

**SONY**<sup>®</sup>

# Videodisc Player

LDP-2000/2100/2200

Operating Instructions

**Lasermax**

## Owner's Record

The model and serial numbers are located at the rear of the unit. Record the model and serial numbers in the spaces provided below. Refer to these numbers whenever you call upon your Sony dealer regarding this product.

Model No. \_\_\_\_\_ Serial No. \_\_\_\_\_

### WARNING

To prevent fire or shock hazard, do not expose the unit to rain or moisture.



This symbol 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.



This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

### CAUTION

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

### DANGER

Invisible laser radiations when open.  
Avoid direct exposure to beam.

This label is located on the top of the unit.

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## How To Use This Manual

This manual primarily covers operation of the LDP-2000/2100/2200 videodisc player in LOCAL mode (manual control). To operate the videodisc player in the REMOTE mode (computer control), refer to the Interface Manual.

In addition to this operating instruction manual, the LDP-2100 is provided with the DB-2010 Control Expansion Board manual, and the LDP-2200 with the DB-2010, DB-2020 Parallel Interface Board and DB-2040 Computer Data/SFA Board manuals.

### System configuration of the LDP-2000 series

Player	Optional board installed at factory	Optional board available for system-expansion	Manual supplied
LDP-2000		DB-2010* DB-2020 DB-2030 DB-2040	LDP-2000/ 2100/2200
LDP-2100	DB-2010	DB-2020 DB-2030 DB-2040	LDP-2000/ 2100/2200 DB-2010
LDP-2200	DB-2010 DB-2020 DB-2040		LDP-2000/ 2100/2200 DB-2010 DB-2020 DB-2040

\* The DB-2010 is indispensable to connect other optional boards.

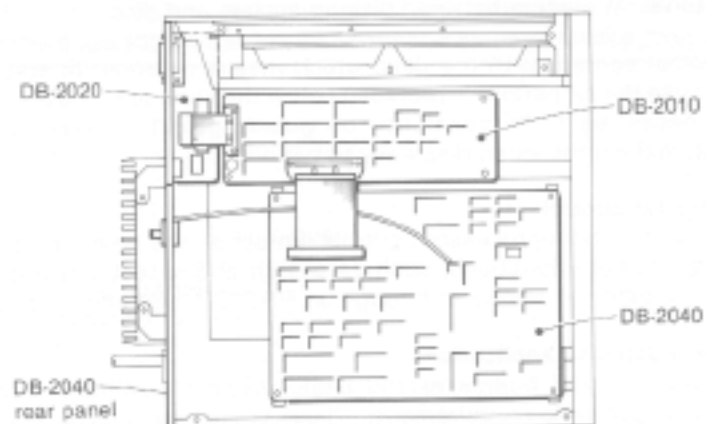
### Optional boards for the system-expansion of the LDP-2000 series

Model	Name	Function
DB-2010	Control Expansion Board	Connectors and control programs provided for the optional boards Playback of video disc with the "audio track control codes"* recorded on the audio track
DB-2020	Parallel Interface Board	IEEE-488 interface bus with an external computer for digital data recorded on a video disc
DB-2030	SFA Board	Playback of Still Frame Audio (long playback of audio while displaying still pictures)
DB-2040	Computer Data/SFA Board	Decoder of digital data recorded on a video disc such as computer data, graphic data, SFA data, etc.

\* These codes are employed only for Sony LDP-1000 and LDP-2000 series. The player is not capable of playing back a video disc with other control program codes.

For details on each function, refer to the installation and the operation manual of optional boards.

### Optional boards mounted on the player



### INFORMATION AVAILABLE ON THE LDP-2000 SERIES

- Installation and operation manuals for each optional board.
- Interface manual
- Video production manual and master tape submission procedure manual

For a list of currently available manuals, please contact your Sony authorized representative.

## Features

Features which are common for the LDP-2000 series are as follows :

### **No physical contact between pick-up system and disc**

Because a laser beam is employed as the signal pick-up, there is no physical contact with the disc, which means no wear. In addition, because the pit pattern is recorded below the surface of the disc, it is not necessary to be constantly on guard against fingerprints and dust, making the video disc easy to handle.

### **Computer control**

The built-in microprocessor controls almost all the functions of this player. Various functions, such as search and repeat, are possible with an external computer through an RS-232C interface connector.

### **Wide video disc applications**

Various optional boards extend basic player capabilities to meet various application requirements. These boards can handle not only conventional video and audio signals but also digital data such as computer data or a compressed audio signal called Still Frame Audio (SFA). Still Frame Audio results in extended audio playback time while displaying still pictures.

### **High speed and accuracy access**

You can locate a particular frame on a Sony new format disc with expanded frame numbers with even higher accuracy. Highly reliable frame-by-frame access is possible which is especially important for computer data/SFA processing.

### **Remote control operation**

By using the RM-2001 optional remote control unit, not only the operation of the main buttons on the front panel but also search and repeat operation are remotely controlled.

### **Automatic front loading of a disc**

A video disc can be inserted from the front. This feature allows for space-saving configurations for the player and other peripheral equipment.

### **Mountable on a 19" rack**

The video disc player can be mounted on an EIA standard 19" rack.

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### **Use NTSC video discs**

This player is to be used exclusively with the NTSC color system. PAL and SECAM video discs cannot be used in this player.

- CED and VHD type video discs cannot be used in this player.
-

# Tips on Video Discs

## TYPES OF VIDEO DISCS

### CAV (constant angular velocity) disc

The CAV disc always rotates at a constant speed of 1800 r.p.m. and the laser beam moves from the inner part of the disc to the outer. Up to 30 minutes of playback (54,000 frames) is possible on one side of the disc. Each frame of the playback picture is recorded on one track and is reproduced in one rotation. The frame number is recorded on the track.

Flexible playback operation such as variable speed playback, repeat play, index display, or computer-controlled playback is possible using the frame numbers as reference.

### CLV (constant linear velocity) disc

With the CLV disc, the rotational speed varies from 600 r.p.m. to 1800 r.p.m. so that a constant linear velocity is maintained. The laser beam moves from the inner part of the disc to the outer as with CAV discs. Playback of up to one hour is possible on one side of the disc, although only normal play, scan and search operations are possible. The elapsed playback time or the chapter number being played can be displayed on the monitor screen. Searches to the beginning of chapters or specified time codes is possible.

#### \*1) Frames

The CAV discs have up to 54,000 "frames" which are numbered in sequence. One frame is recorded on one track, that is, a frame is played back with one rotation of the disc. You can search for a particular frame quickly or repeat a particular sequence of frames.

#### \*2) Picture stop

When the player detects this code, the playback enters the still mode. During search and repeat operations, the code is ignored. During "scan" and "fast (x3)" modes, the code may be ignored sometimes.

#### \*3) Chapters

There are CAV and CLV discs on which "chapters", as the chapter of a book, are pre-recorded. If a chapter number is displayed after a frame number has been displayed (on a CAV disc) or after playback time is displayed in minutes (on a CLV disc) when you press the INDEX button, the data are pre-recorded in chapters. You can easily search for a particular chapter and play it back repeatedly.

#### \*4) Lead-in/Lead-out

When the player detects the lead-out code, it returns to the beginning of a disc, detects the lead-in code and repeats playback or stops at the beginning of the program area according to the AUTO REPEAT switch setting. When the player detects the lead-in code or lead-out code in SCAN mode, the same result will be obtained.

#### Note

The vertical blankings are muted.

# Precautions

## On safety

- Operate the unit with 120 V ac, 60 Hz. When you operate with voltage other than 120 V (100—240 V), consult your nearest Sony service facility.
- Should any solid object or liquid fall into the cabinet, unplug the unit and have it checked by qualified personnel before operating it any further.
- Unplug the unit from the wall outlet if it is not to be used for an extended period of time.
- To disconnect a cord, pull it out by the plug. Never pull the cord itself.

## On installation

Avoid placing the player in a location subject to:

- high humidity
- high temperature
- excessive dust
- mechanical vibration
- direct sunlight

Allow adequate air circulation to prevent internal heat buildup. Do not place the unit on surfaces (rugs, blankets, etc.) or near materials (curtains, draperies) that may block the ventilation holes.

## On operation

- Do not operate the unit right after having transported it from a cold location directly to a warm location or in a room where the temperature rises suddenly because moisture may condense in the operating section of the unit. Wait for about an hour before turning the power on in the new location or keep the rise in room temperature gradual. If the unit is operated with moisture condensation, the unit and the disc may be damaged. Therefore remove the disc immediately when there is a possibility of moisture condensation and no picture is obtained. To evaporate the moisture rapidly, leave the player turned on without a disc loaded.
- Remove the disc from the compartment after playing it, if the unit will not be used for any length of time. Do not transport the set with a disc in place.
- To open or close the disc compartment, press the OPEN/CLOSE button. Do not pull or push the disc compartment forcibly.
- When the disc compartment is in the open position, do not press down on it strongly, or place heavy objects.

## COMPARISON OF SONY VIDEO DISC CODE TYPES

type	purpose	location on disc	capacity	customer's creation method	encoding method	for use with player model:
<b>I. CAV Discs</b>						
Vertical blanking (partial listing)						
—frame number* 1)	frame access	all vertical blankings	00001 to 54000	not available	added automatically during mastering	any
—picture stop* 2)	automatic stop on a frame, during "play" and "step" modes	designated vertical intervals	up to 54000	list of frame numbers to have stops	added during mastering	any
—chapter number* 3)	divide content into chapters	designated vertical blankings	00 to 79; min. chapter = 30 tracks	list of first/last frame nbrs of all chapters	added during mastering	any
—chapter stop	automatic stop on first frame of a chapter, during "scan" mode with the chapter number displayed	designated vertical blankings	first 400 tracks of the chapter; min. chapter = 800 tracks	list of chapter numbers to have stops	added during mastering	any
—expanded frame number	extremely high frame access accuracy (on interactive programs, as with SFA and computer data)	all vertical blankings (on discs specified by customer)	00001 to 54000	not available	added during mastering	LDP-2000
—expanded chapter number	extremely high frame access accuracy	designated vertical blankings	00 to 79; min. chapter = 30 tracks	list of first/last frame nbrs of all chapters	added during mastering	LDP-2000
Audio Track Control Codes	interactive playback with stand-alone player	in audio Ch. 2 of first frames	1 "dump" = 1KB/150 frames max 7 dumps	Logic Generator/Checker on microcomputer; send in TTY or FD with videotape	added during mastering	LDP-1000 (1 dump); LDP-1000A (5 dumps); LDP-2000 with DB-2010 (7 dumps); LDP-2100 (7 dumps)
SFA	very long audio playback per disc side	in video signal; black/white on each line = 0's and 1's	1.3 sec/frame; an SFA unit = min. 2 frames, max 32 frames;	offline-edit analog audio; bring in audiotapes with edit list	at encoding sys: analog to digital conversion; video formatting; onto master tape	LDP-1000A with SFA-1000; LDP-2000 with DB-2010, DB-2040 (or DB-2030); LDP-2200
Computer Data	"One-media" concept (digital data on videodisc for external microcomputer)	in video signal; black/white = 0's and 1's	4096 bytes/frame (= 1 sector)	microcomputer to write data, graphics; bring in FD	at encoding sys: video formatting; onto master tape	LDP-2000 with DB-2010, DB-2020, DB-2040; LDP-2200
<b>II. CLV Discs</b>						
Vertical blanking						
—time code number	time code access	all vertical blankings	00 hr 00 mins to 01 hr 00 mins	not available	added automatically during mastering	any
—chapter number	divide content into chapters	designated vertical blankings	00 to 79; minimum = 30 tracks	list of first/last frame nbrs of all chapters	added during mastering	any
<b>III. CAV/CLV Discs</b>						
Vertical blanking						
—Lead-in* 4)	locate the beginning of the program on a disc	designated vertical blankings	—	not available	added during mastering	any
—Lead-out* 4)	locate the end of the program on a disc	designated vertical blankings	—	not available	added during mastering	any

### On cleaning

Clean the cabinet, panel and controls with a dry soft cloth, or a soft cloth lightly moistened with a mild detergent solution. Do not use any type of solvent, such as alcohol or benzene, which may damage the finish.

### On packing

Do not throw away the carton and packing materials. They make an ideal container in which to transport the unit. When shipping the unit to another location, repack it as illustrated on the carton.

If you have any questions about this unit, contact your authorized Sony service facility.

## Notes on Handling Video Discs

Handle the disc by its edge, and keep the disc clean.



Do not stick paper or tape on the disc surface.



Not this way

Do not expose the disc to direct sunlight or heat sources such as hot air ducts, or leave it in a parked car in direct sunlight which can result in a considerable rise in the temperature.

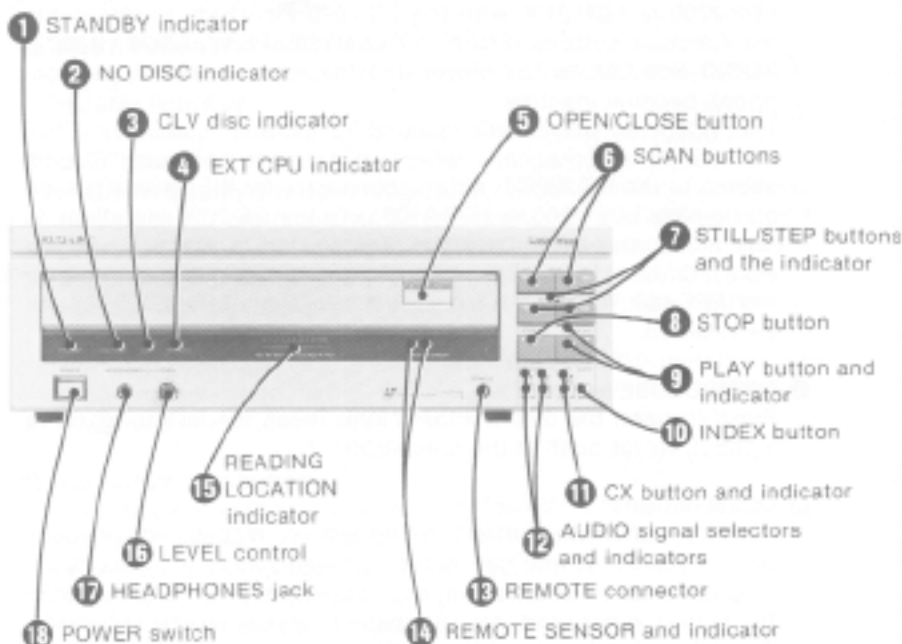
Before playing, clean the disc with a soft cloth.

Do not use solvents (such as benzene or thinner) or commercially available cleaners or anti-static sprays intended for audio discs.

After playing, store the disc in its case.

## Parts Identification

### FRONT PANEL



#### 1 STANDBY indicator

Lights up when a video disc is correctly placed in its tray. It goes off when the rotational speed of the video disc reaches the nominal value: this indicates that the playback can start any time.

If the compartment is pushed in forcibly, the indicator blinks to warn that correct operation cannot be obtained. In this case, press the OPEN/CLOSE button.

#### 2 NO DISC indicator

Lights when there is no disc placed in the disc compartment.

#### 3 CLV disc indicator

Lights when a CLV disc is being played back. The absence of the light indicates that a CAV disc is in place.



#### 4 EXT CPU indicator





Lights when the player is controlled by an external CPU through the RS-232C interface connector (or IEEE-488 interface bus for the LDP-2200 or LDP-2100 with the DB-2020 installed). In this mode the function buttons (SCAN, STILL/STEP, PLAY, STOP, INDEX, AUDIO and CX) on the player and the remote control unit (optional) become inactive.

The videodisc player will respond to external computer (CPU) commands automatically when an external computer is connected to the RS-232C interface connector (or IEEE-488 interface bus for the LDP-2200 or LDP-2100 with the DB-2020 installed). In this mode, the DSR (Data Set Ready) line is active when the RS-232C line is used, or the REN (Remote Enable) line is active for the IEEE-488. When both lines are active, that of the IEEE-488 will be selected.

#### 5 OPEN/CLOSE button

Press to open the disc compartment. Press the button again to close it. Never push in the compartment.

#### 6 SCAN buttons

Keep one of these buttons depressed for high-speed playback (about 100 times normal speed). The  button initiates scanning in the forward direction, and the  button in reverse. When the button is released, normal speed playback will be resumed. With the chapter number displayed on the monitor screen, chapter stop at the beginning of the present chapter (when the  button is pressed) or at the beginning of the next chapter (when the  button is pressed) is possible. The player enters the still mode with a CAV disc, and the normal playback mode with a CLV disc.

#### 7 STILL/STEP buttons and the indicator (only for CAV discs)

Press this button for a still picture. If you press the button again and immediately release it, the next frame will then be displayed in the still mode. When you keep the button depressed, the picture will advance frame-by-frame.

The  button advances the picture in the forward direction, and the  button advances it in reverse.

In the still and step modes, the red indicator lights up.

#### 8 STOP button

Press this button to mute the picture from the player. No picture will be displayed on the monitor TV screen in the stop mode.

#### 9 PLAY button and indicator

Press this button for normal playback. During playback, the red indicator lights up.

#### 10 INDEX button

Press to display the operating mode, frame number and chapter number (if it is pre-recorded) on the monitor screen while playing a CAV disc. When a CLV disc is playing, the time elapsed since the beginning of the program will be displayed, and the chapter number will be displayed if it is pre-recorded. Press this button again to turn the display off.

For LDP-2100/2200 or LDP-2000 with the DB-2010 installed, the program operation using the "audio track control codes" is displayed in the lower index line.

#### 11 CX button and indicator

To play back a video disc which employs the CX Noise Reduction System\*, press the button to ON. The indicator will light. For normal video discs, press the button again to turn it OFF. When a video disc which includes a special code to activate the CX system automatically is played, this button is not effective, because the CX system is automatically turned on.

\* CX Noise Reduction System

This system is employed to improve the signal-noise ratio and enlarge the dynamic range of audio signals recorded on video discs.

### ⑫ AUDIO signal selectors and indicators

Each video disc has two audio channels, channel 1 and 2. When the player is turned on, both channels are automatically on and the CH-1 and CH-2 indicators will light. To turn off one of these channels, press the corresponding selector. The corresponding indicator will go off. Press the button again to activate the channel.

For the LDP-2200 or the LDP-2000 with the DB-2010/2020/2040 installed, when SFA sound is played back, both indicators will go off and the AUDIO signal selectors become ineffective. When SFA operation completes, the indicators will light again, just as they were before the SFA operation.

AUDIO signal selector	LINE OUT jacks (HEADPHONES jack)		TV connector
	CH-1/L	CH-2/R	
CH-1 ON CH-2 ON	channel 1	channel 2	channel 1 and channel 2 mixed
CH-1 ON CH-2 OFF	channel 1	channel 1	channel 1
CH-1 OFF CH-2 ON	channel 2	channel 2	channel 2
CH-1 OFF CH-2 OFF	muted	muted	muted
SFA played back	SFA	SFA	SFA

### ⑬ REMOTE connector

This is a special mini jack for the optional RM-2001 remote control unit.

### ⑭ REMOTE SENSOR and indicator

The sensor located at the right receives the infrared signal from the RM-2001 remote control unit. When a command is detected, the red lamp located at the left blinks.

### ⑮ READING LOCATION indicator

Indicates the point on the disc which is being played back.

NOTE: The indicator point varies according to the environmental condition of the player or to a video disc used.

### ⑯ LEVEL control

Turn to adjust the headphones volume. Clockwise rotation increases the volume.

### ⑰ HEADPHONES jack (Stereo phone jack)

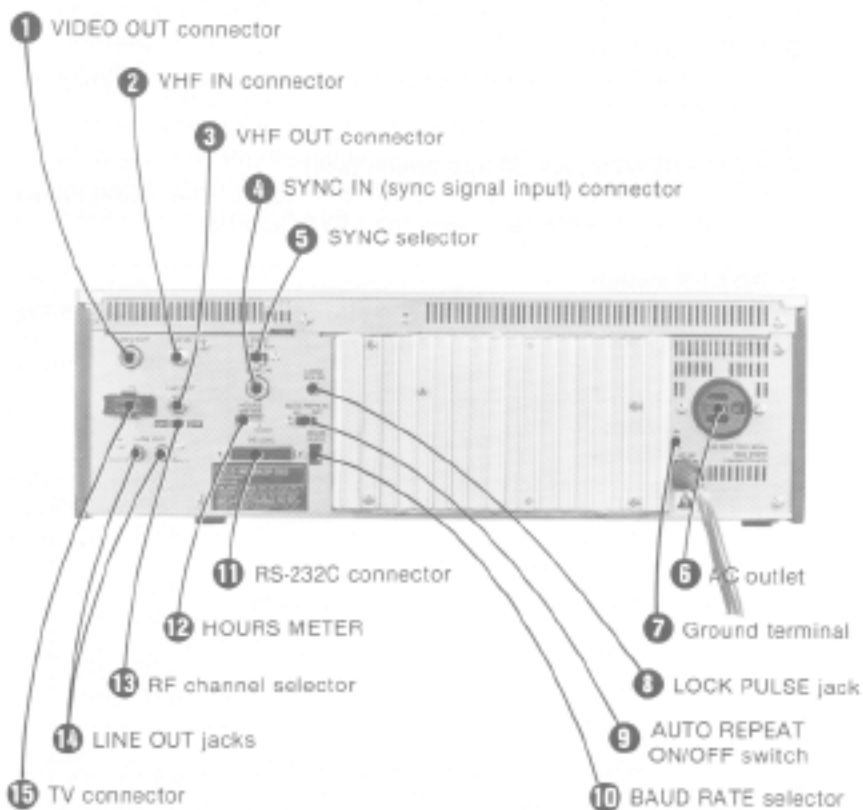
Connect headphones to monitor the audio. The headphones sound level is adjustable with the LEVEL control.

### ⑱ POWER switch

Press to turn on the power of the player. To turn it off, press the switch again.

## REAR PANEL

The photo shows the LDP-2000/2100.



- 1 VIDEO OUT connector**  
A BNC connector for the output of the composite video signal.
- 2 VHF IN connector**  
F-type connector for the RF signal input.
- 3 VHF OUT connector**  
F-type connector for the RF signal\* output.

\* RF (Radio Frequency) signal: The built-in RF unit modulates the output signal of this player into the frequency of VHF channel 3 or 4, so that the picture from the disc can be displayed on the TV receiver.

- 4 SYNC IN (sync signal input) connector**  
BNC type connector for the reference sync signal input. When the player's video signal is to be synchronized with an external sync signal, connect to the SYNC OUT connector of an external CPU or of an external sync generator.  
The player's chroma subcarrier signal is also synchronized with that of an external sync signal.

- 5 SYNC selector**  
Selects the signal with which the video circuit is to synchronize.  
INT: Select this position when the unit is to be operated independently (synchronizing with its own sync signal) from other equipment.  
EXT: Select this position when the signal input from the SYNC IN connector is to be used as the reference sync signal.  
If no external sync signal is supplied to the SYNC IN connector, the player operates synchronizing with the internal sync signal regardless of the switch position.

- 6 AC outlet**  
This outlet supplies ac power to other video equipment whose power consumption is no more than 400 watts. Power is always supplied to the connected equipment regardless of the power switch setting of the player.

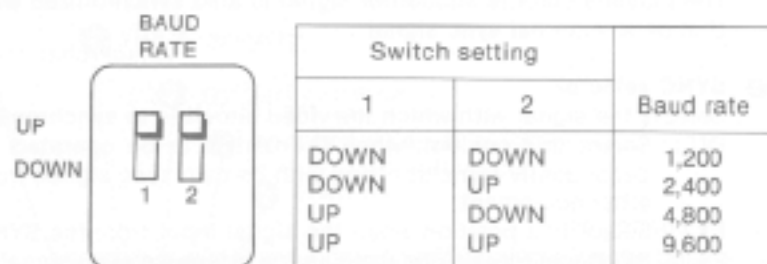
- 7 Ground terminal**  
To reduce hum, connect this terminal to an earth ground with a ground wire.

- 8 LOCK PULSE jack**  
Special mini jack to supply the lock pulse signal to an external computer when superimposing video signals from the Sony SMC-70 microcomputer and the player using the optional video superimposer. The CPU's video signal is synchronized with the lock pulse signal from the player. As result, a stable superimposed picture can be obtained over the playback picture in the still, slow or fast mode of the player.

- 9 AUTO REPEAT ON/OFF switch**  
Set the switch to ON (factory-preset position) to play back a video disc from the beginning to the end repeatedly. Set the switch to OFF not to repeat the playback of a video disc. The switch is ineffective when the player is controlled by the external CPU (EXT CPU indicator lit).

### ⑩ BAUD RATE selector

Selects the speed of data transmission of the RS-232C line among the baud rate of 9,600, 4,800, 2,400, and 1,200 (bits/second). Set the selector to match the baud rate of the external CPU. The factory presetting is 1,200 baud.

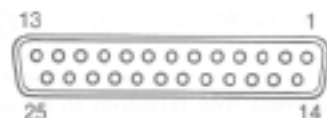


### ⑪ RS-232C connector

25-pin RS-232C standard interface connector for communication with an external computer.

To connect to an external computer, refer to page 34.

#### Pin assignment of the connector



Pin No.	Signal
2	TxD (Transmit data)
3	RxD (Receive data)
6	DSR (Data set ready)
7	GND
20	DTR (Data Terminal ready)

Each signal conforms to the RS-232C specifications.  
(Output level ON: more than +5 V, OFF: less than -5 V)

### ⑫ HOURS METER

Indicates the accumulated time for which the player's power is on. Each segment shows 1,000 hours, up to a total of 10,000 hours.

### ⑬ RF channel selector

Selects the channel to which the output signal of the VHF OUT connector is fed. Set the selector to channel 3 or 4, whichever is not active in your area.

### ⑭ LINE OUT jacks

Phono jacks for audio signal outputs.

The L jack outputs channel 1 (CH-1), and the R jack channel 2 (CH-2).

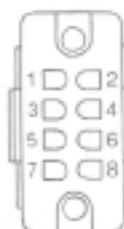
For the LDP-2200 or LDP-2000 with the DB-2010/2020/2040 installed: the SFA signals are also provided from these connectors after being decoded by the DB-2040 Computer Data/SFA Board.

### ⑮ TV connector

8-pin connector for video and audio signal outputs.

If your monitor TV has a connector of the same type, connect the cable (with the square 8-pin plugs) to this connector to supply the video and audio signals to the monitor TV with a single cable.

#### Pin assignment of the connector



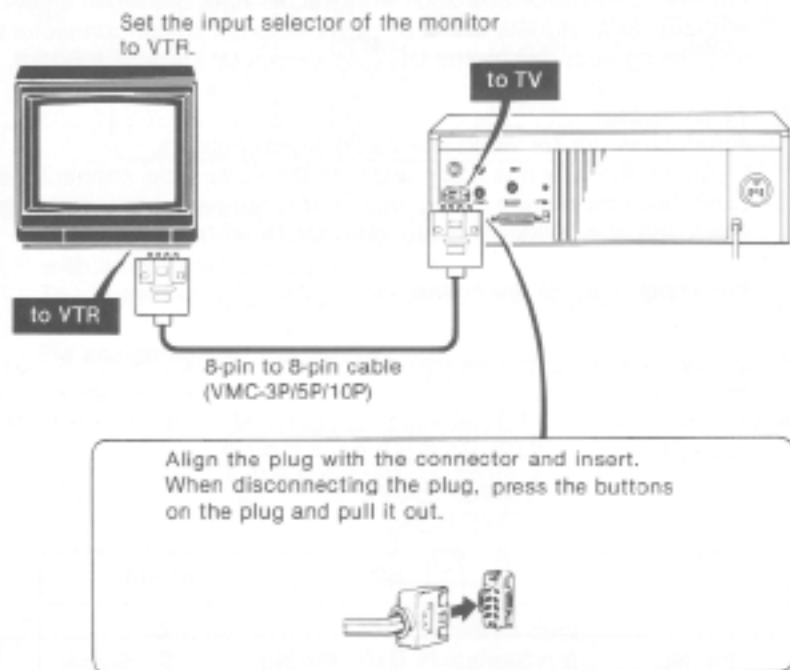
Pin No.	Signal	Pin No.	Signal
1	Audio	5	AUDIO (G)
2	Video	6	VIDEO (G)
3	NC	7	NC
4	NC	8	NC

# Connections

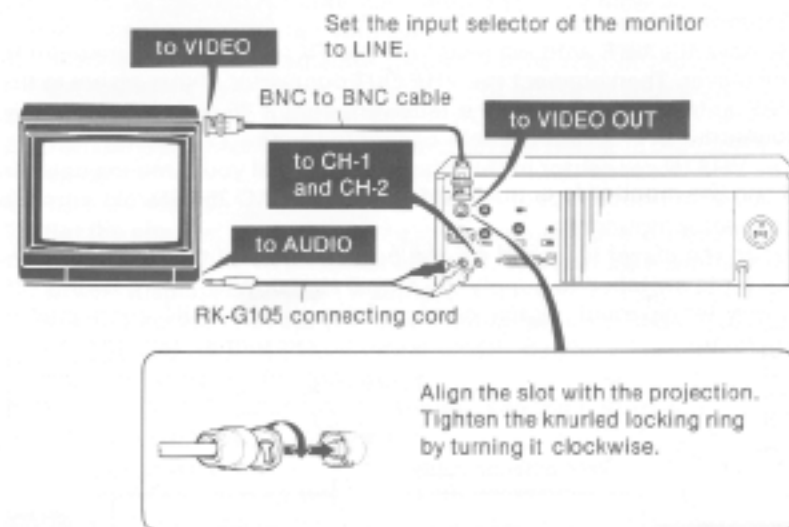
## CONNECTION WITH A VIDEO MONITOR

If your monitor has an 8-pin VTR connector, video and audio signals can be connected with a single cable. If the monitor is not equipped with an 8-pin connector, use a BNC-BNC coaxial cable for the video signal connection and a cable with phono plugs for the audio signal connection.

### When the monitor is equipped with an 8-pin connector



### When the monitor is not equipped with an 8-pin connector



- To play back the audio on a stereo system, connect the LINE OUT connectors to the auxiliary (or tape or tuner) inputs of the amplifier.
- Use the red plug of the audio cable for the right channel (R) connection.

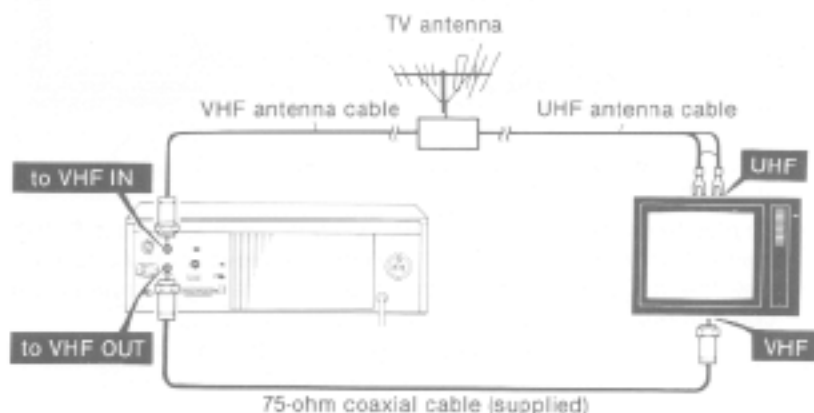
## CONNECTION WITH A CONVENTIONAL TV RECEIVER

### Antenna connection

Remove the VHF antenna lead from the TV receiver and connect it to the player. Then connect the VHF OUT connector of this player to the VHF antenna terminal of the receiver using a 75-ohm coaxial cable. Leave the UHF antenna cable connected to the TV receiver.

The VHF IN connector of this player is F-type. If your antenna cable is a 300-ohm ribbon type (flat cable), use the EAC-25 external antenna connector (optional).

When the player is turned on, the output signal of the VHF OUT connector is switched to supply the player signal. When the power is off, the antenna input signal coming from the VHF IN connector is supplied.



### CAUTION

Connection between the player's VHF OUT connector and the antenna terminals of a TV receiver should be made only as shown in these instructions. Failure to do so may result in operation that violates the regulations of the Federal Communications Commission regarding the use and operation of RF devices. Never connect the output of the player to an antenna or make simultaneous (parallel) antenna and player connections at the antenna terminals of your receiver.

### TV adjustment

When the connection is completed, adjust your TV receiver so that it can receive the signal from your player.

1. Set the RF channel selector located at the rear of the player to CH-3 or CH-4, whichever channel is not active in your area.
2. Make sure that an external CPU is not connected to the player.
3. Turn on the power of the player and set the player in the playback mode.
4. Turn on the TV.
5. Set the channel on the TV to the VHF channel 3 or 4, depending on the setting of the RF channel selector. The picture from the disc will be displayed on the TV screen.

If a picture does not appear, or if the display is not clear, fine tune the channel, so that the picture is clearly displayed on the screen and the sound is clearly heard.

- For details on TV channel adjustment, see the instruction manual furnished with the TV receiver.

Now the TV receiver has been correctly tuned to receive the signal from the player. Select the channel adjusted in the above steps, whenever the video disc player is used.

## To Play Back a Video Disc

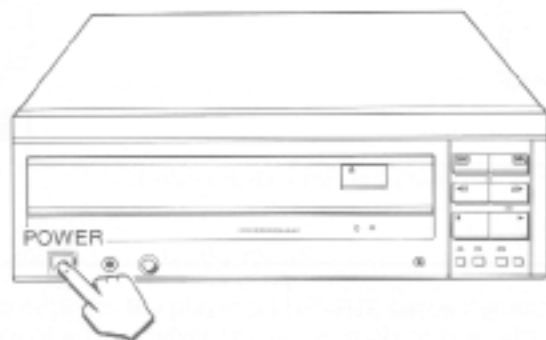
When the player is connected to an external computer, the player operation is entirely controlled by the external computer.

The following procedures explain in detail the operation of the player in the standalone mode. The operation is possible only when the player is not connected to an external computer (the EXT CPU indicator not lit). In this mode the optional RM-2001 remote control unit can be used and its operation is explained in the corresponding operating manual.

Before starting the operation, keep in mind the following precautions.

- To open and close the disc compartment, press the OPEN/CLOSE button. Never push or pull the compartment forcibly.
- Place a disc in the tray with the side to be played back facing down (with the label of the desired side up). Note that the laser reads from below.
- If a disc is not placed correctly in the tray or the disc has a defect which prevents normal playback, the disc compartment will be ejected as soon as the defect is encountered.

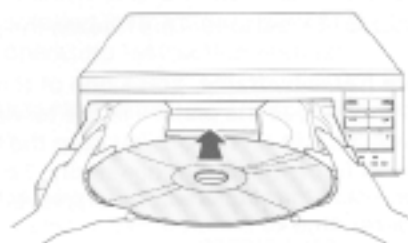
1. Turn on the power of the video disc player by depressing the POWER switch.



2. Press the OPEN/CLOSE button. The disc compartment comes out automatically.



3. Place the disc with the desired program label facing up.



Place in the indentation.

4. Press the OPEN/CLOSE button again. The compartment moves back into the cabinet. The disc starts rotating and the STANDBY lamp will light up for several seconds. When the lamp goes off, playback will start automatically.

### To stop the playback

Press the STOP button. The monitor screen will be muted.

If any function button is pressed, the player will start playing in the corresponding mode from the point at which the STOP button has been pressed.

### To remove the disc

Press the OPEN/CLOSE button to stop the playing of the disc, no matter what mode the player is in.

The disc will stop rotating, and the disc compartment will be ejected.



### Note

At the beginning of the playback, the picture may be distorted. This symptom tends to occur especially when a CLV disc is used or the player is operated in the external sync mode.

## Various Playback Modes



### STILL/STEP PLAYBACK (CAV disc only)

Press either of the STILL/STEP buttons. This freezes the picture being displayed.

To advance the picture frame-by-frame, press one of the STILL/STEP buttons. The  button advances the picture in the forward direction, and the  button advances it in reverse. If you keep the button pressed, the picture advances frame-by-frame repeatedly. To stop the picture, release the button. A still picture will be displayed.



### HIGH SPEED PLAYBACK (CAV and CLV)



Keep one of the SCAN buttons pressed. The  button quickly advances the picture in the forward direction and the  button advances it in reverse. When you release the button, normal playback will be resumed.



**Note:** The picture of a CLV disc may be distorted in this mode.

### CHAPTER STOP (CAV or CLV disc with chapter codes)

Display the chapter number by pressing the INDEX button and then press either of the SCAN buttons.

The  button locates the beginning of the next chapter and the  button locates the beginning of the chapter being played back. When the chapter stop activates, the still mode is obtained with a CAV disc and normal playback will be resumed with a CLV disc. If you want to continue the SCAN mode, keep the button again.

**Note:** The chapter stop function cannot be used with some discs designed for home study or other special purposes.

## Search And Repeat Operations

Search and repeat operations are activated by the respective commands from an external CPU or by operating the RM-2001 remote control unit. For detailed instructions, refer to the Interface Manual or to the RM-2001 operating instruction manual.

The use of these operations differ according to whether a video disc is CAV or CLV.

With **CAV** discs, enter the frame number. If the chapter number is pre-recorded, the number can be used to perform a search and a repeat operation of the desired chapter on a disc. In the search operation, when a designated frame or the beginning of the chapter number is located, the player is automatically set to display the still picture. In the repeat operation, the desired playback mode can be obtained. For LDP-2100/2200 or LDP-2000 with the DB-2010 installed, the search and repeat operation can be executed designating the segment number if a disc has segment numbers in the "audio track control codes" pre-recorded on the audio channel 2 with the keys on the RM-2001 remote control unit.

With **CLV** discs, enter the time number. If chapter numbers are pre-recorded, these numbers can also be used. When the beginning of a designated time number (chapter) is located, the player is set to the normal playback mode.

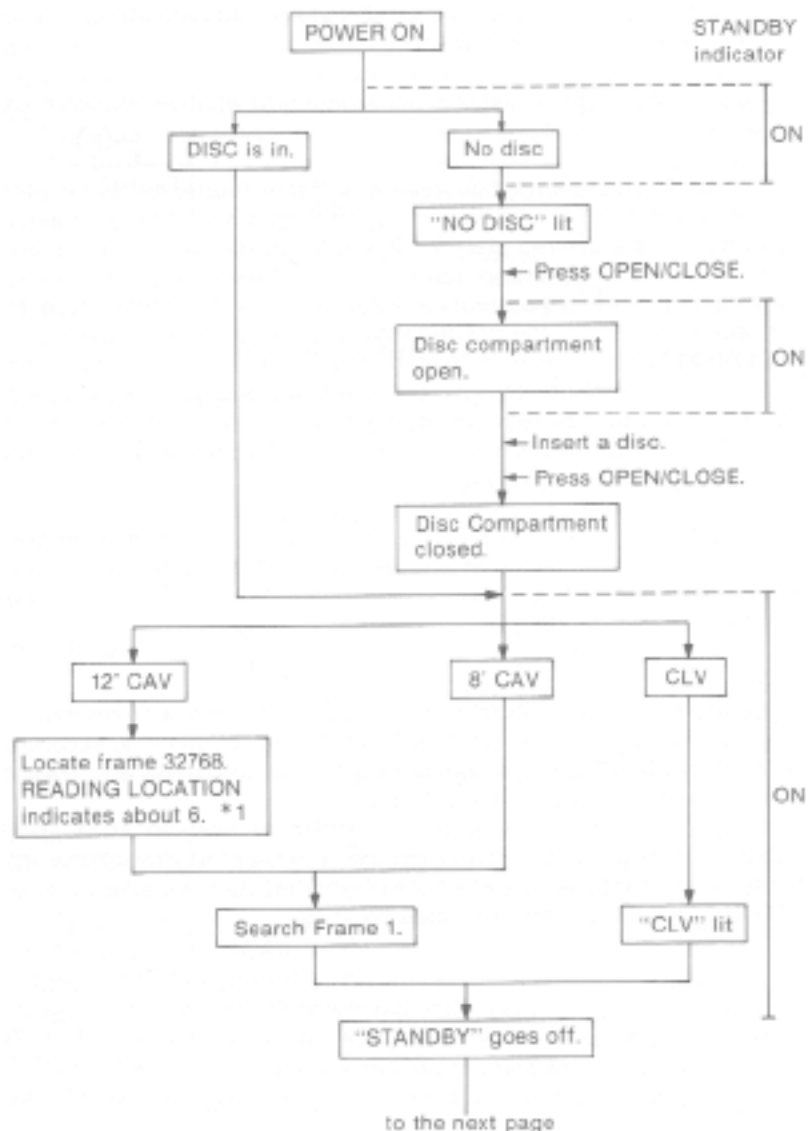
#### Note

If you assign an invalid number to be searched, the search operation may continue about 10 seconds with a CAV disc or about 30 seconds with a CLV disc. The player will then enter the still mode with a CAV disc or the play mode with a CLV disc.

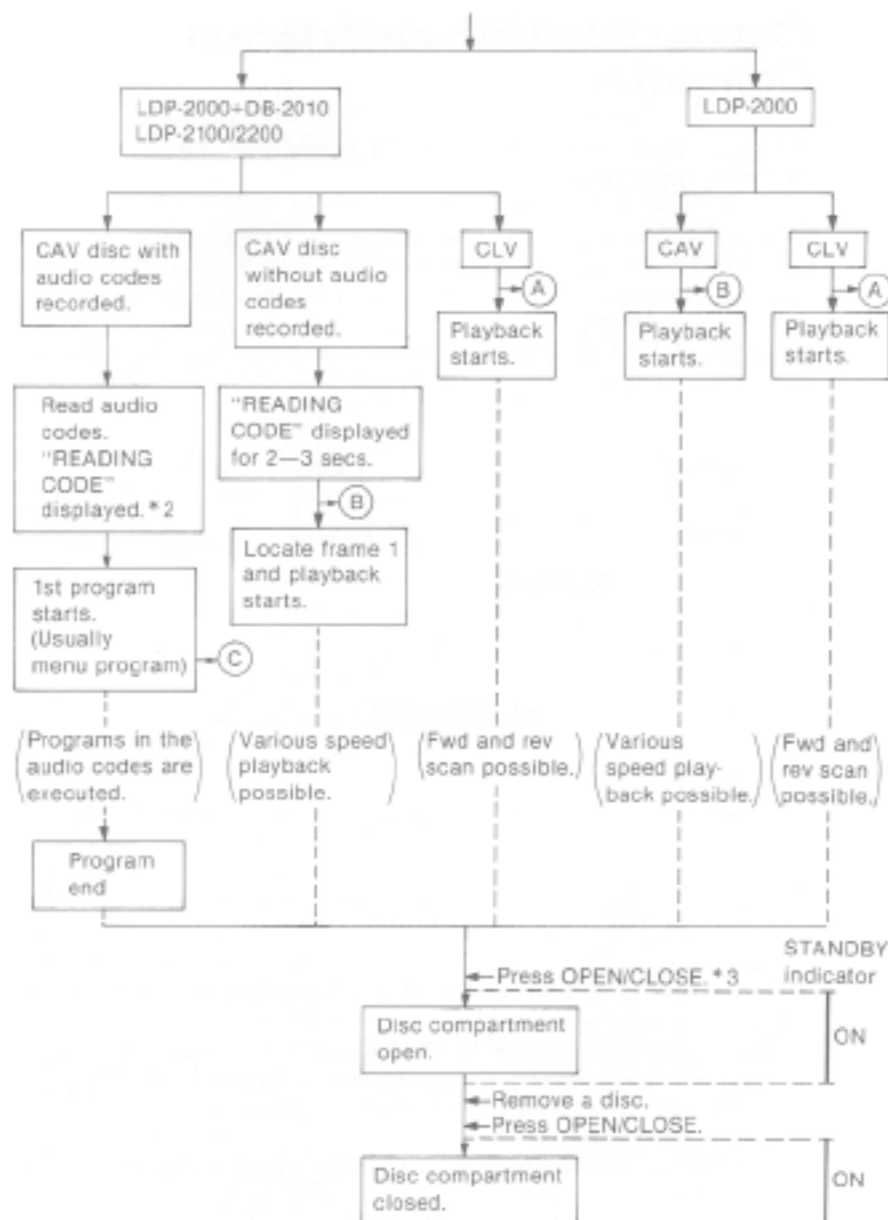
If the player, however, detects the lead-in or lead-out code after search operation of an invalid number is executed, the player activates in the same way as when the player detects the lead-in or lead-out code in normal operation. (See page 10.)



# Flow Chart of Video Disc Playback



\* 1 This is to compensate the pitch between the standard pitch and the actual pitch on the disc used. The search operation will be even quicker.  
 \* 2 The INDEX mode is automatically set to OFF when the display appears on the screen.  
 \* 3 The CX mode is automatically set to OFF at this point.



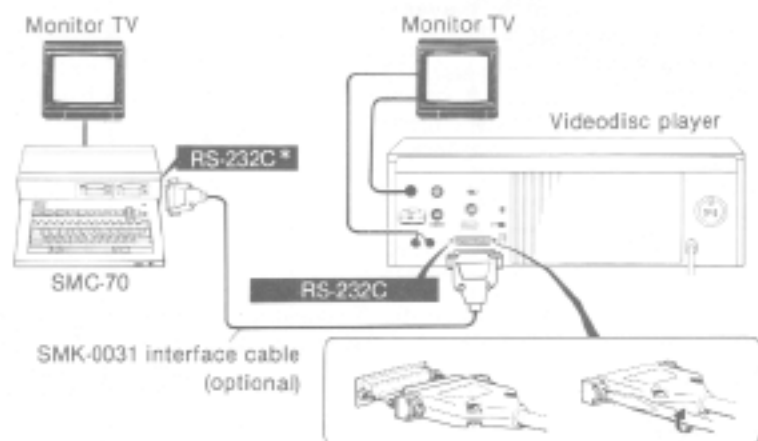
In EXT CPU mode

(A) → The player is in stop mode at the beginning of time number and is ready to receive commands from an external CPU.  
 (B) → The player is in still mode at frame 1 and is ready to receive commands from an external CPU.  
 (C) → The player is in still mode and is ready to receive commands from an external CPU.

## Connection with an External Computer

### TO CONTROL THE PLAYER WITH SONY SMC-70 MICROCOMPUTER

This configuration can use the LDP-2000 for a basic level of player control by the computer. Additional commands for the player operation from an external CPU can be used with use of the DB-2010 Control Expansion Board (which is included in the LDP-2100 and LDP-2200 or can be installed in the LDP-2000). See the Interface Manual for details.



After inserting the cable plug to the receptacle, secure it with these screws.

\* The following settings of the RS-232C interface connector on the SMC-70 are required.

- Signal direction selector to "To TRMNL"
- Baud rate selector should be the same as the one selected on the video disc player. The baud rate of the player is factory-preset to 1,200 bauds.
- The CN-202 internal connector to "DSR signal" selection.

### TO SYNTHESIZE THE PLAYER'S PICTURE AND THE MICROCOMPUTER'S PICTURE

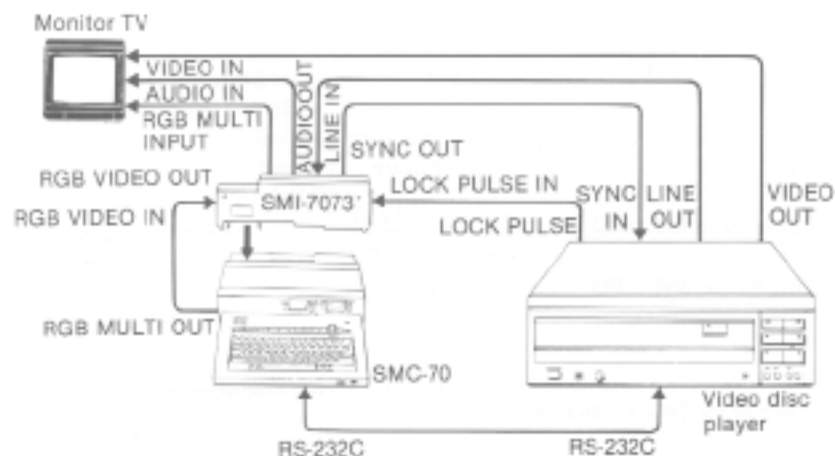
With the combination of the Sony SMC-70 or SMC-70G microcomputer and the SMI-7074 NTSC superimposer or SMI-7073 RGB superimposer, synthesized picture of the videodisc player and the microcomputer can be obtained.

When the SMC-70 is used, it is necessary to connect a composite sync signal of the superimposer which is synchronized with the SMC-70 video output signal to the player's SYNC IN connector. In this way, the signals from the player and the SMC-70 are synchronized. (In this usage, the SYNC selector of the player should be set to EXT.) When the SMC-70G is used, the genlock function of the microcomputer synchronizes the computer's output signal to the player's signal and outputs the synthesized signal to the monitor.

The SMI-7074 NTSC superimposer synthesizes the picture of the SMC-70/70G microcomputer and the player, converts it to an NTSC signal and outputs it to a monitor.

The SMI-7073 RGB superimposer synthesizes the picture of the SMC-70/70G microcomputer and the player on the monitor. (The monitor should be equipped with the function of superimposition.)

#### Example: Using the SMC-70 and the SMI-7073 RGB superimposer



# Specifications

## Playback system

Pick-up method	Laser beam (reflective)
Laser	Semiconductor laser diode ( $\lambda = 7800\text{\AA}$ )
Laser output	0.7 mW*
Video disc	12" and 8"
Maximum playing time	CAV: 30 min./side CLV: 60 min./side
Spindle revolution	CAV: 1800 r.p.m. CLV: 1800 to 600 r.p.m.
Access time	CAV: 1.5 sec (by frame) approx. $\frac{1}{100}$ times the normal playback time (by chapter) CLV: approx. $\frac{1}{100}$ times the normal playback time

## Video

Signal	EIA standards, NTSC color
Output	1.0 V p-p, 75 ohms unbalanced, sync negative.
Resolution	Color: 360 lines
Signal-to-noise ratio	42 dB
VHF output	Channel 3 or 4 (selectable), 75 ohms unbalanced
Input	EXT SYNC: BNC $4 \pm 1$ V p-p, 75 ohms unbalanced

## Audio

Output	Line out: Less than 2 kilohms 0 dB $\pm$ 2 dB [V] (100% MOD) unbalanced Headphones: 8 ohms -21 dB [V] max.
Signal-to-noise ratio	CX ON: 67 dB CX OFF: 55 dB
Frequency response	20 Hz to 20 kHz

\* This output is the value measured at a distance of about 1.6 mm from the objective lens surface on the Optical Pick-up Block.

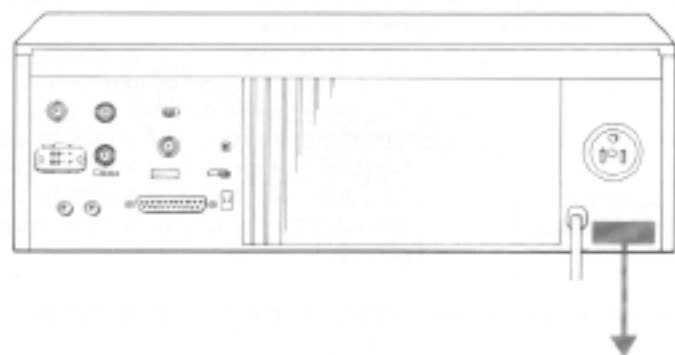
## General

Power requirements	120 V, 60 Hz
AC outlet	Unswitched, max. 400 W
Power consumption	75 W
Operating temperature	5°C to 35°C (40°F to 95°F)
Operating humidity	25% to 80%
Storage temperature	-20°C to 60°C (-4°F to 140°F)
Dimensions	Approx. 424 x 132 x 488 mm (w/h/d) (16 $\frac{3}{4}$ x 5 $\frac{1}{4}$ x 19 $\frac{3}{4}$ inches)
Weight	LDP-2000: approx. 13.4 kg (29 lb 9 oz) LDP-2100: approx. 13.7 kg (30 lb 3 oz) LDP-2200: approx. 14.5 kg (31 lb 15 oz)
Supplied accessory	75 ohms coaxial cable (with F type connectors)

Design and specifications subject to change without notice.

## Note on ROM Version Label

The label for the ROM version has been attached on the rear panel of the player at the factory.  
When you mount an optional board on the player for the system-expansion, attach the label supplied with the board in the corresponding section.



ROM VERSION			
BASIC	EXP	DATA	SFA
xxx	—	—	—

BASIC: LDP-2000 system ROM version

EXP: DB-2010 ROM version (label attached on the LDP-2100 at the factory)

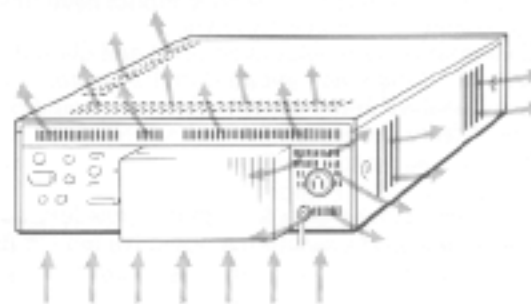
DATA: DB-2040 ROM version (label attached on the LDP-2200 at the factory)

SFA: DB-2030 ROM version

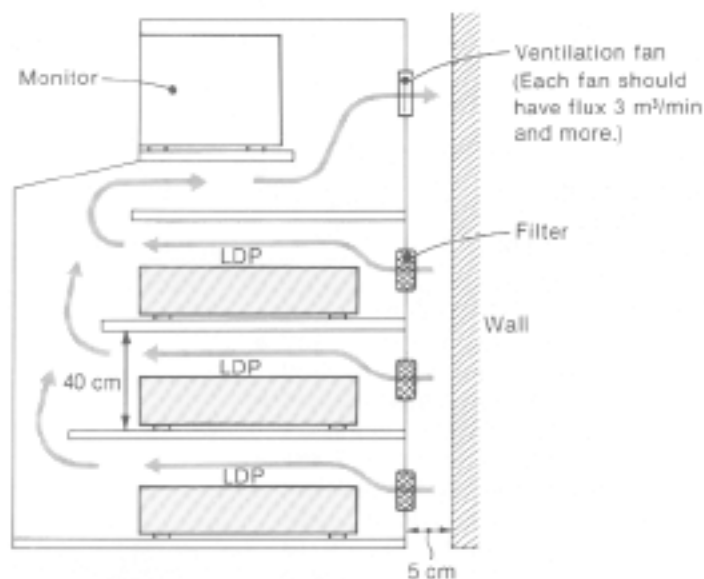
## Note for Installing the Player in a Rack

When the videodisc player(s) is(are) installed in a rack, special consideration should be taken to prevent internal heat buildup.

### Ventilation holes on the LDP-2000 series



### Recommended ventilation when installed in a rack



- The air in the rack should be circulated from the bottom to the top as indicated.
- Allow at least 5 cm (2 inches) behind the rack when installing it against the wall.
- The distance between each shelf should be at least 40 cm (12 3/4 inches)
- The holes located at the back of the rack should have filters to prevent dust from being drawn into the rack.
- At least two ventilation fans should be used and should be installed in the back of the rack as indicated in the figure.
- If a monitor is installed in the same rack, care should be taken to prevent the heat from the monitor affecting the players.

#### Note

When the player is used in a newly built place, powdery dust will be drawn in the player and contaminate the objective lens in the optical pick-up system. Ask your nearest Sony service facility for lens cleaning.

## Trouble Checks

Many apparent malfunctions may be caused by a misoperation or an oversight. If any difficulty arises in operation, check through this list of symptoms and causes. Should the difficulty persist, unplug the unit and contact your authorized Sony service facility.

- The following list includes troubles when the RM-2001 optional remote control unit is used.

Symptom	Cause
Power is not turned on.	<ul style="list-style-type: none"> <li>● Power cord is not connected.</li> <li>● Power has been turned on and off repeatedly and the protection circuit activates. Wait one minute to turn the power on again.</li> </ul>
The disc compartment is ejected automatically.	<ul style="list-style-type: none"> <li>● The video disc is not placed correctly on the tray.</li> <li>● The video disc has scratches or dirt on the surface.</li> <li>● The side of a video disc to be played back is placed facing up. The side to be played back should be placed facing down.</li> </ul>
The disc compartment cannot be ejected.	<ul style="list-style-type: none"> <li>● Power is not turned on.</li> <li>● During 2 seconds after the power is turned on, the OPEN/CLOSE button does not activate.</li> </ul>
The PLAY button does not activate.	<ul style="list-style-type: none"> <li>● An external computer is connected to the player.</li> <li>● The STANDBY indicator lights up. Wait until the indicator goes off.</li> <li>● The STANDBY indicator blinks. Press the OPEN/CLOSE button.</li> <li>● The SEARCH or REPEAT button on the RM-2001 has been pressed when the picture is muted by the STOP button. Clear the search or repeat mode with the CL button or continue the search or repeat operation to the end.</li> </ul>

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Picture is not displayed, although the PLAY indicator lights.

- The monitor TV is not turned on.
- The connection of the monitor TV (or TV receiver) is not correct.
- The input select of the monitor TV is not set correctly.
- The disc is placed in the table with the side to be played back facing up.

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Picture quality is bad.

- Connection of the monitor TV (or TV receiver) is not correct.
- An equipment is near the player to transmit noise and affect the picture quality of the video disc.
- The disc to be played back has a scratch or dirt on the surface.
- There is moisture condensation in the videodisc player.
- The RF channel selector setting does not correspond to the channel selected on the TV.
- TV fine tuning has not been adjusted correctly.

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No audio

- The speaker system or TV monitor is not connected correctly.
- The volume setting of the amplifier or TV monitor is too low.
- Audio is muted in the modes except for the normal playback.

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Particular part of a video disc is not played back correctly.

- The disc has a scratch or dirt on that part. Advance the picture rapidly by pressing the SCAN button.

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Particular part of a video disc cannot be found in search operation.

- The disc has a scratch or dirt on that part. Change with another video disc.
- 

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The RM-2001 remote control unit does not operate.

- The batteries are exhausted.
- When used as wired, the unit is not connect to the REMOTE connector firmly.
- When used as wireless, the unit is not pointed to the REMOTE SENSOR properly, or there is an obstacle between the unit and the REMOTE SENSOR.
- An external computer is connected to the player.

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The picture is muted and the PLAY or STILL indicator is not lit.

- The STOP button is activated.
- The search operation is being executed. If the assigned number to be searched is invalid or not found because of the defect of a disc, the player is in search mode for 10 seconds with a CAV disc and 30 seconds with a CLV disc.
- The playback goes to the end of a disc and stops when the AUTO REPEAT switch at the rear is set to OFF.

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Fast (x3) speed, still/step and reverse playback is not possible.

- A CLV disc is used.

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STANDBY indicator does not light when the power is turned on.

- The power is turned on within 5 seconds after the power is turned off. The indicator will light after the motor speed is resumed.
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