

SONY

COMPACT DISC PLAYER

CDP-650ESD

1300

OPERATING INSTRUCTIONS

Before operating the unit, please read this manual thoroughly. This manual should be retained for future reference.

OWNER'S RECORD

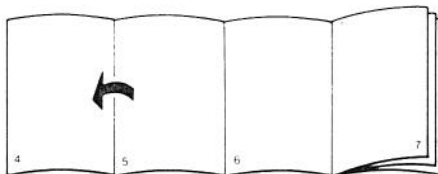
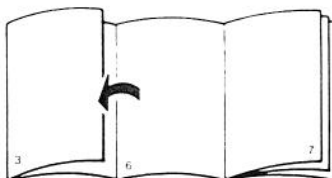
The model and serial numbers are located at the rear. Record the serial number in the space provided below. Refer to these numbers whenever you call upon your Sony dealer regarding this product.

Model No. CDP-650ESD Serial No. _____

COMPACT
disc
DIGITAL AUDIO

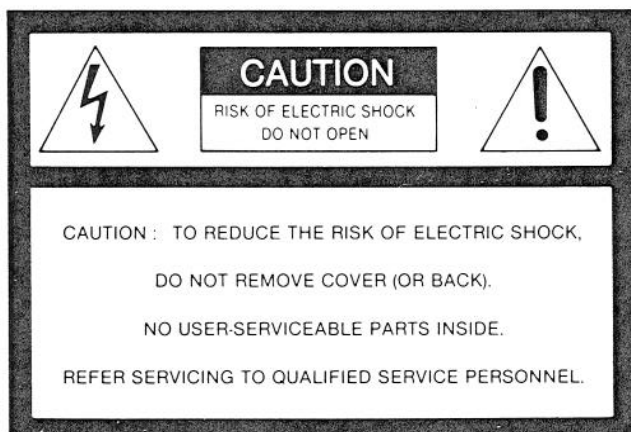


As you read, fold back this page and refer to the illustrations and the photos on pages 3 to 5.



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.

DANGER

Invisible laser radiation when open and interlock failed or defeated.
Avoid direct exposure to beam.

This label is located on the top of the set.

INFORMATION

This equipment generates and uses radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio and television reception. It has been type tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause 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 the receiving antenna

Relocate the equipment with respect to the receiver

Move the equipment away from the receiver

Plug the equipment into a different outlet so that equipment and receiver are on different branch circuits.

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet prepared by the Federal Communications Commission helpful:

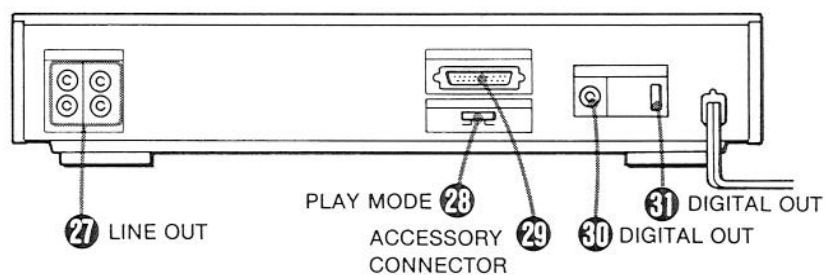
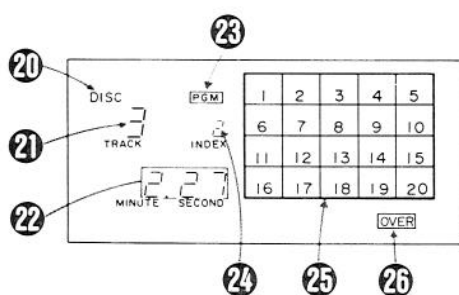
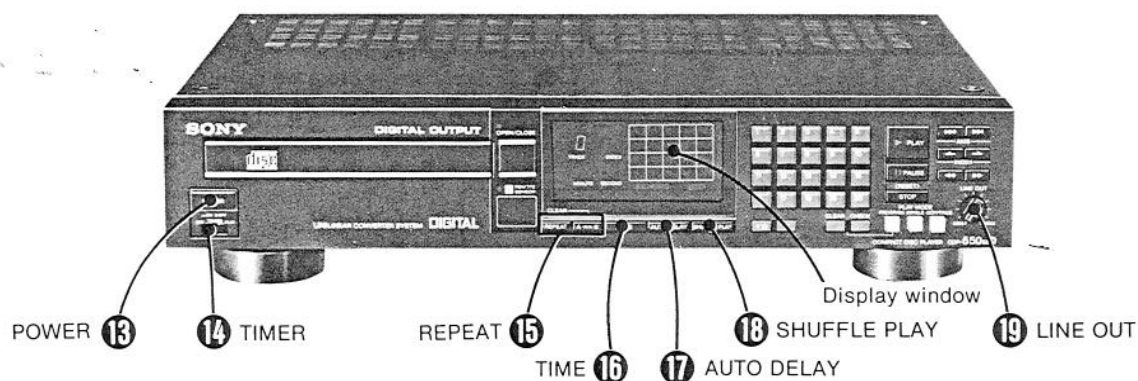
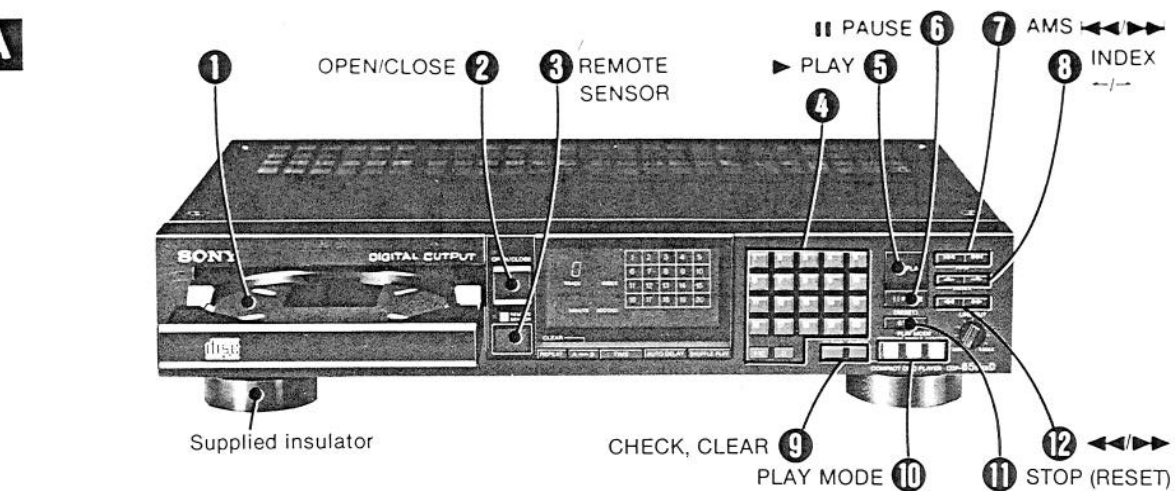
"How to Identify and Resolve Radio-TV Interference Problems".

This booklet is available from the U.S. Government Printing Office, Washington, DC 20402, Stock No. 004-000-00345-4.

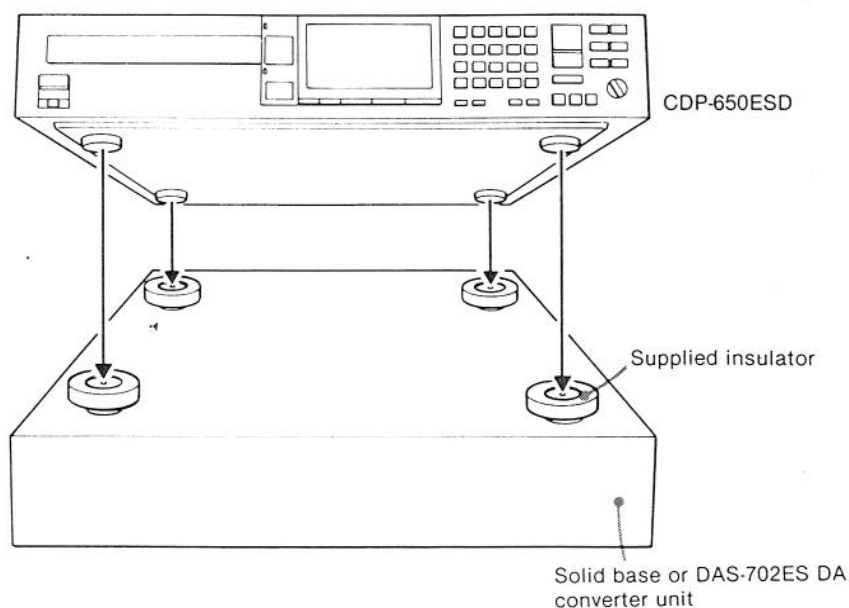
CAUTION

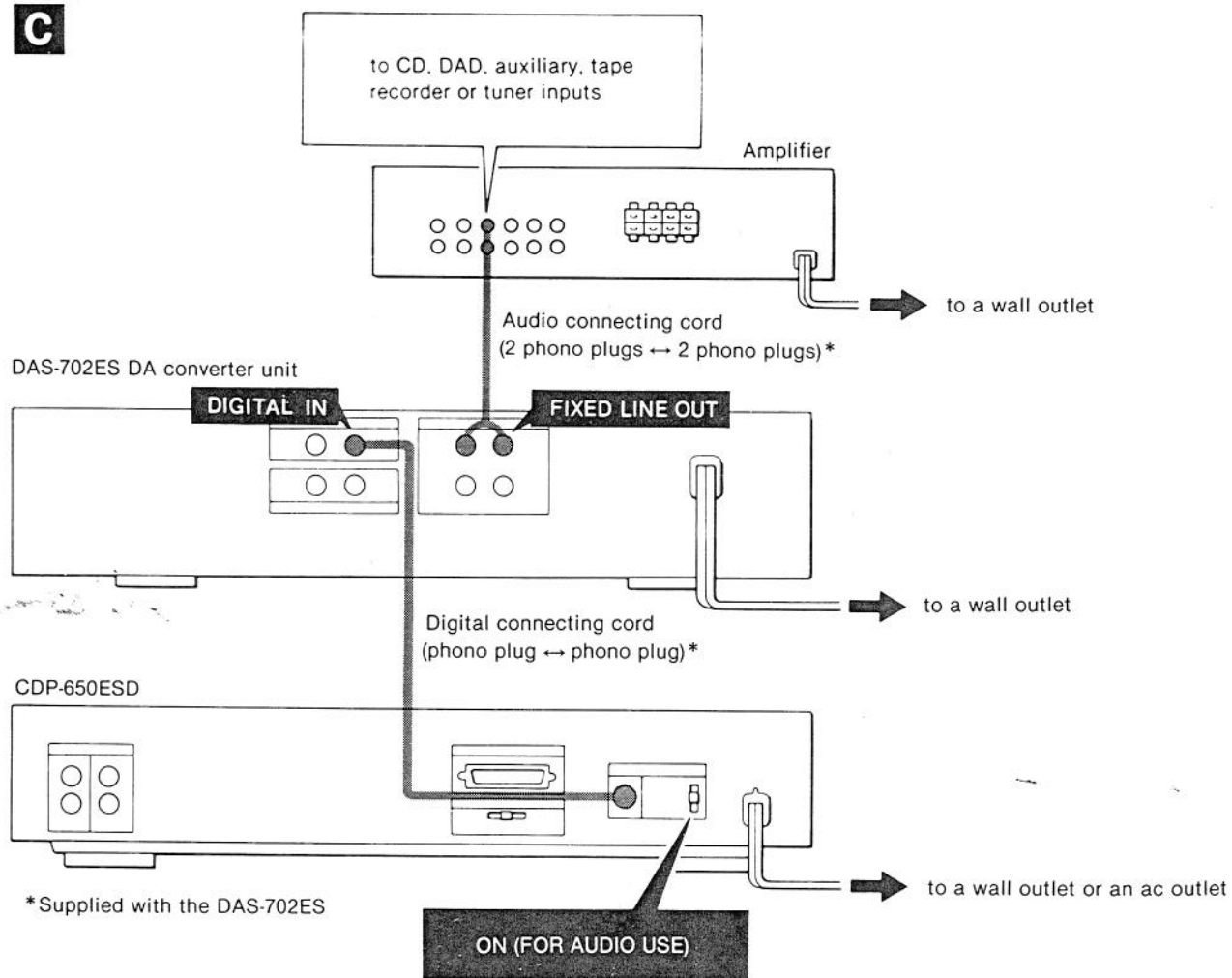
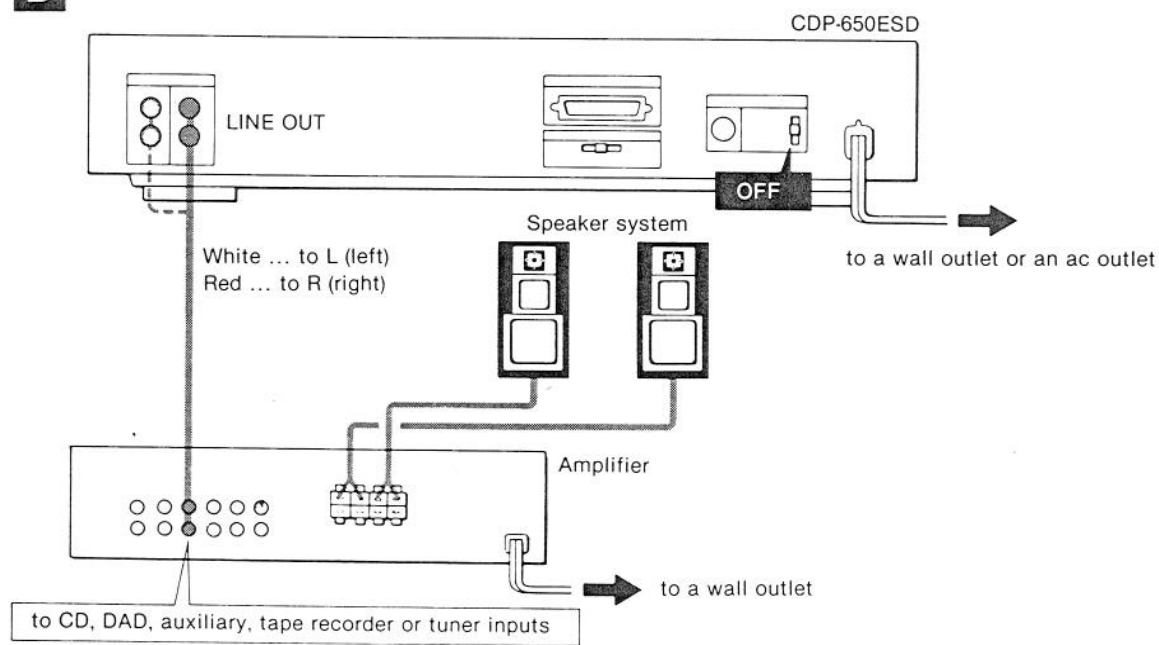
Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

A



B



C**D**

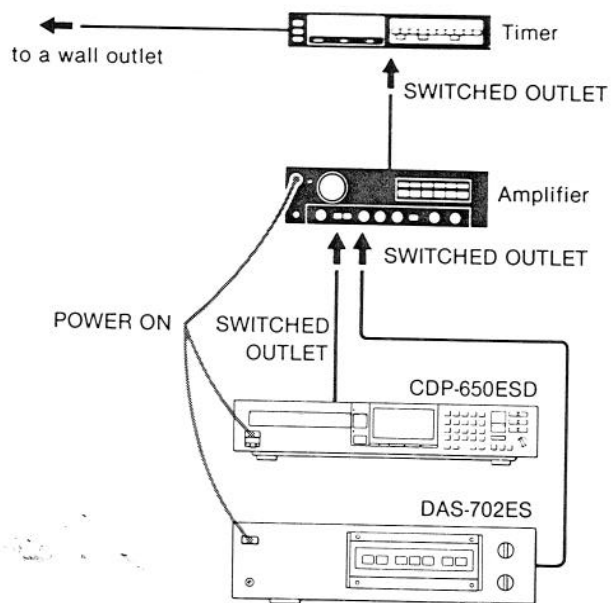
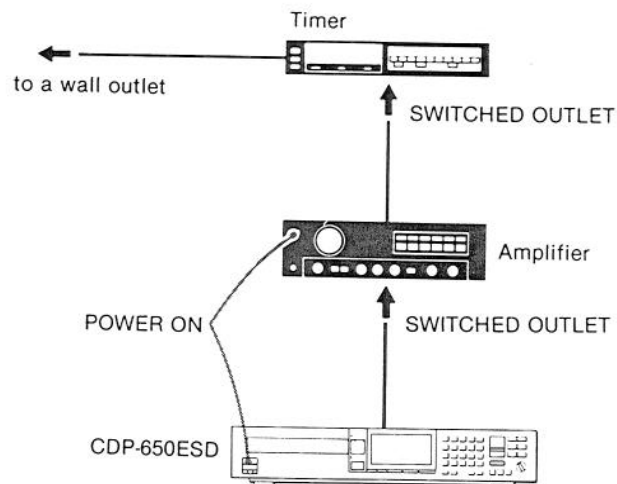
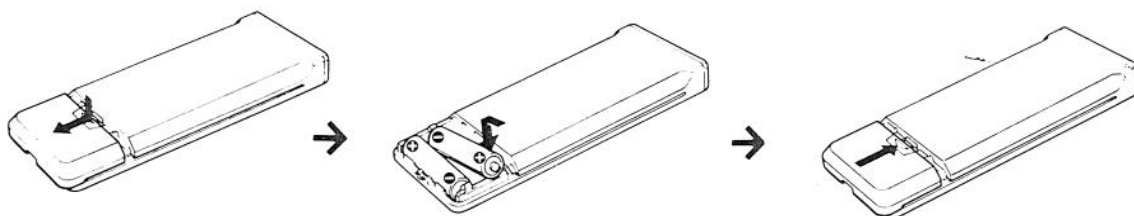
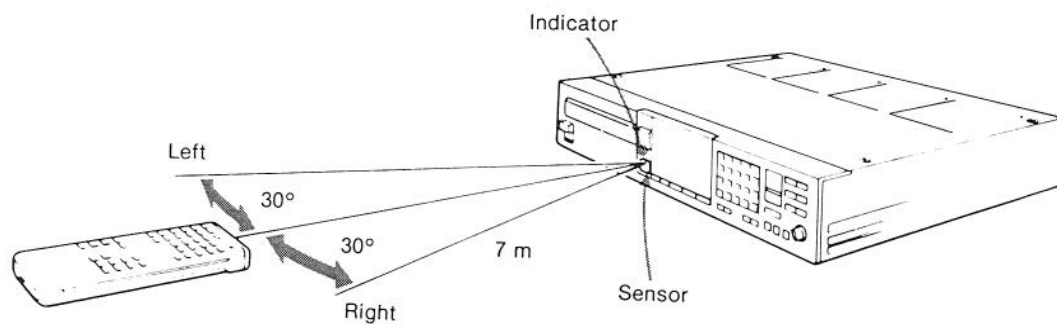
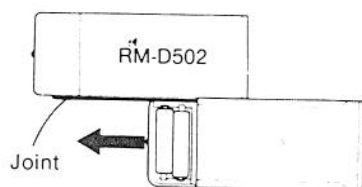
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TABLE OF CONTENTS

Features.....	6
Precautions.....	7
Notes on moisture condensation.....	7
Notes on compact discs.....	7
Preparation.....	8
Location and function of controls.....	8
Insulator installation.....	10
Connections.....	10
Disc playing (Basic operation).....	11
To play	
To stop during play	
Disc playing (Advanced operation).....	12
CONTINUE mode play — To play the disc continuously	
SINGLE mode play — To play one selection only	
PROGRAM mode play — To play the selections in a desired sequence	
SHUFFLE play — To play the selections in a random order	
Search operation.....	18
AMS function — To search for a particular selection	
Index search — To start playing from a particular section	
Manual search — To search for a particular point in a selection	
Repeat play.....	20
To repeat only the selection being played	
To repeat particular selections	
To repeat the whole disc	
To repeat shuffle play	
To repeat play between two particular points (A ↔ B repeat)	
To cancel repeat play	
Auto delay function.....	21
Using the time counter.....	22
To monitor the elapsed playing time	
To monitor the remaining playing time	
Timer-activated play.....	22
Remote control operation.....	23
Transmission of digital audio interface.....	24
Specifications.....	25
Trouble checks.....	26

FEATURES

With the CDP-650ESD flat frequency response (2 - 20,000 Hz), low wow and flutter (lower than the measurable limit), wide dynamic range (more than 96 dB), minimal distortion (0.0025 %) and high channel separation (more than 95 dB) are achieved.

Digital signal output

In addition to the output of the analog signals converted back with high fidelity by laser beam, direct digital signal output is provided, allowing connection of an external D/A converter for the highest possible sound quality.

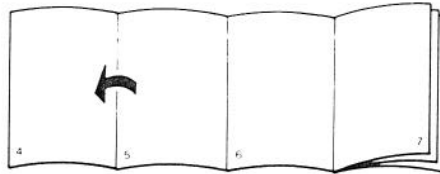
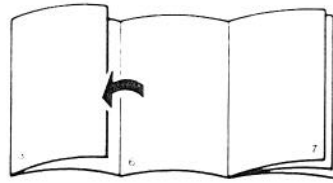
Quick operation

- Feather-touch function keys for direct mode change.
- Linear motor for quick selection search.

Multi-functional

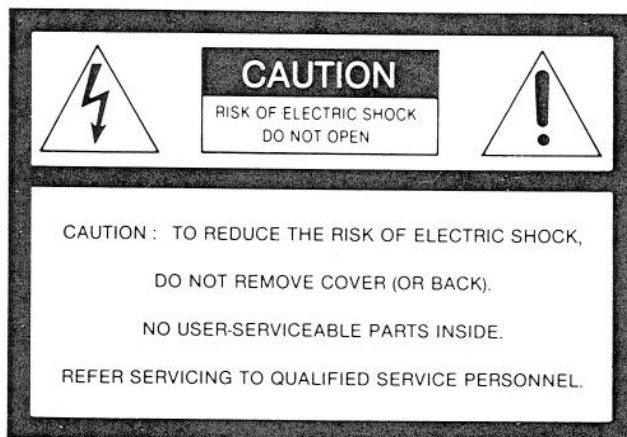
- A variety of playing modes: In the PROGRAM mode the desired selections can be played back in any desired sequence. In the CONTINUE mode playback is continuous from the desired selection to the end of the disc. In the SINGLE mode only one selection is played back.
- The shuffle-play function plays selections back in random order.
- The AMS (Automatic Music Sensor) for quick selection location
- The index function allows you to locate quickly the part you want.
- The repeat function allows you to repeat play continuously in any mode.
- The auto delay function allows you to delay the playback of the first selection 2 seconds.
- An RM-D502 Remote Commander supplied.
- Large and easy-to-read music calendar display shows the selection numbers on the disc and the time counter shows the elapsed or remaining playing time.

As you read, fold back this page and refer to the illustrations and the photos on pages 3 to 5.



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CAUTION

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

PRECAUTIONS

On safety

- Operate the unit only on 120 V ac, 60 Hz.
- Should any liquid or solid object 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 the cord, pull it out by grasping the plug. Never pull the cord itself.
- As the laser beam used in this compact disc player is harmful to the eyes, do not attempt to disassemble the cabinet. Refer servicing to qualified personnel only.

On installation

- Do not install the unit in a location near heat sources such as radiators or air ducts, or in a place subject to direct sunlight, excessive dust, mechanical vibration or shock.
- Good air circulation is essential to prevent internal heat build-up in the unit. Place the unit in a location with adequate air circulation. Do not place the unit on a soft surface, such as a rug that would block the ventilation holes on the bottom.

On operation

When the unit is not used, turn the power off, to conserve energy and to extend the useful life of your unit.

On cleaning the cabinet

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

On repacking

Do not throw away the carton and the packing material. They make an ideal container to transport the unit in. When shipping the unit for repair work or to another location, repack it as illustrated on the carton box.

For detailed safety precautions, see the leaflet "IMPORTANT SAFEGUARDS".

If you have any questions or problems concerning your unit, please contact your nearest Sony dealer.

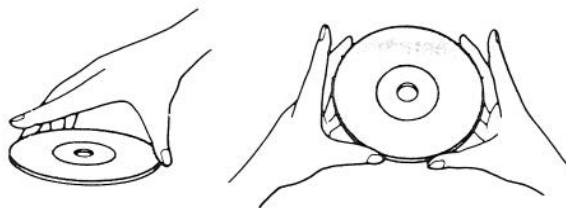
NOTES ON MOISTURE CONDENSATION

If the player is brought directly from a cold to a warm location, or is placed in a very damp room, moisture may condense on the lenses inside the unit.

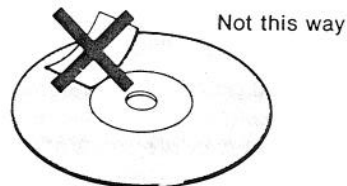
Should this occur, the player will not operate. In this case, remove the disc and leave the player turned on for about an hour to evaporate the moisture.

NOTES ON COMPACT DISCS

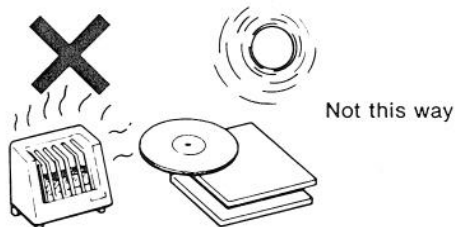
Handle the disc by its edge, and to keep the disc clean, do not touch the rainbow colored surface.



Do not stick paper or tape on the labeled surface.



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



Before playing, clean the disc with the supplied cleaning cloth.

Wipe the disc from the center out.



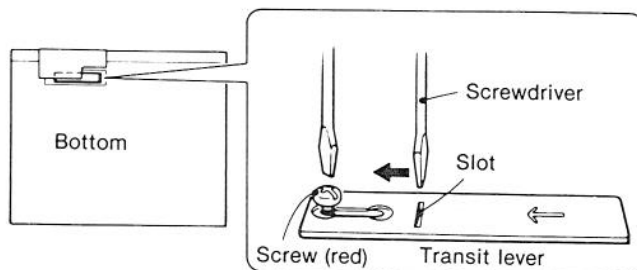
Do not use solvents such as benzine, thinner, commercially available cleaners or anti-static spray intended for analog discs.

After playing, store the disc in its case.

PREPARATION

A transit lever is provided at the bottom of the unit to protect the optical system against shock during transportation.

Before operating the CD player, be sure to move the lever in the direction of the arrow and secure it.



- 1 Loosen the screw (red) with the screwdriver.
- 2 Insert the screwdriver into the slot in the lever and move it in the direction of the arrow until it stops.
- 3 Tighten the screw.

When transporting the unit again, move the lever in the opposite direction of the arrow and secure it with the screw.

LOCATION AND FUNCTION OF CONTROLS

Each number in the text is keyed to that in the photos and the illustrations **A** on page 3.

Front panel

1 Disc compartment

The disc compartment opens when the OPEN/CLOSE key is pressed. The disc compartment can be closed by pressing the front of it lightly, by pressing the OPEN/CLOSE key again or by pressing the ► PLAY key.

2 OPEN/CLOSE key

The disc compartment opens when this key is pressed, and closes when it is pressed again.

3 REMOTE SENSOR and indicator

The signal transmitted by the supplied RM-D502 Remote Commander is received here. The indicator blinks to indicate that a function key on the Remote Commander has been pressed.

4 Direct selection keys

The keys numbered **1** – **20**, **+10** and **0** are used to select the desired selection directly by number. Except during the PROGRAM mode (page 15), the selection will begin to play when the numbered key is pressed.

5 ► PLAY key

Press to start disc play. The ► indicator will light up during play.

6 || PAUSE key

Press to pause during play. The || indicator will light up.

To release the pause mode, press this key again. The || indicator will go off and play will resume.

7 AMS (Automatic Music Sensor) keys

The desired selection can be located by pressing one of these keys during play or during pause.

◀◀: Press once to go back to the beginning of the selection being played. To go back to the previous selection, press two times, and so on.

▶▶: Press once to skip ahead to the beginning of the next selection. Press twice to skip to the following selection, and so on.

8 INDEX keys

Press one of these keys to search for a particular index number (signals prerecorded on the disc, indicating divisions within a selection), to start play from the desired point within a selection. The index numbers are displayed in the display window.

←: Press once to return to the previous index number.

→: Press once to skip to the next index number.

If the key is pressed during playback of a disc on which no index numbers have been recorded, play will start from the beginning of the current selection.

9 CHECK key, CLEAR key

CHECK: This key is for checking the order of the programmed selections.

CLEAR: In order to clear the programmed selections one by one, first display the selection number with the CHECK key, then press this key. Also, press this key to clear **[+ 10]** if it is pressed by mistake.

10 PLAY MODE keys

CONTINUE: Press this key to play continuously from the first (or desired) to last selection, in order from the lowest number.

SINGLE: Press to play one selection only.

PROGRAM: Press to program the desired selections in the desired order continuously.

11 STOP (RESET) key

When this key is pressed during play, play will stop and the player will stand by, waiting for your instructions. All selection numbers are displayed in the display window and the TRACK and INDEX indicators show **7 7**.

12 Manual search keys

These keys are used to search for a particular point. You can monitor the sound while going in fast forward or fast reverse during search.

◀◀: Keep pressed to go backwards at high speed.

▶▶: Keep pressed to go forward at high speed.

13 POWER switch

14 TIMER switch

Using an optional timer, the player can be set to start playing automatically at a particular time. (See page 22.)

15 REPEAT key

Press to repeat play. There are five types of repeat play: one selection, all selections, A ↔ B, program and shuffle repeat. (See page 20.)

16 TIME (elapsed or remaining time) key

When this key is pressed during play, the time remaining for this selection or the time remaining on the disc is displayed.

17 AUTO DELAY key

When this key is pressed, two seconds of blank space are inserted before play of the first selection begins. This function is cancelled by pressing the key again.

18 SHUFFLE PLAY key

Selections are shuffled and played in a random order when this key is pressed. When all of the selections on the disc have been played once, the shuffle play is cancelled.

19 LINE OUT level control

This control adjusts the output levels for the LINE OUT VARIABLE jacks on the rear panel. Output level increases when it is turned to MAX. This control also turns automatically when operated using the supplied RM-D502 Remote Commander.

20 DISC indicator

This indicator lights up when the disc compartment is moving, when the disc compartment has closed with a disc in place and during disc playing.

You can tell whether a disc is inserted or not even when the disc compartment is closed by checking this indicator.

21 TRACK indicator

When the disc is inserted using the OPEN/CLOSE key or by pressing on the front of the disc compartment, **the number of selections on the disc** is displayed for several seconds. When play begins, **the number of the selection being played** is displayed. When the **▶▶** key is pressed continuously and you go past the end of the last selection, **7 7** is displayed.

If the **◀◀** key is kept pressed and you go past the beginning of the first selection, **1 1** is displayed.

22 Time counter

When the disc is inserted and the disc compartment is closed, **the total time of all the selections on the disc** is displayed for several seconds. (When the **▶** PLAY key is used, this display does not appear.) When play begins, **the elapsed time the selection has been playing** is displayed.

When the TIME key is pressed, **the time remaining until the selection ends** is displayed after a minus "—" symbol. When this key is pressed again, **the play time remaining** is displayed after a minus symbol. The display varies depending on the setting of the PLAY MODE key and SHUFFLE PLAY key.

23 PGM indicator

This indicator lights up when the PLAY MODE PROGRAM key is pressed in stop mode, then goes out after the disc has begun to play.

The indicator also lights up when the programmed selections are being checked even during play.

24 INDEX indicator

This displays the index numbers of the selection being played. After programming but before play, or when checking the programmed selections, the INDEX indicator displays the order the selection currently displayed on the TRACK indicator was programmed.

(At this time the red PGM indicator lights up.)

25 Music calendar display window

When a disc is inserted and the player is on stand-by, the number of selections on the disc is displayed. For a disc with 21 or more selections, 1 – 20 light up, as well as the OVER indicator.

The display changes according to the mode and which function keys are pressed.

26 OVER indicator

This indicator lights up when a disc with 21 or more selections is inserted.

Rear panel

27 LINE OUT jacks

This unit is equipped with two pairs of LINE OUT jacks.

The FIXED jacks have a constant output level and the VARIABLE jacks output level can be changed with the LINE OUT level control.

The VARIABLE jacks are convenient to use for matching the playback sound levels of a tuner or other audio equipment and the CD player without having to adjust the volume control of the amplifier.

The VARIABLE jacks output level can be also adjusted with the supplied Remote Commander.

28 PLAY MODE initializing switch

This switch performs the same function as the PLAY MODE keys on the front panel. The setting of this switch—CONTINUE, SINGLE or PROGRAM—determines the mode when power is turned on, so set this switch to the mode most often used. After the power is turned on, change the mode with the PLAY MODE keys, as this switch does not work once the power is turned on.

29 ACCESSORY CONNECTOR

This connector can be used to connect an optional equipment which will be available in the future.

30 DIGITAL OUT jack

The digital signals (audio and subcode data) read from the disc are directly output from this jack.

Connect to the DIGITAL IN jack of the optional DAS-702ES DA converter unit.

31 DIGITAL OUT switch

This is used to select the output signal from the DIGITAL OUT jack. To make the most of this unit's performance, set the switch as follows:

ON: for audio and subcode data output

ON (FOR AUDIO USE): for audio data output only.

When listening to music through the connected D/A converter unit, set to this position.

OFF: for no digital data output. When listening to music through the LINE OUT jacks, set to this position.

INSULATOR INSTALLATION

See illustration **B** on page 3.

To obtain the best sound quality, use the supplied insulators.

CONNECTIONS

CONNECTING THE D/A CONVERTER UNIT AND AMPLIFIER

See connecting diagram **C** on page 4.

Be sure to set the DIGITAL OUT switch to ON (FOR AUDIO USE) position.

CONNECTING THE AMPLIFIER DIRECTLY

See connecting diagram **D** on page 4.

Be sure to set the DIGITAL OUT switch to OFF.

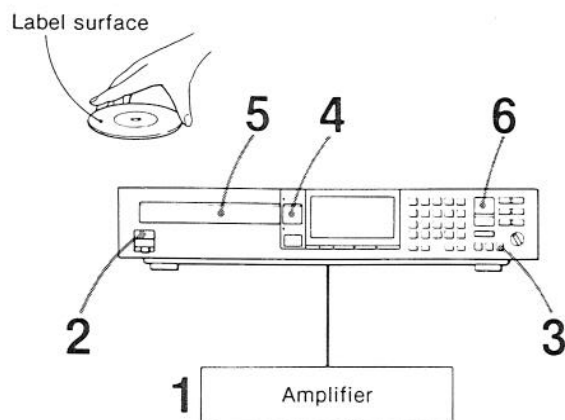
Notes on connection

- Turn off the amplifier before making connections.
- Be sure to insert the cable connectors firmly into the jacks. Loose connections may cause hum and noise.
- Connect the red plug of the audio connecting cord to the right-channel jack (R) and the white plug to the left-channel jack (L). Otherwise, the right and left channels will be reversed.
- Leave a little slack in the connecting cord to allow for inadvertent shock or vibration.
- Be sure not to connect the CD player to the PHONO input jacks of the amplifier.
- If the CD player causes interference to radio and television reception, turn off the player or move the player away from the receiver.

Power cord

A white mark is visible on one lead of the power cord. This will help you drive the CD player and other components in the system "in phase" by aligning the ac power cord polarities with ac outlet polarities. In most cases, the marked plug of the CD player's power cord should be inserted into the negative potential of the ac outlet.

DISC PLAYING (BASIC OPERATION)



TO PLAY

- 1 Turn the amplifier on and set the input selector to the CD player position.
- 2 Depress the POWER switch (ON).
When the D/A converter unit is connected, depress its POWER switch. (Before using, read the instruction manual of the D/A converter unit.)
- 3 Press the PLAY MODE CONTINUE key.
- 4 Press the OPEN/CLOSE key. The indicator above the key flickers and the disc compartment opens.
- 5 Put the disc in the disc compartment **with the label surface up**.
- 6 Press the ► PLAY key. The compartment closes and play begins from the beginning of the disc.

The number of the selections on the disc and the total time of all the selections is displayed for a few seconds on the display window when the disc is inserted using the OPEN/CLOSE key or by pressing the disc compartment.
The number indicators light up on the music calendar display window to show the number of selections on the disc.

If you press the direct selection keys to select the desired selection with the compartment opened, the compartment will close and play will begin from that selection.

If you press the ■ PAUSE key when the compartment is open, the compartment will close and the disc will pause at the beginning of the first selection.

When the player reaches the end of the last selection of the disc, it is automatically reset to the beginning of the disc and stands by. The TRACK indicator displays 0.

An important point to remember

In the CD system, a wider dynamic range is achieved than that of the conventional analog system, and the peaks of high level inputs are recorded with high-fidelity. In addition, the noise level is very low.

If you turn up the volume inadvertently while listening to a portion where no audio signals or very low level inputs are recorded, the speakers may be damaged when the portion with peak levels is played.

TO STOP DURING PLAY

To open the compartment

Press the OPEN/CLOSE key. The disc will stop rotating and the compartment will open.

To pause for a moment during play

Press the ■ PAUSE key. The ■ indicator will illuminate. To release pause and restart play from the same point, press the ■ PAUSE key again.

To reset to the beginning of the first selection

Press the STOP (RESET) key. The player will stand by.

DISC PLAYING (ADVANCED OPERATION)

This player has four play modes to allow you to specify exactly how you would like the disc to be played.

CONTINUE mode: Plays from the first (or desired) selection through the last selection on the disc.

SINGLE mode: Plays one selection only.

PROGRAM mode: The desired selections can be programmed in any order, and are played continuously in that order.

SHUFFLE PLAY: Plays all of the selections on the disc in random order.

In addition, repeated continuous play in each of the above modes can be specified with the REPEAT key.

● You can change the play mode even during play.

CONTINUE MODE PLAY

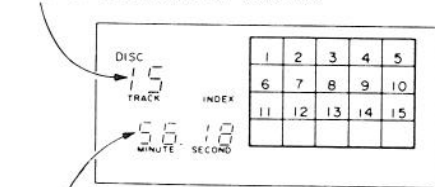
—To play the disc continuously

When the CONTINUE key is pressed, the key lights up. In this mode, play is continuous from the first (or desired) selection through the last, in numerical order. Display appears as shown in the illustration during stand-by, when a disc has been inserted and the compartment has been closed.

Note: When the ► PLAY key is used, this display does not appear.

Displayed for several seconds after a disc is inserted.

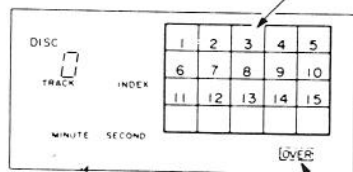
Number of selections on the disc



Total playing time

After several seconds, this display appears. (stand-by display)

Selection number display (maximum 20)

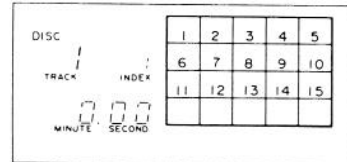


Displayed when the disc has 21 or more selections

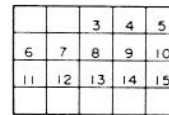
Example: To play from the first to last selection



Press the ► PLAY key.



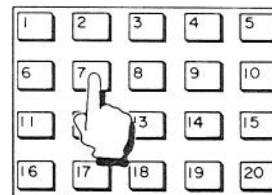
Play begins.
(In this example, the disc has 15 selections.)



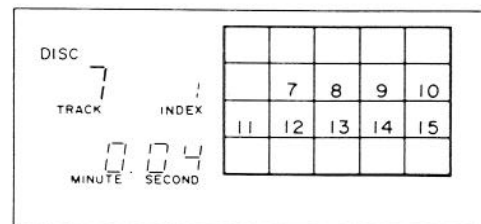
The number of the selection goes out as the selection finishes playing.

After the last selection is played, the player returns to stand-by state and stand-by display appears.

Example: To play from a particular selection to the last selection



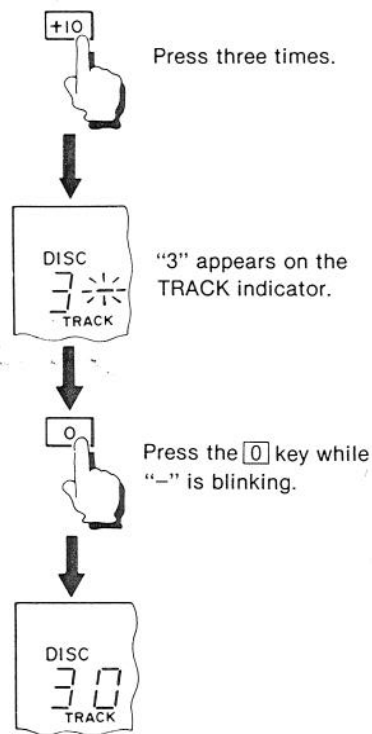
Press the desired selection number (e.g. 7).



Play begins from the seventh selection.

You can choose a number over 20 on a disc with 21 or more selections by using the **+10** and the **0** keys as well as the keys **1** - **20**.

Example : To play from the 30th selection



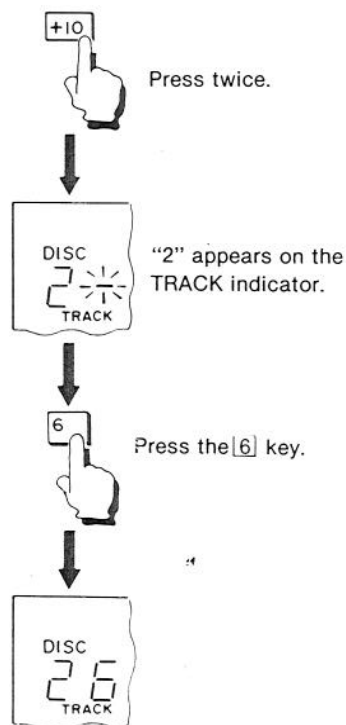
- The numbers for selections past the 20th will not be displayed in the music calendar display window, but only on the TRACK indicator.
- The MINUTE:SECOND display preceded by a minus symbol which appears between selections indicates the blank time between selections.

You can press a direct selection key or the ► PLAY key even when the disc compartment is open. The disc compartment will close and the disc will begin playing.

Repeat play in the CONTINUE mode

When the REPEAT key is pressed in CONTINUE mode, all of the selection numbers are displayed on the music calendar, and the number does not go out even after a selection is played. When the last selection ends, all selections on the disc will be played again, and the sequence will be continuously repeated. Press the REPEAT key again to release it.

Example : To play from the 26th selection



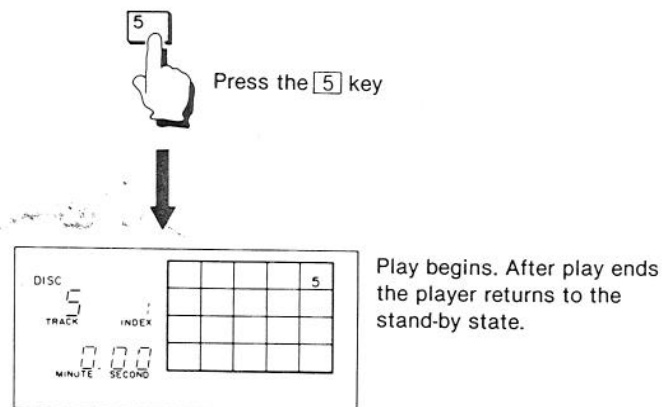
Or, press the **+ 10** key once, then press the **16** key.

SINGLE MODE PLAY

—To play one selection only

One selection only is played when the SINGLE key is pressed. Just as in the CONTINUE mode, when a disc is inserted, all of the selections on the disc are displayed so the selections you want to hear can be selected.

Example : To play the 5th selection



- If a particular selection is not chosen before the ► PLAY key is pressed, the first selection will be played.
- In order to change the selection during play, press the AMS key (see page 18) or direct selection keys (1 – 20). The play begins from the beginning of the new selection.

You can press a direct selection key or the ► PLAY key even when the disc compartment is open. The compartment will close and the disc will begin playing.

- You can choose a number over 20 on a disc with 21 or more selections by using the [+ 10] and the [0] keys as well as the keys [1] – [20]. (See previous page.)

Repeat play in the SINGLE mode

During the SINGLE mode, the selection being played will be repeated any number of times if the REPEAT key is pressed.

Press the REPEAT key again to release it.

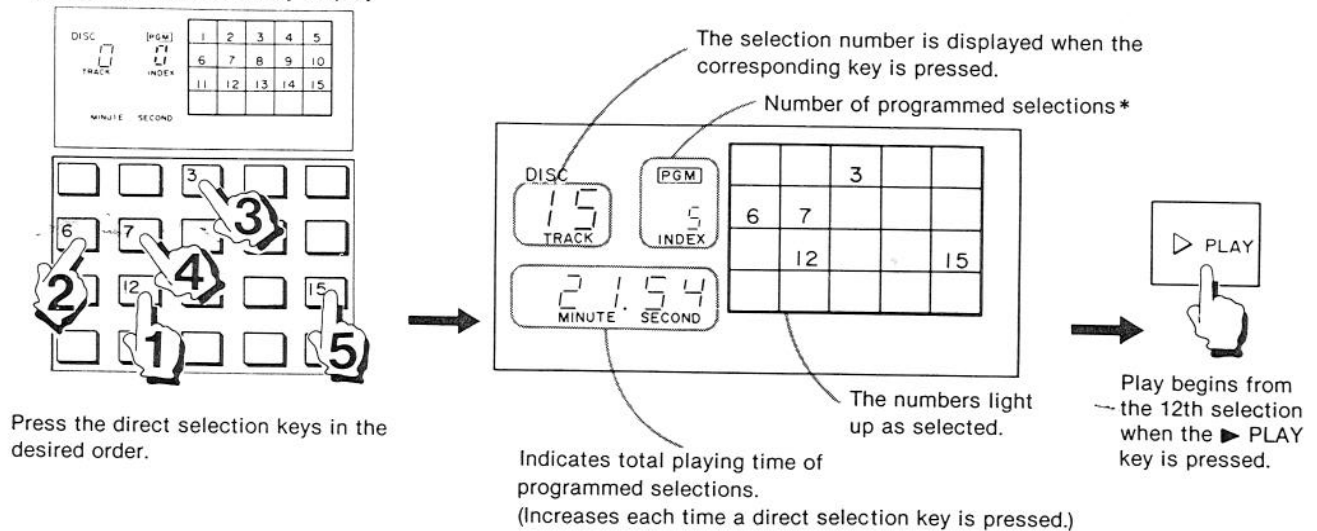
PROGRAM MODE PLAY

—To play the selections in a desired sequence

Any number of selections up to 20 can be selected and played in any order by pressing the PROGRAM key.

Example : To play in the order 12 → 6 → 3 → 7 → 15

PROGRAM mode stand-by display



When program play begins, the PGM indication goes out. The INDEX indicator which displays the number of programmed selections (* in the illustration) returns to the first index number.

Selections can be programmed even after play begins by pressing a direct selection key. Also, the same selection can be programmed to repeat.

When a selection ends, its number disappears from the music calendar and the selection is also erased from the program memory. After 3 seconds the next programmed selection begins.

To skip to the next selection, use the ►► key. (See page 19). You cannot return to the previous selection.

After all programmed selections are played, the player returns to the stand-by state.

Notes

- When the first selection is programmed, the ► PLAY indicator begins flickering.
- For a disc with 21 or more selections, the total playing time is not displayed if more than 20 selections are programmed, instead the display shows "—". Although the music calendar display window only shows the first 20 selections programmed, they are all programmed.

You can program even without the disc inserted. Program with the disc compartment open. After programming place the disc in the compartment and press the ► PLAY key to begin play. The total playing time is calculated and displayed after the disc is inserted.

Repeat play in the PROGRAM mode

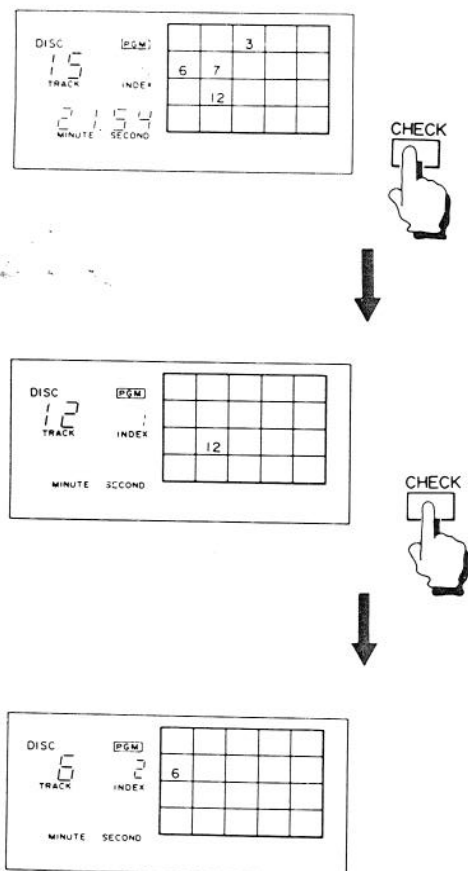
When the REPEAT key is pressed during the PROGRAM mode, only the selections whose numbers still on the music calendar display are repeated. Repeat play begins from the selection that was playing when the REPEAT key was pressed. Press the REPEAT key again to release this mode.

Checking the programmed selections

The programmed selections and their order can be checked by using the CHECK key.

The selections are displayed in the programmed order each time the CHECK key is pressed. After all are displayed, it starts at the beginning again.

Example : When the program is 12 → 6 → 3 → 7 → 15

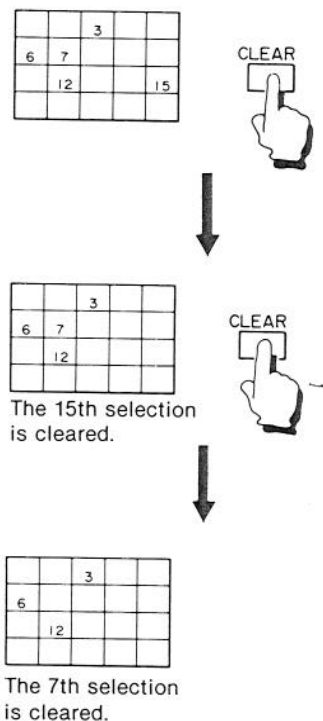


To clear programmed selections

The CLEAR and CHECK keys are used to erase programmed selections.

During programming, the selections are cleared in order from the last selection programmed each time the CLEAR key is pressed.

Example : Immediately after programming 12 → 6 → 3 → 7 → 15

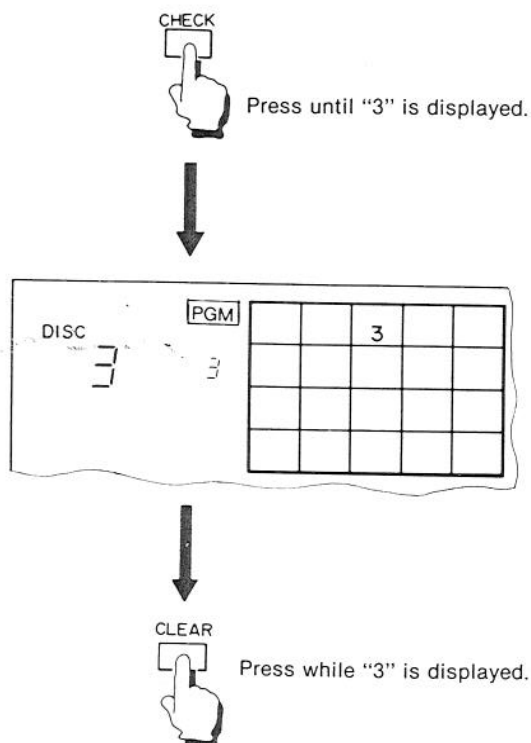


To clear all of the programmed selections, press the STOP (RESET) key.

- If the CHECK key is pressed continuously, the original display appears after 4 seconds.
- When selections after the 20th are being checked, the track number and program order number are displayed, but there is no display in the music calendar.
- The CHECK key also works during play.

During play, the desired selection can be cleared by displaying its number using the CHECK key and pressing the CLEAR key while the number is displayed.

Example: To clear 3

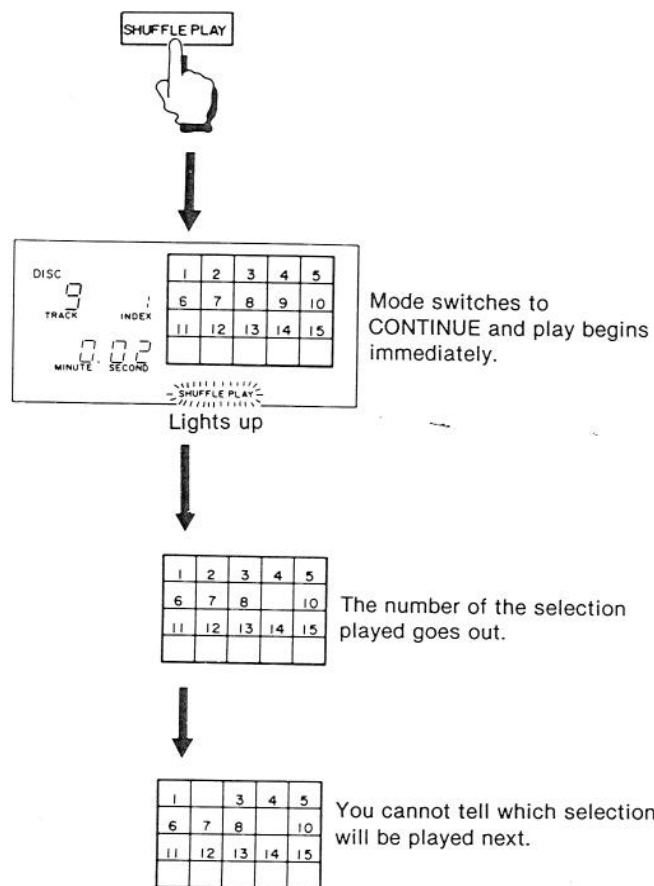


To clear the selection being played, press the STOP (RESET) or the OPEN/CLOSE key. The player will be in stand-by state.

SHUFFLE PLAY

—To play the selections in random order

When the SHUFFLE PLAY key is pressed, the mode automatically switches to CONTINUE, and play begins from any selection on the disc. Each selection is played once, in random order. There is a blank of 3 seconds between each selection.



To release, press the SHUFFLE PLAY key again or the STOP (RESET) key.

To skip to the next selection, press the ►► key.

To return to the beginning of the selection being played, press the AMS ◀◀ key.

To go forward to any point, press the ►► key. You cannot return to the previous selection.

- On discs with 21 or more selections, selections 1 – 24 can be shuffle played, but not 25 and after.
- Shuffle play is released if a direct selection key (1 – 20) is pressed.
- Shuffle play does not operate if the disc compartment is open.

To repeat shuffle play

Shuffle play can be repeated by pressing the REPEAT key before starting shuffle play or during shuffle play. After all of the selections on the disc are played, they are reshuffled and play continues.

Press the REPEAT key again to release.

Guessing game

There is no way of knowing which selection will be the first and which will be the last with shuffle play. If you stop the play during shuffle play and then press the SHUFFLE PLAY key again, the selections will be played in a different order than the last. You can listen to the same disc many times, but never in the same order. Have fun trying to guess which selection will be played next. Even if the ►► key is pressed during shuffle play, the selection will be random.

SEARCH OPERATION

AMS (AUTOMATIC MUSIC SENSOR) FUNCTION

—To search for a particular selection

Using the ◀◀ or ▶▶ key, you can quickly locate a desired selection ahead or back. When the key is pressed, the player searches the selection data recorded at the beginning of each selection and play will start from the beginning of the selection.

In PROGRAM mode

A previous selection can be searched for only during repeat play.

During shuffle play

AMS function does not work.

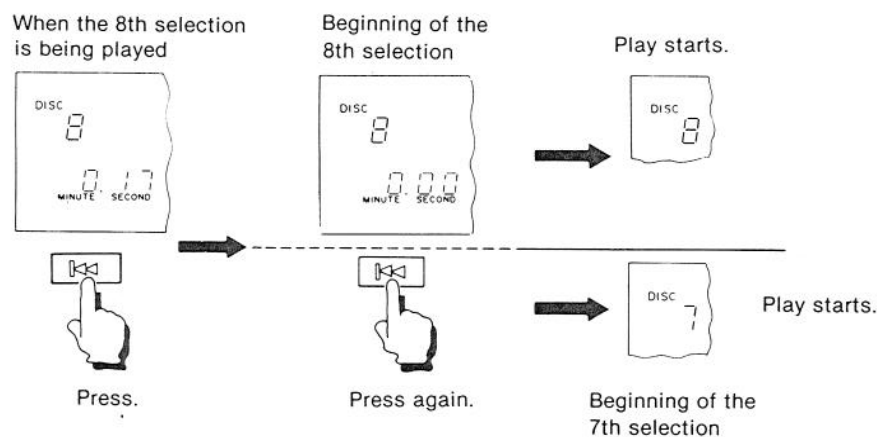
To search for a previous selection

In CONTINUE or SINGLE mode

Press the ◀◀ key during play or pause.

When the ◀◀ key is pressed once, the beginning of the selection being played is searched for.

When the key is kept pressed, one selection back is searched for.



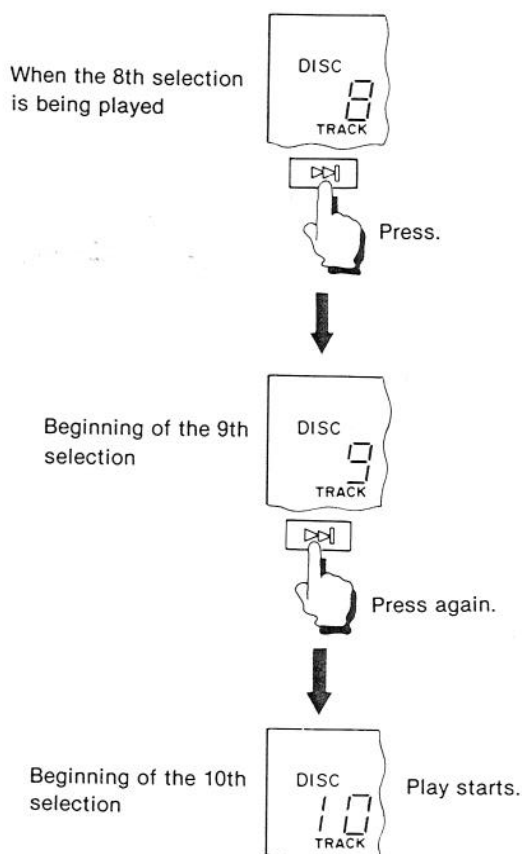
Keep the ◀◀ key pressed until the desired selection number is displayed.

If you press the ◀◀ key after the first selection is located, the TRACK indicator will not change.

To search for a selection ahead

In CONTINUE or SINGLE mode

Press the ►► key during play or pause.
When the ►► key is pressed once, the next selection after that being played is searched for.
When the key is kept pressed, the selection ahead is searched for.



In PROGRAM mode or during shuffle play

Press the ►► key to search for the next programmed (shuffled) selection after that being played or the selection ahead of that.

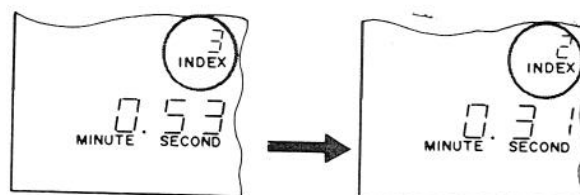
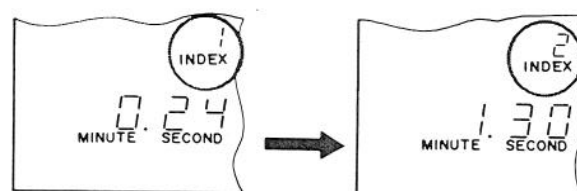
Keep the ►► key pressed until the desired selection number is displayed.

If you press the ►► key after the last selection is located, the TRACK indicator will not change.

INDEX SEARCH

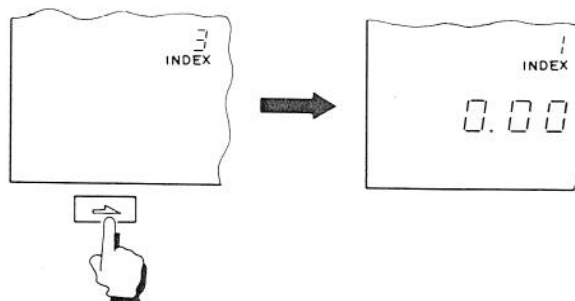
—To start playing from a particular section

On some discs, the index numbers divide the selections into sections, such as chapters in a book or movements in a symphony. To start playback from a particular section, you can press the INDEX keys any time you want, even during playback or in the pause mode, etc. The selected index number is displayed in the INDEX indicator.



If playback does not start from the specified point

- Are you playing back a disc with no index numbers?
In this case, playback starts from the beginning of the current selection.



- You have selected an index number which is not recorded on the disc.
In this case, playback starts from the section with the highest index number.
- You have selected the wrong index number.
Find the correct index number, referring to the notes accompanying the compact disc.

MANUAL SEARCH

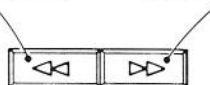
—To search for a particular point in a selection

Using the manual search keys, you can locate a particular point of a selection during play or pause. While one of the manual search keys is held down, the disc playing goes ahead or back. Release the key at the desired point found by observing the time counter or monitoring the high-speed sound (only during play). In the pause mode, the search speed is increased by three times.

Manual search keys

To go back at a high speed.

To go ahead at a high speed.



What are these indications ?



This indication is displayed when you have passed the end of the disc by keeping the ▶▶ key pressed. The indication returns to normal display when the ◀◀ or ◀ key is pressed.



This indication is displayed when you have passed the beginning of the disc by keeping the ◀◀ key pressed. When the player is in the play mode, the indication automatically returns to the normal display.

In the pause mode, press the ▶▶| key or ▶▶ key.

Notes

- If you use the ◀◀ or ▶▶ key during the SINGLE mode, the player will be in stand-by state when the disc reaches the beginning or the end of the selection.
- If you use the ◀◀ or ▶▶ key during the PROGRAM mode or shuffle play, the next programmed (shuffled) selection can be searched for and then play begins.

REPEAT PLAY

Using the REPEAT keys, you can repeat the selection being played, the whole disc, or particular portion of the disc.

TO REPEAT ONLY THE SELECTION BEING PLAYED

Press the SINGLE key then the REPEAT key. (See "Repeat play in the SINGLE mode" on page 14.)

TO REPEAT PARTICULAR SELECTIONS

Press the PROGRAM key and program the desired selections in the order you want, then press the REPEAT key. (See "Repeat play in the PROGRAM mode" on page 15.)

TO REPEAT THE WHOLE DISC

Press the CONTINUE key. (See "Repeat play in the CONTINUE mode" on page 14.)

TO REPEAT SHUFFLE PLAY

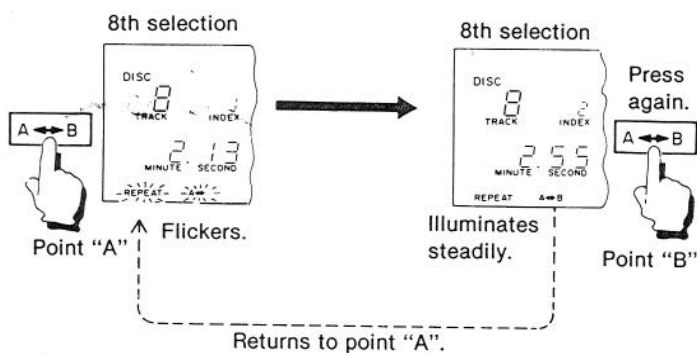
Press the SHUFFLE PLAY key, then the REPEAT key. (See "To repeat shuffle play" on page 18.)

When the ◀◀ or ▶▶ key is kept pressed during repeat play and repeat play end is reached, "-0.03" is displayed in the display window and repeat play resumes after 3 seconds.

TO REPEAT PLAY BETWEEN TWO PARTICULAR POINTS

(A → B REPEAT)

- 1 When the disc plays the point from which you wish to start the repeat play (point A), press the A ↔ B key. The indicator will start flickering showing the point A is memorized.
- 2 When the disc reaches the point at which you wish to stop the repeat play (point B), press the A ↔ B key again. The indicator will then illuminate steadily showing the point B is memorized. The disc will go back to the point A and play will restart.



Then the portion between A and B points will be repeated.

If the ► PLAY key is pressed during the A ↔ B repeat play, the disc will go back to the point A.

Note : When A ↔ B points are within one selection , set the player in SINGLE, CONTINUE or PROGRAM mode. When A ↔ B points are in different selections, set the player in the CONTINUE mode only.

MORE ABOUT A ↔ B REPEAT FUNCTION

To play from a desired point (memory play)

- 1 At the point from which you wish to listen later (point A), press the A ↔ B key.
 - 2 When you press the ► PLAY key, the disc will go back to the point A and play will restart.
- To cancel the point A, press the REPEAT key.

To repeat while eliminating an unwanted portion (jump repeat)

- 1 At the point where you wish to end the portion to be eliminated (point A), press the A ↔ B key.
- 2 Press the ◀◀ or ◀◀ key to search for the point from which you wish to start eliminating (point B), and then press the A ↔ B key. The repeat play eliminating the B – A portion will start.

TO CANCEL REPEAT PLAY

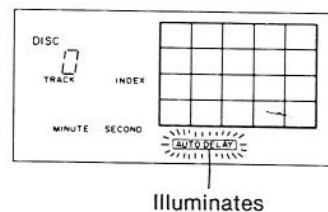
Press the REPEAT key again or the STOP (RESET) key.

AUTO DELAY FUNCTION

Using the auto delay function, the disc play begins **approximately 2 seconds** after you have selected a selection with the direct selection keys or the AMS keys. The AUTO DELAY key can be activated only during play.

To activate the delay function

Press the AUTO DELAY key during play. The AUTO DELAY indicator appears on the display window. This key can be activated in any mode.



To cancel the delay function

Press the AUTO DELAY key again or turn off the power. This function can not be cancelled with the OPEN/ CLOSE or the STOP (RESET) key.

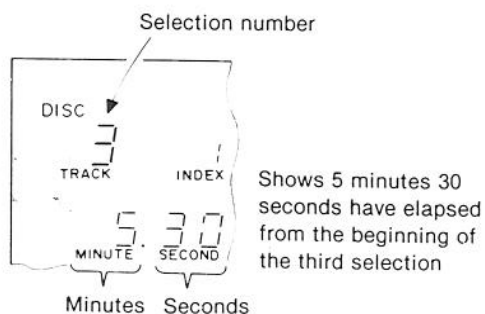
USING THE TIME COUNTER

TO MONITOR THE ELAPSED PLAYING TIME

Generally, the time counter shows the elapsed playing time from the beginning of the selection in minutes and seconds.

When a new selection starts, the counter is reset to "0.00" and then starts counting time again.

If the selection has a blank space at its beginning, the counter is reset to the time preceded by the minus sign such as "-0.02", "-0.01", etc.



TO MONITOR THE REMAINING PLAYING TIME

The TIME key can be activated only during play or pause.

When you press the TIME key first

The counter shows the remaining time of the selection being played.

When you press the key second time

The counter shows as follows.

In CONTINUE mode: Total remaining playing time of whole disc is displayed. During shuffle play, this time is not displayed.

In SINGLE mode: The remaining playing time of the selection being played is displayed.

In PROGRAM mode: The total remaining playing time of the programmed selections is displayed.

When you press the key third time

The counter returns to the elapsed playing time.

Notes

- When a disc with 21 or more selections is inserted, the time counter displays "-- --".
- The TRACK and INDEX indicators disappear when you press the TIME key second time.

TIMER-ACTIVATED PLAY

By connecting any of several commercially-available timers, you can play a disc at any desired time.

See illustrations **E** and **F** on page 5 for power connection.

Connection 1: Using the D/A converter unit and amplifier

(illustration **E**)

Connection 2: Using the amplifier (illustration **F**)

For audio signal connections, see page 4.

To play using a timer

Make sure that the POWER switches of the CDP-650ESD, the D/A converter unit and the amplifier are turned on.

- 1 Set the player's TIMER switch to OFF.
- 2 Set the input selector of the amplifier to the appropriate position.
- 3 Insert a disc.
- 4 Set the timer for the desired time. (At this point, power will be cut off.)
- 5 Set the player's TIMER switch to PLAY.

The player is now ready to start play of the first selection at the time set on the timer.

Notes

- Even with the PLAY MODE initializing switch set at PROGRAM, the player will be automatically switched to CONTINUE mode at the turn-on time.
- With the PLAY MODE initializing switch set at SINGLE, the play begins at the turn-on time but only the first selection is played.
- The PROGRAM mode play or the shuffle play cannot be activated using a timer.

After the timer-activated play has been completed...

Be sure to set the TIMER switch of the player to OFF.

REMOTE CONTROL OPERATION

Once the POWER switch is turned on, you can remotely control various functions of the CDP-650ESD with the RM-D502 Remote Commander (supplied).

Battery installation

Insert the two size AA batteries (IEC designation R6) with correct polarity referring to the illustration **G** on page 5.

Notes on the Remote Commander

- In normal operation, battery life is up to half a year. When the battery is exhausted, the Remote Commander will not operate the unit. In this case, replace the batteries with new ones.
- When the Commander is not to be used for a long period of time, remove the batteries to avoid damage from possible battery leakage.
- Keep the Commander away from extremely hot or humid places.
- Avoid dropping any foreign objects into the Commander cabinet, particularly when replacing batteries.
- To avoid a malfunction, do not simultaneously depress two or more keys.
- If the output indicator does not light when any of the function keys are pressed, replace all the batteries.

Range of the remote control

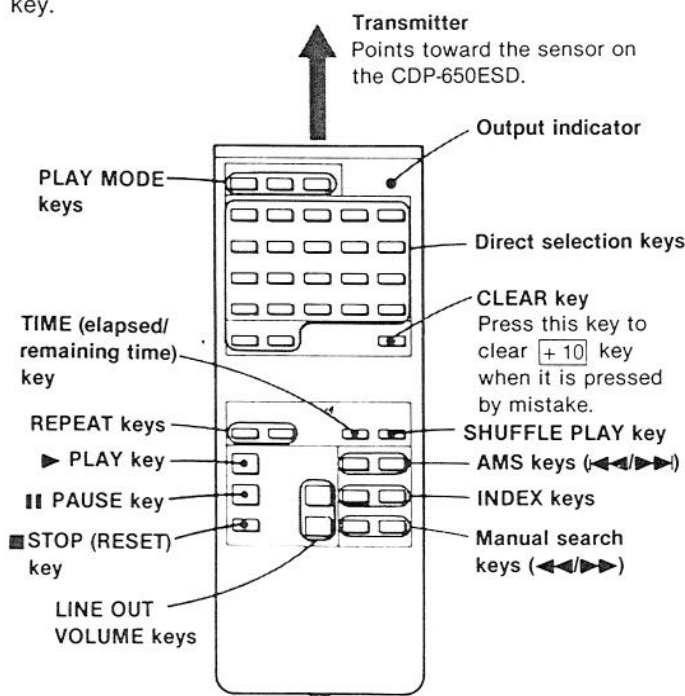
See illustration **H** on page 5.

When using the Remote Commander, point the transmitter of the Remote Commander at the sensor of the player.

The shorter the distance between the Commander and the sensor the wider the angle within which the player can be controlled.

Function of keys on the Remote Commander

The keys of the Remote Commander have the same function as those of the CDP-650ESD except the CLEAR key.



Notes

- If you select a track number which is not recorded on the disc, the selected number will not be accepted.
- If you selected the wrong track number, select the correct track number.
- If the selected index number is not recorded on the disc, playback starts from the section with the highest index number.

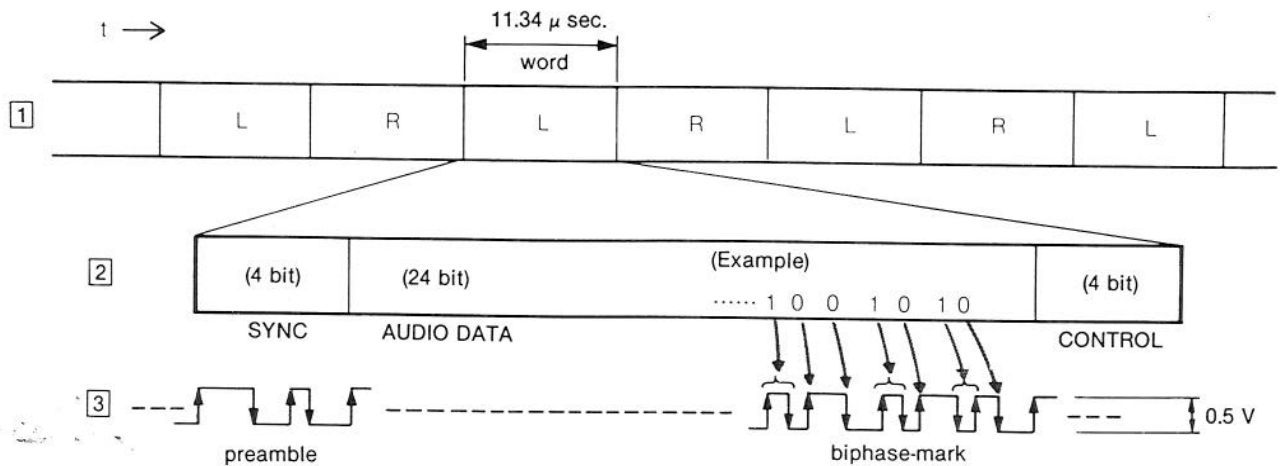
To use the Remote Commander in combination with another Remote Commander

With the supplied joint, the RM-D502 can be attached to another Remote Commander, allowing you to have the central control center in your hand.

- 1 Remove the battery compartment lids from the Remote Commanders.
- 2 Insert the supplied joint into the groove in the side of the RM-D502 and attach the battery compartment lid.
- 3 Slide the other Remote Commander into the attached joint. (See illustration **I** on page 5.)
- 4 Close the battery compartment lid.

The Remote Commanders can be attached at either side.

TRANSMISSION OF DIGITAL AUDIO INTERFACE



The digital audio interface transmits both the L and R channel data using one single digital cable. For the purpose, the time-sharing multiplexing transmission system is employed to transmit or receive the L channel and R channel data alternately, as shown in Fig. [1]. When the sampling frequency is 44.1 kHz (with CD), 44100 data per second are transmitted for each of the L and R channels, i.e., 88200 data transmissions in total. The length of one channel data period (word) is 11.34 microseconds.

One word consists of 32 bits. The assignment of the bits is shown in Fig. [2].

The first 4 bits forms the SYNC portion used for synchronization and is inset with preamble, described later. The next 24-bit field is designed for audio data portion. However, as many current digital audio systems use 16-bit data as with the CD, only the last 16 bits are used at present. The last 4 bits is the control portion which carries informations annexed to data, such as emphasis ON/OFF, subcodes, etc.

The data constructed in this way is modulated with biphasic mark, with which data 0 corresponds with one inversion and data 1 corresponds with two inversions, as shown in Fig. [3]. However, the SYNC portion is modified with a special pattern called preamble, in which the inversion correspondences are ignored and the periods of high levels are longer than other parts. The receiver D/A converter input section uses this preambled portion for synchronization.

The waveform of Fig. [3] is transmitted through a coaxial cable with 75-ohm impedance, at a level of 0.5 V_{p-p}. As the connection with equipment uses phono plugs, the use of commercially available coaxial cables with phono plugs (e.g. audio connection cords, etc.) is possible as well as the digital connection cord supplied with the D/A converter unit.

SPECIFICATIONS

COMPACT DISC PLAYER CDP-650ESD

System	Compact disc digital audio system
Disc	Compact disc
Laser	Semiconductor laser ($\lambda = 780 \text{ nm}$)
Laser output	Max. 0.6 mW *

*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.

Spindle speed	200 r.p.m. to 500 r.p.m. (CLV)
Scan velocity	1.2 - 1.4 m/sec.
Error correction	Sony Super Strategy Cross Interleave Reed Solomon Code

Number of channels	2
D-A conversion	16-bit linear
Frequency response	2 - 20,000 Hz $\pm 0.3 \text{ dB}$
Harmonic distortion	Less than 0.0025% (1 kHz)
Dynamic range	More than 96 dB
Channel separation	More than 95 dB
Wow and flutter	Below measurable limit
Outputs	Line outputs FIXED (phono jacks) Output level 2 V rms (at MSB) Load impedance over 10 kilohms VARIABLE (phono jacks) Max. output level 2 V rms (at MSB) Load impedance over 50 kilohms DIGITAL OUT (phono jack) Max. output level 0.5 V p-p Load impedance 75 ohms

Disc

Track pitch	1.6 μm
Sampling frequency	44.1 kHz
Quantization	16 bit linear quantizing/channel
Modulation system	EFM
Transfer rate	2.03 Mbit/sec. (before modulation)

General

Power requirements	120 V ac, 60 Hz
Power consumption	16 W
Dimensions	Approx. 430 x 80 x 365 mm (w/h/d) (17 x 3 ¹ / ₄ x 14 ³ / ₈ inches) including projecting parts and controls Approx. 430 x 96 x 365 mm (w/h/d) (17 x 3 ⁷ / ₈ x 14 ³ / ₈ inches) including projecting parts and controls and insulators
Weight	Approx. 9.0 kg (19 lbs 14 oz), net Approx. 10.4 kg (22 lb 15 oz) including insulators

REMOTE COMMANDER RM-D502

Remote control system	Infrared control
Power requirements	3 V dc with two batteries size AA (IEC designation R6)
Dimensions	Approx. 67 x 175 x 18 mm (w/h/d) (2 ³ / ₄ x 7 x 3 ¹ / ₄ inches) incl. projecting parts and controls
Weight	Approx. 145 g (5.1 oz) incl. batteries

SUPPLIED ACCESSORIES

Connecting cord (1)
Insulators (4)
Disc cleaning cloth (1)
Sony New Super batteries SUM-3(NS) (2)
Remote Commander (1)
Joint for Remote Commander (1)

OPTIONAL ACCESSORY

DA converter unit DAS-702ES

Design and specifications subject to change without notice.

unit has 4X oversampling = 176.4 KHz

TROUBLE CHECKS

The following checks will assist in the correction of most problems which you may encounter with your unit. Should any problem persist after you have made these checks, consult your nearest Sony service facility. Before going through the check list below, first refer back to the connection and operating procedures.

Play does not begin.

- The **II** PAUSE key is engaged.
- Moisture condensation (see page 7).
- The disc is inserted with the labeled surface downwards.
- The disc is incorrectly inserted.

No audio from one or both channels.

- Incorrect connections.

Play begins as soon as the POWER switch is turned on.

- The TIMER switch is set at PLAY.

The sound volume is too low.

- The VARIABLE LINE OUT jack is used. (See page 10.)