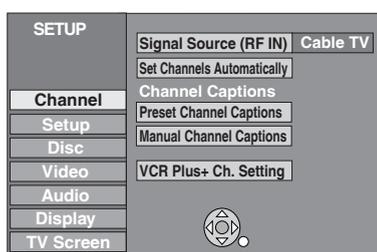
① Press and hold [\wedge CH] and [\vee CH] on the main unit for about five seconds.

The unit turns off.

② Press [\odot DVD POWER] to turn the unit on.

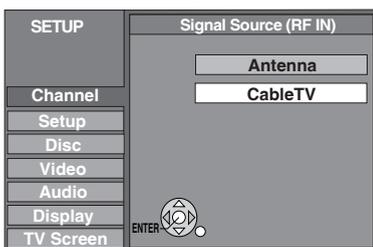
If Plug-in Auto Tuning fails

1 Press [SETUP].



2 Press [\blacktriangle , \blacktriangledown] to select “Channel” and press [\blacktriangleright].

3 Press [\blacktriangle , \blacktriangledown] to select “Signal Source (RF IN)” and press [ENTER].



4 Press [\blacktriangle , \blacktriangledown] to select “Antenna” or “CableTV” and press [ENTER].

5 Press [\blacktriangle , \blacktriangledown] to select “Set Channels Automatically” and press [ENTER].

6 Press [ENTER].

Auto Channel Setting starts. This takes a few minutes.

7 Press [ENTER].

To cancel partway

Press [RETURN].

To exit the screen

Press [SETUP].

Adding and deleting channels

Add or delete channels if necessary channels are not set or unnecessary channels are set.

1 Press the numbered buttons to select a channel.

Antenna Mode (Airwaves)

e.g., 5: [0] → [5]
15: [1] → [5]

CableTV Mode (Cable)

e.g., 5: [0] → [0] → [5]
15: [0] → [1] → [5]
115: [1] → [1] → [5]

Unit's display



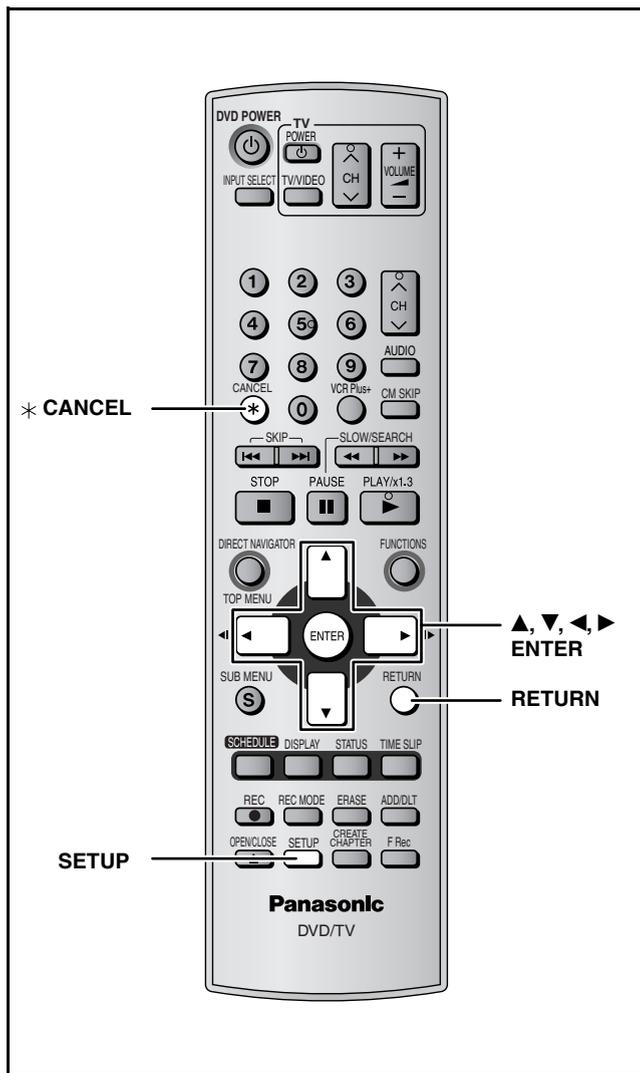
• You can also use [\wedge \vee CH] when you are going to delete a channel.

2 Press [ADD/DLT].

e.g., The channel is deleted.

Channel 15 Deleted

STEP 3 Channel settings



VCR Plus+ guide channel settings

Set these guide channels so you can use the VCR Plus+ system for scheduled recording. Before starting the settings, prepare a chart showing the channels, station names, and guide channels.

e.g.,

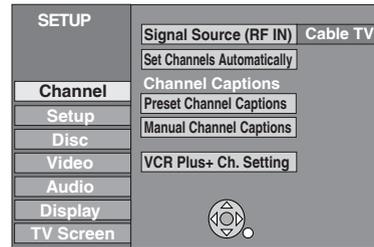
Station name	Guide channel	Channel number	Channel setting
CBS	04	04	Unnecessary
HBO	33	15	Enter channel 15 next to Guide Channel 33.
Nickelodeon	38	20	Enter channel 20 next to Guide Channel 38.

Look up the guide channels for the stations in magazines.

Write down all the stations you can receive.

- If you have connected a cable TV box or satellite receiver, the VCR Plus+ system does not work so you do not have to set the guide channels.

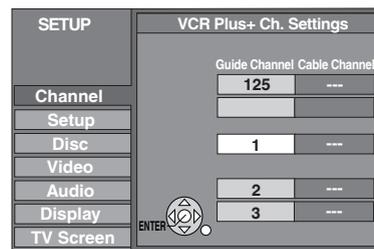
1 Press [SETUP].



2 Press [▲, ▼] to select "Channel" and press [▶].

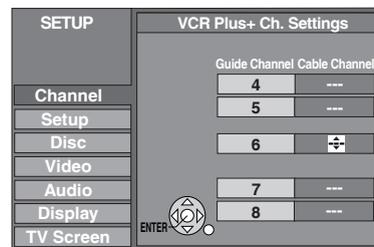
3 Press [▲, ▼] to select "VCR Plus+ Ch. Setting" and press [ENTER].

e.g., "Signal Source (RF IN)" is set to "Cable TV".



4 Press [▲, ▼] to select the guide channel you want to set and press [▶].

When selecting the guide channel, press and hold [▲, ▼] to scroll up and down the screen.



5 Press [▲, ▼] to select the channel corresponding to the guide channel and press [◀].

To delete a number, press [* CANCEL].

Repeat steps 4 and 5 to enter other channels.

6 Press [ENTER].

To exit the screen

Press [SETUP].

To return to the previous screen

Press [RETURN].

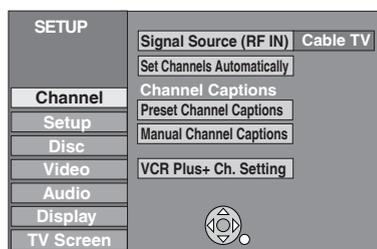
VCR Plus+ and PlusCode are registered trademarks of Gemstar Development Corporation. The VCR Plus+ system is manufactured under license from Gemstar Development Corporation.

Pats. 5,307,173; 5,335,079; 4,908,713; 4,751,578; and 4,706,121

Channel captions

You can give the preset captions, or manually enter new ones yourself.
The captions you enter are displayed when the channel is displayed as well as in the Direct Navigator screen.

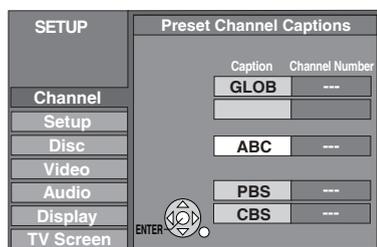
1 Press [SETUP].



2 Press [▲, ▼] to select “Channel” and press [▶].

Preset Channel Captions

3 Press [▲, ▼] to select “Preset Channel Captions” and press [ENTER].



4 Press [▲, ▼] to select the caption and press [▶].

You can choose from the following captions:
ABC, PBS, CBS, CNN, FOX, ESPN, NBC, HBO, A&E, AMC, FAM, MAX, MTV, SHOW, TBS, USA, TNT, CBC, UPN, CTV, WB, TSN, DSC, GLOB

- When selecting the caption, press and hold [▲, ▼] to scroll up and down the screen.

5 Press [▲, ▼] to select the channel corresponding to the caption and press [◀].

- Channels are only displayed if they contain a station and if captions have not been added manually.
- To delete the channel number, press [* CANCEL].

Repeat steps 4 and 5 to enter other channels.

6 Press [ENTER].

Manual Channel Captions

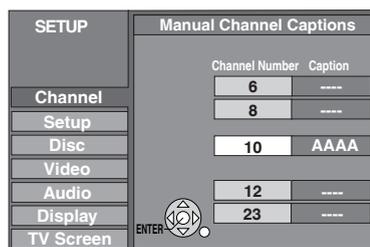
3 Press [▲, ▼] to select “Manual Channel Captions” and press [ENTER].

4 Press [▲, ▼] to select the channel and press [▶].

- Channels are only displayed if they contain a station and if preset captions have not been added.

5 Press [▲, ▼] to select the first character and press [▶].

- You can choose from the following characters:
A–Z, 0–9, -, &, !, /, (space)
- To delete the caption, press [* CANCEL].
- Repeat this step to enter the other characters.



6 Press [◀, ▶] to return to the “Channel Number” column.

Repeat steps 4–6 to enter other channels.

7 Press [ENTER].

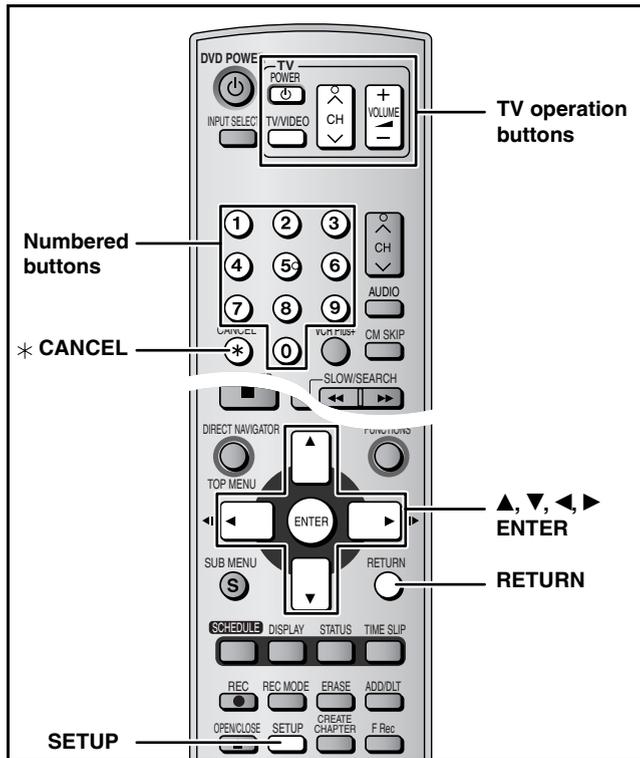
To exit the screen

Press [SETUP].

To return to the previous screen

Press [RETURN].

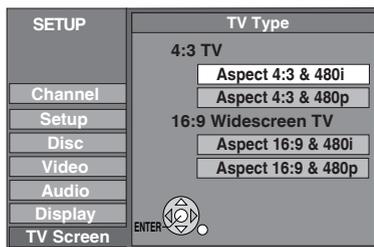
STEP 4 Set up to match your television and remote control



Selecting television type

You do not have to change the setting when connected to a 4: 3 standard aspect television that is not compatible with progressive output (→ page 36).

- 1 Press [SETUP].
- 2 Press [▲, ▼] to select “TV Screen” and press [▶].
- 3 Press [▲, ▼] to select “TV Type” and press [ENTER].



• Aspect 4: 3/Aspect 16: 9:

4:3

16:9

4: 3 standard aspect television 16: 9 widescreen television

- 480p/480i:
Select “480i” unless you have the unit connected to your TV using the three-cable component video connection.
Select “480p” if the television is compatible with progressive output.

- 4 Press [▲, ▼] to select the item and press [ENTER].

- If you select 480p, a confirmation screen will appear. Follow the on-screen instructions, select “Yes” or “No”, then press [ENTER].
- When the picture is distorted, press and hold [* CANCEL] until the picture displays correctly.

To exit the screen

Press [SETUP].

To return to the previous screen

Press [RETURN].

Television operation

You can configure the remote control TV operation buttons to turn the television on/off, change the television input mode, select the television channel and change the television volume.

Point the remote control at the television

While pressing [⏻ POWER TV], enter the code with the numbered buttons.

e.g., 01: [0] → [1]

Manufacturer and Code No.

Panasonic		PHILIPS (RC-5)	03
National	01, 02	RCA	05
QUASAR		SAMSUNG	14, 18, 19
FISHER	10	SANYO	10
GE	05	SHARP	06, 07
GOLDSTAR	15, 16, 17	SONY	08
HITACHI	12	SYLVANIA	03
JVC	11	THOMSON	05
LG	15, 16, 17	TOSHIBA	09
MAGNAVOX	03	ZENITH	04
mitsubishi	13		

Test by turning on the television and changing channels. Repeat the procedure until you find the code that allows correct operation.

- If your television brand is not listed or if the code listed for your television does not allow control of your television, this remote control is not compatible with your television.

When other Panasonic products respond to this remote control

Change the remote control code on the main unit and the remote control (the two must match) if you place other Panasonic products close together.

Use “1”, the factory set code, under normal circumstances.

- 1 Press [SETUP].
- 2 Press [▲, ▼] to select “Setup” and press [▶].
- 3 Press [▲, ▼] to select “Remote Control Code” and press [ENTER].
- 4 Press [▲, ▼] to select the code (1, 2, or 3) and press [ENTER].



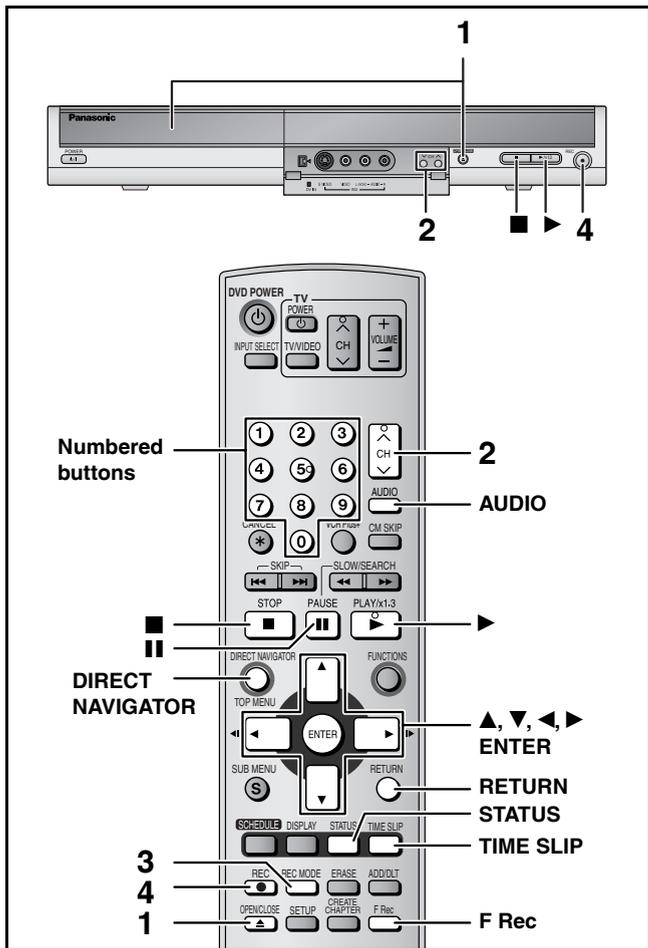
To change the code on the remote control

- 5 While pressing [ENTER], press and hold the numbered button ([1], [2] or [3]) for more than 2 seconds.
- 6 Press [ENTER].

- When the following indicator appears on the unit's display



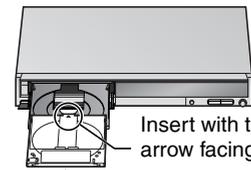
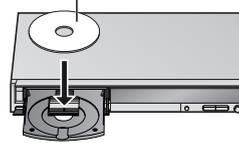
Press and hold [ENTER] and the indicated number button at the same time for more than 2 seconds.



1 Press [▲ OPEN/CLOSE] to open the tray and insert a disc.

- Press the button again to close the tray.

Insert label-up.



Insert with the arrow facing in.

↑ Insert fully so it clicks into place.

2 Press [^ v CH] to select the channel.



To select with the numbered buttons:

Antenna Mode (Airwaves) CableTV Mode (Cable)

e.g., 5: [0] → [5] e.g., 5: [0] → [0] → [5]

15: [1] → [5] 15: [0] → [1] → [5]

115: [1] → [1] → [5]

- Select the audio to be recorded (→ page 16).

3 Press [REC MODE] to select the recording mode (XP, SP, LP, or EP).



Remaining time on the disc

e.g., XP mode is selected.

4 Press [● REC] to start recording.



The elapsed time is shown on the display.

Recording will take place on free space on disc. Data will not be overwritten.

- You cannot change the channel or recording mode during recording. You can change them while recording is paused, but the material is recorded as a separate title.

Preparation

- Turn on the television and select the appropriate video input to suit the connections to this unit.
- Turn the unit on.

RAM -R -RW(V) +R

- It is not possible to record continuously from one side of a double sided disc to the other. You will need to eject the disc and turn it over.
- When using 8 cm (3") DVD-RAM or 8 cm (3") DVD-R with the cartridge, remove the disc from the cartridge.
- You can record up to 99 titles on one disc (+R 49 titles).
- It is not possible to record digital broadcasts that allow "One time only recording" onto DVD-R, DVD-RW, +R or 8 cm (3") DVD-RAM discs. Use a CPRM compatible DVD-RAM.

When recording to DVD-R, DVD-RW (DVD-Video format) or +R

- When recording MTS broadcasts
 - If you do not connect a cable TV box
Select "Main" or "Secondary Audio Program (SAP)" in "Select MTS" in the SETUP menu (→ page 33).
 - If you connect a cable TV box
Select "Main" or "SAP" on the cable TV box.
- The aspect ratio of the recorded images will be 4:3.
- In order to play a DVD-R, DVD-RW (DVD-Video format) or +R recorded using this unit on another playback source, the disc must first be finalized (→ page 31).

■ To pause recording

Press [II].

Press again to restart recording.

You can also press [● REC] to restart.

(Recorded title is not split into separate titles.)

■ To stop recording

Press [■].

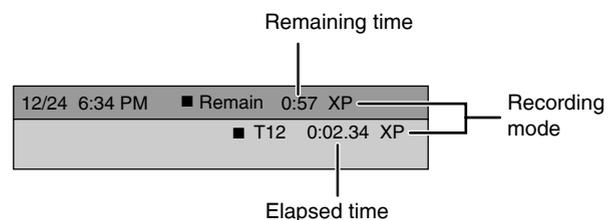
From the start to the end of the recording is called one title.

-R -RW(V) +R

It takes about 30 seconds for the unit to complete recording management information after recording finishes.

■ To show the remaining time (→ page 25)

Press [STATUS] twice.



Note

Disc remaining time may slightly differ between different models.

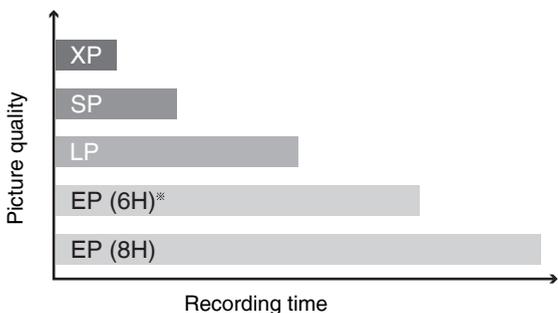
Refer to the control reference on page 15.

Recording modes and approximate recording times

Depending on the content being recorded, the recording times may become shorter than indicated.

(Unit: hour)

Mode	DVD-RAM		DVD-R DVD-RW +R (4.7GB)
	Single-sided (4.7 GB)	Double-sided (9.4 GB)	
XP (High quality)	1	2	1
SP (Standard)	2	4	2
LP (Long play)	4	8	4
EP (Extended long play)	8 (6*)	16 (12*)	8 (6*)
FR (Automatic mode selection)	8 hours maximum	8 hours maximum for one side	8 hours maximum



* When "Recording Time in EP Mode" is set to "EP (6H)" in the SETUP menu. The sound quality is better when using "EP (6H)" than when using "EP (8H)".

Note

When recording to DVD-RAM using EP (8H) mode, play may not be possible on DVD players that are compatible with DVD-RAM. In this case use EP (6H) mode.

FR (Flexible Recording Mode)

The unit automatically selects a recording rate between XP and EP (8H) that will enable the recordings to fit in the remaining disc space with the best possible recording quality.

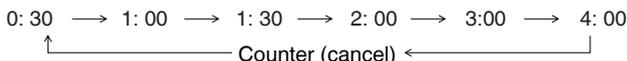
- You can set when programming scheduled recordings.

To specify a time to stop recording—One Touch Recording

During recording

Press [● REC] to select the recording time.

Each time you press the button:



- This does not work during scheduled recordings (→ page 18) or while using Flexible Recording (→ page 17).

Off Timer

The unit switches to standby after about 6 hours in the stop mode. You can turn this feature off or change the time to 2 hours (→ page 32, "Off Timer").

When the format confirmation screen is displayed

When you insert a new DVD-RW or a DVD-RAM or DVD-RW (DVD-Video format) recorded on a computer or other equipment, a format confirmation screen is displayed. Format the disc to use it. However, all the recorded contents are erased.



Press [◀] to select "Yes" and press [ENTER].

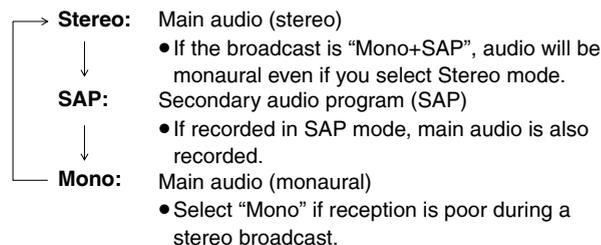
To format a disc

(Several steps are necessary to format a disc.)
"Erasing all contents of a disc-Format Disc" (→ page 30)

Selecting audio to be recorded

RAM

Press [AUDIO].



e.g., "Stereo" is selected.

"(" appears when the unit is receiving the audio type you selected.

- If you change the sound setting while recording, the recorded sound will also change.

-R -RW(V) +R

Select the audio (Main or SAP) in "Select MTS" in the SETUP menu (→ page 33).

Playing while you are recording

Note

You cannot use the following play operations for about 10 or so seconds after starting recording.

Playing from the beginning of the title you are recording—Chasing playback

RAM

Press [▶] (PLAY) during recording.

To stop play

Press [■].

To stop recording

2 seconds after play stops

Press [■].

To stop scheduled recording

Press [■], then [ENTER] within 5 seconds.

- You can also press and hold [■] on the main unit for more than 3 seconds to stop recording.

Playing a title previously recorded while recording—Simultaneous rec and play

RAM

1 Press [DIRECT NAVIGATOR] during recording.

2 Press [▲, ▼, ◀, ▶] to select a title and press [ENTER].

To stop play

Press [■].

To stop recording

After play stops

Press [DIRECT NAVIGATOR] to exit screen, then press [■].

To stop scheduled recording

Press [■], then [ENTER] within 5 seconds.

- You can also press and hold [■] on the main unit for more than 3 seconds to stop recording.

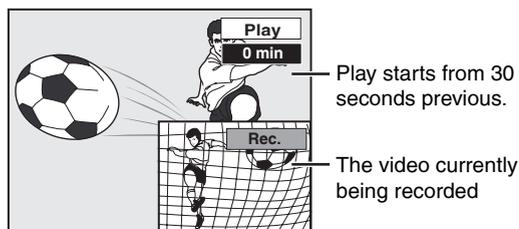
To exit the Direct Navigator screen

Press [DIRECT NAVIGATOR].

Reviewing the recorded images while recording—Time Slip

RAM

1 Press [TIME SLIP] during recording.



- You will hear the playback audio.

2 Press [▲, ▼] to select the time and press [ENTER].

- Press [TIME SLIP] to show the play images in full. Press again to show the play and recording images.

To stop play

Press [■].

To stop recording

2 seconds after play stops

Press [■].

To stop scheduled recording

Press [■], then [ENTER] within 5 seconds.

- You can also press and hold [■] on the main unit for more than 3 seconds to stop recording.

Flexible Recording

(Recording that fits the remaining disc space)

RAM -R -RW(V) +R

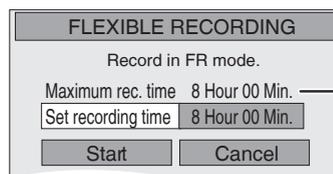
The unit sets the best possible picture quality that fits the recording within the remaining disc space. This is convenient when you want the recorded program to fit on one disc perfectly or you are concerned about the amount of free space on the disc. The recording mode becomes FR mode.

Preparation

Select the channel to be recorded or the external input.

1 While stopped

Press [F Rec].



Maximum recording time
This is the maximum recording time in EP mode.

2 Press [◀, ▶] to select “Hour” and “Min.” and press [▲, ▼] to set the recording time.

- You can also set the recording time with the numbered buttons.

3 When you want to start recording

Press [▲, ▼, ◀, ▶] to select “Start” and press [ENTER].

Recording starts.

To exit the screen without recording

Press [RETURN].

e.g., DVD-RAM

To stop recording partway

Press [■].



To show the remaining time

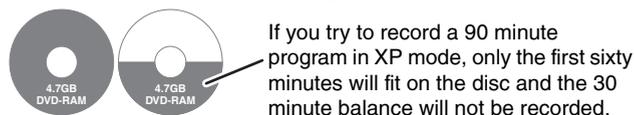
Press [STATUS].

Using “Flexible Recording” is convenient in these kinds of situations.

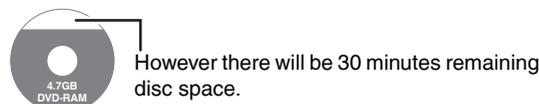
- When the amount of free space on the disc makes selecting an appropriate recording more difficult
- When you want to record a long program with the best picture quality possible

e.g., Recording a 90 minute program to disc

If you select XP mode, the program will not fit on one disc.

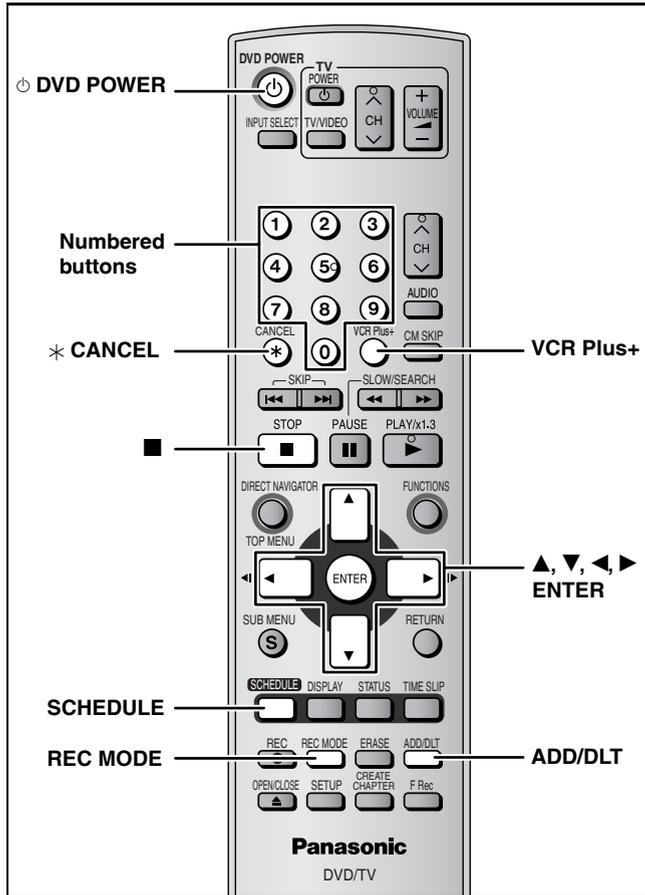


If you select SP mode, the program will fit one disc.



If you select “FLEXIBLE RECORDING” the program will fit one disc perfectly.





RAM -R -RW(V) +R

You can enter up to 16 programs up to a month in advance.

- When connecting a cable TV box or satellite receiver, the VCR Plus+ system does not work. Program the scheduled recording manually and select the channel on the cable TV box or satellite receiver before the scheduled recording starts.

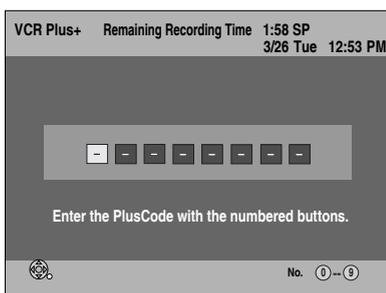
Preparation

- Turn on the television and select the appropriate video input to suit the connections to this unit.
- Check that the time on the unit is correct.

Using VCR Plus+® system to make scheduled recordings

Entering VCR Plus+ numbers is an easy way of scheduled recording. You can find these codes in TV listings in newspapers and magazines.

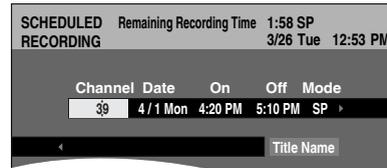
1 Press [VCR Plus+].



2 Press the numbered buttons to enter the PlusCode number.

- **To correct the number**
Press [◀] to move back to correct a digit.

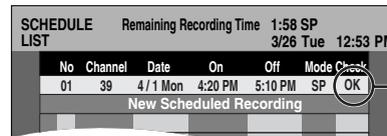
3 Press [ENTER].



- When “XP” is displayed in the unit’s display, the recording mode automatically changes to “FR” in order to prevent loss of recording when there is not enough space. Change to “XP” mode if you want to set the scheduled recording using “XP” mode.
- Confirm the program and make corrections if necessary using [▲], [▼], [◀], [▶] (→ page 19, step 3).
- You can also press [REC MODE] to change the recording mode.
- **Title Name**
Press [◀, ▶] to select “Title Name” and press [ENTER] (→page 31).

4 Press [ENTER].

The settings are stored.



Check to make sure “OK” is displayed.

Repeat steps 1–4 to program other recordings.

5 Press [SCHEDULE].

The message “Turn recorder off for Scheduled Recording.” is shown on the television.

6 Press [DVD POWER].

- Scheduled recording can be started only when the unit is turned off.
- The unit turns off and “Ⓢ” lights on the unit’s display to indicate scheduled recording standby has been activated.

■ To release the unit from recording standby

Press [DVD POWER].

The unit turns on and “Ⓢ” goes out.

- Be sure to press [DVD POWER] to return the unit to standby mode before the scheduled recording time. Scheduled recording will work only if “Ⓢ” is displayed.

■ To cancel recording when recording has already begun

Press [■], then [ENTER] within 5 seconds.

- You can also press and hold [■] on the main unit for more than 3 seconds to stop recording.

Note

- “Ⓢ” flashes when the unit cannot go to scheduled recording standby (e.g., a recordable disc is not in the disc tray).
- The actual time recorded may be longer than the program itself when television programs are recorded using VCR Plus+.
- When you program successive scheduled recordings to start immediately one after the other, the unit cannot record the part at the beginning of the later programs (a few seconds when recording with DVD-RAM and approximately 30 seconds when recording with DVD-R, DVD-RW (DVD-Video format) or +R).
- If you set DST (Daylight Saving Time) to On when manually setting the clock (→ page 34), scheduled recording may not properly work when summer switches to winter and vice versa.

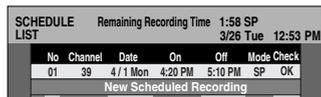
You can enter up to 16 programs up to a month in advance. (Each daily or weekly program is counted as one program.)

- When connecting a cable TV box or satellite receiver, select the channel on the cable TV box or satellite receiver before the scheduled recording starts.

Manually programming scheduled recordings

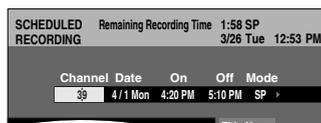
RAM -R -RW(V) +R

1 Press [SCHEDULE].



2 Press [▲, ▼] to select “New Scheduled Recording” and press [ENTER].

3 Press [▶] to move through the items and change the items with [▲, ▼].



- Press and hold [▲, ▼] to alter On (Start time) and Off (Finish time) in 30-minute increments.
- You can also set Channel, Date, On (Start time), and Off (Finish time) with the numbered buttons.
- You can also press [REC MODE] to change the recording mode.

• Date

Date: Current date up to one month later minus one day



Daily timer: Sun-Sat → Mon-Sat → Mon-Fri



Weekly timer: Weekly Sun → --- → Weekly Sat

• Title Name

Press [◀, ▶] to select “Title Name” and press [ENTER] (→ page 31).

4 Press [ENTER].



Check to make sure “OK” is displayed.

Repeat steps 2–4 to schedule other recordings.

5 Press [SCHEDULE].

The message “Turn recorder off for Scheduled Recording.” is shown on the television.

6 Press [⏻ DVD POWER].

- Scheduled recording can be started only when the unit is turned off.
- The unit turns off and “⏻” lights on the unit’s display to indicate scheduled recording standby has been activated.

■ To release the unit from recording standby

Press [⏻ DVD POWER].

The unit turns on and “⏻” goes out.

- Be sure to press [⏻ DVD POWER] to return the unit to standby mode before the scheduled recording time. Scheduled recording will work only if “⏻” is displayed.

■ To cancel recording when recording has already begun

Press [■], then [ENTER] within 5 seconds.

- You can also press and hold [■] on the main unit for more than 3 seconds to stop recording.

Note

- “⏻” flashes when the unit cannot go to scheduled recording standby (e.g., a recordable disc is not in the disc tray).
- When you program successive scheduled recordings to start immediately one after the other, the unit cannot record the very beginning of the later programs (a few seconds when recording with DVD-RAM and approximately 30 seconds when recording with DVD-R, DVD-RW (DVD-Video format) or +R).
- If you set DST (Daylight Saving Time) to On when manually setting the clock (→ page 34), scheduled recording may not properly work when summer switches to winter and vice versa.

Check, change or delete a program

RAM -R -RW(V) +R

- Even when the unit is turned off, you can display the schedule list by pressing [SCHEDULE].

Press [SCHEDULE].

Icons

- This program is currently recording.
- ⌚ The times overlap those in another program. Recording of the program with the later start time starts when the earlier program finishes recording.
- ⊖ You stopped a weekly or daily scheduled recording. The icon disappears the next time the scheduled program starts recording.
- Ⓛ The disc was full so the program failed to record.
- Ⓜ The material was copy-protected so it was not recorded.
- ⓧ The program did not complete recording because the disc is dirty or for some other reason.



Message displayed in the Check line

- OK: Displayed if the recording can fit in the remaining space.
- (Date): For recordings made daily or weekly, the display will show until when recordings can be made (up to a maximum of one month from the present time) based on the time remaining on the disc.
- ! : It may not be possible to record because:
 - the disc is write-protected
 - there is no more space left
 - the number of possible titles has reached its maximum.

■ To change a program

Press [▲, ▼] to select the program and press [ENTER]. (→ left, step 3)

■ To delete a program

Press [▲, ▼] to select the program and press [* CANCEL] or [ADD/DLT].

■ To exit the schedule list

Press [SCHEDULE].

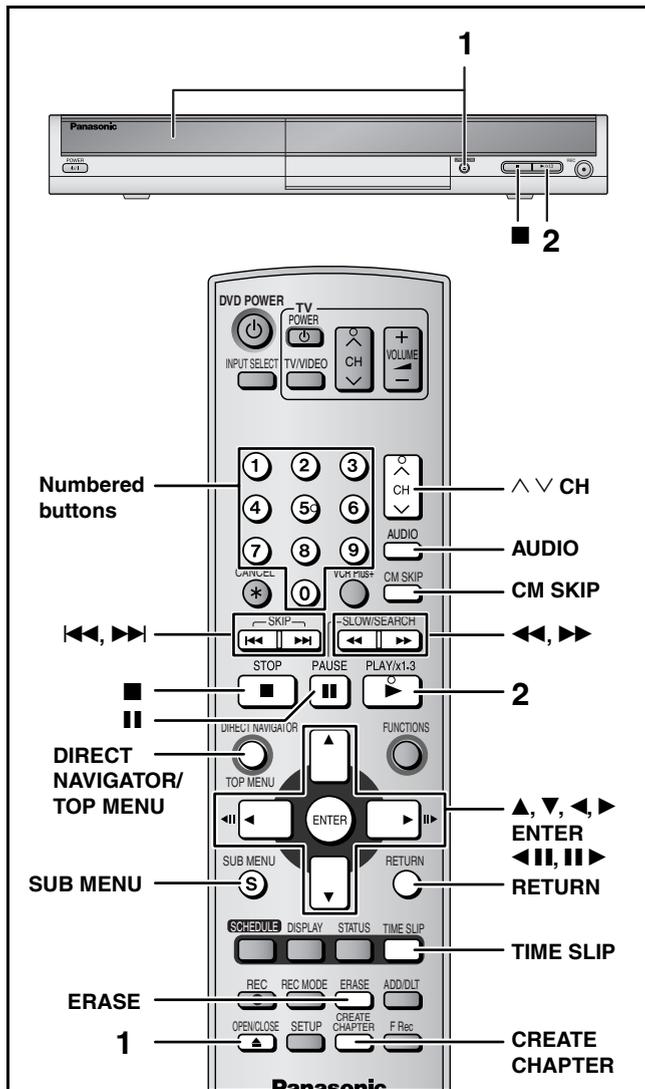
The message “Turn recorder off for Scheduled Recording.” is shown on the television.

■ To put the unit on scheduled recording standby

Press [⏻ DVD POWER].

The unit turns off and “⏻” lights on the unit’s display to indicate scheduled recording standby has been activated.

- Programs that failed to record are displayed gray, and cannot be changed. They are automatically deleted from the schedule list at 4 a.m. two days later.
- During scheduled recording, you can change the end time as long as the recording mode is not “FR”.



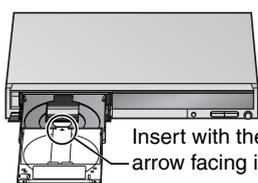
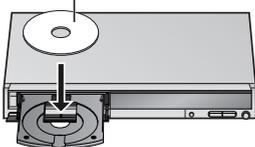
Preparation

- Turn on the television and select the appropriate video input to suit the connections to this unit.
- Turn on this unit.
- It is not possible to play continuously from one side of a double sided disc to the other. You will need to eject the disc and turn it over.
- When using 8 cm (3") DVD-RAM or 8 cm (3") DVD-R with the cartridge, remove the disc from the cartridge.
- Depending on the disc, it may take time for the menu screen, pictures, sound, etc. to start.

1 Press [▲ OPEN/CLOSE] to open the tray and insert a disc.

- Press the button again to close the tray.

Insert label-up.



Insert with the arrow facing in.
↑ Insert fully so it clicks into place.

2 Press [▶] (PLAY).

RAM -R -RW(V) +R -RW(VR)

Play starts from the most recently recorded title.

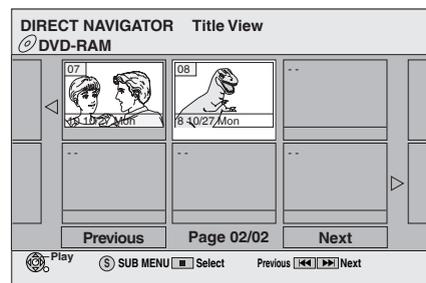
DVD-V CD VCD

Play starts from the beginning of the disc.

■ Selecting recorded programs (titles) to play

RAM -R -RW(V) +R -RW(VR)

1 Press [DIRECT NAVIGATOR].



2 Press [▲, ▼, ◀, ▶] to select the title and press [ENTER].

You can also select titles with the numbered buttons.
e.g., 5: [0] → [5] 15: [1] → [5]

To show other pages

Press [▲, ▼, ◀, ▶] to select "Previous" or "Next" and press [ENTER].

- You can also press [◀◀, ▶▶] to show other pages.

To exit the screen

Press [DIRECT NAVIGATOR].

Direct Navigator screen icons

- 🔒 Title protected.
- ✕ Title cannot be played because data is damaged.
- Currently recording.
- 📄 Title with "One time only recording" restriction

■ When a menu screen appears on the television

DVD-V

Press [▲, ▼, ◀, ▶] to select the item and press [ENTER].

Some items can also be selected using the numbered buttons.

VCD

Press the numbered buttons to select the item.

e.g., 5: [0] → [5] 15: [1] → [5]

- To return to the menu screen

DVD-V Press [TOP MENU] or [SUB MENU].

VCD Press [RETURN].

Changing audio during play

Press [AUDIO].

RAM -RW(VR) VCD

Stereo → Mono L → Mono R

e.g., "Stereo" is selected



- When playing an SAP broadcast recorded on DVD-RAM, DVD-RW (DVD Video Recording format): Main ↔ SAP

DVD-V

You can change the audio channel number each time you press the button. This allows you to change things like the soundtrack language.



English is the selected language (→ page 24, Soundtrack).

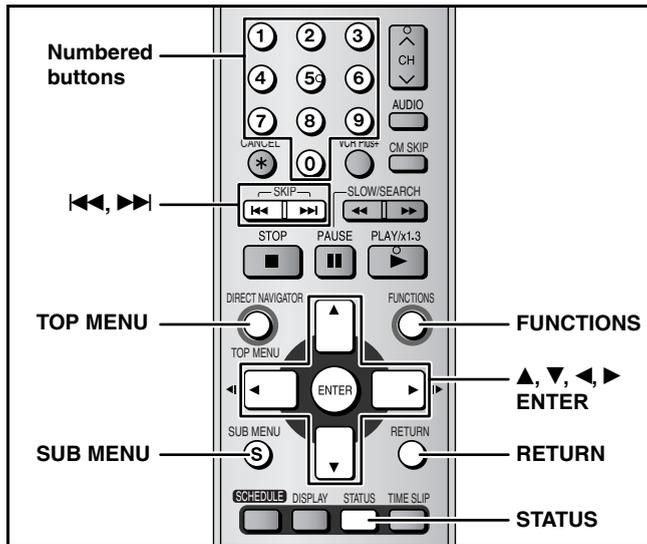
Operations during play

<p>Stop</p>	<p>Press [■]. The stopped position is memorized. (Excluding when playing from the Direct Navigator and when playing a playlist.) Resume play function Press [▶] (PLAY) to restart from this position. • Depending on the disc, resume play function may not be effective. VCD</p> <p>Stopped position • If [■] is pressed several times, the position is cleared. • The position is cleared if the unit is turned off or the tray is opened.</p>
<p>Pause</p>	<p>Press [⏸]. Press again or press [▶] (PLAY) to restart play.</p>
<p>Search</p>	<p>Press [◀◀] or [▶▶].</p> <ul style="list-style-type: none"> • The speed increases up to 5 steps. • Press [▶] (PLAY) to restart play. • Audio is heard during all levels of search. CD • Depending on the disc, searching may not be possible.
<p>Skip</p>	<p>While playing or paused, press [◀◀] or [▶▶].</p> <ul style="list-style-type: none"> • Each press increases the number of skips.
<p>Starting from a selected item</p>	<p>Press the numbered buttons. e.g., 5: [0] → [5] CD (MP3 and JPEG discs only) 5: [0] → [0] → [5] 15: [1] → [5] 15: [0] → [1] → [5]</p> <ul style="list-style-type: none"> • This works only when stopped (screen saver is displayed on the television → right) with some discs.
<p>Quick View RAM The play speed can be increased without distorting the audio.</p>	<p>Press and hold [▶] (PLAY/x1.3). Press again to return to normal speed.</p>
<p>Slow-motion RAM -R -RW(V) +R DVD-V -RW(VR) VCD</p>	<p>While paused, press [◀◀] or [▶▶].</p> <ul style="list-style-type: none"> • The speed increases up to 5 steps. • Press [▶] (PLAY) to restart play. • Forward direction only. VCD • The unit will pause if slow-motion play is continued for approximately 5 minutes (excluding DVD-V VCD).
<p>Frame-by-frame RAM -R -RW(V) +R DVD-V -RW(VR) VCD</p>	<p>While paused, press [◀] or [▶].</p> <ul style="list-style-type: none"> • Each press shows the next frame. • Press and hold to change forward or backward in succession. • Press [▶] (PLAY) to restart play. • Forward direction only. VCD
<p>Displaying the television image as a picture-in-picture Skipping the specified time (Time Slip) RAM -R -RW(V) +R -RW(VR)</p>	<p>Press [TIME SLIP]. The unit displays the television image as a picture-in-picture. • You will hear the playback audio. • Press [TIME SLIP] again to cancel. • The blue background does not appear on the receiving screen even if you select "On" for "Blue Background" in the SETUP menu (→ page 33).</p> <p>1 Press [TIME SLIP]. 2 Press [▲, ▼] to select the time and press [ENTER]. Play skips to the specified time. • Press [TIME SLIP] to show the play images in full.</p> <div data-bbox="1003 1317 1446 1424" style="border: 1px solid black; padding: 5px;"> </div> <ul style="list-style-type: none"> • You can change the channel being received by pressing [^ v CH]. • You cannot change the channel being received while recording.
<p>CM Skip RAM -R -RW(V) +R -RW(VR)</p>	<p>Press [CM SKIP]. Play restarts from approximately a minute later.</p>

Editing operations during play

<p>Erase RAM -R -RW(V) +R</p>	<p>1 Press [ERASE]. 2 Press [◀, ▶] to select "Erase" and press [ENTER].</p> <ul style="list-style-type: none"> • A title cannot be restored once it is erased. Make certain before proceeding. • You cannot erase while recording. • The available recording space on DVD-R or +R does not increase when you erase titles. • Available recording space on a DVD-RW (DVD-Video format) increases only when the last recorded title is erased. It does not increase if other titles are erased.
<p>Create Chapter RAM (→ page 26, Title/Chapter)</p>	<p>Press [CREATE CHAPTER]. Chapters are divided at the point pressed. • You cannot create chapters when the unit is in scheduled recording standby.</p>

Using menus to play MP3 and still pictures (JPEG)



Regarding MP3 and still pictures (JPEG)

- Compatible formats: ISO9660 level 1 or 2 (except for extended formats) and Joliet
- Maximum number of files (tracks) and folders (groups) recognizable: 999 files (tracks) and 99 folders (groups)
- This unit is compatible with multi-session but reading or play of the disc may take time if there are a lot of sessions.
- Operation may take time to complete when there are many files (tracks) and/or folders (groups) and some may not display or be playable.
- The display order on this unit may differ from how the order is displayed on a computer.
- Depending on how you create the disc (writing software), files (tracks) and folders (groups) may not play in the order you numbered them.
- This unit is not compatible with packet-write format.
- Depending on the recording, some items may not be playable.

Regarding MP3

- File format: MP3
Files must have the extension ".mp3" or ".MP3".
- Bit rates: 32 kbps to 320 kbps
- Sampling frequency: 16kHz/22.05kHz/24kHz/32kHz/44.1kHz/48kHz
- This unit is not compatible with ID3 tags.

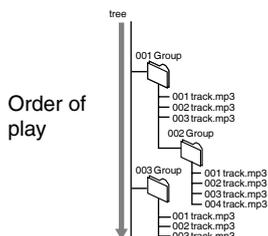
Regarding still pictures (JPEG)

- File format: JPEG
Files must have the extension ".jpg" and ".JPG".
- Number of pixels: 34 x 34 to 3840 x 2160 (Sub sampling is 4:2:2 or 4:2:0)
This unit cannot play images that have resolutions beyond the range shown.
- MOTION JPEG is not supported.

- You can play MP3 and still pictures (JPEG) on this unit by making folders as shown below. However, depending on how you create the disc (writing software), play may not be in the order you numbered the folders.
- When the highest level folders are "DCIM" folders, they are displayed first on the tree.

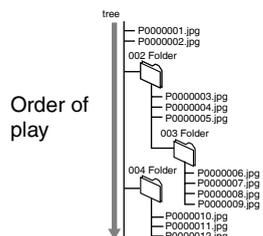
Structure of MP3 folders

Prefix with 3-digit numbers in the order you want to play them.



Structure of still pictures (JPEG)

Files inside a folder are displayed in the order they were updated or taken.



Playing MP3

[CD]

This unit plays MP3 files recorded on CD-R/RW designed for audio recording that are finalized (→ page 36) on a computer.

The screen shown at right is displayed when you insert a disc containing MP3 files and still pictures (JPEG).

Press [ENTER], and follow the steps below.

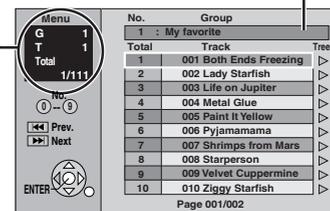
1 Press [TOP MENU].

G: Group no.

T: Track no. in the group

Total: Track no./Total track no. in all groups

Playback mode is set to MP3.
If you want to play picture (JPEG), select JPEG Menu from Menu in FUNCTIONS.



- Files are treated as tracks and folders are treated as groups.
- When the JPEG Menu is displayed, select "MP3 Menu" in step 4 of "To select JPEG Menu" to change to the MP3 Menu. (→ page 23)

2 Press [▲, ▼] to select the track and press [ENTER].

Play starts on the selected track.

- "E" indicates the track currently playing.
- You can also select the track with the numbered buttons.
e.g., 5: [0] → [0] → [5]
15: [0] → [1] → [5]

Using the screen to find a group

While the file list is displayed

1 Press [▶] while a track is highlighted to display the tree screen.

G: Selected group no. /Total group no.

If the group has no track, "—" is displayed as group number.



2 Press [▲, ▼] to select a group and press [ENTER].

The file list for the group appears.

To show other pages

Press [◀, ▶].

To return to the previous screen

Press [RETURN].

To exit the screen

Press [TOP MENU].

Playing still pictures (JPEG)

[CD]

You can play CD-R/CD-RW discs which contain still pictures (JPEG) that have been recorded and finalized (→ page 36) on a computer.

The screen shown at right is displayed when you insert a disc containing MP3 files and still pictures (JPEG).

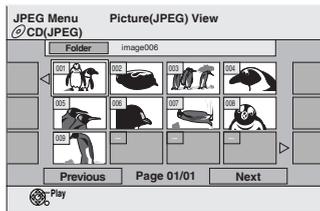
Select JPEG menu before performing the following steps below.

(→ page 23, To select JPEG Menu)

Playback mode is set to MP3.
If you want to play picture (JPEG), select JPEG Menu from Menu in FUNCTIONS.



1 Press [TOP MENU].



- Thumbnails for large JPEG files and images with aspect ratios other than 4:3 may not display.

2 Press [▲, ▼, ◀, ▶] to select the still picture and press [ENTER].

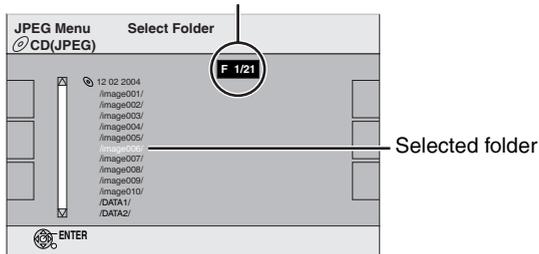
- The selected still picture is displayed on the screen.
You can also select still pictures with the number buttons.
e.g., 5: [0] → [0] → [5]
15: [0] → [1] → [5]

■ To select another folder

While the JPEG Menu is displayed

1 Press [▲, ▼, ◀, ▶] to select “Folder” and press [ENTER].

F: Selected folder no./Total folder no.



2 Press [▲, ▼] to select the folder and press [ENTER].

To display the previous or next still picture during play
Press [◀, ▶].

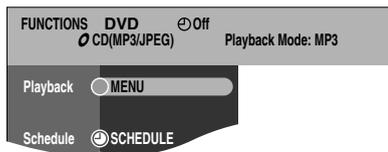
To show other pages
Press [◀◀, ▶▶].

To exit the menu screen
Press [TOP MENU].

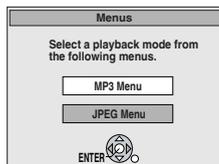
To select JPEG Menu

1 Press [ENTER].

2 Press [FUNCTIONS].



3 Press [▲, ▼] to select “MENU” and press [ENTER].

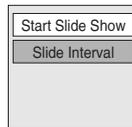


4 Press [▲, ▼] to select “JPEG Menu” and press [ENTER].

To display still pictures one by one

After Step1 (→page 22, Playing still pictures (JPEG))

2 Press [▲, ▼, ◀, ▶] to select “Folder” and press [SUB MENU].



3 Press [▲, ▼] to select “Start Slide Show” and press [ENTER].

To change the slide interval

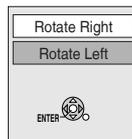
- ① In step 2 above, press [▲, ▼] to select “Slide Interval” and press [ENTER].



- ② Press [◀, ▶] to select the slide interval and press [ENTER].
 - You can select a slide interval between 0-30 seconds.
 - The interval for large JPEG files may be longer than the time you select.

To rotate

1 While playing, Press [SUB MENU].



2 Press [▲, ▼] to select the item and press [ENTER].

To return the rotated picture to its original position

- ① Press [SUB MENU].
- ② Press [▲, ▼] to select the opposite rotation button and press [ENTER].

Note

The rotation information will not be stored.

To view the picture properties

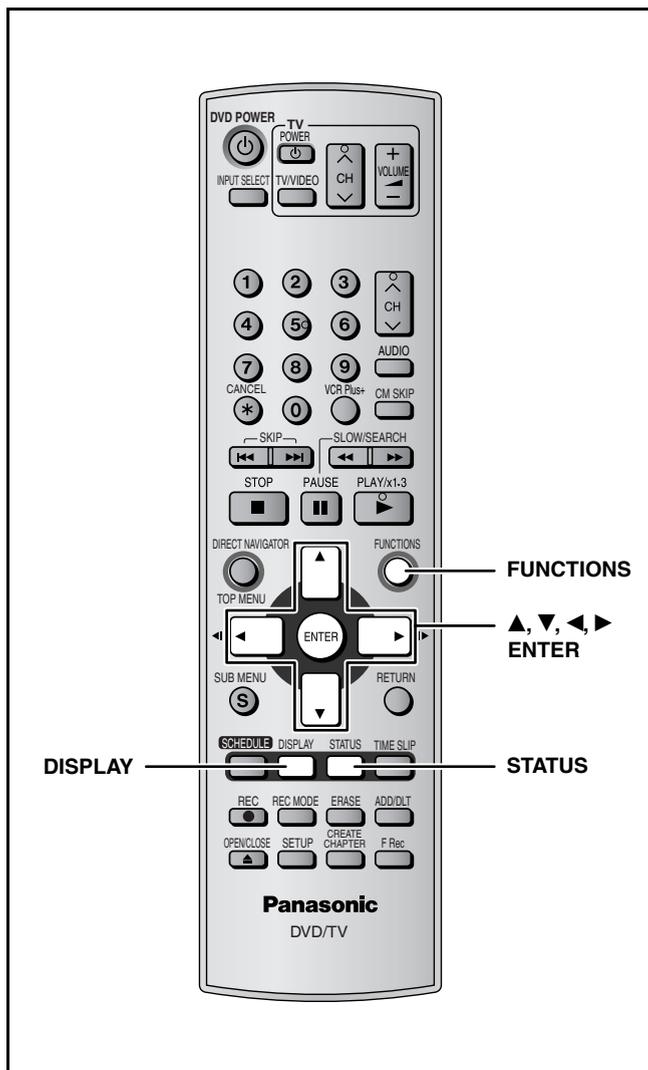
Press [STATUS] twice.



Shooting date

To exit the picture properties screen

Press [STATUS].



Disc menu—Setting disc content

Soundtrack*

RAM -R -RW(V) +R -RW(VR)

The disc's audio attributes appear.

DVD-V

Select the audio and language (→ below, Audio attribute, Language).

Subtitle*

RAM -R -RW(V) +R -RW(VR) (Only discs that contain subtitle on/off information)

DVD-V

Turn the subtitle on/off and select the language (→ below, Language).

- Subtitle on/off information cannot be recorded using this unit.

RAM -R -RW(V) +R -RW(VR)

- If the subtitles overlap closed captions recorded on discs, turn the subtitles off.

Audio channel **RAM -RW(VR) VCD**

→ page 20, Changing audio during play

Angle* **DVD-V**

Change the number to select an angle.

PBC (Playback control → page 36) **VCD**

Indicates whether menu play (playback control) is on or off. (unchangeable)

* You may have to use the menus (→ page 20) on the disc to make changes.

- The display changes according to the disc content. You cannot change anything when there is no recording.

Audio attribute

LPCM/PPCM/□□ Digital/DTS/MPEG:	Signal type
k (kHz):	Sampling frequency
b (bit):	Number of bits
ch (channel):	Number of channels

Language

ENG: English	SVE: Swedish	CHI: Chinese
FRA: French	NOR: Norwegian	KOR: Korean
DEU: German	DAN: Danish	MAL: Malay
ITA: Italian	POR: Portuguese	VIE: Vietnamese
ESP: Spanish	RUS: Russian	THA: Thai
NLD: Dutch	JPN: Japanese	*: Others

- Enter a code (→ page 36) when you select “*: Others”.

Play menu—Change play sequence

This function works only when the elapsed play time is displayed. Select the item for repeat play. Depending on the disc, the items that can be selected will differ.

Repeat play

- All **CD** (excluding MP3 discs) **VCD**
 - Chapter **DVD-V**
 - Group **CD** (MP3 discs only)
 - Playlists **RAM**
 - Title **RAM -R -RW(V) +R DVD-V -RW(VR)**
 - Track **CD VCD**
- Select “Off” to cancel.

Common procedures

1 Press [DISPLAY].

Disc	Soundtrack	1	□□ Digital	2/0 ch
Play	Subtitle	Off		
Video				
Audio	Audio channel	L R		
Other				
Menu	Item	Setting		

- Depending on the condition of the unit (playing, stopped, etc.) and disc contents, there are some items that you cannot select or change.

2 Press [▲, ▼] to select the menu and press [▶].

3 Press [▲, ▼] to select the item and press [▶].

4 Press [▲, ▼] to select the setting.

- Some items can be changed by pressing [ENTER].

To clear the on-screen menus
Press [DISPLAY].

Video menu—Change picture quality

Picture **RAM** **-R** **-RW(V)** **+R** **DVD-V** **-RW(VR)**

To select the picture mode

- **Normal:** Default setting
- **Cinema:** Mellows movies

MPEG-DNR **RAM** **-R** **-RW(V)** **+R** **DVD-V** **-RW(VR)**

Reduces noise and picture degradation.
On←→Off

Progressive* (→ page 36)

Select “On” to enable progressive output.

- Select “Off” if the picture is stretched horizontally.
- When progressive output is on, closed captions cannot be displayed.

Transfer* (When “Progressive” is set to “On”.)

Select the method of conversion for progressive output to suit the type of material being played (→ page 36, Film and video).

- **Auto1 (normal):**
Detects 24 frame-per-second film content and appropriately converts it.
- **Auto2:** Select when using Auto1, and the video content is distorted.

Line-in NR (Only when IN1 or IN2 is selected.)

Reduces video tape noise while dubbing.
Depending on the software, jittering may occur.

- **Off:** Noise reduction is off. Select when you want to record input as is.
- **On:** Noise reduction works for any video input.

* Only when you have selected “480p” in “TV Type” (→ page 14).

Audio menu—Change sound effect

V.S.S. **RAM** **-R** **-RW(V)** **+R** **DVD-V** **-RW(VR)**

(Dolby Digital, 2-channel or over only)

Enjoy a surround-like effect if you are using two front speakers only.

- Turn V.S.S. off if it causes distortion.
- V.S.S. does not work for SAP recordings.

Dialog Enhancer **RAM** **-RW(V)** **+R** **DVD-V** **-RW(VR)**

(Dolby Digital, 3-channel or over only, including a center channel)

The volume of the center channel is raised to make dialog easier to hear.

Other menu—Change the display position

Position

1 (Standard) - 5: The higher the setting the lower the screen moves.

FUNCTIONS window and Status messages

FUNCTIONS window

By using the FUNCTIONS window you may access the main functions quickly and easily.

1 While stopped

Press [FUNCTIONS].



Functions displayed depend on the type of disc.

2 Press [▲, ▼] to select an item and press [ENTER].

- If you select “Other Functions”, press [▲, ▼] to select an item and press [ENTER].

To exit the FUNCTIONS window

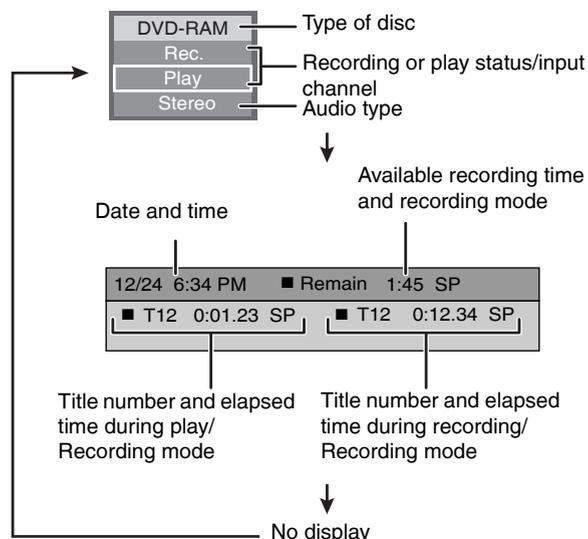
Press [FUNCTIONS].

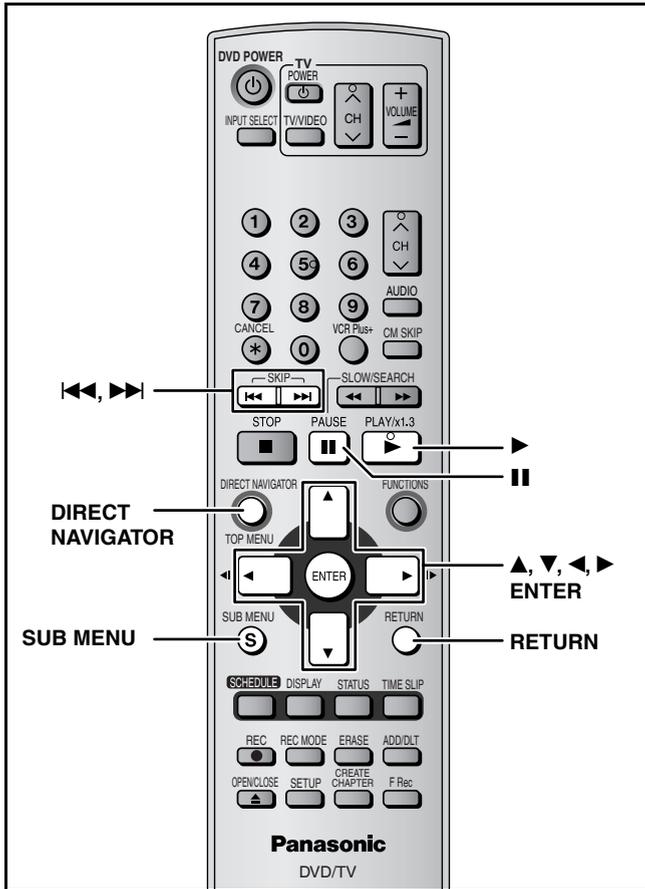
Status messages

Status messages appear on the television during operation to show the condition of the unit.

Press [STATUS].

The display changes each time you press the button.

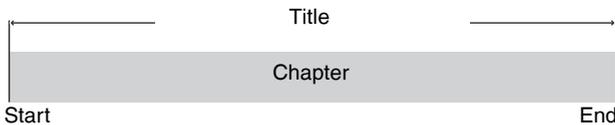




RAM **-R** **-RW(V)** **+R**

Title/Chapter

Programs are recorded as a single title consisting of one chapter.



You can divide a title into multiple chapters. **RAM**
 (→ page 21, 27, "Create Chapter")



• Titles are divided into about 5-minute chapters after finalizing (→ page 31). **-R** **-RW(V)** **+R**

• The maximum number of items on a disc:

- Titles: 99 (**+R** 49 titles)
- Chapters: Approximately 1000 (**+R** Approximately 254)
 (Depends on the state of recording.)

Note

- Once erased, a title cannot be restored to its original state. Make certain before proceeding.
- You cannot edit during recording or chasing play.

Preparation

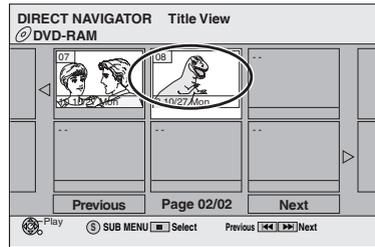
- Turn on the television and select the appropriate video input to suit the connections to this unit.
- Turn the unit on.
- Insert the disc with the title to edit.

Editing titles/chapters and playing chapters

Preparation

Release protection (→ page 30). **RAM**

- 1 During play or while stopped
 Press [DIRECT NAVIGATOR].
- 2 Press [▲, ▼, ◀, ▶] to select the title.



To show other pages

Press [▲, ▼, ◀, ▶] to select "Previous" or "Next" and press [ENTER].

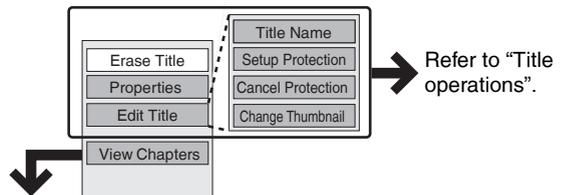
- You can also press [◀◀, ▶▶] to show other pages.

Multiple editing

Select with [▲, ▼, ◀, ▶] and press [■]. (Repeat.)
 A check mark appears. Press [■] again to cancel.

- 3 Press [SUB MENU], then [▲, ▼] to select the operation and press [ENTER].

- If you select "Edit Title", press [▲, ▼] to select the operation and press [ENTER] (→ page 27).

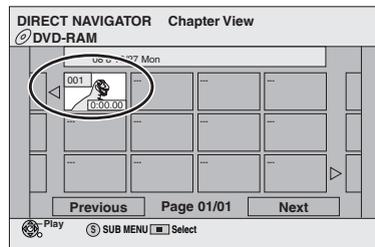


If you select "View Chapters"

- 4 Press [▲, ▼, ◀, ▶] to select the chapter.

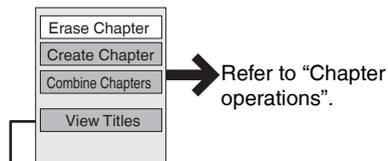
To start play → Press [ENTER].

To edit → Step 5.



- To show other pages/Multiple editing (→ above)

- 5 Press [SUB MENU], then [▲, ▼] to select the operation and press [ENTER].



- You can go back to the Title View.

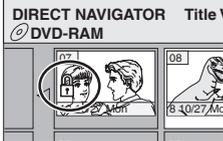
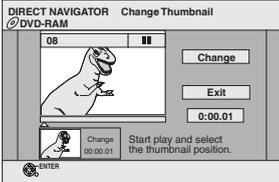
To exit the screen

Press [DIRECT NAVIGATOR].

To return to the previous screen

Press [RETURN].

Title operations

Erase Title * RAM -R -RW(V) +R	<p>Press [◀, ▶] to select “Erase” and press [ENTER].</p> <ul style="list-style-type: none"> • Once erased, the recorded contents are lost and cannot be restored. Make certain before proceeding. • The available recording space on DVD-R or +R does not increase when you erase titles. • Available recording space on a DVD-RW (DVD-Video format) increases only when the last recorded title is erased. It does not increase if other titles are erased.
Properties RAM -R -RW(V) +R -RW(VR)	<p>Information (e.g., time and date) is shown.</p> <ul style="list-style-type: none"> • Press [ENTER] to exit the screen. 
Title Name RAM -R -RW(V) +R	<p>You can give names to recorded titles. → page 31, Entering text</p>
Setup Protection * Cancel Protection * RAM	<p>If set, this will protect the title from accidental erasure.</p> <p>Press [◀, ▶] to select “Yes” and press [ENTER].</p> <p>The lock symbol appears when the title is protected.</p> 
Change Thumbnail RAM -R -RW(V) +R (→ below, “For quicker editing”)	<p>You can change the image to be shown as a thumbnail picture in the Title View.</p> <ol style="list-style-type: none"> 1 Press [▶] (PLAY) to start play. 2 Press [ENTER] when the image you want to use as a thumbnail is shown. To change the thumbnail Restart play and press [▲, ▼] to select “Change”, then press [ENTER] at the point you want to use as the thumbnail. 3 Press [▲, ▼] to select “Exit” and press [ENTER]. 

* Multiple editing is possible.

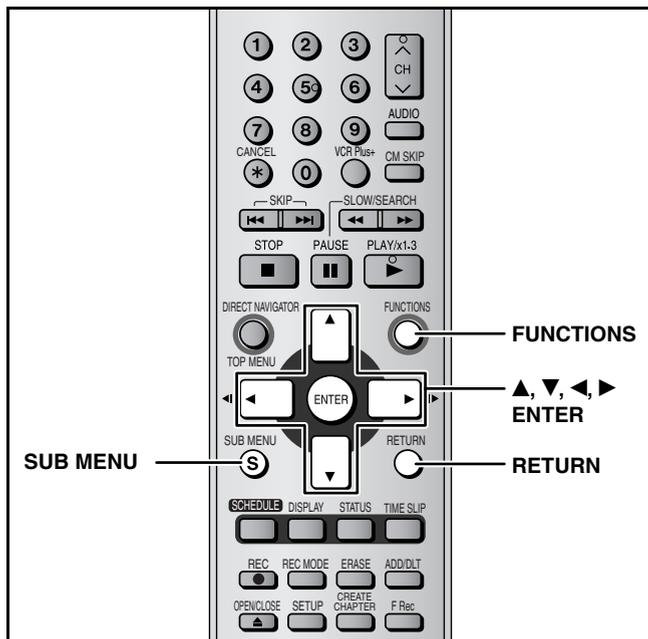
Chapter operations

Erase Chapter * RAM	<p>Press [◀, ▶] to select “Erase” and press [ENTER].</p> <ul style="list-style-type: none"> • Once erased, the recorded contents are lost and cannot be restored. Make certain before proceeding.
Create Chapter RAM (→ below, “For quicker editing”)	<ol style="list-style-type: none"> 1 Press [ENTER] at the point you want to divide. <ul style="list-style-type: none"> • Repeat this step to divide at other points. 2 Press [▲, ▼] to select “Exit” and press [ENTER]. 
Combine Chapters RAM	<p>Press [◀, ▶] to select “Combine” and press [ENTER].</p> <ul style="list-style-type: none"> • The selected chapter and following chapter are combined.

* Multiple editing is possible.

For quicker editing

- Use search, Time Slip or slow-motion (→ page 21) to find the desired point.
- Press [◀◀, ▶▶] to skip to the end of a title.



Note

You cannot create or edit playlists on this unit. However, you can play a playlist that has been created or edited on a different equipment.

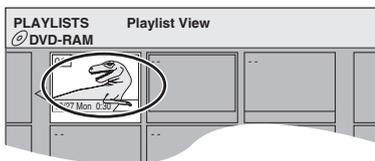
Playing playlists

RAM -RW(VR)

Preparation

- Turn the unit on.
- Turn on the television and select the appropriate video input to suit the connections to this unit.

- 1** While stopped
Press [FUNCTIONS].
- 2** Press [▲, ▼] to select “Other Functions” and press [ENTER].
- 3** Press [▲, ▼] to select “PLAYLISTS” and press [ENTER].
- 4** Press [▲, ▼, ◀, ▶] to select the playlist.
To start play → Press [ENTER].

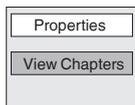


- To show other pages/Multiple editing (→ page 26)

■ **To show Properties**

Press [SUB MENU], then [▲, ▼] to select “Properties” and press [ENTER].

Playlist information (e.g., length and date) is shown.

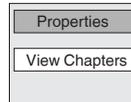


- Press [ENTER] to exit the screen.

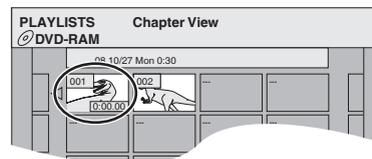
View Chapters

After Step4 (→left, Playing playlists)

- 5** Press [SUB MENU], then [▲, ▼] to select “View Chapters” and press [ENTER].



- 6** Press [▲, ▼, ◀, ▶] to select the chapter and press [ENTER].



- To show other pages/Multiple editing (→ page 26)
- To go back to the Playlist View
→ Press [SUB MENU], then select “View Playlists” and press [ENTER].



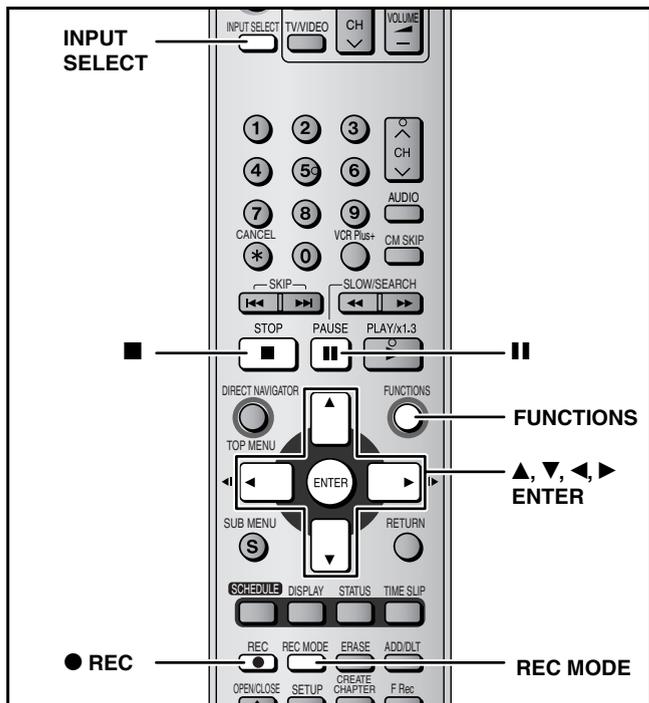
To exit the screen

Press [RETURN] several times.

To return to the previous screen

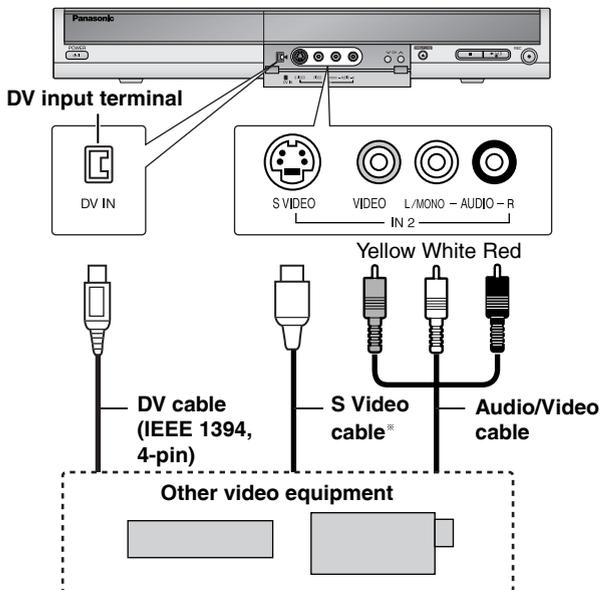
Press [RETURN].

Recording from a video cassette recorder



e.g.: Connecting other video equipment to the IN2 or DV input terminals

- Turn off the unit and other video equipment before connecting.



If the audio output of the other equipment is monaural, connect to L/ MONO.

* The S VIDEO terminal achieves a more vivid picture than the VIDEO terminal.

When recording from the unit's DV terminal

Select the type of audio recording from "Select Audio Channel For DV Input" in the SETUP menu (→ page 33).

When recording from DV equipment (e.g., digital video camcorder), you can record audio/video recordings from DV tape only.

Manual recording

RAM -R -RW(V) +R

Preparation

- Connect a video cassette recorder to this unit's input terminals.
- Insert a disc you can use for recording.

Note

When recording using this unit's input terminals, only the sound received at the time of recording will be recorded. As long as secondary audio that is recorded on the video cassette is not output on the unit in play, it is not recorded.

- 1 While stopped
Press [INPUT SELECT] to select the input channel for the equipment you have connected.
e.g., If you have connected to IN2 input terminals, select "IN2".

- 2 Press [REC MODE] to select the recording mode.
- 3 Start play on the other equipment.
- 4 Press [● REC].
Recording starts.

To skip unwanted parts

Press [II] to pause recording. (Press again to restart recording.)

To stop recording

Press [■].

To record programmes to fill up the remaining space on the disc → page 17, Flexible Recording

Almost all videos and DVD software on sale have been treated to prevent illegal copying. Any software that has been so treated cannot be recorded using this unit.

DV automatic recording (DV AUTO RECORDING)

RAM

When the "DV AUTO RECORDING" function is used, programmes are recorded as a title while at the same time chapters are created at each break in the images automatically.

Preparation

- 1 Turn off the main unit and DV equipment, then connect the equipment with the unit's DV input terminal (→ left).
- 2 Turn on the main unit and DV equipment.
- 3 Pause play of the DV equipment at the point you want recording to start.

- 1 While stopped
Press [REC MODE] to select the recording mode.
- 2 Press [FUNCTIONS].
- 3 Press [▲, ▼] to select "Other Functions" and Press [ENTER].
- 4 Press [▲, ▼] to select "DV AUTO RECORDING" and Press [ENTER].
- 5 Press [◀, ▶] to select "Rec." and Press [ENTER].
Recording starts.

When recording finishes

The confirmation screen appears. Press [ENTER] to finish DV automatic recording.

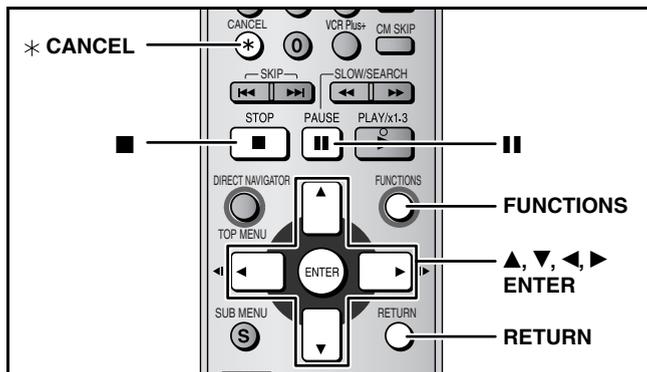
To stop recording

Press [■].

Note

- Only one piece of DV equipment (e.g., digital video camcorder) can be connected to the unit via the DV input terminal.
- If you use video camcorders from other manufacturer's these are not guaranteed to work.
- It is not possible to operate the unit from the connected DV equipment.
- The DV input terminal on this unit is for use with DV equipment only. (It cannot be connected to a computer, etc.)
- The DV equipment name may not be shown correctly.
- Depending on the DV equipment, the images or audio may not be input properly.
- The date and time information on the tape of the DV equipment will not be recorded.
- You cannot record and play simultaneously.
- When you are recording from a digital video camcorder, there may be some delay (approx. 1 second) after you start recording. To ensure you record everything you want, start recording from a point slightly earlier than expected starting point.

If the DV automatic recording function does not work properly, check the connections and DV equipment settings, and turn the unit off and back on.
If that does not work, follow the instructions for manual recording (→ left).



Preparation

- Turn on the television and select the appropriate video input to suit the connections to this unit.
- Turn the unit on.
- Insert the disc to be managed.

- 1 While stopped
Press [FUNCTIONS].
- 2 Press [▲, ▼] to select “Other Functions” and press [ENTER].
- 3 Press [▲, ▼] to select “DISC MANAGEMENT” and press [ENTER].
Select which step 4 to perform depending on what you want to do next.

Setting the protection

RAM

steps 1-3 (→ above)

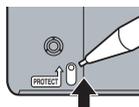
- 4 Press [▲, ▼] to select “Disc Protection” and press [ENTER].
- 5 Press [◀, ▶] to select “Yes” and press [ENTER].



The lock symbol appears closed when the disc is write-protected.

Setting the protection for the whole disc

- For a DVD-RAM with a cartridge



Providing a disc with a name

RAM -R -RW(V) +R

Preparation

- Release protection (→ above).
- steps 1-3 (→ above)

- 4 Press [▲, ▼] to select “Disc Name” and press [ENTER].
→ page 31, Entering text
 - The disc name is displayed in the FUNCTIONS window.
 - With a finalized DVD-R, DVD-RW (DVD-Video format) and +R, the name is displayed in the Top Menu.



To exit the screen

Press [RETURN] several times.

To return to the previous screen

Press [RETURN].

Erasing all titles—Erase All Titles

RAM

Preparation

- Release protection (→ left).

steps 1-3 (→ left)

- 4 Press [▲, ▼] to select “Erase All Titles” and press [ENTER].
- 5 Press [◀, ▶] to select “Yes” and press [ENTER].
- 6 Press [◀, ▶] to select “Start” and press [ENTER].
A message appears when finished.
- 7 Press [ENTER].

Note

- Once erased, the recorded contents are lost and cannot be restored. Make certain before proceeding.
- Erasing all video titles will result in all playlists also being erased.
- Erase does not work if one or more titles are protected.

Erasing all contents of a disc—Format Disc

RAM -RW(V) -RW(VR)

Note

- Formatting erases all contents, and it cannot be restored. Check carefully before proceeding. The contents are erased when you format it even if you have set Disc Protection.

Preparation

- Release protection (→ left).

steps 1-3 (→ left)

- 4 Press [▲, ▼] to select “Format Disc” and press [ENTER].
- 5 Press [◀, ▶] to select “Yes” and press [ENTER].
- 6 Press [◀, ▶] to select “Start” and press [ENTER].
A message appears when formatting is finished.
- 7 Press [ENTER].

Note

- Do not disconnect the AC power supply cord while formatting. This can render the disc unusable. Formatting normally takes a few minutes. However, it may take up to a maximum of 70 minutes.

To stop formatting

Press [RETURN].
(You can cancel formatting if it takes more than 2 minutes. The disc must be reformatted if you do this.)

- Formatting cannot be performed on DVD-R, +R or CD-R/RW.
- You can format DVD-RW only as DVD-Video format on this unit.
- When a disc has been formatted using this unit, it may not be possible to use it on any other equipment.

To exit the screen

Press [RETURN] several times.

To return to the previous screen

Press [RETURN].

Enabling DVD-R, DVD-RW (DVD-Video format) or +R to be played on other equipment—Finalize

-R -RW(V) +R

steps 1-3 (→ page 30)

4 Press [▲, ▼] to select “Playback will start with:” and press [ENTER].

Press [▲, ▼] to select “Top Menu” or “First Title” and press [ENTER].

You can select whether to show the top menu after finalizing.

Top Menu: The top menu appears first.

First Title: The disc content is played without displaying the top menu.

5 Press [▲, ▼] to select “Finalize” and press [ENTER].

6 Press [◀, ▶] to select “Yes” and press [ENTER].

7 Press [◀, ▶] to select “Start” and press [ENTER].

- Finalizing starts.

- You cannot cancel finalizing.

A message appears when finalize process.

8 Press [ENTER].

Note

When finalizing a high-speed recording compatible disc, it may take longer than displayed on the confirmation screen (approximately four times).

After finalizing

- **-R +R** The disc becomes play-only and you can no longer record or edit.
- **-RW(V)** You can record and edit the disc after formatting (→ page 30) although it becomes play-only after finalizing.
- Titles are divided into about 5-minute* chapters.
 - * This time varies greatly depending on the condition and mode of recording.
- There is a pause of several seconds between titles and chapters during play.

Do not disconnect the AC power supply cord while finalizing.

This will render the disc unusable.

- Finalizing takes up to 15 minutes.

- You cannot finalize DVD-R, DVD-RW (DVD-Video format) or +R recorded on other manufacturers' equipment.
- DVD-R, DVD-RW (DVD-Video format) or +R finalized on this unit may not be playable on other players due to the condition of the recording.
- Visit Panasonic's homepage for more information about DVDs.
For U.S.A.: <http://www.panasonic.com/playDVD-R>
For Canada: www.panasonic.ca

To exit the screen

Press [RETURN] several times.

To return to the previous screen

Press [RETURN].

Entering text

RAM -R -RW(V) +R

You can give names to recorded titles, etc.
The maximum number of characters:

RAM	Characters	-R -RW(V) +R	Characters
Title	64 (44*)	Title	44
Disc	64	Disc	40

* Scheduled recording

If a name is long, parts of it may not be shown in some screens.

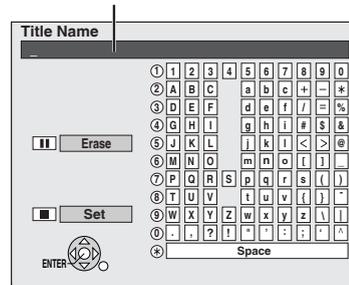
1 Show Enter Name screen.

Title (scheduled recording) (page 18 and 19, Step 3)

Title (page 26, Step 3)

Disc (page 30, “Providing a disc with a name”)

Name field: shows the text you have entered



2 Press [▲, ▼, ▶, ◀] to select a character and press [ENTER].

Repeat this step to enter other characters.

• To erase a character

Press [II]. You can also erase the characters by pressing [◀] after you move the cursor into the Name field by pressing [▲, ▼].

• Using the numbered buttons to enter characters

e.g., entering the letter “R”

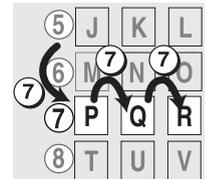
① Press [7] to move to the 7th row.

② Press [7] twice to highlight “R”.

③ Press [ENTER].

• To enter a space

Press [* CANCEL] and press [ENTER].



3 Press [■] (Set).

Returns to the previously displayed screen.

To end partway

Press [RETURN].

Text is not saved.

Summary of settings

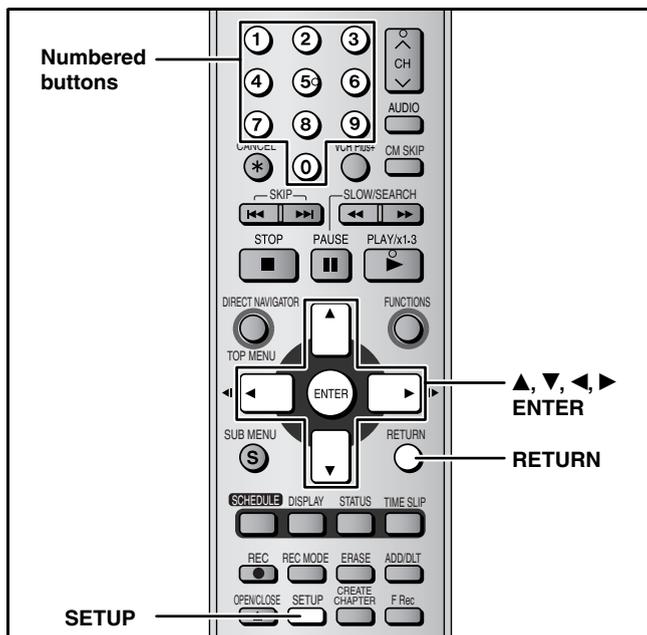
See page 34 for details on menu operation.

The settings remain intact even if you switch the unit to standby.

Tabs	Menus	Options (Underlined items are the factory presets.)
Channel	Signal Source (RF IN) (→ page 11)	• Antenna • <u>CableTV</u>
	Set Channels Automatically (→ page 11)	–
	Preset Channel Captions (→ page 13)	–
	Manual Channel Captions (→ page 13)	–
	VCR Plus+ Ch. Setting (→ page 12)	–
Setup	Off Timer Select how long the unit remains on when it is not being used.	• 2 Hours • <u>6 Hours</u> • Off
	Remote Control Code (→ page 14)	• <u>Set Code 1</u> • Set Code 2 • Set Code 3
	Clock Settings Press [ENTER] to show the following settings.	
	Set Clock Automatically (→ page 34)	
	Set Clock Manually (→ page 34)	
	Adjust Time Zone (→ page 34)	• –1 • <u>0</u> • +1
	Quick Start About 1 Sec. after turning on the unit, you can start recording to DVD-RAM. Power consumption in standby mode increases when Quick Start is set to “On”. The unit performs self maintenance for a few minutes every morning starting at 4:00 am. The unit's buttons, including [POWER ⏻], do not work during this process. (Self maintenance does not start if the unit is on or if a scheduled recording covers this time.)	• <u>On</u> • Off
	Restore Default Settings This returns all values in the SETUP menus, except for the clock, channel settings, ratings level, and on-screen language, to the default settings.	• Yes • <u>No</u>
	Settings for Playback Press [ENTER] to show the following settings.	
	Ratings Set a ratings level to limit DVD-Video play. Follow the on-screen instructions. Enter a 4-digit password with the numbered buttons when the password screen is shown. • Do not forget your password.	<ul style="list-style-type: none"> • <u>8 No Limit</u>: All DVD-Video can be played. • 1 to 7: Prohibits play of DVD-Video with corresponding ratings recorded on them. • 0 Lock All: Prohibits play of all DVD-Video.
Audio Language DVD-V	<ul style="list-style-type: none"> • Some discs start in a certain language despite any changes you make here. • <u>English</u> • French • Spanish • Original: The original language of each disc will be selected. • Other * * * * 	
Subtitle Language DVD-V	<ul style="list-style-type: none"> • Enter a code (→ page 36) with the numbered buttons when you select “Other * * * *”. • <u>Automatic</u>: If the language selected for “Audio Language” is not available, subtitles of that language will automatically appear if available on that disc. • English • French • Spanish • Other * * * * • <u>English</u> • French • Spanish • Other * * * * 	
Menu Language DVD-V	<ul style="list-style-type: none"> • When the selected language is not available on the disc, the default language is played. There are discs where you can only switch the language from the menu screen. • <u>English</u> • French • Spanish • Other * * * * 	
Settings for Recording Press [ENTER] to show the following setting.		
Recording Time in EP Mode Select the maximum number of hours for recording in EP mode (→ page 16, Recording modes and approximate recording times).	<ul style="list-style-type: none"> • EP–Extended Play (6H): You can record for 6 hours on an unused 4.7 GB disc. • <u>EP–Extended Play (8H)</u>: You can record for 8 hours on an unused 4.7 GB disc. 	
Video	Still Mode Select the type of picture shown when you pause play (→ page 36, Frames and fields). • When “On” is selected for “Progressive” (→ page 25), the setting for “Still Mode” is not effective.	<ul style="list-style-type: none"> • <u>Automatic</u> • Field: Select if jittering occurs when “Automatic” is selected. • Frame: Select if small text or fine patterns cannot be seen clearly when “Automatic” is selected.

Continued on next page

Tabs	Menus	Options (Underlined items are the factory presets.)
Video	Black Level Control Select normal, lighter or darker for adjusting the black level control to the desired setting for picture enhancement.	
	Continued Input Level Adjusts the black level of the input signal.	• Lighter • <u>Darker</u>
	Output Level (Composite/SVideo) Adjusts the black level of the output signal from the VIDEO OUT and S VIDEO OUT terminal.	• <u>Lighter</u> • Darker
	Output Level (Component) Adjusts the black level of the output signal from the COMPONENT VIDEO OUT (Y/Pb/Pr) terminals.	• Lighter • <u>Normal</u> • Darker
Audio	Dynamic Range Compression <u>DVD-V</u> (Dolby Digital only) Change the dynamic range for late night viewing.	• On • <u>Off</u>
	Select MTS Select whether to record the main or secondary audio program (SAP) when recording to DVD-R, DVD-RW (DVD-Video format) or +R. (You cannot change secondary audio when recording audio to DVD-R, DVD-RW (DVD-Video format) or +R from an external source.)	• <u>Main</u> • Secondary Audio Program (SAP)
	Digital Audio Output Change the settings when you have connected equipment through this unit's DIGITAL AUDIO OUT terminal (→ page 9). • Press [ENTER] to display the menu.	
	PCM Down Conversion Select how to output audio with a sampling frequency of 96 kHz or 88.2 kHz. • Signals are converted to 48 kHz or 44.1 kHz despite the above settings if the signals have a sampling frequency of over 96 kHz or 88.2 kHz, or the disc has copy protection.	• On: Signals are converted to 48 kHz or 44.1 kHz. (Choose when the connected equipment cannot process signals with a sampling frequency of 96 kHz or 88.2 kHz.) • <u>Off</u> : Signals are output as 96 kHz or 88.2 kHz. (Choose when the connected equipment can process signals with a sampling frequency of 96 kHz or 88.2 kHz.)
 Dolby Digital Select how to output the signal, to output "Bitstream" so the connected equipment decodes the signal, or to decode on this unit and output the signal as "PCM" (2 channel).  DTS Note Not making the proper settings may result in noise, possibly damaging your hearing and speakers, and digital recording may not work properly.	• <u>Bitstream</u> : When connecting to equipment displaying the Dolby Digital logo. • PCM: When connecting to equipment not displaying the Dolby Digital logo.	
	• <u>Bitstream</u> : When connecting to equipment displaying the DTS logo. • PCM: When connecting to equipment not displaying the DTS logo.	
	Select Audio Channel For DV Input You can select the kind of audio when recording from the unit's DV terminal (→ page 29).	• <u>Stereo 1</u> : Records audio (L1, R1). • Stereo 2: Records added audio such as narration (L2, R2) subsequent to original recording. • Mix: Records both Stereo 1 and Stereo 2. When recording MTS broadcast, select the type of audio in advance from "Select MTS" (→ above).
		• <u>Automatic</u> • Off
Display	Status Messages Choose whether to show status messages automatically.	
	On-screen Language Choose the language for these menus and on-screen messages.	• <u>English</u> • Español • Français
	Blue Background Select "Off" if you do not want to have the unit show the blue background when reception is weak.	• <u>On</u> • Off
	Front Display Changes the brightness of the unit's display.	• <u>Bright</u> • Dim • Automatic: The display turns dark during play, and reappears momentarily if a button is pressed. When the unit is turned off all displays disappear. While using this mode the standby power consumption can be reduced.
TV Screen	TV Type (→ page 14)	• <u>Aspect 4: 3 & 480i</u> • Aspect 4: 3 & 480p • Aspect 16: 9 & 480i • Aspect 16: 9 & 480p
	4: 3 TV Settings for DVD-Video Select how DVD-Video widescreen picture is shown on a 4: 3 standard aspect television.	• <u>Pan and Scan (Stretch to fit)</u> : Video recorded for a widescreen is played as Pan & Scan (unless prohibited by the producer of the disc). • Letterbox (Shrink to fit): Video recorded for a widescreen is played in the letterbox style.
	4: 3 TV Settings for DVD-RAM Select how DVD-RAM widescreen picture is shown on a 4: 3 standard aspect television.	• 4: 3: Titles played as recorded. • <u>Pan and Scan (Stretch to fit)</u> : Video recorded for a widescreen is played as Pan & Scan. • <u>Letterbox (Shrink to fit)</u> : Video recorded for a widescreen is played in the letterbox style.

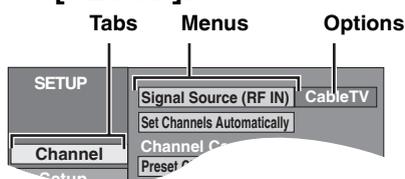


Common procedures

Preparation

- The settings remain intact even if you switch the unit to standby.
- Turn on the television and select the appropriate video input to suit the connections to this unit.
- Turn the unit on.

- 1 While stopped
Press [SETUP].



- 2 Press [▲, ▼] to select the tab and press [▶].
- 3 Press [▲, ▼] to select the menu and press [ENTER].
- 4 Press [▲, ▼] to select the option and press [ENTER].

Note

There may be differences in operation methods. If this happens, follow the on-screen instructions for the operation.

Clock settings

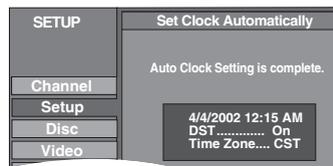
In the case of a power failure, the clock setting remains in memory for approximately 1 minute.

- 1 While stopped
Press [SETUP].
- 2 Press [▲, ▼] to select "Setup" and press [▶].
- 3 Press [▲, ▼] to select "Clock Settings" and press [ENTER].

Set Clock Automatically

- 4 Press [▲, ▼] to select "Set Clock Automatically" and press [ENTER].
- 5 Press [ENTER].

Auto setting starts. This can take some time, up to a few minutes in some cases. The following screen appears when setting is complete.



- If the time was not set correctly, use manual clock setting or time zone adjust.
- DST, Daylight Saving Time, shows the summertime setting.
- Time Zone shows the time difference from Greenwich Mean Time (GMT).
 EST (Eastern Standard Time) = GMT -5
 CST (Central Standard Time) = GMT -6
 MST (Mountain Standard Time) = GMT -7
 PST (Pacific Standard Time) = GMT -8
 AST (Alaska Standard Time) = GMT -9
 HST (Hawaii Standard Time) = GMT -10
 For other areas: xx hr

- 6 Press [ENTER].

To cancel pathway

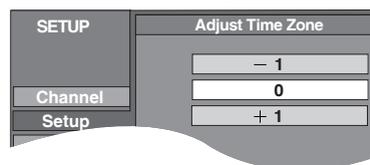
Press [RETURN].

Adjust Time Zone

Adjust the time zone (-1 or +1) if it was not set correctly with auto clock setting.

You cannot change this setting if you set the clock manually.

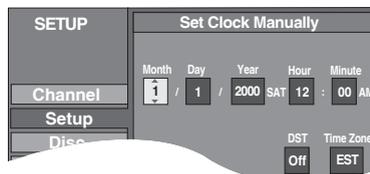
- 4 Press [▲, ▼] to select "Adjust Time Zone" and press [ENTER].



- 5 Press [▲, ▼] to select "-1" or "+1" and press [ENTER].

Set Clock Manually

- 4 Press [▲, ▼] to select "Set Clock Manually" and press [ENTER].



- 5 Press [◀, ▶] to select the item you want to change and press [▲, ▼] to change the setting.

DST (Daylight Saving Time): On or Off

If you select "On", the clock is advanced one hour starting at 2 a.m. on the first Sunday in April and ending at 2 a.m. on the last Sunday in October.

Time Zone (→ above)

- 6 Press [ENTER].

The clock starts.

To exit the screen

Press [SETUP].

To return to the previous screen

Press [RETURN].

Specifications

Recording System: DVD Video Recording format (DVD-RAM),
DVD-Video format (DVD-R),
DVD-Video format (DVD-RW)

Optical pick-up: System with 1 lens
(662 nm wavelength for DVDs,
780 nm wavelength for CDs)

Recordable discs:

DVD-RAM :
Ver. 2.0
Ver. 2.1/3x–SPEED DVD-RAM Revision 1.0
Ver. 2.2/5x–SPEED DVD-RAM Revision 2.0
DVD-R :
for General Ver. 2.0
for General Ver. 2.0/4x–SPEED DVD-R Revision 1.0
for General Ver. 2.x/8x–SPEED DVD-R Revision 3.0

DVD-RW :
Ver. 1.1
Ver. 1.1/2x–SPEED DVD-RW Revision 1.0
Ver. 1.2/4x–SPEED DVD-RW Revision 2.0

+R :
Ver. 1.0
Ver. 1.1
Ver. 1.2

Recording Time:

Maximum 8 hours (using 4.7 GB disc)
XP: Approx. 60 minutes SP: Approx. 120 minutes
LP: Approx. 240 minutes EP: Approx. 360 minutes or 480 minutes

Regional Code: #1

Playable discs:

DVD-RAM, DVD-R, DVD-RW, +R,
+RW, DVD-VIDEO, Video CD, CD-Audio (CD-DA),
CD-R/CD-RW (MP3, JPEG, CD-DA, Video CD formatted discs)

Video system

TV system: NTSC color signal, 525 lines, 60 fields

Recording system: MPEG2 (Hybrid VBR)

Input: LINE (pin jack) ×2, 1.0 Vp-p; 75 Ω
S connector ×2 Y: 1.0 Vp-p; 75 Ω
C: 0.286 Vp-p; 75 Ω

Output: LINE (pin jack) ×1, 1.0 Vp-p; 75 Ω
S connector ×1 Y: 1.0 Vp-p; 75 Ω
C: 0.286 Vp-p; 75 Ω

Component video output (480p/480i): Y: 1.0 Vp-p; 75 Ω
PB: 0.7 Vp-p; 75 Ω
PR: 0.7 Vp-p; 75 Ω

Antenna reception input: TV Channel: 2 ch to 69 ch
CATV Channel: 1 ch to 125 ch

Audio system

Recording system: Dolby Digital (2ch)
Analog Input: LINE (pin jack) ×2

Reference input: 309 mVrms
FS: 2 Vrms (1 kHz, 0 dB)
Input impedance: 47 kΩ
LINE (pin jack) ×1

Analog Output: Reference output: 309 mVrms
FS: 2 Vrms (1 kHz, 0 dB)
Output impedance: 1 kΩ
(Load impedance: 10 kΩ)

Digital Output: Digital audio optical output connector
(PCM, Dolby Digital, DTS) ×1

Number of channels: Recording: 2 channels
Playback: 2 channels

DV Input: IEEE1394 Standard 4pin 1pc

Operating temperature range: 5 °C to 40 °C (41 °F to 104 °F)

Operating humidity range: 10 % to 80 % RH (no condensation)

Clock unit: Quartz-controlled 12-hour digital display

LASER Specification

Class 1 LASER Product

Wave Length: 662 nm wavelength for DVDs, 780 nm wavelength for CDs

Laser Power: No hazardous radiation is emitted with the safety protection

Power source AC 120 V, 60 Hz

Power consumption: Approx. 22 W

Dimensions (W × H × D): Approx. 430 mm × 63 mm × 250 mm
(Approx. 16¹⁵/₁₆" × 2¹/₂" × 9²⁷/₃₂"

Mass: Approx. 2.55 kg (5.62 lbs)

Power consumption in standby mode: approx. 15.7 W

Note

Specifications are subject to change without notice.
Mass and dimensions are approximate.

Manufactured under license from Dolby Laboratories. "Dolby" and the double-D symbol are trademarks of Dolby Laboratories.

"DTS" and "DTS 2.0 + Digital Out" are trademarks of Digital Theater Systems, Inc.

Apparatus Claims of U.S. Patent Nos. 4,631,603, 4,577,216, and 4,819,098, licensed for limited viewing uses only.

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MPEG Layer-3 audio decoding technology licensed from Fraunhofer IIS and Thomson multimedia.

Bitstream

This is the digital form of multi-channel audio data (e.g., 5.1 channel) before it is decoded into its various channels.

CPRM (Content Protection for Recordable Media)

CPRM is technology used to protect broadcasts that are allowed to be recorded only once. Such broadcasts can be recorded only with CPRM compatible recorders and discs.

Dolby Digital

This is a method of coding digital signals developed by Dolby Laboratories. Apart from stereo (2-channel) audio, these signals can also be multi-channel audio. A large amount of audio information can be recorded on one disc using this method.

DTS (Digital Theater Systems)

This surround system is used in many movie theaters. There is good separation between the channels, so realistic sound effects are possible.

Dynamic range

Dynamic range is the difference between the lowest level of sound that can be heard above the noise of the equipment and the highest level of sound before distortion occurs. Dynamic range compression means reducing the gap between the loudest and softest sounds. This means you can listen at low volumes but still hear dialog clearly.

Film and video

DVD-Video are recorded using either film or video. This unit can determine which type has been used, then uses the most suitable method of progressive output.

- Film is 24 or 30 frames per second, with motion picture film generally being 24 frames per second.
- Video is 60 fields per second (two fields making up one frame).

Finalize

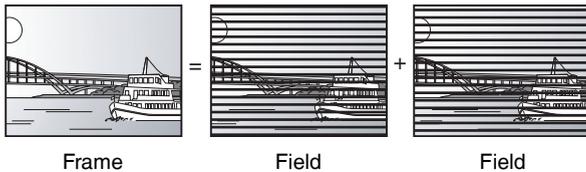
A process that makes play of a recorded CD-R, CD-RW, DVD-R, etc. possible on equipment that can play such media. You can finalize DVD-R, DVD-RW (DVD-Video format) or +R on this unit. After finalizing, the disc becomes play-only and you can no longer record or edit. You can record after formatting although it becomes play-only after finalizing, when you use DVD-RW.

Formatting

Formatting is the process of making media such as DVD-RAM recordable on recording equipment. You can format DVD-RAM or DVD-RW (only as DVD-Video format) on this unit. Formatting irrevocably erases all contents.

Frames and fields

Frames refer to the single images that constitute the video you see on your television. Each frame consists of two fields.



- A frame still shows two fields, so there may be some blurring, but picture quality is generally better.
- A field still shows less picture information so it may be rougher, but there is no blurring.

JPEG (Joint Photographic Experts Group)

This is a system used for compressing/decoding color still pictures. If you select JPEG as the storage system on digital cameras, etc., the data will be compressed to 1/10–1/100 of its original size. The feature of JPEG is less deterioration in picture quality considering the degree of compression.

MP3 (MPEG Audio Layer 3)

An audio compression method that compresses audio to approximately one tenth of its size without any considerable loss of audio quality. You can play MP3 you have recorded onto CD-R and CD-RW.

Pan & Scan/Letterbox

In general, DVD-Video are produced with the intention that they be viewed on a widescreen television (16:9 aspect ratio), so images often don't fit regular (4:3 aspect ratio) televisions. Two styles of picture, "Pan & Scan" and "Letterbox", deal with this problem.

Pan & Scan: The sides are cut off so the picture fills the screen.



Letterbox: Black bands appear at the top and bottom of the picture so the picture itself appears in an aspect ratio of 16:9.



Playback control (PBC)

If a Video CD has playback control, you can select scenes and information with menus. (This unit is compatible with version 2.0 and 1.1.)

Progressive/Interlace

NTSC, the video signal standard, has 480 interlaced (i) scan lines, whereas progressive scanning uses twice the number of scan lines. This is called 480p.

Using progressive output, you can enjoy the high-resolution video recorded on media such as DVD-Video. Your television must be compatible to enjoy progressive video.

Protection

You can prevent accidental erasure by setting writing protection or erasure protection.

Sampling frequency

Sampling is the process of converting the heights of sound wave (analog signal) samples taken at set periods into digits (digital encoding). Sampling frequency is the number of samples taken per second, so larger numbers mean more faithful reproduction of the original sound.

Thumbnail

This refers to a miniature representation of a picture used to display multiple pictures in the form of a list.

Language code list

Enter the code with the numbered buttons.

Abkhazian: 6566	Catalan: 6765	Gujarati: 7185	Lingala: 7678	Rhaeto-Romance: 8277	Tamil: 8465
Afar: 6565	Chinese: 9072	Hausa: 7265	Lithuanian: 7684	Romanian: 8279	Tatar: 8484
Afrikaans: 6570	Corsican: 6779	Hebrew: 7387	Macedonian: 7775	Russian: 8285	Telugu: 8469
Albanian: 8381	Croatian: 7282	Hindi: 7273	Malagasy: 7771	Samoan: 8377	Thai: 8472
Ameharic: 6577	Czech: 6783	Hungarian: 7285	Malay: 7783	Sanskrit: 8365	Tibetan: 6679
Arabic: 6582	Danish: 6865	Icelandic: 7383	Malayalam: 7776	Scots Gaelic: 7168	Tigrinya: 8473
Armenian: 7289	Dutch: 7876	Indonesian: 7378	Maltese: 7784	Serbian: 8382	Tonga: 8479
Assamese: 6583	English: 6978	Interlingua: 7365	Maori: 7773	Serbo-Croatian: 8372	Turkish: 8482
Aymara: 6589	Esperanto: 6979	Irish: 7165	Marathi: 7782	Shona: 8378	Turkmen: 8475
Azerbaijani: 6590	Estonian: 6984	Italian: 7384	Moldavian: 7779	Sindhi: 8368	Twi: 8487
Bashkir: 6665	Faroese: 7079	Japanese: 7465	Mongolian: 7778	Singhalese: 8373	Ukrainian: 8575
Basque: 6985	Fiji: 7074	Javanese: 7487	Nauru: 7865	Slovak: 8375	Urdu: 8582
Bengali; Bangla: 6678	Finnish: 7073	Kannada: 7578	Nepali: 7869	Slovenian: 8376	Uzbek: 8590
Bhutani: 6890	French: 7082	Kashmiri: 7583	Norwegian: 7879	Somali: 8379	Vietnamese: 8673
Bihari: 6672	Frisian: 7089	Kazakh: 7575	Oriya: 7982	Spanish: 6983	Volapük: 8679
Breton: 6682	Galician: 7176	Kirghiz: 7589	Pashto, Pushto: 8083	Sundanese: 8383	Welsh: 6789
Bulgarian: 6671	Georgian: 7565	Korean: 7579	Persian: 7065	Swahili: 8387	Wolof: 8779
Burmese: 7789	German: 6869	Kurdish: 7585	Polish: 8076	Swedish: 8386	Xhosa: 8872
Byelorussian: 6669	Greek: 6976	Laotian: 7679	Portuguese: 8084	Tagalog: 8476	Yiddish: 7473
Cambodian: 7577	Greenlandic: 7576	Latin: 7665	Punjabi: 8065	Tajik: 8471	Yoruba: 8979
	Guarani: 7178	Latvian, Lettish: 7686	Quechua: 8185		Zulu: 9085

Frequently asked questions

Set up		Page						
Do the Audio/Video cables need to be connected to the TV in order to see the Menus?	<ul style="list-style-type: none"> If your television does not have AUDIO/VIDEO terminals, an RF modulator is necessary. Consult your local dealer for more information. 	7, 8						
What equipment is necessary to play multi channel surround sound?	<ul style="list-style-type: none"> DVD-Video: You can play DVD-Video multi channel surround by digitally connecting an amplifier equipped with a Dolby Digital and a DTS decoder. 	9						
Are the headphones and speakers directly connected to the unit?	<ul style="list-style-type: none"> You cannot directly connect to the unit. Connect through the amplifier, etc. 	9						
The television has both S VIDEO IN terminal and COMPONENT VIDEO IN terminals. Which terminal should I connect with?	<ul style="list-style-type: none"> We recommend the COMPONENT VIDEO IN terminal. Component signal outputs the color difference signals (P_B/P_R) and luminance signal (Y) separately in order to achieve high fidelity in reproducing colors. If the television is compatible with progressive output, a high quality picture can be output because this unit's component video output terminal outputs a progressive output signal. 	8						
Is my television progressive output compatible?	<ul style="list-style-type: none"> All Panasonic televisions that have 480p input terminals are compatible. Consult the manufacturer if you have another brand of television. 	—						
Disc								
Can I play DVD-Video and Video CDs bought in another country?	<ul style="list-style-type: none"> You can play them if the video standard is NTSC. However, you cannot play DVD-Video if their region number does not include "1" or "ALL". 	— Cover						
Can a DVD-Video that does not have a region number be played?	<ul style="list-style-type: none"> The DVD-Video region number indicates the disc conforms to a standard. You cannot play discs that do not have a region number. 	—						
Please tell me about DVD-R, DVD-RW, +R and +RW compatibility with this unit.	<ul style="list-style-type: none"> This unit records and plays DVD-R, DVD-RW (DVD-Video format) and +R, and plays DVD-RW (DVD Video Recording format) and +RW. This unit also records and plays high speed recording compatible DVD-R, DVD-RW, +R discs. 	4, 5						
	<ul style="list-style-type: none"> After recording but before finalizing +R discs <ul style="list-style-type: none"> You may not be able to play and record +R discs on this unit after recording them on other Panasonic products or other manufacture's equipment. You may not be able to play and record +R discs on other equipment after recording them on this unit. After finalizing the disc, however, you will be able to play it on any DVD-Video compatible player. 	—						
	<ul style="list-style-type: none"> This unit plays CD-R/CD-RW discs (audio recording discs) which have been recorded under one of the following standards: CD-DA, Video CD, MP3 and still pictures (JPEG). Close the session or finalize the disc after recording. This unit can recognize up to 99 folders (groups) and 999 files (tracks) on a disc with MP3 or still pictures (JPEG). You cannot write to a CD-R or CD-RW with this unit. 	4, 5, 22 —						
Recording								
Can I record from a commercially purchased video cassette or DVD?	<ul style="list-style-type: none"> Most commercially sold video cassettes and DVD are copy protected; therefore, recording is usually not possible. 	—						
Can DVD-R, DVD-RW (DVD-Video format) and +R recorded on this unit be played on other equipment?	<ul style="list-style-type: none"> You can play on compatible equipment such as DVD players after finalizing the disc on this unit. However, depending on the condition of the recording, the quality of the disc and capabilities of the DVD player, play may not be possible. 	31						
Can I record digital audio signals using this unit?	<ul style="list-style-type: none"> You cannot record digital signals. The digital audio terminals on this unit are for output only. (The audio recorded using the DV automatic recording function from a digital video camcorder, for example, is recorded digitally.) 	—						
Can a digital audio signal from this unit be recorded to other equipment?	<ul style="list-style-type: none"> You can record if using the PCM signal. When recording DVD, change the "Digital Audio Output" settings to the following from the SETUP menu. <table border="0"> <tr> <td>– PCM Down Conversion</td> <td>On</td> </tr> <tr> <td>– Dolby Digital</td> <td>PCM</td> </tr> <tr> <td>– DTS</td> <td>PCM</td> </tr> </table> However, only <ul style="list-style-type: none"> As long as digital recording from the disc is permitted. As long as the recording equipment is compatible with a sampling frequency of 48 kHz. You cannot record MP3 signals. 	– PCM Down Conversion	On	– Dolby Digital	PCM	– DTS	PCM	33
	– PCM Down Conversion	On						
– Dolby Digital	PCM							
– DTS	PCM							
Can I switch to SAP during recording?	<ul style="list-style-type: none"> With DVD-RAM, you can, and the recorded audio also changes. Just press [AUDIO]. With DVD-R, DVD-RW (DVD-Video format) or +R you cannot. Change before recording with "Select MTS" in the SETUP menu. 	16 33						

On the television

Page

Cannot finish recording completely.	<ul style="list-style-type: none"> The program was copy-protected. The disc may be full. There are already 99 recorded titles (+R 49 recorded titles). 	— — —
Cannot play.	<ul style="list-style-type: none"> You inserted an incompatible disc (Discs recorded in PAL video, etc.). 	—
Cannot record on the disc.	<ul style="list-style-type: none"> The disc may be dirty or scratched. 	42
Unable to format.		
Please check the disc.		
Cannot record. Disc is full.	<ul style="list-style-type: none"> Create space by erasing any unnecessary titles. RAM -RW(V) (Even if you erase recorded content from a DVD-R or +R, there is no increase in disc space. Available disc space on DVD-RW (DVD-Video format) increases only when the last recorded title is erased.) Use a new disc. 	21, 27, 30
Cannot record. The number of titles has exceeded the maximum limit.		
Error has occurred. Please press ENTER.	<ul style="list-style-type: none"> Press [ENTER] to start recovery process. You cannot operate the unit while it is recovering. ("ooooo" (self check) appears on the unit display.) 	—
No disc	<ul style="list-style-type: none"> The disc may be upside down. 	—
Please change the disc.	<ul style="list-style-type: none"> There may be a problem with the disc. Press [▲ OPEN/CLOSE] to remove it and check it for scratches or dirt. (The unit turns off automatically after you open the tray.) 	42
This is a non-recordable disc.	<ul style="list-style-type: none"> The unit cannot record on the disc you inserted. Insert a DVD-RAM or unfinalized DVD-R, DVD-RW (DVD-Video format) or +R. You inserted an unformatted DVD-RAM or DVD-RW. 	4, 5
This disc is not formatted properly.		
	<ul style="list-style-type: none"> The operation is prohibited by the unit or disc. 	—

On the unit's display

RC □ (“□” stands for a number.)	<ul style="list-style-type: none"> The remote control and main unit are using different codes. Change the code on the remote control.  <p>Press and hold [ENTER] and the indicated number button at the same time for more than 2 seconds.</p>	14
Err	 <p>When “Err” appears on the unit's display, the disc indicator flashes.</p> <ul style="list-style-type: none"> The disc is dirty or badly scratched. The unit cannot record, play, or edit. You have used a lens cleaner and it has finished. Press [▲ OPEN/CLOSE] to eject the disc. You have inserted a disc the unit cannot play or record on. You have inserted a DVD-RAM or DVD-RW that is unformatted or recorded on other equipment. If there is no change after turning the unit on and off, consult the dealer where the unit was purchased. 	42 — 4, 5 30 —
FULL	<ul style="list-style-type: none"> There are already 16 timer programs. Delete unnecessary timer programs. 	19
ooooo	<ul style="list-style-type: none"> There was something unusual detected with the disc while recording, playing or transferring (dubbing). There was a power failure or the AC plug was disconnected while the unit was on. The unit is carrying out its recovery process. This process restores the unit to normal operation. The unit is not broken. Wait until the message disappears.  <p>The symbol “o” appears at the bottom left of the unit's display. The number of symbols increases one by one until six appear. They then disappear one by one from the left until none remain. This continues during self check.</p>	— — 40
U59	<ul style="list-style-type: none"> The unit is hot. The unit switches to standby for safety reasons. Wait about 30 minutes until the message disappears. Select a position with good ventilation when installing the unit. Do not block the vent on the side of the unit. 	—
U99	<ul style="list-style-type: none"> The unit fails to operate properly. Press [POWER /I] on the main unit to switch the unit to standby. Then press [POWER /I] on the main unit again to turn the unit on. 	—

Troubleshooting guide

Before requesting service, make the following checks. If you are in doubt about some of the check points, or if the remedies indicated in the chart do not solve the problem, refer to the "Customer Services Directory" on page 43 if you reside in the U.S.A., or refer to the "Product information" on page 42 if you reside in Canada.

The following do not indicate a problem with this unit:

- | | |
|--|---|
| <ul style="list-style-type: none"> • Regular disc rotating sounds. The sound of the disc rotating may become louder especially when finalizing a DVD-R, DVD-RW (DVD-Video format) or +R. • Poor reception due to atmospheric conditions. • Image disturbance during search. | <ul style="list-style-type: none"> • Interruptions in reception due to periodic satellite broadcasting breaks. • Operations do not work due to a poor-quality disc. (Try again using a Panasonic disc.) • The unit freezes due to one of its safety devices being activated. (Press and hold [POWER ϕ/I] on the main unit for 10 seconds.) |
|--|---|

Power

		Page
No power.	<ul style="list-style-type: none"> • Insert the AC power supply cord securely into a known active AC outlet. 	7, 8
[POWER ϕ/I] cannot be operated.	<ul style="list-style-type: none"> • If you have turned on Quick Start in the SETUP MENU, the unit performs self maintenance for a few minutes every morning starting at 4:00 am. The unit's buttons, including [POWER ϕ/I], do not work during this process. (Self maintenance does not start if the unit is on or if a scheduled recording covers this time.) 	32
The unit switches to the standby mode.	<ul style="list-style-type: none"> • This is a power saving feature. Change "Off Timer" in the SETUP menu, if you would prefer. • One of the unit's safety devices is activated. Press [POWER ϕ/I] on the main unit to turn the unit on. 	32 —
Cooling fan rotating sounds are heard when the unit is off.	<ul style="list-style-type: none"> • The cooling fan sometimes operates to cool active circuits in the unit while it is turned off. To detect user operation and to prepare for quick REC & PLAY, some circuits need to be active even when the unit is turned off. 	—

TV screen and video

The images from this unit do not appear on the television.	<ul style="list-style-type: none"> • Make sure that the television is connected to the VIDEO OUT terminal, S VIDEO OUT terminal or COMPONENT VIDEO OUT terminals on this unit. 	7, 8
Picture is distorted.	<ul style="list-style-type: none"> • Make sure that the television's input setting (e.g., VIDEO 1) is correct. • Make sure that progressive output has not been selected when the connected television is not progressive compatible. Press and hold [* CANCEL] until the picture displays correctly. The settings will return to 480i. • The television isn't compatible with progressive signals. Press and hold [■] and [▶/x1.3] on the main unit at the same time for about 5 seconds. The setting will change to interlace. 	— — —
Television reception worsens after connecting the unit.	<ul style="list-style-type: none"> • This can occur because the signals are being divided between the unit and other equipment. It can be solved by using a signal booster, available from audio-visual suppliers. 	—
Status messages do not appear.	<ul style="list-style-type: none"> • Select "Automatic" in "Status Messages" in the SETUP menu. 	33
The blue background does not appear.	<ul style="list-style-type: none"> • Select "On" in "Blue Background" in the SETUP menu. 	33
The 4:3 aspect ratio picture expands left and right.	<ul style="list-style-type: none"> • Use the television to change the aspect. If your television does not have that function, set "Progressive" in the Video menu to "Off". 	25
Screen size is wrong.	<ul style="list-style-type: none"> • Check the settings for "TV Type", "4:3 TV Settings for DVD-Video" or "4:3 TV Settings for DVD-RAM" in the SETUP menu. 	33
There is a lot of after-image when playing video.	<ul style="list-style-type: none"> • Set "MPEG-DNR" in the Video menu to "Off". 	25
When playing DVD-Video using progressive output, one part of the picture momentarily appears to be doubled up.	<ul style="list-style-type: none"> • Set "Progressive" in the Video menu to "Off". This problem is caused by the editing method or material used on DVD-Video, but should be corrected if you use interlace output. 	25
There is no apparent change in picture quality when adjusted with the Video menu in the on-screen menus.	<ul style="list-style-type: none"> • The effect is less perceivable with some types of video. 	—

Displays		Page
The display is dim.	<ul style="list-style-type: none"> Change "Front Display" in the SETUP menu. 	33
"12: 00A" is flashing on the unit's display.	<ul style="list-style-type: none"> Set the clock. 	34
Compared to the actual recorded time, less remaining time is displayed.	<ul style="list-style-type: none"> The displayed recording/play time is converted from the number of frames at 29.97 frames (equal to 0.999 seconds) to one second. There will be slight a difference between the time displayed and the actual recorded time (e.g., actual one-hour recorded time may display as approximately 59 minutes 56 seconds). This does not affect the recording. 	—
The time recorded on the disc and the available time shown do not add up.	<ul style="list-style-type: none"> Times shown may not equal to actual times. Even if you erase recorded content from the DVD-R or the +R, there is no increase in disc space. Available recording space on a DVD-RW (DVD-Video format) increases only when the last recorded title is erased. It does not increase if other titles are erased. 	—
The play time shown for MP3 does not agree with the actual time.	<ul style="list-style-type: none"> More disc space than the actual recording time is used after recording or editing the DVD-R or the +R 200 times or more. While searching, the elapsed time may not display correctly. 	—
"ooooo" is displayed and the disc cannot be ejected.	<ul style="list-style-type: none"> The unit is carrying out the recovery process. Do the following to eject the disc. <ol style="list-style-type: none"> Press [POWER ] on the main unit to switch the unit to standby. If the unit doesn't switch to standby, press and hold [POWER ] on the main unit for about 10 seconds. The unit is forcibly switched to standby. The unit may have a problem. While the unit is off, press [■] and [CH ^] on the main unit at the same time and hold for about 5 seconds. Remove the disc. 	—

Sound		Page
No sound	<ul style="list-style-type: none"> Check the connections and settings. Check the input mode on the amplifier if you have connected one. 	7-9, 33
Low volume.	<ul style="list-style-type: none"> Press [AUDIO] to select the audio. 	20
Distorted sound.	<ul style="list-style-type: none"> Turn off V.S.S. in the following cases. <ul style="list-style-type: none"> When using discs that do not have surround sound effects such as Karaoke discs. When playing MTS (→ page 33) broadcast programs. 	25
Cannot hear the desired audio type.	<ul style="list-style-type: none"> The disc may have a restriction on the method of audio output. Refer to the disc's jacket. 	—
Cannot switch audio.	<ul style="list-style-type: none"> You cannot change the audio type when a DVD-R, a DVD-RW (DVD-Video format) or a +R is in the disc tray. You cannot change the audio type when playing a DVD-R, a DVD-RW (DVD-Video format) or a +R. (You can select "Main" or "Secondary Audio Program (SAP)" in "Select MTS" in the SETUP menu before recording.) You have used digital connection. Set "Dolby Digital" to "PCM" or connect using audio cables (analog connection). There are discs where audio cannot be changed because of how the disc was created. 	— 33 9, 33 —

Operation		Page
Cannot operate the television. The remote control doesn't work.	<ul style="list-style-type: none"> Change manufacturer code. Some televisions cannot be operated even if you change the code. The remote control and main unit are using different codes. Change the code on the remote control. Press and hold [ENTER] and the indicated number button at the same time for more than 2 seconds.  	14 14
	<ul style="list-style-type: none"> The batteries are depleted. Replace them with new ones. Colored glass may obstruct the signal reception/transmission. Don't place the signal sensor in direct sunlight or in areas that may be subject to sunlight exposure. 	3 — —
	<ul style="list-style-type: none"> Some operations may be prohibited by the disc. The unit is hot ("U59" appears on the display). Wait for "U59" to disappear. One of the unit's safety devices may have been activated. Reset the unit as follows: Press [POWER ] on the main unit to switch the unit to standby. If the unit doesn't switch to standby, press and hold [POWER ] on the main unit for about 10 seconds. The unit is forcibly switched to standby. Alternatively, disconnect the AC power supply cord, wait one minute, then reconnect it. 	— — —
	<ul style="list-style-type: none"> The unit may quit responding if a large number of buttons have been randomly pressed. 	—
Cannot eject disc.	<ul style="list-style-type: none"> The unit may have a problem. While the unit is off, press and hold [■] and [CH ^] on the main unit at the same time for about 5 seconds. Remove the disc and consult the dealer. 	—
Startup is slow.	<ul style="list-style-type: none"> Startup takes time in the following situations. <ul style="list-style-type: none"> A disc other than a DVD-RAM is inserted. The clock is not set. Immediately after a power failure or the AC power supply cord is connected. 	—

Recording/Scheduled recording

Page

Cannot record.	<ul style="list-style-type: none"> You haven't inserted a disc or the disc you inserted cannot be recorded on. Insert a disc the unit can record onto. The disc is unformatted. Format the disc. RAM -RW(V) The write-protect tab on the cartridge is set to PROTECT, or the disc is protected with DISC MANAGEMENT. Some programs have limitations on the number of times they can be recorded. (CPRM) The disc is full or nearly full. Erase unneeded titles or use another disc. You cannot record on finalized DVD-R, DVD-RW (DVD-Video format), +R or DVD-RW (DVD Video Recording format) discs. Due to peculiarities of DVD-R, DVD-RW (DVD-Video format) or +R, you may be unable to record onto them if you either insert and remove the disc or switch the unit on and off while a disc is loaded, a total of fifty times. A DVD-R, DVD-RW and +R recorded on this unit may not be recordable on other Panasonic DVD recorders. 	<p>4, 5</p> <p>30</p> <p>30</p> <p>36</p> <p>21, 27, 30</p> <p>—</p> <p>—</p> <p>—</p>
Scheduled recording does not work properly.	<ul style="list-style-type: none"> When connecting a cable TV box or satellite receiver, the VCR Plus+ system does not work. The scheduled program is incorrect or different scheduled program times overlap. Correct the program. The unit is not on scheduled recording standby. ("Ⓢ" on the unit's display is not on.) 	<p>—</p> <p>19</p> <p>18, 19</p>
VCR Plus+ system does not work properly.	<p>Press [Ⓢ DVD POWER] to turn the unit off and make sure that "Ⓢ" is on.</p> <ul style="list-style-type: none"> Correct the guide channels. Set the clock. 	<p>12</p> <p>34</p>
Scheduled recording does not stop even when [■] is pressed.	<ul style="list-style-type: none"> Press [■] and then [ENTER] within 5 seconds to turn "Ⓢ" off. Recording stops. If you start recording immediately after turning on the unit while "Quick Start" is set to "On", you cannot then start recording for a few seconds. 	<p>18, 19</p> <p>32</p>
The scheduled program remains even after recording finishes.	<ul style="list-style-type: none"> The scheduled program remains if set to Monday-Friday, Monday-Saturday, Sunday-Saturday or weekly. 	<p>19</p>
A part or whole of a recorded title has been lost.	<ul style="list-style-type: none"> If there is a power failure or the plug is disconnected from the household AC outlet while recording or editing, the title may be lost or the disc may become unusable. You will have to format the disc (RAM -RW(V)) or use a new disc. We cannot offer any guarantee regarding lost titles or discs. 	<p>—</p>
The DV automatic recording function does not work.	<ul style="list-style-type: none"> If images cannot be recorded or if the recording is aborted, check the connections and DV equipment settings. You cannot start recording until the images from the DV equipment appear on the television. Recording may not be performed as desired if the time codes on the tape in the DV equipment are not successive. Depending on the equipment, the DV automatic recording may not operate properly. You can only record audio/video images on a DV tape. 	<p>29</p> <p>—</p> <p>—</p> <p>—</p> <p>—</p>

Play

Play fails to start even when [▶] (PLAY) is pressed. Play starts but then stops immediately.	<ul style="list-style-type: none"> Insert the disc correctly with the label facing up. The disc is dirty. You tried to play a blank DVD-RAM, DVD-R, DVD-RW (DVD-Video format), +R, DVD-RW (DVD Video Recording format) or disc unplayable on this unit. You tried to play a +RW that needs to be finalized on the equipment used for recording. When recording to DVD-RAM using EP (8H) mode, play may not be possible on DVD players that are compatible with DVD-RAM. In this case use EP (6H) mode. You cannot play discs during DV automatic recording. 	<p>20</p> <p>42</p> <p>4, 5</p> <p>—</p> <p>—</p> <p>—</p>
DVD-Video is not played.	<ul style="list-style-type: none"> Some DVD-Video cannot be played when you change the ratings level. 	<p>32</p>
Alternative soundtrack and subtitles cannot be selected.	<ul style="list-style-type: none"> The languages are not recorded on the disc. You may have to use the disc's menus to select languages. 	<p>—</p> <p>20</p>
No subtitles.	<ul style="list-style-type: none"> When progressive output is on, closed captions cannot be displayed. Subtitles are not recorded on the disc. Turn the subtitles on. 	<p>—</p> <p>—</p> <p>24</p>
Angle cannot be changed.	<ul style="list-style-type: none"> Angles can only be changed during scenes where different angles are recorded. 	<p>—</p>
You have forgotten your ratings password.	<ul style="list-style-type: none"> While the disc tray is open, press and hold [● REC] and [▶/x1.3] on the main unit at the same time for 5 or more seconds. 	<p>—</p>
Quick View does not work.	<ul style="list-style-type: none"> This does not work when audio is other than Dolby Digital. This does not work while recording. 	<p>—</p> <p>—</p>
The resume play function does not work.	<ul style="list-style-type: none"> Memorized positions are canceled when the unit is turned off or when the tray is opened. 	<p>—</p>

Edit

Cannot format.	<ul style="list-style-type: none"> The disc is dirty. Wipe with a damp cloth and then wipe dry. You tried formatting a disc that is not compatible with this unit. 	<p>42</p> <p>4, 5</p>
Cannot create chapters.	<ul style="list-style-type: none"> The unit writes the chapter division information to the disc when you turn it off or remove the disc. The information is not written if there is an interruption to the power before this. These operations are not possible with still pictures. You cannot set points if they are too close to each other. You cannot set an end point before a start point. 	<p>—</p> <p>—</p> <p>—</p>
Cannot erase chapters.	<ul style="list-style-type: none"> When the chapter is too short to erase, use "Combine Chapters" to make the chapter longer. 	<p>27</p>
The available recording space doesn't increase even after erasing recordings on the disc.	<ul style="list-style-type: none"> Available recording space on the DVD-R or the +R does not increase even after erasing previously recorded titles. Available recording space on a DVD-RW (DVD-Video format) increases only when the last recorded title is erased. It does not increase if other titles are erased. 	<p>—</p> <p>—</p>

Disc handling

How to hold a disc

Do not touch the recorded surface.

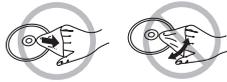


Concerning non-cartridge discs

Be careful about scratches and dirt.

If there is dirt or condensation on the disc

Wipe with a damp cloth and then wipe dry.



Handling precautions

- Do not attach labels or stickers to discs. (This may cause disc warping and un-balanced rotation, rendering it unusable.)
- Write on the label side of the disc only with a soft, oil-based felt pen. Do not use ballpoint pens or other hard writing implements.
- Do not use record cleaning sprays, benzene, thinner, static electricity prevention liquids or any other solvent.
- Do not use scratch-proof protectors or covers.

- Do not drop, stack, or impact discs. Do not place objects on them.
- Do not use the following discs:
 - Discs with exposed adhesive from removed stickers or labels (rented discs, etc).
 - Discs that are badly warped or cracked.
 - Irregularly shaped discs, such as heart shapes.
- Do not place in the following areas:
 - In direct sunlight.
 - In very dusty or humid areas.
 - Near a heater.
 - Locations susceptible to significant differences in temperature (condensation can occur).
 - Where static electricity or electromagnetic waves occur.
- To protect discs from scratches and dirt, return them to their cases or cartridges when you are not using them.



The manufacturer accepts no responsibility and offers no compensation for loss of recorded or edited material due to a problem with the unit or recordable media, and accepts no responsibility and offers no compensation for any subsequent damage caused by such loss. Examples of causes of such losses are

- A disc recorded and edited with this unit is played in a DVD recorder or computer disc drive manufactured by another company.
- A disc used as described above and then played again in this unit.
- A disc recorded and edited with a DVD recorder or computer disc drive manufactured by another company is played in this unit.

Unit care

The precision parts in this unit are readily affected by the environment, especially temperature, humidity, and dust. Cigarette smoke also can cause malfunction or breakdown.

To clean this unit, wipe with a soft, dry cloth.

- Never use alcohol, paint thinner or benzene to clean this unit.
- Before using chemically treated cloth, carefully read the instructions that came with the cloth.

Observe the following points to ensure continued listening and viewing pleasure.

Dust and dirt may adhere to the unit's lens over time, making it impossible to record or play discs.

Use the **DVD lens cleaner** about once every year, depending on frequency of use and the operating environment. Read the lens cleaner's instructions carefully before use.

DVD lens cleaner: RP-CL720PP

Do not place the unit on amplifiers or equipment that may become hot.

The heat can damage the unit.



Note

Do not obstruct the rear panel's internal cooling fan.

Before moving the unit, ensure the disc tray is empty. Failure to do so will risk severely damaging the disc and the unit.

Product Service

1. **Damage requiring service**—The unit should be serviced by qualified service personnel if:

- (a) The AC power supply cord or AC adaptor has been damaged; or
- (b) Objects or liquids have gotten into the unit; or
- (c) The unit has been exposed to rain; or
- (d) The unit does not operate normally or exhibits a marked change in performance; or
- (e) The unit has been dropped or the cabinet damaged.

2. **Servicing**—Do not attempt to service the unit beyond that described in these operating instructions. Refer all other servicing to authorized servicing personnel.

3. **Replacement parts**—When parts need replacing ensure the servicer uses parts specified by the manufacturer or parts that have the same characteristics as the original parts. Unauthorized substitutes may result in fire, electric shock, or other hazards.

4. **Safety check**—After repairs or service, ask the servicer to perform safety checks to confirm that the unit is in proper working condition.

Product information

For product information or assistance with product operation:

In the U.S.A., refer to "Customer Services Directory" on page 43.

In Canada, contact the Panasonic Canada Inc. Customer Care Centre at 1-800-561-5505, or visit the website (www.panasonic.ca), or an authorized Servicentre closest to you.

The model number and serial number of this product can be found on either the back or the bottom of the unit. Please note them in the space provided below and keep for future reference.

MODEL NUMBER _____ DMR-ES20
SERIAL NUMBER _____

User memo:

DATE OF PURCHASE _____
DEALER NAME _____
DEALER ADDRESS _____
TELEPHONE NUMBER _____

Limited Warranty (ONLY FOR U.S.A.)

Panasonic Consumer Electronics Company,
Division of Panasonic Corporation of North America
One Panasonic Way Secaucus, New Jersey 07094

Panasonic Puerto Rico, Inc.
Ave. 65 de Infantería, Km. 9.5
San Gabriel Industrial Park, Carolina, Puerto Rico 00985

Panasonic DVD Recorder Limited Warranty

Limited Warranty Coverage

If your product does not work properly because of a defect in materials or workmanship, Panasonic Consumer Electronics Company or Panasonic Puerto Rico, Inc. (collectively referred to as "the warrantor") will, for the length of the period indicated on the chart below, which starts with the date of original purchase ("warranty period"), at its option either (a) repair your product with new or refurbished parts, or (b) replace it with a new or a refurbished product. The decision to repair or replace will be made by the warrantor.

Product of Part name	Parts	Labor
DVD Recorder	One (1) Year	One (1) Year
Rechargeable Batteries, DVD-RAM Disc (in exchange for defective item)	Ten (10) Days	Not Applicable

During the "Labor" warranty period there will be no charge for labor. During the "Parts" warranty period, there will be no charge for parts. You must carry-in or mail-in your product during the warranty period. If non-rechargeable batteries are included, they are not warranted. This warranty only applies to products purchased and serviced in the United States or Puerto Rico. This warranty is extended only to the original purchaser of a new product which was not sold "as is". A purchase receipt or other proof of the original purchase date is required for warranty service.

Carry-In or Mail-In Service

For Carry-In or Mail-In Service in the United States call 1-800-211-PANA (7262) or visit Panasonic Web Site: <http://www.panasonic.com>

For assistance in Puerto Rico call Panasonic Puerto Rico, Inc. (787)-750-4300 or fax (787)-768-2910.

Limited Warranty Limits And Exclusions

This warranty ONLY COVERS failures due to defects in materials or workmanship, and DOES NOT COVER normal wear and tear or cosmetic damage. The warranty ALSO DOES NOT COVER damages which occurred in shipment, or failures which are caused by products not supplied by the warrantor, or failures which result from accidents, misuse, abuse, neglect, mishandling, misapplication, alteration, faulty installation, set-up adjustments, misadjustment of consumer controls, improper maintenance, power line surge, lightning damage, modification, or commercial use (such as in a hotel, office, restaurant, or other business), rental use of the product, service by anyone other than a Factory Servicenter or other Authorized Servicer, or damage that is attributable to acts of God.

THERE ARE NO EXPRESS WARRANTIES EXCEPT AS LISTED UNDER "LIMITED WARRANTY COVERAGE". THE WARRANTOR IS NOT LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES RESULTING FROM THE USE OF THIS PRODUCT, OR ARISING OUT OF ANY BREACH OF THIS WARRANTY. (As examples, this excludes damages for lost time, travel to and from the servicer, loss of media or images, data or other recorded content. The items listed are not exclusive, but are for illustration only.) **ALL EXPRESS AND IMPLIED WARRANTIES, INCLUDING THE WARRANTY OF MERCHANTABILITY, ARE LIMITED TO THE PERIOD OF THE LIMITED WARRANTY.**

Some states do not allow the exclusion or limitation of incidental or consequential damages, or limitations on how long an implied warranty lasts, so the exclusions may not apply to you.

This warranty gives you specific legal rights and you may also have other rights which vary from state to state. If a problem with this product develops during or after the warranty period, you may contact your dealer or Servicenter. If the problem is not handled to your satisfaction, then write to the warrantor's Consumer Affairs Department at the addresses listed for the warrantor.

PARTS AND SERVICE WHICH ARE NOT COVERED BY THIS LIMITED WARRANTY ARE YOUR RESPONSIBILITY.

Customer Services Directory

Obtain Product Information and Operating Assistance; locate your nearest Dealer or Servicenter; purchase Parts and Accessories; or make Customer Service and Literature requests by visiting our Web Site at:

<http://www.panasonic.com/consumersupport>

or, contact us via the web at:

<http://www.panasonic.com/contactinfo>

You may also contact us directly at:

1-800-211-PANA (7262),

Monday-Friday 9 am-9 pm; Saturday-Sunday 10 am-7 pm, EST.

For hearing or speech impaired TTY users, TTY: 1-877-833-8855

Accessory Purchases

Purchase Parts, Accessories and Instruction Books online for all Panasonic Products by visiting our Web Site at:

<http://www.pasc.panasonic.com>

or, send your request by E-mail to:

npcparts@us.panasonic.com

You may also contact us directly at:

1-800-332-5368 (Phone) 1-800-237-9080 (Fax Only) (Monday - Friday 9 am to 8 pm, EST.)

Panasonic Services Company

20421 84th Avenue South, Kent, WA 98032

(We Accept Visa, MasterCard, Discover Card, American Express, and Personal Checks)

For hearing or speech impaired TTY users, TTY: 1-866-605-1277

Service in Puerto Rico

Panasonic Puerto Rico, Inc.

Ave. 65 de Infantería, Km. 9.5, San Gabriel Industrial Park,

Carolina, Puerto Rico 00985

Phone (787)750-4300, Fax (787)768-2910

Limited Warranty (ONLY FOR CANADA)

Panasonic Canada Inc.

PANASONIC/TECHNICS PRODUCT—LIMITED WARRANTY

Panasonic Canada Inc. warrants this product to be free from defects in material and workmanship and agrees to remedy any such defect for a period as stated below from the date of original purchase.

**Technics Audio Product
Panasonic Audio & DVD Product
Accessories including rechargeable batteries**

**One (1) year, parts and labour
One (1) year, parts and labour
Ninety (90) days**

In-home Service will be carried out only to locations accessible by roads and within 50 km of an authorized Panasonic service facility.

LIMITATIONS AND EXCLUSIONS

This warranty does not apply to products purchased outside Canada or to any product which has been improperly installed, subjected to usage for which the product was not designed, misused or abused, damaged during shipping, or which has been altered or repaired in any way that affects the reliability or detracts from the performance, nor does it cover any product which is used commercially. Dry cell batteries are also excluded from coverage under this warranty.

This warranty is extended to the original end user purchaser only. A purchase receipt or other proof of date of original purchase is required before warranty service is performed.

THIS EXPRESS, LIMITED WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING ANY IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

IN NO EVENT WILL PANASONIC CANADA INC. BE LIABLE FOR ANY SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES.

In certain instances, some jurisdictions do not allow the exclusion or limitation of incidental or consequential damages, or the exclusion of implied warranties, so the above limitations and exclusions may not be applicable.

WARRANTY SERVICE

FOR PRODUCT OPERATION ASSISTANCE, please contact:

Our Customer Care Centre:

Telephone #:

(905) 624-5505

1-800 #:

1-800-561-5505

Fax #:

(905) 238-2360

Email link:

"Contact Us" on www.panasonic.ca

FOR PRODUCT REPAIRS, please locate your nearest Authorized Servicentre at www.panasonic.ca :

Link : "Servicentres™ locator" under "Customer support"

Richmond British Columbia

Panasonic Canada Inc.

12111 Riverside Way

Richmond, BC V6W 1K8

Tel: (604) 278-4211

Fax: (604) 278-5627

Mississauga, Ontario

Panasonic Canada Inc.

5770 Ambler Drive

Mississauga, ON L4W 2T3

Tel: (905) 624-8447

Fax: (905) 238-2418

IF YOU SHIP THE PRODUCT TO A SERVICENTRE

Carefully pack and send prepaid, adequately insured and preferably in the original carton.
Include details of the defect claimed, and proof of date of original purchase.

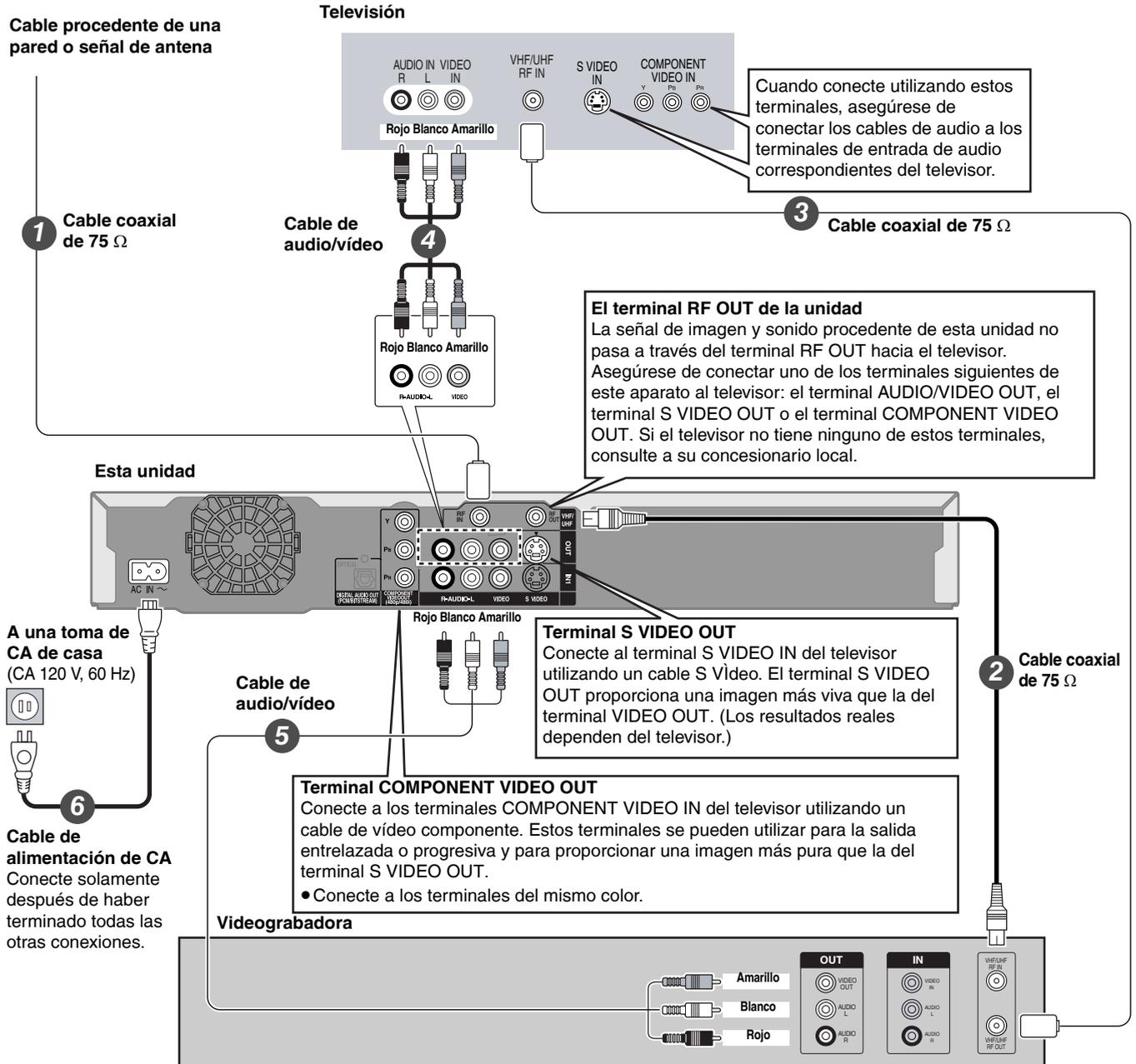
Instalación básica

- Las conexiones del equipo descritas son ejemplos.
- Antes de hacer la conexión, apague todos los equipos y lea los manuales de instrucciones apropiados.
- El equipo periférico y los cables opcionales se venden por separado a menos que se indique lo contrario.

Conexión con un televisor y videgrabadora

La conexión permitirá utilizar la videgrabadora para reproducir cuando esté apagada esta unidad. Para que la operación sea óptima, se recomienda que esta unidad sea conectada como se muestra más abajo.

— indica accesorios incluidos.
 — indica accesorios no incluidos.

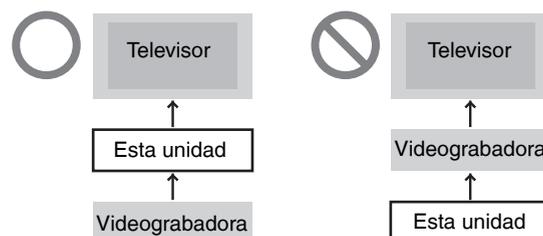


■ Cuando el aparato no se utilice durante mucho tiempo

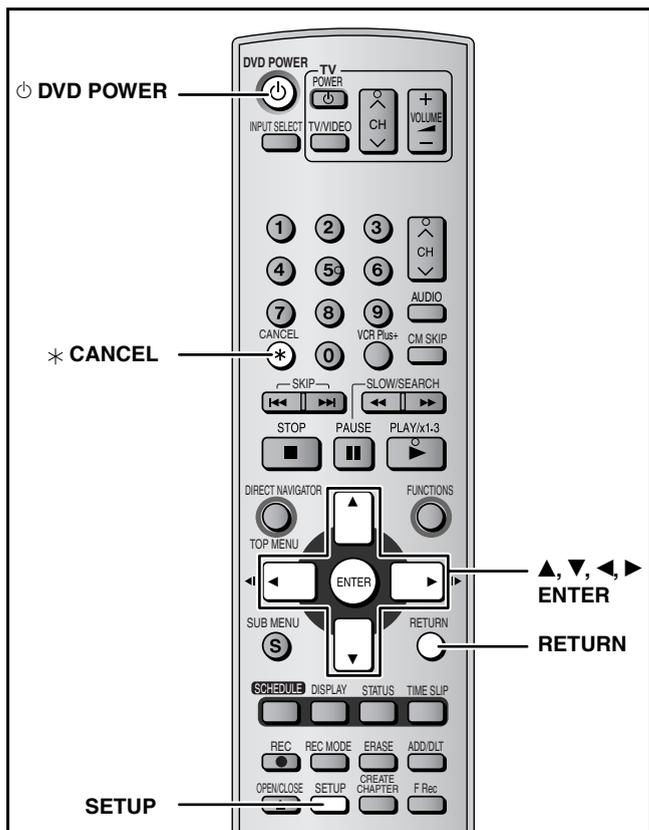
Para ahorrar energía, desenchufe el aparato de la toma de CA de casa. El aparato consume una pequeña cantidad de energía aunque está apagado (aprox. 15,7 W).

Conecte directamente la unidad al televisor

Las señales de video que pasan a través de videgrabadoras afectarán a los sistemas de protección del copyright, y la imagen no se mostrará correctamente en el televisor.



- Cuando conecte a un televisor con videgrabadora incorporada, conecte a los terminales de entrada del televisor, no a los de la videgrabadora.

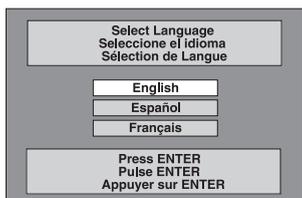


Sintonización automática al enchufar

Preparación

- Encienda el televisor y seleccione la entrada de vídeo apropiada a las conexiones de esta unidad.
- Si conecta el aparato a través de una caja de TV por cable o receptor de satélite, sintonice su PBS local para hacer la puesta en hora automática del reloj. Si no hay PBS local, ponga la hora manualmente en la pantalla "Ajustar manualmente el reloj".

1 Pulse [DVD POWER].



2 Pulse [▲, ▼] para seleccionar "Español" y pulse [ENTER].

3 Pulse [ENTER] para iniciar la sintonización automática al enchufar.

La unidad prosigue luego con Ajuste automático reloj. La hora se visualiza al terminar.

4 Pulse [ENTER].

■ Si el reloj va una hora retrasado o adelantado con relación a la hora actual

- 1 Pulse [SETUP] para mostrar el menú SETUP.
- 2 Ponga "-1" o "+1" en "Ajustar del huso horario" en la ficha "Configuración" utilizando [▲, ▼, ◀, ▶] y [ENTER].
- 3 Pulse [SETUP] para salir.

■ Si la unidad no puede ajustar el reloj automáticamente

Ponga manualmente la hora en la pantalla "Ajustar manualmente el reloj".

Ajuste de canales guía VCR Plus+

Establezca estos canales guía para poder utilizar el sistema VCR Plus+ para hacer grabaciones programadas.

Antes de iniciar los ajustes, prepare una gráfica que muestre los canales, nombres de emisoras y canales guía.

Ej.,

Nombre de emisora	Canal guía	Número de canal	Ajuste de canal
CBS	04	04	No es necesario
HBO	33	15	Introduzca el canal 15 a continuación del canal guía 33.
Nickelodeon	38	20	Introduzca el canal 20 a continuación del canal guía 38.

Mire cuáles son los canales guía para las emisoras en revistas. Anote todas las emisoras que pueda recibir.

- Si ha conectado una caja de TV por cable o un receptor de satélite, el sistema VCR Plus+ no funcionará si usted no ha establecido los canales guía.

- 1 Pulse [SETUP].
- 2 Pulse [▲, ▼] para seleccionar "Canal" y pulse [▶].
- 3 Pulse [▲, ▼] para seleccionar "VCR Plus+ Ajuste canal" y pulse [ENTER].
- 4 Pulse [▲, ▼] para seleccionar el canal guía que quiere establecer y pulse [▶].
- 5 Pulse [▲, ▼] para seleccionar el canal correspondiente al canal guía y pulse [◀].
Para borrar un número, pulse [* CANCEL].
Repita los pasos 4 y 5 para introducir otros canales.
- 6 Pulse [ENTER].

Para salir de la pantalla

Pulse [SETUP].

Para volver a la pantalla anterior

Pulse [RETURN].

Selección del tipo de televisor

No tiene que cambiar el ajuste cuando conecte a un televisor de aspecto estándar 4:3 que no sea compatible con salida progresiva.

- 1 Pulse [SETUP].
- 2 Pulse [▲, ▼] para seleccionar "Pantalla TV" y pulse [▶].
- 3 Pulse [▲, ▼] para seleccionar "Tipo TV" y pulse [ENTER].

- Aspecto 4:3/Aspecto 16:9:



- 480p/480i:

Seleccione "480i", a menos que tenga la unidad conectada a su televisor mediante la conexión de componente de vídeo de tres cables.
Seleccione "480p" si el televisor es compatible con salida progresiva.

4 Pulse [▲, ▼] para seleccionar el elemento y pulse [ENTER].

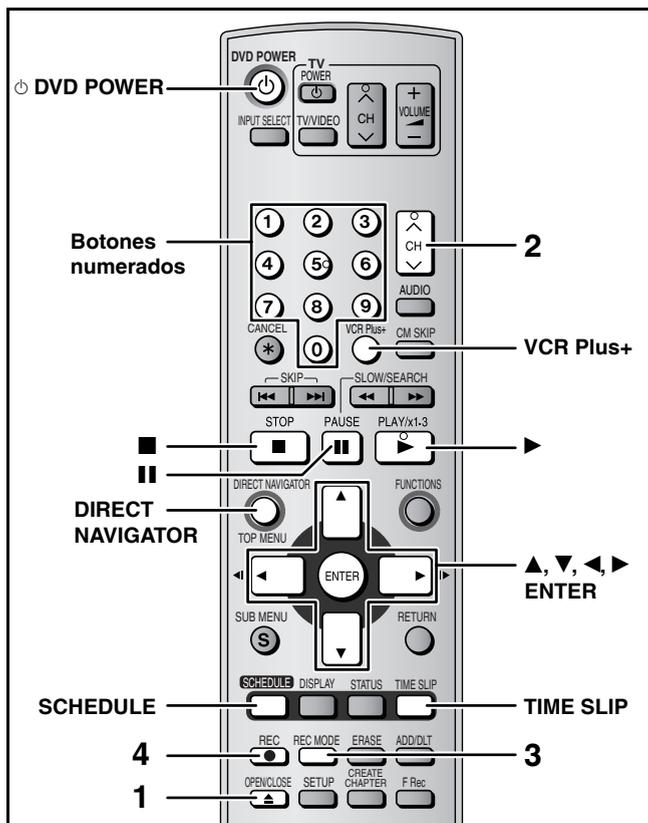
- Si selecciona 480p, aparecera la confirmacion en la pantalla. Siga las instrucciones que aparecen en la pantalla seleccionando "Si" o "No", luego pulse [ENTER].
- Cuando la figura esta torcida, pulse y mantenga presionado [* CANCEL] hasta que la figura sea exhibida correctamente.

Para salir de la pantalla

Pulse [SETUP].

Para volver a la pantalla anterior

Pulse [RETURN].



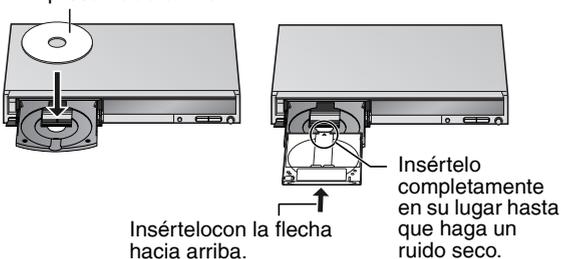
RAM -R -RW(V) +R

- No es posible grabar continuamente desde una cara a la otra en un disco de dos caras. Tendrá que expulsar el disco y darlo la vuelta.
- Cuando utilice discos DVD-RAM de 8 cm (3") o DVD-R de 8 cm (3") con el cartucho, retire el disco del cartucho.
- Puede grabar hasta 99 títulos en un disco (**+R** 49 títulos).
- No es posible grabar emisiones digitales que permiten "Grabación sólo una vez" en discos DVD-R, DVD-RW, +R o DVD-RAM de 8 cm (3"). Utilice un DVD-RAM compatible con CPRM.

1 Pulse [**▲ OPEN/CLOSE**] para abrir la bandeja e introducir un disco.

- Pulse de nuevo el botón para cerrar la bandeja.

Insértelo con la cara impresa hacia arriba.



Insértelo con la flecha hacia arriba.

Insértelo completamente en su lugar hasta que haga un ruido seco.

2 Pulse [**^ v CH**] para seleccionar el canal.

Para seleccionar con los botones numerados:

Modo de TV (del aire)

Ej., 5: [0] → [5]
15: [1] → [5]

Modo CATV (Cable)

Ej., 5: [0] → [0] → [5]
15: [0] → [1] → [5]
115: [1] → [1] → [5]

3 Pulse [**REC MODE**] para seleccionar el modo de grabación (XP, SP, LP o EP).

4 Pulse [**● REC**] para empezar a grabar.

La grabación se hará en el espacio vacío del disco. Los datos no se escribirán encima de otros.

- Durante la grabación no se puede cambiar el canal ni el modo de grabación. Puede cambiarlos cuando la grabación está en pausa, pero el material se graba como título aparte.

■ Para detener la grabación

Pulse [**■**].

Desde el inicio de una grabación se denomina título.

■ Para hacer una pausa en la grabación

Pulse [**||**].

Pulse de nuevo para reiniciar la grabación.

También puede pulsar [**● REC**] para reiniciar.

(El título no se divide en un título separado.)

■ Para especificar un tiempo y detener la grabación—Grabación con una sola pulsación

Durante la grabación

Pulse [**● REC**] para seleccionar el tiempo de grabación.

■ Modo de grabación

Dependiendo del contenido que está siendo grabado, los tiempos de grabación pueden ser inferiores a los indicados.

(Unidad: hora)

Modo	DVD-RAM		DVD-R DVD-RW +R (4,7GB)
	Una cara (4,7 GB)	Dos caras (9,4 GB)	
XP (Alta calidad)	1	2	1
SP (Normal)	2	4	2
LP (Duración larga)	4	8	4
EP (Reproducción larga extendida)	8 (6*)	16 (12*)	8 (6*)

* Cuando "Tiempo de grab. en el modo EP" se haya puesto en "EP (6H)" en el menú SETUP.

La calidad del sonido es mejor cuando se utiliza "EP (6H)" que cuando se utiliza "EP (8H)".

■ Utilización del sistema VCR Plus+ para hacer grabaciones programadas

Durante la parada

- 1 Pulse [VCR Plus+].
- 2 Pulse los botones numerados para introducir el número PlusCode y pulse [ENTER].
- 3 Haga las correcciones necesarias utilizando [**▲, ▼, ◀, ▶**].
- 4 Pulse [ENTER].
Repita los pasos 1-4 para programar otras grabaciones.
- 5 Pulse [SCHEDULE].
- 6 Pulse [**⏻ DVD POWER**].
"⏻" se enciende en el visualizador de la unidad.

Reproducción mientras usted está grabando

RAM

Reproducción con presecución	Puede empezar a reproducir desde el comienzo del título que está grabando. Pulse [▶] (PLAY) durante la grabación.
Grabación y reproducción simultáneas	Puede reproducir un título grabado previamente. 1 Pulse [DIRECT NAVIGATOR] durante la grabación. 2 Pulse [▲, ▼, ◀, ▶] para seleccionar un título y pulse [ENTER]. • Para salir de la pantalla Direct Navigator Pulse [DIRECT NAVIGATOR].
Time Slip	Puede revisar las imágenes grabadas mientras graba. 1 Pulse [TIME SLIP] durante la grabación. 2 Pulse [▲, ▼] para seleccionar el tiempo y pulse [ENTER]. • Pulse [TIME SLIP] para mostrar las imágenes de reproducción completas. Pulse de nuevo para mostrar las imágenes de reproducción y grabación.

■ Para detener la reproducción

Pulse [**■**].

■ Para detener la grabación

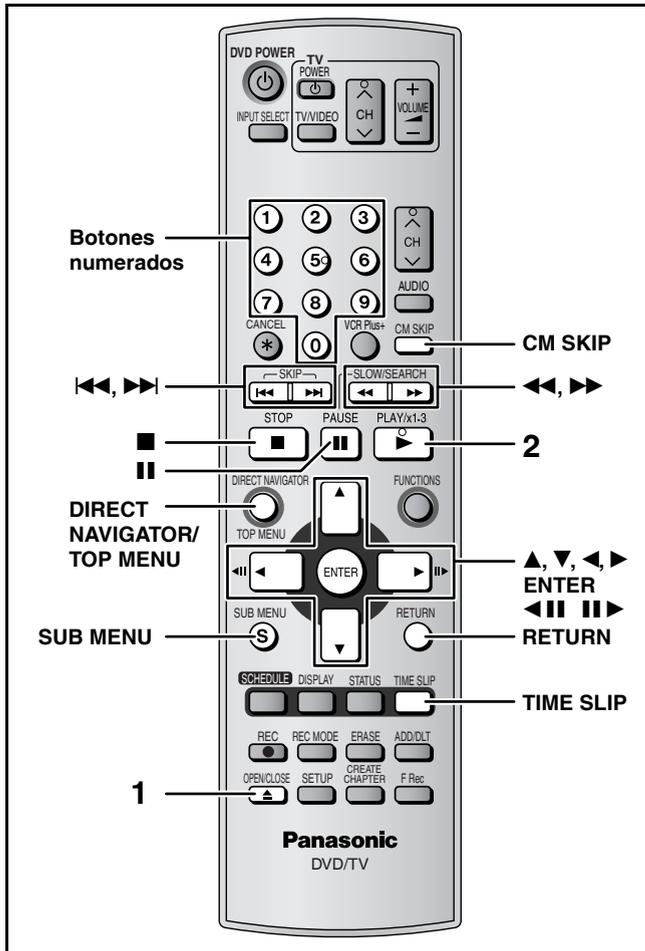
2 segundos después se detiene la reproducción

Pulse [**■**].

■ Para parar la grabación programada

Pulse [**■**] y luego [ENTER] antes de que pasen 5 segundos.

- También puede mantener pulsado [**■**] en el aparato principal durante más de 3 segundos para detener la grabación.



- No es posible reproducir continuamente desde una cara a la otra en un disco de dos caras. Tendrá que expulsar el disco y darlo la vuelta.
- Cuando utilice discos DVD-RAM de 8 cm (3") o DVD-R de 8 cm (3") con el cartucho, retire el disco del cartucho.

1 Pulse [▲ OPEN/CLOSE] para abrir la bandeja e introducir un disco.

- Pulse de nuevo el botón para cerrar la bandeja.

2 Pulse [▶] (PLAY).

RAM -R -RW(V) +R -RW(VR)

La reproducción empieza desde el título grabado más recientemente.

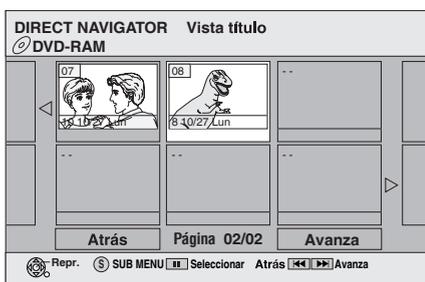
DVD-V VCD CD

La reproducción empieza desde el comienzo del disco.

■ Seleccione programas (títulos) grabados para reproducir

RAM -R -RW(V) +R -RW(VR)

1 Pulse [DIRECT NAVIGATOR].



2 Pulse [▲, ▼, ◀, ▶] para seleccionar el título y pulse [ENTER].

También puede seleccionar títulos con los botones numerados.
Ej., 5: [0] → [5] 15: [1] → [5]

■ Cuando aparece una pantalla de menú en el televisor

DVD-V

Pulse [▲, ▼, ◀, ▶] para seleccionar el elemento y pulse [ENTER]. Algunos elementos también se pueden seleccionar con los botones numerados.

VCD

Pulse los botones numerados para seleccionar el elemento.

Ej., 5: [0] → [5] 15: [1] → [5]

- Para volver a la pantalla de menú

DVD-V Pulse [TOP MENU] o [SUB MENU].

VCD Pulse [RETURN].

Operaciones durante la reproducción

Parada	<p>Pulse [■]. La posición de parada se memoriza. (Excepto cuando se reproduce desde Direct Navigator y cuando se reproduce una lista de reproducción.)</p> <p>Función de reanudación de la reproducción Pulse [▶] (PLAY) para reanudar la reproducción desde esta posición.</p>
Pausa	<p>Pulse [⏸]. Pulse otra vez o pulse [▶] (PLAY) para reiniciar la reproducción.</p>
Búsqueda	<p>Pulse [◀◀] o [▶▶].</p> <ul style="list-style-type: none"> • La velocidad aumenta hasta 5 pasos. • Pulse [▶] (PLAY) de nuevo para reiniciar la reproducción.
Salto	<p>Durante la grabación o la pausa, pulse [◀◀] o [▶▶].</p> <ul style="list-style-type: none"> • Cada pulsación aumenta el número de saltos.
Inicio desde un elemento seleccionado	<p>Pulse los botones numerados. Ej., 5: [0] → [5] 15: [1] → [5] [CD] (discos MP3 y JPEG solamente) 5: [0] → [0] → [5] 15: [0] → [1] → [5]</p> <ul style="list-style-type: none"> • Esto sólo funciona durante la parada con algunos discos (el salvapantalla están en el televisor).
Visión rápida	<p>La velocidad de reproducción puede aumentar sin distorsionar el audio. Mantenga pulsado [▶] (PLAY/x1.3).</p> <ul style="list-style-type: none"> • Pulse de nuevo para volver a la velocidad normal.
Cámara lenta	<p>Durante la pausa, pulse [◀◀] o [▶▶].</p> <ul style="list-style-type: none"> • La velocidad aumenta hasta 5 pasos. • Pulse [▶] (PLAY) de nuevo para reiniciar la reproducción. • Sentido de avance solamente. VCD • La unidad hará una pausa si la reproducción de cámara lenta continua por aproximadamente 5 minutos (excluyendo DVD-V VCD).
Cuadro a cuadro	<p>Durante la pausa, pulse [◀◀] o [▶▶].</p> <ul style="list-style-type: none"> • Cada pulsación muestra el cuadro siguiente. • Mantenga pulsado para cambiar sucesivamente hacia delante o hacia atrás. • Pulse [▶] (PLAY) para reiniciar la reproducción. • Sentido de avance solamente. VCD
Visualización de la imagen de televisión en el modo de imagen en imagen	<p>Pulse [TIME SLIP]. El aparato visualiza la imagen de televisión en el modo de imagen en imagen.</p> <ul style="list-style-type: none"> • Pulse de nuevo [TIME SLIP] para cancelar.
Salto del tiempo especificado (Time Slip)	<p>1 Pulse [TIME SLIP]. 2 Pulse [▲, ▼] para seleccionar el tiempo y pulse [ENTER]. La reproducción salta el tiempo especificado.</p> <ul style="list-style-type: none"> • Pulse [TIME SLIP] para mostrar las imágenes de reproducción completas.
Salto CM	<p>La reproducción se reanuda un minuto después aproximadamente. Pulse [CM SKIP].</p>

Para salir de la pantalla
Pulse [DIRECT NAVIGATOR].

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THE FOLLOWING APPLIES ONLY IN THE U.S.A.

FCC Note:

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC Caution: To assure continued compliance, follow the attached installation instructions and use only shielded interface cables when connecting to peripheral devices.

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Responsible Party:

Panasonic Corporation of North America
One Panasonic Way
Secaucus, NJ 07094
Telephone No.: 1-800-211-7262

-IF you see this symbol-

Information on Disposal in other Countries outside the European Union



This symbol is only valid in the European Union. If you wish to discard this product, please contact your local authorities or dealer and ask for the correct method of disposal.

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